



CITY OF WARWICK COMPREHENSIVE PLAN 2033



Scott Avedisian, Mayor
William J. DePasquale, Jr. AICP
 Director of Planning
Daniel Geagan
 Senior Planner

CONSULTANT TEAM

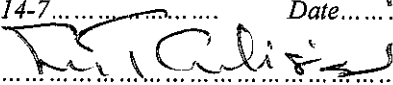
Goody Clancy
 Lead Consultant

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Mount Auburn Associates
Susan Jones Moses & Associates

THE CITY OF WARWICK
STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

APPENDIX B
CITY OF WARWICK COMPREHENSIVE PLAN
2013-2033

No.....O-14-7..... Date...4/17/14
Approved..........Mayor

Be it ordained by the City of Warwick:

SECTION I. The Code of Ordinances of the City of Warwick is hereby amended as follows

1. Deletion of the previously approved City of Warwick Comprehensive Plan (duly adopted through PCO-21-91, as amended) in its entirety;
2. Insertion of the attached Exhibit A as Appendix B, as amended in Exhibit 1, in the Warwick Code of Ordinances. A full copy of the amendments may be viewed in the office of the City Clerk during regular business hours or at (cite web reference).
3. <http://www.warwickcompplan.com/?p=257>

SECTION II. This Ordinance shall take effect upon passage and publication as prescribed by law and all ordinances and parts of ordinances inconsistent herewith are hereby repealed.

SPONSORED BY: COUNCIL PRESIDENT TRAVIS AND
COUNCILMAN COLANTUONO ON BEHALF
OF MAYOR AVEDISIAN

COMMITTEE: Ordinance



CITY OF WARWICK COMPREHENSIVE PLAN 2013–2033

Scott Avedisian, Mayor
City of Warwick Council
City of Warwick Planning Board

ACKNOWLEDGEMENTS

THANK YOU to all the citizens, neighborhood and business leaders, community advocates, and stakeholders who participated in creating this Comprehensive Plan by attending public meetings and engaging with one another, by sharing your experience and knowledge of Warwick through interviews and meetings with the planning team, and by expressing your commitment to Warwick's future. Everyone can be part of putting this plan into action!

Mayor Scott Avedisian

WARWICK CITY COUNCIL

Council President Donna Travis
Ward 1 Councilman Steven Colantuono
Ward 2 Councilman Thomas Chadronet
Ward 3 Councilwoman Camille Vella-Wilkinson
Ward 4 Councilman Joseph J. Solomon
Ward 5 Councilman Edgar Ladouceur
Ward 7 Councilman Charles J. Donovan, Jr.
Ward 8 Councilman Joseph Gallucci
Ward 9 Councilman Steve Merolla

CITY OF WARWICK PLANNING BOARD

Philip Slocum, Chairman
Vincent Gambardella, Vice-Chairman
James Desmarais
Cynthia Gerlach
Steve Horowitz
Thomas Kiernan
John Mulhearn
Laura Pisaturo
Sue Stenhouse

WARWICK PLANNING DEPARTMENT

William DePasquale, AICP, Planning Director
Dan Geagan, Project Manager

COMPREHENSIVE PLAN ADVISORY COMMITTEE

(CREATED BY EXECUTIVE ORDER 2011-01)

Derek Andersen, Warwick Land Trust
William DePasquale, Warwick Planning Director
John Dickerson, Warwick Harbor Management Commission
Dan Geagan, Warwick Planning Department
Ray Meunier, Warwick Wildlife and Conservation Commission
John Mulhearn, Warwick Planning Board
Kevin Nelson, Rhode Island Statewide Planning
Daniel Porter, Rhode Island Airport Corporation
Carol Pratt, Warwick Historic District Commission
William Russo, Warwick City Council President Appointee
Lauren Slocum, Central Rhode Island Chamber of Commerce
Camille Vella-Wilkinson, Warwick City Council
Lee R. Whitaker, AICP, Mayoral Appointee

CONSULTANT TEAM

Goody Clancy (lead consultant)
with
Veri/Waterman Associates
Gordon Archibald, Inc.
Mount Auburn Associates
Susan Jones Moses & Associates

EXECUTIVE SUMMARY

PART I – SETTING THE STAGE

Chapter 1: The Vision for 21st Century Warwick

Chapter 2: The Community Speaks

Chapter 3: Population and Land Use Trends

PART II – NATURAL AND CULTURAL RESOURCES

Chapter 4: Natural Resources

Chapter 5: Parks, Open Space and Recreation

Chapter 6: Historic and Cultural Resources

PART III – LIVABLE NEIGHBORHOODS

Chapter 7: Housing and Neighborhoods

PART IV – PROSPEROUS CITY

Chapter 8: Economic Development

PART V – SUSTAINABLE SYSTEMS

Chapter 9: Transportation and Circulation

Chapter 10: Public Facilities and Services

Chapter 11: Sustainability and Resilience

PART VI – THE FUTURE CITY

Chapter 12: Future Land Use, Zoning and Urban Design

Chapter 13: Stewardship and Implementation

APPENDIX



WHY WE DEVELOPED THIS PLAN

This is Warwick's first full update of its comprehensive plan in twenty years. It is designed to help Warwick begin meeting the challenges of the 21st century so that it can continue to be competitive as a place to live, work, play, and do business for many decades to come. The State of Rhode Island requires that municipalities prepare a comprehensive plan with a 20-year vision and a 10-year implementation plan that is consistent with the state's planning goals.

HOW WE DEVELOPED THIS PLAN

More than previous plans, this Warwick Comprehensive Plan is based on a substantial community engagement process that was designed to find out what residents, business people, and other stakeholders were thinking about the future of the city. What makes Warwick a good place to live and do business? What characteristics of Warwick should we keep, enhance, and protect? How should we allocate our resources in maintaining and improving quality of life and prosperity for the city?



HOW WE'LL PUT THE PLAN TO WORK

The purpose of planning is to get to action. The Comprehensive Plan includes a ten-year implementation matrix setting out the What, How, Who, and When for specific actions to achieve the goals of the plan. Annual public hearings will give citizens a report on implementation and the plan will be used in capital improvement planning, work plans, and to guide land use decision making. Partnerships with residents, businesses, institutions, and nonprofits will be important to the success of the plan.

WHAT'S IN THE 2013 CITY OF WARWICK COMPREHENSIVE PLAN?

IMAGINE ► PLAN ► ACT

The Comprehensive Plan covers a broad range of topics in 13 chapters about current trends, the planning process and all aspects of community life that affect the way our city can develop in the future.

IMAGINE: WHAT KIND OF PLACE DO WE WANT TO BE IN THE 21ST CENTURY?

- *Part I: Setting the Stage.* Our vision for the future, guiding principles for planning, the public process, and where we are starting from today.

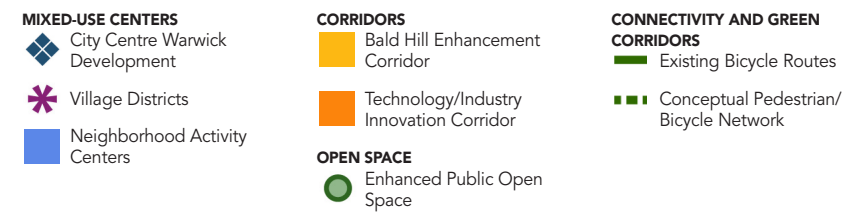
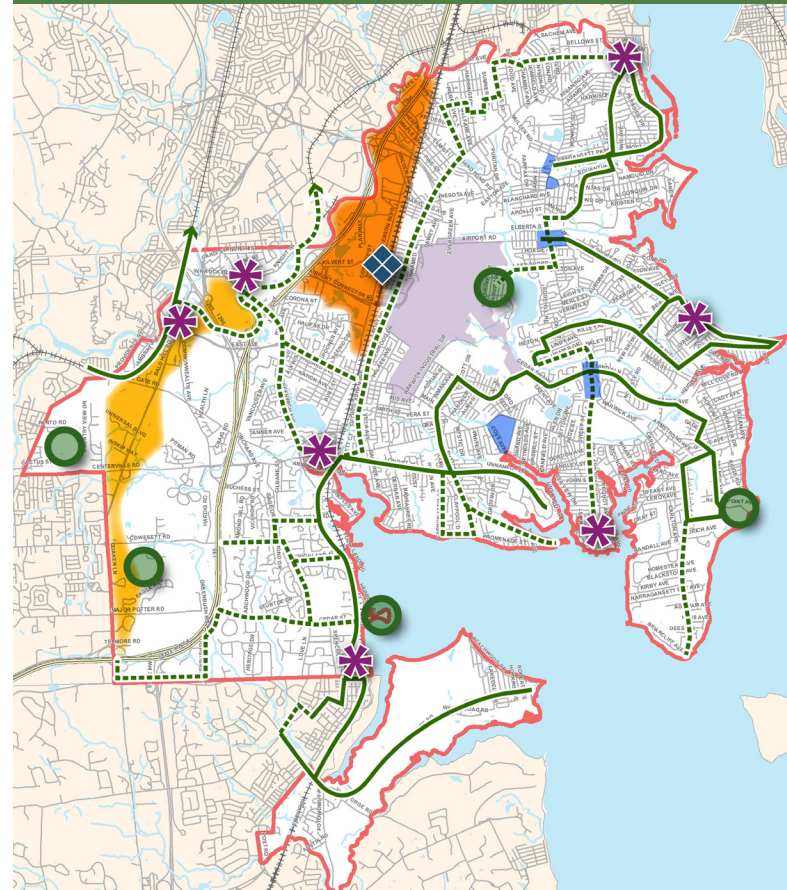
PLAN: HOW DO WE GET THERE? STRATEGIES TO ACHIEVE THE VISION.

- *Part II: Natural and Cultural Resources*
- *Part III: Livable Neighborhoods*
- *Part IV: Prosperous City*
- *Part V: Sustainable Systems*

ACT: HOW DO WE GET STARTED?

- *Part IV: The Future City*

WARWICK COMPREHENSIVE PLAN 2013–2033 STRATEGIC PRIORITIES



THE CITY OF WARWICK'S VISION FOR 2033

Twenty-first century Warwick is a connected, sustainable, and prosperous coastal city of livable neighborhoods and walkable villages—a community that honors and preserves the best from its past, protects and enhances its environment of water and land, provides varied housing opportunities for people across the age and income scale, and supports an increasingly diversified economy. We are strengthening our city and our community to meet the needs of current and new generations of Warwick residents, within the context of our traditions, history, and maritime heritage.

- Our village centers are pedestrian friendly and mixed use, include new housing opportunities, and serve neighborhoods with attractive retail and services. They add new living options to our traditional suburban neighborhoods of single family homes.

- The Warwick Station district, now known as City Centre Warwick, is a vibrant live-work-play growth hub with mixed-use, transit-oriented development.
- We have invested in transportation improvements and amenities to make Apponaug Village the city's center of civic life, anchored by city hall, the Warwick Museum, a new community gathering place, and celebration of our connection to the water at Apponaug Cove and through the daylighting of Hardig Brook.
- We are protecting and enhancing the overall quality of life in all the city's neighborhoods; continuing to be vigilant in monitoring noise, air, and water quality around the airport; and providing methods to remediate minimum housing violations and reconcile derelict properties.
- We are connecting neighborhoods, parks, schools, village centers, ponds and coastline to one another by green-

- ways, pedestrian links, and bicycle routes, in order to create more transportation choice in getting around the city.
- We are committed to a diversity in land use that promotes a strong, stable tax base, including preserving industrially zoned land for non-retail uses.
- We are investing to keep our regional retail destinations competitive, to modernize and transform our neighborhood commercial districts, to make the intermodal station district a new city center and hub of economic growth, and to attract new opportunities, such as advanced manufacturing.
- We are committed to preserving and enhancing the city's open space, recreation and water resources, improving the utility of these properties for the community while promoting economic development and public-private partnerships that provide

- revenue for ongoing maintenance and infrastructure improvements.
- We are making more sustainable choices about how we manage the impacts of development on our streams, ponds, wetlands, and coastal waters because we understand how our actions on land affect water quality and flooding. We are implementing a coordinated program to manage stormwater, impervious surfaces, wastewater, and landscape practices so that all our waters will once again be clean for fish and shellfish, for recreation, and for commercial purposes. Warwick's coastal waterfront is one of our most precious assets, but we know we must plan for the likelihood of sea level rise in this century.

Twenty-first-century Warwick combines the best of traditional suburban life with the amenities of village centers, affordable access to the coast, convenience to travel hubs, and a forward-thinking community.

TEN KEY CONCEPTS AND STRATEGIES TO PRESERVE QUALITY OF LIFE AND COMPETITIVENESS IN WARWICK'S FUTURE

- 1 Make the City Centre Warwick a new hub of growth and economic development.** Promote mixed-use, transit-oriented development, make improvements to the public realm, and advocate for more frequent commuter rail service
- 2 Make historic village centers into hubs of walkability, amenities, events, and mixed use development.** Continue Apponaug Village improvements and establish Village District zoning in additional historic villages.
- 3 Promote compact development options to preserve open space.** Establish the option of conservation subdivision design for the few large open space parcels that remain available for residential development.
- 4 Promote walkable Neighborhood Activity Centers.** Establish zoning to incentivize mixed-use redevelopment of neighborhood shopping areas at major intersections
- 5 Intensify efforts to make Warwick a "green" community.** Plant more trees, protect and enhance Warwick's streams, ponds, and coastal waters by implementing measures to reduce nonpoint source pollution, make the city energy- and resource-efficient, and work on climate change resilience with the state.
- 6 Create the Warwick Innovation District.** Revitalize and refresh the city's economic base by creating the Warwick Innovation District to attract technology, advanced manufacturing, and office development with appropriate zoning and economic development initiatives.
- 7 Maintain the city's role as a regional retail center.** Establish the Bald Hill Enhancement Corridor Overlay District to bring improvements in design and function, so that this important tax base for the city continues to be competitive.
- 8 Enhance connectivity throughout the city.** Connect neighborhoods to parks, schools, villages, shopping areas, and other city destinations by "green corridors" of designated routes for walking and bicycling.
- 9 Continue efforts to include a signature public open space at Rocky Point and enhance other open space areas.** Pursue funding to enhance places like Chepianoxet and Barton's Farm.
- 10 Monitor airport impacts and agreements.** Continue to work with the Rhode Island Airport Corporation to mitigate the environmental and other impacts of T.F. Green Airport, and monitor implementation of previous agreements.



THE BIG PICTURE
 CHALLENGES AND OPPORTUNITIES FOR A NEW ERA OF TRANSFORMATION IN WARWICK'S HISTORY

Over Warwick's long history from a colonial town of farming and fishing villages to a successful 20th century suburban city, it has gone through many transformations. New challenges and changes are ahead in the 21st century:

- **Warwick hasn't been growing.** The city's population peaked in 1980 and has declined slightly since then, though the number of households has increased because households today are smaller and more people live alone.
- **There is a generational transition from Baby Boomers to Millennials.** The post-war and baby-boomer generations that raised families in Warwick's comfortable and safe suburban neighborhoods from the 1950s to the 1990s are getting older. Some want to age at home while others hope

to stay in Warwick but with new housing options. The Millennial generation—born from the early 1980s to the early 2000s—tends to prefer walkable, village-like environments, bike and walking trails and connected open space. Warwick is beginning to offer new housing options and neighborhood environments for both seniors and Millennials in the Village Districts and the Warwick Station District.

• **From now on, it's all about redevelopment.** Warwick is a mature community with little undeveloped land. Improvements must come through redevelopment of previously developed land and through upgrading and redesign of public infrastructure and amenities for new residents and new businesses.

- **Everybody is talking about better connectivity.** Pod-style suburban development patterns left Warwick neighborhoods without good connections. Bike and pedestrian trails can help connect neighborhoods with city destinations and options for better transit must be explored.
- **Warwick's environmental assets are a key competitive resource.** With ponds, streams, marshes, 39 miles of coastline, and Rocky Point, Warwick has tremendous natural attractions. Protecting and enhancing these assets, and making sure that there is continued affordable access to the coastline, has multiple benefits.
- **Preparing for climate change has to begin earlier rather than later.** Warwick is very vulnerable to the impacts of climate change and sea level rise.

NATURAL AND CULTURAL RESOURCES



Rocky Point

Natural Resources

- Develop an integrated "Green Systems" Plan that encompasses natural resources, open space, greenways, waterfronts, parks and recreation, and sustainability.
- Protect and enhance natural resource areas and water bodies—including our 39 miles of coastline and five coves—with appropriate zoning and land use management.
- Improve water quality and habitat in freshwater and saltwater resources.
- Continue policies and programs that protect, enhance and increase the city's tree canopy.

Parks and Recreation

- Work towards a goal of a park within walking distance of every resident.
- Develop parks and open space maintenance guidelines and funding options.

- Develop "green corridors" to connect open space and recreation land with walking and biking routes.
- Protect, maintain, and expand coastal and fresh water public access points.

Historic and Cultural Resources

- Provide incentives for historic preservation.
- Enhance the review process in local historic districts with more focused design guidelines.
- Promote adaptive reuse of historic buildings with a demolition-delay ordinance.
- Promote the preservation and adaptive reuse of Elizabeth Mill.
- Explore the creation of neighborhood conservation districts for neighborhoods with an established character that are not local historic districts.
- Improve promotion of arts and cultural activities and initiatives as part of the city's economic development strategy.

LIVABLE NEIGHBORHOODS

Housing and Neighborhoods

- Focus multi-family and other higher-density housing options in areas that support village, City Centre, and neighborhood center development.
- Refine and implement the affordable housing program.
- Provide affordable housing and programs suitable for seniors, so they can stay in Warwick as they age.
- Establish a coordinated, proactive system of code enforcement and property standards.

- Create Neighborhood Livability Plans to identify improvement projects on the neighborhood level.
- Make Apponaug Village into the city's civic center.
- Use Village District zoning in Pawtuxet, Pontiac Village, East Natick Village and Oakland Beach.
- Redevelop neighborhood shopping centers into walkable mixed use centers at intersections such as Lakewood, Hoxsie, and Wildes Corner through appropriate zoning and design standards.
- Use mixed-use development and office uses to make a transition between major arterial roadways and residential districts.
- Allow development of mixed-use, multi-family residential uses along arterial roads such as Warwick Avenue, Post Road, and West Shore Road.
- Limit development of undersized lots and create design standards for properties seeking zoning relief to ensure that new construction fits into the neighborhood.



Norwood Village

PROSPEROUS CITY



Economic Development

- Implement the City Centre Development District Master Plan and continue to work with the state to develop City Centre Warwick as a transit hub, mixed-use growth center, and gateway to Rhode Island.
- Designate a Warwick Innovation District near I-95 and the airport with appropriate zoning and design standards.
- Strengthen relationships with the technology and advanced manufacturing and property owners to recruit these industries to the Innovation District.
- Target marketing to other industries in which Warwick has competitive strengths, including regional retail, professional and technical services, financial services, and distribution
- Strengthen and expand the tourism industries.
- Preserve the shellfish industry by maintaining needed infrastructure and appropriate land use policies, and advocating for supportive federal and state policies.
- Survey business owners to identify improvements to make the City more business-friendly, such as a one stop information and referral office for regulation and streamlined permitting processes.
- Promote participation by local businesses in career education and workforce development programs

SUSTAINABLE SYSTEMS

Transportation and Circulation

- Create "complete streets" where feasible to incorporate walking, biking and transit.
- Reduce traffic congestion on major roads by applying a strong access management policy to control the number and location of curb cuts.
- Advocate for improved commuter rail and bus service and better bus connections among city destinations.
- Implement traffic calming in locations with persistent speeding.
- Expand bicycle routes and sidewalks to make a connected network.

- Ensure implementation of measures to mitigate negative impacts of airport operations and development.
- Complete an update to the city's Harbor Management Plan.
- Advocate for dredging to restore navigable depths to the city's navigation channels and mooring fields.

Public Facilities and Services

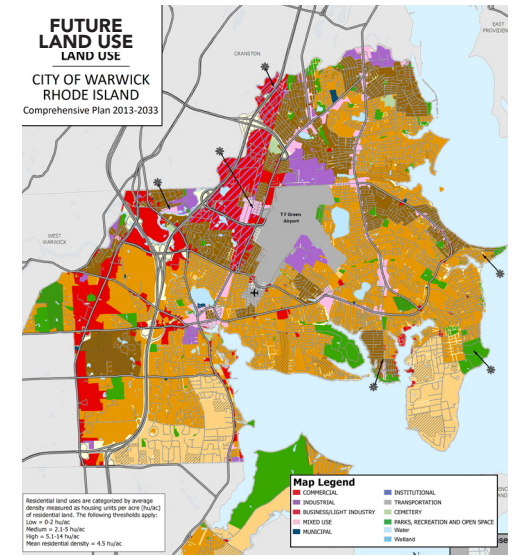
- Continue to protect existing and potential drinking water sources and to implement water system management and capital plans.
- Continue to implement plans and programs to protect the Wastewater Treatment Facility from flooding.
- Continue eliminating all cesspools and implementing the Mandatory Sewer Connection Program.
- Comply with state and federal stormwater management requirements and best practices for drainage.
- Ensure that all private developments adhere to the standards in the state stormwater design manual.
- Invest in a GIS system and an asset management system to manage city-owned property efficiently.
- Continue improving the city website to be more informative and user-friendly.

Resilience and Sustainability

- Keep the city's hazard mitigation plan updated.
- Appoint a committee to raise awareness and work with the state on climate change and sea level rise.
- Continue to implement energy conservation projects and programs identified in the City's Comprehensive Energy Strategy
- Adopt regulations that support renewable energy installations, green building, and best practices to reduce impervious surfaces and promote infiltration of stormwater
- Make city government practices and facilities a model of sustainability.



The March 2010 flood



THE FUTURE CITY

Future Land Use, Zoning and Urban Design

- Retain diverse land uses to support a strong and stable tax base.
- Change zoning in the Innovation District from Heavy Industry to Technology/Light Industry.
- Extend Village District zoning to other villages such as Pawtuxet Village, Pontiac Village, East Natick Village, and Oakland Beach.
- Implement the City Centre Warwick Plan.
- Provide regulatory options for mixed-use redevelopment at major intersections currently occupied by retail and to allow multi-family development along commercial arterial streets.
- Establish a Bald Hill Enhancement Corridor Design Overlay to improve the function and appearance of the Bald Hill retail corridor.
- Incorporate basic urban design, form-based, and performance standards into zoning districts.

Stewardship and Implementation

- Review progress on the plan in an annual public hearing before the Planning Board or City Council.
- Incorporate the plan into decision making on operating and capital budgets.
- Publicize the comprehensive plan connection when recommendations are implemented.
- Update the City zoning ordinance to be consistent with the goals, policies, and objectives of the Comprehensive Plan.
- Update the vision, plan and implementation section every ten years to comply with state law.

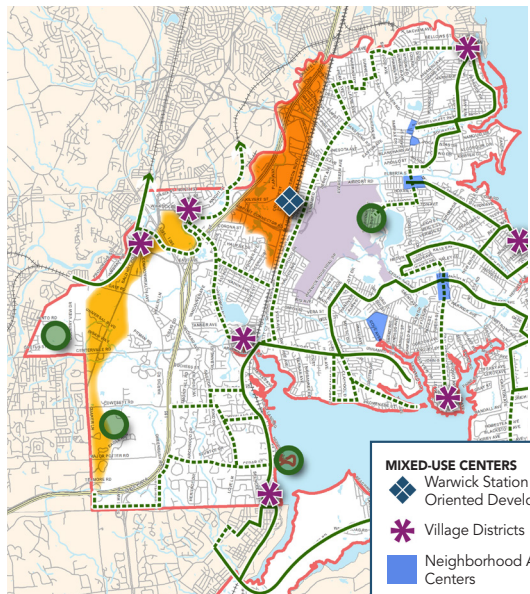
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PART I SETTING THE STAGE

“A connected, sustainable, and prosperous coastal city of livable neighborhoods and walkable villages.... We are strengthening our city and community to meet the needs of current and new generations of Warwick residents.”—FROM THE VISION

“If we invest in the city, the city will give back.”—WARWICK RESIDENT

Our Vision for 21st-Century Warwick



- The **City Centre Warwick** as a vibrant live-work-play growth hub with mixed-use, transit-oriented development
- **Village and neighborhood centers** combining housing and shops in walkable environments
- **An Innovation District** for 21st-century business and advanced manufacturing
- **Design and esthetic improvements** to keep our regional retail corridor attractive and improve our neighborhood retail centers
- More safe and convenient ways to **walk and bike around the city**
- **Preservation, protection, and enhancement** of our open space, environmental resources, waterfront, and coastal waters for today and future generations.

From Warwick Today to Warwick Tomorrow

- **Baby Boomers to Millennials:** With population declining, we need to offer the jobs, housing, and amenities—connections, community, diversity—that new generations want.
- **Greenfield development to redevelopment:** Warwick is a mature suburban city with little undeveloped land. Redevelopment is the city's future.
- **Everybody wants more connections:** Better conditions and routes for walking and biking, more transit options, less traffic congestion.
- **Our coastline makes Warwick a hidden gem:** But we need to take care of the parks, ponds, marshes, beaches, and coastal waters that can draw new generations to our city.
- **Climate change is happening:** Sea level rise and more extreme storms mean Warwick needs to start thinking about resilience now.



PART II NATURAL AND CULTURAL RESOURCES

“Access to the water is the number one attraction for my family.... I love Pawtuxet Village, City Park, and Conimicut Point Park. These are areas I often visit [...] and feel like I’m on a mini vacation.”—WARWICK RESIDENT

Nature and Parks

An integrated “Green Systems Plan” that encompasses natural resources, open space, greenways, waterfronts, parks and recreation, and sustainability.

> GREEN SYSTEMS:

- “Green corridors” to connect open space and recreation land with walking and biking routes.
- A goal of a park within walking distance of every resident.
- Parks and open space maintenance guidelines, new funding options, and improved facilities and maintenance.
- Policies and programs that protect, enhance and increase the city’s tree canopy.

> BLUE SYSTEMS:

- Natural resource areas and water bodies—including our 39 miles of coastline and five coves—protected by appropriate zoning and land use management.
- Better water quality and habitat in freshwater and saltwater resources—Buckeye Brook, Warwick Pond, Greenwich Bay.
- Protected coastal and fresh-water public access points.
- A recreational “blueway” trail system on local waters.

History and Culture

- Incentives for historic preservation.
- Enhanced review process in historic districts with more focused design guidelines.
- A demolition-delay ordinance to promote reuse of historic buildings.
- Promotion of arts and cultural activities and initiatives in City Centre Warwick and elsewhere as part of the city’s economic development strategy.



PART III LIVABLE NEIGHBORHOODS

“I love the personalities that the individual areas in Warwick retain.... I want to see more ‘Main Street’ areas where people can walk, bike, eat and shop.” –WARWICK RESIDENT

Housing

- A mix of housing types and affordability for 21st-century singles, couples, and families.
- Multi-family housing to support Village Districts, as part of new Neighborhood Centers and in the City Centre Warwick transit-oriented district.
- Effective and coordinated code enforcement around single-family rentals and vacant houses.



Neighborhoods

- Village District zoning for Pawtuxet, Pontiac, East Natick, and Oakland Beach Villages.
- Expanded Village District zoning for Apponaug and completion of projects to make it the city’s civic center.
- A new urban neighborhood emerging in City Centre Warwick.
- Transformation of neighborhood shopping centers to create walkable, mixed-use centers.



Transforming Hoxsie

WHAT IT COULD LOOK LIKE

- Establish pedestrian-friendly neighborhood centers by locating buildings close to street intersections.
- Facilitate greater activity on the street during evenings and weekends by increasing the residential presence in mixed-use buildings.
- Encourage a 2- to 3-story, mixed-use building types that are compatible with or make a transition to adjacent building heights.
- Screen large surface parking lots from the street by locating them behind retail/mixed-use buildings. Employ effective signage so shoppers can locate near parking lots from streets.



PART IV PROSPEROUS CITY

“Warwick is blessed with many excellent assets and business development opportunities.”

—WARWICK RESIDENT

Economic Development Opportunity Sectors

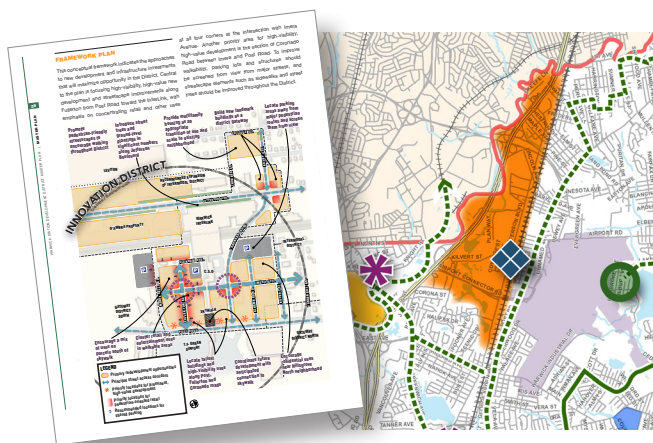
- **Educational services:** satellite or specialty campus.
- **Financial services:** call centers, customer service, processing, and data centers.
- **Health care:** satellite, regional, and walk-in facilities.
- **Medical devices and instruments:** manufacturing, customization, packing and kitting, and foreign trade.
- **Biotechnology and pharmaceuticals:** manufacturing, dosing, packaging and kitting.
- **High-value manufacturing:** assembly, final manufacturing, customization, service, remanufacturing.
- Professional and technical services.

City Centre Warwick Development District: Live-Work-Play at the Gateway to Rhode Island

- Implementation of the Master Plan to make the district a transit and regional transportation hub, an economic growth center, an arts and culture center, and a lively, mixed-use urban neighborhood.

Warwick Innovation District: Technology and Light Manufacturing

- The industrial area near I-95, Warwick Station, and the airport designated and transformed with appropriate zoning and design standards and upgraded infrastructure and appearance.



Regional Retail for the 21st Century: Route 2/ Bald Hill Road Enhancement District

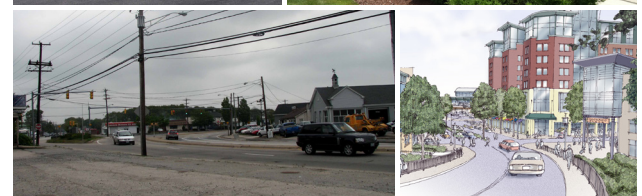
- An urban design overlay district to improve the experience of shopping on Route 2—functionally and aesthetically—and maintain this district as the state’s premier destination shopping area.

Neighborhood Retail Right-Sized and Mixed With Housing

- A planning and zoning framework to promote redevelopment of neighborhood shopping centers at major intersections as mixed-use centers.
- Mixed-use zoning in major corridors to encourage multi-family development of underutilized and vacant retail locations.

Economic Development and Warwick Tradition

- Continued support for the shellfish industry
- Strengthened tourism based on natural and cultural assets



PART V SUSTAINABLE SYSTEMS

“[Warwick’s] status as a central hub for...different modes of transportation is beginning to be recognized.... City services have always been the best.” –WARWICK RESIDENT

Transportation and Circulation

- “Complete Streets” where feasible that incorporate walking, biking and transit.
- Limit curb cuts to control traffic congestion.
- Improved commuter rail and bus service and better bus connections among city destinations.
- Traffic calming in locations with persistent speeding.
- More bicycle routes and sidewalks to make a connected network.
- Mitigation of negative impacts of airport operations and development.
- An update of the city’s Harbor Management Plan.



Public Facilities and Services

- Implementation of water-system management and capital plans.
- The Wastewater Treatment Facility protected from flooding.
- Implementation of the Mandatory Sewer Connection Program, elimination of cesspools, and best practices management for remaining unsewered areas.
- Compliance with state and federal stormwater-management requirements and best practices for drainage.
- Investment in a Geographic Information System (GIS) to bring the City’s land register into the 21st century and an associated asset-management system for efficient maintenance programs.



Resilience and Sustainability

- A hazard-mitigation plan that receives regular updates.
- A committee to raise awareness of and work with the state on climate change and sea level rise.
- Continued energy conservation projects and efficiency programs.
- Regulations to support renewable energy installations, green building, and best practices to reduce impervious surfaces and promote infiltration of stormwater
- City government practices and facilities as models of sustainability.



PART VI THE FUTURE CITY

“We have found Warwick to be a city with a great deal to offer and having a tremendous potential to improve upon its existing amenities.” –WARWICK RESIDENT

Ten Key Concepts and Strategies to Preserve Quality of Life and Competitiveness for Warwick's Future

- 1 Make City Centre Warwick a new city center of growth and economic development.** Promote mixed-use, transit-oriented development, make improvements in the public realm, and advocate for more frequent commuter rail service.
- 2 Make historic village centers into hubs of walkability, amenities, events, and mixed use development.** Continue Apponaug Village improvements and establish Village District zoning in additional historic villages.
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- 6 Create the Warwick Innovation District.** Revitalize and refresh the city’s economic base by creating the Innovation District to attract technology, advanced manufacturing, and office development with appropriate zoning and economic development initiatives.
- 7 Maintain the city’s role as a regional retail center.** Establish the Bald Hill Enhancement Corridor Design Overlay District to bring improvements in design and function, so that this important tax base for the city remains competitive.
- 8 Enhance connectivity throughout the city.** Connect neighborhoods to parks, schools, villages, shopping areas, and other city destinations by “green corridors” of designated routes for walking and bicycling.
- 9 Continue efforts to include a signature public open space at Rocky Point and enhance other open space areas.** Pursue funding to enhance places like Chepiwanoxet and Barton’s Farm.
- 10 Monitor airport impacts and agreements.** Continue to work with the Rhode Island Airport Corporation to mitigate the environmental and other impacts of T.F. Green and monitor implementation of previous agreements.





21st Century Warwick: City of Livable Neighborhoods



This is the City of Warwick’s first full update of its comprehensive plan in twenty years. It comes as the city, the state and the nation are slowly recovering from a period of severe economic difficulty. More than previous plans, this plan is based on a substantial community engagement process that was designed to find out what Warwick residents, business people, and other stakeholders were thinking about the future of the city. What makes Warwick a good place to live and do business? What characteristics of Warwick should we keep, enhance, and protect? What needs improvement and how can we make needed changes? How should we allocate our resources in maintaining and improving quality of life and prosperity for the city?

Warwick has changed significantly through its long history. In the post-World War II era, most of the city’s remaining farms became suburban subdivisions; the resort communities became year-round neighborhoods; traditional village centers lost importance to strip shopping centers; a new, auto-dependent regional retail center emerged with the interstate system; and T.F. Green Airport expanded to serve the region. Today, Warwick is a mature suburban community. The broad transformations of the 20th century are behind it, along with the simple methods of development—subdivide “greenfield” parcels and build single family homes—that made it possible.

Warwick’s 21st century challenges require different and more nuanced approaches. The suburban values of neighborhood, relatively low densities, quiet, safety, convenience, and access to open space and the waterfront retain very strong appeal to Warwick citizens. At the same time, some of the traditional suburban characteristics are no longer working as well as they did decades ago, while dramatic expansion of the airport has introduced new burdens on the community. Faded commercial strip development, almost complete dependence on car travel and associated traffic congestion, the big box and mall development model in a changing retail

environment, and neighborhoods battered by the Great Recession of 2007-2009; these are all challenges that require new and more complex solutions.

How will Warwick be competitive as a place to live, work, and do business in the 21st century? Like many older suburban communities, Warwick needs to evaluate its future in the context of the changing preferences of the Millennial generation born in the 1990s and now reaching adulthood. This comprehensive plan is for them as much as it is for the citizens who helped created it—they will be its heirs, and their preferences and interests will shape Warwick in the next 20 years. The Millennial generation is:

- Bigger than the Baby Boom generation
- Native to the digital world
- The most educated generation ever
- The most racially and ethnically diverse generation ever
- More likely to want to live in central cities than Baby Boomers and Gen X
- More likely to prefer car-free lifestyles

For economic and other reasons, Millennials are forming households and having children later in life, are more likely to rent rather than own a house, and are attracted to pedestrian-friendly, mixed-use environments that are more urban in style, even if located in suburban locations. Warwick has many assets that can be appealing to this generation, including significant access to the waterfront and to nature recreation as well as traditional sports, the potential for walkable village centers and mixed use environments to replace the old strip commercial centers, and multi-modal transit options afforded by the Interlink and its surrounding City Centre Warwick. Although most participants in the planning process were older than the Millennials, they were also aware of the need to update Warwick for the new century.

Our Vision for 2033

Vision statements focus attention on a community’s values, sense of identity, and aspirations. They identify what citizens want to preserve and what they want to change, and articulate their desires and hopes for the future. This vision statement for Warwick provides a guiding image for the city as it faces choices and challenges over the next twenty years.

Twenty-first century Warwick is a connected, sustainable, and prosperous coastal city of livable neighborhoods and walkable villages—a community that honors and preserves the best from its past, protects and enhances its environment of water and land, provides varied housing opportunities for people across the age and income scale, and supports an increasingly diversified economy. We are strengthening our city and our community to meet the needs of current and new generations of Warwick residents, within the context of our traditions, history, and maritime heritage.

- Our village centers are pedestrian friendly and mixed use, include new housing opportunities, and serve neighborhoods with attractive retail and services. They add new living options to our traditional suburban neighborhoods of single family homes.
- City Centre Warwick is a vibrant live-work-play growth hub with mixed-use, transit-oriented development.
- We have invested in transportation improvements and amenities to make Apponaug Village into the city’s center of civic life, anchored by city hall, the Warwick Museum, a new community gathering place, and celebration of our connection to the water at Apponaug Cove and through the daylighting of Hardig Brook.
- We are protecting and enhancing the overall quality of life in all the city’s neighborhoods; continuing to be vigilant in monitoring noise, air, and water quality around the airport; and providing methods to remediate minimum housing violations and reconcile derelict properties.
- We are connecting neighborhoods, parks, schools, village centers, ponds and coastline to one another by greenways, pedestrian links, and bicycle routes, in order to create more transportation choice to get around the city.
- We are committed to a diversity in land use that promotes a strong, stable tax base, including preserving industrially zoned land for non-retail uses.

- We are investing to keep our regional retail destinations competitive, to modernize and transform our neighborhood commercial districts, to make the intermodal development district a new city center and hub of economic growth, and to attract new opportunities, such as advanced manufacturing.
- We are committed to preserving and enhancing the city’s open space, recreation and water resources, improving the utility of these properties for the community while promoting economic development and public-private partnerships that provide revenue for ongoing maintenance and infrastructure improvements.
- We are making more sustainable choices about how we manage the impacts of development on our streams, ponds, wetlands, and coastal waters because we understand how our actions on land affect water quality and flooding. We are implementing a coordinated program to manage stormwater, impervious surfaces, wastewater, and landscape practices so that all our waters will once again be clean for fish and shellfish, for recreation, and for commercial purposes. Warwick’s coastal waterfront is one of our most precious assets, but we know we must plan for the likelihood of sea level rise in this century.

Twenty-first century Warwick combines the best of traditional suburban life with the amenities of village centers, affordable access to the coast, convenience to travel hubs, and a forward-thinking community.

A THE COMPREHENSIVE PLAN IN WARWICK

Rhode Island State Requirements and Planning Goals.

The Rhode Island Comprehensive Planning and Land Use Regulation Act (Chapter 45-22.2) requires municipalities to create comprehensive plans that conform to the provisions of the Act. The Act was amended in 2011 to extend the planning horizon and modify requirements.

The Act provides a context for municipal comprehensive plans through a set of overarching planning goals for the entire state. Municipal plans must be consistent with these goals:

- Promote orderly growth and development that recognizes the natural characteristics of the land, its suitability for use and the availability of existing and proposed public and/or private facilities.
- Promote an economic climate which increases quality job opportunities and the overall economic well being of each municipality and the state.
- Promote a balance of housing choices, for all income levels and age groups, which recognizes the affordability of housing as the responsibility of each municipality and the state.
- Promote the protection of the natural, historic and cultural resources of each municipality and the state.
- Promote the preservation of the open space and recreational resources of each municipality and the state.
- Encourage the use of innovative development regulations and techniques that promote development of land suitable for development while protecting our natural, cultural, historical, and recreational resources and achieving a balanced pattern of land uses.
- Promote consistency of state actions and programs with municipal comprehensive plans and provide for review procedures to ensure that state goals and policies are reflected in municipal comprehensive plans and state guide plans.

2011 NEW REQUIREMENTS FOR RHODE ISLAND
20 year planning horizon
Updates required once every 10 years.
Updates to extend the 20 year planning horizon and replace the existing plan.
State approval lasts 10 years
Changes to contents: existing conditions maps in addition to future land use map and illustration of differences between existing zoning and future land use; eight topical areas rather than six.
Flexibility on how the plans are organized and presented.
Additional areas to be considered: energy production and consumption; natural hazards such as flooding and sea-level rise.

- Ensure adequate uniform data are available to municipal and state government as a basis for comprehensive planning and land use regulation.
- Ensure that municipal land use regulations and decisions are consistent with the comprehensive plan of the municipality and to insure state land use regulations and decisions are consistent with state guide plans.
- Encourage the involvement of all citizens in the formulation, review and adoption of the comprehensive plan.

Warwick’s most recent state-approved plan and partial update. The last full Comprehensive Plan for the City of Warwick was prepared in 1990 and approved in 1992, with a minor update and approval by Statewide Planning in 2002.

B HOW THE PLAN IS ORGANIZED

The Warwick Comprehensive Plan includes an Executive Summary and covers a broad range of topics in 13 chapters about current trends, the planning process, all aspects of community life that affect the way our city can develop in the future, and implementation actions. The chapters are organized into six Parts, each of which start with a summary of the contents of each Part. The plan can be read all the way through or selectively, according to the reader’s interests. Citizens, government agencies, businesses, nonprofit institutions and others can choose specific topics relevant to their activities.

- For a quick overview of key themes, major recommendations, and the process to create the plan: read the Executive Summary.
- To understand the aspirations for the future and community values that are the foundation of the plan: read Chapters 1–2. These chapters are based on an extensive community participation process and designed to answer the question: What kind of place do we want to be in the 21st century? They provide the vision for the future, overall goals and guiding principles for planning, and a description of the public process.
- To understand the starting point for the comprehensive plan and how we got here, read Chapter 3. It lays out the key existing conditions and circumstances of the city when the plan was developed in 2011–2012.
- To find out about specific topics, from natural resources to housing to economic development and infrastructure, choose the topics of interest to you from Chapters 4–11. Each chapter provides a table of goals and policies, findings and challenges, and a set of recommended strategies and actions to achieve the goal.

- To find out about recommended changes in land use, and principles for new zoning and urban design approaches, read Chapter 12.
- To find out about how to make this a living plan and how to implement it, read Chapter 13. There you will find a matrix of actions, responsible parties, timelines, and potential resources for Chapters 4–11.

C OUR 21ST CENTURY PRIORITIES

1. Issues facing the city

At the time of writing this comprehensive plan, Warwick, like the rest of Rhode Island, has been suffering from the impacts of the Great Recession and is slowly beginning to improve. While these conditions—unemployment, foreclosures, vacancies—must be addressed, they are only one aspect of the challenges facing the city in the long term.

- **Connectivity.** Warwick has poor connectivity along its major roadways, east-west and north-south, resulting from a variety of circumstances: location of the airport; rail and interstate highway; legacy roadway systems that have exceeded the roadways’ design capacity; subdivision layouts; lack of sufficient pedestrian and bicycle connections and networks; and the alignment of the coastline and streams. As a result, a number of locations experience traffic congestion, many trips require travel on a limited number of arterials, and walking and biking conditions and routes are poor. Warwick’s WalkScore® is 43 out of a possible 100 points, earning it the qualifier “car-dependent.”¹
- **Securing and maintaining public waterfront access.** Warwick residents see the city’s 39 miles of coastline and its rivers and ponds as among its most important positive attributes. Making sure that all residents have an opportunity to enjoy the waterfront and the water is a very high priority.

¹ <http://www.walkscore.com/RI/Warwick>

- **Improving access and opportunities afforded by the city’s substantial open space and recreation resources.** Warwick residents value the variety and quality of open space available in this city. Improving passive and/or active and community use of the Rocky Point property will enhance the overall use and enjoyment of these public investments.
- **Maintaining neighborhood quality.** The collapse of the housing bubble in the Great Recession and resulting foreclosures have underscored the importance of code enforcement and high maintenance standards for amenities and services.
- **Protecting the community from adverse noise, air and water quality impacts.** Warwick’s largest single land use is the state airport whose operations impact our environment and disturb residents. With the memorandum of understanding (MOU) with the Rhode Island Airport Corporation (RIAC) the City remains committed to working with the airport operator, legislature, RIDEM and Statewide Planning to monitor, mitigate and curb growth of these adverse impacts.
- **Providing high quality, diverse housing types for households at all income levels.** Although Warwick will continue to be a city of predominantly single-family neighborhoods, the city needs to think about where and how to provide high quality housing to meet the needs of an aging population, for all income levels, as well as the preferences and needs of coming generations.
- **Maintaining a diversity of land use that promotes a strong stable tax base.** Development pressure exists to construct new traditional retail uses on non-commercially zoned property. This threatens the preservation of industrially-zoned properties that provide an equilibrium in the City’s land use diversity. The City promotes the reuse of existing commercially zoned properties rather than rezoning new industrial zoned properties to a typical box or strip commercial development that would expand its land use and traffic impacts onto the surroundings community. The City does understand that in certain cases limited commercial development and mixed use development may be acceptable as part of a larger overarching plan such as implementing the goals and objectives of the

City Centre Warwick Master Plan which is a functional element of this Plan.

- **Improving the appearance, character, and function of commercial districts.** Warwick’s traditional commercial districts—from the big box and mall district of Route 2 to the numerous commercial strips on arterial streets—need to reduce their ecological footprint while evolving to align with retailing changes in the 21st century.
- **Reviving and promoting village environments.** This is already underway with the new village district zoning option and Apponaug Circulator transportation project. These mixed use environments can attract new households looking for walkable environments.
- **Making the most of the City Centre Warwick.** Investments in multimodal transportation improvements and access, a new theater looking to serve the entire state, and a planning framework for new development have positioned this area for growth.
- **Sustainability, including protecting environmental and water resources and preparing for the potential impacts of climate change.** One of Warwick’s greatest assets—its water resources—can also be a hazard.

2. Priority initiatives

In the next twenty years, the City of Warwick will work to preserve and enhance quality of life for its residents and build the city’s economic competitiveness. The agenda for the next two decades includes the creation of more mixed-use walkable environments in the city, investments in economic development opportunities, neighborhood quality of life projects, investments in infrastructure, stronger environmental protections, and expanded initiatives to enhance sustainability and resilience.

Economic development initiatives include:

- **Make City Centre Warwick a new city center of growth and economic development.** Promote mixed-use, transit-oriented development, make improvements to the public realm, and advocate for more frequent commuter rail service

- **Create the Warwick Innovation District.** Revitalize and refresh the city’s economic base by creating the Warwick Innovation District to attract technology, advanced manufacturing, and office development with appropriate zoning and economic development initiatives.
- **Maintain the city’s role as a regional retail center.** Establish the Bald Hill Enhancement Corridor Design Overlay District to bring improvements in design and function, so that this important tax base for the city continues to be competitive.

Neighborhood development initiatives include:

- **Make historic village centers into hubs of walkability, amenities, events, and mixed use development.** Continue Apponaug Village improvements and establish Village District zoning in additional historic villages.
- **Promote walkable Neighborhood Activity Centers.** Establish zoning to incentivize mixed-use redevelopment of neighborhood shopping areas at major intersections

Open space and environmental initiatives include:

- **Promote compact development options to preserve open space.** Establish the option of conservation subdivision design for the few large open space parcels that remain available for residential development.
- **Enhance connectivity throughout the city.** Connect neighborhoods to parks, schools, villages, shopping areas, and other city destinations by “green corridors” of designated routes for walking and bicycling.
- **Continue efforts to include a signature public open space at Rocky Point and enhance other open space areas.** Pursue funding to enhance places like Chepibanoxet and Barton Farm.
- **Intensify efforts to make Warwick a “green” community.** Plant more trees, protect and enhance Warwick’s streams, ponds, and coastal waters by implementing measures to reduce nonpoint source

pollution, make the city energy- and resource-efficient, and work on climate change resilience with the state.

- **Monitor airport impacts and agreements.** Continue to work with the Rhode Island Airport Corporation to mitigate the environmental and other impacts of T.F. Green Airport, and monitor implementation of previous agreements.

Priority implementation actions for the next five years (2013-1018) include a set of activities designed to advance achievement of the broader, long-term initiatives above:

• **Economic development:**

- City Centre Warwick: development of a design manual for public and private improvements
- Route 2/Bald Hill Corridor Plan: transportation and land use plan including access management and design guidelines
- Warwick Innovation District: Public improvements and urban design plan for the Warwick Innovation District

• **New and amended zoning for mixed use areas identified on the future land use plan:**

- Define different types of mixed use and then rezone for mixed use
- Expanded Village District at Apponaug
- Village Districts at Pawtuxet, East Natick, Oakland Beach and adjacent to East Greenwich Main Street

• **Airport land use:**

- Systematic approach to land use issues and communications

• **Housing:**

- Ordinance for rental registration and inspection
- Code enforcement improvements

• **Infrastructure:**

- Water and wastewater system investments as identified in their facilities/operating plans



- **Environment, sustainability and resilience:**
 - Work with the state to get inclusion of natural recreational and community meeting space at Rocky Point
 - 2015 update to hazard mitigation plan
 - Create a local climate change committee to work with state committee
 - Completion of update to the Harbor Management Plan
- **Comprehensive Plan regular reports and decision support systems:**
 - GIS system and training
 - Annual review to evaluate progress on comprehensive plan
 - Inclusion of comprehensive plan in department and capital planning



The Community Speaks

FROM A WARWICK RESIDENT

“We need a vigorous campaign to encourage ‘Warwickians’ to learn to value what they have in this unique community and to take steps to enhance these wonderful qualities.”

A COMMUNITY PARTICIPATION PROGRAM

The planning process for this Comprehensive Plan included an extensive process of community engagement including:

- A project website, www.warwickcompplan.com



- A web-based survey with 691 responses.
- Nine “communities of place” meetings in each of the nine City Council wards, as a way to hear from residents about the issues specific to different neighborhoods and locations around the city.
- Two “communities of interest” meetings—one on the environment, parks, and open space and another on transportation issues.
- A presentation to the Rotary Club and an economic development focus group.
- Numerous interviews with city staff and with citizens representing diverse interests.
- An Advisory Committee made up of members of boards and commissions and other stakeholders met 8 times throughout the update.
- Two open house meetings and two Planning Board public workshops to elicit feedback on the draft plan.

B PUBLIC OPINION SURVEY

Like the residents of many older suburbs that are nearly built-out, the respondents to the Warwick survey worry about the potential impacts of additional development and are most interested in preserving remaining natural areas. They want to preserve and improve neighborhood quality of life and are interested in seeing more walkable, Main Street-style, small commercial districts, in contrast to the unattractive, dated strip commercial development that is common on many of Warwick’s arterial roads.

The public opinion survey was web-based, meaning that it was not a scientific survey and the respondent group was self-selected. However, the number of respondents was quite high at 691. The respondent group was significantly skewed towards, older, long-time residents of the city:

- 67% over 45 years old (compared to 48% of the city’s population)
- 88% owner-occupants (74% of the households in the city)
- 89% in single family homes (72% of the city’s housing units)
- 53% female (52% female in the city as a whole)
- 60% have lived in Warwick 21 years or more.

All of the questions were multiple choice, with the exception of two simple free-answer questions on the best and worst things about Warwick. (The survey questions and complete responses can be found in the Appendix.)

When respondents were asked about the importance to the future of Warwick of a number of issues, the top five issues with at least 60% answering “very important” were:

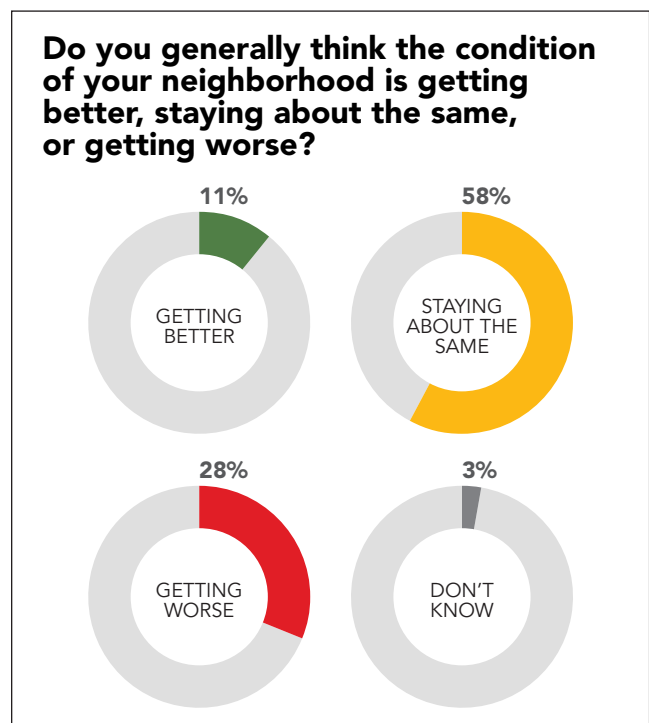
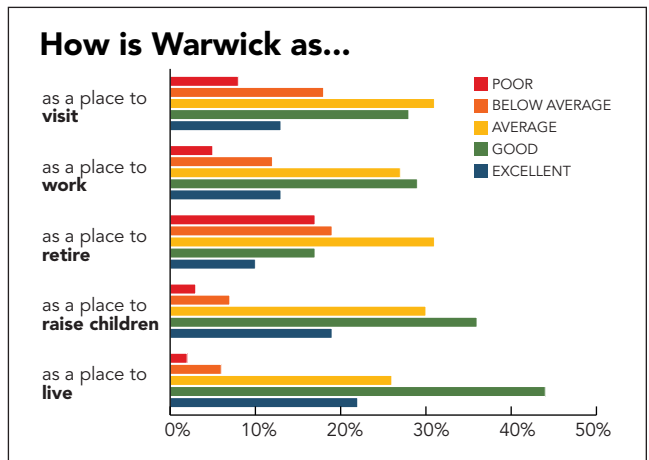
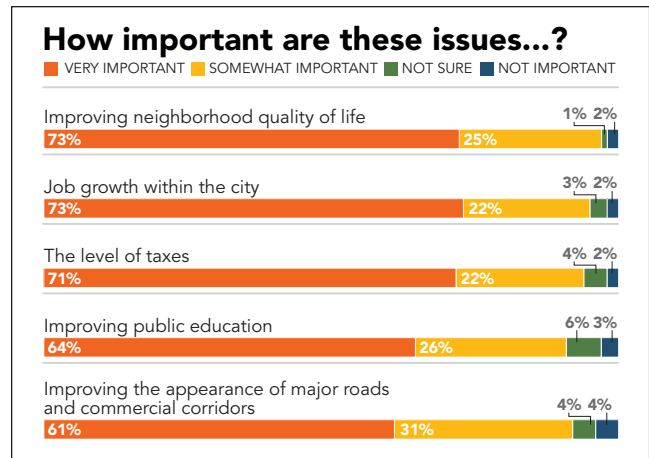
- improving neighborhood quality of life
- job growth within the city
- the level of taxes
- improving public education
- improving the appearance of major roads and commercial corridors.

Respondents found Warwick a good, but not yet excellent, place to live and to raise children, an average place to retire, and an average to good place to work or visit. While 58% of respondents said that their neighborhoods are staying about the same, another 28% saw their neighborhoods as getting worse.

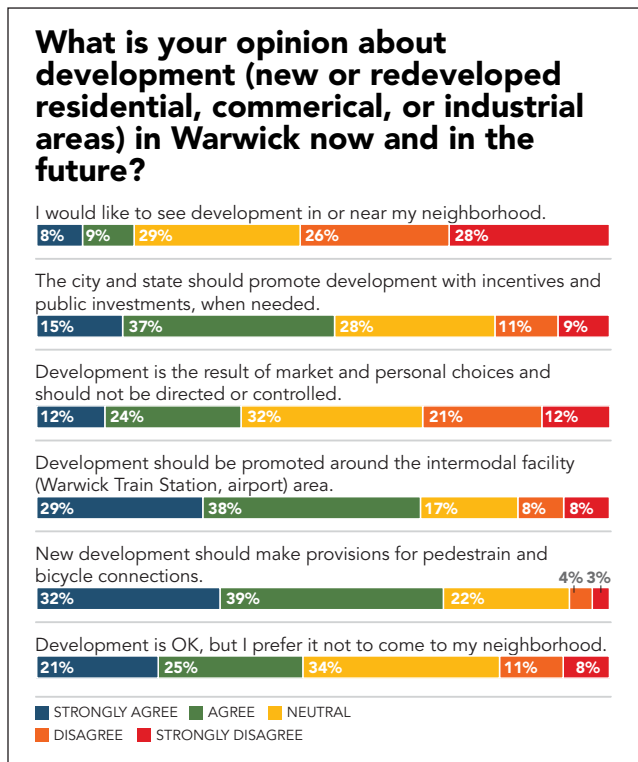
When asked to identify three of the most desirable characteristics or amenities in their neighborhood, nearly two-thirds of respondents included “location and conveniences to goods, services, and shopping,” and half of respondents included “low crime rate.” Other characteristics with strong support included “parks, recreation and open space,” “good schools,” and “sense of community.”

Similarly, in response to the question “What are the biggest issues facing your residential neighborhood?” with the possibility of choosing three items, nearly half of respondents included foreclosed properties and code enforcement issues. Other issues named with less frequency included lack of affordable housing, lack of historic preservation protections, and absentee landlords (which is linked to the code enforcement issues).

When asked about their attitudes toward development, most of the respondents were not very enthusiastic about development in or near their own neighborhoods, but like the idea of development at City Centre Warwick. The majority generally accept the idea that government incentives and public investments to promote develop-



ment can be legitimate and would like to see new developments be walkable and connected by bike. Consistent with these results, a majority of respondents believe that the city needs more natural areas and wildlife habitat; small village, Main Street style development; and recreational areas—but not more residential, commercial or industrial land uses.



In the free-answer questions, respondents repeatedly used the following words and phrases to identify what is best about Warwick: convenient to transportation and shopping, proximity to water, suburban, good neighborhoods, quiet, parks and nature, safe, good services (especially trash removal), good schools, the people. These remarks could be summed up by one respondent’s valuing of Warwick as a “somewhat urban suburb.” Respondents’ dislikes about Warwick focused around high taxes and utility rates, traffic congestion and lack of transportation choice, maintenance of public spaces, poor enforcement of property standards for private property, unattractive and dysfunctional commercial areas, airport impacts, and disappointment with school quality.

The overall directions indicated by the survey responses are:

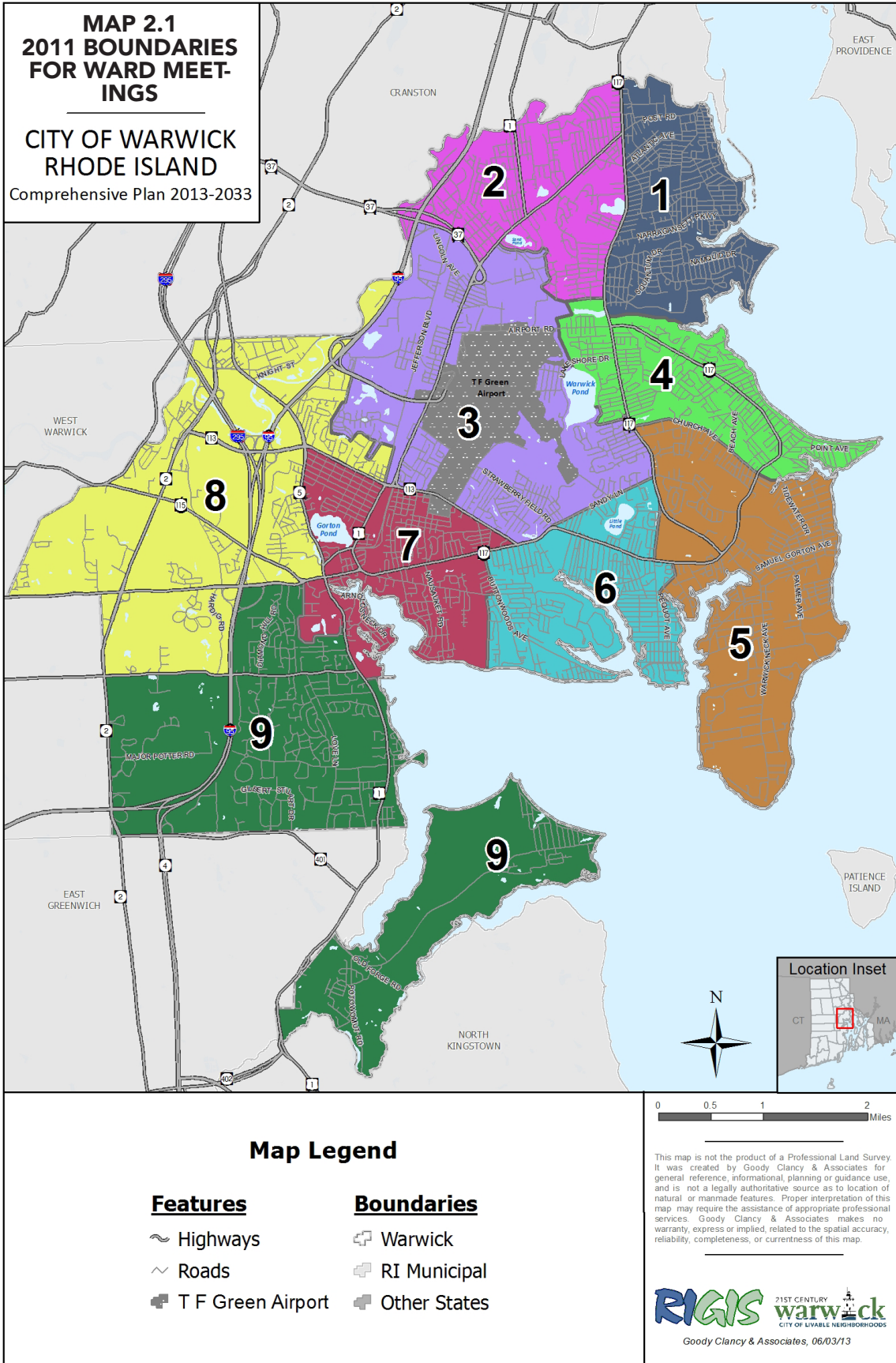
- Need for more focus on maintenance of the public realm (streets, parks, waterfront areas, etc.)
- Need for more enforcement of property standards for private property in neighborhoods
- Desire for village-style, pedestrian-friendly commercial areas
- Need for improved traffic management, such as signal timing and innovative intersection systems, pedestrian activated lights, and so on.
- Need to maintain and preserve neighborhoods
- Desire for better design standards and aesthetics in much of the city

The survey also asked more specific questions about topics such as open space and transportation. The survey results for these topics can be found in the relevant chapters of the plan.



Between May and July 2011, meetings were held in each of the nine City Council Wards. Attendance varied, ranging from 5 to 25 attendees, with total attendance at 125 people. Each meeting included a brief presentation, individual and small group exercises facilitated by the planning team, and then reports back to the group as a whole. The presentations highlighted current conditions within each Ward, including comparisons to the city as a whole. All presentations and results summaries were posted to the project website.

The majority of meeting time was dedicated to small group discussion. Participants began by filling out a form describing what they believed to be the top assets (What do you like best?) and top improvements needed (What would you like to change?) within their area of the city for each of the topics below.



- Housing and Neighborhoods
- Commercial Areas
- Transportation, Infrastructure, Public Services
- Parks, Open Spaces and the Environment

Group discussions followed on each topic, with each table provided with a large aerial photo of the ward. Participants were asked to identify the specific issues and opportunities in their wards, the best and worst things in their wards, and the top improvements needs. At the end of the meeting, each small group shared the results of their discussions.

In general, feedback was quite consistent from Ward to Ward. Common themes included:

Top Assets

Housing and Neighborhoods

- Housing is affordable, even near the water, compared to other places in the region
- Sense of community
 - Good neighborhoods and neighbors
 - Local neighborhood organizations (i.e., Conimicut, Pontiac)
- Village Zoning is a good idea
- Neighborhood stability (many long-time residents)

Commercial Areas

- Easy access to shopping
 - Route 2
 - Local shops and restaurants (but want more)
 - “Warwick has everything”



- Marine businesses
- Up-and-coming village areas (Conimicut)
- Proximity to medical offices

Transportation, Infrastructure and Public Services

- Warwick is convenient to I-95, the airport, and now commuter rail.
- Roads are well maintained. (See Top Improvements needed.)
- Good schools
- Responsive government services (See Top Improvements needed.)

Parks, Open Space and the Environment

- Proximity to the water “is the best thing about Warwick”
- Park system is excellent for a city this size.
- Many opportunities for more open space and recreation
 - Pawtuxet River path
 - Greenwich Bay access

TOP ISSUES AND IMPROVEMENTS NEEDED

Housing and Neighborhoods

- Enhanced enforcement of minimum housing laws—code enforcement, litter and dumping, property standards
- More protection of neighborhood character and preservation of historic housing stock (i.e. Pontiac Village)
- More neighborhood village areas
- Improved management of foreclosures and their impact
- Improved management of rental property by some Absentee landlords

Commercial Areas

- Nicer commercial areas; existing areas are tired and unattractive.
- Improved pedestrian environment/access in commercial areas

- More parking in village areas (Conimicut specifically)
- Fill vacant storefronts
 - Attraction and retention of small businesses (in villages in particular)
 - Retention of marine industries, particularly shellfish
 - Desire for more restaurants often mentioned

Transportation, Infrastructure and Public Services

- Traffic congestion, particularly on east/west routes
- Airport noise and takings concerns
- Better road maintenance
- More transportation alternatives within Warwick, possibly through transit
- More neighborhood traffic calming and controls
- Bike or multi-use paths lacking. Would like to see more.
- Sewer hookups an issue
- Reuse options for closed schools

Parks, Open Space and the Environment

- Stormwater management
- Greenwich Bay water quality
- Improved park/recreation maintenance and programming
- Access to the water (Greenwich Bay and Pawtuxet River)
- Soil contamination (near Pawtuxet River)
- Improved water quality—Buckeye Brook (from airport contaminants)
- Need a plan for Rocky Point

BEST THING ABOUT LIVING IN WARWICK

- Good neighborhoods and people
- Small village feel
- Very livable
- Proximity to water
- Convenient shopping

WORST THING ABOUT LIVING IN WARWICK

- Airport noise and uncertainty over takings
- Traffic congestion
- Hurricane fears—flooding

COMMUNITIES OF INTEREST MEETINGS

Two topical public meetings were held in September and October 2011, one on *Green Systems and the Environment*, the other on *Transportation and Circulation*. At each meeting, the consultant team provided a presentation highlighting current conditions on the topic, which were later posted to the project website. The majority of meeting time was dedicated to small group discussion where attendees discussed the biggest issues and potential improvements for several categories related to the topic.

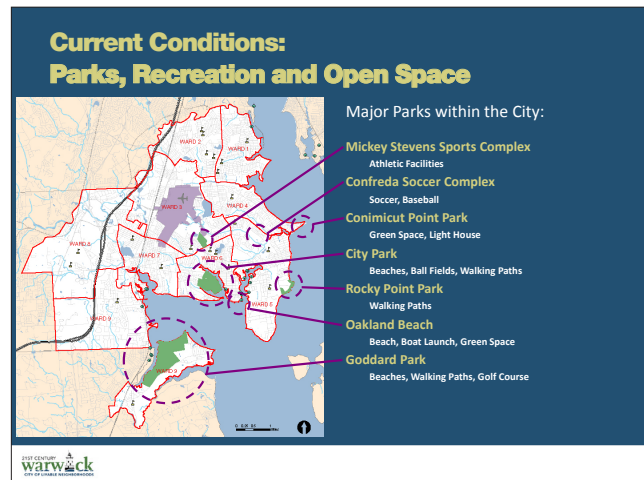
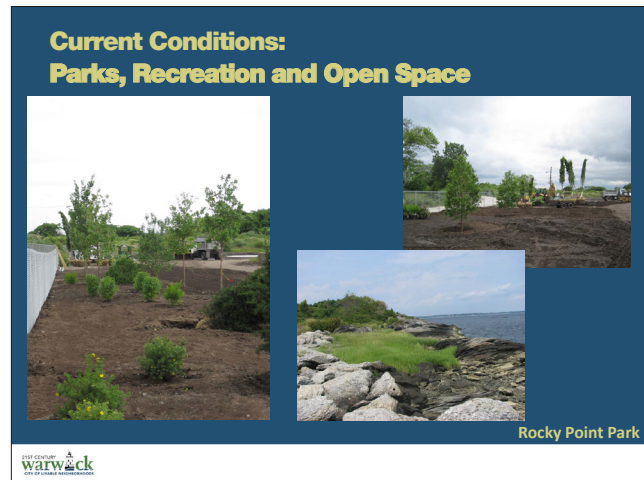
In addition to these two meetings, the economic development specialist on the consultant team, Peter Kwass of Mt. Auburn Associates, was invited to give an economic development presentation to the Rotary Club as an initial step to engage the business community in the planning process. Interviews and a focus group provided additional economic development input.

1. Green and Environmental Systems Meeting

TOP ISSUES AND IMPROVEMENTS NEEDED

Parks and Recreational Facilities

- Improve balance between active and passive open space. Currently, mostly active.
- Need for additional parks.
 - Acquire tax title lots for additional green space/conservation land
 - Need to map existing recreational spaces in each Ward to see if facilities are equitably distributed.



- Better utilize existing facilities
 - Dawley Farm needs parking to allow trail access
 - Chepiwanoxet needs improved parking and trails
- Improve neighborhood connections to parks (sidewalks, multi-use paths)
- Improved maintenance and programming at current facilities
- Residents/Neighborhood organization stewardship for maintenance of local parks/beaches should be explored.

Bicycle Paths and Walking Trails

- Link parks and open space by bike/multi-use paths
- Bike network needs improvements
- Include bike lanes in new roadway projects

River and Coastal Flooding

- Protect and restore wetlands to help with flood water retention
- Prevent development on undersized lots near water

Water/Air Quality

- Airport contaminants
- Public education programs/outreach needed re: homeowner impacts on watershed
- Health of Greenwich Bay is paramount to the city
 - Protect and restore shellfish
- Need for waste water management districts for areas not sewered
- Plant new trees—environmental benefits including air pollution mitigation

Climate Change

- New building codes that anticipate rising water
- Better protect wetlands
- Identify new strategies to address anticipated changes, including potential for more and stronger storm events
 - Plantings, increased culvert sizes, etc.

Coastal and River Access

- Ensure all public rights of way remain public. Need to identify all.
- Identify additional access to areas along coast and Pawtuxet River

Other

- City needs an “Environmental Coordinator”

2. Transportation and Circulation Meeting

TOP ISSUES AND IMPROVEMENTS NEEDED

Roadway Conditions and Congestion

- East/west congestion
- Public safety—Traffic calming in neighborhoods needed
- Improve problem intersections

Infrastructure for New Developments

- Too many curb cuts allowed for businesses. Currently, each one gets two.
- Encourage consolidated driveways in new residential developments
- Apponaug Circulator—needs to get done

Bicycle and Pedestrian Facilities

- Connect neighborhoods and community destinations with bike and pedestrian paths/routes
- More bike paths, lanes, and routes needed throughout the City

Public Transportation

- Potential ferry service to Rocky Point
- Replace bus fleet with CNG/electric vehicles
- More service within Warwick
- Increase commuter rail frequency

The Airport / Station Area

- Limit parking to promote transit-oriented development
- Work to get an Amtrak station at the Interlink

Other

- Identify locations for electric car charging stations (Rte 2 perhaps)
- Explore and identify a pilot area to implement a variety of connectivity and alternative transportation options.

PUBLIC OPEN HOUSES

NOVEMBER 2012 OPEN HOUSE

On November 15, 2012, from 5 pm to 8 pm, a public Open House was held at the Buttonwoods Community Center. This was a drop-in event that allowed attendees to come at any time during the open house and spend as much or as little time as they wished. Members of the consultant team and Warwick planning staff were available for informal discussion. The purpose of the Open House was to seek comment on and guidance for priorities developed as goals, policies, and strategies for the initial drafts of the Comprehensive Plan. These initial drafts were developed in collaboration with the Comprehensive Plan Advisory Committee and Warwick staff. Attendees at the Open House received handouts including an overview of the project, FAQ (frequently asked questions), a sheet explaining how to comment through a dot exercise, and a draft vision statement comment sheet. A PowerPoint presentation on a loop with results of the Comprehensive Plan web survey was available for viewing in one part of the room.

Topics examined. Exhibit boards and maps were stationed around the room by topic. The four topics were Green Systems-Natural Resources, Parks and Open Space, Resilience and Sustainability; Housing and Neighborhoods; Economic Development; and City Systems-Transportation and Facilities. Each topic was represented by maps and by three informational boards: draft goals; draft strategies; and “your suggestions,” a blank board where participants could affix post-it notes with additional suggestions.

Identifying priorities. Participants were given 8 green dots and 8 yellow dots. The green dots were for items important to the city as a whole and the yellow dots were for items important to the participant personally. The purpose of providing a limited number of dots was to encourage the participants to think about which items were most important or highest priority. Dots could be distributed in any way the participant desired: all on

one item, spread among different topics, and on goals, strategies, or both.

The Warwick Comprehensive Plan under development is based on an extensive process of community engagement including participation through the web, meetings in each of the city council wards, topic-based meetings, and, most recently, an open house meeting to elicit feedback on elements of draft plan and identify the community’s priorities. The results of this meeting show that the proposed goals and strategies that resonate most with participants as priorities for the city and for their lives are:

- Ensuring that the Airport Corporation fulfills its obligations to the City, especially in terms of environmental impacts
- Phasing out of cesspools and requiring sewer connections
- Working with the state to implement open space use at Rocky Point
- Providing more pedestrian and bicycle routes to connect town destinations
- Making village centers into hubs of walkability, amenities, events, and mixed use development
- Protecting environmental resources and supporting the city’s park and recreation network, while pursuing cost efficiencies and new financing sources
- Providing supports for senior citizens to age in place
- Improving the business environment and responsiveness to business concerns
- Preserving access to the coast and the city’s shellfish industry

In contrast, the goals and strategies that attracted very little attention were those related to affordable housing and to resilience in relation to flood hazards, climate change, and sea-level rise. Because of the decline in housing prices and increase in foreclosures that the city and the state have experienced in recent years, affordable housing needs tend not to be at the forefront of resident concerns. Similarly, despite the 2010 flood, the concept

of resilience and the expected consequences of climate change are relatively new ideas to many residents.

JUNE 2013 OPEN HOUSE AND LIBRARY DISPLAY

On June 6, 2013, from 5 pm to 8 pm, a public open house was held at the Buttonwoods Community Center to present the concepts in the Draft Comprehensive Plan and seek comments from Warwick residents. Materials at the open house included a set of maps on display boards and six display boards with key issues, goals and strategies from the plan and handouts included a draft Executive Summary in the form of a mini-poster and a short questionnaire asking for feedback on key strategies. The six boards were organized around the topics: The Big Picture, City of Neighborhoods-Innovation-Sustainability, Natural and Cultural Resources, Livable Neighborhoods, Prosperous City, and Sustainable Systems.

As this was a weekday evening of exceptional spring weather, the decision was made to display the set of Comprehensive Plan boards from the open house in the Warwick Public Library for a week along with the draft executive summaries and the question sheets, in order to get additional feedback from the public.

While fewer than 20 people attended the open house, those who came were positive in their comments and in some cases took additional copies of the draft Executive Summary to share with friends and neighbors. The questionnaire asked for feedback on key strategies, with the options of checking Yes, No, Maybe or Don't Know and providing further comment. A total of 17 comment sheets, from both the open house and the library display, were filled out. The comments on these sheets were generally consistent with the public opinion received throughout the planning process. In general, those who filled out the questionnaire were positive about the ten key strategies identified. Almost unanimous support was found for promoting village districts, improving sidewalks and providing better walking and biking conditions and routes, and preservation of open space. The strategies related to redevelopment of parts of the city, though still supported, received a somewhat more

ambivalent reaction because people want to have more confidence about what any changes would really be like. A few commenters voiced concerns about property-owners' rights and preserving suburban character. The questions and representative comments are below:

1. Do you support giving a high priority to making the Warwick Station area a live-work-play district as a center of transit-oriented development, including city investment in improvement?

Comments:

- "Great idea!"
- "This could be a great success, but beware—it could turn into another Route 2."
- "The old Leviton complex is very important. This property could be the hub of changeovers."
- "Depends upon what it would include."
- "Seems logical."

2. Should the City promote walkable, mixed-use development through establishment of Village Districts (like Apponaug) in Pawtuxet, Pontiac, East Natick, and Oakland Beach?

Comments:

- "Be careful that architecture of buildings is not Disney-like. Enough stucco already!"
- "Lakewood area needs something parklike..."
- "No expansion/addition of "historic" districts which impair property-owners' rights."

3. If remaining large land parcels are up for development, should the city give incentives to developers to use conservation subdivisions that preserve open space?

Comments:

- "Try to include pedestrian/bike trails to improve access through town."
- "Depends on the types of incentives. Beware of excessive tax incentives."
- "Open space and recreational facilities, trailways, etc."



- “Developing what we have is in my opinion the priority.”
- “I feel it’s important to keep some scenic sights in Warwick.”
- “Or the city should consider buying those parcels to remain open land.”
- “Absolutely. Warwick should remain a suburb, not a cement city.”
- “Ab-so-lutely yes!”
- “Preserve 10% of each project’s usable land for green space/conservation.”

4. Do you support the idea of encouraging redevelopment of shopping centers at intersections like Hoxsie into Neighborhood Activity Centers where multi-family housing and retail are combined in a contemporary village?

Comments:

- “Provide plenty of moderate-income housing.”
- “Be careful about architectural design.”
- “Yes, with emphasis on traffic flow and traffic improvements.”
- “Village idea is attractive but would need to see more progress or idea.”
- “It would centralize everything, also increase in jobs and more affordable housing.”
- “Proximity to airport noise and traffic diminishes the attractiveness [of the Hoxsie example shown], though it is needed somewhere!”
- “Preserve setbacks from the roads. Do not ‘crowd’ streets with buildings.”
- “Yes, I think so, but anxious to see how that would work—privacy for living? Carefully thought out.”
- “Mixed zoning doesn’t work. Look at Mineral Spring Avenue in North Providence.”

5. Do you support more ‘greening’ of Warwick, including tree planting, reducing water pollution, pursuing more energy-efficiency, and working on climate change planning with the state?

Comments:

- “However, most tree planting (sidewalk areas, etc.) are not cared for and end up looking horrible.”
- “Along with this, transform a portion of Barton Farm to a secured nursery area for producing our own trees, shrubs and flowers.”
- “More recycling in public areas/parks. Bins for all types of refuse.”
- “[Yes to] all but ‘climate change.’”

6. Do you support the idea of making the industrial district near I-95 and Warwick Station into an “Innovation District,” with new zoning and public investment in infrastructure and urban design—so the city can attract technology, advanced manufacturing, and other 21st century businesses?

Comments:

- “A design that has been in development for a long time. Just hope it doesn’t take as long as the people mover.”
- “Warwick needs to move forward so it can look attractive to families.”
- “Please consider limiting the type of industry that may come in...remember Fort Barton!”

7. Do you support a design overlay district for the Route 2/Bald Hill Road corridor so that it is more attractive and more functional for shoppers and for cars—and therefore continues to be a highly competitive regional retail destination?

Comments:

- “Good luck on the ‘more attractive’ goal.”
- “For me it works now – but staying competitive is a necessity.”
- “Traffic there is bad and it is not pleasing to get in and leave that area. I think the area should be improved.”

- “Whatever someone can come up with to ‘fix’ that stretch of road would be wonderful!”

8. Do you support the idea of investing in sidewalk repair and extension and more bike routes and networks for safe bicycling throughout the city?

Comments:

- “Absolutely!!”
- “Sidewalk repair, IF it does not involve tar for the sidewalks or curbs.”
- “Sidewalk repairs should start in areas surrounding schools.”
- “Current conditions are not friendly to walkers/ bikes. Improvements would attract a younger resident that prefers this type of transportation.”
- “Rent-a-bike program.”
- “I run through the city on the sidewalks and they are tough sometimes so I think that could be improved.”
- “Yes!”
- “More bicycle routes help all.”

9. Do you support activities to maintain and enhance the City’s existing parks and open spaces, as well as working with the State on ensuring that Rocky Point will contain a signature open space?

Comments:

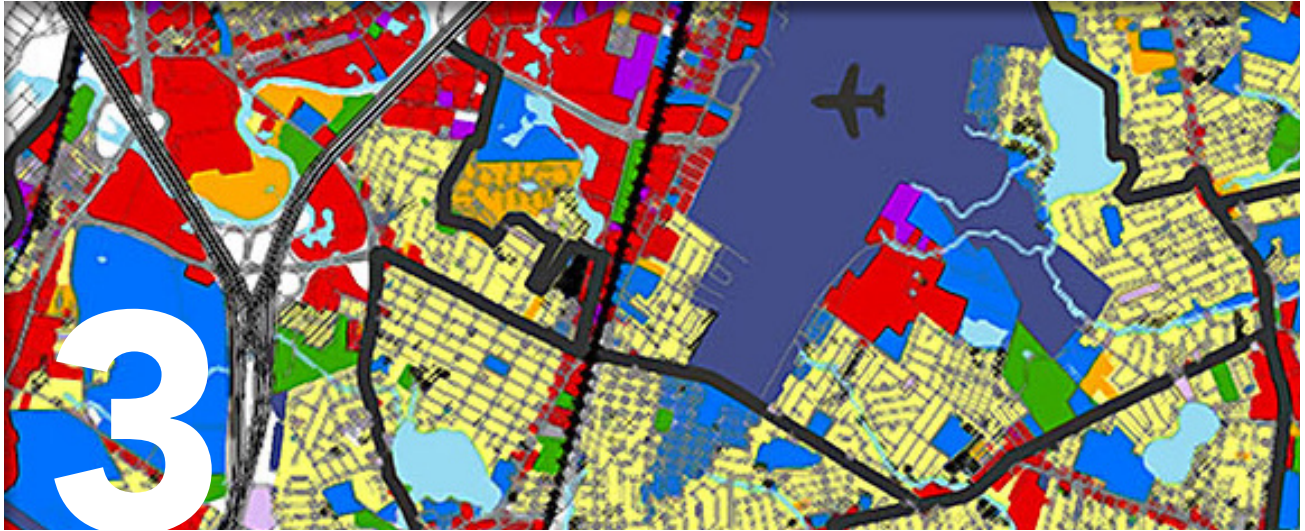
- “City Park is a gem. All parks should close at sunset and be locked.”
- “Warwick has many nice/simple parks. Adding a larger parcel that could entertain/support different events and number of people would add to the attraction of Warwick.”
- “It is important to keep our cultural history.”
- “Please consider developing the park as a natural rather than manicured park.”
- “Keep Rocky Point as natural as possible.”



PUBLIC HEARINGS AND APPROVALS

Two workshops on the draft plan were held with the Planning Board, which then held a public hearing on December 11, 2013, to approve the plan.

After Planning Board approval, the plan was sent to the RI Division of Planning for review. Final approval of the plan by the City Council took place on March 17, 2014.



Population and Land Use Trends

FROM A WARWICK RESIDENT

“We have found Warwick to be a city with a great deal to offer and having a tremendous potential to improve upon its existing amenities”

The second largest city within the State of Rhode Island, the City of Warwick is a stable, middle-class, suburban community located approximately 10 miles south of the state’s largest city and capital, Providence, RI. Warwick has changed significantly over the years, and its development patterns greatly reflect the community’s history and its important connection to the water for its growth and prosperity.

A NOTE ON THE DATA
 Data for the comprehensive plan was gathered from public and private sources. Census 2010 data was used when available. Some data is from the Census Bureau’s American Community Survey (ACS) which is based on survey samples. The City of Warwick does not have Geographic Information Systems (GIS) so maps were created using state GIS data connected to Warwick databases, such as the assessor’s list, when relevant.

HISTORY, GROWTH AND DEVELOPMENT

Founded in 1642 by Samuel Gorton where Native Americans planted, fished and hunted, Warwick’s first European settlers established village settlements in Pawtuxet, Spring Green, Apponaug, Pontiac, and other areas, creating the decentralized village system still reflected today. During the early 18th century, farming stimulated the City’s expansion of village settlements in spite of conflicts with native settlements. By the late 18th century and into the 19th century the City began to expand as a result of the industrial revolution and consequent in-migration of many European immigrants. Industry grew in the western part of the City, while the farming communities dominated the eastern part. With the creation of the Town of West Warwick in 1913, Warwick lost most of its industrial base, but still had mills in areas such as Pontiac, Apponaug, and Hillsgrove. During the late 19th century, Warwick’s coastline attracted Providence residents who built summer cottage colonies such as Oakland Beach, Gaspee Point and Conimicut.

Areas like Rocky Point, the famous amusement park that remained open until 1995, provided a respite to local factory workers, their families and visitors for nearly 150 years. Oakland Beach, Mark Rock and Conimicut thrived as summer resort communities, complete with beaches, resort hotels, and seasonal cottages. Oakland beach even had the nation’s first ever water toboggan, a precursor to flume rides. The Buttonwoods area grew as a summer resort for Protestant families. Modeled after Oaks Bluff on Martha’s Vineyard, the area thrived once connected to Providence by the Warwick Railroad. By 1900, Warwick had evolved from its colonial beginnings as a series of villages and maritime settlements to a larger community of over 21,000 residents with a diverse local economy with factories and textile mills along the Pawtuxet River, resorts along the bay, and remaining agricultural lands in areas between. Significantly guiding new growth in the early 1900s was a system of roads and trolleys which began operating along early settlement paths. The emergence of this transportation system, which connected the villages to new mill communities, waterfront resorts, and more importantly, Providence, played a major role in the suburban development pattern that exists today. Easy access to trolleys in the northern sections of town made commuting to and from Providence fairly easy and inexpensive. Trolleys brought in people from out of town by improving accessibility to the resort areas of Oakland Beach and Buttonwoods, while making access to the developing industrial centers in town easier for residents as well.

The increasing popularity of automobile travel along with state financed roadway improvements further amplified the trend towards suburbanization in the years prior to the Great Depression. In these years, the first conversions of summer cottages to year round residences began in resort areas, and modest new housing development began on agricultural lands. This early suburbanization also triggered an early round of institutional development such as schools, churches and government facilities to serve the growing population.

The establishment of the state airport in 1931 at Hillsgrove altered the city’s development pattern forever. Neighborhoods were lost to airport construction and its central location divided the city, making east-west access

more difficult. Over the years as the airport expanded into what is today T.F. Green Airport, noise impacts also affected some parts of the city.

At the end of World War II increasing automobile usage and low-cost federal mortgage programs allowed people of modest income to purchase single-family homes, unleashing a new, much bigger wave of suburbanization. In Warwick, this led to speculative construction on large tracts of agricultural lands, adding thousands of single-family homes throughout the city. This trend of auto-oriented, single-family suburbanization continued at a steady pace until the late 1960s and early 1970s and was followed by new forms of retail development. Instead of compact village commercial districts, suburban commercial strip development along the city’s roadways became the norm. The fact that Warwick was always a series of small villages, and had no clear center, further contributed to this pattern because there was no central place to focus commercial development efforts.

Initial commercial growth occurred along roadways in the more heavily populated areas east and north of the airport, along Post Road, Warwick Avenue, and West Shore Road. New commercial development shifted to western areas of the city, primarily due to the opening of I-95 and I-295 in the mid 1960s, which made access to these areas from outside the city fast and convenient. Development of the Rhode Island (formerly Midland) and Warwick malls in 1967 and 1970 respectively at the intersection of the two interstates, initiated the growth of Route 2 as a regional shopping destination, which continues to this day. Proximity to the interstates also drove office and light industrial development to these areas, including Metropolitan Life’s Regional headquarters off of Route 2, and later office parks lining I-95, such as Metro Park.

In recent decades, most development within the city has occurred in western areas of the city. While there has been some development east of the airport, most has been residential redevelopment or infill opportunities, or redevelopment of retail centers. These areas are essentially built out. The western portions of the city held the only significant parcels of undeveloped land, many of which now hold large-lot subdivisions, multi-family

apartment and condominium developments, or large retail complexes along Route 2, or adjacent to I-95 and I-295.

Today, with little land available for greenfield development, and changing demographics, the city faces different land use challenges. The public has expressed desire for a return to more compact village development, with walkable centers and improved pedestrian and bicycle connections between the villages, suburban neighborhoods and open space amenities. New opportunities for redeveloping underutilized or vacant commercial and industrial properties into mixed-use centers, particularly around the new Interlink station area, are desired, with planning already underway, or completed. The regional malls and Route 2 retail must keep up with changes in retailing, including online shopping. As an established community with little remaining greenfield development opportunities, Warwick, like many older suburbs, has entered the era when new investment and improvements must come through redevelopment.

DEMOGRAPHIC TRENDS

Total Population and Households. Like suburban communities all around the country, the composition of City of Warwick’s population is changing. Although the city’s population has decreased slightly from its peak in the 1980s, the number of households has increased, the result of smaller household sizes, more seniors, fewer children, and changing household compositions and preferences.

As mentioned earlier, the City of Warwick grew rapidly in the decades following World War II. In 1920, shortly after West Warwick seceded, the population in the City of Warwick stood at around 13,500 residents. By 1940, the population had more than doubled to nearly 30,000 residents. However, the most significant growth occurred post WWII, when rapid suburbanization nearly tripled the city’s population, peaking in 1980 with 87,123 residents. In the years since, population has remained

POPULATION 2010— FACT SHEET

Total Population

- 2010 total: 82,672
- 1990 total: 85,427

Age Composition

- 19 and under: 20%
- 20-34 years: 17%
- 35-54 years: 30%
- 55-64 years: 16%
- 65 and over: 17%

Households

- 2010 total: 35,234
- 1990 total: 33,437
- 1,802 more households than in 1990

Household Composition

- 61.0 percent are family households (persons related by blood or marriage)
- 24% households with children
- 39.0 percent are non-family households
- 31.8 percent are single-person households

Race and Ethnicity

- 92.7 percent white
- 1.7 percent African American
- 2.3 percent Asian
- 1.1 percent Some Other Race
- 1.9 percent two or more races
- 3.4 percent Hispanic/Latino (of any race)

Language Spoken at Home (2009 ACS)

- 6.3 percent speak a language other than English
- Less than 1 percent speak English less than “very well”

Income and Poverty (2009 ACS)

- \$61,114 median household income
- 21.3 percent of households have incomes of more than \$100,000
- 27.5 percent of households have incomes below \$35,000
- 7.8 percent of households had incomes below the poverty level

Educational Attainment

- 10.4 percent do not have high school diplomas
- 29.0 percent have a bachelor’s or advanced degree

Sources: US Census Bureau decennial census 1990 and 2010; American Community Survey 2009.

fairly steady, decreasing only slightly to 82,658 in 2010, or approximately 5 percent from its peak figure.

Although Warwick’s population declined slightly over the last few decades, the number of households has increased, up nearly 14 percent since the 1980 population peak. Today, almost one-third of Warwick’s households are made up of single persons, and only 26 percent of Warwick households include children 18 and under. This mirrors a national trend of declining household size since 1960 and an increasing diversity in household composition. Families are having fewer children, there are more single person households, and married without children households, and an aging population with more seniors and empty nesters. In 1990, nearly

FIGURE 3.1: Warwick Population 1920 to 2010

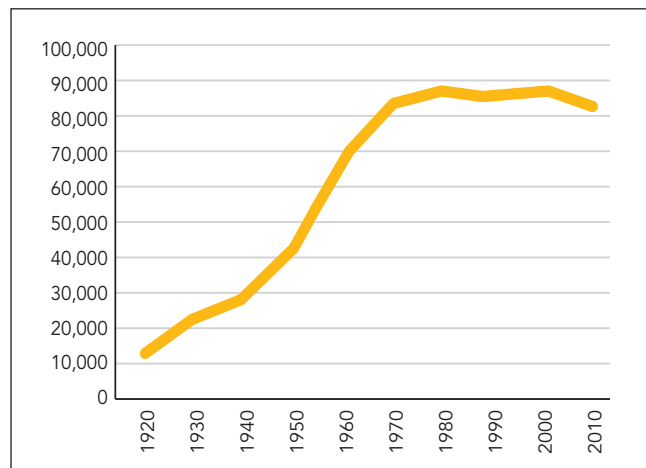
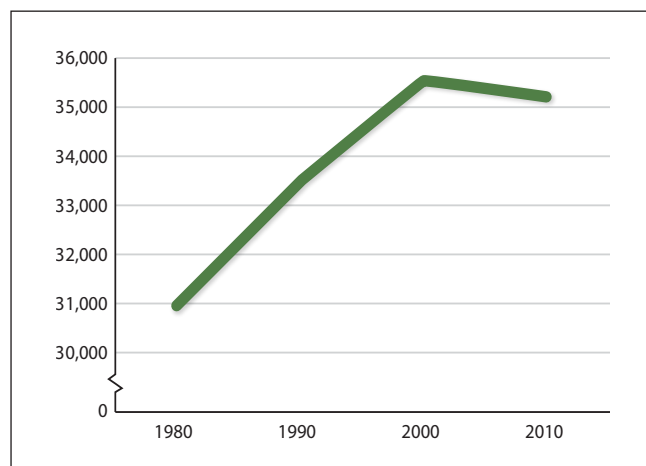


FIGURE 3.2: Warwick Households 1980 to 2010



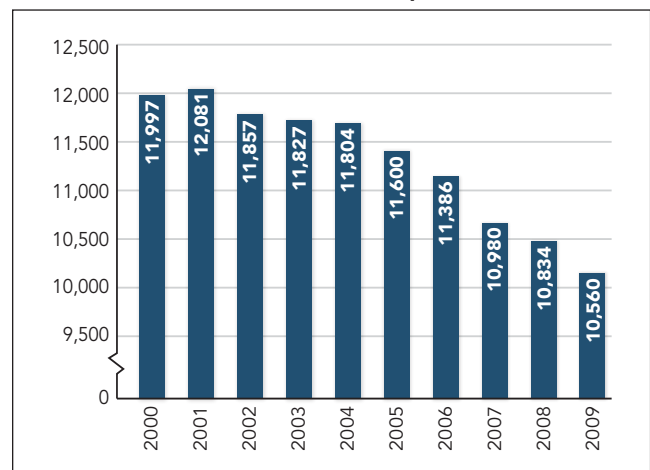
70 percent of households in Warwick were family households (that is, related by blood or marriage and not necessarily including children), compared to just 61 percent in 2010; and only 26 percent were single households, compared to 32 percent in 2010. Between 1990 and 2010, the number of families with children also decreased from 30.5 percent to 26 percent of all households. Suburban communities all over America, like Warwick, are increasingly made up of households at all stages of the life cycle, not just the stereotypical nuclear family with children.

Age Composition. The change in households is also reflected in the age composition of the city’s population, which has experienced a significant shift that will affect the City over the next 20 years. Simply put, the population is aging.

As shown in the chart, the number of elderly persons over the age 80 has increased significantly. And although the number of 65 to 80 year olds has decreased relative to the whole population, the Baby Boom generation will all age into the 65+ category over the next 10 to 20 years, significantly increasing the “empty nester” and elderly population.

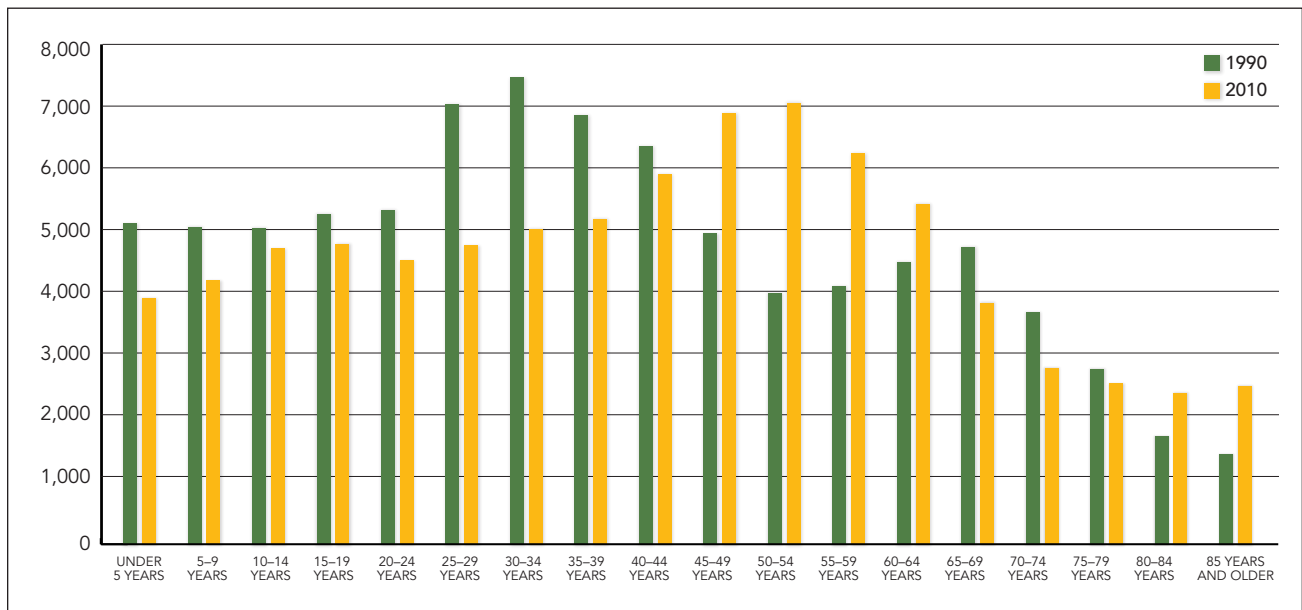
This will have a major impact on the city. Empty nesters often leave single-family homes and relocate to smaller residential units, with many opting for walkable areas near amenities and services such as transportation and health care assistance. For the most part, Warwick lacks these types of neighborhoods. Generational turnover in older neighborhoods will depend on a number of factors, from the state of the housing market (allowing seniors to sell and younger cohorts to buy), options available in town for seniors who wish to downsize or who need

FIGURE 3.4: Warwick Public Schools Population



Source: Rhode Island Department of Education

FIGURE 3.3: Age Composition of Warwick, 1990-2020



assistance, to whether village improvements and similar efforts will attract younger families to live in Warwick.

With the aging of the population and decline in the number of households with children, fewer children are in the public schools. In the last decade alone, student population within Warwick’s public schools has decreased by more than 1,400 students. This has already resulted in several school closings (see Chapter 10, Public Facilities and Services for more information). In addition, Warwick’s young people do not tend to stay in the city. Once they graduate from high school or college, many are choosing to live elsewhere, judging from the declining proportion of 20-29 year-olds living in the city in 2010 compared to 1990. This age cohort is increasingly attracted to dense, walkable environments with many amenities, which Warwick currently lacks. When young adults marry and have children, some will want to return to where they grew up but many will settle elsewhere.

This change in age composition—increase in the elderly population, combined with smaller families and fewer school children--will affect many elements within the comprehensive plan, including decisions about land use, transportation, public facility needs and more.

Race and ethnicity. Although the population of Warwick has primarily been and remains mostly white, the city has grown slightly more diverse over the last 20 years. In 1990, nearly 97 percent of the population was white, compared to 93 percent in 2010. The change is primarily due to small increases in the number of African-Americans, Asians, and people of two or more races within the community. Although a small percentage of people in Warwick are of Hispanic ancestry, that percentage has more than tripled in twenty years.

Income and Poverty Profile. According to the 2005-2009 ACS estimate, Warwick’s median household income of \$61,114 is higher than that of the state as a whole (\$55,569), and residents are less likely to live below the poverty line. Warwick is solidly middle class,

TABLE 3.1: Race and Ethnicity (Hispanic or Latino)

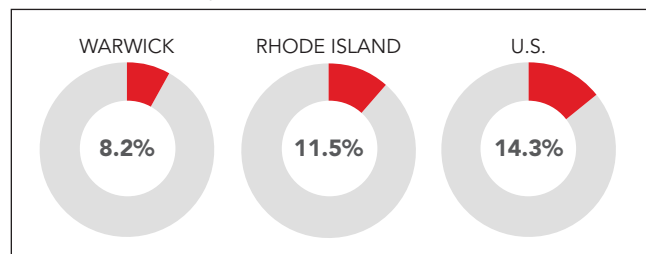
	1990	2000	2010
White	96.6%	95.2%	92.7%
Black or African American	0.8%	1.2%	1.7%
American Indian or Alaskan Native	0.2%	0.2%	0.3%
Asian	0.8%	1.5%	2.3%
Pacific Islander	0.0%	0.0%	0.0%
Some other Race	0.2%	0.6%	1.1%
Two or More	1.8%	1.3%	1.9%
Hispanic* (Ethnicity)	1.0%	1.6%	3.4%

*Hispanics can be of any race. | Source: US Census Bureau

TABLE 3.2: Median Household Income

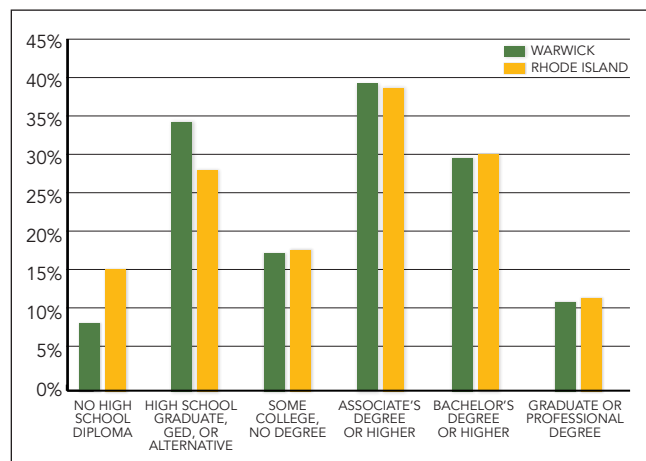
	WARWICK	RHODE ISLAND
Less than \$15,000	10.0%	13.3%
\$15,000-\$24,999	8.2%	9.9%
\$25,000-\$34,999	9.3%	13.7%
\$35,000-\$49,999	12.1%	8.4%
\$50,000-\$74,999	22.1%	18.1%
\$75,000-\$99,999	17.2%	14.0%
\$100,000-\$149,999	14.3%	14.0%
\$150,000+	6.9%	8.6%

FIGURE 3.5: Poverty Rate 2009: Warwick, Rhode Island, U.S.



Source: U.S. Census, American Community Survey, 2009

FIGURE 3.6: Educational Attainment of Population 25+: Warwick and Rhode Island



Source: U.S. Census, American Community Survey, 2009

with over 50 percent of households earning between \$35,000 and \$99,999. Over 20 percent of households earn over \$100,000, similar to that of Rhode Island as a whole, and fewer households (7.8 percent) have incomes below the poverty level compared to the state as a whole (11.9 percent).

Educational Attainment. Warwick residents tend to be relatively highly educated. A higher proportion of people have obtained a high school diploma or equivalent compared to the state as a whole, and a higher proportion have obtained a post-secondary degree. However, a slightly lower proportion have obtained bachelor’s or graduate degrees than the state average. Warwick residents’ educational attainment is also on the rise. Younger residents tend to have obtained significantly more education than their older counterparts, with 60 percent of those in the 25-34 age group having received a post-secondary degree. And residents in the prime working age group of 35-44, while less educated than the younger counter-parts, are more highly educated than older age groups.

Population Projections. Population projections for 2010–2040 released for Warwick by the Rhode Island Statewide Planning Program in April 2013 show a decline from the Census 2010 population of 82,672 to 79,243 in 2020, and 77,751 in 2030. Population is projected to continue declining to 74,701 by 2040. According to these projections, Warwick’s population would be slightly below Cranston’s in 2020, making it the third largest city in Rhode Island. Given the household trends detailed earlier, even if overall population continues to

decrease slightly, the number of households will likely remain stable or even grow slightly as household size continues to decrease or stabilize. Moreover, efforts to bring new jobs to the city and provide living options and quality of life attractive to the Millennial generation could bring new population to Warwick.

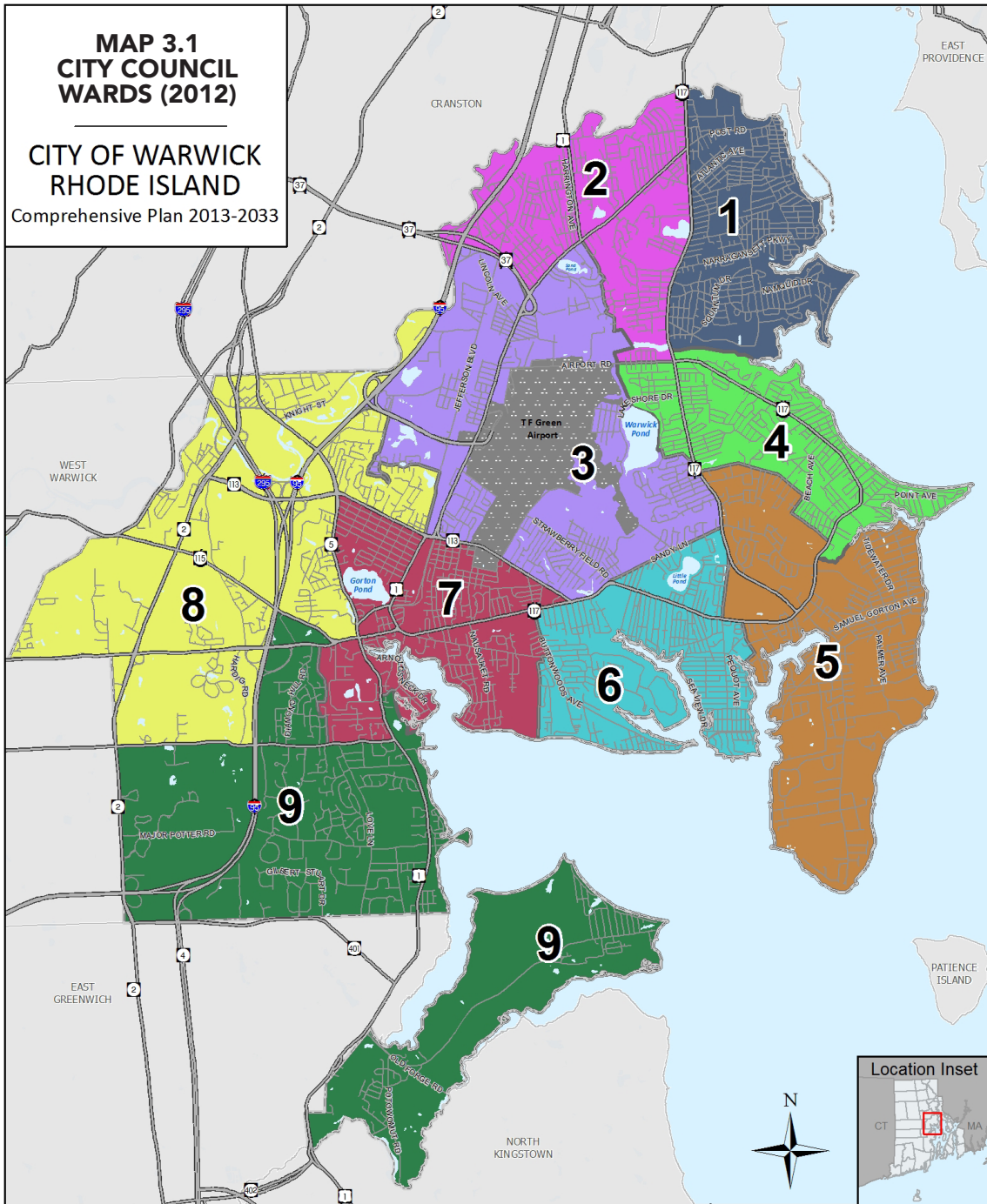
Warwick Demographics by Ward. Although all of Warwick is a solidly middle class community, there are demographic variations in different areas of the city. Analyzing demographic data by the city’s nine Wards provides greater insight into who lives where.

Whereas population is distributed fairly evenly by Ward for government representation, the differences between areas can be seen primarily in age, household composition and income. For example, when comparing Wards 8 and 9, Ward 9 has a significantly higher median income than 8 and the city as a whole. However, Ward 8 also has the smallest average household size, highest median age, and largest percentage of population over 65, which means more seniors and singles live in this area. Additionally, those Wards with the highest percentage of family households (2, 4, 5 and 6), also have some of the lowest median ages, meaning more families with children reside in these areas. Planning to accommodate different types of households, in different areas of the city, will require targeted strategies for different areas to accommodate all types of households, and allow Warwick to adapt and thrive in a time of shifting demographics and needs.

TABLE 3.3. Warwick Demographics by Ward


	CITY	WARD 1	WARD 2	WARD 3	WARD 4	WARD 5	WARD 6	WARD 7	WARD 8	WARD 9
Population	82,658	8,983	9,284	8,843	8,853	9,140	9,036	9,411	9,643	9,465
Households	35,228	3,898	3,732	3,775	3,574	3,688	3,556	4,041	4,746	4,218
Families	61.0%	60.9%	63.2%	61.3%	65.9%	67.5%	67.5%	61.0%	45.8%	60.7%
Household Size	2.33	2.27	2.49	2.33	2.45	2.47	2.54	2.32	1.98	2.23
Median Age	43.6	45.8	41.0	42.1	41.5	42.2	42.3	40.6	48.5	47.5
65 Years and Over	17.1%	17.8%	14.9%	17.8%	13.7%	13.3%	14.0%	14.6%	28.1%	19.2%
Under 18 Years	19.1%	18.3%	20.3%	19.7%	21.1%	20.3%	20.2%	19.2%	15.1%	18.2%
Median Household Income	\$61,114	\$65,051	\$55,587	\$50,522*	\$60,936	\$63,050	\$59,057	\$65,021	\$47,180	\$78,602

* 2012 ESRI forecast (ACS 2005-2009 data unavailable) | Source: U.S. Census 2010 and ACS 2005-2009 (for Median Household Income only)






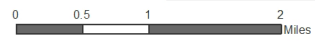
Map Legend

Features

-  Highways
-  Roads
-  T F Green Airport

Boundaries

-  Warwick
-  RI Municipal
-  Other States



This map is not the product of a Professional Land Survey. It was created by Goody Clancy & Associates for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Goody Clancy & Associates makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.



LAND USE TRENDS

“Land use” is the general term referring to the actual uses or activities that occur on a parcel of land at any given time, be they residential, commercial, industrial, recreational or another use. Land use is not permanent and can change over time. For example, much of the land that holds residential uses in Warwick today was farmland a century ago. It is important to note that land use is not the same as zoning. Zoning is the tool a municipality uses to regulate what can be built on a parcel of land and how should it be developed or redeveloped. Land uses can be “nonconforming,” meaning that they do not conform with the zoning because they were in existence when the land was zoned for another use. The nonconforming uses were “grandfathered.” Like land use, zoning can change over time. For example, parcels that are currently zoned to allow only commercial uses

today may one day be changed to allow for a mix of uses, including residential.

To analyze existing land use within Warwick, the planning team created the city’s first GIS-based existing land use parcel map. The team matched assessor’s data that included a land use category for each parcel with a GIS parcel file. For parcels that could not be matched, or for which data was not available, the planning team either visited the sites in person or relied on aerial photography to assign a general land use category. The team then consulted with city staff to verify these assessments and provide corrections. The resulting existing land use map contains the best information currently available and conveys the general patterns of land use within the city. It provides the city with a solid land use foundation for future planning and zoning efforts and should be refined and updated regularly.

TABLE 3.4: Land Use

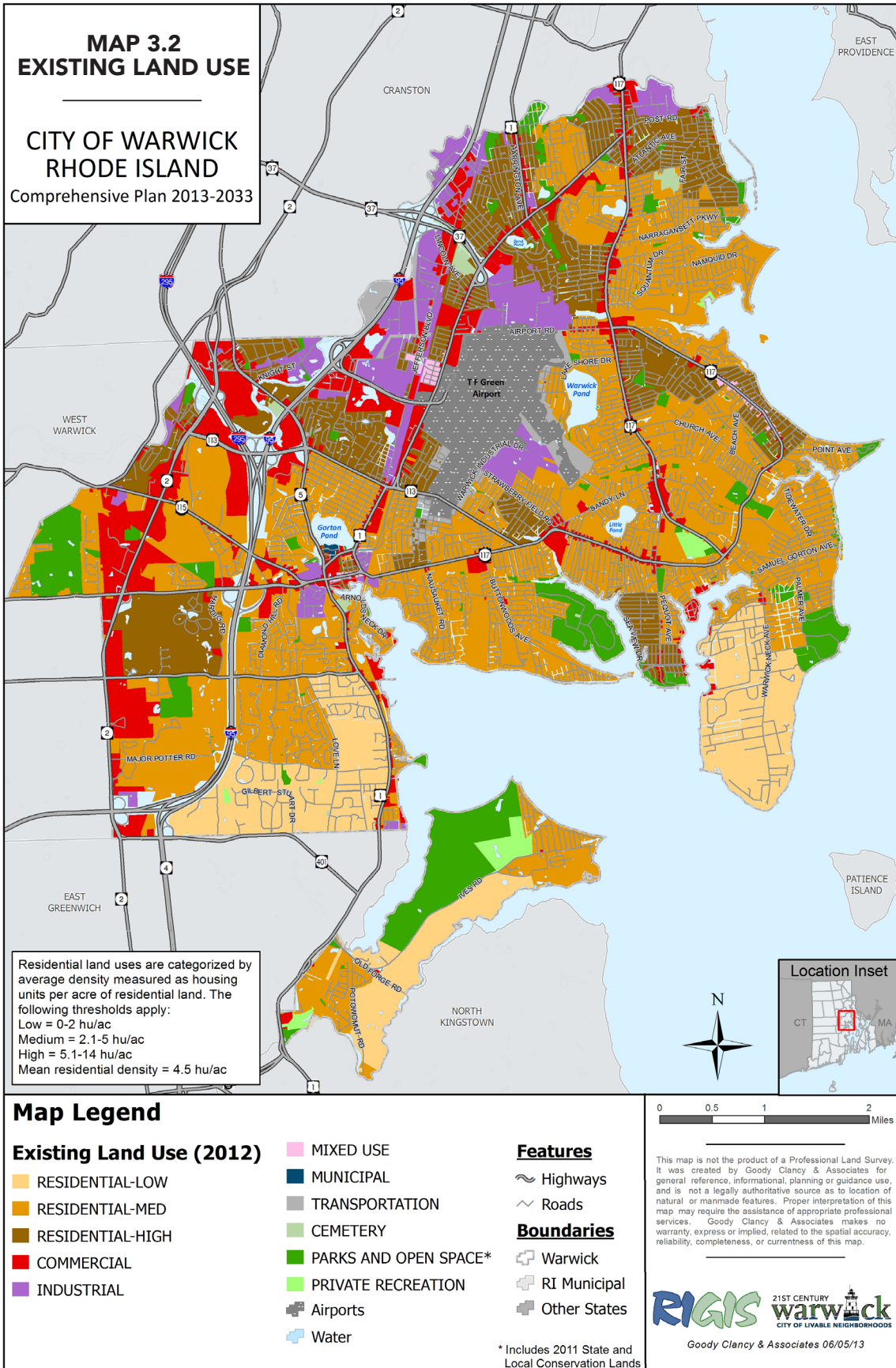
LAND USE	LAND AREA (ACRES)	PERCENTAGE
Total Land Area	18,890	100.0%
Residential	12,635	66.9%
Low Density (0-2 units per acre)	2,100	
Medium Density (2-5 units per acre)	7,920	
High Density (5-14 units per acre)	2,615	
Commercial/Industrial	3,290	17.4%
Commercial	2,150	
Industrial	1,140	
Mixed Use	65	0.3%
Open Space	1,810	9.6%
Parks and Open Space	1,570	
Private Recreation	155	
Cemetery	85	
Municipal	10	.05%
Transportation	1,080	5.7%
Airport	888	
Other (including airport acquisitions)	192	

1. Residential Land Uses

Although land use within the City of Warwick is quite varied, as one would expect in a predominantly suburban community like Warwick, over half of the city’s total land area is used for residential purposes. The majority of this land is comprised of single-family residences, with pockets of multi-family dwellings.

Single-Family Residences. Single-family residential neighborhoods vary by area of the city, and in large part reflect the character and style of the time in which they were constructed. The northern and central areas of the city predominantly reflect the character of early and mid 20th century suburban expansion, featuring modest ranch and split level structures on small to medium sized lots in large subdivisions arranged generally around a grid pattern with some cul-de-sacs. These developments tend to have multiple entry points along major roadways.

More recent suburban development, including large residential structures, are located primarily in Wards 9, 8 and 5 where large tracts of undeveloped land remained available for development in the last few decades. These areas are characterized by larger homes on larger lots along winding roadways with cul-de-sacs. Developments





Large homes on small lots have replaced modest cottages in many waterfront areas in Warwick.

typically have one entry point and do not allow through traffic. These developments are often found adjacent to older homes and estates built prior to World War II.

Waterfront Residential Areas. Waterfront residential areas throughout Warwick offer the most diverse residential character. These areas include a wide variety of residential types from modest cottages in Oakland Beach, to large historic estates adjacent to new single-family and condominium developments (e.g. Angelsea) on Warwick Neck, to elevated homes on small lots in Conimicut. In many areas, large waterfront homes sit

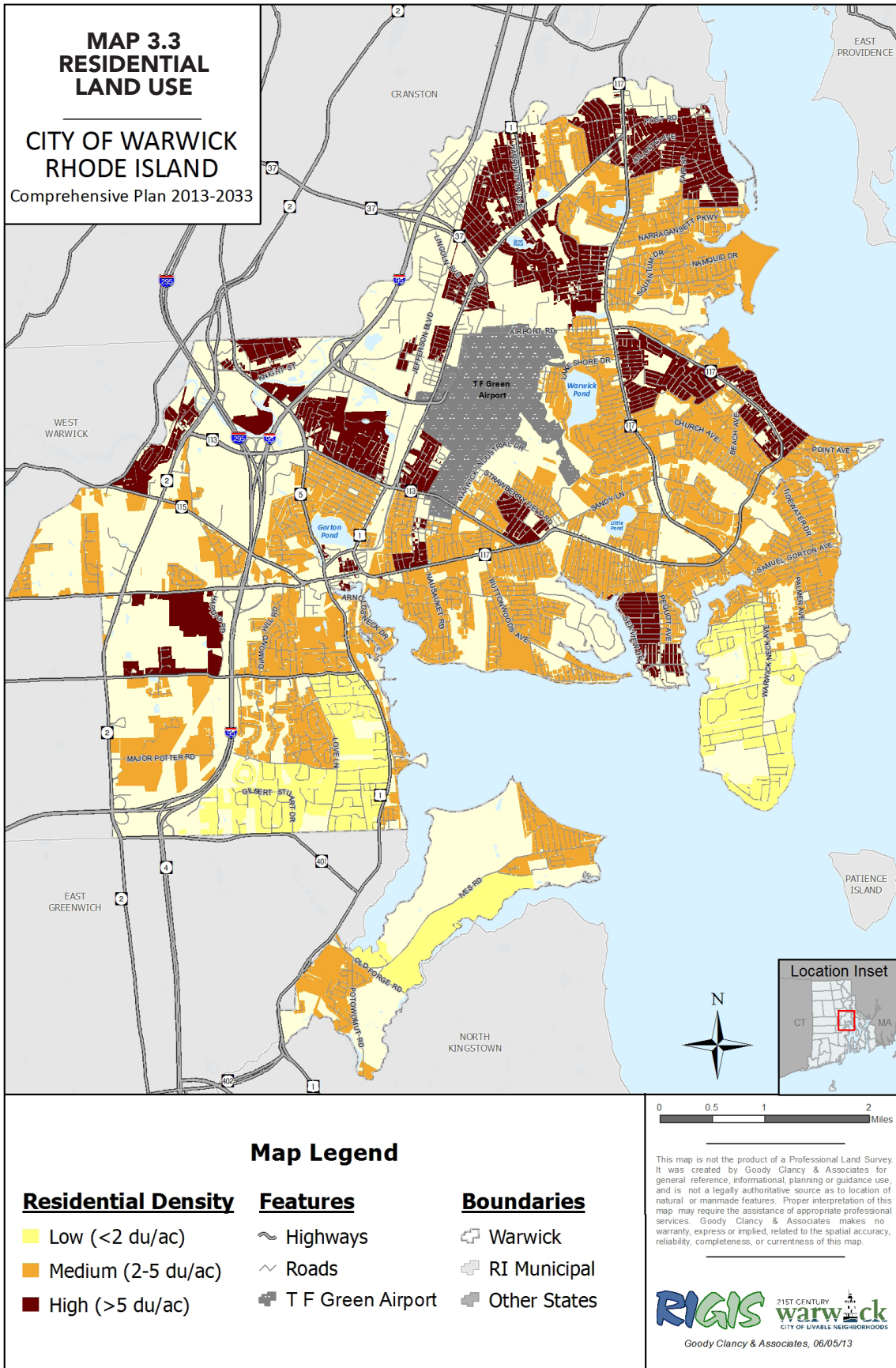
adjacent to modest structures, as smaller homes have been demolished to make room for new, larger homes.

Historic Residential Areas. Although much of Warwick’s historic character has been lost over the years, there are hundreds of historic residential properties sprinkled throughout the community. Historic neighborhood fabric remains in Pawtuxet Village, which holds Warwick’s largest concentration of historic homes in a walkable, village setting. Other less contiguous historic groupings are also found in Pontiac Village, Apponaug Village, Buttonwoods and Conimicut.

Multi-family Residences. Multi-family residences are sprinkled throughout the city with the largest concentrations found along major arterials and in the central and western areas of the city. Multi-family properties include apartment and condominium complexes along Post Road (Cowesett Hills apartments), Centerville Road (Royal Crest apartments), and Major Potter Road (Eagles Nest). Other multi-family development is found along the water, particularly condominium development, such as Narragansett Village in Pawtuxet, and Kimberly Village along Post Road in Cowesett, and adjacent to Post Road and Warwick Avenue in northern and eastern parts of the city. These developments are all suburban in character, auto-oriented, and typically



Warwick contains a diversity of single-family neighborhoods with a range of housing types.



sited around an internal circulation system with large surface parking lots. They were not designed to promote walking.



Multi-family housing including condominium and apartment complexes built on large parcels with surface parking, have little to no design continuity to one another or with their surrounding neighborhoods.

2. Commercial and Industrial Uses

Commercial and industrial land in Warwick has expanded significantly over the years. As noted earlier, Warwick’s development pattern since World War II has been suburban in nature, leading to commercial development that accommodates, and relies on visibility from, automobile drivers along the city’s major thoroughfares. This shift has significantly affected the commercial landscape of the city. Although commercial uses were once centered in the traditional village centers, they now sprawl along major arterials throughout the city, with the largest commercial concentrations located in central and western portions of the city that are easily accessible from I-95 and I-295. To gain perspective, in the 1970s, approximately 1,000 acres were used for commercial and industrial uses, while today over 3,000 acres are in these land uses.

Strip Commercial Development. One of Warwick’s greatest land use challenges is the predominance of strip commercial development, much of which is dated and unattractive. These commercial uses that line major arterials in a domino-like fashion, are reachable almost exclusively by car and typically hold several small retail or office establishments with a larger anchor store. Major issues with these developments are increased traffic congestion caused by numerous curb cuts and lack of internal circulation, encroachment into residential neighborhoods, large impervious parking surfaces that increase surface runoff, obtrusive signage clutter, and a generic, “Anywhere USA” aesthetic. Additionally, strip commercial areas in Warwick do not serve as neighborhood centers, rather they function more as barriers between neighborhoods, with little to no pedestrian connectivity.

Route 2. The most significant cluster of retail uses is located along Route 2, which, unlike other commercial corridors in the city, serves as a regional shopping destination. The area is anchored by the Warwick and Rhode Island Malls, numerous big box-anchored shopping centers, automobile dealerships and national chain restaurants. These retail centers tend to have individual

curb cuts and entrances and lack internal connectivity between developments, which increases traffic congestion along the heavily traveled route.

Although the area is expected to remain a regional retail center and has recently attracted new investment like a large Jordan's Furniture location, there are several vacancies. Moreover, retail uses have approximately a 20 year life cycle, at which time they often require redevelopment or a new tenant. This is particularly important for this area, since retail trends point to a future with fewer large format big box establishments, and more small or medium sized retailers. Should this occur, the city will need to identify new uses for some of these structures, or identify new strategies for redevelopment, since few uses require such large footprints.



Large big box commercial developments along Route 2 with individual curb cuts and no internal connections to one another contribute significantly to congestion along the corridor.



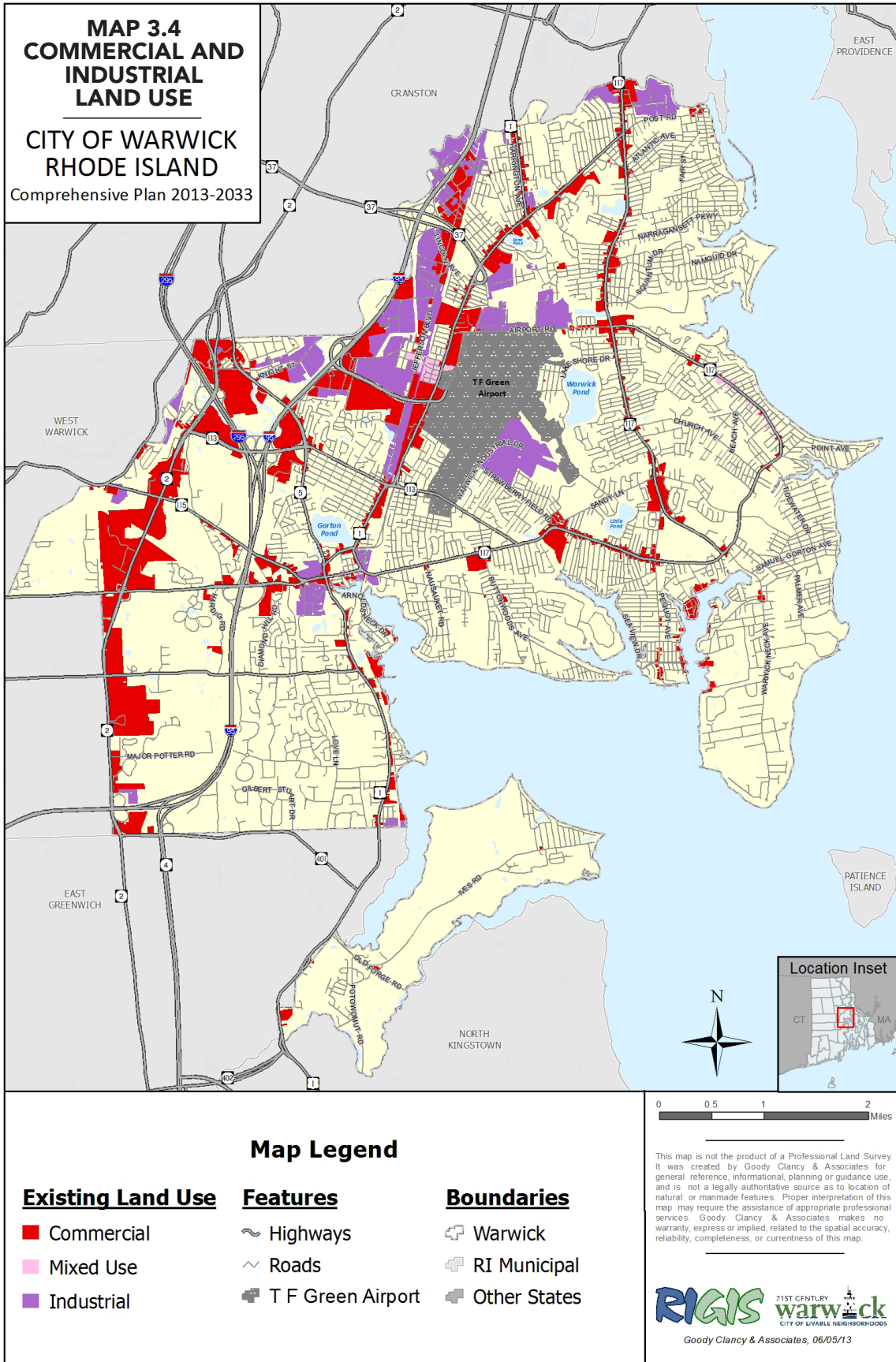
Although Route 2 is a successful regional shopping destination, identifying new uses for vacancies may prove difficult should the popularity of big box retailers wane in coming years.

Local Commercial Corridors. Other commercial activities within the city are concentrated along major arterials such as Post Road, West Shore Road, Airport Road, and Warwick Avenue. In general, these commercial areas target local residents and contain a varied mix of local retailers, grocery stores, fast food, convenience and service establishments. The corridors lack a cohesive design aesthetic, are several decades old, and have numerous vacancies. As noted by many participants during public meetings, the commercial corridors throughout Warwick look tired and “need a face-lift”.

Post Road offers a varied commercial environment. The stretch near the airport and Intermodal facility is home to numerous underutilized light industrial structures, hotels and other smaller retail uses, many of which,



Post Road commercial establishments vary by area, but are all oriented to the auto, and lack quality design.



particularly hotels and restaurants cater to airport passengers, not to the typical Warwick resident. Retail and restaurant uses dominate the intersection of Airport Road, and further north, neighborhood-serving retailers, fast food restaurants, and a large Walmart are found. Office and industrial properties line the northeastern stretch, particularly as you approach Pawtuxet.

Warwick Avenue is characterized by rows of strip development holding various types of uses, from small retail structures, top fast food restaurants, to offices and larger commercial shopping centers. This roadway in particular was pointed out in public meetings as “dated” and “unattractive” and is dominated by large areas of impervious paving surfaces, obtrusive signage and poor design, most significantly between Post Road and the Cranston line.



Commercial development along Warwick Avenue lacks design consistency, is often “dated”, is oriented to the car, and does not connect to surrounding neighborhoods. “It needs a face lift” said a meeting attendee.

West Shore Road, between Oakland Beach Avenue and Sandy Lane is characterized by older strip retail development with large paved parking lots, numerous curb cuts and heavy traffic. There is no cohesive look to the area, and several storefronts are vacant. The remainder of West Shore Road alternates between residential and commercial parcels, with concentrations of retail found at larger intersections. In the Village of Conimicut, one of Warwick’s few remaining Main Street-like areas, several storefronts line the roadway, but retail offerings are limited and there are several vacancies. The area recently received the new Village Overlay zoning designation, which is intended to foster more walkable, mixed-use village areas.

Although some parcels along these corridors have been redeveloped, or contain newer retail structures, such as the Stop and Shop along Warwick Avenue, as well as properties near Hoxsie Four Corners, many present opportunities for potential redevelopment in the next 20 years, perhaps as new village areas with a mix of retail and housing. This could include areas near the intersection of West Shore Road and Sandy Lane, parcels along Post Road near Airport Road and Elmwood Avenue, and at various points along Warwick Avenue.

Office and Industrial Uses. The largest concentration of warehouse and other light industrial uses is found along Jefferson Boulevard, which runs through the center of the city parallel to I-95. This provides easy truck and automobile access to these businesses, many of which ship materials to and from their facilities. The Northeast Corridor rail line also runs through this area, but there are no direct connections within Warwick for the loading and unloading of freight.

The largest concentrations of office buildings in the city are found immediately adjacent to, or a quick drive from I-95. Office uses are typically in office park settings with 2- to 4-story structures surrounded by seas of surface parking with limited landscaping and few shade trees. This includes a regional headquarters off Route 2, office uses lining I-95 such as Metro Center, and those off Crossings Boulevard to name a few.



The vacant Pontiac Mills structure has the potential for reuse, and sits next door to the new NYLO Hotel.

Additional opportunities exist for the redevelopment of vacant or underutilized industrial sites within the city. The most prominent site is the recently sold Leviton property, immediately adjacent to the Warwick Intermodal facility, which serves as the anchor for the recent City Centre Warwick master plan, a mixed-use, transit-oriented development district with office, retail and residential uses. Another prominent site is the abandoned Pontiac Mills structure near the Warwick Mall. Redevelopment of the riverfront property has been a goal of the city, but no formal plans are currently proposed. Recent development of the NYLO Hotel in the adjacent lot and the success of the hotel's restaurant/bar, could serve as an anchor for a new mixed-use development or village center.

Waterfront Commercial Uses. For a city with 39 miles of waterfront, there is a noticeable lack of retail commercial activity along Warwick's shore. With the exception of marinas and adjacent restaurants, a few establishments in Pawtuxet Village, and a grouping of restaurants in Oakland Beach, Warwick is not taking advantage of its waterfront. In fact, during public meetings, many commented that they would like to see Warwick have an area like that found in East Greenwich, one with multiple waterfront restaurants concentrated in one area. Warwick's lack of such an area is most notable in and around Apponaug Village, which for the most part has no connection to Apponaug Cove. Water adjacent properties in the area make little to no attempt to connect with the water. For example, the largest waterfront parcel in the village area holds a lumber yard with no public access to the

waterfront, and retail uses along Post Road have located parking lots, not active uses along the shoreline. This is a wasted opportunity to provide a waterfront amenity and improve the area's sense of place.

3. Parks and Open Space Uses

There are almost 2,000 acres of open space in Warwick, including large state and local parks like Goddard Park and City Park that include beaches, ball fields, picnic areas and other facilities; recreational fields, playgrounds and tot lots throughout the city; passive open spaces, city beaches and waterfront parks; and historic cemeteries and other permanently protected open spaces. For more information on these open space amenities, see Chapter 5, Parks, Recreation and Open Space.

4. Transportation Uses

Land uses associated with transportation play a major role in the overall development patterns of the city. This includes parking areas, railroad ROW, and most significantly, T.F. Green airport. According to the land use GIS shapefile, the airport occupies over 850 acres in the middle of the city (1,100 according to the final EIS), creating numerous land use issues. It essentially divides Warwick into two areas, those east of the airport and those west, significantly impacting connectivity. Abutting residential neighborhoods are affected by the noise generated from 203 daily landings and departures. The airport runway expansion will further strain neighborhood fabric as it requires both residential and commercial land acquisitions and the relocation of the Winslow recreation fields. Additionally, environmental concerns include contaminants associated with airport uses entering and damaging Warwick Pond, Buckeye Brook, and wetland areas. (See Chapter 9, Transportation and Circulation for more information on the airport.)

Land uses around rail and interstate transportation typically include industrial and commercial activities that require easy access to major intrastate transportation systems. However, while the Northeast Corridor passes through Warwick, no direct freight rail connections are located within the city limits.

5. Institutional Uses

Institutional uses, such as police, fire, schools and government facilities, are well-distributed throughout the city and can be found within all land use categories. The exception is Potowomut in Ward 9, which is physically separated from the remainder of the city by the bay and the town of East Greenwich, which provides first response fire service to the area. To rectify this lack of service for Ward 9, the City is currently designing and constructing a new fire station at the site of the former Potowomut Elementary School.

The majority of city government facilities are centrally located within the Village of Apponaug including a cluster of civic buildings: City Hall, the City Hall Annex, the Warwick Fire Department headquarters, and the Warwick Police Department. Remaining public safety facilities are spread out throughout the rest of the city, as are educational uses such as elementary, middle and high schools. Several school properties are currently vacant, the result of declining school enrollments, and additional properties could potentially follow. Other institutional uses include numerous churches throughout the city, Kent County Memorial Hospital and the Community College of Rhode Island Knight Campus, both of which are in Ward 8 with excellent access to I-95.



Many of Warwick's government and public facilities are clustered in Apponaug Village.

ZONING

Warwick's Zoning Ordinance is a conventional zoning code with single-use districts, including residential, business, industrial and open space. To overcome the rigidity of conventional zoning for special purposes or in special areas, the City has deployed special districts and overlay districts. There are two mixed-use City Centre districts, a mixed-use Village District and seven overlay districts.

This planning process created the first GIS-based version of the zoning map, which is also the first map to show zoning citywide. The official zoning map is found in a book of zoning plats in the Zoning Department. Although the ordinance is on the City website, there is no zoning map online. To identify where various zoning districts are located requires a time-intensive process of reviewing each zoning map. Creating an official GIS-based map would provide residents, business owners, developers and city employees with a simple tool to identify potential sites for development or protection.

Residential Zoning Districts. The four residential zoning districts (Residence A-40, A-15, A-10, and A-7) account for the most land area in Warwick. These districts are differentiated by the minimum lot size required for a single-family structure, ranging from the higher density A-7 district, which requires a minimum lot area of 7,000sf for a single-family home, to a low density A-40, which requires a minimum lot area of 40,000sf.

The ordinance does not specifically identify areas for two-family or multi-family development. In fact, multi-family residential development is not permitted by right in any residential districts. It is only allowed in two overlay districts, the Planned District Residential Overlay (PDR) and Planned Unit Development Overlay Districts (PUDs). These overlay districts can be enacted on a site by site basis. The overlay requires an approved site plan, a recommendation from the planning board, with final approval granted by the City Council. All multi-family projects must adhere to the underlying residential district density and dimensional requirements, and those

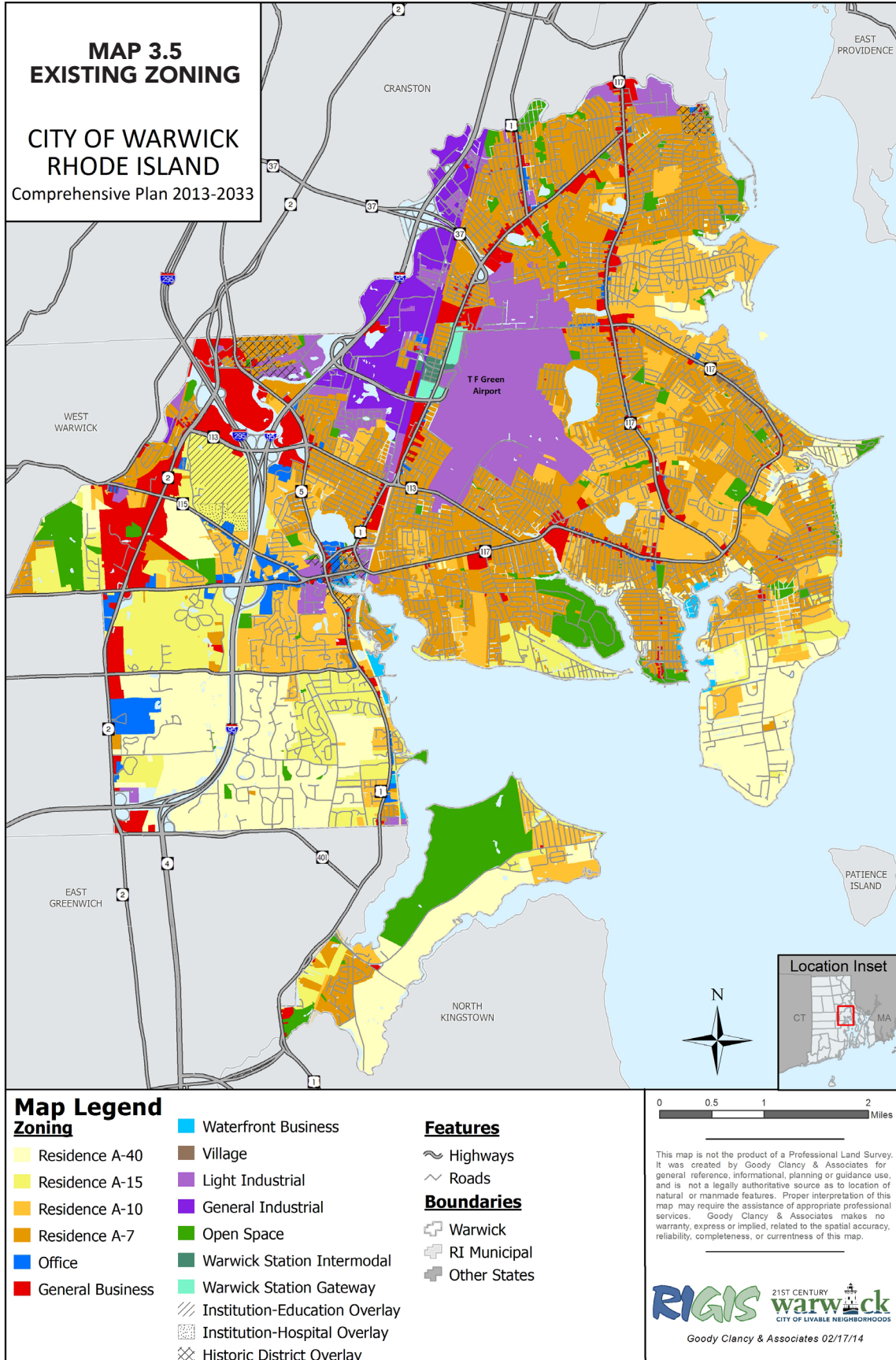


TABLE 3.5: Maximum Allowable Residential Densities

ZONING DISTRICT	UNITS PER ACRE
A-7	17
A-10	14
A-15	8
A-40	3

in general business districts must adhere to A-7 district requirements.

Commercial Zoning Districts.

Several zoning districts allow for commercial uses. The General Business District (GB) allows for a diversity of

commercial uses including retail, service, office and automotive uses. The Office District (O) allows for professional and low intensity businesses and professional services, including new offices that are residential in character, and the Waterfront Business District (WB) allows for businesses primarily used for marine purposes. Design criteria are lacking in the existing commercial district regulations, resulting in the poor design of the commercial strip development along the city’s major roadways, along with increased congestion and sprawling commercial patterns.

The City Centre zoning districts, Intermodal and Gateway, also allow for commercial uses, with application of pedestrian-friendly design principles.

Industrial Districts. Two zoning districts allow for industrial uses. The General Industrial District (GI) allows for industrial and manufacturing operations and enterprises, including assembly of durable goods, bulk storage and general storage of trucks and construction equipment, as long as they do not create serious problems of compatibility with surrounding land uses or pose unwarranted toxic, explosive or environmental hazards to their general vicinity. The Light Industrial District (LI) allows for limited less intensive industrial uses.

Overlay Zoning Districts. There are seven overlay districts within the code:

- The **Institutional-Health Care** (IH) is designated to provide areas for health care facilities.
- The **Institutional-Educational** (IE) district provides for educational facilities such as colleges, universities, vocational institutions and professional training schools.

Public schools are not included in this designation. They are allowed in other zoning districts by right.

- The **Planned District Residential Overlay** (PDR) is applied to allow for two-family and multi-family residential developments with more than 10 units.
- The **Planned Unit Development Overlay District** (PUD) allows for a mixed use district with residential and limited commercial or industrial uses on large parcels.
- The **Flood Hazard Overlay District** (AE, VE) includes all land areas that fall within the 100-year floodplain. The intent of the overlay is to protect life and property from natural flooding hazards. Any development or man-made change proposed must meet several requirements to receive a building permit, including a FEMA and NFIP (National Flood Insurance Program) certificate upon completion of the foundation.
- The **Historic District Overlay** (H) is designed to protect and preserve historic, architectural or archaeological character of structures or sites, or for neighborhoods that hold a wider historical significance.
- The **Watershed Protection Overlay District** (WP) protects environmentally sensitive surface water and groundwater bodies or wetlands from levels of pollution that threaten public health, welfare and safety.

Overlay districts require review by and a recommendation from the Planning Board and approval by the City Council before a change can be made to the zoning map.

Special Districts. Special districts have been created for the Warwick Station area (City Centre) and to promote mixed-use village environments:

- **Warwick Station Area Zoning Districts.** Two zoning districts regulate land uses in and around the Inter-Link.
 - **The City Centre Intermodal District** (Intermodal) includes land adjacent to the Warwick railroad and airport terminals. The intent of the intermodal zone is to create and sustain an area of regional economic activity within a retail, commercial and office core between the two terminals. This area is the core

commercial activity area of the Warwick Station Development District (City Centre). It is intended that this zone have a high quality of design for pedestrian use, infrastructure improvements that will enable a flow of users between the two transportation nodes and an appropriate intensity of associated retail, office and hotel uses.

- **The City Centre Gateway District** (Gateway) is intended to serve as transitional areas leading to the Intermodal District of the Warwick Station Development District from outlying areas, including the Post Road and Airport Road general business districts. The Gateway District is intended to allow limited commercial uses customarily associated with transportation facilities such as airport and railroad terminals as well as general commercial uses commonly allowed within general business districts.
- **Village District Zoning.** Village District Zoning was adopted in 2011 to create new economic and housing opportunities within Warwick by reestablishing mixed-use districts in the city’s traditional village areas. Village zoning specifically calls for a mix of uses including retail and a variety of residential types, combined with reduced parking requirements and building setbacks, as well as design standards to encourage a more active pedestrian environment with greater interaction to the street. Thus far, Village Zoning has only been adopted in Apponaug Village and along West Shore Road in Conimicut, but it can be applied in other areas of the city where mixed-use, walkable “Main Street” areas were historically the norm or where they may be most successful today.



Natural Resources

FROM A WARWICK RESIDENT

“There is a whole community of people committed to improving the quality and treatment of our natural resources, the bay, the watersheds, [and] open lands.”



A GOALS AND POLICIES

GOALS

Warwick’s natural resource systems, sensitive water resources and natural habitat are preserved and protected for future generations.

Warwick’s urban forest is healthy and provides maximum environmental and economic benefits .

Agriculture will remain an important use in historically farmed areas.

POLICIES FOR DECISION MAKERS

- Support integrated strategies to protect and restore natural systems with desirable land use practices and management programs.
 - Implement programs to protect and restore Warwick’s coastal and freshwater wetlands and improve water quality.
 - Support policies and measures to protect shellfish resources.
 - Support continued initiatives to improve water quality and habitat quality in the Pawtuxet River and its watershed.
 - Promote and protect the long-term viability and sustainability of Greenwich Bay, its coves and tributaries.
 - Protect Warwick’s critical wildlife and wildlife habitat.
 - Implement mandatory tie-in to the sewer system for all future developed properties.
 - Protect Warwick Pond, Buckeye Brook and Tuscatucket Brook from pollutant loading associated with the nearby airport land use.
-
- Promote public and private efforts to protect and enhance tree resources.
-
- Support community organizations to increase access to locally grown agricultural products

B FINDINGS AND CHALLENGES

findings

Warwick has 39 miles of coastline.

There are two major watersheds and five sub-watersheds in Warwick.

Ten ponds and numerous streams are in Warwick.

Warwick shares the Hunt River Aquifer with North Kingstown and East Greenwich.

Warwick has nine saltwater coves and two bays.

Commercial finfishing is not allowed in Warwick's waters, but it remains an important shellfish area.

Warwick has over 1,000 acres of freshwater wetlands, and over 2,000 acres of coastal wetlands.

Water pollution from stormwater nonpoint sources is a significant problem for both freshwater and saltwater resources.

The Greenwich Bay Special Area Management Plan (SAMP), an integrated coastal management plan, provides recommendations and priorities for Warwick.

Warwick needs to improve stormwater management and wastewater management in order to improve inland and coastal water quality.

Repetitive flooding of the Pawtuxet River is an increasing problem, as evidenced by the 2010 flood.

Warwick has an estimated 54,000 public trees and 107,000 privately-owned trees, including 10 "Champion Trees". This constitutes approximately 30% tree canopy cover.

challenges

Implementing the Greenwich Bay SAMP.

Establishing buffers along waterways.

Preserving remaining wildlife habitat.

Raising public awareness about improving private landscape practices.

Restoring degraded environments.

Reducing nonpoint source pollution of water bodies and waterways.

Implementing legally sustainable methods of prohibiting undersized lot or dimensionally deficient development within critical resource areas.

Raising public awareness about the advantages of low impact development practices, stormwater and wastewater management.



WHAT THE COMMUNITY SAID

- Many residents are concerned about flooding.
- Education programs on best landscape practices for private landowners are needed so they understand the connection to cleaner water.
- Sewering of areas without sewers is needed but there is also a concern that sewer service could make some small lots buildable, resulting in increased impervious surfaces, stormwater and pollution increases.
- Policies to reduce impervious surfaces are needed.
- No-build buffer zones along streams are needed.
- When asked to choose their top two environmental investments from a list of seven (of which 5 were water-related and one was “other”), the top two choices were air quality monitoring and improved river and coastal flooding protections. However, water quality monitoring, stormwater improvements for improved water quality, sewer expansion for improved water quality, and wetland preservation and restoration were almost equally important.



CURRENT CONDITIONS

1. Topography and Landscape Character

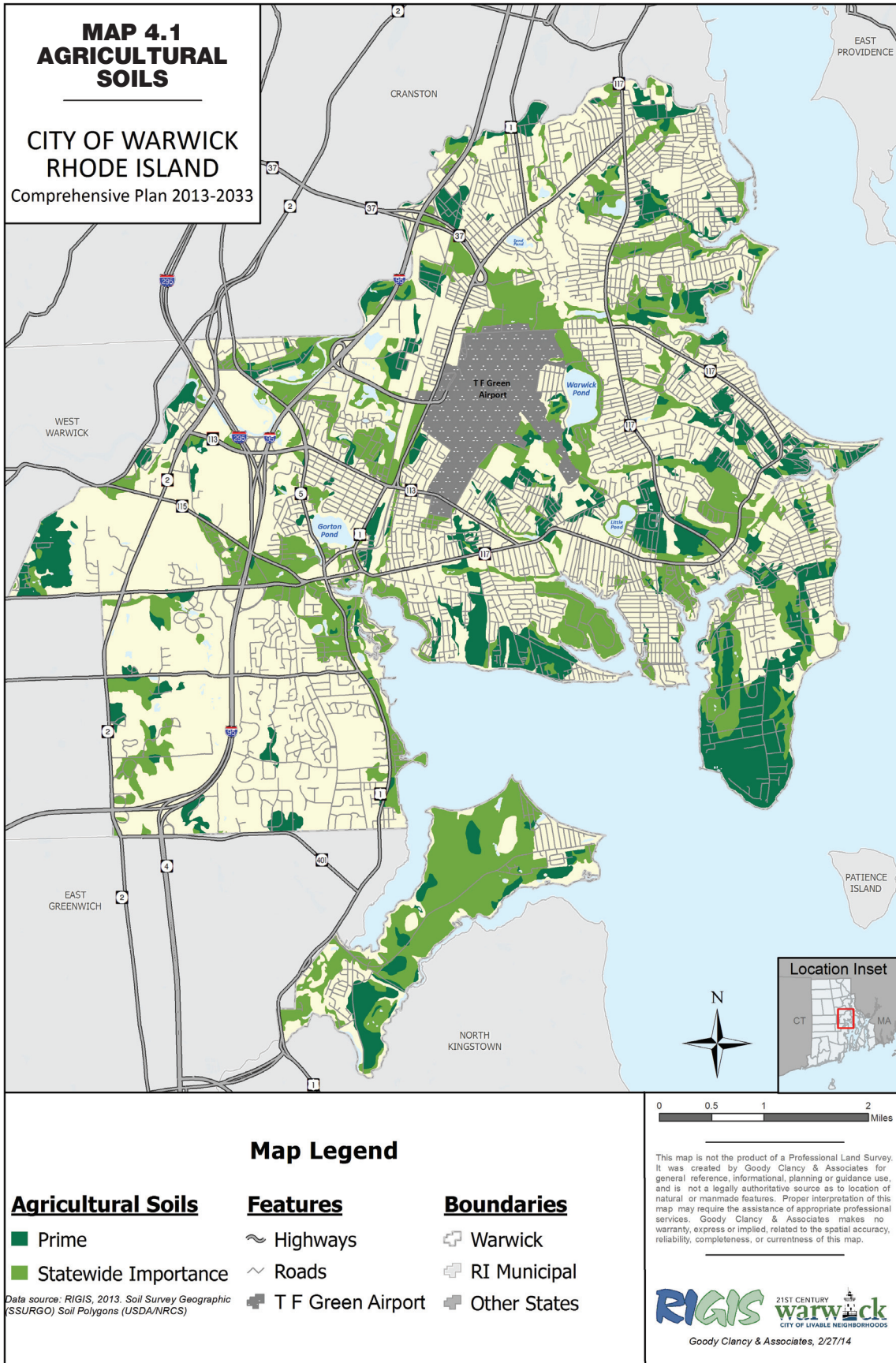
Topography. Warwick is divided into two topographically distinct areas, a seaboard lowland area comprising all of the north and central areas and Potowomut, and an upland area which covers the western and southwestern areas, principally Cowesett. A rather pronounced escarpment separates the lowland from the upland. The lowland is generally flat ranging in altitude from sea level to 100 feet, with isolated hills such as Warwick Neck, and

scattered depressions and ponds of varying size dotting the plain. The upland area consists of several hilly areas separated by stream valleys. The hilly areas are characterized by smooth, wooded slopes, areas of excessive slope, and generally rough topography and high elevation. At 350 feet, Spencer Hill, located off Quaker Lane near Major Potter Road, is the highest point in the city.

Slope conditions in Warwick are for the most part gentle and moderate. Areas which may be considered in excessive slope, meaning a deterrent to normal building procedures and generally above 15 percent, are found in western areas of the city, particularly in the Cowesett area, along the Pawtuxet River and on Warwick Neck.

Soil and Groundwater Conditions. A soil survey published for Rhode Island in 1981 by the US Department of Agriculture, Soil Conservation Service, identified over fifty soil classifications within Warwick’s city limits. Subsequent surveys have been made of the bedrock and surficial geology and of the ground water resources. In general, there are two distinct areas separated by the previously mentioned escarpment. The eastern lowland is underlain by glacial outwash atop sedimentary rocks of Pennsylvanian age, and the western upland is underlain by glacial till atop igneous and metamorphic rock of pre-Pennsylvanian age.

Glacial outwash is composed of soils which are fairly well sorted, permeable and the most productive water bearing soils in the city. Glacial till is generally unstratified, unsorted and compact. They are relatively impermeable. Sandy, loosely packed soils such as outwash have a higher permeability than dense soils such as glacial till and are better suited for on-site wastewater disposal. They also are a better source of groundwater. Conversely, high permeability can be undesirable if the rate of percolation is so fast that on-site sewage disposal causes groundwater contamination. Additionally, good permeability can be adversely affected by the presence of a high water table. Areas of Warwick in which the water table is close to the surface (high groundwater areas) are found along the shoreline in the north and northwest sections and also in the western parts of the city.





Agricultural Soils. The USDA/NRCS soil survey estimates that approximately 12% of Warwick is considered to have prime farmland soils. The City of Warwick is proud of its rich farming history and today has several privately operating farms including Morris Farm, Rocky Point Blueberry Farm, and Confreda Farm. From an economic standpoint, however, agriculture is no longer a large generator of local economic activity. The City of Warwick has taken steps in recent years to protect and preserve the remaining farmland within the municipal boundaries. The City partnered with the Rhode Island Department of Environmental Management (RIDEM) to purchase development rights to Morris Farm, Rocky Point Farm and acquired fee simple rights to both Barton Farm and Dawley Farm. Barton Farm is currently being utilized as open space and is home to a community farm providing fresh produce to low income families.

2. Watersheds, Water Bodies and Waterways

Watersheds. Warwick's surface waters are contained within two main watersheds: the Pawtuxet River Watershed, and the Narragansett Bay Watershed. Within the two watersheds, there are five subwatersheds. Surface waters within each watershed lead to a series of rivers, streams, brooks and tributaries that eventually empty into Narragansett Bay.

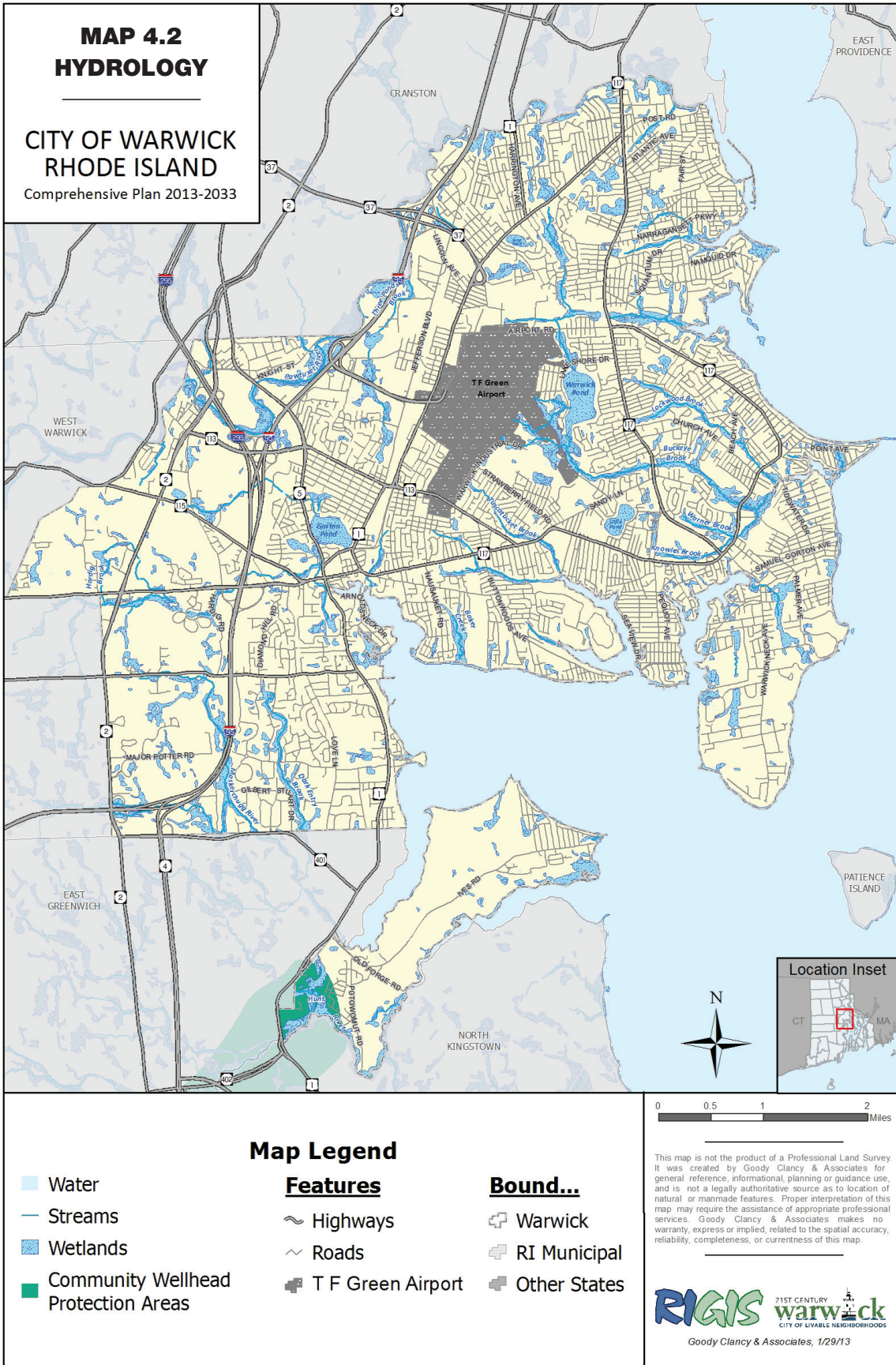
- The **Pawtuxet River Mainstem Subwatershed** encompasses portions of Wards 1, 2, 3, and 8. It includes a portion of the Pawtuxet River, its many tributaries

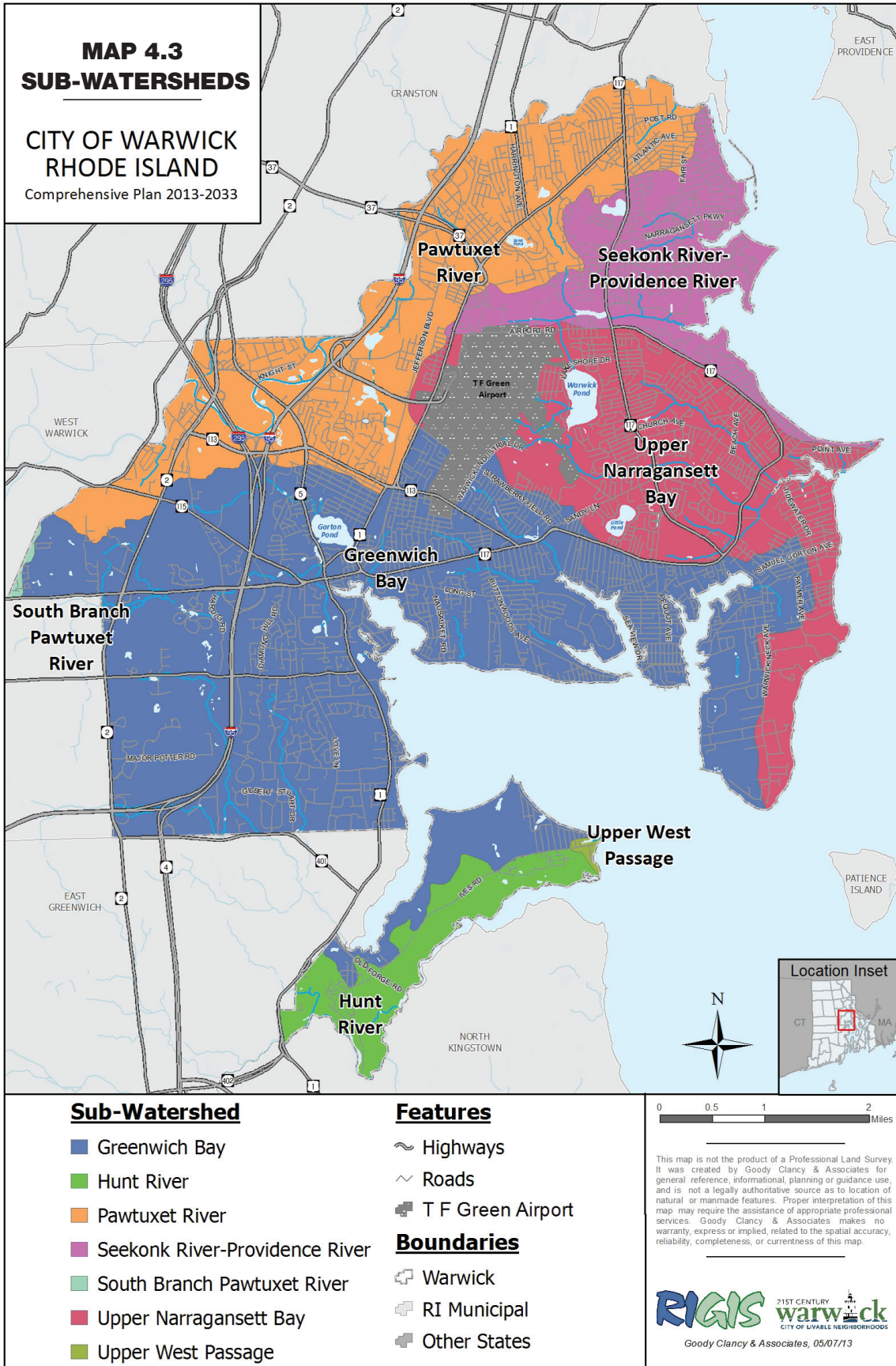
including Lakewood Brook, Three Ponds Brook and Meshanticut Brook, and it outlets into Pawtuxet Cove.

- The **Greenwich Bay Subwatershed** is the largest subwatershed in Warwick, and it encompasses all of Ward 7 and most of Ward 9, as well as portions of Wards 3, 5, 6, and 8. It includes Gorton Pond, and its many tributaries include Baker Creek, Greenwood Creek, Mill Brook, Pierce Brook, Dark Entry Brook, Tuskatucket Brook, and Saddle Brook. The subwatershed outlets into Greenwich Cove, Apponaug Cove, Buttonwoods Cove, Brushneck Cove, and Warwick Cove.
- The **Upper Narragansett Bay Subwatershed** encompasses portions of Wards 3, 4, and 5. It includes Warwick Pond, and its many tributaries include Knowles Brook, Warner Brook, Buckeye Brook, and Lockwood Brook. The subwatershed outlets into Mill Cove. T.F. Green State Airport is located within this subwatershed, and as such it contains some of the most environmentally sensitive areas in all of Warwick, including Buckeye Brook and Mill Cove.
- The **Hunt River Subwatershed** encompasses the southernmost portion of Ward 9. It includes Hunt River and Potowomut Pond, and the subwatershed outlets into the Potowomut River.
- The **Seekonk and Providence Rivers Subwatershed** is one of the state's largest and most sensitive subwatersheds, encompassing a portion of northern Warwick in Wards 1, 2, 3 and 4. It includes Spring Green Pond and its tributaries, and outlets into Passeonkquis Cove and Occupasstuxet Cove.

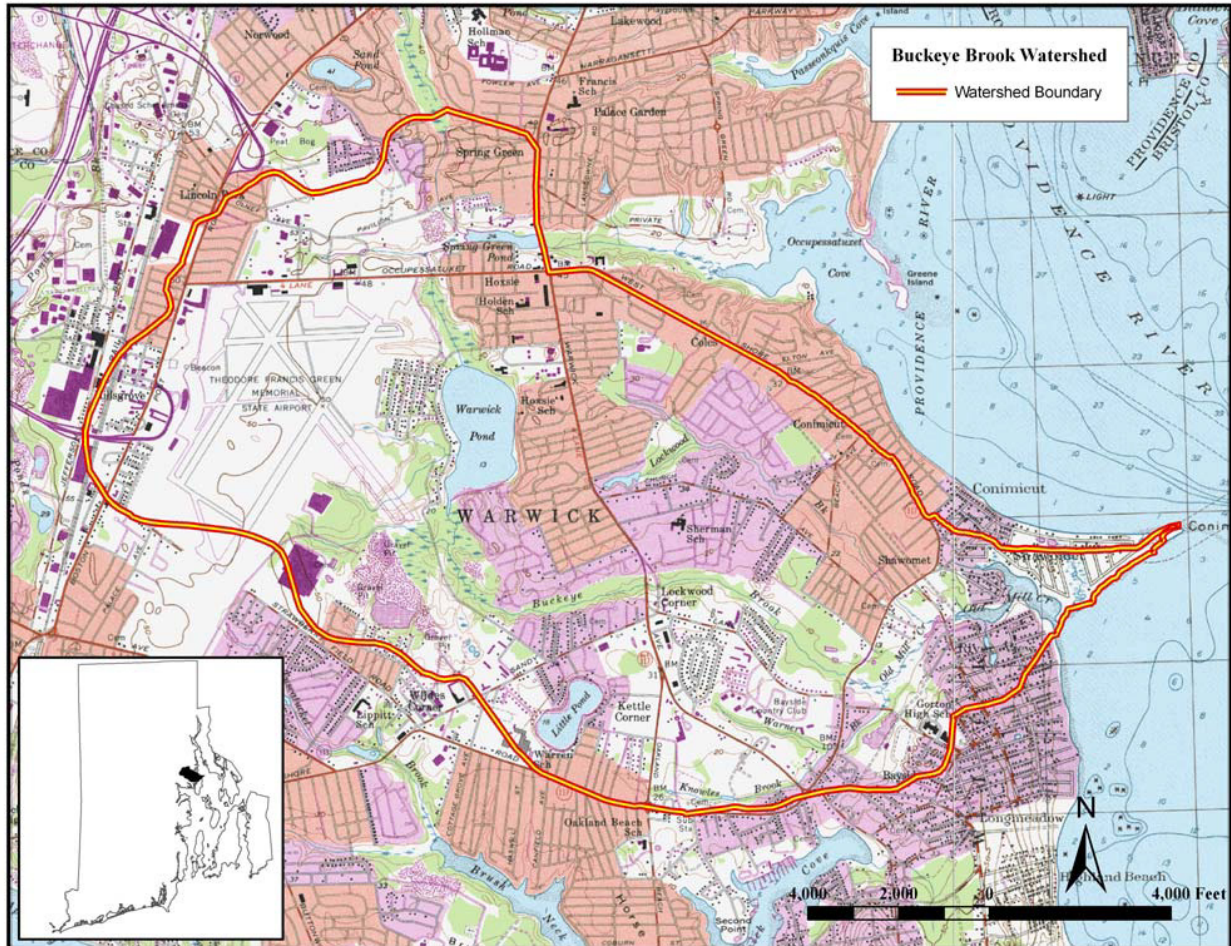
Table 4.1: **Water Bodies and Waterways by Ward**

WARD	PONDS	RIVERS, CREEKS AND STREAMS
Ward 1		Lakewood Brook
Ward 2	Posnegansett Pond, Sand Pond, Cranberry Pond	
Ward 3	Warwick Pond, Three Ponds	Three Pond Brook, Buckeye Brook, Tuskatucket Brook
Ward 4	Spring Green Pond, Smith Pond	Lockwood Brook
Ward 5		Buckeye Brook, Oakside Brook, Parsonage Brook, Warner Brook, Meadowview Creek, Foster Brook
Ward 6	Little Pond	Tuskatucket Brook, Carpenter Brook
Ward 7	Gorton Pond, Mary's Pond	Baker's Creek, Mary's Creek, Greenwood Creek, Mill Brook
Ward 8		Meshanticut Brook, Hardig Brook, Pawtuxet River
Ward 9		Pierce Brook, Dark Entry Brook Saddle Brook





Map 4.3: Buckeye Brook Watershed



The Pawtuxet River

The health of the Pawtuxet River is a high priority for Warwick and the State of Rhode Island. After centuries of pollutants entering its waters and modifications to the river's path and natural flow, plans to restore the river and provide improved public access to its shoreline are underway or completed.

Water Quality. The water quality classification for the segment of the river bordering Warwick is currently B1, which means waters are designated for primary (swimming) and secondary (boating) contact recreational activities and fish and wildlife habitat, but primary contact may be impacted due to pathogens from approved wastewater discharges. The Rhode Island Department of Environmental Management (RIDEM) has entered into an agreement with the USGS (US Geological Survey) to conduct monthly water quality monitoring on the Pawtuxet to enable long-term trend assessments, including ongoing analysis of pollutant loadings to Narragansett Bay.

Pawtuxet River Authority and Watershed Council (PRAWC).

In addition to efforts by RIDEM, the PRAWC, a non-profit agency created by the Rhode Island state legislature in 1972, coordinates efforts within the Pawtuxet River Watershed to improve the water and land quality of the entire Pawtuxet River system and render its waters fishable and swimmable. The PRAWC has cleaned hundreds of tons of debris from the Pawtuxet, built river access and trails, and worked to preserve open space. Currently, the PRA is engaged in a major project to restore migratory shad and herring to the Pawtuxet River system. The PRAWC was also responsible for funds being made available to

the three sewage treatment plants on the Pawtuxet River to upgrade their river discharges to tertiary treatment levels. Discharge water in this category is nearly drinkable.

Restoration of Pawtuxet Falls.

In August 2011, the waters of the Pawtuxet River entered the Narragansett Bay unimpeded for the first time in 300 years. The restoration of the free-flowing river resulted from the largest ecological dam-removal project yet undertaken in Rhode Island. The project was led by the PRAWC and Narragansett Bay Estuary Program (NBEP), with funding and technical assistance from more than a dozen federal, state and private organizations. The purpose of the project was to improve the ecosystems of the Pawtuxet River watershed and Narragansett Bay by restoring populations of native migratory fish, such as river herring and American shad, which were blocked from their natural spawning habitat for hundreds of years. In the spring of 2012, RIDEM began a multiyear stocking program for river herring and American shad to help re-establish their migratory cycle. The dam removal will also provide modest flood reduction for homes and businesses, and improve water quality in the lower Pawtuxet River. In developing the restoration project, the PRAWC and its partners completed major engineering, environmental and cultural studies of the Pawtuxet River, examining

river flow, sediments, wetlands, and historic resources in order to ensure that the dam removal will improve the environment of the Pawtuxet River and Narragansett Bay while avoiding adverse impacts to human health or economic uses. In order to begin construction, extensive permitting was necessary, including approvals by RIDEM, RICRMC, and the U.S. Army Corps of Engineers.

The Great Flood of 2010. During February and March of 2010, the City of Warwick endured a series of rain events which culminated in the greatest river flooding in the State of Rhode Island's history. The flooding caused many hydrological alterations along portions of the river, including altered channeling, sediment mobilization and deposition, embankment erosion and collapse, as well as mature tree uprooting, mobilization and deposition. A complete assessment of the full impact of the flood on the well-being of the Pawtuxet River and the immediate community is ongoing. River assessments are being conducted, and mapping strategies to identify the most significant problems which need immediate attention are continuing as well. They will be used in the future to provide a more detailed river analysis of the consequences of the March 2010 flood. (For more on the flood, see Chapter 11: Sustainability and Resilience)

Table 4.2: **Freshwater Wetlands by Type in Warwick**

WETLAND TYPE	APPROXIMATE ACRES
Riverain Nontidal Open Water (rivers)	118.17
Lacustrine Open Water (lakes)	162.65
Palustrine Open Water (marsh/swamp)	207.69
Emergent Wetland: Marsh/Wet Meadow	162.81
Scrub-shrub Wetland: Shrub Swamp	336.37
Forested Wetland: Coniferous	12.43
Forested Wetland: Deciduous	154.81
Total Inland Wetland Area:	1,217.94

Source: RIGIS, University of Rhode Island Environmental Data Center, 1993

Land uses vary within these subwatersheds but generally consist of a mixture of residential and commercial uses, as well as some undeveloped tracts and farmlands, all overlain by the city’s surface transportation network. The Pawtuxet River, Greenwich Bay, and Buckeye Brook (Upper Narragansett Bay) subwatersheds in particular have seen significant increases in impervious cover over the past several decades, resulting in increases in the volume and rate of runoff discharging to receiving waters, which in turn has contributed to the degradation of water quality.

Water Bodies and Waterways. Ten ponds and portions of five rivers can be found in Warwick, including the Pawtuxet, Hunt, Maskerchugg, Potowomut and Apponaug, as well as nearly two dozen brooks.

Freshwater Wetlands. Approximately one third of the total wetland area in Warwick is classified as freshwater wetlands. (See Map 4.2) Wetlands, which include riverbank and perimeter areas, ponds, marshes, bogs, and swamps, are important areas for water retention and filtration, for plant and wildlife habitat, and help to protect life and property from flooding. Table 4.1 lists the approximate acreage of freshwater wetlands in Warwick. These include wetlands of at least ¼ acre in area, and wetlands with salinity of less than 0.5 parts per thousand. Freshwater wetlands of particular importance include the resource area along the Three Ponds Brook system, Peat Bog, and the wetland resource areas along Warwick Neck.

Regulation of freshwater wetlands is the responsibility of RIDEM. Development activities which may alter any freshwater wetland area, or activities in close proximity to wetlands that may cause any alteration to the natural character of a freshwater wetland are not allowed without first receiving a permit from the department. Projects that impact surface run-off or divert groundwater away from the wetland, or modify the water quality in any way are included.¹

Aquifers. Aquifers are subsurface geological formations that contain significant amounts of groundwater. Water drawn from these formations can be replaced by surface water that filters downward through permeable surface soils, thereby “recharging” the aquifer. Aquifers are vital natural resources that require protection from contamination as they provide drinking water. Warwick shares the Hunt River Aquifer system with the Towns of North Kingstown and East Greenwich. The Kent County Water Authority and North Kingstown Water Department both maintain wells that draw from the aquifer. Land development practices pose a serious threat to this resource due to the proliferation of on-site septic systems, incompatible land uses, use of herbicides, insecticides and chemical fertilizers in residential landscaping, and the presence of underground storage tanks (USTs). Wellhead protection areas (WHPAs) have been established around all public wells in the state to help prevent and mitigate contamination from entering the critical portion of the aquifer where groundwater moves to and reaches the well. While there are no WHPAs in Warwick, the southernmost portion of Potowomut falls within the East Greenwich WHPA (WHPA #2051728-01).

3. Coastal Water Resources

Warwick has approximately 39 miles of shoreline, divided among a variety of conditions and ownership patterns. The majority of the City’s shoreline is privately owned. Approximately 12 miles of shoreline are publicly owned, divided among City, state and federal proper-

¹ Rules and Regulations Governing the Administration and Enforcement of the Fresh Water Wetlands Act, RI Department of Environmental Management, December 2010.

ties, with the City holding the most frontage. Most of Warwick’s shoreline is classified as salt marsh, mud flats, and unconsolidated sand, gravel or cobble beaches. However, there are also limited areas of headland bluffs. To illustrate the differences, Oakland Beach’s shoreline type is classified as a beach, while the south side of Conimicut Point is classified as a barrier spit, and both Buttonwoods and Occupassatuxet Neck are classified as headland bluffs of glacial outwash. Bluff areas are those shoreline areas elevated significantly above water level offering scenic vistas of the Bay and adjacent shoreline. Bluff areas also provide good protection from storms and erosion, and excellent recreational opportunities.

Table 4.3: **Warwick Coves**

WARD	COVES
1	Pawtuxet Cove, Pas-seonkquis Cove, Occupassatuxet Cove
4	Mill Cove
5	Warwick Cove
6	Brushneck Cove, Buttonwoods Cove
7	Apponaug Cove
9	Greenwich Cove

Barrier Beaches.

Barrier beaches serve as buffers against storms and offer a unique and valuable coastal environment. Undeveloped barrier beaches in Warwick

include Marsh Point, Baker’s Creek, Buttonwoods Cove, Gaspee Point and Conimicut Point. Development along barrier beaches can degrade the natural functions of these resources. These areas should be preserved for recreational use by residents, and for their value as scenic resources and storm control. The Coastal Barrier Resources Act (COBRA) of 1982 and later amendments, removed the Federal government from financial involvement associated with building and development in undeveloped portions of designated coastal barriers (including the Great Lakes). These areas were mapped and designated as Coastal Barrier Resources System units or “otherwise” protected areas. They are colloquially called COBRA zones. COBRA banned the sale of NFIP flood insurance for structures built or substantially improved on or after a specified date. For the initial COBRA designation, this date is October 1, 1983. For all subsequent designations, this date is the date the COBRA zone was identified. COBRA zones and their identification dates are shown on Flood Insurance Rate Maps (FIRMs).

Table 4.4: **Coastal Wetlands In Warwick**

WETLAND TYPE	APPROXIMATE ACRES
Riverine Tidal Open Water (RTW)	1,319
Estuarine Open Water (EOW)	395
Marine/Estuarine Rocky Shore (ERS)	8
Marine/Estuarine Unconsolidated Shore (EUS)	104
Estuarine Emergent Wetland (EEM)	208
Estuarine Scrub-shrub wetland (ESS)	1
Total Coastal Wetland Area:	2,034

Sources: RTW and EOW, 1990 Comprehensive Plan; ERS, EUS, EEM, ESS RIGIS 1993

Communities may permit development in these areas even though no Federal assistance is available, provided that the development meets NFIP requirements.

Coves and Bays. Warwick’s ten saltwater coves and two bays provide ample habitat for finfish and shellfish, the most significant of which is the winter flounder. However, Warwick’s waters have been off limits to commercial finfishing for more than 20 years. Commercial fishing is limited to restricted seasonal trawl fishery in the “Upper Bay” (Narragansett Bay between Warwick Neck and Conimicut Point) and seasonal baitfishery for menhaden. The “Upper Bay” and Greenwich Bay are two of the State’s most important shellfishing areas, producing most of the quahogs harvested from Narragansett Bay. These areas are regulated by RIDEM, which designates them as approved shellfishing areas or polluted, conditional or seasonal closure areas.

Coastal Wetlands. Warwick has approximately 2,034 acres of designated coastal wetlands. Table 4.4 lists the approximate acreage by wetland type as identified by the Rhode Island Geographic Information System (RIGIS). These include wetlands of at least 1/4 acre in size, and wetlands with salinity greater than or equal to 0.5 parts per thousand. The vast majority of this area included in this acreage is open water in Greenwich Bay and the “Upper Bay.” However, wetland areas along the shoreline account for 321 acres, of which nearly 260 acres are considered salt marshes.² These areas provide food and

2 "208" Water Quality Management Plan for Rhode Island



shelter for juvenile fish, shellfish habitat, shorebird and waterfowl habitat and serve as natural erosion and flood control mechanisms. Coastal wetlands of particular importance include Mary's Creek, Capron Farm Creek, Mill Cove, Greenwich Cove, Marsh Point, Buttonwoods Cove, Baker's Creek, Brush Neck Cove, Conimicut Point, Gaspee Point, and Passeonkquis Cove.

Greenwich Bay. With five square miles of shallow water and five protected coves (Greenwich Cove, Apponaug Cove, Buttonwoods Cove, Brush Neck Cove, and Warwick Cove), Greenwich Bay is an estuary—a mixing basin for salt and fresh water—that has provided people with food, shelter, transportation, trade, and recreational opportunities for centuries. Greenwich Bay remains a valuable commercial fishing area and recreational harbor surrounded by a 21-square-mile suburban watershed encompassing portions of three municipalities: Warwick, East Greenwich, and, to a smaller degree, West Warwick. Greenwich Bay experiences many of the problems common to growing suburban coastal communities, such as poor water quality, the loss of natural habitats, displacement of traditional commercial fisheries, privatization of the shoreline, and a lack of coordination between neighboring communities.

4. Water Quality and Protection

In accordance with the environmental protection objectives of the federal Clean Water Act, the State of Rhode Island is required to:

- Establish water quality standards for its surface waters (lakes, ponds, rivers, streams, estuaries and other marine waters)
- Monitor and assess water quality conditions within these waters (with respect to their ability to support fish and wildlife habitat; fish/shellfish consumption; and human recreation activities)
- Identify and inventory those waterbodies that do not meet water quality standards due to impairments caused by one or more pollutants (e.g., bacteria, nutrients, metals, temperature, low dissolved oxygen)

- Establish a prioritized schedule for total maximum daily load (TMDL) studies and the implementation of pollutant load restrictions / target reductions for the source(s) identified as the cause of the impairment.

RIDEM's Office of Water Resources regularly publishes updates of their Water Quality Regulations. The latest regulations were amended in December 2010, and the Water Quality Classification Descriptions were amended in May, 2009. In addition to the Water Quality Regulations, RIDEM has also issued a new RI Pollutant Discharge Elimination System (RIPDES) permit to the RI Airport Corporation (RIAC) for T.F. Green State Airport. The permit went into effect on September 1, 2012 and expires on September 1, 2017.

The majority of Warwick's fresh waters are classified as either A or B, which means they are suitable for primary and secondary contact recreational activities (A and B) and fish and wildlife habitat (B). The majority of Warwick's salt waters are Classification SA, which allows shellfish harvesting for direct human consumption, primary and secondary recreational activities and fish and wildlife habitat; or SB, which meets all SA criteria, with some exceptions for shellfish. (See the Appendix for more detailed water quality classification explanations.)

Ponds. "Eutrophic" ponds have excess nutrients that promote growth of algae and vegetation. In an urbanized location, the excess nutrients typically come from fertilizer runoff, waterfowl fecal matter, and similar sources. In Warwick, deicing and anti-icing fluids used at T.F. Green Airport also contribute to this issue. Gorton Pond, Warwick Pond, and Sand Pond are among nine eutrophic ponds studied in a RIDEM TMDL 2007 study.³ The water quality issues in these ponds exemplify the varied conditions and challenges of improving water quality in highly urbanized areas like Warwick.

- Gorton Pond, in the Greenwich Bay watershed, has a surface area of 59 acres, a maximum depth of 45 feet, and an average depth of 16 feet. The pond is fed by groundwater, surface water runoff, stormwater runoff,

³ Total Maximum Daily Loads for Phosphorus To Address 9 Eutrophic Ponds in Rhode Island, RIDEM Office of Water Resources, September 2007, <http://www.dem.ri.gov/programs/benviron/water/quality/rest/pdfs/eutropnd.pdf>

tributary inflow, and direct precipitation. The Gorton Pond watershed is highly urbanized and encompasses approximately 398 acres. A city park and beach with a wheelchair accessible fishing pier and boardwalk is located on the eastern side of the pond. Hundreds of gulls and waterfowl are attracted to residential lawns near the pond. Except for a small marsh at the northwest corner of the pond, there are no vegetative wetlands contiguous to the shore. There is significant growth of aquatic vegetation in the shallows of this deep pond and in some areas it forms a continuous mat on the surface.

- Sand Pond, also in the Pawtuxet watershed, has a surface area of approximately 12 acres. As a kettle hole pond, it has no streams discharging into or draining from the pond, nor are there any contiguous wetlands. Inflow to the pond consists primarily of groundwater, surface water runoff, stormwater runoff, and direct precipitation. The pond’s watershed is highly urbanized and encompasses approximately 62 acres. There is a narrow forested buffer around most of the pond, but several lawns extend to the water’s edge. Sand Pond is made up of two basins separated by a low narrow earthen berm. The smaller basin has extremely dense growth of aquatic vegetation. Hundreds of geese have periodically over-wintered on the pond. There are six identified storm drains and one area of concentrated surface water flow discharging to Sand Pond.
- Warwick Pond is located in the Buckeye Brook watershed, east of the airport. This 85-acre pond has an average depth of 14 feet and a maximum depth of 26 feet. Inflow to the pond consists of groundwater, surface water runoff, stormwater runoff, tributary inflow, and direct precipitation. The Warwick Pond watershed is approximately 855 acres in area and much of it is highly urbanized. Located just east and within the watershed is T.F. Green Airport, which occupies 1,100 acres of land. However, there are some forested areas and vegetated, wetland buffers along the main stream that feeds the pond. Lawns typically extend to the water’s edge along the western and southern shore, attracting waterfowl. The northern shore of the pond is undeveloped and is dominated by a swamp. The pond supports an andronomous fish population and does

not have the aquatic vegetation growth found in the other ponds. Two drainage ditches from the airport area discharge into the stream and the pond. Warwick Pond is drained by Buckeye Brook at its southwestern end. There are forty four (44) identified storm drains and sixteen (16) areas of concentrated surface water flow discharging to Warwick Pond, its tributaries, and hydrologically connected wetlands.

The RIPDES Permit issued to RIAC by RIDEM addresses stormwater discharges from the airport facility. The discharges flow into Tuscatucket Brook and several small tributaries leading to Warwick Pond and Buckeye Brook. The permit addresses impacts from stormwater, primarily the water quality impacts pertaining to dissolved oxygen, aquatic toxicity, foaming, nuisance odors, and nuisance bacteria growths caused by deicing and anti-icing fluids used at the airport (Glycol Collection and Treatment Facility under construction).

Impaired Waters and TMDL Studies. A number of streams, ponds, and coastal waters in Warwick are on the state’s 303(d) list of waters impaired for certain uses by pollutants, issued in August 2012. The state is required under the federal Clean Water Act to develop Total Maximum Daily Load (TMDL) plans for waters not meeting one or more water quality criteria. TMDL plans for the following water bodies in Warwick have been approved by the US Environmental Protection Agency:

- Buckeye Brook Watershed for fecal coliform and enterococci, including Buckeye Brook, Lockwood Brook, Parsonage Brook, Warner Brook, Old Mill Creek estuary, tributaries to Warwick Pond
- Gorton Pond for phosphorus
- Warwick Pond for phosphorus
- Greenwich Bay for fecal coliform, including Apponaug Cove, Brush Neck Cove, Buttonwoods Cove, Warwick Cove, Greenwich Cove, Gorton Pond tributary, Southern Creek, Tuscatucket Brook, Hardig Brook and tributaries, Maskerchugg River
- Sand Pond for phosphorus

As an example, the TMDL study for Greenwich Bay, which focused on fecal coliform, found that the sources

Table 4.5: **303(d) List of Impaired Waters (2010)**

WATERSHED	WATER BODY	TMDL SCHEDULE	USES NOT SUPPORTED
Narragansett Basin	Providence River	2016; 2022	fish/wildlife habitat; contact recreation
	Upper Narragansett Bay	2016; 2022	fish/wildlife habitat; shellfish consumption
	Sandy Pond	2014	contact recreation
	Buckeye Brook and tributaries	2012	fish/wildlife habitat; contact recreation
	Apponaug Cove	2016	fish/wildlife habitat; contact recreation
	Brushneck Cove	2016	fish/wildlife habitat; shellfish consumption
	Buttonwoods Cove	2016	fish/wildlife habitat; shellfish consumption
	Greenwich Bay	2016	fish/wildlife habitat; shellfish consumption
	Greenwich Cove	2016	fish/wildlife habitat; contact recreation
	Warwick Cove	2016	fish/wildlife habitat; contact recreational shellfish consumption
	Hardig Brook & tributaries	2016	fish/wildlife habitat; fish consumption; contact recreation
	Maskerchugg River	2016	fish/wildlife habitat; contact recreation
	West Passage	2016	fish/wildlife habitat
Pawtuxet River Basin	Pawtuxet River South Branch	2011; 2016	fish/wildlife habitat; contact recreation
	Three Ponds	2014; 2016	fish/wildlife habitat
	Meshanticut Brook and tributaries	2011	contact recreation
	Pawtuxet River Main Stem	2016; 2022	fish/wildlife habitat; fish consumption; contact recreation
	Three Pond Brook	2016	fish/wildlife habitat

Source: State of Rhode Island 2010 303(d) List of Impaired Waters Final, July 2011 (<http://www.dem.ri.gov/pubs/303d/303d10.pdf>)

of bacteria were humans, domestic pets, waterfowl and wildlife, and the pathways to water were the storm sewer network, stormwater sheet flow over land, seepage from septic tanks and cesspools and directly into the water. Stormwater and wastewater management are critical aspects of the plan. Stormwater Best Management Practices (BMPs) include infiltration of roof runoff, landscape management to promote infiltration, and end of pipe treatment. Stormwater BMP priority locations for Warwick are Brush Neck Cove, Apponaug Cove, and Narragansett Bay via contribution from Buckeye Brook. Warwick is also extending its sewer system. Other best practices focus on managing pet and waterfowl waste, managing activities at beaches to reduce bacteria and boat pump out stations.

Greenwich Bay Special Area Management Plan (SAMP). The Greenwich Bay SAMP is an integrated

coastal management plan developed by the R.I. Coastal Resources Management Council (CRMC), along with municipalities, federal and state agencies, and concerned citizens. This plan provides recommendations on addressing and balancing environmental and economic issues including poor water quality, loss of natural habitats, displacement of traditional commercial fisheries (including shellfishing), and privatization of the shoreline. The goals of the Greenwich Bay SAMP are as follows:

- Develop leaders and stewards to coordinate and implement actions that protect the unique resources of Greenwich Bay.
- Improve Greenwich Bay’s water quality so that it is a safe place to fish and swim.
- Maintain high quality fish and wildlife habitat in the Greenwich Bay watershed.



- Improve recreational opportunities on Greenwich Bay and its shoreline.
- Enhance water-dependent economic development on Greenwich Bay and its shoreline to maintain the areas unique sense of place.

Specific recommendations for Warwick include stormwater management recommendations that are consistent with the requirements for municipalities (MS4 operators) under the state’s stormwater management regulations: mapping stormwater outfalls; identifying, eliminating and preventing illicit discharges; planning and implementing structural Best Management Practices (BMPs) to improve water quality and reduce runoff; and updating ordinances to enforce proper stormwater management. Structural BMPs include detention ponds, swales, rain gardens, and similar physical interventions to increase infiltration of stormwater into the ground. Priority areas for BMPS are Brush Neck Cove, Apponaug Cove, areas with large impervious drainage areas and areas with direct stormwater discharges. (See Chapter 10, Public Facilities and Services, for additional discussion.)

Stormwater. Before 1987, water pollution programs focused on “point” sources of pollution (such as industrial sources, and other identifiable pipes and outfalls). With better controls over point sources, it became evident that pollution from “nonpoint” sources of pollution (i.e., stormwater runoff from agricultural lands, construction sites, and urban areas) remained a serious problem. As runoff flows over impervious surfaces and other areas altered by development, it can capture pollutants that end up in the receiving waters. The 1987 amendments to the federal Clean Water Act addressed nonpoint pollution sources by directing states to develop and implement nonpoint pollution management programs, which in Rhode Island are administered by RIDEM under the Rhode Island Pollutant Discharge Elimination System (RIPDES).⁴

Sewerage. Programs to improve sewerage within Warwick to protect the health of its waterways have been ongoing, primarily addressed through the Warwick

TABLE 4.6: **LOCATIONS OF HIGH VALUE WILDLIFE HABITAT IN WARWICK**

NAME	WILDLIFE VALUE
Buckeye Brook/ Mill Cove	Herring run, aquatic life, Wood and Black Ducks
Warwick Pond	Various fish, snapping turtles
Potowomut River	Herring run
Rock Island	Fossil site, birds
Passeonquis Cove	Ducks, scaup, widgeon
Gorton Pond	Herring, alewife and American eel run, freshwater fish (various types)
Occupasstuxet Cove	Waterfowl, shell and finfish, upland birds
Marsh Point, Baker's Creek	Upland birds, shell and finfish
Mary's Creek	Shellfish, waterfowl, finfish
Conimicut Point	Shellfish, saltwater fish, (Narragansett Bay)
Tuscatucket Brook & Pond, Sand Pond, Three Pond Brook, City Park	Waterfowl, freshwater fish
Pawtuxet River (especially lower reaches)	Waterfowl, birds

Sewer Authority’s 1992 Facilities Plan and 1996 and 2004 amendments. This has included a \$32 million upgrade to the Warwick wastewater treatment facility, numerous sewer service extensions, as well as ongoing maintenance and operational improvements. (For more information on stormwater and sewer systems, see Chapter 10, Public Facilities and Services.)

5. Wildlife Habitat

In a mature suburban city such as Warwick, most of the native wildlife has disappeared or has dwindled to very low populations. There are, however, several areas in the City which support wildlife, primarily birds and aquatic life. The most important of these are the coastal and freshwater wetlands, salt and fresh water marshes, and other water sources. All of Warwick’s wetland areas provide valuable wildlife habitat, especially excellent sources of food for aquatic life, birds and waterfowl. Among the city’s most notable habitat areas are Buckeye Brook and its marshlands, where herring run upstream each spring to spawn in Warwick Pond. Gorton Pond and Hardig Brook contain high value habitat for alewives, blueback

⁴ <http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/index.htm>



herring, and American eels. The marshlands along Mill Cove support a large amount of aquatic life and are one of the city's best shelters for ducks. Mary's Creek is one of the premier shellfish habitat areas in the state. Brushneck Cove and Baker's Creek Marsh provide significant areas for waterfowl feeding, resting and cover. The Potowomut River and environs also provide a large estuarine habitat for a wide variety of marine and upland wildlife. In addition to wetland areas, upland woodland, particularly in the less developed southwestern sections of the city provide valuable habitat for fox, deer and a wide variety of more commonly observed mammals and birds.

Rare and Endangered Species and Habitats.

Approximately thirty five rare and endangered species of plants and animals in Warwick have been identified by the Rhode Island Natural Heritage Program. Species are assigned to one of six status categories: FE (Federally Endangered); FT (Federally Threatened); SE (State Endangered); ST (State Threatened); C (Concern); and SH (State Historical). The Federally Endangered and Federally Threatened species are given the highest status in regard to protection, followed by State Endangered, State Threatened, Species of Concern and State Historical species. There are no known Federally Endangered or Federally Threatened species in Warwick. However, there are a number of state status species in the city, a list of which is maintained at the NHP office at RIDEM. The NHP has inventoried habitats where rare species are found and have made management recommendations to ensure their continued survival in those habitats. Sites of particular interest in Warwick include the following:

- Greene Farm, located on the Potowomut River, includes approximately 150 acres of open fields and farmland, and dry oak/mixed woodlands. With frontage on the Potowomut River and several small streams, and four small ponds Greene Farm provides varied riparian and lacustrine habitats. The farm has been protected through purchase of development rights by the State.
- In the lower reaches of the Pawtuxet River floodplain forests and associated river stretches are critical but unprotected habitat for waterfowl, songbirds, other aquatic mammals and various reptiles and amphibians. Protection would involve establishing river buffer zones and control of pollutants entering the river system.
- Wetlands adjacent to the Three Ponds complex provide habitat for the State-listed Sora Rail (*Porzana carolina*). Fewer than 10 populations of this species are known statewide and its numbers are continuing to decline, primarily due to habitat destruction. The present configuration of the cattail marsh along with open water at this site favors the presence of not only the Sora, but other noteworthy species, including the Virginia Rail (*Rallus limicola*). The site has already been subjected to repeated alteration.
- Gorton Pond is an example of a rare community type, the coastal plain pondshore. The sandy shorelines support rare flora adapted to the naturally fluctuating water levels. More inventory work is needed in this area, as many of the rare pondshore plants are only seen in years of low water levels, when the shorelines are exposed.
- Apponaug Cove and Occupastuxet Cove are known to be significant wintering areas for black ducks and other species of waterfowl. Of particular importance are the marshes and extensive mudflats in the back areas of the coves.

All of the sites listed above could benefit from additional protection such as protective zoning, placement of conservation restrictions, redirecting intensive development, establishment of buffer zones and other activities.

6. Trees and the Urban Forest

Urban forestry encompasses the planning, protection, and management of trees and associated plants in cities. Trees provide a wide range of environmental and aesthetic benefits and are among the most valuable and important landscape features in any community.

Trees function collectively in the urban forest, forming a “green infrastructure” within their communities.

The benefits of trees in the urban environment include:

- Reduction of surface water runoff/reduction of flood risks
- Reduction of soil erosion and sedimentation of water bodies
- Absorption of water and air pollution
- Sequestration of atmospheric carbon
- Mitigation of the “urban heat island effect”
- Micro-climate control and reduction of energy costs
- Abatement and buffering of noise
- Enhancement of property values
- Enhancement of community aesthetic character, links to the past, and contribution to “sense of place”
- Psychological and social impacts, including stress relief and crime reduction
- Health benefits associated with air quality improvements and physical exercise.

Since the early 1990’s, the City of Warwick has worked closely with the Rhode Island Tree Council (RITC) to promote efforts on behalf of the city’s urban forest. The Rhode Island Tree Council is a non-profit organization dedicated to the improvement of Rhode Island’s tree resources by providing technical expertise to cities and towns as well as creating and presenting public education programs designed to promote public awareness regarding the value of trees and proper tree planting and maintenance techniques. In 1995, the City created a full time position within the planning department to plan and manage the city’s expanding tree planting program. This staff person is dedicated to urban forestry issues, including managing the tree planting program and reviewing landscape plans for both commercial and subdivision development, as well as all other aspects of landscape design for the city. The staff member also serves as a city liaison, working in partnership with RIDEM and the RITC to improve and strengthen urban forestry initiatives with the city.

Thousands of trees have been planted on city streets, in parks, at schools and other public properties, along the Warwick segments of state arterial roads and in the parking lots and frontages of all new commercial development. The City has a process to track compliance with landscape regulations and the permitting process of the Building Department. A fee in lieu of landscaping is required if a particular development is unable to fulfill the requirements of the City’s Zoning Code. The Warwick Tree Trust account was established to hold these funds in a separate account to be used for city tree planting projects.

Barton Tree Farm. The City has developed a pot-in-pot tree farm operation on approximately 1 acre of land at the city owned Barton Farm, a former dairy farm acquired by the city as open space in 2001. By ordering young, 1” caliper trees from nurseries at a low cost, the city was able to increase the seasonal availability of trees and increase the diversity of species, as well as significantly lower the cost of trees. Hundreds of trees from the tree farm have been planted throughout city neighborhoods, schools, parks and recreational facilities. The former dairy farm well is used to water the trees as well as a community farm operated by Westbay Community Action located at Barton Farm, eliminating the need to use water from the Kent County Water Authority.

The two-acre community farm, Westbay Farm, was founded in 2005 as Westbay Community Garden. The farm supplies the Westbay Marketplace food pantry in Buttonwoods and operates a farm stand at Kent Hospital.

Rhode Island Urban and Community Forest Plan.

In May of 1999, the Rhode Island Statewide Planning Program published the first Rhode Island Urban and Community Forest Plan, Element 156 of the Rhode Island State Guide Plan. Developed in collaboration with RIDEM’s Division of Forest Environment and the RITC, this plan “establishes a vision, goal, and policies and provides recommendations focused on the manage-

TABLE 4.7: **Warwick’s Public Viewshed (PVT) Tree Population**

PUBLIC	PRIVATE	TOTAL
53,554 (±8,552)	106,451 (±10,302)	160,006 (±5,184)



ment of tree resources within the built environment.” It also states: “As an element of the State Guide Plan, the Urban and Community Forest Plan sets forth goals and policies that must, under State law, be reflected in future updates of local comprehensive plans.” Therefore, the goals and policies of Element 156 must, under state law, be reflected in Warwick’s Comprehensive Plan, and ultimately the zoning ordinances and land development regulations.

Recent Developments. During the summer and fall of 2010, the City of Warwick was chosen to be included in a large urban forestry study that was conducted along with 5 other communities throughout urbanized Rhode Island. This study, called the Forest Sustainability Project, was conducted by the RITC in conjunction with the USDA Forest Service, and was funded by the 2009 American Recovery and Reinvestment Act (ARRA). Members of the Rhode Island Tree Council’s “Green Team” conducted a Tree Inventory Assessment on a 6% sampling of the entire city’s streets, a sample size of 32.93 miles of street segments out of a total 593.57 linear street miles. In total, 495 street segments were surveyed. Data was collected on all trees that were found to be within the public view shed corridor, which includes street trees located within the public right of way as well as trees located on private property in front and side yards. Every tree that could be viewed from the roadway was included in this survey. A total of 7,550 trees were counted, 2,527 (33.5%) of which were publicly owned. The remaining 5,023 (64.5%) trees were observed on private property. Utilizing the data collected in the Warwick Tree Inventory Assessment, the “Green Team” members were able to use the i-Tree software program to extrapolate the number of trees in the entire city planted within both the public right of way and the viewshed corridor.

The Warwick Tree Inventory Assessment provides the City with the estimated economic value derived from Warwick’s urban forest:

- Citywide, each tree in Warwick contributes \$32.93 per year in energy savings.

- Warwick trees intercept a total of 249,827,422 gallons of stormwater annually, providing \$1,998,758 in derived stormwater mitigation benefits.
- Warwick’s tree resources sequester a net amount of 38,146,045 pounds of CO₂ annually.
- Warwick trees also house a significant amount of carbon stored over a life time of growth, 750,713,031 pounds in all. This provides a total of \$2,477,353 in related savings.

Warwick’s total tree-derived economic benefit is calculated to be \$12,852,683 per year.

While Warwick’s tree population is split between 66.5% private ownership and 33.5% public trees, the proportion of economic benefit derived from public property is 40.4%. This shows greater benefit from trees in public space than on private land. This is because homeowners tend to choose smaller flowering trees, displayed for sale when they are in bloom, which provide correspondingly smaller environmental and economic benefits. A planting program combined with a public outreach program regarding species choices and proper placement would serve to ensure the future vitality of this valuable resource.

7. Natural Resources Organizations

The organizations in Warwick charged with protecting, preserving and enriching the city’s landscape and natural resources include the Warwick Wildlife and Conservation Commission, the Pawtuxet River Authority and Watershed Council, the Warwick Land Trust, the Mill Brook Conservancy, and the Buckeye Brook Coalition.

Warwick Wildlife and Conservation Commission.

The Warwick Wildlife and Conservation Commission was established in 1974 by the Warwick City Council. The Warwick Wildlife and Conservation Commission is constantly striving to sustain a balance between residential and commercial development while maintaining the integrity of the City’s wildlife and other natural resources.



The purpose of the Warwick Wildlife and Conservation Commission is to preserve the City's natural resources while promoting development of the environment in an orderly responsible fashion; to protect the watershed resources; to preserve and enhance natural aesthetics and wildlife habitat; and to promote an ecological balance between preservation of the natural landscape and the man-made environment.

The Warwick Land Trust. The mission of the Warwick Land Trust, which was formed by the city government, is to preserve open space; protect wetlands, water bodies, ground and surface water resources; protect farm lands, historical or cultural places of interest, scenic views, unusual, exceptional or exemplary natural habitats; provide opportunities for research and education on natural resources on land trust held properties; and to secure for the city the goals and objectives established in the Comprehensive Plan. The nine member commission is responsible for reviewing requests for land transfers, and for making land acquisition and open space designation recommendations to the city council.

Pawtuxet River Authority & Watershed Council (PRAWC). The PRAWC is a non-profit agency created by the RI state legislature in 1972. It is continually striving to improve the water and land quality of the entire Pawtuxet River system and render its waters fishable and swimmable. The PRAWC has cleaned hundreds of tons of debris from the Pawtuxet, built river access and trails, obtained funds to upgrade sewage treatment plants, and worked to preserve open space. Currently, the PRAWC is engaged in a major project to restore migratory shad and herring to the Pawtuxet River system.

Mill Brook Conservancy. The Mill Cove Conservancy (MCC) seeks to preserve the historic, cultural and environmental qualities of the Mill Cove neighborhood. Through cooperation with responsible agencies and officials, the MCC seeks to ensure that the Warwick Comprehensive Plan and regulations are implemented and enforced so as to provide adequate protection of public safety (especially from storm damage), the environment (especially from erosion, runoff and pollution), the character of the Mill Cove neighborhood (from overly dense

or oversized development) and the fiscal health of both the neighborhood and the City (from unnecessary fiscal impacts relating to flood management and/or cleanup of pollution).

The Buckeye Brook Coalition. The Buckeye Brook Coalition (BBC), a state designated Watershed Council, was formed to focus attention on Buckeye Brook and its watershed. Buckeye Brook and Warwick Lake are the spawning grounds of the blue back herring and alewives. The major goal of the BBC is to protect and preserve the brook and its watershed, as well as the future of blue back herring and alewives who annually spawn in these waters. The BBC supports activities that work to clean-up debris in the brook and surrounding areas and promote good water quality. The BBC also advocates for protection of the brook and its wetlands from destruction, and focuses attention on situations and policies that endanger its well being.

8. Soils and Agriculture

The City of Warwick is proud of its rich farming history and has in recent years taken steps to protect and preserve the remaining farmland within the municipal boundaries. The USDA/NRCS have mapped soils in Warwick and estimates that approximately 12% of Warwick is considered prime farmland. From an economic standpoint agriculture is no longer a large generator of economic activity within the City; however the City is continues to support efforts to support local agriculture. Privately operating farms located in Warwick include Morris Farm, Rocky Point Blueberry Farm, and Confreda Farm. To preserve remaining farmland the City partnered with RIDEM to purchase development rights to Morris Farm (Warwick Ave), Rocky Point Farm (Rocky Point Ave) and acquired fee simple rights to both Barton Farm (Centerville Rd) and Dawley Farm (Cowesett Rd - preserved as open space; agricultural production is idle). Barton Farm is currently being utilized as open space and is home to a community farm (West Bay Farm) providing fresh, locally grown organic produce to the Westbay marketplace food pantry. City land use regulations allow growing of crops in 10 of the 13 zoning districts. Agriculture is not shown as category on the

future land use map, however its future is supported by the Zoning Ordinance.

E RECOMMENDATIONS

GOAL 1

Warwick’s natural resource systems, sensitive water resources and natural habitat are preserved and protected for future generations.

POLICIES

- Support integrated strategies to protect and restore natural systems with desirable land use practices and management programs.
- Implement programs to protect and restore Warwick’s coastal and freshwater wetlands and improve water quality.
- Support policies and measures to protect shellfish resources.
- Support continued initiatives to improve water quality and habitat quality in the Pawtuxet River and its watershed.
- Promote and protect the long-term viability and sustainability of Greenwich Bay, its coves and tributaries.
- Protect Warwick’s critical wildlife and wildlife habitat.
- Implement mandatory tie-in to the sewer system for all future developed properties.
- Protect Warwick Pond, Buckeye Brook, and Tussock Brook from pollutant loading associated with the nearby airport land use.

STRATEGIES

A. Develop an integrated Green Systems Master Plan that includes natural resources.

The Green Systems Master Plan for Warwick would integrate planning for natural resources, open space, greenways, waterfronts, parks and recreation, and sustainability.

Actions

- 1. Develop the natural resources section for a Warwick Green Systems Plan.**
This section should include goals for healthy environmental systems, on land and in the water, and plan for an integrated set of programs and initiatives.
- 2. Empower the Warwick Land Trust to raise revenue and apply for grant funding in order to finance natural resource protection initiatives.**
The current activities of the Land Trust, which include reviewing requests for land transfers and recommendations to the City Council for land acquisition and open space designation, should be expanded as necessary to incorporate a funding mechanism for their recommendations.

B. Protect, preserve and enhance natural resource areas adjacent to developed or potentially developed areas.

Actions

- 1. Preserve open space through the promotion of conservation subdivisions on larger development sites, open space acquisition, and sensitive siting of competing land uses.**
Revise zoning as necessary in order to maximize preservation opportunities, and continue to seek funding sources for acquisition.
- 2. Identify and prioritize specific parcels of land for acquisition, development rights, foreclosing right of redemption (tax sale properties), conservation easements for farmland preservation, and open space purposes that have the great-**

est potential for preserving Warwick’s natural resources.

Funding mechanisms for acquisition need to be identified and developed.

- 3. Ensure that all critical natural resource areas with the City are zoned appropriately.**
- 4. Amend the zoning ordinance to include stringent performance standards for development within critical natural resource areas.**
- 5. Continue to prioritize acquisition in areas with the most potential for preserving the city’s natural resources.**
- 6. Enforce the 2012 MOU by and between the City of Warwick and Rhode Island Airport Corporation entitled “water quality” which requires the construction of a glycol collection and treatment facility by December 31, 2015 as well as establishing a water quality liaison, increased water quality testing and training through the University of Rhode Island Watershed Watch. (see 2012 MOU).**

C. Protect freshwater bodies, coastal waters, areas with soil limitations, unique natural features, fish and wildlife habitat, and threatened and endangered species habitat through land use planning and regulatory management programs.

Actions

- 1. Develop a City-wide stormwater management plan and implement Best Management Practices to reduce storm water discharge volume and nitrogen and bacteria concentrations.**
The plan will be an extension of the current Rhode Island Stormwater Design and Installation Standards Manual. (See Chapter 10 for more information on stormwater management.)
- 2. Adopt Low Impact Development Standards for new development, substantial renovations, and undersized properties seeking dimensional variances.**
The standards can be developed with the help of and in conjunction with the Rhode Island Low Impact Development Site Planning and Design Guidance Manual (February 2011).
- 3. Preserve remaining coastal and riparian vegetated buffers, establish them on public lands, and**

promote the establishment of new vegetated buffers at water edges on private lands.

- 4. Seek funding for BMPs and Stormwater Attenuation and Source Reduction Strategies for priority sub-watersheds.**

The US EPA has several funding sources available for these types of projects that the City may be able access.

- 5. Increase public awareness of water quality problems, sources and solutions.**

Homeowners and other property owners need education on the negative water quality impacts of failing septic systems, cesspools, and the improper use of chemical fertilizers, herbicides and insecticides. In addition, they need information on how pets and wildlife contribute to closures of beaches and shellfish areas. The importance of waterside buffers as a best practice should also be publicized. For example, geese, who like to graze on short green grass, are attracted to manicured lawns at the shoreline. Allowing grass to grow to its full height of 10-14 inches helps discourage waterfowl from congregating on lawns.

- 6. Manage wastewater systems to improve water quality.**

Some coastal areas in Warwick are not sewerred, with existing and potential pollution effects on coastal waters. The City should continue to work to:

- Ensure all homes and businesses tie-in to available sanitary sewers.
- Cesspool use is phased out, giving priority to the Greenwich Bay watershed and riparian areas.
- Consider implementing wastewater management districts for those areas not scheduled for sewers.

Making loans available to help property owners defray their costs can accelerate the process.

- 7. Acquire land and conservation easements to preserve critical wildlife habitat and protect water quality.**
- 8. Continue to support volunteer water quality monitoring programs.**



- 9. Restore and preserve fish and wildlife habitat, especially in Buckeye Brook, Warwick Pond, and the Mill Cove ecosystem that supports anadromous fish runs of river herring (alewife).**

Restore anadromous fish runs where feasible (such as the recently completed project at Pawtuxet Falls) and use local zoning and land use regulations to assess and mitigate development impacts on rare and endangered species.

- 10. Consider adopting the RI Stormwater Design and Installation Standards Manual through local ordinance.**

D. Support the programs of the Pawtuxet River Authority and Watershed Council that mitigate flood damage to low lying areas of the City.

Actions

- 1. Support the programs of the Pawtuxet River Authority and Watershed Council that promote increased access to the River for Warwick's residents.**

These programs include riverwalks, such as the completion of the Arkwright-Phenix-Harris Riverwalk, and canoe launches, such as the recently completed facility in Pontiac Village.

- 2. Collaborate to enhance or restore wetlands to mitigate flood impacts.**
- 3. Carefully review proposed developments within the Pawtuxet River flood zone to mitigate or eliminate potential additional future flood damage.**

Any new development or construction within the flood zone should be vetted by both the City and the Authority, with proper measures taken to protect the property as well as the natural resources associated with the river.

- 4. Continue to work with FEMA as necessary on flood mitigation.**

E. Continue programs to implement the Greenwich Bay SAMP and all city TMDLs to improve the health of the bay.

Actions

- 1. Identify and protect remaining wetlands, open space and shoreline areas within the Greenwich Bay watershed.**
- 2. Protect, maintain, and where feasible, restore ecological systems, including submerged lands and shore habitat.**
- 3. Support the environmentally-sensitive, water-dependent economic development on the Bay and its shoreline to maintain the area's unique sense of place.**
- 4. Integrate the CRMC Coastal Buffer Zone management guidance into land development and zoning regulations.**

F. Develop protection and management recommendations for sensitive and critical habitat identified by the Rhode Island Natural Heritage Program.

Actions

- 1. Coordinate with the Rhode Island Natural Heritage Program on a regular basis to determine sensitive habitat locations.**

These locations will then be added to critical resource location maps to ensure their protection from future development.

- 2. Consult with the Rhode Island Natural Heritage Program staff for information on identified sites which may potentially be impacted by a development proposal.**

This step should be taken on any development proposal in the City, and initial review should be completed by the project proponent.

- 3. Identify and prioritize acquisition of significant wildlife habitat sites.**

- 4. Develop and enforce cluster development regulations that will preserve known and potential wildlife habitats.**

Revise the city zoning regulations as necessary in order to maximize preservation opportunities, and continue to seek funding sources for acquisition of these known or potential habitats. Review and consider replacing Cluster Subdivision regulations with a Conservation subdivision approach as a means of improving the quantity, quality, and configuration of open space.

G. Protect groundwater resources

Actions

- 1. Support programs that protect the Hunt-Annaquatucket-Pettaquamscutt Sole Source Aquifer.**
Programs that aid in the removal of septic systems, restrict the use of herbicides, pesticides and chemical fertilizers in residential lawns, and remove underground storage tanks should be prioritized.
- 2. Encourage the use of advanced treatment and denitrification on-site wastewater systems in the Hunt-Annaquatucket-Pettaquamscutt watershed.**
Advanced treatment and denitrification system types include sequencing batch reactors, media filters, and aerobic treatment units. These advanced treatment systems incorporate a treatment step between solids separation and final dispersal of effluent.

- 3. Distribute information to residents on the benefits of trees and tree planting, with suggested species suitable for different types of properties.**

GOAL 2

Warwick’s urban forest is healthy and provides maximum environmental and economic benefits.

POLICY

- Promote public and private efforts to protect and enhance tree resources.

GOAL 3

Agriculture will remain an important use in historically farmed areas.

POLICY

- Support community organizations to increase access to locally grown produce

STRATEGIES

A. Continue supporting policies and programs that promote local agriculture

Actions

- 1. Continue to make land available for community agriculture at Barton Farm.**

STRATEGIES

A. Continue policies and programs that protect, enhance, and increase the city’s tree canopy.

Actions

- 1. Continue to support and expand the City’s tree nursery at Barton Farm and tree planting programs, and create a master plan for Barton Farm.**
- 2. Promote tree protection and tree planting through review of proposed new development and redevelopment, including in parking lots.**



Parks, Open Space and Recreation

FROM A WARWICK RESIDENT

“I just love City Park and all it has to offer. The wildlife, the bike path, the ability to view the water.”

“There are lots of friendships being made and maintained around the open space in Warwick.”



A GOALS AND POLICIES

GOALS

A preserved and enhanced parks and open space system.

Recreation facilities that are state-of-the-art and meet the needs of all Warwick residents.

POLICIES FOR DECISION MAKERS

- Integrate park, open space, and recreation planning into a broader Green Systems planning framework.
- Pursue improved connectivity of parks, open space, recreation land, and water resources with neighborhoods and other community destinations.
- Promote high quality park design and environmental stewardship.
- Connect, protect, preserve, maintain, and expand Warwick's coastal public access points.
- Promote, maintain, and enhance a broad range of city-wide and neighborhood recreational facilities to meet the needs and desires of Warwick's residents.

B FINDINGS AND CHALLENGES

findings

There are 6 State owned parks totaling over 750 acres offering active and passive recreation.

Goddard State Park is the largest park in Warwick.

The recent state purchase of the remaining 82 acres of the former Rocky Point Amusement Park, combined with the 40.9 acres of Rocky Point oceanfront property previously purchased by the City, will combine to create one of the largest new permanent open space parcels in the City.

Over 1,000 acres of City-owned parks offer active and passive recreation opportunities for residents.

City Park, the largest City-owned park, has beaches, playing fields, walking paths, picnic areas and more.

The Mickey Stevens Complex is in need of significant repairs and renovations to most of its facilities.

Airport expansion will require some recreation amenities to be relocated.

Many residents are not within walking distance of a neighborhood playground or athletic field.

Recreational programs are offered by the city as well as private associations.

Bicycle facilities are limited throughout the city, limiting connectivity.

challenges

Budgetary constraints have delayed important improvement projects to the Mickey Stevens Sports Complex, and to neighborhood playgrounds.

Lack of an integrated Recreation Plan and Capital Plan for improvements, maintenance and upgrade of existing open space and recreation space controlled by either the city or the school department.

There is a need for additional recreation fields (baseball, softball, soccer, lacrosse) in areas of the city, but there is little to no land available for development.

Creating a pedestrian and bicycle network, including multi-use paths, to better connect neighborhoods to parks and other recreational amenities.



WHAT THE COMMUNITY SAID

- There are lots of parks in Warwick but they are not connected or easily accessed.
- The Jesse P. Dawley Memorial Woodland was acquired by the City but there is limited parking, making it difficult for people to access.
- Improved maintenance and facilities at existing parks is more important than purchasing land for new parks or developing additional athletic fields.
- Neighborhood volunteers should be encouraged to help maintain parks.
- Athletic fields are always stressed because of use by schools and by private leagues. The City should look into artificial turf for high-use fields.
- An organized program is needed to connect environmental and beautification programs.
- More resources need to be dedicated to the improvement of the existing athletic facilities.
- There should be one point of contact at City Hall for public contact, coordination with non profit and community group improvements, and park maintenance issues.
- Almost all the survey respondents supported the recent state purchase of Rocky Point.
- The majority of respondents prefer that an expanded Rocky Point have community gathering space and a mix of active and passive recreation.



CURRENT CONDITIONS

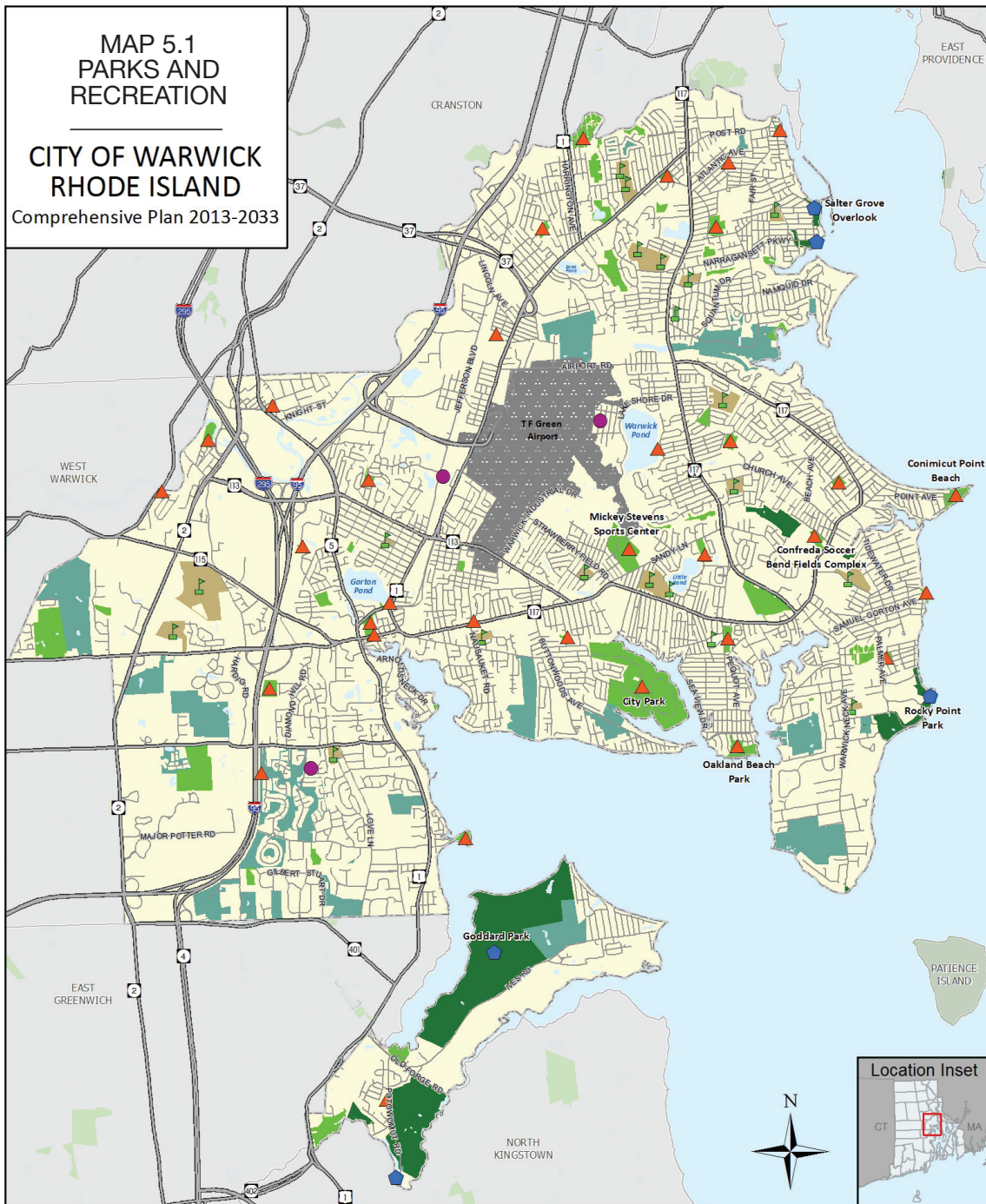
For a city its size, both in terms of population and land area, Warwick has an excellent and extensive system of parks and protected open spaces. Warwick's parks and open space facilities consist of State-owned parks, City-

owned parks, public school facilities, and private lands and facilities—nearly 2,000 acres. Future expansion of Rocky Point Park may include the addition of 82 acres of interior land of the former amusement park to be combined with the current city-owned shoreline to create a 123-acre state park. Some of these parks and open space facilities are permanently protected from development, some are temporarily protected, and some contain no protections and could potentially be developed in the future. The inventory provided in this chapter includes all existing open space and recreation areas and facilities owned and operated by federal, state, regional, and local agencies, as well as quasi-public and private entities where available for public use. Data from the State of Rhode Island GIS was used to compile parcel information, particularly the Conservation Lands Municipal dataset, which includes parcels that are permanently protected from future development by cities and organizations other than the State of Rhode Island, and by Conservation Lands State of Rhode Island, which compiles those parcels protected by the State through fee title ownership, conservation easements or deed restrictions.

1. State Owned Park Facilities

There are a total of six (6) state owned park facilities in Warwick, with an aggregate size of over 750 acres. The state owned facilities include Goddard Park, Longmeadow Acres, the George B. Salter Memorial Grove, Narragansett Parkway, the Narragansett Parkway Access, and park space at the Knight Campus of the Community College of Rhode Island.

Goddard Park. Goddard Park is a regional park that attracts thousands of visitors each year as Rhode Island's most popular metropolitan park. The 489-acre park offers active and passive recreational spaces, including spacious lawns, fields, and forested areas with a variety of trees from all over the world, including 62 deciduous and 19 evergreen species. Visitors can make use of a nine hole golf course, an equestrian show area, 11 miles of bridle trails, 355 picnic tables, 11 game fields, the Carousel Performing Arts Center for weddings, concerts and special events, and a saltwater beach on Greenwich Bay that includes bathhouses.



- Map Legend**
- Protected Open Space***
- State-Owned
 - City-Owned
- Private Open Space****
- Open Space/Recreation
- School Grounds**
- School Recreation Facilities

- Recreation Spaces*****
- State-Owned
 - City-Owned
 - School-Owned
 - Private
- * includes 2011 state and local conservation lands
 ** no permanent deed restriction
 *** includes playgrounds, playfields, and water access points

- Features**
- Highways
 - Roads
 - T F Green Airport
- Boundaries**
- Warwick
 - RI Municipal
 - Other States

0 0.5 1 2 Miles

This map is not the product of a Professional Land Survey. It was created by Goody Clancy & Associates for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Goody Clancy & Associates makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

RIGIS 21ST CENTURY
warwick
 CITY OF LIVABLE NEIGHBORHOODS

Goody Clancy & Associates, 06/03/13



George B. Salter Memorial Grove. Situated along the westerly shoreline of the lower Providence River, George B. Salter Memorial Grove is a public park leased and maintained by the City of Warwick on property owned by the State. A long stone breakwater which runs parallel to the river channel and connects two small barrier islands. Constructed and maintained by the U.S. Army Corps of Engineers, this breakwater is accessed from the park by a narrow causeway and is actively used for fishing along most of its length. In addition to providing fishing access, Salter Grove offers a launch ramp for small boats as well as a landside park.

Narragansett Parkway, the access road to Salter Grove, is home to the annual Gaspee Days Arts and Crafts Festival. In June of 1772, brave colonists from Rhode Island burned the British revenue schooner, *HMS Gaspee*, in what has become recognized as the first overt action leading to the American Revolutionary War. Since 1965 Pawtuxet Village has commemorated this act with the annual Gaspee Days Parade, which begins on Narragansett Parkway. Held annually throughout Memorial Day Weekend, the festival attracts approximately 50,000 people for three days, browsing and purchasing the wares of the 100-150 craft exhibitors along the Parkway. In addition to the arts and crafts festival, there is a food court, free family music entertainment, and other attractions for children located in nearby Pawtuxet Park. A viewing deck provides a view corridor towards the location of the burning of the Gaspee. The proceeds of the annual Arts and Crafts fair benefit the running of the annual Gaspee Days Parade.

The Knight Campus of the Community College of Rhode Island, a state owned higher education facility, has several acres of park and recreation space that is included in the aggregate acreage total listed above.

2. City Owned Park Facilities

There are forty city-owned parks in Warwick (including beaches) totaling over 1,000 acres. Parks and facilities that attract users from around the city include: the Mickey Stevens Sports Complex (Ward 3), Confreda Soccer Complex (Ward 5), Conimicut Point Park (Ward

4), Warwick City Park (Ward 6), Oakland Beach (Ward 6), and Rocky Point Park (Ward 5). The Winslow Softball Fields (Ward 7) will be relocated (Ward 3) because of runway expansion at T.F. Green State Airport.

Mickey Stevens Sports Complex. The Mickey Stevens Sports Complex is the city's central recreational facility. Built on a former landfill, the complex features two bocce courts, three basketball courts, eight tennis courts, three baseball fields, and an indoor pool. The complex is also home to Warwick's two indoor ice rinks for year-round skating, Thayer and Warburton Arenas. Once the "crown jewel" of the city's recreational facilities, the facility is currently in need of major repairs. Although the pool and ice rinks are in good condition, the remainder of the facility is in poor condition. Among the biggest concerns are sinking fields, fields that are too steep, court resurfacing, and outdoor lighting, which requires complete replacement.

Winslow Field Softball Fields. As mentioned above, the Winslow Softball Fields are being relocated to RIAC property located west of Warwick Pond in the Lakeshore Drive area due to airport expansion. This area of land on airport property will not be impacted by current expansion plans, so therefore it was selected to hold these facilities. The City is currently in the process of reviewing field designs at the Lakeshore Drive site. Although leased by the City, this relocation is intended to be a long-term solution. The new park is scheduled to be open early summer 2015.

Confreda Soccer/Bend Fields Complex. This athletic complex contains 3 youth sized and 2 regulation sized lighted soccer fields, with ample parking, as well as baseball and softball fields. It is the home of the Warwick National Little League. The soccer fields are a regional attraction for tournaments. The site also includes a concession building, picnic tables, and a children's tot lot.

Conimicut Park. Located at the end of Point Avenue overlooking Narragansett Bay and the site of the Conimicut Point Lighthouse, the park includes a small beach, and provides some of the best views of Narragansett Bay in the entire city. A boat launch that is ideal for kayaking,

a small tot lot for children, and benches overlooking the ocean complete the park.

City Park. City Park is the largest City-owned park and contains a number of active and passive recreation amenities including a beach along Buttonwoods Cove, 4 softball fields, 1 soccer field, a multi-use field, several picnic areas and shelters, a skate park, a roller hockey rink, 2 dog parks, a model car course, and bathroom facilities. A lacrosse field is planned. Among the park's most popular offerings is nearly 3 miles of paved multi-use paths for walking and bicycling that is used and maintained year-round.

Oakland Beach. Oakland Beach is a Bay inlet beach at the mouth of Warwick Cove, overlooking Greenwich Bay. It contains a public saltwater swimming beach, a boat ramp on Bay Avenue, saltwater fishing, and a small central green space with restrooms, a gazebo, and a small September 11, 2001 Memorial. Several popular restaurants abut the beach, including the Carousel Grille, Top of the Bay, Timmy's Bay One, Marley's on the Beach, and Iggy's Doughboys and Chowder House. Oakland Beach is also home to the very popular and successful Cruise Night every Tuesday evening from June through September.

Rocky Point Park. The City recently purchased 40.9 acres of property along the waterfront of the former Rocky Point amusement park as the newest of the City's waterfront open spaces. The Rocky Point property had been home to one of New England's largest and most famous amusement parks since the mid-nineteenth century, until bankruptcy forced the parks' closure in the mid 1990s. Since its closure, several scenarios for its redevelopment have been proposed by private developers, mainly involving large lot single family residential development. Because of infrastructure constraints, particularly traffic concerns, strong opposition from the city, state, and community groups who wish the property to remain in the public domain, and a severely weakened housing market, the property still remains vacant today. The 123 acre property had been the largest vacant parcel abutting the Atlantic Ocean on the eastern seaboard.

The City, through volunteerism and grant money, has developed a mile-long waterfront walkway in their pur-

chased property that permanently reclaims the waterfront for the public domain. The remaining 82 acres of the property, which include the former amusement park midway, have been purchased by the state. The Rhode Island Department of Environmental Management has developed a Schematic Master Plan for the combined 123 acres, and a plan is in place to potentially combine the City-owned waterfront parcel and some or all of the state-owned parcel into one large State Park.

Gorton Pond. A public beach is located on the eastern shore of Gorton Pond. A fishing pier and small boat dock, as well as handicap accessible facilities are available.

Additional Park and Recreation Facilities. In addition to these city owned park facilities, there are over 30 playgrounds and tot lots, and over 160 playfields for different uses throughout the city. This includes the twenty-two public school facilities in the city (3 high schools, 3 junior high schools, and 16 elementary schools), all of which include some open space or recreation component, whether athletic facilities, tot lots, or unprogrammed open space. Upkeep and maintenance of these facilities is the responsibility of the School District. A summary of the facilities by Ward, with number by type is listed below.

Access to Recreation. Other than tot lots and school yard playgrounds, most of the playfields above are used on a city-wide basis, not strictly to meet neighborhood needs, which can create issues of access. Many recreational facilities are primarily accessed by auto or by bicycle. However, bicycle amenities providing for safe travel are limited within the city.

Research has repeatedly shown that the most important variable in how much and how often people use a green space is distance—especially walking time—from home. They will travel further distances for larger, unique park facilities, but for everyday use, playgrounds and recreation need to be nearby. As Map 5.2 shows, much of Warwick is not within a 5–10 minute walk (1/3-mile) of a local playground or playfield. Pedestrian facilities are also poor or not provided in many neighborhoods, hin-

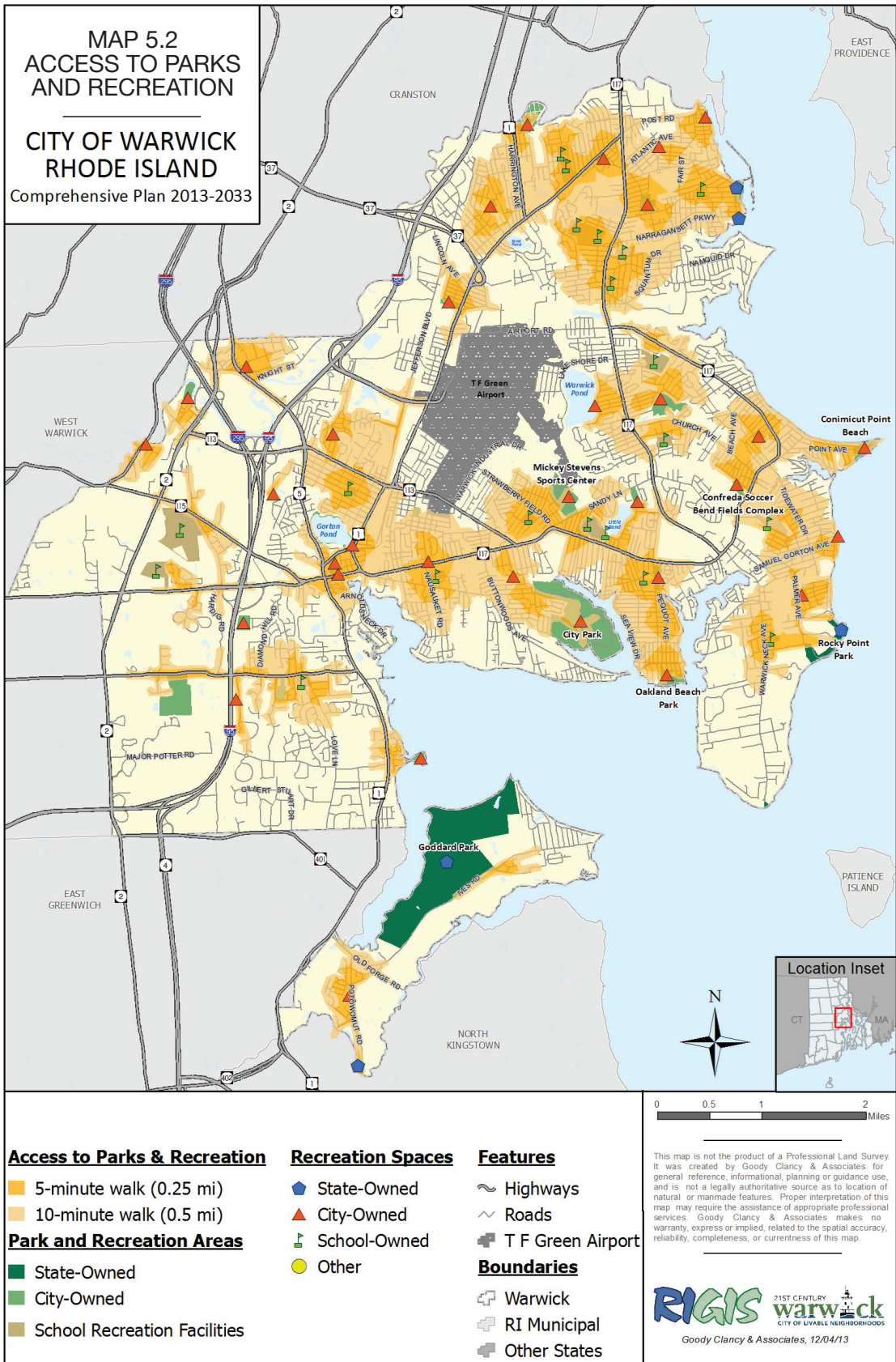


TABLE 5.1: ADDITIONAL PARK AND RECREATION FACILITIES BY WARD

WARD	NUMBER BY TYPE			FACILITIES
	PLAY-GROUNDS	PLAY FIELDS	OTHER*	
1	6	11	5	Pawtuxet Village Park, Adams Playground, Salter Grove, Wyman School, Whitaker Field, John Brown School, Spring Green School
2	3	34	0	Belmont Park, Rhodes School, Aldrich Junior High school, Kitzner Field, Rubery Field, Holliman School, Pilgrim High School
3	2	16	3	Lincoln Park, Lakecrest Park, Lippitt School, Kenney Manufacturing Company Field, Mickey Steven Sports Complex
4	3	5	2	Hoxsie School, Porter Field, Clegg Field, Conimicut Point Park
5	4	18	3	Sherman School, Warwick National Little League, Bend Street Field, Gorton School, Longmeadow Fishing and Boating Access, Palmer Avenue Field, Warwick Neck School, Rocky Point Park
6	4	27	5	G Boyd Field, O’Hara Field, Little Pond Beach, Veteran’s High School, Champlin Field, Oakland Beach Park, Warwick City Park, Kerri Lyn Playground
7	3	16	2	Gorton’s Pond Beach, O’Brien Field, Apponaug Park, Winslow Playfield, Robertson School Playfield, Normandy Drive, Greenwood School Playfield, Iris Avenue Field
8	4	25	1	Toll Gate School Complex, Scott Elementary School, Pontiac Playground, Father Tirocchi Playground, Natick Dam Overlook, Warwick Continental Little League Fields, Halifax Street Playground
9	2	9	6	Duchess Street Field, Cedar Hill School Ball Field, Sleepy Hollow Tennis Courts, Chepibanoxet, Goddard Park, Potowomut School, Potowomut Pond

*Other includes swimming pools, skating rinks, fishing, boating, skate parks, etc.

dering safe movement by foot. (See Chapter 9: Transportation for more on Bicycle and Pedestrian facilities.)

Department of Parks and Recreation. All programmatic elements at the city’s parks and recreation facilities are managed by the Department of Parks and Recreation. The Parks and Recreation Department oversees a wide range of facilities for both recreation and athletics, and also administers and implements harbor rules and regulations as related to the Ordinances of the City of Warwick. A variety of private, nonprofit athletic and sports associations use the city’s parks and recreation facilities and offer baseball, softball, football, hockey and soccer throughout the year.

Maintenance. The Field Maintenance Division of the City’s Department of Public Works is responsible for the maintenance of all city owned parks and recreation facilities. This includes large parks such as City Park, as well as playgrounds, play fields, other recreation facilities and fields (except school properties), and parking facilities. General maintenance and operations are for the

most part funded through the annual General Fund, but in some cases maintenance is performed by nonprofit athletic leagues and associations. Renovation, redesign and major rehabilitation is funded by the Capital Budget. The budget constraints at the time of writing this plan have reduced capital plans for recreational facilities. Currently, the only project included in fiscal year 2013/2014 is \$250,000 for the redesign of the McDermott Pool locker rooms. There are no funds currently allocated for the field and lighting repairs required at the Mickey Stevens Sports Complex, despite a \$7 million bond measure passed in 2006 to bring the complex facilities up-to-date. Due to budgetary constraints, repairs have been delayed.

Although not currently in the city’s current Capital Budget, maintenance of the city’s playgrounds is one of the highest priorities. In 2006 the city approved a \$3.5 million bond measure to bring neighborhood playgrounds up-to-date, of which some funds were to be used to identify and construct additional playground locations in areas determined to be underserved. However, similar to

monies allotted for repair of the Mickey Stevens Complex, budgetary constraints have delayed such projects.

3. Shoreline Recreation

Shoreline access in Warwick is provided in three forms: access points designated by the Coastal Resources Management Council (CRMC) as public rights of way, City of Warwick Designated Rights of Way, and platted streets that end at the shoreline. There are approximately 23 CRMC-designated public rights-of-way to the shore; most are simple grass paths off streets and drives that lead to small sandy beaches, cobble beaches, or marsh grass areas. There is a significantly greater amount of right-of-way to the shore extending from platted streets. There are approximately 36 rights-of-way to the shore, mostly in the form of beach ways or passage ways, as well as over 100 public rights-of-way to the shore from dedicated highway access points.

Shoreline Recreation Facilities. Recreation facilities along Warwick’s 39 miles of shoreline include major parks such as Chepiwanoxet Park, Salter Memorial Grove, City Park, Pawtuxet Park, Rocky Point Park, and Goddard State Park. Public Beach facilities are located at Conimicut Point, Oakland Beach, Bayside Beach, City Park, and Goddard State Park. Community beaches are located at Gaspee Point, Conimicut, Mill Cove, Buttonwoods, Beachwood Drive, Nausauket, and Potowomut. Private, for-profit facilities include the Warwick Country Club, and private non-profit facilities include Our Lady of Providence Seminary, the Masonic Temple site, and Rocky Hill Country Day School.

4. Warwick Harbor Management Plan and Recreational Boating

The Warwick Harbor Management Plan and the Harbor Ordinance (Chapter 24 of the Warwick City Code) guide the use and development of the City’s waters in order to enable access to the shore from the water. The plan also delineates mooring fields within Warwick’s waters. These areas are designated as single use areas for commercial and private moorings. Presently, mooring

permits are given on a first come, first served basis. Riparian property owners can, at the discretion of the City, be permitted to place a mooring within reasonable proximity to their property. With numerous protected coves along its shoreline, Warwick is a popular location for recreational boating activities. Within the city, there are approximately 19 boat yards, marinas, and commercial docks currently operating its waters.

Marinas. Marina facilities include Buttonwoods Cove/Brush Neck Cove (The Little Rhody Yacht Club); Warwick Cove (11 marinas, including Angel’s Marina, Harbor Light Marina, Bay Marina, Wharf Marina, Winstead’s Marina, Aqua Vista Marina, C-Lark Marina, and Warwick Cove Marina); Apponaug Cove (Apponaug Harbor Marina, Ponaug Marina); Greenwich Cove (East Greenwich Yacht Club, Norton’s Shipyard and Marina); Greenwich Bay (Brewer Yacht Yard, Greenwich Bay Marina Club); and Pawtuxet Cove (Pettis Marine Boat Yard). These marinas contain over two thousand five hundred (2,500) slips.

Docks. Several docks in the various coves are designated to commercial fishermen, and the City owns public docks in both Apponaug Cove and Warwick Cove. Additionally, there are numerous private docks throughout the City’s waters, as well as commercial shellfishing docks that support the historic heritage of Greenwich Bay’s commercial fisheries.

Public Boat Ramps. Boat owners in Warwick and surrounding communities who do not have access to moorings or dock space within the city rely on public access ways and launching ramps throughout the city to access to the water. There are approximately 13 boat ramp locations in the City, ranging in condition from good (Oakland Beach, Passeonquis Cove, Goddard Park, Apponaug Cove, Gorton Pond) to fair (Bayside Beach, Arnold’s Neck, Edgewater Beach) to poor (Conimicut Point, Pawtuxet Park, Salter Grove, Robert Ave., Waterfront St.).

5. Private Recreation Facilities

There are a number of privately owned open space and recreation facilities within the City limits, including golf courses, marinas, and private school athletic facilities. Marinas are described in the previous section. Private golf course facilities include Warwick Country Club Valley Country Club, Harbor Light Golf Course, and Potowomut Golf Club.

6. Permanently Protected Non-Recreational Open Space

Although all permanently protected open space parcels within the City are designated by the State as conservation land, many fall under the parks and recreation

TABLE 5.2: PERMANENTLY PROTECTED OPEN SPACE BY WARD

WARD	NUMBER OF PARCELS	ACRES	SITES
1	5	15.5	Kingston Street Wetland Occupessatuxet Cove Marsh Passeonkquiss Cove Waterfowl Habitat John Francis Ravine
2	29	22.2	Pawtuxet River Wetland Ring & George Street
3	1	0.2	N/A
4	3	0.4	Spot Park Conimicut Point
5	8	56.3	Morris Farm Warwick Cove Heights Ave Leroy/Paine Rocky Point Blueberry Farm
6	None	n/a	n/a
7	1	2.2	Little Swamp/Sutton
8	None	n/a	n/a
9	11	219.4	Potowomut Farm/Greene Ives Bluff Hunt River Gilbert Stuart Open Space
TOTALS	58	316.0	

Source: RIGIS, 2010

category, which has already been discussed previously in the chapter. The remaining parcels will be discussed in this section.

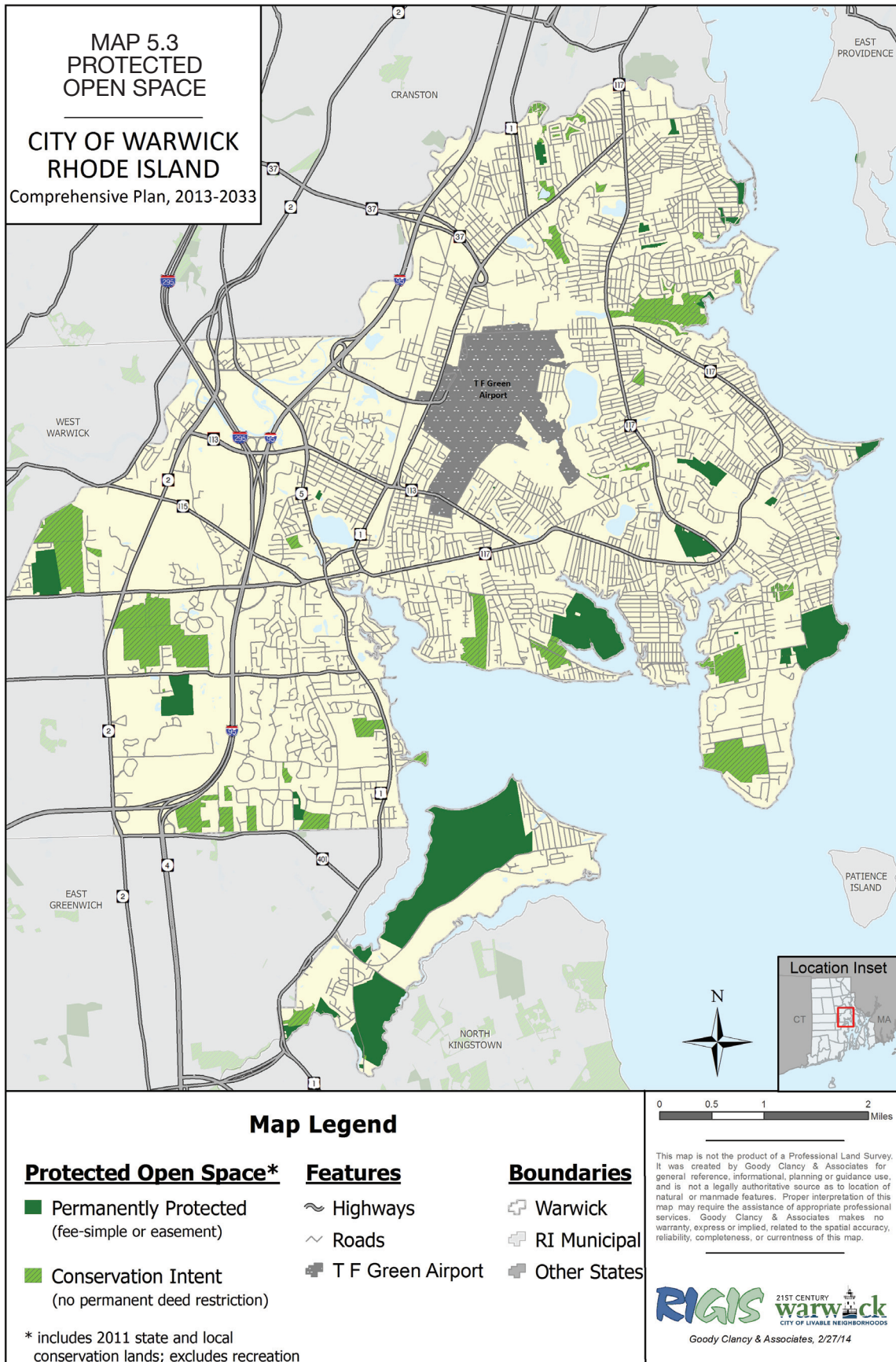
There are approximately 58 parcels of non-recreational, permanently protected open space within the city limits, with a total land area of 316 acres. These parcels are protected either by the State of Rhode Island, the City of Warwick, or non-government land protection organizations through fee title ownership, conservation easements, or deed restrictions. Of the total acreage, 83 percent or 263 acres has gone into permanent protection since the previous comprehensive plan in 1990.

Among the more prominent are Dawley Farm (Ward 9) which includes passive recreation amenities such as walking trails, and Morris Farm (Ward 5) for which the City owns development rights. Barton Farm (Ward 8) is home to the West Bay Community Action Program

TABLE 5.3: CONSERVATION INTENT PARCELS BY WARD

WARD	NUMBER OF PARCELS	ACRES	SITES
1	1	3.8	Passeonkquiss Cove Wetland
2	42	50.7	Pawtuxet River Wetland Belmont Park Cranberry Bog Cushing Road Wetland Dryden Heights
3	5	7.9	Buckeye Brook
4	none	n/a	n/a
5	66	13.7	Bayside Field/Barton Homestead
6	none	n/a	n/a
7	2	72.3	Masonic Youth Center
8			Barton Farm Country Club Estates Little Gorton Pond Wetland
9	11	207.7	Chepiwonoxet Point Dawley Farm Larchwood Estates Hunt River Major Potter Hills Maskerchugg Wetland
TOTALS	135	434.5	

Source: RIGIS, 2010



(WBCAP), a non-profit organization that supplies fresh vegetables for low income families. Also included on the Barton Farm property is the City tree farm, preserved open space, and a conservation easement on the wetlands which was sold to the Natural Resources and Conservation Service (NRCS). In 2013, the City applied for and received a Recreational Trails Grant to design and construct a handicapped-accessible pedestrian path at the Barton Farm. The project will include an overlook deck and parking improvements. Construction is expected to begin in Spring 2014. For a complete listing of conservation parcels, see the Appendix.

Conservation Intent Lands. In addition to permanently protected open space, there are nearly 135 parcels of land totaling 435 acres that are categorized as “Conservation Intent.” These parcels, which include local parks, recreational areas, or parcels within cluster subdivisions, are not permanently protected by fee titles or easements, rather they are protected by good will. Many of these parcels are wetland areas, and are therefore undevelopable. However, several sites, such as Barton Farm in Ward 8, Dawley Farm and Chepiwonoxet Point in Ward 9, and Bayside Field in Ward 5, could be developed if no additional measures are taken.

FUTURE PARK AND RECREATION NEEDS

According to the Deputy Director of Parks and Recreation, there is no current need for additional major parks within the city. With the recent purchase of land at Rocky Point, combined with existing active and passive recreational areas like City Park and Goddard Park, the city is currently well served.

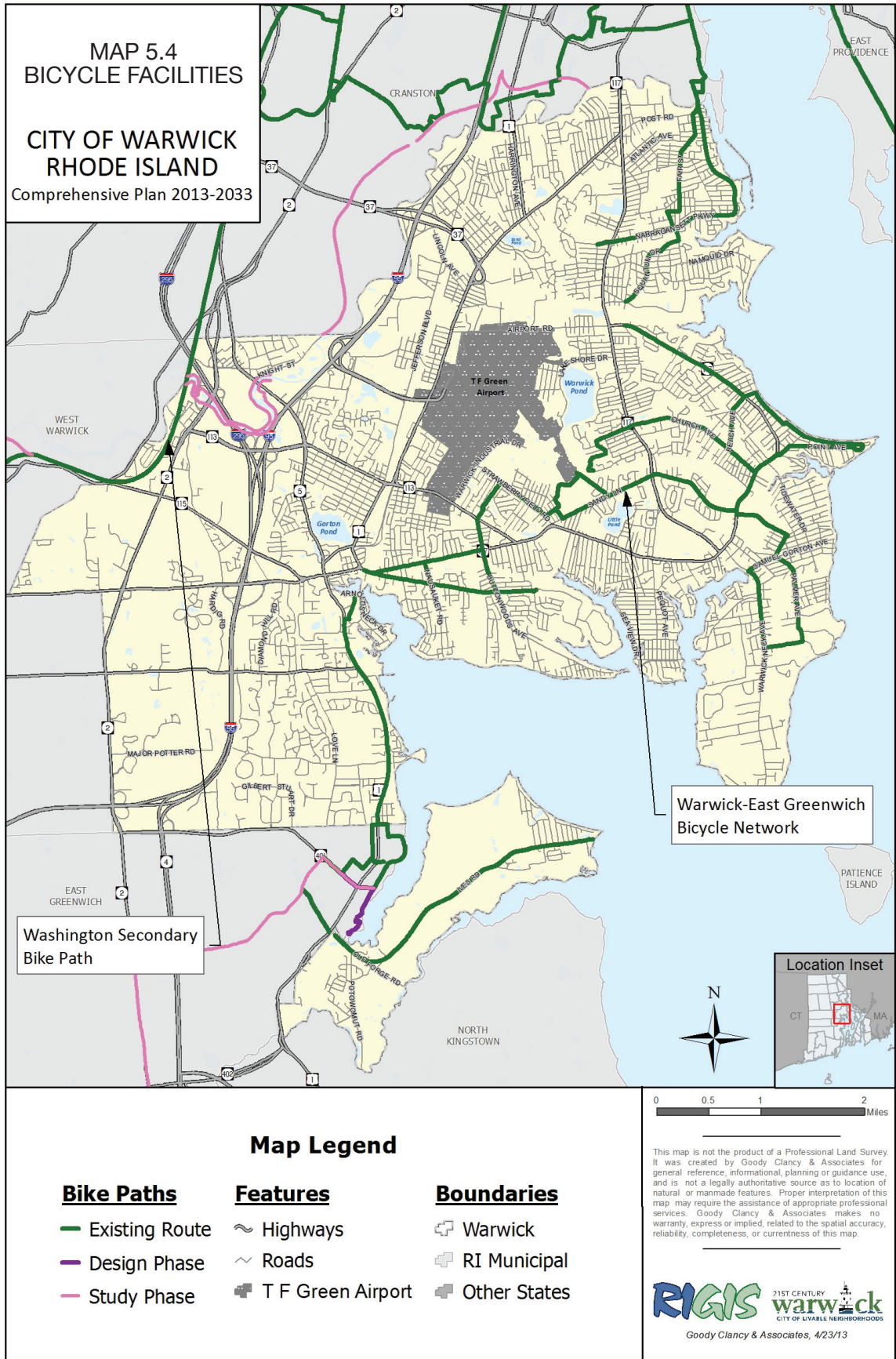
However, planners for urban and mature suburban park systems are increasingly emphasizing the importance of “walk-to” parks—access within a safe, barrier-free, five to ten-minute walk. At the same time, Warwick residents are expressing great interest in being able to walk more and to walk more safely, and in having city destinations connected for walking and biking. More parks may be

needed to expand the network to provide a park within a ten minute walk of every resident, with improved physical connectivity such as walking or biking trails. The city appears to be underserved by tot-lots (which have been shown to have low utilization and should be candidates for replacement with new, small “walk-to” parks). Because backyards are so widespread in Warwick—and the population is aging—this may not be a significant issue in 2012, when this plan is being written. However, if a successful generational transition occurs in the next several decades and walkability continues to be a desired characteristic, the lack of small neighborhood parks or civic spaces serving as nodes in a larger connected system could become a problem.

The need for play fields and playgrounds (and bicycle facilities) was a common theme throughout the planning process. Although Warwick tends to have ample playgrounds, playfields and recreation facilities in areas such as Apponaug, Sandy Lane, Pawtuxet, and Wildes Corner, underserved areas include Hillsgrove, Norwood, Lakewood, much of Cowesett and residential areas in Ward 8. In any case, the Department of Parks and Recreation should survey residents and park users every five to ten years to identify changing needs. It is important to include people who do not, at present, use parks or recreation programs to find out why.

Winslow Field will be permanently relocated to the Lakeshore Drive area. Installing artificial turf at many of the City’s worn recreation facilities should be considered. Artificial turf allows fields to be used intensively, without the resting needed on natural turf, and it needs less maintenance. In the right location, artificial turf fields could become well-used centers for team sports, and could attract tournaments that could establish a consistent income stream for field development and maintenance.

Bicycle Recreation. Warwick has seen a renewed interest in providing dedicated bicycle / multi-use facilities and more bicycle-friendly thoroughfares. Existing, designated state and local bicycle facilities within the City of Warwick consist of two principal elements: the Washington Secondary Bike Path and the Warwick-East Greenwich Bicycle Network. The Washington Second-



ary Bike Path is a 14.2-mile dedicated multi-use path constructed along a former railroad corridor that runs through Warwick, West Warwick, Cranston and Coventry. The 1.6-mile Warwick Bike Path, which is part of the larger system, is largely limited to those residing in Ward 8 neighborhoods in close proximity to the path.

The **Warwick-East Greenwich Bicycle Network** includes 28 miles of signed routes including loops and spurs to Conimicut Point, Warwick Neck / Rocky Point, City Park in the Buttonwoods neighborhood, and Potowomut Neck / Goddard State Park. Other segments link with signed bike lanes in Cranston and continue north into Providence. The Apponaug By-Pass will link the Network through Apponaug Village by way of a 6 foot dedicated bicycle lane in Post Road between Apponaug Four Corners and Williams Corner.

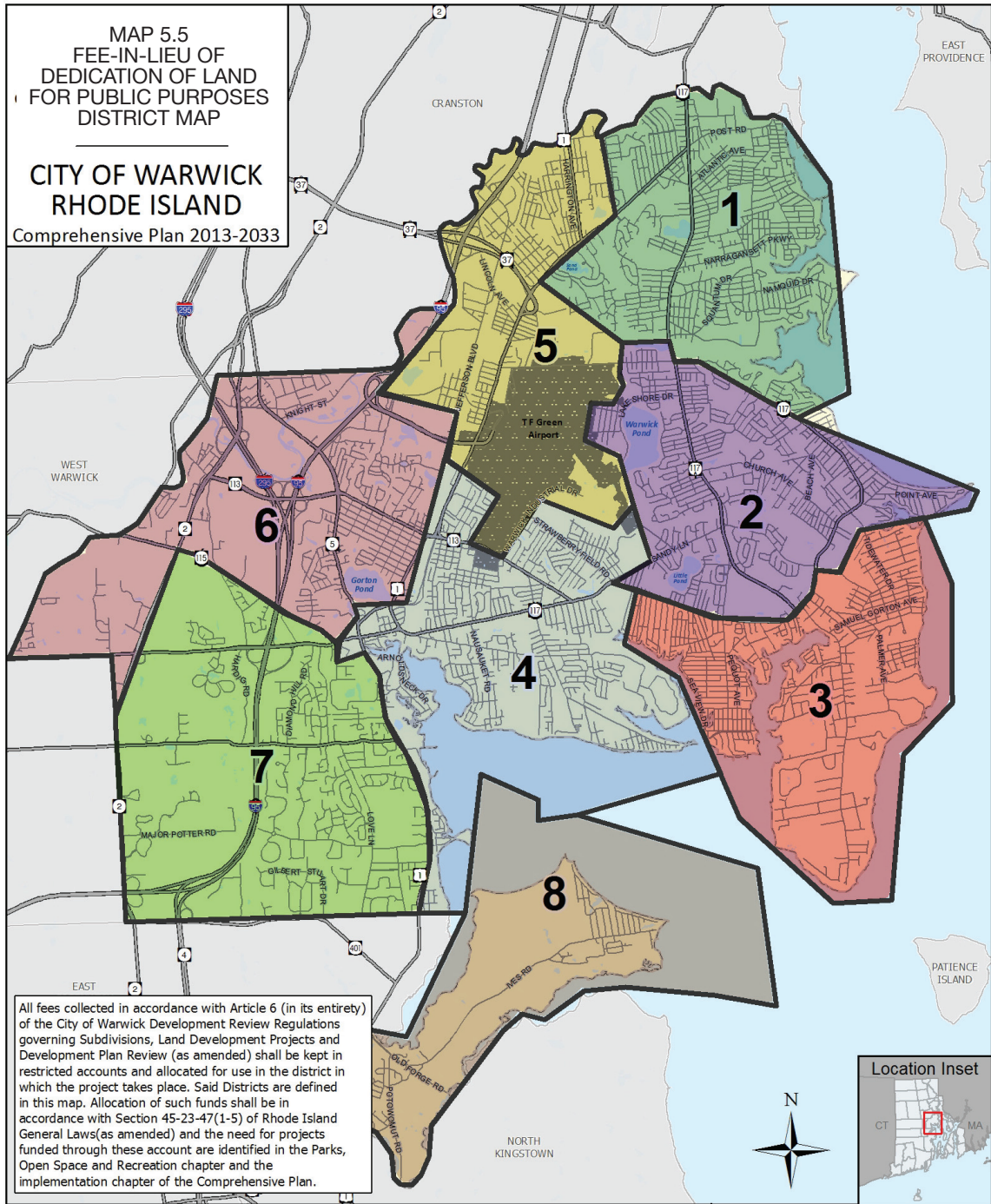
Proposed Facilities. A number of proposed improvements to the Warwick-East Greenwich Bicycle Network will provide circulation, safety, and recreational benefits for cyclists. Projects include:

- The **Hoxsie Multi-Use Path/Connector**, which will shortcut the Hoxsie Four Corners intersection by linking the currently disconnected West Shore Road and Squantum Drive segments across the Spring Green Pond stream via the Landsdowne Road right-of-way
- The **Buckeye Brook Multi-Use Path**, which will link portions of the existing network in the vicinity of the Mickey Stevens Sports Complex through the provision of a new path over a brook crossing to Rodney road
- An **Oakland Beach loop**, which would connect to the existing network at the public library along Sandy Lane and run south, crossing West Shore Road and continuing to Oakland Beach.
- The **Rocky Point Walkway Extension**, which is an extension of Meadow View Avenue (the former trolley right of way) from Young Avenue to Palmer Avenue.

Future recreation improvements under consideration. While major renovation of the Mickey Stevens Sports Complex is the top priority for recreation staff, the City is also working with the U.S. Army to take over the former Cooper Army Reserve Center, which is adjacent to Mickey Stevens, to transform it into a teen and

recreation center. The proposed program would provide a gymnasium, an exercise room, a teen center with activities led by teens, a dance and exercise studio, an art room, a theater, music rooms, a woodworking space, a commercial kitchen, and general classroom space. The \$3.5 million recreation improvements bond passed in 2006, but as yet not activated, could be a source of funding for this project. In addition to the recreation opportunities at the Cooper Center, recreation staff also note possible need for lacrosse fields, as this is the fastest growing sport in the country, and that the City's two skate parks have obsolete, first-generation design and will need upgrading. As noted earlier, however, it is advisable to survey the population (and not just current users of parks and recreation facilities and programs) about their recreation needs and preferences on a regular schedule, so that these quality of life investments are responsive to the needs of city residents.

Fee-in-lieu of dedication of land for public purposes. The City of Warwick's Development Review Regulations give the Planning Board the power to determine whether a proposed subdivision or development project is required to dedicate a portion of the land area to preserve unique natural characteristics or to provide open space for residents and users. The Planning Board may also determine that a fee-in-lieu of this dedication is beneficial to the goals of the City. These fees can only be used in the district in which the project is located, as identified on the following map.



MAP 5.5
FEE-IN-LIEU OF
DEDICATION OF LAND
FOR PUBLIC PURPOSES
DISTRICT MAP

CITY OF WARWICK
RHODE ISLAND
Comprehensive Plan 2013-2033

All fees collected in accordance with Article 6 (in its entirety) of the City of Warwick Development Review Regulations governing Subdivisions, Land Development Projects and Development Plan Review (as amended) shall be kept in restricted accounts and allocated for use in the district in which the project takes place. Said Districts are defined in this map. Allocation of such funds shall be in accordance with Section 45-23-47(1-5) of Rhode Island General Laws(as amended) and the need for projects funded through these account are identified in the Parks, Open Space and Recreation chapter and the implementation chapter of the Comprehensive Plan.

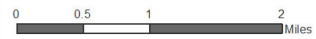
Map Legend

Features

- ~ Highways
- ~ Roads
- T F Green Airport

Boundaries

- Warwick
- RI Municipal
- Other States



This map is not the product of a Professional Land Survey. It was created by Goody Clancy & Associates for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Goody Clancy & Associates makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.



F RECOMMENDATIONS

GOAL 1

A preserved and enhanced parks and open space system.

POLICIES

- Integrate park, open space, waterfront, and recreation planning into a broader “Green Systems” planning framework.
- Pursue improved connectivity of park, open space, waterfront, and recreation land with neighborhoods and other community destinations.
- Pursue improved accessibility to all park, open space, waterfront, and recreational land.
- Improve trail access on open space lands.
- Promote high quality park design and environmental stewardship.
- Protect, preserve, mark, map, maintain, and expand Warwick’s coastal public access points.

STRATEGIES

- A. Develop a Parks, Open Space, Waterfront, and Recreation section of a Green Systems Master Plan that provides a roadmap for current and future needs at both the neighborhood and city-wide levels.

The Green Systems Master Plan for Warwick would integrate planning for natural resources, open space, greenways, the waterfront, parks and recreation, and sustainability.

Actions:

1. Inventory and evaluate the condition of all parks, open spaces and recreation facilities available for public use, including those not owned by the city.
Although the City is not responsible for facilities that are not city-owned, from a resident’s point of

view, it does not matter who owns the park. Understanding how all public park resources fit together as an integrated system is essential.

2. Use the planning process to develop a schedule of regular meetings for all park and recreation managers in the city so they can easily collaborate.
Improved communication between managers is a key element in developing a framework for identifying user needs patterns and ensuring that usage between the park facilities is better balanced. This could lead to decreased wear and tear on certain facilities, helping the City realize reduced maintenance costs in the future.
3. Survey park users to determine changing needs and interests, including post-program surveys to gauge satisfaction with programs and events.
Understanding the needs of the park users will help the park managers and the City better utilize and program the park space and activities. This aids in identifying the programs that will attract the most users, and could potentially lead to fee-based programs to defray maintenance costs.
4. Identify measures to use existing facilities more efficiently.
These measures could be incorporated with the programming measures outlined above to manage the use of each park in a more sustainable and cost effective manner.
5. Identify the potential for revenue-producing activities that could help fund higher levels of maintenance, enhanced facilities, more events, and other benefits.
Those aspects of park and recreation facilities and programs that provide a benefit to the entire community should be free to all. Programs that provide more benefit to the individual than to the community as a whole may be suitable to be fee-based.
6. Identify how the parks and recreation system can be effectively integrated with an overall green system of environmental health and sustainability.

B. Work towards a goal of a park within walking distance of every resident of Warwick.

Research has shown that people are more likely to use parks if they can easily walk to them. Older park system standards based on a certain number of park acres per 1,000 people were developed for expanding suburbs, when a lot of greenfield opportunities were available. This is not the case for mature suburbs like Warwick. The Trust for Public Land (TPL) Center for City Park Excellence has recently released a scoring system for cities called ParkScore.¹ Access is an important aspect of this system. TPL’s standard is a safe, barrier-free ten-minute walk from home to a park, which is approximately one-half mile.

Actions:

1. Work with residents to identify the appropriate time and geographic measure for walking distance from home to a park.
Once this measure is adopted, it should be kept in mind in developing initiatives to connect community destinations with walking and biking routes.
2. Identify both existing municipally owned and privately owned parcels for conversion to parks or permanently protected open space in underserved areas.
This work can also be done as part of the identification and prioritization of specific parcels of land for acquisition, development rights, foreclosing right of redemption (tax sale properties), conservation easements for farmland preservation, and open space purposes that have the greatest potential for preserving Warwick’s natural resources.
3. Identify and create “walk-to” neighborhood park spaces (playgrounds/playfields), where feasible, in underserved areas.
A priority list of parcels for acquisition or conversion should be developed as part of the overall planning process that identifies the areas of biggest need within the City.

C. Focus on improving facilities and programming at existing parks and develop parks and open space

maintenance guidelines that include a scalable annual maintenance budget and identify alternative sources of maintenance income and responsibility.

Actions:

1. Create a system of maintenance standards to meet public expectations and give guidance to workers.
Meet with residents to develop a set of maintenance standards accompanied by photographs, as in the example below, to guide maintenance workers on acceptable and unacceptable maintenance levels.²
2. Partner with businesses, nonprofits, and neighborhood groups to enhance park maintenance through an Adopt-



a-Park program or development of “Friends” groups. The City should actively seek participants in the program and develop an outreach program that targets businesses in close proximity to the parks and open space parcels.

3. Incorporate low-maintenance design and sustainable practices in park and recreation maintenance.
Because parks are long-term assets, sustainable management practices will enhance benefits to future generations. Sustainable management in the park system can also provide an educational example to private property owners of how to manage their landscapes. On a life-cycle basis, green systems can bring significant savings, and it may be possible to obtain grants and other assistance to plan and begin implementing the program. Best practices include:

¹ <http://parkscore.tpl.org/>

² http://sf-recpark.org/ftp/uploadedfiles/wcm_recpark/Mowing_Schedule/SFParkMSManual.pdf

- Choose turf varieties that require lesser amounts of fertilization, irrigation, and mowing
- Explore the use of artificial turf for intensively used athletic fields because the fields can be used without resting and do not require the water and other inputs that natural turf does. Grants may be available to install artificial turf.
- Recommend employing integrated pest management and natural alternatives for management of private golf courses and other areas.
- Design new recreation buildings to take advantage of natural lighting and ventilation during some parts of the year, in order to reduce the need for air conditioning and lighting.
- Seek to use recycled and recyclable materials for walls, paving and recreational equipment.
- Explore alternative energy sources, such as solar or wind power, to reduce electricity costs over time in recreational structures.

and also create routes of varying length, leading to increased use based on ability, age, etc.

4. Develop improvements for increased neighborhood connections to parks, such as new sidewalks or multi-use paths.
Incorporating these improvements into the individual Village Master Plans that are updated every five years makes those neighborhoods eligible for Community Development Block Grant (CDBG) funds, which can be used to develop these connections.
5. Work with neighboring communities to form links to regional trails and open space systems.
Actively pursue strategies and identify opportunities with the planning departments in Cranston, West Warwick, East Greenwich, and North Kingstown to take advantage of funds, available land, and purchase or swap opportunities.
6. Create an easy to use trail/bike/greenspace map that can be accessed from the City’s website.
The map should be developed so that it is legible when printed on letter size paper from a home printer.

D. Pursue improved connectivity of open space and recreation land through the development of “green corridors” consisting of new and existing bicycle and pedestrian trails and on-street routes.

Actions:

1. Identify opportunities for “land swaps” to develop systems of contiguous permanently protected open space. The City can actively seek these opportunities once a “master list” of properties has been developed and available City land has also been identified.
2. Develop further refinements to the existing bicycle and pedestrian trail system in locations that currently connect major open space parcels.
Improvements such as pavement maintenance, signage, and increased visibility all contribute to a safer and more accessible bicycle and train system.
3. Develop new enhancements to the bicycle and pedestrian trail system by identifying potential new routes that can connect major open space parcels.
These new routes, such as the Meadow View Avenue spur at Rocky Point, increase connectivity

E. Maintain high standards of urban design, environmental stewardship, and aesthetics in public open spaces to preserve and further enhance the character of the City.

Actions:

1. Continue and expand the development of the municipal tree farm at Barton Farm.
Focus on species that are proven to be urban tolerant. Keep a diversity of small, medium, and large deciduous trees in stock. Develop a maintenance plan for the tree farm to keep it free of invasive weeds, and encourage volunteer stewardship of the Barton Farm.
2. Continue and expand the City’s street tree planting program, and seek innovative funding methods.
Street trees are proven to sequester carbon, aid in stormwater filtration, reduce heat island effects, and

aid in noise and wind buffering. Street trees lead to healthier cities.

3. Continue “Adopt-a-Spot” and similar programs to encourage private funding of beautification of the public realm, such as in street medians.
Because aesthetic and maintenance standards can vary, the City should accept the donations in money and then contract with a landscape designer and firm to design and maintain all the plantings in the program around the city. Similarly, signage giving credit to the donors should be visible but not obtrusive.
4. Enact necessary regulations for sufficient review of development plans for both private and public improvements to ensure that neighborhood and municipal urban character is preserved and enhanced
Neighborhood and municipal character is something that should be outlined and articulated in Village Master Plans. Regulations that require development plans to adhere to the Village Master Plans would ensure their compliance.

F. Protect, preserve, maintain, and expand Warwick’s coastal and fresh water public access points.

Actions:

1. Promote inclusion of recreational and community meeting space uses in the State’s portion of the Rocky Point parcel.
Respondents to the Comprehensive Plan survey preferred a mix of passive and active recreation and favored a community meeting place on the site.
2. Maintain and consistently update the inventory of all public rights-of-way to the coastline found in the Warwick Harbor Management Plan.
An updated Harbor Management Plan that is accessible to all residents is the best tool for understanding where public points of entry to the coastline can be found.
3. Clearly demarcate and maintain, wherever feasible and practicable, the public rights-of-way identified in the inventories.

The public rights of way should be clearly marked at their points of entry to ensure access for all residents.

4. Discourage the abandonment or sale of public rights of way to coastal and inland water access points.
These access points are critical to maintaining access to Warwick’s coastline to the greatest extent practicable.
5. Identify, retain, and foreclose rights of redemption on all tax title properties within 200 feet of the shoreline and all inland water bodies that provide potential access points and scenic vistas to the shore, freshwater ponds, and rivers.
A master list of potential properties should be developed, prioritized by most critical areas necessary for increased access and most readily attainable properties for foreclosure.
6. Develop a recreational Blueway Trail Initiative to map and enhance recreational opportunities in local waterways and adjacent open space and create an interactive water trail map that can be accessed from the City’s website.
See www.exploreri.org for more information on blueways. As with the trail/bike/greenspace map, the map should be developed so that it is legible when printed on letter size paper from a home printer.
7. Improve existing and create new access points for canoeing, kayaking, and boating on both rivers and ponds and in the coves and the bay.
Increasing opportunities for water access is another method to creating healthier, livable cities.

GOAL 2

Recreation facilities that are state-of-the-art and that meet the needs of all Warwick residents.

POLICY

- Promote, maintain, and enhance a broad range of city-wide and neighborhood recreational facilities which meet the needs and desires of Warwick’s residents.

STRATEGIES

A. Evaluate park and recreation needs regularly.

Actions:

1. Survey Warwick residents periodically to identify changing needs for recreation programs and facilities for youth, adults and seniors.
Surveys should be taken approximately every 5 years and be sure to include residents who are not active in team sports or other organized programs, as well as those who are heavy users of recreation programs.

B. Seek a variety of funding sources for operational and capital improvements to the park and recreation system.

Actions:

1. Identify additional funding sources for programs through channels such as higher user fees and private sources. Ensure that lower-income residents have access to recreational programs through the development of a recreation department scholarship fund or a similar mechanism.

2. Encourage neighborhood associations to adopt and maintain neighborhood recreational facilities and open spaces.
This also encourages community “buy-in” that helps in long term maintenance and upkeep.
3. Provide funding for capital improvements to the Mickey Stevens Athletic Complex.
Establish a public-private partnership to fund improvements (i.e. naming rights, branding etc.).

C. Ensure the availability of park and recreation resources to persons of different abilities and different preferences.

Actions:

1. Establish and implement a plan to make all of Warwick’s public recreational facilities fully accessible to persons with disabilities.
Many of these improvements can be funded through Community Development Block Grants, as well as other Federal funding sources.
2. Ensure that spaces for both active and passive uses are available in all parks.
Program requirements for all parks should be reviewed and revised as necessary based on the demographics of the neighborhood they serve.



Historic and Cultural Resources

FROM A WARWICK RESIDENT

“One thing I enjoy about other towns in RI that Warwick doesn’t have much of is a historical downtown area. Apponaug is small, but the same general idea.”



GOALS AND POLICIES

GOALS

POLICIES FOR DECISION MAKERS

HISTORIC PRESERVATION

The city's historic resources, including structures, natural features, and character areas, are protected and preserved.

- Support a coordinated historic preservation program encompassing resources outside as well as inside local historic districts.

Residents' and visitors' experience of Warwick is enhanced by a sense of the city's history.

- Increase public awareness of Warwick's historical legacy including buildings, village centers and cemeteries.
- Enhance public awareness of the economic benefits of historic preservation in Warwick.
- Promote educational efforts in the schools and engender a preservation ethic among Warwick residents.

ARTS AND CULTURE

Warwick's arts community is vibrant and growing.

- Enhance access to resources for arts and cultural organizations.
- Improve promotion of arts and cultural activities and initiatives as part of the city's economic development strategy.

B FINDINGS AND CHALLENGES

findings

Warwick has significant Native American archeological resources and is rich in revolutionary war civil war, agricultural and industrial history.

Three local historic districts require design review through zoning overlays: Pawtuxet Village (1989), Apponaug Village (1993) and Pontiac Village (1995).

The Secretary of the Interior's Standards for historic rehabilitation are the only historic design standards used by the City in local historic districts. There are no standards specific to each area.

Historic overlay zoning was replaced by Village District Zoning for properties located along the Post Road commercial core of Apponaug Village in 2011.

There are 7 National Register historic districts, 29 National Register properties, 323 properties are listed in the Rhode Island State Register of historic properties, and there are approximately 150 historic cemeteries.

Outside of the local historic districts, historic structures or sites are not protected from alteration or demolition.

Many historic resources have been lost to development in the last 50 years.

Warwick's development pattern is characterized by small villages of historic homes and structures that date back hundreds of years, rather than by a central downtown.

The City's historic resources include landscapes, natural sites and varied structures such as bridges, stone walls, streetscapes, Mark Rock, Drum Rock, and Rocky Point.

As we advance into the 21st century, it is important to recognize that Warwick has a considerable legacy of mid-20th century buildings and placed that warrant fresh consideration for their historical significance

challenges

Promoting more public awareness of the value of Warwick's remaining historic resources.

Promoting more understanding about the economic and "quality of life" benefits of historic preservation.

Establishing programs to better identify, celebrate, and promote protection of Warwick's historic resources located outside the local historic districts.

Mitigating the impact of new development on historic resources.

Identifying and protecting archeological resources.

Providing incentives for historic preservation

Funding historic awareness and historic preservation activities



WHAT THE COMMUNITY SAID

- 89% of survey respondents said that “preservation of historic buildings and traditional neighborhoods” was “very important” (53%) or “somewhat important” to the future of Warwick
- 80% of survey respondents said that the “availability of arts and cultural opportunities” was very important (38%) or somewhat important to the future of Warwick



EXISTING CONDITIONS

Communities that have a strong historic and cultural identity are not only important to existing residents; they often attract new residents, visitors and investment. Individual historic buildings, structures, landmarks and larger historic districts tell the story of a place, providing a unique character that can impart a place with a strong identity that is greater than the sum of its parts. It is this unique, historic “sense of place” that enhances economic competitiveness, attracting residents who want to live in distinctive neighborhoods; visitors who seek interesting, vibrant places to work, shop or spend leisure time; and investors who view stable and unique locations as attractive opportunities for investment. Historic preservation is also a resource-efficient component of sustainable practices. Using historic structures, whether for an original purpose or a new adaptive reuse, conserves natural resources needed to build replacement structures, while taking advantage of past building practices that used natural light and ventilation features.

While the City of Warwick has three local historic districts where structures are protected from historically inappropriate exterior changes—Pawtuxet Village, Apponaug Village, and Pontiac Mills—many historic sites lack protection. Much of the ensemble—the historic context—to the remaining historic buildings has been

lost over the years, and those assets that remain are often surrounded by incompatible, post WWII sprawling residential and commercial strip development. Listing on the National Register of Historic Places and the State Register does not protect a structure from alterations or even demolition, unless it is being affected by federal or state projects.

1. Archeological and Historic Resources

Archeological resources. Archaeological remains from pre-colonial farming and hunting communities demonstrate that Warwick was the home of Native American communities for millennia before the advent of European colonists. Some known archaeological sites that exist from the prehistoric period are Mark Rock and Drum Rock. Mark Rock, located in Conimicut on the south shore of Occupasstuxet Cove, is a large flat rock outcropping with carvings probably dating to between 1630 and 1650. Drum Rock, located behind the Cowesett Hills apartment complex south of Apponaug, is composed of two boulders which were once balanced in a manner that one could strike the other and produce a sound that reputedly could be heard for miles. The best-known example of Native American archeological resources in Warwick was the discovery of a prehistoric settlement and ceremonial features at the Lambert Farm Site in Cowesett. When development of this site was imminent, the owner and members of the Historic District Commission made a mutually beneficial agreement whereby development would be delayed until such time as significant data could be removed from this site. This salvage of an important archaeological resource came about without the benefit of regulation, and relied solely on the goodwill and cooperation of the owner. Other sites include the Sweet Meadow Brook site near Apponaug, where stone tools were discovered, and the Potowomut site which included the remains of postholes, a rare find.

Archeological resources from 17th and 18th century European settlement can also be found. Since 2004, Brown University archeologists and other specialists have been working at Greene Farm. In addition to archeological resources on land, there are also remains under coastal waters.

The arrival of the Europeans marked the end of the earliest native settlements as strife and disease obliterated much of the native population. Though relatively few Native Americans remain, the tribes’ names have continued in Warwick neighborhoods such as Pawtuxet, Cowesett, and Potowomut. Native trails evolved into Warwick’s current road pattern, including Post Road, which follows the alignment of the Pequot Path, a major trail that in colonial times became the main highway from Boston to New York.

The land was appealing to the first English colonists who found much of it already cleared for farming by natives. These earliest Europeans were helped by the natives who shared their land and harvests before disease and warfare with the colonists disrupted the native settlements. By 1616 and 1617, diseases had depopulated whole native villages. Any archaeological remains that have survived to the present may provide important scientific data on the life ways of Warwick’s most ancient inhabitants.

At present, state and federal projects must evaluate the likelihood of archeological resources at proposed projects, and the resources must be investigated and pro-

tected if found. Private development is not subject to any requirements. Archeologists at the state’s Historic and Heritage Commission have experience with more than 2,000 sites across the state. As a result, they can predict where archaeological resources are likely to be found.

Sites on the National Register of Historic Places. The National Register of Historic Places, also known as the “National Register,” is the federal government’s list of properties or sites that are at least 50 years old, that are seen to be significant to the history of America, and that are worthy of preservation. Individual buildings, districts or archaeological sites are included. Designation requires documentation, typically by a trained consultant, but the listing provides no protection for the historic property or site except in the case of federal projects, which must avoid or mitigate impacts on National Register properties. Designation does not prevent owners from altering or tearing down the property. In fact, no design review or penalties for altering a National Register property are associated with the listing. In Warwick, there are 29 individual sites, and 7 districts listed on the National Register of Historic Places. According to RIH-PhC, no additional properties or districts are currently under review for designation.

Table 6.1: National Register Historic Sites, Districts and Individual Sites in the City of Warwick

SITE	ADDRESS	DATE LISTED
DISTRICTS		
Apponaug Historic District	Post Road	2/23/84
Buttonwoods Beach Historic District	Buttonwoods, Cove, Cooper and Promenade Avenues and Greenwich Bay	2/23/84
East Greenwich Historic District	Majority of district is located in East Greenwich	4/24/73
Forge Road Historic District	Forge Rd from Ives Rd to Potowomut River	2/23/84
Meadows Archaeological District	790 Ives Rd	11/3/83
Pawtuxet Village Historic District	Bounded by easterly on Narragansett Bay, southerly on the Pawtuxet Cove, Bayside Avenue and South Fair Street, westerly on South Atlantic Avenue, and northerly on the Pawtuxet River and Ocean Avenue (Warwick and Cranston)	4/24/73
Warwick Civic Center Historic District	Post Rd	6/27/80
INDIVIDUAL SITES		
Budlong Farm	595 Buttonwoods Avenue	8/18/83
Greene-Bowen House	698 Buttonwoods Avenue	5/2/74
Caleb Green House	15 Centerville Road	11/28/78
Cowesett Pound	Cowesett Road	9/4/87
Lambert Farm Site	287 Cowesett Road	11/3/83
Knight Estate	486 East Avenue	2/23/84

**Table 6.1: National Register Historic Sites, Districts and Individual Sites in the City of Warwick**

SITE	ADDRESS	DATE LISTED
Moses Greene House	11 Economy Avenue	8/18/83
Trafalgar Site	Southeast corner of Forge Road and Route 1	11/3/83
Forge [Greene] Farm	40 Forge Road	1/11/74
Elizabeth Spring	Off Forge Road near railroad viaduct	8/18/83
Caleb Gorton House	987 Greenwich Avenue	8/18/83
Richard Wickes Greene House	27 Homestead Avenue	8/18/83
Greenwich Cove Site	Ives Road	1/4/80
Pontiac Mills	Knight Street	6/5/72
Greenwich Mills	42 Ladd Street	n/a
Oliver Wickes House	794 Major Potter Road	8/18/83
Gaspee Point/Namquid Point	End of Namquid Drive	6/8/72
Terminal Building, R.I. State Airport	572 Occupasstuxet Road	8/18/83
John R. Waterman House	100 Old Homestead Avenue	8/18/83
Christopher Rhodes House	25 Post Road	3/31/71
Captain Oliver Gardiner House	4451 Post Road	8/18/83
Conimicut Lighthouse	Providence River (east end of Conimicut Point)	3/30/88
John Waterman Arnold House	11 Roger Williams Avenue	9/10/71
Hopelands/Rocky Hill School	Wampanoag Road	8/18/83
Indian Oaks/Senator Nelson W. Aldrich Estate/Our Lady of Providence Seminary	836 Warwick Neck Avenue	8/18/83
Warwick Lighthouse	1350 Warwick Neck Avenue	3/30/83
Peter Greene House	1124 West Shore Road	8/18/83
Greene-Durfee House	1272 West Shore Road	8/18/83
District Four School	1515 West Shore Road	4/14/97

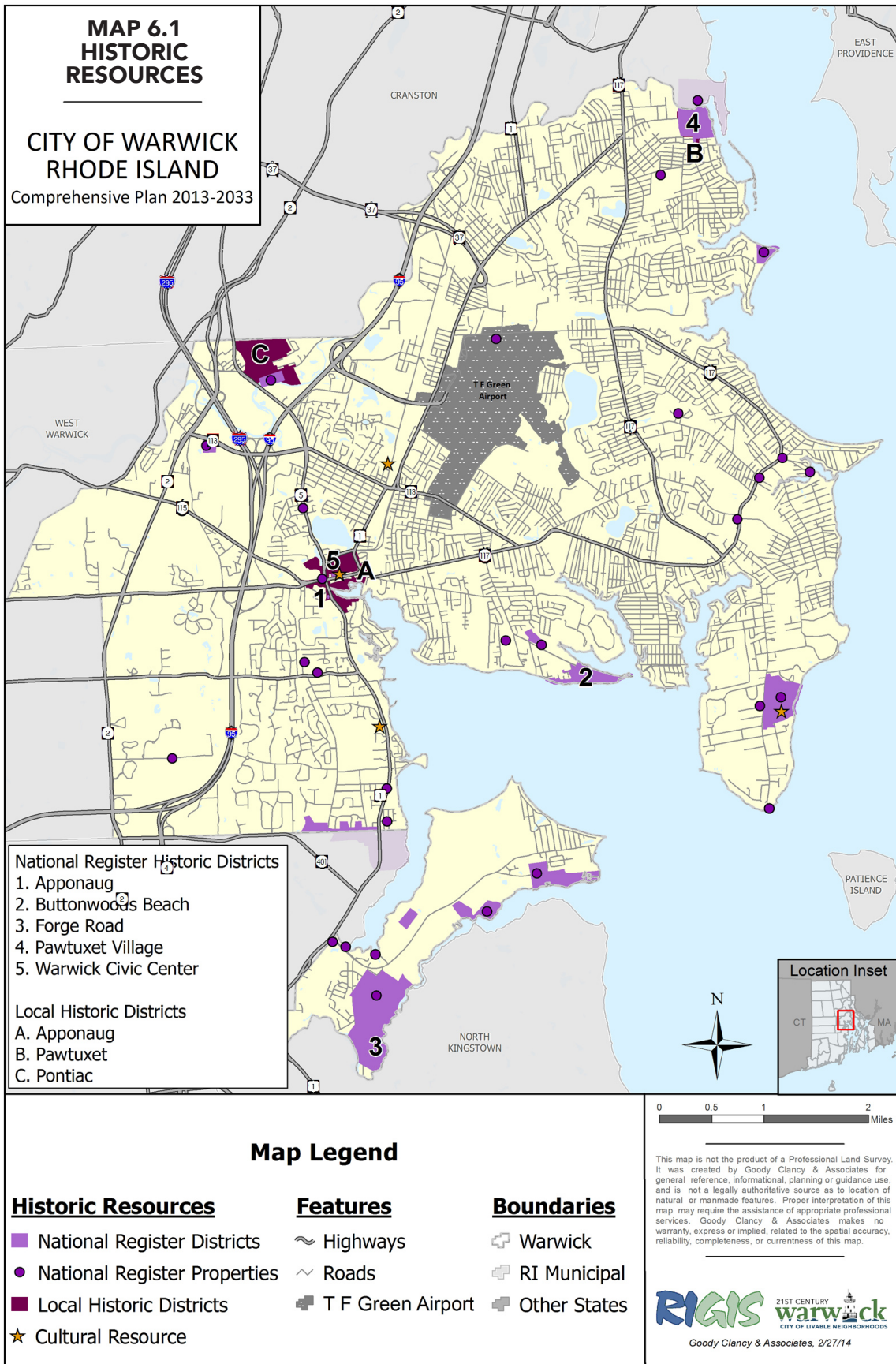
Sites on the Rhode Island State Register of Historic Places. The Rhode Island Historical Preservation Commission (RIHPC) locates, records and evaluates historic places within Rhode Island for inclusion on the State Register of Historic Places. The state uses the same criteria as that used for the National Register of Historic Places, but the structures do not need to hold national significance. Inclusion on the National Register automatically places the property on the State Register. There are 399 sites listed on the State Register within the city of Warwick. The majority of these are not listed on the National Register. (A listing of all State Register properties is in the Appendix.)

City Register of Historically Zoned Properties. When the Historical Commission was established in 1975, properties could be placed under the jurisdiction of the Commission only with permission of the owners. Between 1975 and 1989, when the first local historic district was created, ten owners requested historic designa-

tion and they were identified in the zoning ordinance as “historically zoned properties.”

Local Historic Districts. As noted earlier, there are three local historic districts in Warwick with historic district overlay zoning that regulates the construction, alteration, repair, removal or demolition of structures and sites in the overlay district.

- **Pawtuxet Village.** The first historic district overlay was approved in 1989 for the Village of Pawtuxet to include 184 parcels. This is the largest concentration of eighteenth and nineteenth century structures in the city, and is part of the larger Pawtuxet Village National Register Historic District that extends into neighboring Cranston.
- **Apponaug Village.** Created in 1993 as a local historic district, Apponaug extends from Apponaug Cove to Gorton’s Pond including Williams Corner, Apponaug Four Corners at Post Road and Centerville Road and





Veteran's Memorial Drive. Key structures include the Apponaug Mill and the Tanner Avenue graveyard, Caleb Green House, Warwick Civic Center (City Hall, Library, and Museum), Henry Remington House, and the Harrison House. Although historic district zoning was established, there are a limited number of historic resources in the district and many structures have been significantly altered over the years. In fall of 2011, numerous properties fronting Post Road were removed from the historic district overlay zone, and placed in a Village Overlay District. Although the new zoning designation encourages a mix of uses and traditional Main Street development and is subject to design standards, alterations to the properties no longer require the Historic Commission review.

- **Pontiac Village.** As recommended in the 1990 Comprehensive Plan process, Pontiac Village became a local historic district in 1995. Once home to prosperous textile industries, the area is home to several mill and housing structures, of which the majority of houses remain occupied. Although reuse of the vacant mill structures is desired, no plans are currently in the works.

Historic Plaque Program. First started by a volunteer a historic plaque program continues to be supported by the City of Warwick.

1990 Comprehensive Plan Historic Survey. During the 1990 Comprehensive Plan process, a survey of historic properties was conducted in May and June of 1990. The survey was not comprehensive, but was intended to identify neighborhoods and additional historic resources, with the intent to recommend further study to possibly expand the City's Register of Historic Places, and then adopt systems to protect them. None of the recommended studies have been carried out. The historic resources identified include the following listed by neighborhood:

- **Greenwood:** The area was not eligible for historic district status. Establishment of a neighborhood conservation area to recognize and further secure the stability of the neighborhood was recommended.
- **Hillsgrove/Jefferson Boulevard:** Home to the former Leviton Manufacturing property and Elizabeth Mill structures, the Hillsgrove Mill District should be established. Additionally, nineteenth century mill housing north of Kilvert Street could anchor a separate district, and some structures could be added to the city listing or National Register.
- **Norwood:** Established in the 1880s, the area north of Pettaconsett Bridge up to Budlong Street holds promise for historic district designation or for individual properties. A survey of the remaining areas to identify additional structures worthy of historic designation was recommended.
- **Lakewood:** Lakewood Town Hall was identified and recommended for historic designation.
- **River View/Longmeadow:** The concentration of historic properties along Hope Avenue was identified as a potential historic district. Further evaluation is required for the district, but individual structures are likely eligible for the City register.
- **Spring Green/Governor Francis Farms:** The 1917 school, which replaced an 1881 school house, which replaced an 1820 one-room school house, along with two-acre Spring Green, should be considered for historic district designation.
- **Conimicut Village:** Although signage designates the area as the Conimicut Historic District, the commercial district and surrounding homes are not officially recognized by the city with the historic zoning designation. The 1990 study however, recommended an inventory be undertaken. Village District zoning with design standards was approved for the area in 2011.
- **Oakland Beach:** Early twentieth-century summer-houses not destroyed by the 1938 and 1954 hurricanes, including the former train station, should be surveyed and entered into the City inventory.
- **Warwick Neck:** Numerous structures on the Bishop Hendricken High School campus, and the former Our Lady of Providence Seminary were recommended to be surveyed and entered into the City's Inventory of Historic Places.
- **Cowesett:** Numerous structures along Valentine Circle, including the Sprague Mansion, should be considered for individual designation on the City's inventory as examples of late 19th and early 20th Century

Secretary of the Interior Standards for Rehabilitation

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

styles. Additionally, two areas including 19th century mill buildings and housing in the area bordered by Post Road, Division Street, Williams Street and the shoreline along Greenwich Cove; and the area of 19th and 20th century residential structures bounded by Division Street, Spencer Avenue, Post Road and Cedar Street holds should be considered for historic district designation.

- **Potowomut:** The historic sites are predominantly located within state owned properties and are protected. Structures outside hold potential for individual listings, not districts.
- **Buttonwoods:** A portion of Buttonwoods has been designated under the State and National Register designations, but the City could extend local zoning protections to better protect the properties.

- **Natick/East Natick:** The area should be surveyed to see if 1890's duplexes should be placed on the City list or create a district.

2. Historic Preservation Organizations

Warwick Historic District Commission. The Warwick Historic District Commission has responsibility for historic preservation in local historic districts. Created by City Ordinance (O-73-19) in 1973, the Commission has 7 members appointed for staggered 3-year terms. The primary role of the Commission is to review proposed development and rehabilitation projects in local historic districts and issue Certificates of Appropriateness. Property owners must receive the certificate from the Commission prior to receiving a building permit for any



work including alteration, repair, removal or demolition to the exterior appearance of a historic structure. Certificates of Appropriateness are granted if the proposed rehabilitation meets the United States Secretary of the Interior's Standards for Rehabilitation. There are no special standards for particular districts. The commission has no authority over interior changes to these structures. The Commission also issues Certificates of Appropriateness for any alterations to stone walls within the city constructed prior to 1900. Stone walls in disrepair or neglected may not be removed, but must be repaired or left in the existing state.

Warwick Cemetery Commission. Established by City Council, the Warwick Historical Cemetery Commission is responsible for inventorying the city's 150 historical cemeteries; developing programs to restore, rehabilitate and maintain them; raising money through fundraising, grants and sponsorships for programs and projects; and making recommendations to the Mayor and City Council. Programs run by the Commission include Adopt a Cemetery, where a citizen or group agrees to clean and preserve a cemetery for three year period. They also work with Warwick high schools to encourage students to help with clean-up activities.

Warwick Historical Society. The Warwick Historical Society is a private membership group whose mission is to "preserve whatever relates to the topography, antiquity and natural, civil and ecclesiastical history of the City of Warwick." The Society collects, preserves and displays historical artifacts and advocates for the preservation of buildings and sites of historical and archaeological significance. The society is located in the John Waterman Arnold House, which houses the organization's library. The library includes historical documents, textiles and photographs, and is open to the public on Wednesdays. Much of the collection can be viewed online.¹ The Historical Society distributes a quarterly online newsletter, sponsors activities such as historic cemetery clean-up days, holds seminars at the library, and offers a small scholarship to graduating high school seniors who have shown exemplary academic achievement and community service, along with an interest in history and technology.

¹ <http://warwickhistoricalsocietyonline.org>

State of Rhode Island Historical Preservation and Heritage Commission. The State of Rhode Island Historical Preservation and Heritage Commission (RIHPHC) is responsible for the state's historical preservation and heritage programs. The State Historic Preservation Plan outlines existing preservation programs and sets out priorities and goals for the RIHPHC. A new, revised draft State Historic Preservation Plan was released in summer 2011, and is available for public review and comment.

RIHPHC is responsible for the State Register of Historic Places, which identifies historic buildings, structures, districts and archaeological sites and for programs to document and celebrate the state's historic and cultural heritage. RIHPHC also provides financial and technical assistance to communities for preservation efforts, and works with private and public groups and other agencies to meet the cultural needs of the state and its communities. In addition to historic preservation efforts, the agency coordinates heritage festivals, sponsors studies and works to create educational programs and materials highlighting ethnic traditions and culture within the state.

3. Historic Preservation Resources and Initiatives

State and Federal Programs and Resources. Both the federal and the state governments promote historic preservation through tax credits and other programs.

- **State programs:**
 - **Historic Homeowner State Tax Credit** – eliminated in 2011, but future reinstatement of the credit is likely with improved economic conditions.
 - **Historic Preservation Investment Tax Credit** – 30% tax credit for historic rehabilitation of income-producing historic buildings (typically including mixed-use buildings).
 - **Historic Preservation Loan Program:** Available to individual owners looking to preserve properties listed on the State of Rhode Island's Register of Historic Places, the program provides low-interest loans to public, non-profit, or private owners for restoration work or, in some cases, for acquiring and rehabilitat-

ing an endangered historic property. All work to be done must meet the Secretary of the Interior’s Standards for Rehabilitation, and work that has already been completed is not eligible. Proposed projects are evaluated based on architectural and historical significance of the property, on relative need and the public benefit. Geographic distribution, financial need, and conformance to community planning issues are also considered. The maximum loan is \$200,000, and must typically be repaid within five years

- **Loans to municipalities.** RIHPHC may also loan funds to municipalities to operate a local revolving loan program. Usually, the community targets a few historic areas or neighborhoods and uses RIHPHC funds to make a number of smaller loans to individual owners.
- **Federal programs:**
 - **Historic Preservation Tax Credit** – 30% tax credit for historic rehabilitation of income-producing historic buildings (typically including mixed-use buildings). The 20 percent federal tax credit can be taken on the owner’s income tax that is equal to 20 percent of the total rehabilitation costs on approved projects. The structure must be listed on the National Register as an individual structure or as part of a district.

Preservation Easements. Property owners can donate a preservation easement to RIHPHC, which is a legal agreement that ensures that the historic and architectural character of a property will be preserved and that the property will not be altered without the Commission’s approval. In exchange, owners receive tax benefits for federal income, estate, and gift taxes. Under federal law, a preservation easement is treated as a charitable contribution. Owners retain the use of the property and are responsible for all maintenance costs. The RIHPHC requires grantors to donate an endowment equal to 5 percent of the appraised value of the easement. The RIHPHC uses the income from the endowment to defray the costs of monitoring the easements it receives. Commission staff will visit properties and are available for consultation regarding preservation plans.

Certified Local Government (CLG) Grant Program. RIHPHC administers this grant program for municipal historical preservation activities. Warwick and other communities with a historic district ordinance and historic district commission are eligible for the program. CLG grants can be used for a wide range of projects, including National Register nominations, historic preservation plans and other education-related activities.

Local Programs. Initiatives to promote historic preservation and raise public awareness about the city’s historic resources include the historic plaque program, booklets for self-guided tours, and a digital history project with a dedicated website launched in 2012. The City lacks a demolition delay ordinance which could be used to seek opportunities for adaptive reuse for a specified period (typically six months to a year) when a demolition permit is pulled for a property of historic significance. No digital database of protected properties exists. All records are held in a loose leaf binder at the Planning Department.

The Warwick, Rhode Island, Digital History Project at www.WarwickHistory.com, contains articles on Warwick History, online exhibits, the heritage tour booklets, videos, and will include oral history recordings.

4. Cultural Resources

An important contributor to a community’s overall quality of life is the availability and access to various cultural activities and facilities.

State Arts Initiatives. Rhode Island has prioritized the enhancement of the arts and culture sector as part of economic development. As of December 1, 2013, the purchase and sale of all original works of art will be exempt of state sales tax throughout Rhode Island. The legislature also established the Rhode Island State of the Arts Planning Task Force which will develop a strategic plan for the arts and associated creative industries in the state.

Warwick Department of Tourism Culture and Development. The Warwick Department of Tourism Culture and Development is the city department charged with

culture, tourism and economic development. The three-person department works with numerous public and private groups to support and promote cultural activities and events throughout the city, and manages the Visit Warwick Rhode Island website (www.visitwarwickri.com) which not only provides information about tourism, but hosts a comprehensive list of cultural activities taking place within the City of Warwick, including festivals and events, arts and entertainment events, and special events.

Festivals. Hundreds of festivals and events are held each year within Warwick, bringing city residents and visitors together to celebrate their communities in various ways. Most festivals are organized by neighborhood associations with support from the Warwick Department of Tourism, Culture and Development, whereas other events are held by various private or non-profit entities. The Gaspee Days Celebration, organized by the Gaspee Days Committee, is the city’s largest festival, taking place over several weeks from May to June in Pawtuxet Village. The festival attracts over 50,000 visitors, and commemorates the burning of the Gaspee, the “first blow for freedom” in the American Revolution. The festival includes a costume contests, a crafts fair, the Gaspee Parade, a mock battle culminating with the symbolic burning of the Gaspee, and fireworks display funded by the city.

Arts, Entertainment and Special Events. Many arts and entertainment events are held in Warwick throughout the year, from art shows to concert series and comedy showcases, including art shows and retrospectives at the Warwick Museum; comedy and improv shows at the Showcase Cinemas Warwick or Warwick Museum; concert series at the Warwick Mall; concerts at local restaurants and venues; Apponaug Tree Lighting at Christmas.

Ocean State Theater Company. The Ocean State Theatre Group moved into a new performing arts theater in a renovated commercial building at on Jefferson Boulevard in 2012. The company offers year-round programming, classes, and children’s programming.



Clouds Hill Victorian House Museum

Warwick Museum of Art. Founded in 1976, the Warwick Museum of Art (WMOA) is the city’s largest non-profit arts organization and in many ways serves as the cultural center for Warwick. The museum provides performance and exhibition space to artists, writers and performers and hosts cultural events including live theatre, music performances, poetry and literature readings and monthly visual exhibitions. The museum operations are supported in part by the Rhode Island State Council on the Arts, the City of Warwick, the State of Rhode Island, the Champlin Foundation, WMOA members and sponsors.

Clouds Hill Victorian House Museum. Clouds Hill Victorian House Museum is a house museum open to the public that has remained in the same family since it was built. The house is considered one of the best examples of Victoriana in Rhode Island, “surpassing even the Bellevue Avenue [Newport] manors in terms of authenticity of its contents.” In addition to its architecture and interiors, textiles, family articles, carriages and more are displayed. The property on which the house sits has been referred to as the West Bay arboretum.

Aldrich Mansion and Estate. The Aldrich Mansion, listed on the National Register, is a seventy-five acre estate on Narragansett Bay built by Senator Nelson W. Aldrich at the turn of the 20th century. The property includes the 75-room mansion, a carriage house, caretaker’s cottage and boathouse. Tours of the property can be arranged, but the facility is primarily used for special events, large receptions and for conferences, meetings and seminars. It also serves as a motion picture filming location, most notably 1998s “Meet Joe Black.”

historic resources. Local versions of the National Register basic criteria can be refined for Warwick:

- The property is associated with a major historical event.
- The property is associated with a significant historic person.
- The property has distinctive architectural or construction characteristics, including great artistic value or design by an important designer.
- The property has provided or may be likely to provide information important to prehistory or history.

RECOMMENDATIONS

GOAL 1

The City’s historic resources, including structures, natural features, and character areas, are protected and preserved.

POLICY

- Support a coordinated historic preservation program encompassing resources outside as well as inside local historic districts.

STRATEGIES

A. Maintain an accurate inventory of historic resources in the city, including photographs, and make it publicly accessible.

Actions:

1. Determine eligibility criteria for inclusion in the inventory of historic resources.

Local historic resources inventories are generally based on resources listed in the national and state registers, with additions for locally-important resources. In many cities, resources must be at least 50 years old to be considered historic. This is simply the first threshold or filter for consideration as a historic resource—not all properties or places over 50 years old will merit inclusion in an inventory of

2. Create a rating system to identify priority properties for preservation.

Preservation priorities should be established by means of a rating system to help identify the best use of preservation resources and to identify target properties or areas for preservation initiatives. For instance, a point system could be adopted whereby historic resources are given points for: age, integrity of original structure/architectural style, contribution to a historic fabric or ensemble, uniqueness, and so on. The Historic Preservation Master Plan for Arlington County, Virginia, is a good model of a preservation master plan that integrates historic preservation into broader goals with a priority ranking for historic resources. (<http://www.arlingtonva.us/Departments/CPHD/Documents/77768-15-06%20HP-Policy%20Rev.pdf>)

3. Identify additional historic and archaeological resources.

The inventory may include structures such as stone walls, bridges, lighthouses, and landscapes as well as buildings. Where a structure is eligible for nomination to the National Register, the City should work with the property owner to prepare the nomination. The City can also actively solicit the aid of individuals and organizations, such as the Warwick Historic Society, who possess knowledge of local history in locating potentially significant sites, cataloging private artifact collections and any other appropriate activities relating to the inventory of historic resources.



Identification of archaeological resources requires a delicate balance. While the City should work with the RIHPHC to identify areas likely to have resources, they should not be publicly identified except in the most general terms in order not to create situations where the resources may be destroyed.

4. **Make the inventory available to the public on the City website.**

The inventory, accompanied by photos and historic images, should be put on the City website as part of a broader data warehouse program to make data and information available to the public.

B. Provide incentives for historic preservation.

Actions:

1. **Advocate for reinstatement of the State Historic Tax Credit.**

The state tax credit was suspended because of the economic and fiscal crisis of 2007-9. It was very successful in the past, providing support for historic rehabilitation in communities throughout Rhode Island, and should be reinstated as soon as possible.

2. **Consider a city tax credit or property tax abatement for approved work to high-priority historically significant properties.**

With establishment of the rating system recommended above, the City could make available tax credits, or a property tax abatement for a specified number of years, to properties where historic rehabilitation has high importance and/or would help the city meet other goals, such as revitalization of village districts. Because many Warwick historic resources are dispersed around the city, the impact of tax credits or property tax abatements applied anywhere in the City may be dissipated. Restricting the availability to properties that meet certain criteria of importance will provide greater likelihood that the City's investment will promote and leverage private investment.

C. Enhance the review process in local historic districts with more focused design guidelines.

Actions:

1. **Create more detailed design guidelines for local historic districts.**

Warwick uses the Secretary of the Interior's guidelines as its only design standards in local historic districts. Although useful, these guidelines are very general and applicable to a wide array of circumstances. Design guidelines or standards for the specific circumstances of each of Warwick's local historic districts will sharpen the City's ability to preserve the distinctive historic character of each area. Pawtuxet Village, for example, is quite different from Pontiac Mill. As important as their impact on changes to historic structures would be a more nuanced approach to review of changes to the non-historic structures or to new construction in the historic districts.

D. Promote adaptive reuse of historic buildings.

Action:

1. **Establish a demolition-delay ordinance.**

When an owner of a historic property applies for a demolition permit, a demolition-delay ordinance requires a waiting period during which an effort is made to find a use for the property that will not require demolition of its historic elements. Historic significance can be defined according to various criteria—for example, all structures over 50 years old or on the National or State Registers could be eligible for a demolition delay. This tool is used by many communities, where the delay period typically ranges from 60 days to one year. Demolition delay does not guarantee that a property will be spared from demolition if no other viable use can be found for it, but it has been shown to reduce demolition of historic properties. If demolition proceeds after the delay period, the property owner should be asked to provide photos and other documentation, if available, in order to provide a record for the City, and to provide information in on-site signage and in a digital format

E. Promote protection of historic resources outside local historic districts

Actions:

1. Explore creating neighborhood conservation districts.

Neighborhood conservation districts (NCDs) provide a mechanism for differing levels of review—from advisory to fully regulatory—for demolition and exterior changes to buildings within a defined area that has a recognized character. Typically, conservation districts are defined by a study of the area that highlights an identifiable neighborhood character and recommends which kinds of changes should be subject to review. Review standards are tailored to the special character of each district. Conservation districts can be administered by a local historic preservation commission, planning commission, municipal staff members, or a special neighborhood conservation district commission. They are sometimes included in zoning ordinances and sometimes enacted as separate ordinances for each conservation district.

Neighborhoods in Warwick that might be suitable for NCDs include Greenwood, Norwood, Cowesett, Valentine Circle, Spencer Avenue, Oakland Beach, Riverview and Longmeadow. Conservation districts based on neighborhood action and that encourage voluntary compliance—rather than mandatory review—may be better suited to Warwick than a more formal approach with mandatory design reviews, which require more staff, funding, time, and capacity. (A voluntary approach could still issue certificates or other indications that a given project has met the established standards.) In the future, neighborhoods or districts where there is an increased threat of deterioration of neighborhood character that is not adequately addressed through voluntary design guidelines may consider the more stringent approach of mandatory standards.

A number of cities have conservation districts under various names, including Cambridge, Wellesley, and Northampton in Massachusetts; San Antonio, Dallas, and Austin in Texas; Memphis and Nashville in

Voluntary Design Guidelines: Naperville, Illinois

An example of voluntary design guideline initiatives is a workbook created by Community First, a citizens' group in the Chicago suburb of Naperville, which experienced inappropriate additions and teardowns. The organization was founded as an educational nonprofit by builders, architects and citizens and is supported by both the City of Naperville and the local Chamber of Commerce. The group prepared a booklet with simple illustrations to guide builders, property owners, designers and citizens through the process of understanding the character of a particular neighborhood and street—with special attention to what constitutes harmonious relationships among buildings—and provides advice on ways to design additions and new buildings to contribute to overall neighborhood character. Even though compliance is entirely voluntary, the booklet influenced some 250 projects in its first four years.

(www.communityfirstinc.org)

Tennessee; Roanoke, Virginia; and Atlanta, Georgia. Elements of a neighborhood conservation district system that would be suitable for Warwick include:

- Nomination by a neighborhood group, with a process to get majority property-owner approval for the nomination and to start the process.
- Neighborhood study to identify key aspects of neighborhood character.
- Neighborhood meetings and discussion to identify what building or site elements, if any, should be subject to review, advisory or mandatory standards.

2. Create design principles or guidelines for areas with high-priority unprotected historic resources.

Design guidelines for development in areas where there are high-priority unprotected historic resources can have a positive effect on alterations to the unprotected resources and on new construction in the vicinity of the historic resources. In special permit processes, the design principles or guidelines could be included as criteria that the Planning and Zon-

ing Board must consider in deliberating on special permits. If the principles/guidelines are voluntary, zoning and building permit staff can provide them to property owners and contractors in the case of by-right construction.

3. **Continue to advocate for the preservation of historical cemeteries through the continued efforts of the Warwick Historical Cemetery Commission.**
4. **Work with the Rhode Island Historic Preservation and Heritage Commission (RIHPHC) to develop procedures to protect hidden archaeological resources.**
5. **Establish a program to accept and acquire historic easements.**

Historic preservation easements are voluntary agreements between owners of a National Registered property and a historic preservation organization recognized by the IRS. The easement restricts specified changes to the property and the donor conveys certain rights over the property to the

easement-holding organization, which then has the legal authority to enforce the terms of the easement. Terms of the easement can include interior or exterior changes in a building, and they are tailored to each situation. In exchange for the tax break, the property owner agrees to provide public access to the property. In Rhode Island, the RIHPHC holds preservation easements.

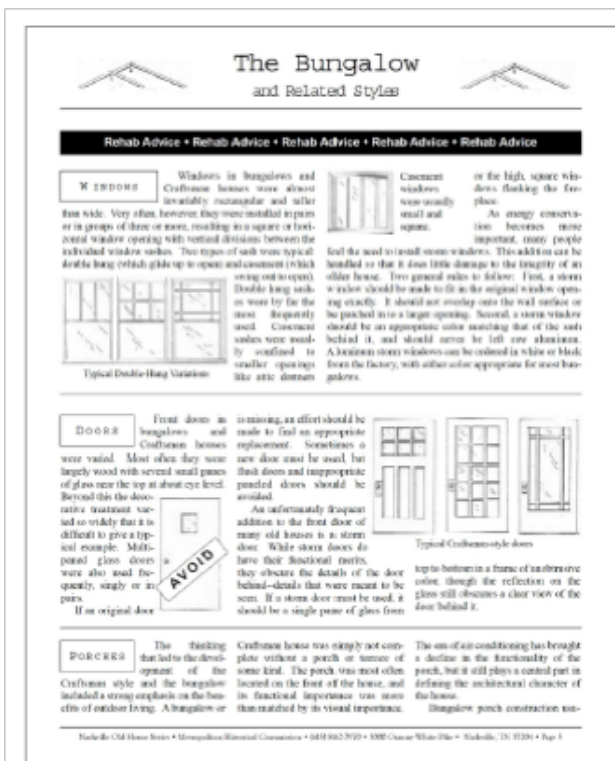
F. Provide resources for information and guidance to property owners on historic preservation issues.

Actions:

1. **Make the historic preservation office a “one-stop shop,” in person and online, for information on historic preservation.**

Property-owners who are interested in historic restoration, rehabilitation, or compatible renovation need to be able to find practical information about local historic building types, sources of materials, tax credit opportunities, preservation easements and other information. This information could be made available on the City’s web site. Some functions of this resource could include:

- Tax credit assistance: information for property owners on obtaining federal, state and other tax credits, when available, for renovation.
- Information on historical appropriateness for typical Warwick architectural types for use by property owners in renovation projects: A number of cities have created pamphlets explaining common historic architectural types in the community and how to preserve character while doing renovations.
- Technical assistance on historic preservation easements.
- Information on affordable materials and options for preservation.



The Nashville Metropolitan Historical Commission “Old House Series” provides information on sensitive renovation and additions.

GOAL 2

Residents’ and visitors’ experience of Warwick is enhanced by a sense of the City’s history.

POLICIES

- Increase public awareness of Warwick’s historical legacy including buildings, village centers and cemeteries.
- Enhance public awareness of the economic benefits of historic preservation in Warwick.
- Promote educational efforts in the schools and engender a preservation ethic among Warwick residents.

STRATEGIES

A. Provide user-friendly information on historic and cultural assets.

Isolated sites of historic importance can be given new vitality through increased public awareness, such as by linking these sites with other places of interest and with one another, or by providing resources such as self-guided tours and information to make isolated sites more accessible and attractive. Synergies and physical connections can also be encouraged through guides and easy-to-use information. In addition to providing information on Warwick-focused websites, the City can also enhance its presence on websites such as the Warwick Heritage Trail section of Visit Rhode Island and interest group websites focused on colonial, revolutionary, and civil war era.

Actions:

1. **Inventory, improve, standardize, and expand existing interpretative signage for historic resources.**
An inventory of the existing signage, along with identification of additional sites that merit signs, should be prepared. At a minimum, all National Register-listed sites and districts should be appropriately signed, with first priority to the local historic

districts. The inventory could be an appropriate task for volunteers such as the Warwick Historical Society or college or high school groups. Identification of additional sites for historic signage should occur in the context of a broader survey of historic people, activities and sites that should be recognized. A consistent design and materials for historic signage should be developed and implemented over time. The signage program could become the foundation for a heritage tour program.

2. **Create self-guided digital tours and make them digitally available.**

Downloadable podcasts, maps and narratives that connect sites according to geographic and thematic content are cost-effective. These guides should correspond to interpretive historic signage. In addition to making the podcasts available online at www.WarwickHistory.com and other websites, flyers with QR codes promoting downloads of the tours could be distributed to city locations to encourage both locals and visitors to become more conscious of Warwick’s history.

3. **Continue to promote awareness of residential historic preservation including strengthening the Historic Plaque program and establishing events like historic house tours.**

The Historic Plaque program could be funded through a fee-based program, as it is in Providence. The Providence Preservation Society Historic Property Marker Program provides plaques for buildings at least 50 years old that meet criteria for retaining historic integrity. In return for a fee, the Society provides a history of the building and a historic plaque.

Historic house tours have become popular in many communities and fees can be collected to help support historic preservation activities. They are typically organized by historic societies rather than government historical commissions.

4. **Make local history a part of the school curriculum and offer programs for children and adults at the library and elsewhere.**

Lively programs to whet the interest of children, youth and adults in local history will build a constituency for historic preservation. Programs that



provide opportunities for hands-on connection with history and historic places, as well as volunteer opportunities to support historic preservation, can be very effective.

GOAL 3

Warwick's art community is vibrant and growing.

POLICY

- Promote Warwick's arts and cultural organizations, events and individual artists.

STRATEGIES

A. Improve promotion of arts and cultural activities and initiatives as part of the city's economic development strategy.

When Ocean State Theatre announced its move to Warwick in 2012, the Mayor noted that many studies have shown the positive economic impact of arts and cultural organizations. Clustering of arts and culture activities in a walkable environment can help create vibrant urban or village environment. In Warwick, the two cultural anchors are the Ocean State Theatre in City Centre and the Warwick Art Museum in Apponaug Village.

Actions:

1. **Use the arrival of Ocean State Theatre to attract other arts organizations to City Centre Warwick area and create an Arts and Culture District there.**

The Warwick Station Development District Plan for City Centre Warwick provides for a walkable environment. It could become a cultural center for Warwick.

2. **Explore the opportunities for arts-oriented housing, studio spaces, and retail spaces in Warwick's closed school buildings, in Village environments, and in vacant or underutilized industrial space.**



Housing and Neighborhoods

FROM A WARWICK RESIDENT

“I love the personalities that the individual areas in Warwick retain.”



A GOALS AND POLICIES

GOALS

Warwick has a wide range of quality housing choices to meet the diverse needs of households at all income levels and all stages of the life cycle.

All neighborhoods have retained or enhanced their character and livability.

Warwick villages have a mixture of uses and have become more walkable.

Neighborhood commercial areas are modernized and serve residents well.

POLICIES FOR DECISION MAKERS

- Support addition of compact housing types such as townhouses, lofts, apartments, cottage developments and conservation subdivisions in suitable locations.
- Continue efforts to provide scattered site affordable housing for families.
- Support implementation of an affordable housing plan.
- Support improvements to neighborhood connectivity.
- Support new systems to enhance enforcement of property standards.
- Consider design standards and conservation districts to promote high quality design.
- Support improvements to village districts to enhance walkability, provide amenities, and encourage mixed-use development.
- Support new design standards for neighborhood commercial districts.

B FINDINGS AND CHALLENGES

findings

In 2010, there were 37,730 housing units in Warwick, slightly more than the 37,085 in 2000. Approximately 5% of the units were vacant at the time of the 2010 census.

Most of Warwick's housing stock was built in the heyday of suburbanization between 1950 and 1980. The median age of housing is 52 years. A quarter of the City's housing was built before 1940.

Three quarters of Warwick's housing units are owner-occupied.

New construction declined substantially as a result of the Great Recession and continuing economic difficulties. A total of 1,185 housing units were permitted between 2000 and 2011, according to US Census data, with the peak year in 2002, when 118 permits were issued. By 2011 the number had decreased by 87% to an estimated 15 permits.

Approximately one-third of Warwick households are single-person households.

Only 26% of Warwick households include children.

Median housing prices have declined 44% since the peak year of 2005.

Over the period 2009-2011, 786 homes (4% of the housing units with mortgages) have gone into foreclosure.

Many neighborhood shopping areas have vacancies and need upgrades to be competitive and serve surrounding residents.

The existence of older houses combined with houses in flood zones that have been elevated sometimes creates a problematic aesthetic effect.

challenges

Decline in housing values.

Foreclosures and managing their impacts on neighborhoods.

Maintaining neighborhood quality with effective code enforcement.

Providing a range of high quality housing types to meet the needs of diverse households.

Finding properties for affordable housing development.

Keeping some waterfront housing affordable.

Increasing connectivity.

Revitalizing neighborhood shopping areas.



WHAT THE COMMUNITY SAID

- The majority of survey respondents said their neighborhoods are stable—neither getting better nor getting worse.
- The most desirable characteristics or amenities of neighborhoods identified by survey respondents are: convenience of location; low crime; parks, recreation, and open space; good schools; and sense of community.
- Three out of the top issues identified in the survey as “the biggest issues facing your neighborhood” are related to foreclosure, vacancy and property maintenance issues: impact of foreclosed and abandoned houses; property maintenance and the enforcement of minimum housing standards; and absentee landlords.
- Residents would like more neighborhood-serving retail.
- Residents are wary of new development in or near their neighborhoods with 54% in the survey disagreeing or strongly disagreeing with the statement: “I would like to see development in or near my neighborhood.”
- Keeping some modest-cost housing in waterfront areas is important.
- Affordable housing is needed.
- Survey respondents prefer single family development and mixed use development (ground floor commercial and upper story residential) to multi-family condominium, and apartment development.
- Survey respondents were highly supportive of village revitalization, as long as initiatives are incentive-based and supported substantially by private rather than public dollars.



HOUSING ISSUES

1. Change and Continuity in Housing Issues Facing Warwick

In 2005, when the housing “bubble” did not yet show any signs of bursting, a committee asked to review comprehensive plan goals and policies indicated that Warwick residents were concerned about “overdevelopment and the intrusion of nonresidential activity” in residential neighborhoods and a sense that quality of life was deteriorating, which was described as the “urbanization of suburbia,” an umbrella phrase encompassing increased traffic, overdevelopment of residential areas, environmental degradation, and commercial blight. Preserving a sense of suburban and village life in Warwick so that neighborhoods thrive, was important to this group. Providing a wide range of housing choices, including low- and moderate-income housing, was identified as a housing goal, with special attention to providing a variety of options for senior citizens, disincentives for converting affordable rental units to condos, and more coordination and promotion of the City’s housing programs.

Although many of these issues remain relevant, the housing context has changed drastically since 2005. As this comprehensive plan update is being written in 2012, the housing values in Warwick and the rest of Rhode Island have declined substantially since the 2005 peak, and although the housing market has improved somewhat, prices are still expected to decline slightly in 2013. Foreclosures affected over 900 homes during the period from 2009 to mid-2012. Rather than condo conversion, residents report that their biggest housing problem is the impact of poorly maintained foreclosed and abandoned housing on their neighborhoods.

2. Housing Characteristics

Number and Type of Housing Units. The 2010 Census identified 37,730 housing units in Warwick. The city offers a mix of housing types, including single-family detached houses, two-family homes, and large and small multi-family structures. However, almost 75% of Warwick’s housing units are single-family detached homes. Only 5,570 housing units are located in structures with 10 or more units (about 15% of all housing units). These larger multi-family developments were typically developed on arterial roads between 1975 and 2000. At the time of the 2010 census, 5.6% of housing units were

TABLE 7.1: Housing Units By Type, 2010

TYPE	NUMBER	PERCENT OF TOTAL UNITS
Single Family Detached	27,239	72.2%
Two Family	2,438	6.5%
Three to Nine	1,944	5.2%
Ten or More	5,570	14.8%
Other (mobile home, rv, etc.)	274	0.7%
TOTAL	37,730	

Source: US Census

vacant.

Household size. The overall average household size in Warwick was 2.33 persons in 2010. Owners tend to have larger households (average 2.49 persons), while renters have smaller households (1.82 persons on average).

Housing tenure. According to the 2010 census, almost 75% of housing units are owner-occupied and slightly more than 25% are renter-occupied.

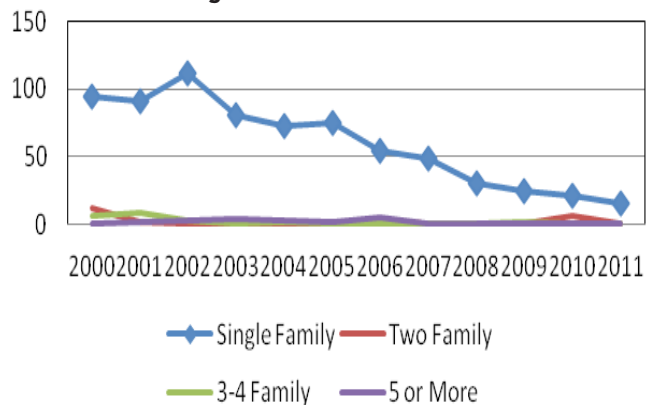
Length of time in Warwick. About 20% of Warwick households have been at their current address for more than 30 years, while over 45% moved into their homes within the past ten years. The latter figure includes those who moved within Warwick.

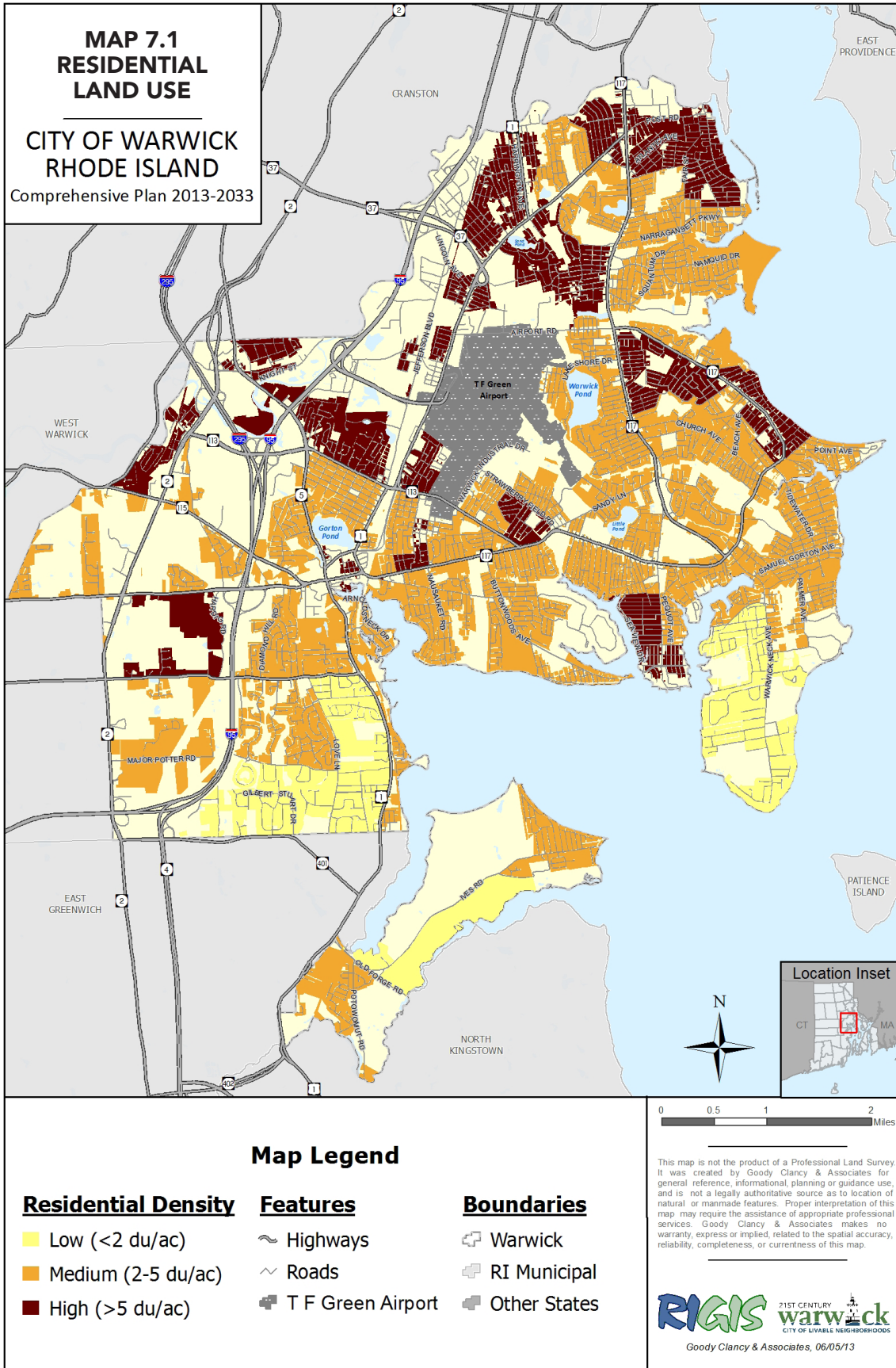
Age of housing stock. The age of Warwick’s homes reflects the city’s history. While nearly one quarter of the city’s homes were built before 1940 and are now over 70 years old, the remainder was constructed in the decades since World War II, as farmland was developed into resi-

dential neighborhoods and Warwick’s villages expanded to meet housing demand. The median year of construction for housing structures in Warwick is 1958. Roughly 45% of Warwick’s homes were built in the 1940-1970 post-World War II housing boom that fueled suburban growth across the nation. About a quarter were built in the 1970s and 1980s, and fewer than 10% of the city’s homes were built between 1990 and 2010. Today, Warwick is a mature, largely “built-out” community. Relatively few vacant sites are available for new housing development. This means that Warwick has entered a period in which redevelopment of existing areas, such as village districts and commercial areas, will become more important than “greenfield” development on agricultural or other unbuilt land.

Residential building permits. Consistent with national trends, while housing construction in Warwick was fairly robust in the early 2000s, the city saw a significant decrease in the number of permits issued for new housing construction as the decade progressed. According to US Census data, between 2000 and 2011, Warwick issued 792 total residential permits for a total of 1,185 units. At the height of permitting activity in 2002, 118 permits were issued. By 2011 the number had decreased by 87% to an estimated 15 permits. Of the 1,185 housing units permitted between 2000 and 2011, 59% (approximately 699) were single-family homes. The remaining 486 units – representing approximately 40% of units permitted during this period – were in multi-family structures: 24 were two-family homes (48 units total); 25 were three- and four-family homes (82 units total); and 23 were multi-family developments of 5 or more units each (335 units total).

FIGURE 7.1: Building Permits 2000–2011





3. Housing Market

The collapse of the housing market in the Great Recession affected Rhode Island and Warwick significantly. Average sales prices declined nearly 39% between 2008 and 2012. The median sales price for the May to July 2012 period was \$140,000, down 44% from a peak of \$248,000 in 2005. As of August 2012, 842 homes were listed for sale of which 258 were foreclosures: the least expensive was \$22,000 for an age-restricted mobile home and the most expensive were waterfront homes listed at \$2.2 million.¹

Distressed Sales, Foreclosures and Foreclosure Assistance. Over the 2008-2011 period, nearly 40% of all single family home sales in Warwick were “distressed properties,” either foreclosures or short sales in which lien holders (such as mortgagors) allow a sale that will not result in full payment of the liens. Because Warwick is one of the largest municipalities in the state, over the period 2009-2011 it experienced the second largest absolute number of foreclosures in the state, 786 foreclosures (after Providence). However, with foreclosures accounting for 4.06% of the city’s 19,366 mortgaged properties, Warwick had the eighth biggest foreclosure percentage among Rhode Island municipalities. Eighty-seven percent of the foreclosures were for single family homes, and nearly a third of the foreclosures occurred

in 2011.² By June of 2012, another 108 Warwick homes were foreclosed. After foreclosure, homes in Warwick are typically resold in about three months, according to City officials.³

In May 2010, Warwick enacted an ordinance requiring mortgage servicers to work with a “conciliation conference coordinator” at a HUD-approved housing counseling agency before they can file a foreclosure deed or pay a fine. The coordinator determines whether the mortgage company has made a good faith effort to reach an agreement with the homeowner. In 2010 and 2011, 966 potential foreclosures went through this process in Warwick. Providence and Cranston enacted similar ordinances. The majority of homeowners in these three

2 <http://www.housingworksri.org/sites/default/files/HWRISPrprt-Foreclosures2012.pdf>
 3 <http://www.rhodeislandhousing.org/filelibrary/RI's%20Most%20Foreclosed%20Communities,%209-28-2012%20GoLocalProv.pdf>

Table 7.2: Single Family Home Sales in Warwick, 2008-2011

YEAR	TOTAL SINGLE FAMILY SALES	SINGLE FAMILY DISTRESSED PROPERTY* SALES	PERCENT DISTRESSED SALES
2008	829	301	36.3
2009	994	400	40.2
2010	856	268	31.3
2011	856	300	35.0
Total	3,535	1,269	35.9

*Distressed property includes short sales as well as foreclosures
 Source: Rhode Island Home Sales Statistics, www.statewidemls.com/RealtorResources/SalesStats/Default.asp

1 www.trulia.com

FIGURE 7.2: Median Sales Price



Source: Trulia.com

cities who have gone through this process ended up staying in their homes.

Warwick has worked closely with Rhode Island Housing on the foreclosure problem. RI Housing, in partnership with the U.S. Department of the Treasury, has created a special program of foreclosure prevention and assistance, the Hardest Hit Fund (HHFRI). Four programs—1) Mortgage Payment Assistance-Unemployment Program; 2) Temporary and Immediate Homeowner Assistance; 3) Loan Modification Assistance; and 4) Moving Forward Assistance—are available to eligible homeowners.

To be eligible, owner-occupants of 1- to 4-family homes or condominiums must have a documented financial hardship, such as unemployment, unexpected medical expenses, or disability; meet income requirements (gross annual income of less than \$102,400 for households of 3 or more persons); monthly mortgage payments over 31% of gross monthly income; and they must have no financial resources. Special assistance is available for groups such as seniors, owners of deed-restricted and subsidized properties, those who have received natural disaster assistance (such as from FEMA) and still need help because of extensive damage, and deployed or veteran members of the armed forces.⁴

⁴ www.hhfri.org/WorkArea/DownloadAsset.aspx?id=2147485845; www.hhfri.org

What is “affordable housing?”

The state of Rhode Island uses the same definition of housing affordability as the federal government. Housing is affordable if households with incomes of 80% or below the Area Median Income (calculated annually by HUD) pay no more than 30% of their income for housing costs. “Permanently affordable housing” has a land lease or deed restriction to keep the housing units affordable for at least 30 years.

4. Affordable Housing: Low- and Moderate-Income Housing

Housing affordability is a continuing challenge in Warwick and across the state, despite the impacts of the Great Recession. *HousingWorks Rhode Island* reports that Rhode Island families pay a greater percentage of their income on housing than any other New England state. Statewide, rental costs for a two-bedroom apartment increased 50% between 2001 and 2010. One in four Rhode Island renters spends 50% or more of their income on housing.⁵ Fewer people are able to buy homes because of unemployment and because lenders have returned to more stringent loan criteria. Demand for

⁵ “Rental Housing in Rhode Island,” *HousingWork RI Issue Brief*, vol. 6 no. 1 (February 2012).

Table 7.3 Warwick Housing Affordability 2011

Typical monthly housing payment* for a \$155,000 house	\$1,254
Household income required to afford a \$155,000 house	\$50,146
Average monthly rent for a two-bedroom apartment	\$1,208
Household income required for that rent to be affordable	\$48,320
Average private-sector wage for jobs in Warwick	\$41,132

Source: *HousingWorks Rhode Island 2011*

Table 7.4 Housing Units Qualified as Affordable in Warwick

Total number of year-round housing units	37,244
Housing units that qualify as affordable	1,983
Affordable housing units reserved for the elderly	1,657
Affordable housing units reserved for families	141
Affordable housing units reserved for persons with special needs	185
Homes funded through Building Homes Rhode Island	10

Source: *HousingWorks Rhode Island 2011*

rental housing has increased, so that rental housing is becoming more expensive, in many cases, than ownership housing.

In Warwick, the median cost of a single-family home grew from \$110,000 in 2000 to \$168,000 in 2010—an increase of 53%—while average rent for a 2-bedroom apartment rose 38% to \$1,130 in that same period.⁶ In addition, wages for jobs in Warwick did not rise at the same rate. However, since the early 1980s, some 1,885 units of lower-cost, entry-level housing have been demolished through expansion of T. F. Green Airport.

Housing is considered affordable if housing costs consumes less than 30% of the household’s income. Given the \$37,076 average private sector wage for jobs in Warwick (home to three of the state’s top 5 employment centers) in 2010, the “typical” worker in a Warwick job could afford to pay \$927 per month for housing – well below the \$1,324 per month required for a “typical” house in Warwick and less than the \$1,130 required for the “typical” 2-bedroom apartment.

However, most people who live in Warwick do not work there. For example, Warwick’s estimated 2011 median household income of \$59,497, was above the \$50,146 estimated by *HousingWorks Rhode Island* as the affordability threshold for the average house in Warwick. In other words, in 2011 the median household living in Warwick could affordably purchase a home within the city, assuming they had the down payment and could qualify for a mortgage.

At the time of writing, housing prices are continuing to decline, but at a slower pace. In 2011, the median cost of a single-family home in Warwick was \$165,000, well below the state-wide median of \$210,000, and in July 2012, the median Warwick price was \$147,900. It is expected that housing prices in Warwick will decline another 5% or so in 2013, as the housing market continues to make its way through the inventory of distressed properties. The decline in housing prices could present opportunities for acquisition to create permanently affordable housing. The City and nonprofit agencies have

worked to acquire several properties, but price levels, even for distressed properties, remain too high in many cases for acquisition for affordable housing, especially since many of these properties need improvements.

Public and Assisted Housing. The Warwick Housing Authority (WHA) is the largest provider of assisted housing in Warwick. The WHA inventory includes 517 housing units of various types. The majority of units are located in six developments across the city with a total of 481 housing units for elderly and disabled persons. Additionally, the WHA operates 36 “scattered site” single family or duplex units to house families with children. Approximately 5% of all units owned by the Housing Authority are handicap-accessible. The WHA also manages the City’s Housing Choice Voucher program (formerly known as “Section 8”), which subsidizes the rent of eligible families in privately owned housing units. Although the US Department of Housing and Urban Development (HUD) has authorized the WHA for up to 350 vouchers, in recent years renters have only been able to use about 190-208 vouchers because the Fair Market Rents (FMR) established by HUD are not competitive in a market where rents are rising and a two-bedroom apartment typically costs over \$1,000/month. The FY 2012 FMR for a two-bedroom apartment in Warwick is \$910/month. The need for assisted housing can be seen in the growth of the WHA waiting list. As of late 2013, the WHA reported approximately 400 names on its waiting list; in 2010, the waiting list had approximately 1,000 names. The Section 8 waiting list in late 2013 had 646 names.

The WHA also has two Section 8 project-based contracts with nonprofit housing providers for a total of 20 units. In addition to working with housing nonprofits, the WHA has created the Warwick Non-Profit Housing Corporation, which currently owns two properties, to develop additional affordable housing.

Table 7.5: Warwick Housing Authority Inventory

TYPE	NUMBER OF UNITS
Elderly	460
Disabled	21
Family	36
TOTAL	517

Source: Consolidated Plan for the City of Warwick 2010-2015

⁶ Data on affordable housing need comes from *HousingWorks Rhode Island 2011 Fact Book*.

City of Warwick Housing Programs. Warwick is an “entitlement” community, which means that it annually receives federal funding from the Community Development Block Grant (CDBG) and HOME programs. The City of Warwick Office of Housing and Community Development administers housing assistance programs for eligible households (currently \$60,500 annual income in 2012 for a household of four persons):

- The **Home Improvement Loan Program** assists low-to-moderate income homeowners and owners of rental units that they rent to low-to-moderate income tenants in making improvements.
- The **Lead Hazard Reduction Loan Program** focuses on improvements to reduce exposure to lead-based paint by children under 6 years old. The same eligibility requirements apply.
- The **Sewer Tie-In Grant Program** provides assistance to income-eligible property owners in connecting to the municipal sewer system.

Homelessness. The 2011 point in time homeless count for Rhode Island found 1,070 homeless persons, both in shelters and on the street, throughout the state, including 132 families. The City of Warwick has eleven facilities for the homeless including 5 locations operated by House of Hope Community Development Corporation, two locations operated by RI Family Shelter, two locations operated by the Elizabeth Buffum Chase Center, and Westbay CAP, with two locations. These locations include emergency shelters for families and individuals, transitional housing, and permanent supportive housing. In the last decade, national policy for homelessness has emphasized “housing first,” that is, finding permanent housing for homeless people and then providing them with supportive services, as needed, either to help in a transition to independence or to provide services for those with chronic problems, such as mental illness. This approach has been found to be more effective, both in terms of costs and in terms of helping homeless persons. A significant portion of funding for housing and services for homeless persons comes from federal funds. According to the City’s Consolidated Plan, 2010-2010, there is a small unmet need for two beds of permanent supportive housing.

Warwick and the Rhode Island Low and Moderate Income Housing Act. The Rhode Island Low and Moderate Income Housing Act was enacted in 1991 and has been amended numerous times. All municipalities were to work towards a goal of having 10% of the overall housing stock in low- and moderate-income housing and include these goals as part of the comprehensive plan. In 1999, the law was amended to provide alternative ways to meet the statute’s goals: urban municipalities with at least 5,000 year-round occupied rental units, of which low- and moderate income units comprised 15% of the rental housing. Under this alternative, the City of Warwick, with approximately 9,400 rental units, of which 1,983 are permanently affordable, has met the goals of the statute. If Warwick were to meet the threshold for 10% of all housing units, it would need 1,741 additional long-term affordable homes.

Property and other taxes in Warwick. Although the difficult economy has strained many people’s budgets and taxes were a concern to many who participated in the comprehensive plan survey or public meetings, Warwick’s tax structure is not out of line when compared with peer communities in Rhode Island.

Table 7.6; 2011 Taxes in Warwick and Selected Rhode Island Communities (per \$1,000 in value)

	RESIDENTIAL	COMMERCIAL	PERSONAL PROPERTY	MOTOR VEHICLE
Warwick	17.69	26.53	35.38	34.60
Cranston	20.26	30.39	30.39	42.44
West Warwick	21.40	Variable	33.95	28.47
Pawtucket	17.78	24.54	52.09	53.30
Providence	31.89	36.75	55.80	60.00

Source: RI Department of Administration, Office of Municipal Affairs

5. Housing Needs

Warwick grew steadily during the heyday of suburban growth between 1950 and 1980 and has since begun to decline in population.

Demographic trends. In 2013, the Rhode Island State-wide Planning Program published population projections for the state and cities and towns. Rhode Island

Table 7.7; Warwick Projected Population

YEAR	POPULATION
Census 2010	82,672
2015	80,595
2020	79,243
2025	78,628
2030	77,751
2035	76,458
2040	74,701

Source: Rhode Island Statewide Planning Program, Division of Planning, “Technical Paper 162, Rhode Island Population Projections, 2010-2040,” (April 2013), <http://www.planning.ri.gov/documents/census/tp162.pdf>

lost population during the 2000-2005 period and its population is aging. The state population is expected to decline from 2010 to 2015, grow modestly for a few years, and then decline again in the 2030-2040 decade. The

comprehensive plan has demonstrated, there is demand for walkable, village-like, mixed use environments and transit-oriented development very different from the traditional subdivisions and auto-oriented garden apartment complexes that make up most of Warwick’s housing stock. Because this new demand is for denser housing types, it can be accommodated by redevelopment of underutilized land in already developed areas. By offering new types of housing and amenities, Warwick also has the potential to attract new residents.

state projects that Warwick’s population will continue to decline and that in 2040 the population will be 10% smaller than in 2010. A secular decline in household size has been occurring throughout the country as more people live alone and families are smaller than they were in earlier decades. As a result, while the number of people in Warwick declined between 1990 and 2010, the number of households went up. The number of housing units increased still more: up by 2,594 from 35,136 to 37,730. (In 2010, 486 of these units were seasonal.)

Market-rate housing need. Warwick’s principal need in terms of market rate housing is to diversify its offerings and to provide housing designed in the community environments that people seek. The establishment of the first Village District zone in Apponaug was the beginning of an initiative to revitalize the city’s historic villages that continues with this plan. In addition, creation of mixed use zoning frameworks for redevelopment of faded suburban shopping centers at major intersections will allow for compact, higher-density housing integrated with retail. Housing of this type might be particularly attractive to senior citizens. Transit-oriented development and technology jobs in the City Centre Warwick can attract young adults. The demand for market rate housing and the potential to attract new residents will be linked to several factors: creation of new well-paying jobs; improvements in commuter rail service and safe biking and walking networks; housing near amenities; and aesthetic improvements to public places in the city. The compact development types that are lacking in Warwick and which are increasingly in demand do not require reserving large amounts of land for new suburban-style housing.

Warwick’s average household size in 2010 was 2.33. Assuming the same average household size in 2040, the loss of 7,971 people between 2010 and 2040 would mean a loss of 3,421 households and the same number of empty housing units. There are many imponderables in any population projection over 10 years, and significant economic or other changes could change the trajectory or reduce the losses.

Demand for diverse housing types. Judging strictly on the basis of population projections, Warwick does not need more housing. However, changing household composition and housing preferences are likely to affect Warwick just as much or more than a simple decline in numbers. As noted elsewhere in this plan, Warwick’s 20th century growth took place in the era when families with children constituted the majority of the housing demand. Today, housing demand is much more diverse, with singles, couples without children, empty nesters, and seniors looking for different kinds of housing. Moreover, as the public participation process for the

Affordable housing need. The greatest affordability need in Warwick is for rental housing. In 2010, 7.6% of the Warwick population lived in poverty and 24.4% of the households had incomes under \$35,000. The data provider ESRI Business Analyst estimates that in 2012, nearly 28% of the households in the city had annual incomes under \$35,000. According to the 2010-2015 Consolidated Plan prepared for the U.S. Department of Housing and Development by the City’s Community Development Department, approximately 6,097 households in the city are cost-burdened, meaning they pay



30% or more of their income for housing (2,154 renters of whom 54% are elderly and 3,943 owners, of whom 48% are elderly). Home improvement programs and tax abatements for income-eligible elderly homeowners help them stay in their homes.

Judging from this data, Warwick's affordable housing need is greater than the gap between existing assisted housing units and the state goal of 10% of all housing in Warwick. Approximately half of that need is for elderly households, with small family households of two to 4 members making up the majority of the remainder.



NEIGHBORHOOD ISSUES

1. Neighborhood Characteristics

While historically Warwick was a city of villages, the suburban development that replaced farms, filling in between the village districts and resort communities of the 19th century in the post-World War II era, blurred the identity of many of the old villages. The combination of commercial development, the expansion of major roads, patterns of subdivision site design, and the increase in vehicle traffic that came with rapid population growth, tended to physically divide many of the original villages.

As noted in Chapter 3, Warwick neighborhoods reflect the characteristics of the predominant housing and subdivision styles of the time they were built. Waterfront areas recall Warwick's era as a resort, combining waterfront estates with summer cottage colonies at Oakland Beach, Conimicut, Gaspee Point and Buttonwoods. Pawtuxet Village retains the strongest historic village fabric, while Conimicut, Apponaug, and Pontiac have retained some village-style character, including small retail businesses. The post-World War II suburban housing boom created many neighborhoods of modest single family homes, while late-20th century building focused on a more affluent market by building larger homes on one-acre lots. The history and pattern of the last 50 years

of subdivisions in Warwick, with poor connectivity and cul-de-sac designs, exacerbated the complex circulation issues that already existed because of the location of the airport and a coastline of coves and bays.

2. Sustaining Livable Neighborhoods

Keeping up the neighborhood. Although survey respondents and residents who participated in the public meetings generally feel that their neighborhoods are good places to live, the impact of the Great Recession on Warwick's housing market and economy concerns about the impact of vacant and abandoned housing on neighborhoods and code enforcement were at the top of the list of current issues. The extent of these problems and the level of concern about them is probably greater now than ever before and needs more focused attention. Warwick's recovery will be hastened by making sure that neighborhoods continue to reflect the sense of quiet, safe, and orderly suburban life that residents value.

Aging populations and the generational transition. Like most mature, suburban-style communities, Warwick has an aging population. On the one hand, this means that the City has to continue to pay attention to meeting the housing needs of a growing senior population. Features of the aging of the population will include downsizing of households, more demand for single-level housing, and potentially more demand for subsidized senior housing. On the other hand, the City must begin to think about the generational transition that will take place over the next several decades and the housing preferences and needs of the Millennial Generation now reaching adulthood and forming families.

Luckily, these trends have some convergent characteristics. Both empty-nesters and seniors are increasingly interested in walkable, village-like environments, where they can find activities without having to drive and can be a part of a community. Similarly, the Millennials, especially singles and couples without children, are also attracted to compact, walkable neighborhoods. In both cases, improving Warwick's village districts, as the City has begun to do, as well as enhancing connectivity and options for walking and biking in the traditional sub-

urban precincts of the city, have public support. Implementation of the transit-oriented development plan for the City Centre area will also help Warwick meet the increasingly diverse housing and transportation needs of 21st century households.

Finally, Warwick needs to make sure that the neighborhoods built in the 1950s to 1970s, and the summer colonies of neighborhoods such as Oakland Beach that became year-round neighborhoods can continue to be attractive to new generations of residents.

Locations near the water will always be sought after, as long as the housing and neighborhoods are well-maintained, function well if they have attractions for people outside the neighborhood, and preserve some sense of distinct neighborhood character (which could be very different, for example, in Buttonwoods and Oakland Beach), as well as retaining affordability. One of the biggest long-term challenges facing the waterfront districts is the likelihood of more extreme weather events and sea level rise as the result of climate change. (See Chapter 13 – Resilience for more discussion of this aspect of waterfront locations).

The trajectory of the typical subdivisions of the 1950s to 1970s will depend on a number of variables. In the 1990s and early 2000s, in some metropolitan areas, close-in suburban jurisdictions experienced decline because they could not compete with the sprawling development of newer, bigger housing built on larger lots in outlying communities. Neighborhood commercial districts and strip centers lost business to big box and power centers. At the time of writing, retailing is in flux as the recession reduced spending, people are buying more on line, and big box companies experiment with smaller formats.

Two of the most important attributes of Warwick are not likely to change. The most common reply to the survey question on the most desirable aspect of the respondent’s neighborhood was the convenient location. The free answer sections of the survey indicate that this means the convenience of residential Warwick to I-95, to the shopping malls and Route 2, and, for a number of people, to transportation options, including the airport.

Another highly-valued attribute is the city’s park and recreation system, which will continue to attract people to live in Warwick. Continued high school quality and low crime rates will also contribute to making the city a sought after place to live.

Keeping the city’s suburban subdivisions competitive in the 21st century will include initiatives to connect these neighborhoods to focused commercial districts—rather than long commercial strips—with a more village feel. In addition, regulations should include guidance for renovations and enlargement of homes so that older capes and ranches can be renovated to meet the needs of modern households and families while keeping some level of consistency in neighborhood character.

Because the housing bust has to run its course and the Rhode Island economy will require time to recover, the City has time to prepare for opportunities and changes in the future.

3. Village Districts

Warwick’s Village District zoning, first applied in 2011 to Apponaug Village, is designed to meet some of the housing and neighborhood challenges identified in the discussion above. Village District zoning provides a regulatory framework for the development of mixed-use villages with ground-floor retail and upper story apartments, additional residential development (including live-work units) to help support the retail base and arts businesses, and design guidelines to promote pedestrian-friendly, compatible design. Village district zoning has also been adopted for Conimicut Village and is suitable for Pawtuxet and other historic villages.

F RECOMMENDATIONS

GOAL 1

Warwick has a wide range of quality housing choices to meet the diverse needs of households at all income levels and all stages of the life cycle.

POLICY

- Support addition of compact housing types such as townhouses, lofts, apartments, cottage developments and conservation subdivisions, in suitable locations.
- Continue efforts to provide scattered site affordable housing for families.
- Support implementation of an affordable housing plan

STRATEGIES

A. Promote a mixture of housing choices in the City as well as mixed-income housing in City Centre Warwick within walking distance to commuter rail.

Actions:

1. Allow compact, higher-density housing options in and adjacent to Village Districts and City Centre Warwick, including appropriate design standards.

Multi-family and other higher-density housing options should be focused in areas that contribute to the creation of neighborhood centers, so that residents can walk to neighborhood retail or to employment centers. Transitions between single family neighborhoods and higher-density and commercial neighborhoods must be included in design standards. This approach will avoid the tendency in suburban environments to create pod-like, isolated multi-family developments on arterial streets.

2. Create a mixed-use Neighborhood Center zoning district to promote redevelopment of older shopping centers at major intersections.

Residential uses in these districts could be particularly attractive to seniors looking for walking access to retail and services. Intersections suitable for Neighborhood Center mixed use zoning include Lakewood, Hoxsie, and Wilde’s Corner.

3. Establish an option for multi-family, townhouses or similar housing options along major corridors through mixed use zoning.

Segments of major street corridors like Warwick Avenue, Post Road, West Shore Road and Jefferson Boulevard could provide opportunities for diversifying Warwick’s housing stock.

4. Amend the zoning ordinance to support minimum mixed-income housing within the City Centre.

B. Provide for conservation subdivisions by right, and consider making them mandatory, with appropriate design standards, in remaining open areas that may be developed some time in the future.

The Warwick zoning ordinance allows single family cluster subdivisions in residential districts, allowing development of the same number of units that would be permitted on the land in a conventional subdivision. The ordinance also provides for a minimum development area and usable open space area in each residential zoning district.

Although development may not be imminent, some remaining large parcels may eventually be considered for development. (This can include private recreational lands, such as golf courses, that residents often believe will always continue in their current use. Private organizations sometimes have financial difficulties and need to sell land. It is important that the City be prepared for such eventualities.) Well-designed conservation subdivisions can be attractive to the city and adjacent neighborhoods because they can help retain an open space character, and they are attractive to developers because roads and other infrastructure are less costly when pro-

vided in a compact footprint. This housing pattern tends to have strong market acceptance, because it can provide walking trails and access to nature that are not available in a traditional suburban neighborhood.

Actions:

- 1. Revise the zoning ordinance to create a conservation subdivision with a limited density bonus to promote use.**

Best practices for site design require a process of 1) site analysis to identify not only the features of the land that are protected or undevelopable, but also those that are especially important to the character of the land; 2) identification of preservation areas, which will include environmentally regulated and otherwise sensitive lands, areas connected to other protected open space, and areas of special interest (such as preservation of views, special landscape features, etc.); and 3) conceptual design of the street and lot layout.⁷

C. Consider single-level, aging-in-place housing options as a way to diversify housing types for seniors and affordable housing.

Warwick’s aging population will need new options for housing that allow them to age in place.

Actions:

- 1. Create a special regulation zoning district for single-level housing friendly to aging in place.**

D. Refine and implement an affordable housing plan.

Actions:

- 1. Continue the partnerships between the Warwick Housing Authority, nonprofit agencies, and for-profit developers to provide project-based Section 8 certificates for transitional housing, supportive housing, and mixed use housing.**

Declining funding of local public housing authorities is making it increasingly difficult to make long-term commitments of this type, but the potential tool should be retained.

- 2. Promote creation of service networks for senior citizens that help them stay in their homes for as long as possible.**

Beacon Hill Village was the first membership organization created to help seniors get access to services so that they can age in place as long as possible.⁸ There are over a hundred of these organizations in economically and ethnically diverse communities and interest is growing.⁹

“It works like this: Members pay an annual fee (the average is about \$600) in return for services such as transportation, yard work, and bookkeeping. The village itself usually has only one or two paid employees, and most do not provide services directly. Instead, the village serves as a liaison — some even use the word concierge. The help comes from other able-bodied village members, younger neighbors, or youth groups doing community service. Villages also provide lists of approved home-maintenance contractors, many of whom offer discounts to members. By relying on this mix of paid and volunteer help, members hope to cobble together a menu of assistance similar to what they would receive at a retirement community, but without uprooting their household.”¹⁰

In addition to the benefits to the seniors themselves, this kind of organization can be important for the City because it means a reduced need to build special senior housing and a longer period of generational transition in housing during a difficult economy.

- 3. Continue to work to identify city-owned land and foreclosed properties that could be made available for affordable or mixed-use housing.**
- 4. Consider acquisition of foreclosed properties for rehabilitation and use as scattered site affordable housing.**

8 www.beaconhillvillage.org

9 Village to Village Network (www.vtvnetwork.org) links the organizations and provides common services.

10 <http://www.aarp.org/home-garden/livable-communities/info-04-2011/villages-real-social-network.html>

7 Randall Arendt, *Growing Greener* (Washington DC: Island Press, 1999), and numerous other publications provide details on creating effective conservation subdivisions.



5. **Continue to facilitate access to housing counseling programs for those at risk of foreclosure or homelessness.**
6. **Explore the establishment of affordable housing zoning incentives or inclusionary zoning for mixed-use districts, such as the Village Districts and City Centre.**

Affordable housing zoning incentives typically offer a limited increase in density in return for development of permanently affordable units similar in size and quality to market-rate units. This could be an effective way to increase the affordable housing stock in Warwick while enhancing the critical mass needed to support mixed-use, walkable districts.

-
- E. **Continue and expand, when possible, rehabilitation programs for low- and moderate-income homeowners.**
-

When economic conditions are difficult, low- and moderate-income homeowners often find it hard to keep up maintenance on their homes. This is not only a problem for the homeowners, but affects the block, neighborhood and city as a whole.

Actions:

1. **Seek additional resources for rehabilitation programs.**
Federal funding for housing programs has been declining for decades with little prospect of change. Other resources could include programs for energy efficiency and, for tasks such as painting or simple repairs, corporate, young adult and faith-based community service programs.

GOAL 2

All neighborhoods have retained or enhanced their character and livability.

POLICIES

- Support improvements to neighborhood connectivity.
- Support new systems to enhance enforcement of property standards.
- Consider design standards and conservation districts to promote high quality design.

STRATEGIES

-
- A. **Establish a robust, proactive and coordinated code enforcement program and property standards system that will facilitate the resolution to code issues that threaten the use and enjoyment of neighboring properties and the general quality of life of the surrounding community.**
-

Actions:

1. **Establish responsibility in an existing or new position for coordination of code enforcement and property standards.** As is true in most cities, code enforcement involves a variety of departments and agencies. Cities with enforcement problems much more serious than Warwick's have found that giving coordination responsibility to one person who is directly accountable to the mayor can be very effective. This director of code enforcement then works with the various agencies and departments to clarify roles, ensure that they work together in a coordinated way to implement policy, and s/he will be responsible for setting measurable goals and making regular public reports on progress.
2. **Create a code enforcement program designed to address stewardship and public safety issues for single-family structures operated as rental properties within residential neighborhoods.**

3. Explore a ticketing system for quality of life violations.

Many communities have developed ticketing systems with fines for quality-of-life offenses. Not only do these programs improve neighborhoods, but there is considerable evidence that they help cut crime. At the same time, funds from the fines can help pay for the cost of enforcement.

4. Establish an online/mobile system for receiving and responding to citizens' concerns about quality of life violations.

As more and more people use smartphones and want to use computers to interface with government, applications that promote communication between residents and city government have become more and more common. See ClickFix (<http://seeclickfix.com/citizens>) is an existing online utility used by some communities. Boston has an award-winning app for smartphones (<http://www.cityofboston.gov/doi/apps/citizensconnect.asp>). Code for America is developing a number of open source applications which could be modified to suit Warwick. (<http://codeforamerica.org/projects/>). Of course, these utilities will only work if the city is organized to respond efficiently to reports by citizens.

5. Consider an ordinance for registration and periodic inspection of rental housing.

Landlords would pay a fee to support the cost of inspection. If desired, single family homes could be exempted from the program.

B. Create Sustainable Neighborhood Livability Plans and Projects.

Actions:

1. Building on existing neighborhood plans and working with neighborhood residents, develop neighborhood-focused plans.

Livability Projects should be identified that will increase connectivity through pedestrian and bicycle improvements and routes to community destinations; identify opportunities for tree planting, Friends' groups to support park maintenance

and similar projects; and initiate energy efficiency, stormwater management and other sustainability demonstration projects on the neighborhood level.

GOAL 3

Warwick villages have a mixture of uses and have become more walkable.

POLICY

- Support improvements to Village Districts to enhance walkability, provide amenities, and encourage mixed-use development.

STRATEGIES

A. Make Apponaug Village into the city's civic center and establish additional Village District zones.

Actions:

1. Implement the Apponaug Village Master Plan and expand the area of Village District zoning to include the mill site and areas surrounding the residential core of the village.

The Apponaug Village Master Plan builds on the framework created by the Bypass project and Village District zoning. Among the important goals of the plan are to restore the Village connection to the waterfront, daylight Hardig Brook in the Apponaug Mill area and create a signature public space that symbolizes Warwick's historic, environmental and cultural identity.

2. Establish Village District zoning in Pawtuxet, Pontiac, and East Natick Villages and in the Oakland Beach village area.

B. Give high priority to connecting Village Districts with surrounding neighborhoods and community destinations through pedestrian and bicycle routes.

Actions:

- 1. Identify opportunities for pedestrian and bicycle routes radiating from Village Districts and important community destinations.**

The Village Districts represent the most immediate opportunities to create activity centers and compact mixed-use, walkable environments. In order to start creating better connectivity within Warwick, the best routes for walking and biking to and from these districts must be identified and given priority for improvements.

-
- C. Explore establishment of a Main Streets program to organize merchants and promote improvements for Village Districts.**
-

Actions:

- 1. Start Main Streets programs in Village Districts.**
Main Streets Programs, first developed by the National Trust for Historic Preservation, have been successful in small towns and urban neighborhoods around the country.¹¹ Although the program is based on volunteer committees made up of merchants and others in the district, a key element of the most successful programs is to have a paid director. Funds for the director can come from the city, from corporate partners, and from foundations.

-
- D. Provide incentives for appropriate development in Village Districts.**
-

Actions:

- 1. Offer incentives such as limited tax abatements or creation of a TIF district for public improvements for development in Village Districts.**

-
- E. Establish a regular series of cultural events in Village Districts.**
-

¹¹ <http://www.preservationnation.org/main-street/>

Actions:

- 1. Work with arts and culture organizations, the schools, and others to create events that encourage repeat visits and enhance business for local merchants.**

Concert series, performances, art in vacant storefronts, pop-up stores, and similar activities can help reinforce the identify and “brand” of Village Districts, both for residents and for businesses.

GOAL 4

Neighborhood commercial areas are modernized and serve residents well.

POLICY

- Support new design standards for neighborhood commercial districts.

STRATEGIES

-
- A. Establish mixed use zoning for Neighborhood Centers to concentrate retail uses at major intersections along commercial strips to create destinations.**
-

Low-density, low-value uses on long commercial corridors in suburban conditions tend to drive out other uses but typically never attain enough critical mass to become destinations. Their many curb cuts contribute to traffic congestion on these arterial roads. A zoning strategy that focuses retail and service uses in nodes along the corridors and returns the rest of the corridors to less traffic-intensive uses, such as office or residential, over the long term will strengthen neighborhood commercial destinations.

Actions:

See Actions 1.A.2 and 1.A.3 above.

-
- B. Establish design standards and incentives for substantial renovation and new construction in neighborhood commercial districts, including sustainability measures.**
-



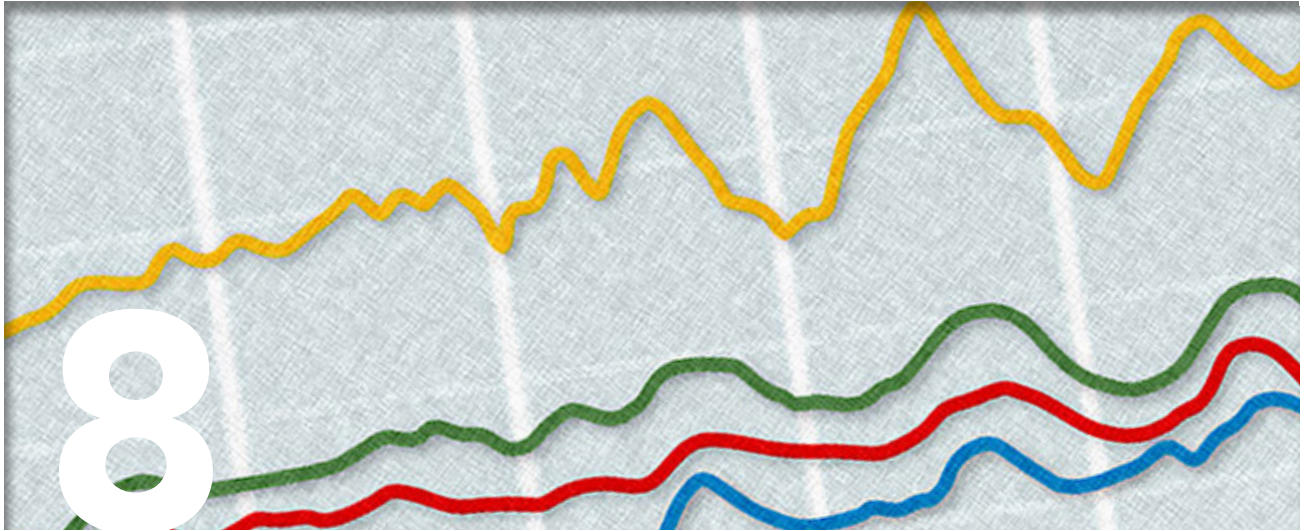
Actions:

1. Create a Mixed-Use Neighborhood Center zoning district and a Mixed-Use Corridor zoning district with appropriate standards and incentives.

Warwick's General Business District covers a broad array of environments, from the malls and big boxes to neighborhood retail. As not all neighborhood commercial areas may be appropriate for Village Districts, the City needs zoning districts that provide guidance for retail, commercial, and mixed-use development and redevelopment in areas such as Warwick Ave/Airport Road, Post Rd/Elmwood Ave, Sandy Lane/West Shore Rd where older strip malls and auto-dependent retail predominate. New retail investment in these areas will begin to appear as the economy improves, and the City should be ready with regulatory frameworks that will result in high quality development. These new zoning districts will also allow multi-family development. (See Chapter 12)

Standards for retail should include:

- Pedestrian-friendly design on site and in connections to the site
- Unobtrusive parking with sufficient signage to indicate where parking exists
- Perimeter and parking lot landscaping for shade and permeability
- Building design that avoids long expanses of blank walls
- A combination of requirements and incentives for "green" building



Economic Development

FROM A WARWICK RESIDENT

“Warwick is blessed with many excellent assets and business development opportunities for future growth.”



A GOALS AND POLICIES

GOALS

Attract and retain businesses in key existing and emerging economic base industries.

Preserve and strengthen neighborhood retail districts that enhance the quality of life in the city's neighborhoods.

Improve the business environment.

Increase access to high-quality employment opportunities for Warwick residents.

POLICIES FOR DECISION MAKERS

- Implement plans for the City Centre Warwick, a new innovation district near I-95, and enhancement of the Bald Hill Road corridor.
 - Identify target industries and strategically target marketing, development incentives, and land use policies to attract and retain businesses in these industries.
 - Implement land use policies that support a diversity of industries and promote a strong, stable tax base.
 - Work to retain traditional industries that remain economically viable and have played an important role in the city's historical development.
 - Invest in public infrastructure to catalyze private development.
 - Engage in public-private partnerships to stimulate suitable forms of development and redevelopment on key sites.
 - Promote Warwick's quality of life as an economic asset.
-
- Incorporate neighborhood-based commercial development into the neighborhood planning process.
 - Support the development and sustainability of locally-owned businesses.
 - Invest in public infrastructure to catalyze private development.
 - Provide incentives for property improvements.
-
- Increase responsiveness to business concerns.
 - Streamline business regulatory processes.
-
- Strengthen coordination between economic development and workforce development.



B FINDINGS AND CHALLENGES

findings

While Warwick experienced moderate job growth in the early part of the last decade, employment declined considerably between 2006 and 2010, faster than both the state and the nation.

Warwick has a relatively high share of jobs in low-to moderate-wage industries, translating into a relatively low average wage.

Warwick's most important primary industry sectors are health care and social assistance, retail trade, and accommodation and food services.

Most of the city's primary industry sectors have experienced job loss during the past decade, with only three, health care and social assistance, professional and technical services, and private educational services, experiencing growth.

Compared to the state and the nation, Warwick has high concentrations of employment relative to total employment in transportation and warehousing, real estate and rental and leasing, retail trade, management of companies and enterprises (e.g., national or regional corporate headquarters), and finance and insurance. This suggests that it maintains a competitive advantage as a location for firms in these industry sectors. While Warwick shed jobs in all of these sectors during the past decade, real estate and rental and leasing, management of companies and enterprises, and finance and insurance declined at a slower pace than overall employment, indicating that they may be better positioned to rebound as the general economy improves.

Particularly strong growth opportunities are indicated in the tourism, ambulatory health care services, professional and technical services, and medical device manufacturing industries.

The unemployment rate for Warwick residents has remained consistently, if only slightly, below the state average during the past decade. However, after starting the decade below the national average, local unemployment surpassed the national rate in 2007 and remained above it through 2010.

Among industries, Warwick residents are most likely to be employed in health care and social assistance, retail trade, manufacturing, educational services, finance and insurance, and accommodation and food services.

Among occupations, Warwick residents are most likely to be employed in relatively high-paying professional, management, and business and financial operations occupations, and middle-paying office and administrative support. Smaller numbers are employed in blue collar occupations and low-wage service occupations.

Warwick residents tend to be relatively highly educated, with a higher proportion having obtained a post-secondary degree than their state and national counterparts. Younger residents have significantly higher levels of educational attainment than older residents, making them well positioned to compete for high-skill, high-wage jobs.

The relatively high education levels of Warwick residents are reflected in their relatively high incomes. Warwick residents earn more than their counterparts at both the state and national levels and are much less likely to live below the poverty line.

Warwick has a relatively mature population, with a lower proportion of residents under 45 years of age and a higher proportion 45 years and older than both the state and the nation. While this could portend workforce shortages in the future, most workers in Warwick commute from outside the city.



challenges

Bolstering its position as a regional retail center

Fully capitalizing on its transportation assets

Capturing its share of the state's emerging technology economy, including life sciences and marine technology

Preserving its traditional shellfish industry in the face of ongoing environmental and regulatory challenges

Upgrading its aging and deteriorated commercial and industrial real estate inventory and adjacent public infrastructure

Attracting employers providing higher-quality jobs matched to the educational attainment levels of residents

Strengthening neighborhood retail districts

workforce development programs as very important and another 39 percent as somewhat important.

- The top choice for economic development investment among community survey respondents was increased support for locally-based retail. Other investment choices that received strong support were improving the aesthetics of existing commercial corridors, support for improved waterfront businesses and facilities, support for more neighborhood retail and services, and providing tax incentives to attract new business.
- Businesses cite the need for improved circulation and wayfinding signage to improve access to the waterfront and neighborhood commercial districts.
- Businesses advocate for more business-friendly local regulatory and permitting processes.
- Business point to the need for more effective marketing, both internal and external to the city, to increase patronage of local businesses and attractions



WHAT THE COMMUNITY SAID

- Local job growth was one of the most important issues cited by community survey respondents. 73 percent rated it as very important and 22 percent as somewhat important.
- 61 percent of community survey respondents rated improving the appearance of major roads and commercial corridors as very important and 31 percent as somewhat important. Both business owners and almost all the of survey respondents also cite the need to improve the appearance of major commercial corridors.
- 43 percent of community survey respondents rated promoting mixed-use village development in a “Main Streets” setting as very important and 39 percent as somewhat important. In addition, 56 percent of respondents said that more land should be devoted to this type of development.
- 39 percent of community survey respondents rated increasing post-secondary technical education and



ECONOMIC OPPORTUNITIES

1. Warwick Economy

Wage and salary employment in the city of Warwick stood at 46,439 in 2010. Warwick also had an estimated 10,300 business proprietors and otherwise self-employed workers in that year.¹ The city gained employment during the first half of the last decade but began to shed jobs beginning in 2007 even before the onset of the 2008-9 recession. While the city outperformed both the state and the nation in job growth through 2005, it lost jobs at a faster pace than both the state and the nation between 2006 and 2010. (See Figure 8.1) During this period, wage and salary employment declined by 6,624, or 12.5 percent, from a peak of 53,063.

¹ Proprietor employment data is not available at the municipal level. This estimate is extrapolated from Kent County data sourced from the U.S. Department of Commerce Bureau of Economic Analysis.

Average annual pay for wage and salary jobs in Warwick was \$40,833 in 2010. Pay levels are below both state and national averages and have been consistently so during the past decade. (See Figure 8.2)

INDUSTRY PROFILE

Industry Structure

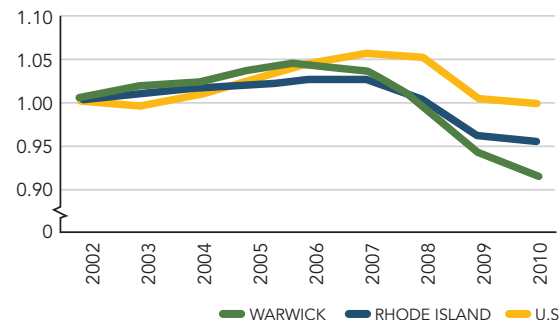
Warwick’s most important primary industry sectors² are health care and social assistance, retail trade, and accommodation and food services, the latter in part encompassing the tourism industry. Together these three industries comprise 44 percent of all wage and salary employment. Other important sectors are government, manufacturing, and finance and insurance. The city’s largest industries pay moderate to low wages, which accounts in large part for the low average pay level of Warwick jobs relative to the state and nation. (See Figure 8.3)

Over the past decade, most of Warwick’s primary industry sectors have lost employment. The most dramatic decline, both on a numerical and percentage basis, has been in manufacturing. Between, 2002 and 2010, manufacturing jobs declined by over 2,200, or 40 percent. The second largest numerical decline was in the important retail sector, which dropped by 1,600 jobs, or 18 percent. The decline in retail employment began in 2006 and continued consistently on a year-to-year basis through 2010. Consequently, while the flood of 2010 was likely responsible for some loss in retail employment in that year, it was not the major contributing factor to this longer-term trend. Other significant losses were in administrative and waste services, and transportation and warehousing, the latter driven by declines in air transportation and related services.

On the plus side, three industries added jobs during this period. Health care and social assistance employment grew by almost 1,000, or 13 percent. Increases also occurred in professional and technical services and private educational services. (See Figures 8.4 and 8.5)

2 As defined by the North American Industry Classification System (NAICS). Primary industry sectors are at the 2-digit level.

Figure 8.1: Trends in Non-Farm Wage & Salary Employment 2002–2010: Warwick, Rhode Island and U.S.



Source: R.I. Department of Labor & Training; U.S. Department of Labor

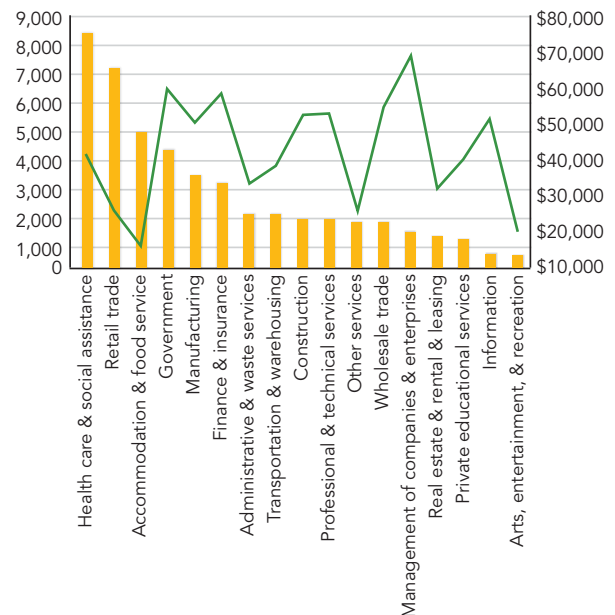
Figure 8.2: Trends in Average Annual Pay* 2002–2010: Warwick, Rhode Island, and U.S.



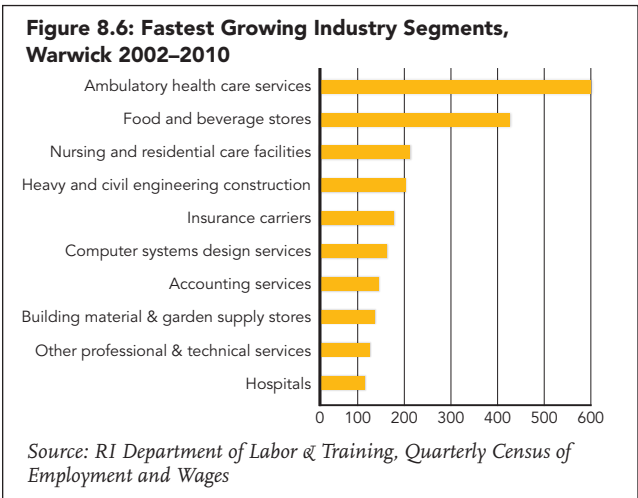
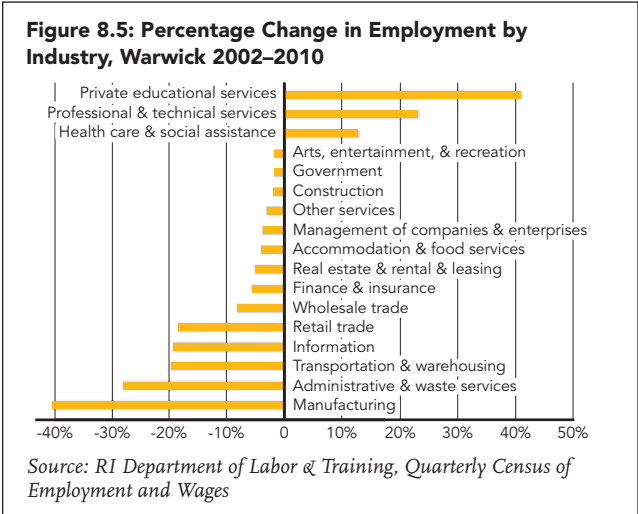
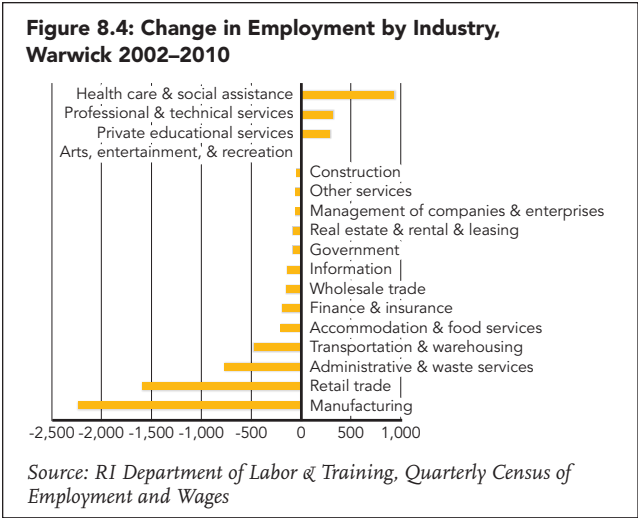
* Not adjusted for inflation

Source: R.I. Department of Labor & Training; U.S. Department of Labor

Figure 8.3: Jobs in Warwick by Industry and Average Industry Wage, 2010



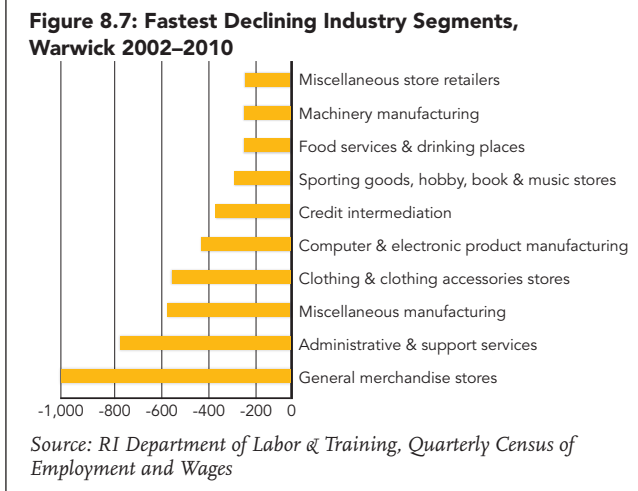
Source: RI Department of Labor & Training, Quarterly Census of Employment and Wages



A more detailed look at industry employment data reveals some of the key industry segments that are driving both growth and decline in the city’s economy. As Figure 8.6 indicates, some of the fastest growing industry segments have been in the health care and the professional and technical services sectors. In health care, growth has been particularly strong in ambulatory health care services, driven by growth in home health care services, and “offices of other health practitioners.”³ Growth has also occurred in nursing and residential care facilities, and hospitals. In professional and technical services, the most significant growth has occurred in computer systems design, accounting, and “other professional and technical services.”⁴ Bucking the overall decline in the retail sector, two retail segments, food and beverage stores, and building material and garden supply stores, have experienced employment growth.

Figure 8.7, which displays the fastest declining industry segments, reveals which industry segments have been driving the decline in the retail and manufacturing sectors. The single fastest declining industry segment is general merchandise stores (e.g. department stores), with the loss of almost 1,000 jobs. A number of other re-

3 Includes chiropractors, optometrists, mental health practitioners (except physicians), physical, occupational and speech therapists, and audiologists, and podiatrists
 4 Includes marketing research & public opinion polling, photographic services, translation and interpretation services, and veterinary services



tail segments, including clothing and accessory stores, sporting goods, hobby, book and music stores, and “miscellaneous retailers”⁵ have also suffered significant declines. In manufacturing, the largest declines have occurred in “miscellaneous manufacturing,” which includes the jewelry industry, computer and electronic product manufacturing, and machinery manufacturing. Another large drop, in administrative and support services, was driven by the decline in employment services, an industry particularly sensitive to economic downturns.

Competitive Position

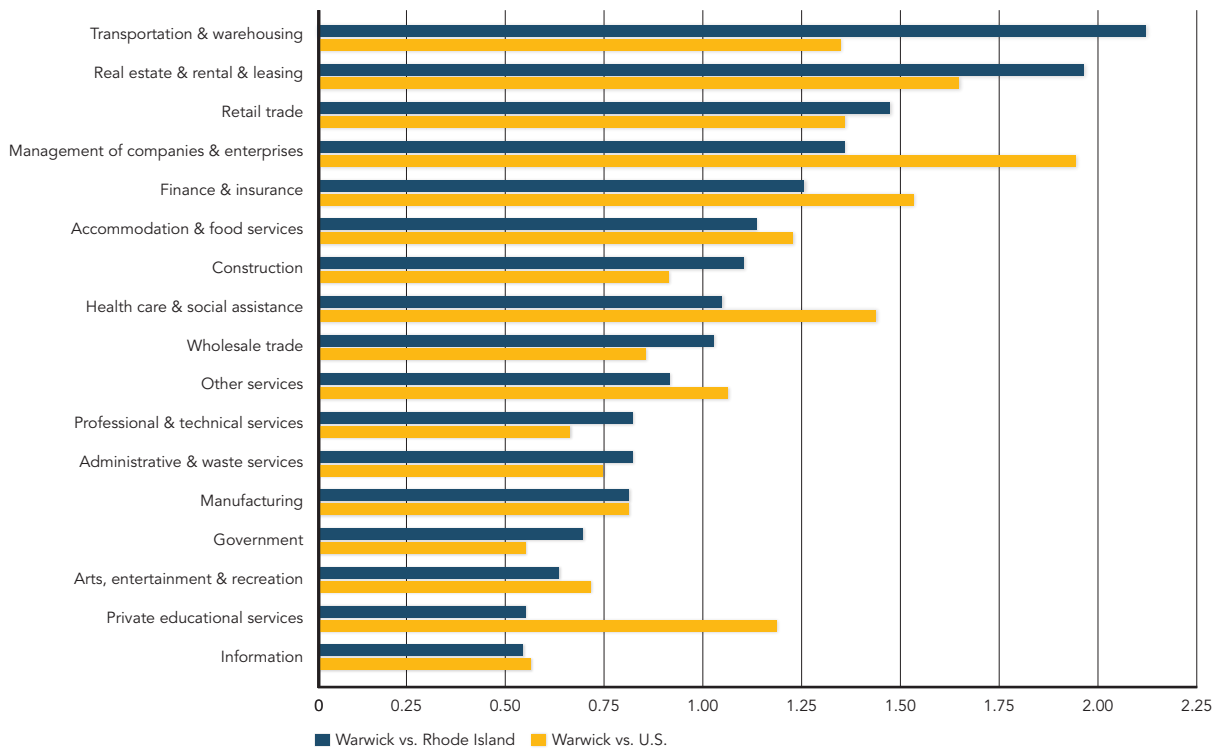
Figure 8.8 shows location quotients for Warwick in primary industry sectors relative to the state of Rhode Island and the U.S. Location quotients indicate the concentration of industry employment in an area relative to a comparison area and are thus a measure of the area’s

competitive strength in that industry relative to the comparison area. A location quotient of greater than one indicates a higher level of concentration and, by implication, a relatively strong competitive position.

Among primary industry sectors, Warwick competes particularly well in transportation and warehousing, real estate and rental and leasing, retail trade, management of companies and enterprises (e.g., national or regional corporate headquarters), and finance and insurance. Warwick’s strength in the first two sectors primarily reflects the presence of T.F. Green Airport, and the high concentrations of employment in industries such as air transportation, couriers and messengers (e.g. Fedex, UPS), and automobile rental, which makes up the bulk of employment in rental and leasing services. The airport is also partly responsible for the city’s strong competitive position in accommodation. (See Table 1 for industry segments with high location quotients relative to the state)

⁵ Includes florists, office supplies, stationary, and gift stores, used merchandise stores, pet and pet supply stores, arts dealers, and mobile home dealers.

Figure 8.8: Location Quotients: Warwick vs. Rhode Island and U.S., 2010



Source: U.S. Department of Labor AND R.I. Department of Labor and Training, *Quarterly Census of Employment and Wages*

Table 8.1: Selected Industry Sub-sectors* with High Location Quotients Relative to Rhode Island

INDUSTRY SUB-SECTOR	EMPLOYMENT 2010	LOCATION QUOTIENT
Couriers & messengers	1,241	7.36
Rental & leasing services	587	3.12
Sporting goods, hobby, book & music stores	457	2.79
General merchandise stores	1,602	2.39
Motor vehicle & parts dealers	1,111	2.14
Insurance carriers	1,601	1.71
Accommodation	634	1.55
Building material & garden supply stores	543	1.44
Clothing & clothing accessories stores	675	1.41
Credit intermediation	1,398	1.35
Real estate	557	1.32
Merchant wholesalers, durable goods	1,072	1.31
Fabricated metals product manufacturing	762	1.31

*1% or more of total employment
 Source: RI Department of Labor and Training, *Quarterly Census of Employment and Wages*

The strength of the retail sector reflects Warwick’s position as a regional retail center, with the proliferation of malls, big box stores, and automotive dealerships, particularly along Route 2. It has particularly high concentrations of employment in sporting goods, hobby, book and music stores, general merchandise stores, automotive dealerships, building materials and garden supply stores, and clothing and accessory stores.

Warwick is also a relatively strong location for management of companies and enterprises. Green Airport, which provides convenient air travel for corporate executives and sales representatives, is likely a factor in this regard. In finance and insurance, Warwick is well-positioned in both the insurance and banking segments.

As noted, all of these industry sectors shed jobs during the past decade, although real estate and rental and leasing, management of companies and enterprises, and finance and insurance declined at a slower pace than overall employment. This may indicate that they

are better positioned to rebound as the general economy improves.

Emerging Growth Opportunities

A review of recent industry trends and future projections, and discussions with local and state economic development professionals, point to a number of particularly strong industry growth opportunities for Warwick. These include tourism, ambulatory health care services, professional and technical services, and medical device manufacturing.

Tourism

Tourism is already a significant industry in Warwick. The city has 16 lodging facilities with 2,237 guest rooms. Six of these have convention and/or smaller meeting facilities (including the state’s second largest convention facility). The city’s central location in the state along with its transportation infrastructure makes it a convenient location for smaller conventions and conferences and provides easy access to all regions of the state for pleasure visitors. The city also has its own tourist attractions, including its coastline, recreational boating opportunities, and other recreational, historical and cultural attractions. Several new or planned initiatives, including the extension of commuter rail to Warwick and North Kingstown, the planned development of City Centre, the proposed development of Rocky Point for active and passive recreational activities, and the runway extension at T.F. Green airport, which would accommodate flights to and from more distant locations, create the opportunity to significantly expand tourism activity in Warwick in both the convention and recreational markets.

Ambulatory Health Care Services

Local employment in ambulatory health care services grew by 26 percent between 2002 and 2010, led by home health care services and “offices of other health care practitioners.” In addition, the Rhode Island Department of Labor and Training projects statewide growth of 19 percent between 2008 and 2018. Industry growth is being driven by the shift in health care services from hospital to outpatient settings and the aging of the population, with a commensurate increase in demand for in-home health care services. With its

relatively high number of aging residents (see Figure 8.17 below), Warwick will experience particularly strong growth in demand for in-home and outpatient services for the elderly.

Professional and Technical Services

While Warwick is under-represented in professional and technical services relative both to the state and nation (see Figure 8.8), this industry was one of only three primary industry sectors to expand locally between 2002 and 2010,⁶ with particularly strong growth in computer systems design services. Moreover, the Rhode Island Department of Labor and Training projects industry growth of 29 percent between 2008 and 2018, the highest for any primary industry sector. With its ample supply of office space, Warwick is well-positioned to capture a significant share of this growth.

Medical Device Manufacturing

Warwick already has a small but growing cluster of medical device manufacturers. According to state employment data, the city had 13 firms in medical equipment and supplies manufacturing employing 339 workers in 2010, an employment increase of 137 percent since 2002. These companies include Geotec, which designs and manufactures custom surgical instruments and other medical devices, and Davol, which develops products for soft tissue reconstruction, specialized surgical procedures, and biologic implants. Companies in other industries also support the medical device industry, such as VR industries, an electronic contract manufacturer, which manufactures circuit boards for medical electronics. With the state focusing on health and life sciences as one of its target industries, and the development of Providence’s Knowledge District, companies formed to develop new medical technologies generated by local research could find a home in Warwick as they outgrow their startup space. The city’s still significant base of machinery manufacturers and metal fabrication firms form a valuable foundation of supportive technology for medical device manufacturers.

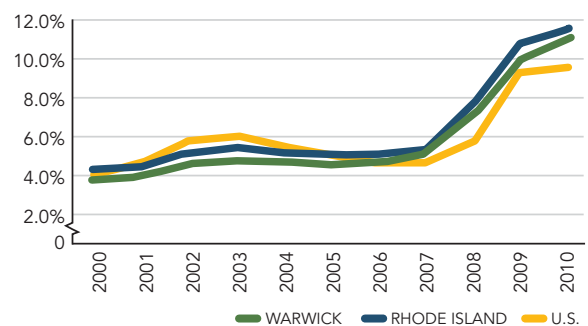
⁶ The other two were health care and social assistance, and private educational services.

Additional Opportunities

A 2013 Market Segmentation Analysis study for the City Centre Warwick identified additional industry opportunities or segments:

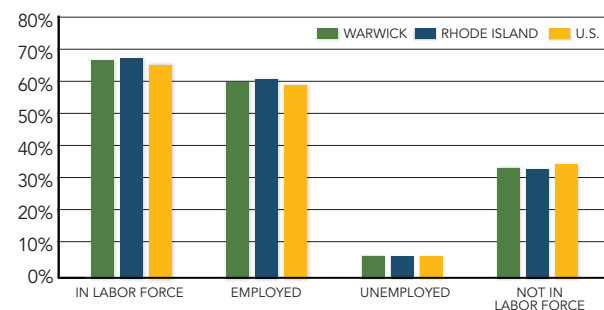
- Educational services – satellite or specialty campus facilities for higher education institutions
- Financial services – back office activities such as call centers, customer service, processing and data centers
- Health care – satellite, regional and walk-in centers
- Biotechnology and pharmaceuticals—small scale manufacturing for clinical trials or scale-up engineering, full scale manufacturing, dosing, packaging and kitting
- Foreign trade—through international air access at TF Green with connections to Quonset/Davisville economic centers, and ideally, Free Trade Zone activities

Figure 8.9: Unemployment Rate 2000–2010: Warwick, Rhode Island, and U.S.



Source: U.S. Department of Labor, Local Area Unemployment Statistics

Figure 8.10: Employment Status of Population 16+, 2009: Warwick, Rhode Island, and U.S.



Source: U.S. Census, American Community Survey, 2009



- Logistics and warehousing—distribution for the New England market; processing and customization for both domestic and international markets
- High value manufacturing and assembly—assembly, final manufacturing, customization, service, and remanufacturing

Warwick Station Development District Master Plan (City Centre Warwick)

The City is pursuing implementation of the Warwick Station Development District (WSDD) Master Plan adopted in 2011. In the words of the Master Plan:

“The District forms the gateway to T.F. Green Airport, one of Rhode Island’s most important economic engines. As T.F. Green has grown, a mix of airport-related uses and commercial strip development has come to characterize the airport’s front door. In establishing the Warwick Station Redevelopment District (WSRD) in 1998, the City of Warwick recognized the underutilized character of the land between the station and the airport and its potential for redevelopment to advance several public goals:

- Create a place of identity and pride for Warwick and Rhode Island.
- Provide economic benefits for Warwick and the state.
- Capitalize on intermodal transportation resources to foster high-value, high-quality, mixed-use growth.
- Create a sustainable, livable community by introducing a variety of housing choices connected to an economic growth center and established neighborhoods and by improving access to transportation, housing, and new jobs.”

Potential for a Warwick Innovation District

“Innovation districts” are economic development tools based on the idea that job growth and redevelopment in targeted locations can be fostered by intentionally clustering businesses, institutions, ideas and people through investing in places and institutions. Typically, an innovation district will include:

- Formal collaboration between three kinds of partners: higher education institutions, the public sector and private enterprise.

- Geographic focus on investing in and improving a particular place, ideally with access to transit, to be the innovation district.
- Initiatives to foster communication and collaboration, including compact, walkable design, and new or enhanced programs and institutions.
- Focus on a specific type of industry or industry cluster and/or a particular type of knowledge workers.

Warwick has an older industrial district in close proximity to the WSDD, between the airport and Jefferson Boulevard and I-95 and the river. With the right planning and regulatory framework and investments in infrastructure and aesthetic improvements, this area can be transformed into an Innovation District to take advantage of some of the economic development opportunities described above.

2. The Workforce

LABOR FORCE PARTICIPATION AND EMPLOYMENT STATUS

The unemployment rate for workers residing in Warwick averaged 11.1 percent in 2010. This was lower than the statewide rate of 11.6 percent but considerably higher than the 9.6 percent national rate. The city’s unemployment rate has consistently remained below state averages during the past decade. It was below the national average for the first part of the decade but then climbed and remained above it from 2007 to 2010. (See Figure 8.9)

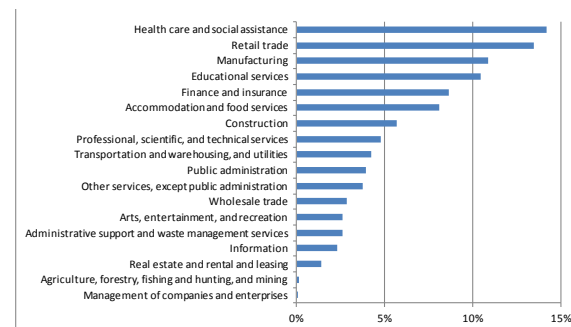
Warwick residents are about as likely to participate in the labor force—that is, to be either employed or looking for work—as other state residents, and slightly more likely than workers elsewhere in the U.S. (See Figure 8.10)

EMPLOYMENT BY INDUSTRY AND OCCUPATION

Warwick residents are employed in a wide range of industries and occupations. Among industries, they are most likely to be employed in health care and social assistance, retail trade, manufacturing and educational services. Almost half of the working population is



Figure 8.11: Industry Employment of the Working Population 16+ 2007–2009 Average



Source: U.S. Census, American Community Survey, 2007–2009

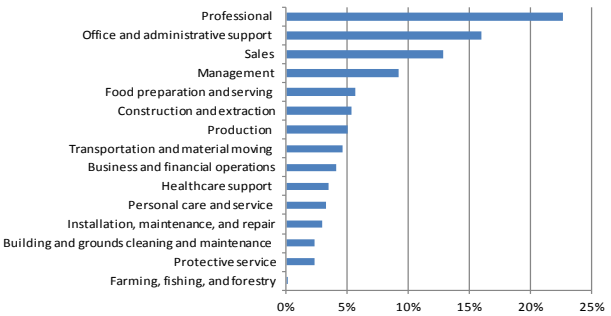
employed in these four industries. Other industries in which a significant number of residents are employed include finance and insurance, and accommodation and food services. (See Figure 8.11)

The distribution of industry employment among Warwick residents is well matched to the industry structure of employment in the city. There is a virtual match among the top six industries in which residents are employed and the top six industry employers within the city.⁷ (See Figure 8.3)

At the occupational level, a high proportion of Warwick residents are employed in relatively high-paying professional, management, and business and financial operations occupations. Thirty-six percent of residents are employed in these three occupations. Other occupations in which a relatively high proportion of residents are employed are generally middle-paying office and administrative support, and sales occupations, a total of 29 percent. Eighteen percent are employed in traditional blue collar occupations including construction, production, transportation and material moving, and installation, maintenance and repair. The remaining 17 percent are employed in lower-paying service occupations,

⁷ Because of differences in the way industry employment by place and industry employment of the population are classified, employment in public education is counted in “government” in the former and in “educational services” in the latter. A large proportion of the jobs by place in government are in public education.

Figure 8.12: Occupational Employment of the Employed Population 16+: 2007–2009 Average



Source: U.S. Census, American Community Survey, 2007–2009

including food preparation and serving, healthcare support, personal care and service, building and grounds maintenance, and protective services. (See Figure 8.12)

EDUCATIONAL ATTAINMENT

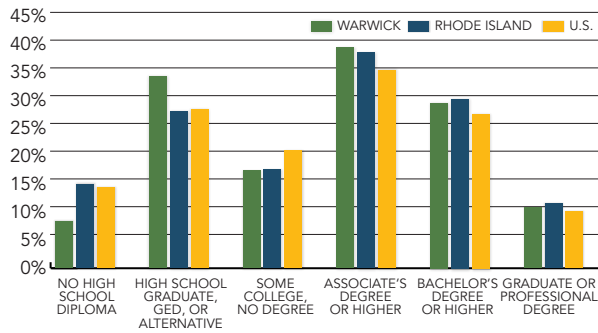
Warwick residents tend to be relatively highly educated. A higher proportion has obtained a high school diploma or equivalent than their counterparts at both the state and national levels, and a higher proportion have obtained a post-secondary degree. However, a slightly lower proportion have obtained higher-level bachelor’s or graduate degrees than the state average. See Figure 8.13)

Warwick residents are also becoming more highly educated. Younger residents tend to have obtained significantly more education than their older counterparts, with 60 percent of those in the 25-34 age group having received a post-secondary credential. Residents in the prime working age group of 35-44, while less educated than the younger counterparts, are more highly educated than older age groups. This puts the younger generations in a good position to obtain higher-skill, higher-wage jobs. (See Figure 8.14)

INCOME AND POVERTY

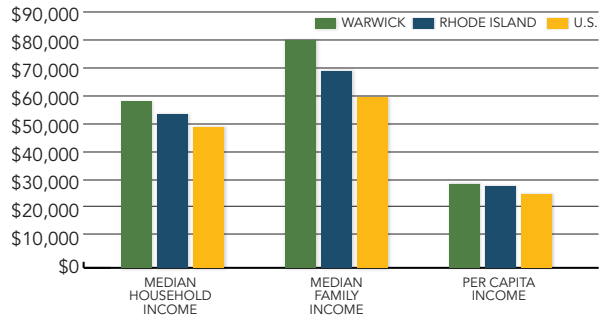
The relatively high education levels of Warwick residents are reflected in their relatively high incomes. Warwick residents earn more than their counterparts at both the state and national levels and are much less

Figure 8.13: Educational Attainment of Population 25+, 2009: Warwick, Rhode Island, and U.S.



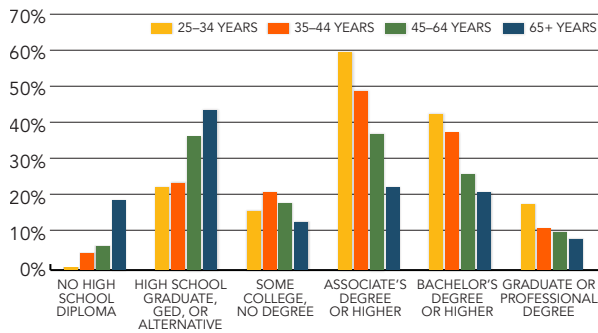
Source: U.S. Census, American Community Survey, 2009

Figure 8.15: Income 2009: Warwick, Rhode Island, and U.S.



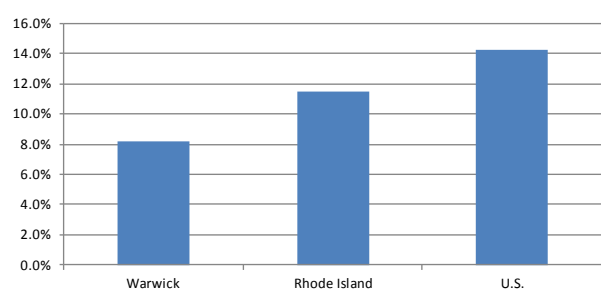
Source: U.S. Census, American Community Survey, 2009

Figure 8.14: Educational Attainment of Population 25+, by Age Group, 2009



Source: U.S. Census, American Community Survey, 2009

Figure 8.16: Poverty Rate 2009: Warwick, Rhode Island, and U.S.



Source: U.S. Census, American Community Survey, 2009

likely to live below the poverty line. (See Figures 8.15 and 8.16)

This may seem contradictory to data presented earlier on the relatively low wage levels of Warwick jobs. However, most Warwick residents work outside the city, reflecting in part the search for higher-paying jobs commensurate with their skills. According to 2000 Census data on work flows, the most recent data available, 63 percent of Warwick’s working residents work outside the city.

AGE

Warwick has a relatively mature population, with a lower proportion of residents under 45 years of age and a higher proportion 45 years and older than both the state and the nation. (See Figure 8.17) This may have implications for the ability of local employers to find workers as the baby boom generation retires, although

almost two thirds of Warwick workers commute from outside the city.

3. Economic Development Resources

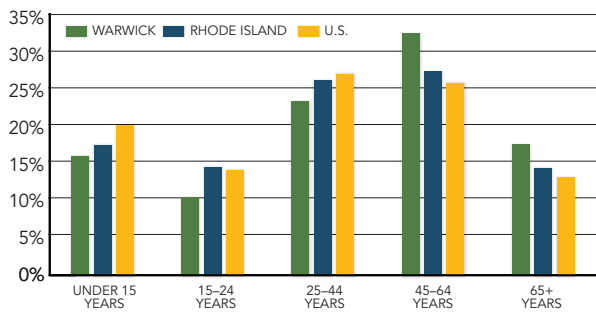
A range of local and state government agencies and nonprofit organizations provide economic development services in the City of Warwick. These include entities involved in both business development and workforce development. The most important of these are described below.

BUSINESS DEVELOPMENT

Warwick Department of Tourism, Culture, and Development

The city’s lead economic development agency, the Department engages in both tourism development and

Figure 8.17: Distribution of Population by Age, 2009: Warwick, Rhode Island, and U.S.



Source: U.S. Census, American Community Survey, 2009

general economic development. Its major activity is marketing, which includes development and maintenance of tourism and economic development websites, social media sites, media buys, ad creation, brochure production and distribution and participation in trade shows, conferences and meetings. The department also maintains relationships with area commercial realtors that in turn provide information on property listings that are stored on the city website. The available property listing is maintained and updated frequently and is accessible to the general public for use as an outreach program for those looking to secure a location in Warwick for their business. The Department also works in partnership with the Rhode Island Commerce Corporation and the Central Rhode Island Chamber of Commerce on business recruitment efforts. It also engages in business retention and expansion through outreach and assistance to existing businesses, networking events and social media. Most of its funding for tourism marketing is generated from state room tax revenues while funding for general economic development marketing comes from the city's general fund.

The Department encourages and utilizes the concepts and practices of geo-tourism while encouraging smart tourism development opportunities. These opportunities include enhancing the city's geographical character by developing and improving it in ways distinctive to the area and reflective of its natural and cultural heritage, so as to encourage market differentiation and cultural pride.

The Department has a staff of three and an annual budget of approximately \$550,000, approximately 60% of which goes towards marketing programs.

Central Rhode Island Chamber of Commerce

The Chamber is the leading business membership organization in central Rhode Island, serving businesses in several central Rhode Island communities, including Warwick. It supports local businesses by acting as an informal liaison with local governments, participating in state legislative advocacy, organizing networking events, sponsoring informational presentations, providing marketing opportunities, and offering discounted services. It also promotes tourism and relocation to the area through its website and distribution of informational brochures.

Central Rhode Island Business Information Center

The Business Information Center (BIC), housed in the Central Rhode Island Chamber of Commerce, provides a one-stop location where current and aspiring small business owners can receive assistance and advice at no charge. The BIC offers internet-based tools, a small business resource library of books and publications, and consultants to help entrepreneurs plan their business, expand an existing business or venture into new business areas. On-site counseling is provided by the Rhode Island Small Business Development Center (RISBDC) and the Service Corps of Retired Executives (SCORE).

Providence-Warwick Convention and Visitors Bureau

The Convention & Visitors Bureau is responsible for promoting Providence, Warwick and the Rhode Island Convention Center Complex as visitor destinations. It provides an array of services and travel planning assistance to visitors and conventions. This includes hosting a website, distributing a visitor and meeting planner guide, and assisting organizations and convention planners with convention planning. It works in collaboration with the Warwick Department of Tourism, Culture and Development to market Warwick as a convention destination and Warwick's lodging facilities to accommodate the needs of Providence-based conventions.



Rhode Island Office of Tourism

The Office of Tourism promotes leisure tourism throughout the state. It hosts a website, distributes a travel guide, and works collaboratively with local communities on tourism development and promotion.

Rhode Island Commerce Corporation

The Rhode Island Commerce Corporation (RICC) is the state's lead economic development organization. A quasi-public agency, RICC promotes business expansion in, and relocation to, Rhode Island by assisting companies with commercial real estate, business financing, state and local business incentives, workforce training and other needs.

RICC's site selection group works with companies considering expanding or relocating in Rhode Island to identify suitable sites, address infrastructure needs, coordinate visits, and analyze alternative locations for expansion and relocation. Once a company has expressed interest in a particular site, RICC works with the local community to develop a combined package of state and local assistance.

RICC focuses on promoting development of industry sectors that have been identified as particularly important to the state's economy. These include consumer products and design, defense and homeland security, financial services, green economy, health and life sciences, information technology and digital media, manufacturing and industrial products, marine trades, and tourism and hospitality.

POLARIS MEP

The Rhode Island Manufacturing Extension Service is a non-profit organization, funded in part through the National Institute of Standards and Technology's Manufacturing Extension Partnership, which helps Rhode Island manufacturers become more competitive by improving their manufacturing processes. It provides training and technical assistance in continuous improvement, lean manufacturing, quality and management systems, facility layout and design, and growth strategies.

WORKFORCE DEVELOPMENT

Rhode Island Department of Labor and Training, Workforce Development Services Division

RIDLIT's Workforce Development Services Division is the lead workforce development agency in the state. In addition to developing and managing programs for businesses, individual workers, and youth, the Division coordinates the workforce development activities of various state departments. It also operates the netWORKri one-stop career centers in West Warwick and three other communities.

netWORKri

The West Warwick netWORKri Center is the closest of the state's four one-stop career centers to Warwick and the one most frequently used by Warwick residents seeking employment services. The centers provide a range of employment services, including:

- staff-assisted or self-directed employment searches;
- employment counseling and testing;
- access to information and referrals to training programs funded through federal workforce dollars including the Workforce Investment Act and Trade Adjustment Assistance;
- local and national job listings;
- a resource area, including library, telephones, copiers, fax machines and computer workstations;
- assistive technology for people with disabilities; and



- workshops including résumé preparation, interviewing skills, job search techniques, computer basics, networking and online short-term course offerings.

The Center can provide individuals who are deemed to need additional occupational training with individual training accounts (ITAs) for training with certified training providers. Training is available in occupations that are deemed to be in-demand according to state labor market data. The Center can also fund enrollment in Adult Basic Education (ABE) and English for Speakers of Other Languages (ESOL) programs at the Community College of Rhode Island for certain eligible workers.

Career Centers seek to collaborate with local governments and nonprofits in a number of ways, including exchanging information about complementary services, making client referrals, improving access to city resources such as libraries and adult education programs, and soliciting local employers to make informational presentations about employment opportunities.

Business Workforce Center

Representatives from RIDLT's Business Workforce Center are the department's liaisons to the business community and simplify the process of obtaining workforce development services in Rhode Island. The Business Workforce Center offers the following employer services:

- developing job orders;
- coordinating recruitments and job fairs;
- pre-screening applicants; and
- facilitating contacts that help employers become or stay competitive (i.e., tax credits, on-the-job training and incumbent worker grants, WorkShare).

Because the Business Workforce Center serves as the primary employer outreach for the department, it also oversees such employer-centered initiatives as Rapid Response and tax credit programs. As a part of the Rapid Response Program, Business Workforce Center staff proactively responds to layoffs and plant closings

by quickly coordinating services and providing immediate aid to companies and their affected workers. Staff works with employers and employee representatives to maximize public and private resources quickly and to minimize disruptions associated with job loss. Rapid Response staff members conduct on-site services to disseminate information on accessing unemployment insurance benefits, One-Stop Career Center re-employment services and training opportunities. Other on-site services include job fairs and customized re-employment workshops, such as résumé development and interviewing strategies.

The Center seeks to strengthen contacts with local governments in order to draw on their established relationships with their business communities to identify businesses in need of its services. It provides informational materials to city agencies for distribution to local companies and encourages referrals of businesses that are either in need of new workers or workforce training, or at-risk of initiating significant lay-offs. While it conducts its own business outreach, it has found that local governments often have more frequent contacts with local businesses and thus can identify needs at an earlier stage.

Youth Services

RIDLT's Workforce Development Services Division provides workforce development services to in-school and out-of-school youth ages 14-24 through 15 Youth-WORKS₄II Centers around the state. Warwick's center is housed in the Buttonwoods Community Center and operated by the Comprehensive Community Action Program. Services include intake and assessment, job search skills training, pre-GED and GED classes, job readiness and work experience opportunities, occupational skills training, National Retail Federation's Customer Service Certification, leadership development, a summer jobs program, case management, and follow-up services.

The Division seeks to collaborate with local governments and school departments and local chambers of com-



merce in order to enhance its services. This can include engaging municipal recreation departments to provide work experience opportunities, developing satellite programs in schools targeted to students performing below grade-level, offering occupational training in career and technical high schools, and recruiting private employers for summer internships. The Division is currently developing a more comprehensive and integrated youth workforce development model that calls for greater collaboration between state and local governments and private employers.

Community College of Rhode Island

CCRI's Knight Campus is located in Warwick. In addition to a wide range of credit-bearing associate degree and certificate programs for students, CCRI provides a range of workforce training services to local businesses:

- Its Center for Workforce & Community Education's Workforce Training & Corporate Education program provides customized training in a range of skill areas, including manufacturing technologies, basic management skills, health and safety, workplace Spanish, computer training, and credit-bearing courses in conjunction with Academic Affairs. Programs can be offered either on site or on campus, and can include credit & noncredit programs, certificate or degree programs, or individual course offering.
- Its EducationToGo noncredit career and workforce online training programs can be used by employers to train individual workers.
- Career and Technical Training offerings include environmental safety programs such as lead abatement and lead inspector training, adult skills training, pharmacy technician II training, professional development for dental assistants and massage therapists, and more.
- It provides customized training and certificate preparation for higher-level professional and management employees through its Institute for Leadership and Organizational Development.

- Through a grant from the RI Department of Education, it provides literacy services to employers, with classes custom-designed to meet the specific needs of a work site. Services include English as a Second Language (ESL) training, basic skills enhancement (reading, math, writing), and GED preparation.

Rhode Island Department of Education (RIDE)

RIDE's Office of Adult Education administers programs in Adult Basic Education, GED, and English for Speakers of Other Languages. Classes support adults who wish to advance their education towards a high school credential, training, and/or post secondary degrees. In Warwick, adult education programs are provided by the Westbay Community Action Program.

RIDE's Office of Multiple Pathways is developing a cohesive system of learning opportunities that integrate academic and 21st Century work and career ready skills to ensure that all learners, grades K-Adult, will have access to diverse program options that match their career interests and the ways they wish to pursue them. The Office includes the teams of Secondary Education, Career and Technical Education, Adult Basic Education and GED, and Virtual Learning teams.



E RECOMMENDATIONS

GOAL 1

Attract and retain business in key existing and emerging economic base industries.

POLICY

- Identify target industries and strategically target marketing, development incentives, and land use policies to attract and retain businesses in these industries
- Implement land use policies that support a diversity of industries and promote a strong, stable tax base
- Work to retain traditional industries that remain economically viable and have played an important role in the city's historical development
- Invest in public infrastructure to catalyze private development
- Engage in public-private partnerships to stimulate suitable forms of development and redevelopment on key sites
- Promote Warwick's quality of life as an economic asset

STRATEGIES

A. Promote Warwick as a home for expanding life sciences, marine technology, and other technology firms, capitalizing on Warwick's location midway between Providence's Knowledge District and the University of Rhode Island in Kingston, and its ample inventory of commercial and industrial space.

Actions

1. Build relationships with the technology community through engagement with organizations such as the Rhode Island Center for Innovation and Entrepreneurship, Rhode Island Science and Technology Council, Rhode Island Manufacturing Extension Service, and Slater Technology Fund.

2. Identify technology firms transitioning from startup to expansion phase and develop targeted marketing approaches including personal outreach, promotional materials, and information on available properties.
3. Monitor trends in development of technology-based industries and communicate with property owners and developers about opportunities for targeted marketing and property improvements.

B. Target marketing to other industries in which Warwick has competitive strengths, including regional retail, professional and technical services, financial services, and distribution.

Actions

1. Develop marketing materials highlighting city's assets and advantages relevant to target industries.
2. Create an industries section on the city's economic development website and use social media to market to target industries.
3. Attend state and regional industry trade shows.
4. Coordinate marketing efforts with Rhode Island EDC.

C. Strengthen and expand the tourism industry.

Actions

1. Identify tourism market segments most likely to experience growth and focus on their development.
2. Selectively develop additional attractions, including the development of Rocky Point for a combination of active and passive recreation activities, full restoration of the Aldrich Mansion in collaboration with the Providence Diocese, and further development of sports tourism.
3. Develop partnerships with local businesses and civic groups that support and build on the area's natural assets, history and culture in order to provide a distinctive, genuine visitor experience.
4. Establish a visitors' ambassadors program that enlists resident volunteers to showcase the city's natural, historical, and cultural offerings through such measures as information kiosks at key entry points and tourism venues, and guided tours.



5. Provide wayfinding and gateway signage to visitor attractions and retail districts.
6. Organize tourism information by defined districts, “packaging” information on attractions, events, retail, dining, and lodging for each district.
7. Promote the development of food and lodging facilities to increase the city’s appeal to targeted markets.
8. Improve waterfront circulation through establishment of a water shuttle to connect major waterfront facilities and venues.

D. Preserve the shellfish industry by maintaining needed infrastructure and appropriate land use policies, and advocating for supportive federal and state policies.

Actions

1. Ensure implementation of provisions of the new Harbor Management Plan addressing the needs of the local shellfish industry.
2. Support preservation of waterfront infrastructure that serves commercial fisherman.
3. Promote branding and marketing of local shellfish in cooperation with state efforts.
4. Develop eco-tourism projects that involve local fisherman and provide them with supplemental income.
5. Support industry advocacy for favorable federal and state fisheries policies.

E. Establish land use and public investment policies that promote the attraction and growth of target industries

Actions

1. Implement the Warwick Station District (City Centre) Master Plan.
2. Implement City Centre Master Plan, zoning ordinance, and design standards prohibiting uses and designs that are nonconforming with the ordinance and principal objectives of the master plan and design goals.
3. Create an Innovation District in the industrial area near I-95 with Technology/Light Industry zoning and

design standards; infrastructure improvements; and public realm urban design improvements.

4. Adopt land use regulations that sufficiently provide for the diversity of target industry development and, in particular, preserve a balance between large-scale retail development and other industry development.
5. Invest in infrastructure improvements in key commercial/industrial corridors such as Jefferson Boulevard, Warwick Avenue, and Post Road to increase their appeal to property developers and professional and technology businesses.
6. Provide targeted incentives for repurposing of vacant and deteriorated commercial and industrial space through tax stabilization and tax increment financing.
7. Establish an overlay district for urban design and functional improvements to the Route 2/Bald Hill Road corridor.

GOAL 2

Preserve and strengthen neighborhood commercial districts that enhance the vitality and quality of life in the City’s neighborhoods.

POLICY

- Incorporate neighborhood-based commercial development into the neighborhood planning process.
- Support the development and sustainability of locally-owned businesses.
- Invest in public infrastructure to catalyze private development.
- Provide incentives for property improvements.

STRATEGIES

-
- A Use land use policies, design standards, and public investments incorporated into broader neighborhood plans to enhance neighborhood commercial districts with a mixture of uses.**
-

Actions

1. Establish design and maintenance standards for neighborhood commercial districts that incorporate



- preservation, high-quality design and neighborhood character.
2. Encourage high-quality mixed-use development at appropriate densities to integrate housing, transit, and neighborhood businesses.
 3. Develop a capital improvement plan for each neighborhood commercial district, including street and sidewalk repair, lighting, street furniture, landscaping, and off-street parking, as appropriate.
 4. Consider the use of Tax Increment Financing in neighborhood commercial districts.
 5. Expand the Apponaug Village Façade Program to other retail districts in need of façade improvements.

B Collaborate with neighborhood businesses to develop business-led initiatives that strengthen the business environment.

Actions

1. Establish a Main Streets Program with assistance from the National Trust for Historic Preservation, incorporating all retail districts whose merchants and property owners agree to participate.
Seek local corporate funding to support a least one professional to staff the program.
2. Establish a dedicated website providing more information on each district identified on the “Shop Warwick” map on the city’s tourism website.
This could include a store listing, parking information, events and special promotions.

3. Establish new channels for sale of locally produced goods and services, such as local farmers, seafood and crafts markets.

GOAL 3

Improve the business environment.

POLICY

- Increase responsiveness to business concerns
- Streamline business regulatory processes.

STRATEGIES

A Develop stronger lines of communication with businesses to better identify and respond to business needs and interests.

Actions

1. Establish a Warwick Business Interest Group within the Central Rhode Island Chamber of Commerce to work with local government to identify and address business opportunities and challenges.
2. Hold periodic meetings with industries groups to identify and address industry-wide needs and interests.
3. Establish a formal business retention program staffed by screened and trained volunteers to conduct periodic outreach to local businesses and provide information, referral and/or direct assistance as needed.

B Make business development regulatory processes more timely and user-friendly.

Actions

1. Establish a one-stop information and referral desk that will use a case management approach to assist businesses with all regulatory issues.
2. Increase coordination among regulatory agencies to streamline and expedite regulatory approvals.
3. Develop a stronger customer-service philosophy through customer service training, effectiveness metrics and continuous improvement processes.



A simple survey can provide information on what needs improvement and what is working well.

GOAL 4

Increase access to high-quality employment opportunities for Warwick residents.

POLICY

- Strengthen coordination between economic development and workforce development
- Increase local employment opportunities for Warwick residents

STRATEGIES

A Leverage relationships with local businesses to promote participation in career education and workforce development programs.

Actions

1. Provide local businesses that have workforce training or recruitment needs with information and referral to Rhode Island Department of Labor and Training's Business Workforce Center.

2. Link local businesses with the Warwick Public Schools to expand career exploration and exposure opportunities.

B Take labor force skill levels into account in business recruitment efforts.

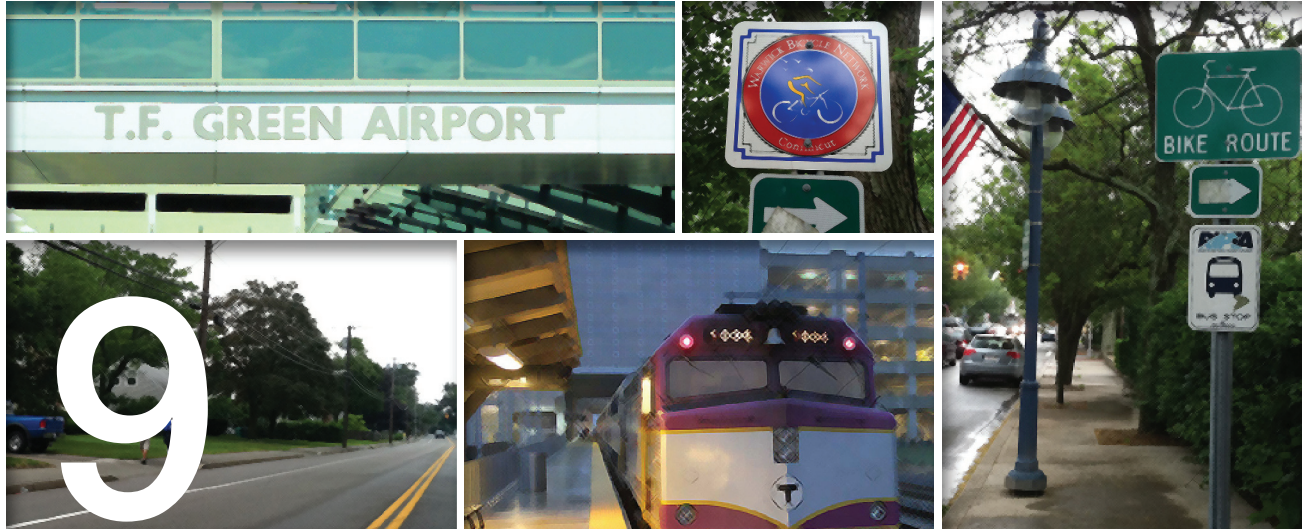
Actions

1. Seek to attract businesses with employment needs consistent with the occupational skills of Warwick residents, particularly professional, management, and business and financial occupations.

C. Improve transit access between local residential and employment centers.

Actions

1. Advocate for improved intra-community public transit services with RIPTA.
2. Improve alternative transportation options between residential and business areas, including walking and bicycling.



Transportation and Circulation

FROM A WARWICK RESIDENT

“[Warwick’s] status as a central hub for various different modes of transportation is beginning to be recognized.”

“I am a public transportation/bike commuter and I find the lack of adequate public transportation and the lack of bike lanes the least desirable thing about living in Warwick.”



GOALS AND POLICIES

GOALS

Establish the city of Warwick as a model for efficient and flexible multimodal transportation.

An efficient road network that responds to existing and future development patterns while reducing auto congestion and improving circulation.

An improved pedestrian and bicycling environment that better connects Warwick's neighborhoods.

A convenient public transit network that better meets the needs of Warwick residents and workers.

Enhanced intercity and intermodal transportation with improved passenger rail service, and airport facilities.

An accessible, easily navigable marine transportation system.

POLICIES FOR DECISION MAKERS

- Ensure that all local plans and planning decisions employ a holistic approach in considering and accommodating various modes of transportation.
- Leverage the city's intermodal connectivity assets to foster sustainable transit and reduce dependency on the automobile as the primary mode of travel for commuters.
- Ensure that roads are maintained to a high standard for long term use.
- Support roadway projects that reduce traffic congestion, particularly along east/west routes and major commercial corridors.
- Promote best practices to strengthen access management and improve traffic flow.
- Encourage the use of effective traffic-calming techniques in neighborhoods.
- Support initiatives that will provide more bicycle and pedestrian facilities in Warwick.
- Ensure that all local plans employ a holistic approach in considering and accommodating various modes of transportation.
- Work with RIPTA to enhance service within the City of Warwick to improve connectivity and help reduce single-occupancy automobile trips.
- Support initiatives to improve and expand intercity travel options.
- Ensure that the proposed expansion of TF Green Airport addresses all land use, and environmental impacts (including air, noise, water quality, wetlands, etc) and implements all mitigation measures.
- Support initiatives that improve access to, and navigation in, Warwick's marine environment.

B FINDINGS AND CHALLENGES

findings

The primary mode of transportation in Warwick is the automobile.

Pedestrian and bicycle facilities within Warwick are extremely limited and need repair.

Warwick has significant connectivity problems for drivers, bicyclists and pedestrians.

Public transit routes do not offer intra-city connectivity, rather are oriented to Providence.

Numerous factors contribute to significant congestion along Warwick’s roadways including relatively high population densities, roadway development along historical trails, lack of sufficient east-west routes, and poor access management.

Commuter rail service at the new InterLink station now connects residents to jobs and activities in Providence and Boston.

challenges

Funding all road maintenance needs.

Improving arterial traffic flow, particularly along east-west routes like Airport Road and West Shore Road.

Identifying and developing a citywide green network of linked multi-use paths to encourage and improve movement of pedestrians and bicyclists.

Working with RIPTA to provide improved intra-city public transportation routes and amenities.

Increasing commuter rail service to Providence and Boston



WHAT THE COMMUNITY SAID

Public comment that focused on transportation emphasized the following issues:

- Improvements to mitigate traffic congestion are needed, such as limiting curb cuts to one per business.
- Residents want to see more bike paths, lanes, and routes to connect destinations throughout the city.
- More frequent commuter rail and bus service is needed.
- When asked which two transportation investments they would support most (out of seven choices), respondents chose “Improved maintenance of existing roads” as the top priority by a large margin, with “Build Amtrak platform at Warwick Station” and “Improved sidewalk conditions” tied for the second priority.



EXISTING CONDITIONS

1. Transportation Planning in Warwick

Today, Warwick faces the same transportation and circulation concerns as most metropolitan areas nationwide, including vehicular congestion, urban sprawl, the rising cost of fuel and other resources, shifts in commuting patterns, municipal budget limitations, and economic uncertainty. Increased awareness of the potential impacts of transportation on human health and the environment has also spurred the need to identify solutions that are efficient, cost-effective, and sustainable, both economically and environmentally. Certain attributes unique to Warwick, most notably T.F. Green Airport and the city’s location along the I-95 Northeast Transportation Corridor and Narragansett Bay, pose further challenges to identify and implement such sustainable transportation policies and practices.

This Comprehensive Plan element has been developed in accordance with the Rhode Island Department of Administration, Division of Planning *Handbook on the Local Comprehensive Plan* (Handbook 16, 2003 Update) and for consistency with *Transportation 2030*, State Guide Plan Element 611 (2010, as amended).¹ This document provides extensive information on current conditions, policies, and demographic and travel trends throughout the state, a comprehensive inventory of the state’s transportation system and needs, financial and environmental analyses, and policy recommendations in fourteen facets of modern transportation. These topic areas, along with their respective goals (as disseminated in the Recommendations section of *Transportation 2030*), are reproduced in Table 9.1.

¹ Transportation 2030 is the Division of Planning, Statewide Planning Program document addressing Rhode Island’s transportation needs over the forthcoming decades, setting forth objectives, policies, and strategies for the statewide and metropolitan transportation system—see <http://www.planning.ri.gov/transportation/trans2030.pdf>. The Statewide Planning program has recently issued a Draft update to the State’s Long Range Transportation Plan, entitled Transportation 2035 (October 2012). Further information on this limited Plan update is available through the Statewide Planning Program website: <http://www.planning.ri.gov/transportation/default.htm>

TABLE 9.1: Rhode Island Statewide Planning Program, Transportation 2030 Plan Goals (State Guide Plan Element 611, Amendment #1, May 13, 2010)

ELEMENT	GOAL
Bicycle (B)	Maintain and expand an integrated statewide network of on-road and off-road bicycle routes to provide a safe means of travel for commuting, recreation, and tourism in order to improve public health, and reduce auto congestion and dependency.
Design (D)	Strive for excellence in design of transportation projects to enhance safety, security, mobility, environmental stewardship, aesthetic quality, and community livability.
Economic Development (ED)	Support a vigorous economy by facilitating the multi-modal movement of freight and passengers within Rhode Island and the northeast region.
Emergency Response (ER)	Develop transportation and communication systems that serve Rhode Islanders and the region in the event of natural disasters, accidents, and acts of terrorism in a manner that minimizes injury, loss of life, and disruption to the economy; facilitates evacuation of people; and allows emergency response and recovery activities to occur.
Environment (EN)	Recognize, protect and enhance the quality of the state’s environmental resources and the livability of its communities through well-designed transportation projects and effective operation of the transportation system.
Equity (EQ)	Ensure that the transportation system equitably serves all Rhode Islanders regardless of race, ethnic origin, income, age, mobility impairment, or geographic location.
Finance (F)	Provide a sustainable financial base for the transportation system that is adequate for supporting needed infrastructure and services with an emphasis on preservation and management of the existing system.
Highway (H)	Maintain the highway and bridge network in a safe, attractive, and less congested condition to carry passenger vehicles, commercial vehicles, government vehicles, and transit vehicles, as well as bicycles and pedestrians. Recognize roadways as vital public spaces that accommodate travel, commerce, community activities, and utility infrastructure.
Intermodal (I)	Provide convenient intermodal facilities and services offering seamless connections for passengers and freight.
Land Use and Travel Corridors (LU)	Continue to integrate land use and transportation planning using a travel corridor framework and promote responsible development practices in the public and private sectors.
Pedestrian (PE)	Create and maintain safe and attractive walkable communities to encourage more walking trips, enhance transit usage, improve public health, and reduce auto congestion and dependency.
Planning (PL)	Conduct a comprehensive, cooperative and continuing planning process that responds to public interests and concerns, strives to meet the needs of underserved communities, and fosters productive relationships with elected and appointed officials from all levels of government and the private sector.
Safety (S)	Improve the safety of all transportation modes through education, enforcement, and engineering solutions.
Transit (T)	Provide a safe, robust, and convenient network of transit and shared ride services with seamless intermodal connections in support of increased employment opportunities, improved environmental quality, and reduced congestion and auto dependency.

Note: Refer to Section 5 of the Transportation 2030 plan for the specific objectives, policies, strategies and performance measures associated with each goal. These goals remain unchanged in the October 2012 Draft of the limited Plan update (Transportation 2035).

2. Roadway Network

FUNCTIONAL CLASSIFICATIONS

The Rhode Island Department of Administration, Statewide Planning Program *Highway Functional Classification System for the State of Rhode Island 2005–2015* (Technical Paper 155)² establishes the functional classification of all public roadways within the state based on purpose and function, and location relative to major population centers (urban or rural, based on the most recently available census data). As the entirety of Warwick is located within the Greater Providence urbanized area, roadway segments within the city’s corporate limits fall within one of the following urban classifications:

2005-2015 Functional Classification Mileage, City of Warwick Roads

CLASSIFICATION	MILEAGE
Interstate	9.3
Freeways & Expressways	3.6
Principal Arterials	37.1
Minor Arterials	13.1
Collectors	100.2
Local Roads	375.0

Mileages taken from *Statewide Planning Technical Paper 155* (local road mileage estimated from RIGIS data).

Functional Classifications consist of the following:

- Interstate Highways—Interstate Routes 95 and 295 (I-95, I-295)
- Freeways and Expressways—State Routes 4 and 37, Airport Connector Road
- Arterials—These types of major roadways provide a higher level of mobility for through traffic movements, and depending on classification, offer limited access to adjacent properties
- Principal Arterials—e.g., U.S. Route 1 (Post Road), State Route 117 (including Centerville Road, West Shore Road, and Warwick Avenue), State Route 5 (Greenwich Avenue)
- Minor Arterials—e.g., Cowesett Road, Jefferson Boulevard, Sandy Lane

- Collectors—These roads provide a balance between traffic mobility and property access. Examples within the City of Warwick include Narragansett Parkway, Buttonwoods Avenue, and Ives Road
- Local/Non-Classified—These roads emphasize access to property and consist of local (primarily residential) streets and roads.

Figure 1 depicts the functional classifications of the city’s roadways as established by the State. In general, the classification of highways determines the jurisdictional responsibility (i.e., state or local ownership, maintenance responsibility) and whether improvements to the infrastructure are eligible for funding under the federal-aid system. Highways classified as Interstate, Other Freeways and Expressways, and Principal Arterials are within state jurisdiction, whereas Minor Arterials (within cities), Collectors, and Local roads fall under local jurisdiction.³ For urbanized areas such as Warwick, highways listed in the *Highway Functional Classification System* are eligible for federal aid funds for capital projects involving the maintenance, rehabilitation and/or improvement of these roadways, whereas local roads are not.

BRIDGES

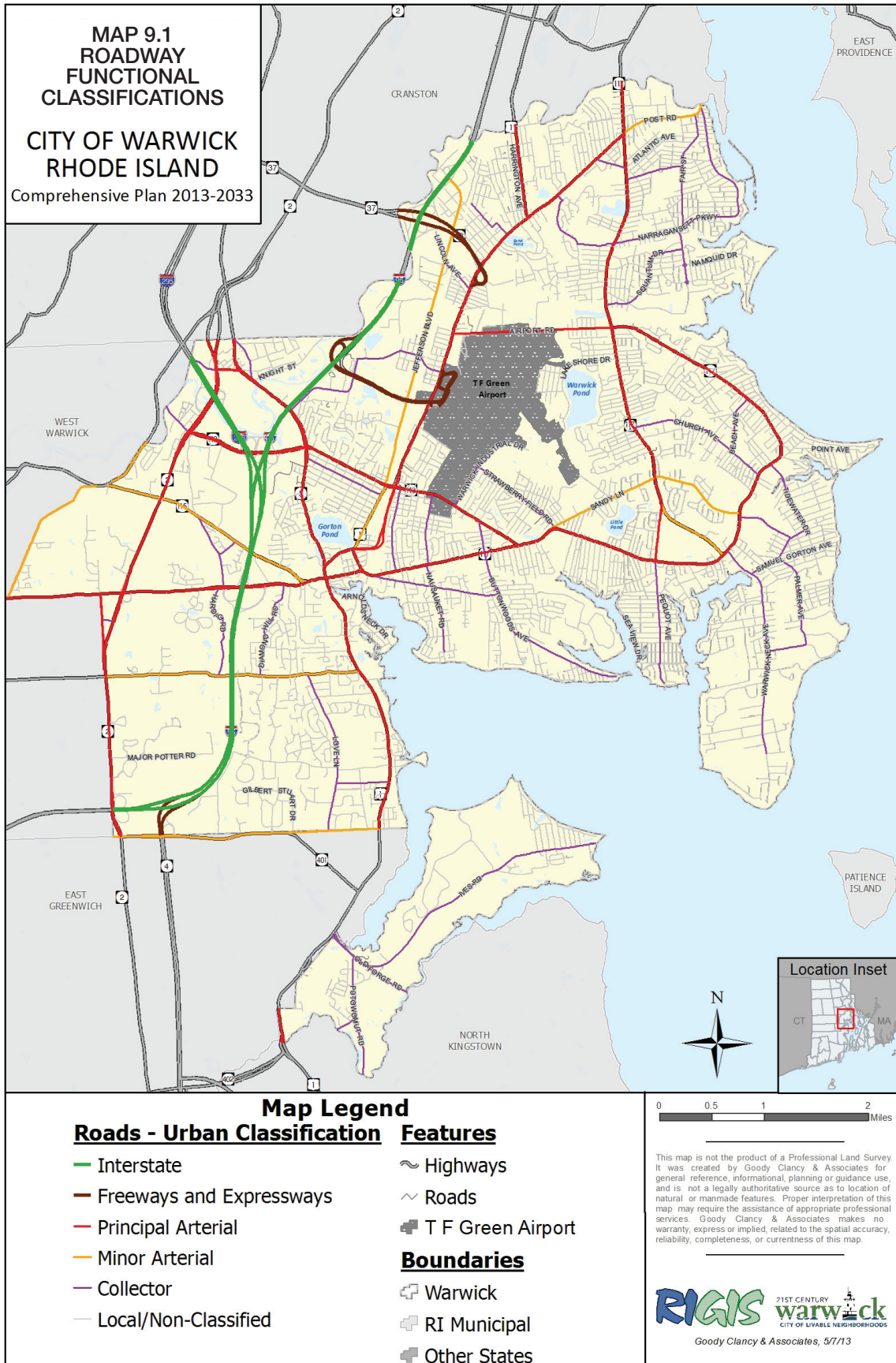
Warwick contains 53 bridges listed in the National Bridge Inventory (NBI).⁴ The Rhode Island Department of Transportation (RIDOT) is responsible for the inspection of all numbered NBI bridges and maintains a bridge condition inventory.⁵ Of the 53 NBI bridges within Warwick, 52 are state-owned (including 3 at T.F. Green Airport). The Forge Road Bridge spanning the Potowomut River is city owned.

3 Table 2 of Technical Paper 155 lists Functional Classifications and “Proposed Jurisdiction” on the basis of previous Statewide Planning technical papers and pavement management legislation passed in 1988 (though, as noted therein, never fully implemented).

4 Includes all bridges and culverts that carry vehicular traffic over spans greater than 20 feet along the centerline of the structure. Smaller structures (e.g., culverts) not listed in the NBI spanned by public rights-of-way are subject to state/local jurisdictional responsibility based on the functional classification of the associated transportation facility.

5 <http://www.dot.ri.gov/engineering/bridges/condition.asp>

2 <http://www.planning.ri.gov/transportation/155/index.htm>



Currently, three bridges within the City of Warwick are posted for load restrictions, limiting the weight of vehicles that may use the facility⁶:

- Pawtuxet River Bridge Southwest No. 491 (Route 2/Bald Hill Road)—14 tons (2-axle only)
- Pawtuxet River Bridge Southeast No. 490 (Route 2/Bald Hill Road)—14 tons (2-axle only)
- Natick Bridge No. 383 (Route 113/East Avenue over the Pawtuxet River)—3 tons (all vehicles)

Six Warwick bridges on the NBI are classified as “structurally deficient.” Such bridges must be monitored, inspected and maintained, and must also be repaired or replaced at an appropriate time to maintain its structural integrity. However, according to RIDOT, structurally deficient does not imply that it is unsafe. Additionally, 27 Warwick Bridges are classified as “functionally obsolete” due to their non-conformance with current best practice design standards. A bridge listed as functionally obsolete does not imply that it is inherently unsafe.

Scheduled RIDOT bridge improvement projects for Warwick in 2012 include the replacement of three load-restricted bridges, as well as repairs to four others, including:

- Division Street Bridge No. 760
- South County Freeway Bridge No. 686
- Wellington Avenue Railroad Bridge
- Jefferson Boulevard Bridge No. 634
- Barton Corner Bridge No. 518

TRAFFIC VOLUMES AND CONGESTION

A relatively high volume of traffic uses Warwick’s highways. Where use demand and volumes exceed the handling capacity of roadways and intersections, congestion, delays, and susceptibility to accidents consequently occur. Major contributing factors to congestion within Warwick’s roadway network include:

- A relatively high population density dependant on auto travel (including a significant suburban population that commutes to work destinations outside the city);
- An existing system of primary thoroughfares that evolved from traditional roads and trails, many of which existed prior to the automobile and modern transportation planning practices;
- The land take and severance associated with the creation of (and subsequent expansions to) T.F. Green Airport, located near the city’s geographic center;
- The city’s location within Rhode Island and the Northeast region, including constraints as a West Bay shoreline community, as well as its location relative to the regional transportation system (including proximity to Interstate Routes 95 and 295);
- Past development of land uses with many curb cuts that produce many turning/access movements along arterial roadways, often conflicting with the through traffic objectives of the functional classification (e.g., commercial development along Route 2);
- Suburban street patterns that create “pod” neighborhoods which require all the traffic from a subdivision to empty into one arterial, rather than flowing through a grid.
- The lack of an east-west limited-access freeway to provide more efficient access between neighborhoods west/south of the airport (particularly Wards 1, 4, 5 and 6) and the freeway system.

RIDOT periodically issues traffic count data as *Traffic Flow Maps*,⁷ listing average annual daily traffic (AADT) volumes along various major roadway segments throughout the state. *Table 9.2* summarizes the most recently AADT volumes published by the RIDOT major roadway segments within the City of Warwick. While traffic volumes throughout the city and the State of Rhode Island exhibited steady rises in the latter decades of the 20th century (following similar trends in population and vehicle registrations), more data collected by the RIDOT since 2008 has shown modest decreases in traffic volumes from those listed in *Table 9.2*, as well as along other highways throughout the state. This follows

⁶ <http://www.dot.ri.gov/engineering/bridges/postedbridges.asp>

⁷ <http://www.dot.ri.gov/documents/gis/maps/SM02.pdf>

TABLE 9.2: Average Annual Daily Traffic (AADT) for Major Warwick Roads, 2004–2008

NAME AND LOCATION	SEGMENT	FUNCTIONAL CLASS	DIRECTION OF TRAVEL	2004-2008 AADT
I-95	Between Rte 4 and 113	Interstate Highway	North—South	148,700
I-95	Between Rte 37 & Airport Connector	Interstate Highway	North—South	151,100
Airport Road	East of Post Rd	Principal Arterial	East—West	32,900
Bald Hill Road	Between Centerville Rd & Quaker Ln	Principal Arterial	North—South	19,200
Centerville Road (Route 117)	East of I-95	Principal Arterial	East—West	25,600
Centerville Road (Route 117)	West of I-95	Principal Arterial	East—West	25,400
Main Avenue (Route 113)	Between Greenwich Ave & Post Rd	Principal Arterial	East—West	20,100
Post Road (U.S. 1)	Between Airport Conn and Airport Rd	Principal Arterial	North—South	31,700
Post Road (U.S. 1)	South of Centerville Rd/Apponaug	Principal Arterial	North—South	13,900
Warwick Avenue (Route 117A)	South of Airport Road/Hoxsie	Principal Arterial	North—South	26,300
West Shore Road (Route 117)	Between Main Ave and Sandy Ln	Principal Arterial	East—West	28,200

Source: State Highway Map of Rhode Island, Traffic Flow Map, RIDOT, 2009

the recent national trend in decreasing motor vehicle trips per capita as a result of the Great Recession and subsequent slow economy, elevated gasoline prices, and increased use of telecommuting technologies.

Transportation 2030 designates the following Warwick highways segments as congested based on traffic volume to capacity (v/c) ratios computed through the Rhode Island regional travel demand forecasting model:

- I-95—all segments through Warwick
- Airport Connector Road
- Warwick Avenue (State Routes 117/117A)—from West Shore Road/Oakland Beach Avenue north to the Cranston City line. The City continues to work with the Oakland Beach Association and others to support dredging of Brush Neck Cove.

The model for years 2015 and 2030 forecasts these segments as remaining congested with I-295 becoming congested in model years 2015 and 2030 as well.

Limited data is available on a citywide level for congestion metrics such as AADT volumes and Level of Service (LOS).⁸ The recently issued *Final Environmental*

8 Employing an index ranging from A to F (with LOS “A” representing the best operating conditions and LOS “F” representing the worst/most congested operating conditions), the Level of Service for a particular roadway or intersection is evaluated through traffic engineering analysis considering of number of factors, including traffic demands, roadway geometry, speed, signal operations, travel delay, and freedom to maneuver.

Impact Statement for the T.F. Green Airport Improvement Program (EIS, Federal Aviation Administration, 2011)⁹ does however include an assessment of existing and anticipated conditions of surface transportation facilities potentially affected by the airport program, which consists of a number of capacity, safety, and operational infrastructure improvements, including runway expansion. Through the baseline conditions evaluation, the following signalized intersections in the vicinity of the airport /City Centre Warwick were identified as presently operating under poor/congested conditions (LOS E or F) during morning and evening peak hours:

- Post Road (Route 1) at Lincoln Avenue (near Route 37 freeway interchange);
- Airport Road at Warwick Avenue (Route 117/117A), colloquially known as Hoxsie Four Corners.

Further operational assessments determined that the following intersections in the area have lane groups that are currently operating at LOS E or F during the morning or evening peak hours:

- Post Road (Route 1) at Lincoln Avenue
- Post Road (Route 1) at Airport Road
- Airport Road at Warwick Avenue (Route 117/117A)
- Post Road (Route 1) at Coronado Road
- Main Avenue (Route 113) at Industrial Drive

9 <http://www.vhb.com/pvd/eis/>



- Main Avenue (Route 113) at Jefferson Boulevard
- Jefferson Boulevard at Coronado Road/Kilvert Street

The baseline conditions assessment provided in the EIS further notes that “the on-Airport signalized location where Airport Connector intersects with Terminal Loop Road operates at capacity due to high demands, short storage bays, inefficient intersection geometry, and a high number of signal phases. This poor condition contributes to long delays and queues along the entire southern portion of Terminal Loop Road.” All ramp merges/diverges and freeway segments within the Airport Study Area operate at LOS C or better, and the sole unsignalized node within the study area currently operating under poor conditions (LOS E and F) during peak hours is the intersection of the Airport Connector off ramp with Jefferson Boulevard. As presented in the EIS, these baseline results indicate that State Route 37 and Airport Connector have sufficient capacity to accommodate merging/diverging maneuvers from on-ramps and overall roadway traffic during weekday peak hour conditions.

DANGEROUS INTERSECTIONS

Intertwined with issues of congestion and levels of service, traffic safety remains a critical concern. A 2011 report found that 13 of the 50 most dangerous intersections in Rhode Island are located within the City of Warwick:

- Route 37 East/Post Road (Route 1)
- West Shore Road/Warwick Avenue (Route 117/Hoxsie Four Corners)
- Warwick Avenue (Route 117A)/Church Avenue
- Ginsu Way/Quaker Lane (Route 2)
- East Avenue (Route 113)/Bald Hill Road (Route 2)
- Bald Hill Road (Route 2)/Toll Gate Road (Route 115)
- Interstate 95 South/Centerville Road (Route 117)
- Long Street/West Shore Road (Route 117)
- Elmwood Avenue/Post Road (Route 1)
- Quaker Lane (Route 2)/Division Street (Route 401, East Greenwich town line)
- Main Avenue (Route 113)/Post Road (Route 1)

- Interstate 95 North/Route 37
- Post Road (Route 1)/Airport Road

Only the first three intersections listed above are targeted for intersection improvements and are currently in the engineering design stage.

TRUCK ROUTES AND TRAFFIC

High truck volumes can have a number of adverse impacts on the surface transportation network, particularly along roads not suited (or under-suited) for truck traffic. These generally include increased loading and wear on roadway pavement (reducing its service life), increased congestion, and decreased mobility, visibility, and driver comfort for other motorists. In Warwick, the greatest truck volumes occur along the city’s interstates and freeways (I-95, I-295, Routes 37 and 4, Airport Connector Road) and its principal north-south arterials (Warwick Avenue, Post Road, Greenwich Avenue, Bald Hill Road, Quaker Lane) and east-west arterials (Centerville Road, West Shore Road, East/Main Avenue, Airport Road). Driving routes to and from areas of the city supporting industrial uses (including Jefferson Boulevard, Warwick Industrial Drive) also by their nature receive higher volumes and percentages of truck traffic.

At the state level, highway freight transport is addressed in the Statewide Planning Program’s *Freight Planning Needs Assessment*, which provides a brief overview of national and state policies, freight and traffic volumes, and truck parking/rest facilities. As noted therein, the portions of Interstate Routes 95 and 295 passing through Warwick are part of the “Providence Beltline Corridor,” a segment designated as a High Priority Corridor in the National Highway System (NHS).¹⁰ Highways are listed in the NHS for its importance to the nation’s economy (as intercity truck corridors), defense, and mobility. Other Warwick highway segments listed on the NHS are State Route 37, Route 1/Post Road (from Route 37 to T.F. Green Airport), and Airport Connector Road.

While there are no highways or other roads designated as truck routes at the municipal level, the City of War-

¹⁰ <http://www.fhwa.dot.gov/planning/nhs/>

wick Code of Ordinances¹¹ contains provisions which prohibit trucks from using certain city streets under normal circumstances. The extensive lists of roads on which such traffic is prohibited (§76–86) consists of primarily of local roads generally unsuited for large vehicles due to a variety of factors, including residential uses, inadequate paved widths or pavement conditions, etc. This ordinance also applies to certain roads for the purpose of deterring “cut through” truck traffic on local connecting roads, thus ensuring that trucks remain on the city’s arterials and other appropriate roadways.

MAINTENANCE, STATE OF REPAIR, AND NEW STREETS

Maintenance

Routine and non-routine maintenance of roads within the City of Warwick is conducted by the city’s Department of Public Works (Highway Division) or the RIDOT Highway and Bridge Maintenance Division (Kent and Washington North Maintenance Districts) according to jurisdictional responsibility. In general, RIDOT is responsible for the maintenance of all interstates, freeways, expressways, and principal arterials, whereas the upkeep of minor arterials, collectors and local roads is the responsibility of the Department of Public Works. Where a city-maintained road is listed on the Highway Functional Classification (i.e., Minor Arterials and Collectors), the city’s responsibilities for repair and/or reconstruction of

the roadway may be assisted through Federal Aid System funding administered by the FHWA.

Routine maintenance activities conducted by the Department of Public Works include pavement repairs such as pothole patching and crack sealing, striping and re-striping of pavement markings, maintaining paved and grassed road shoulders, maintaining roadway drainage systems, and conducting plowing and sanding/salting operations in response to winter storm events. The RIDOT Maintenance Division conducts similar maintenance for the 50 miles of state-maintained highways within city limits. As in other states and municipalities, maintaining roadway infrastructure in the context of increasing budgetary constraints is a challenge.

Existing state roads are evaluated for structural preventative maintenance (e.g., resurfacing) through pavement management evaluation and assessment by RIDOT. The Department of Public Works employs a qualitative pavement management system to evaluate the structural condition of city-maintained streets based on the presence of surface wear and defects such as potholes, cracks, rutting, and utility patches, all of which may adversely impact motorist safety and comfort. The system is used to track the conditions on a rolling basis, and results are tabulated to formulate a prioritized schedule of repairs.

Federal stimulus funding in 2009 through RIDOT enabled the City of Warwick to make needed repairs to

11 http://www.warwickri.gov/index.php?option=com_content&view=article&id=786&Itemid=136

TABLE 9.3: Roadway Investment—Local Equity Aid Program (RI-LEAP), City of Warwick

CLASSIFICATION	MAINTENANCE/REPAIR ACTIVITIES	STATUS	INCLUDED ROADS
Non-Federal Aid System Local Roads (State Funds)	Resurfacing, Crack Sealing	Completed	Arnold Avenue, Hall Street, Hewett Street, Bellows Street, O’Keefe Lane, Laura Street, Remington Street, Perry Avenue, Airway Road, Ernest Avenue, Edythe Street, Greer Street
Federal Aid System (Federal Funds)	Crack Sealing	In Development	Commonwealth Avenue, Metro Center Boulevard, Pilgrim Parkway, Kilvert Street, Potowomut Road, Oakland Beach Avenue, West Natick Road, Fair Street, George Arden Avenue, Atlantic Avenue, Buttonwoods Avenue, Church Avenue, Commonwealth Avenue, Cowesett Road, Diamond Hill Road, Draper Avenue, Fairfax Drive, Groveland Avenue, Hardig Road, Harrison Avenue, Jefferson Boulevard, Long Street, Longmeadow Ave, Narragansett Pkwy, Nausauket Road, Oakland Beach Avenue, Palmer Avenue, Rocky Point Avenue, Sandy Lane, Strawberry Field Road, Tidewater Drive, Toll Gate Road, Warwick Industrial Drive

Source: RI-LEAP Status Update, RIDOT, February 2011



a number of local roads with state funds, which were completed in 2010, as well as repairs along several of its Federal Aid System roads. In total, \$1.08 million has been allocated to Warwick through RI-LEAP.

New Streets

New streets that are proposed as part of subdivisions are subject to design standards in Appendix D of the City of Warwick's *Development Review Regulations*.¹² Through its subdivision and land development review processes, the city accepts a new street when the surface of the roadway, drainage systems, and sidewalks are completed. The amount of new roadway construction within the city over the past decade has declined, due to prevailing economic conditions and because there is limited remaining developable land within the city limits.

3. Pedestrian Facilities

SIDEWALK CONDITIONS

Sidewalks exist in a limited number of circumstances in Warwick. With few exceptions, most of the city's urban arterial thoroughfares have sidewalks along their entire length. Segments that do not have sidewalks such as Oakland Beach Avenue between Warwick Avenue and West Shore Road typically have paved shoulders. The majority of Route 2 has a sidewalk only along one side, although by its nature pedestrians using sidewalk facilities along this heavy retail corridor are few and far between. Elsewhere throughout the city, there are fewer sidewalks associated with decreasing functional classification. The majority of the city's collectors (e.g., Long Street, Warwick Neck Avenue, Love Lane, Narragansett Parkway) lack sidewalks along significant portions of their length, and sidewalks are virtually nonexistent in many of the city's neighborhoods. This is the result of decades of not requiring sidewalks in new developments. The lack of sidewalks causes pedestrians to walk on the street, a potentially hazardous condition due to conflicts with motorists and cyclists.

In 1985, the city adopted a policy that required sidewalks to be installed in all new residential subdivisions. Because the construction of sidewalks occurs in front

yards within city rights-of-way, residents may perceive this is a loss of yard/property rather than a gain of a sidewalk. Less impervious surface supports low impact development (LID) efforts for stormwater management, which aim to protect receiving waters from the adverse environmental impacts associated with urban runoff. Sidewalk programs should be developed on a neighborhood basis with full citizen participation and consider alternatives to traditional impervious surface sidewalks..

PEDESTRIAN ACCESSIBILITY

Several elements contribute to poor pedestrian accessibility within the City of Warwick. In particular, rapid suburbanization in the 20th century led to high volumes of traffic along the city's roadway network, a sprawling development pattern of residential areas, and non-residential auto-dependent commercial strip destinations throughout the city (particularly the concentration of commercial developments along Route 2, Post Road, and Warwick Avenue). As a result, most Warwick residents remain heavily reliant upon auto travel for routine travel needs such as access to schools, markets, and civic facilities.

Due in large part to their age, existing roadways and pedestrian facilities in many of Warwick's neighborhoods and villages do not currently conform to the accessibility requirements of the Americans with Disabilities Act (ADA) of 1990. Federal guidelines, which apply to all new construction and reconstruction projects in the public right-of-way, require that pedestrian facilities meet the safety and mobility needs of disabled persons, including those who are visually impaired. The United States Access Board recently issued its *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right of Way* in July 2011, which addresses access to newly constructed and altered public streets and sidewalks covered by the ADA.¹³ Released for public comment, the access provisions include pedestrian access routes including sidewalks, street crossings, and curb ramps, detectable warning surfaces, pedestrian signals, roundabouts, on-street parking and passenger loading zones, transit stops and shelters, and street furniture and amenities. States and municipalities will not be

¹² <http://www.warwickri.gov/pdfs/planning/development%20review%20regs.pdf>

¹³ <http://www.access-board.gov/news/row-nprm.htm>

required to modify existing streets and sidewalks to meet these guidelines, as they do not apply to existing public rights-of-way outside of planned alterations) Local officials may however voluntarily consult the guidelines in undertaking access improvements at existing streets and sidewalks.

SIDEWALK MAINTENANCE

The City of Warwick is responsible for the maintenance of sidewalks along all local and state roads within the city, as by state law, the maintenance of sidewalks on state roads is the responsibility of the municipality. The Department of Public Works employs a management system to inventory and track conditions of pedestrian facilities, through which repairs and improvements are prioritized accordingly. Chapter 70 of the Code of Ordinances sets forth the city's regulations pertaining to streets and sidewalks, including repairs, excavations, poles and wires, and responsibilities for snow and ice removal by abutting owners.

4. Bicycle Facilities and Multi-Use Paths

Warwick has seen a renewed interest in providing dedicated bicycle/multi-use facilities and more bicycle-friendly thoroughfares. Through its Intermodal Planning section and the “Bike Rhode Island” program,¹⁴ RIDOT continues to proactively develop dedicated paths and striped/signed bicycle routes throughout the state, including the City of Warwick. Information on cycling in Rhode Island is provided on the RIDOT's Bike Rhode Island website, including a “Guide to Bicycling in the Ocean State,” maps, safety and bike-to-work tips, and updates on bike path and lane/route development.

EXISTING FACILITIES

Figure 2 highlights existing, designated state and local bicycle facilities within the City of Warwick, which consist of two principal elements: the Washington Secondary Bike Path and the Warwick-East Greenwich Bicycle Network.

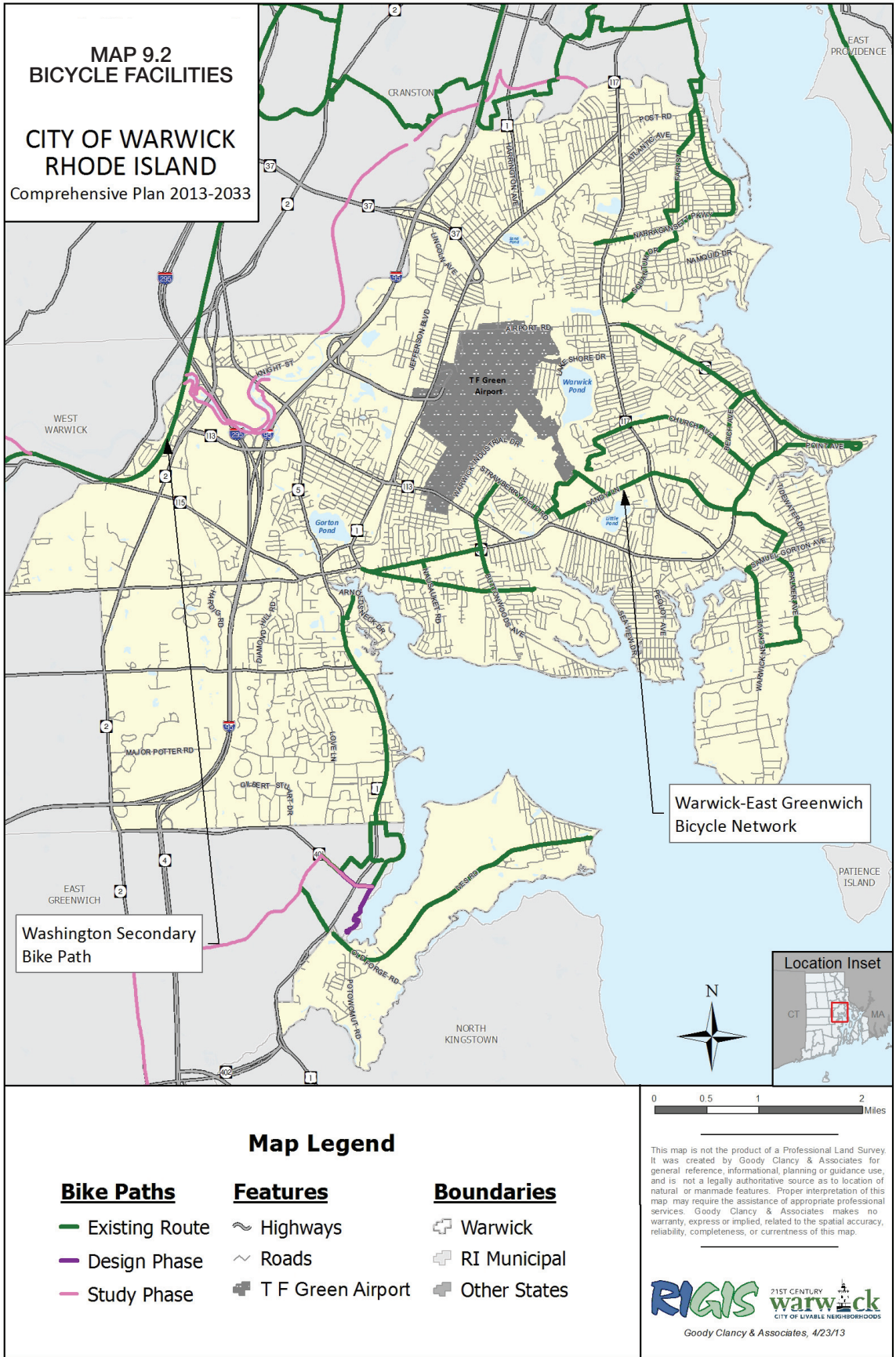
The *Washington Secondary Bike Path* is a dedicated 14.2-mile multi-use path constructed along a former railroad corridor, beginning at Garfield Street in Cranston and running in a generally southwesterly and westerly direction through Cranston, Warwick, West Warwick and Coventry. The 1.6-mile Warwick Bike Path segment of the path is located along the westerly fringe of the city (Ward 8) and lacks dedicated public parking in the immediate vicinity. Regular use of the Warwick Bike Path by residents tends to be those residing in close proximity to the path.

The *Warwick-East Greenwich Bicycle Network* includes 28 miles of signed routes along local, collector, and arterial roads in the eastern and southern wards of the city, including loops and spurs to Conimicut Point, Warwick Neck/Rocky Point, City Park in the Buttonwoods neighborhood, and Potowomut Neck/Goddard State Park (see Figure 2). Major city roads shared by the network include Narragansett Parkway, West Shore Road, Church Avenue, Sandy Lane, Buttonwoods Avenue, and Post Road. The network also includes designated roads through East Greenwich, which link to Potowomut neighborhoods. Other segments link with signed bike lanes in Cranston and continue north into Providence.

Although extensive, the network presently does not link to key City of Warwick locations, including Apponaug Village and Hoxsie Four Corners, both of which are subject to high volumes of motor vehicle traffic and associated congestion, which may pose difficulties for less experienced cyclists. Discussed in Section 9, the RIDOT's Apponaug Circulator (Bypass) Long-term Improvements project will serve to connect the southerly portion of the Warwick-East Greenwich Bicycle Network with the portion of the network south and east of the airport, in part through the construction of a designated bike lane along the Apponaug Village segment of Post Road.

Beyond the facilities noted above, cycling conditions along rights-of-way throughout the city are highly variable and dependent upon a number of factors, including roadway width (and availability of paved shoulders), motor vehicle traffic volume and speeds, provision (or prohibition) of on-street parking along paved shoulders and curb lines, and pavement conditions. In general,

¹⁴ <http://www.dot.ri.gov/bikeri/index.asp>



local and minor collector roads in primarily residential areas are safer and more accommodating of bicycle traffic due to their lower volumes of traffic and intensity of adjacent uses.

PROPOSED BICYCLE FACILITIES

Both the City of Warwick and the State of Rhode Island are committed to improving the availability and accessibility of bicycle facilities, as well as conditions for and awareness of bicycle use on roadways in general. While opportunities for the enhancement of safe bicycle routes will continue to be explored throughout the city, currently identified proposed improvements include a number of improvements to the Warwick-East Greenwich Bicycle Network that will provide circulation, safety, and recreational benefits for cyclists.

- The **Hoxsie Multi-Use Path/Connector**, which will shortcut the Hoxsie Four Corners intersection by linking the currently disconnected West Shore Road and Squantum Drive segments across the Spring Green Pond stream via a the Landsdowne Road right-of-way;
- The **Buckeye Brook Multi-Use Path**, which will link portions of the existing network in the vicinity of the Mickey Stevens Sports Complex through the provision of a new path a brook crossing to Rodney road;
- An **Oakland Beach loop**, which would connect to the existing network at the public library along Sandy Lane and run south, crossing West Shore Road and continuing to Oakland Beach;
- The **Maskerchugg River Bridge Multi-use Path**, which will connect the East Greenwich portion of the network along Greenwich Cove/Crompton Avenue to the Potowomut on-road segment through the construction of a new dedicated multi-use path and bridge.

While the Hoxsie and Buckeye Brook connections have been planned for some time, neither project was recommended for inclusion in the state’s Transportation Improvement Program (TIP) for Fiscal Years 2013-2016 (see Section 9). The Oakland Beach loop is in early conceptual phases with no timetable for implementation. The Maskerchugg River Bridge Multi-use Path was recently recommended for inclusion in the TIP, with

program monies allocated for final design and construction.

Construction of the Apponaug Circulator, which will involve a major reconstruction of roadways in and around Apponaug Village, has been designed to be bicycle tolerant (minimum 4-foot paved shoulder widths), and a dedicated bicycle lane is proposed along the one-way segment through Apponaug Village proper. These elements and other design improvements will serve to make this urban center more conducive to bicycle and pedestrian circulation.

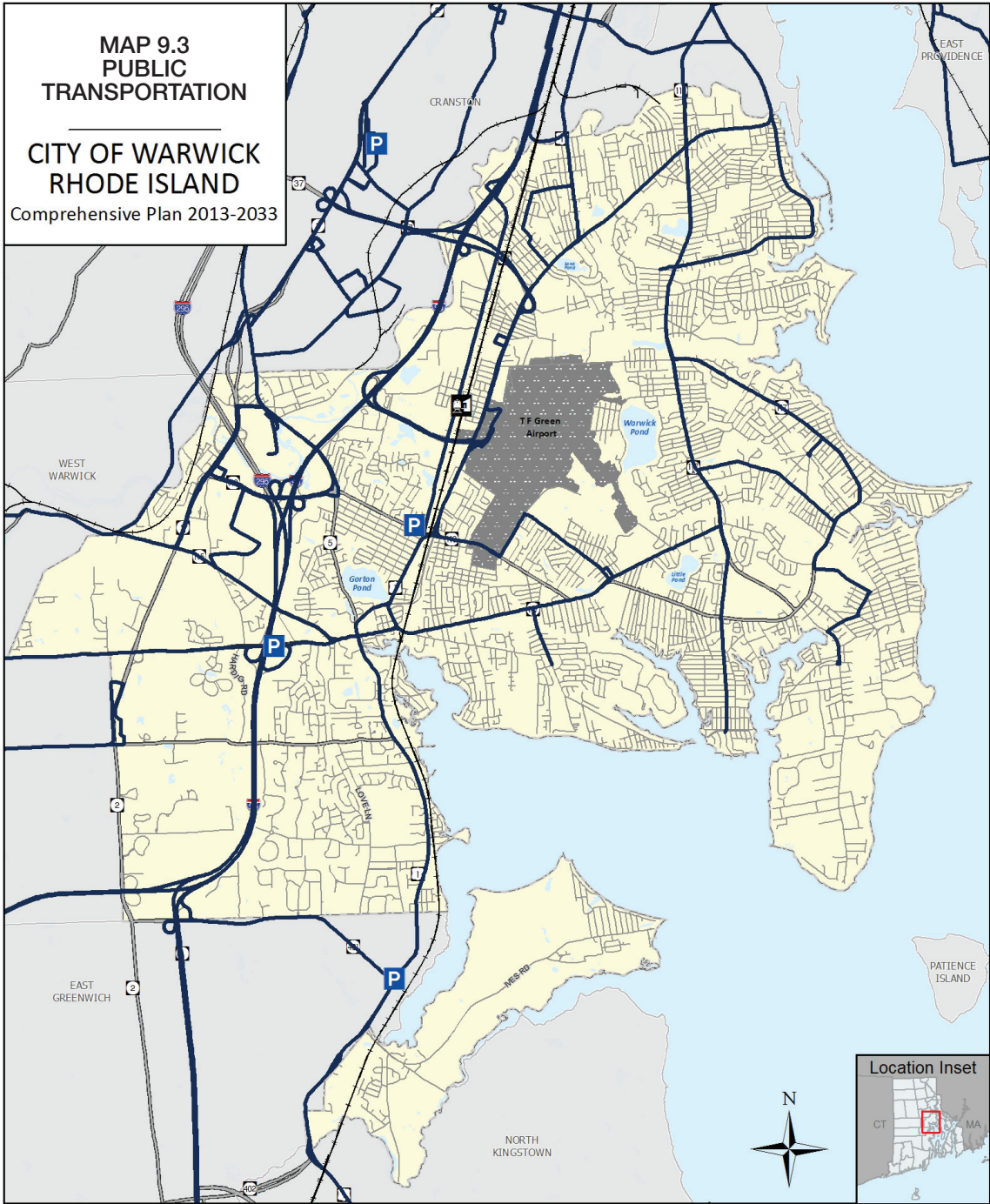
Other state bicycle projects include:

- **Coventry Trestle Trail Extension.** This 10-mile project is under construction and will extend the Washington Secondary Bike Path to the Connecticut state line. The extension will allow Warwick residents to bike to the Connecticut line, but it is not located in Warwick.
- **Pawtuxet Riverwalk.** The project, which is in the preliminary study and development stage, would include 1.8-mile footpaths along both the Warwick and Cranston sides of the river, beginning at the Washington Secondary Bike Path and running east.

5. Transit Network and Service

RIPTA

Public transit for the City of Warwick is primarily provided by the Rhode Island Public Transit Authority (RIPTA), the quasi-public, independent organization authorized to operate public transit (primarily bus services). Bus service to and from the City of Warwick is currently provided by ten RIPTA bus routes (See Figure 3). RIPTA buses are ADA-accessible and equipped with bus racks. Fares are \$2.00 per trip (\$0.50 per transfer) with discounts for seniors and the disabled and monthly passes/voucher programs also available. The three park and ride lots see moderate use on weekdays, with the Route 117 lot generally operating at a higher percentage of its capacity (typically 100 vehicles or more). RIPTA also operates the “RIde” program, which provides para-transit services to qualifying individuals in the city.



Map Legend		
Amtrak/MBTA	Features	Boundaries
+ Passenger Service & Commuter Rail	~ Highways	☐ Warwick
RIPTA	~ Roads	☐ RI Municipal
☐ Interlink Intermodal Station	✈ T F Green Airport	☐ Other States
☐ Park-and-Ride		
— Bus Route		

MBTA: Massachusetts Bay Transportation Authority
 RIPTA: Rhode Island Public Transit Authority

0 0.5 1 2 Miles

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RIGIS 21ST CENTURY **warwick**
 CITY OF LIVABLE NEIGHBORHOODS
 Goody Clancy & Associates, 1/29/13

Table 9.4: RIPTA Bus Routes Serving Warwick

ROUTE NO.	NAME	WEEKDAY SPAN	WEEKDAY FREQUENCY (PEAK)	WEEKDAY FREQUENCY (OFF-PEAK)	WEEKDAY FREQUENCY (NIGHT)	SAT. SPAN	SAT. FREQ.	SUN. SPAN	SUN. FREQ.
1	Eddy/Gaspee	536a – 1123p	12m	19m	48m	636a – 1046p	42m	716a – 913p	54m
3	Warwick Ave	511a – 931p	24m	29m	47m	559a – 946p	1h00m	648a – 846p	53m
8 *	Jefferson Blvd	605a – 609p	10 trips	3 trips	-	No Service	No Service	No Service	No Service
14	West Bay	450a – 828p	27m	58m	50m	745a – 741p	1h28m	No Service	No Service
20	Elmwood Ave	507a – 1244a	23m	18m	43m	455a – 1128p	44m	458a – 939p	46m
22	Pontiac Ave	517a – 1216a	31m	28m	47m	530a – 1131p	53m	542a – 800p	43m
29	Kent County Connector	540a – 650p	1h23m	1h18m	-	700a – 645p	1h20m	No Service	No Service
30	Arlington/Oaklawn	509a – 1024p	38m	35m	37m	646a – 735p	49m	742a – 758p	47m
66	URI/Galilee	515a – 1135p	19m	43m	1h11m	752a – 1112p	1h14m	752a – 1112p	1h15m
90 *	Park and Ride	630a – 624p	6 round trips	-	-	No Service	No Service	No Service	No Service

* denotes park-and-ride service | Source: RIGIS/RIPTA

With the exception of the Kent County Connector (Route No. 29, weekdays), all Warwick routes provide service to and from the RIPTA hub at Kennedy Plaza in Downtown Providence. This predominantly radial service pattern has remained intact over the past several decades, despite changes in the spatial distribution of population, employment, and economic activity. As a result of this orientation, the routes do not provide connectivity to and from destinations within Warwick itself. However, the relatively higher densities of employment and education in Providence continue to generate ridership, but not nearly to the levels that once occurred.

Intermodal travel to and within Warwick is supported by the West Bay (No. 14) and Elmwood Avenue (No. 20) routes which provide service to the T.F. Green passenger air terminal, and the Jefferson Boulevard (No. 8) route to the MBTA commuter rail station and skywalk to the airport. No Sunday or holiday service is offered along No. 14.

TRANSWICK

Transwick is a local para-transit service for senior citizen residents of Warwick administered through the city’s Department of Human Services. Started in 1988 with three para-transit buses, Transwick provides destination and activity-based transit for over 750 riders, including weekly grocery shop trips, pharmacy transportation, shopping trips, and service to all recreational programs at the city’s senior and community centers (including the Pilgrim Senior Enrichment Center at which Transwick is based.) Transwick costs 50 cents per round trip, and is available to “any Warwick resident who is 55 years of age or older, disabled, or does not possess any available means of transportation.”¹⁵ A comprehensive list of services and schedules is available through the city website. Like many municipal social service programs throughout the state, Transwick continues to operate in a climate of increasing budgetary constraints, which will undoubtedly pose tangible challenges to the continued success of the program in years ahead.

¹⁵ http://www.warwickri.gov/index.php?option=com_content&view=category&id=65&Itemid=175



6. Parking

ON-STREET PARKING CONDITIONS

City parking regulations are codified in Chapter 76 (Traffic), Article IV of the City of Warwick Code of Ordinances. An extensive list of parking restrictions for specific streets is set forth in Section 76-192 of the Code, and Section 76-193 charges the city with erecting and maintaining proper signage indicating locations where parking is restricted. With the exception of locations specified in Section 76-200, overnight on-street parking is permitted within the city. Other articles of Section 76 establish the city's ordinances on designated loading zones, taxicab stands, reserved parking for handicapped persons, removal and impounding of illegally parked vehicles, emergency no parking, etc. At present, there are no pay/metered parking spaces in the city.

On-street parking conditions throughout the city have not changed significantly over recent decades. In most residential areas, available on-street parking meets demand, since regulations also require sufficient off-street parking based on residential unit type (single-family, multi-family, etc.). Parking restrictions have been effected and are enforced in areas where parked vehicles pose a risk to motorists, pedestrians, or public service vehicles. While the Department of Public Works has indicated that it is presently unaware of any neighborhood-specific traffic or parking issues, citizen concerns brought to the attention of the Department are investigated, and where warranted, appropriate corrective action is taken.

On-street parking is not a significant concern along the city's more recently developed/redeveloped retail corridors (e.g., Route 2), as zoning regulations have required that businesses and establishments provide off-street parking capacity appropriate to the use's expected parking demand. In and around the city's village districts, on-street parking may at times be insufficient to meet user demand (due to narrow road widths, grandfathered uses with nonconforming off-street parking, and/or other site-specific factors). Recognizing these constraints, the city's new Village District zoning designation (Code of Ordinances, Appendix A) includes on-street park-

ing allowances (§701), providing a degree of latitude for development/redevelopment in these areas.

OFF-STREET PARKING CONDITIONS

Off-street parking conditions have remained largely unchanged since the last comprehensive plan update. Municipal off-street parking facilities in the city, which include lots at the City Hall and Annex in Apponaug, public schools, and recreational facilities continue to adequately serve their respective functions but may operate near or at capacity during peak periods. With the more recent economic downturn, many retail and commercial uses have seen a decline in business, and a number of commercial establishments have closed, resulting in a surplus of off-street parking. Elsewhere, off-street parking conditions are very much intertwined with those for on-street parking; in the city's villages and other areas where uses are nonconforming by parking or where demand exceeds the available off-street parking, this can result in both inconvenience for visitors and patrons and disruption to surrounding uses. The previous comprehensive plan recommended working with area merchants to identify land parcels that could potentially be developed into shared parking facilities, although to date this has been largely unrealized.

PARK AND RIDE FACILITIES

RIPTA provides service to two park and ride lots within the city: Greenwood Community Church (Route 113 and Jefferson Boulevard) and the state-owned lot at the Route 117/Interstate 95 Interchange. Additionally, one city-designated park and ride facility is located along Post Road (Route 1) just south of the Apponaug Four Corners intersection. As with the city's other off-street parking facilities available to the public, these lots are in fair to good structural condition and sufficiently meet their present use demand.

7. Inter-City Travel

AIR—T.F. GREEN AIRPORT

Occupying over 1,100 acres of land near the geographic center of the city, Theodore Francis Green Airport (T.F. Green Airport—PVD) is a state-owned airport provid-

ing inter-city commercial carrier service for the greater Rhode Island area. T.F. Green is designated by the Federal Aviation Administration (FAA) as a medium-hub primary commercial service airport and is administered by the Rhode Island Airport Corporation (RIAC),¹⁶ the quasi-public agency responsible for planning and operation of the state's airports. The airport is considered a reliever airport for Logan International Airport in Boston, providing an alternative point of departure for a range of destinations in the Atlantic and Midwest regions. Carriers presently operating from the facility's 22 commercial passenger gates include Delta, Southwest, United, and U.S. Airways. According to the U.S. Department of Transportation, Bureau of Transportation Statistics (BTS),¹⁷ the most-traveled domestic routes from T.F. Green include Baltimore, Philadelphia, Orlando, Charlotte, Atlanta, and Chicago, each serving over 100,000 passengers over the period of June 2010 through May 2011.

T.F. Green Airport currently accommodates over 200 aircraft operations (arrivals and departures) per day, serving a total of approximately 3.8 million passengers in 2013. The facility is integral to the regional economy, and as detailed in the *Final Environmental Impact Statement for the T.F. Green Airport Improvement Program*¹⁸:

The Airport plays a vital role in fulfilling anticipated local, regional, and national demands of business and leisure travel, as well as providing air cargo capacity for the eastern New England region. According to a 2006 [RIAC] Economic Impact Study, the Airport is a critical catalyst for economic growth in the State of Rhode Island, generating directly and indirectly approximately \$1.96 billion in economic activity from sales taxes on additional goods and services and \$603.9 million in earnings from additional direct and indirect jobs. The Airport provides over 2,000 jobs directly, and indirectly supports hotels, rental car agencies, parking facilities, gas stations, and other travel-related businesses in the City of Warwick. (Executive Summary, p. ES-7)

Since opening in 1931, T.F. Green has undergone significant expansions in both its operations and its facilities. Its main passenger terminal was fully reconstructed to modern standards and rededicated as the Bruce Sundlun Terminal in 1996, and in 2010 a new intermodal station, the InterLink, was opened, connecting the airport to commuter rail services via a new skywalk. Infrastructure development at T.F. Green has generally coincided with steady rises in passenger traffic, which grew by over 130 percent from 1990 to 2004. Although passenger traffic has declined during the recent economic downturn, long-term forecasts anticipate modest growth in passenger traffic at T.F. Green Airport, which is projected to serve approximately 6.5 million passengers annually by 2025.

T.F. Green Airport is also addressed in the *Rhode Island State Airport System Plan*.¹⁹ As the strategic plan for the six state-owned airports, the ASP identifies goals, policies, and strategies needed to ensure that Rhode Island maintains an airport system that is capable of meeting the state's long-term transportation and economic needs. A draft update to the original and largely outdated 1984 ASP was issued in August 2011 by Statewide Planning Program, and identifies the need for a balance between airport operational safety, efficiency and host community values at all state airports; and) recognizes the NEPA Environmental Impact Statement (EIS) process as the appropriate vehicle to resolve T. F. Green Airport's optimal runway length and Airport Improvement Program. Subject to final approval following a public hearing and comment period, the plan update is also intended to project airport roles for the next 15-20 years, monitor airport performance, and aid in consistency determinations (including local comprehensive plans and intergovernmental review) as well as capital improvement programming.

RIAC's 2002 *Master Plan Update*²⁰ for T.F. Green Airport identified a number of recommended capital improvements to the airport's infrastructure in order to address needed improvements to enhance safety, efficiency and serviceability, most notably improvements to

16 http://www.pvdairport.com/main.aspx?sec_id=15

17 <http://www.transtats.bts.gov/>

18 <http://www.vhb.com/pvd/eis/>

19 (ASP—State Guide Plan Element 640), <http://www.planning.ri.gov/transportation/default.htm>

20 http://www.pvdairport.com/main.aspx?sec_id=89



the airport's primary and secondary runways (Runways 5-23 and 16-34) to meet modern aviation safety requirements, as well as the possible lengthening of runways to accommodate the presently unmet demand for longer-haul nonstop service routes. Planned capital improvements are discussed later in this element.

FREIGHT

Freight transport within and through the City of Warwick is presently conducted through three principal modes: air (cargo operations through T.F. Green Airport), rail (via the Amtrak Northeast Corridor), and truck (focused along the I-95 and I-295). The *Freight Planning Needs Assessment* presents a broad overview of freight movement in the state by mode, current freight planning efforts on both the state and regional level, and freight planning needs for the Statewide Planning Program.²¹

Air freight. T.F. Green Airport supports a significant throughput of cargo, by freight carriers (such as the United Parcel Service and Federal Express) and commercial airlines which carry mail and goods as “belly cargo” on their passenger routes. According to the Bureau of Transportation Statistics, approximately 25 million pounds of freight, express, and mail goods passed through T.F. Green over the 12-month period from June 2010 through May 2011. Although this is up slightly from similar periods ending in 2009 and 2010, it is significantly off from the peak volumes of over 40 million pounds as recently as 2007. Additional cargo capacity is part of the airport master plan

Rail freight. The Amtrak Northeast Corridor, which passes through Warwick, is used for cargo transport in the Northeast Region. Upgrades to this corridor were recently implemented in 2006 through the Freight Rail Improvement Project (FRIP), a new rail line constructed along and parallel to the two Amtrak passenger lines to serve freight movements between Central Falls and Quonset.

Local freight service is operated principally through the Providence and Worcester Railroad, which has freight

service easements along the Amtrak Shoreline. However, virtually no loading or unloading of cargo occurs along the Warwick segment—there is no intermodal freight connection between air and rail. And contrary to its name, the 0.9-mile Warwick Industrial Track (which spurs off of the main line in Cranston and is still in operation) no longer extends into Warwick, with the useable segment of the railroad stopping at the Pawtuxet River just short of the city line.

Roadway freight. As previously noted, the Providence Beltline Corridor (which includes Interstate Routes 95 and 295 through Warwick) is a crucial element in the regional and national ground transport infrastructure. Although two freeway interchanges bounding the Warwick segment of I-95 have been identified as bottlenecks due to congestion and delays, these bottlenecks are being actively addressed at the state level both through the recently completed “I-Way” interchange reconfiguration at I-195 and through the ongoing study and development of an improved interchange system at Route 4.

PASSENGER RAIL SERVICE AND INTERMODAL TRANSPORTATION

A boost to the Rhode Island's intermodal transportation efficiency was realized in October 2010 with the opening of the InterLink,²² the \$267 million intermodal station located along Jefferson Boulevard and the Amtrak Shore Line. Hosting a multi-level parking garage, train platform, and consolidated rental car facility, the state-owned station (operated by the RIAC) is connected to T.F. Green's main passenger terminal by a ¼-mile long elevated skywalk. Effectively connecting air, rail, automobile, and bus modes of travel, the InterLink recently received an America's Transportation Award from the American Association of State Highway and Transportation Officials (AASHTO) in the Innovative Management category, which recognizes creative transportation solutions that improve the movement of people, goods and services, and that enhance community life. The city recently approved the *Warwick Station Development District Master Plan*²³ which outlines a vision and strategy for the redevelopment of approximately 95 acres of land in

21 Technical Paper 158, 2006

22 http://www.pvdairport.com/main.aspx?sec_id=62

23 <http://www.warwickri.gov/pdfs/planning/WSRDMasterPlanAUGUST2011.pdf>

the area of the intermodal facility, both as a new public destination and center of economic activity.

Through agreement with the RIDOT and Amtrak, commuter rail service to the InterLink station is provided by the Massachusetts Bay Transit Authority (MBTA) by extension of its Providence/Stoughton Commuter Rail Line from Boston. MBTA service to/from the InterLink rail line is provided through ten inbound (northbound) and ten outbound (southbound) trains each weekday. One-way fares between T.F. Green and Providence are \$2.25, and travel between T.F. Green and Boston costs \$8.25 each way. A 50 percent discount is given to seniors and persons with disabilities, and children ride at no cost when accompanied by a paying adult. According to current MBTA schedules, inbound trips to Boston's South Station take approximately 90 minutes, whereas outbound trips are approximately 75 minutes. Daily and monthly commuter parking rates are offered for the InterLink garage (\$6.75 and \$110 respectively), with approximately 650 spaces available for commuters.

The provision of MBTA rail service to T.F. Green Airport is one element of a wider RIDOT initiative to provide commuter rail service to communities south of Providence along the existing Amtrak corridor. The 2001 *South County Commuter Rail Service Operations Plan*,²⁴ assessed the operational feasibility and projected costs of establishing commuter rail service over the 43.8-mile section of the Northeast Corridor between Providence and Westerly. The preferred service alternative identified in the plan, which is currently being implemented through partnership with the MBTA, involves the incremental, staged expansion of existing MBTA service to the Warwick intermodal station and Wickford Junction, approximately 11 miles south of the InterLink in North Kingstown. Commuter service to Wickford Junction has commenced. The RIDOT is also presently undertaking a Phase II Study of future commuter rail expansion, which may involve the extension of service to Westerly and connections to the Connecticut Shoreline East service, as well as stops at existing passenger stations such as Kingston Station and proposed commuter facilities.

Amtrak provides service to major metropolitan areas in the Northeast including Boston, New York City, Philadelphia, and Washington, D.C. At present, no Amtrak services stop at the Warwick InterLink station, due primarily to the fact that the FRIP line serving the station's platform is not electrified—a requirement for all Amtrak trains (MBTA commuter trains providing service to Warwick are diesel powered). Although it is understood that Amtrak is studying the ridership potential of a stop at the InterLink, there are presently no plans to provide such service.

While much less prominent in the public eye than the InterLink, a number of other existing facilities provide intermodal access opportunities to Warwick residents. These include bicycle racks on all RIPTA full-size buses, the city's two park and ride lots, and the existing Warwick-East Greenwich Bicycle Network and Washington Secondary Bike Path. For the former, dedicated multi-use path segments are currently in design for the former at Buckeye Brook and Hoxsie Four Corners which, upon completion will provide tangible benefits to both the bicycle network and local pedestrian accessibility.

8. Marine Terminals and Facilities

Warwick is host to several mooring areas, marinas, and public boat launches, supporting a range of commercial and private recreational boating uses. Warwick's marine infrastructure is the purview of the Warwick Harbor Management Commission, a 7-member panel charged with enforcing the provisions of the *Harbor Management Plan* as well as recommending additional policies, rules and regulations for the implementation of the *Harbor Management Plan*. Regulations pertaining to harbors and harbor management are codified in Chapter 24 of the city's Code of Ordinances, and the Chief Harbormaster is responsible for day-to-day operations and enforcement of policies and regulations.

The Rhode Island Coastal Resources Management Council (CRMC) is the state's coastal zone management authority having jurisdiction over all activities occurring within tidal waters of the state and along the coastline. In accordance with CRMC regulations and guidance, the

²⁴ <http://www.dot.ri.gov/intermod/index.asp>



Harbor Management Plan has been developed to document the city's findings, policies, objectives, issues, and implementation strategies with respect to the following:

- Mooring Management
- Dredging
- Public Access/Rights-of-Way to the Shore
- Harbor Facilities and Boat Ramps
- Emergency Response
- Shell fishing and Environmental Quality
- Coordination of Harbor Management Jurisdictions
- Water Use Compatibility
- Derelict Vessels and Debris
- Management of Harbormaster Activities
- Harbor Management Budget

Although out of date, the most recent *Harbor Management Plan* remains the effective planning document for the city's marine facilities, as a plan update is currently under development but has not yet been issued. The inventory of existing marine facilities contained in this section is based on the most recently available data compiled in the preparation of the updated plan.

The *Harbor Management Plan* was created for the purpose of ensuring that the city's marine facilities are operated, maintained, and planned in a manner that best serves the interests and needs of the community while protecting the coastal environment. Within the vision statement of the most recent *Harbor Management Plan* (1996-2001),²⁵ the aims of the Harbor Management Commission are to:

- To maximize the compatibility of harbor uses in a manner that provides for the safe, orderly, and efficient use of the water and the waterfront;
- To improve, expand, and maintain public access and opportunities for people's use and enjoyment of coastal and marine resources;

- To provide for the efficient and equitable distribution and management of commercial, transient, and private moorings
- To improve navigation by encouraging and supporting appropriate dredging projects;
- To promote and encourage the prudent use of coastal and marine resources in a manner that stimulates economic development and protects the coastal environment; and
- To work to improve natural resources and habitats within the city's waters by supporting policies and programs to reduce pollution.

The city currently administers 13 designated mooring areas, with an additional two designated transient vessel anchorage areas (as required by federal regulations). Current city-designated mooring areas are located in the following coves:

- Apponaug Cove (5 areas)
- Pawtuxet Cove (1 area)
- Warwick Cove (5 areas)
- Greenwich Cove (2 areas)

Mooring permits in Warwick are fee-based and issued on a first come, first served basis. No moorings are allowed in city waters without a permit, and current holders of permits must renew their permit annually to avoid forfeiture. The U.S. Army Corps of Engineers (ACOE) maintains three federal anchorage areas within the city's waters (Apponaug Cove, Pawtuxet Cove and Warwick Cove), which are managed by the city in the interest of the general public. While these federal areas must be open to all on an equal basis, no private commercial moorings are allowed within the mooring areas themselves. All coves and mooring areas along Warwick's coastline are designated as "no-discharge zones" (no releases of treated or untreated sewage) in accordance with federal regulations.

In addition to the above general mooring areas, riparian homeowners may, at the discretion of the Harbormaster, be permitted to place up to two moorings in the waters fronting their property. Such moorings also require a

²⁵ <http://www.warwickri.gov/pdfs/planning/Harbor%20Management%20Plan.pdf>

permit and must not interfere with navigational safety or another property owner’s riparian rights.

As of 2006 there were 709 legally registered moorings in the city (both in the above designated mooring areas and other approved locations), of which 251 were registered to commercial operators. Of the 458 private moorings, 322 (70%) were held by Warwick residents.

TABLE 9.5: Legally Registered Moorings by Location

LOCATION	TOTAL PRIVATE	TOTAL COMMERCIAL	TOTAL
Apponaug Cove	89	44	133
Brush Neck Cove	42	0	42
Greenwich Cove	85	197	282
Pawtuxet Cove	72	3	75
Warwick Cove	57	7	64
Open Water	113	0	113
Totals	458	251	709

Source: Warwick Office of the Harbormaster, 2006

Demand for licensed spaces within the city’s designated mooring areas currently exceeds capacity: as of 2006 the waiting list for moorings in Warwick’s harbors was 67. As demand for additional mooring space continues to increase, the city is considering the creation of additional mooring areas, an initiative that is currently in the preliminary design stages of development.

The city’s shoreline is also host to a number of harbor facilities, consisting of public, private and commercial marinas, yacht clubs, boatyards, docks, and boat ramps. As of 2006, there were 20 marinas, boatyards and yacht clubs operating in the City of Warwick, with facilities located along Greenwich Cove, Apponaug Cove, Brush Neck Cove, Warwick Cove, Pawtuxet Cove, and Greenwich Bay. These marinas contain over three thousand two hundred (3,200) slips and provide various services and amenities for commercial and private users. 18 of the city’s 20 marinas provide restrooms, 12 provide sewage pump-out facilities, and 6 are equipped with fuel service pumps.

In accordance with CRMC regulations, all marinas must have an Operations and Maintenance Plan to ensure that best management practices are employed

in marina activities including operation and maintenance of pump-out, fueling facilities. Several marinas serving Greenwich Bay are in the process of upgrading their facilities to keep pace with the increased demand for boat slips for boats, and there have been numerous requests for expansions or perimeter changes at many of these marinas. The most recent inventory of facilities shows that the number of total marina slips in Warwick increased by over 10% since the previous tabulation in the late 1990s.

City docks are situated in Apponaug and Warwick Coves and are available for public use. Currently there is only one private dock, located in Apponaug Cove, available for commercial fishermen. A number of residential docks are located along the city’s vast coastline, several of which however are not approved by CRMC (and thus are not legal). The city also maintains a number of public boat ramps at various locations along its shoreline. (See Table 6). Based on the most recent inventory of these facilities, many structures originally meant for launching boats in Warwick are no longer viable for public use. Many small boat ramps are located in densely developed neighborhoods with inadequate parking. Additionally, deteriorating infrastructure and siltation have rendered many neighborhood ramps difficult to use. Ensuring that there are useable boat ramps in each cove of the city is a stated objective of the *Harbor Management Plan*, although it is acknowledged that costs and permitting complexity render boat ramp redevelopment extremely difficult. The Harbor Management Commission is coordinating with the Planning Department and Department of Public Works in the continued development of plans for both long-term maintenance and prioritized capital improvements.

Maintaining adequate depths in the navigation channels that provide access to the city’s coves and harbor facilities is essential to the serviceability of the marine infrastructure. In recent years dredging projects have become increasingly complex due to the recognized need to dispose (or reuse) dredged material in an environmentally prudent manner consistent with state and federal regulations. The ACOE has a program to provide maintenance dredging of public channels and mooring areas at the request of local and state governments, and

TABLE 9.6: Public Boat Ramps and City Docks

LOCATION	STATE OF REPAIR	TYPE	ACCESS	PARKING
Passeonquis Cove/ Gaspee Point Drive	Good	overlook, cement boat ramp	direct, paved road, broken asphalt approach	10 spaces (recently improved)
Conimicut Point/ Shawomet Ave.	Poor	concrete ramp	direct, paved road	10-15 spaces
Bayside Beach, Longmeadow—Samuel Gorton Highway	Good—Fair	concrete ramp	direct, paved road	10 spaces
Arnolds Neck/ Harrop Ave.	Poor	asphalt ramp	direct, paved road	10 spaces
Goddard Park	Good	concrete ramp	crushed rock approach, paved road; shallow at low tide	15-20 spaces
Apponaug Cove	Good	dock, moorings	direct paved	10-15 spaces
Pawtuxet Park/Asprey Boat-house	Fair	concrete ramp, dock	paved approach; shallow at low tide	5 spaces
Salter Grove— Narragansett Parkway	Poor	rock ledge	direct, very steep hill; very shallow	5 spaces
Edgewater Beach— Oaktree Ave.—Darrow Dr.	Fair	2 gravel & sand ramps	sand road (potholed)	10 spaces (on-street)
Robert Ave./Potowomut	Poor	asphalt ramp	asphalt approach (undermined); shallow	None
Waterfront Street/ Second Point Ave.	Poor	concrete ramp	gravel approach; shallow	None
Warwick Cove/ Suburban Parkway	Good	dock	end of city street	None
Warwick Cove/ Oakland Beach	Good	concrete ramp	asphalt paved, handicap accessibility	29 paved vehicle and trailer spaces; staging area

Source: *Warwick Office of the Harbormaster, 2006*

in the mid-2000s the Providence River dredging project was completed, which included the dredging of Pawtuxet Cove, and improving navigability and public access through the restoration of pre-existing channel and mooring field depths. Both Warwick Cove and Apponaug Cove have not been dredged in over 40 years, presenting significant constraints to navigation and the mooring of vessels, and the Harbor Management Commission supports initiatives to restore water depths to historic levels in the city’s channels and coves to provide safe navigation and efficient use of mooring areas. The city also supports the development of comprehensive state-wide dredging plan that includes the beneficial reuse of dredged material.

9. Planned Roadway and Transit Projects

A number of capital projects are currently in development to maintain and improve the transportation infrastructure in and around the city. Major roadway and transit projects in the state are prioritized by their listing in the *Transportation Improvement Program (TIP)*,²⁶ which establishes a program of projects that the State of Rhode Island intends to implement using U.S. Department of Transportation (USDOT) funds. By their nature and location, most all major transportation projects within the city are developed by the state (the bulk of which are administered by RIDOT) in conjunction with

²⁶ <http://www.planning.ri.gov/transportation/default.htm>

the branch of the USDOT overseeing the particular mode of transportation (e.g., Federal Highway Administration, Federal Aviation Administration) and through coordination with local authorities.

The TIP is a multi-year program of Bicycle/Pedestrian, Bridge, Congestion Management Air Quality (CMAQ), Enhancement, Highway, Interstate, Major Projects, Pavement Management, Planning, Study and Development, Traffic Safety, Transit, Administration, and Earmark projects that are eligible to receive federal funding. As the current TIP period (Fiscal Years 2009-2012) has drawn to a close, the State Planning Council (Statewide Planning Program) has developed the program for the next TIP for federal Fiscal Years 2013-2016. Of particular relevance is the current transportation funding crisis in Rhode Island and the nation at large, which is expected to result in a decrease in annual federal highway funding to Rhode Island for the future TIP of approximately 24 percent (down from approximately \$210 to \$160 million).

A critical component of developing the new TIP is the prioritization/reprioritization of local projects. Each municipality submits a prioritized list of projects. To aid cities and towns in this effort, the Statewide Planning Program prepared a status report of projects listed in the 2009-2012 TIP by municipality, which identified those projects that have been completed, those where the State is committed to implementation, and those that are not likely to be implemented prior to the close of the 2009-2012 TIP period due to anticipated funding constraints (a second status report was prepared by the Statewide Planning Program listing state projects in the current

TIP for similar prioritization by RIDOT). The Statewide Planning Program’s recommendations for the 2013-2016 TIP can be found in the Appendix. The City’s top five priorities are listed in Table 9.7.

Two major projects are in development that will likely have appreciable effects on the future of transportation in Warwick: (1) the T.F. Green Airport Improvement Program and (2) the Apponaug Circulator Long-term Improvements Project. In addition to these, a number of other projects listed in the current TIP are expected to provide tangible benefits to surface transportation safety, serviceability, and efficiency upon their completion, particularly the Route 5 Reconstruction Project, which is currently in final design. Natick Bridge (East Avenue over the Pawtuxet River) is scheduled for replacement in 2012 and will restore a key transportation link between Warwick and West Warwick that is currently saddled by weight restrictions. Implementation of the Warwick Avenue Arterial Traffic Signal Synchronization, which is nearing design completion, will serve to alleviate much of the congestion currently afflicting the Route 117/117A corridor.

T.F. GREEN AIRPORT IMPROVEMENT PROGRAM

As previously noted, RIAC proposes to implement a program of major improvements to the existing infrastructure at T.F. Green State Airport. With the Final EIS approved by the FAA with a Record of Decision (ROD) issued in September 2012, RIAC intends to complete the final design and commence construction of the

TABLE 9.7: City of Warwick TIP Priorities (FY 2013-2016)

PRIORITY	PROJECT NAME/LIMITS	PROGRAM	TIP RECOMMENDATION
1	Route 5 Reconstruction Contract 1 Mayfield Ave. (Cranston) to I-95	Highway Program	Recommended
2	Ramp Hazard Elimination Contract 5 Route 37 eastbound off-ramp at Post Road (Route 1)	Highway Safety Improvement Program	Recommended
3	Warwick Interlink—Coronado Road Improvements Post Road to Amtrak Railroad Bridge	Study & Development Program	Recommended
4	2015 STC Contract 7: Warwick Interlink—Post Road and Airport Connector Improvements	State Traffic Commission (STC)	Recommended (Study Only)
5	Conimicut Shoals Lighthouse	Enhancement Program	Recommended (Future)

improvements in 2013, with certain key elements of the program expected to be complete by 2017.²⁷

The T.F. Green EIS notes that the purpose of the Airport Improvement Program (AIP) is to enhance airport safety and the efficiency of the airport and the New England Regional Airport System to more fully meet the current and anticipated demand for aviation services. To address the former, the following safety elements are proposed within the scope of the AIP:

- The upgrading of crosswind (secondary) Runway 16-34 Runway Safety Areas (RSAs) to meet current FAA requirements;
- The demolition of Hangar No. 1 (located in close proximity to the northwest end of Runway 16-34) to remove its present encroachment on designated airspace;
- The relocation of Taxiway C to increase the current lateral separation between Taxiway C and Runway 16-34.

Located at each end of the runway, the RSAs associated with Runway 16-34 do not meet current FAA design standards, and in accordance with new federal runway safety requirements, all commercial passenger airports must upgrade RSAs by 2015 to meet acceptable airport design standards. The EIS Re-Evaluation determined that Runway 16-34 RSA improvements will remain on airport property, which will not require Airport Road to be relocated.

To achieve the stated efficiency objectives, the AIP includes several proposed enhancements to the airport's existing infrastructure, including the addition of up to seven commercial service gates, reconfiguration of the airport's system of taxiways to improve traffic flow, and the provision of relocated and expanded cargo facilities to meet space needs and anticipated demand. Central amongst the efficiency enhancement elements is the proposed extension of Runway 5-23 "to fulfill New England Regional Airport System needs and more fully accommodate existing and anticipated demand for commercial non-stop service to the West Coast" (Executive Summary,

²⁷ The reader is referred to the Executive Summary of the T.F. Green EIS for a more thorough treatment of the proposed Airport Improvement Program (AIP), its anticipated impacts, and the measures proposed to mitigate adverse impacts.

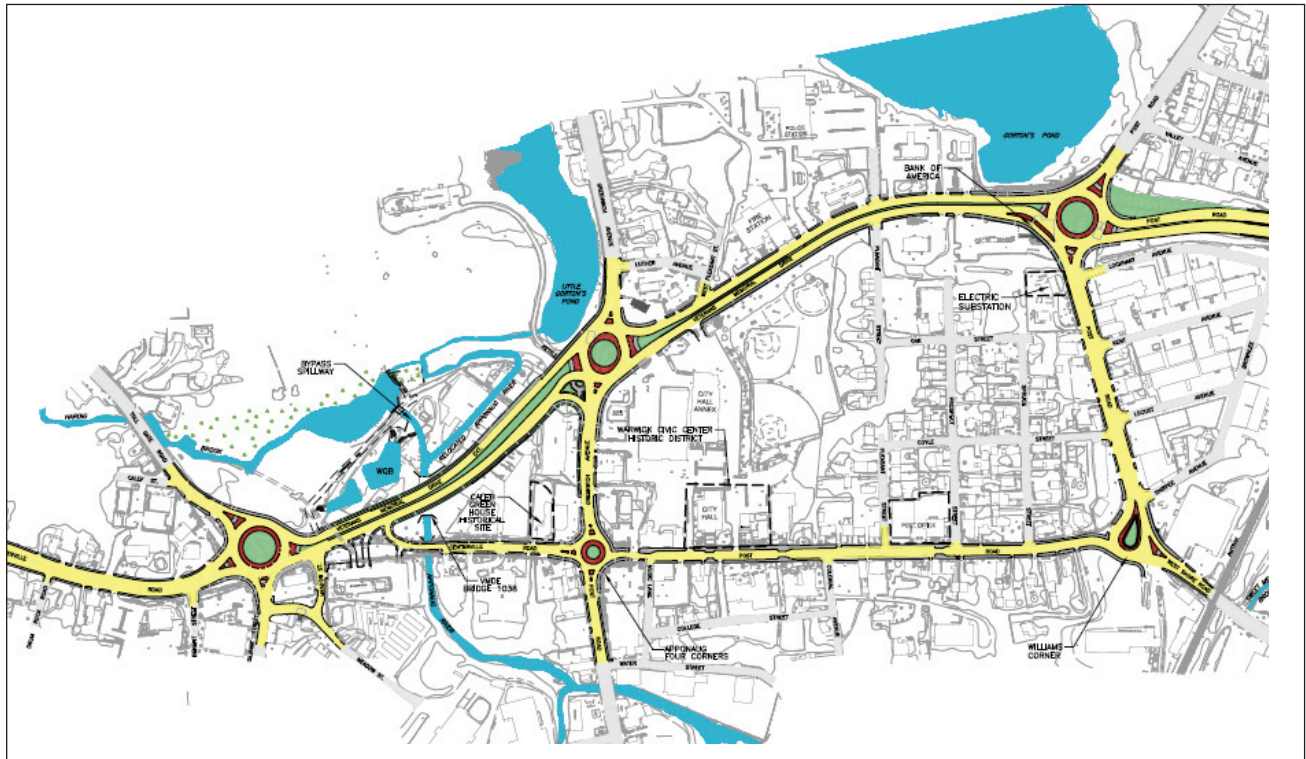
p. ES-10). Lengthening of this runway by approximately 1,530 feet at its southerly end (to a total length of 8,700 feet) will also require the realignment of Main Avenue (Route 113) to accommodate the clearances and setback associated with the extended primary runway.

The Final EIS provides an overview of the alternatives analysis undertaken in the development of the AIP, which consisted of various levels of screening and refinement (based on consistency with the project purpose and anticipated environmental impacts) leading to the selection of final alternatives ("B2" and "B4") and ultimately the identification of B4 as the preferred alternative. Through extensive analyses of the potential for impacts to the natural and human environment, it was determined that the final alternatives could have a significant adverse effect in a number of NEPA impact categories, most notably Noise (through increased noise associated with intensified use, including larger aircraft), Compatible Land Use (through both noise and required property acquisitions), and Wetlands (through impacts to wetland features in the immediate vicinity required for expansion). To offset the potential for significant impacts, a program of mitigation measures is proposed, which includes voluntary property acquisitions (as part of the RIAC's ongoing Noise Compatibility Program in accordance with 14 CFR Part 150, *Airport Noise Compatibility Planning*), and sound insulation for impacts related to a significant increase in noise to noise-sensitive land uses (residential) as well as non-residential noise-sensitive sites such as schools. In identifying the preferred alternative, the EIS notes that Alternative B4 would have the least environmental impacts (compared to B2 and other alternatives eliminated in earlier screening phases) and that all significant impacts could be mitigated. The FAA Record of Decision (ROD) was issued in September 2011, approving preferred alternative B4.

APPONAUG CIRCULATOR

RIDOT is currently in the final design phase (75% design stage) of a project to construct intersection and alignment improvements to the existing Apponaug Circulator, a one-way system around Apponaug Village.

FIGURE 4: Apponaug Circulator



The primary objective of the proposed project is to improve traffic conditions in the area through the construction of a bypass around Apponaug Village, the section of Post Road between Apponaug Four-Corners and Williams Corner. Implementation of such a bypass will divert the majority of traffic around this segment, significantly reducing traffic volumes, alleviating congestion, and allowing the City of Warwick to pursue its long-range plan for redevelopment of this area. In coordination with the City of Warwick, the Apponaug Area Improvement Association’s vision for the revitalization of Apponaug Village has recently been published in the *Apponaug Village Master Plan* (Veri Waterman Associates, Inc., April 2011).

Identified by the RIDOT early in the planning process, the principal needs for long-term improvements to the existing one-way circulator system include the following:

- A very high volume of traffic travels through the heart of Apponaug Village (Post Road, between Apponaug Four-Corners and Williams Corner) every day. This traffic (with its associated noise, pollution, unsafe pedestrian environment, and congestion) is viewed as

being primarily responsible for the decline of the “Village” from a social and economic viewpoint.

- Numerous roadway deficiencies exist along the Circulator, including narrow lane widths, narrow or non-existent shoulder widths, insufficient horizontal curves, poor curb reveal, and poorly defined curb openings.
- Weaving conflicts exist on two legs of the Circulator, conditions which contribute to congestion and adversely impact traffic safety.
- Poor levels of service currently exist within the Circulator and are projected to worsen by year 2020.
- Four major intersections and two roadway segments in the study area currently have accident rates higher than state and national averages.

Through the required NEPA process for the project (which included public consultation and the drafting of an Environmental Assessment), the preferred alternative was identified, which involves the extension of Veterans Memorial Drive to the existing intersection of Centerville Road (Route 117) and Toll Gate Road, creating a two-way bypass to carry the bulk of through traffic around Apponaug Village and Apponaug Four Corners.



As development of the project design was advanced, the RIDOT further evaluated ways in which safety and traffic flow could be improved upon along the proposed alignment. These efforts subsequently led to the current design, under which the five major signalized intersections in the project area will be replaced with modern roundabouts (see Figure 4). Consisting of a one-way, circular intersection without traffic signals in which traffic flows around a center island, modern roundabouts are specifically engineered to reduce speeds, maximize safety, and improve traffic flow/throughput. Implementation of the project will involve the construction/reconstruction of approximately 2.32 miles of roadway in total, including five intersection roundabouts; a new bridge carrying the Veterans Memorial Drive Extension over the Apponaug River; roadway drainage and stormwater management facilities; curbing, sidewalks, and pedestrian facilities; and appropriate landscaping measures. Based on the current RIDOT schedule, it is anticipated that construction will commence in 2013, and that the Apponaug Circulator Long-term Improvements will be completed by 2015.

ROUTE 5 RECONSTRUCTION

Under Contract 1, the RIDOT plans to reconstruct an approximately 1-mile segment of State Route 5 (Oaklawn Avenue/Greenwich Avenue/Lambert Lind Highway) from Mayfield Avenue in Cranston south to the Interstate 95 overpass. This project will provide improved access and circulation along the eastern fringe of the Warwick Mall, through modifications to the existing road geometry (intersections, turning lanes), improved traffic signal designs, ADA-accessible pedestrian facilities, and a proposed two-lane roundabout at the Greenwich Avenue/Knight Street/mall entrance intersection. In addition to tangible safety and efficiency improvements, the upgrading the existing, substandard geometry at this intersection to a modern roundabout design will greatly facilitate economic redevelopment of the former Pontiac Mills site along Knight Street (just west of the intersection).

E RECOMMENDATIONS

GOAL 1

The City of Warwick is a model for efficient and flexible multimodal transportation.

POLICIES

- Ensure that all local plans and planning decisions employ a holistic approach in considering and accommodating various modes of transportation.
- Leverage the city's intermodal connectivity assets (Inter-Link, City Centre Warwick) to foster sustainable transit and reduce dependency on the automobile as the primary mode of travel for commuters.

STRATEGIES

- A. Require that pedestrian movement, bicycle transportation, accessibility for the disabled, and streetscape aesthetics be incorporated in the design of roadway construction/reconstruction projects.**

Where appropriate, encourage redevelopment of urban corridors as “complete streets” that support improved bicycle and pedestrian mobility, are compatible with adjacent uses, and incorporate low impact development and green infrastructure. Provide improved east-west access across the Northeast Rail Corridor for pedestrians, bicyclists, and motor vehicles.

Actions:

1. **Identify and prioritize existing corridors for viability as complete streets “vision projects”, such as Route 2, Route 5, and Jefferson Boulevard.**
Identify and prioritize opportunities for providing bicycle storage areas (e.g., covered bike racks) at key linkages between existing/planned bicycle and transit networks, such as bus stops and park and ride lots.



Encourage the development of multi-use paths that interconnect residential areas, provide access to retail and community centers, and integrate with the existing Warwick-East Greenwich Bicycle network. Include the Hoxsie and Buckeye Brook multi-use path projects on future TIP Proposals (these projects were not recommended for the FY 2013-2016 TIP).

B. Promote the economic, environmental, and quality of life benefits of mass transit.

Seek to diminish the prevailing perception of public transit (bus, rail) as a “means of last resort” by advocating for improved service, providing incentives, and promoting increased synergy between bicycle/pedestrian and mass transit modes of travel.

Actions:

1. **Advocate for more frequent commuter rail service at the Warwick Station and support initiatives to increase ridership.**
Evaluate the potential for economic incentives to promote the use of alternatives to single occupant vehicles among Warwick commuters, such as reduced fares, commuter lot vouchers, and/or tax deductions.
2. **Promote development of the Proposed InterLink/Coronado Street Improvements Project, and evaluate the feasibility of providing enhanced and/or new linkages across the rail corridor at other locations.**

GOAL 2

Warwick has an efficient road network that responds to existing and future development patterns while reducing auto congestion and improving circulation.

POLICIES

- Ensure that roads are maintained to a high standard for long-term use. Maintain roadway facilities and their ancillary elements (including sidewalks, lighting, drainage, streetscape/landscape features where present) in a state of good repair.
- Support state planning and implementation efforts to reduce vehicular congestion and improve safety on/at major roadways, intersections, and interchanges throughout the city.
- Support roadway projects to reduce traffic congestion throughout Warwick, particularly along east/west routes and along major commercial corridors.
- Promote best practices to strengthen access management to improve traffic flow.

STRATEGIES

A. Allocate sufficient resources for maintenance and street repairs.

Actions:

1. Continue to seek state and federal funding assistance for the maintenance of local roadway infrastructure (through opportunities such as the RI-LEAP program).
2. Regularly monitor street conditions and advance projects to address problems before they grow larger and more expensive to fix.
3. Implement a citywide geographic information system (GIS), asset management system, and/or other technologies to more efficiently and effectively inventory, track, and manage city infrastructure and resources.
4. Coordinate road repairs with other infrastructure improvements to increase efficiency, and preserve roadway quality.
5. Identify, prioritize, and promote projects to address the transportation infrastructure needs of the city for inclu-



sion in the state's Transportation Improvement Program (TIP).

B. Reduce traffic congestion throughout Warwick, particularly along east/west routes and along major commercial corridors.

Actions:

1. Upon their completion, assess the performance of the modern roundabouts constructed under the Apponaug Circulator and Route 5 projects in increasing safety and alleviating congestion, and identify other locations within the city where the benefits of these facilities could potentially be realized.
2. Continue to conduct an open and transparent process for selecting projects to include in the future TIP Proposals, and ensuring that the city's most pressing needs are prioritized accordingly.
3. Limit multiple access points on the City's major arterial roadways, and where possible, seek to consolidate and/or eliminate redundant accesses and curb cuts.
 - Strengthen and enforce existing access management regulations.
 - Minimize the potential for traffic impacts by efficiently integrating access to new developments into existing transportation networks.
 - Amend city ordinances pertaining to redevelopment to encourage the elimination or consolidation of accesses and discourage the creation of new accesses and curb cuts.
4. Ensure that Main Avenue (Route 113) continues to serve effectively as an east-west arterial and a hurricane evacuation site.

As it is presently a hurricane evacuation route and one of the city's major east/west arterials, ensure that Main Avenue (Route 113) continues to adequately serve these functions both during and following construction of the Airport Improvement Program. Actively participate in, and coordinate with the RIDOT and RIAC on the final design of the proposed Main Avenue relocation to ensure that the needs and interests of residents are addressed.

C. Encourage the use of effective traffic-calming techniques in neighborhoods.

Actions:

1. Solicit input from the community (residents, neighborhood groups, public officials) as to the specific locations within the city where traffic calming measures are most needed and appropriate.
2. Implement traffic calming measures (e.g., curb bump outs, speed humps) at locations along local and residential roads where speeding is persistently problematic.

GOAL 3

Warwick has improved the pedestrian and bicycling environment with routes that better connect Warwick's neighborhoods.

POLICY

- Support initiatives that will provide more bicycle and pedestrian facilities in Warwick.

STRATEGIES

- ### A. Identify and pursue opportunities for developing dedicated bicycle and multi-use pedestrian rights-of-way to create linkages between residential neighborhoods, parks, commercial areas and other destinations.

Actions:

1. Continue to work with the state to develop and expand the city's system of signed bicycle routes.
2. Continue to require sidewalks for all new residential developments and ensure that pedestrian accessibility and circulation are addressed.
3. Regularly monitor the condition of sidewalks and provide sufficient funding for repairs.
4. Ensure that redevelopment projects within the city's village districts provide for pedestrian safety and mobility,

and address applicable accessibility requirements for persons with disabilities.

5. Require that new development and redevelopment proposals, where applicable, include appropriate amenities for bicyclists (e.g, bicycle racks).
6. Enforce federally-mandated guidelines for accessibility in accordance with the Americans with Disabilities Act (ADA).

GOAL 4

Warwick has a convenient public transit network that better meets the needs of Warwick residents and workers.

POLICY

- Advocate for RIPTA to enhance service within the City of Warwick to help reduce single-occupancy automobile trips.

STRATEGIES

- A. Discourage the elimination of fixed bus routes providing service to the city and further reductions in service frequency along established routes.

Actions:

1. Advocate for improved connectivity between RIPTA service, the InterLink, and key points (e.g.Village Districts) throughout the city.
2. Identify potential new routes, or Providence route realignments, to better meet inter-city transportation needs.
3. Evaluate the feasibility of implementing demand-based transit services (similar to RIPTA’s Flex Service offered elsewhere in suburban and rural “flex zones”) for to increase intra-city mobility.
4. Maintain and operate the city’s para-transit service (Transwick) in a manner that best serves the mobility needs of the elderly and disabled residents.
5. Review all RIPTA proposals for changes to service (routes, frequency) and, where appropriate, submit written comments during the public notice period that

represent the concerns and interests of the city and its residents.

6. Develop and offer recommendations to RIPTA for improved synergy between bus and other modes of transit within the city.

GOAL 5

Warwick’s intercity and intermodal transportation includes improved passenger rail service and airport facilities.

POLICIES

- Support initiatives to improve and expand intercity travel options.
- Ensure that the expansion of TF Green Airport addresses all impacts including land use, traffic and environmental impacts (including air quality, noise, water quality, wetlands, etc) and implements all mitigation measures to address them.

STRATEGIES

- A. Engage with the RIDOT and Amtrak to further leverage the city’s key intermodal assets (location and infrastructure) for intercity travel.

Actions:

1. Promote the InterLink station as an efficient and sustainable means of providing access between air, rail, automobile, and bus modes of travel.
2. Ensure that the redevelopment of the City Centre Warwick is conducted in a manner that complements and encourages transit ridership.
3. Work with RIDOT and the MBTA to increase the frequency of commuter rail service to and from Providence and Boston.
4. Encourage the Rhode Island Department of Transportation (RIDOT) to expand commuter rail services to points south of the city along the Northeast Corridor.
5. Work with RIDOT and Amtrak to build a platform at Warwick Station to connect travelers to major destinations along the Northeast Corridor route.

B. Work with the State of Rhode Island, the Rhode Island Airport Corporation (RIAC), and the Federal Aviation Administration (FAA) to mitigate any potential negative impacts of airport development activities on the residents, businesses, and institutions of the City of Warwick.

Actions:

1. Ensure that all mitigation measures committed to in the Final Environmental Impact Statement Record of Decision (ROD) are implemented in a manner that improves east/west circulation, and minimizes traffic, noise and other impacts on adjacent properties, and that the provisions of the Memorandum of Understanding (MOU) between the RIAC and the City of Warwick are upheld.

C. Coordinate the implementation of Transportation and Circulation recommendations with other elements of the Comprehensive Plan and the City Centre Warwick Master Plan to ensure the measured and sustainable development of the Station District and its environs.

Actions:

1. Expedite completion of the updated Harbor Management Plan to accompany this Comprehensive Plan update.

B. Address the need for dredging to restore navigable depths within the city’s navigation channels and mooring fields through coordination with the CRMC and U.S. Army Corps of Engineers.

Actions:

1. Gain support from congressional delegation and CRMC.
2. Continue to support dredging of Brush Neck Cove.

C. Maintain and improve public access opportunities for the use and enjoyment of coastal and marine resources.

Actions:

1. Enforce the harbor ordinance to prohibit the blocking impeding or private annexing of CRMC rights-of-way, city rights-of-way as well as platted improved and unimproved roadways to the coastline.

GOAL 6

An accessible, easily navigable marine transportation system.

POLICY

- Support initiatives that improve access to, and navigation in, Warwick’s marine environment.

STRATEGIES

A. Work with the Rhode Island Coastal Resources Management Council (CRMC) to complete an update to the city’s Harbor Management Plan.



Public Facilities and Services

FROM A WARWICK RESIDENT

“City services have always been the best—schools, police, fire, recreation, snow and trash removal—all done professional and at a fair price.”

A GOALS AND POLICIES

GOALS	POLICIES FOR DECISION MAKERS
Excellent quality and quantity of drinking water to meet all current and future needs of Warwick.	<ul style="list-style-type: none"> • Ensure a reliable and efficient supply of clean drinking water for Warwick residents, businesses, and institutions.
Efficient and reliable sewer service and wastewater treatment throughout the city.	<ul style="list-style-type: none"> • Support sustainable systems and programs for the safe, efficient, and effective collection and treatment of sewage and recovery of water resources and protection of the environment.
Stormwater management and drainage systems that are effective, reliable and incorporate best practices.	<ul style="list-style-type: none"> • Support use of best practices, including natural drainage systems, when feasible, to manage stormwater runoff and mitigate adverse impacts, including pollution quality, flooding, and erosion and sedimentation. • Require all new development and redevelopment projects to meet or exceed the standards in the latest edition of the <i>Rhode Island Stormwater Design and Installation Standards Manual</i>.
Continuing to exceed the state's 35% recycling requirement and meeting or exceeding the state's 50% solid waste diversion goal.	<ul style="list-style-type: none"> • Minimize the quantity of solid waste sent to the landfill by promoting recycling and other waste reduction measures.
City facilities that are state-of-the art and/or maintained for long term use.	<ul style="list-style-type: none"> • Support investment in an asset management system. • Provide high quality educational facilities that meet the current and future needs of Warwick students.
Police and fire facilities that meet best practice performance standards throughout the City of Warwick.	<ul style="list-style-type: none"> • Fund all public safety departments so that they are able to meet best-practice standards. • Continue to support Community Policing and other public safety programs.
Effective services to support a growing senior citizen population.	<ul style="list-style-type: none"> • Support programs that help senior citizens age in place.

B FINDINGS AND CHALLENGES

findings

Approximately 27,000 customers (about 88%) of residents) receive drinking water from the Warwick Water Division, which it purchases from Providence and the Kent County Water Authority. The Kent County Water Authority (KCWA) provides drinking water to the rest of the city from a combination of Providence Water and groundwater well sources.

Approximately 65% of the developed parcels in Warwick are severed. Where sewer lines are available, about 3,000 property owners chose not to connect.

The WSA is implementing a program to encourage tie-in of all parcels with access to sewer lines because current onsite wastewater treatment systems are major contributors of pollution to Greenwich Bay. Sewer connections are increasing because of the program.

The wastewater treatment facility was flooded in 2010 and its levee system is being upgraded.

Warwick completed a stormwater management plan but has not implemented some elements required by the state.

Warwick has the highest rate of recycling among Rhode Island cities.

School closing and consolidations have occurred due to declining enrollments.

challenges

Funding for the sewer extension program

Full funding of water infrastructure replacement program that meets the 20-year progressive replacement identified in the law.

Funding for measures to comply with the State's requirements for stormwater management

Adding multi-family and commercial recycling

Finding appropriate uses for closed school facilities

C WHAT THE COMMUNITY SAID

Warwick residents had very positive comments about some city services such as trash removal. The areas of greatest concern to a number of residents were the following:

- Elimination of cesspools, sewerage, and best practices for unsewered areas
- Maintenance of public spaces, parks and open space
- Road maintenance
- Condition of public school facilities
- Drainage and repeated flooding in some areas
- High level of taxes

D CURRENT CONDITIONS

1. Drinking Water Supply

DRINKING WATER SERVICE

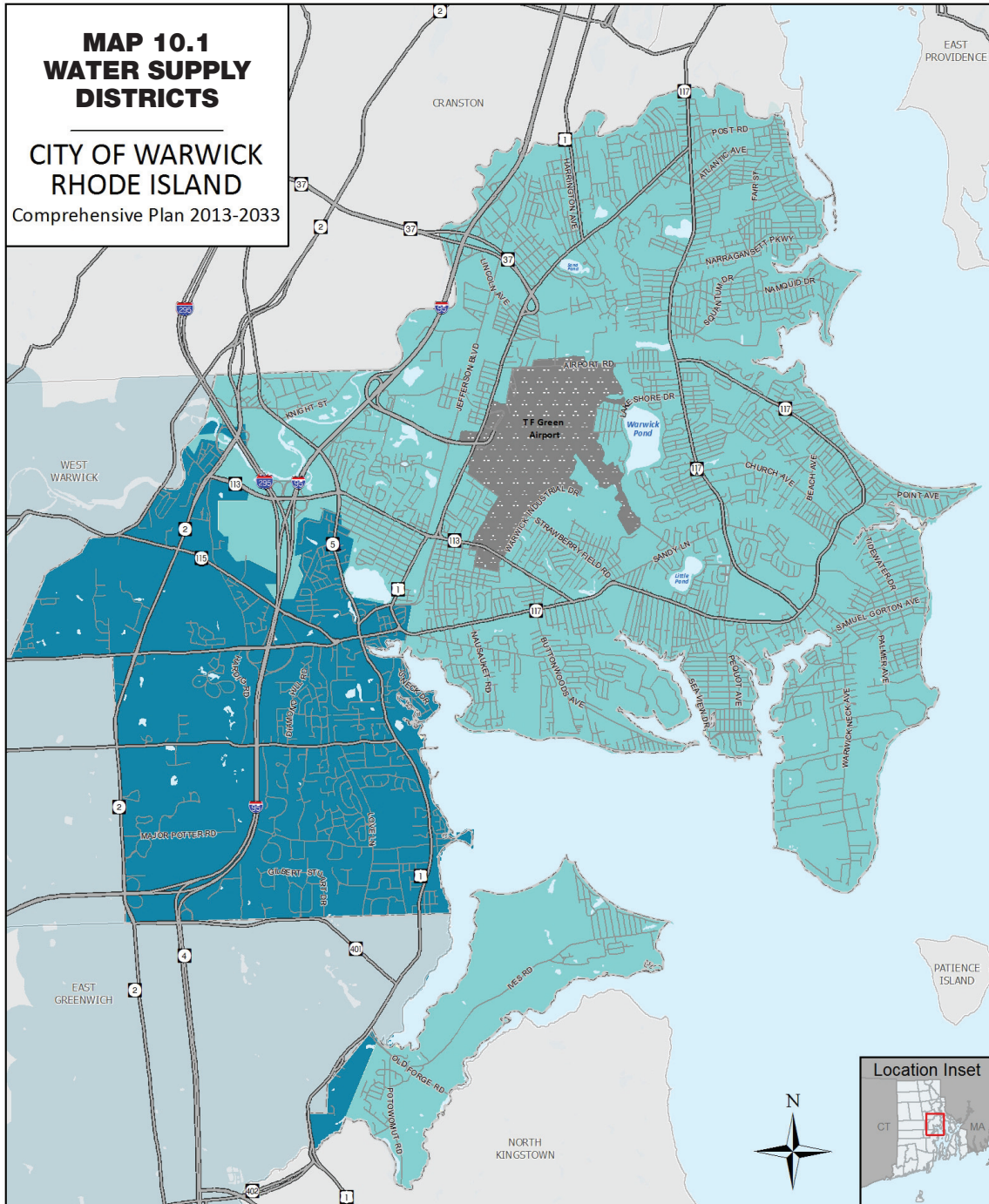
Within the City of Warwick, drinking water service is provided by two suppliers: (a) the city’s Department of Public Works, Division of Water (Warwick Water Division)¹ and (b) the Kent County Water Authority (KCWA).² The Warwick Water Division serves approximately 88 percent of the city’s population, while the Kent County Water Authority provides service to residents in the western section of the city (including the Cowesett, Natick, Apponaug, and Toll Gate neighborhoods). Both entities obtain most of their water from the Scituate Reservoir through interconnections with the Providence Water Supply Board (PWSB). They maintain extensive pipe networks and various infrastructure elements (pumps, valves, hydrants, etc.) throughout their respective service areas. There are no reservoirs, drinking water wells, or water treatment plants in the City of Warwick, except for a KCWA well.

The Warwick Water Division system is comprised of two geographically separate service areas: the Potowomut System and the Warwick System. All of the water supply to the Warwick System is purchased directly from the PWSB and water provided to the Potowomut System is purchased from the KCWA. The Kent County Water Authority obtains approximately 80–90 percent of its supply through wholesale purchase from the PWSB, and connects with Warwick Water off the PWSB aqueduct, with the remainder drawn from KCWA-owned groundwater wells.

The Division of Water provides service to approximately 27,000 customers and serves an average daily demand of approximately 9.5 million gallons per day (MGD). Although the KCWA covers a much larger

¹ http://www.warwickri.gov/index.php?option=com_content&view=article&id=866&Itemid=183

² <http://www.kentcountywater.org/>



**MAP 10.1
WATER SUPPLY
DISTRICTS**

CITY OF WARWICK
RHODE ISLAND
Comprehensive Plan 2013-2033

Map Legend




Water Supply Districts

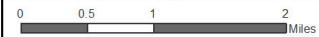
- Kent County Water District
- Warwick Water District

Features

-  Highways
-  Roads
-  T F Green Airport

Boundaries

-  Warwick
-  RI Municipal
-  Other States



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Goody Clancy & Associates, 12/4/13

service area that includes West Warwick and portions of Warwick, Coventry, North Kingstown, West Greenwich, East Greenwich, and Scituate, it serves roughly the same total number of customers (27,000) and has an average demand of 8 MGD.

State oversight of public water suppliers is administered principally through the Rhode Island Water Resources Board (and Board Corporate),³ which is the executive state agency charged with managing the proper development, utilization and conservation of water resources, and the Rhode Island Department of Health (HEALTH), Office of Drinking Water Supply,⁴ which is responsible for ensuring compliance with state and federal laws and regulations pertaining to drinking water quality.

The primary responsibilities of the state Water Resources Board (WRB) are the strategic planning and management of the withdrawal and use of the water resources of the state.⁵ “The WRB meets these responsibilities through the strategic planning initiatives, development of policy and guidelines, promulgation of rules and regulations, and a wide variety of capital projects that benefit all Rhode Islanders.” The WRB is the lead state agency for water policy development, and at the time this plan is being written, the WRB is developing a Draft Rule for Water Use and Efficiency for major water suppliers as well as working with the Statewide Planning Program to consolidate existing state guide plans pertaining to water resources (including State Guide Plan Element 721, *Water Supply Policies for Rhode Island*⁶ and related elements). The WRB is also responsible for resource management, review of Water Supply System Management Plans (WSSMPs) of major water suppliers in the state, and administration of an ongoing Water Supply Interconnection Program for adjacent water suppliers to supply redundancy, backup, and increased safety.

3 <http://www.wrb.ri.gov/index.htm>; the Water Resources Board Corporate is a quasi-public corporation separate from the Board and serves as the water facilities and infrastructure financing arm of the Water Resources Board—see website for further information.

4 <http://www.health.ri.gov/programs/drinkingwaterquality/index.php>

5 <http://www.wrb.ri.gov/reports/2010AR.pdf>

6 <http://www.planning.ri.gov/sgp/pdf/721.pdf>; note that this document is an abstract of the full plan element—see <http://www.wrb.ri.gov/lawsregs.htm> for more information.

In addition to performing annual reviews of the billing rates of major water suppliers in the state, the Board has recently assessed the current capital needs of the State’s major water suppliers to ensure continual reinvestment in water supply infrastructure. The Water Use and Efficiency and Clean Water Infrastructure (RIGL §46-15.6) Acts require rate stabilization and reserves accounts to ensure continual reinvestment in water supply infrastructure. WRB data on the rates and infrastructure funding needs of Warwick’s two public water suppliers is provided in Table 10.1 below. As evident in this table, there remains a significant difference in the rates paid by the customers of each supplier: for the same amount of water delivered, KCWA customers are charged nearly twice the amount as Warwick Water Division customers. This is likely due in part to a number of variables, including differences in overhead, capital improvement program, and system maintenance costs; and the fact that the Warwick Water Division does not own or maintain any source or treatment infrastructure. KCWA rates reflect costs associated with compliance with state law requiring an infrastructure replacement plan with a 20-year cycle. KCWA spends \$5.4 million annually on infrastructure replacement.

The HEALTH Office of Drinking Water Quality is responsible for regulatory oversight of public drinking water systems in Rhode Island, which includes ensuring compliance with the Safe Drinking Water Act and the *Rules and Regulations Pertaining to Public Drinking*

TABLE 10.1: Rhode Island Water Resources Board Rate and Infrastructure Surveys

	WARWICK WATER DIVISION	KENT COUNTY WATER AUTHORITY
2006 Annual Cost per Household ⁽¹⁾	\$207.59	\$378.48
2010 Annual Cost per Household ⁽¹⁾	\$254.19	\$497.80
Capital Requirements for Infrastructure Replacement (next 20 years)	\$12,928,450	\$103,282,440 ⁽²⁾

Notes: (1) Based on 73,000 gallons annual usage per household, including consumption costs and annual charges. Under the Water Use and Efficiency Act, the target consumption per capita per day is 65 gallons (approximately 60,000 gallons per year for an average household); (2) Estimate is for entire KCWA service area.

Source: Rhode Island Water Resources Board

Water,⁷ engineering and plan review of new and replacement infrastructure projects, water quality monitoring and sampling, and financial assistance through the DWSRF (administered in conjunction with the Clean Water Finance Agency). HEALTH requires that major water suppliers such as the KCWA and Warwick Water prepare and distribute to customers annual Water Quality Consumer Confidence Reports in accordance with U.S. Environmental Protection Agency (EPA) requirements. As indicated in the testing results reported for 2012, neither supplier had contaminant concentrations in their water supply exceeding EPA standards for water quality.

In cooperation with other state agencies, HEALTH conducted source water assessments for both the KCWA and PWSB Source Water Protection Area (SWPAs) in 2003. These studies considered a number of susceptibility factors, including intensity of watershed development, the presence of businesses and facilities that handle, store, or generate potential contaminants, and the pathways through which contaminants may enter the supply. Based on HEALTH assessment guidelines, it was determined that Scituate Reservoir source has “low risk” of contamination, whereas the KCWA supplies have a “moderate” susceptibility to contamination (an average ranking for a water supply).

HEALTH, in conjunction with the Rhode Island Clean Water Finance Agency,⁸ currently oversees the Drinking Water State Revolving Loan Fund, a program to assist public water systems in ensuring safe drinking water by providing a financing mechanism for infrastructure projects through an annual EPA capitalization grant. In this capacity, HEALTH develops a priority system for funding projects based on Safe Drinking Water Act criteria, ranks the projects as to how well they meet the established priorities, and recommends funding of projects based on priority ranking. Recently, HEALTH has made loans through the American Reinvestment and Recovery Act to improve drinking water infrastructure.

A brief discussion of the facilities and operations of each public water supplier to the city Warwick is provided in

the respective subsections below. It is important to note that as with most all institutions in the public sector, suppliers and state agencies are facing appreciable fiscal challenges and budgetary constraints amidst the recent economic downturn. While effort has been made to obtain the most up to date information possible, it is possible that a number of planned capital and infrastructure reinvestment initiatives may be deferred beyond their originally programmed timeframe for financial reasons.⁹

WARWICK WATER DIVISION

As part of the city’s Department of Public Works, the Division of Water provides approximately 3 billion gallons of potable water annually to nearly 27,000 customers (approximately 88% of the city’s residents). The Division purchases about 3 billion gallons a year and sells some to the KCWA, resulting in net usage to retail customers of about 2.2 billion gallons a year on average. The Water Division is responsible for ensuring that all water quality testing requirements are met, for quarterly billing customers, and for upgrading, replacing, and rehabilitat-

⁹ For more info, see websites and public points of contact of the City of Warwick, KCWA, WRB, and HEALTH for further information.

TABLE 10.2: Warwick Water Division Critical Components

OPERATIONAL AREA	COMPONENT
Wholesale Water Purchase	<ul style="list-style-type: none"> • Pettaconsett Connection to Providence • Natick Connection to Providence • Post Road / Forge Road Connection to Kent County (Potowomut)
Transmission/ Distribution	<ul style="list-style-type: none"> • Bald Hill Storage Facility • Warwick Neck Storage Facility • State Street Booster Pumping Station • 42” transmission main from Natick Connection to Bald Hill Road • 36” transmission line from Bald Hill Storage Facility • 30” transmission line from Pettaconsett Connection to Post Road • 12” & 10” transmission lines from State Street Booster Pumping Station south along Warwick Neck Avenue • 10” transmission main along Forge/ Ives Road to Potowomut

Source: 2008 Water Supply System Management Plan, WRB

⁷ <http://sos.ri.gov/documents/archives/regdocs/released/pdf/DOH/5536.pdf>

⁸ <http://www.ricwfa.com/index.html>

ing transmission and distribution systems using water system revenues. The Water Division owns 375 miles of distribution main, 18 miles of transmission main, 1,800 fire hydrants, 5 interconnections, 3 storage tanks, and one pump station.

According to its 2008 Water Supply System Management Plan, the goals of the Warwick Water Division

are to conserve water through the implementation of various programs, reduce non-account water, maintain water quality in accordance with the Safe Drinking Water Act, and conform to the goals of State Guide Plan Element No. 721. As of 2012, the Division is in the process of updating its Water Supply System Management and Clean Water Infrastructure Plans in accordance with

TABLE 10.3: Warwick Water Division Water Supply System Management Plan Implementation Schedule

ELEMENT	ACTION	SCHEDULE	OUTCOMES / REMARKS	COST
Residential Retrofit Program	Distribute Retrofit Kits	Ongoing	Approximately 8,000 kits distributed to date	
Public Education Information	Conservation Promotional and informational bill stuffers	Ongoing	Create conservation awareness	\$2,500 annually
	Participate in "Water Week" Public Education Program	Annually	Create conservation awareness	Limited to WWD staff time
Major Users Technical Assistance Program	Continue high volume meter retrofit program	Ongoing	Reduce consumption	\$10,000
	Conduct follow-up site visits of major users	Ongoing	Evaluate effectiveness of program	\$10,000
Building Code Enforcement	Require low-flow plumbing fixtures	Ongoing	Reduce consumption	No cost to WWD
Water Rates and Pricing	Complete water study rate	2007/2008	Analyze adequacy of current rates	\$15,000
	Revise rate schedule	To be determined	Stability in rates	In rate study
Leak Detection and Repair	Leak Detection Survey	2008	Reduce non-revenue water	\$30,000 per survey
	Repair located leaks	2008	Reduce non-revenue water	\$20,000 Annually
Preventative Maintenance Program	Uni-directional Flushing	Annually (beginning 2008)	Cleaner water	\$20,000 plus WWD staff time
	Enhanced Valve Exercising	Annually	Prevent broken valves	WWD staff time
Rehabilitation of Distribution / Transmission System	Five Year Capital Improvements Program	To be determined	Address system deficiencies and rehabilitation needs	\$2 million per year
Meter Installation, Maintenance and Repair Program	Meter replacement	2006-2010 / ongoing	Replace meters every 15-20 years	\$200,000 / year beginning in 2007
	Meter testing	2008	Meters 2" and larger	\$10,000 / year plus WWD staff time
Water Quality Protection	Water quality monitoring	Ongoing	Sampling sites are continuously monitored	
	Coordination with local governments	Ongoing	Represent WWD interests in local planning process	Limited to WWD staff time
Emergency Management	Implement Plan	Ongoing	Update annually and after each emergency	\$2,500 annually

Source: 2008 Water Supply System Management Plan, WRB

regulatory requirements. The Water Division is currently finalizing a rate study as well, through which it intends to appropriate approximately \$2 million annually to its Capital Improvement Program (CIP). In 2009 the Division expended approximately \$1.5 million on infrastructure replacement, \$500,000 on capital improvements, and \$150,000 on renewal/replacement initiatives.

The Division has in place a suite of management programs to ensure regulatory compliance and high levels of service, including demand management (Residential Retrofit, Major User Technical Assistance, and Public Education Programs), system management (Meter Installation/Maintenance and Repair, Leak Detection and Repair, and Preventative Maintenance Programs) and emergency response (including an Emergency Response Action Plan). See Table 10.4.

KENT COUNTY WATER AUTHORITY

The Kent County Water Authority is a state-regulated independent authority supported by user charges. The KCWA is governed by a five-member Board, including one member appointed by the Warwick City Council with management and operations carried out by a staff of 34 employees.

The Authority owns four groundwater wells in Coventry and one located in Warwick at the Warwick-East Greenwich line that draws from the Hunt River Aquifer. However, it purchases approximately 80% of its water from the PWSB. The KCWA's system-wide infrastructure also includes approximately 445 miles of distribution and transmission mains, nine storage tanks, four pressure-boosting pumping stations, four wells, and over 2,364 fire hydrants. In addition to the authority's capital improvement and renewal/replacement programs, the KCWA has drafted a *Water Conservation Action Plan*¹⁰ and will need to comply with the state's Water Use and Efficiency Act requirements.

Table 10.4: Kent County Water Authority Capital Improvement Program

FISCAL YEAR	PRIORITY CATEGORY	DESCRIPTION	TOTAL FISCAL YEAR COST*
2012	E	Mishnock Water Main	\$2,640,000
			\$2,640,000
2013	N	Bald Hill Road/New Londa Ave Loop Connection	\$210,000
	N	Wakefield Street Storage Tank - Water Main Upgrades	\$610,000
	N	Quaker Lane Pump Station - High Service Pumps	\$290,000
	N	High Service Transmission Mains - Quaker Lane Pump Station	\$4,290,000
			\$5,400,000
2014	E	East Greenwich Well Upgrade and Treatment	\$6,720,000
	E	Oaklawn Service Gradient Emergency Pressure Reducing Valve	\$450,000
			\$7,170,000
2015	E	Spring Lake Well Upgrade and Treatment	\$5,830,000
	E	I-295 Water Main Bridge Crossing at Providence Street	\$450,000
			\$6,280,000
2016	E	Replace KCWA Facility	\$8,880,000
	N	Division Road (High Service Reinforcement/Expansion)	\$2,780,000
	N	Shippettown Road (High Service Reinforcement/Expansion)	\$390,000
			\$12,050,000
2017	N	Middle Road (High Service Reinforcement/Expansion)	\$650,000
	N	Middle Road (High Service Reinforcement/Expansion)	\$310,000
			\$960,000
Total Cost - All Fiscal Years:			\$34,500,000

E = Essential | N = Necessary | * Rounded to nearest \$10,000

Source: KCWA Water Supply System Five Year Capital Improvement Program Update, 2012-2017

DROUGHT and FUTURE NEEDS

RI Division of Planning population projections for the City show continued population decline through 2040, with a projected loss of 7,971 residents by this date. The City currently operates at a surplus based on the allocated 150 gallons per day allotment from the Providence Water Supply Board. Appendix C of Rhode Island Water 2030 shows that Warwick maintains a surplus of available water through the next twenty years with the 20 year Average Daily Demand being 9.60 (MGD) and the Available water being 11.35 (MGD) resulting in a surplus of available water. Impacts of drought can include reduced flow in rivers and streams, low water levels in reservoirs, potable water shortage, dried up surface waters, crop and livestock losses and fire risk. In the event of a declared long-term drought, the City will coordinate and communicate with the RI Water Resources Board and Warwick Water/KCWA to preserve water supplies through water conservation, including taking a role in preparing for and managing all stages of drought at the community level. The City will work with local water suppliers and the RI WRB to implement drought preparedness measures as necessary as well as coordinating with adjacent municipalities and their water suppliers to ensure emergency interconnections. The City of Warwick Water Department also would implement drought management measures such as implementing mandatory water conservation.

2. Sanitary Sewer System

WARWICK SEWER AUTHORITY

As the City of Warwick experienced rapid population growth and development in the latter half of the 20th Century, policy makers recognized the need to protect groundwater and surface water resources from the potential impacts of water pollution as a result of wastewater (domestic and commercial/industrial) treated and disposed via individual sewage disposal systems (cesspools and septic systems). By Rhode Island Public Law 1962, Chapter 254, the Warwick Sewer Authority

(WSA)¹¹ was created in 1962 as an enterprise fund for the collection and treatment of wastewater for the city.

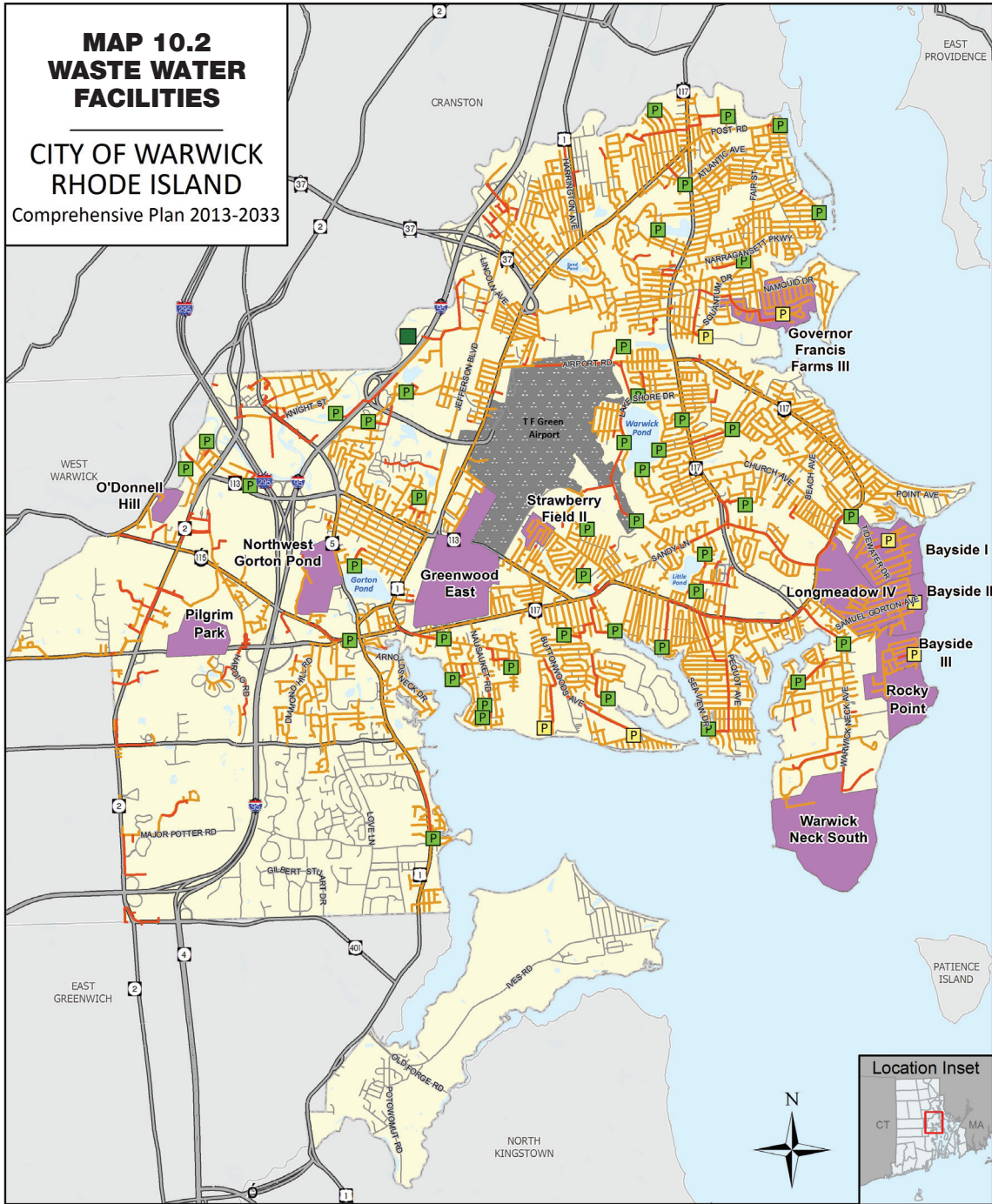
In 1965, the city's wastewater treatment facility (WWTF) and a small core of a sewerage system was completed and brought on line. The 4.5 MGD secondary treatment facility was located on the banks of the Pawtuxet River at the terminus of Service Avenue (Arthur W. Devine Boulevard) near the Lincoln Park neighborhood. At the time of its construction the treatment facility was state of the art, consisting of an activated sludge secondary treatment facility designed to reduce suspended solids and organic loading to the then heavily-polluted Pawtuxet River. In 1979 the WSA completed a comprehensive sewer facilities plan, which established a program for extending the municipal sewer system over the next 20 years.

In 1989, RIDEM issued Warwick, West Warwick and Cranston new permits under the RIPDES—the regulatory program under which treatment facilities are permitted to discharge),¹² which set more stringent limits on the discharge of metal, nitrogen, phosphorus and other materials. As meeting these requirements was not attainable with existing secondary treatment facilities, the RIDEM entered into consent agreement with each community in 1990, directing each to develop a plan and a program to achieve the allowable limits of discharges.

The WSA's Facilities Plan was updated in 1992 to address these new regulations. City voters approved the authorization of a \$130 million general obligation bond in 1994 to finance the mandated upgrades at the wastewater treatment facility and to expand the sewer system to virtually all serviceable areas of Warwick. The \$32 million upgrade to the WWTF was completed in September 2004, and the plant is now equipped with a biological nutrient removal process that is able to reduce concentrations of total nitrogen and total phosphorus below the limits established under the facility's RIPDES permit. In 2008, RIDEM issued WSA a new permit that requires WSA to meet even lower nutrient standards. The WSA is in the construction bidding stage for these

¹¹ <http://www.warwickri.gov/wsa/index.html>

¹² Refer to the RIDEM website for further information regarding the regulation of wastewater treatment facilities and discharges:
<http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/index.htm>
<http://www.dem.ri.gov/programs/benviron/water/permits/wtf/index.htm>



Map Legend		Boundaries
■ Wastewater Treatment Plant	⋈ Highways	⬜ Warwick
— Force Main	⋈ Roads	⬜ RI Municipal
— Gravity Main	⬜ T F Green Airport	⬜ Other States
P Existing Pump Station		
P Future Pump Station		
 Future Sewer Service Areas		

0 0.5 1 2 Miles

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RIGIS 21ST CENTURY **warwick**
CITY OF LIVABLE NEIGHBORHOODS

Goody Clancy & Associates, 02/27/14

latest upgrades, which are estimated to be completed in late 2016 and cost approximately \$14 million.

In concert with amendments to the WSA's Facilities Plan in 1997 and 2004, the city continued its commitment to reduce water quality impacts on Greenwich Bay and Narragansett Bay in 2004 with the approval of an ordinance authorizing the WSA to issue up to \$50 million in revenue bonds to continue its capital plan. Recent efforts have been focused on providing for the sewerage needs of the Greenwich Bay Watershed: in 2005 the RIDEM issued a *Total Maximum Daily Load Analysis for Greenwich Bay Waters* (TMDL)¹³ to address fecal coliform bacteria impairments to Greenwich Bay (including its coves and tributaries), which includes recommendations for ensuring adequate treatment of wastewater (i.e., sewer service extensions, proper operation and maintenance of existing individual sewage disposal systems). In an effort to meet the pollution reduction goals set forth in the TMDL as well as other objectives of the RICRMC GBAY Special Area Management Plan, the WSA was required (in order to obtain a CRMC Assent for constructing the Conimicut North sewer project) to institute a phased Mandatory Sewer Connection Program (MSCP) that requires homeowners to tie in to the sewer system where available. However, the main enforcement mechanism for this project was never implemented. Further information regarding the MSCP can be obtained through the WSA website.¹⁴

ADMINISTRATION AND RATE STRUCTURE

The WSA is overseen by a five-member board which convenes on a monthly basis, with meetings open to the public. Members are appointed by the Mayor (subject to the confirmation by the Warwick City Council) and serve for a term of five years. Significant actions or decisions by the Board require the advice and consent of the Mayor.

The Executive Director of the WSA is in charge of the Authority's facilities and reports directly to the Mayor

¹³ <http://www.dem.ri.gov/programs/benviron/water/quality/rest/pdfs/gbtmdl.pdf>, see also <http://www.dem.ri.gov/programs/benviron/water/quality/rest/index.htm>

¹⁴ www.warwicksewerauthority.com

and Board Members of the Authority. The Superintendent and operations personnel, who are required to be licensed, are responsible for maintaining the equipment and operating the unit processes in a manner that meets and exceeds the requirements of the RIPDES permit for the Warwick WWTF.

There are two classes of sewer system users: residential and commercial/industrial. Bills are issued quarterly. For FY 2014, residential users are billed a service charge of \$30.49 per unit and a consumption fee of \$45.95 per 1,000 cubic feet. Commercial/industrial users are billed a service charge based on the size of their water meter, ranging from \$34.97 for a 5/8-inch meter to \$1,033.75 for an 8-inch meter, and a consumption fee of \$69.67 per 1,000 cubic feet. All users are charged a Renewal and Replacement fee of \$.47 per 1,000 cubic feet. All consumer charges are based on 100 percent of water usage.

In October 2009, the WSA retained a consultant to conduct a comprehensive cost of service study. However, the 2010 floods wiped out the treatment facility as well as six pumping stations along the Pawtuxet River, after which the WSA Board directed its consultant to update the rate study to reflect post-flood finances. The rate study was eventually implemented in 2011. The current report¹⁵ on which the proposed fiscal year 2012-2016 rates are based is available through the WSA website.

Where sewers are available, residences are charged an assessment of \$82.00 per foot of frontage for sewer construction costs. For large lots (1+ acres) the assessment is based on a formula established to account for the development potential of the parcel. Assessments are payable over 20 years and the assessment charge is applied whether or not the property is connected. The WSA's enabling legislation allows it to charge a "connect capable fee" for owners who have sewer service available but have not connected to the system. However, this fee has never been implemented.

The WWTF also accepts septage from licensed haulers for \$47.00 per 1000 gallons. Septage is accepted only from Warwick residents, and each load is monitored for

¹⁵ <http://www.warwickri.gov/pdfs/wsa/wsa%20may%202011%20use%20rates.pdf>

compliance with WSA standards to prevent any toxicity to the biological processes employed at the treatment facility. The WSA limits the volume of septage received on a given day to 25,000 gallons. With the implementation of its MSCP, the WSA anticipates a gradual decline in the volume of septage received for treatment.

COLLECTION SYSTEM

At present, approximately 65 percent of the developed parcels in the City of Warwick are sewerred. Where sewer lines have been installed, roughly 3,000 residential properties have elected not to connect to the sewer system. To address growing concerns about the environmental impact of on-site septic systems leaching pollutants into Greenwich Bay, the WSA has developed the Mandatory Sewer Connection Program (MSCP). The WSA has no ability to enforce connections to the collection system except in the case of some emergency situations or within one year after the sale of a property.

There are approximately 294 miles of sanitary sewer in the city, ranging in size from 2-inch diameter low pressure force mains to 48-inch diameter gravity interceptors. Due to the diverse topography throughout the city, particularly the low lying coastal regions, the sanitary sewer system uses 48 sewage pump stations owned, operated and maintained by the WSA to convey wastewater to the

Warwick WWTF. In addition to these publicly owned stations, there are approximately 100 privately owned pump stations that discharge into the sanitary sewer system. Individual grinder pumps and low pressure force mains are also used in several sections of the City that could not be serviced with conventional gravity sewers.

Except for limited areas of the western part of Warwick, the public sewerage system is tributary to the Warwick Wastewater Treatment Facility. Sewer service is also available to the western sections of the city through the terms of an inter-municipal agreement between Warwick and the Town of West Warwick, which owns and operates its own regional wastewater treatment facility along the Pawtuxet River in Natick. Most of the connections in Warwick to the West Warwick WWTF have occurred through individual private agreements with the Town of West Warwick and with the approval of the WSA. The West Warwick Agreement established a reserve capacity at the town's facility, and at present about 40% of the 253,200 gallons per day allocated to the City of Warwick remains available at this time. The WSA also pays the Town of West Warwick a flow-based proportion (2.4%) for the capital costs incurred for the upgrades to the West Warwick facility.

TABLE 10.5: Warwick Sewer Authority Preliminary Sewer Extension Schedule

PROJECT NAME	STATUS	ESTIMATED COST	# OF RESIDENTIAL UNITS
Governor Francis III	Dependent on funding 2015	\$4,600,000	241
Bayside I	Dependent on funding & resolution of archeological issues; 2018	\$5,636,000	396
Bayside II	Dependent on funding & resolution of archeological issues; 2018	\$4,370,000	248
Bayside III	Dependent on funding & resolution of archeological issues; 2018	\$3,900,000	242
Northwest Gorton Pond	Dependent on funding 2016	\$4,900,000	295
Greenwood East	Dependent on funding 2020 & RIAC airport expansion	\$13,362,000	577
Pilgrim Park	Dependent on funding 2020	\$4,250,540	125
O'Donnell Hill (East Natick III)	Dependent on funding 2015	\$2,115,000	77
Strawberry Field II	Postponed due to contamination issues; dependent on funding 2020	\$860,500	76
Warwick Neck South	Dependent on funding	\$11,048,800	279
Rocky Point Park	75,000 gpd reserved for property per agreement with previous owners	N/A	N/A

Due to the ongoing sewer construction program and new connections to the expanding sewer system, the number of persons served by the WSA system continues to grow. There are currently over 21,000 customer accounts total, which are split between residential and commercial services. Over the last four years there has been a 10% increase in the number of customer accounts. This increase is projected to continue at a rate of as many as 500 new service connections per year for the next six or seven years.

The WSA has recently completed an update to its Facilities Plan, which included a capacity analysis of the major pumping stations and collection system interceptors. With only a couple of exceptions, the current sewer collection system and hydraulic capacity at the treatment facility are adequate to safely convey present and projected (2030) wastewater flows. The sewer extension schedule currently developed for the plan update is reproduced in Table 10.5. The WSA notes that this preliminary schedule is highly dependent on a number of factors including funding availability, approval of the WSA Board, completion of design, issuance of permits, and project management staff availability and is subject to change as new information becomes available. Individual project maps for both ongoing and planned sewer extension projects are available through the WSA website.¹⁶

The update to the Facilities Plan also included an evaluation of the feasibility of providing sewer service to all sections of the City, including Warwick Neck, Cowesett, and Potowomut/Sandy Point. Previously, sewers were not recommended for Cowesett and Warwick Neck since large lot sizes and soil types were deemed favorable for on-lot sewage disposal systems. However, the continued presence of high pathogen levels in Greenwich Bay because high groundwater levels on Warwick Neck result in a high septic system failure rate, led to a reassessment and Warwick Neck was put on the list.

Although the southwest Potowomut and Sandy Point neighborhoods are several miles from the nearest connection point to the city's collection system, concerns with the relatively high failure rate of on-site treatment

systems (and the potential for impacts to Greenwich Bay and the Hunt River Aquifer) have necessitated consideration of alternatives for the collection and treatment of wastewater within this section of Warwick. A preliminary study of wastewater management options and costs was completed for the WSA in 2009, which evaluated the feasibility of constructing a new collection system and pumping infrastructure to convey flows to an existing treatment facility (the Warwick WWTF or other nearby facilities in Quonset Point or East Greenwich), as well as alternatives such as shared/community on-site treatment systems, a satellite wastewater treatment facility, and implementation of an on-site wastewater management district. Given the extremely high capital costs associated with the new build alternatives, the city engaged with the Town of East Greenwich in 2011 to discuss alternatives. As a result of these discussions, a “hybrid” approach—in which Southwest Potowomut would be sewerred and the more remote Sandy Point neighborhood managed by on-site systems—was identified for further consideration as a more viable, cost-effective solution. The city has not yet committed to any alternative for improved wastewater management in these areas, and several logistical issues (particularly with respect to connecting to the East Greenwich Sewer System, funding, and maintenance) need to be resolved in order to proceed.

TREATMENT SYSTEM

The WSA owns and maintains a 7.7 million gallons per day (MGD) advanced wastewater treatment facility which discharges into the Pawtuxet River. As previously noted, a \$34 million upgrade to the WWTF was completed in 2004. Other facility improvements that were implemented included:

- a new administration building
- renovations to the operations building and laboratory
- a new PC-based operating and supervisory control system, including a radio frequency telemetry system for the 48 remote pumping stations throughout the city
- inlet and preliminary treatment facilities
- primary sedimentation and sludge/scum pumping
- process aeration and automatic control

¹⁶ <http://www.warwickri.gov/wsa/construction/index.html>

- final clarification and sludge/scum pumping
- odor control
- chemical feed systems
- sludge thickening

The upgraded facility has a capacity to treat an average daily flow of 7.7 MGD and a peak hourly flow of 17.7 MGD. The average daily flow for 2005 was 5.0 MGD, of which 30% was from commercial/industrial sources and 70% from residential sources. As of 2012, however, the average daily flow continues to hover at 5 MGD, despite thousands of new connections. The WSA attributes this to water conservation efforts.

The WSA implements an Industrial Pretreatment Program (IPP) to protect the existing sewer collection system, treatment facility, Pawtuxet River and Narragansett Bay by preventing the discharge of toxic pollutants and excessive conventional pollutants from the industrial/commercial user base. This is accomplished through the issuance of wastewater discharge permits for all Warwick-based industrial and commercial facilities discharging wastewater, either directly or indirectly, into the Warwick Sewer System. There are currently 633 permitted businesses in Warwick regulated under the IPP, including 343 industrial/commercial users, 288 restaurants/food preparers and 2 septage haulers.

WSA/IPP personnel monitor the incoming waste stream to the WWTF on a 24-hour per day basis to ensure that elevated levels of pollutants are not present. If elevated levels of pollutants are detected, 24-hour sampling devices are deployed in select manholes throughout the City in order to determine the origin of the elevated pollutants. Non-compliant discharges are traced back to the business in violation of their permit discharge limits and enforcement action ensues.

As with all utility operators, the WSA is responsible for the physical and fiscal planning in replacing and modernizing its aging infrastructure elements. This key operations element is addressed in the 2011 rate study, addressing costs such as projected increases in treatment/commodity/disposal prices, reduced revenue from reduced water consumption, and existing debt obliga-

tions through a revised rate structure for residential and commercial customers, assessments, and enforcement of the connect capable fee under the Authority's MSCP.

In the wake of the record flooding along the Pawtuxet River in 2010, the WSA has recently completed the design of improvements to the existing levee system of the WWTF to provide enhanced flood protection and mitigation. The improvements involved raising the elevation of the existing levee (by extending the earthen embankment, construction of a levee wall, or combination thereof) to contain the 500-year flood event. Inclusive of appurtenant elements (toe drain system and interior drainage), implementation the flood protection and mitigation improvements is estimated to cost in the range of \$3.5 to \$5 million.

ONSITE WASTEWATER TREATMENT SYSTEMS

The City of Warwick is investigating a Wastewater Management Ordinance and the establishment of Wastewater Management Districts for those areas of the City that will remain unsewered. Such a program would seek to assist the unsewered population with the management of their Onsite Wastewater Treatment Systems (OWTS) to ensure proper upkeep and maintenance for better operation and longer life. OWTS can provide a cost-effective, viable alternative to sewers in those areas of Warwick not included in the Facility Plan for sewers. Such a program would benefit both water quality and eligibility for various grant and loan programs to assist Warwick residents with the expense associated with new or upgraded OWTS.

3. Drainage Infrastructure and Stormwater Management

STORMWATER MANAGEMENT OVERVIEW

The proper management of stormwater runoff has long been a challenge in urbanized areas where higher percentages of impervious surfaces generate significantly more surface runoff than rural or undeveloped lands of similar size. The record floods of early 2010 served as a

TABLE 10.6: RIPDES Phase II Minimum Measure Requirements for MS4 Operators

MEASURE	MINIMUM REQUIREMENTS *
1. Public Education and Outreach	<ul style="list-style-type: none"> • Implement a public education program (through partnerships, distribution of informational literature, etc.) • Determine appropriate BMPs and measurable goals (brochures/fact sheets, educational programs, event participation, etc.)
2. Public Involvement/ Participation	<ul style="list-style-type: none"> • Comply with applicable State and local Public Notice Requirements • Determine appropriate BMPs and measurable goals (volunteer clean-ups, stewardship/citizen panels, storm drain stenciling, etc.)
3. Illicit Discharge Detection and Elimination	<ul style="list-style-type: none"> • Develop a storm sewer map showing the location of all outfalls • Develop ordinances or other regulatory mechanisms to prohibit non-storm water discharges into the MS4 • Develop and implement a plan to detect and address non-storm water discharges • Educate the public about the hazards associated with illegal discharges and improper disposal of waste • Determine appropriate BMPs and measurable goals
4. Construction Site Runoff Control	<ul style="list-style-type: none"> • Develop an erosion and sediment control ordinance for construction sites • Implement a construction plan review process to assess potential water quality impacts (including inspections and enforcement) • Establish procedures for the receipt and consideration of information submitted by the public • Determine appropriate BMPs and measurable goals
5. Post Construction Runoff Control	<ul style="list-style-type: none"> • Develop and implement strategies which include structural and/or nonstructural BMPs for the control of runoff quality/quantity • Develop an ordinance or other regulatory mechanism requiring the implementation of post-construction runoff controls • Ensure adequate long-term operation and maintenance of controls • Determine appropriate BMPs and measurable goals
6. Pollution Prevention / Good Housekeeping	<ul style="list-style-type: none"> • Develop and implement an operation and maintenance program to prevent/reduce pollutant runoff from municipal operations into the storm sewer systems (routine street sweeping, catch basin cleaning, etc.) • Provide employee training on how to incorporate pollution prevention and good housekeeping techniques into municipal operations • Determine appropriate BMPs and measurable goals

Note: * Summarized for informational purposes only—see RIPDES regulations for program requirements.

Source: RIDEM

harsh reminder of the need for improved stormwater infrastructure, management and maintenance in Warwick.

The EPA’s Storm Water Phase II Rule of 1999 requires operators of municipal separate storm sewer systems (MS4s) to obtain permits and establish a stormwater management program that is intended to improve waterbodies by reducing the quantity of pollutants that can enter storm sewer systems during storm events. As it is classified as a regulated Small MS4 Operator, the City of Warwick must apply for a Rhode Island Pollutant discharge Elimination System (RIPDES) permit and develop a Storm Water Management Program Plan (SWMPP) describing the Best Management Practices (BMPs) to be implemented in the six minimum measure areas listed in Table 10.6 on the following page.

The SWMPP for Small MS4 Operators must contain the measurable goals for each minimum control measure as well as an implementation schedule including interim milestones and frequency of activities and reporting of results. Additional permit requirements may also be required of MS4 operators based on total maximum daily load (TMDL) restrictions placed on impaired waterbodies.¹⁷

Depending on the location and nature of the activity, private and public entities wishing to construct new developments or redevelopments in the State of Rhode Island must prepare and implement a Stormwater Manage-

¹⁷ <http://www.dem.ri.gov/programs/benviron/water/quality/rest/index.htm>

ment Plan in accordance with the recently issued Rhode Island Stormwater Design and Installation Standards Manual (RIDEM & CRMC, 2010)¹⁸ as a component of required regulatory approvals from the CRMC (Coastal Assent) and/or RIDEM (e.g., Freshwater Wetlands Program, Underground Injection Control Program, Water Quality Certification). Policies set forth in the manual require that the Stormwater Management Plan and site design mitigate the potential for adverse water quality and quantity (flooding, erosion) impacts to receiving waters through application of the following minimum stormwater management standards (where applicable):

- Low Impact Development (LID) Planning and Design Strategies
- Groundwater Recharge
- Water Quality Protection Measures
- Conveyance and Natural Channel Protection
- Overbank Flood Protection
- Redevelopment and Infill Projects (Alternative Requirements)
- Pollution Prevention
- Mitigation of Land Uses with Higher Potential Pollutant Loads (LUHPPLs)
- Illicit Discharge Detection and Elimination
- Construction Erosion and Sedimentation Control
- Stormwater Management System Operation and Maintenance

The stormwater manual also sets forth standards, policies, and design guidance for structural BMPs (Best Management Practices), such as retention/detention basins that may be employed to meet water quality and quantity control criteria.

Additionally, proposed development projects involving land disturbances greater than one acre must seek coverage under the RIPDES General Permit for Storm Water Discharge Associated with Construction Activity.¹⁹ Conditions of the permit require that the proponent

file a Notice of Intent (NOI) with the RIPDES Program and prepare a Construction Site Storm Water Pollution Prevention Plan (SWPPP), a working document that describes the erosion and sediment control measures and pollution prevention techniques that will be employed during an active construction project.

EXISTING SURFACE DRAINAGE AND INFRASTRUCTURE

A multitude of publicly and privately owned drainage systems convey surface runoff to receiving waterbodies/watercourses within Warwick. The drainage network includes open (drainage swales, channels) and closed (catch basins, drainage manholes, and piping systems) elements, as well as include BMPs such as detention basins, wet swales, and/or hydrodynamic separators. In general, structures and systems located within the public right-of-way are owned and maintained by either the City of Warwick or the State Department of Transportation. It is also not uncommon for systems operated by the city to be interconnected with those of the RIDOT at various locations.

The Greenwich Bay Special Area Management Plan (SAMP, 2005)²⁰ makes stormwater management recommendations which are largely identical to the requirements of MS4 Operators under the RIPDES Program, including the mapping stormwater outfalls; identifying, eliminating and preventing illicit discharges; planning and implementing structural BMPs to improve water quality and reduce runoff; and updating municipal ordinances to enforce proper stormwater management. Amongst these recommendations, the SAMP also specifically recommends that:

Warwick should conduct BMP feasibility studies to identify locations for installing stormwater BMPs in the Greenwich Bay watershed that address bacteria and nitrogen concentrations as well as stormwater volume, once such BMPs are identified by CRMC and RIDEM. The draft TMDL identifies Brush Neck Cove and Apponaug Cove as priority areas for Warwick (RIDEM, 2004a). BMP feasibility studies should include outfalls with large impervious drainage areas, the outfalls priori-

¹⁸ <http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/t4guide/desman.htm>

¹⁹ <http://www.dem.ri.gov/pubs/regs/regs/water/ripdesca.pdf>

²⁰ http://www.crmc.ri.gov/samp_gb.html



tized by SRICD,²¹ and the direct storm water discharges identified by URI-CVE²² as large bacteria loads to Greenwich Bay. While physical constraints at these locations may exist, they should be considered first for BMP construction. (§470.5B.13)

(See Chapter 6, *Natural Resources*, for more about the SAMP.)

MUNICIPAL MANAGEMENT AND COMPLIANCE

In 2008 the City of Warwick commissioned the preparation of its SWMPP to comply with RIPDES requirements, which included sections addressing resource protection (identification of impaired waters and critical habitats), existing drainage systems (sub-watershed descriptions), and the six minimum control measures described in Table 10.6 (including mechanisms and timeframes for implementation). Although the SWMPP has been completed, the City of Warwick is currently in receipt of a Notice of Noncompliance from the RIDEM for not satisfactorily addressing the requirements of its RIPDES MS4 Permit (#RIR040031), including failure to submit annual reports documenting compliance and progress towards achieving SWMPP goals in the six minimum measures required of all MS4 operators.²³

Largely due to a lack of available funding and resources (coupled with the sheer area and extensive stormwater infrastructure throughout the city), the City of Warwick has to date been unable to complete the most labor-intensive elements required under its RIPDES permit:

Mapping of all stormwater outfalls. Outfall sampling is required under the Illicit Discharge Detection and Elimination minimum measure. Updating of city ordinances (e.g., Soil Erosion and Sediment Control) for consistency with current best practices. Although the city effectively meets certain requirements through completed or continuing efforts (such as storm drain stenciling, annual street sweeping and catch basin

cleaning), it is imperative that the city renew its commitment to the RIPDES MS4 program to avoid the assessment of fines for noncompliance and to meet the stormwater management goals and policies of the preceding planning period, on which limited headway has been made to date.

Needs

The City of Warwick Stormwater Management Program Plan identifies the following future priority needs:

- Continue to develop outreach strategies and partnership arrangements and expand the city website to provide educational information and encourage involvement with the storm water program.
- Continue implementing the CRMC Special Area Management Plan for Greenwich Bay.
- Inspect City discharges and conduct dry-weather surveys as required.
- Review all construction project plans and SWPPPs for construction projects within the regulated area.
- Track all Building Permits and Planning Review Applications.
- Complete inspections for all construction projects within the regulated area that discharge or have the potential to discharge to the MS4.
- Develop an operations and maintenance program for BMPs, storm sewers, and catch basins.
- Conduct inspections on all BMPs, storm sewers, catch basins and clean as required.
- Sweep all roads annually.
- Sweep critical environmentally sensitive areas twice per year.
- Conduct outfall and erosion control inspections, as required.

4. Solid Waste Collection, Disposal, and Recycling

RESIDENTIAL WASTE AND RECYCLING

Warwick's regulations pertaining to garbage, debris, and rubbish are set forth in Chapter 22 of the city's Code of Ordinances, which contains articles and statutes pertaining to collection; storage of trash/debris and litter; recycling; leaf and yard waste; and the protection of specific

²¹ Southern Rhode Island Conservation District

²² University of Rhode Island, Department of Civil and Environmental Engineering

²³ The last Annual Report submitted by the city was for Reporting Year 4 (2007).

natural resource areas (i.e., the Pawtuxet River, Buckeye Brook, and the Greenwich Bay Watershed) from the adverse impacts of illegal dumping.

Residential waste and recycling collection is handled by Warwick’s Department of Public Works (DPW) Recycling and Sanitation Division. Implemented in 2003, the automated residential recycling and trash collection program uses specialized collection trucks with mechanical lifting devices to empty trash and recycling roll-out containers directly. The automated system is designed to improve the efficiency of collection operations, make garbage disposal easier for residents, improve the appearance of the city, and reduce the potential for employee injuries. City residences are provided city-owned roll-out containers for refuse (gray) and recyclables (blue and green) at no cost.

The Sanitation and Recycling Division website includes collection calendars, guidance on roll-out cart use, frequently asked questions, and lists of items that can/cannot be disposed or recycled. Developed with a grant from the Rhode Island Resource Recovery Corporation (RIRRC), the website also includes information for residents on the city’s white goods/appliances recycling, motor oil recycling, and yard waste collection programs, as well as guidance on home composting and the disposal of household hazardous waste.

THE CENTRAL LANDFILL AND MATERIALS RECYCLING FACILITY

TABLE 10.7: 2012 Municipal Waste Management, Diversion and Recycling Data

	CITY OF WARWICK	STATE AVERAGE
Tons of Trash Landfilled per Household Served (Annual)	0.90	0.89
Bin / Materials Recycling Facility (MRF) Recycling Rate (1)	27.3%	22.3%
Mandatory Recycling Rate (MRF + yard waste + other recyclables) (1)	50.0%	32.7%
Rate of Overall Material Diversion from Landfill (2)	50.3%	33.4%

Notes: (1) As percentage of gross total waste stream; (2) In addition to recycling and composting, includes all other materials diverted from landfilling, including special wastes such as tires, mattresses, clean wood, clothing and shoes, books, motor oil and filters, cooking oil, etc.

Source: RIRRC

The City’s municipal waste and recyclables are disposed at the Central Landfill and Materials Recycling Facility in Johnston, Rhode Island. The 1200 acre facility is owned and operated by the Rhode Island Resource Recovery Corporation (RIRRC), the state’s self-funded, quasi-public agency responsible for providing the public with environmentally sound programs and facilities to manage solid waste. In addition to the landfill, the site includes a materials recycling facility, a construction and demolition waste processing facility, the Eco-Depot and landfill gas power generation plants.

The Central Landfill presently receives approximately 2,500 tons of waste per day, of which approximately 40% is from municipal/residential sources and 60% from commercial waste generators. As of the Fiscal Year 2012 rate schedule, municipalities pay \$32 per ton of waste disposed at the landfill, whereas recyclables are accepted at no charge. Waste beyond the municipality’s “cap,” based on estimated waste per capita, are assessed higher rates as an incentive for cities and towns to increase recycling and composting programs.²⁴ Because of Warwick’s recycling and diversion programs, it has not exceeded its municipal cap in recent years (2011 data is in Table 10.7). While municipal solid waste costs are generally borne by local government budgets, the RIRRC has to date provided substantial financial assistance to municipalities for waste management, including funding of recycling program start-up costs, grants, and acceptance of recycled materials and household hazardous waste free of charge.

RHODE ISLAND COMPREHENSIVE SOLID WASTE MANAGEMENT PLAN

The Rhode Island Comprehensive Solid Waste Management Plan (CSWMP, State Guide Element 171, 2007) was developed to address the disposal of solid waste, in large part to extend the life of the Central Landfill. Thus, the state’s four priorities for the management and disposal of solid waste are (in order of priority):

- Reduction of the amount of source waste generated;
- Source separation and recycling;

²⁴ See RIRRC website for the Accepted Materials and Rates FY2012 schedule (including rates for commercial and miscellaneous special wastes). See RIRRC website and State Guide Plan Element 171 for further information on municipal caps and waste diversion efforts.

- Waste processing to reduce the volume of waste necessary for land disposal;
- Land disposal.

Under Rhode Island General Law § 23-18.9-1,²⁵ every city or town that enters into a contract with the RIRRC to dispose of solid waste is required to recycle a minimum of thirty-five percent (35%) of its solid waste and to divert a minimum of fifty percent (50%) of its solid waste by a target date of July 1, 2012. The RIRRC periodically publishes data on the performance of each municipality towards achieving the target recycling and diversion rates.²⁶ The City of Warwick’s recycling and diversion rates for the year 2010 are listed in Table 10.8, alongside the average rates for municipalities across the state. Amongst the twelve municipalities in the state serving over 10,000 households with curbside collection, Warwick has the highest rates of recycling in all three recycling and diversion metrics, and currently meets the 2012 target for percentage of its total solid waste stream diverted from landfill disposal. These figures can be credited largely to the city participation in the RIRRC’s Maximum Recycling Program, the effectiveness of the city’s automated collection program, and the participation efforts of city residents, through which over 10,000 tons of material from Warwick households are currently recycled per year.

As with most all areas of state and local government, both the RIRRC and Warwick DPW are presently facing significant budgetary constraints. In addressing the need for adequate financing for the implementation of its recommendations, policies, and action items, the CSWMP emphasizes that “While this Plan cannot mandate funding for... waste diversion programs, it can be stated with confidence that continued failure to adequately fund and staff the programs and activities recommended in this Plan will shorten the projected life of the Central Landfill...from approximately 26 to 19 years.”

COMMERCIAL WASTE AND RECYCLING

The City of Warwick does not provide collection service for commercial, institutional and apartment/condomin-

ium sites. Disposal is typically through a private hauler. Depending on contract arrangements with the RIRRC, disposal rates at the Central Landfill are significantly higher—up to \$75 per ton—than the \$32 municipal under-cap rate.

Commercial waste accounts for roughly 60% of the waste material received at the Central Landfill, and as such requires increased recycling and diversion efforts in order to extend the longevity of the landfill. While commercial recyclables are now accepted at no charge, at the time of the issuance of the CSWMP the state-wide commercial recycling rate was less than 3 percent. Amongst the key recommendations set forth in the plan, the following is stated with respect to CSW:

- Increased enforcement of solid waste regulations,
- The incorporation of recycling into facility permitting,
- The acceptance of commercial material at RIRRC’s Material Recycling Facility (MRF),
- Eliminating the “put or pay” provision in RIRRC commercial disposal contracts, and

Table 10.8 : Warwick Public Schools

AREA	HIGH SCHOOL	JR. HIGH SCHOOLS	ELEMENTARY SCHOOLS
Pilgrim Area	Pilgrim High School	Aldrich Jr. High	Francis Holden Holliman Hossie Norwood Wyman
Veterans Area	Warwick Veterans High School	Gorton Jr. High	Lippitt Oakland Beach Park Sherman Warwick Neck
Toll Gate Area	Toll Gate High School	Winman Jr. High	Cedar Hill Greenwood Robertson Scott Wickes

Source: Warwick School District

²⁵ <http://www.rilin.state.ri.us/Statutes/TITLE23/23-18.9/23-18.9-1.HTM>

²⁶ <http://www.rirrc.org/customers/municipal-recycling/>

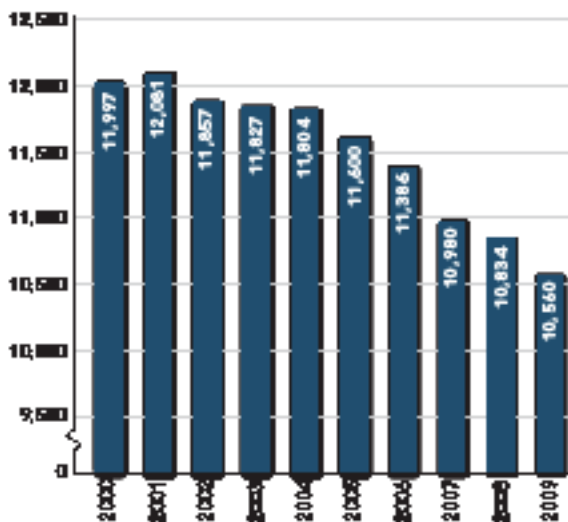
- Allowing municipalities to collect and deliver non-residential recyclables to the MRF.

Because multi-family residential housing is treated as commercial waste instead of municipal waste, recycling rates for multi-family housing are very low. This plan calls for the statewide institution of residential multi-family recycling. (pp. ES-2—ES-3)

Although budgetary limitations effectively constrain the City from collecting and delivering non-residential recyclables, a number of state initiatives targeting business waste are currently being implemented by the RIRRC.²⁷ In an effort to address the financial obstacles to commercial recycling in the state, the RIRRC is currently promoting the switch to a “single stream” program for commercial recycling. Single stream requires only one dumpster for all eligible recyclables, which can make recycling more fiscally viable for businesses, as the frequency of pick-up (and associated hauling costs) can be reduced.

27 <http://www.rirrc.org/business/>

Figure 10.1: Warwick Public School Population 2009–2009



Source: RI Department of Education, 2011

5. School Facilities

WARWICK PUBLIC SCHOOL DISTRICT

The Warwick Public School District currently operates sixteen elementary schools, three Junior High schools, and three High Schools. The District organizes schools into three areas, all of which feed into one of the three public high schools.

The School District also runs the Drum Rock Early Childhood Center and the Warwick Area Career and Technical Center (high school), both of which are located at the Toll Gate/Winman Complex. Drum Rock offers educational programs for preschool and kindergarten students, and for children with disabilities, Autism spectrum disorders and other behavioral challenges. Families pay a fee based on number of days attended per week, except for children identified as needing special education through an IEP (Individualized Education program), who attend for free. The Warwick Area Career and Technical Center is a high school offering career and technical programs for students attending Toll Gate, Veterans, Pilgrim, East Greenwich and West Warwick High Schools.

STUDENT POPULATION AND FACILITY NEEDS

Perhaps the greatest challenge facing the Public School District in terms of facility management is the decline in student population. Between 2001 and 2009, the number of students enrolled in Warwick schools has declined by over 14 percent, or more than 1,500 students.

Since the previous comprehensive plan, declining enrollment has resulted in a round of school consolidation,

TABLE 10.9: Schools - Planned Capital Projects

PROJECT TYPE	TOTAL FUNDS	YEARS
Fire System Improvements	\$9,254,162	2011-2015
Building Improvements	\$2,307,183	2011-2013
Mechanical Systems	\$3,163,085	2010-2016
Site Improvements	\$466,022	2010-2016

Source: City of Warwick 2011-2012 Capital Improvements Program Budget

tions, leading to the closure of several schools, among



them the John Greene Elementary School in Ward 5, the Potowomut Elementary School in Ward 9, and the Rhodes School in Ward 2. To address continued declining enrollment and funding gaps, a committee was formed in 2011 to look at opportunities for consolidating additional elementary as well as secondary schools. While no recommendations have been made, the issue may be addressed as soon as 2013.²⁸

School closing can be difficult for neighborhood residents, who identify with their local schools. Empty school buildings in other communities have been transformed into condominiums, senior housing, offices, art centers, and other beneficial community uses. In Warwick, no studies for reuse have been performed to date.

In addition to school closings, existing facilities are aging, resulting in the need for additional maintenance and repairs throughout the city to bring facilities up to code. While it will not address all needs, such as technology improvements, the School Department is seeking a bond issue for repairs to its fire systems, general building improvements, mechanical system improvements, and additional site improvements. As detailed in the Capital Budget for 2012, the following repairs are required:

- **Fire System Improvements:** Repair and upgrades, including means of egress, fire detection systems, and other improvements, to all fire systems are required to bring them in compliance with revisions adopted in 2004 into the State Fire Code.
- **Building Improvement:** Repair and renovation projects include roof replacements, new auditorium seating and stage improvements at high schools.
- **Mechanical Systems:** Projects include filter replacement, steam systems, elevator improvements, lighting improvements, emergency generators, boiler replacements and more.
- **Site Improvements:** Projects include sewer connections (Francis, Greene, Gorton and Veterans), paving improvements, curb work, and athletic track resurfacing at Pilgrim and Veterans.

28 Horoschak, Peter, "Warwick considers school consolidation." http://www.wpri.com/dpp/news/local_news/west_bay/warwick-school-committee-considers-consolidation

In addition to public schools there are several private schools located in Warwick. This includes several Catholic schools such as Bishop Hendricken High School, Overbrook Academy middle school, and the elementary school, Cedar-Hurst School to name a few. Numerous private pre-schools are also found throughout the city.

6. Police Department

The Warwick Police Department is housed in a facility located at 99 Veterans Memorial Drive. The facility, built in 1977, meets most requirements of the department at present staffing levels. In the years 2002 through 2005, a public safety bond allowed additions to be built to the headquarters building that created a new communications dispatch center, administrative services division offices and computer training room, and a new training room for the patrol division and an area that houses an incident command center. Up to the year 2008, the headquarters facility provided support facilities to 180 uniformed police officers and 55 civilian support personnel. In 2009, due to the difficult economic conditions facing the City of Warwick and with agreement during collective bargaining negotiations, the uniformed police personnel organization was reduced to 163 officers. At present the personnel organization for the department is 163 sworn uniformed personnel, 53 civilian support personnel, and 23 crossing guards: 107 officers/employees in the Patrol Division, 22 officers/employees in the Community Services Division, 31 detectives/supervisors/employees in the Detective Division., 36 officers/employees in the Administrative Services Division, 5 in the Professional Standards Division, 8 officers/employees in the Prosecution Division, and 7 officers/employees in Headquarters.

The department is committed to increased efficiency in its operations through improved technology. The department continues to update its Computer Assisted Dispatch (CAD)/Records Management System that handles the basic patrol operations and civilian support systems that deliver basic constituent services to the public. The department employs its mobile data terminal project in its uniformed patrol division that allows the officer increased efficiency in its tactical patrol operations in

dealing specifically with taking constituent complaint reports, order maintenance, and crime control functions. The department also uses technology that assists the detective division/patrol division in crime analysis, computer forensic and AVID forensic investigations. Technology partnership with the RI Department of Corrections assists the department in community reentry projects for court probationers, prison parolees, and sex offender management programs. The department has also entered into a new program that tracks its purchasing and resource capabilities thru City administration procedures.

Community policing. Community/intelligence-led policing is an important community strategy that incorporates a close interaction between patrol/community services divisions allowing for closer cooperation with residents working together to prevent crime and improve the quality of life in the neighborhoods of the city. Beat officers work closely with the district community police officer and interact closely with the residents in the area to solve an array of problems within the specific geographic area. Crime analysis technology assist police and informs the public where the crimes are occurring and allows police a specific focus with the goal of crime reduction and increased quality of life. The patrol/community services function also provides constituent mediation and problem solving, sex offender registration/monitoring, traffic enforcement, alcohol enforcement, crime prevention, elderly affairs advocacy and safety, bike safety programs. The department also employs a school resource officer program in the Warwick Schools and administers to the crossing guard program during school hours. The Police Athletic League (PAL) also falls under the Community Services Division and works with over 1300 of the city's youth in over eight different sports. The PAL Office works out of a City owned facility that is leased to the PAL organization located at 80 Bend St. The Community Services Division also sponsors and supervises the Police Explorer Program The Community Services Division has a traffic services unit that handles not only accident/serious accident reconstruction investigation and the traffic enforcement function but also handles

constituent complaints & traffic studies. This unit is resident in the Community Services Division.

The Community Services Division has its community police officers staff the three district sub-stations:

- The District One Office located at 759 West Shore Road serves the neighborhoods of Lakewood, Conimicut, Hillsgrove, Pilgrim Park, Spring Green, Lincoln Park, Massasoit Terrace, Gaspee, Norwood, Pawtuxet, and Governor Francis.
- The District Two Office located at the Boys & Girls Club located at 340 Oakland Beach Ave. serves the neighborhoods of Riverview, Bayside, Oakland Beach, Buttonwoods, Nausauket, Wildes Corner, Longmeadow, Warwick Neck, and Meadow View.
- The District Three Office located at 145 Greenwich Ave. serves Pontiac, Cowesett, Centerville, Apponaug, Natick, Potowomut, Greenwood, Arnolds Neck, Providence St., and Route 2 Business Corridor.

Table 10.10: Warwick Fire Stations

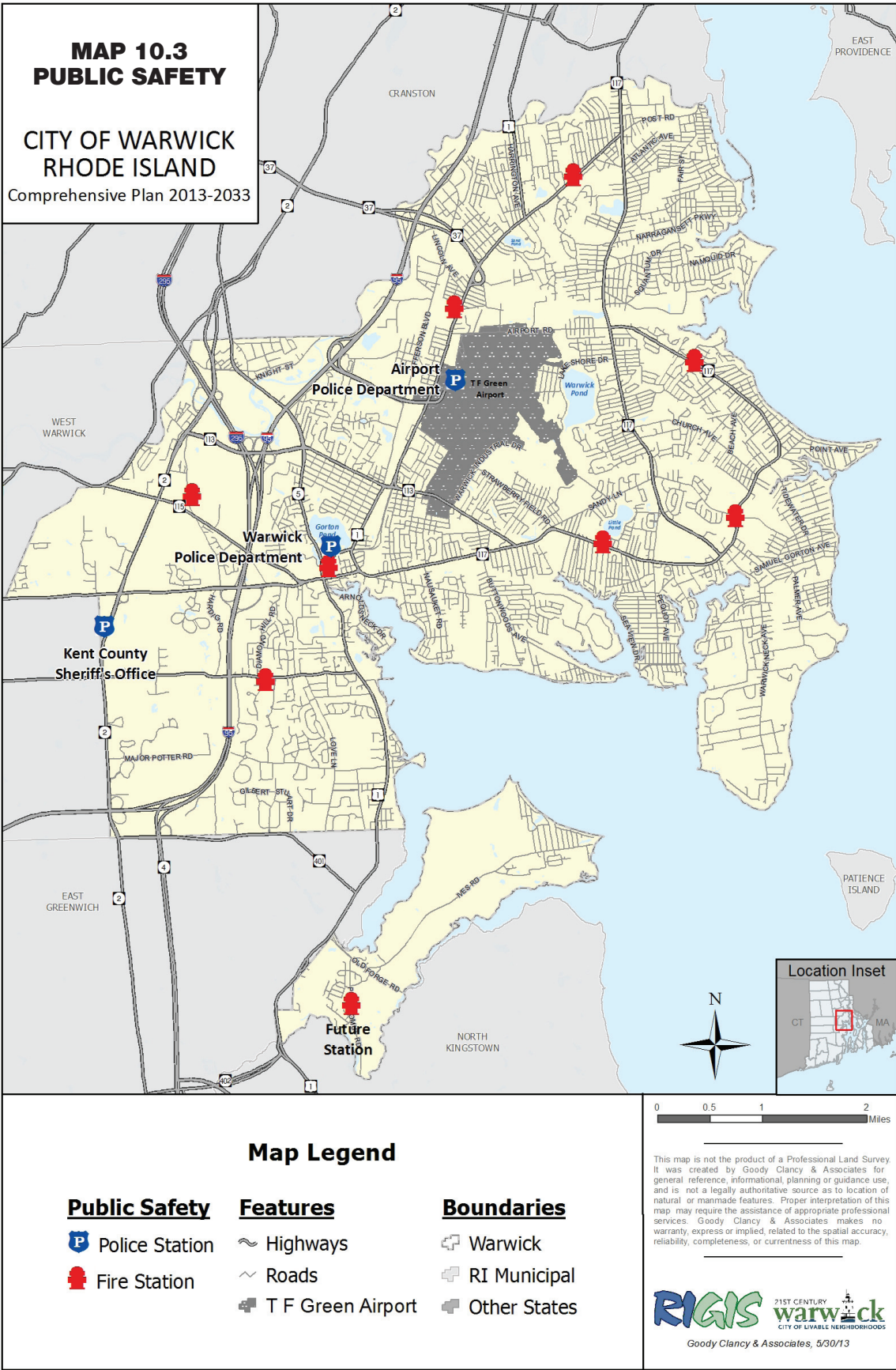
STATION	ADDRESS	NEIGHBORHOOD
1	111 Veterans Memorial Drive	Apponaug
2	771 Post Road	Lakewood/Norwood
3	2373 West Shore Road	Oakland Beach
4	1501 West Shore Road	Bayside
5	450 Cowesett Road	Cowesett
6	456 West Shore Road	Conimicut
8	1651 Post Road	Hillsgrove
9	314 Commonwealth Avenue	Ward 8

Source: www.warwickfirefighters.org

TABLE 10.11: Fire Department - Planned Capital Projects

YEAR	TOTAL FUNDS	EQUIPMENT
2013-2014	\$1,175,000	Ladder 2, Engine 4
2014-2015	\$750,000	Ladder 3
2015-2016	\$425,000	Engine 5
2016-2017	\$435,000	Engine 9

Source: City of Warwick 2011-2012 Capital Improvements Program Budget



Animal Control. The department also supervises an animal control division that responds to all complaints involving animals and enforces state law and city ordinances regarding animals.

Community service officers. The City Charter and the Police Collective Bargaining recognizes the use of retired Warwick police officers and civilian volunteers, appropriately named community service officers, to assist police during major public events and natural disasters. The community service officers maintain their eligibility by volunteering their time to provide traffic control for Sunday church events and other public service events. The Police Collective Bargaining Agreement allows for both retired and community service officers to take paid traffic details.

Firing range. The Warwick Police Department maintains a weapons firing range facility in the Wildes Corner area of the city near the DPW Solid Waste Landfill Facility. The range allows for officers to qualify with their firearms in accordance with RI General Law and also provides a primary location for the department’s SWAT and EOD Teams to train.

7. Fire and Rescue Services

The Warwick Fire Department operates out of eight stations throughout the city, including a headquarters station (Station 1) at 111 Veterans Memorial Drive in Apponaug village. The headquarters facility is home to all administration offices, including fire prevention, training, and EMS. The facility also houses fire and emergency vehicles including equipment including Engine 1, Ladder 1, and Rescue 1 emergency ambulance.

Service Areas. There are nine fire districts within the city, and residents are taxed equally regardless of where they live. The only area within the city that does not have a city-owned station and unit is Potowomut. This area is first served by the East Greenwich Fire Department, as well as by Station 5 in District 6. With the exception of

Table 10.12: Warwick Public Libraries

LIBRARY	LOCATION
Warwick Central Library	600 Sandy Lane
Apponaug Branch	3267 Post Road
Conimicut Branch	55 Beach Avenue
Norwood Branch	328 Pawtuxet Avenue

small areas in Buttonwoods and Warwick Neck, all areas are served by stations within suggested drive times, however at peak traffic hours, response times are more likely to be affected. This has been the case since the previous comprehensive plan.

Staffing. There are currently 213 active firefighters within the department. Staffing at the department is sufficient to handle existing and projected populations. With a standard of 5 firefighters per 1,000 housing units, the city would require approximately 189 firefighters; therefore, the city is well above the standard. However, given the amount of commercial and light industrial development within Warwick, particularly along Jefferson Avenue and along Rte. 2, the surplus is not as large as it may appear.

Facility and Equipment Needs. No additional fire stations are needed currently, nor will anticipated changes in population and land uses warrant additional locations. Routine maintenance and updated equipment, however, will be required. Funding for new equipment, including replacement of Ladders 2 and 3, and Engines 4, 5 and 9 is currently included in the City of Warwick Capital Improvements Plan and Budget. Funds are anticipated to be spent between the years 2013 and 2017. An analysis of conditions at each of the facilities for needed repairs should be undertaken.

8. Public Libraries

The Warwick Public Library provides materials and services to meet the information needs of the community. The collections within the four-library system emphasizes recreational and leisure materials in addition to current information in a variety of formats.



Warwick is served by the main public library, the Warwick Central Library, and three branch libraries located in Apponaug, Conimicut, and Norwood. The Central Library on Sandy Lane, built in 1964, with major renovations in 1997, is a 22,350 sf facility. It has the longest hours, offers the largest collection within the system and serves as a community center offering meeting room space for public use, numerous computer terminals, and programs for people of various ages. A complete list of programs is listed on their website, www.warwicklibrary.org.

The neighborhood branches are older structures which have not been updated in recent decades. They are typically open for approximately 20 hours a week, offer smaller collections, and do not provide community rooms. Reading hours are the only scheduled activities.

Funding and Maintenance. The library system is funded by the City, State and by federal grants, and its activities are overseen by the Board of Library Trustees. Total municipal funding for the library for fiscal year 2011-2012 is just under of \$2.6 million, with an additional \$638,711 in funding from Public Library Grant-in-Aid. This covers personnel, materials maintenance, utilities, and other public service costs. Currently, there are no capital projects budgeted for libraries, nor are any planned. However, repairs, renovations and maintenance are needed.

Currently, maintenance projects are covered through the shifting of municipal funds (e.g., the \$20,000 Central Library roof replacement in 2011), or through grant funding. The primary source of grant funding has been through the Champlin Foundation. In recent years, grants from the foundation have paid for renovations at the Central Library including a new teen room, the reconfigured parking lot, and a \$100,000 reconfigured reference area that provides additional computer space.

Additional needs include the renovation of a former cafeteria to usable space at the central branch library, and an assessment of building conditions to all branch libraries. None of the branches are handicapped accessible, bathrooms are often located in basements, and one does not provide parking. Other improvements, such

as roof replacements and interior painting, may also be needed. Associated costs for these improvements have not been determined.

9. Community Centers and Senior Services

The City of Warwick maintains a number of venues that serve the local and citywide needs for public community meeting space including the Warwick Public Libraries, the Police Department Community Room, and the Pilgrim Senior Center. Buttonwoods Community Center serves the needs of the community by providing enriching health, recreational, educational, and social experiences in a welcoming environment. The BCC offers programs for all ages such as adult dancing, crafts and fitness programs. Additionally the center offers music lessons for children, youth and family support services including truancy and substance abuse and senior social activities. The center continues to evolve its programming according to the needs and desires of the local community.

To expand future community offerings the City is currently seeking to expand its recreational program by obtaining the Cooper Armory located on Sandy Lane for use as a city recreational center under the guidelines established by the Base Realignment and Closure Act (BRAC). The 26,000 square foot building is located close to the Mickey Stevens Sports Complex and is envisioned to provide additional recreation opportunities for city and state residents.

As Warwick's population continues to age, the need for services to support the city's senior population will increase. It is estimated that by 2030, nearly 1 in 5 residents will be 65 or older. However, despite this growth in the elderly population, budget constraints have led to closing two of the three city Senior Centers. Today, the Pilgrim Senior Center, a 16,000 sf facility at 27 Pilgrim Parkway, is the only active City-owned and operated senior center. The two facilities no longer operating are the JONAH Senior Center, and the Buttonwoods facility, though Buttonwoods remains open as a larger community center.

Services provided at the Pilgrim Senior Center by its staff and 200 volunteers, include meal service (lunches each weekday, and dinner on Tuesday), health seminars, affordable housing assistance, transportation assistance, as well as senior exercise and enrichment classes such as swing dance, adult yoga and needlework workshops. Seniors also receive vouchers for use at local farmers' markets.

The Senior Center operates 8 buses within Warwick to assist seniors with getting to and from the center, and for shopping excursions. According to the Director of the Pilgrim Senior Center, there is a growing need for more. Additional needs include a fitness center for seniors, and additional staff to assist with social services, particularly for senior housing assistance.

The greatest challenge facing the center will be to serve the growing number of seniors as the Baby Boom continues to age into the 65+ demographic, as well as a growing "fragile" population, those 85+. The mindset of this new generation of seniors, which prefers more active lifestyles, poses challenges such as providing and funding facilities appropriate for this group such as fitness centers, but also walking facilities such as multi-use paths, which is a larger citywide transportation and recreation issue. "Fragiles" on the other hand will require more assistive services, such as equipment rentals and transportation, and more that are not currently available. An assessment of needs and costs is required.

Friends of Warwick Senior Centers, Inc. To supplement funding from the city and state, a non-profit organization, Friends of Warwick Senior Centers, Inc, was formed by seniors in the 1990s to help raise additional funds to support senior programs and services within the city. The group holds fundraising events throughout the year to raise funds, and today is overseen by a 21-member Board of Directors.

RECOMMENDATIONS

GOAL 1

Excellent quality and quantities of drinking water to meet all current and future needs of Warwick.

POLICY

- Provide a reliable, efficient supply of clean drinking water for of the City's residents, businesses, and institutions.

STRATEGIES

A. Ensure that the potable water delivered to the customers of both the Warwick Water Division and the Kent County Water Authority (KCWA) meets all drinking water quality standards established by the state Department of Health and the U.S. Environmental Protection Agency.

Actions

- 1. Protect existing and potential future water supply sources from contamination and over-withdrawals.**
- 2. Support state planning efforts to identify auxiliary, redundant potable water supply sources to supplement the Scituate Reservoir, which supplies the bulk of the city's drinking water.**
- 3. Coordinate with and support the KCWA in its efforts to continue implementing and updating supply management and system infrastructure renewal and replacement plans.**

B. Continue to implement and update the Warwick Water Division's Water Supply System Management Plan and Clean Water Infrastructure Plan.

This plan addresses the infrastructure replacement and capital improvements needs of the city’s water distribution system, including programs to reduce/eliminate dead end mains, pressure drops, and non-account water (e.g., infiltration losses).

Actions:

- 1. Amend the Warwick Water Division’s rate schedule as appropriate to account for expected declines in metered use (through increased conservation efforts) and develop a revenue structure to sustain the city’s state-mandated maintenance, replacement, and capital improvement programs.**

C. Promote and encourage water conservation efforts to meet the requirements of the state’s Water Use and Efficiency Act of 2009.

Actions

- 1. Continue public education to raise awareness about water conservation.**

GOAL 2

Efficient and reliable sewer service and wastewater disposal throughout the city.

POLICY

- Provide sustainable systems and programs for the, safe, efficient, and effective disposal of sewerage and protection of the environment.

STRATEGIES

A. Upon completion of regulatory review and public comment processes, implement the Facility Plan Amendment for the Warwick Wastewater Treatment Facility.

Actions

- 1. Include programs for the maintenance of and capital improvements to existing system infrastructure (collection, pumping, and treatment**

facilities) and the prioritized expansion of the collection system to areas not presently served.

- 2. Expedite implementation of the proposed flood protection and mitigation improvements at the WWTF (raising of the levee crest) to better protect the facility and assets from extreme storm and river flow events, and identify other WSA infrastructure (e.g., pump stations) that require enhanced protection from flooding.**
- 3. Continue to engage with the Town of East Greenwich, residents, and other stakeholders to develop environmentally and economically sustainable strategies for improved wastewater management in the Potowomut section of the city.**

B. Ensure that the wastewater system and on-site wastewater systems operate with best practices and at the highest level.

Actions

- 1. Consistent with the findings of a recent comprehensive rate study prepared for the Warwick Sewer Authority (WSA), ensure the balancing of costs of continued maintenance and capital improvements in system infrastructure with equitable revisions of the sewer rate schedule, and ensure the pursuit of program and improvement financing through the state’s Clean Water State Revolving Fund (SRF) loan program.**
- 2. Support state programs for the protection and restoration of surface and groundwater quality through continued implementation of WSA’s Mandatory Sewer Connection Program, including enforcement of connect-capable fees where applicable.**
- 3. Where new development or redevelopment projects are proposed in un-sewered areas, require proven, best-practice siting and design of on-site wastewater treatment systems, particularly in locations near environmentally sensitive wetland and coastal resources.**
- 4. Continue to implement the Industrial Pretreatment Program (through the issuance, monitoring, and enforcement of wastewater discharge permits) to protect WSA facilities and receiving waters from the discharge of toxic and/or excessive conventional pollutants.**

5. Develop and distribute educational materials to discourage disposal of harmful materials into on-site disposal systems and the municipal sewer system.

GOAL 3

Stormwater management and drainage systems that are effective and reliable and incorporate best practices.

POLICY

- Provide adequate, efficient and environmentally sensitive programs and practices to manage stormwater runoff and mitigate adverse impacts on receiving waters, including water quality, flooding, and erosion and sedimentation.

STRATEGIES

A. Reestablish compliance with the city’s Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit for Stormwater Discharge from Small Municipal Separate Storm Sewer Systems (Small MS4s)

Actions

- 1. Implement and continue adherence to the required minimum measure elements contained in the City’s Stormwater Management Program Plan (SWMPP). Actions required under the RIPDES Phase II include, but are not limited to, the following:**
 - public education, outreach, and participation programs to raise awareness of stormwater runoff and its impact on the environment
 - mapping of city-owned stormwater infrastructure (including collection systems and best management practices) and detection/elimination of any illicit discharges to these systems

- development and enforcement of ordinances requiring construction-phase and post-construction runoff control through the implementation of erosion/sedimentation and stormwater best management practices (BMPs)
- preparation of annual reports in accordance with RIPDES requirements
- development of amendments to the city’s SWMPP to address approved Total Maximum Daily Load (TMDL) requirements, which are established by the Rhode Island Department of Environmental Management to reduce pollutant loadings to impaired surface waters of the state.

- 2. Identify and prioritize existing drainage systems for the construction of appropriate BMPs to improve the quality of runoff discharged to receiving waters.**
- 3. Amend planning and zoning regulations to require reporting and enforce maintenance of privately owned BMPs and drainage systems.**

B. Require all new development and redevelopment projects to adhere to the applicable design, construction, and maintenance requirements set forth in the latest edition of the Rhode Island Stormwater Design and Installation Standards Manual.

Actions

- 1. Encourage proponents of new development and redevelopment projects to incorporate low-impact development (LID) techniques for the avoidance, reduction, and source management of potential stormwater impacts.**

GOAL 4

Continuing to exceed the state’s 35% recycling requirement and meeting or exceeding the state’s 50% solid waste diversion goal.

POLICY

- Provide safe and efficient programs for the recycling and disposal of municipal household solid wastes and minimize the quantity of solid wastes that are permanently landfilled.

STRATEGIES

A. Operate the city’s waste collection and recycling programs (including the automated system for the collection and transport of residential solid waste and recyclables) in a manner consistent with the State’s Comprehensive Solid Waste Management Plan.

Actions

- 1. Coordinate with the Rhode Island Resource Recovery Corporation (RIRRC) in continuing to develop and implement initiatives for (a) reducing in the amount of source waste generated per capita and (b) diverting waste material from landfill disposal through effective recycling, composting, and other waste-diversion programs.**
- 2. Continue to maintain the amount of municipal waste disposed of at the state’s Central Landfill within the municipal caps/quotas established under state law.**
- 3. Support the development of programs to increase recycling and diversion in commercial and other non-residential sectors.**

GOAL 5

City facilities that are state-of-the-art and maintained for long-term use.

POLICY

- Support investment in an asset-management system.
- Repurpose and renovate existing municipal buildings, if possible, before building new ones.

STRATEGIES

A. Acquire and implement a municipal asset management system to improve the capital planning process, as well as support more efficient maintenance.

The physical systems and structures owned by the City represent a huge community investment. These are long-term assets purchased with public funds and should be designed, built, maintained and managed with life-cycle costs in mind. Asset management involves taking care of these physical systems and structures so that they deliver the desired level of service at the most reasonable cost.

A number of software systems are available to help governments keep track of the condition of their assets and support decision making about maintenance and replacement. These systems are connected to GIS (geographic information systems), so assets are mapped and their locations connected to a database containing information on when they were put in service, expected service life, condition, and how much annual maintenance they require. Managers need this information in order to make the most cost-effective decisions while maximizing service and to drive decisions on whether and when to maintain, repair, or replace assets. While it requires an initial investment, training, and improved data systems, asset management ultimately saves money. An asset-management system can be built incrementally, as assets are improved, built or acquired and added into the system.

Actions

1. Develop a plan for establishing and implementing an asset-management system.

The steps in establishing an asset-management system should include:

- Identification of best-practice examples of municipal asset management.
- A report and presentation documenting the long-term costs and benefits of implementing an asset-management system and funding.
- A plan for training personnel after acquisition of the system, but before department-wide installation and implementation.

2. Determine specific and detailed asset-management needs of each municipal department.

A complete asset-management system addresses the needs of all municipal departments, including documented roadway, utility, vehicle, building and other conditions. Should funding be limited, however, most asset-management software allows municipalities put a system in place incrementally.

3. Determine if additional school consolidations are warranted and plan for building reuse.

- Review enrollment projections.
- Identify strategies to use existing facilities more efficiently.
- Include consideration of open space and recreation needs in any study of future reuse of schools.
- Support adaptive reuse strategies consistent with land use policies to bring closed school facilities back into use and include neighborhood residents in the planning process.

4. Consider augmenting the internally-created schools facilities plan with additional technical assistance.

GOAL 6

Police and fire facilities that meet best-practice performance standards.

POLICY

Continue to support all public safety departments so that they are able to meet best-practice standards.

STRATEGIES

- A. Continue regular review and planning for manpower, service areas, facilities and equipment, and response times to insure adequate protection and adherence to best-practice standards throughout the city.**

Actions

- 1. Continue to support Community Policing and other community-based public safety programs.**

GOAL 7

Effective services that support a growing senior citizen population.

POLICY

Support programs that help senior citizens age in place.

STRATEGIES

- A. Develop a plan for senior services and aging-in-place programs.**

Recognizing the aging of the population and especially changing needs as the aging of the Baby Boom generation occurs, a number of communities have developed plans to help them combine government supported and grassroots initiatives to help the growing senior citizen population age in place—for example, *Aging in Cam-*

bridge (<http://www.cambridgema.gov/CDD/Projects/Planning/Aging.aspx>).

Actions

1. Survey senior citizens and retirees about their needs and preferences in services.

Senior citizens in different age groups require different services, and the Baby Boom generation is already showing evidence of re-defining retirement and old age as it begins to age.

2. Review existing services and programs in Warwick and the region to see where service and support gaps exist.

3. Explore grassroots service “village” programs to help seniors age in place.

As they age, people typically prefer to stay in their own homes—to “age in place”—if possible. To support that desire, grassroots organizations have emerged around the country that create service and community-connection programs known as “aging-in-place villages.” One of the first of these was founded in 2001 in Boston as Beacon Hill Village. It is a membership-based group for anyone over the age of 50 living in downtown Boston. It provides information and referral services, wellness programs, shopping trips, social and recreational events and many other services. Discounted memberships are available for low-income members. These kinds of grassroots communities coordinate with and add to services available through the city senior services programs.

EXECUTIVE SUMMARY

WARWICK DEPARTMENT OF PUBLIC WORKS WATER DIVISION WATER SUPPLY SYSTEM MANAGEMENT PLAN

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GENERAL

The Water Division of the Water Department of Public Works completed the Water Supply System Management Plan in 2001 in accordance with the State of Rhode Island Water Resources Board "Rules and Procedures for Water Supply System Management Planning". This Executive summary was developed to highlight the findings and recommendations of Warwick's Water Supply System Management Plan. The five year update will only highlight major changes since the last 30 month update. A comprehensive overview of all sections of the WSMP will take place inn the future as required by regulation.

GOALS

The goals of the Warwick Water Division are to conserve water through the implementation of various programs, reduce non-account water, maintain water quality in accordance with the Safe Drinking Water Act, and conform to the goals of State Guide Plan Element No. 721.

SYSTEM OVERVIEW

The Warwick Water Division serves about 88% of the population of the City of Warwick. The Cowesett, Natick, Apponaug, Tollgate, and portion of the Greenwood sections of Warwick are served by the Kent County Water Authority.

The Warwick Water Division receives all of its water from interconnections with the Providence Water Supply Board and the Kent County Water Authority, which serves the Potowomut section of Warwick. The Warwick Water Division does not produce any water. The Warwick Water Division owns no water sources and does not operate a treatment plant.

The Warwick Water Division also sells wholesale water to the Kent County Authority through its interconnection on Quaker Lane.

The Warwick Water Division water system includes over 110,000 linear feet of transmission main; approximately 314 miles of distribution main, 5 active or emergency interconnections, 3 storage tanks, and one pump station.

WATER QUALITY

The Warwick Water Division receives treated water from the Providence Water Supply Board and the Kent County Water Authority. It is the responsibility of the Warwick Water Division to protect the quality of the water until it reaches the customer. The Warwick Water Division routinely tests the water as required by Safe Drinking Water Act (SDWA). The 2006 Consumer confidence Report stated that water supplied by the WWD has consistently met all SDWA standards.

AVAILABLE WATER VS. DEMAND

The comparison of available water vs. demand for the 5-year and 20 year planning period is:

YEAR	AVAILABLE WATER* (MGD)	AVERAGE DAILY DEMAND (MGD)	SURPLUS WATER (MGD)
2007	11.35	9.54	1.81
2020	11.42	9.60	1.82

*-available water was determined by multiplying the service area population (75,511 people in 2000) by 150 gallons per capita per day according to the agreement with PWSB.

DEMAND MANAGEMENT

The Warwick Water Division has instituted several programs to reduce demand and promote water conservation including a Residential Retrofit Program, Major User Technical Assistance Program, and Public Education Program.

Under the current Residential Retrofit Program, over 8,000 kits have been distributed to customers. In 2008 THE Warwick Water Division will begin annual notification of the Residential Retrofit Program through the insertion of “stuffers” in the water bills subject to resources being approved by the City Council.

Warwick Water Division personnel currently participate in the Rhode Island Water Works Association education programs. The Warwick Water Division will review available educational information for use in the schools and will work with the school department to provide information for use in the classroom.

The Warwick Water Division has started the basis of a Major User Technical Assistance Program (MUTAP) by interviewing all major users. The Warwick Water Division is concentrating on completing the high volume meter retrofit program prior to establishing any additional major user program. The Major User Technical Assistance Program has been instituted by the Warwick Water Division in 2002 and will continue for the foreseeable future subject to resources being approved by the City Council.

SYSTEM MANAGEMENT

To reduce non-account water, the Warwick Water Division has instituted a Meter Installation and Maintenance and Repair (MIMR) Program, a Leak Detection and Repair Program (LDR), and a Preventative Maintenance Program.

Meter Installation and Maintenance and Repair (MIMR) Program

The Warwick Water Division began an accelerated meter replacement program in the mid 1990's when older residential meter were replaced and remote reading systems were installed on a turnkey contract such that more than 99% (>17,000) of the remaining residential meters were upgraded and equipped for remote reading.

The Water Supply System Management Plan had required installation of remote meter reading system by July 1, 2001. The Warwick Water Division is essentially in full compliance with the requirement that all accounts are metered and all meters are read remotely.

The Water Supply System Management Plan had required all water systems to implement reading and billing at less than a 1 year interval by July 1, 2001. Warwick Water has implemented a plan to quarterly meter read and water bills all of its customers. The resources necessary to implement the reading and billing process was approved in the budget for the foreseeable future.

Leak Detection and Repair (LDR) Program

The Warwick Water Division is planning to implement a Leak Detection and Repair (LDR) program in 2008, pending approval of resources by the City Council during the Fall of 2007. The LDR program will cover the entire system over the 2008 calendar year. It is recommended that the LDR Program be repeated every 3-5 years thereafter.

Preventative Maintenance Program (PM)

The Warwick Water Division's present Preventative Maintenance (PM) Program includes hydrant flushing, valve exercising, pump station maintenance, storage tank maintenance, and interconnection maintenance. The Warwick Water Division is scheduled to enhance its preventative maintenance program. The hydrant flushing program will be formalized to a unidirectional flushing program during 2008. The valve exercising program will be increased so that each valve is exercised in conjunction with the unidirectional flushing program, the storage tanks will be inspected and repainted during the 2008 calendar year. The existing pump station and interconnection maintenance programs have continued since the last update.

EMERGENCY MANAGEMENT

The Warwick Water Division has completed a Vulnerability Assessment and developed an Emergency Response Action Plan which is in the appendix the Water Supply System Management Plan. The following tables identify the Critical Facility Components identified through the Vulnerability Analysis.

**CRITICAL COMPONENTS
WATER QUALITY RELATED**

Tier NP Quality Condition Components	Operational Area
Pettaconsett Connection to Providence	Wholesale Water Purchase
Natick Connection to Providence	Wholesale Water Purchase
Bald Hill Storage Facility	Transmission/Distribution
Warwick Neck Storage Facility	Transmission/Distribution
State Street Booster Pump Station	Transmission/Distribution
Post/Forge Rd Connection to Kent County	Wholesale Water Purchase

**CRITICAL COMPONENTS
WATER QUALITY RELATED**

Tier 2 Quantity Condition Components	Operational Area
WARWICK SECTION	
Natick Connection to Providence	Wholesale Water Purchase
42inch transmission main from Natick Connection to Bald Hill Rd	Transmission/Distribution
42inch transmission main in Bald Hill Rd From Tollgate Road south to Bald Hill Storage Facility and Quaker Lane connection to Kent County Water Authority	Transmission/Distribution
Bald Hill Storage Facility	Transmission/Distribution
36inch transmission line from Bald Hill Storage Facility	Transmission/Distribution
Pettaconsett Connection to Providence	Wholesale Water Purchase
30inch transmission line from Pettaconsett Connection to Post Road	Transmission/Distribution
12 and 10 inch transmission lines from State Street Booster Pumping Station south along Warwick Neck Ave	Transmission/Distribution

POTOWOMUT SECTION	
10 inch transmission main along Forge/Ives Rd to Potowomut	Transmission/Distribution
Tier 3 Quantity Condition Components	Operational Area
WARWICK SECTION	
Two Providence Connections at same time	Wholesale Water Purchase
POTOWOMUT SECTION	
Forge/Post Road connection to Kent County Water Authority	Wholesale Water Purchase

IMPLEMENTATION SCHEDULE

The following schedule has been developed to implement the programs discussed in the Water Supply System Management Plan:

IMPLEMENTATION PLAN FOR WATER SUPPLY SYSTEM MANAGEMENT PLAN					
Elements to be addressed Action		Responsible Agency	Schedule	Remarks Est. Cost	
DEMAND MANAGEMENT					
Residential Retrofit Program	Distribute Retrofit Kits	Warwick Water Division	Ongoing	Approx 8,000 kits distributed o date	Kits provided to customers
Public Education Information	Conservation Promotional and informational bill stuffers	Warwick Water Division	Ongoing	Create conservation awareness	\$2,500 annually
	Participate in "Water Week" Public Education Program	Warwick Water Division	Annual		Cost limited to WWD staff time
Major Users Technical Assistance Program	Continue high volume meter retrofit program	Warwick Water Division	Ongoing	Reduce Consumption	\$10,000
	Conduct follow-up site visits of major users	Outside Contractor/staff	Ongoing	Evaluate effectiveness of program	\$10,000

Building Code Enforcement	Require low-flow plumbing fixtures	Warwick Building Department	Ongoing	Reduce Consumption	No cost to WWD
Water Rates and Pricing	Complete water study rate	Outside contractor	2007/2008	Analyze adequacy of current rates	\$15,000
	Revise rate schedule	Outside Contractor	To be determined	Stability in rates	In rate study
SYSTEM MANAGEMENT					
Leak Detection And Repair	Leak Detection Survey	Outside Contractor	2008	Reduce non-revenue water	\$30,000 per survey
	Repair located leaks	Warwick Water Division	2008	Reduce non-revenue water	\$20,000 per year

IMPLEMENTATION PLAN FOR WATER SUPPLY SYSTEM MANAGEMENT PLAN

Elements to be addressed	Action	Responsible Agency	Schedule	Remarks	Est. Cost
Preventative Maintenance Program	Uni-directional Flushing	Outside Consultant and Warwick Water Division	Annually (beginning 2008)	Cleaner Water	\$20,000 plus WWD staff time
Preventative Maintenance Program	Enhanced Valve Exercising	Warwick Water Division	Annually	Prevent Broken Valve	WWD staff time
Rehabilitation of Distribution/Transmission System	Five year capital improvements program	Outside Contractor	**to be determined	Address system deficiencies and rehabilitation needs	\$2 million per year
Meter Installation, Maintenance and Repair Program	Meter replacement	WWD Staff	2006-2010 ongoing	Replace meters every 15-20 years	\$200,000 every year beginning in 2007
	Meter testing	Outside Contractor and Warwick Water Division	2008	Meters 2" and larger	\$10,000 every year and WWD staff time
SUPPLY MANAGEMENT					
Water Quality Protection	Water quality monitoring	Warwick Water Division	Ongoing	Sampling sites are continuously monitored	\$15,000 annually
	Coordination with local governments	Warwick Water Division	Ongoing	Represent WWD interests in local planning process	Cost limited to WWD staff time
Emergency Plan	Implement Plan	Outside Consultants and Warw Water	Ongoing	Update annually and after each emergency	\$2,500 annually

FINANCIAL MANAGEMENT

The Warwick Water Division hired an engineering consultant to develop a computerized hydraulic model of the Water System. The model is finalized and was completed by the summer of 2002. The hydraulic model was developed to assist in the preparation and implementation of the Water System Master Plan. The Water System Master Plan will include a capital improvements program that has identified specific upgrades to the water system along with a schedule for implementation.

The Warwick Water Division will commission a rate study to be completed during the first six months of 2008. The new rate study will hopefully include approximately \$2,000,000 annually for implementation of the Capital Improvements Program.

The Water Division has maintained a rate structure that includes a service charge based on the size of the meter and a consumption charge that is charged at a flat rate. Other charges to customers are based upon the actual cost of providing service; e.g. private fire protection, service installations, etc.

Currently meters are billed on a quarterly basis. The Water Division has completed installation of new remote reading meters for all customers. The resources necessary to implement the quarterly reading and billing process have been approved in our annual budget for the foreseeable future.

COMMENTS

The Warwick Water Division takes pride in the high quality of the water delivered to its customers. The Water Division is constantly striving to operate the system to benefit the citizens and businesses of Warwick while maintaining efficiency such that the rates and charges are appropriate to operate, maintain, and protect the integrity of the water system.



Background

This Water Supply System Management Plan (WSSMP), as amended, has been prepared as required under the Rhode Island General Laws (RIGL) 46-15.3, as amended and titled, "The Water Supply System Management Planning Act" (Act). The legislative authority to effectuate the goals and policies of this Act has been conferred to the Rhode Island Water Resources Board (RIWRB). To this end, the RIWRB has promulgated the Rules and Regulations for Water Supply System Management Planning, October 2002, as amended to implement the provisions of this Act.

Under this regulation, the Kent County Water Authority (KCWA), as a water purveyor supplying over 50 million gallons of water per year, is responsible for the preparation and adoption of a WSSMP. It also requires that the KCWA update this WSSMP periodically, as significant changes warrant but at a minimum of every five years, or as otherwise stipulated in the Regulations.

WSSMP's are prepared in order to provide the proper framework that will facilitate the effective and efficient conservation, development, utilization and protection of the natural water resources of the State as utilized by the water purveyor. Further, the overall goals incorporate the applicable policies and recommendations of the Rhode Island Water 2030, State Guide Plan Element 721. The purpose of this WSSMP is to outline the objectives of the Water Supply System Management Planning process for the KCWA water supply system, and to serve as a guide to employ the proper decision-making processes toward meeting that goal.

This WSSMP contains a detailed description of the water system and includes the policies and procedures related to the general function, operation, and management of the water system. The water quality protection component of the plan is contained, separately, under Volume II. The Emergency Management section, Volume III, relates to the vulnerability assessment of the water system for use in emergency planning. It shall be incumbent upon the KCWA to implement the recommendations and procedures outlined in this WSSMP in order to comply with the overall requirements of the Act.

Water System Description

The KCWA was established by legislation of the General Assembly of the State of Rhode Island and Providence Plantations in 1946. Formation of the KCWA entailed the consolidation of three water companies: the Warwick and Coventry Water Company, the Pawtuxet Valley Water Company, and the East Greenwich Water Supply Company. The 1956 General Laws empowered the KCWA to own, operate, and maintain a water supply system (including all water supply sources, pumping stations, transmission facilities and distribution piping) in Kent County, and to serve the communities that comprise Kent County (i.e., Coventry, East Greenwich, West Greenwich, Warwick, and West Warwick). Moreover, since 1956, the KCWA has supplied water to localized outlying regions of Cranston, North Kingstown and Scituate. The service population is comprised mainly of residential, commercial, and government customers of which there are over 26,560 metered accounts. The total service population has been estimated at 88,781 persons.

The primary source of water supply for the KCWA water system is wholesale water purchased from the PWSB and City of Warwick which accounts for approximately 93% of system demand for the year 2011. The KCWA also owns three independent wellfields (Mishnock, Spring Lake, and East Greenwich) that collectively supplied approximately 12% of the total system demand in the year 2011. Currently, the East Greenwich Well is the only operating and active well source.

The KCWA will be placing the Mishnock Water Treatment Facility on line in 2013. At this time, groundwater is disinfected at each of the production wells via injection of a diluted 15% hypochlorite solution. In addition to disinfection, potassium hydroxide is added for pH adjustment and corrosion control.

The transmission and distribution system consists of approximately 402 miles of water main, with sizes ranging from 2-inch diameter in older areas that serve domestic supply only, to 24-inch diameter transmission mains, which transport water from the supply sources and storage tanks to the distribution system. Transmission mains, which are defined as water mains 12 inches or greater in diameter, total approximately 38.4 miles, or 9.7 percent of the total system piping.

The service area is operated as eight (8) distinct service areas (pressure gradients), each operating at varying hydraulic grades. Three of the pressure gradients serve the majority of KCWA's customers.

There are ten water storage facilities that are operated by the KCWA and maintain the pressure gradients. The KCWA owns and operates three (3) booster pumping stations (Setian Lane, J.P. Murphy Boulevard and Johnson Boulevard Pump Stations) and two (2) transmission pumping stations (Clinton Avenue and Quaker Lane Pump Stations), in addition to the four (4) well pump stations (with only the East Greenwich Well active).

The KCWA maintains four interconnections to neighboring water purveyors – two each with Providence Water and the City of Warwick. Three of the four interconnections supply the KCWA with finished water on a daily basis, while one of the interconnections to the City of Warwick (Potowomut) conveys finished water to the City of Warwick. The KCWA also has four emergency interconnections, one with the Quonset Development Corporation, one with the Town of North Kingstown, one is offline in the City of Warwick and one is with the Providence Water Emergency Interconnection on Hoover Street in West Warwick.

Kent County service area comprises five communities in central Rhode Island (Coventry, East Greenwich, West Greenwich, Warwick, and West Warwick). The general laws of Rhode Island permit the KCWA to own, operate and maintain a water supply coterminous the county's political boundaries. In addition to serving all or parts of those communities, KCWA service has been extended outside of its legislative boundaries to contiguous bordering areas in need of public water supply. Currently, its service area also incorporates parts of Oaklawn in Cranston, Western Cranston, southeastern Scituate, and the extreme northeast corner of North Kingstown.

The following table indicates the breakdown of KCWA customer account distribution for the year 2011.

Type of Account	Number of Accounts
Residential	24,912
Commercial / Industrial	1,351
Governmental	297
Other (Dry – Non Metered Fire Lines)	144
Total	26,704

The KCWA does not have the ability to accurately record actual population served for each water use classification (i.e., residential, commercial, industrial, government). Census information represents an

average population for residential occupancy. A reasonable estimate of total residential population served within the service district can be derived using statewide planning standards and utilizing various sources of data including the number of residential services, population figures, number of households (actual and projected), and persons per household.

Population Per Community versus Population Served by KCWA

Community	2010 ¹	2011 Population Served ²	Percent Served
Coventry	35,014	26,971	77%
Cranston*	81,131	2,257	3%
East Greenwich	13,146	12,010	91%
North Kingstown*	26,486	28	0%
Scituate*	10,325	1,364	13%
Warwick	85,620	15,504	18%
West Greenwich	6,135	1,728	28%
West Warwick	29,191	28,947	99%
* No projected Increase	¹ Taken from 2010 Census	² Taken from Actual Census Track	

The water supply and distribution system is 100% metered. Master meters located at each individual well station and interconnection to neighboring purveyors, meter 100% of the water produced and purchased via wholesale interconnections. Every service connection within the water distribution system is metered at the point of sale, with the exception of a small amount of dry non-metered fire services, yielding 99.4% metering. Since 2010, the KCWA has begun the process of replacing the water meters with radio frequency reading systems. Commercial meters and large meters over 2 inches are not being replaced as part of this program. The large meter replacement and/or testing program has been implemented. Some customers have been resistant to comply with the Public Utilities Commission's regulations requiring the testing of large meters on an annual basis. It is anticipated that the large meter replacement/calibration program will continue to fall short of the prescribed 100% testing goals due to customer resistance to comply with PUC requirements. Legislative reform and/or amendment to PUC regulations are necessary to assist water purveyors in compelling customer compliance (i.e. violation with fine).

A review of production data totals for the past ten (10) years (2002 - 2011) reveals an average production rate of 3,348 million gallons per year (mgy), with a high of 3,874 mgy occurring in 2005, and a low of 2,860 mgy occurring in 2009. Based on the total production, the current Average Day Demand for calendar year 2011 computes to 8.02 million gallons per day (mgd) for the entire system. The

current Average Day Demand for calendar year 2011 based on total system production is 8.02 mgd. The current Average Day Demand for calendar year 2011 based on the total volume of water metered at the point of sale (water purchased ie. residential, commercial, etc.) computes to 6.78 mgd for the entire system. The volume of water sold to residential customers in 2011 totaled 1,869.05 million gallons, which averages to a daily residential consumption of 5.1 mgd. Based on the estimated residential service population of 88,781 persons, the current per capita system demand for residential users is approximately 57.67 gpcpd.

The KCWA supplied water to forty-eight (48) major users in 2011. Kent County's major water user class varies greatly ranging from hospitals, to a yacht club, to laundromats and private multi residential properties. The majority of the major users, however, are either residential entities (i.e. mobile home parks, condominium associations, etc.) or large industrial enterprises. In 2011, major user water consumption totaled approximately 495.7 million gallons.

The KCWA has maintained an average of 7.62% non-account water since 2002, and 8.2% for the year 2011. This rate is below the goal of 10% set forth in 2011 Water Use and Efficiency Act, RI General Laws §46-15.3-22(b). The success KCWA has achieved is largely due to the large meter testing program, residential retrofit program, the meter replacement program, and the aggressive leak detection and repair program that it maintains.

No specific legal obligations or contract agreements exist between any city or town regarding the KCWA's provision to supply water to undeveloped territory. Agreements do exist for wholesale supply from the PWSB and the City of Warwick to obtain supply. KCWA also has an interconnection agreement with the North Kingstown Water Department the Quonset Development Corporation and the City of Warwick to provide water under emergency circumstances.

Water conservation initiatives are defined as the "methods, procedures and devices designed to promote efficient use of water and to eliminate waste of water." The KCWA uses seasonal press releases to encourage efficient outdoor watering techniques, provide tips on how to check your home for leaks, encourages the installation of low-flow retrofit devices, and recently developed a Water Conservation Action Plan.

Recent System Improvements

The KCWA maintains an ongoing, aggressive Capital Improvement Program (CIP) in order to provide its customers with a safe and reliable supply of potable water. What follows is a list of major system improvements that are planned for the future or have taken place in recent years.

- Quaker Lane pump station rehabilitation study Feb 2007
- Mishnock Wells Water Treatment Facility under construction
- Water Conservation Action Plan Jan 2007
- Evaluation of the Clinton Avenue Pump Station 2008
- Distribution Storage Tank Hydraulic Evaluation (ongoing) Dec 2006
- Computer Model Upgrade Feb 2006
- Major Users Technical Assistance Program Jan 2006
- Distribution system computerized model update 2005
- Infrastructure Rehabilitation pipeline database update 2009
- Emergency Response Plan 2012
- Five-Year Capital Improvements Program Report Jan 2012
- East Greenwich Well sequestering study 2004
- East Greenwich Well Treatment Study 2012

Water Quality Protection

Volume II of the WSSMP fulfills the requirements of the water quality protection component of the plan. An update of the 2011 Kent Count and North Kingstown Source Water Assessment Plan (SWAP) for the KCWA was developed in accordance with the Guide to Updating Source Water Assessments and Protection Plans, final draft October 2011. The final risk ratings for the East Greenwich, Spring Lake, and Mishnock Wellhead Protection Areas were determined to be consistent with the 2006 ratings.

Current and Future Demands

Kent County has grown moderately over the past ten years and over this same span, however, the average day demand has remained fairly constant, indicating the effective employment of water

conservation measures. Anticipated future demands for the 5- and 20-year planning periods were developed utilizing population projections for each service community as well as information from hydraulic modeling reports. The following table shows the estimated ADD and MDD for 5- and 20-year planning periods.

	ADD	MDD
5-year	11.6	22.4
20-year	13.4	25.6

Theoretical Water Supply values were developed for the current year and 5-and 20-year planning periods.

Theoretical Water Supply

	Present*	5-Year (2010)*	20-Year (2020)*
Clinton Avenue	25.00	25.00	25.00
Oaklawn Avenue	0.19	0.19	0.19
Quaker Lane	4.60	10.10	10.10
East Greenwich Well	2.00	2.00	1.60**
Mishnock Wellfield	0.00	2.4	1.92**
Spring Lake Well	0.00	0.26	0.21**
Total	31.79 mgd	39.95 mgd	39.02 mgd

***Pump station values are based on the maximum capacity (both high and low service gradient pumps operating) of the facility and may not be achieved over extended periods due to operational system constraints. Over time, all wells will see a reduction in capacity due to aging of the well through general use. Values are used for planning purposes only and should not be construed as actual available water supply.**

****20% reduction in well capacity due to aging of well.**

Comparison of the anticipated future demands verse the theoretical water supplies revealed that the KCWA will be able to meet demands for both the 5- and 20-year planning periods.

Conservation and Education

The Hunt River Wellhead Protection Area Planning Committee was comprised of members from the KCWA, Rhode Island Economic Development Corporation, and the Towns of East Greenwich, North Kingstown, and the City of Warwick. It was intended that this Committee's first task be the update of the Hunt Aquifer WHPP. This did not occur and the sunset imposed by the Town of East Greenwich regarding this committee action plan ran out. KCWA has met with the other two water suppliers, North Kingstown and QDC, who use this aquifer as their source of supply to develop a coordinated management plan for this source. This plan was presented to the RIWRB in April 2007. The plan was accepted by the RIWRB and is now being actively implemented.

Demand and System Management

The KCWA had periodically distributed educational flyers to service area businesses and residents. Funding for periodic newsletters was denied by public utilities commission effectively cutting off one method of communicating these types of concerns to the customers. The KCWA has implemented an "E" News letter on its website as an alternative communication mechanism to offset the debilitating affect cancellation of the printed version has on customer communications. The KCWA published a Conservation brochure and Water Audit mailer focused on education and assisting its customers with the elements of conserving water. One flyer, entitled "Lake Mishnock," is a foldout pamphlet that educates readers on water quality issues, protective measures, volunteer efforts, and regional hydrology.

The KCWA implemented a residential retrofit program in 1999 and remains active. The KCWA also developed a Water Conservation Action Plan in January 2007. KCWA started its Major Users Technical Assistance Program (MUTAP) in July 2004 and identified sixty-four (64) customers, at the time, as major users. Major Users are defined as customers that use approximately 3 million gallons of water or more each year (KCWA expanded this at the time to include customers under but close to the 3 million gallons per year threshold).

Outdoor water use contributes to double the average daily demand on most, if not all, water systems throughout the State. With the passage of the Water Use & Efficiency Act, the State has adopted

cohesive statewide conservation regulations to demonstrate a firm commitment to conservation that can be equitably implemented across all local, state and municipal boundaries.

The KCWA employs a Meter Installation, Maintenance and Replacement (MIMR) Plan as well as an aggressive Leak Detection and Repair program. As previously mentioned, with the exception of some fire services, the KCWA meters 100 percent of the water supplied to its customers. Other exceptions of water used include municipal, fire fighting, and water system maintenance. The KCWA maintains an aggressive Leak Detection and Repair (LDR) program. For over fifteen years, the KCWA has been performing in-house leak detection and repair services on a routine basis by trained personnel using electronic leak detection equipment.

The KCWA performs preventive maintenance on its water system, the extent of which is limited by the workforce currently available to accomplish this work. Preventive maintenance practices are largely limited to aboveground activities such as exercising emergency power at the pump stations, changing oil, checking gauges, and semi-annual flushing of water mains. The KCWA is looking to expand and formalize its preventive maintenance program.

The KCWA is not contemplating any planned extensions of the water system infrastructure in or outside of the water service district. Any desired expansion of the water system must be applied for, approved by the KCWA, and financed independently.

The KCWA has demonstrated full compliance with all of the water quality provisions of the Safe Drinking Water Act and its subsequent amendments and RIDOH regulations.

Emergency and Drought Management

The Emergency Management section, Volume III, of the Plan establishes the responsibilities and authority within the KCWA for responding to most probable emergencies and outlines specific tasks for carrying out functional and constructive solutions based on a review of the potential emergencies and risks. The procedures outlined are generally consistent with the goals of the Rhode Island Water Emergency Response Plan. It is also intended that this document provide guidance to ensure that the primary aspects of recovery from an emergency are addressed in an organized manner to aid in an efficient response and in maintaining drinking water quality and quantity.

The KCWA developed a Demand/Drought Management Policy that was approved in April 16, 2003 and revised February 15, 2006. This policy provides the KCWA the ability to proactively prepare and manage potential drought occurrences. The use and development of this policy demonstrates KCWA's commitment to drought management.

Implementation, Financial Management, and Coordination

The KCWA has developed a 20 year Implementation Schedule for system improvements. A detailed schedule outlining the individuals or entity responsible, timing, and costs associated with recommendations of this plan has been developed and is presented within the WSSMP. Where work can be accomplished by the KCWA, the responsibility has been designated "In-House." It is intended that where outside consultants and/or contractors are required, the KCWA shall take the necessary steps to advertise for and contract with such resources. The costs developed for each recommendation include an estimate of the capital, operating and maintenance costs associated with each implementation.

It is evident from review of these documents that KCWA's continued revenue stream and control of expenses has provided a solid foundation for the Authority to continue to provide the quality service to its customers, as well as provide repayment of the debt issuance. PUC authorized rates have failed to realize the full funding needs of all programs and operational cost. KCWA will continue to file for increases as necessary to compensate for budget shortfalls associated with reduction in sales due to variation in consumer water use patterns.

KCWA water rate charges consist of a combination of a *Consumption Charge* (Rate varies according to meter size), a *Service Charge* (Flat Rate), and a State imposed *Water Quality Protection Charge*. The Consumption Charge is of a uniform block rate structure, whereby customers are charged a constant rate per 100 cubic feet of water metered. Service charges are based on size and use.

The WSSMP is intended to be reasonably consistent with the goals and policies of the Comprehensive Community plans for the communities serviced by the KCWA. Naturally, these communities must also take into consideration the ability of the KCWA to extend water service in an area zoned for development without adversely impacting existing customer service or rates for the constituents of the communities served.



Sustainability and Resilience

FROM A WARWICK RESIDENT

“During last year’s floods and the hurricane in 2011, the city did a superb job of communicating with residents and handling emergency needs.”



A GOALS AND POLICIES

GOALS

POLICIES FOR DECISION MAKERS

SUSTAINABILITY

The City implements practices to conserve energy and use renewable energy.

- Promote energy efficiency in municipal facilities and practices.
- Encourage energy efficiency by private property owners.

The City implements and promotes resource conservation and waste reduction.

- Reuse materials, facilities and structures when possible.

City facilities and practices are a model of sustainability.

- Choose sustainable materials, methods and practices, when possible.

RESILIENCE

Warwick has an up to date hazard mitigation plan

- Support timely updates to the plan.

Warwick is preparing for the impacts of extreme weather events and climate change.

- Integrate mitigation and adaptation to climate change into City practices and plans.
- Work with the state's climate change commission.

Broad sustainability goals inform Rhode Island's state plan and this comprehensive plan. Sustainability initiatives include recommendations to create compact, mixed-use, walkable centers in City Centre Warwick, villages and neighborhood centers; provide more transportation alternatives and encourage walking; diversify the housing stock in type and affordability; and reduce nonpoint and other forms of pollution.

This chapter concentrates especially on energy and resource efficiency and on hazard mitigation and resilience, particularly in relation to the potential impacts of extreme weather events and climate change, which in Warwick means flooding, coastal storm surge, and sea level rise.



B FINDINGS AND CHALLENGES

findings

Warwick is dependent on fossil fuels for energy.

The municipal government has conducted preliminary feasibility analysis for wind turbines on City properties.

The City has begun to adopt energy saving technologies in City buildings.

Solar and wind energy technologies have been installed by some private and non-profit businesses in Warwick.

The City has a strong recycling program.

The zoning and building codes need to be updated to incorporate regulations and incentives to encourage energy efficiency and reductions in energy demand.

Climate change impacts on Rhode Island are documented. In the future, Rhode Island is expected to experience more frequent extreme weather events with potential flooding, more severe hurricanes and noreasters, and an accelerated rise in sea levels.

With its coastal location and 39 miles of shoreline, Warwick is vulnerable to the impacts of climate change and sea level rise.

State government has convened the Rhode Island Climate Change Commission to help communities prepare for the impacts of climate change.

Warwick is already taking steps to protect its wastewater facility from a repetition of the 2010 flood.

challenges

Raising public awareness of energy efficiency and demand reduction options

Changing behaviors to conserve energy and reduce greenhouse gas emissions

Funding for adoption of additional energy efficiency strategies for municipal facilities

Raising public awareness about the potential future impacts of climate change on Warwick.

Planning, funding, and implementing programs to adapt City facilities and activities to be resilient to climate change impacts.

Working with private property owners over time in vulnerable locations.



WHAT THE COMMUNITY SAID

- Despite the 2010 flood, residents did not express much concern about potential future flooding or climate change impacts.
- Residents support retaining existing trees and planting more.
- Residents suggested installing electric vehicle recharging stations and converting the City fleet to energy efficient vehicles.
- There is strong support for the City's recycling program.



CURRENT CONDITIONS

1. Energy and Resource Use

Access to affordable, clean energy is critical to the city and its residents. Energy use, cost and conservation are integrally tied to many of the traditional elements of the comprehensive plan, including housing, transportation, economic development, community services, and natural resources. For much of the 20th century, the availability of relatively cheap oil spurred the consumption of fossil fuels. Energy conservation and efficiency are cost-effective and reduce air pollution and negative impacts on other natural resources. Techniques for promoting energy demand reduction and efficiency include energy conservation, installation of energy efficient technologies, and use of renewable and alternative energy sources.

Conventional Energy. The City of Warwick and its residents buy electricity from Narragansett Electric, which is owned by National Grid. National Grid provides natural

gas to Warwick. Table 11.1 shows the City government's energy usage and cost by energy type.

Electricity. In Fiscal Year (FY) 2011, the City reduced its electricity usage for municipal buildings by 2.9% over the average usage for the previous two years, from 9,162,214 kilowatt hours to 8,893,093 kilowatt hours. However, because the cost per kilowatt hour increased by 9.5%, the total cost of electricity increased by 6%. The two largest municipal users of electricity in 2011 were the Sewer Authority (3,015,750 kWh) and the Thayer Ice Arena (1,826,600 kWh).

National Grid is in the process of implementing a \$250,000 Reliability Project, which involves updating its electrical systems. Project components include the installation of new equipment in the Warwick substation, and reconstruction of additional new transmission lines in Warwick. The system is designed to handle periods of peak energy demand, such as summer when air conditioning systems can strain delivery.

Natural Gas. Natural gas usage in municipal buildings increased by 7.4% in FY2011 compared to the average annual usage for the prior two years. Because of a 7.4% increase in the unit cost of natural gas, the City's overall expenditure on natural gas increased by 11%.

Oil and Propane. Many private fuel distributors provide fossil fuels to individual residents, businesses and government. In FY2011, the City used 1,613 gallons of oil for heating municipal buildings, a decrease of 32.9% from the average amount used in the previous two years. However, the price per gallon for heating oil increased by 49.5%, leading to a 0% change in total dollars expended on oil. In FY2011, only two municipal buildings, the Apponaug and Conimicut Libraries, used oil for heating. As of the summer of 2012, these buildings use only electricity and natural gas, and the City has eliminated its use of oil for heating.

The City fleet and the majority of commercial and private vehicles registered in Warwick are gasoline or diesel powered. In an effort to encourage alternative fuel vehicles, URI has launched The Rhode Island "Top 50"

Table 11.1: City of Warwick: Municipal Government Energy Usage and Costs—All Buildings¹

PERIOD ²	ELECTRICITY (KWH)	NATURAL GAS (THERMS)	OIL (GALLONS)	TOTAL ENERGY (KBTU)
'08-'10 Consumption	18,324,428	673,204	4,806	130,500,595
Baseline Consumption	9,162,214	336,602	2,403	65,250,297
'10-'11 Consumption	8,893,093	349,112	1,613	65,474,453
% Change Consumption – Baseline to '10-'11	-2.9%	3.7%	-32.9%	0.3%
'08-'10 Cost	\$2,313,024	\$832,064	\$9,782	\$3,154,870
Baseline Cost	\$1,156,512	\$416,032	\$4,891	\$1,577,435
'10-'11 Cost	\$1,227,577	\$463,494	\$4,907	\$1,695,978
% Change Cost – Baseline to '10-'11	6%	11%	0%	8%
Unit Cost Baseline	\$0.126	\$1.236	\$2.035	\$0.024
Unit Cost '10-'11	\$0.138	\$1.328	\$3.042	\$0.026
% Change Unit Cost – Baseline to '10-'11	9.5%	7.4%	49.5%	7.1%

¹ The data included in this table was collected by the University of Rhode Island as part of an EPA Showcase Grant. The work being conducted under the grant is a collaboration between URI and the communities of Warwick, East Greenwich, North Providence and South Kingston. The data in the table is not normalized in order to show direct energy consumption.

² Data was collected for the period July 2008 through June 2010. The Baseline represents an average for these two years. The '10-'11 period is from July 2010 through July 2012.

Source: University of Rhode Island Outreach Center.

Electric Vehicle Recharging Station Project, aimed at locating 50-60 electric vehicle recharging stations around the state. URI has approached the City about participating by locating a station at City Hall. However, the City would be required to pay for the station, and City officials questions whether there is enough traffic at City Hall to justify the investment. City officials are exploring options to site a facility at a more heavily trafficked establishment, such as the Warwick Mall.

Hydropower. In the winter and summer of 2012, City officials participated in Hydropower Workshops as part of the Renewable Energy Siting Project being conducted by the University of Rhode Island. The purpose of the workshop was to explore opportunities for river restoration and low impact hydropower development, as well as how to use existing dams in an effort to create opportunities for hydropower. No projects have been proposed for Warwick at this time.

Energy Efficiency and Conservation Initiatives. In 2009, the City was awarded an \$835,200 American Recovery and Reinvestment (ARRA) Energy Efficiency and Conservation Block (EECBG) Grant to develop and implement a Comprehensive Energy Strategy. In response to the grant award, Honeywell Corporation completed a complimentary energy audit for the City of

Warwick to identify energy efficiency projects that could be funded with the grant. The audit identified approximately \$20 million in projects that the City could undertake to improve energy efficiency. With limited funding, the City identified projects that could be done using the ARRA grant. Much of the grant was used to install energy efficient light bulbs in 22 municipal buildings, replacing over 6,400 fixtures. The project is projected to save 433,000 kWh of electricity and reduce carbon dioxide emissions by nearly 171 metric tons annually. The project is also expected to save \$1.02 million in annual energy and operating expenses.

The Thayer and Warburton Arenas and the McDermott Pool are the highest energy users among municipal facilities in Rhode Island. In 2012, the Thayer and Warburton Arenas and McDermott Pool participated in National Grid’s Whole Building Assessment Initiative, a program” designed to help commercial and municipal customers assess the energy performance of their buildings and to identify opportunities for improvement.”¹ Through the program, B2Q Associates performed an on-site assessment of the energy usage of each of these facilities, and prepared a report with recommendations for steps the City can take to reduce the energy usage of

¹ B2Q Associates, Inc., Thayer and Warburton Arenas Whole Building Energy Assessment, prepared for National Grid, August 24, 2012.



each. In each report, recommendations for energy saving ranged from no or low-cost items to more expensive capital projects.

The City has begun implementing the recommendations proposed in the B2Q reports. The City spent over \$100,000, partially funded with the ARRA grant, to install low-emissivity (Low-e) ceilings in the City's two skating rinks. These ceilings reflect heat and light, requiring less energy to keep the ice cold and people warm. In addition, three new energy efficient boilers have been installed at McDermott Pool, at a cost of \$109,000, minus a \$12,000 rebate from National Grid. The City used its contingency fund to pay for the boilers. The boilers are fueled by natural gas, and are expected to run at 97% efficiency, compared to 36% efficiency for the old boilers. The pool and rinks are among the highest energy users in the state, and these projects will help reduce that energy usage.

The City of Warwick, in partnership with South Kingston, North Providence, and East Greenwich, and the University of Rhode Island, received an EPA Showcase grant in 2009. The City's share of the grant is \$150,000. City officials are evaluating recommendations of the Honeywell energy audit to determine what projects can be funded with the EPA grant money. Additional energy saving projects at the skating rinks, such as options for recapturing heat from the water compressors used to freeze the ice, and variable speed pumps to improve energy efficiency as the ice is cooled, are under consideration.

National Grid has also worked with the City to promote energy efficiency in municipal buildings. A program entitled "See the Light" was launched in fall of 2012 to encourage workers in City Hall to adopt energy efficient behaviors such as turning off lights and computers when they leave a room. The program is designed as a competition between departments to see which department can save the most energy over a set time period.

In the fall of 2011, National Grid offered all Warwick residents free energy audits, and helped participants identify opportunities for energy efficiency and con-

servation. Participants were also eligible to receive free energy efficient light bulbs, low-flow showerheads, and energy-efficient faucet aerators. The company also offered assistance paying for weatherization and air sealing costs.

Energy consumption in Warwick municipal buildings increased by just .3% between the FY2008-2010 and FY 2011. The projects described above should result in a decrease in usage in future years.

Renewable Energy

Solar energy. Warwick has not installed solar panels on any of its municipal buildings. No municipal ordinances have been adopted that address solar installations within the city. However, there are several private solar installations. In May 2009, New England Institute of Technology (NEIT) had 135 photovoltaic panels installed on its Electrical Technology Building. Each panel can produce 175 watts of electricity, or 23 watts per hour. Actual output depends on sun angles, cloud cover, length of day, and other variable environmental factors². Any excess energy produced returns to the National Grid system and the school will be credited. The TD Bank branch on West Shore Road includes a solar panel on the drive-through window to provide some of the energy for the facility. In addition, a developer of a private garage at the airport has proposed installing a solar canopy on the facility, and has received city support for the project, which is seeking tariff approval from National Grid.

Wind energy. The City of Warwick completed a Wind Turbine Screening Study in July 2011 as a preliminary step in assessing the feasibility of the possible future installation of a large-scale (+100kW) wind turbine on City-owned property³. The study consultants, in conjunction with the City of Warwick Planning Department, identified five city-owned sites, as listed in Table 11.2, that would potentially be suitable for a large-scale turbine. These sites were screened based on wind speeds, availability of sufficient land to construct the turbine and

2 New England Institute of Technology web page. Accessed on September 26, 2012. <http://technet.neit.edu/files/TechNews200908.pdf>

3 Weston and Sampson, City of Warwick Rhode Island Wind Turbine Screening Study Site Suitability Assessment, prepared for Crossman Engineering, July 2011.

provide adequate distance from abutters, FAA height limitations, environmental concerns, reasonable access to electrical interconnections, and financial feasibility. Upon completion of the screening, only the Rocky Point and Toll Gate sites emerged as both economically and technically feasible for a 600 kW or larger turbine, although both were only marginally feasible. The report recommended a more detailed feasibility analysis of these two sites, to include “visual impacts (simulations), noise and shadow impacts, specific approvals and permits, processes and procedures, timeframes, interconnection and engineering requirements, and other aspects of the project” before proceeding⁴. At this time, the City is not pursuing any wind turbines on municipal land. To date, the City has not adopted any ordinances that address the construction or use of wind turbines either on city or private property.

Table 11.2: Potential Wind Turbine Site List

SITE NAME	ACRES	CURRENT LAND USE
125 Arthur W. Divine Boulevard	275	Wastewater Treatment Facility
Rocky Point Avenue	93	Open Space
Toll Gate Complex	44	High School and Elementary School
Barton Farms	66	Farmland
Conimicut Point	14	Open Space

Source: Weston and Sampson, *City of Warwick, Rhode Island Wind Turbine Screening Study Site Suitability Assessment*, July 2011

NEIT and Shalom Housing have each installed small-scale (100 kW) wind turbines to provide energy for their facilities. NEIT installed a 100-kilowatt, 156-foot tall wind turbine at its Access Road campus in July 2011. At the time of installation, planners estimated that the turbine could produce 164,029 kW hours annually, enough to provide electricity to 16-20 homes. The energy produced will be fed into National Grid’s system, and the college will be credited for the electricity produced. The school will also incorporate the wind turbine into coursework on renewable energy, economics and the environment.⁵

4 Ibid., p. 28.

5 New England Institute of Technology web page. Accessed on September 26, 2012. <http://www.neit.edu/About-Us/New-England-Tech-Wind-Turbine-Photo-Voltaic>

In November 2009, Shalom Housing received a \$1.4 million “green” stimulus grant from the US Department of Housing and Urban Development to both retrofit its 100 unit, 30-year old senior housing project with energy efficient systems and appliances, and add a wind turbine to reduce energy costs.⁶ The 100-kilowatt wind turbine was installed in February 2011.⁷ It will reduce electricity costs for the facility and for tenants.

Tidal energy. Tidal energy comes from the motion of water as tides shift from low to high and back again. The cost of producing tidal energy is very site specific, and varies based on geography, speed and volume of the currents, and distance to the grids. The energy is captured with turbines located under the water. One drawback of tidal energy production is that it can alter the ecosystem of an estuary through erosion and reduced flushing. Another is that the energy from tides is spread over vast areas, and finding efficient, environmentally safe ways to harness enough energy from tides has proven difficult. To date, tidal energy is used in only four places worldwide, none of which are in the United States. Trials are underway elsewhere, including in the East River in New York City, San Francisco Bay, and Cobscook Bay and Western Passage near Eastport, ME. Warwick has not explored opportunities for tidal energy. However, with its 39 miles of coastline, tidal energy may provide a future opportunity for the City.

Wood energy. Some residents in Warwick use wood stoves to heat their homes. Wood is delivered to these homes from companies located in more rural areas outside of Warwick.

Resource Conservation and Efficiency

Recycling. The City of Warwick has a well-established and successful recycling program, including an automated recycling and trash collection system. The City provides garbage containers and a container for single-stream recycling with once-a-week collection for all resi-

6 A Turbine Grows in Warwick, *The Providence Phoenix*, November 4, 2009. Retrieved from the World Wide Web on September 26, 2012 at <http://providence.thephoenix.com/News/92580-turbine-grows-in-Warwick>.

7 Public to Celebrate Warwick Wind Turbine, *The Providence Journal*, February 1, 2011. Retrieved from the World Wide Web on September 26, 2012 at <http://bizblog.projo.com/2011/02/public-to-celeb.html>



dents. Residents must place at least one recycling bin outside each week with the garbage bin, or garbage will not be collected. This mandate is an effort to encourage more recycling. In addition to curbside recycling, items such as grills, bicycles, lawn chairs, unpainted wood and clothing can be dropped off at the Municipal Recycling Center on Sandy Lane, open Monday through Saturday from 7:00 am to 3:00 pm.

Since 1993, Warwick has offered a yard waste collection program that operates once per week during the spring and summer, and every other week during the fall. Residents can bag grass, leaves and garden debris in 30 gallon biodegradable paper yard waste bags or in barrels marked yard debris, and bundle sticks for roadside pickup. The yard waste is taken to the Municipal Recycling Center and composted into soil. The City recycles approximately 12,000 tons of yard waste annually.

The White Goods Recycling Program offers residents an opportunity to recycle appliances such as washers and dryers, refrigerators, air conditioners, water heaters, etc. Residents can call the city for curbside pickup, or can drop off the appliances at the Municipal Recycling Center. The city avoids disposal fees by removing chemicals such as chlorofluorocarbons and selling the goods for scrap metal, thereby generating money for the City.

2. Watersheds, Water Bodies and Waterways

The City of Warwick maintains a Hazard Mitigation Strategy (HMS) document that follows the requirements of the Federal Emergency Management Agency (FEMA) in order to maintain the City's eligibility for grant funding. This document identifies and assesses potential hazards and risks and includes action plans to mitigate risk and impacts of potential hazards before they happen. The HMS must be updated every five years. Warwick's current HMS received City Council approval on May 22, 2012 (R-12-54).

Hazard mitigation and sustainable communities. The HMS explicitly links hazard mitigation to the concept of sustainable communities and to the idea of resilience:

“Disaster resilient” communities employ a long range, community-based approach to mitigation.... When natural hazard mitigation is combined with the standards of creating sustainable communities, the long-term beneficial result is smarter and safer development that reduces the vulnerability of populations to natural disasters.... Resilient communities may bend before the impact of natural disaster events, but they do not break. They are constructed so that their lifeline systems of roads, utilities, infrastructure, and other support facilities are designed to continue operating in the midst of high winds, rising water and shaking ground.... Resilient and sustainable communities' structures are built or retrofitted to meet the safest building code standards available. It also means that their natural environmental habitats such as wetlands and dunes are conserved to protect the natural benefits of hazard mitigation that they provide.”⁸

The natural hazards of most interest for Warwick that the HMS addresses are classified as atmospheric, hydrologic, or seismic. Atmospheric hazards are hailstorms, nor'easters, severe winter storms, temperature extremes, thunderstorms and lightning, tornados, and tropical cyclones. Hydrologic hazards include coastal erosion, droughts, floods and storm surges. Seismic hazards are earthquakes. In addition, the strategy also includes technological hazards of dam failure and hazardous materials events (such as chemical spills on highways). The Strategy update found that the highest risk scores for Warwick were for the following types of events: tropical cyclones (hurricanes and tropical storms), nor'easters, and severe winter storms, with flood, drought, and storm surge the next highest in risk.

Warwick's location and proximity to water on the western shore of Narragansett Bay, is a community asset, but it is also the potential source of the community's most damaging and destructive hazards. Warwick's prehistoric settlements were shaped by its proximity to waters for fishing and its relatively flat coastal plain that supported farming. Today, the water attracts residents, recreational uses, and shellfishing.

⁸ Ibid., p. 1.3

Warwick Hazard Mitigation Strategy Mission and Goals

Mission

The purpose of the Warwick multi-hazard Mitigation Strategy is to:

1. Provide a coordinated consistent set of goals for reducing or minimizing: human and property losses; major economic disruption; degradation of ecosystems and environmental critical habitats; destruction of cultural and historical resources from natural disasters;
2. Provide a basis for intergovernmental coordination in natural hazard mitigation programs at the state and local level;
3. Develop partnerships between the City and private sector, local communities and non-profit organizations in order to coordinate and collaborate natural hazard mitigation programs;
4. Identify and establish close coordination with local government departments and agencies responsible for implementing the sound practices of hazard mitigation through building standards and local land use development decisions and practices;
5. Provide for continuing public education and awareness about the risks and losses from natural-disasters, in addition to natural hazard mitigation programs, policies, and projects.

Warwick Hazard Mitigation Strategy, February 2011, p. 2.1

Goals

The goals of the Warwick Multi-hazard Mitigation Strategy are to:

1. Protect public health, safety and welfare;
2. Reduce property damages caused by natural disasters;
3. Minimize social dislocation and distress;
4. Reduce economic losses and minimize disruption to local businesses;
5. Protect the ongoing operations of critical facilities;
6. Reduce the dependence and need for disaster assistance funding after natural disasters;
7. Expedite recovery disaster mitigation efforts during the recovery phase;
8. Promote non-structural flood and coastal erosion measures to reduce the risk of damage to the surrounding properties and environmental habitats;
9. Establish a local Hazard Mitigation Committee to support, implement and revise the Warwick multi-hazard mitigation strategy and to provide the support necessary for an ongoing forum for the education and awareness of multi-hazard mitigation issues, program, policies and projects; and to
10. Provide for adequate financial and staffing resources to implement the Warwick Hazard
11. Mitigation Strategy.
12. Maintain an updated, FEMA-approved Local Mitigation Plan in accordance with 44 CFR 201 such that the City of Warwick is eligible to apply and receive assistance under federal hazard mitigation assistance programs.

The primary hazard Warwick continues to face is flooding. Approximately 3,379 acres in Warwick are located in a Special Hazard Flood Zone Area designated by the Federal Emergency Management Agency (FEMA). Flood risk in Warwick comes from three sources: flooding from the Pawtuxet River, heavy rains, and hurricane-related storm surge, all of which are exacerbated by the city's low-lying terrain in the vicinity of the Pawtuxet River. Other hazards include wind, erosion, rising heat and sea level change, winter storms, and earthquakes, as well as those resulting from the location of significant interregional roadways and the airport in the city, such as chemical spills. The concept of "risk" is also more complex and variable than most people generally think because risk is linked not only to probability but also to consequences. For example, the annual 1 percent prob-

ability of a 100-year storm means there is a 39 percent probability of the storm over 50 years. This can be more or less risky, depending on the situation and on actions taken to reduce the consequences of a storm. Moreover, a "1-in-100-year storm" does not mean that a storm of this magnitude would really strike at this frequency. In actuality, it is possible that multiple 100-year storms can strike in consecutive years or even in the same year.

In urban areas, flash flooding is an increasingly serious problem due to the removal of vegetation and replacement of ground cover with impermeable surfaces such as roads, driveways and parking lots. In these areas, and drainage systems, flash flooding is particularly serious because the runoff is dramatically increased. In addition stormwater runoff and debris flows also negatively



impacts public infrastructure such as roads and bridges as water collects and can create ponding conditions that may make certain roads impassible. This may interrupt road transportation and damage low elevation buildings. Road closures can be a critical issue in certain areas of Warwick as these events have the potential to isolate communities. The City should continue to implement mitigation measures and consider overall impacts of future developments within the local watersheds relative to flooding.

Hurricanes and Severe Storms. The highest risks for Warwick are associated with tropical cyclones, or hurricanes and other severe storms. Warwick has experience with the destructive potential of such storms. The Hurricane of 1938 created flood tides of over 12 feet above the normal high water line in Greenwich Bay, and resulted in the loss of over 700 permanent residences and over 100 summer homes along the coast of Warwick, as well as the complete destruction of Rocky Point Amusement Park on Warwick Neck. The Warwick Point Lighthouse, which sits on a 20 foot tall cliff, was undermined by a 38 foot recession due to heavy erosion. After the hurricane, the lighthouse was moved landward by 75 feet. The erosion and changing coastline not only damaged local infrastructure but also had an impact on habitats within the bay. Hurricane Carol in 1954 had sustained winds of 80 to 110 mph, and resulted in over \$3,000,000 worth of property damage in Warwick; flash flooding in Apponaug; and an estimated \$250,000 worth of damage to the recently rebuilt Rocky Point. Oakland Beach was the most heavily battered section of Upper Narragansett Bay. Apponaug, Chepiwanoxet, and Potowomut shores were littered with damaged houses, industrial structures, docks, and trees. Hurricane Bob in 1991 resulted in the spillage of over 100 million gallons of raw sewage into Narragansett Bay, resulting in a nine day shellfish bed closure.

Repeated coastal hazard impacts are particularly likely over the coming century with anticipated increases in extreme weather events and sea level rise resulting from climate change. These storm impacts will threaten human populations, harm infrastructure, and criti-

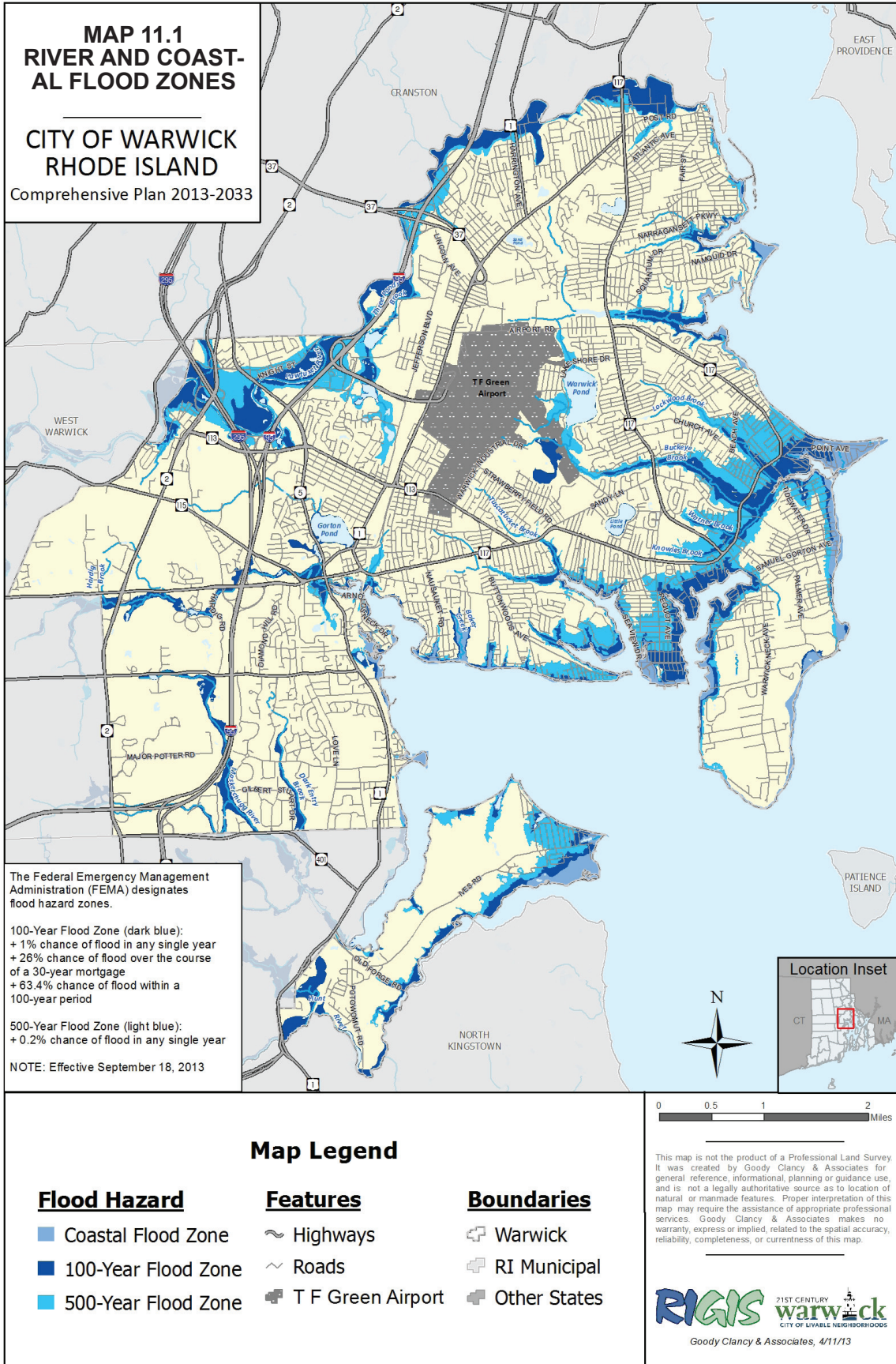
cal ecosystems. Climate change is discussed in greater detail later in this chapter.

Flood Mitigation and Management

Flood Prone Areas. The City of Warwick uses the FEMA Flood Insurance Rate Maps (FIRM) to determine the location of flood zones and flood prone areas. These maps were last updated in 2013. In Warwick, 3,379 acres of land, including hundreds of structures are located within a FEMA designated Special Flood Hazard Area (SFHA). An SFHA is delineated on a FIRM, and is mapped as Zone A. In coastal situations, Zone V is also part of the SFHA. SFHA's are areas subject to inundation by a flood having a one percent chance or greater of occurring in any given year. This type of flood, which is referred to as the 100-year flood (or base flood), is the national standard on which the floodplain management and insurance requirements of the Nation Flood Insurance Program (NFIP) are based.

The City of Warwick adopted a new Flood Ordinance in 2013 and also adopted the new Digital Flood Insurance Rate Maps (DFIRMs) as provided by FEMA. To further mitigation efforts the City is currently seeking to become a member of the Community Rating System (CRS) a program that supports flood mitigation efforts and provides flood insurance premium incentives for reducing risk within a community. The City is also working with RI EMA and property owners to elevate repetitive loss structures above the BFE.

Hazards and Critical Facilities. Of particular importance in mitigating a natural disaster in a timely manner is the continued operation of critical facilities. "Critical facilities" include those that deliver vital services, protect special populations, or have other special functions that if lost, or temporarily not operational, present an immediate threat to life, public health and safety. Critical facilities in Warwick include fire stations, police stations, schools, City Hall, hospitals, bridges with utilities, sewage treatment plant and lift stations, water distribution system and water tanks, Red Cross approved shelters, evacuation routes, and traffic control points. The vulnerability of a community includes the potential for direct



**MAP 11.1
RIVER AND COAST-
AL FLOOD ZONES**

**CITY OF WARWICK
RHODE ISLAND**

Comprehensive Plan 2013-2033

The Federal Emergency Management Administration (FEMA) designates flood hazard zones.

100-Year Flood Zone (dark blue):
+ 1% chance of flood in any single year
+ 26% chance of flood over the course of a 30-year mortgage
+ 63.4% chance of flood within a 100-year period

500-Year Flood Zone (light blue):
+ 0.2% chance of flood in any single year

NOTE: Effective September 18, 2013

Map Legend

Flood Hazard	Features	Boundaries
■ Coastal Flood Zone	≈ Highways	⊕ Warwick
■ 100-Year Flood Zone	~ Roads	⊕ RI Municipal
■ 500-Year Flood Zone	⊕ T F Green Airport	⊕ Other States

Location Inset

0 0.5 1 2 Miles

North Arrow

This map is not the product of a Professional Land Survey. It was created by Goody Clancy & Associates for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Goody Clancy & Associates makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

RIGIS 21ST CENTURY
warwick
CITY OF LIVABLE NEIGHBORHOODS

Goody Clancy & Associates, 4/11/13



damage to residential, commercial, and industrial property as well as schools, government and critical facilities.

Evacuation areas and routes. The following neighborhoods would have to be evacuated in case of a hurricane: Warwick Neck, Oakland Beach, Buttonwoods, Apponaug Cove, and Potowomut. Primary evacuation routes in Warwick are: Post Road, Warwick Avenue, Elmwood Avenue, Bald Hill Road/Route 2, Centerville Road, Toll Gate Road, Division Road, as well as I-95, Route 37 west, Route 4 and Route 295 north.

Emergency shelters. There are three Red Cross approved emergency shelters in the Warwick section of the Greenwich Bay watershed; in the Warwick's section of the Greenwich Bay watershed, Toll Gate, Pilgrim, and Warwick Veterans High Schools, each of which can accommodate about 1,000 people.

MARINE

The marine trades are a significant economic and social asset to Warwick. Greenwich, Apponaug and Warwick Coves contain some of the densest marina and boating facilities in the state. There are an estimated 30 marinas/yacht clubs providing almost 4,000 boat slips. Boating related business real estate in Greenwich Bay generates between \$500,000 and \$1million in tax revenue (HMS). In the event that a natural hazard destroys a portion of the tax base, even those property owners not directly impacted by the event would potentially be impacted by increased property taxes. In this context, it is important that the potential economic impacts of a natural disaster continue to be assessed in future hazard mitigation plans so that the resulting policy accounts for these potential impacts.

National Flood Insurance Program. In order to continue to participate in FEMA's flood insurance program, the City has adopted a new Flood Ordinance and the new Digital Flood Insurance Rate Maps (DFIRMs) effective December 3, 2010 (FEMA) and September 18, 2013. It also has adopted and enforces floodplain regulations.

2012 Hazard Mitigation Action Plan. The hazard mitigation action plan includes the following items⁹:

For the Planning Department:

- Elevate structures: help get financial assistance for Conimicut and Oakland Beach property owners
- Boat relocation sites: identify and secure agreements with property owners outside the floodplain for relocation of boats during major storm events
- Voluntary acquisitions: purchase and demolish about 25 properties at high risk of repetitive flood losses and restore the land
- Bellows Street mitigation study: develop and evaluate flood mitigation alternatives for the Bellows Street industrial park area

For the Warwick Sewer Authority:

- Protect sewer pump stations: identify and implement flood protection improvements, or relocate sewer pump stations in flood prone areas
- Relocate the Bellows Street sewer pump station
- Relocate the Knight Street sewer pump station
- Evaluate and upgrade the treatment facility levee

For the Engineering Department:

- Dam management plan: develop a plan to manage floodwaters in the Pawtuxet River through coordinated flow control at existing dams

For the Water Department:

- Water valve relocation: relocate the 42-inch water main valve subject to inundation

For the Emergency Management Agency:

- Identify and secure an alternative site for the Emergency Management Command

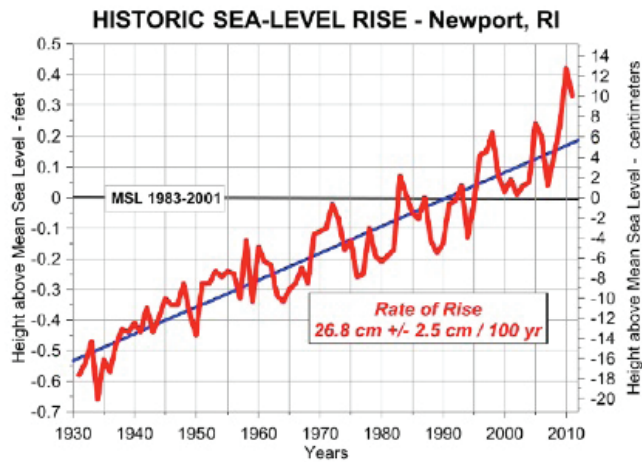
For the Public Works Department:

- Drainage inventory: complete a comprehensive drainage inventory and prepare a digital GIS map
- Road inventory: tie the existing road database to a GIS map

⁹ 2010 update, page 10.5

Figure 11.1: Newport, RI Sea Level Rise

Difference between average sea level at Newport, R.I., from 1983 to 2001 and mean annual sea level plotted for each year between 1930 and 2011. The blue trend line shows a 10.6 inch (26.8cm) increase in sea level per century. Graph courtesy of Jon Boothroyd, 2012. Data from: http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8452660



For the Building Department:

- Infrastructure inventory: inventory all private structures in the floodplain

The City is pursuing some of these actions, such as protecting the Wastewater Treatment Plant with better levees. Other actions await funding. For example, the City cannot put any inventories into a GIS system because it does not have GIS capacity.

Climate Change and Sea Level Rise

Climate is defined as the long-term weather average observed within a geographic region, and climate change refers to fluctuations in the Earth’s climate system as a result of both natural and manmade causes. The main issues surrounding climate change over the long-term are rising global temperatures, and the resulting increase in weather extremes such as more frequent floods, droughts and rising sea levels. Climate change and sea level rise may seem like relatively new issues facing coastal communities, but the reality is that these issues have been affecting communities like Warwick for several decades. In other words, climate change and sea level rise are not issues that are looming on the horizon or may at some point in the future be an issue, they are here now. In addition to the potential for displacement of coastal populations, threatened infrastructure, and intensified coastal flooding, consequences may also

include salt intrusion into aquifers that will contaminate drinking water supplies and that higher water tables will compromise wastewater treatment facilities in coastal areas. In Rhode Island, long-term records from the Newport tide gauge show that relative local sea level has risen 10.1 inches (plus or minus 1.2 inches) over the last century (Figure 11.1). At the same time, the land surface in Rhode Island is sinking at a rate of approximately 6 inches per century, according to a report in the Journal of Geophysical Research.

As a result of sea level rise, both hurricanes and “nor’easters” will be more damaging to property in Warwick, and coastal flooding effects will be felt farther inland. For instance, storm surge heights will increase as sea level rises, resulting in many more properties being damaged or destroyed during a storm—including inland properties that have never before experienced flood damage. Warwick’s coastal wetlands are also vulnerable to rapid changes in sea levels. Salt marshes will be inundated, causing significant loss of habitat for fish, shellfish, birds, and other wildlife, and making nearby recreation areas and public spaces more vulnerable to flooding.

Furthermore, infrastructure along Warwick’s coast will become increasingly susceptible to complications from rising sea levels. Residential and commercial structures, roads, and bridges will be more prone to flooding. Sea level rise will also reduce the effectiveness and integrity of existing seawalls and revetments, designed for historically lower water levels. Future increase in the relative sea level will increase the extent of flood damage over time. Lower elevation areas of the City that were formerly spared storm damage will become increasingly susceptible to flooding as storm surge reaches further inland due to both sea level rise in concert with a probable increase in the frequency and intensity of storms predicted from climate change.

Rhode Island Coastal Resources Management Program and Sea Level Rise

In January 2008, the CRMC revised its Coastal Resources Management Program (Section 145) to better address the realities of sea level rise and climate change and to set the stage for adopting future regulations. The

Figure 11.2: Potential Impacts from Sea Level Rise in 2100



Source: Sea Grant Rhode Island

new policy called for accommodation of a base rate of expected 3 to 5 foot rise in sea level by 2100, and that the CRMC should review these figures frequently and adjust them as necessary. This rate of sea level rise will guide the coastal program and the Rhode Island State Building Commission as they work to adopt coastal construction standards for siting, design, and implementation of public and private coastal activities. New standards may eventually incorporate considerations of increased freeboard into the state building code. In July 2008, the state building commission adopted the International Building Code standards, which implement stricter flood zone requirements. These include a one-foot freeboard elevation and more stringent building requirements in special flood hazard areas along the coast.

Rhode Island Climate Change Commission

The state legislature passed the Rhode Island Climate Risk Reduction Act in 2010 (RIGL 23-84) and established the Rhode Island Climate Change Commission with 28 representatives from the legislature, executive agencies, business and environmental organizations, and community groups. The Commission is charged with studying the projected impacts of climate change on Rhode Island, identifying methods to adapt to climate



change impacts, and identifying ways to mainstream climate adaptation into existing municipal and state plans and programs. The Commission has three working groups: Key Infrastructure and the Built Environment, Natural Resources and Habitat, and Human Health and Welfare.

The Commission has met twice as of November 2012. The Commission's 2012 progress report lists a number of programs and initiatives underway in Rhode Island that can be resources for climate change and sea level planning in Warwick. The most important action the City can take now is to explicitly recognize the potential impacts of climate change and sea level rise on the City of Warwick and begin integrating planning for these impacts in all relevant areas. Because the City will not be able to mitigate all these impacts with its own resources, it is important that the City forge strong relationships with the Rhode Island Climate Change Commission and its working groups.

The vulnerability of the built environment in Warwick and the value of insured property suggests that sea level rise is a serious threat to life and property. Storm surge floods could erode coastal areas and result in loss of life, property and infrastructure. Road transportation may be interrupted by ponding water, potentially isolating communities and damaging low elevation buildings. Future land use decisions should consider the impact of climate change. To help assess and consider the impact; shoreline change maps (1939-2003) are attached as in the appendix for use as a reference tool.

Flood Risk MAP Report

The Department of Homeland Security (DHS), Federal Emergency Management Agency's (FEMA) Risk Mapping, Assessment, and Planning (RISK MAP) completed (2012) a report for Kent County Rhode Island to provide the community with flood risk information and tools to use to increase resilience to flooding and better protect citizens. The study focused on approximately 57 miles of shoreline in Kent County utilizing detailed coastal analysis to develop flood hazard parameters. Utilizing census block data the report showed a reduced risk to Warwick resulting in a decrease of Special Flood Hazard Area in the amount of 1.01 square miles and a reduction of 1436 structures at risk.

RECOMMENDATIONS

GOAL 1

The City implements practices to conserve energy and use renewable energy.

POLICIES

- Encourage energy efficiency in municipal facilities and practices.
- Encourage energy efficiency by private property owners.

STRATEGIES

A. Develop a five year capital plan for adopting energy efficient systems and practices for municipal buildings and equipment to aim for a 25% reduction in energy use by 2033.

Actions

1. **Prioritize recommendations from the Whole Building Assessment Initiative reports for the pool and arenas and the Honeywell Energy Audit based on energy efficiency benefits and capital costs.**
2. **Develop a timeline for implementing the recommendations included in these plans.**
3. **Develop a plan for converting the municipal fleet to fuel efficient and alternative fuel vehicles.**
4. **Identify an appropriate location for electric vehicle charging stations.**

B. Develop and implement an energy demand reduction campaign.

Actions

1. **Develop an energy efficiency campaign for the public in conjunction with National Grid.**
The campaign can include information on how to improve energy efficiency in homes and buildings through techniques such as using energy efficient



light bulbs, wrapping pipes, installing insulation, using draft blocks, replacing aged heating and cooling systems, replacing single pane windows, and so on.

2. **Use state, federal and non-profit sources to promote energy efficiency.**
Support and promote weatherization programs offered through state and federal agencies (Weatherization Assistance Program of US Dept of Energy).
3. **Create a program to recognize businesses that adopt energy efficient/conservation techniques.**

C. Adopt land use policies and regulations that encourage reductions in energy demand.

Actions

1. **Encourage, incentivize and incorporate, as appropriate, use of energy efficient technologies in building and landscape projects.**
Adopt zoning and building codes that reward builders who incorporate energy efficient technologies, designs, and landscaping in their projects.
2. **Support policies in other elements of this plan that promote efficiency through compact growth patterns, improved road connectivity and alternative transportation modes.**
3. **Create a program to recognize businesses that adopt energy efficient/conservation techniques.**

D. Replace fossil fuels with renewable energy sources.

Actions

1. **Review the findings on wind energy on municipal properties to consider next steps and investigate installing solar panels on municipal buildings.**
2. **Provide regulations for renewable energy installations on private property in zoning and other ordinances, as appropriate.**
This includes reviewing the building code to identify and eliminate regulatory barriers or deterrents to renewable energy generation; ensuring that electric vehicle charging stations are an allowable

use; and providing for installation of small scale wind turbines and solar panels. Guidelines for how these technologies can be incorporated into building design should be included.

3. **Streamline and reduce regulatory barriers to green buildings, and develop incentives to encourage green construction.**
4. **Provide more convenient parking and/or free parking for energy efficient vehicles in municipal parking facilities and encourage similar practices by commercial property owners.**

GOAL 2

The City implements and promotes resource conservation and waste reduction.

POLICY

- Reuse materials, facilities and structures when possible.

STRATEGIES

- A. **Continue the City's high performance in recycling.**

Actions

1. **Develop a program to include multi-family developments and commercial properties in recycling programs, either through the City or through private companies**

GOAL 3

City facilities and practices are a model of sustainability.

POLICY

- Choose sustainable materials, methods and practices when possible.

STRATEGIES

- A. Make a checklist of sustainable criteria to be used in capital planning, operations and purchasing in order to promote energy efficiency and other sustainable practices.**

Actions

1. Use tools such as the STAR Community rating system (www.starcommunities.org), to create a set of tools and criteria to be used in Warwick.

GOAL 4

Warwick has an up-to-date hazard mitigation plan.

POLICY

- Support timely updates to the plan and implementation of action items.

STRATEGIES

- A. Keep the City’s Hazard Mitigation Strategy current and implement the action plan.**

Actions

1. Prepare the 2015 update.
2. Incorporate coastal restoration, including wetland and marsh restoration, as an integral part of the hazard mitigation strategy.
3. Ensure that there is adequate funding and administrative support to implement the recommendations in the Hazard Mitigation Strategy.

GOAL 5

Warwick is preparing for the impacts of extreme weather events and climate change.

POLICY

- Integrate mitigation and adaptation to climate change into City practices and plans.
- Work with the state’s Climate Change Commission.

STRATEGIES

- A. Educate the public to better understand the concept of community resilience and the meaning of probabilities and risk, especially for stream and coastal flooding.**

Actions

1. Create an Emergency and Disaster Preparedness section on the City website with information for individual households and on the City and state’s preparedness.
2. Work with the state and FEMA to make brochures and other information available on the City website, in the library, and at other city destinations, such as community centers.

- B. Improve the City’s stormwater management system to enhance infiltration and expand stormwater retention areas**

1. Implement green infrastructure stormwater management strategies and actions in chapters 4 and 10.

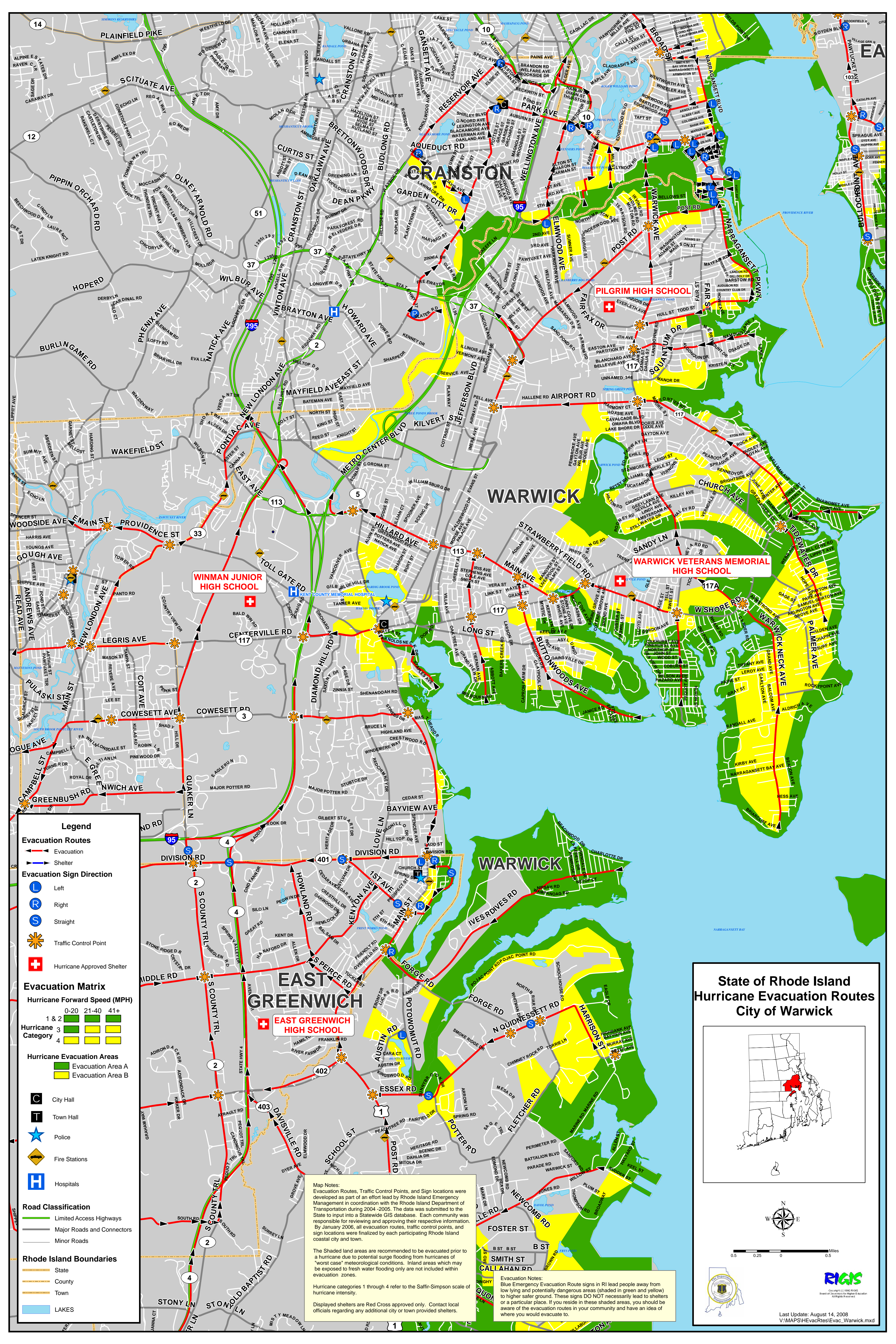


C. Begin planning to accommodate a base rate of expected 3 to 5 foot rise in sea level by 2100 in the siting, design, and implementation of public and private coastal activities.

Actions

1. **Work with CRMC on the Rhode Island Shoreline Change Special Area Management Plan (Beach SAMP) as well as appoint a Climate Change Task Force to work with the Rhode Island Climate Change Commission, City departments, and the public.**
2. **Study impacts and create adaptation and mitigation measures and require City departments to consider climate change impacts in all long-range planning and critical public infrastructure projects.**
3. **Ensure consistency between the Hazard Mitigation Plan, the Comprehensive Plan, SAMP plans, and the city's land use regulations.**
4. **Enhance education and community engagement through increased understanding of climate change and its potential impacts on the community.**
5. **Enforce building and zoning codes along the coast to protect residents from potential hurricane and tropical storm impacts, and to protect coastal wetlands.**
6. **Develop examples of attractive design solutions for elevating existing buildings and for development of new elevated buildings.**

A voluntary design manual could be developed by architecture students at Roger Williams or RISD for distribution to property owners, contractors, and architects in relevant parts of Warwick.



Legend

Evacuation Routes

- Evacuation
- Shelter

Evacuation Sign Direction

- Left
- Right
- Straight
- Traffic Control Point
- Hurricane Approved Shelter

Evacuation Matrix

Hurricane Forward Speed (MPH)	0-20	21-40	41+
1 & 2	Green	Light Green	Yellow
3	Light Green	Yellow	Orange
4	Yellow	Orange	Red

Hurricane Evacuation Areas

- Evacuation Area A
- Evacuation Area B

Road Classification

- Limited Access Highways
- Major Roads and Connectors
- Minor Roads

Rhode Island Boundaries

- State
- County
- Town
- LAKES

Other Symbols:

- City Hall
- Town Hall
- Police
- Fire Stations
- Hospitals

Map Notes:
 Evacuation Routes, Traffic Control Points, and Sign locations were developed as part of an effort lead by Rhode Island Emergency Management in coordination with the Rhode Island Department of Transportation during 2004-2005. The data was submitted to the State to input into a Statewide GIS database. Each community was responsible for reviewing and approving their respective information. By January 2006, all evacuation routes, traffic control points, and sign locations were finalized by each participating Rhode Island coastal city and town.

The Shaded land areas are recommended to be evacuated prior to a hurricane due to potential surge flooding from hurricanes of "worst case" meteorological conditions. Inland areas which may be exposed to fresh water flooding only are not included within evacuation zones.

Hurricane categories 1 through 4 refer to the Saffir-Simpson scale of hurricane intensity.

Displayed shelters are Red Cross approved only. Contact local officials regarding any additional city or town provided shelters.

Evacuation Notes:
 Blue Emergency Evacuation Route signs in RI lead people away from low lying and potentially dangerous areas (shaded in green and yellow) to higher safer ground. These signs DO NOT necessarily lead to shelters or a particular place. If you reside in these shaded areas, you should be aware of the evacuation routes in your community and have an idea of where you would evacuate to.

**State of Rhode Island
Hurricane Evacuation Routes
City of Warwick**

0.5 0.25 0 0.5 Miles

© 2006 RI GIS
 Last Update: August 14, 2008
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Future Land Use, Zoning and Urban Design

FROM A WARWICK RESIDENT

“ I want to see more ‘Main Street’ areas where people can walk, bike, eat and shop.”

“ There should be walkable neighborhoods with small attractive retail shops nearby with lots of street trees.”

A GOALS AND POLICIES

GOALS	POLICIES FOR DECISION MAKERS
Warwick has sufficient diversity of land uses to support a strong and stable tax base.	<ul style="list-style-type: none"> • Continue to balance land uses, particularly between regional retail and non-retail commercial uses. • Direct regional retail to the Route 2 Corridor.
Mixed-use centers provide walkable environments and new housing options.	<ul style="list-style-type: none"> • Support additional Village District zones. • Encourage neighborhood activity centers at major intersections combining retail, services and multi-family residences in a walkable environment.
City Centre Warwick (the Warwick Station Development District) is a major center of compact, higher-density, transit-oriented development.	<ul style="list-style-type: none"> • Implement the Warwick Station Development District Plan to become a major center of urban activity within Warwick and the region. • Develop City Centre Warwick as a Growth Center.
Warwick's neighborhoods are safe, attractive, well-maintained, and stable.	<ul style="list-style-type: none"> • Protect and support existing residential neighborhoods. • Minimize land use conflicts and limit development of undersized lots. • Use the Comprehensive Plan and the zoning ordinance to guide infill and redevelopment.
Major streets mix clusters of neighborhood-serving retail and services with housing.	<ul style="list-style-type: none"> • Provide regulatory options to balance retail, commercial uses and housing along major corridors. • Avoid commercial encroachment on residential areas except for mixed-use as proposed in the Plan.
Public and private development meets high standards of design.	<ul style="list-style-type: none"> • Establish design standards for public and private development. • Promote infill and redevelopment of outmoded/blighted commercial or industrial properties. • Ensure that proposed new residential, business and industrial uses are compatible with the character and surrounding area.
Warwick's environmental and open space networks are respected by new development.	<ul style="list-style-type: none"> • Support development options that enhance networks of open space, recreation, and environmentally sensitive land. • Encourage new businesses and industries to locate in areas where adequate public facilities already exist.
Warwick has a systematic approach to airport land use issues.	<ul style="list-style-type: none"> • Support development of land use agreements with RIAC.

B FINDINGS AND CHALLENGES

findings

Warwick is close to built-out and older non-residential areas will need to be redeveloped to meet the city's goals.

With few exceptions, development patterns in Warwick are auto-oriented.

There is retail development pressure on land adjacent to I-95 and the airport that is not in the Route 2 regional retail corridor.

Shopping centers and neighborhood retail east of I-95 need redevelopment to meet contemporary needs.

Warwick is beginning to create walkable neighborhood centers through the designation of City Centre Warwick (Warwick Station Development District) and Village Districts in Apponaug and Conimicut.

Warwick's zoning ordinance is based on conventional separation of land uses, with additional special districts and overlay districts.

The zoning ordinance needs to be modernized with illustrations and other elements to make it more user-friendly.

The official zoning map is available only in a zoning plat book in the Planning Department, making it difficult for property owners or prospective property owners to easily ascertain their zoning.

The growth of T.F. Green Airport and expansion of its uses "outside the fence" has problematic impacts on the city's land use pattern, neighborhoods, traffic, tax base, housing, and the environment.

challenges

Modernizing the zoning ordinance and upgrading the GIS-based unofficial zoning map created for this plan to a citywide GIS zoning map with legal force.

Providing more compact mixed-use, walkable, neighborhood centers.

Reducing the amount of low-density, low-value retail and services along major corridors.

Preserving continuity of neighborhoods and high quality of life with an expanding airport use.

Supporting economic development without adverse impacts on residential neighborhoods and traffic.

Directing commercial, industrial, and office development to appropriate areas of the city to promote implementation of the Comprehensive Plan and City Centre Master Plan.

Protecting environmental resources in a densely-developed community.

Limiting growth of traffic congestion in the context of constrained east-west circulation.



C WHAT THE COMMUNITY SAID

- Over eighty percent of survey respondents said that promoting mixed use, transit-oriented development at Warwick Station, and village development with housing, restaurants and shops in a Main Street-style setting is “very important” or “somewhat important.”
- A majority of respondents said that more land should be devoted to village, Main Street development. Most respondents saw the amount of land dedicated to all other land uses as “about right,” except for natural areas, recreational facilities, and boating and waterfront businesses, of which they felt the city needed more.
- When asked what kind of development they would like to see more of in the city, with multiple selections possible, most respondents indicated commercial/residential mixed use, single-family homes, and neighborhood retail.
- Over 60% of survey respondents indicated that improving the appearance of major roads and commercial corridors is “very important.”
- In public meetings, attendees also supported making village centers into hubs of walkability, amenities, events and mixed-use development; and working with the state to implement open space uses at Rocky Point.

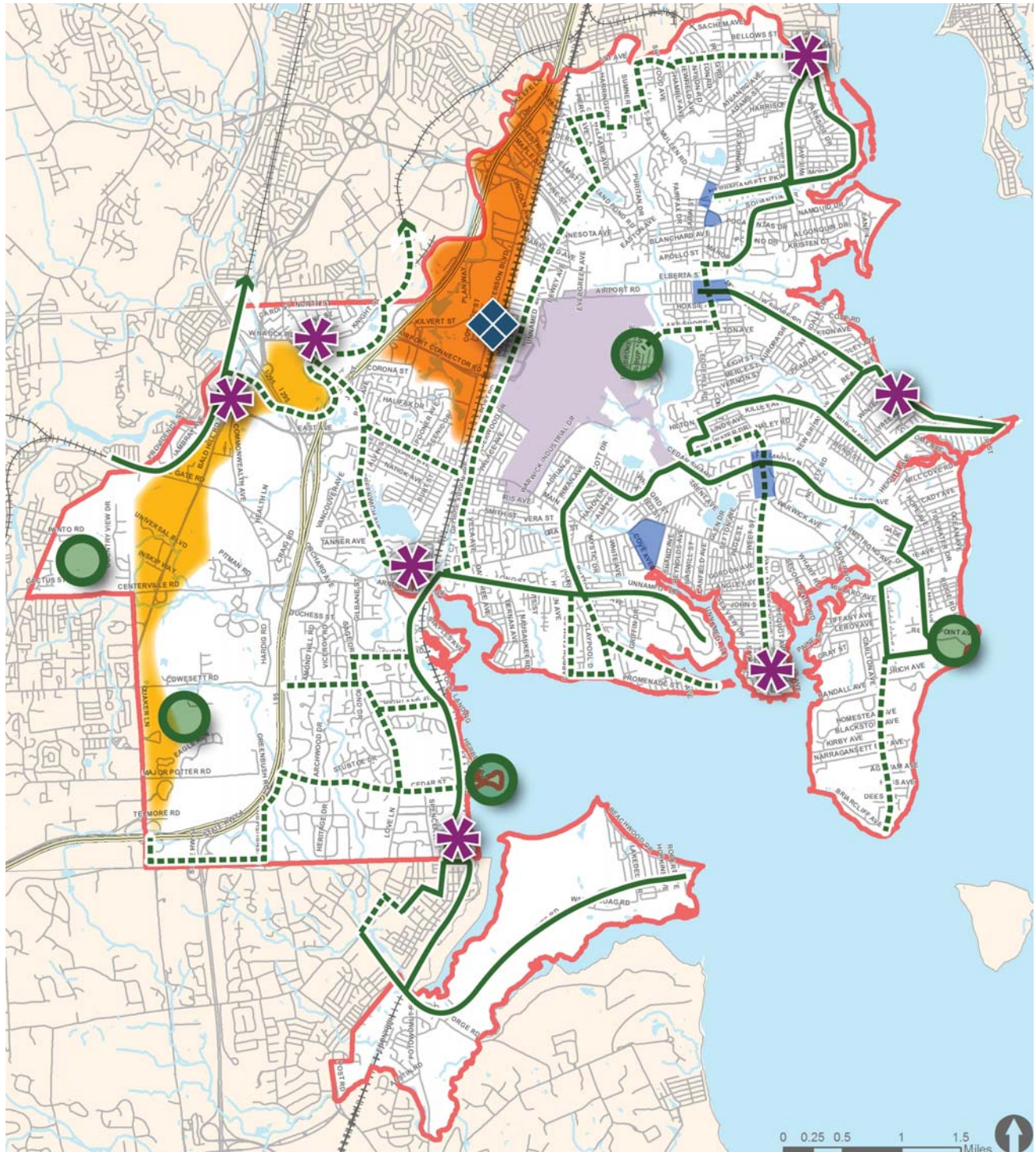
D EXISTING CONDITIONS

Land use patterns and decisions are influenced by population and economic growth (which both create market demand), transportation access and opportunities, the availability of infrastructure, environmental constraints, and the quality of life potential reflected in school quality, parks and recreational opportunities, and cultural amenities. Most development decisions are made by the private sector, but those decisions occur within a land use framework created by the comprehensive plan, the zoning ordinance and other development regulations, and influenced by public investments, incentives and disincentives. These regulatory and incentive frameworks will not, by themselves, cause development of a specific type to happen, but they can encourage it.

Every community comprehensive plan or comprehensive plan contains a Future Land Use section and map. This chapter and map sets forth a policy framework for the physical development of the City of Warwick, directing the pattern, distribution, density and intensity of land uses that will, over time, best achieve the comprehensive plan's goals:

- Development of walkable mixed use centers in historic village locations and important commercial intersections
- City Centre Warwick (the Warwick Station Development District) as a robust transit-oriented development area
- Maintenance of a balance of regional retail and business/light industry land uses for stable tax revenue and jobs
- Support for stable single-family neighborhoods
- Encouragement of multi-family housing in walkable environments and affordable to households across the income spectrum
- More connectivity and alternatives to the car
- An open space network for recreation and preservation of environmentally sensitive areas.

Strategic Priorities



- MIXED-USE CENTERS**
- Warwick Station Transit-Oriented Development
 - Village Districts
 - Neighborhood Activity Centers

- CORRIDORS**
- Bald Hill Enhancement Corridor
 - Technology/Industry Innovation Corridor
- OPEN SPACE**
- Enhanced Public Open Space

- CONNECTIVITY AND GREEN CORRIDORS**
- Existing Bicycle Routes
 - Conceptual Pedestrian/Bicycle Network

The plan aims to direct the most efficient, functional, cost-effective and aesthetically pleasing way to provide sufficient land to meet demand for various land uses in the future. Because Warwick, like other Rhode Island cities, does not have a large amount of land that has not been previously developed, land use changes in the future will increasingly involve redevelopment of previously used lands.

1. Existing Land Use

The pattern of existing land uses in the City of Warwick was discussed earlier in this plan in Chapter 3 and exhibits these features:

- Warwick's original villages, with some exceptions, have lost some of their original character over time. Pawtuxet Village retains a characteristic village environment and other historic village such as Apponaug, Conimicut, Natick, and Pontiac have retained a small-scale, historic feel to various degrees.
- A majority of Warwick's land is occupied by residential uses, with single-family dwellings the predominant residential land use. About two-thirds of the residential uses are at medium densities of two to five units per acre. Multi-family apartment and condominium developments are scattered around the city and mostly garden-apartment style. Most are located in pods off main roads and lack connections to adjacent land uses.
- Warwick hosts a major regional retail cluster in the Route 2/Bald Hill Road corridor with two malls, numerous big box-anchored shopping centers, auto dealerships and national chain restaurants. Internal connections among the developments are lacking and each development has its own curb cuts, resulting in traffic congestion. Changes in shopping preferences are endangering this twentieth-century model of suburban retail.
- East of the Route 2 corridor and I-95, retail and service uses are typically found in one of two configurations: 1) auto-oriented commercial strips and neighborhood shopping centers at major intersections; and 2) small-scale development along major streets, sometimes in buildings originally used

as residences. Commercial corridors such as Post Road, West Shore Road, Warwick Avenue, and Airport Road may be accessed from nearby neighborhoods by walking, but they were not designed to provide safe and convenient pedestrian access. The neighborhood retail corridors and clusters have not been upgraded in decades and have numerous vacancies.

- Offices uses lie predominantly west of the airport in a few locations: the southern portion of Route 2, where the regional headquarters of Metropolitan Life Insurance can be found; close to Kent County Memorial Hospital, where a cluster of medical office uses is located along portions of Tollgate and Centerville Roads; Apponaug Village; and scattered along major roads in small buildings.
- Warwick's industrial areas reflect their origin in the late nineteenth and early twentieth centuries, when access to rail and to water was important. The major concentration of light industrial and warehouse uses is along Jefferson Boulevard, with smaller light-industrial neighborhoods southwest of Apponaug Village and northwest of Pawtuxet Village at the northern edge of the city.
- Open space uses are distributed throughout the city but are not well-connected or networked.
- Transportation uses include the approximately 1,120 acres of T.F. Green Airport, as well as railroad and interstate rights of way.

2. Corridor Land Use Issues

The arterial roads in Warwick link the city's historic villages and the many subdivisions developed over the last 60 years. Many of these road corridors exhibit a mix of land uses, some of which are obsolete and no longer be optimal for the future from functional, design, environmental and market points of view. It is along these corridors and intersections that Warwick needs to consider new approaches to land use. The character and potential land use issues in sixteen road corridors are discussed below.

A. POST ROAD

Post Road is the longest stretch of highway that runs through the city (US 1A north of Elmwood Avenue to Pawtuxet Village, and US 1 south of Elmwood Avenue). From Pawtuxet Village at the Cranston line, it proceeds southerly through the entire city and is the only road which extends through Warwick proper into Potowomut. Six segments of Post Road, from north to south, are as follows:

1. Post Road Pawtuxet Village to Warwick Avenue:

This area is characterized by commercial development at each end, in historic Pawtuxet Village and at the intersection with Warwick Avenue, with residential uses predominating along most of the segment. Strip commercial development, common elsewhere in the city, is not evident here.

Land use issues:

- Preservation of residential uses and avoidance of commercial sprawl
- Historic preservation and compatible changes in and around Pawtuxet Village
- Potential impacts of any expansion of Warwick Industrial Park (north of the corridor on Warwick Ave)
- Existence of many small lots (less than 7,000 square feet)

2. Post Road Warwick Avenue to State Route 37:

Single family development, mostly high- and medium-density, can be found in the northeastern portion of this segment of Post Road between Warwick Avenue and the Aldrich School site and Wal-Mart Plaza, with intense commercial development at the southwesterly end of the segment. The Cranberry Bog area includes a mix of office, retail, multi-family, and a small number of single family homes. Similarly, the area adjacent to Sand Pond contains a mixture of residential and well-worn dense commercial strip development. Large expanses of impervious surfaces and multiple curb cuts characterize the commercial and multi-family development sites.

Land use issues:

- Preservation of residential character between Warwick Ave and Aldrich School
- Upgrade and modernize obsolete commercial strip development uses and design with design and development standards to be applied to redevelopment projects
- Implementation of green design and green infrastructure
- Traffic and access management to eliminate excessive curb cuts

3. Post Road—State Route 37 to Greenwood Bridge:

This segment is overwhelmingly non residential in character with retail, office and large scale commercial uses and large expanses of impervious surfaces. There is also a small pocket of single and multi family residences south of Strawberry Field Road West bounded by T.F. Green Airport, Main Ave., and Post Road/New England Institute of Technology on the east, to the south, and at the west, respectively. Traffic counts in this area, particularly at and around Airport Road, are the highest in the city. This Plan recommends that the City study and consider an amendment to the Warwick Zoning Ordinance to establish a “floating zone” which is a tool that would provide residents an opportunity to rezone certain areas from residential to an airport convenient or dependent use should the residential community decide that they want to proceed in that manner.

Land use issues:

- Future land use in the residential enclave and potential change to non-residential, airport-related uses
- Implementation of the City Centre Warwick Master Plan with consistent land uses to make Centre City Warwick a walkable, mixed-use growth center
- Land Use impacts, such as traffic, parking, lack of pedestrian connections and pollution from airport expansion.
- Reuse of New England Institute of Technology properties
- Discouragement of big box retail in this location

4. Post Road—Greenwood Bridge to Veterans’

Memorial Drive: This segment is characterized by a variety of land uses:

- Intensive commercial activity along the west side of the roadway heading south to Potters Avenue
- Highly developed commercial and medical uses on the east side to Myrtle Avenue
- Mix of office, residential, retail and open space.

Land use issues:

- Preservation of non-commercial character south of Potters Avenue and Myrtle Avenue
- Potential commercial encroachment into residential areas (particularly the Greenwood neighborhood)
- Integration of green, walkable, and high quality design and development standards for redevelopment of non-residential properties and property near Gorton’s Pond

5. Post Road—Apponaug (the circle and Veterans’

Memorial Drive) Post Road in Apponaug exhibits a heavy concentration of almost all kinds of land uses, including industrial. Although the area is described as a village center, in 2013 it is unfriendly to pedestrians because of an auto-dominated, outmoded and congested circulator system. In 2014 the RIDOT will begin construction of the Apponaug bypass a roadway project that will bypass the Apponaug Business District significantly reducing average daily vehicle trips in the village center, allowing for construction of additional on street parking and a new bike lane, creating a dramatically more efficient, safer, accessible, and sustainable transportation facility. This project, along with a new village-zoning district, is intended to help the City and the State realize the long-term socioeconomic revitalization goals for the area. Myriad land use and transportation issues and a new village concept in Apponaug discussed in detail in the 1982 Apponaug Village Study will be addressed with the implementation of the circulator project and village zoning.

Land use issues:

- Potential expansion of village zoning to extend to the nonresidential areas on Veteran’s Memorial Drive, the Apponaug Cover waterfront, and the Apponaug Mill site
- Establishment of a civic plaza
- Establishment of greater internal connectivity and waterfront access

6. Post Road Centerville Road to Division Street

including Potowomut: Except for commercial development clustered at major intersections (Apponaug Four Corners, Cowesett Road, and Division Street), residential uses are predominant. Most of the non-residential land uses are located along the east side of Post Road. The west side of Post Road between Cowesett Road and two lots south of Corey Avenue is entirely residential. As of 2013, there is no continuous linkage of commercial development along either side from Centerville Road (Apponaug Four Corners) to Division Street. This area of Post Road contains more vacant parcels than other segments so there may be pressures to develop remaining tracts. Some of the tracts have been approved for multi-family and some zoning variances have been granted for small-scale office uses.

Land use issues:

- Preservation of residential character
- Limits on small scale office use
- Implementation of green and high quality design and development standards to ensure new development is compatible with existing in terms of impacts and design
- Potential impacts of potential institutional expansion of the Trudeau Center
- Development impacts land abutting the sensitive Mary’s Creek, Thatch Cove, and Mary’s River
- Historic preservation in the Arnold’s Neck Drive vicinity
- Avoid expansion of car dealerships, gas stations and auto repair

- Explore options for senior housing and senior care facilities
- Potential to apply mixed-use zoning along Post Road at the East Greenwich border to extend the East Greenwich *Main Street* concept

B. WARWICK AVENUE

Warwick Avenue is an intensely developed arterial road characterized by long rows of commercial strip development and high traffic counts, particularly at Airport Road. It is also known as State Route 117 up to Airport Road and, south of Airport Road moving southerly to West Shore Road, it is known as State Route 117A. For the purposes of this discussion, Warwick Avenue will be divided into three sections:

1. Warwick Avenue Cranston line to Airport Road:

Continuous commercial development of all types including retail, office, heavy commercial and light industrial land uses in obsolete designs with expanses of impervious pavement, multiple curb cuts, obtrusive signage and few green areas is characteristic of this corridor segment. One portion of the corridor, around and across from Posnegansett Lake, is residential. There are three environmentally fragile water systems in this area, the Pawtuxet River, Posnegansett Lake, and Spring Green Pond. There is limited developable vacant land.

Land use issues:

- Deteriorating conditions—disinvestment and blight—in the strip between the Cranston line and Post Road require updated design and development standards
- Establishment of access management, design and development standards
- Potential impacts of development and redevelopment abutting the lake
- Proximity of airport noise near Spring Green Pond
- Potential impacts of development on sensitive wetlands and Spring Green Pond
- Reduction of traffic conflicts and establishment of higher quality development, especially at intersections with Airport Road and West Shore Road

- Preservation of residential district from commercial intrusion

2. Warwick Avenue Airport Road to Sandy Lane:

This is an area comprised of dense commercial strip development at the northern end near Airport Road and smaller, less concentrated commercial activity near Sandy Lane. The central portion is a rather hazardous, narrow roadway containing a variety of land uses at fairly high densities. This stretch is comprised of single and multi family residences, retail, office and institutional uses. Except for the established commercial pattern at either end, the remaining interior land uses are not linked in strip development fashion. However, the lots between Church Avenue and Old Warwick Avenue hold substantially residential development. Vacant sites are limited.

Land use issues:

- Potential development impacts on Buckeye Brook
- Preservation of predominantly residential character between West Shore Road and Old Warwick Avenue
- Establishment of access management, design and development standards

3. Warwick Avenue Sandy Lane to West Shore Road:

Large-scale retail uses—Warwick Plaza and the Super Stop and Shop—occupy sites on Warwick Avenue between Sandy Lane and the intersection with Oakland Beach Avenue. South of this location a mixture of single and multi family, school, industrial and commercial uses eventually change to rural farmland up to West Shore Road, represented by the 44- acre Morris Farm which has been preserved for rural uses by the purchase in 2000 of development rights (with state and city funds). This preservation effort implemented a priority of the city's last comprehensive plan.

Land use issues:

- Potential development impacts on Warner and Parsonage Brooks wetland ecosystems and associated water bodies.

C. WEST SHORE ROAD

West Shore Road (State Route 117) is an important east/west access road in Warwick. For the most part, it is a highly developed arterial with identifiable residential and commercial segments, with the exception of the Conimicut Village zone, which offers a mixture of various land uses. A description and analysis of West Shore Road is presented below in four separate divisions.

1. West Shore Road Warwick Avenue to Church Avenue: Except for the commercial use around the intersection of West Shore Road and Warwick Avenue, residential land use dominates the streetscape up to Conimicut Village at Cambridge Street on the east side. The village contains a high density clustering of many different uses and has Village Center zoning. Toward the southern end of the village, residential uses begin to outnumber other uses up to Church Avenue. There are also a few vacant lots.

Land use issues:

- Preservation of residential land uses and limits on commercial intrusion
- Enhanced concentration of retail, office, and other small scale commercial uses in Conimicut Village
- Potential development impacts on Lockwood Brook and Spring Green Pond
- Establishment of commercial design and development standards

2. West Shore Road intersection at Warwick Avenue to Oakland Beach Avenue: This segment of West Shore Road offers a scenic residential atmosphere for the most part. Some of these residences are at low densities, especially south of Sandy Lane. The area has one of the more picturesque and valuable wildlife, brooks (Buckeye), and marshland habitats in the city (located between Bend Street and Sandy Lane on east and west sides, some of the lots are city owned). Parsonage Brook runs parallel to West Shore Road in this section as well. There are small pockets of commercial activity at the intersections of Warwick Avenue and Oakland Beach Avenue. There are some vacant lands particularly between Warwick Avenue and Oakland Beach Avenue.

Land use issues:

- Preservation of residential character and limits on commercial intrusion
- Impacts of potential development on the brooks
- Design standards for commercial uses

3. West Shore Road Oakland Beach Avenue to Wilde’s Corner at intersection with Sandy Lane: Intense strip development consumes almost the entire length of this segment of West Shore Road. There is a single-family residential between Taplow Street and Hawksley Avenue on the south side. In general, the strip contains many large parking lots, often without curbs, allowing some cross-parcel travel by motorists.

Land use issues:

- Limit commercial intrusion in residential areas
- Establishment of modern green, development and design guidelines for redevelopment
- Establishment of access management, design, and development standards

4. West Shore Road Wilde’s Corner to Post Road in Apponaug: This end of West Shore Road is essentially residential with the exception of Wilde’s Corner, intersections with Buttonwoods and Nausauket Avenues, and Apponaug. Much of Wildes Corner is characterized by old-fashioned commercial development including used car sales and a gas station. New development at the Sandy Lane and West Shore Road intersection brought upgrades including use of low-impact development design principles, significant landscaping, and streetscape and traffic circulation improvements. There are several vacant properties in this segment of West Shore Road. Wilde’s Corner west of Tuscatucket Brook to Post Road in Apponaug is mainly residential with a number of home operated and some small businesses along this heavily traveled way. There are very few vacant sites.

Land use issues:

- Establishment of green and high quality design and development standards for new development and redevelopment
- Potential development impacts on Tuscatusket Brook

D. CENTERVILLE ROAD

Known as State Route 117, this heavily-trafficked arterial runs from Apponaug Four Corners in a due westerly direction to the West Warwick line. Traffic is steady and can be very heavy at the Four Corners, Bald Hill Road and Quaker Lane intersections, and the Route 95 interchange. Except for concentrations of commercial activity near Apponaug Four Corners, Interstate 95, Bald Hill Road and Quaker Lane, and to a lesser extent New London Avenue, land uses are essentially residential.

Over the years, this arterial from the RT 95 interchange east to 115 has been subject to several zone changes to office. Given this transformation remaining residentially zoned parcels located along the northern border of this section of Centerville Road may be considered for office use. Due to major traffic along this roadway expansion of medical office, uses in this area need careful design to share parking and drive access onto Centerville Road. As a sub category of office, medical office tends to generate additional vehicle trips per day than a typical professional office and as such the latter is preferred as being more compatible. Innovative mixed-use scenarios whereby the site design includes interior roadways, shared parking and limited access onto Centerville Road present practical alternatives.

1. Centerville Road from I-95 to Hardig Road: Office uses can be found north of Route 117 on Centerville Road, with residential neighborhoods behind the corridor lots.

Land use issues:

- Highway exit land uses are inappropriate for the context
- Potential impacts of nonresidential uses on residential character and traffic

2. Centerville Road from Hardig Road to West Warwick:

This segment of Centerville Road to Bald Hill Road is predominantly residential to Scott Elementary School where it transitions to a mix of residential and office/educational uses. Approaching the Bald Hill Road overpass the land use transitions to retail. Further west, the surrounding land uses are commercial to Quaker Lane, followed by a transition to residential uses on the Warwick side of Centerville Road to the West Warwick line.

Land use issues:

- Access management (limit curb cuts)
- Potential impacts on residential areas of additional nonresidential development
- Single lane roads and traffic congestion

E. BALD HILL ROAD AND QUAKER LANE

Once a rural highway connecting Providence and “South County,” Bald Hill Road/Route 2 has evolved into a major regional commercial corridor. In Warwick, the northern part of the corridor, from the Cranston line to the water tanks at Bald Hill contains two regional shopping malls, several shopping plazas and other smaller retail establishments. The second half, from the water tanks south to Division Street has been transformed by the establishment of three major commercial developments. These developments are characterized by “super stores:” large-scale retail operations that specialize in high-volume discount sales and new car dealerships.

1. Bald Hill Road—Cranston line to and including the water tanks at Bald Hill:

This part of Bald Hill Road embraces the largest concentration of large-scale shopping centers in the city and the state. In addition, there are numerous mid size and some smaller commercial developments. With only a few scattered residences and virtually no vacant lots, the area has high traffic counts.

Bald Hill Road from Route 113 to Route 115 is anchored by the Rhode Island Mall and has older retail strips in need of renovation. A series of undersized, disjointed lots and physical constraints associated with slope, high water table, and stony soils present challenges to redevelopment.

Warwick Mall is located in flood hazard areas and suffered significant flooding in 2010.

Land use issues:

- Revitalization, expansion, and continuation of the commercial corridor without adversely affecting traffic and the adjacent residential zoning district.
- Access management and cross-parcel access
- Opportunities for more pedestrian-friendly shopping areas
- Flood hazard

2. Bald Hill Road South of water tanks at Bald Hill including Quaker Lane to Division Street:

The remainder of Bald Hill Road runs from south of Target (on both east and west sides) to the intersection with Quaker Lane just south of the Kent County Courthouse site. Vacant land on this end of Bald Hill Road is rapidly being consumed by large-scale commercial development such as new car dealerships. That this development is a significant traffic generator is evident from the increasing traffic congestion centered on the intersection of Route 2 and Pace Boulevard as well as at the entrance to Target Plaza to the north. Quaker Lane runs from Centerville Road south to Division Street, with the centerline of the road as the boundary with West Warwick. Development consists largely of office, new car dealerships, and heavy commercial activity. Vacant lands exist primarily in the north central section.

Land use issues:

- Access management, design and development standards for high quality commercial development and redevelopment and mixed-use opportunities
- Physical constraints including slope, high water table, stony soils, open space loss

F. JEFFERSON BOULEVARD

The most dominant and visible industrial corridor in Warwick is Jefferson Boulevard and adjacent areas. With municipal sewerage, good access to Interstate 95, and vacant parcels, the area includes many industrial enterprises and a growing number of office uses, and to a lesser extent, wholesale developments. Small residential enclaves include single family homes between Illinois and State Avenues (both the west and especially the east side), several single and two family dwellings on the west side just north of Kilvert Street, and a row of historic duplex style mill houses south of the Elizabeth Mill site up to Airport Access Road (both east and especially west side). This area is adjacent to the intermodal zoning district comprised of City Centre Warwick, the mill house, and Elizabeth Mill, with potential for expansion of the intermodal district. In addition, the Pawtuxet River at the far north and the Three Ponds in the mid southern section are located in this area.

Land use issues:

- Promotion of technology/innovation/light industrial businesses with business park atmosphere/amenities
- Limit other commercial land uses to avoid expansion at the expense of desired technology/light industry uses.
- Historic preservation of the Elizabeth Mill
- Implementation of the master plan for City Centre Warwick (Warwick Station Development District)
- Expansion of City Centre Warwick

G. GREENWICH AVENUE AND LAMBERT LIND HIGHWAY

Lambert Lind Highway begins at the Cranston line and continues south about 300 feet past where the Pawtuxet River crosses under said highway. At this point, the name changes to Greenwich Avenue and runs southerly into Apponaug. This arterial primarily contains highly developed retail and other commercial uses north of Main Avenue. There is also a clustering of

multi family buildings (for the elderly) in this section just south of the Pawtuxet River. The land south of Main Avenue encompasses primarily single family dwellings. Commercial activity is located at both ends of this stretch and several office uses (some of the customary home occupation varieties) are situated between these points. Traffic along this section of Greenwich Avenue is light compared to other major arterials.

Land use issues:

- Potential impacts of nonresidential uses on neighborhoods
- Potential impacts of development on Gorton’s Pond, Little Gorton’s Pond, and the Pawtuxet River

H. MAIN AVENUE

Main Avenue, also known as State Route 113, is an important east/west arterial for motorists. The section between West Shore Road and the Greenwood Bridge is almost completely non commercial in nature, with single family residences, the airport runway, and the airport runway protection zone, and the next segment, between Greenwood Bridge and Greenwich Avenue, is predominantly single family residential. There are commercial uses at the intersections of Post Road and Greenwich Avenue, and the interior portion along the north side includes several office uses (including some customary home occupations).

Land use issues:

- Preservation of residential uses
- Potential for non-residential uses on limited area of Main Avenue with design compatible with the neighborhood
- Proposed commercial rezoning shall be flexible to allow for unknowns related to final re-configuration of Main Ave for Airport runway expansion.

I. TOLLGATE ROAD

This street can be considered a secondary arterial road. It runs from its intersection with Centerville Road in a northwesterly direction to the West Warwick line and is

increasingly characterized by medical office buildings because of the proximity of Kent County Hospital. However, residential uses persist along with farmland and some vacant parcels. The corridor west of Bald Hill Road is primarily residential with some office and heavy commercial use.

Land use issues:

- Potential medical uses to be designed to avoid adverse effects on traffic or residential areas

J. AIRPORT ROAD

Although a comparatively short stretch of road (about one and one half miles), this corridor is heavily traveled and developed, serving as one of City’s important east/west traffic corridors. The eastern edge contains a rather intense mixture of retail, office and residential use. The central portion is dominated by airport property, a farm and industrial plat (north), and the western side near Post Road is entirely non residential.

Land use issues:

- Potential traffic impacts of future development or redevelopment
- Design and development standards to update the function and appearance of the area
- Avoid big box development incompatible with City Centre

K. DIVISION STREET

Division Street, also known as State Route 401, is the boundary between Warwick (north side) and East Greenwich (south side), running from Greenwich Cove at the east west to Quaker Lane. This arterial is a moderately to somewhat heavily traveled and provides direct access to Interstate Route 95 and State Routes 2 and 4. The small section to the east of Post Road is almost entirely non residential, including marina, industrial and heavy commercial uses. Between Post Road and State Route 4, Division Street is low-density residential. Some of the dwellings east of Love Lane and west of Post Road are historically significant. The area between Route 4 and Route 2 (Quaker Lane) consists



mostly of heavy commercial and retail uses. There are a limited number vacant parcels with potential constraints brooks and wetlands in the vicinity.

Land use issues:

- Potential impacts of nonresidential development on residential areas, historic resources, and environmentally sensitive areas
- Impacts of high traffic speeds

L. SANDY LANE

Sandy Lane is a secondary east-west arterial road that intersects West Shore Road in two locations: near Draper Ave at the east and at Wildes Corner at the west. Except for commercial development around the Warwick Avenue and Wildes Corner intersections, Sandy Lane is entirely residential. There are several small sized vacant lots.

Land use issues:

- Preservation of residential character

M. ELMWOOD AVENUE

Approximately a mile in length, Elmwood Avenue (U.S. Route 1) runs from its intersection with Post Road to the Cranston line. At best, the area can be described as a mixture of multiple uses (many incompatible with one another), including auto repair, used car sales and service, industrial and office uses and basically lacking any site design considerations. Like that portion of Warwick Avenue north of Post Road, it is an older section of the city that would greatly benefit from a facelift and major renovations.

Land use issues:

- Design and development standards to upgrade the function and appearance of the street through redevelopment
- Impacts of auto-oriented uses in shallow lots on residential districts

N. EAST AVENUE

East Avenue (State Route 113) proceeds from its intersection with Main Avenue west to the West Warwick line. The section between Main Avenue and Bald Hill Road is dominated by interstate highway property, large scale retail, and school properties. The remaining segment includes mostly high density one, two and multi family residences as well as some businesses (some of which are located in residential structures). Some of the dwellings can be considered historically valuable and are similar to the mill homes identified along Jefferson Boulevard.

Land use issues:

- Design and development standards to upgrade the function and appearance of the street through redevelopment
- Historic preservation where appropriate

O. WEST NATICK ROAD

Because it borders the Pontiac neighborhood and provides access to the Warwick Mall, Lambert Lind Highway, and Route 2, West Natick Road it merits review. Almost entirely commercial, it runs from the intersection of Old Greenwich Avenue west, past Lambert Lind Highway, to the West Warwick line.

Land use issues:

- Design and development standards to upgrade the function and appearance of the street through redevelopment
- Limits on commercial intrusion in residential areas
- Preservation and enhancement of the historic village of Pontiac

P. OAKLAND BEACH AVENUE

The segment of Oakland Beach Avenue north of West Shore Road to Warwick Avenue is a short stretch of road with a mix of vacant lots, heavy commercial uses, and a few residences.

Land use issues:

- Limits on expansion of Warwick Avenue’s intensive commercial uses.
- Design and development standards to upgrade the function and appearance of the street through redevelopment

municipal taxes and expansion of RIAC property has an impact on the City’s budget.

FUTURE LAND USE

3. City-Airport Land Use Issues

The Rhode Island Airport Corporation (RIAC) master plan for T.F. Green Airport has resulted in the airport buying additional lands to accommodate runway expansion and accompanying impacts. The Winslow Athletic Fields have been relocated. In addition to the runway expansion plan, RIAC from time to time has acquired properties that are not adjacent to the airport and which RIAC leases to non-airport businesses. The City is concerned about this expansion of RIAC ownership because it takes taxpaying property off the rolls, since RIAC, as a state entity, does not pay

The Future Land Use Map (Map 12.1) shows the distribution of general land use categories (residential, commercial, industrial, mixed-use, open space, and so on) that will set the framework for achieving the goals of the Comprehensive Plan. It is not a zoning map and should not be treated as a zoning map. The Future Land Use Map for the most part shows general, consolidated land uses. The consolidated land uses on the map take two forms: a) consolidation under one category of land uses with similar impacts, for example, a “Commercial” designation for areas where retail, service and office uses already exist or where they would be appropriate; or b) consolidation under a predominant use—for example, where an area is predominantly residential but also includes schools, churches, and a few scattered retail or office uses.

General Principles to Guide Future Land Use

- Preserve existing predominantly single-family residential neighborhoods.
- Preserve environmentally-sensitive lands and park lands and connect them in a network when possible.
- Preserve public open space access to the waterfront.
- Promote land use configurations that increase connectivity and walkability.
- Promote mixed-use, transit-oriented development at City Centre Warwick (Warwick Station Development District).
- On the model of the Apponaug and Conimicut centers, promote mixed-use development in historic village centers including Pawtuxet, Natick, and in Oakland Beach.
- Create compact, mixed-use neighborhood centers at important commercial intersections, such as Lakewood, Hoxsie, and Wildes Corner that are located east of Route 2, combining walkable residential and retail development, including opportunities for senior housing.
- In general, locate multi-family development in mixed-use centers, on collector or arterial streets, or where there is nearby access to retail, services, and public transportation.
- Maintain residential uses on major streets and discourage expansion of commercial uses on these corridors in order to promote consolidation of commercial uses in neighborhood centers, historic villages, City Centre and Route 2.
- Limit commercial intrusion into residential neighborhoods.
- Preserve land in the Route 2/Bald Hill Road corridor for regional commercial uses while enhancing function and appearance.
- Preserve land between the airport and the river for a technology and light industry innovation district adjacent to the City Centre Warwick that can serve advanced manufacturing, research and development, office and similar uses.



1. General Principles for Land Use

The “General Principles to Guide Future Land Use” provide a set of policy principles to guide decision making about land use changes and associated zoning amendments. These principles are based on community discussions during the planning process, the land use patterns necessary to support other goals (such as transportation, connectivity and environmental goals), and economic development considerations. An additional principle shall include that the City and RIAC shall work cooperatively to address outstanding land use issues by and between both parties.

One of the most important land use issues in Warwick is the condition of the city’s arterial corridors. While a variety of viable neighborhoods of different vintages, housing types, and economic levels remain in Warwick, the majority of the non-residential development along the city’s arterials is out of date, unattractive, functionally obsolete, and environmentally problematic. Ugly, auto-dominated, old-fashioned commercial development surrounded by wide expanses of parking and sometimes with “curb cuts” as wide as the entire lot is too common in Warwick. The land use issues identified in the discussion of Warwick’s arterial corridors highlight over and over the need for a new set of design and development standards to be applied to new and redeveloped non-residential and multi-family development all over the city. In addition, many of these corridors currently have “General Business” zoning that encourage sprawling, low-density commercial development with the accompanying multiplication of curb cuts and traffic congestion. Many of the corridors continue to have residential segments, and preservation of those segments is desirable, in order to promote consolidation of commercial uses in walkable environments or the city’s regional commercial center.

The Principles to Guide Future Land Use focus on preserving single family neighborhoods; environmentally sensitive resources and open space; increasing connectivity and walkability wherever possible; promoting centers of activity appropriate to conditions, whether a

mixed-use transit oriented City Centre, historic villages, or new mixed-used neighborhood centers; and providing districts for economic transformation and growth in a new Innovative District and a 21st century, regional commercial center at Bald Hill. Keeping these principles in mind when making regulatory changes will create a framework for redevelopment and new development that, over time, will transform the tired commercial corridors and attract new development to compact, walkable, mixed-used centers.

Any land use map for the future is inevitably based on the existing uses. Some land uses are less susceptible to change once they have been established. For example, occupied single-family neighborhoods tend to stay in place over long periods, with limited change or encroachment from other uses. Similarly, heavy industry, once located, does not tend to move if it continues in operation because it is difficult to find new locations. In contrast, retail and light industrial land uses are more likely to change, and to change in more rapid cycles. Multi-family development is less susceptible to change than retail uses, but more so than single-family neighborhoods, with condos and other ownership models less likely to change than rental developments, which are particularly susceptible to change if they are small, older, or run down.

In many cases, the land use locations in the Warwick Future Land Use Map reflect existing land uses, but there are some changes. The State of Rhode Island requires that changes in land use category be reflected in changes in zoning. The areas where zoning will need to be changed to reflect the Future Land Use Map are shown in Map 12.2 Future Zoning Change Areas. For example, the Commercial land use category can have zoning districts that feature different types of retail or office uses as the predominant land use and limit other uses.

A new land use category found in this Comprehensive Plan is the Mixed-Use category. The separation of land uses was viewed as desirable for the forty years after World War II as a way to protect neighborhoods from the undesirable impacts of other land uses. However,



since the 1990s, communities have increasingly understood the benefits of walkable, mixed-use centers that in many ways resemble the town, village and neighborhood commercial centers of the nineteenth and early twentieth centuries. Warwick is part of this movement to revive its historic village districts as mixed-used walkable centers and to create new ones.

2. City Approach to Airport Land Uses

The City recognizes the opportunities that T. F. Green Airport brings to Warwick, but also wishes to see the airport contain its operations “inside the fence” and confine non-noise related property acquisition to properties adjacent to properties inside the fence and for uses that are related to airport operations. Similarly, the City believes that both the City and RIAC would benefit from a more systematic approach to communication about RIAC planned acquisitions and the reuse of “outside the fence” airport property. To the extent practicable “outside the fence” airport-owned property that does not have a specific aeronautical, safety, or operational purposes should be rezoned and reused as taxable property by the host community consistent with the City’s Comprehensive Plan and compatible with RIAC’s Noise Land Inventory and Reuse Plan. There are three aspects to this more systematic approach: 1) a simple goal to guide the City in its discussions with RIAC, and 2) an annual meeting to discuss future plans 3.) Development of a land inventory and reuse plan that is acceptable to the City and RIAC.

The City’s goal for airport land use. The City of Warwick would like to agree with RIAC on an “Airport Line” for acquisition of property unrelated to any major change in airport operations, the ongoing noise mitigation program, runway safety and/or runway expansion. The “Airport Line” would confine new acquisition of property by RIAC to properties that are adjacent to existing airport land inside the fence if the said property is to be used for a specific airport operation. RIAC would not cross public streets or “leapfrog” non-airport properties to buy and hold properties for “future” use, or as a real estate holding to gain revenue or to prevent what RIAC considers are competitive land uses.

Annual Airport report and discussion. The City of Warwick would like to establish with RIAC that there will be an annual “Airport Report” in a public meeting of the Warwick Planning Board and or the City Council to provide information to the City on airport operations, issues related to land use, environmental, traffic or other potential impacts on the City, and general plans expected for the next five years. The Planning Board and or the City Council will develop a list of questions it would like RIAC to address at this annual meeting.

State Guide Plan 640: Airport System Plan: It is important to note that the State Guide Plan incorporates goals and Policies for the state airport system. Goal 5 states that RI’s airports will exist compatibly within their communities while providing air services appropriate to their roles. Goal 6 states that all airports will meet federal, state and local environmental regulatory requirements. Sections 4.3-4.7 and 6.5-6.9 of the Plan contains specific benchmarks and criteria for meeting the above goals of operating compatibly with the surrounding community and the ability to meet environmental compliance.

3. Future Land Use Categories

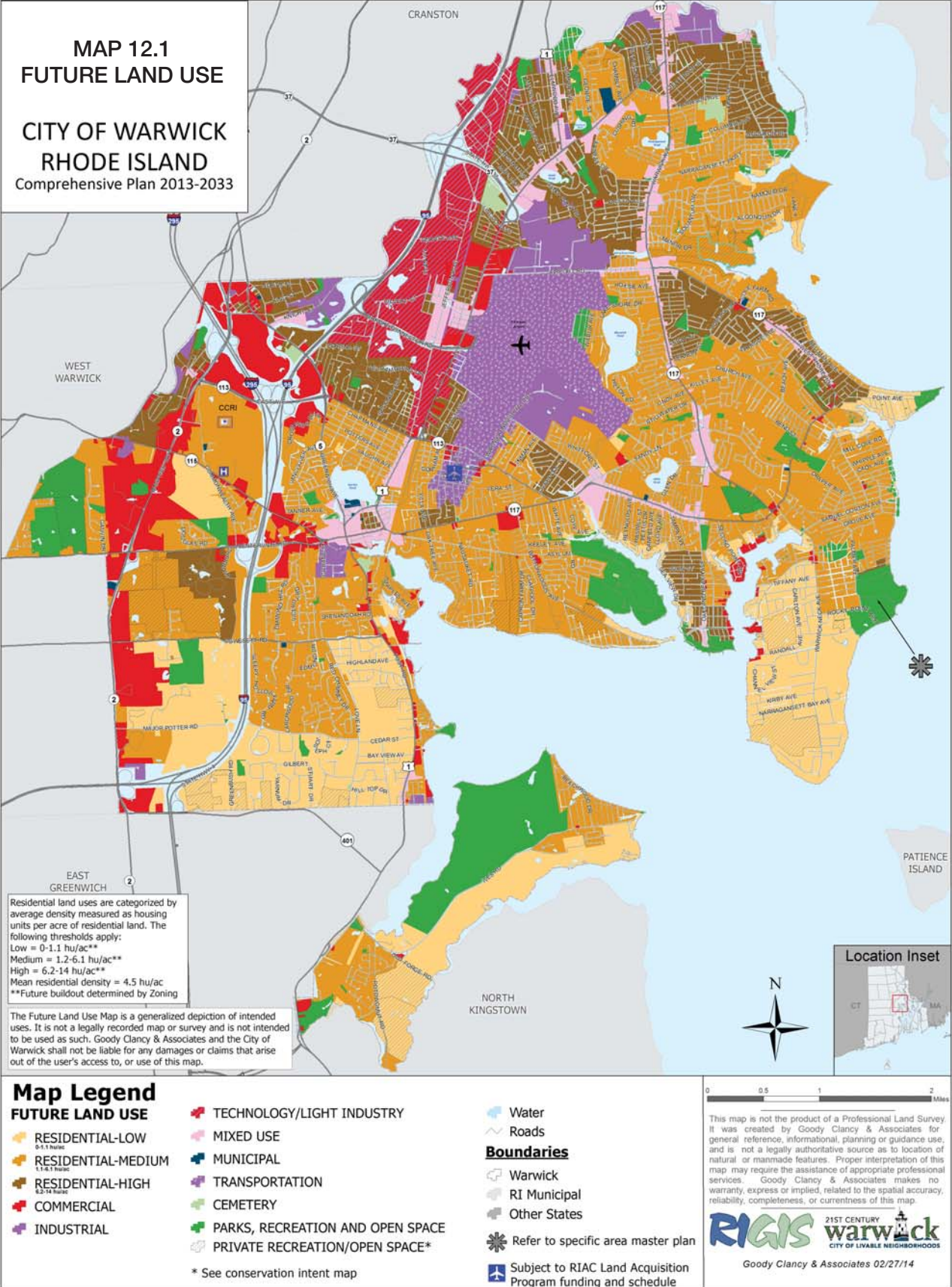
RESIDENTIAL

Low-Density. Residential land uses of 1 to 2 dwelling units per acre are located primarily on Warwick Neck, south of Ives Road and across from Goddard Park in Potowomut; between Division Street, Major Potter Road, and Post Road; and between Cowesett Road, Post Road, Major Potter Road, and Love Lane.

Medium-Density. Residential land uses of 2.1 to 5 dwelling units per acre are found throughout the city.

High-Density. Residential land uses of 5.1 to 14 dwelling units per acre are found in older parts of the city including Apponauag Village, Oakland Beach, Conimicut, Pawtuxet, Spring Green, and Norwood, and where there are multi-family developments.

Changes to Residential land uses. No new exclusively Low-, Medium- or High-Density Residential areas were identified for this plan.





COMMERCIAL

Commercial. The Commercial land use category, which includes office uses, is located along Route 2; in specific lots along Post Road south of Centerville Road; in specific lots along Tollgate and Centerville Roads; and in scattered locations elsewhere in the city.

Changes to Commercial land uses. There is less General Commercial land use on the Future Land Use Map than shown on the Existing Land Use Map, because major corridors and commercial intersections are shown as mixed use areas. Airport acquisitions and the Main Avenue realignment have created future locations for commercial uses east and west of the airport's Runway Protection Zone. Residential uses will not be permitted in those areas.

Considerations for future zoning of commercial land uses. The Commercial land use category can include a variety of commercial land use types, such as regional retail, office, neighborhood commercial, commercial water-dependent uses (such as marinas), and so on. The type of commercial use permitted in areas designated with the Commercial land use category will be controlled by the zoning, not the broader land use category. For example, within the Commercial land use areas designated on the Future Land Use Map, the city may zone certain areas for office uses, limiting or denying other types of commercial land use.

INDUSTRY

Light Industry. The Light Industry land uses are small scale manufacturing, warehousing, and similar uses that have limited impacts on adjacent properties.

Technology/Light Industry. The Technology/Light Industry category is a type of mixed use category intended to include research and development, office, and technology uses in addition to light industrial uses.

Changes to Industrial land uses. The Existing Land Use map shows an undifferentiated industrial category. The Future Land Use Map eliminates heavy industrial uses

and designates a general light industry category and a business/light industry category.

MIXED USE

Mixed Use. The Existing Land Use Map shows mixed use in three locations: Apponaug Village, Conimicut Village, and City Centre Warwick (Warwick Station Development District). The Future Land Use Map expands mixed use in Apponaug and extends the mixed use category to other historic village areas, to neighborhood commercial intersections, and to important commercial corridors east of I-95. In addition, the Mixed Use land use designation is used for the state-owned portion of Rocky Point. At the time of completion of this comprehensive plan, the ultimate mix of open space with other uses on this land was not yet known.

Considerations for zoning of mixed use areas. The mixed use designations on the Future Land Use Map will be expressed according to the goals for the particular type of location in different types of zoning: Village District zoning for historic villages, zoning to promote mixed use neighborhood centers at commercial intersections, and allowance for multi-family development along corridors that currently are predominantly commercial. Zoning for the land use mix at Rocky Point will be put into place as appropriate.

MUNICIPAL

Municipal. These municipal land uses include city facilities and schools.

Changes to Municipal land uses. Where there is a Mixed Use land use category, municipal facilities, like other land uses, are subsumed under the overall Mixed Use category.

INSTITUTIONAL

Institutional. The Institutional land use category primarily includes the lands of the Community College of Rhode Island and Kent County Memorial Hospital.



Changes to Institutional land uses. There are no changes to institutional land uses in the Future Land Use Plan.

TRANSPORTATION

Transportation. The major transportation land use is the airport and the land it recently acquired. Highway rights of way are also designated as transportation land uses.

Changes to Transportation land uses. The airport acquired land as part of its master plan process. As noted earlier, future locations for commercial uses east and west of the airport’s Runway Protection Zone are expected to be released after the realignment of Main Avenue is completed.

OPEN SPACE

Open Space land uses. The Open Space land uses indicate public and private land intended for open space, though not all of it is permanently protected.

Changes to Open Space land uses. Changes include the transfer of the Winslow Softball Fields from south of the airport to the Cedar Swamp Road area east of the airport and the expected mix of uses on the state-owned portion of the Rocky Point property.

ZONING

1. Approaches to zoning

Land use zoning first appeared in the United States in 1916. The zoning system that emerged in the early twentieth century is now called conventional or “Euclidean” zoning (after *Euclid v. Ambler*, the 1926 Supreme Court case that validated zoning as a proper exercise of municipal police power). As some of the disadvantages of conventional zoning became evident by the second half of the twentieth century, new zoning approaches emerged, including performance zoning and form-based zoning. Conventional zoning remains the basis of most zoning systems today, but many jurisdictions have added aspects of performance zoning and form-based zoning,

particularly as communities have begun to see zoning as one of the tools of placemaking.

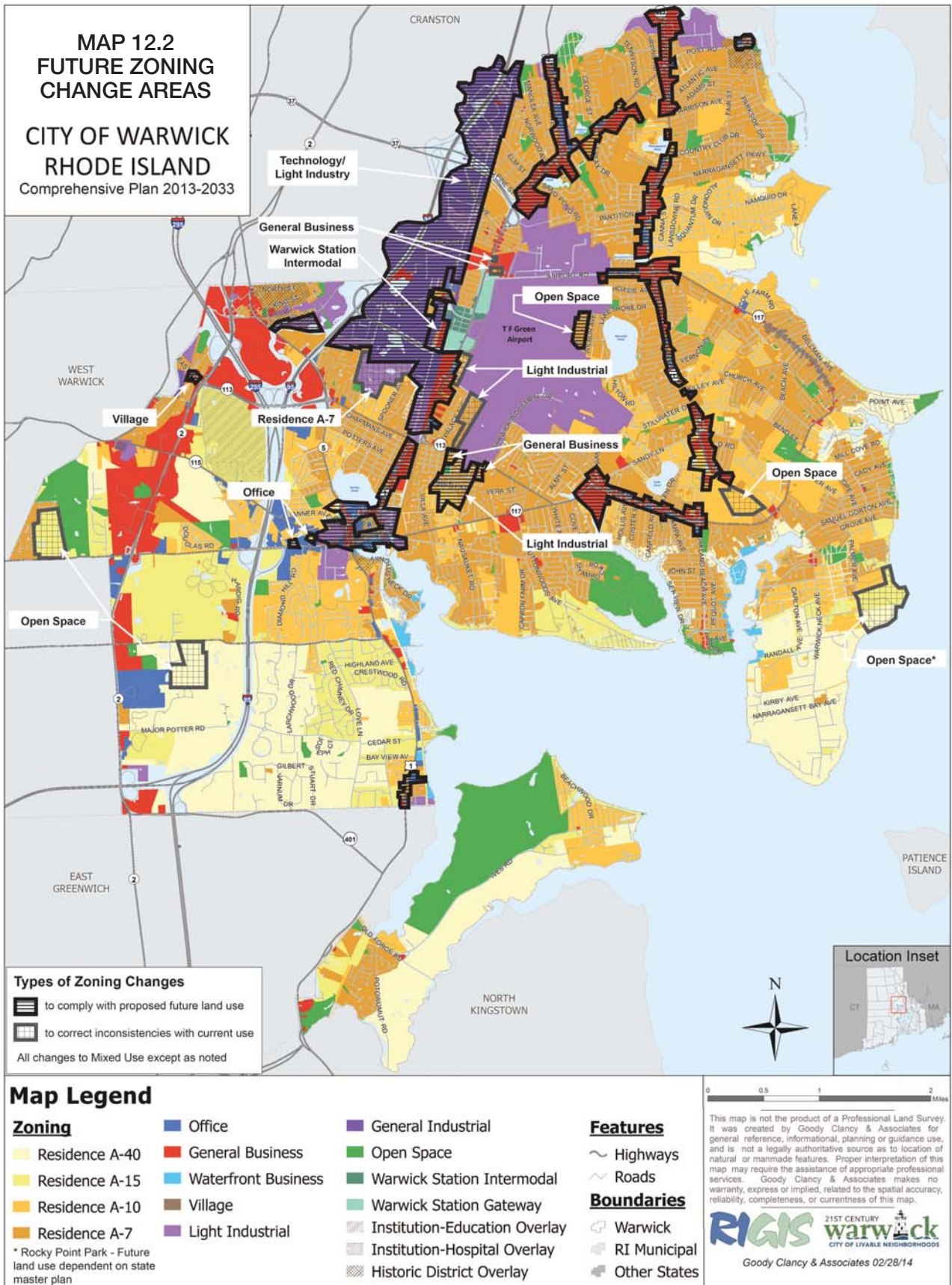
Conventional Zoning. Conventional zoning was originally created to separate industrial and other noxious land uses from residential areas, and particularly to preserve quality of life and property values in single-family neighborhoods. Conventional zoning regulates the uses and dimensions of development, for example:

- Type and mix of land uses
- Size and dimension of lots
- Type, size and height of buildings
- Distance of front, side and rear setbacks
- Width and length of streets and sidewalks
- Amount and size of off-street parking

Conventional zoning separates land uses deemed incompatible and is prescriptive, in that it specifies land uses and required maximum or minimum dimensions, parking, and so forth. This prescriptive character makes it easy to implement both by governments and by property owners, because there are no judgment calls when the zoning says, for example, that a building must be ten feet from the front lot line. However, conventional zoning also focuses on proscription, that is, it focuses on what is not allowed rather than articulating what is actually desired. Conventional zoning provides some certainty about development outcomes and, because it is long-established, it is familiar to everyone, but it is inflexible and inhibits design creativity. It is one, though not the only, source of the “Anywhere, USA” landscape of buildings that lack distinctiveness and sense of place.

The homogenizing and inflexible outcomes of conventional zoning have resulted in an array of strategies to get around that inflexibility. Variances, conditional uses, special exceptions, bonuses and incentives, planned unit developments, and similar devices are intended to allow development to be more closely tailored to particular conditions and desired results.

Performance Zoning. Performance zoning has its origins in industrial performance standards that identify





limits on measurable industrial impacts such as noise, vibration, light, dust, smells, and so on, and that are often incorporated into zoning codes for industrial land uses. This idea was expanded in performance zoning to regulation of the impacts of the built environment. Unlike conventional zoning, which assumes certain uses are incompatible and separates them, pure performance zoning assumes virtually any use can be made compatible if impacts are properly managed. Because it provides flexibility to developers and designers to present their own solutions to mitigate impacts for administrative review, the specific outcomes are not always predictable. Generally speaking, performance zoning requires highly-trained administrators who have the confidence of both residents and developers. Performance zoning emerged in the 1970s and 1980s. Few locales have a pure performance zoning system, but some aspects of performance zoning are incorporated into many communities' zoning codes.

Form-Based Zoning. Form-based zoning focuses more on building form than on land uses. Form-based codes are based on the concept of a transition from low densities and building forms at the periphery to high densities at the center—of a city, a district or a neighborhood. This transition is called “the transect” in form-based zoning. These codes are a reaction to conventional zoning's separation of land uses, which made it impossible to build mixed-use neighborhoods and districts, and its neglect of the public realm, which resulted in visually- and functionally-impoverished environments that are often ugly, and often functional only for one type of user. Form-based codes are very detailed and prescriptive about certain aspects of design and use many visuals to give a positive vision of what is desired, rather than focusing on what should be excluded. They require a design-focused community process in advance of writing the zoning. In existing communities, these kinds of codes have generally been applied in specific districts, such as downtown or in commercial corridors, rather than citywide.

Hybrid Zoning. Conventional, performance, and form-based zoning codes all have advantages and disadvantages. Because of its familiarity and long institutional history, conventional zoning is likely to remain the foundation of most zoning codes. However, performance standards and form-based elements represent effective tools for increasing the flexibility of conventional zoning. For example, conventional zoning is organized in separate-use districts on a citywide basis but is not effective in mediating impacts at the edges of districts—which is precisely the strong point of performance zoning. Form-based codes are organized around the street and the neighborhood and are particularly good at conveying what is desired in terms of the relationship between private buildings and the public street.

2. The Warwick Zoning Ordinance

The current Warwick Zoning Ordinance was adopted in the early 1990s, with changes and additions made in the last two decades. Like all zoning ordinances that are changed over time, it has become more complex with a number of additions designed to overcome the rigidities of the conventional zoning that underlies the ordinance. There are several types of overlay districts, with four overlays operating as “floating zones” that do not appear on the zoning map until a specific project has a site plan approved by the City Council, and four overlay districts protecting historic and environmental resources and flood hazard. Section 500 of the ordinance, “Special Regulations,” is an amalgam of diverse regulations on cluster development, coastal regulations, freshwater wetlands regulations, telecommunications facilities, the City Centre Warwick, landscaping, and additional village district regulations to address design standards. This section is followed by Section 600 for yet more “Supplementary Regulations,” another compendium of regulations, including environmental performance standards for the village district zone. There are no graphics or illustrations in the zoning ordinance to guide project proponents on what is desired. While the zoning ordinance text is available online, there is no zoning map online. The City's official zoning map is a zoning plat book. The GIS zoning map prepared for this plan (which maps



base zoning, not the overlay districts) is the only citywide map showing zoning, but is not the legal zoning map.

Because of the accretion over time of new and changed regulations, older zoning ordinances can become difficult to understand, becoming barriers to the development that the community desires. For that reason, many communities are completely rewriting their zoning ordinances and other development regulations to create a Unified Development Code or ordinance. A Unified Development Code combines in one code all the regulations and administrative procedures affecting land development, including zoning, subdivision regulations, design and development standards, environmental standards, and so on.

Modern development codes are written to be user-friendly. They contain a single, uniform set of definitions and terminology; integrated procedures with step-by-step details on the sequence of development approvals; illustrated design guidelines and standards; a detailed table of contents and index to make it easy to find regulations on different topics; an electronic version online with hyperlinks to code sections and site design standards; page design and layout that are easy to use. Completely rewriting a zoning ordinance and creating a Unified Development Code is a project that takes time and expense. While Warwick may not be ready to launch a zoning rewrite project immediately, new regulations should be written and inserted into the zoning ordinance to be as user-friendly as possible.

URBAN DESIGN

Urban design focuses on the physical character of spaces in three dimensions. It is not, as sometimes thought, simply about visual appearance or style. Urban design affects many aspects of how we experience places, including how the different elements of spaces, such as buildings, sidewalks, roads, parking lots, and parks, relate to one another; how spaces function in facilitating, directing or obstructing people's activities; and how spaces express aesthetic values. Although urban design can be practiced both in publicly-owned and privately-owned places, the focus here will be on the public realm

and on private places that are commonly open to the public, such as retail developments.

Many aspects of Warwick's vision for the future can be informed by enhanced urban design standards: development and redevelopment that reflects sense of place and community; connected networks of open spaces; creation of mixed use and walkable historic villages and neighborhood centers; preservation of historic resources; and a more pedestrian- and bicycle-friendly community. Warwick's historic villages and some of its older neighborhoods exhibit the more human-scaled design of an older era: connected grids of streets with small blocks, sidewalks and tree-lined streets, parks and schools as the center of neighborhoods, shops clustered together and built to the sidewalk, and streets that accommodate cars without being dominated by cars. However, much of the suburban development in Warwick in the 1950s–1980s was laid out in subdivisions as “pods” connected to one arterial road requiring driving for almost all daily needs. During recent decades, newer development has been laid out in bigger blocks, with fewer connecting streets, limited or no facilities for pedestrians, and a general orientation to accommodate vehicles over people.

With the establishment of the City Centre Warwick and the Village District zones, Warwick has begun to include design guidelines in its zoning. The City Centre Warwick Master Plan and the City Centre Warwick Design Manual are included by reference in the zoning ordinance to provide guidance for development in the City Centre Warwick. Basic site design standards are included in Village Districts to ensure a pedestrian-friendly environment.

URBAN DESIGN PRINCIPLES

A few basic, interrelated urban design principles can be applied to public projects and to guide private development projects:

- **Create human-scaled environments.** Places should be designed primarily at a scale that is comfortable for people, rather than at a scale primarily focused on vehicles. This is true even for the Route 2/Bald Hill corridor. Although it may be difficult to imagine Route



2 changing, retail areas redevelop in more rapid cycles than other land uses because retailers need to keep consumers' interest with new formats. As consumers increasingly shop on line, the need to create more functional, attractive and interesting retail environments becomes more important.

- **Design for streets as three-dimensional shared spaces.** Streets are the most important public spaces in any city and are made up of the travel right-of-way (including sidewalks) and the land, landscaping, and buildings that line the travel way. Space for all modes of travel plus street trees and other landscaping make up “complete streets.” Except for limited-access highways, the travel way in city and suburban environments should be shared and accessible to vehicles, bicyclists and pedestrians, as much as is feasible. The vertical elements at the edge of the street—buildings and street trees—should create a sense of enclosure. Researchers have found that the optimum relationship of the vertical (height of buildings) to horizontal (width of street) dimensions in a street corridor should approximate no more than 1:4 (e.g., a street that is 80 feet wide should be lined with buildings at least 20 feet high). Street trees spaced no more than 35 feet can also create this sense of enclosure, even when the height-to-width ratio cannot.
- **Create walkable environments and connections.** Everyone is a pedestrian at some point during every day, at a minimum at the beginning and end of every vehicle trip. Walkable environments—connected, safe, comfortable, appealing—are important in both the public and semipublic realms and have been emphasized throughout this plan. In the public participation process, residents made clear their desire for more walking opportunities. Although many older Warwick neighborhoods have elements that promote walkability, such as small block sizes, their connections to other neighborhoods are limited to a few major roads such as Post Road, West Shore Road, Warwick Avenue, and Coweset Road. These roads are heavily traveled and have poor and unsafe pedestrian facilities. The village districts and neighborhood mixed use centers recommended in this plan can be made more walkable with visual interest, safe crossings and sidewalks, human-scaled lighting, landscaping, and public art.
- **Plant trees.** Planting trees along streets and roads and in parking lots is one of the easiest ways to enhance the public realm, create comfortable environments, and reduce heat and stormwater impacts. In many Warwick commercial areas, parking lots dominate the streetscape, but very few have trees, and those that do often have trees only along the periphery of the lot. Trees should be chosen for their suitability to the task. For example, street trees along sidewalks should be chosen to have canopies sufficiently high and broad to provide shade to pedestrians. Parking lots should be broken into small parking fields shaded by trees.
- **Bring buildings to the street.** Buildings should be located at the sidewalk, behind a small landscaped or hardscape setback, or, in a few cases along major arterials, behind limited, single-loaded parking. Locate building entries to promote safe pedestrian movement across streets; to relate to crosswalks and pathways that lead to public transportation stops; and to encourage walking, biking and public transit use for employment and other travel around the city.
- **Put parking to the side, to the rear, in structures or underground, with clear signage to direct motorists.** Parking is necessary but should not dominate street frontage. Rear parking should not, however, result in buildings that turn their backs on the street frontage. Parking structures should have active ground-floor uses on the street frontage, if possible, or design elements such as screens and vines to give the ground floor more aesthetic appeal.
- **Use more pedestrian-friendly site design within retail centers.** Designated pedestrian pathways along buildings and through parking lots toward building entrances, pedestrian precincts, and pedestrian connections from sidewalks directly to stores can make retail centers more attractive. In large centers, a common rule of thumb is to create designated pedestrian paths at least every 300 feet to connect with entrances.
- **Create visual interest in buildings by avoiding blank facades.** Articulated and modulated façades, windows and transparency attract interest by providing a sense



of activity within. Screens and vertical plantings, also improve on facades that otherwise offer little interest.

- **Design new development to be integrated into existing street grids.** Conventional zoning that separates land uses depends on “buffers”—landscape setbacks, fences, and other treatments often deployed in a unthinking way to isolate developments from one another. Preserve or create connections by establishing transitions in scale, density, and appearance from surrounding areas, rather than relying on buffers.

H RECOMMENDATIONS

GOAL 1

Warwick has sufficient diversity of land uses to support a strong and stable tax base.

POLICY

- Continue to balance land uses, particularly between regional retail and non-retail commercial uses.

STRATEGIES

A. Establish a new Technology/Light Industry land use category and Innovation District Zoning.

Actions

1. **Create a Technology/Light Industry Innovation District in the zoning ordinance.**
Located between the Pawtuxet River and Jefferson Boulevard, and surrounding the City Centre Warwick, this district will be designed to provide an area in the city for an urban business, technology and light industry park environment, with only accessory retail or services to support the dominant uses. Retail uses that might otherwise find this area attractive will be directed to the Route 2 corridor. Economic sectors appropriate to this zone with opportunities for Warwick include educational services, back office financial services, medical device

and instrument manufacturing, pharmaceutical manufacturing, logistics, advanced manufacturing and assembly.

2. Prepare a district master plan for the Innovation District.

The plan should include recommendations for public improvements to enhance the area and make it more competitive for the market segments identified in the 2013 “Warwick Station Development District Market Segmentation Analysis” study.

3. Create development standards and design guidelines for both public and private investment in the Innovation District.

Public realm standards and guidelines for the Innovation District will provide a framework for public investment in streets, streetscape, and infrastructure and set the bar for private investment through standards and guidelines for sites and buildings. While preserving light industry needs for parking and loading of trucks and other vehicles, the design standards should promote pedestrian- and bike-friendly circulation, buildings oriented to public streets and without extensive blank facades, and landscaping and green infrastructure to manage as much stormwater as possible on site. Where multi-building, campus-like development is desired, consistent site design, consolidated signage and form-based regulations should be included.

B. Establish a Bald Hill Road Enhancement Overlay District.

An overlay district covering the commercial areas adjacent to Route 2/Bald Hill Road should be developed with design guidelines for redevelopment of properties along this corridor.

Actions

1. **Prepare a district master plan for the Route 2/Bald Hill Road corridor that focuses on improving corridor function, attractiveness, and competitiveness to maintain this area as a regional retail center.**
The plan should include attention to access management from Route 2; cross-parcel connections; pedestrian and bicycle connections, conditions,

and facilities both in the public and private realms; control of parking as a dominant visual feature; high performance stormwater management using permeable surfaces and green infrastructure; building orientation and design; landscape design; and energy-efficiency features.

2. **Based on the plan, establish design and development standards for the Enhancement Overlay District and adopt the plan and the new overlay district.**
Standards and guidelines to improve the area’s environment at the human scale are needed.

C. Amend commercial zoning to specify office development where it is appropriate.

Actions

1. **Establish a Medical Office Zoning District on Toll Gate and Centerville Roads in the vicinity of Kent Hospital where there are existing medical offices.**
Other uses can be permitted in this district, but the regulations should be written to promote medical office uses, and mitigate their impacts (such as traffic) on the corridor and other land uses.

GOAL 2

Mixed-use centers provide walkable environments and new housing options.

POLICIES

- Support additional Village District zones.
- Encourage neighborhood activity centers at major intersections combining retail, services and multi-family residences in a walkable environment

STRATEGIES

A. Expand the Apponaug Village District and designate additional Village District Zones.

The Village District Zone in Apponaug is currently very small and exists only along Post Road. Expansion of the zone and accompanying design and development standards will, over time, provide an opportunity to improve the gateway to the historic village district. In addition, the inclusion of the Apponaug Mill area and other underutilized lots would provide an opportunity for multi-family housing that could bring more critical mass to Apponaug and provide support for the walkable retail and town center vision that the City has for Apponaug. In addition to Apponaug and Conimicut, Village District Zoning can be appropriate for some of the city’s other historic villages. Residents, property owners, and business owners in the historic villages should be consulted about any changes to Village District zoning. By promoting mixed-use multi-story infill development with pedestrian connections, the City can strengthen the village’s “main street” character.

Actions

1. **Expand the Apponaug Village District zone.**
2. **Designate additional Village District zones in Pawtuxet and Natick Villages, and at Oakland Beach after consultation with stakeholders.**

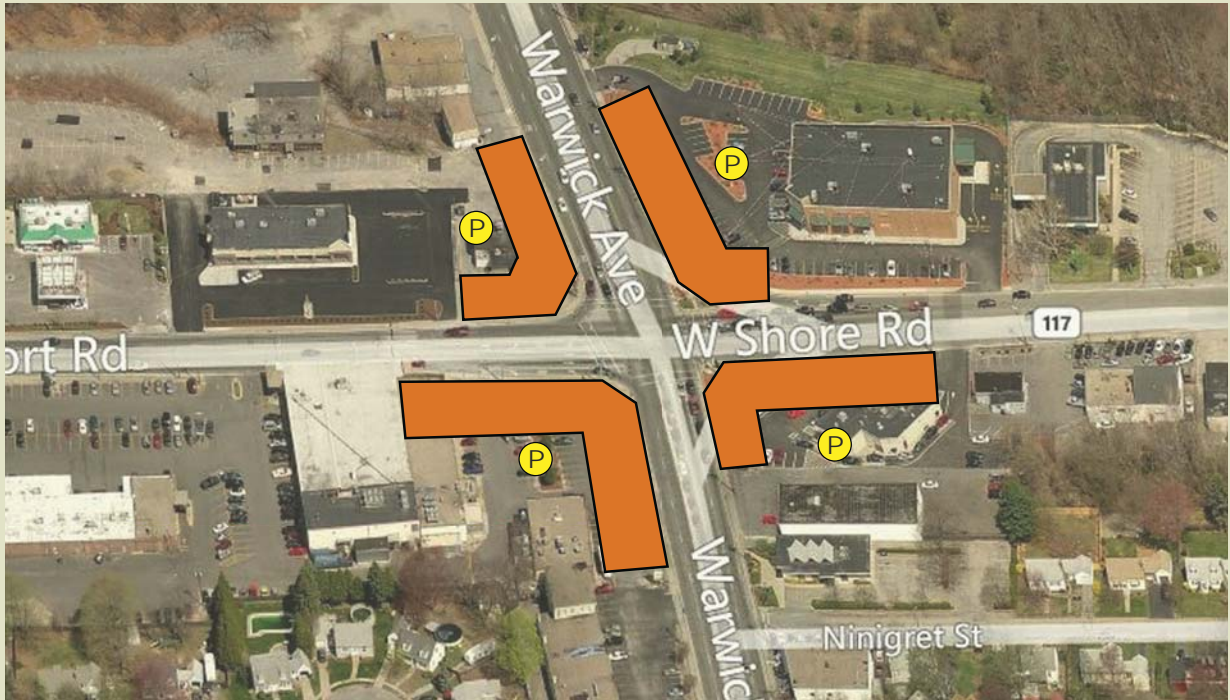
B. Establish Neighborhood Center Mixed-Use Zones at neighborhood commercial district intersections.

The purpose of these mixed-use zones is to promote redevelopment of the old-fashioned neighborhood shopping centers common in Warwick into residential-commercial mixed-use centers. Medium-density multi-family housing developed above stores or adjacent to retail in a walkable environment could be highly attractive to senior citizens and to young adults if designed correctly.

Actions

1. **Study varied mixed-use zoning options and define specific land use composition and performance standards.**

Transforming Hoxsie with a neighborhood activity center



WHAT IT WOULD LOOK LIKE

- Establish pedestrian-friendly neighborhood centers by locating buildings close to street intersection.
- Facilitate greater activity on the street in the evening and on weekends by increasing the residential presence in mixed-use buildings.
- Encourage 2- to 3-story, mixed-use building types that are compatible with or make a transition to adjacent building heights.
- Screen large surface parking lots from the street by locating them behind retail/mixed-use buildings. Employ effective signage so shoppers can locate rear parking lots from streets.



Transforming Hoxsie with a neighborhood activity center

APPLYING AN UPDATED APPROACH TO DESIGN OF PARKING AND RETAIL



Surface parking lots converted to landscaped plazas for outdoor dining and nighttime retail uses



Deeper front setback transformed into an active pedestrian zone using existing mature trees and limited landscape improvements



Wide sidewalks with distinct planting and outdoor dining zones

All mixed-use zones will not be identical and the amount of residential and other uses will need to be adjusted to specific conditions.

2. **Designate Neighborhood Center Mixed-Use Zones at shopping center intersections on West Shore Road, Warwick Avenue, and Post Road.**

The neighborhood shopping intersections that could be suitable for redevelopment as mixed-use centers include Lakewood, Hoxsie, and Wildes Corner. Pages 12.26 and 12.27 provide an illustrative example for Hoxsie.

3. **Develop development and design standards for Neighborhood Centers.**

Standards should ensure that the various uses in the Neighborhood Centers are integrated and connected, not simply adjacent. (The garden apartments adjacent to Warwick Mall are not the model to be emulated.) The design should minimize the impacts of parking, provide pedestrian-friendly circulation on and off the site, minimize stormwater runoff, and provide trees and other landscaping.

4. **Amend subdivision development review regulations and the zoning ordinance to reflect different types of mixed use conditions desired.**

GOAL 3

City Centre Warwick (the Warwick Station Development District) is a major center of compact, higher-density transit-oriented development.

POLICY

- Implement the Warwick Station District Master Plan to become a major center of urban activity within Warwick and the region.

STRATEGIES

- A. **Ensure that public improvements and private development in City Centre Warwick will be designed for a live-work-play environment, based on the district master plan.**

Actions

1. Create a design manual for public improvements.
2. Create a design manual for private site and building design.
3. Continue to work within the collaborative that includes RIDOT, FHWA, RICC and the Central RI Chamber of Commerce to coordinate the distribution of resources to grow transit options with appropriate land use that in turn creates economic development.
4. Continue to identify the types of businesses and market segments best suited to the City's economic, land use and urban design goals for City Centre.
5. Continue to inventory and market sites available for development.

GOAL 4

Warwick's neighborhoods are attractive, well maintained and stable.

POLICY

- Protect and support existing residential neighborhoods.

STRATEGIES

- A. **Protect the character and quality of existing residential neighborhoods as houses are modified and redeveloped to mitigate flooding or for other reasons.**

Actions

1. **Create design guidelines to assist property owners and contractors seeking to raise houses above base flood elevation (BFE).**
 Building or raising houses so that the first floor is above BFE can sometimes result in houses that seem ungainly and out of scale with surrounding development. Property owners and contractors need assistance in finding the best design solutions for their situation. The City could work with the architecture program at Roger Williams University to develop a studio project to create a brief guidance document.
2. **Discourage the creation and development of undersized non-conforming lots, except as provided for in the Warwick zoning ordinance.**
3. **Prevent commercial intrusion in to residential neighborhoods.**

Warwick has too much commercial development located on small lots along major corridors east of I-95, as evidenced by properties in need of a face-lift as well as multiple vacancies. Redevelopment of these lots into multi-family housing—if possible through assembly of several adjacent lots—would promote the desired concentration of retail uses in Neighborhood Center Mixed-Use Districts, Village Districts, and the Route 2/Bald Hill Corridor. The diversification of Land Uses within the mixed-use zones shall vary depending on surrounding land uses and/or corridor study.

2. **Include urban design standards for all commercial and multi-family development and redevelopment in these corridor segments.**

The standards should be required for “new development,” “substantial redevelopment” (change to 50% or more of the structure) and “substantial addition” (expansion by 20% or more of gross floor area). The focus should be on promoting connectivity and a pedestrian-friendly environment, for example by:

- Placing parking to the side or rear, except for one single-loaded parking area in front of commercial development
- Orienting building entrances to the street
- Prohibiting blank walls at the street
- Providing windows and transparency in commercial buildings
- Minimizing stormwater runoff through green infrastructure and landscape treatments

In addition, a reduction in the number of curb cuts should be encouraged, in order to promote better access management and traffic patterns.

3. **Make the zoning changes on the following road segments, up to where proposed Mixed-Use Neighborhood Center zoning begins:**

- Post Road from Warwick Avenue to Route 37
- Post Road from Main Avenue to the proposed expanded Apponaug Village District
- Elmwood Avenue from Post Road to the Cranston border

GOAL 5

Major streets mix clusters of neighborhood-serving retail in neighborhood centers with housing and commercial uses.

POLICY

- Provide regulatory options to balance retail and housing along major corridors.

STRATEGIES

- A. **Create a Corridor Mixed-Use zoning district for segments of major streets in order to promote redevelopment of underutilized commercial properties into small- and medium-scaled multi-family housing.**

Actions

1. **Develop a mixed-use zoning district that expands allowed uses in these corridors to include multi-family development.**



- Warwick Avenue from West Shore Road to the Cranston border
- West Shore Road from Sandy Lane to Warwick Avenue

GOAL 6

Public and private development meets high standards of urban design.

POLICY

- Establish design standards for municipal and private development.
- Promote infill and redevelopment of outmoded/blighted commercial or industrial properties.
- Ensure that proposed new residential, business and industrial uses are compatible with the character and surrounding area.

STRATEGIES

- A. Incorporate basic urban design and performance standards in zoning, and use form-based zoning where appropriate, so that new by-right development and redevelopment meets city goals.

Actions

1. Develop suitable design and performance standards for different kinds of development, not otherwise subject to design and performance standards, and incorporate them, with graphics, in the zoning ordinance.

Although this plan recommends that design standards be enhanced or developed for specific districts such as the Route 2/Bald Hill Road Corridor, the Innovation District, City Centre Warwick, Mixed Use Neighborhood Centers, and Village Districts, other areas where commercial and multi-family development is allowed also can benefit from enhanced requirements for design and performance.

2. Consider using form-based zoning in mixed-use districts, and amend the zoning ordinance to include form-based zoning principles such as building placement and size to ensure compatibility with the surrounding community and natural environment.

Form-based zoning can be very successful in mixed-use districts where the use is less important than creating a safe, functional and attractive environment for a living, working, and playing. Form-based zoning requires a plan and substantial public participation and education to be successful.

For example, a zoning overlay for business park districts can establish visual continuity with unified landscaping and infrastructure improvements designed to create a gateway to a business park, attracting new business development.

3. With guidance from the future land use map, maintain appropriate transitional uses and buffering between commercial and residential districts.
4. Discourage zoning variance requests and strengthen regulations to protect wetlands and water quality.

GOAL 7

Warwick’s environmental and open space networks are respected by new development.

POLICY

- Support development options that enhance networks of open space and environmentally sensitive land.
- Encourage new business and industries to locate in areas where adequate public facilities already exist.

STRATEGY

- A. Promote preservation of open space in networks by incentivizing the use of conservation subdivisions in development of any remaining large parcels.

Most of the large land parcels remaining in Warwick, including private clubs and golf courses, are not expected to be developed. However, this land is not



protected and may become available for development through unforeseeable circumstances. Warwick should put appropriate zoning in place.

Actions

1. **Develop a conservation-subdivision zoning option for large parcels with a small density bonus as an incentive to encourage their use.**

Warwick's zoning ordinance contains regulations for single-family cluster development. Conservation subdivision zoning is a particular type of cluster zoning that employs a four-step process that begins with evaluating the open space and conservation values of the development site in order to preserve the best areas as open space. If any of Warwick's remaining large parcels were subject to development, the developer could choose to develop as a conservation subdivision rather than a conventional one-acre subdivision. The conservation subdivision language should also include elements to encourage connecting to existing protected open space, and to minimize impervious surfaces through the use of narrow streets and natural drainage. In addition to a small density bonus, the developer would have the advantage of spending less money for infrastructure.

B Develop new robust design and performance standards for development within environmentally sensitive areas of the city and for structures seeking deviation from dimensional standards before the zoning board of review.

Actions

1. **Require incorporation of low-impact design and green infrastructure in environmentally sensitive areas affected by development seeking exceptions to dimensional standards.**

GOAL 8

Warwick has a systematic approach to airport land use issues

POLICY

- Support development of land use agreements with RIAC.

STRATEGY

A. Work with RIAC to create agreements on property acquisition and enhanced communication.

Actions

1. **Identify and agree on an "Airport Line" to limit RIAC acquisition of property and land use.**
The City wishes to see the airport contain its operations "inside the fence" and confine non-noise related property acquisition to properties adjacent to properties inside the fence and for uses that are related to airport operations. The City would like to agree with RIAC on an "Airport Line" for acquisition of property unrelated to any major change in airport operations, the ongoing noise mitigation program, runway safety and/or runway expansion. The "Airport Line" would confine new acquisition of property by RIAC to properties that are adjacent to existing airport land inside the fence if the said property is to be used for a specific airport operation. RIAC would not cross public streets or "leapfrog" non-airport properties to buy and hold properties for "future" use, or as a real estate holding to gain revenue or to prevent what RIAC considered are competitive land uses.
2. **Develop and agree on a land inventory and reuse plan.**
To the extent practicable "outside the fence" airport-owned property that does have a specific aeronautical, safety or operational purpose should be rezoned and reused as taxable property by the City of Warwick consistent with the City's Comprehensive Plan and compatible with FAA land use principles.



Continue to participate in future FAA required Noise Land Inventory and Reuse Plan updates.

3. Schedule an Annual Airport Report and discussion with the City.

The City of Warwick would like to establish with RIAC that there will be an annual “Airport Report” in a public meeting of the Warwick Planning Board and/or the City Council to provide information to the City on airport operations, issues related to land use, environmental, traffic or other potential impacts on the city, and general plans expected for the next five years. The Planning Board and or the City Council will develop a list of questions they would like RIAC to address at this annual meeting.

Similarly, the City believes that both the City and RIAC would benefit from a more systematic approach to communication about RIAC planned acquisitions and the reuse of “outside the fence” airport property.

4. Work with RIAC to identify and address Airport Hazard Areas(AHA) that are consistent with PVD approach plans and RIGL Title 1, Chapter 3, Airport Zoning.

Airport Hazard areas are intended to limit obstructions that may impair the safe use of navigable airspace in the vicinity of airport runways. Airport zones would specify permitted land uses and regulate and restrict the height to which structures and trees may be allowed to grow. Any requested AHA rezoning must consider the adverse impact that glide slope height restrictions may have on the use and enjoyment of privately held properties.

5. Work with RIAC to help RIAC seek zoning amendments to bring Airport Property into conformance with local zoning.

The airport (T.F. Green Airport) is located within a light industrial district, which falls under the nonconformance provisions of the RIGL TITLE 45 Towns, and cities, CHAPTER 45-24 Zoning Ordinances SECTION (51) as well as the City’s Zoning Ordinance Section 404 entitled “Land Nonconforming by Use”. Proposed commercial rezoning of properties abutting the reconfigured Main Avenue , as depicted on the Future Land Use Map and re-zoning map, shall be flexible to accommodate final reconfiguration and build out as approved by RIAC, scheduled to be 2015-2016.

Over the years, the expansion of the nonconforming airport land use has posed user conflict with neighboring residential properties that predated airport expansion and as such, the light industrial zone remains the preferred

zone should the airport cease its operations in the City. Furthermore, the growth of airport as well as its noise compatibility program has left many RIAC controlled properties located “outside the airport fence” with land uses that are incompatible with the underlying zoning district most often commercial land use on residentially zoned property.

Therefore, history has shown the airport land use maintains a dynamic boundary that can be more effectively addressed with the use of an overlay district as opposed to an amending the future land use map. To this end, precedent to establishing an overlay for the airport “proper” (inside the fence operations) it’s essential that RIAC first obtain zone changes to accomplish Comprehensive Plan compatibility for all RIAC properties located “outside the airport fence” that do not have an immediate (that being 3 years) operational or safety need.



Stewardship and Implementation

FROM A WARWICK RESIDENT

“If we invest in our city, the city will give back”



A GOALS AND POLICIES

GOALS

Regular review of implementation progress is part of the City's annual calendar.

The comprehensive plan appropriately assimilates other local planning initiatives and master plans.

Update the City zoning ordinance to be compatible with the Comprehensive Plan.

Provide modern technology to enhance the effectiveness of the Planning Department.

Update the Comprehensive Plan regularly to comply with state law.

POLICIES FOR DECISION MAKERS

- Establish public review of progress in implementing the Comprehensive Plan.
- Use the plan in preparing and approving other planning and implementation activities by City departments decision making bodies and agencies.
- Support zoning changes that promote implementation of the Plan.
- Support provision of GIS and other tools to the Planning Department.
- Support a public process to update the plan

B FINDINGS AND CHALLENGES

findings

It took a long time to update the last comprehensive plan.

The public is not aware of accomplishments from the last comprehensive plan.

challenges

Providing for timely funding of comprehensive plan updates.

Incorporating consultation of master plan policies in day to day decision making.

Establishing regular events to monitor and support actions to implement the master plan.



WHAT THE COMMUNITY SAID

- Many participants in the public process said that the Comprehensive Plan should be an implementation guide for future public activities and investment in Warwick.



CURRENT CONDITIONS

1. The purpose of a plan is to organize for action

The Warwick Comprehensive Plan expresses Warwick residents' twenty-year vision for quality of life and prosperity, a vision that emerged from an unprecedented community participation process encompassing many meetings across the city and a survey with nearly 700 respondents. Following State of Rhode Island requirements, the plan has a twenty-year vision but the strategies and recommendations are primarily focused on the next ten years. This chapter of the Comprehensive Plan discusses overall stewardship of the Plan to keep it useful and current and the specific activities that are needed to implement the Plan. It includes methods to incorporate the Plan into day-to-day decision making and to assess progress and make needed revisions so that the plan remains relevant. The last section of this chapter is a matrix of action plans corresponding to each of the Plan elements. Although there is more focus on actions that the City of Warwick government can take to implement the Plan, many actions may also need the participation of state, federal, private sector, and non-profit partners.

2. The Comprehensive Plan and the State Guide Plan

This Comprehensive Plan meets the requirements of Rhode Island General Law Chapter 45-22.2, the Rhode Island Comprehensive Planning and Land Use Act, as amended.

As the Warwick Comprehensive Plan is being completed, the State is launching a new statewide planning process funded by a federal Sustainable Communities grant. Called "RhodeMap RI," this Project will advance the vision embodied in the existing statewide land use, transportation and water plans by developing new state economic development, housing, and growth centers plans. Key components of the initiative include (but are not limited to) establishing criteria for designating growth centers throughout the state; advancing fair housing strategies; identifying future development and redevelopment opportunities; and developing performance measures for future implementation.

The recommendations of this Comprehensive Plan are also aligned with the priorities of the federal government, particularly the six "Livability Principles" jointly adopted by the U.S. Departments of Transportation and of Housing and Urban Development, and the Environmental Protection Agency:

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate and leverage federal policies and investment.
- Value communities and neighborhoods.

This alignment enhances funding potential for implementation of the Comprehensive Plan. Moreover, the Plan's extensive community participation process brings legitimacy to the consensus on goals and policies. Representatives of diverse interests, from elected officials to

business owners to residents, aligned around the same message can have a powerful effect in bringing local concerns into decisions by the state and federal governments. Effective monitoring and implementation of the Plan will also help Warwick attract public and private investment and financing to achieve the vision and goals of the Comprehensive Plan.

STEWARDSHIP OF THE PLAN

Successful implementation of the Warwick Comprehensive Plan will require communication, collaboration and coordinated activity from many government departments, from elected leaders, and from partners in the private and nonprofit sectors. It is important to create systems and procedures to make sure that the plan is used to guide decision-making, that it is evaluated regularly to see if strategies are working and if it continues to reflect community goals. The Planning Board and the Planning Department are the stewards of the Comprehensive Plan, but, the more that the Plan is understood and used by other city departments and by the City’s partners, the more successful it will be.

RECOMMENDATIONS

GOAL 1

Regular review of comprehensive plan implementation progress is a regular part of the City’s calendar.

POLICY

- Establish public review of progress in implementing the Comprehensive Plan on a regular schedule.

STRATEGY

- A. Make regular review of the Comprehensive Plan a public process.**

Actions

- 1. Establish an annual public hearing before the Planning Board to review implementation progress on the Comprehensive Plan.**

Planning staff should prepare an annual public review of implementation progress, ideally on a schedule that allows the review document and the public hearing to inform budget decisions. The public hearing should review how the plan is being used, the way the Vision and Goals have shaped decision-making, successes and obstacles to implementation, and new circumstances that may affect the plan’s goals. This annual process will keep the plan current as officials and the public are reminded of its contents and discuss any needed changes.

- 2. Schedule a public process every five years to confirm or revise the Vision and Goals and review progress on implementation before filing the five-year informational report with the State Office of Planning.**

A Comprehensive Plan must reflect the needs and aspirations of community residents. It must be a flexible document that can change according to circumstances. One or two public meetings in conjunction with public surveys and/or web-based opportunities for public input should be held every five years to review the Vision and Goals of the Plan. The process should include a summary of progress made on implementing the plan and any unforeseen circumstances—both opportunities and obstacles—that affect implementation. After a review of the Vision and Goals of the plan, the public should then be asked to confirm, revise, remove or add to these aspects of the plan.

State law requires that the City file an informational report on the status of the comprehensive plan implementation program with the Office of State Planning “not more than five years from the date of municipal approval.” The public process to review the Vision and Goals should ideally take place in advance of submission of this informational report.

GOAL 2

The Comprehensive Plan is incorporated in decision-making at multiple levels.

POLICY

- Use the plan in preparing and approving other planning and implementation activities by city agencies.

STRATEGY

A. Use the Plan annually in preparing and approving departmental work plans, operational budgets and capital improvement plans.

A number of cities use their Comprehensive Plans in an annual process to develop departmental budgets and work plans and capital budgets. Among other things, this helps to ensure a certain level of understanding throughout City departments of what is in the Comprehensive Plan and how it is being implemented. A statement of how the budget or work plan reflects the priorities of the Comprehensive Plan should be required.

Actions

1. **Develop a user-friendly system or checklist for City departments and agencies to use to compare proposals with the goals of the Comprehensive Plan.**

A user-friendly system that helps departments and agencies easily review consistency with the Comprehensive Plan will make the Plan an integral part of their day to day work.

2. **Use the Plan in preparing and approving One-Year and Five-Year HUD Consolidated Plan documents, redevelopment grant proposals, and similar documents.**

The required plans for HUD formula grants should also be consistent with the Comprehensive Plan and a statement on how the Consolidated Plan documents reflect the Comprehensive Plan should be required.

3. **Identify Comprehensive Plan-related actions on agendas of the City Council and the Planning Board.**

Sometimes citizens are unaware of implementation actions and believe that a plan is “gathering dust on the shelf” when in fact it is being implemented. An icon, color code or identifying note in agendas of decision-making bodies is a systematic way to show how the City is implementing the Comprehensive Plan.

4. **Publicize actions and activities that implement the Comprehensive Plan.**

Actions by the City and by others that implement the Comprehensive Plan should be publicized as such, giving credibility to the planning process. Publicizing the connection between the recommendations of the Comprehensive Plan and implementation actions will require information sharing and communication.

GOAL 3

Update the City zoning ordinance to be compatible with the Comprehensive Plan.

POLICIES

- Support zoning changes that promote implementation of the Plan.

STRATEGY

A. Prepare a program and schedule for rezoning to make the ordinance compatible with the Comprehensive Plan.

Actions

1. **Identify and prioritize zoning changes that change designations based on existing zoning categories or land uses.**

Some zoning changes should be relatively simple to accomplish. For example, certain zoning changes proposed in the Comprehensive Plan are designed to make zoning consistent with existing land uses,

for example, residential uses that now occupy locations that are zoned for industry. Zoning changes that do not require substantive change in the zoning description are also more likely to be relatively easy to accomplish, for example extending Village District zoning to the city’s other village environments.

2. **Develop new zoning language and a schedule for pursuing additional zoning changes.**

GOAL 4

Provide modern technology to enhance the effectiveness of the Planning Department.

POLICY

- Support provision of GIS and other tools to the Planning Department.

STRATEGY

A. Establish a Geographic Information System (GIS) for city government.

A GIS manages and allows for digital analysis of information displayed as maps. It can be established incrementally to serve all of city government. It is an invaluable tool of modern planning and municipal government from the planning department to the assessor’s office, public works, law enforcement, 911, elections, and many other departments. The return on investment in GIS includes better decision making and accuracy, increased productivity, time savings, cost avoidance and increased revenue. A GIS system includes software, data, and staff. GIS is increasingly web-based, so that citizens can easily access information. For this Comprehensive Plan, the consultant team created GIS files and numerous GIS maps and will make the data layers and map projects available to the Planning Department. The State’s recently amended comprehensive plan requirements include a much greater number and array of maps with the expectation that communities of the complexity of Warwick will have GIS mapping systems.

Actions

1. **Establish a GIS program, starting with the data and maps created for the Comprehensive Plan.**

The program will need to include training for at least one existing employee or hiring of a GIS specialist. Expansion of GIS data and capabilities can take place incrementally.

GOAL 5

Update the Comprehensive Plan regularly to comply with state law.

POLICY

- Support a public process to update the Plan.

STRATEGY

A. Develop a schedule and process to update the Comprehensive Plan every ten years.

Although the State requires that municipal Comprehensive Plans have a twenty-year time horizon, it also requires that the plans be updated every ten years.

Actions

1. **Update the Plan every ten years through a substantial public process.**

With annual implementation progress public hearing and a five-year review of the Vision and Goals, the City will be ready to update the plan at the ten-year mark. The update should include a public participation process encompassing public meetings in wards, districts, or neighborhoods and on topical issues, citywide public meetings, and, just as important, opportunities for participation online through surveys or other tools.

IMPLEMENTATION MATRIX

The following implementation matrices for Chapters 4–13 provide guidance about how to put the plan to work and begin transforming ideas into action. The plan has a long-term horizon, looking ahead to 2033, but the implementation plan focuses on short-term (first five years) and medium-term (second five years) actions that are necessary prerequisites to long-term results. Each action plan includes goals, strategies (“what”), actions (“how”), responsible parties (“who”), a target timeline (“when”) and potential resources.

Actions marked with an asterisk (*) are high priority five-year action items.

ORGANIZATION	ACRONYM
Apponaug Area Improvement Association	AAIA
Buckeye Brook Association	BBC
Central RI Chamber of Commerce	CRICC
Conimicut Village Association	CVA
Grow Smart RI	GSRI
Kent County Water Authority	KCWA
Mill Cove Conservancy	MCC
Natick Village Association	NVA
Oakland Beach Association	OBA
Pawtuxet River Authority	PRA
Pawtuxet Village Association	PWVA
Pontiac Village Association	PVA
RI Airport Corporation	RIAC
RI Coastal Resources Management Council	CRMC
RI Department of Transportation	DOT
RI Dept of Environmental Management	DEM
RI Economic Development Corporation	RIEDC
RI General Assembly	GA
RI Historical Preservation and Heritage Commission	RIHPHC
RI Housing	RIH
RI Shellfishermen’s Association	RIS
RI Statewide Planning Program	SPP
Warwick City Council	WCC
Warwick Community Development	CDBG
Warwick Conservation Commission	WCC
Warwick Engineering Dept	ENG
Warwick Fire	WFD
Warwick Harbor Management Commission	HMC
Warwick Historic District Commission	HDC
Warwick Housing Authority	WHA
Warwick Human Services	WHS
Warwick Mayor’s Office	Mayor
Warwick Parks & Recreation	DPR
Warwick Planning/Planning Board	Plan
Warwick Police	WPD
Warwick Public Works	DPW
Warwick School Department	WSD
Warwick Sewer Authority	WSA
Warwick Tourism/Economic Development	TED
Warwick Water Department	WW

Chapter 4—Natural Resources

HIGH PRIORITY **High Priority** Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. Warwick’s natural resource systems, sensitive water resources and natural habitat are preserved and protected for future generations.	A. Develop an integrated Green Systems Master Plan that includes natural resources.	1. Develop the natural resources section for a Warwick Green Systems Plan.	Planning Department with consultant	Medium term	Seek grant funding
		2. Empower the Warwick Land Trust to raise revenue and apply for grant funding in order to finance natural resource protection initiatives.	City Council	Medium term	Staff time; grant funding; city budget
	B. Protect, preserve and enhance natural resource areas adjacent to developed or potentially developed areas.	1. Preserve open space through the promotion of conservation subdivisions on larger development sites, open space acquisition, and sensitive siting of competing land uses.	Planning; City Council; Planning Board	Ongoing	Staff time
		2. Identify and prioritize specific parcels of land for acquisition, development rights, foreclosing right of redemption (tax sale properties), conservation easements for farmland preservation, and open space purposes that have the greatest potential for preserving Warwick’s natural resources.	Planning; City Council; Land Trust; Conservation Commission; RIDEM	Short term	Staff time; grant funding; city budget
		3. Ensure that all critical natural resource areas with the City are zoned appropriately.	Planning	Short term	Staff time
		4. Amend the zoning ordinance to include stringent performance standards for development within critical natural resource areas.	Planning; Planning Board; City Council	Short term	Staff time
		5. Continue to prioritize acquisition in areas with the most potential for preserving the city’s natural resources.	Planning	Ongoing	Staff time
		HIGH PRIORITY 6. Enforce the 2012 MOU by and between the City of Warwick and Rhode Island Airport Corporation entitled “water quality” which requires the construction of a glycol collection and treatment facility by December 31, 2015 as well as establishing a water quality liaison, increased water quality testing and training through the University of Rhode Island Watershed Watch. (see 2012 MOU).	Planning; City Council	Ongoing	Staff time; RIAC; GA (legislature); statewide planning



Chapter 4—Natural Resources

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
High Priority	C. Protect freshwater bodies, coastal waters, areas with soil limitations, unique natural features, fish and wildlife habitat, and threatened and endangered species habitat through land use planning and regulatory management programs.	1. Develop a City-wide stormwater management plan and implement Best Management Practices to reduce storm water discharge volume and nitrogen and bacteria concentrations.	DPW	Medium term	Seek grant funding and general fund
		2. Adopt Low Impact Development Standards for new development, substantial renovations, and undersized properties seeking dimensional variances.	Planning; Planning Board; City Council	Medium term	Staff time
		3. Preserve remaining coastal and riparian vegetated buffers, establish them on public lands, and promote the establishment of new vegetated buffers at water edges on private lands.	General Assembly; RIDEM; CRMC; City Council; Planning	Medium term	Grant funding; General Assembly; RIDEM; CRMC; City funding
		4. Seek funding for BMPs and Stormwater Attenuation and Source Reduction Strategies for priority sub-watersheds.	Planning; DPW; RIDEM; CRMC	Medium term	Staff time; grant funding
		5. Increase public awareness of water quality problems, sources and solutions.	Planning; RIDEM; CRMC; other non-profits	Ongoing	Staff time; grant funds; non-profits donations; city funds
		HIGH PRIORITY 6. Manage wastewater systems to improve water quality.	Sewer Authority	Ongoing	Sewer Authority funding
		7. Acquire land and conservation easements to preserve critical wildlife habitat and protect water quality.	Planning; Land Trust; Conservation Commission; City Council	Short term and ongoing	Seek agreements; grants if needed
		8. Continue to support volunteer water quality monitoring programs.	City; Pawtuxet River Watershed Council; BBC; Watershed Watch	Ongoing	Volunteer
		9. Restore and preserve fish and wildlife habitat, especially in Buckeye Brook, Warwick Pond, and the Mill Cove ecosystem that supports anadromous fish runs of river herring (alewife).	City; Watershed Council; State; BBC; Watershed Watch; RIDEM	Medium term	Seek grants
	D. Support the programs of the Pawtuxet River Authority and Watershed Council that mitigate flood damage to low lying areas of the City.	1. Support the programs of the Pawtuxet River Authority and Watershed Council that promote increased access to the River for Warwick's residents.	City	Ongoing	Staff time; grant funding
2. Collaborate to enhance or restore wetlands to mitigate flood impacts.		Planning; Environmental organizations listed in Chapter 4	Medium term	Staff time	

Chapter 4—Natural Resources

High Priority  **Short-term actions (2013–2018)**  **Medium-term actions (2019–2023)**  **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		3. Carefully review proposed developments within the Pawtuxet River flood zone to mitigate or eliminate potential additional future flood damage.	Planning; City Council; ZBR; Planning Board; RIDEM; consultant	Ongoing	Staff time; grants
		4. Continue to work with FEMA as necessary on flood mitigation.	City; Building; DPW; CRMC	Ongoing	Staff time; FEMA
	E. Continue programs to implement the Greenwich Bay SAMP and all city TMDLs to improve the health of the bay.	1. Identify and protect remaining wetlands, open space and shoreline areas within the Greenwich Bay watershed.	Planning; City Council; RIDEM; CRMC	Short term	Staff time; grants
		2. Protect, maintain, and where feasible, restore ecological systems, including submerged lands and shore habitat.	Planning; CRMC; RIDEM; City Council	Long term	State and other partners; grants
		3. Support the environmentally-sensitive, water-dependent economic development on the Bay and its shoreline to maintain the area's unique sense of place.	Planning; CRCC; Tourism	Short term	Staff time
		4. Integrate the CRMC Coastal Buffer Zone management guidance into land development and zoning regulations.	Planning; City Council; CRMC; City Council Zoning Board	Long term	Staff time
	F. Develop protection and management recommendations for sensitive and critical habitat identified by the Rhode Island Natural Heritage Program.	1. Coordinate with the Rhode Island Natural Heritage Program on a regular basis to determine sensitive habitat locations.	Planning	Ongoing	Staff time
		2. Consult with the Rhode Island Natural Heritage Program staff for information on identified sites which may potentially be impacted by a development proposal.	Planning	Ongoing	Staff time
		3. Identify and prioritize acquisition of significant wildlife habitat sites.	Planning; Consultant; RIDEM; CRMC; Land Trust; Conservation Commission	Medium term	Staff time; grant funding
		4. Develop and enforce cluster development regulations that will preserve known and potential wildlife habitats.	Planning; Consultant; City Council; Planning Board	Medium term	Staff time; grant
	G. Protect groundwater resources	1. Support programs that protect the Hunt-Annaquatucket-Pettaquamscutt Sole Source Aquifer.	City; NK; KCWA; Consultant; City Council; Planning Board	Long term	Staff time; grant

Chapter 4—Natural Resources

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		2. Encourage the use of advanced treatment and denitrification on-site wastewater systems in the Hunt-Annaquatucket-Pettaquamscutt watershed.	City; GA; RIDEM; CRMC	Ongoing	Staff time; grant funding; public outreach
2. Warwick’s urban forest is healthy and provides maximum environmental and economic benefits.	A. Continue policies and programs that protect, enhance, and increase the city’s tree canopy.	1. Continue to support and expand the City’s tree nursery at Barton Farm and tree planting programs; Create a master plan for Barton Farm	City; DPW; non-profits; private partners/ vendors	Medium term	General fund; grant
		2. Promote tree protection and tree planting through review of proposed new development and redevelopment, including in parking lots.	Planning; Zoning Board; City Council	Short term	Staff time
		3. Distribute information to residents on the benefits of trees and tree planting, with suggested species suitable for different types of properties.	Planning with RI Urban and Community Forest Program	Short term	Staff time; grant funding

Chapter 5—Parks and Open Space Resources

HIGH PRIORITY **High Priority** Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. A preserved and enhanced parks and open space system.	A. Develop a Parks, Open Space, Waterfront, and Recreation section of a Green Systems Master Plan that provides a roadmap for current and future needs at both the neighborhood and city-wide levels.	1. Inventory and evaluate the condition of all parks, open spaces and recreation facilities available for public use, including those not owned by the city.	Parks & Recreation, with consultant	Medium term	Seek grant funding
		2. Use the planning process to develop a schedule of regular meetings for all park and recreation managers in the city so they can easily collaborate.	Parks & Recreation	Medium term	Staff time
		3. Survey park users to determine changing needs and interests, including post-program surveys to gauge satisfaction with programs and events.	Parks & Recreation; consultant	Medium term	Staff and consultant; grants
		4. Identify measures to use existing facilities more efficiently.			
		5. Identify the potential for revenue-producing activities that could help fund higher levels of maintenance, enhanced facilities, more events, and other benefits.	Parks & Recreation; consultant	Medium term	Staff and consultant; grant funding; general funding
		6. Identify how the parks and recreation system can be effectively integrated with an overall green system of environmental health and sustainability.	Planning, Parks & Recreation, consultant	Medium term	Staff and consultant; grant; general fund
	B. Work towards a goal of a park within walking distance of every resident of Warwick.	1. Work with residents to identify the appropriate time and geographic measure for walking distance from home to a park.	Planning; consultant	Medium term	Staff time; grant
		2. Identify both existing municipally owned and privately owned parcels for conversion to parks or permanently protected open space in underserved areas.	Planning with Parks & Recreation; consultant	Medium term	Staff time; grant
		3. Identify and create “walk-to” neighborhood park spaces (playgrounds/playfields), where feasible, in underserved areas.	Planning with Parks & Recreation; City Council	Medium term	Staff time; seek grant funding
	C. Focus on improving facilities and programming at existing parks and develop parks and open space maintenance guidelines that include a scalable annual maintenance budget and identify alternative sources of maintenance income and responsibility.	1. Create a system of maintenance standards to meet public expectations and give guidance to workers.	Parks & Recreation; consultant	Medium term	Staff time; grant

Chapter 5—Parks and Open Space Resources

HIGH PRIORITY High Priority ■ Short-term actions (2013–2018) ■ Medium-term actions (2019–2023) ■ Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		2. Partner with businesses, nonprofits, and neighborhood groups to enhance park maintenance through an Adopt-a-Park program or development of “Friends” groups.	Parks & Recreation	Short term	Staff time
		3. Incorporate low-maintenance design and sustainable practices in park and recreation maintenance.	Parks & Recreation; consultants	Medium term	Staff time; general fund grants
	D. Pursue improved connectivity of open space and recreation land through the development of “green corridors” consisting of new and existing bicycle and pedestrian trails and on-street routes.	1. Identify opportunities for “land swaps” to develop systems of contiguous permanently protected open space.	Planning	Long term	Staff time
		2. Develop further refinements to the existing bicycle and pedestrian trail system in locations that currently connect major open space parcels.	Planning; consultants; RIDOT	Medium term	Staff time
		3. Develop new enhancements to the bicycle and pedestrian trail system by identifying potential new routes that can connect major open space parcels.	Planning; consultant; RIDOT	Medium term	Staff time; MPO; RIDOT; grants
		4. Develop improvements for increased neighborhood connections to parks, such as new sidewalks or multi-use paths.	Planning; DPW; consultants; developers	Medium term	Staff time; grants; developers
		5. Work with neighboring communities to form links to regional trails and open space systems.	Planning; consultant	Ongoing	Staff time; grants
		6. Create an easy to use trail/bike/greenspace map that can be accessed from the City’s website.	Planning with nonprofit partners; RIDEM; CRMC; consultant	Medium term	Seek assistance from Narragansett Bay Wheelmen and Explore RI; grants; general fund
	E. Maintain high standards of urban design, environmental stewardship, and aesthetics in public open spaces to preserve and further enhance the character of the City.	1. Continue and expand the development of the municipal tree farm at Barton Farm.	City with partners; consultant	Short term	DPW or contract with nonprofit group; grants; general fund
		2. Continue and expand the City’s street tree planting program.	DPW; consultant	Ongoing	Grants; general funds
		3. Continue “Adopt-a-Spot” and similar programs to encourage private funding of beautification of the public realm, such as in street medians.	DPW and private partners; RIDOT	Ongoing	RIDOT

Chapter 5—Parks and Open Space Resources

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		4. Enact necessary regulations for sufficient review of development plans for both private and public improvements to ensure that neighborhood and municipal urban character is preserved and enhanced	Planning; consultant	Medium term	Staff time; grants; general fund
	F. Protect, preserve, maintain, and expand Warwick’s coastal and fresh water public access points.	HIGH PRIORITY *1. Promote inclusion of recreational and community meeting space uses in the State’s portion of the Rocky Point parcel.	Mayor; City Council; Planning; Rocky Point Foundation; RIDEM	Ongoing	Staff time
		2. Maintain and consistently update the inventory of all public rights-of-way to the coastline found in the Warwick Harbor Management Plan.	Planning; Parks and Recreation; HMC; consultant	Short term and ongoing	Staff time; grants; general funds
		3. Clearly demarcate and maintain, wherever feasible and practicable, the public rights-of-way identified in the inventories.	DPW; CRMC	Medium term	General fund; grants
		4. Discourage the abandonment or sale of public rights of way to coastal and inland water access points.	Planning; City Council	Ongoing	Staff time
		5. Identify, retain, and foreclose rights of redemption on all tax title properties within 200 feet of the shoreline and all inland water bodies that provide potential access points and scenic vistas to the shore, freshwater ponds, and rivers.	Planning; Legal; City Council	Ongoing	Staff time; grant funding; general fund
		6. Develop a recreational Blueway Trail Initiative to map and enhance recreational opportunities in local waterways and adjacent open space and create an interactive water trail map that can be accessed from the City’s website.	Planning with Explore RI; consultant	Short term	Expand Explore RI information; donations; grants
		7. Improve existing and create new access points for canoeing, kayaking, and boating on both rivers and ponds and in the coves and the bay.	Planning; Parks and Recreation; nonprofit partners	Medium term	Staff time; grants; donations



Chapter 5—Parks and Open Space Resources

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
2. Recreation facilities that are state-of-the-art and that meet the needs of all Warwick residents.	A. Evaluate park and recreation needs regularly.	1. Survey Warwick residents periodically to identify changing needs for recreation programs and facilities for youth, adults and seniors.	Parks and Recreation	Medium term and ongoing	Staff time; grant
	B. Seek a variety of funding sources for operational and capital improvements to the park and recreation system.	1. Identify additional funding sources for programs through channels such as higher user fees and private sources.	Parks and Recreation	Short term	Staff time
		2. Encourage neighborhood associations to adopt and maintain neighborhood recreational facilities and open spaces.	Parks and Recreation	Short term	Staff time
		3. Provide funding for capital improvements to the Mickey Stevens Athletic Complex.	Mayor and City Council	Short term	Bond funding; public-private partnership
	C. Ensure the availability of park and recreation resources to persons of different abilities and different preferences.	1. Establish and implement a plan to make all of Warwick’s public recreational facilities fully accessible to persons with disabilities.	Parks and Recreation	Short term	Staff time; CDBG
		2. Ensure that spaces for both active and passive uses are available in all parks.	Parks and Recreation	Short term	Staff time

Chapter 6—Historic and Cultural Resources

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. The City’s historic resources, including structures, natural features, and character areas, are protected and preserved.	A. Maintain an accurate inventory of historic resources in the city, including photographs, and make it publicly accessible.	1. Determine eligibility criteria for inclusion in the inventory of historic resources.	Planning; Historic District Commission; consultant	Medium term	Staff time; grant
		2. Create a rating system to identify priority properties for preservation.	Planning; Historic District Commission; consultant	Medium term	Staff time; grant
		3. Identify additional historic and archaeological resources.	Planning; Historic District Commission; consultant	Medium term	Staff time; grants
		4. Make the inventory available to the public on the City website.	Planning; consultant; MIS	Long term	Staff time; grant
	B. Provide incentives for historic preservation.	1. Continue to support the State Historic Tax Credit.	Mayor and City Council; consultant	Short term and ongoing	Staff time
		2. Consider a city tax credit or property tax abatement for approved work to high-priority historically significant properties.	Mayor and City Council; Historic District Commission	Medium term	Staff time
	C. Enhance the review process in local historic districts with more focused design guidelines.	1. Create more detailed design guidelines for local historic districts.	Planning; Historic District Commission; consultant	Medium term	Staff time with small consultant contract; grant
	D. Promote adaptive reuse of historic buildings.	1. Establish a demolition-delay ordinance.	Planning; City Council; consultant	Medium term	Staff time; grant
	E. Promote protection of historic resources outside local historic districts	1. Explore creating neighborhood conservation districts.	Planning; consultant	Medium term	Staff time; general fund grant
		2. Create design principles or guidelines for areas with high-priority unprotected historic resources.	Planning; consultant	Medium term	Staff time; grant
		3. Continue to advocate for the preservation of historical cemeteries through the continued efforts of the Warwick Historical Cemetery Commission.	Warwick Historical Cemetery Commission	Ongoing	Commission members’ time
		4. Work with RIHPHC to develop procedures to protect hidden archaeological resources.	Planning	Short term	Staff time
		5. Establish a program to accept and acquire historic easements.	Planning; legal; consultant	Medium term	Staff time; grant
	F. Provide resources for information and guidance to property owners on historic preservation issues.	1. Make the historic preservation office a “one-stop shop,” in person and online, for information on historic preservation.	Planning; Historic District Commission; with state and nonprofit partners	Long term	Staff time and seek grant funding

Chapter 6—Historic and Cultural Resources

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
2. Residents' and visitors' experience of Warwick is enhanced by a sense of the City's history.	A. Provide user-friendly information on historic and cultural assets.	1. Inventory, improve, standardize, and expand existing interpretative signage for historic resources.	Planning; consultant	Medium term	Staff time and seek grant funding
		2. Create self-guided digital tours and/or website and make them digitally available.	Planning with Warwick Historical Society	Short to Medium term	Assist Historical Society to seek grants or assistance from student groups
		3. Continue to promote awareness of residential historic preservation including strengthening the Historic Plaque program and establishing events like historic house tours.	Planning with Warwick Historical Society; MIS; consultant; WHDC	Medium term	Staff time and volunteers
		4. Make local history a part of the school curriculum and offer programs for children and adults at the library and elsewhere.	School system; library	Medium term	Staff time and volunteers
3. Warwick's art community is vibrant and growing.	A. Improve promotion of arts and cultural activities and initiatives as part of the city's economic development strategy.	1. Use the arrival of Ocean State Theater to attract other arts organizations to City Centre Warwick area and create an Arts and Culture District there.	Planning; Tourism; EDC; City Council; Planning Board	Medium term	Staff time; general fund grants
		2. Explore the opportunities for arts-oriented housing, studio spaces, and retail spaces in Warwick's closed school buildings, in Village environments, and in vacant or underutilized industrial space.	Planning; City Council; Planning Board	Medium term	Staff time

Chapter 7—Housing and Neighborhoods Resources

High Priority  **Short-term actions (2013–2018)**  **Medium-term actions (2019–2023)**  **Long-term actions (2024 and beyond)** 

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. Warwick has a wide range of quality housing choices to meet the diverse needs of households at all income levels and all stages of the life cycle.	A. Promote a mixture of housing choices in the city as well as mixed income housing in City Centre Warwick within walking distance to commuter rail.	1. Allow compact, higher-density housing options in and adjacent to Village Districts and City Centre Warwick, including appropriate design standards.	Planning; City Council; RIDOT; RIEDC	Short term	Staff time; grant
		HIGH PRIORITY 2. Create a mixed-use Neighborhood Center zoning district to promote redevelopment of older shopping centers at major intersections.	Planning; City Council	Short term	Staff time
		HIGH PRIORITY 3. Establish an option for multi-family, townhouses or similar housing options along major corridors through mixed use zoning.	Planning; City Council; Planning Board; consultant	Short term	Staff time; grant
		4. Amend the zoning ordinance to support minimum mixed-income housing within the WSDD	Planning; consultant; Planning Board; City Council	Medium term	General fund; grants
	B. Provide for conservation subdivisions by right, and consider making them mandatory, with appropriate design standards, in remaining open areas that may be developed some time in the future.	1. Revise the zoning ordinance to create a conservation subdivision with a limited density bonus to promote use.	Planning; City Council; consultant	Medium term	Staff time; Planning Challenge Grant
	C. Consider single-level aging in place friendly housing option as a way to diversify housing types for seniors and affordable housing.	1. Create a special regulation zoning district for single-level aging in place friendly housing option.	Planning; City Council; Planning Board	Medium term	Staff time
	D. Refine and implement an affordable housing plan.	1. Continue the partnerships between the Warwick Housing Authority, nonprofit agencies, and for-profit developers to provide project-based Section 8 certificates for transitional housing, supportive housing, and mixed use housing.	Warwick Housing Authority	Ongoing	Staff time
		2. Promote creation of service networks for senior citizens that help them stay in their homes for as long as possible.	Senior Center and volunteers	Medium term	Staff time and volunteers
		3. Continue to work to identify city-owned land and foreclosed properties that could be made available for affordable or mixed-use housing.	Planning; Community Development; Housing Authority	Ongoing	Staff time
		4. Consider acquisition of foreclosed properties for rehabilitation and use as scattered site affordable housing.	Housing Authority; housing nonprofits; Community Development	Ongoing	Staff time; state and federal funding

Chapter 7—Housing and Neighborhoods Resources

High Priority  **Short-term actions (2013–2018)**  **Medium-term actions (2019–2023)**  **Long-term actions (2024 and beyond)** 

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		5. Continue to facilitate access to housing counseling programs for those at risk of foreclosure or homelessness.	Community Development and nonprofit groups	Ongoing	Staff time
		6. Explore the establishment of affordable housing zoning incentives or inclusionary zoning for mixed-use districts, such as the Village Districts and City Centre.	Planning; City Council	Medium term	Staff time
		7. Study the establishment of a Warwick Affordable Housing Trust and an inclusionary zoning program.	Planning; City Council; Warwick Housing	Long term	Staff time
	E. Continue and expand, when possible, rehabilitation programs for low- and moderate-income homeowners.	1. Seek additional resources for rehabilitation programs.	Community Development and nonprofit groups	Ongoing	Staff time; state and federal funding; corporate volunteer programs
2. All neighborhoods have retained or enhanced their character and livability.	A. Establish a robust, proactive and coordinated code enforcement program and property standards system that will facilitate the resolution to code issues that threaten the use and enjoyment of neighboring properties and the general quality of life of the surrounding community.	HIGH PRIORITY 1. Establish responsibility in an existing or new position for coordination of code enforcement and property standards.	Mayor's office; Building	Short term	Staff time; General fund
		HIGH PRIORITY 2. Create a code enforcement program and/or ordinance designed to address stewardship and public safety issues for single-family structures operated as rental properties within residential neighborhoods.	Planning; Building Department; Police Department; Legal; City Council	Short term	Staff time
		3. Explore a ticketing system for quality of life violations.	Planning; Police Dept.	Medium term	Staff time
		4. Establish an online/mobile system for receiving and responding to citizens' concerns about quality of life violations.	Mayor's office; DPW	Medium term	Staff time; use free apps; general funds
		HIGH PRIORITY 5. Consider an ordinance for registration and periodic inspection of rental housing.	Planning; Community Development; Building Department; City Council; legal; consultant	Short term	Fund through fee for registration and inspections; grant
	B. Create Sustainable Neighborhood Livability Plans and Projects.	1. Building on existing neighborhood plans and working with neighborhood residents, develop neighborhood-focused plans.	Planning; Community Development	Short term and ongoing	Staff time and grants

Chapter 7—Housing and Neighborhoods Resources

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
3. Villages have a mixture of uses and have become more walkable.	A. Make Apponaug Village into the city’s civic center and establish additional Village District zones.	1. Implement the Apponaug Village Master Plan and expand the area of Village District zoning to include the mill site and areas surrounding the residential core of the village.	Planning; Planning Board; City Council; Zoning	Medium term	Staff time; grants; general fund
		2. Consider Village District zoning in Pawtuxet, Pontiac, and East Natick Villages and in the Oakland Beach village area.	Planning; Planning Board; City Council	Medium term	Staff time
	B. Give high priority to connecting Village Districts with surrounding neighborhoods and community destinations through pedestrian and bicycle routes.	1. Identify opportunities for pedestrian and bicycle routes radiating from Village Districts and important community destinations.	Planning; consultant	Short term	Staff time; grant
		C. Explore establishment of a Main Streets program to organize merchants and promote improvements for Village Districts.	1. Start Main Streets programs in Village Districts.	Planning; consultant	Medium term
	D. Provide incentives for appropriate development in Village Districts.	1. Offer incentives such as limited tax abatements or creation of a TIF district for public improvements for development in Village Districts.	Planning; City Council	Medium term	Staff time; grants
	E. Establish a regular series of cultural events in Village Districts.	1. Work with arts and culture organizations, the schools, and others to create events that encourage repeat visits and enhance business for local merchants.	Parks & Recreation; Warwick Tourism	Short term	Staff time; seek grants
4. Neighborhood commercial areas are modernized and serve residents well.	A. Establish mixed use zoning for Neighborhood Centers to concentrate retail uses at major intersections along commercial strips to create destinations.	See Actions 1.A. 2 and 1.A.3 above.	Consultant; Planning board; City Council	Medium term	General fund; grant
	B. Establish design standards and incentives for substantial renovation and new construction in neighborhood commercial districts, including sustainability measures.	1. Create a Mixed-Use Neighborhood Center zoning district and a Mixed-Use Corridor zoning district with appropriate standards and incentives.	Planning; consultant; Planning Board; City Council	Medium term	Staff time; general fund; grant

Chapter 8—Economic Development

HIGH PRIORITY High Priority ■ Short-term actions (2013–2018) ■ Medium-term actions (2019–2023) ■ Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. Attract and retain business in key existing and emerging economic base industries.	A. Promote Warwick as a home for expanding life sciences, marine technology, and other technology firms, capitalizing on Warwick’s location midway between Providence’s Knowledge District and the University of Rhode Island in Kingston, and its ample inventory of commercial and industrial space.	1. Build relationships with the technology community through engagement with organizations such as the Rhode Island Center for Innovation and Entrepreneurship, Rhode Island Science and Technology Council, Rhode Island Manufacturing Extension Service, and Slater Technology Fund.	Tourism/Economic Development Department with RIEDC	Short term and ongoing	Staff time
		2. Identify technology firms transitioning from startup to expansion phase and develop targeted marketing approaches including personal outreach, promotional materials, and information on available properties.	Economic Development Department with RIEDC	Short term and ongoing	Staff time
		3. Monitor trends in development of technology-based industries and communicate with property owners and developers about opportunities for targeted marketing and property improvements.	Economic Development Department	Short term and ongoing	Staff time
	B. Target marketing to other industries in which Warwick has competitive strengths, including regional retail, professional and technical services, financial services, and distribution.	1. Develop marketing materials highlighting the city’s assets and advantages relevant to target industries and expanding the marketing, branding and identity of City Center Warwick (formerly WSDD).	Economic Development Department, with consultant	Short term and ongoing	Staff time; seek grants or general fund
		2. Create an industries section on the city’s economic development website and use social media to market to target industries.	Economic Development with MIS	Short term	Staff time
		3. Attend state and regional industry trade shows.	Economic Development	Short term and ongoing	Staff time
		4. Coordinate marketing efforts with Rhode Island EDC.	Economic Development	Short term and ongoing	Staff time

Chapter 8—Economic Development

HIGH PRIORITY High Priority Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
	C. Strengthen and expand the tourism industry.	1. Identify tourism market segments most likely to experience growth and focus on their development.	Tourism Office; RIEDC	Short term	Short term
		2. Selectively develop additional attractions, including the development of Rocky Point for a combination of active and passive recreation activities, full restoration of the Aldrich Mansion in collaboration with the Providence Diocese, and further development of sports tourism.	Tourism Office with partners; RIDEM	Long term	Staff time; need funding grants (?)
		3. Develop partnerships with local businesses and civic groups that support and build on the area’s natural assets, history and culture in order to provide a distinctive, genuine visitor experience.	Tourism Office; Environmental groups; Historical Society; Chamber	Medium term	Staff and volunteer time
		4. Establish a visitors’ ambassadors program that enlists resident volunteers to showcase the city’s natural, historical, and cultural offerings through such measures as information kiosks at key entry points and tourism venues, and guided tours.	Tourism Office	Medium term	Staff; volunteers
		5. Provide wayfinding and gateway signage to visitor attractions and retail districts.	Planning; Tourism Office; DPW; RIEDC; RIDOT	Short term and ongoing	Staff time; seek grants or general fund; RIEDC; RIDOT
		6. Organize tourism information by defined districts, “packaging” information on attractions, events, retail, dining, and lodging for each district.	Tourism Office	Medium term	Staff time
		7. Promote the development of food and lodging facilities to increase the city’s appeal to targeted markets.	Tourism Office; Planning; Economic Development	Medium term	Staff time; incentives
		8. Improve waterfront circulation through establishment of a water shuttle to connect major waterfront facilities and venues.	Planning; Economic Development; partners; RIDEM; CRMC	Long term	Staff time; seek grants
		D. Preserve the shellfish industry by maintaining needed infrastructure and appropriate land use policies, and advocating for supportive federal and state policies.	1. Ensure implementation of provisions of the new Harbor Management Plan addressing the needs of the local shellfish industry.	Economic Development; Harbormaster; consultant	Short term

Chapter 8—Economic Development

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		2. Support preservation of waterfront infrastructure that serves commercial fisherman.	Economic Development; Harbor Commission	Short term	Staff time
		3. Promote branding and marketing of local shellfish in cooperation with state efforts.	Economic Development	Short term	Staff time
		4. Develop eco-tourism projects that involve local fisherman and provide them with supplemental income.	Tourism Office	Long term	Staff time
		5. Support industry advocacy for favorable federal and state fisheries policies.	Economic Development	Short term	Staff time
	E. Establish land use and public investment policies that promote the attraction and growth of target industries	HIGH PRIORITY 1. Implement the Warwick Station Development District Master Plan (City Centre).	Planning; Economic Development; City Council; Planning Board; Zoning Board	Short term and ongoing	Staff time
		HIGH PRIORITY 2. Implement WSDD Master Plan, zoning ordinance, and design standards prohibiting uses and designs that are nonconforming with the ordinance and principal objectives of the master plan and design goals.	Planning Board; Zoning Board; City Council; consultant	Short term and ongoing	Staff time; grants
		HIGH PRIORITY 3. Create an Innovation District in the industrial area near I-95 with Technology/Light Industry zoning and design standards; infrastructure improvements; and public realm urban design improvements.	Planning; Economic Development; consultant	Short term	Staff time; seek grants for improvements
		4. Adopt land use regulations that sufficiently provide for the diversity of target industry development and, in particular, preserve a balance between large-scale retail development and other industry development.	Planning, City Council	Medium term	Staff time; general fund; grant
		5. Invest in infrastructure improvements in key commercial/industrial corridors such as Jefferson Boulevard, Warwick Avenue, and Post Road to increase their appeal to property developers and professional and technology businesses.	Mayor, City Council, Planning, DPW; RIEDC	Medium term	Staff time; seek grants for improvements; general fund
		6. Provide targeted incentives for repurposing of vacant and deteriorated commercial and industrial space through tax stabilization and tax increment financing.	Mayor, City Council, Planning	Medium term	Staff time; grant; general fund

Chapter 8—Economic Development

HIGH PRIORITY High Priority Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES	
		HIGH PRIORITY 7. Establish an overlay district for urban design and functional improvements to the Route 2/Bald Hill Road corridor.	Planning, City Council; Planning Board; consultant	Short term	Staff time; grant; general fund	
2. Preserve and strengthen neighborhood commercial districts that enhance the vitality and quality of life in the City’s neighborhoods.	A. Use land use policies, design standards, and public investments incorporated into broader neighborhood plans to enhance neighborhood commercial districts with a mixture of uses.	1. Establish design and maintenance standards for neighborhood commercial districts that incorporate preservation, high-quality design and neighborhood character.	Planning; City Council; consultant	Long term	Staff time; grants; general fund	
		2. Encourage high-quality mixed-use development at appropriate densities to integrate housing, transit, and neighborhood businesses.	Planning; City Council; Zoning/Planning Board	Short term	Staff time	
		3. Develop a capital improvement plan for each neighborhood commercial district based on a GIS database, including street and sidewalk repair, lighting, street furniture, landscaping, and off-street parking, as appropriate.	Planning, DPW; consultant	Long term	Staff time plus consultants; grants	
		4. Consider the use of Tax Increment Financing in neighborhood commercial districts	Planning, City Council	Short term	Staff time	
		5. Expand the Apponaug Village Façade Program to other retail or village districts in need of façade improvements	Planning; consultant	Medium term	Staff time; grant	
	B. Collaborate with neighborhood businesses to develop business-led initiatives that strengthen the business environment.	1. Establish a Main Streets Program with assistance from the National Trust for Historic Preservation, incorporating all retail districts whose merchants and property owners agree to participate.	Planning; Economic Development	Long term	Staff time; corporate grants	
		2. Establish a dedicated website providing more information on each district identified on the “Shop Warwick” map on the city’s tourism website.	Tourism Office with MIS	Short term	Staff time	
		3. Establish new channels for sale of locally produced goods and services, such as local farmers, seafood and crafts markets.	Economic Development and partners	Medium term	Staff time	
	3. Improve the business environment.	A. Develop stronger lines of communication with businesses to better identify and respond to business needs and interests.	1. Establish a Warwick Business Interest Group within the Central Rhode Island Chamber of Commerce to work with local government to identify and address business opportunities and challenges.	Economic Development with Warwick businesses	Medium term	Staff time

Chapter 8—Economic Development

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		2. Hold periodic meetings with industries groups to identify and address industry-wide needs and interests.	Economic development	Short term and ongoing	Staff time
		3. Establish a formal business retention program staffed by screened and trained volunteers to conduct periodic outreach to local businesses and provide information, referral and/or direct assistance as needed.	Economic development and volunteers	Long term	Staff time
		1. Establish a one-stop information and referral desk that will use a case management approach to assist businesses with all regulatory issues.	Economic development; MIS	Medium term	Staff time; grants (software)
	B. Make business development regulatory processes more timely and user-friendly.	2. Increase coordination among regulatory agencies to streamline and expedite regulatory approvals.	Economic development and planning; General Assembly; RIDEM; CRMC; etc.	Short term	Staff time
		3. Develop a stronger customer-service philosophy through customer service training, effectiveness metrics and continuous improvement processes.	Mayor's office	Medium term	Staff time
4. Increase access to high-quality employment opportunities for Warwick residents.	A. Leverage relationships with local businesses to promote participation in career education and workforce development programs.	1. Provide local businesses that have workforce training or recruitment needs with information and referral to Rhode Island Department of Labor and Training's Business Workforce Center.	Economic development	Short term and ongoing	Staff time
		2. Link local businesses with the Warwick Public Schools to expand career exploration and exposure opportunities.	Economic development; Public Schools	Short term and ongoing	Staff time
	B. Take labor force skill levels into account in business recruitment efforts.	1. Seek to attract businesses with employment needs consistent with the occupational skills of Warwick residents, particularly professional, management, and business and financial occupations.	Economic development; RIEDC	Short term and ongoing	Staff time
		C. Improve transit access between local residential and employment centers.	1. Advocate for improved intra-community public transit services with RIPTA.	Mayor's office; Planning; economic development	Short term and ongoing
	2. Improve alternative transportation options between residential and business areas, including walking and bicycling.		Planning; DPW; RIDOT	Medium term	Staff time; federal state and local funding; grants

Chapter 9—Transportation and Circulation

HIGH PRIORITY High Priority Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. The City of Warwick is a model for efficient and flexible multimodal transportation.	A. Require that pedestrian movement, bicycle transportation, accessibility for the disabled, and streetscape aesthetics be incorporated in the design of roadway construction/reconstruction projects.	1. Identify and prioritize existing corridors for viability as complete streets “vision projects,” such as Route 2, Route 5, and Jefferson Boulevard.	Planning; consultant	Medium term	Staff time; grant
	B. Promote the economic, environmental, and quality of life benefits of mass transit.	1. Advocate for more frequent commuter rail service at the Warwick Station and support initiatives to increase ridership.	Mayor’s office; City Council; RIDOT	Short term and ongoing	Staff time
		2. Promote development of the Proposed InterLink/Coronado Street Improvements Project, and evaluate the feasibility of providing enhanced and/or new linkages across the rail corridor at other locations.	Mayor’s office; City Council; Planning; RIDOT; RIEDC	Short term and ongoing	Staff time; RIDOT; RIEDC
2. Warwick has an efficient road network that responds to existing and future development patterns while reducing auto congestion and improving circulation.	A. Allocate sufficient resources for maintenance and street repairs.	1. Continue to seek state and federal funding assistance for the maintenance of local roadway infrastructure (through opportunities such as the RI-LEAP program).	Mayor’s office; Planning	Short term and ongoing	Staff time
		2. Regularly monitor street conditions and advance projects to address problems before they grow larger and more expensive to fix.	DPW	Short term and ongoing	Staff time; general fund
		HIGH PRIORITY 3. Implement a citywide geographic information system (GIS), asset management system, and/or other technologies to more efficiently and effectively inventory, track, and manage city infrastructure and resources.	Mayor’s office; city council	Short term	Staff time; general fund; grants
		4. Coordinate road repairs with other infrastructure improvements to increase efficiency, and preserve roadway quality.	DPW in coordination with other agencies	Short term and ongoing	Staff time
		5. Identify, prioritize, and promote projects to address the transportation infrastructure needs of the city for inclusion in the state’s Transportation Improvement Program (TIP).	Planning; Highway department	Short term and ongoing	Staff time



Chapter 9—Transportation and Circulation

High Priority Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES	
	B. Reduce traffic congestion throughout Warwick, particularly along east/west routes and along major commercial corridors.	1. Upon their completion, assess the performance of the modern roundabouts constructed under the Apponaug Circulator and Route 5 projects in increasing safety and alleviating congestion, and identify other locations within the city where the benefits of these facilities could potentially be realized.	RIDOT	Medium term	Staff time	
		2. Continue to conduct an open and transparent process for selecting projects to include in the future TIP Proposals, and ensuring that the city's most pressing needs are prioritized accordingly.	Planning	Ongoing	Staff time	
		3. Limit multiple access points on the City's major arterial roadways, and where possible, seek to consolidate and/or eliminate redundant accesses and curb cuts.	Planning; Highway department; RIDOT; General Assembly	Short term	Staff time; RIDOT; developer	
		4. Ensure that Main Avenue (Route 113) continues to serve effectively as an east-west arterial and a hurricane evacuation site.	Planning; Highway department; RIDOT	Medium term	Staff time	
	C. Encourage the use of effective traffic-calming techniques in neighborhoods.	1. Solicit input from the community (residents, neighborhood groups, public officials) as to the specific locations within the city where traffic calming measures are most needed and appropriate.	Planning	Medium term	Staff time	
		2. Implement traffic calming measures (e.g., curb bump outs, speed humps) at locations along local and residential roads where speeding is persistently problematic.	DPW; Highway Department	Long term	Staff time and general fund	
	3. Warwick has improved the pedestrian and bicycling environment with routes that better connect Warwick's neighborhoods.	A. Identify and pursue opportunities for developing dedicated bicycle and multi-use pedestrian rights-of-way to create linkages between residential neighborhoods, parks, commercial areas and other destinations.	1. Continue to work with the state to develop and expand the city's system of signed bicycle routes.	Planning	Short term and ongoing	Staff time
			2. Continue to require sidewalks for all new residential developments and ensure that pedestrian accessibility and circulation are addressed.	Planning; Planning Board; City Council; Zoning Board	Ongoing	staff time
			3. Regularly monitor the condition of sidewalks and provide sufficient funding for repairs.	DPW; City Council	Short term and ongoing	Staff time; general fund

Chapter 9—Transportation and Circulation

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		4. Ensure that redevelopment projects within the city’s village districts provide for pedestrian safety and mobility, and address applicable accessibility requirements for persons with disabilities.	Planning; Planning Board; City Council; Zoning Board	Short term and ongoing	Staff time
		5. Require that new development and redevelopment proposals, where applicable, include appropriate amenities for bicyclists (e.g. bicycle racks).	Planning; Planning Board; City Council; Zoning Board	Short term and ongoing	Staff time
		6. Enforce federally-mandated guidelines for accessibility in accordance with the Americans with Disabilities Act (ADA).	Planning; DPW; Highway Dept; Building Dept	Short term and ongoing	Staff time
4. Warwick has a convenient public transit network that better meets the needs of Warwick residents and workers.	A. Discourage the elimination of fixed bus routes providing service to the city and further reductions in service frequency along established routes.	1. Advocate for improved connectivity between RIPTA service, the InterLink, and key points (e.g. Village Districts) throughout the city.	Mayor’s office; City Council; Planning;	Short term and ongoing	Staff time
		2. Identify potential new routes, or Providence route realignments, to better meet inter-city transportation needs.	Planning, with RIPTA	Medium term	Staff time
		3. Evaluate the feasibility of implementing demand-based transit services (similar to RIPTA’s Flex Service offered elsewhere in suburban and rural “flex zones”) for to increase intra-city mobility.	Planning, with RIPTA	Long term	Staff time
		4. Maintain and operate the city’s para-transit service (Transwick) in a manner that best serves the mobility needs of the elderly and disabled residents.	Transwick	Ongoing	Staff time
		5. Review all RIPTA proposals for changes to service (routes, frequency) and, where appropriate, submit written comments during the public notice period that represent the concerns and interests of the city and its residents.	Planning	Ongoing	Staff time
		6. Develop and offer recommendations to RIPTA for improved synergy between bus and other modes of transit within the city.	Planning	Short term	Staff time

Chapter 9—Transportation and Circulation

High Priority  **Short-term actions (2013–2018)**  **Medium-term actions (2019–2023)**  **Long-term actions (2024 and beyond)** 

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
5. Warwick’s intercity and intermodal transportation includes improved passenger rail service and airport facilities.	A. Engage with the RIDOT and Amtrak to further leverage the city’s key intermodal assets (location and infrastructure) for intercity travel.	HIGH PRIORITY 1. Promote the City Center Warwick (formerly WSDD) as an efficient and sustainable means of providing access between air, rail, automobile, and bus modes of travel.	Mayor’s office; Planning; Dept. of Tourism; transportation agencies; RIEDC; RIDOT	Ongoing	Staff time; advertising; RIDOT; RIEDC; grants; general fund
		HIGH PRIORITY 2. Ensure that the redevelopment of City Center Warwick (formerly WSDD) is conducted in a manner that complements and encourages transit ridership.	Planning; Planning Board; City Council; Zoning Board	Ongoing	Staff time
		3. Work with RIDOT and the MBTA to increase the frequency of commuter rail service to and from Providence and Boston.	Mayor’s office; Planning; RIDOT	Ongoing	Staff time
		4. Encourage the Rhode Island Department of Transportation (RIDOT) to expand commuter rail services to points south of the city along the Northeast Corridor.	Mayor’s office; Planning	Ongoing	Staff time
		5. Work with RIDOT and Amtrak to build a platform at Warwick Station to connect travelers to major destinations along the Northeast Corridor route.	Mayor’s office; Planning; RIDOT is the lead; legislature; Governor	Long term	Staff time
	B. Work with the State of Rhode Island, the Rhode Island Airport Corporation (RIAC), and the Federal Aviation Administration (FAA) to mitigate any potential negative impacts of airport development activities on the residents, businesses, and institutions of the City of Warwick.	HIGH PRIORITY 1. Ensure that all mitigation measures committed to in the Final Environmental Impact Statement Record of Decision (ROD) are implemented in a manner that improves east/west circulation, and minimizes traffic, noise and other impacts on adjacent properties, and that the provisions of the Memorandum of Understanding (MOU) between the RIAC and the City of Warwick are upheld.	Mayor’s office; Planning; RIAC; Legal; City Council	Ongoing	Staff time
	C. Coordinate the implementation of Transportation and Circulation recommendations with other elements of the Comprehensive Plan and the City Center Warwick (formerly WSDD) Master Plan to ensure the measured and sustainable development of the Station District and its environs.		Planning; RIDOT	Ongoing	Staff time

Chapter 9—Transportation and Circulation

HIGH PRIORITY High Priority **Short-term actions** (2013–2018) **Medium-term actions** (2019–2023) **Long-term actions** (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
6. An accessible, easily navigable marine transportation system.	A. Work with the Rhode Island Coastal Resources Management Council (CRMC) to complete an update to the city's Harbor Management Plan.	HIGH PRIORITY I. Expedite completion of the updated Harbor Management Plan to accompany this Comprehensive Plan update.	Planning; Harbormaster; consultant; Harbor Commission; CRMC	Short term	Staff time; consultant; general fund; grant
	B. Address the need for dredging to restore navigable depths within the city's navigation channels and mooring fields through coordination with the CRMC and U.S. Army Corps of Engineers.	I. Gain support from congressional delegation and CRMC.	Planning; Harbormaster; CRMC; congressional delegation; U.S. Army Corp.	Long term	Staff time; federal funding
	C. Maintain and improve public access opportunities for the use and enjoyment of coastal and marine resources.	I. Enforce the harbor ordinance to prohibit the blocking impeding or private annexing of CRMC rights-of-way, city rights-of-way as well as platted improved and unimproved roadways to the coastline.	Planning; DPW, Parks and Recreation; CRMC; Building Dept.; Legal	Ongoing	Staff time



Chapter 10—Public Facilities and Services

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES	
1. Excellent quality and quantities of drinking water to meet all current and future needs of Warwick.	A. Ensure that the potable water delivered to the customers of both the Warwick Water Division and the Kent County Water Authority (KCWA) meets all drinking water quality standards established by the state Department of Health and the U.S. Environmental Protection Agency.	1. Protect existing and potential future water supply sources from contamination and over-withdrawals.	Town of North Kingstown; KCWA	Ongoing	NK; Water; KCWA	
		2. Support state planning efforts to identify auxiliary, redundant potable water supply sources to supplement the Scituate Reservoir, which supplies the bulk of the city's drinking water.	Water Division	Short term	Staff time	
		3. Coordinate with the KCWA in its efforts to continue implementing and updating supply management and system infrastructure plans.	Water Division	Medium term	Staff time	
	B. Continue to implement and update the Warwick Water Division's Water Supply System Management Plan and Clean Water Infrastructure Plan.	HIGH PRIORITY		Water Division; Mayor's office; City Council	Short term	Staff time; consultant
		1. Amend the Warwick Water Division's rate schedule as appropriate to account for expected declines in metered use (through increased conservation efforts) and develop a revenue structure to sustain the city's state-mandated maintenance, replacement, and capital improvement programs.				
	C. Promote and encourage water conservation efforts to meet the requirements of the state's Water Use and Efficiency Act of 2009.	HIGH PRIORITY		Water Division	Ongoing	Staff time
1. Continue public education to raise awareness about water conservation.						
2. Efficient and reliable sewer service and wastewater disposal throughout the city.	A. Upon completion of regulatory review and public comment processes, implement the Facility Plan Amendment for the Warwick Wastewater Treatment Facility.	HIGH PRIORITY		Sewer Authority	Short term	Staff time
		1. Include programs for the maintenance of and capital improvements to existing system infrastructure (collection, pumping, and treatment facilities) and the prioritized expansion of the collection system to areas not presently served.				
		HIGH PRIORITY		Sewer Authority	Short term	Staff time; FEMA Hazard Mitigation Funds
		2. Expedite implementation of the proposed flood protection and mitigation improvements at the WWTF (raising of the levee crest) to better protect the facility and assets from extreme storm and river flow events, and identify other WSA infrastructure (e.g., pump stations) that require enhanced protection from flooding.				

Chapter 10—Public Facilities and Services

HIGH PRIORITY High Priority Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		3. Continue to engage with the Town of East Greenwich, residents, and other stakeholders to develop environmentally and economically sustainable strategies for improved wastewater management in the Potowomut section of the city.	Sewer Authority	Ongoing	Staff time
	B. Ensure that the wastewater system and on-site wastewater systems operate with best practices and at the highest level.	HIGH PRIORITY 1. Consistent with the findings of a recent comprehensive rate study prepared for the Warwick Sewer Authority (WSA), ensure the balancing of costs of continued maintenance and capital improvements in system infrastructure with equitable revisions of the sewer rate schedule, and ensure the pursuit of program and improvement financing through the state’s Clean Water State Revolving Fund (SRF) loan program.	Sewer Authority	Short term	Staff time; Clean Water State Revolving Loan Fund
		2. Support state programs for the protection and restoration of surface and groundwater quality through continued implementation of WSA’s Mandatory Sewer Connection Program, including enforcement of connect-capable fees where applicable.	Sewer Authority	Ongoing	Staff time
		3. Where new development or redevelopment projects are proposed in un-sewered areas, require proven, best-practice siting and design of on-site wastewater treatment systems, particularly in locations near environmentally sensitive wetland and coastal resources.	Health Department; RIDEM; OWTS; General Assembly; consultant	Medium term	RIDEM
		4. Continue to implement the Industrial Pretreatment Program (through the issuance, monitoring, and enforcement of wastewater discharge permits) to protect WSA facilities and receiving waters from the discharge of toxic and/or excessive conventional pollutants.	Sewer Authority	Ongoing	Staff time
		5. Develop and distribute educational materials to discourage disposal of harmful materials into on-site disposal systems and the municipal sewer system.	Sewer Authority	Short term	Staff time; grant funding



Chapter 10—Public Facilities and Services

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
3. Stormwater management and drainage systems that are effective and reliable and incorporate best practices.	A. Reestablish compliance with the city’s Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit for Stormwater Discharge from Small Municipal Separate Storm Sewer Systems (Small MS4s)	HIGH PRIORITY 1. Implement and continue adherence to the required minimum measure elements contained in the City’s Stormwater Management Program Plan (SWMPP).	Public Works	Short term and ongoing	Staff time
		2. Identify and prioritize existing drainage systems for the construction of appropriate BMPs to improve the quality of runoff discharged to receiving waters.	Public Works; consultant	Medium term	Staff time; grant; general funds
		3. Amend planning and zoning regulations to require reporting and enforce maintenance of privately owned BMPs and drainage systems.	Planning; Public Works; consultant; Building Dept.	Short term	Staff time; grant
	B. Require all new development and redevelopment projects to adhere to the applicable design, construction, and maintenance requirements set forth in the latest edition of the Rhode Island Stormwater Design and Installation Standards Manual.	HIGH PRIORITY 1. Encourage proponents of new development and redevelopment projects to incorporate low-impact development (LID) techniques for the avoidance, reduction, and source management of potential stormwater impacts.	Planning; Planning Board; Zoning Board	Short term	Staff time
		1. Coordinate with the Rhode Island Resource Recovery Corporation (RIRRC) in continuing to develop and implement initiatives for (a) reducing in the amount of source waste generated per capita and (b) diverting waste material from landfill disposal through effective recycling, composting, and other waste-diversion programs.	Public Works	Ongoing	Staff time
		HIGH PRIORITY 2. Continue to maintain the amount of municipal waste disposed of at the state’s Central Landfill within the municipal caps/quotas established under state law.	Public Works	Ongoing	Staff time
4. Continuing to exceed the state’s 35% recycling requirement and meeting or exceeding the state’s 50% solid waste diversion goal.	A. Operate the city’s waste collection and recycling programs (including the automated system for the collection and transport of residential solid waste and recyclables) in a manner consistent with that state’s Comprehensive Solid Waste Management Plan.	HIGH PRIORITY 3. Support the development of programs to increase recycling and diversion in commercial and other non-residential sectors.	Public Works	Short term	Staff time; grants

Chapter 10—Public Facilities and Services

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
5. City facilities that are state-of-the-art and maintained for long-term use.	A. Acquire and implement a municipal asset management system to improve the capital planning process, as well as support more efficient maintenance.	1. Develop a plan for establishing and implementing an asset-management system.	Mayor’s office; DPW; consultant; MIS	Medium term	Staff time; general fund; grant
		2. Determine specific and detailed asset management needs of each municipal department.	Mayor’s office; consultant; MIS	Medium term	Staff time
		3. Determine if additional school consolidations are warranted and plan for building reuse.	School Committee; Planning Dept.	Ongoing	Staff time; Facilities Master Plan consultant
		4. Consider augmenting the internally-created schools facilities plan with additional technical assistance.	School Committee consultant	Short term	School Committee funds
6. Police and fire facilities that meet best-practice performance standards.	A. Continue regular review and planning for manpower, service areas, facilities and equipment, and response times to insure adequate protection and adherence to best-practice standards throughout the city.	1. Continue to support Community Policing and other community-based public safety programs.	Police Department	Ongoing	Staff time; grants
7. Effective services that support a growing senior citizen population.	A. Develop a plan for senior services and aging-in-place programs.	1. Survey senior citizens and retirees about their needs and preferences in services.	Senior Center; consultant	Short term	Staff time; grant; general budget
		2. Review existing services and programs in Warwick and the region to see where service and support gaps exist.	Senior Center; consultant	Medium term	Staff time
		3. Explore grassroots service “village” programs to help seniors age in place.	Senior Center; volunteers	Medium term	Staff and volunteer time

Chapter 11—Sustainability and Resilience

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. The City implements practices to conserve energy and use renewable energy.	A. Develop a five year capital plan for adopting energy efficient systems and practices for municipal buildings and equipment to aim for a 25% reduction in energy use by 2033.	HIGH PRIORITY			
		1. Prioritize recommendations from the Whole Building Assessment Initiative reports for the pool and arenas and the Honeywell Energy Audit based on energy efficiency benefits and capital costs.	Parks and Recreation; Mayor's office	Short term	Staff time; capital program
		2. Develop a timeline for implementing the recommendations included in these plans.	Mayor's office; Parks and Recreation	Short term	Staff time
		3. Develop a plan for converting the municipal fleet to fuel efficient and alternative fuel vehicles.	Mayor's office; DPW	Medium term	Staff time
		4. Identify an appropriate location for electric vehicle charging stations.	Planning; DPW; Police Dept; Fire Dept; Building Dept	Short term	Staff time
	B. Develop and implement an energy demand reduction campaign.	1. Develop an energy efficiency campaign for the public in conjunction with National Grid.	Mayor's office	Medium term	Staff time
		2. Use state, federal and non-profit sources to promote energy efficiency.	Mayor's office	Ongoing	Staff time; grants
		3. Create a program to recognize businesses that adopt energy efficient/conservation techniques	Mayor's office	Medium term	Staff time
	C. Adopt land use policies and regulations that encourage reductions in energy demand.	1. Encourage, incentivize and incorporate, as appropriate, use of energy efficient technologies in building and landscape projects.	Planning; Building Dept	Short term	Staff time
		2. Support policies in other elements of this plan that promote efficiency through compact growth patterns, improved road connectivity and alternative transportation modes.	Planning	Short term	Staff time
		3. Create a program to recognize businesses that adopt energy efficient/conservation techniques.	Planning; Tourism	Short term	Staff time
	D. Replace fossil fuels with renewable energy sources.	1. Review the findings on wind energy on municipal properties to consider next steps and investigate installing solar panels on municipal buildings	Mayor's office; DPW; Statewide Planning	Medium term	Staff time
		2. Provide regulations for renewable energy installations on private property in zoning and other ordinances, as appropriate .	Planning; City Council; consultant	Medium term	Staff time; grant



Chapter 11—Sustainability and Resilience

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		3. Streamline and reduce regulatory barriers to green buildings, and develop incentives to encourage green construction.	Planning; City Council; MIS; consultant	Short term	Staff time; general fund; grant
		4. Provide more convenient parking and/or free parking for energy efficient vehicles in municipal parking facilities and encourage similar practices by commercial property owners.	Mayor's office; Planning; DPW; consultant	Medium term	Staff time
2. The City implements and promotes resource conservation and waste reduction.	A. Continue the City's high performance in recycling.	1. Develop a program to include multi-family developments and commercial properties in recycling programs, either through the city or through private companies.	Public Works	Medium term	Staff time
3. City facilities and practices are a model of sustainability.	A. Make a checklist of sustainable criteria to be used in capital planning, operations and purchasing in order to promote energy efficiency and other sustainable practices.	1. Use tools such as the STAR Community rating system (www.starcommunities.org) to create a set of tools and criteria to be used in Warwick.	Planning	Long term	Staff time
4. Warwick has an up to date hazard mitigation plan.	A. Keep the City's hazard mitigation strategy current and implement the action plan.	1. Prepare the 2015 update.	Planning; Public Works; Fire Dept; consultant	Short term	Staff time; consultant; grant funding; general fund
		2. Incorporate coastal restoration, including wetland and marsh restoration, as an integral part of the hazard mitigation strategy.	Planning; consultant; CRMC; Save the Bay	Long term	Staff time; consultant; grant fund
		3. Ensure that there is adequate funding and administrative support to implement the recommendations in the Hazard Mitigation Strategy.	Mayor's office; City Council	Short term	General fund; hazard mitigation grants
5. Warwick is preparing for the impacts of extreme weather events and climate change.	A. Educate the public to better understand the concept of community resilience and the meaning of probabilities and risk, especially for stream and coastal flooding.	1. Create an Emergency and Disaster Preparedness section on the City website with information for individual households and on the city and state's preparedness.	MIS Division; consultant; Fire Dept.	Short term	Staff time; grant funds
		2. Work with the state and FEMA to make brochures and other information available on the City website, in the library, and at other city destinations, such as community centers.	MIS Division; Public Works; Planning	Short term	Staff time; grants; general funds
	B. Improve the city's stormwater management system to enhance infiltration and expand stormwater retention areas.	1. Implement green infrastructure stormwater management strategies and actions in chapters 4 and 10.	Planning; Mayor's office; Zoning Board; Planning Board; City Council; Building Dept.	Short term and ongoing	Staff time; incorporation into future designs; require addition to zoning ordinance

Chapter 11—Sustainability and Resilience

High Priority  **High Priority**  **Short-term actions (2013–2018)**  **Medium-term actions (2019–2023)**  **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
	C. Begin planning to accommodate a base rate of expected 3 to 5 foot rise in sea level by 2100 in the siting, design, and implementation of public and private coastal activities.	HIGH PRIORITY 1. Work with CRMC on the Rhode Island Shoreline Change Special Area Management Plan (Beach SAMP) as well as the Rhode Island Climate Change Commission, City departments, and the public.	Mayor's office; CRCM	Short term	Staff time
		2. Study impacts and create adaptation and mitigation measures and require city departments to consider climate change impacts in all long-range planning and critical public infrastructure projects.	Mayor's office; consultant	Medium term	Staff time; grant; general fund
		3. Ensure consistency between the Hazard Mitigation Plan, the Comprehensive Plan, SAMP plans, and the city's land use regulations.	Planning; City Council; Planning Board; Zoning Board	Short term	Staff time
		4. Enhance education and community engagement through increased understanding of climate change and its potential impacts on the community.	Mayor's office; Planning; Libraries	Short term and ongoing	Staff time
		5. Enforce building and zoning codes along the coast to protect residents from potential hurricane and tropical storm impacts, and to protect coastal wetlands.	Building Department	Short term and ongoing	Staff time
		HIGH PRIORITY 6. Develop examples of attractive design solutions for elevating existing buildings and for development of new elevated buildings.	Planning; consultant	Short term	Staff time; student architecture studies; grant; general funds

Chapter 12—Future Land Use, Zoning, and Urban Design

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. Warwick has sufficient diversity of land uses to support a strong and stable tax base.	A. Establish a new Technology/Light Industry land use category and Innovation District Zoning.	HIGH PRIORITY 1. Create a Technology/Light Industry Innovation District in the zoning ordinance.	Planning; City Council; consultant	Short term	Staff time; grant; general fund
		2. Prepare a district master plan for the Innovation District.	Planning with consultant	Long term	Seek grant funding
		3. Create development standards and design guidelines for both public and private investment in the Innovation District.	Planning with consultant	Long term	Seek grant funding
	B. Establish a Bald Hill Road Enhancement Overlay District.	HIGH PRIORITY 1. Prepare a district master plan for the Route 2/Bald Hill Road corridor that focuses on improving corridor function, attractiveness, and competitiveness.	Planning with consultant	Short term	Seek grant funding
		2. Based on the plan, establish design standards for the Enhancement Overlay District and adopt the plan and the new overlay district.	Planning; City Council	Short term	Staff time
	C. Amend commercial zoning to specify office development where it is appropriate.	HIGH PRIORITY 1. Establish a Medical Office Zoning District on Toll Gate and Centerville Roads in the vicinity of Kent Memorial Hospital where there are existing medical offices without adversely affecting neighboring residential properties.	Planning; City Council; consultant	Short term	Staff time; general funds
2. Mixed-use centers provide walkable environments and new housing options.	A. Expand the Apponaug Village District and designate additional Village District Zones.	HIGH PRIORITY 1. Expand the Apponaug Village District zone.	Planning; City Council; consultant	Short term	Staff time; grant
		2. Designate additional Village District zones in Pawtuxet, and Natick Villages, and at Oakland Beach Village.	Planning; City Council; consultant	Medium term	Staff time; grant
	B. Establish Neighborhood Center Mixed-Use Zones at neighborhood commercial district intersections.	1. Study varied mixed-use zoning options and define specific land use composition and performance standards.	Planning	Short term	Staff time; Consultant; Planning Challenge Grant
		2. Designate Neighborhood Center Mixed-Use Zones at shopping center intersections on West Shore Road, Warwick Avenue, and Post Road.	Planning; City Council; consultant	Medium term	Staff time; grant; general funds
		3. Develop development and design standards for Neighborhood Centers.	Planning	Short term	Staff time; grant; general funds
		4. Amend subdivision development review regulations and the zoning ordinance to reflect different types of mixed use conditions desired.	Planning; Planning Board; City Council	Short term	Staff time; Planning Challenge Grant

Chapter 12—Future Land Use, Zoning, and Urban Design

High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
3. City Center Warwick (formerly known as WSDD) is a major center of compact, higher-density transit-oriented development.	A. Ensure that public improvements and private development in the City Center Warwick will be designed for a live-work-play environment, based on the district master plan.	HIGH PRIORITY 1. Create a design manual for public improvements.	Planning	Short term	Grant funding
		HIGH PRIORITY 2. Create a design manual for private site and building design.	Planning	Short term	Grant funding
		3. Continue to work within the collaborative that includes RIDOT, FHWA, RIEDC and the Central RI Chamber of Commerce to coordinate the distribution of resources to grow transit options with appropriate land use that in turn creates economic development.	Planning; Tourism and Economic Development	Ongoing	Staff time
		4. Continue to identify the types of businesses and market segments best suited to the City’s economic, land use and urban design goals for City Centre.	Planning	Ongoing	Staff time
		5. Continue to inventory and market sites available for development.	Planning; Economic Development	Ongoing	Staff time
4. Warwick’s neighborhoods are attractive, well maintained and stable.	A. Protect the character and quality of existing residential neighborhoods as houses are modified and redeveloped to mitigate flooding or for other reasons.	1. Create design guidelines to assist property owners and contractors seeking to raise houses above base flood elevation (BFE).	FEMA; RIEMA	Long term	Seek assistance from architecture students or similar sources; grant
		2. Discourage the creation and development of undersized non-conforming lots, except as provided for in the Warwick zoning ordinance.	Planning; Zoning Board; Planning Board; City Council	Short term	Staff time
5. Major streets mix clusters of neighborhood-serving retail in neighborhood centers with housing and commercial uses.	A. Create a Corridor Mixed-Use zoning district for segments of major streets in order to promote redevelopment of underutilized commercial properties into small- and medium-scaled multi-family housing.	1. Develop a mixed use zoning district that expands allowed uses in these corridors to include multi-family development.	Planning; City Council; consultant	Short term	Staff time; grant; general fund
		2. Include urban design standards for all commercial and multi-family development and redevelopment in these corridor segments.	Planning; consultant	Short term	Staff time; grant; general fund

Chapter 12—Future Land Use, Zoning, and Urban Design

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
		3. Make the zoning change on these road segments, up to where proposed Mixed-Use Neighborhood Center zoning begins: Post Road from Warwick Avenue to Route 37; Post Road from Main Avenue to the proposed expanded Apponaug Village District; Elmwood Avenue from Post Road to the Cranston border; Warwick Avenue from West Shore Road to the Cranston border; West Shore Road from Sandy Lane to Warwick Avenue	Planning; consultant; City Council; Planning Board	Short term	Staff time; general funds
6. Public and private development meets high standards of urban design.	A. Incorporate basic urban design and performance standards in zoning, and use form-based zoning where appropriate, so that new by-right development and redevelopment meets city goals.	1. Develop suitable design and performance standards for different kinds of development, not otherwise subject to design and performance standards, and incorporate them, with graphics, in the zoning ordinance.	Planning; City Council; consultant	Medium term	Staff time; general fund; grants
		2. Consider using form-based zoning in mixed-use districts.	Planning; consultant	Long term	Staff time; general fund
		3. With guidance from the future land use map, maintain appropriate transitional uses and buffering between commercial and residential districts.	Planning; Planning Board	Short term and ongoing	Staff and board time
		4. Discourage zoning variance requests and strengthen regulations to protect wetlands and water quality.	Planning	Short term and ongoing	Staff time
7. Warwick’s environmental and open space networks are respected by new development.	A. Promote preservation of open space in networks by incentivizing the use of conservation subdivisions in development of any remaining large parcels.	1. Develop a conservation-subdivision zoning option for large parcels with a small density bonus as an incentive to encourage their use.	Planning; consultant; City Council; Planning Board	Medium term	Staff time; general fund; grant
	B. Develop new robust design and performance standards for development within environmentally sensitive areas of the city and for structures seeking deviation from dimensional standards before the zoning board of review.	1. Require incorporation of low-impact design and green infrastructure in environmentally sensitive areas affected by development seeking exceptions to dimensional standards.	Planning; City Council; consultant; General Assembly; RIDEM; CRMC	Medium term	Staff time; general funds; grant



Chapter 12—Future Land Use, Zoning, and Urban Design

HIGH PRIORITY **High Priority** Short-term actions (2013–2018) Medium-term actions (2019–2023) Long-term actions (2024 and beyond)

GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
8. Warwick has a systematic approach to airport land use issues	A. Work with RIAC to create agreements on property acquisition and enhanced communication.	HIGH PRIORITY 1. Identify and agree on an “Airport Line” to limit RIAC acquisition of property and land use.	Planning; Mayor and City Council; RIAC	Short term	Staff time
		HIGH PRIORITY 2. Develop and agree on a land inventory and reuse plan.	Planning; RIAC	Short term	Staff time
		HIGH PRIORITY 3. Schedule an Annual Airport Report and discussion with the City.	Planning; RIAC	Short term	Staff time
		HIGH PRIORITY 4. Bring all Airport properties into compliance with local zoning when short term	RIAC	Short term	RIAC

Chapter 13—Stewardship and Implementation

HIGH PRIORITY High Priority **Short-term actions (2013–2018)** **Medium-term actions (2019–2023)** **Long-term actions (2024 and beyond)**

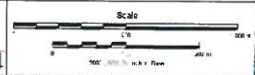
GOAL	WHAT	HOW	WHO	WHEN	RESOURCES
1. Regular review of comprehensive plan implementation progress is a regular part of the City’s calendar.	A. Make regular review of the Comprehensive Plan a public process.	HIGH PRIORITY 1. Establish an annual public hearing before the Planning Board to review implementation progress on the Comprehensive Plan.	Planning	Short term	Staff time
		2. Schedule a public process every five years to confirm or revise the Vision and Goals and review progress on implementation before filing the five-year informational report with the State Office of Planning.	Planning	Short term	Staff time
2. The Comprehensive Plan is incorporated in decision-making at multiple levels.	A. Use the Plan annually in preparing and approving departmental work plans, operational budgets and capital improvement plans.	1. Develop a user-friendly system or checklist for City departments and agencies to use to compare proposals with the goals of the Comprehensive Plan.	Planning; MIS	Short term	Staff time
		2. Use the Plan in preparing and approving One-Year and Five-Year HUD Consolidated Plan documents, redevelopment grant proposals, and similar documents.	Community Development	Short term	Staff time; grant funds; general funds
		HIGH PRIORITY 3. Identify Comprehensive Plan-related actions on agendas of the City Council and the Planning Board.	Planning	Short term	Staff time
		4. Publicize actions and activities that implement the Comprehensive Plan.	Mayor’s office; Planning; MIS	Short term	Staff time
3. Update the City zoning ordinance to be compatible with the Comprehensive Plan.	A. Prepare a program and schedule for rezoning to make the ordinance compatible with the Comprehensive Plan.	HIGH PRIORITY 1. Identify and prioritize zoning changes that change designations based on existing zoning categories or land uses.	Planning; City Council; Planning Board	Short term	Staff time
		2. Develop new zoning language and a schedule for pursuing additional zoning changes.	Planning	Medium term	Staff time
4. Provide modern technology to enhance the effectiveness of the Planning Department.	A. Establish a Geographic Information System (GIS) for city government.	HIGH PRIORITY 1. Establish a GIS program, resources and staff starting with the data and maps created for the Comprehensive Plan and City Center Warwick.	Mayor’s office; Planning; MIS	Short term	Staff time; general fund; grants
5. Update the Comprehensive Plan regularly to comply with state law.	A. Develop a schedule and process to update the Comprehensive Plan every ten years.	1. Update the Plan every ten years through a substantial public process.	Planning	Medium term	Staff time; consultant

Appendix
Shoreline Change Maps

**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Apponaug Cove**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION		
DIGITAL SHORELINE ANALYSIS	SHORELINE	SHORELINE CHANGE
<ul style="list-style-type: none"> 1939 Shoreline 2003 Shoreline 2003 Wetlands 	<ul style="list-style-type: none"> 1939 Shoreline 2003 Shoreline 2003 Wetlands 	<ul style="list-style-type: none"> Net Gain 1939-2003 Net Loss 1939-2003 Net Change 1939-2003



**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Buttonwoods - Brush Neck**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

DIGITAL SHORELINE ANALYSIS		EXPLANATION	
	1939 Shoreline		2003 Shoreline
	1939 Shoreline		Shoreline Change
	2003 Shoreline		Shoreline Change
	Shoreline Change		Shoreline Change

Scale: 0 100 200 Feet

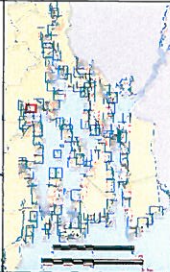
NOI: 00012-0001-0001



**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Cedar Tree Point**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

DIGITAL SHORELINE ANALYSIS	SHORELINE	SHORELINE CHANGE
<ul style="list-style-type: none"> 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994 1993 1992 1991 1990 1989 1988 1987 1986 1985 1984 1983 1982 1981 1980 1979 1978 1977 1976 1975 1974 1973 1972 1971 1970 1969 1968 1967 1966 1965 1964 1963 1962 1961 1960 1959 1958 1957 1956 1955 1954 1953 1952 1951 1950 1949 1948 1947 1946 1945 1944 1943 1942 1941 1940 1939 	<ul style="list-style-type: none"> High Water Line 1939 2003 	<ul style="list-style-type: none"> Equivalent Distance 27.5 ft 8.4 m Full-Tide High 3.4 ft 1.0 m 0.13 m



**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Conimicut Point**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

DIGITAL SHORELINE ANALYSIS	SHORELINE	SHORELINE CHANGE
1:26 DNAS Triangulation	High Water Lines	End Point Distance
1:26 Beaches	1939	27.5 ft
	2003	8.4 ft
		End Point Move
		3.4 ft
		0.13 ft

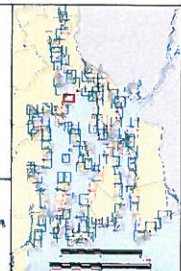


FIG 10-2004

NARRAGANSETT BAY, RHODE ISLAND: Warwick, Cowesett-Chepiwanoxet

SHORELINE CHANGE 1939-2003

Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

DIGITAL SHORELINE ANALYSIS

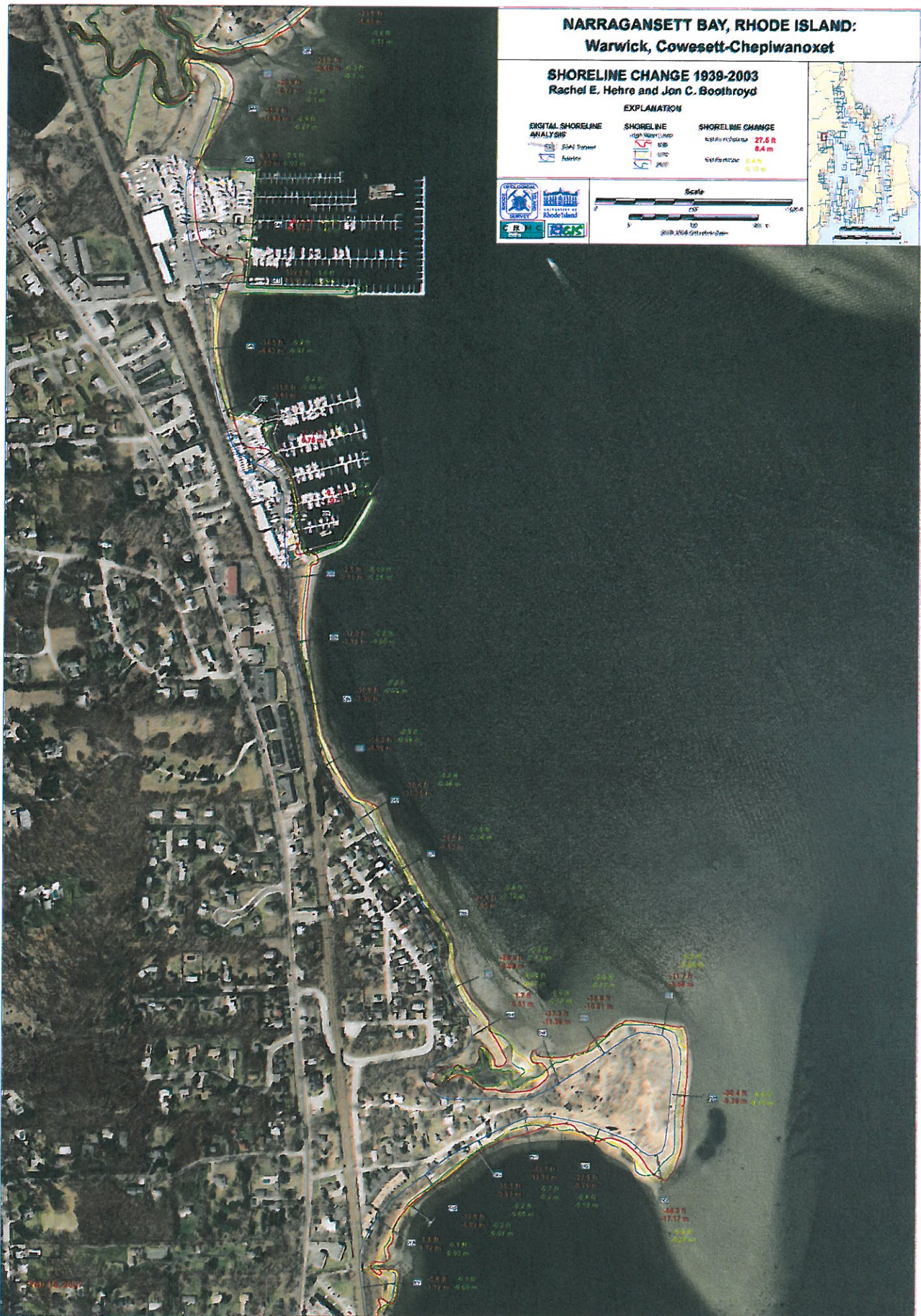
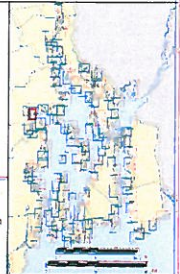
- USAI Triangulation
- Satellite

SHORELINE

- High Water (1939)
- MSB
- MSD
- MSL

SHORELINE CHANGE

- MSB to MSL 27.6 ft
- MSD to MSL 8.4 m
- MSL to 1939 0.4 m
- MSL to 1939 0.13 m

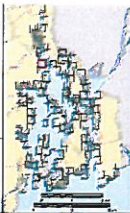
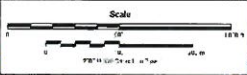


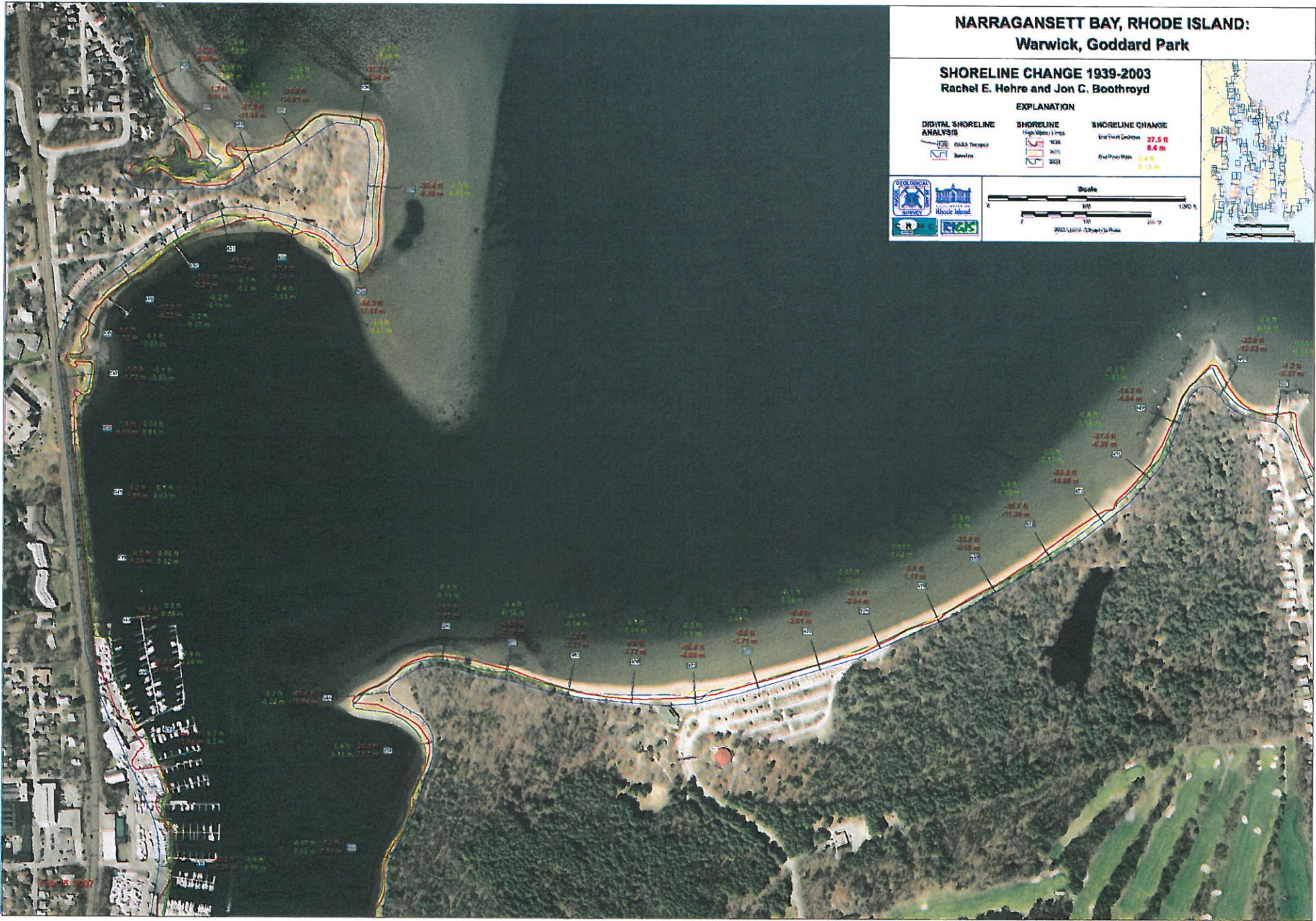
NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Gaspee Point

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

DIGITAL SHORELINE ANALYSIS	SHORELINE	SHORELINE CHANGE
1939	High Water Line	Feet: 1939 - 27.3 ft
1954	1954	Meters: 8.4 m
2003	2003	Meters: 8.53 m





**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Goddard Park**

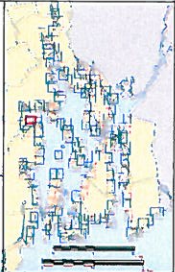
SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

DIGITAL SHORELINE ANALYSIS
 NOAA Hydrographic Survey
 Bathymetry

SHORELINE
 High Water Lines
 1939
 2003

SHORELINE CHANGE
 Erosion/Deposition
 27.5 ft
 8.4 m
 0.4 ft
 0.13 m





**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Mill Creek**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

DIGITAL SHORELINE ANALYSIS		EXPLANATION	
1939	Red	SHORELINE	1939-2003
1949	Yellow	SHORELINE CHANGE	1939-2003
1959	Green	SHORELINE CHANGE	1949-2003
1969	Blue	SHORELINE CHANGE	1959-2003
1979	Purple	SHORELINE CHANGE	1969-2003
1989	Brown	SHORELINE CHANGE	1979-2003
2003	Black	SHORELINE CHANGE	1989-2003

Scale: 1" = 1000'

NOI 800 (1) (a) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)



**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Pawtuxet Cove**

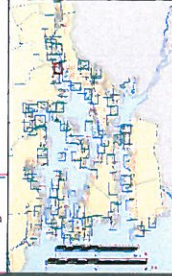
SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

EXISTAL SHORELINE ANALYSIS

SHORELINE
 High Water/MSL
 MSL
 MHW
 MLLW
 MHHW
 MLLW

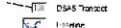
SHORELINE CHANGE
 Total Retraction 27.6 ft
 Total Protrusion 8.4 ft
 Net Protrusion 0.48 ft
 Net Retraction 0.13 m



NARRAGANSETT BAY, RHODE ISLAND: Warwick, Rocky Point

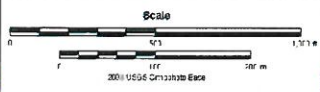
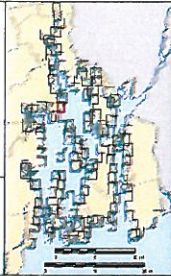
SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

DIGITAL SHORELINE ANALYSIS


SHORELINE
 High Water Line
 1938
 1975
 2003

SHORELINE CHANGE
 End Point Distance
 27.5 ft
 8.4 m
 End Point Rate
 0.2 ft/yr
 0.06 m/yr



**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Sally Rock Point**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

DIGITAL SHORELINE ANALYSIS	SHORELINE	SHORELINE CHANGE
1939	1939	1939
2003	2003	2003
1939-2003	1939-2003	1939-2003



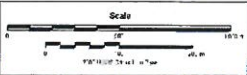
NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Warwick Cove

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd



EXPLANATION

DIGITAL SHORELINE ANALYSIS	SHORELINE	SHORELINE CHANGE
1939 Shoreline	1939	1939 - 2003
2003 Shoreline	2003	1939 - 2003
Bank	Bank	Bank



**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Warwick Neck - East**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

DIGITAL SHORELINE ANALYSIS

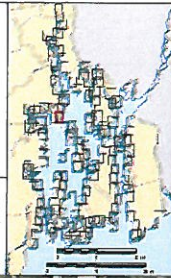
- Dike's Footprint
- Shoreline

SHORELINE

- High Water Line
- 1939
- 1975
- 2003

SHORELINE CHANGE

- 1st Point Distance: **27.5 ft**
- 2nd Point: **6.4 m**
- 3rd Point: **1.4 m**
- 4th Point: **1.7 m**



**NARRAGANSETT BAY, RHODE ISLAND:
Warwick, Warwick Neck - West**

SHORELINE CHANGE 1939-2003
Rachel E. Hehre and Jon C. Boothroyd

EXPLANATION

DIGITAL SHORELINE ANALYSIS

- DPA Triangulation
- BaseLine

SHORELINE

- High Water (1939)
- MHW (1984)
- MLLW (1984)

SHORELINE CHANGE

- 0.0 to 27.6 ft
- 0.0 to 8.4 m
- 0.0 to 2.1 m
- 0.0 to 5.1 m

