

RI Energy Plan (Update) and The Renewable Energy Siting Guidelines & Standards

Technical Committee
March 4, 2011
Statewide Planning
www.planning.ri.gov



RI Energy Plan: Guiding Principles

- **New Format, Technical and Planning Document**
- **Increased inclusion of Renewable Energy issues**
- **Current, applicable, useable document for Municipalities and others**
- **Reflect current National and State energy policies, set policy and guide actions**

Introduction – Vision Statement

“In 20 years, energy in Rhode Island will be more efficient, reliable, and secure and at least 30% of all energy used in the State will come from clean and renewable resources, with at least 20% of the total coming from within the State.”

CHAPTER 1 – Current Energy Needs

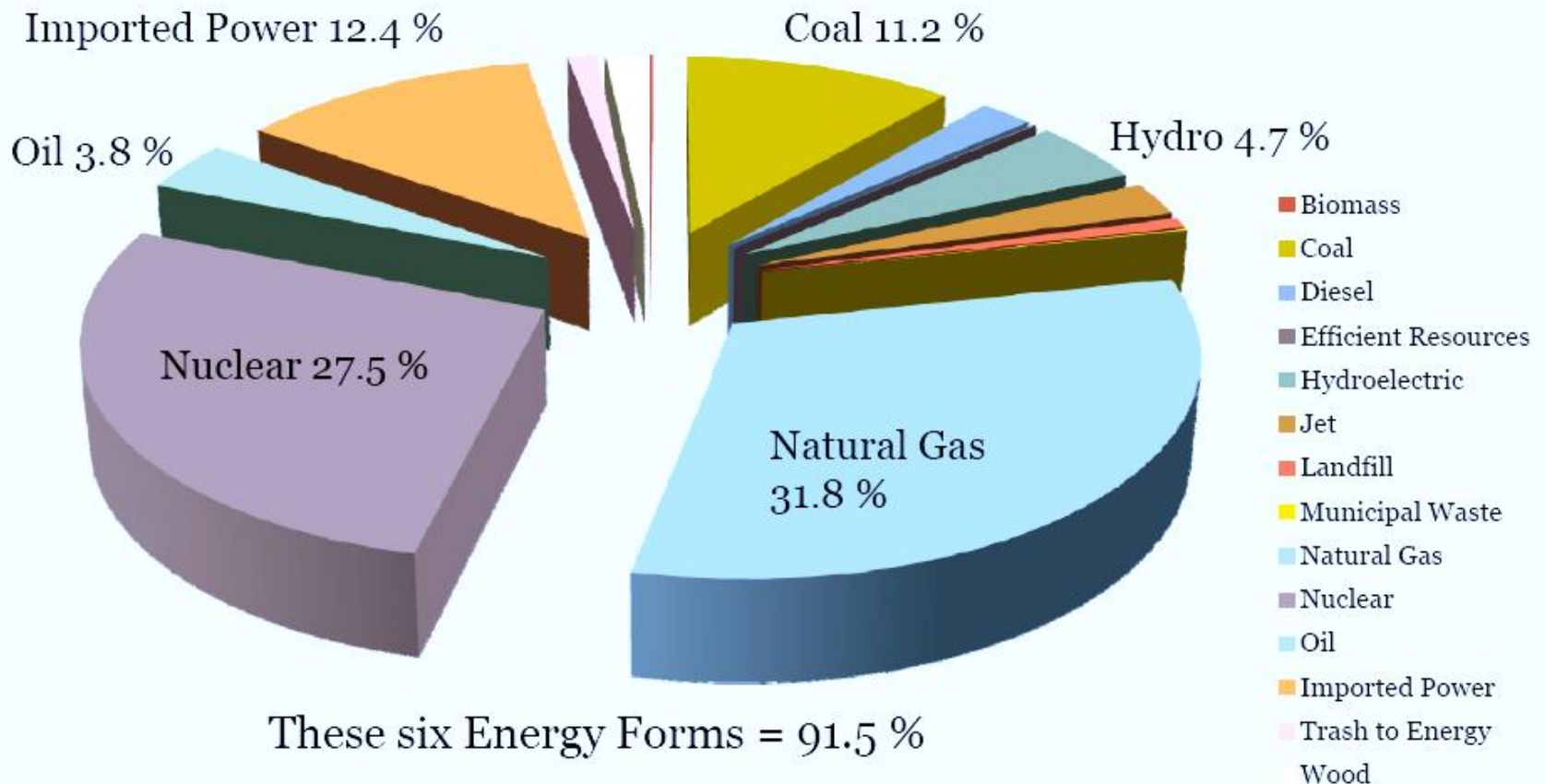
- RI consistently ranks lowest in energy use per capita (#49 or 50)
- RI ranks 2nd lowest in production, only DE and D.C. are lower
- Relatively High prices (#7 in Electricity, #3 in Home Heating Oil, #11 in Diesel, #19 in Gasoline)

CHAPTER 1 – Electricity

Key Electrical Issues:

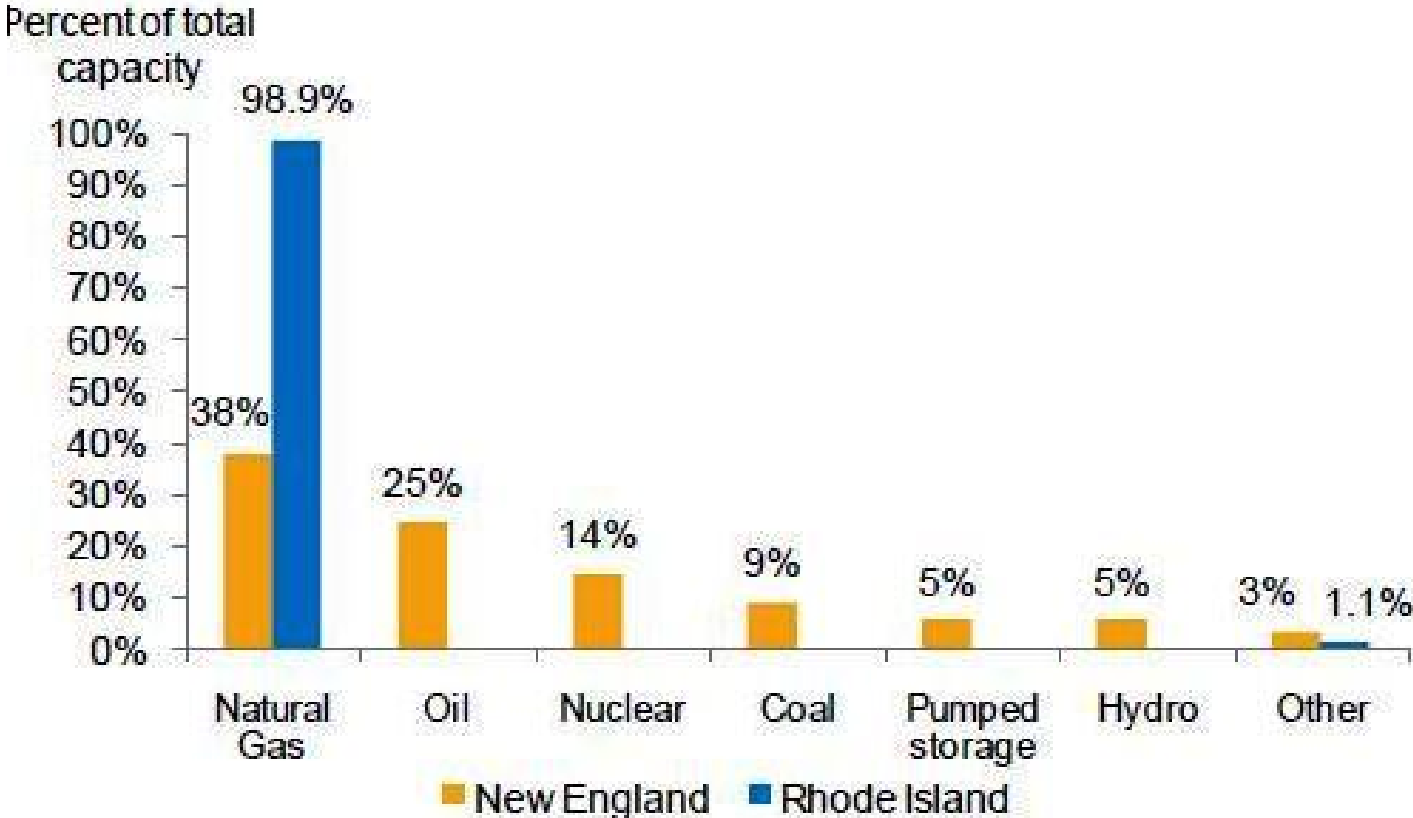
- Rhode Island consumes roughly 0.2% of all power produced nationwide
- Electricity consumed in Rhode Island is generated largely out of state, from a variety of resources
- More than 90% of electrical generation capacity in Rhode Island is produced by 5 Natural Gas firing facilities
- 8% of Rhode Island homes use electricity as their primary heating source and this is 14.9% of annual residential energy consumption

CHAPTER 1 – Electricity Sources



CHAPTER 1 – Electricity Produced in RI

Electricity Production



CHAPTER 1 – Petroleum

Key Petroleum Issues:

- All of Rhode Island's petroleum consumed is imported.
- Less than 4.0% of electricity consumed in Rhode Island is generated through burning petroleum products
- Oil (mostly Diesel Fuel) accounts for less than 1% of total generating capacity in Rhode Island; The largest generation facility which uses petroleum as a primary fuel is the Block Island Power Plant.
- 42% of homes in Rhode Island use oil as a primary heating fuel, this is 25.2% of annual residential energy consumption
- 89% of motor vehicle fuel consumed in Rhode Island is gasoline.

US

RI

0%

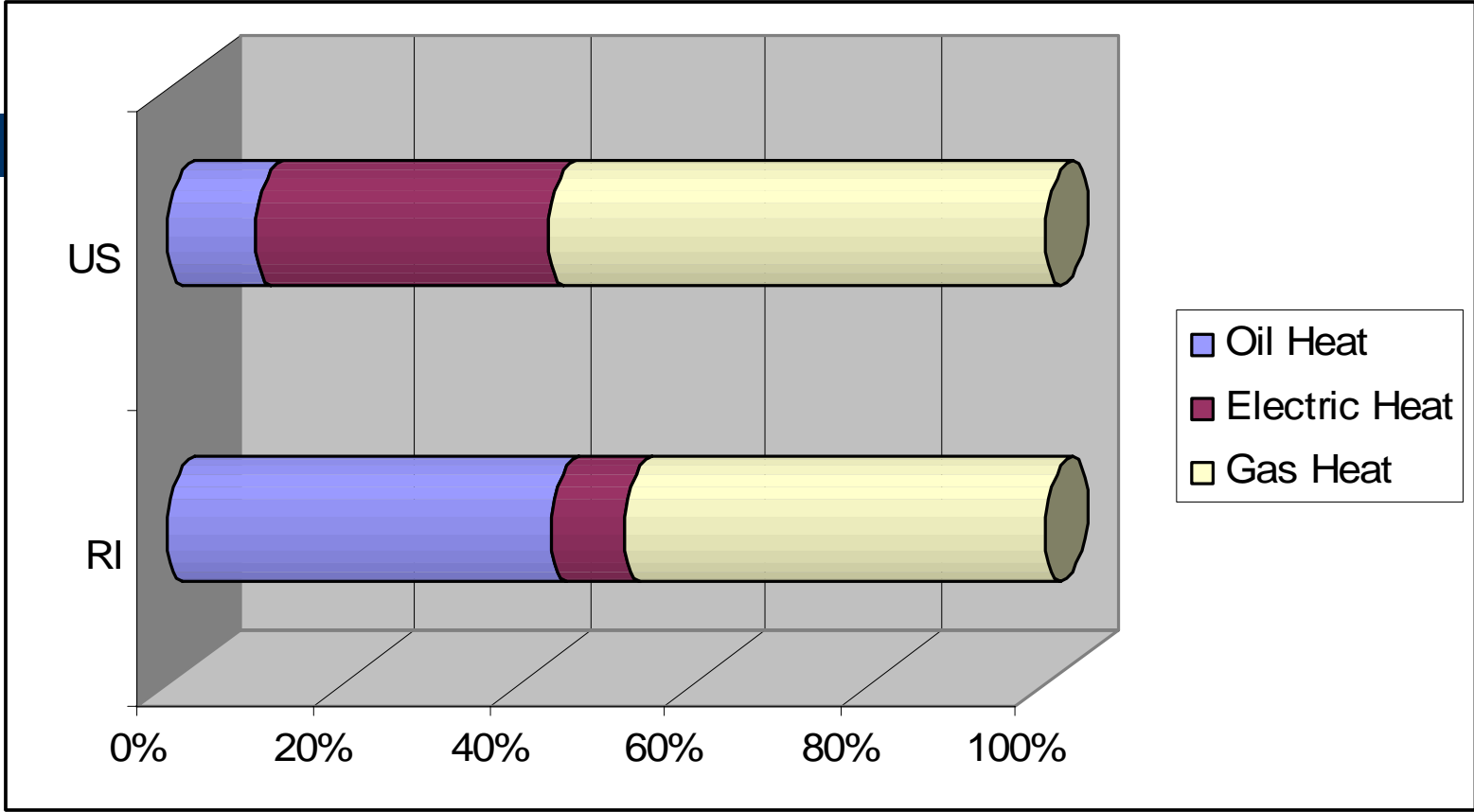
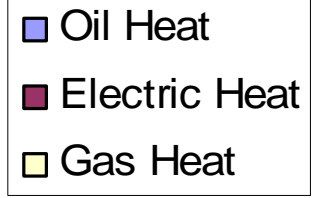
20%

40%

60%

80%

100%



CHAPTER 1 – Natural Gas (LNG)

Key Liquefied Natural Gas (LNG) Issues:

- Proposed Weaver’s Cove project in Mt. Hope Bay – strong opposition
- Port of Providence most significant Regional Hub, is known as a “Peak Shaving Facility”
- Storage of surplus natural gas for peak consumption times in the winter months
- Depends upon tanker trucks to bring LNG from other nearby sources – Connectivity to I-95
- Preservation of existing facilities is key to our “energy mix”

CHAPTER 1 – Nuclear Power

Key Nuclear Power Issues

- 27.5% of electricity consumed in Rhode Island is generated using Nuclear Power from elsewhere;
- Rhode Island has no indigenous nuclear power plants
- Nuclear power is overall safer than other types of production and is relatively clean, except for toxic nuclear waste
- Unlikely to see Nuclear Power generation in RI



Pilgrim Power – Plymouth, MA

CHAPTER 1 – Renewable Energy Sources (Wind, Solar, Hydro, Biofuels, etc.)

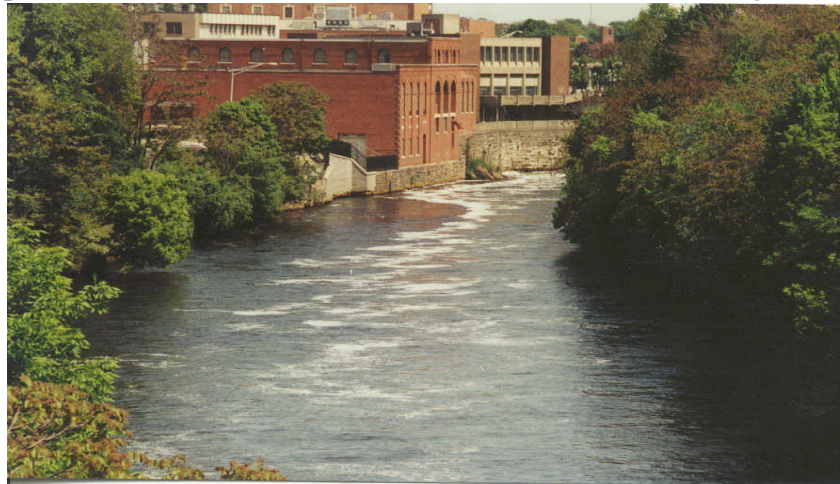
Key Renewable Energy Power Issues

- **The U.S. Energy Information Administration (EIA) estimates that 26 MW (1.5%) of Rhode Island’s electricity generation capacity comes from facilities using renewable resources.**
- **163,000 MWh (2.2%) of the electricity Rhode Island generates annually comes from renewable energy resources.**
- **Currently, 92% of Renewable Energy capacity, and 97% of annual generation uses biofuels / landfill gas/ municipal solid waste.**
- **Off-shore Wind – Highest Potential**

CHAPTER 1 – Hydroelectric Sources

Key Hydroelectric Power Issues

- EIA estimates that Rhode Island has a hydroelectric generating capacity of 2-3 MW (0.2% of total state Capacity)
- Roughly 5,000 MWh (0.1% of state total) are generated using hydroelectric facilities annually.
- Not a significant source – limited capacity → “small hydro”

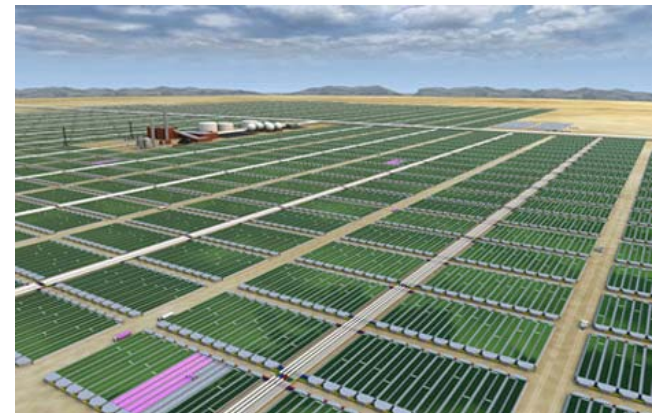


Pawtucket Hydropower

CHAPTER 1 – Biofuel Energy Sources

Key Biofuel Power Issues

- According to EIA estimates, total biofuel electric generation capacity is 24 MW (1.3 % of state total).
- Biofuel and municipal solid waste/landfill gas are used in the production of 158,000 MWh (2.1% of state total) annually.
- Less than 1% of homes statewide use wood/other biofuels as the primary heat source for their homes. (2.1% of total state residential energy consumption).



CHAPTER 1 – Wind Energy Sources

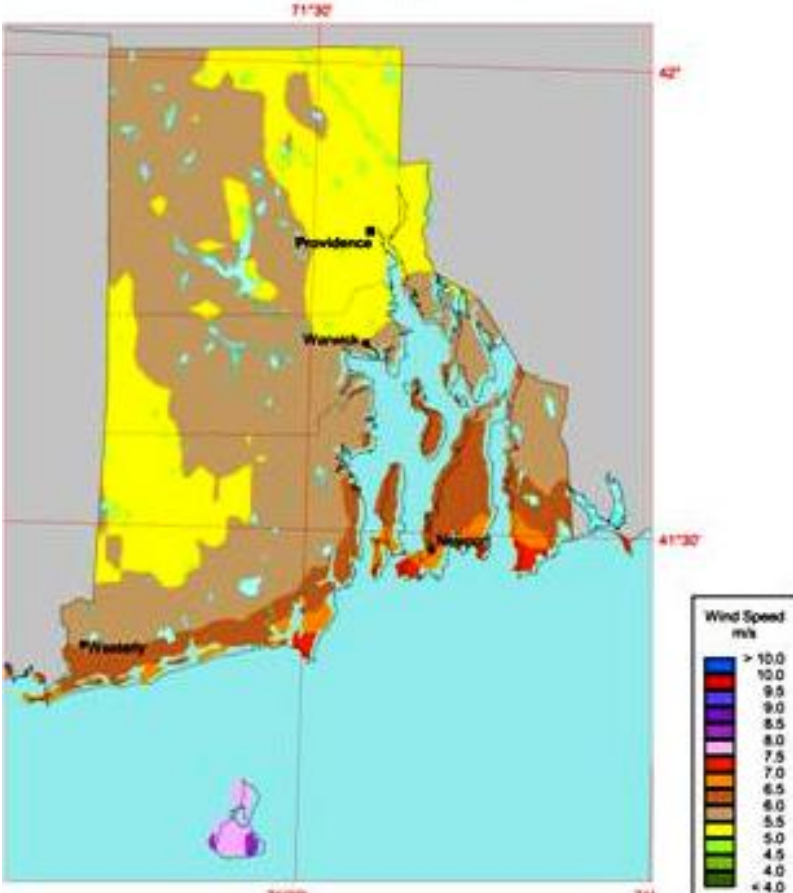
Key Wind Power Issues

- There are currently 5 utility scale (100kw+) on-shore turbines in the State
- There are currently no off-shore turbines, but there are plans to erect eight turbines off the coast of Block Island starting in 2013
- Potential to produce 15%+ of state's electricity needs
- Siting of turbines is a rather new issue for the state

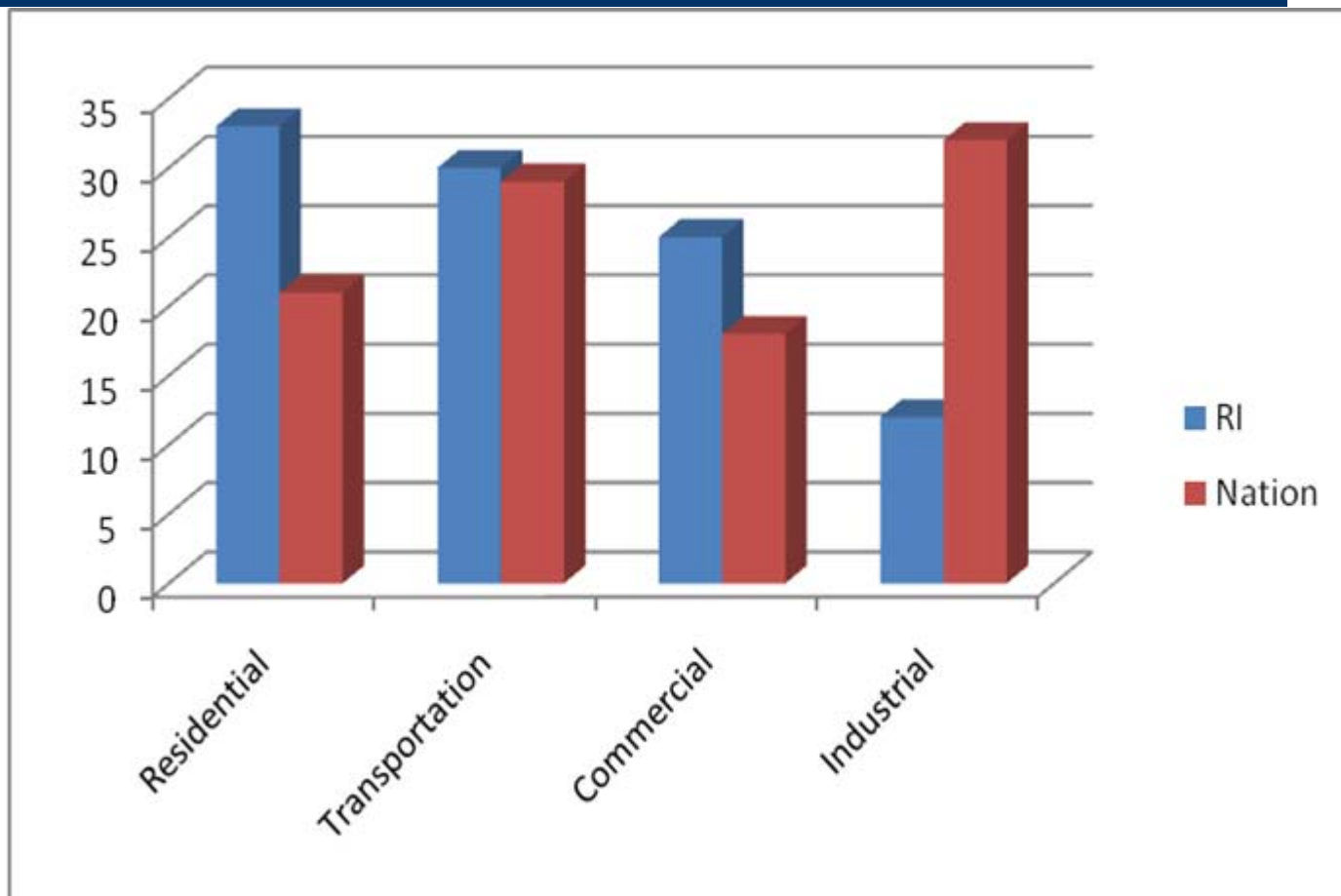


CHAPTER 1 – Wind Energy Sources

Rhode Island - Annual Average Wind Speed at 80 m



CHAPTER 1 – Energy Use by Sector

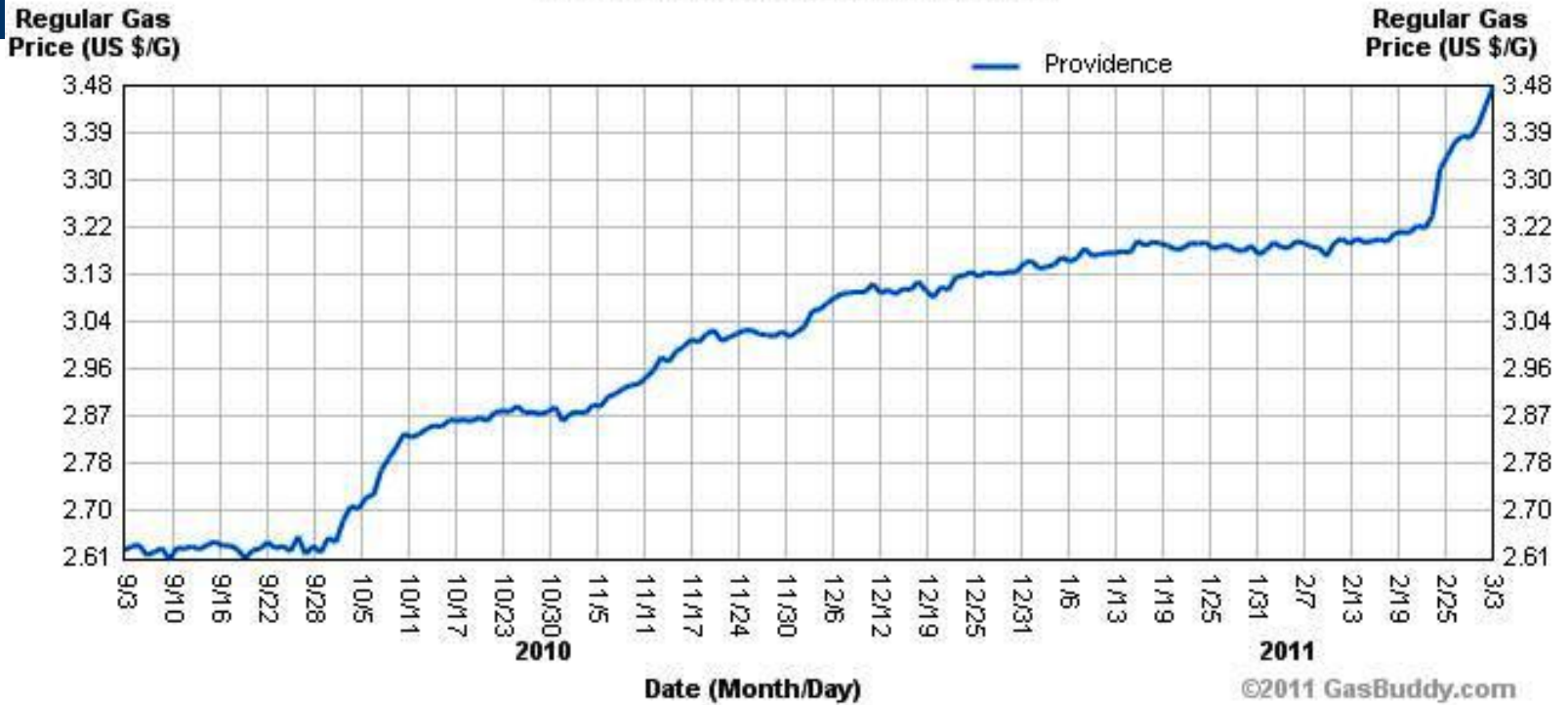


CHAPTER 2 – Where are We Heading?

- **Electricity demand to grow by about 1% per year (ISO-NE)**
- **Natural Gas – possible reduced use for electricity generation, increased use for residential uses**
- **VMT in RI – 24 million up to 31 million by 2030**
- **VHT in RI – 827k up to 1.36 million by 2030**
- **COSTS – level of uncertainty**

Current Gas Prices

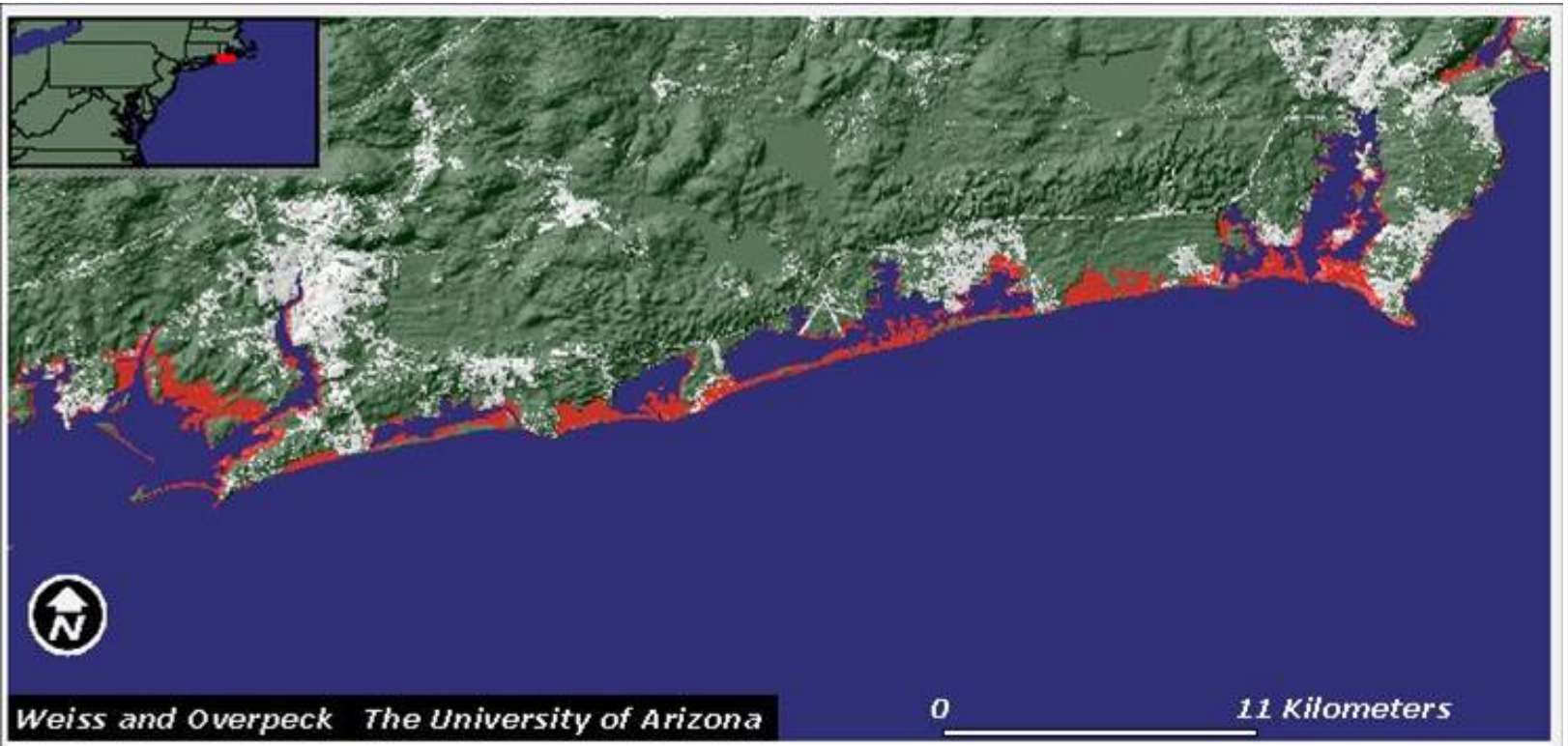
6 Month Average Retail Price Chart



CHAPTER 3 – Consequences of continuing “Business as Usual”

- **Volatility in Energy Costs**
 - **RI especially vulnerable to price fluctuations**
- **Climate Change & Sea Level Rise**
 - **Low-lying coastline (inland)**

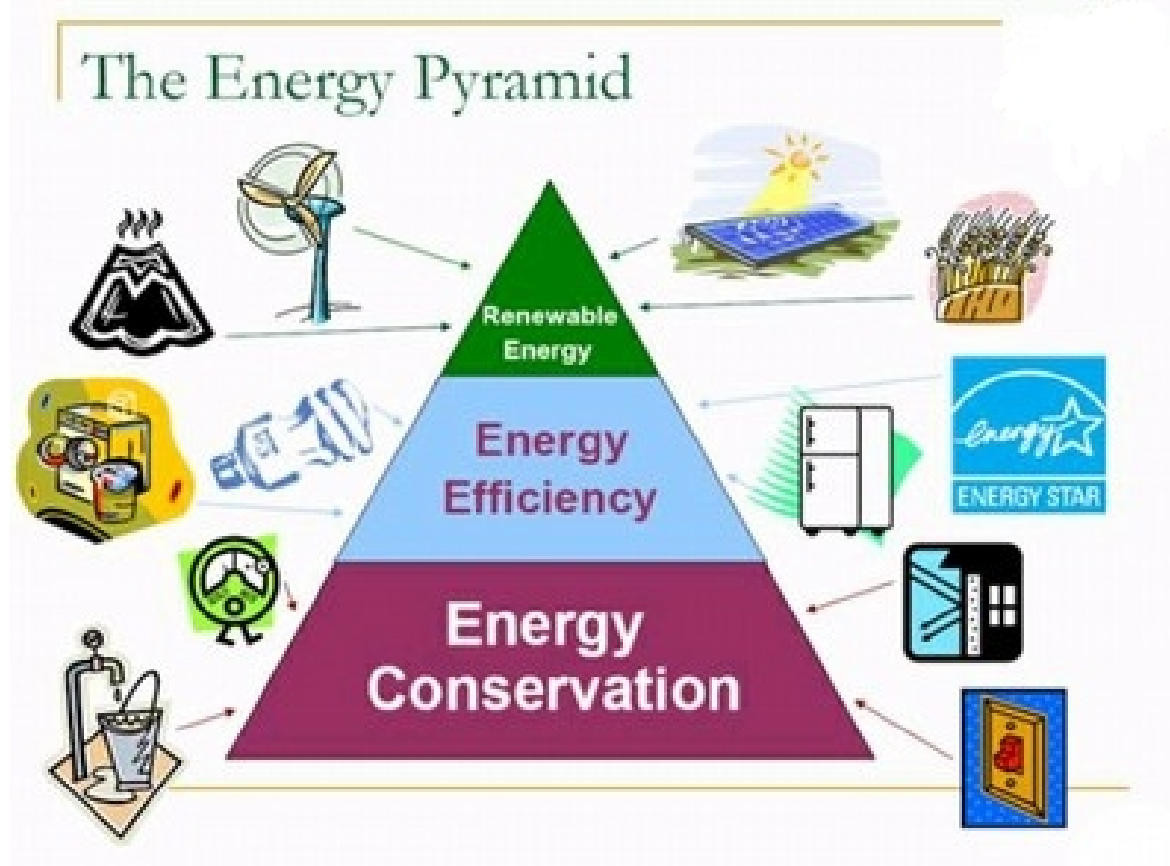
Estimated 1 Meter Sea Level Rise



CHAPTER 3 – Consequences of continuing “Business as Usual”

- **Foreign Fossil Fuel Dependency**
 - **Instability in Oil-producing nations**
- **Homeland Security**
 - **Energy Independence → Stronger Economy**

CHAPTER 4 – Opportunities & Challenges



CHAPTER 4 – Opportunities & Challenges

Residential - Energy Efficiency and Conservation

- Weatherization Assistance
- N-Grid/RISE Energy Audit Program
- “ 3%” Model
- Energy Star
- New State Building Code

CHAPTER 4 – Opportunities & Challenges

Commercial/Industrial- Energy Efficiency and Conservation

- **Long-Term Cost Savings**
- **Best Management Practices**
- **Green Buildings and LEED Certification**
- **New State Building Code**

CHAPTER 4 – Opportunities & Challenges

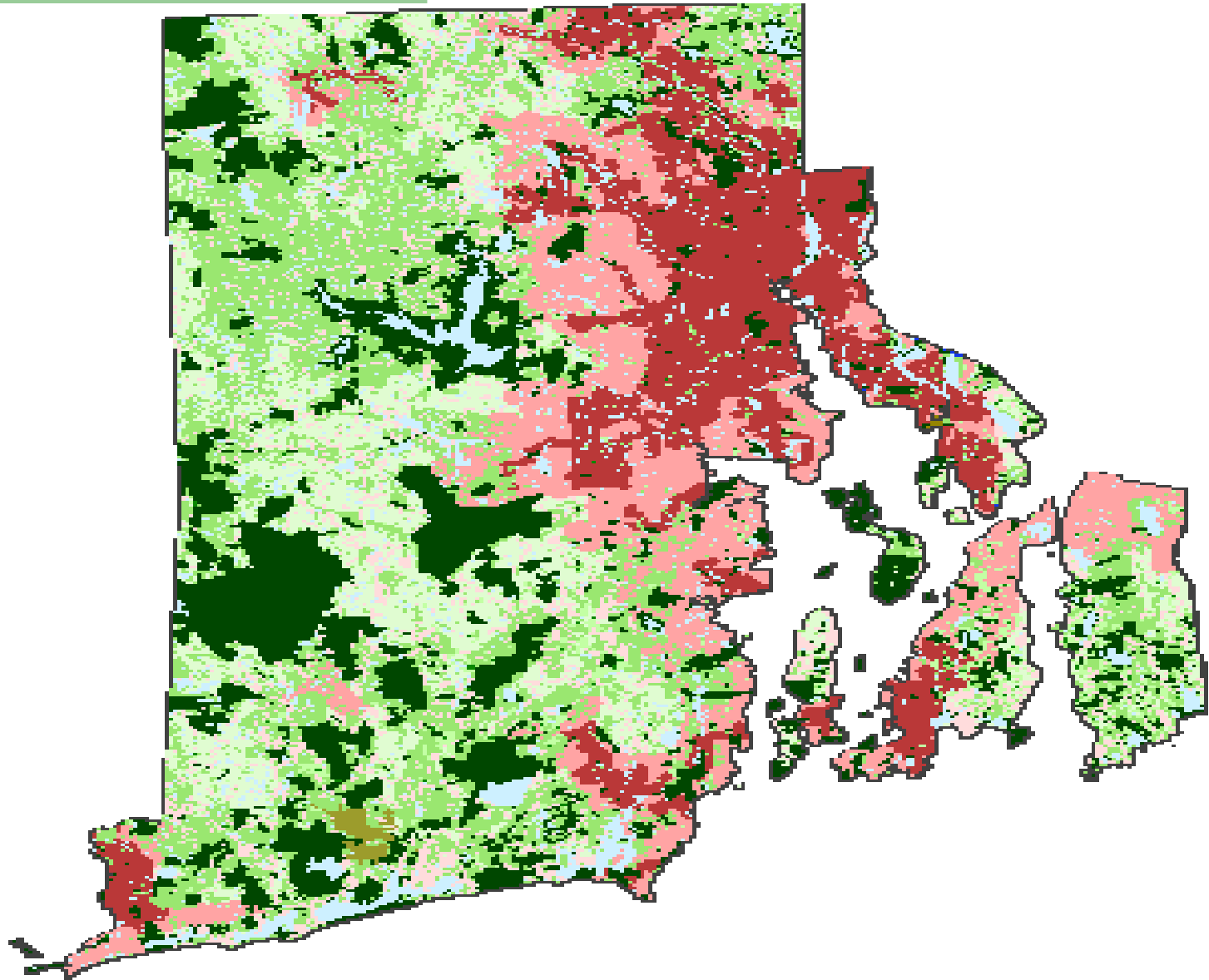
Governmental- Energy Efficiency and Conservation

- **Budget Savings**
- **ESCO's**
- **School Departments**

CHAPTER 4 – Opportunities & Challenges

Transportation- Energy Efficiency and Conservation

- MPG and Emissions
- Electric Vehicles
- Public Transportation
- Land Use Choices → Land Use 2025



CHAPTER 4 – Opportunities & Challenges

Renewable Energy

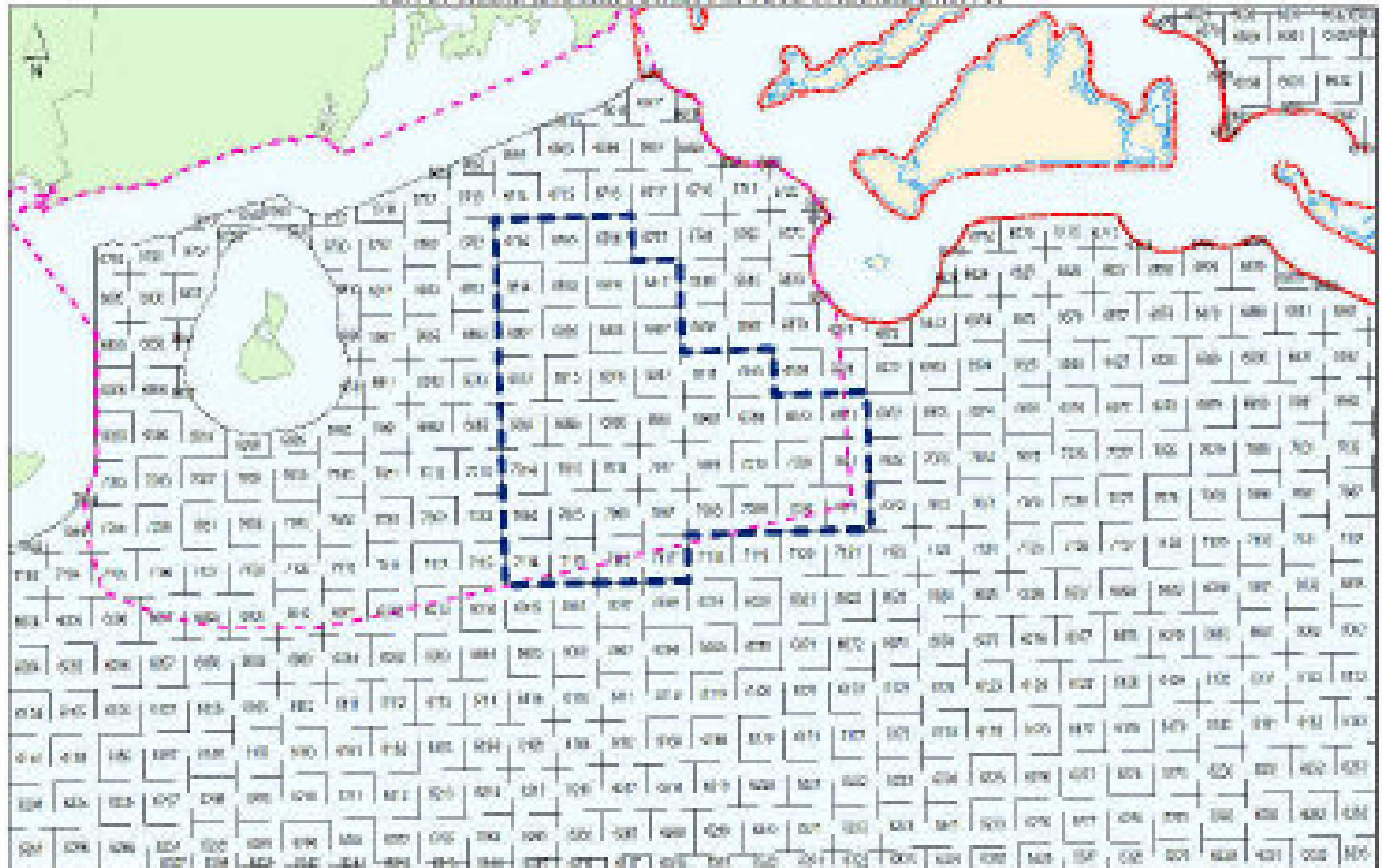
- Off-Shore Wind
- Non-utility Scale Renewables (Building Capacity Report, 2008)
- Siting Guidelines
- Geothermal, Solar, Hydro, Tidal




CHAPTER 4 – Opportunities & Challenges

Legislative and Regulatory Framework

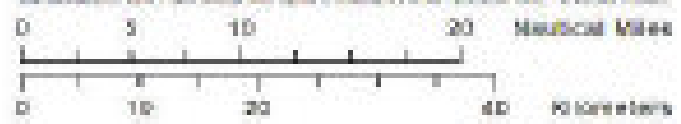
- Federal
- State/Regional (Off-shore Wind A.O.M.I.)
- Local

Rhode Island and Massachusetts Area of Mutual Interest



-  Massachusetts Ocean Management Planning Area
-  RIMA Area of Mutual Interest Boundary
-  OCS Lease Block
-  RI Ocean SAMP Study Area

1 inch equals 69 miles & 111 kilometers (Scale: 1:426,720). The distance between the Massachusetts and Rhode Island Ports (Coastal Zone Order: 10000) is 100 miles.



CHAPTER 5 – Getting There

Goal 1: Increasing Energy Efficiency

Recognition that energy is a resource too valuable to waste and should be produced and used efficiently to extend the resource, protect public health, and sustain the environment.

CHAPTER 5 – Getting There

Goal 2: Energy Conservation

Conservation of our energy resources is key to ensuring and maintaining an adequate supply for all sectors of usage.

CHAPTER 5 – Getting There

Goal 3: Energy Reliability, Infrastructure and Security

The attainment of a fuel mix that is reliable and that satisfies economic need.

CHAPTER 5 – Getting There

Goal 4: Environmental Quality and Public Health

Setting and achieving objectives that preserve or enhance environmental quality while ensuring adequate energy supplies.

CHAPTER 5 – Getting There

Goal 5: S.M.A.R.T. Residential Energy (Sustainability, Management, Accessibility, Retrofits, Taxes)

More energy-efficient homes, especially in Affordable Housing construction.

CHAPTER 5 – Getting There

Goal 6: Energy Education and the “Green Economy”

Energy education available at all levels, beginning in grade school and continuing through post-high school levels, along with specialized training and post-secondary education opportunities for “green jobs”.

CHAPTER 5 – Getting There

Goal 7: Indigenous Renewable Resources

The development of permanently sustainable energy resources that are environmentally benign and economically feasible.

NEXT STEPS

- Completed Draft for Review- April/May
- Technical Committee Review- May/June
- State Planning Council Review- June/July
- Public Hearing- August/September
- Final Adoption- September/October



Questions/Comments/Suggestions?



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Renewable Energy Facility Siting Guidelines & Standards

Statewide Planning, March 2011



What gives the Division of Planning the authority to develop Guidelines?

- Comprehensive Energy Conservation, Efficiency and Affordability Act of 2006:

“To adopt... and to amend and maintain as an element of the state guide plan or as an amendment to an existing element of the state guide plan, standards and guidelines for the location of eligible renewable energy resources and renewable energy facilities in Rhode Island with due consideration for the location of such resources and facilities in commercial and industrial areas, agricultural areas, areas occupied by public and private institutions, and property of the state and its agencies and corporations, provided such areas are of sufficient size, and in other areas of the state as appropriate”.

What is the purpose of drafting wind energy facility siting guidelines and standards?

- The creation of a ‘cornerstone’ document that will contain a listing of environmental, safety, zoning and related issues to assist in:
 - 1.) Siting Facilities
 - 2.) Drafting Municipal Ordinances

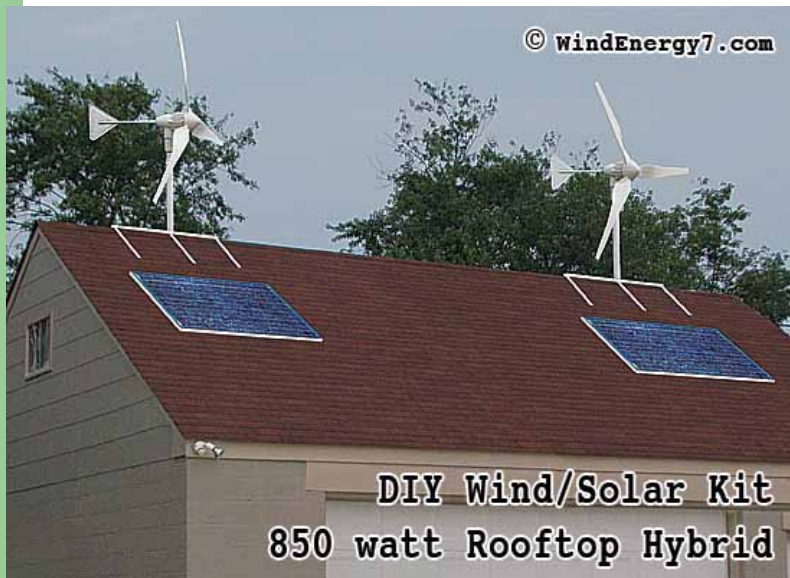
Will the Standards & Guidelines be a regulatory mandate?

- **NO**

- The document will be advisory, and contain:

1. A listing of impacts that should be considered
2. Recommended guidelines for these impacts
3. Performance standards, when appropriate

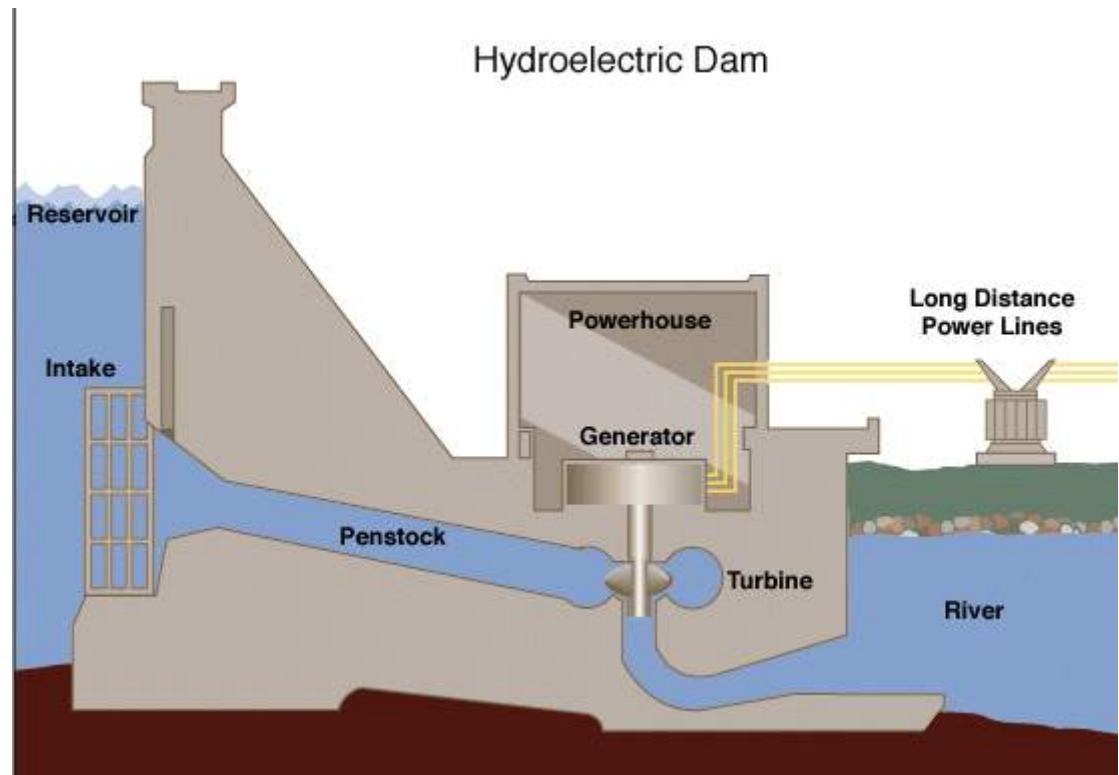
What is the scope of the standards?



- RIGL 42-98-3
- 1 kW to 40 MW
- All of Rhode Island
- *Sizes discussed later*

Which Energy types?

- Wind
- Solar
- Hydro
- Fuel Cells
- Tidal
- Biomass
- *RIGL 39-26-5*

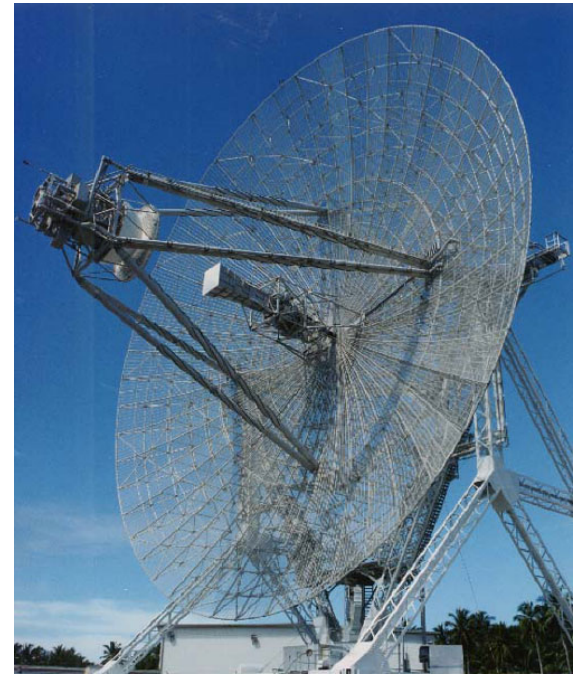


Guideline Development Principles:

- Scale of Facility
- Location, Location, Location
- Scientific Literature and Studies

Issues considered:

- Current regulatory regime surrounding a specific technology
- Impacts of the facility
- Permissibility of the facility in certain zones



DOD Radar System

WIND ENERGY FACILITY, Guidelines Overview



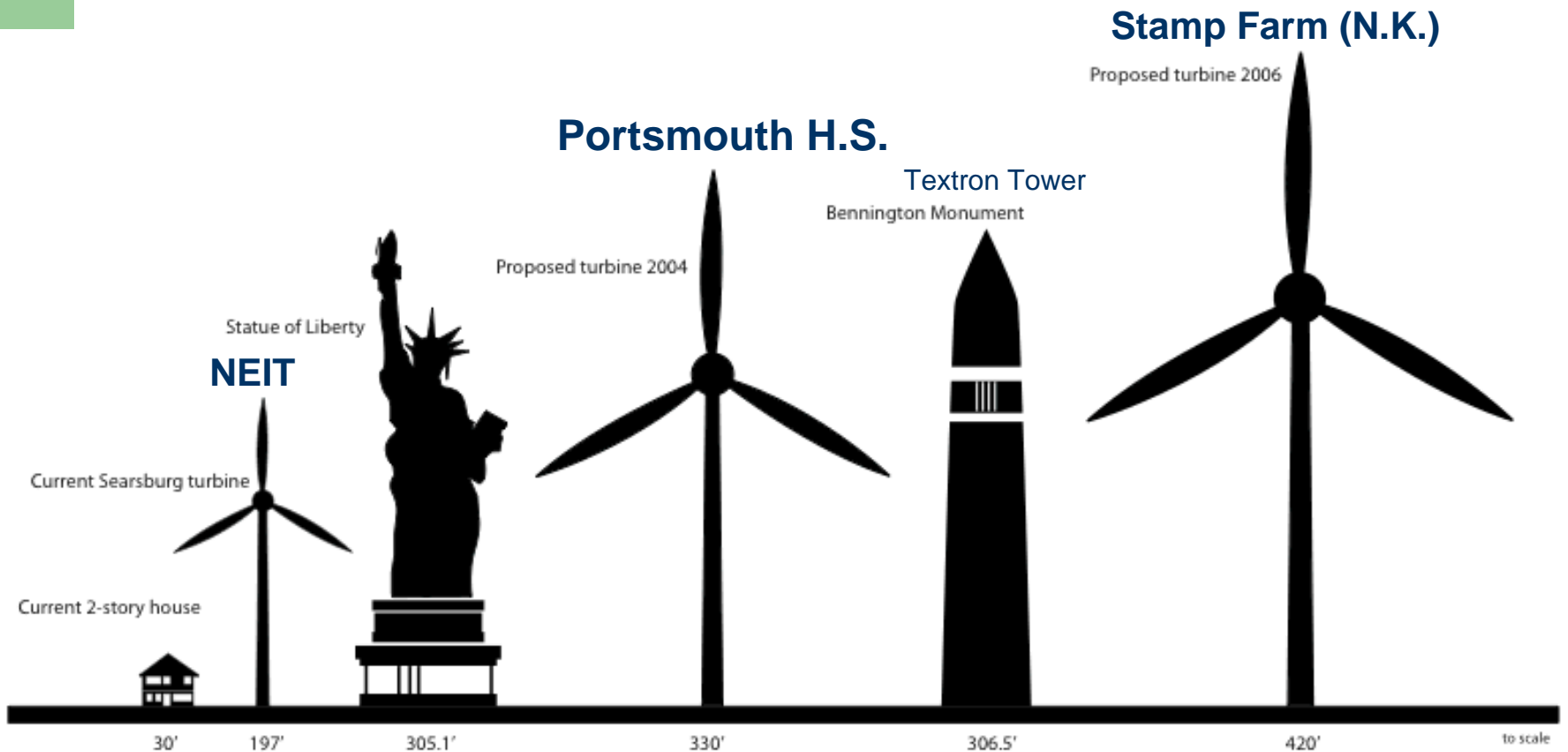
Why Wind Energy First?

- #1 Siting Priority
- Wind Projects in 13 communities currently
- 400ft +
- Noise Propagation / Property value



Portsmouth, Abbey

Size Matters in Siting



Wind Guidelines – Development (1)

- **Advisory Group**
- CRMC, CLF, PPL, DEM, RIEDC, DoP, OER, WCRPC, R.I. Municipalities, ASA, RI Audubon Society, (1) Citizen Representative

Participant Municipalities: Jamestown, Middletown, North Kingston, Portsmouth, WCRPC,

Wind Guidelines – Development (2)

- **Scientific Working Group**
- *Goal: Come to consensus on literature, possible impacts*
- CRMC, DEM, RIEDC, DoP, OER, WCRPC, RI Municipalities, ASA, RI Audubon Society

Wind Guidelines – Development (3)

- **Land Use Working Group**
- *Goal: Use the Scientific Document to develop normative guidelines for Wind Energy Facility Siting*
- *Membership TBD*

Impacts to be Investigated (1)

PUBLIC SAFETY

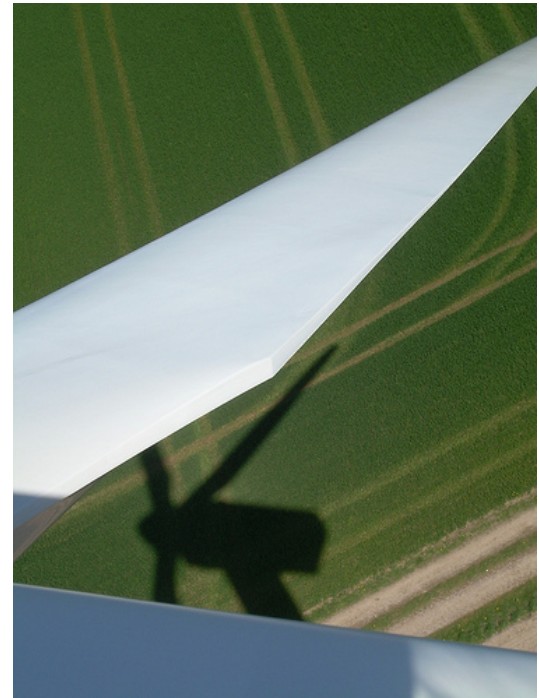


- Collapse and Failure
- Icing – Throw and Fall
- General Safety Practices

Impacts to be Investigated (2)

Annoyance

- Shadow Flicker
- Noise Propagation



Impacts to be Investigated (3)

Environmental



- Birds & Bats
- Fragmented Habitats
- Endangered Species and Wetlands

Impacts to be Investigated (4)

Aesthetics & Others

- Basic tower/ facility Design Considerations
- Mitigating impact on scenic vistas
- Others TBD

Wind Energy Guidelines - Timeline

- Scientific Working Group Completion – May
- Land Use Working group Document Completion – June / July
- Technical Committee Review – July / August

Questions/Comments/Suggestions?



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