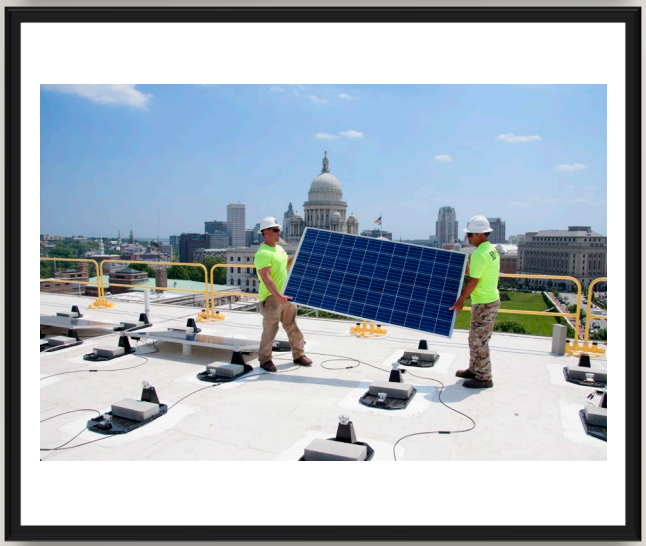


STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

RI Division of Statewide Planning

SOLAR SITING INFORMATION

FEBRUARY 2019

Disclaimer

The following presentation, recommendations and outreach meetings are a **voluntary** effort by the Rhode Island Department of Administration's Office of Energy Resources (OER) and Division of Statewide Planning (Planning)to provide technical assistance and information to municipalities on the subject of solar siting.

This PowerPoint is one of three resources concerning the siting of solar energy systems (SES) in Rhode Island. The documents should be reviewed together in their entirety; starting with the general information presented in this PowerPoint, then, the report on comprehensive plans, and last, the guidelines report which contains the templates for zoning and taxation ordinances. Taking one document in isolation, without reading the others, will not provide the reader with the benefit of the comprehensive and interlinked advice within all the documents. A glossary and the references used throughout the project are included in the *Comprehensive Plans & Solar Energy Systems Report*. The three documents are:

- *Solar Siting Information- January, 2018 (PowerPoint)*
- *Comprehensive Plans & Solar Energy Systems Report – January, 2018*
- *Renewable Energy Guidelines: Solar Energy Systems – Model Ordinance Templates Zoning & Taxation– January, 2018*

Topics

- Solar Energy Siting - Advisory Working Group
- Outreach Meetings Across the State
- Centralized Power System to a Distributed Generation Power System
- Siting Energy Projects in Rhode Island and New England Region
- Kinds of Solar Energy Systems (SES)
- Examples of Solar Canopy Opportunities
- Protecting Conservation Lands
- Advisory 2018 Renewable Energy Siting Principles
- Solar Energy Systems – Rhode Island Context
- *Energy 2035 – RI State Energy Plan*
- Solar Energy Systems related State laws and Municipal Zoning/Applications
  - Farm, Forest and Open Space Program
  - Comprehensive Plans
- General Zoning Guidance
  - Steps
- Issues Encountered with Ground Mounted Solar Energy Systems
- Solar Energy Systems - Preliminary Ordinance Siting Recommendations
  - Ground mounted Solar Energy Systems
  - Farms
  - Undeveloped Residential Lots
  - Tiered Review
- Case Studies
- Contacts

Solar Energy Systems - Advisory Working Group

- Office of Energy Resources
- Division of Statewide Planning
- Department of Environmental Management
- RI League of Cities and Towns
- RI Builders Association
- Northeast Clean Energy Council
- RI American Planning Association
- RI Land Trust Council
- Acadia Center
- The Nature Conservancy
- Green Energy Development
- RI Tree Council
- Clean Energy Collective
- Green Energy Consumers Alliance
- Audubon Society of Rhode Island
- Grow Smart RI
- Conservation Law Foundation
- Energy Development Partners
- Civic Alliance for a Cooler Rhode Island
- NEXAMP Solar
- RI Tree Council
- Newport Solar
- RI Farm Bureau
- Burrillville Land Trust
- Handy Law
- RI Distributed Generation Board
- West Bay Land Trust
- RI Forest Conservators Organization
- Kearsarge Energy
- Heartwood Group
- Municipal Planning Offices: Coventry, Cranston, Narragansett, Exeter, Charlestown, Richmond

2018 Outreach Meetings

- Providence – June 6th
- Cranston – July 18th
- Charlestown – July 23rd
- Coventry – August 2nd
- Hopkinton – August 27th
- Westerly - September 13th
- Jamestown – September 19th
- Bristol – September 24th
- Providence – September 26th
- Burrillville – October 4th
- Narragansett – October 11th
- Warwick – October 16th

4.6 MW Solar System on Superfund Site - Plains Road in South Kingstown (near URI Ryan Center)

For More Information:

http://www.energy.ri.gov/renewable-energy/solar/model-ordinance.php

Centralized Power System → Distributed Generation Power System

- The New England region and its energy system is gradually shifting from centralized energy systems to a distributed generation system. Each New England State has self-imposed renewable energy requirements.
- With distributed generation systems, there will be renewable energy systems (small, medium, large) scattered throughout the states, instead of centralized energy (gas, coal, nuclear) in just a handful of municipalities.
- RI has a renewable energy procurement target of 38.5% renewables by 2035.
- Solar, Biomass, Land Based Wind, Small Scale Hydro, Anaerobic Digestion and Offshore Wind will all play a role in meeting that statutory objective.

http://www.energy.ri.gov/renewable-energy/

Siting Energy Projects in Rhode Island and New England Region

Types of Projects

- Proposed New Gas Plants and Expansion of Existing Gas Pipelines/Corridor Routes
- Large Scale Hydropower/Transmission Lines
- Updates to Existing Liquified Natural Gas Plant
- Commercial Land Based Wind Turbines
- Commercial Offshore Wind Turbines
- Ground Mount Solar Systems

Siting Energy Projects in Rhode Island and New England Region

Impacts/Issues Raised

- Scenic Viewsheds
- Flicker and Noise from Wind Turbines
- Anti-Change, Not-In-My-Backyard (NIMBY) to fossil fuel, wind turbines and ground mounted solar projects
- Environmental Impacts - Wetlands, Forests, Wildlife, Water Quality, etc.…
- Climate Change & Greenhouse Gas Emissions
- Impacts to Residential Communities
- Farmland Sustainability and Economic Pressures facing Farm Land Owners
- Impacts to Commercial Fisheries Activities and Boating Navigation from Offshore Wind
- 31 Rhode Island Municipalities Passed Resolutions in 2016/2017 Opposing proposed new Burrillville gas plant application
- Municipal opposition to expanding existing gas pipeline corridor

Kinds of Solar Energy Systems

Ground Mounted

Ballasted - use of weight to keep the racking to the Ground (normally used on landfills or contaminated sites)
Pile driven - Metal beam is driven into the ground
Screw - Large screws that "screwed" into the ground
Anchored - The racks are fastened to the ground via cable and ground securing system.

Kinds of Solar Energy Systems

Roof Mounted

Penetrating Roof - use of screws or fasteners to directly connect the racking to a structure

Ballasted Roof - use of weight to keep the racking to a structure

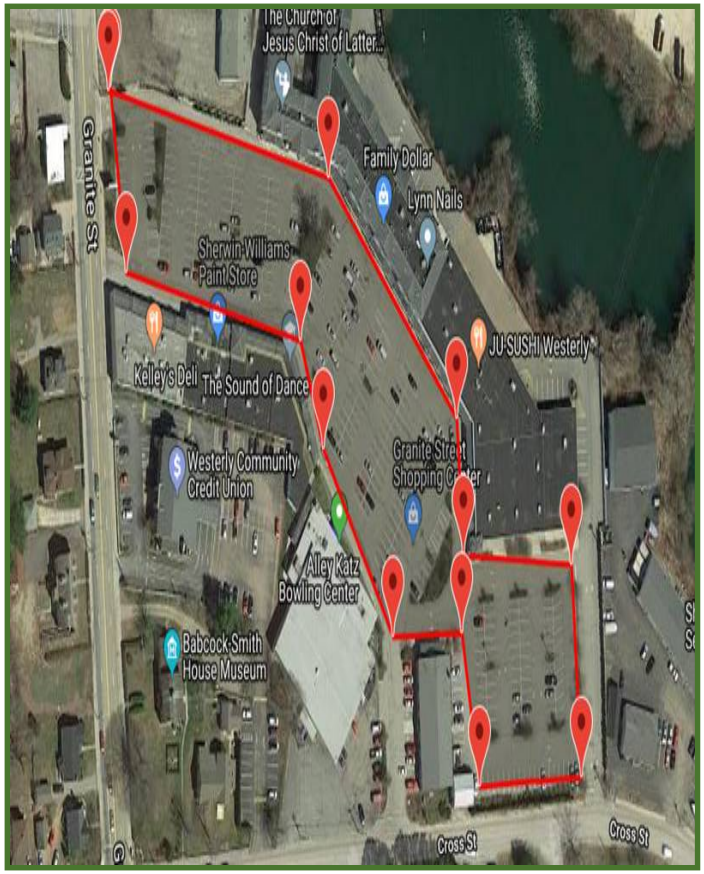
Kinds of Solar Energy Systems

Solar Carports

- Recommended to be allowed as an accessory use in parking lots of industrial, commercial, residential, municipal, farms, and state properties
- The Office of Energy Resources is developing Solar Carport opportunities (several project opportunities to be awarded) with proposed 2019 Renewable Energy Growth Program
- The scale of these projects can range between affordable housing to commercial/industrial businesses parking lots
- Siting issues include accessing setbacks, visual impacts, installation costs, stormwater and snow management, and aesthetics.

56 kW Parking Lot Canopy Solar Energy System - Public Utilities Commission Office, Jefferson Blvd, Warwick

Examples of Solar Energy Systems - Canopy Opportunities



Westerly - Shopping Plaza Center, Granite St. - 3.1 Acres

Coventry - Shopping Plaza Parking Lot, Main St. – 2.7 Acres

Richmond - Shopping Plaza Parking Lot, Main St. – 2.3 Acres

Protecting Conservation Lands

- All properties that have state or local conservation funding/easement agreements or restrictions associated with them aren't allowed to install ground mounted solar energy systems on these properties.

- The State and Federal renewable laws and programs aren't allowed to be used for solar energy systems on these properties.

For More Information on Protected Lands:

http://www.dem.ri.gov/maps/openspace3.php

Advisory Working Group

Renewable Energy Siting Principles

March 2018

All Principles to be used together

1. Accelerate the pace toward achieving Rhode Island's renewable energy and greenhouse gas reduction goals through thoughtful and strategic development of renewable energy projects of all sizes.
2. Build support for achieving Rhode Island's renewable energy and greenhouse gas reduction goals by increasing public understanding of the multiple benefits of renewable energy including to the economy, the environment, to promote equity and to cultivate climate resiliency.
3. Provide predictability, consistency and fairness in state and local rules, regulations, zoning and ordinances to support development of renewable energy projects.
4. Promote proactive, comprehensive utility distribution system planning.
5. Ensure that regulations governing renewables are applied in a fair and balanced manner with those governing other land uses, while recognizing that local zoning is the authority of communities to establish public health and safety standards.
6. Honor commitments to keep permanently protected land free from development.
7. Encourage renewable energy development on commercial and industrial zoned land, on already developed land, and in other locations with environmental alterations such as closed landfills, brownfields, parking lots, commercial and residential rooftops, sand and gravel pits.

Advisory Working Group

Renewable Energy Siting Principles

March 2018

All Principles to be used together

8. Support the economic viability of farms through appropriate renewable energy development as a complementary use in a manner which keeps farms in agricultural production while preserving agricultural soils.
9. Promote policies that recognize ecological services and sensitivity as well as habitat connectivity in the siting of renewable energy projects.
10. Respect landowner rights to realize value from their property within the context of established planning and zoning principles.
11. Ensure equitable access to renewable energy installations for all consumers, and recognize that delaying the transition to renewable energy disproportionately burdens environmental justice communities.
12. Provide local governments with guidance on smart renewable energy siting and to ensure consistency between the state guide plan and local ordinances and policies. Establish a timeline for all municipalities to adopt renewable energy siting ordinances and associated processes.
13. Provide opportunities for state and municipal governments to lead by example and use renewables to exercise more control over their energy use and production in meeting their energy needs.

Solar Energy Systems - Rhode Island Context

RENEWABLE ENERGY LAWS, PROGRAMS, REGULATIONS AND POLICIES

http://www.energy.ri.gov/policies-programs/programs-incentives/

- Net Metering and Virtual Net Metering
- Renewable Energy Growth
- Net Metering/Renewable Energy Fund
- Federal Investment Tax Credit
- Statewide Renewable Energy Taxation Formula
- Statewide Property Tax Exemption for residential and manufacturers net metered systems
- Property Tax Exemption Waiver Option (approved through town councils) for business, commercial net metered systems

CLIMATE CHANGE POLICY

- Resilient Rhode Island Act

http://webserver.rilin.state.ri.us/Statutes/TITLE42/42-6.2/INDEX.HTM

LAND USE LAWS, REGULATION & COMPREHENSIVE PLANS

HTTP://WWW.PLANNING.RI.GOV/PLANNING-AREAS/LAND-USE/LAND-USE-LAW.PHP

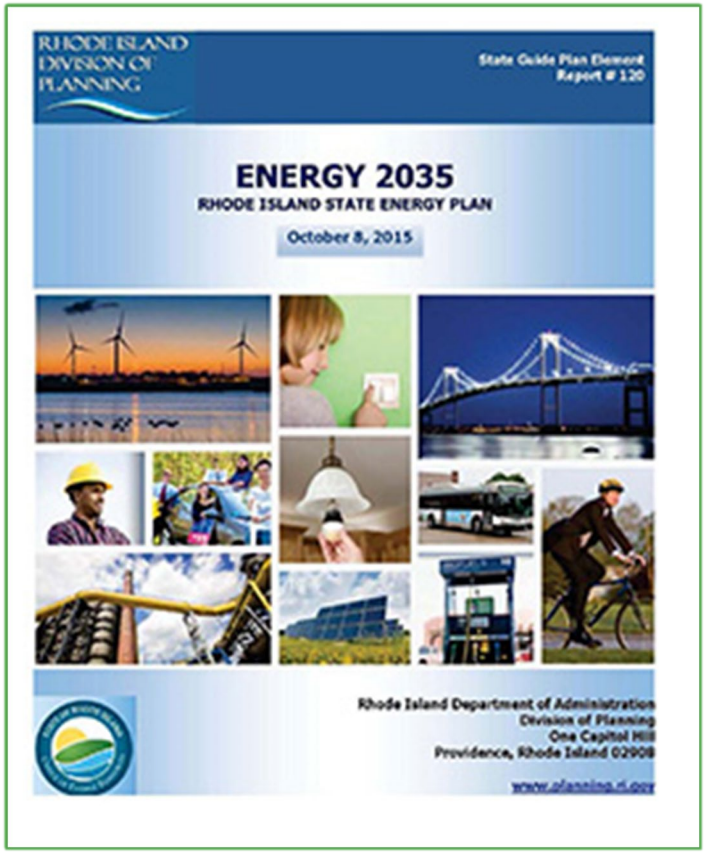
- Comprehensive Planning and Land Use Regulation Act
- Land Development and Subdivision Review Enabling Act
- Zoning Enabling Act
- Comprehensive Energy Conservation, Efficiency and Affordability Act

51.3 kW Rooftop Solar Energy System, Cranston High School. Cranston , RI

State Guide Plan Element:
Energy 2035 – RI State Energy Plan

In 2015, Rhode Island formally adopted a 10-year update to the Rhode Island State Energy Plan (the Plan). OER and DOP worked throughout 2013 and 2014 with a twenty-member Advisory Council, stakeholder groups, and a consultant team to complete the Plan, which covers a planning horizon out to 2035. The Plan represents the State's first data-driven energy planning and policy document, providing a long-term, comprehensive energy strategy for Rhode Island.

The vision of the Plan is to provide energy services across all sectors—electricity, thermal, and transportation—using a secure, cost-effective, and sustainable energy system. The Plan demonstrates that Rhode Island can increase sector fuel diversity, produce net economic benefits, and reduce greenhouse gas emissions by 45 percent by the year 2035. The Plan proposes state-of-the-art policies and strategies to achieve those goals.



For more information:
www.planning.ri.gov

Solar Context: Other Related State Laws and Municipal Zoning/Applications

Statewide Building Code Standards

- RIGL § 23-27.3-100.1.7 Effect of local codes – Repeal of local authority. Municipalities aren't allowed to incorporate building code standards that exceed statewide building code standards that aren't recognized by the RI Building Code Commission (BCC). The BCC sent a letter to all municipal building/electric officials in early 2018 reminding them of this matter relating to local solar siting ordinances.

Statewide Solar Building & Electric Permit

- Single Statewide Solar Building and Electric Permit Application for all scales of solar projects that are submitted to a municipality. All Municipal Building and Zoning Offices are required to use the state application form that went into effect on January 1, 2018.

Statewide Fire Code Variance for Ground Mount Solar Systems

- The RI Fire Safety Code Board of Appeal and Review unanimously adopted a blanket statewide variance in February 2018 for all proposed ground mounted solar projects to have the ability to provide a Vegetative Management Plan (VMP) and Fire Permit Variance to local fire marshals for review and approval. The Board staff notified local fire marshals on this variance process.

4.7 MW Solar Energy System, Rose Hill Closed Landfill, South Kingstown, RI

Solar Context: Other Related State Laws and Municipal Zoning/Applications

Farm, Forest, and Open Space (FFOS) Program – Updates to Local Property Tax Rules and Dual Use (Renewable Installation/Farm Activity in Same Area) Regulation

- Chapter 44-27 Taxation of Farm, Forest, and Open Space Land law was amended by the General Assembly in June 2017.
- The law exempts land previously classified as farms within the FFOS Program from local land use change taxes, *if* a farm land owner converts no more than twenty percent (20%) of the total acreage of the farm property with the FFOS to install a commercial renewable energy system.
- The local tax assessor can't change the land value taxation for the entire farm acreage, but only the 1-20% of acreage used for the commercial ground mounted solar system or other renewable energy resource.
- Updated FFOS Regulations, including Dual Use regarding commercial renewable development on farms is scheduled to be released for a public comment period with DEM in late August or early September.

Dual Use Solar Energy System in Vermont

Solar Context – Comprehensive Plans

General Law §45-22.2 states that communities must address energy production and consumption in their comprehensive plans.

- Communities should address the topics energy conservation and solar renewable energy in their municipal comprehensive plan before adopting zoning requirements for solar systems, and amend the plan if needed.

- A comprehensive plan should consider goals and policies for:

  - Decreasing dependence on non-renewable energy sources.
  - Promoting effective and efficient use of solar energy resources.
  - Promoting safe development of solar energy that minimizes impacts to land uses, properties, and the environment.
  - Minimizing potential aesthetic–community character impacts.
  - Eliminating barriers to and incentivizing small-scale, distributed solar energy systems such as roof top solar.

- A plan should consider:

  - Where the various types of solar systems would be appropriate in the community.
  - Promoting the use of previously disturbed lands or existing impervious surfaces as priority sites for solar energy development.

More detailed guidance is included in the technical report:
Comprehensive Plans & Solar Energy Systems – January, 2018

General Zoning Guidance

RI General Law §45-24 authorizes communities to adopt zoning ordinances that control the use of land and how it is developed to implement the vision of their comprehensive plans and protect the public health, safety and welfare.

- Communities should include solar energy systems as a land use in their zoning code.
- Zoning must consider that solar energy systems vary in size and shape.
- Requirements should be crafted carefully to balance avoiding barriers to solar development and ensuring protection from potential impacts.

6.3 MW Solar Energy System, Airport Connector (Near TF Green Airport),Warwick, RI

General Zoning Guidance

Step 1 - Assess all zoning districts and consider in the zoning use table options for solar systems in each district:

- not a permitted use;
- outright permitted;
- allowed as an accessory use;
- allowed by special use permit;
- create an overlay zone district with siting conditions

31.4 kW Rooftop Solar Energy System, Furey Roofing & Construction, Warwick, RI

General Zoning Guidance

Step 2 – Decide how to review

The review options for solar systems through zoning are:

- Allowed as a stand alone permitted use - no additional review beyond Zoning / Building Officials
- Allow as an accessory use to an existing use - no additional review beyond Zoning / Building Officials
- Allowed by a Special Use Permit (SPU) in all or certain districts with siting standards to be met
  - Requires Planning Board advisory opinion to Zoning Board decision (2 month minimum)
- Allowed in all or some districts but with tiered development plan review (DPR) required
  - Can be Planning staff or Planning Board review
- Allowed in all or some districts but major land development review (MLDR) is required.
  - Multiple steps and requires Planning Board approval and a public hearing with notice to abutters
    - Preapplication, master plan, preliminary, and final (longest time)
- Allowed within an overlay district with siting standards to be met
  - Overlay can be floating or mapped to limit to certain districts
    - Review can be either SPU, DPR, or MLDR (timeline based on process dictated)

2.6 MW Solar Energy System, Closed Landfill. North Providence, RI

General Zoning Guidance

Why review applications through Planning Board?

The Advisory Working Group prefers reviews of applications by the Planning Boards/Commissions verses Zoning Boards because:

- It uses the site plan review expertise of the Planning Boards/Commission and their professional staff.
- Planning Boards study on and off-site characteristics
- Planning Boards/Commissions are familiar with reviewing detailed information/site plans that address many factors.
- Zoning Boards narrowly review how applications for single lots comply with provisions of the ordinance.
- Zoning Boards do not review applications for other impacts or off-site impacts.

77.3 kW Solar Energy System, Storage Facility, Middletown, RI

Issues Encountered With Ground Mounted Solar Systems

- Regulating top soil removal and/or repurposing on sites.
- Improper stormwater mitigation steps deployed at installation sites:
  - Construction activities not occurring within the approved construction schedule of DEM applicable permits.
  - Disturbance to wetlands and abutters from stormwater runoff and improper soil erosion and sediment control
- Lack of and/or confusion regarding Decommissioning Plans as part of ordinances/application process
- Mitigating nonwetland habitat disturbances
- Connecting to utility electric distribution system
- Lack of proper buffer/screening in applications
- Disturbances from blasting
- Fencing requirements
- Compatibility with abutting land uses

Storm Water Off Site Runoff. Richmond, RI
December 2017
(Westerly Sun)

Solar Energy Systems - Model Siting Ordinance Template Recommendations*

* Detailed recommendations are contained in the report, *Renewable Energy Guidelines: Solar Energy Systems Model Ordinance Templates Zoning & Taxation*, January, 2018

20-25 kW Solar Energy System, Baby Greens Farm, North Kingstown, RI

Recommendations for Developing Ordinances

- Adopt **both** Solar Siting and Renewable Taxation Ordinances at the same time to ensure that both Planning and Taxation Offices and staffs know what the rules are before solar applications are submitted

- OER worked with the RI League of Cites and Towns, RI Tax Assessors Organization and Renewable Energy Community on a Model Renewable Taxation Ordinance in the Summer/Fall of 2016

- As of 2018, 18 municipalities have adopted taxation ordinances

- As of 2018, 23 municipalities addressed solar energy systems as a use in zoning in some fashion, some comprehensively for all uses and some not so comprehensively. There were 4 municipalities working on ordinances then.

Recommendations for the Fundamentals of Zoning Ordinance

- **Develop Ordinances without a One-Size-Fits All Approach, including Acreage/Percentage Restrictions on Different Types of Zoned Lots**

  Consider siting/application criteria for industrial, commercial, manufacturing lots that are different compared to residential or farm lots.

- **Consider flexible and different lot coverages (or none) for landfills, gravel pits, commercial and industrial lots versus sensitive sites (undeveloped residential lots) sites.**

  Must set a clear definition of lot coverage for this use. Solar energy systems are not building. Cannot use the Building Lot coverage of the Zoning Enabling Act.

- **Focus on regulating solar energy systems as a land use and NOT on the amount/type of renewable energy produced or generated.**

  Renewable Energy System Sizes and how the power is generated and used/exported to electric distribution systems for property owners, municipalities, schools, businesses farmers, etc. are determined by the State's Net Metering and Renewable Energy Growth Laws and regulated by National Grid, Pascoag Utility, Block Island Power and the Public Utilities Commission.

Recommendations for the Fundamentals of Zoning Ordinance

Consider reuse of certain lots with difficult redevelopment potential within residential zones

There are a number of gravel pits, landfills, superfund/brownfield, salvage/recycling yards that appear to be zoned as residential

Consider buffers and transitions between varying zoning districts

Remember review considerations for projects in special districts such as historic districts or sites, viewshed overlays with restrictions, or easements assigned to the property.

500 kW Rooftop Solar energy System,
Gannon and Scott Recycling, Cranston, RI

Recommendations for Siting Ground Mounted Solar Energy Systems

Viewshed Screening – Consider natural vegetative screening, if existing, or add new vegetative landscaping at the proposed project site to mitigate impacts to views and abutters

- Consider the significance of topography, evergreen vs deciduous considerations, supplemental plantings mixing with existing species, etc.

Enforcement of Local Ordinances and State Laws - Reference within ordinance that all solar systems must comply with all laws and any existing property restrictions/easements, including those pertaining to DEM/CRMC, wetlands, storm water management or other conservation restrictions if applicable to the property.

Emergency Response Plan – Ensure that state fire codes are followed. Ensure that local fire and police have approved an emergency response plan and access to the system.

- Emergency Access Road – Consider allowing pervious surfaces for road (unpaved or gravel) for storm water runoff and water recharge where system is installed

Height - Tailor height restrictions for ground mounted solar energy systems to the system type, zoning district and topography

- Topography and land uses can vary from site to site
- Ground mounted commercial solar energy systems have different heights when compared to solar energy systems as parking lot or other types of canopies

Review Process – ensure that any process used has at least an informational public meeting for abutters included as part of the application review and approval process.

Recommendations for Siting Ground Mounted Solar Energy Systems

Historic Properties - Properties with National Register of Historic Places status may include the grounds and natural features or scenic vistas on site as part of the listing. This may apply to State designation as well and should require review for all types of systems. Verify whether any proposed solar applications have any conflicts with historic properties.

National Register: New and Proposed Listings - http://www.preservation.ri.gov/register/listings.php

National Register: Rhode Island Properties - http://www.preservation.ri.gov/register/riproperties.php -

Decommissioning Plan* (IMPORTANT) – Include within the ordinance that the solar developer shall be required to provide a financial guarantee for decommission of system after no longer in operation. The financial guarantee should be filed with the local Financial Official and Office.

* **Detailed Recommendations are contained in the report, *Renewable Energy Guidelines: Solar Energy Systems Model Ordinance Templates Zoning & Taxation*, January 2018**

Recommendations for Siting Ground Mounted Solar Energy Systems

Vegetation Management - Limit the use of herbicides and control invasive plant species growing beneath or around any solar system manually.

Require pollinator-friendly seed mixes and native plants to the maximum extent possible.

Example:

http://eanvt.org/regulatory-reform/pollinator-friendly-solar-initiative/ [eanvt.org]

Top Soil - Minimize the disturbance to top soil and require the maintenance and reuse of top soil on the same site.

Fences - Determine possible fencing types / heights that enables small wildlife to pass beneath fencing, in areas that abut designated state or local conservation properties or other natural areas.

- **Fencing is required for all ground mount solar energy systems, per the National Electrical Code requirements.**

7.71 MW Solar Energy System, Closed Landfill, East Providence, RI

Interconnections - Interconnection wiring of system should be placed underground for any portion of the system **not** protected by surrounding fencing, except for the overhead wiring that connects at the main road to the electric distribution poles. All associated wiring needs to meet statewide and federal electrical building code standards and installed by licensed electricians.

- **Building code matters shouldn't be in zoning ordinances.**

Recommendation for Siting Ground Mounted Solar Energy Systems on Farms

- Review applications on farms by studying the site as a whole and designating areas within the total acreage of property for farming use, buffers and potential commercial ground mounted solar systems.
- Solar energy systems on farmland should designed to minimize disruption to agricultural operations.
- Communities can support the economic viability of farms through allowing appropriate renewable energy development as a complementary use in a manner which keeps farms in agricultural production while preserving agricultural soils.

250 kW Solar Energy System, Reynolds Farm, Rt. 3, (between exit 1-2 along route 95) Hopkinton ,RI

Recommendations for Siting Ground Mounted Solar Energy Systems on Undeveloped Residential Lots

- Recommend applications going through Major Land Development Review process by Planning Board
- Not all residential lots will be appropriate for possible project proposals.
- Some residential lots (with low acreage designations) aren't suitable and would need to be determined by local Planning Boards/Commissions in their zoning/land use tables within ordinance
- Consider a requirement that a portion of the lot that is not used by the solar project be preserved voluntarily through a conservation easement, as part of an application

Recommendations for Solar Energy Systems – A Tiered Approach

- **Level 1 Solar Energy System (SES)** - An accessory SES for electricity generation secondary to the use of the premises for other lawful purposes. An accessory SES cannot exist without a primary use on the same lot. Level 1 SES include the following:
  - Roof-mounted on any code compliant structure.
  - Ground mounted on an area of up to 49% of the footprint of the primary structure on the parcel but no more than **X Acre(s)*** in total.
  - Building integrated
  - Solar Carports
  - Other Solar Canopies

**** A maximum size for establishing tiered sizes to be permitted as an accessory use should be considered and discussed when developing an ordinance in relation to the districts present in the community. There is no one maximum size appropriate for all communities; each municipality will have to set an appropriate size(s) for their community. This will vary community by community. In some cases, an accessory use for a Level 1 SES may be sought on a site of 10 acres or more that is zoned for commercial or industrial use. In those cases, communities should consider varying maximum project size allowed for Level 1 SES.***

Kinds of Solar Energy Systems

Solar Canopies

- Recommended to be allowed as an accessory use in parking lots of industrial, commercial, residential, municipal, farms, and state properties
- The Office of Energy Resources is developing Solar Carport opportunities (several project opportunities to be awarded) with proposed 2019 Renewable Energy Growth Program
- The scale of these projects can range between affordable housing to commercial/industrial businesses parking lots
- Siting issues include accessing setbacks, visual impacts, installation costs, stormwater and snow management, and aesthetics.

56 kW Parking Lot Canopy Solar Energy System - Public Utilities Commission Office, Jefferson Blvd, Warwick

Recommendations for Solar Energy Systems – A Tiered Approach

- **Level 2 Solar Energy System (SES)** – Are those SES that do not meet the requirements of Level 1 SES and are the primary use of land on a given lot or lots for the commercial generation of power. These SES are ground-mounted with a footprint of no more than **X acre(s)*** in residential or agricultural districts, and no more than **X acres*** in commercial, business, and industrial districts. **Level 2 systems can also potentially be located on closed landfills, defunct gravel banks, and/or brownfield locations regardless of the type of district.** Subject to additional solar development standards and approval through Development Plan Review.

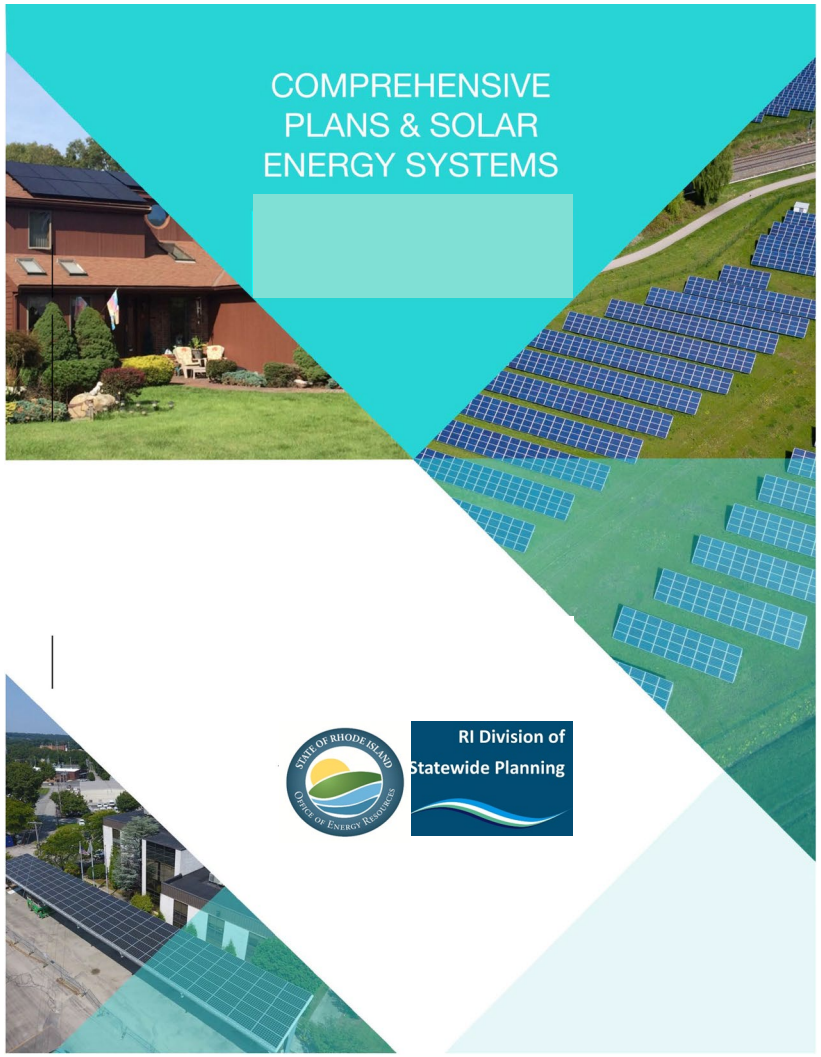
68 Stilson Road,
Richmond
500 kW system

Recommendations for Solar Energy Systems – A Tiered Approach

- **Level 3 Solar Energy System (SES)** – A primary use SES that does not meet the requirements of Level 1 or Level 2. Most commercial installations will be Level 3 systems. Subject to the same solar development standards as Level 2 and subject to approval through Major Land Development review by the Planning Board.

Southern Sky Renewable Energy, 21.3 MW, Gold Meadow Farms, Cranston, RI (Conti Solar)

See Also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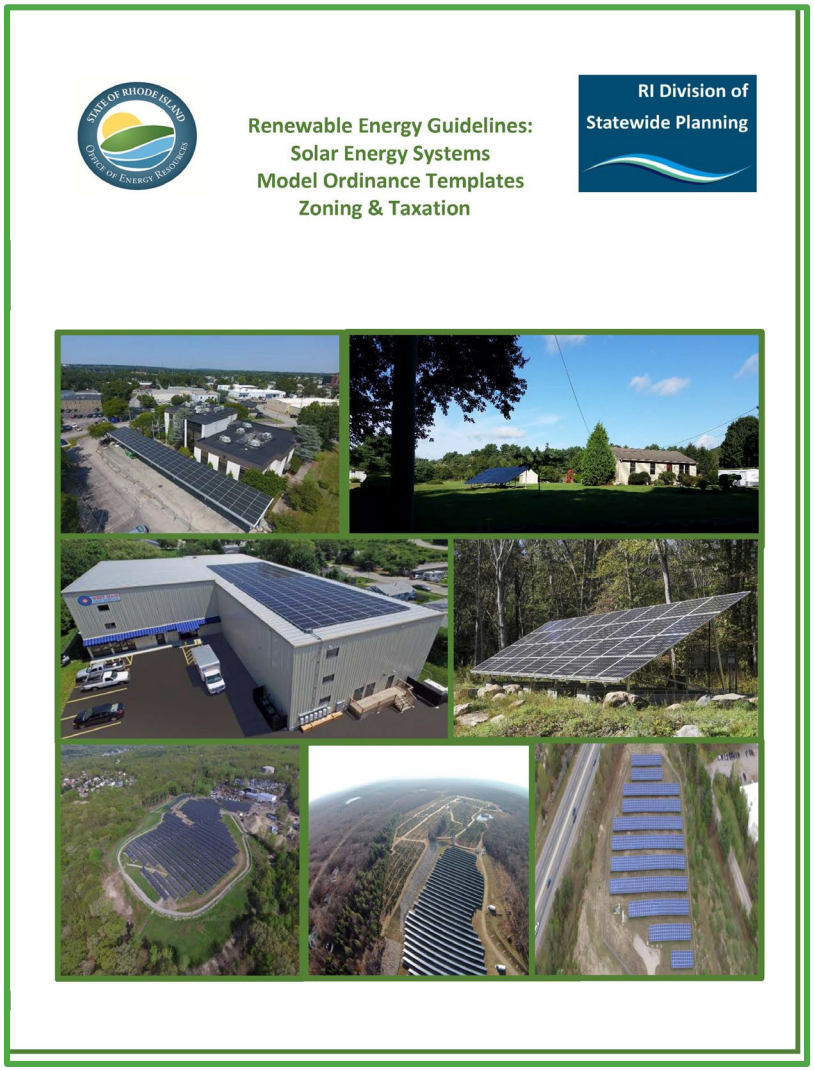
ENERGY SYSTEMS
RI Division of
Statewide Planning


Renewable Energy Guidelines:
Solar Energy Systems
Model Ordinance Templates
Zoning & Taxation
RI Division of
Statewide Planning

QUESTIONS & CONTACTS

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RI Solar Energy Systems Case Studies

Disclaimer - The following Case Studies are provided to stakeholders to provide a range of solar energy systems that have been built over the past few years in Rhode Island. The case studies should **NOT** be interpreted as the OER and the Division of Statewide Planning taking a formal position on such systems, but are provided as examples of the diversity of solar energy systems that exist to interested stakeholders

Case Study #1

- **Type of Property –** Commercial Activity
- **Address and System Size -** 68 Stilson Road, Richmond 500 kW system
- **Zoning District-** Industrial
- **Buffers - Any setback or buffer requirements? If so, what was applied for this commercial scale system?** - 50' front, 35' side, 40' rear. This particular project offered a planting plan for along Route 95
- **Any residential properties that abut this property?** 62 Stilson abuts the subject lot and contains a house as well as industrial warehouse; houses are also across the street on Buttonwoods
- **Municipal Permit Type -** Development Plan Review
- **Timeline for Local Permit Approval of Application by the Planning Board –** Upon application completion, the one non-noticed review with the Planning Board took place within a month in 2014 Decision and plans recorded within 1.5 months of Board approval
- **Any state permits (DEM?) required for the project?** State permits: Existing driveway was utilized so no curb cut was required (would have been local anyway); RIPDES permit from RIDEM RIR101181 was obtained after approval

Case Study #2

- **Type of Property:** Undeveloped Residential
- **Address:** 186 Lippitt Ave, Cranston RI
- **System Size:** 21.3 MW
- **Zoning District:** Residential A-80
- **Buffers - Any setback or buffer requirements? If so, what was applied for this commercial scale system?** The City of Cranston Solar Ordinance did not require any specific buffer requirements. Due to the location of the solar field and the surrounding existing vegetation, the City did not require any additional setback or buffer requirements.
- **Any residential properties that abut this property? –** Yes , residential zones abut the subject parcel on all sides based. North of the solar system is an existing farm field. East of the solar system is a large wetland complex and river protected by State law which provides a permanent buffer to the east. West are residential properties with a an existing 300 foot vegetated buffer that is to remain. South of the site is residential property located in the Town of West Warwick.
- **Municipal Permit Type -** The project was required to go thru the City of Cranston Major Land Development process. This included multiple public meetings and approvals from the City including a Master Plan approval, Development Plan Review approval, Preliminary Approval, and Final Approval.
- **Timeline for Local Permit Approval of Application by the Planning Board -** Master Plan Approval was received in July 2016 and the Final Approval was recorded in October 2017. The project took approximately 15 months to permit.
- **Any state permits (DEM?) required for the project?** Yes, the project required a RIDEM Wetlands Insignificant Alteration Permit #16-0202 and a RIPDES Permit #101456

Case Study #3

- **Type of Property** – Farm
- **Address and System Size -** 421 Kingstown Road, Richmond, 1.5MW and 3MW systems
- **Zoning District -** Light Industrial
- **Buffers - Any setback or buffer requirements? If so, what was applied for this commercial scale system?** - Light Industrial district: 50' front, 35' side, 40' rear.
- **Any residential properties that abut this property?** Residential uses and zones adjacent: R2 and R3 zoned residences along Route 138 and nearby Heaton Orchard Road/Clearview Drive/Beaver River Road/Smallpox Trail/Thorpe Lane
- **Municipal Permit Type -** Development Plan Review
- **Timeline for Local Permit Approval of Application by the Planning Board -** Upon application completion, the one non-noticed review meeting with the Planning Board took place within a week in 2017; the Planning Board decision was recorded within a day of the Board meeting; and the plans were recorded within 3.5 months of the recorded decision (the applicant had to wait for their RIDEM permits)
- **Any state permits (DEM?) required for the project?** Existing access on to Route 138 were utilized so no RIDOT curb cut was required; RIDEM FWW Wetlands 17-0070 & RIPDES RIR101564 for Solar I, and FWW Wetlands 17-0069 & RIPDES RIR101563 for Solar II were obtained for the project(s)

Case Study #4

- **Type of Property:** Office Building
- **Address and System Size:** 89Jefferson Boulevard, Warwick , 56 kW-canopy
- **Zoning District:** Commercial, Industrial
- **Buffers:** Building setbacks
- **Any Residential Properties abut this?** No
- **Municipal Permit Type:** None, state property
- **Dimensions & Square footage of System/Canopy:** 160 ft x 20 ft
- **How many days or weeks did take to install?** 40 construction days including repaving
- **Height (ft.) from ground to top of the system:** Low end clearance - 14 ft 2", high end max height ~22 ft
- **No. of parking spaces involved:** 15
- **Any state permits (DEM?) required for the project?** No

Case Study #5

- **Type of Property –** Commercial
- **Address and System Size -** 56 Stilson Road, Richmond 2 MW system
- **Type of Municipal Lot -** Industrial
- **Buffers - Any setback or buffer requirements? If so, what was applied for this commercial scale system?** - 50' front, 35' side, 40' rear
- **Any residential properties that abut this property?** There is a house on the subject lot; 62 Stilson abuts the subject lot and contains a house as well as industrial warehouse
- **Municipal Permit Type -** Development Plan Review
- **Timeline for Local Permit Approval of Application by the Planning Board –** Upon application completion, the one non-noticed review with the Planning Board took place within a month and a half in 2017 Decision recorded within one month of Board approval; plans recorded within 1.5 months of Board approval
- **Any state permits (DEM?) required for the project?** Existing driveway was utilized so no curb cut was required (would have been local anyway); RIPDES permit from RIDEM RIR101537 was obtained prior to approval

Case Study #6

- **Type of Property:** Undeveloped Residential
- **Address and System Size:** Bucknam Road (private road)

  Richmond, 4.73 MW
- **Zoning District:** Residential R-3 Zone
- **Buffers - Any setback or buffer requirements? If so, what was applied for this commercial scale system?** Setbacks for Solar Energy Systems in the R-3 district: 50' all sides. Within that 50', for R3, the perimeter fence has to be at least 25' from the panels and then the fence has to be at least 25' from the boundary lines. A 25' vegetated buffer (minimum) must be maintained or planted to the boundary lines within that setback.
- **Any residential properties that abut this property?** Residential uses and zones adjacent: R3 zoned residences along Route 91/Church Street, Bucknam Road and nearby Riverview & Fawn Drives
- **Municipal Permit Type -** Special Use Permit/DPR process- To the Zoning Board of Review to open the Public Hearing (200' abutters notified and legal ad in paper) to refer to the Planning Board for advisory Development Plan Review but accept no testimony or presentation on September 25, 2017.
- **Timeline for Local Permit Approval of Application by the Planning Board -** Upon 11/9/2017 application completion, the DPR meeting with the Planning Board took place within a week on 11/14/2017. The continuation of the ZBR's Public Hearing for the Special Use Permit took place at the next available agenda of 11/27/2017; and the associated decision was recorded on 12/13/2017 and the plans on 12/14/2017.
- **Any state permits (DEM?) required for the project?** State permits: RIDEM FWW Wetlands 17-0241 & RIPDES RIR101657 were obtained for the project. No curb cut permit required because Bucknam is a private road.

Case Study #7

- **Type of Property -** Former Gravel Pit
- **Address and System Size -** Hartford Ave, Johnston, RI. 4 MW System - – System is 16 acres of the 30+ acre lot.
- **Zoning District-** Commercial
- **Buffers - Any setback or buffer requirements? If so, what was applied for this commercial scale system?** - Received variances to go to from 200 feet on the rear yard, 150 feet on the side yards to 40 feet everywhere. There are no abutters to where the system is and it is set back on the rear part of the lot.
- **Any residential properties that abut this property?** No
- **Municipal Permit Type -** Special Use Permit
- **Timeline for Local Permit Approval of Application by the Planning Board -** Applied filed on March 27, 2017 and received the local permit on June 22, 2017.
- **Any state permits (DEM?) required for the project?** Yes, DEM Physical Alteration Permit for the access road and storm water.

Case Study #8

- **Type of Property –** Farm
- **Address and System Size** – 179 Plain Meeting House Road, West Greenwich, Big John Leyden's Christmas Tree Farm
- **Zoning District –** 92 acre designated farm. 12 acres removed from farm land and rezoned as commercial.
- **13% of the farm acreage was used for the solar system and associated footprint of the project.**
- **Buffers - Any setback or buffer requirements? If so, what was applied for this commercial scale system?** - 50' set backs from wetlands, and defined zoning setbacks from rear and side lot boundaries. The project is nearly 2000' ft offset to the front lot boundary
- **Any residential properties that abut this property?** Yes, but well offset to the solar site
- **Municipal Permit Type –** Special Use Permit
- **Timeline for Local Permit Approval of Application by the Planning Board** – 6+ Months. First large commercial solar project in the municipality.
- **Any state permits (DEM?) required for the project?** Yes, RIPDES permit (industrial permit for storm water) with DEM.