



City of Warwick  
Proposed comprehensive plan amendments  
Encouraging solar in the built environment.



### 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 sewerred
- 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.

Preserve existing forests from solar development in exchange for solar in developed commercial and industrial areas.

- 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.





## 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 nor'easters, 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.

Develop local solar siting policy that focuses on existing developed commercial & industrial areas with large parking lots and rooftops.

Federal & State tax incentives generate development pressure that favors solar arrays in undeveloped areas, thereby compromising forests and field areas.



Upon observing three solar facilities which have been installed via the zoning amendment process (RIGL 45-24-51), and through the course of developing solar policy, there is a clear public consensus to focus solar arrays within existing developed commercial & industrial areas –perhaps through accessory use solar canopies and rooftop solar.

Preserving existing, undeveloped forest tracts, whether by open space preservation, or in concert with residential zoning districts parameters, is preferred.

behaviors such as turning on 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 factors<sup>2</sup>. 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 property<sup>3</sup>. 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.



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).

Consider allowing solar canopies as an accessory use in commercial and industrial zones by building permit without extensive Planning or Zoning Board Review.

ers 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.



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
<b>1. The City implements practices to conserve energy and use renewable energy.</b>	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.	<b>HIGH PRIORITY</b>			
		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		
	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		
		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

Encourage private sector to augment fossil fuels with solar power in the built environment.

Provide regulations that encourage solar canopies and rooftop solar in existing commercial areas.