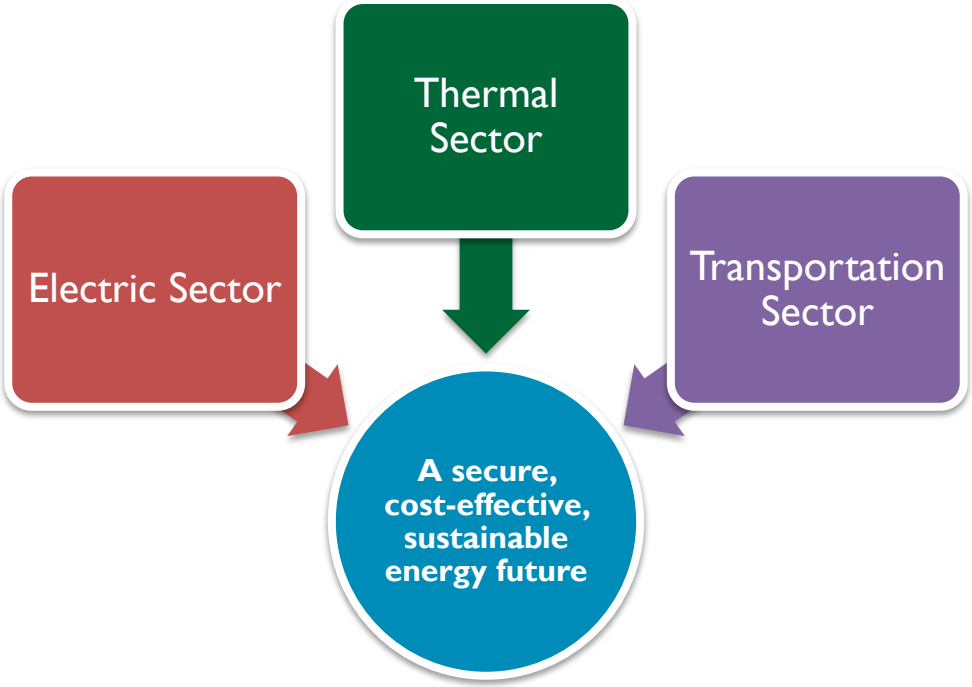
RISEP Advisory Council Meeting #8

Commerce RI
Thursday, January 30, 9–11 am

STATE OF RHODE ISLAND
OFFICE OF
ENERGY RESOURCES

RISEP Vision Statement



*"In **2035**, Rhode Island provides energy services across all sectors—**electricity, thermal, and transportation**—using a **secure, cost-effective, and sustainable** energy system."*

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RISEP Project Tasks

Gather Data

Analyze and quantify the amount, cost, supply, and environmental effects of all forms of energy resources—currently used, and potentially available to use—within all sectors in Rhode Island.

Set Goals

Identify measurable targets for providing energy services using a resource mix that meets a set of criteria advancing the health, environmental, economic, and human wellbeing of the people, communities, and environment of Rhode Island.

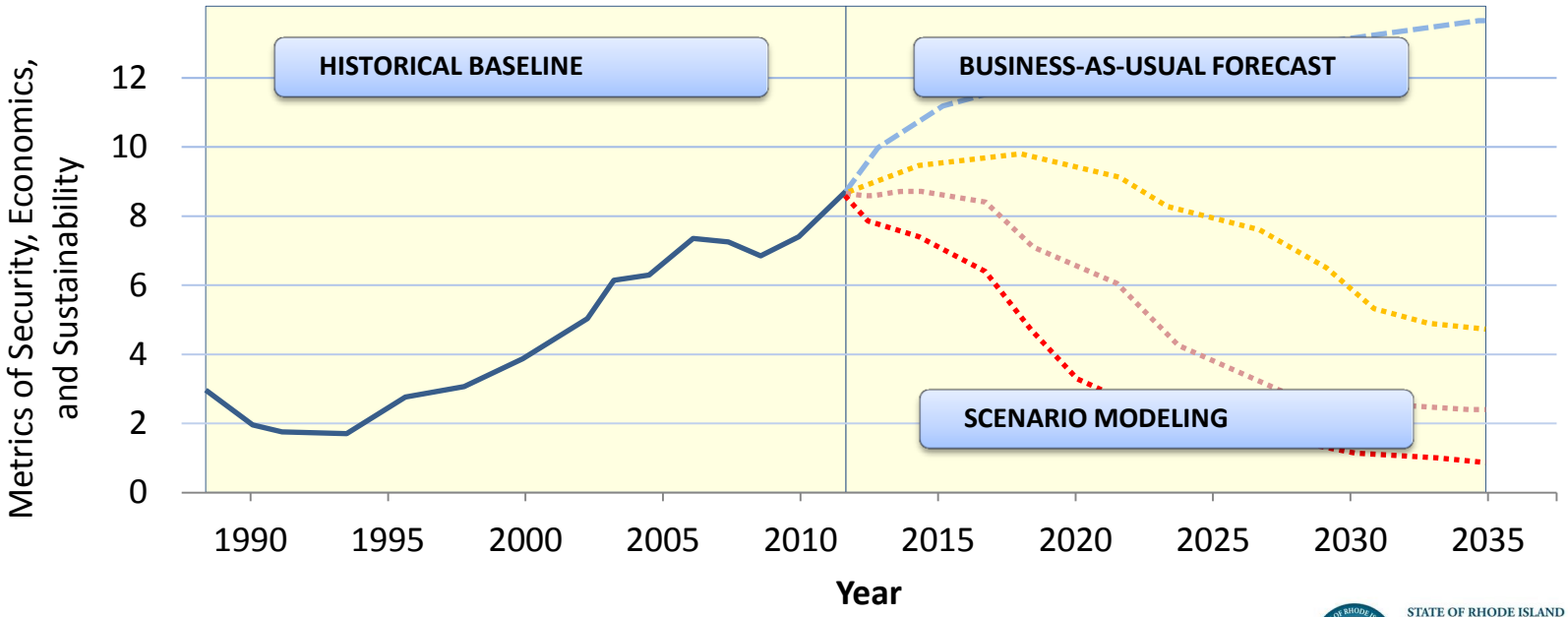
Recommend Action

Design a comprehensive implementation strategy to meet the goals of the Plan through public, private, and individual efforts, consistent with existing policy requirements at the local, state, regional, and federal level.

Gathering Data

Gather Data

Analyze and quantify the amount, cost, supply, and environmental effects of all forms of energy resources—currently used, and potentially available to use—within all sectors in Rhode Island.



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Gathering Data

Gather Data

Analyze and quantify the amount, cost, supply, and environmental effects of all forms of energy resources—currently used, and potentially available to use—within all sectors in Rhode Island.

Navigant modeled three energy future scenarios

Scenario 1 (Security)	• Prioritizes energy security through fuel diversification and grid modernization
Scenario 2 (Cost-Effectiveness)	• Prioritizes cost-effectiveness and economic development while hitting key targets for GHG reduction
Scenario 3 (Sustainability)	• Prioritizes the sustainability of Rhode Island's energy economy through the widespread deployment of renewables, thermal alternatives, and vehicle electrification

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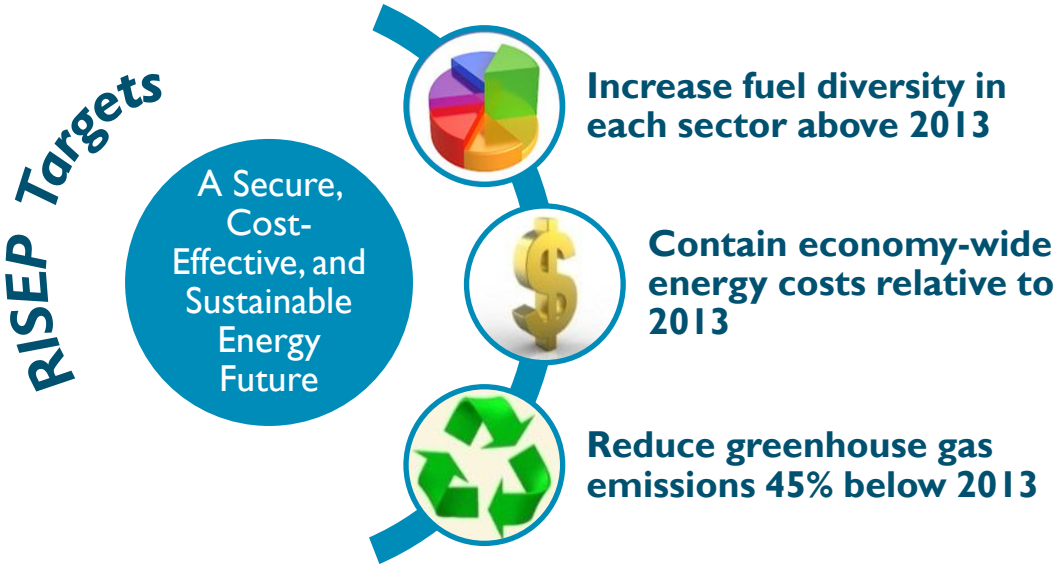
Setting Goals

Set Goals

Identify measurable targets for providing energy services using a resource mix that meets a set of criteria advancing the health, environmental, economic, and human wellbeing of the people, communities, and environment of Rhode Island.



Hitting key targets for GHG reductions while increasing energy diversity is anticipated to provide net economic benefits to Rhode Island

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Recommending Action

Recommend Action

Design a comprehensive implementation strategy to meet the goals of the Plan through public, private, and individual efforts, consistent with existing policy requirements at the local, state, regional, and federal level.

- **The RISEP Project Team proposed a portfolio of 20 policy recommendations**
  - The policy recommendations help frame the minimum near- and long-term steps Rhode Island must take to achieve the RISEP targets
  - Recommendations are proposed for:
    - The RISEP security, cost-effectiveness, and sustainability criteria; and
    - The electric, thermal, and transportation sectors

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How were policies developed?

- **The RISEP Project Team used analysis and research to propose policy recommendations**

Overall Approach	Sources of Information

• Identify policies needed to meet carbon reduction target and estimate necessary size accordingly
• Select those policies consistent with driving increased fuel diversity in Rhode Island's energy portfolio
• Recommend the most cost-effective strategies and methods
 	
Hitting key targets for GHG Reductions while increasing energy diversity is anticipated to provide net economic benefits to Rhode Island
	• **Results of Navigant Scenario Modeling**
	  • *Helps answer → is the policy needed?*
	• **Best Practices in Other Jurisdictions**
	  • *Helps answer → does the policy work?*
	• **Feedback from Implementation Group & Advisory Council**
	  • *Helps answer → is the policy right for Rhode Island?*

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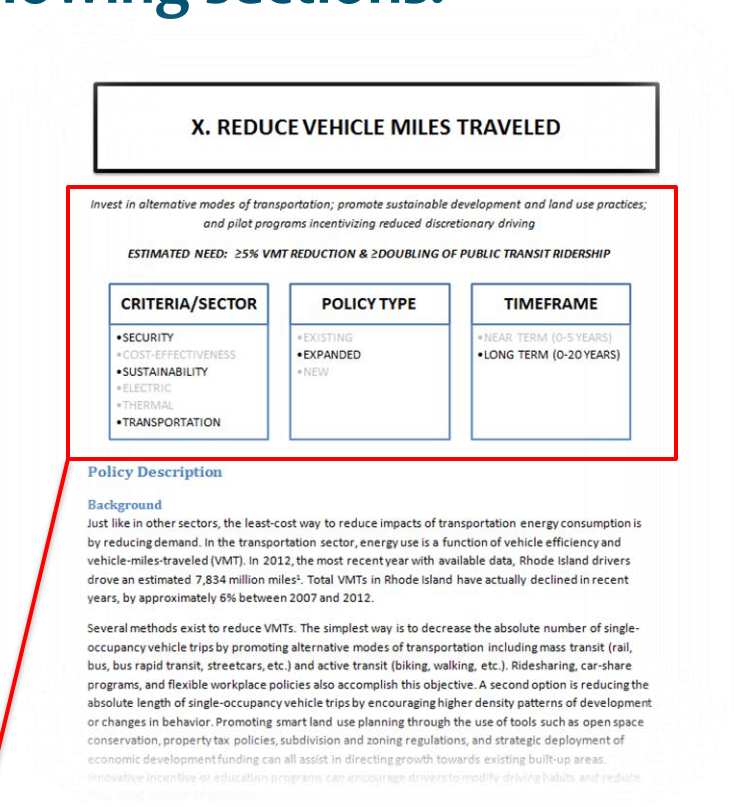
Level of Treatment

- **Designed as a portfolio of strategies to achieve the goals and targets of the RISEP**
  - Intent is to provide policymakers an overall picture of the complete array of actions needed to elicit desired outcomes
  - Highlights existing gaps, shows order of magnitude degree of change likely needed
- **Not at level of individual policy design**
  - Requires its own detailed analysis
    - For example, the DG Economic Impact Study is informing the DG program expansion
  - Navigant did not always explicitly model policy mechanisms needed to achieve future outcomes
    - For example, a B20 Standard was explicitly modeled; improving energy efficiency codes and standards was not explicitly modeled

Level of Treatment

- **Each "Policy Brief" contains the following sections:**
  - Policy Description
    - Background
    - Summary
    - Experience in Other States
  - Rationale
    - What is the Need?
    - Alignment with RISEP Goals/Modeling
    - What are the Impacts/Benefits?
  - Implementation
    - Legal Authority
    - Lead/Responsible Actor
    - Expected Costs/Potential Funds
    - Design or Implementation Issues



X. REDUCE VEHICLE MILES TRAVELED

Invest in alternative modes of transportation; promote sustainable development and land use practices; and pilot programs incentivizing reduced discretionary driving

ESTIMATED NEED: ≥5% VMT REDUCTION & ≥DOUBLING OF PUBLIC TRANSIT RIDERSHIP

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Just like in other sectors, the least-cost way to reduce impacts of transportation energy consumption is by reducing demand. In the transportation sector, energy use is a function of vehicle efficiency and vehicle-miles-traveled (VMT). In 2012, the most recent year with available data, Rhode Island drivers drove an estimated 7,834 million miles[1]. Total VMTs in Rhode Island have actually declined in recent years, by approximately 6% between 2007 and 2012.

Several methods exist to reduce VMTs. The simplest way is to decrease the absolute number of single-occupancy vehicle trips by promoting alternative modes of transportation including mass transit (rail, bus, bus rapid transit, streetcars, etc.) and active transit (biking, walking, etc.). Ridesharing, car-share programs, and flexible workplace policies also accomplish this objective. A second option is reducing the absolute length of single-occupancy vehicle trips by encouraging higher density patterns of development or changes in behavior. Promoting smart land use planning through the use of tools such as open space conservation, property tax policies, subdivision and zoning regulations, and strategic deployment of economic development funding can all assist in directing growth towards existing built-up areas. Innovative incentive or education programs can encourage drivers to modify driving habits and reduce

Estimated Impact/Need – Best current understanding from modeling

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How will the policies be used?

- **State agency decisionmakers will use RISEP policies to focus programmatic efforts and inform funding allocation decisions**
  - For example, initial RISEP policy recommendations are already guiding OER's proposed RGGI allocation plan
    - Grid Modernization Working Group, Delivered Fuels Working Group, Renewable Thermal Pilot Study, etc.
- **State policymakers and stakeholder groups can use RISEP policies to direct policy efforts**
  - For example, RISEP policy recommendations could help direct efforts to design climate legislation or inform the proposed size of electric, thermal, or transportation policies

Overall, policies provide stakeholder groups with a common understanding of the long-term vision and direction we want to move toward

Philosophical Thoughts

- **Policies are selected, sized, and designed to meet RISEP targets, which are ambitious**
- **There will be substantial benefits to meeting the targets, and substantial costs to not meeting the targets…**
  - BUT, it will be very challenging to meet the targets
- **It is acknowledged that meeting the targets depend on exogenous realities and variables including:**
  - Political muster and leadership,
  - Changes to markets
  - Limits on society's willingness to pay
- **However, we believe that achieving the RISEP vision is a technically feasible endeavor if the will to pursue it can be mustered**
  - Thought experiment: Think about what things were like 20 years ago, then reconsider the RISEP vision for 20 years from now

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Policy Summaries

- Security
- Cost-effectiveness
- Sustainability
- Energy Efficiency
- Electricity
- Thermal
- Transportation

Security

- **Increase the resiliency of Rhode Island's energy system:**

Enhance Energy Emergency Preparedness

- *Develop a short- and long-term strategy for mitigating critical infrastructure energy security risks and investing in power resiliency solutions*

Cost-effectiveness

- **Build Rhode Island's capacity to make long-term energy investments at a lower cost:**

Expand Financing & Investment Tools

- *Transition energy programs from grants and rebates towards deploying private capital to create long-term, stable financing for energy efficiency and renewable energy*

Update State Administration of Energy Programs

- *Simplify access to energy programs and maximize their impact through 1) a consolidated, one-stop-shop concierge service for homeowners and private businesses and 2) a tailored and comprehensive public sector "lead by example" strategy*

Reduce the Soft Costs of Renewable Energy

- *Provide guidance at the state and municipal level for uniform, standardized clean energy permitting processes to streamline development and mitigate regulatory hurdles to renewable deployment*

Track Progress Towards Goals

- *Develop improved standardized performance metrics and regular reporting mechanisms to measure success in meeting RISEP targets*

Sustainability

- **Set Rhode Island on a path to a reduced GHG footprint as a means to address global climate change and insulate citizens and businesses from a future price on carbon:**

Continue Participating in RGGI

- *Continue participating in the Regional Greenhouse Gas Initiative (RGGI)*

Develop a Carbon Reduction Strategy

- *Establish binding near- and long-term greenhouse gas emissions targets and evaluate the most cost-effective portfolio of policies to meet the goals*

Energy Efficiency

- **Reaffirm Rhode Island's commitment to leadership in energy efficiency, the lowest-risk, lowest-cost, and arguably most sustainable energy resource available:**

Extend Least-Cost Procurement

- *Renew Rhode Island's commitment to leadership in energy efficiency by extending the Least-Cost Procurement mandate and its associated provisions beyond 2018*

Expand Least-Cost Procurement to Unregulated Fuels

- *Develop a long-term strategy for sustainably funding energy efficiency programs for delivered fuels customers*

Improve State Energy Efficiency Codes & Standards

- *Strengthen appliance minimum standards, and develop an integrated and long-term strategy to transition to zero net energy buildings*

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Electricity

- **Build on Rhode Island's existing successes to pursue a renewable energy and distributed generation future:**

Modernize the Grid

- *Develop recommendations for electric grid, rate, and regulatory modernization*

Expand the Renewable Energy Standard

- *Increase the Renewable Energy Standard beyond 16% by 2019*

Expand Renewable Energy Procurement

- *Increase the share of renewable energy in Rhode Island's electricity supply portfolio through a mix of clean energy imports, distributed renewable generation, and utility-scale in-state projects*

Improve Combined Heat and Power Market

- *Evaluate additional methods to speed the diffusion of CHP technologies into the Rhode Island marketplace*

Thermal

- **Find new opportunities to transition Rhode Island to a diversified, lower-carbon heating and cooling future:**

Institutionalize Renewable Thermal Funding

- *Create a sustained source of funding to help mature and expand the renewable thermal fuel market*

Expand Use of Biofuels

- *Increase the biodiesel content of distillate fuel blends used by Rhode Island's thermal and transportation sectors*

Address Natural Gas Leaks

- *Review the progress of gas infrastructure repair and replacement in Rhode Island*

Transportation

- **Develop a Least-Cost Procurement strategy for transportation to harness demand-side resources and reduce reliance on oil by investing in alternative fuels:**

Reduce Vehicle Miles Traveled

- *Invest in alternative modes of transportation; promote sustainable development and land use practices; and pilot programs incentivizing reduced discretionary driving*

Reduce Vehicle Emissions

- *Continue to adopt the increasingly stringent vehicle emissions standards set by California up until 2025 and afterwards*

Promote Alternative Fuel & Electric Vehicles

- *Mature the market for alternative fuel and electric vehicles through ongoing efforts to expand fueling infrastructure, ease upfront costs for consumers, and address other barriers to adoption*

RISEP Task 2 - Future State Energy Profile Report Proposed Methodology

RISEP, Advisory Council Meeting

Jan 24, 2013

Rhode Island

Varun Kumar, Policy and Data Analyst and Jamie Howland, Director, ENE Climate and Energy Analysis Center (ENE CLEAN Center), Environment Northeast

Scope

- Energy Parameters – Output of Forecast Model
  - Demand or Consumption
  - Prices
  - Expenditure or Cost
  - Greenhouse gas (GHG) emissions

- Forecast will assume no changes in existing state energy policies.

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Forecast Model Input Data

- Baseline data will be from Energy Information Administration (EIA) State Energy Data System (SEDS).

- We will use following sources for projected data :

  - ✓ EIA Annual Energy Outlook (AEO) -
    - EIA AEO 2013 ER Reference Case – New England specific data through 2040.
    - EIA AEO 2012 Alternative Cases – New England specific data through 2035.

  - ✓ ISO New England (ISO NE) CELT Report Electricity Demand Forecast – Rhode Island specific data through 2021.

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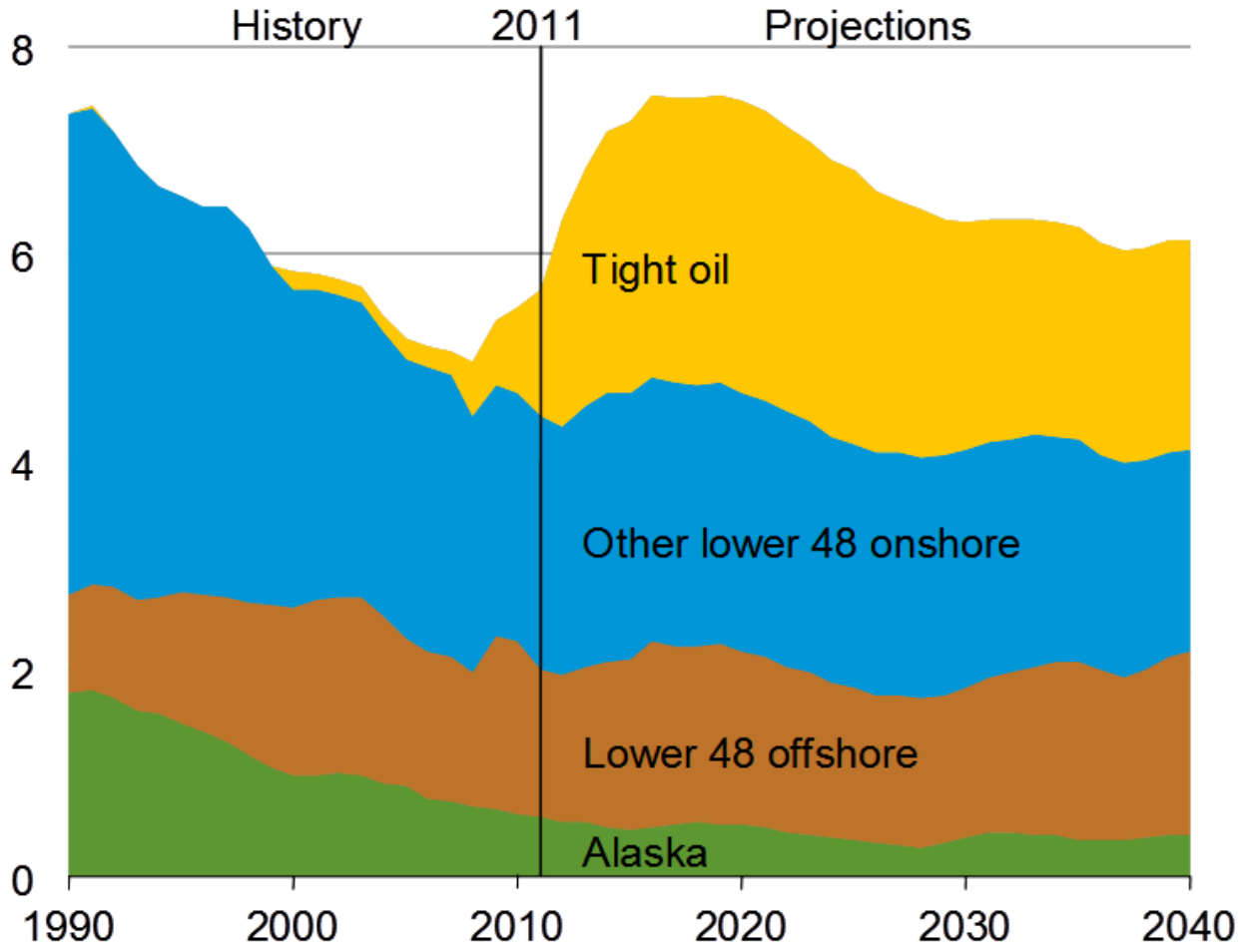
EIA Annual Energy Outlook – Widely accepted for long term energy planning.



Source EIA AEO 2013 ER

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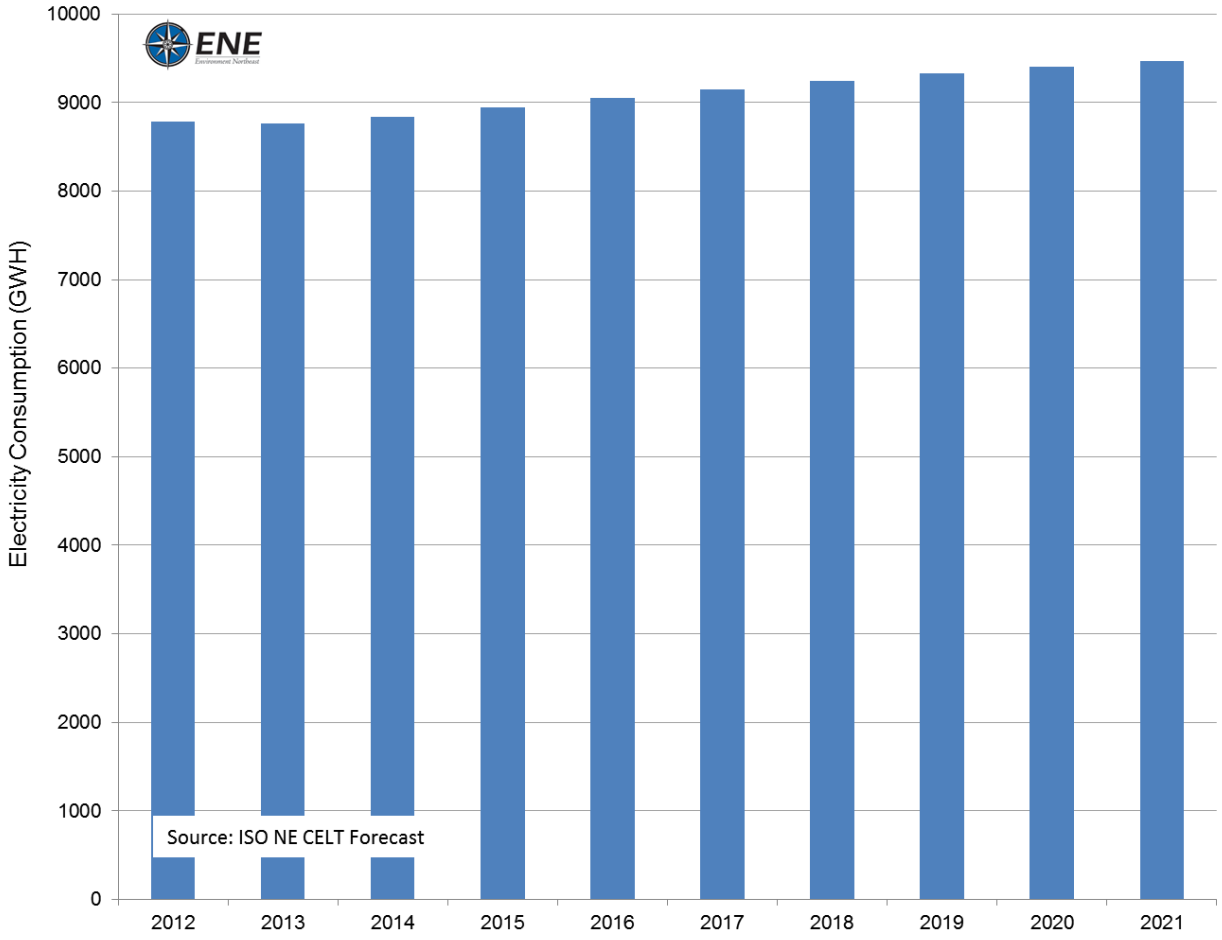
ISO NE CELT Report



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Forecast Model Methodology

- Input data from EIA AEO and ISO NE CELT report will be used to generate Rhode Island specific data.
- Model will be adjusted to include policy impacts not evaluated by EIA Forecasts.
- Detailed methodology described later for different scenarios.

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Policy Impacts in Forecast Model

- Included
  - Rhode Island Comprehensive Energy Conversion, Efficiency and Affordability Act
  - The Rhode Island Petroleum Savings and Independence Advisory Commission proposed targets
- Potential
  - Regional Green House Gas Initiatives New Cap
- Not included
  - Distributed Generation Standard Contract, Long Term Contracting and Net Metering are complimentary to RPS.

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Forecasted Scenarios

RISEP BAU Base Case	• This scenario will be based on the AEO 2013 Early Release AEO 2013ER reference case or AEO 2012 proposed CAFÉ Standards (2017 -2035). The AEO case will be adjusted to include the impacts of increase in energy efficiency .
RISEP BAU Low Oil Price Case	• This scenario will differ from the RISEP BAU Base case with a lower price for petroleum-based fuels. It will use the AEO 2012 Low Oil Price case.
RISEP BAU High Oil Price Case	• This scenario will differ from the RISEP BAU Base case with a higher price for petroleum-based fuels. It will use the AEO 2012 High Oil Price case. Further, impacts of the Rhode Island Petroleum Savings and Independence Advisory Commission's recommended targets will be included.
RISEP BAU Low Natural Gas Price Case	• This scenario will differ from the RISEP BAU Base case with a lower price for natural gas. It will use the AEO 2012 Oil and Gas: High Technically Recoverable Resources (TRR) case.
RISEP BAU High Natural Gas price Case	• This scenario will differ from the RISEP BAU Base case with a higher price for natural gas. It will use the AEO 2012 Oil and Gas: Low EUR case.
RISEP BAU Carbon Fee Case	• This scenario will differ from the RISEP BAU case with an applied economy wide carbon fee starting at 15$ and rising by 5 percent per year from 2013 through 2035.

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Energy Sectors

Electricity

- Power Generation - Distillate Fuel Oil, Residual Fuel Oil, Natural Gas and Coal.
- Electricity consumption - Residential, Commercial and Industrial.
- **We will analyze electricity emissions based on both generation and consumption.**

Thermal

- Residential – Liquefied Petroleum Gas (propane), Distillate Fuel Oil (heating oil), Kerosene and Natural Gas.
- Commercial - Liquefied Petroleum Gas, Distillate Fuel Oil, Kerosene Residual Fuel Oil and Natural Gas.
- Industrial - Liquefied Petroleum Gas, Distillate Fuel Oil, Residual Fuel Oil, Natural Gas and Coal.

Transportation

- Liquefied Petroleum Gas, E85 Ethanol, Diesel Fuel, Motor Gasoline, Jet Fuel, Residual Fuel Oil and Natural Gas.

Pictures from Freedigitalphotos.net

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RISEP BAU Base Case Methodology

- AEO's New England energy consumption and price forecast factors will be adjusted based on historical Rhode Island and New England data from EIA to derive Rhode Island-specific forecast for different fuels.
- Energy expenditure will be derived using consumption and price data.
- Greenhouse gas emissions will be derived using consumption and emission factors data.
- ISO NE Rhode Island electricity consumption forecast data will be used through 2021. ENE will forecast data from 2022 through 2035 based on ISO NE and AEO forecast.
- Results derived from the AEO will be adjusted by the impacts of increased energy efficiency:
  - The energy savings targets will be translated into changes in fuel consumption, expenditure and greenhouse gas emissions over the proposed period. Targets are shown in the next slide:

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Electric Efficiency

Year	Electric Efficiency Savings Target (Percentage of Sales)	Source
2012	1.7%	RI Energy Efficiency Procurement Plan 2012-14
2013	2.1%	
2014	2.5%	
2015-2021	2.7%	ENE proposed based on KEMA RI Energy Efficiency Opportunity Report
2022-2024	2%	ENE proposed conservative estimate based on anticipated new opportunity.
2025-2035	1%	

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Natural Gas Efficiency

Year	Natural Gas Efficiency Savings Target (Percentage of Sales)	Source
2012	0.6%	RI Energy Efficiency Procurement Plan 2012-14
2013	0.8%	
2014	1%	
2015-2017	1%	ENE proposed based on VEIC Optimal Consultant Team RI Opportunity Report.
2018-2020	1%	ENE proposed conservative estimate based on anticipated new opportunity.
2021-2035	0.5%	

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Methodology Similar for other scenarios except RISEP BAU High Oil Price Case:

1. Results will be adjusted to achieve a 30% overall reduction in petroleum products consumption from 2007 levels by 2030 and 50% by 2050.

2. Year 2011 consumption will be established as a percentage of 2007 levels.

3. Reductions will then be phased out over the period between 2012 and 2030 uniformly to reach 30% below 2007 levels.

4. Further, reductions will be phased out to reach 50% below 2007 levels by 2050.

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Sources

- Comprehensive Energy Efficiency, Conservation, and Affordability Act of 2006, R.I.G.L. § 39-1-27.7, http://www.rilin.state.ri.us/Statutes/TITLE39/39-1/39-1-27.7.HTM.

- The Rhode Island Petroleum Savings and Independence Advisory Commission, http://webserver.rilin.state.ri.us/Statutes/TITLE42/42-140.4/42-140.4-1.HTM

- EIA AEO 2012 Assumption Document, http://www.eia.gov/forecasts/aeo/assumptions/pdf/0554(2012).pdf

- Based on VEIC Optimal Consultant Team RI Opportunity Report, http://www.rieermc.ri.gov/documents/RI%20Gas%20Opportunity%20Report%202012.pdf

- Rhode Island Public Utilities Commission Docket 4202, Electric and Natural Gas Least Cost Procurement Savings Targets for 2012-2014, http://www.ripuc.org/eventsactions/docket/4202-EERMC-EST-Filing(9-1-10).pdf

- Based on KEMA RI Energy Efficiency Opportunity Report, http://www.ripuc.org/eventsactions/docket/4202-EERMC-EST-KEMARept.pdf

ENE Environment Northeast

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DRAFT RISEP Policy Recommendations Summary - January 2014

CRITERIA/ SECTOR	POLICY	ESTIMATED NEED/IMPACT	DESCRIPTION
Security	**1. Enhance Energy Emergency Preparedness**	--	*Develop a short- and long-term strategy for mitigating critical infrastructure energy security risks and investing in power resiliency solutions*
Cost-Effectiveness	**2. Expand Financing & Investment Tools**	≥$10 Billion Total by 2035	*Transition energy programs from grants and rebates towards deploying private capital to create long-term, stable financing for energy efficiency and renewable energy*
	3. Update State Administration of Energy Programs	--	*Simplify access to energy programs and maximize their impact through 1) a consolidated, one-stop-shop concierge service for homeowners and private businesses and 2) a tailored and comprehensive public sector "lead by example" strategy*
	4. Reduce the Soft Costs of Renewable Energy	--	*Provide guidance at the state and municipal level for uniform, standardized clean energy permitting processes to streamline development and mitigate regulatory hurdles to renewable deployment*
	5. Track Progress Towards Goals	--	*Develop improved standardized performance metrics and regular reporting mechanisms to measure success in meeting RISEP targets*
Sustainability	**6. Continue Participating in RGGI**	≤23% BAU Electric GHG Reductions by 2035	*Continue participating in the Regional Greenhouse Gas Initiative (RGGI)*
	7. Develop a Carbon Reduction Strategy	45% Total GHG Reductions by 2035	*Establish binding near- and long-term greenhouse gas emissions targets and evaluate the most cost-effective portfolio of policies to meet the goals*
Energy Efficiency	**8. Extend Least-Cost Procurement**	~20% Electric & Thermal BAU Energy Reductions	*Renew Rhode Island's commitment to leadership in energy efficiency by extending the Least-Cost Procurement mandate and its associated provisions beyond 2018*
	9. Expand Least-Cost Procurement to Unregulated Fuels	15-25% Thermal Energy Reductions	*Develop a long-term strategy for sustainably funding energy efficiency programs for delivered fuels customers*
	10. Improve State Energy Efficiency Codes & Standards	--	*Strengthen appliance minimum standards, and develop an integrated and long-term strategy to transition to zero net energy buildings*
Electricity	**11. Modernize the Grid**	--	*Develop recommendations for electric grid, rate, and regulatory modernization*
	12. Expand the Renewable Energy Standard	≥40% Renewable Energy by 2035	*Increase the Renewable Energy Standard beyond 16% by 2019*
	13. Expand Renewable Energy Procurement	Minimum ~300 MW Renewable Energy by 2035	*Increase the share of renewable energy in Rhode Island's electricity supply portfolio through a mix of clean energy imports, distributed renewable generation, and utility-scale in-state projects*
	14. Improve Combined Heat and Power Market	400 MW by 2035	*Evaluate additional methods to speed the diffusion of CHP technologies into the Rhode Island marketplace*
Thermal	**15. Institutionalize Renewable Thermal Funding**	15% Renewable Thermal Energy by 2035	*Create a sustained source of funding to help mature and expand the renewable thermal fuel market*
	16. Expand Use of Biofuels	B20 Standard by 2035	*Increase the biodiesel content of distillate fuel blends used by Rhode Island's thermal and transportation sectors*
	17. Address Natural Gas Leaks	--	*Review the progress of gas infrastructure repair and replacement in Rhode Island*
Transportation	**18. Reduce Vehicle Miles Traveled**	≥5% VMT Reduction & ≥Doubling of Public Transit Ridership	*Invest in alternative modes of transportation; promote sustainable development and land use practices; and pilot programs incentivizing reduced discretionary driving*
	19. Improve Fuel Efficiency & Reduce Vehicle Emissions	Minimum 12% BAU Transportation GHG Reductions by 2035	*Continue to adopt the increasingly stringent vehicle emissions standards set by California up until 2025 and afterwards*
	20. Promote Alternative Fuel & Electric Vehicles	25-40% Alternative Fuels by 2035	*Mature the market for alternative fuel and electric vehicles through ongoing efforts to expand fueling infrastructure, ease upfront costs for consumers, and address other barriers to adoption*

DRAFT RISEP Policy Recommendations - January 2014

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DRAFT

1. ENHANCE ENERGY EMERGENCY PREPAREDNESS

Develop a short- and long-term strategy for mitigating critical infrastructure energy security risks and investing in power resiliency solutions

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

A 2013 report prepared by the Obama administration found that 670 widespread weather-related power outages occurred nationwide over the past decade, with an average annual cost to the U.S. economy of $18 billion to $33 billion[1]. Rhode Island has witnessed numerous severe weather-related events over the last four years, including floods, blizzards, extended heat waves, extreme cold snaps and hurricanes. These events pose significant energy security risks to the State. For example, during Blizzard NEMO in February 2013, all of the fuel terminals in the State lost electrical power for two days and were unable to provide fuel (i.e. gasoline, diesel, heating oil, jet fuel) to gas stations, homes and the airports. During Superstorm Sandy, approximately 120,000 electric customers and 1,200 natural gas customers lost service, and five days passed until National Grid was able to restore electric power to 100% of the state[2].

Rhode Island has already taken initial steps to gather high-level information on energy emergency considerations through the development of an Energy Assurance Plan (EAP)[3], which was funded through an American Recovery and Reinvestment Act (ARRA) State Energy Program (SEP) grant in 2012. The State, however, has not yet drawn on the recommendations of the EAP to design and implement a comprehensive, targeted strategy addressing energy security vulnerabilities at the municipal or facility level, specifically at discrete critical infrastructure assets— hospitals; police and fire stations; water and

[1] http://energy.gov/sites/prod/files/2013/08/f2/Grid%20Resiliency%20Report_FINAL.pdf
[2] National Grid 2012 Public Safety Meeting, November 2012.
[3] http://www.recovery.ri.gov/programs/energy/EnergyAssurance.php

sewage treatment plants; senior centers and nursing homes; shelters; correctional facilities; fueling stations; and grocery stores. Smart energy security investments at these locations including, but not limited to backup generation, fuel reserves, distributed generation, combined heat and power, energy storage, microgrids, or other energy resiliency solutions could help alleviate the impact of power outages or fuel supply disruptions during energy emergency situations.

Summary

This policy recommends the formation of a working group charged with the task of developing a short- and long-term strategy for mitigating critical infrastructure energy security risks and investing in power resiliency solutions. The working group should convene the appropriate set of stakeholders to review the state of current critical infrastructure; better characterize the need for resiliency investments; assess existing information and options; evaluate costs and benefits; and most importantly, devise a sustained and institutionalized funding mechanism to help ensure that the recommended energy security improvements can be made in critical infrastructure locations throughout the State.

Experience in Other States

"Distributed resilient power systems and energy emergency response protocols are critical to protecting energy security at the facility and municipal level"

Presidential directives issued by the Obama administration emphasize the importance of critical infrastructure security and power resiliency[4][5]. As a result of federal policy and stimulus investment in state level energy planning, each of the 50 states are moving to implement comprehensive energy assurance and emergency planning initiatives[6]. In the Northeast in particular, states battered by storms like Hurricane Sandy are investing in power resiliency solutions[7], including exploring applications of cutting edge technologies like microgrids. The New York State Energy Research and Development Authority (NYSERDA) published its first study on microgrid efficacy, including the use of microgrids in emergency situations in 2010[8]. A microgrid run by a 13.4 MW combined heat and power system kept New York University heated and powered while the rest of lower Manhattan was dark in the wake of Superstorm Sandy[9]. In Connecticut, the 2012 passage of PA 12-148 "An Act Enhancing Emergency Preparedness and Response" established a grant program to fund microgrid pilot projects, drawing on best practices from other states[10][11][12].

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[4] http://www.whitehouse.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil

[5] http://www.whitehouse.gov/the-press-office/2013/11/01/executive-order-preparing-united-states-impacts-climate-change

[6] http://energy.gov/sites/prod/files/National%20Energy%20Assurance%20Planning%20Conference_After%20Action%20Report_082112_1.pdf

[7] http://www.cleanenergystates.org/projects/power-resiliency-adaptation-and-the-role-of-states/

[8] "Microgrids: An Assessment of the Value, Opportunities and Barriers to Deployment in New York State", http://stuff.mit.edu/afs/athena/dept/cron/project/EESP-Cambridge/microgrid/NYS-Microgrids-Roadmap.pdf

[9] http://www.eenews.net/stories/1059987045

[10] http://www.cga.ct.gov/2012/SUM/2012SUM00148-R02SB-00023-SUM.htm

Rationale

What is the Need?

The increasing frequency of extreme storm events and risk of natural- or man-made disasters pose serious energy security risks to the State of Rhode Island. The likelihood that future events will occur is high, and without preemptive efforts to address critical infrastructure energy resiliency, Rhode Island could face disastrous consequences, including loss of life and significant economic damage.

Alignment with RISEP Goals/Modeling

Energy security is one of the three pillars of the Rhode Island Energy 2035 vision. While diversifying fuel sources can mitigate the overall impact of an energy supply disruption, distributed resilient power systems and energy emergency response protocols are critical to protecting energy security at the facility and municipal level. The Navigant modeling did not consider the impact of resiliency investments at such a granular scale; however, Scenario 1 and Scenario 3 did model the deployment of 200 MW and 150 MW of energy storage, respectively. Adding comparable levels of in-state energy storage would represent a significant investment in power system resiliency, providing substantial energy security benefits but likely at a hefty cost.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Title 30 of Rhode Island General Law addresses most aspects of state emergency management.

Lead/Responsible Actor

Members of the working group might include, but not be limited to, representatives from the following groups:

- Rhode Island Office of Energy Resources
- Rhode Island Department of Environmental Management
- Rhode Island Emergency Management Agency
- Rhode Island Division of Public Utilities and Carriers
- Rhode Island Department of Health
- Rhode Island Department of Transportation
- Rhode Island Division of Planning

[11] http://www.cga.ct.gov/2012/rpt/2012-R-0417.htm
[12] http://www.cleanegroup.org/assets/Uploads/2013-Files/Reports/CT-Microgrids-project-summary-Sept2013.pdf

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- Electric and gas distribution companies
- Fuel terminal operators, wholesale and retail fuel distributors
- Commercial and industrial energy users
- Environmental/energy interests
- Other private sector representatives of critical infrastructure areas

Expected Costs/Potential Funds

Expected costs vary based on the needs and vulnerabilities of existing critical infrastructure. The working group could better quantify costs based on research and experience in other states. Connecticut's Microgrid Grant and Loan Pilot Program Round I cost just shy of $18 million[13]. The group should also conduct a thorough review of possible existing funding sources and potential new, novel methods of financing critical infrastructure energy resiliency investments[14].

Design or Implementation Issues

Intra and interstate energy emergency preparedness, planning, and implementation requires collaboration between multiple governmental, private sector, and institutional actors that don't always interact in their day-to-day business.

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[13] http://www.dpuc.state.ct.us/DEEPEnergy.nsf/c6c6d525f7cdd1168525797d0047c5bf/40cb9336a459e06185257bb20052b8ff/$FILE/Microgrids%20Funding%20Chart%20Final.pdf

[14] e.g. "Using State RPSs to Promote Resilient Power at Critical Infrastructure Facilities" http://www.cleanenergystates.org/assets/2013-Files/RPS/Using-State-RPSs-to-Promote-Resilient-Power-May-2013.pdf

2. EXPAND FINANCING & INVESTMENT TOOLS

Transition energy programs from grants and rebates towards deploying private capital to create long-term, stable financing for energy efficiency and renewable energy

ESTIMATED NEED: ≥$10 BILLION TOTAL BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Rhode Island currently spends about $140 million annually on clean energy projects and initiatives[15]. Much of this investment occurs through energy efficiency programs mandated by Least-Cost Procurement. The remainder comprises: 1) renewable power and/or renewable energy certificates (RECs) purchased to comply with Renewable Energy Standard (RES), Long Term Contracting (LTC) Standard for Renewable Energy, and Distributed Generation (DG) Standard Contracts Program obligations; 2) grants and loans issued through the Renewable Energy Fund (REF) administered by the Economic Development Corporation (EDC); and 3) clean energy investments made with Regional Greenhouse Gas Initiative (RGGI) funds.

Although Rhode Island ranks among the national leaders[16] in clean energy investment, maintaining the status quo presents two main challenges going forward to policymakers: 1) The pace and magnitude of investment is nowhere near commensurate with levels required to achieve deep impact—for instance, upgrading all housing stock in Rhode Island would likely require at least $9 billion for energy efficiency

[15] Energy Efficiency: 2013 Energy Efficiency Program Plan ($97,036,800 reflects total electric & gas program budgets); Renewable Energy: OER Data Request to National Grid ($42,005,000 reflects anticipated 2015 costs for Long-Term Contracting for Renewable Energy and Distributed Generation Standard Contracts; and 2013 costs for Net Metering, Renewable Energy Fund, and Renewable Energy Standard); RGGI: 2013 Plan for the Allocation and Distribution of RGGI Auction Proceeds ($2,857,538.70)

[16] http://aceee.org/files/pdf/state-sheet/rhode-island.pdf

improvements alone[17]; and 2) Current programs rely almost solely on ratepayer funds collected from electric and gas utility bill surcharges. Supporting a dramatic growth on top of existing programs using only ratepayer funds is unsustainable. In order for clean energy programs to achieve necessary scale, a new paradigm is needed that emphasizes expanded financing opportunities and a role for private sector capital.

Rhode Island has already taken some initial steps to shift in this direction. As of 2013, National Grid had committed approximately $13 million to an energy efficiency revolving loan fund for commercial and industrial customers[18]. Also in 2013, the Office of Energy Resources (OER) designated approximately $2 million in American Recovery and Reinvestment Act (ARRA) funds to capitalize a revolving loan fund for energy efficiency and renewable energy to be administered by the EDC, in addition to existing loan products available through the REF. Finally and also in 2013, the Rhode Island General Assembly passed the Property Assessed Clean Energy (PACE) Residential Program[19]. This program will help mitigate barriers to investment in energy efficiency and renewable energy by giving municipalities the option to allow homeowners to purchase energy upgrades and pay them back over time as part of their property assessment.

There is plenty of room for Rhode Island to build on these first efforts. An emerging model for expanding private financing of clean energy is the "Green Bank". The Green Bank is a public-private partnership mechanism between states and private financial institutions that leverages an initial state capitalization to jumpstart sustainable and efficient clean energy financing services through private lending markets. The ultimate goal of the Green Bank is to enhance market confidence in clean energy investments, ultimately maturing private lending markets to the point where financing energy technology is as easy and customer-friendly as financing an automobile.

Summary

This policy recommends a concerted effort to transition energy programs from grants and rebates towards deploying private capital to create long-term, stable financing for energy efficiency and renewable energy. Consideration should be given to the creation of a "Green Bank", modeled on successful examples from other states and designed to build on existing structures here in Rhode Island. A Green Bank would help clean energy initiatives attain scale, dramatically accelerating the rate and level of investment and helping to drive down program costs.

Experience in Other States

[17] See "Alignment with RISEP Goals/Modeling" below
[18] http://www.ripuc.org/eventsactions/docket/4451-NGrid-EEPP2014_11-1-13.pdf (Page 14)
[19] http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26.5/INDEX.HTM

New York Governor Andrew Cuomo announced the $1 billion capitalization of a Green Bank in September 2013[20] after the state hired Booz and Company to develop a business plan[21]. In 2011, Connecticut Public Act 11-80 established the Connecticut Clean Energy Finance and Investment Authority (CEFIA) [22]. The CEFIA helps connect residential energy contractors and businesses with zero-down financing options for energy technologies.

Rationale

What is the Need?

The purpose of state-supported energy efficiency and renewable energy incentive programs is to speed the diffusion of clean energy technologies among state residents, businesses, and institutions. These initiatives help address key market barriers to adoption, namely by defraying high upfront costs of investment—hopefully encouraging participants to make energy improvements they would not have otherwise. In a time of dwindling and limited public sector resources, however, identifying innovative ways to engage private sector capital is necessary. Because many clean energy investment upgrades pay for themselves over time, the savings could potentially provide a return to private investors, helping to reduce reliance on public subsidies and incentives.

Alignment with RISEP Goals/Modeling

Rhode Island has approximately 460,000 housing units[23]. Assuming a ballpark cost of $20,000 per home for a deep energy retrofit, it would take over $9 billion to upgrade the State's entire housing stock. Even if Rhode Island maintained its nation-leading energy efficiency investment level of nearly $100 million annually, it would still take nearly a century to upgrade the State's entire housing stock. On top of this, the $9 billion figure omits levels of investment needed to support the distributed deployment of residential renewable energy systems, which currently rely on grants and loans from a comparatively-paltry pool of ~$2 million through the Renewable Energy Fund. Finally, the Navigant modeling suggests that between 2013 and 2035, Rhode Island would need to make minimum thermal and transportation sector capital investments of $4.8 billion and perhaps as much as $7.1 billion in order to achieve the outcomes modeled in the different scenarios[24]. Therefore, because orders of magnitude higher levels of capital investment are required to accelerate the adoption of clean energy solutions in the state, innovate strategies to harness private sector resources and expanded financing tools are obligatory to meeting RISEP targets and keeping down long-term costs.

"Assuming a ballpark cost of $20,000 per home for a deep energy retrofit, it would take over $9 billion to upgrade the State's entire housing stock"

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[20] http://www.bloomberg.com/news/2013-09-10/cuomo-starts-1-billion-new-york-green-bank-for-energy-lending.html
[21] http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B52B09652-1BA1-4B85-845C-B6F05185E692%7D
[22] http://www.cga.ct.gov/2011/act/pa/pdf/2011PA-00080-R00SB-01243-PA.pdf
[23] http://quickfacts.census.gov/qfd/states/44000.html
[24] Thermal and Transportation Capital Investment Totals: Scenario 1 - $5.0 billion; Scenario 2 - $7.1 billion; Scenario 3 - $4.8 billion

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
*	*	*
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

None currently exists, although as was the case in Connecticut, this might be a logical extension of the existing Renewable Energy Fund.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Economic Development Corporation
Rhode Island Office of Energy Resources
Rhode Island Energy Efficiency and Resource Management Council

Expected Costs/Potential Funds

Initial upfront capitalization is expensive. New York State targeted an amount of approximately $50 per capita, meaning a $50 million upfront capitalization could be required in Rhode Island. In New York, the state is providing about 16% of the total capitalization amount. Similar figures in Rhode Island would require a state investment of $8,000,000, should a sufficient level of private investment be available. New York committed funds from the existing energy efficiency system benefits charge to fund the one-time capitalization. Additional administrative and staff capacity would be required to establish and launch the Green Bank.

Design or Implementation Issues

Rhode Island does not yet have a single point of contact where residents, contractors, and businesses can easily find energy incentives and finance options. Prior to launch, the state would need to facilitate discussions with private financial institutions so that they would have time to evaluate the business opportunity, decide what level of commitment they could bring to bear, and what level of state capitalization would be required.

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3. UPDATE STATE ADMINISTRATION OF ENERGY PROGRAMS

Simplify access to energy programs and maximize their impact through 1) a consolidated, one-stop-shop concierge service for homeowners and private businesses and 2) a tailored and comprehensive public sector "lead by example" strategy

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

The Comprehensive Energy Conservation, Efficiency, and Affordability Act of 2006 established the Rhode Island Office of Energy Resources (OER) and transformed how energy programs are administered within the state[25]. After several years without full staffing or formal leadership, Governor Lincoln Chafee restructured and stabilized funding for the OER in 2012[26]. The OER now assumes both larger oversight duties and also direct implementation responsibilities in coordinating Rhode Island's clean energy and efficiency programs. Further updates to the administrative structure of the OER might provide better services to the citizens of the state.

Summary

This policy recommends simplifying access to energy programs and maximizing their impact through 1) a consolidated, one-stop-shop concierge service for homeowners and private businesses and 2) a tailored and comprehensive public sector "lead by example" strategy.

One-Stop-Shop: Policymakers should evaluate the suitability of establishing a single point of contact for residential, commercial, and industrial energy customers. This approach would align, braid, and coordinate multiple energy efficiency and renewable energy funding sources and offerings, such that

[25] http://www.ripuc.org/eventsactions/docket/3759-RIAct.pdf

[26] http://www.energy.ri.gov/documents/about/2012%20Office%20of%20Energy%20Resources%20Annual%20Report.pdf

customers across all market sectors are able to access the benefits of diverse programs in a streamlined, coordinated and cost-efficient manner. This approach could also be used to require that all cost-effective energy efficiency measures be performed prior to receiving renewable energy incentives. The one-stop-shop initiative would require a simple public interface, state branding, and better integration of data from state agencies, weatherization contractors, renewable energy contractors, and electric and gas distribution companies.

"Lead by Example" – Green Communities: The OER should establish a Green Communities program responsible for improving municipal energy usage and helping the public sector to "lead by example". The OER's experience administering technical and financial assistance through the American Recovery and Reinvestment Act (ARRA) of 2009 as well as lessons learned from the Renewable Energy Siting Partnership (RESP)[27], EPA Climate Showcase Communities project[28] and Rhode Island Public Energy Partnership (RIPEP)[29] revealed that local governments face unique challenges in implementing energy efficiency and renewable energy projects due to the nature of their governance structures, budgeting and finance mechanisms. The Green Communities program would help municipalities overcome these barriers and would streamline and coordinate technical and financial assistance opportunities.

The Green Communities program would emulate the eponymous Massachusetts initiative, which provides a set of criteria which a city or town must meet in order to become designated as a "Green Community". In Rhode Island, the designation criteria might include: 1) establishing an energy use baseline and plan to reduce energy use 20% in five years; 2) designating the municipality as a Property Assessed Clean Energy (PACE) community; 3) providing "as-of-right siting" and expedited permitting for renewable energy facilities; 4) purchasing only fuel-efficient vehicles; 5) adopting a "stretch code"; and 6) taking measures to preserve open space and promote "smart growth" development through modified property tax policies, zoning regulations, or other means.

"Lead by Example" – Green Communities – State Program: A final proposed update includes a state-level "lead by example" counterpart to the Green Communities initiative. The program would develop long-term targets and a plan for energy reductions in state facilities, thereby generating security, cost, and sustainability benefits that accrue to all Rhode Island taxpayers. An existing obligation set in Rhode Island General Law § 37-8-17.1 that states 16% of energy used by state buildings must come from renewable sources could be expanded to require eventual net zero energy usage[30]. The initiative could also focus on transportation energy impacts by expanding on an existing requirement spelled out in Rhode Island General Law § 36-6-21.1 to reduce vehicle miles traveled per state employee by 35% by 2016[31].

[27] http://seagrant.gso.uri.edu/resp/
[28] http://www.epa.gov/statelocalclimate/local/showcase/building-local-capacity.html
[29] http://www.energy.ri.gov/pep/index.php
[30] http://webserver.rilin.state.ri.us/Statutes/TITLE37/37-8/37-8-17.1.HTM
[31] http://webserver.rilin.state.ri.us/Statutes/TITLE36/36-6/36-6-21.1.HTM

Experience in Other States

MassSave provides a single point of contact for residents and businesses to access energy efficiency programs in Massachusetts[32]. Energize Connecticut offers a similar platform for energy users in the Constitution State[33]. Massachusetts currently operates a Green Communities Division that guides municipalities toward the goal of achieving zero net energy status[34]. Massachusetts also has a "Leading By Example" Program to reduce greenhouse gas emissions, conserve energy and water, and generate renewable energy in publicly-owned facilities[35].

Rationale

What is the Need?

A bewildering assortment of entities currently administers energy efficiency and renewable energy programs. Average consumers often flounder trying to locate information on available offerings and deciphering how to take advantage of incentives. A one-stop-shop portal and streamlined process would alleviate this issue. Public sector "lead by example" programs are a responsible way to generate taxpayer benefits while addressing a key market sector of energy consumption. According to OER estimates, state and municipal electricity, thermal, and transportation expenditures account for roughly 2-3% of total Rhode Island energy expenditures.

> "Align, braid, and coordinate multiple energy efficiency and renewable energy funding sources and offerings"

Alignment with RISEP Goals/Modeling

Each scenario modeled by Navigant included sweeping changes to Rhode Island's energy infrastructure and demand and supply portfolios. Achieving such ambitious outcomes depends in part on hastening the adoption of clean energy technologies in Rhode Island's marketplace. The state can assist this transition by stepping in, if and where appropriate, to improve awareness among consumers, municipalities, and businesses of available energy programs and incentives. State and local government can also contribute towards meeting the RISEP targets by leading the way with clean energy investments in publicly-owned facilities.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
*	*	*
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* *	* *	* *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
*	*	*

[32] http://www.masssave.com/
[33] http://www.energizect.com/
[34] http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/
[35] http://www.mass.gov/eea/grants-and-tech-assistance/guidance-technical-assistance/leading-by-example/

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Implementation

Legal Authority

Rhode Island General Law § 42-140 establishes the Rhode Island Office of Energy Resources.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Office of Energy Resources

Expected Costs/Potential Funds

Expected costs vary based on administrative needs required to perform the new functions and the size of the programs. Sources of funding could include a combination of existing System Benefits Charge and Renewable Energy Fund funding. Massachusetts uses Regional Greenhouse Gas Initiative (RGGI) auction proceeds to fund its Green Communities program[36], and has awarded approximately $20 million to 103 communities to date[37]. Establishing a one-stop-shop clearinghouse for clean energy offerings would theoretically yield net benefits and cost savings by introducing efficiencies into program participant recruitment. A Green Communities program could strategically maximize the impact of public funding by leveraging action at the local level through a structure that incentivizes communities to proactively reduce energy usage and facilitate the adoption of renewables and alternative fuels before becoming eligible for funding. A state "Lead by Example" initiative would generate long-term savings for all taxpayers.

Design or Implementation Issues

Providing a single point of contact requires a web-based platform, information technology expertise and a database infrastructure that does not yet exist. It would require potentially complex coordination between multiple entities including state agencies, contractors, and electric and gas distribution companies. Eligible forms of technical or financial assistance under a Green Communities program would hinge on any restrictions attached to the funding sources of the program. For example, if energy efficiency program funds were used to support the Green Communities program, only technologies and measures passing the Total Resource Cost test could qualify for inclusion under the initiative.

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[36] http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf
[37] http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/gc-grant-program/

4. REDUCE THE SOFT COSTS OF RENEWABLE ENERGY

Provide guidance at the state and municipal level for uniform, standardized clean energy permitting processes to streamline development and mitigate regulatory hurdles to renewable deployment

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Current laws in New England and Rhode Island regarding renewable energy siting, permitting, zoning, and interconnection are a patchwork of varied state and municipal rules. A number of important public-private partnerships and state initiatives have begun to address this issue in Rhode Island over the past few years, primarily focusing on siting challenges associated with offshore and onshore wind. The Ocean Special Area Management Plan (SAMP), adopted by the Coastal Resources Management Council (CRMC) in 2011, informed the siting of Rhode Island's first offshore wind farm in state waters off Block Island[38]. Following the SAMP, the Renewable Energy Siting Partnership (RESP) produced a land-based resource assessment and siting analysis in 2012 to help guide the siting of terrestrial wind turbines, low-head hydropower facilities, and landfill solar projects[39]. In addition to a comprehensive report, the RESP resulted in the development of a "Wind Energy Siting Tool", an online decision-support tool that stakeholders can use assess the estimated power production and siting impacts of a proposed wind project[40]. Also during 2012, the Division of Planning Statewide Planning Program (SPP) released a technical report, "Interim Siting Factors for Terrestrial Wind Energy Systems", which put forth guidelines

[38] http://seagrant.gso.uri.edu/oceansamp/index.html#
[39] http://seagrant.gso.uri.edu/resp/
[40] http://www.edc.uri.edu/resp/WindSitingViewer/

for siting wind turbines in municipalities[41]. SPP produced this report as part of an overarching statutory charge to develop siting guidance for the location of renewable energy facilities in the state[42].

Through the resources generated by these efforts, decision-makers and stakeholders can now access a comprehensive body of information to assess opportunities, evaluate impacts, and make informed siting decisions for renewable energy technologies, primarily wind. As Rhode Island moves toward a future with a greater amount and variety of distributed generation resources, namely solar, focus must shift to actions designed to streamline and accelerate the diffusion of these technologies into the marketplace. In 2013, the Office of Energy Resources (OER) announced its participation in a regional collaboration funded through the U.S. Department of Energy (DOE) SunShot Initiative Rooftop Solar Challenge II called the New England Solar Cost-Reduction Partnership[43]. Over the 2.5 years of the grant, the team will tackle a range of barriers to solar energy deployment, including permitting and interconnection challenges; the need for new financing tools; and planning and zoning rule variations. This and other concerted efforts to drive down the non-hardware "soft" costs of installing distributed renewable energy in Rhode Island will improve business climate by driving down barriers to entry and reducing administrative costs; expand consumer access to clean energy products; and bring associated economic development benefits to the State.

Summary

This policy recommends providing guidance at the state and municipal level for uniform, standardized clean energy permitting processes to streamline development and mitigate regulatory hurdles to renewable deployment. State agencies should maintain ongoing partnerships with local government, citizens and industry, and other key stakeholder groups to apply best practices and lessons learned regarding siting of renewable energy. New efforts should focus on developing common intra- and inter-state rules and regulations for the installation of clean energy systems in order to radically simplify the business of doing renewable energy in Rhode Island and the region.

"Focus on developing common intra- and inter-state rules and regulations for the installation of clean energy systems in order to radically simplify the business of doing renewable energy "

Experience in Other States

Both Connecticut and Massachusetts received grants through the U.S. Department of Energy (DOE) SunShot Initiative Rooftop Solar Challenge I to work with municipal partners to lower the soft costs of rooftop photovoltaic solar systems in their respective states[44].

[41] http://www.planning.ri.gov/documents/LU/Wind%20Energy%20FacilityGuidelines_June-2012_.pdf
[42] http://webserver.rilin.state.ri.us/Statutes/title42/42-11/42-11-10.HTM
[43] http://www.ri.gov/press/view/20643
[44] http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/sunshot-rooftop-solar-challenge.html; http://energizect.com/communities/programs/Sun%20Rise%20New%20England

Rationale

What is the Need?

Uniform standards and regulations provide the private sector with a simplified environment for doing business and help developers of renewable energy offer products to consumers at a lower cost.

Alignment with RISEP Goals/Modeling

Each scenario modeled by Navigant included substantial renewable energy expansion, with significant capacity additions of in-state solar and wind. Increased distributed generation in Rhode Island is necessary to achieve fuel diversification and emissions reductions, as laid out in the RISEP security and sustainability targets. Proactively addressing renewable energy soft costs and regulatory burdens will simplify the addition of generating capacity and lower the costs of installing future renewable energy systems.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
*	*	
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* *	* *	* * *

Implementation

Legal Authority

No statutory authority is needed to launch a state effort to reduce soft costs of renewable energy.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Office of Energy Resources
Rhode Island Economic Development Corporation
Rhode Island Department of Labor
Rhode Island Building Code Commission

Expected Costs/Potential Funds

Primary costs associated with this project are simply the administrative costs of identifying best practices and setting standards. As of 2013, inter-jurisdictional federal grant funding awarded to the state supports this effort.

Design or Implementation Issues

Renewable energy developers operate throughout the state and oftentimes the region, facing a diverse assortment of permitting rules. At the same time, Rhode Island cities and towns, let alone different New England states, have very different political dispositions and regulatory frameworks. Achieving regulatory consistency across jurisdictions to streamline the permitting and installation of renewable energy systems will likely be challenging.

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5. TRACK PROGRESS TOWARDS GOALS

Develop improved standardized performance metrics and regular reporting mechanisms to measure success in meeting RISEP targets

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

The concept of performance management refers to a systematic process where: 1) expectations are set through an initial planning phase, 2) progress and performance are monitored, 3) organizational capacity to perform is developed, 4) periodic evaluation occurs, and 5) effective performance is rewarded. Through Governor Lincoln Chafee's Performance Management Initiative for Rhode Island State Government, public agencies use performance management reporting to increase government transparency and accountability and maximize the value of taxpayer dollars[45]. As an agency subject to this initiative, the Office of Energy Resources (OER) endeavors to apply the outcome-based principles of performance management to its statutory functions involving planning, monitoring, and reporting on energy issues relevant to the state, including its obligation to assist the Division of Planning in updating and maintaining the State Energy Plan.

Through the process of developing this 10-year update of the Rhode Island State Energy Plan, the OER worked with stakeholder groups and consultants to set goals and targets and develop associated quantitative metrics for measuring success. Due to the complexities associated with characterizing and measuring energy system dynamics, lingering questions inevitably remained at the conclusion of the planning process regarding the optimal ways of tracking performance. The following is a sampling of key issues highlighted in stakeholder discussions and comments:

[45] http://www.transparency.ri.gov/performance/

- **Security:** How should fuel diversity be measured on an economy-wide basis versus in individual sectors? How should sources be treated in the electric sector? Can better resiliency metrics be developed?
- **Cost-Effectiveness:** How can the RISEP cost-containment target be better formulated to measure net benefits, rather than just capturing the cost side of the equation? What new data and cutting-edge screening tools can be harnessed to advance policymakers' understanding of the true value of our energy procurement decisions?
- **Sustainability:** Should electric sector greenhouse gas emission reductions targets be calculated based on in-state generation sources, consumption levels prorated by sources reflecting the regional generation mix, or some other method? How are REC purchases versus renewable power purchases treated differently, if at all, toward meeting carbon reduction goals?

In addition to tracking overall success, OER's challenge will be to apply performance management tools and evaluate impacts on a program level, in order to judge the composite effect of ongoing state initiatives towards meeting goals. Excellent metrics already exist to quantify costs and benefits of the energy efficiency programs; the state, however, is only just beginning to address electric renewable supply-side programs through a study on the economic impacts of the Distributed Generation (DG) Standard Contracts Program and the Renewable Energy Fund (REF). Further work will need to characterize thermal supply and transportation sector program metrics for security, cost, and sustainability.

Summary

This policy recommends that the Office of Energy Resources implement a plan to track progress towards the goals set out in the RISEP by developing improved standardized performance metrics and regular reporting mechanisms to measure success in meeting RISEP targets. Performance measures and benchmarking standards for state energy use, supply, in-state generation portfolios, emissions, cost expenditures, and economic impact should be further refined hand-in-hand with expert input and stakeholder feedback to ensure consensus. Information on progress toward achieving RISEP goals could be incorporated into the Annual Report that OER must submit to the Governor and General Assembly.

> "What new data and cutting-edge screening tools can be harnessed to advance policymakers' understanding of the true value of our energy procurement decisions?"

Experience in Other States

The electric and gas energy efficiency program plans developed by National Grid in consultation with the Rhode Island Energy Efficiency and Resource Management Council (EERMC) offer an excellent model for setting clear goals and tracking success. Each annual program plan sets quantitative energy savings targets, carefully measures benefit/cost ratios, and provides quantitative estimates of economic and environmental impact. All results are subsequently independently evaluated, measured, and verified.

The Massachusetts Executive Office of Energy and Environmental Affairs (EEA) developed a sophisticated performance management system to manage and monitor progress on achieving the goals

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laid out in the Massachusetts Clean Energy & Climate Plan for 2020[46]. The system includes a user-friendly web dashboard to communicate ongoing progress to the public[47].

Rationale

What is the Need?

Substantial benefits will accrue to the State of Rhode Island if it meets the security, cost, and sustainability goals and targets laid out in the RISEP. The state must carefully track progress to determine areas where Rhode Island is on pace to achieve the RISEP vision and areas where further resources must be dedicated in order to stay on track.

Alignment with RISEP Goals/Modeling

N/A.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 42-140-8 requires the Rhode Island Office of Energy Resources to issue an annual report on the "status of energy supplies, markets, and conditions, the effectiveness of energy programs […]".

Rhode Island General Law § 39-26.2-12 requires the Rhode Island Office of Energy Resources to commission an annual jobs, economic impact and environmental impact study on the Distributed Generation Standard Contracts Program.

Lead/Responsible Actor

Rhode Island Office of Energy Resources

Expected Costs/Potential Funds

Minor administrative costs could potentially be required to support the development of performance management tools.

Design or Implementation Issues

Carrying out and tracking progress on a long-term plan benefits from the sustained involvement of parties with institutional memory and direct involvement in the planning process. Changes in leadership

[46] http://www.mass.gov/eea/pr-2013/new-website.html
[47] http://www.mass.gov/eea/air-water-climate-change/climate-change/massachusetts-global-warming-solutions-act/

due to political appointments or staff turnover in state government could present obstacles to implementation of the RISEP.

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6. CONTINUE PARTICIPATING IN RGGI

Continue participating in the Regional Greenhouse Gas Initiative (RGGI)

ESTIMATED IMPACT: ≤23% BAU ELECTRIC GHG REDUCTIONS BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

The Regional Greenhouse Gas Initiative (RGGI) is the first market-based cap and trade program in the United States designed to reduce electric power sector greenhouse gas emissions[48]. Nine states currently participate in the effort, including: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. The program, which began in 2009, establishes a declining regional emissions cap and requires electric generators greater than 25 MW to purchase emissions allowances through quarterly auctions. Participating states invest the auction proceeds in energy efficiency and clean energy programs that deliver economic benefits to consumers throughout the region.

The states participating in RGGI recently agreed to reduce the regional CO_2 cap by 45%, from 165 million to 91 million tons in 2014, with subsequent reductions of 2.5% each year from 2015 to 2020[49]. This significant reduction in the cap signals that RGGI will continue to be a dominant force shaping the carbon profile of the electric power sector market for the coming years.

Summary

This policy recommends that Rhode Island continue participating in the Regional Greenhouse Gas Initiative (RGGI). Ongoing involvement in RGGI will drive down regional power sector CO2 emissions,

[48] http://www.rggi.org/
[49] http://www.rggi.org/docs/PressReleases/PR130207_ModelRule.pdf

generate net economic benefits to Rhode Island and the region, and help position the participating states as leaders in any future national efforts to limit carbon.

Experience in Other States

Nine northeastern and Mid-Atlantic states currently participate in RGGI. New Jersey withdrew from the program in 2011[50].

Rationale

What is the Need?

Scientific consensus indicates that emissions of greenhouse gases, including carbon dioxide, are contributing to global climate change. The effects of climate change pose significant risks to the communities, economies, and environment of Rhode Island, as the 2012 Climate Change Commission Progress Report spells out in detail[51]. Market-based emissions reduction programs like RGGI are a cost-efficient mechanism to cap and reduce emissions in the electric power sector, a major source of greenhouse gas emissions in the Northeast and Mid-Atlantic. Furthermore, the regional nature of the RGGI collaboration benefits Rhode Island by not placing the state at a comparative economic disadvantage and leveraging a much larger carbon reduction impact than our small state could otherwise muster with unilateral action.

Alignment with RISEP Goals/Modeling

The Navigant modeling projects BAU electric sector carbon emission reductions of 23% below 2013 levels by 2035.The BAU model draws on information from the ENE Business-As-Usual Forecast, which assumes ongoing participation in the RGGI program. This suggests that simply achieving ambitious BAU emissions reductions, not to mention further reductions, depends at least in part on Rhode Island's continued involvement in RGGI.

> "Simply achieving ambitious BAU emissions reductions depends at least in part on Rhode Island's continued involvement in RGGI"

The BAU reductions alone are very significant, especially considering that the RISEP calls for 45% economy-wide GHG reductions by 2035.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

[50] http://www.environmentalleader.com/2011/05/27/new-jersey-pulls-out-of-rggi-bans-coal-plants/

[51] http://www.rilin.state.ri.us/Reports/Climate%20Change%20Commission%20Prog%20Report%20Final%2011%2015%2012%20final%202.pdf

Implementation

Legal Authority

Rhode Island General Law § 23-82 provides the statutory basis for Rhode Island's participation in RGGI[52].

Lead/Responsible Actor

Rhode Island Office of Energy Resources
Rhode Island Department of Environmental Management
Rhode Island Energy Efficiency and Resource Management Council
Rhode Island Public Utilities Commission
Non-Regulated Power Producers

Expected Costs/Potential Funds

RGGI generates enormous economic and environmental benefits at a comparatively small cost. An independent report by the Analysis Group found that in its first three years, RGGI increased near-term consumer electricity costs by a modest 0.7%, but generated net savings of almost $1.1 billion over time as a result of investment in energy efficiency[53]. Additional macroeconomic benefits to the regional economy during this time period include the creation of over 16,000 jobs and $1.6 billion in total economic growth[54].

Each year, Rhode Island receives proceeds from quarterly auctions held under RGGI. The Office of Energy Resources (OER) is responsible for the allocation and distribution of these funds, which are invested in the most cost-effective available projects to reduce longer-term consumer energy demands and costs. Approximately 60% of auction revenues in Rhode Island support the implementation of annual energy efficiency programs by National Grid, and 40% are directed toward innovative projects to integrate efficiency with renewable energy and promote efforts to modernize Rhode Island's electric distribution grid[55]. As of the end of 2012, Rhode Island had invested nearly $18 million in RGGI auction proceeds[56] in clean energy programs, with the most recent round of auctions in 2012 generating a total $2,857,538.70[57].

Design or Implementation Issues

Under RGGI, Rhode Island generation-based carbon emissions have actually increased. Counterintuitively, this trend attests to the success of RGGI, reflecting how the program is driving broader shifts in the regional generation mix. The in-state growth in emissions can be ascribed to Rhode Island's natural gas-fired power plants, which have begun to operate with greater frequency as higher-

[52] http://webserver.rilin.state.ri.us/Statutes/TITLE23/23-82/INDEX.HTM
[53] http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic_Impact_RGGI_Report.pdf
[54] http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic_Impact_RGGI_Fact_Sheet.pdf
[55] http://www.energy.ri.gov/documents/rggi/2013%20Plan%20Items/Strategic%20Use%20of%20RGGI%20Funds%2012.5.2013.pdf
[56] http://www.energy.ri.gov/documents/rggi/2012%20Annual%20Report.pdf
[57] http://www.energy.ri.gov/documents/rggi/2013%20Plan%20Items/Annual%20RGGI%20Allocation%20Plan%202013%20-%20Draft%20November%202013.pdf

emitting coil and oil units elsewhere in New England cut back generation. Therefore, from a state emissions perspective, policymakers should strongly consider the merits of planning any separate carbon reduction efforts around consumption-based emissions, at least in the short term.

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7. DEVELOP A CARBON REDUCTION STRATEGY

Establish binding near- and long-term greenhouse gas emissions targets and evaluate the most cost-effective portfolio of policies to meet the goals

ESTIMATED NEED: 45% TOTAL GHG REDUCTIONS BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

The New England Governors and Eastern Canadian Premiers (NEG/ECP) 2001 Climate Change Action Plan called for a reduction in greenhouse gas (GHG) emissions to 1990 levels by 2010, at least 10% below 1990 levels by 2020, and a 75-85% reduction below 2001 levels as a long term goal[58]. The following year, Rhode Island completed a Greenhouse Gas Action Plan[59]. The 2002 Action Plan proposed 52 potential policy initiatives at the state, regional, and national levels to move towards meeting the 2020 carbon reduction goal[60]. In 2007, Rhode Island joined the Regional Greenhouse Gas Initiative (RGGI), which started holding the nation's first cap-and-trade auctions for fossil fuel power producers over 25MW in 2008[61].

In 2013, the NEG/ECP announced it had surpassed its 2010 regional greenhouse gas emissions reduction target and is already nearly 25% of the way toward its 2020 target[62]. Meanwhile, other neighboring jurisdictions like Massachusetts are in full swing implementing ambitious plans and programs to achieve individual state carbon reduction mandates[63]. As Rhode Island looks to 2020 and beyond to 2035, the

[58] http://www.negc.org/uploads/file/Reports/ClimateChangeAP[1].pdf
[59] http://righg.raabassociates.org/
[60] http://righg.raabassociates.org/Articles/GHGPlanBody7-19-02FINAL.pdf
[61] http://www.rggi.org/
[62] http://www.scics.gc.ca/english/Conferences.asp?a=viewdocument&id=2023
[63] http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf

state should strongly consider developing an enforceable greenhouse gas reduction plan that sets the state on pace to meet the ambitious emissions reduction target established in the RISEP.

Summary

This policy recommends establishing binding near- and long-term greenhouse gas emissions targets and evaluating the most cost-effective portfolio of policies to meet the goals. A suggested first step is a legislative finding setting clear carbon reduction goals as state policy, beginning with 10% below current levels in 2020 and ramping to 45% below current levels by 2035. Many policies proposed in the RISEP will work towards meeting this goal. Additional non-energy measure policies to directly promote the fixing of carbon could supplement the plan. These might include increasing in-state biomass through land-use policy, conservation easements, and local ordinance templates for optimal tree planting and retention for shading purposes.

If benchmarks are not met, Rhode Island could consider additional options for meeting carbon reduction targets using state or regional action. Potential methods include increasing the Renewable Energy Standard while expanding the list eligible technologies; setting a System Benefits Charge "trigger" that kicks in if interim goals are missed; or adopting a revenue-neutral carbon tax. Rhode Island could also participate in regional collaborations to pursue alternative innovative policies such as a Clean Energy Performance Standard[64].

Experience in Other States

Every other northeastern state has adopted a legislative or executive goal of ~80% carbon emission reductions by 2050. The 2008 Global Warming Solutions Act in Massachusetts sets an 80% greenhouse gas emissions reduction target by 2050 and requires interim goals for 2020, 2030, and 2040, with regularly-updated plans to determine all technically feasible reduction mechanisms necessary to achieve the goals[65]. The first of these plans, the Massachusetts Clean Energy and Climate Plan for 2020, provides an excellent example of a data-driven, comprehensive strategy to meet an ambitious carbon reduction goal[66].

"Net economic benefits are expected to accrue to Rhode Island as a result of pursuing a low-carbon future"

Table: Northeast State Carbon Reduction Goals

State	Target	Source
Connecticut[67]	80% below 2001 by 2050	2008 CT Global Warming Solutions Act
Maine[68]	75-80% below 2003 long-term	Act to Provide Leadership in Addressing the Threat of Climate Change (2003)
Massachusetts[69]	80% below 1990 by 2050	2008 Global Warming Solutions Act

[64] http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf
[65] https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter298
[66] http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf
[67] http://www.cga.ct.gov/2008/ACT/PA/2008PA-00098-R00HB-05600-PA.htm
[68] http://www.mainelegislature.org/ros/LOM/lom121st/5pub201-250/pub201-250-44.htm

New Hampshire[70]	80% below 1990 by 2050	New Hampshire Climate Action Plan (2009)
New York[71][72]	80% below 1990 by 2050	Exec. Order No. 2 (2011); Exec. Order No. 24 (2009)
Vermont[73]	75% below 1990 by 2050	10 V.S.A. § 578

Rationale

What is the Need?

Scientific consensus indicates that emissions of greenhouse gases, including carbon dioxide, are contributing to global climate change. The effects of climate change pose significant risks to the communities, economies, and environment of Rhode Island, as the 2012 Climate Change Commission Progress Report spells out in detail[74]. Curbing greenhouse gas emissions is the most effective way to slow the anticipated future damage from climate change.

Alignment with RISEP Goals/Modeling

Navigant's scenario modeling demonstrated that significant greenhouse gas reductions are feasible under three distinct scenarios. The average emissions reductions among the scenarios was 34%, and the results indicate that it is feasible to reduce Rhode Island consumption-based greenhouse gas emissions by approximately 45% below 2013 levels by 2035. All three scenarios modeled by Navigant showed substantial carbon reductions, but all three scenarios also modeled dramatically transformed energy systems. To ensure that greenhouse gas emission targets are met, a coordinated strategy with enforceable interim benchmarks will be required.

Figure: RI GHG Emissions 2035 by Sector

GHG Reductions - RI Load Served (% Below 2013 levels)

	ALL SECTORS		INDIVIDUAL SECTORS - 2035		
	2023	*2035*	*Electric*	*Thermal*	*Transportation*
BAU	12%	18%	23%	20%	12%
Scenario 1	21%	36%	35%	40%	34%
Scenario 2	21%	32%	23%	34%	36%
Scenario 3	22%	46%	56%	44%	40%
Scenario Avg	**21%**	**38%**	**38%**	**39%**	**37%**

An illustrative greenhouse gas reduction schedule shows that 45% reductions by 2035 corresponds to an ambitious 2-2.5% reductions per year. The schedule would set Rhode Island on pace to achieve 80% reductions by 2050, a generally-accepted target to avoid the worst consequences of climate change.

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[69] https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter298
[70] http://des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/documents/nhcap_final.pdf
[71] http://www.dec.ny.gov/energy/71394.html
[72] http://www.governor.ny.gov/executiveorder/2
[73] http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=10&Chapter=023&Section=00578
[74] http://www.rilin.state.ri.us/Reports/Climate%20Change%20Commission%20Prog%20Report%20Final%2011%2015%2012%20final%202.pdf

Table: Illustrative RI GHG Emissions Reduction Schedule

YEAR	REDUCTION	YEAR	REDUCTION
2013	0.0%	*2036*	49.7%
2014	2.2%	*2037*	51.9%
2015	4.3%	*2038*	54.1%
2016	6.5%	*2039*	56.2%
2017	8.6%	*2040*	58.4%
2018	10.8%	*2041*	60.5%
2019	13.0%	*2042*	62.7%
2020	15.1%	*2043*	64.9%
2021	17.3%	*2044*	67.0%
2022	19.5%	*2045*	69.2%
2023	21.6%	*2046*	71.4%
2024	23.8%	*2047*	73.5%
2025	25.9%	*2048*	75.7%
2026	28.1%	*2049*	77.8%
2027	30.3%	***2050***	**80%**
2028	32.4%		
2029	34.6%		
2030	36.8%		
2031	38.9%		
2032	41.1%		
2033	43.2%		
2034	45.4%		
2035	**47.6%**		

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

None currently exists.

Lead/Responsible Actor

Rhode Island General Assembly

Rhode Island Office of Energy Resources

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Rhode Island Department of Environmental Management

Expected Costs/Potential Funds

It costs nothing to set greenhouse gas reduction goals in statute. Funding will be needed to commission studies estimating economic effects and identifying all technically feasible greenhouse gas reduction measures to achieve interim and final targets. Implementing a carbon emissions reduction plan has associated program costs and potential economic effects on businesses and ratepayers, but as demonstrated in the RISEP scenario modeling, net economic benefits are expected to accrue to Rhode Island as a result of pursuing a low-carbon future. Scenario 3, which targeted a 45% reduction in greenhouse gases, costs less than either today's energy economy or a business-as-usual future.

Design or Implementation Issues

Rhode Island has about six years left to meet the 2020 target of reducing carbon emissions by 10% below 1990 levels as reflected in the NEG/ECP commitment and the 2002 Greenhouse Gas Action Plan. As of 2013, Rhode Island is at only at 1990 levels. This means that a reduction of nearly 2% per year is required to meet the 2020 goal. If the state wishes to meet further ambitious goals set by the RISEP or the NEG/ECP, the state must establish intermediate goals and propose serious mechanisms for enforcement. Unfortunately, these mechanisms may come with economic costs to greenhouse gas emitting entities and possibly ratepayers, and therefore can be politically difficult.

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8. EXTEND LEAST-COST PROCUREMENT

Renew Rhode Island's commitment to leadership in energy efficiency by extending the Least-Cost Procurement mandate and its associated provisions beyond 2018

ESTIMATED IMPACT: ~20% ELECTRIC & THERMAL BAU ENERGY REDUCTIONS

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

In 2006, the Rhode Island General Assembly enacted the Comprehensive Energy Conservation, Efficiency and Affordability Act[75]. The Act established a groundbreaking mandate termed "Least-Cost Procurement"[76]— a policy that requires Rhode Island electric and gas[77] distribution companies (National Grid) to invest in all cost-effective energy efficiency before the acquisition of additional supply. This strategy is "least-cost" because energy-saving measures—higher efficiency lighting, HVAC systems, and appliances; insulation; air sealing; etc.—cost approximately 4¢ per kWh over their lifetime while electric supply costs between 8¢ and 12¢ per kWh[78].

Prior to Least-Cost Procurement, Rhode Island electric distribution companies did implement demand-side management programs. The cost of the programs was recovered through a "System Benefits Charge" (SBC) levied on the distribution service portion of customer utility bills. The SBCs, however, were set at a fixed rate of 0.2¢/kWh[79], limiting program funding to far below the amount needed to

[75] http://www.ripuc.org/eventsactions/docket/3759-RIAct.pdf
[76] http://webserver.rilin.state.ri.us/Statutes/title39/39-1/39-1-27.7.HTM
[77] In 2010, Least-Cost Procurement was expanded to include natural gas
[78] http://www.rieermc.ri.gov/documents/annual/3_EERMC_April%202013.pdf
[79] http://www.synapse-energy.com/Downloads/SynapseReport.2007-05.Raab.Least-Cost-Elec-Procurement-in-RI.07-012.pdf

procure all cost-effective energy efficiency (As of 2013, the SBC was 0.906¢/kWh[80]). In contrast, under Least-Cost Procurement, National Grid sizes yearly program budgets to meet ambitious annual targets for electric and gas savings, which are determined based on a detailed analysis of the amount of available cost-effective energy efficiency. To achieve the targets, National Grid develops and implements annual "energy efficiency procurement plans"[81], working under the oversight and expert guidance of a consumer stakeholder committee, the Energy Efficiency and Resource Management Council (EERMC)[82]. The plans are composed of a portfolio of energy efficiency programs targeting different market sectors of energy consumers: residential, income-eligible, and commercial/industrial. The plans also contain an important component addressing system reliability, which considers the potential of "non-wires alternatives"—energy efficiency, demand response, distributed generation, and other innovative methods—to curtail electric load in constrained areas of the distribution network[83].

Summary

Least-Cost Procurement is Rhode Island's cornerstone energy policy. The mandate ensures that energy procurement decisions maximize use of the lowest-risk, lowest-cost, and arguably most sustainable resource available for supplying energy needs—energy efficiency. Most of the legislative provisions supporting Least-Cost Procurement sunset by 2018. This policy recommends renewing Rhode Island's commitment to leadership in energy efficiency by extending the Least-Cost Procurement mandate and its associated provisions beyond 2018. Continuing the mandate to procure all cost-effective energy efficiency is perhaps the single most important step that state policymakers can take towards ensuring a secure, cost-effective and sustainable future for Rhode Island.

"Continuing the mandate to procure all cost-effective energy efficiency is perhaps the single most important step that state policymakers can take "

Experience in Other States

In New England, Connecticut[84], Maine[85], Massachusetts[86], and Vermont[87] all have similar policies to Rhode Island mandating the procurement of all cost-effective energy efficiency[88]. The American Council for an Energy Efficient Economy (ACEEE) currently ranks five Northeast states—Massachusetts, New York, Connecticut, Rhode Island, and Vermont—among the top 10 energy efficient states in the country[89].

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[80] http://www.nationalgridus.com/narragansett/non_html/rates_tariff.pdf
[81] http://www.ripuc.org/eventsactions/docket/4366-NGrid-2013EEPP(11-2-12).pdf
[82] http://webserver.rilin.state.ri.us/Statutes/TITLE42/42-140.1/INDEX.HTM
[83] http://www.ripuc.org/eventsactions/docket/4367-NGrid-SRP-2013Plan(11-2-12).pdf
[84] http://www.cga.ct.gov/2007/act/pa/2007pa-00242-r00hb-07432-pa.htm
[85] http://www.mainelegislature.org/legis/bills/bills_124th/billpdfs/HP103801.pdf
[86] https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25/Section21
[87] http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=30&Chapter=005&Section=00209
[88] http://www.neep.org/Assets/uploads/files/public-policy/outreach-and-analysis/EE%20Policy%20Snapshot%20Update%204.16.13.pdf
[89] http://aceee.org/energy-efficiency-sector/state-policy/aceee-state-scorecard-ranking

Rationale

What is the Need?

Energy efficiency is the single most cost-effective method to improve energy security and sustainability. The Least-Cost Procurement model maximizes economic and environmental benefits to consumers and the broader economy by ensuring that cheap energy efficiency measures are used before more expensive energy supply. Without a strategy to procure all cost-effective energy efficiency available, Rhode Island limits the ability of all electric and gas customers to access the lowest-cost energy source available.

Alignment with RISEP Goals/Modeling

For all the scenarios, Navigant modeled changes incremental to the ENE Business-As-Usual Forecast, which assumed a continuation of Least-Cost Procurement through 2035. The impact of this assumption cannot be understated: With an extension of the mandate, the models project BAU energy reductions of approximately 21% in the electric sector and 19% in the thermal sector between 2013 and 2035. These savings represent a significant component of the energy security, cost, and sustainability benefits modeled in each scenario. Because these scenarios formed the basis for setting the RISEP targets, none of the targets proposed in this Plan will be attainable unless the state extends Least-Cost Procurement.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island Public Law Chapters 236[90] and 237[91] originally set forth Least-Cost Procurement. Key chapters of Rhode Island General Law include § 39-1-27.7 (System Reliability and Least-Cost Procurement), § 39-1-27.8 (Supply Procurement Portfolio), and § 39-2-1.2 (Utility Base Rate – Advertising, Demand-Side Management and Renewables).

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Office of Energy Resources
Rhode Island Energy Efficiency and Resource Management Council
Rhode Island Public Utilities Commission
Electric and Gas Distribution Companies

[90] http://webserver.rilin.state.ri.us/PublicLaws/law06/law06236.htm
[91] http://webserver.rilin.state.ri.us/PublicLaws/law06/law06237.htm

Expected Costs/Potential Funds

By design, Least-Cost Procurement reduces costs via eliminating the need to purchase expensive energy supply resources. For example, the 2012 Energy Efficiency Program cost $59.5 million, but is expected to generate $183.55 million in economic savings for Rhode Island homes and businesses[92]. Funding for the programs comes principally from system benefits charges on customer electric and natural gas bills, set according to rate tariffs for electric distribution[93] and natural gas service[94]. Despite the clear economic rationale for energy efficiency investments, the growing size of the program makes it increasingly unsustainable to rely primarily on ratepayer funding. To continue these critical investments in Rhode Island's least-cost energy efficiency resources, program administrators and stakeholders must prioritize efforts to identify new sources of funding, including financing with private sector capital.

Design or Implementation Issues

The structure for implementing Least-Cost Procurement already exists.

DRAFT

[92] http://www.rieermc.ri.gov/documents/annual/3_EERMC_April%202013.pdf
[93] http://www.nationalgridus.com/narragansett/non_html/rates_tariff.pdf
[94] http://www.nationalgridus.com/rigas/non_html/rigas_firm_rates.pdf

9. EXPAND LEAST-COST PROCUREMENT TO UNREGULATED FUELS

Develop a long-term strategy for sustainably funding energy efficiency programs for delivered fuels customers

ESTIMATED IMPACT: 15-25% THERMAL ENERGY REDUCTIONS

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Nearly 40% of Rhode Island homes heat with delivered petroleum-based fuels[95], however, no dedicated energy efficiency program funding exists to serve these customers. Current funding for the efficiency programs under Least-Cost Procurement derives solely from electric and natural gas demand-side management charges, leaving unregulated fuel users with historically limited access to the program offerings. In past years, for example, National Grid offered oil customers a 25% rebate for weatherization services funded from the electric side of the efficiency program budget, on the premise that all customers use electricity and weatherization provides electric savings. In 2010, the Office of Energy Resources (OER) allocated $2.3 million of funds from the American Recovery and Reinvestment Act (ARRA) State Energy Program (SEP) Grant for energy efficiency improvements to homes using oil or propane for heating[96]. The current piecemeal approach, however, creates regular uncertainty in funding availability and scope, and precludes a sophisticated, tailored design of comprehensive delivered fuels energy efficiency offerings. In order to truly extend the benefits of Least-Cost Procurement to unregulated fuels customers, a sustained solution for funding energy efficiency for these users must be found.

[95] http://www.eia.gov/state/data.cfm?sid=RI#ConsumptionExpenditures
[96] http://www.ri.gov/press/view/11926

Summary

This policy recommends the formation of a working group to develop a long-term strategy for sustainably funding energy efficiency programs for delivered fuels customers. Expanding Least-Cost Procurement to unregulated fuels will address a major underserved population of energy users in Rhode Island. Dedicated energy efficiency programs for the users of petroleum-based heating fuels will generate substantial consumer, environmental, and economic benefits in the form of energy savings, emissions reductions, increased disposable income and revenue, and new business opportunities for delivered fuel distributors.

Experience in Other States

Other New England states have considered similar programs. A recent bill proposed in Massachusetts (Bill H.2741) would establish a least-cost procurement method of offering energy efficiency incentives for customers heating with oil[97][98]. The bill would establish an assessment of 2.5¢ per gallon of heating oil sold and enable oil dealers to provide energy efficiency offerings to their customers. Connecticut allows for customers who do not heat with electricity or gas to access a percentage of the energy efficiency charge from electric delivery for weatherization services, although it limits this amount to $500,000 per year[99]. It should be noted that the Connecticut provision has been contentious, with lawmakers enacting and repealing the legislation multiple times only to finally cap the amount. This is likely due to a misalignment of incentives, where the electric and natural gas distribution companies gain little benefit by offering system benefit charges to delivered fuels customers.

"A comprehensive energy efficiency program for delivered fuels customers could potentially provide 15-25% thermal sector energy savings by 2035"

Rationale

What is the Need?

Energy efficiency is the single most cost-effective method to improve energy security and sustainability. The Least-Cost Procurement model maximizes economic and environmental benefits to consumers and the broader economy by ensuring that cheap energy efficiency measures are used before more expensive energy supply. Without a strategy to deliver energy efficiency resources to users of petroleum-based fuels, Rhode Island excludes nearly 40% of its heating customers from access to the lowest-cost energy source available.

Alignment with RISEP Goals/Modeling

According to Navigant's scenario modeling results, cost-effective opportunities exist beyond the BAU to capture thermal sector energy efficiency savings, including for delivered fuels. The analysis projects BAU thermal sector energy reductions of approximately 19% between 2013 and 2035 and suggests that further opportunities to reduce thermal sector demand could exist, perhaps by as much as 50% below current levels by 2035. Extending Least-Cost Procurement to petroleum-based heating fuels could

[97] https://malegislature.gov/Bills/188/House/H2741
[98] http://www.neep.org/Assets/uploads/files/public-policy/outreach-and-analysis/MA-Oil-Heat-Facts-Jan-4.-2013.pdf
[99] http://www.cga.ct.gov/2012/TOB/s/pdf/2012SB-00501-R00-SB.pdf

provide a significant portion of these additional potential savings. Using the modeling results to calculate illustrative potential values[100] similar to the KEMA Electric Efficiency Potential study shows that perhaps up to approximately 27% delivered fuels savings (based on a 2013 baseline) might be achieved. This best available estimate suggests that a comprehensive energy efficiency program for delivered fuels customers could potentially provide 15-25% thermal sector energy savings by 2035.

Figure: Delivered Fuels 2035 Energy Efficiency Potential

Scenario	Delivered Fuels Efficiency Potential (BBTU)	% of Base Energy Use (2013 Consumption)	Simple Average Annual Savings
BAU	5,226	8%	0.4%
Scenario 1	8,964	14%	0.7%
Scenario 2	17,446	27%	1.4%
Scenario 3	8,366	13%	0.7%

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 39-1-27.7 establishes Least-Cost Procurement, which currently does not include delivered fuels.

Lead/Responsible Actor

Members of the working group might include, but not be limited to, representatives from the following groups:

- Rhode Island Office of Energy Resources
- Rhode Island Energy Efficiency and Resource Management Council
- Unregulated Fuel Distributors (oil, kerosene, propane, wood, etc.)
- Low-income energy users
- Residential energy users
- Commercial and industrial energy users
- Environmental/energy interests

[100] Efficiency potential is measured as the difference in consumption of distillate fuel oil, gasoline, kerosene, propane, residual fuel oil, and biodiesel between years 2035 and 2013. Only a portion of the difference reflects gains in efficiency; the remainder represents fuel switching to different heating sources, like natural gas. Therefore, the estimated efficiency potential values given are very rough numbers.

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Expected Costs/Potential Funds

By design, Least-Cost Procurement reduces costs by eliminating the need to purchase expensive energy supply resources. For example, the 2010 Deliverable Fuel Weatherization Program cost $2.3 million, but could generate $7 million in lifetime savings[101]. Despite the clear economic rationale, identifying a source of funds to support delivered fuel efficiency programs is challenging. To eliminate cross-subsidization, the ideal solution would ultimately tie program funding to a per-gallon energy efficiency charge affixed to delivered fuels, as was proposed in Massachusetts. As of 2011, however, Vermont was the only jurisdiction to have such a mechanism in place[102].

Design or Implementation Issues

Energy efficiency program design and implementation lends itself well to least-cost procurement of electricity and natural gas, where costs are shared among a defined and discrete group of ratepayers. The delivered fuels market, on the other hand, is unregulated in Rhode Island, presenting unique challenges for capturing all cost-effective efficiency. For example, revenue decoupling, which exists for electric and gas distribution companies, does not exist for delivered fuel distributors. Any program design must establish a mechanism by which unregulated fuel dealers might maintain profit margins and even make a profit by promoting energy efficiency measures that ultimately reduce the amount of fuel sold. Other important policy implications include cross-state alignment of incentives, including potential competition from out-of-state fuel dealers who might not face energy efficiency charges, and thus have a comparative advantage in the Rhode Island market.

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[101] http://www.rieermc.ri.gov/documents/annual/1_EERMC_April%202011.pdf

[102] http://www1.eere.energy.gov/wip/solutioncenter/pdfs/fundingforenergyefficiencyprogramsforunregulatedfuels.pdf

10. IMPROVE STATE ENERGY EFFICIENCY CODES & STANDARDS

Strengthen appliance minimum standards, and develop an integrated and long-term strategy to transition to zero net energy buildings

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Existing statutes in Rhode Island set minimum energy efficiency standards for appliances[103] and buildings[104]. In 2005, the Rhode Island General Assembly enacted Rhode Island General Law § 39-27, setting appliance and equipment efficiency standards for a diversity of energy-consuming products sold and installed in the state[105]. Subsequent legislative action at the federal level instituted nationwide standards, preempting many of Rhode Island's minimum standards[106]. Although the U.S. Department of Energy (DOE) prohibits states from setting standards for appliances covered by mandatory federal standards (though it can grant waivers to states wishing to establish stricter standards), states may set standards for products not covered by federal standards.

Rhode Island General Law § 23-27.3-100.1.5.4, which establishes the State Energy Conservation Code, currently requires that residential and commercial buildings meet some of the strictest international building code standards for energy efficiency. As of July 1, 2013, the state Building Code Standards Committee adopted 2012 International Energy Conservation Code (IECC) for both residential and commercial buildings[107]. Recent studies commissioned by National Grid, however, found widespread

[103] http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-27/INDEX.HTM
[104] http://webserver.rilin.state.ri.us/Statutes/TITLE23/23-27.3/23-27.3-100.1.5.4.HTM
[105] http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-27/INDEX.HTM
[106] http://aceee.org/energy-efficiency-sector/state-policy/Rhode%20Island/211/all/192
[107] http://sos.ri.gov/documents/archives/regdocs/released/pdf/BCSC/7284.pdf

lack of compliance; on average, just 56% of residential new construction[108] and 70% of commercial new construction[109] achieved compliance with existing energy codes. Moreover, the State Energy Conservation Code only applies to new and renovated structures, but does not grandfather in buildings constructed before enactment of the mandate.

In the 2013 Energy Efficiency Program Plan, National Grid launched an innovative Codes and Standards (C&S) Initiative, which is already helping to build on Rhode Island's existing energy efficiency regulations. Through this initiative, National Grid works in close partnership with the Rhode Island Building Code Commission and other stakeholders to increase base code compliance, advocate to improve base code, develop an additional voluntary "stretch" code, and advocate expanding appliance efficiency standards[110].

Summary

This policy recommends 1) strengthening appliance minimum standards; and 2) developing an integrated and long-term strategy to transition to zero net energy buildings.

Appliance Standards: For appliances, policymakers should continually screen additional technologies for inclusion under the state appliance efficiency standards or consider requiring that standards stay current with the latest standards established by California, which historically have set the precedent for subsequent federal standards.

Building Codes: In the building sector, Rhode Island should chart a path to zero net energy buildings. Setting a long-term goal and establishing a schedule that ratchets up energy efficiency requirements over time (e.g. decades) to achieve the net zero target would send a clear, lasting signal to the market and provide sufficient time for the building community to adapt. The strategy must address both the new construction/renovation and the existing housing markets alike. Components of the plan will likely fall into the following broad categories: adopting policies that improve base code; providing incentives to exceed base code, and increasing overall code compliance.

To improve base code in new construction and renovations, Rhode Island should at minimum continue to stay current with the latest IECC standards. Over the long-term, policymakers should consider transitioning from traditional "prescriptive" building codes towards "performance" oriented building codes. Performance-based energy codes will more directly address the end goal of reducing wasted energy and simplify compliance for developers by allowing them to make their own design decisions on how to meet energy reduction targets.

To achieve savings above and beyond base code in the new construction/renovation market, Rhode Island can supply cities and towns the option to adopt higher-efficiency "stretch" codes. In these same

[108] http://www.rieermc.ri.gov/documents/evaluationstudies/2012/Final-RI-RNC-2011-Baseline-Report-sent-10-8-12.pdf

[109] http://www.rieermc.ri.gov/documents/evaluationstudies/2012/RI%20Code%20Compliance%20Baseline%20Study%20%20Final%20Report%20-%20July%2023%202012.pdf

[110] http://www.ripuc.org/eventsactions/docket/4366-NGrid-2013EEPP(11-2-12).pdf Appendix 2

properties, Rhode Island can increase compliance with base and stretch codes by providing training and education as well as stepping up compliance enforcement through third-party inspections.

For existing housing stock, by far the largest segment of buildings in the state, "Building Energy Labeling"[111] represents the most promising tool to encourage greater investment by the voluntary market in energy efficiency. Mandatory building energy labeling policies, which require the disclosure of building energy performance data to occupants, renters, potential buyers, or the public, could also assist with code enforcement in new construction and renovations. Finally, policymakers should seriously consider pursuing fundamentally new approaches to speeding the pace of energy efficiency improvements in the existing housing market, including requiring that existing homes meet current code within a designated period of time (e.g. within ten years) and providing incentives to support compliance. This type of policy may be particularly effective in prompting efficiency investment in the rental market, where the well-known landlord/tenant "split-incentive" discourages property owners and renters alike from implementing energy upgrades.

Experience in Other States

As of March 2012, twelve states had set minimum appliance efficiency standards for products not covered by mandatory federal standards[112]. Massachusetts has recommended universal adoption of zero net energy practices for new construction by 2030[113]; California set a net zero energy usage goal for all new residential homes by 2020[114]. In 2009, Massachusetts developed an optional stretch code for municipalities wishing to achieve enhanced building energy efficiency[115][116]. Numerous local and state jurisdictions across the country have implemented building energy rating policies[117][118], including the City of Boston[119]. The City of Boulder, Colorado required that all rental housing meet a minimum energy efficiency standard by 2019[120].

What is the Need?

Codes and standards are one of the most simple and cost-effective policy tools to promote energy efficiency for appliances and buildings. Because their expected lifetimes are measured in decades or more, the base efficiency of these assets today will have a substantial and long-lasting impact on energy consumption, fuel expenditures, and emissions for years to come. In the buildings sector in particular, certain energy-inefficient properties, especially in the rental market, can go years and years without upgrades but still technically be code compliant. Addressing these issues through the smart and prudent

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[111] http://www.neep.org/Assets/uploads/files/public-policy/building-energy-rating/BER%20One%20Pager%20FINAL.pdf
[112] http://www.appliance-standards.org/sites/default/files/State_status_grid_MAR_2012_1.pdf
[113] http://www.mass.gov/eea/docs/eea/press/publications/zneb-taskforce-report.pdf
[114] http://www.cpuc.ca.gov/NR/rdonlyres/D8EBFEE4-76A5-47AC-A8F3-6E0DAB3A9E5D/0/DRAFTZNE_Action_Plan_Comment.pdf
[115] http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/stretch-energy-code-information.html
[116] http://neep.org/Assets/uploads/files/public-policy/building-energy-codes/Massachusetts%20Stretch%20Code.pdf
[117] http://www.neep.org/public-policy/energy-efficient-buildings/building-energy-rating/index
[118] http://www.buildingrating.org/content/us-policy-briefs
[119] http://www.cityofboston.gov/news/Default.aspx?id=5997
[120] https://bouldercolorado.gov/plan-develop/smartregs

use of energy efficiency regulations is a proven method to provide enormous energy security, economic, and environmental returns.

Alignment with RISEP Goals/Modeling

Navigant's scenario modeling projected BAU energy reductions of approximately 21% in the electric sector and 19% in the thermal sector between 2013 and 2035. The analysis suggests that further opportunities to reduce thermal sector demand could exist, perhaps by as much as 50% below current levels by 2035. Achieving these ambitious BAU savings, let alone further energy reductions, will require an "all-of-the-above" approach. Extending Least-Cost Procurement will help deliver the bulk of the BAU savings; improved codes and standards will help provide a complementary policy mandate that lifts the baseline efficiency of appliances and housing.

"The base efficiency of these assets today will have a substantial and long-lasting impact on energy consumption for years to come"

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 39-27 provides the statutory basis for appliance and equipment energy efficiency standards. Rhode Island General Law § 23-27.3-100.1.5.4 establishes the State Energy Conservation Code.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Office of Energy Resources
Rhode Island Energy Efficiency and Resource Management Council
Electric and Gas Distribution Companies
Rhode Island Building Code Commission
Rhode Island Building Code Standards Committee

Expected Costs/Potential Funds

Although compliance costs exist, mandating improved energy efficiency codes and standards does not require funding and represents one of the most cost-effective ways to promote energy efficiency. For instance, according to the Appliance Standards Awareness Project, adopting new efficiency standards for twelve products could potentially generate an eye-popping 54,100 BBTU in cumulative energy

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reductions and $425 million in cost savings by 2035[121]. The total energy reduction corresponds to roughly one third of Rhode Island's annual economy-wide energy consumption in 2035; the anticipated annual savings represent more than double the electric sector annual savings of the 2013 National Grid Energy Efficiency Program.

Similarly, in the building sector, higher upfront costs are offset by lifetime savings. Massachusetts estimated a 1-3% incremental cost for both residential and commercial buildings achieving a 20-30% energy reduction below base code[122]. Additionally, developers stand to benefit if consumers are willing to pay a premium for energy-efficient properties.

Design or Implementation Issues

Tying Rhode Island appliance standards to California's standards would delegate authority to another state, creating some uncertainties. Any new standards for buildings or appliances must be developed in partnership with applicable private sector stakeholders and implemented in a phased approach over time to minimize compliance costs and give industry time to adapt. Building energy labeling policies must be designed for both residential and commercial markets and may take years to implement.

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[121] http://www.appliance-standards.org/sites/default/files/2011_Model_Bill-RI.pdf
[122] http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf

11. MODERNIZE THE GRID

Develop recommendations for electric grid, rate, and regulatory modernization

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

The Comprehensive Energy Conservation, Efficiency, and Affordability Act of 2006 set forth Rhode Island's commitment to "System Reliability and Least-Cost Procurement" in Rhode Island[123]. Now Rhode Island General Law § 39-1-27.7[124], this mandate contains an innovative provision requiring electric distribution companies to develop annual system reliability plans for review by the Rhode Island Energy Efficiency and Resource Management Council (EERMC) and adoption by the Rhode Island Public Utilities Commission (RIPUC). System reliability plans evaluate the potential of "non-wires alternatives"—energy efficiency, demand response, distributed generation, and other methods—to curtail electric load in constrained areas of the distribution network. The latest 2013 System Reliability Procurement report focuses on deploying energy efficiency and WiFi thermostats in the particularly load constrained areas of Tiverton and Little Compton to defer a major investment in distribution system infrastructure[125].

In 2010, the Rhode Island General Assembly passed a bill that decoupled utility revenues from energy sales. Now Rhode Island General Law § 39-1-27.7.1[126], revenue decoupling realigned regulatory incentives such that investing in energy efficiency and overall system reliability is in the best interest of electric distribution companies. The statute also requires National Grid, the state's major electric gas distribution company, to submit an annual Electric Infrastructure, Safety, and Reliability Plan (Electric ISR Plan). The purpose of the Electric ISR Plan is to "protect and improve the electric delivery system

[123] http://www.ripuc.org/eventsactions/docket/3759-RIAct.pdf
[124] http://webserver.rilin.state.ri.us/Statutes/title39/39-1/39-1-27.7.HTM
[125] http://www.ripuc.org/eventsactions/docket/4367-NGrid-SRP-2013Plan(11-2-12).pdf
[126] http://webserver.rilin.state.ri.us/Statutes/title39/39-1/39-1-27.7.1.HTM

through repairing failed or damaged equipment, addressing load growth/migration, sustaining system viability through targeted investments driven primarily by condition, continuing a level of feeder hardening and cutout replacement, and operating a cost-effective vegetation management program" [127]. Costs are recovered through an annual rate reconciliation mechanism.

Least-Cost Procurement and Revenue Decoupling form the existing basis for aligning electric rates and regulation with the goal of cost-effective system reliability in Rhode Island. To truly move towards the "utility of the future", however, further efforts to address grid modernization are needed. In July of 2013, Massachusetts released an Electric Grid Modernization Report to the state Department of Public Utilities[128]. The report identified both customer-facing and grid-facing options to support the intended outcomes of a modernized electric grid: 1) preventing power outages; 2) reducing the impact of outages; 3) optimizing demand; 4) integrating distributed resources; and 5) workforce and asset management. Establishing a working group to examine the results of the Massachusetts Grid Modernization Report and preparing a similar report taking into account the unique regulatory and rate structures in Rhode Island would help the state begin to chart a path forward on modernizing the electric grid and enhancing system reliability.

> "As new smart grid and clean energy technologies become increasingly cost-competitive and sophisticated, the traditional model of distribution system management must adapt"

Summary

This policy recommends convening a working group to develop recommendations for electric grid, rate, and regulatory modernization in Rhode Island. The working group should convene the appropriate set of stakeholders to examine key questions including: current status of electric grid infrastructure modernization in Rhode Island; modernization objectives and an implementation strategy for customer- and grid-facing elements; evaluating costs and benefits; cost recovery; customer engagement; and security and privacy concerns.

Experience in Other States

Massachusetts released an Electric Grid Modernization Report in July of 2013[129]. New York established a public-private partnership called the Smart Grid Consortium in 2008[130] that continues to focus on grid modernization activities[131]. Other northeast states including Pennsylvania, Vermont and Maine rank in the top 15 of GridWise's grid modernization index[132]. Massachusetts already has a Time of Use pricing rate (R-4) established in the Massachusetts rate tariff with National Grid[133]. Time of Use pricing is also implemented in Connecticut power rate tariffs[134].

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[127] http://www.ripuc.org/eventsactions/docket/4382-NGrid-2014-ISR-Electric(12-28-12).pdf
[128] http://magrid.raabassociates.org/
[129] http://www.mass.gov/eea/docs/dpu/electric/grid-mod/ma-grid-mod-working-group-report-07-02-2013.pdf
[130] http://www.nyserda.ny.gov/Statewide-Initiatives/NYS-Smart-Grid-Consortium.aspx
[131] http://nyssmartgrid.com/innovation-highlights/new-york-state-grid-modernization-activities/
[132] http://www.gridwise.org/uploads/reports/GWA_13_GMIReport_FINAL.pdf
[133] http://www.nationalgridus.com/masselectric/home/rates/4_tou.asp
[134] http://www.cl-p.com/downloads/TOU%20BRO.pdf?id=4294986199&dl=t

Rationale

What is the Need?

The design and operation of the electric distribution grid has changed little over the past century. As new smart grid and clean energy technologies become increasingly cost-competitive and sophisticated, the traditional model of distribution system management must adapt. Over the coming decades, investments in the grid of the future—grid hardening, non-wires alternatives, advanced metering infrastructure (AMI) technologies, distributed generation, and energy storage—offer the potential to yield substantial consumer and system benefits. Implementing concomitant improvements to rate and regulatory regimes will help accelerate the integration of non-conventional resources and support the development of a more resilient, reliable, efficient and flexible electric grid.

Alignment with RISEP Goals/Modeling

All future energy scenarios modeled by Navigant showed increases in energy storage, renewable generation, electric vehicles, and other distributed energy resources. The electric distribution grid of the future must provide a platform to effectively integrate and facilitate the adoption of these technologies. Furthermore, grid modernization will assist efforts to meet the RISEP energy security target of increased fuel diversification by supporting a growth in electric sector renewable energy and increased electrification of the thermal and transportation sectors.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 39-1-27.7 provides the statutory basis for system reliability procurement. Rhode Island General Law § 39-1-27.7.1 provides the statutory basis for revenue decoupling.

Lead/Responsible Actor

Rhode Island Public Utilities Commission
Rhode Island Division of Public Utilities
Rhode Island Office of Energy Resources
Rhode Island Energy Efficiency and Resource Management Council
Electric Distribution Companies

Expected Costs/Potential Funds

Electric distribution companies will likely need to incur significant costs to make grid modernization investments. However, as system reliability least-cost procurement shows, alternative approaches to traditional “poles and wires” distribution planning can offer more cost-effective options for enhancing

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electric sector reliability. New technologies, rate and regulatory structures offer the possibility for additional least-cost approaches to achieving system reliability through grid modernization. Current law allows for cost recovery of such measures through system benefits charges.

Design or Implementation Issues

Current Rhode Island law limits system reliability efforts to those that are shown to be least-cost. Some grid modernization efforts might provide net lifetime savings, but require a large upfront capital expenditure. Furthermore, newer technologies may require further study to determine economic effects and improved methodologies for valuing costs and benefits. Finally, proposed grid modernization measures must account for and address security, privacy, and interoperability concerns.

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12. EXPAND THE RENEWABLE ENERGY STANDARD

Increase the Renewable Energy Standard beyond 16% by 2019

ESTIMATED NEED: ≥40% RENEWABLE ENERGY BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

In 2004, the Rhode Island General Assembly enacted a Renewable Energy Standard (RES)[135]. Now Rhode Island General Law § 39-26, the RES sets a statewide target of 16% renewable energy by 2019. Electric distribution companies and non-regulated power producers comply with the mandate by supplying an increasing percentage of their retail electric sales from renewable energy resources. Eligible renewable energy resources include solar, wind, wave, geothermal, small hydropower, biomass, and fuel cells. The current statute calls for the minimum RES level of 16% in 2019 to be "maintained unless the [Public Utility Commission] shall determine that such maintenance is no longer necessary for either amortization of investments in new renewable energy resources or for maintaining targets and objectives for renewable energy"[136].

Summary

This policy recommends increasing the Renewable Energy Standard beyond 16% by 2019. Achieving the RISEP security, cost, and sustainability targets will likely require a 40% RES by 2035 at a minimum, equivalent to a 1.5% annual increase in the mandate after 2019. The RES, however, is only one in a suite of policy tools Rhode Island can use to achieve its electric sector clean energy supply goals. Therefore, in determining the appropriate level for the RES expansion, the General Assembly should deliberate closely with stakeholders to carefully analyze a portfolio of strategies—in-state renewable procurement, out-of-

[135] http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26/INDEX.HTM
[136] http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26/39-26-4.HTM

state renewable procurement, and the general RES market mandate—and select an optimal and prudent balance that sets the state on pace to meet the RISEP security, cost, and sustainability targets.

Experience in Other States

As of March 2013, 30 states and the District of Columbia had enacted Renewable Portfolio Standards, and eight other states had set voluntary goals[137]. Compared to existing RPS mandates and goals in other northeastern states, Rhode Island's standard of 16% by 2019 could be viewed as conservative:

Table: Northeast State RPS Mandates & Goals[138]

State	Target
Connecticut	27% by 2020
Maine	40% by 2017
Massachusetts	15% by 2020, and 1% each year thereafter
New Hampshire	24.8% by 2025
New York	29% by 2015
Rhode Island	16% by 2019
Vermont	20% by 2017 (non-mandated goal)

Rationale

What is the Need?

Market barriers still exist preventing many types of renewable energy generation facilities from competing on a level playing field with their fossil-fuel counterparts. For example, many of the harmful externalities associated with fossil fuel generation are never monetized, yet the costs—in terms of quality of life, human health, and our environment—are borne in full by society. Also, many renewable energy technologies are at an earlier stage of commercialization compared to more established fossil-fuel based technologies. Regulatory mandates like the Renewable Energy Standard are a proven method to address these market barriers, stimulating demand for and driving investment in more renewable energy generation.

"Achieving the RISEP security, cost, and sustainability targets will likely require a 40% RES by 2035 at a minimum"

Alignment with RISEP Goals/Modeling

The Navigant modeling considered scenarios with substantial renewable energy expansion. Scenario 1 targeted a 40% RPS, resulting in electric sector GHG reductions of 35% achieved through a mix of in-state distributed generation and out-of-state procurement of renewables. Scenario 3 targeted a 75% RPS, resulting in electric sector GHG reductions of 56% achieved mostly through REC purchases from over 1,000 MW of on-shore wind in northern New England. Scenario 3 was the only scenario to meet the RISEP target of 45% reductions in economy-wide GHG emissions. This suggests that a 75% RPS might be required to achieve the sustainability target, an exceptionally ambitious mandate by current standards. However, the Navigant analysis did not explicitly distinguish between overall RPS targets in

[137] http://dsireusa.org/rpsdata/index.cfm
[138] http://www.dsireusa.org/incentives/index.cfm?SearchType=RPS&&EE=0&RE=1

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the scenarios and the expansion other key renewable energy policy levers that are currently mutually exclusive from the RES, such as the Long Term Contracting (LTC) Standard for Renewable Energy, Distributed Generation (DG) Standard Contracts Program, or Net Metering. Combining a more modest RES increase with an expansion of these separate programs could result in an overall portfolio of clean energy procurement programs that combine to achieve the GHG target.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 39-26 established the Renewable Energy Standard.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Office of Energy Resources
Rhode Island Public Utilities Commission
Electric Distribution Companies
Non-Regulated Power Producers

Expected Costs/Potential Funds

During Compliance Year 2011, National Grid incurred a cost of $8.43 million to comply with the RES[139]. These costs are projected to rise as the mandate increases[140]. All costs associated with the electric distribution company's RES compliance—including the procurement of RECs—are passed on to Rhode Island's electric customers through a monthly charge on their electric bills. For the ~30% of customers served by competitive suppliers, it is assumed that RES compliance costs are similarly passed on to them in their electric rates, but this data is currently unavailable. Further increases in the RES will likely create additional costs to ratepayers. It is possible, however, that as the cost of renewable energy continues coming down, the pace of deployment could increase such that REC supply outstrips demand and the rate of growth in compliance costs slows. Furthermore, increasing amounts of renewable energy will likely produce other benefits and savings to consumers in the form of price hedging against volatile fossil fuel prices and wholesale power market price suppression.

[139] http://www.ripuc.org/utilityinfo/PUC-RES-AnnualReport2011.pdf
[140] http://www.ripuc.org/eventsactions/docket/4404-NGrid-Presentation(10-3-13).pdf

Design or Implementation Issues

Renewable energy developers often require the security of long-term power purchase agreements to obtain financing for project development. Since RES compliance only requires the purchase of RECs, not power, the mandate only assures project developers supplemental operating revenue in the form of RECs but does not address upfront cost barriers. Therefore, policymakers should consider pairing increases in an RES policy with increases in long-term contracting provisions of existing law.

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13. EXPAND RENEWABLE ENERGY PROCUREMENT

Increase the share of renewable energy in Rhode Island's electricity supply portfolio through a mix of clean energy imports, distributed renewable generation, and utility-scale in-state projects

ESTIMATED NEED: MINIMUM ~300 MW RENEWABLE ENERGY BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Over the past decade, Rhode Island's Renewable Energy Standard (RES) (R.I.G.L. §39-26) has remained the lynchpin of state renewable energy policy. The RES requires electric distribution companies and non-regulated power producers to supply 16% of power sold to end users in Rhode Island from renewable resources by 2019[141]. In the years since its enactment in 2004, however, Rhode Island policymakers concluded that the RES does not on its own sufficiently address certain key market barriers inhibiting the increased adoption of renewable energy. The most fundamental barrier in question—a guaranteed revenue stream that renewable energy developers can "take to the bank" to attract investors and secure financing for project development.

In response to this concern, the General Assembly passed a series of laws mandating the procurement of renewable energy in Rhode Island. Unlike the RES, which only requires electricity providers to purchase renewable energy certificates (RECs) in order to comply, these procurement laws require Rhode Island's primary electric distribution company to enter into long-term "power purchase agreements" (PPA) with renewable energy generators for both RECs and power.

The first of these laws, enacted in 2009, was the Long-Term Contracting Standard for Renewable Energy (LTC) (R.I.G.L. § 39-26.1). The LTC requires electric distribution companies to annually solicit proposals

[141] http://webserver.rilin.state.ri.us/Statutes/title39/39-26/index.htm

from renewable energy developers and to enter into long-term contracts with terms up to 15 years for an ultimate total of 90 MW of renewable capacity by December 2013[142].The Long Term Contracting Standard also provides for PPAs specifically for an offshore wind demonstration project at Block Island and a utility-scale offshore wind project in federal waters.

By 2011, there was a growing recognition that the LTC was not adequately supporting the development of small renewable energy projects in the State[143]. In response, the Rhode Island General Assembly passed a host of new laws aimed at encouraging the expansion of in-state renewable energy generating capacity, including a landmark renewable energy procurement provision establishing Distributed Generation (DG) Standard Contracts (R.I.G.L. §39-26.2)[144]. This law set forth minimum capacity targets for electric distribution companies to purchase RECs and power from renewable energy projects located in their load zone, ramping to a total of 40 MW of nameplate capacity by the end of 2014.

At the same time that Rhode Island lawmakers sought to promote in-state renewable generation, state and regional efforts signaled movement towards increasing clean energy imports into New England. In 2013, Governor Lincoln Chafee's "Energy Reform Act" proposed requiring that electric distribution companies solicit proposals and enter into contracts for up to 150 MW of large-scale hydropower resources, contingent on approval by the Public Utilities Commission[145]. In December 2013, the New England Governors announced a collaborative effort to develop a regional energy infrastructure plan that would guide strategic investments in natural gas infrastructure and electric transmission to access large-scale, low- and no-carbon resources, such as hydropower[146].

Summary

This policy recommends increasing the share of renewable energy in Rhode Island's electricity supply portfolio through a mix of clean energy imports, distributed renewable generation, and utility-scale in-state projects. This includes expanding the LTC and DG programs, maintaining the state's commitment to offshore wind generation located in state and federal waters, and participating in regional collaborations to expand New England's access to low- and no-carbon electric resources, such as Canadian hydropower and on-shore wind. Achieving the RISEP security, cost, and sustainability targets will require the procurement of an estimated 300 to 600 MW of total renewable generation capacity, inclusive of procurements from existing programs. Additional REC purchases or clean energy imports from renewable generation facilities located in neighboring states and regions will likely be needed to meet the overall GHG reduction target.

The most prudent way to craft a renewable procurement strategy that meets the RISEP targets is setting a clear, long-term vision for renewable energy and then identifying least-cost pathways toward meeting the ultimate goal. In order to do so, Rhode Island must first develop and apply standardized cost/benefit metrics for renewable energy that will: 1) support an advanced understanding of the net benefits

[142] http://webserver.rilin.state.ri.us/Statutes/title39/39-26.1/INDEX.HTM
[143] http://www.rilin.state.ri.us/Reports/REPORT%20%20Small%20Biz%20renenergy.pdf
[144] http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26.2/INDEX.HTM
[145] http://webserver.rilin.state.ri.us/BillText13/HouseText13/H6018.pdf
[146] http://www.nescoe.com/uploads/NewEngGovEng12-05-13.pdf

renewable energy procurement programs provide Rhode Island; and 2) help identify a least-cost combination of imports and in-state development that set the state on pace to achieve long-term clean energy goals.

Experience in Other States

Other states in New England have enacted renewable procurement policies similar to Rhode Island. Section 83A of the Green Communities Act requires Massachusetts electric distribution companies to solicit proposals from renewable energy developers for long-term contracts for up to 4% of their annual load[147]. In Connecticut, Public Act 13-303 authorizes regional renewable energy solicitations and procurements[148]. All New England states are currently evaluating a regional strategy for increasing Canadian clean energy imports[149].

Rationale

What is the Need?

Existing RPS mandates throughout New England help bolster demand for renewable energy in the region. Even with these policies in place, however, additional key market barriers impede the growth of renewable energy. A key hurdle is the high upfront capital and financing costs associated with the development of new renewable energy projects. Typically, developers need the security of a guaranteed, long-term revenue stream—often in the form of a PPA—to attract project financing. The term length of these PPAs can be 15 years or more. In restructured electric markets like New England, however, supply contracts between electric distribution companies and power generators are usually signed on a much shorter-term basis—from several months to a few years in length. Long-term PPAs help ameliorate this issue.

"Achieving the RISEP security, cost, and sustainability targets will require the procurement of an estimated 300 to 600 MW of renewable generation capacity"

Alignment with RISEP Goals/Modeling

The Navigant modeling considered scenarios with substantial renewable energy expansion. In-state renewable builds range from 266 MW to 560 MW among the scenarios. All scenarios assume that the 30 MW Block Island offshore wind demonstration project and the 150 MW utility-scale offshore wind project (as provided for in the LTC mandate) are both built. Additionally, the Navigant modeling assumes that a new 1,200 MW transmission line from Canada comes online, bringing low-carbon hydropower generation into the New England regional power mix.

To drive the overall level of electric sector renewable deployment, Navigant set overarching RPS targets for each scenario. To meet the RPS target for each scenario, Navigant modeled both procurement of actual power from in-state renewable resources and also REC purchases (not power) from renewable resources located out-of-state. The relative balance of power procurement versus REC purchases

[147] https://malegislature.gov/Laws/SessionLaws/Acts/2012/Chapter209
[148] http://www.cga.ct.gov/2013/ACT/PA/2013PA-00303-R00SB-01138-PA.htm
[149] http://www.nescoe.com/uploads/NewEngGovEng12-05-13.pdf

depended on the main focus of the scenario—security, cost-effectiveness, or sustainability. In Scenario 1, for example, which prioritized energy security, Navigant emphasized in-state renewable procurement to result in a more localized, resilient, and reliable Rhode Island power portfolio. In Scenario 3, on the other hand, which prioritized sustainability, Navigant emphasized REC purchases from regional renewable energy resources—northern New England wind—in order to meet aggressive carbon reduction targets at a presumably lower cost—though the potential need for new transmission is a key unknown variable. In practice, Rhode Island policymakers will need to continually monitor the evolving renewable energy market to weigh the relative costs and benefits of localized versus regional procurements taking into account the overall necessary amount of renewable energy necessary to meet energy goals; the highly uncertain costs of transmission expansion to interconnect more distant resources; and technological and other efficiency-related advancements that could tilt the balance toward more cost-effective in-state development.

Figure: Navigant Scenario Modeling Renewable Energy Power Procurement

	BAU	Scenario 1	Scenario 2	Scenario 3
In-State Power Procurement (MW)				
Wind	16	70	20	70
Offshore Wind	180	180	180	180
Solar	66	302	66	66
Biomass	-	7	-	-
	262	**560**	**266**	**316**
Out-of-State REC Purchases (MW)				
Wind	-	228	11	1,111
	-	**228**	**11**	**1,111**
GRAND TOTAL (MW)	**262**	**788**	**277**	**1,427**

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 39-26 et seq. establishes the bulk of renewable energy procurement programs.

Lead/Responsible Actor

Rhode Island General Assembly

Rhode Island Office of Energy Resources
Rhode Island Renewable Energy Coordination Board
Rhode Island Distributed Generation Standard Contracts Board
Rhode Island Public Utilities Commission
ISO New England
Electric Distribution Companies
Non-Regulated Power Producers

Expected Costs/Potential Funds

All renewable energy procurement programs are supported by electric ratepayers through charges on the distribution portion of customer bills. The cost of the programs grows as more new PPAs come online. In 2012, the LTC and DG programs cost approximately $384,110 in 2012[150]; this figure is projected to grow to $21,500,000 in 2015[151]. As renewable energy technologies and markets continue to mature and technological advancements help drive down project costs, these programs may become increasingly cost-effective and competitive with purchases of conventional power. For example, pricing for some DG program contracts have fallen by approximately 50% since the start of the program[152]. In addition, during November 2013, the Rhode Island Public Utilities Commission approved a PPA for wind power and RECs between National Grid and Champlain Wind, LLC anticipated to be nearly $49 million below market over the length of the contract[153]. Several Massachusetts electric distribution companies also signed below-market PPAs for on-shore wind power in the fall of 2013[154]. Aside from the energy security and sustainability benefits of the increased renewable power generation, the programs will likely produce other economic benefits for consumers including hedging against volatile fossil fuel prices, deferring costly distribution and transmission infrastructure investments, and reducing wholesale power market prices.

Design or Implementation Issues

Under Generally Accepted Accounting Principles (GAAP), electric distribution companies view power purchase contracts as debt on their balance sheets. The long-term liability can affect the company's cost of borrowing and in turn, shareholder interests. Therefore, any effort to expand renewable energy procurement programs in Rhode Island must address this issue in order to garner buy-in from electric distribution companies.

Broader regional collaborations to increase clean energy imports require the complex balancing of multi-state interests and priorities. Siting and development of transmission lines necessary to deliver the power to load centers is a challenging, costly, and contentious process.

[150] http://www.ripuc.org/eventsactions/docket/4391-4315-NGrid-RR(4-11-13).pdf
[151] OER Data Request to National Grid
[152] http://www.ripuc.org/eventsactions/docket/4288-DGB-2014-DG-CP-Rept(12-16-13).pdf
[153] http://www.ripuc.org/eventsactions/docket/4437-NGrid-Ord21234_11-4-13.pdf
[154] http://www.mass.gov/eea/pr-2013/reneable-procurement.html

14. IMPROVE COMBINED HEAT AND POWER MARKET

Evaluate additional methods to speed the diffusion of CHP technologies into the Rhode Island marketplace

ESTIMATED NEED: 400 MW by 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Combined heat and power (CHP), also called cogeneration, refers to systems that generate both electricity and useful heat. CHP technologies can use a variety of fuels, including natural gas. CHP helps increase the efficiency of on-site energy use by recycling waste thermal energy produced as a byproduct of power generation for a number of end use applications including hot or chilled water, space conditioning, and process heat[155].

As of 2006, approximately 100 MW of installed CHP capacity existed in Rhode Island. A 2008 study conducted by NESCAUM found that the total technical potential for in-state CHP likely falls between 350 MW and 714 MW[156]. The study estimated that up to 330 MW of new CHP capacity could be cost-effectively installed by 2020.

The Least-Cost Procurement statute in Rhode Island, which requires electric and gas distribution companies to invest in all cost-effective energy efficiency before the acquisition of additional supply, includes CHP as an eligible technology[157]. In 2012, the Rhode Island General Assembly modified the statute by further stipulating that annual energy efficiency procurement plans must include "a plan for identifying and recruiting qualified combined heat and power projects, incentive levels, contract terms

[155] http://www.epa.gov/chp/basic/
[156] http://www.env-ne.org/public/resources/pdf/NESCAUM_CHP_Report.pdf
[157] http://webserver.rilin.state.ri.us/Statutes/title39/39-1/39-1-27.7.HTM

and guidelines, and achievable megawatt targets for investments in combined heat and power systems"[158]. Despite the favorable changes to the legislation, the American Council for an Energy-Efficient Economy (ACEEE), which issues an annual state energy efficiency ranking, only awarded Rhode Island 2 out of 5 points for CHP policies[159]. The ACEEE scoring criteria considers CHP interconnection standards, financial incentives, standby rates, output-based emissions regulations, eligibility to contribute towards meeting renewable or efficiency mandates, net metering, and other financing assistance[160].

Summary

This policy recommends evaluating additional methods to speed the diffusion of CHP technologies into the Rhode Island marketplace. Policymakers might consider the suitability of adding CHP as an eligible technology under an expansion and carve-out of the Renewable Energy Standard (RES) or perhaps under the Distributed Generation (DG) Standard Contracts Program. Other options include exploring ways to promote district heating and cooling systems, which can serve as a platform not only for CHP, but also for renewable thermal energy technologies.

Experience in Other States

Like Rhode Island, Massachusetts supports cost-effective CHP systems through their efficiency program; however, additional support for the technology exists through the Alternative Energy Portfolio Standard (APS)[161]. Assuming the APS Minimum Standard is met solely with CHP, Massachusetts will deploy 261 MW of new CHP by 2020[162]. Connecticut lists CHP as an eligible Class III resource in their Renewable Portfolio Standard, with a current target of 4% of load by 2020[163]. The Massachusetts Clean Energy Center currently is soliciting proposals for district energy systems, including those supporting CHP[164].

> "Achieving levels of CHP modeled in the RISEP will require a radical acceleration in the pace of deployment—an approximate quadrupling of in-state capacity over 20 years"

What is the Need?

CHP systems provide energy security, economic, and sustainability benefits[165]. Like other distributed, customer-sited resources, CHP can provide electric system benefits through reduced line losses and possible distribution infrastructure investment deferrals. From a customer perspective, cogeneration increases the efficiency of on-site energy usage and produces cost savings. CHP also reduces carbon emissions and can displace the use of higher-emitting sources of electricity or thermal energy.

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[158] http://webserver.rilin.state.ri.us/BillText12/housetext12/h8233.pdf
[159] http://aceee.org/files/pdf/state-sheet/rhode-island.pdf
[160] http://aceee.org/energy-efficiency-sector/state-policy/Rhode%20Island/211/all/195
[161] http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/rps-aps/rps-and-aps-program-summaries.html
[162] http://ccap.org/assets/Massachusetts-Policies-for-CHP_CCAP-Breger-Oct-2012.pdf
[163] http://www.ct.gov/pura/cwp/view.asp?a=3354&q=415186&puraNav_GID=1702
[164] http://www.masscec.com/solicitations/renewable-heating-and-cooling-and-district-energy-solicitation
[165] http://www.iea.org/media/files/chp/CHPbrochure09.pdf

Alignment with RISEP Goals/Modeling

Navigant estimated an upper bound for CHP market penetration of 400 MW by 2035, close to the economic potential identified by NESCAUM in their 2008 study. It is important to note that of all resources modeled in the scenarios, CHP alone was deployed at the "aggressive" target level of 400 MW in every scenario. This suggests that the use of CHP is a high-impact means to address each of the diverse RISEP priorities: energy security, cost-effectiveness, and sustainability. Achieving levels of CHP modeled in the RISEP, however, will require a radical acceleration in the pace of deployment—an approximate quadrupling of in-state capacity over 20 years.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* *	* * *

Implementation

Legal Authority

Rhode Island General Law § 39-1-27.7 provides the statutory basis for including CHP in Least-Cost Procurement. Rhode Island General Law § 39-26 establishes the Renewable Energy Standard (RES), which, with proper modifications, could potentially support CHP systems.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Energy Efficiency and Resource Management Council
Rhode Island Office of Energy Resources
Electric and Gas Distribution Companies

Expected Costs/Potential Funds

Current incentives for CHP funding come from the general energy efficiency program budget, which ultimately is recovered from ratepayers. Like all measures included in the programs, however, CHP projects must pass a cost-benefit screening analysis to demonstrate net economic savings. Therefore, the economic, environmental, and system benefits of installing CHP should outweigh the costs of promoting cost-effective projects in the state. Including CHP as an eligible technology under other existing renewable energy procurement policies may raise similar concerns regarding cost impacts to ratepayers.

Design or Implementation Issues

Including CHP under an expansion and carve-out of the RES would require modifications to the structure of the mandate and definitions of eligible technologies. Even with sufficient policy support in place, recruiting enough CHP projects to participate in programs may be challenging due to long project lead times and high upfront capital investments. According to the experience of National Grid, some of the main market barriers to adoption of CHP in Rhode Island include insufficient payback periods to meet

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customer requirements; poor consumer awareness and education; and lack of gas distribution infrastructure[166].

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[166] http://www.energy.ri.gov/efficiency/index.php - See September 17, 2013 EERMC Public Meeting on CHP

15. INSTITUTIONALIZE RENEWABLE THERMAL FUNDING

Create a sustained source of funding to help mature and expand the renewable thermal fuel market

ESTIMATED NEED: 15% RENEWABLE THERMAL ENERGY BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Although thermal energy consumption represents approximately one-third of energy use nationwide, policy support for renewable thermal and heating fuels—biomass, solar hot water, ground- and air-source heat pumps, advanced biofuels, and biogas—has traditionally been lacking[167]. Rhode Island is no exception to this rule. Electric renewable energy technologies benefit from a wide variety of policy incentives including the Renewable Energy Standard (RES), Net Metering, Distributed Generation (DG) Standard Contracts, and Long Term Contracting (LTC) for Renewable Energy Standard statutes. Dedicated funding for these technologies exists through the Renewable Energy Fund (REF), which allocates an annual pool of approximately $2 million of ratepayer funds collected through a monthly renewable energy surcharge on electric customer bills. Alternative Compliance Payments (ACPs) paid by obligated entities under the RES further supply the REF with additional funds during periods of REC shortages. Such ACP payments can be significant; during RES Compliance Year 2011, the REF received over $5.2 million in ACPs[168].

Renewable thermal technologies, however, do not benefit from the policy and funding structures that support electric technologies in Rhode Island. The REF lacks the ability to make substantial investments in thermal technologies because its funds originate from electric ratepayers. Other existing renewable policies only allow participation by electric technologies. Therefore, in order to transform the thermal

[167] http://ases.conference-services.net/resources/252/2859/pdf/SOLAR2012_0711_full%20paper.pdf
[168] http://www.ripuc.org/utilityinfo/PUC-RES-AnnualReport2011.pdf

market and increase penetration of renewable technologies within the thermal sector, a stable and consistent source of renewable thermal funding is critical.

Summary

This policy recommends the creation of a sustained source of funding to help mature and expand the renewable thermal fuel market. The General Assembly should consider the suitability of expanding the existing Renewable Energy Standard with a "carve-out" designated specifically for renewable thermal technologies. An RES carve-out, if structured appropriately, could help stimulate the renewable energy thermal market in two major ways: helping to defray upfront costs of renewable thermal fuel adoption, and providing a performance-based subsidy in the form of renewable energy credit operating revenue[169].

Furthermore, Rhode Island policymakers should support an institutionalized funding mechanism with a comprehensive renewable thermal strategy designed to address major market barriers including comparatively higher upfront costs, a dominant conventional heating and cooling industry unfamiliar with offering or delivering the technologies, poor public awareness of the economic, environmental, and societal benefits, and opaque regulatory standards[170].

Experience in Other States

States in the Northeast and elsewhere have started recognizing and addressing the significant gap in integrated policy support for renewable thermal fuels. Several of these jurisdictions are experimenting with using a familiar policy tool long used to incentivize renewable electric technologies—the Renewable Portfolio Standard, or RPS—as a new way of incentivizing the renewable thermal market. In 2012, legislation passed in New Hampshire creating a carve-out for eligible thermal renewable energy technologies in the state's RPS, and setting specific annual targets[171]. A legislative proposal in Massachusetts (SB1593, January 2013) would include renewable thermal in the state's Alternative Portfolio Standard[172]. Several other states—including Maryland, Colorado, New Mexico, and Connecticut—are considering including renewable thermal technologies in their RPS mandates, or have already done so.

"Although the thermal sector accounts for approximately one-third of Rhode Island energy consumption, virtually no renewable thermal market exists in the state to date"

Rationale

What is the Need?

Although the thermal sector accounts for approximately one-third of Rhode Island energy consumption, virtually no renewable thermal market exists in the state to date. Renewable thermal fuels can provide energy security, economic, and environmental benefits. Rhode Island, like other New England states,

[169] http://www.mass.gov/eea/docs/doer/pub-info/heating-and-cooling-in-aps.pdf
[170] http://www.mass.gov/eea/docs/doer/pub-info/heating-and-cooling-in-aps.pdf
[171] http://www.gencourt.state.nh.us/legislation/2012/SB0218.html
[172] https://malegislature.gov/Bills/188/Senate/S1593

relies essentially solely on carbon-based heating fuels that are either costly (petroleum-based), constrained (natural gas), or both—renewable thermal fuels can play a vital role in diversifying the State's thermal portfolio. Expanding the renewable thermal fuel market could help allay the economic burden of high heating costs on Rhode Islanders—in many instances, renewable thermal fuels offer lifecycle cost savings compared to petroleum-based heating fuels, and in some cases, natural gas[173]. Finally, it is becoming increasingly clear that renewable thermal must play a role in any greenhouse gas emission reduction strategy, without which ambitious reduction targets are not possible.

Alignment with RISEP Goals/Modeling

In order to meet the 45% carbon emission reduction target modeled in Scenario 3, the market share of renewable thermal technologies—such as biofuels, solar thermal and geothermal—must expand dramatically. The Navigant modeling suggests that a target of approximately 15% renewable thermal energy by 2035 would assist in achieving the security and sustainability outcomes modeled in both Scenarios 1 and 3. Compared to New Hampshire's renewable thermal fuel target of 2% by 2025, a 15% carve-out by 2035 is considerably ambitious; further detailed analysis would be needed to determine actual levels. Although the thermal sector promises the greatest potential for demand reduction out of all the sectors—perhaps as much as a 50% reduction[174] according to Navigant's modeling—greenhouse gas reduction targets will be impossible without further contributions from renewable thermal supply in meeting remaining heating loads not served by efficiency measures.

Figure: Rhode Island 2035 Thermal Demand

Rhode Island Thermal Demand - 2035

	2013	*BAU*	*Scenario 1*	*Scenario 2*	*Scenario 3*
Natural Gas	60%	60%	53%	74%	53%
Distillate Fuel Oil	34%	31%	25%	16%	25%
Other Petroleum	6%	8%	7%	9%	7%
Renewables/Electricity	0%	2%	15%	1%	15%
TOTAL	100%	100%	100%	100%	100%

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

[173] http://www.mass.gov/eea/docs/doer/renewables/renewable-thermal-study.pdf

[174] 2010 RI thermal demand was approximately 63,269 BBTU; 2035 RI thermal demand after aggressive demand reductions modeled in Scenario 2 was approximately 31,599 BBTU

Implementation

Legal Authority

Rhode Island General Law §39-26 established the Renewable Energy Standard. Authority to provide tax incentives for renewable energy including solar space heating, solar domestic hot water, and geothermal heat pumps exists in §44-57, but is inactive due to 2010 changes to §44-30-2.6.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Office of Energy Resources
Rhode Island Economic Development Corporation
Gas Distribution Companies
Unregulated Fuel Distributors

Expected Costs/Potential Funds

Program costs are uncertain, but likely to be in the millions of dollars. The results of the Navigant modeling show high levels of thermal sector capital investment in renewables and efficiency, ranging from approximately $30 million to $80 million in average annual expenditures above the BAU. In Scenario 1 and Scenario 3, a portion of this investment represents efforts to mature the renewable thermal fuel market. Despite the significant costs, failure to support a renewable thermal fuel market in Rhode Island will ignore a momentous economic opportunity to provide lifecycle cost savings[175] to consumers while stemming the tide of energy dollars exiting the state used to pay for petroleum and gas heating products.

Design or Implementation Issues

Identifying appropriate sources for the proposed level of renewable thermal fuel funding will be very challenging. Equitable and fair policy design should attempt to minimize cross-subsidization: ideally, those bearing the cost of a program should be the same group eligible to benefit from the program. Careful analysis should address the costs and benefits of various funding strategies and ways to ameliorate the economic impact of compliance on all possible obligated entities, whether electric and gas distribution companies, fuel distributors, or other groups.

[175] http://www.mass.gov/eea/docs/doer/renewables/renewable-thermal-study.pdf

16. EXPAND USE OF BIOFUELS

Increase the biodiesel content of distillate fuel blends used by Rhode Island's thermal and transportation sectors

ESTIMATED REQUIREMENT: B20 STANDARD BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Biofuels are liquid fuels derived from a variety of organic substances, including recycled cooking grease, plant residues, animal fats, and other renewable feedstocks. Biodiesel, an important member of the biofuel family, is most commonly used in thermal and transportation applications and typically blended with conventional petroleum products to create distillate fuel blends. "B5" blends, for instance, contain a mixture of 95% conventional oil and 5% biodiesel.

In order to promote the production and use of biofuels in the state, the Rhode Island General Assembly passed the Biodiesel Heating Oil Act of 2013[176]. Now Rhode Island General Law §23-23.7, the Act sets a compliance schedule ramping up to a 5% biofuel blend minimum standard for all heating oil sold in the State by July 1, 2017.

Summary

This policy recommends increasing the biodiesel content of distillate fuel blends used by Rhode Island's thermal and transportation sectors. Policymakers should evaluate the suitability of increasing the existing 5% biofuel blending mandate to a statewide B20 standard by 2035. Policy design should consider ways to expand the requirement beyond heating oil to all distillate fuels entering the State, allowing for penetration of B20 blends into the diesel fuel transportation market as well.

[176] http://webserver.rilin.state.ri.us/Statutes/TITLE23/23-23.7/INDEX.HTM

Experience in Other States

Many states across the nation have enacted biodiesel blend mandates, including a number in the Northeast. Massachusetts enacted the Clean Energy Biofuels Act in 2008, which required a minimum of 5% advanced biofuel in all diesel fuel and home heating fuel sold in the Commonwealth[177]. The Vermont Energy Act of 2011 requires a B7 blend for all heating oil sold in state by 2016[178]. In 2013, New York adopted a statewide B2 mandate by 2015[179]. As of 2013, Minnesota, Oregon, Washington, Pennsylvania, New Mexico, and Louisiana had instituted biodiesel blend mandates for diesel fuel used in on-road vehicles[180]. B20 biodiesel blends for transportation needs are already offered by retailers throughout the United States[181].

Rationale

What is the Need?

Rhode Island, like other Northeastern states, relies heavily on oil for heating and transportation needs. Nearly 40% of Rhode Islanders are home heating oil customers[182]. Many live in locations lacking either the population density or the geography (high water tables near the coast) to make natural gas main installation feasible. Increasing the biodiesel content of heating oil used by these customers will furnish automatic environmental benefits in the form of reduced carbon and criteria pollutant emissions in all end-use applications.

Alignment with RISEP Goals/Modeling

The results of Navigant's modeling indicate that under any scenario, distillate fuel oil will remain Rhode Island's most important thermal sector heating fuel second only to natural gas. In 2035, heating oil will likely account for at least 17% of thermal sector fuel consumption and perhaps as much as 32%. Because all signs indicate that Rhode Island will continue to rely on distillate fuel for the foreseeable future, it is necessary to explore ways to reduce the carbon intensity of the fuel source, while generating benefits to Rhode Island's economy in the form of a growing biodiesel industry. Navigant modeled increases in the biodiesel content of distillate heating fuels for both Scenario 1 and Scenario 2, targeting B10 and B20 blends respectively. Based on the results of the analysis, a B20 minimum mandate by 2035 would likely be necessary to assist in achieving the RISEP greenhouse gas emission reduction target of 45% below 2013 levels.

"A B20 minimum mandate by 2035 would likely be necessary to assist in achieving the RISEP greenhouse gas emission reduction target of 45% below 2013 levels"

DRAFT

[177] https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter206
[178] http://www.leg.state.vt.us/docs/2012/Acts/ACT047.pdf
[179] http://www.biodiesel.org/news/biodiesel-news/news-display/2013/06/24/industry-groups-cheer-new-york-bioheat-legislation
[180] https://www.federalregister.gov/articles/2012/09/27/2012-23344/regulation-of-fuels-and-fuel-additives-2013-biomass-based-diesel-renewable-fuel-volume#t-5
[181] http://www.biodiesel.org/using-biodiesel/finding-biodiesel/retail-locations/retail-map
[182] http://www.eia.gov/state/data.cfm?sid=RI#ConsumptionExpenditures

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law §23-23.7 provides the statutory basis for biodiesel blend requirements.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Office of Energy Resources
Rhode Island Department of Environmental Management
Distillate Fuel Wholesalers & Retailers

Expected Costs/Potential Funds

It is possible that either wholesale or retail distillate fuel distributors may face additional costs due to a biofuel blend mandate. Massachusetts found that some wholesale terminals, where product is typically blended, required capital upgrades as high as $3 million to install the necessary equipment for biodiesel storage, blending, and distribution[183]. No such concerns have been raised in Rhode Island to date, however, the situation warrants monitoring as mandate increases are considered. As a result of these compliance cost concerns, including uncertainties surrounding the reinstatement of the federal biodiesel blender tax credit, the Massachusetts Department of Energy Resources (DOER) suspended the Commonwealth's advanced biofuel content mandate in 2010[184].

Rhode Island should not incur significant additional direct costs due to the mandate, other than perhaps minor administrative costs to enforce compliance, if necessary. Because bioheat is a "drop-in replacement" fuel, customers are not faced with the same upfront cost barrier associated with fuel-switching to other heating fuels. Additionally, the incremental cost of blended fuel should be minimal so long as the price of oil remains relatively high.

Design or Implementation Issues

Most manufacturer warranties for engines, heating furnaces, boilers and other systems only guarantee components for use with B5 biodiesel blends or less. As policymakers consider biofuel blend mandate increases, equipment manufacturers will need to resolve any potential performance issues associated with higher biodiesel content in fuel blends. Even if manufacturers extend warrantees on new products to cover B20 blends, older systems may not be designed to accommodate such high levels of biodiesel content.

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[183] http://www.mass.gov/eea/docs/doer/renewables/renewable-thermal-study.pdf
[184] http://www.mass.gov/Eoeea/docs/Eoeea/docs/doer/renewables/biofuels-mandate-announcement-jun302010.pdf

Other potential concerns involve uncertainty associated with the amount and characteristics of biodiesel content in blends. Because ASTM International technical standards currently allow for B5 biodiesel blends to be treated as conventional fuel oil, the biodiesel content of product imported into a fuel terminal may be unclear[185]. Further blending could result in blends exceeding the minimum standard, posing warranty and insurance coverage concerns. Rhode Island wholesale distributors, however, currently test product at the fuel terminal for biodiesel content before blending, obviating this issue[186]. In a separate but related matter, Rhode Island law does not currently address the complexities surrounding the heterogeneous nature of biofuel products, which often display a wide range in actual carbon footprint. Massachusetts distinguishes between "conventional biodiesel" and "advanced biodiesel", which is defined by the Commonwealth as a fuel yielding at least a 50% reduction in lifecycle GHG emissions compared with fossil fuels[187]. As Rhode Island policymakers consider increases to Rhode Island's biofuel blending mandate, addressing this issue may become key to ensuring that the law it fulfills its intended environmental policy objectives.

DRAFT

[185] http://www.astm.org/SNEWS/ND_2008/D02E0_nd08.html
[186] Personal communication, Julie Gill, Oil Heat Institute, December 10, 2013
[187] https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter206

17. ADDRESS NATURAL GAS LEAKS

Review the progress of gas infrastructure repair and replacement in Rhode Island

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

According to a 2013 report prepared for U.S. Senator Edward Markey, over 2.6 trillion cubic feet of natural gas escaped through pipeline leaks in the nation's aging gas distribution infrastructure over the last decade, costing American consumers at least $20 billion[188]. The problem is particularly acute in New England, where some of the oldest and most leak-prone gas pipelines exist. A Conservation Law Foundation study in Massachusetts found that the quantity of lost and unaccounted for gas exceeded the amount of energy savings through the state's gas efficiency programs[189]. In Rhode Island, gas distribution system leaks represent the XX[190] largest source of greenhouse gas emissions in the state. In fact, a 2009 study suggested that Rhode Island lost 5.72% of its gas through leaks, about five times the rates of the Massachusetts utilities included in the report[191].

In Rhode Island, the Revenue Decoupling Act, now Rhode Island General Law §39-1-27.7.1, requires National Grid, the state's only natural gas distribution company, to submit an annual Gas Infrastructure, Safety, and Reliability Plan (Gas ISR Plan)[192]. The purpose of the Gas ISR Plan is to "protect and improve the gas delivery system through proactively replacing leak-prone gas mains and services, upgrading the system's pressure regulating systems, responding to emergency leak situations, and addressing conflicts

[188] http://www.markey.senate.gov/documents/markey_lost_gas_report.pdf
[189] http://www.clf.org/static/natural-gas-leaks/WhitePaper_Final_lowres.pdf
[190] DEM should be making the NESCAUM study results public very soon
[191] http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Benefits_Costs_TIRF_Jan2013.pdf
[192] http://webserver.rilin.state.ri.us/Statutes/title39/39-1/39-1-27.7.1.HTM

that arise out of public works projects"[193]. Costs are recovered through an annual rate reconciliation mechanism.

Summary

This policy recommends creating a task force or holding a PUC technical session to review the progress of gas infrastructure repair and replacement in Rhode Island and determine whether the programs are adequately meeting their intended safety and reliability objectives. Further evaluation should consider how well the current initiatives are assisting the State in meeting its cost and sustainability goals and whether any changes to the programs are warranted.

Experience in Other States

In the Northeast, at least three states including Maine, New York, and New Hampshire have promulgated regulations for natural gas leak classification and repair[194]. Several bills have been proposed in Massachusetts to address leaky natural gas pipelines. A bill proposed by Representative Lori Ehrlich (Bill H.2933) would establish a grading system for assessing and classifying leaks and set specific timeline requirements for repair[195].

Rationale

What is the Need?

National Grid's natural gas distribution system is large and extensive, delivering natural gas to approximately 253,000 residential, commercial, and industrial customers in 33 cities and towns in Rhode Island using a network of over 3,100 miles of mains[196]. According to an inventory of major sources of greenhouse gas emissions compiled by NESCAUM, natural gas lost through leaks in this distribution system rank as the XX largest source of greenhouse gas emissions in the state. Because natural gas is composed primarily of methane, a greenhouse gas over 20 times as potent as carbon dioxide, fugitive gas emissions represent a significant unaccounted for contributor to global warming. Addressing natural gas leaks in Rhode Island is therefore a necessary component of achieving the greenhouse gas reduction goals outlined in the RISEP.

> "Natural gas lost through leaks in this distribution system rank as the XX largest source of greenhouse gas emissions in the state"

Alignment with RISEP Goals/Modeling

The results of Navigant's modeling indicate that under any scenario, natural gas will continue to play an important role in Rhode Island's electric and thermal sectors and will play a growing part as a transportation sector fuel. As natural gas will remain the most significant economy-wide fuel in the State for the foreseeable future, it is imperative that fugitive gas emissions are accounted for and addressed in order to meet greenhouse gas emission reduction targets. Additionally, CLF estimates that lost and

[193] http://www.ripuc.org/eventsactions/docket/4380-NGrid-2013-ISR-Gas(12-27-12).pdf
[194] http://www.clf.org/static/natural-gas-leaks/WhitePaper_Final_lowres.pdf
[195] https://malegislature.gov/Bills/188/House/H2933
[196] http://www.ripuc.org/eventsactions/docket/4380-NGrid-2013-ISR-Gas(12-27-12).pdf

unaccounted for gas results in Massachusetts ratepayers shouldering additional costs to the tune of nearly $40 million per year. If costs are comparable in Rhode Island, accelerating the pace of leak repair will be necessary to meeting cost containment targets.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
*	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
*	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
*	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 39-1-27.7.1 provides the statutory basis for the Gas Infrastructure, Safety, and Reliability Plan.

Lead/Responsible Actor

Rhode Island Public Utilities Commission
Rhode Island Division of Public Utilities and Carriers
Rhode Island Department of Environmental Management
Rhode Island Office of Energy Resources
Gas Distribution Companies

Expected Costs/Potential Funds

The costs of upgrading the gas distribution system are included in the gas company's revenue requirement and reconciled as part of the annual rate case. Therefore, ratepayers are ultimately shouldering the cost of the repairs. However, costs associated with any unresolved fugitive gas emissions are paid annually for perpetuity by ratepayers as noted above. Therefore, paying for leak repair investments helps permanently remove this additional cost imposed on ratepayers.

Design or Implementation Issues

The basis for gas repair investments exists through the Gas Infrastructure, Safety, and Reliability Plan.

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18. REDUCE VEHICLE MILES TRAVELED

Invest in alternative modes of transportation; promote sustainable development and land use practices; and pilot programs incentivizing reduced discretionary driving

ESTIMATED NEED: ≥5% VMT REDUCTION & ≥DOUBLING OF PUBLIC TRANSIT RIDERSHIP

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Just like in other sectors, the least-cost way to reduce impacts of transportation energy consumption is by reducing demand. In the transportation sector, energy use is a function of vehicle efficiency and vehicle-miles-traveled (VMT). In 2012, the most recent year with available data, Rhode Island drivers drove an estimated 7,834 million miles[197]. Total VMTs in Rhode Island have actually declined in recent years, by approximately 6% between 2007 and 2012.

Several methods exist to reduce VMTs. The simplest way is to decrease the absolute number of single-occupancy vehicle trips by promoting alternative modes of transportation including mass transit (rail, bus, bus rapid transit, streetcars, etc.) and active transit (biking, walking, etc.). Ridesharing, car-share programs, and flexible workplace policies also accomplish this objective. A second option is reducing the absolute length of single-occupancy vehicle trips by encouraging higher density patterns of development or changes in behavior. Promoting smart land use planning through the use of tools such as open space conservation, property tax policies, subdivision and zoning regulations, and strategic deployment of economic development funding can all assist in directing growth towards existing built-up areas. Innovative incentive or education programs can encourage drivers to modify driving habits and reduce their usual amount of travelling.

[197] http://www.dot.ri.gov/documents/highwaysafety/FFY_2014_Hwy_Safety_Plan_20130827.pdf

A number of existing long-term policies, plans, and programs in Rhode Island address VMT reductions in Rhode Island. These include the Long Range Transportation Plan "Transportation 2035" (LRTP 2035)[198], the "Growing Smart with Transit" Transit 2020 Working Group Report[199], the "Providence Metropolitan Transit Enhancement Study" commissioned by the Rhode Island Public Transit Authority (RIPTA) with support from the City of Providence[200], and the Rhode Island State Land Use Policies and Plan "Land Use 2025"[201]. The LRTP 2035 provides a number of specific recommendations regarding VMT reductions, chiefly in the "Transit", "Bicycle", "Pedestrian", "Intermodal", and "Land Use and Corridors" sections.

Summary

This policy recommends investing in alternative modes of transportation; promoting sustainable development and land use practices; and piloting programs incentivizing reduced discretionary driving. Rhode Island should implement the recommendations proposed by the planning efforts of RIPTA, the Division of Planning, and the Department of Transportation, which project substantial security, economic, and sustainability benefits accruing to the state through various initiatives to reduce VMTs. In order to do so, policymakers must find a long-term solution for sustainably funding mass transit and other transportation programs.

Experience in Other States

Many states have implemented policies and plans to reduce VMTs. The American Council for an Energy Efficient Economy (ACEEE) ranks California and Washington as the leading states for transportation system efficiency policies[202]. Washington has set a very aggressive 30% reduction in annual VMTs per capita target by 2035[203]. In its Clean Energy and Climate Plan for 2020, Massachusetts identifies a series of transportation policies designed to reduce VMTs including a "Pay As You Drive (PAYD)" auto insurance pilot, sustainable development principles, GreenDOT, and a "Smart Growth Policy Package"[204]. Additionally, Massachusetts devotes nearly six times as much funding per capita as Rhode Island for statewide transit systems[205].

"The challenge for policymakers will be designing a creative transportation analog to the electric and gas Least-Cost Procurement model"

Rationale

What is the Need?

VMT reductions are a form of reducing demand—the single most cost-effective method to improve energy security and sustainability. Rhode Island energy policy, however, has historically placed much greater focus on least-cost procurement of demand resources in the electric and thermal sectors. The

[198] http://www.planning.ri.gov/documents/trans/LRTP%202035%20-%20Final.pdf
[199] http://www.transit2020.com/report.php
[200] http://www.transit2020.com/study/
[201] http://www.planning.ri.gov/documents/121/landuse2025.pdf
[202] http://aceee.org/sector/state-policy/transportation-system-efficiency
[203] http://aceee.org/energy-efficiency-sector/state-policy/washington/218/all/207
[204] http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf
[205] http://www.transit2020.com/study/report/RIPTA%20TransitStudy%20ExecSummary.pdf

state cannot afford to neglect demand reduction in a sector that accounts for approximately one third of all energy consumption in Rhode Island.

Alignment with RISEP Goals/Modeling

The results of Navigant's scenario modeling demonstrate ripe opportunities for transportation sector demand reduction beyond levels seen in the BAU forecast. In every scenario, transportation fuel consumption dropped by at least an additional 25% below the BAU. A portion of this reduction in overall demand represents increases in average vehicle efficiency, but a material component is attributable to reductions in VMTs.

Figure: Transportation Sector Aggregate Demand, 2013-2035

Transportation Sector Aggregate Demand, 2013-2035

	DEMAND (BBTU)			% REDUCTION
	2013	*2023*	*2035*	*2013 - 2035*
BAU	60,973	56,906	55,811	8%
Scenario 1	60,973	48,187	38,616	37%
Scenario 2	60,973	45,383	35,392	42%
Scenario 3	60,973	51,514	40,364	34%

Reductions in VMTs modeled by Navigant represent both non-transit related activities (telecommuting, bicycling, walking, etc.) and also reductions due to the expansion of public mass transit (expanded RIPTA ridership and light and heavy rail service). Only Scenario 3 included VMT reductions due to non-transit related activities, targeting a somewhat modest 5% reduction from current levels. In contrast, all scenarios considered increases in mass transit. The moderate increase in RIPTA ridership modeled in Scenario 1 and Scenario 2 (35 million annual rides in 2035) is generally consistent with the LRTP 2035 transit performance measure target of 31 million annual rides in 2030 (T.4.c). In Scenario 3, however, Navigant modeled aggressive increases in public transit ridership corresponding to the additional expansion of light and heavy rail options, with concomitant RIPTA ridership increases. Total ridership in 2035 under this scenario represents an approximate threefold increase above present day levels, a considerably ambitious target.

The VMT reductions modeled in every scenario place Rhode Island squarely on a path toward meeting the RISEP cost and sustainability targets. All scenarios display substantial reductions in fuel expenditures below the BAU, an expected impact of aggressive investment in efficiency measures, which to date has been lacking in Rhode Island's transportation sector compared to other sectors. All scenarios also show significant GHG emissions reductions; however, it is not explicitly apparent from the Navigant modeling results which component of transportation demand reduction yields the greatest GHG impact—vehicle efficiency improvements or VMT reductions. Future greenhouse gas policy should devote more detailed

analysis to better determine the exact level and areas of transportation sector efficiency investments required to achieve the RISEP target of 45% GHG reductions below 2013 by 2035.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Rhode Island General Law § 42-13 establishes the Rhode Island Department of Transportation. Rhode Island General Law § 42-11-10 establishes the Statewide Planning Program.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Department of Transportation
Rhode Island Division of Planning
Rhode Island Office of Energy Resources
Rhode Island Public Transportation Authority

Expected Costs/Potential Funds

VMT reductions achieved through smart growth development patterns or changes in behavior impose negligible incremental costs on Rhode Island consumers and businesses. Beyond the potential need for modest administrative funds, such programs simply attempt to influence investment or behavioral decisions that would occur anyway.

Mass transit programs, on the other hand, are expensive. Implementing the recommendations of the Providence Metropolitan Transit Enhancement Study would cost a total of nearly $127 million[206]. The results of Navigant's scenario modeling show very high levels of total transportation sector capital investment, ranging from approximately $140 million to $240 million in average annual expenditures above the BAU. Only a portion of this investment, however, represents upgrades to public transit; the remainder represents purchases of alternative fuel vehicles.

Transit programs suffer from a well-known crisis in sufficient and sustainable sources. Broader structural problems with transportation infrastructure funding are persistent at the state and national levels; it is beyond the scope of this policy brief to recap the issues in depth. Several studies including the 2008 Blue Ribbon Panel for Transportation Funding[207] and the 2011 Senate Commission on Sustainable

[206] http://www.transit2020.com/study/report/RIPTA%20TransitStudy%20ExecSummary.pdf
[207] http://www.dot.ri.gov/blueribbon/

Transportation Funding[208] examine transportation funding challenges in Rhode Island closely and propose potential solutions. Ultimately, the challenge for policymakers will be designing a creative transportation analog to the electric and gas Least-Cost Procurement model, based on the enduring, compelling argument that inexpensive demand-side resources are Rhode Island's best way to secure long-term, significant net economic and environmental gains in all sectors of the energy economy.

Design or Implementation Issues

Securing funding for public transit investments probably represents the most challenging obstacle to implementing cost-effective and sensible transportation sector demand reduction programs. Promoting sustainable development principles requires inter-agency coordination and action at the municipal level.

DRAFT

208 http://webserver.rilin.state.ri.us/SenateFinance/special_reports/Sustainable%20Transportation%20Funding%20Report.pdf

19. IMPROVE FUEL EFFICIENCY & REDUCE VEHICLE EMISSIONS

Continue to adopt the increasingly stringent vehicle emissions standards set by California up until 2025 and afterwards

ESTIMATED IMPACT: MINIMUM 12% BAU TRANSPORTATION GHG REDUCTIONS BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Authority to set standards for fuel efficiency and motor vehicle emissions falls under the purview of the federal government. The two primary agencies responsible for developing national standards are the U.S. Department of Transportation (DOT) National Highway Traffic Safety Administration (NHTSA) and the U.S. Environmental Protection Agency (EPA). The NHTSA promulgates fuel efficiency regulations through the Corporate Average Fuel Economy (CAFE) standards[209], and the EPA sets vehicle pollution standards, including for greenhouse gas emissions[210]. In 2010, the two agencies jointly issued a harmonized set of standards for the first time. Known as the "National Program", the first phase covered model years 2012 through 2016 and required a fleet-wide average of 250 grams CO_2 per mile for light-duty vehicles in 2016, equivalent to 35.5 miles per gallon if met only through fuel economy improvements[211]. In 2012, the agencies finalized standards for model years 2017 through 2025, which set historic standards of 163 grams CO_2 per mile for average light-duty vehicles in 2025, equivalent to 54.5 miles per gallon if met only through fuel economy improvements[212].

[209] http://www.nhtsa.gov/fuel-economy
[210] http://www.epa.gov/OTAQ/standards/index.htm
[211] http://www.epa.gov/otaq/climate/regulations/420f10014.pdf; http://www.gpo.gov/fdsys/pkg/FR-2010-05-07/pdf/2010-8159.pdf
[212] http://www.epa.gov/otaq/climate/documents/420f12051.pdf; http://www.gpo.gov/fdsys/pkg/FR-2012-10-15/pdf/2012-21972.pdf

Although the federal government sets nationwide standards, Section 177 of the Clean Air Act allows California to request a waiver to adopt stricter standards[213]. Other states may adopt California's standards, which are promulgated by the California Air Resources Board (CARB). Rhode Island is one of 15 "Section 177 states" that opt to apply vehicle emissions standards set by California[214]. In Rhode Island, the standards are set through air pollution regulations promulgated by the Rhode Island Department of Environmental Management (DEM) Office of Air Resources. As of July 2013, DEM had amended Air Pollution Control Regulation No. 37[215] to reflect the most recent CARB Low Emission Vehicle (LEV) III standards[216] and Zero Emission Vehicle (ZEV) requirements[217].

Because federal law preempts states from setting their own standards, adopting CARB standards is the only recourse available to Rhode Island to establish stricter regulations that improve fuel economy and vehicle emissions. As part of the landmark agreement that launched the National Program in 2010, however, California agreed to offer the CAFE standards as an alternative compliance method to meet the CARB standards[218]. This essentially aligns the CARB standards, and by extension, the Section 177 states, with the federal requirements. It is noteworthy, however, that if the CAFE standards are ever relaxed as a result of a mid-term evaluation planned for 2022 or due to any other reason, auto manufacturers will still need to meet the CARB standards for vehicles sold in California or the Section 177 states, including Rhode Island. This underscores the importance of Rhode Island continuing to adopt the California standards.

Summary

This policy recommends that Rhode Island continue to adopt the increasingly stringent vehicle emissions standards set by California up until 2025 and afterwards. Since federal law only allows states the ability to adopt a single more stringent standard as set by CARB, there is no legislative or regulatory action Rhode Island can pursue on its own. The state may also work to reduce vehicle emissions by stepping up enforcement of the idle reduction provisions in Rhode Island General Law § 23-23-29.2[219] and § 31-47.3-5[220] and increasing education and outreach promoting fuel economy and efficient driving habits.

Experience in Other States

Fifteen other states including Connecticut, Maine, Massachusetts, New York, and Vermont opt to use CARB vehicle emission standards.

Rationale

What is the Need?

[213] http://www.epa.gov/otaq/cafr.htm#state
[214] http://iaspub.epa.gov/otaqpub/display_file.jsp?docid=24724&flag=1
[215] http://sos.ri.gov/documents/archives/regdocs/released/pdf/DEM/7323.pdf
[216] http://www.arb.ca.gov/regact/2012/leviiighg2012/levfrorev.pdf
[217] http://www.arb.ca.gov/regact/2012/zev2012/zev2012.htm
[218] http://www.epa.gov/otaq/climate/letters/carb-commitment-ltr.pdf; http://www.arb.ca.gov/regact/2012/leviiidtc12/leviiifsorrev.pdf
[219] http://webserver.rilin.state.ri.us/Statutes/TITLE23/23-23/23-23-29.2.HTM
[220] http://webserver.rilin.state.ri.us/Statutes/TITLE31/31-47.3/31-47.3-6.HTM

Rhode Island's transportation sector accounts for over 40% of economy-wide fuel expenditures and greenhouse gas emissions, despite comprising just one-third of total energy consumption[221]. This is due to the comparatively high cost and carbon intensity of petroleum-based transportation fuels relative to natural gas, which dominates the state's electric, and to a lesser extent, thermal supply portfolios. Fuel economy and vehicle emissions improvements help promote energy efficiency in the transportation sector, the single most cost-effective method to improve energy security and sustainability. Because of the higher avoided cost of gasoline consumption, measures to reduce transportation demand represent some of the most cost-effective opportunities for energy efficiency of any sector. Furthermore, because vehicles bought today have expected lifetimes exceeding a decade, the base efficiency of these assets will have substantial and long-lasting impact on energy consumption, fuel expenditures, and emissions for years to come.

"If the CAFE standards are relaxed, auto manufacturers will still need to meet the CARB standards for vehicles sold in California or the Section 177 states, including Rhode Island"

Alignment with RISEP Goals/Modeling

The Navigant modeling projects BAU transportation sector carbon emission reductions of 12% below 2013 levels by 2035. The BAU model draws on information from the ENE Business-As-Usual Forecast, which includes the impacts of the most recent CAFE standards for model years 2017 through 2025. This suggests that simply achieving ambitious BAU emissions reductions—and concomitant cost savings—depends at least in part on realizing the vehicle efficiency and emissions improvements currently mandated by the federal program. Beyond 2025, additional fuel economy increases or vehicle emissions reductions will likely be necessary to meet the RISEP security, cost, and sustainability targets. According to Navigant's resource potential targets, the average efficiency of registered vehicles in Rhode Island will rise from about 19 miles per gallon to almost 27 miles per gallon in 2035 under BAU conditions. With appropriate policies in place, however, a fleet-wide average of 35 miles per gallon might be achieved during the same period. Reaching this level of fuel efficiency will probably require adopting stricter CARB standards absent a continuation of the federal program past 2025 or providing consumer incentives to purchase higher efficiency vehicles already offered by auto manufacturers, as described in Policy X.

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

Implementation

Legal Authority

Section 177 of the Clean Air Act

Rhode Island General Laws § 23-23 *et seq*

[221] http://www.eia.gov/state/data.cfm?sid=RI#ConsumptionExpenditures; Historical Baseline

Rhode Island Department of Environmental Management Regulation Air Pollution Control Regulation No. 37

Lead/Responsible Actor

Rhode Island Governor
Rhode Island Department of Environmental Management
Rhode Island Office of Energy Resources

Expected Costs/Potential Funds

Aside from minor administrative costs, adopting CARB emissions standards requires no additional state funds for regulation or targeted enforcement. Implementing the standards can add a modest cost to the price of purchasing an automobile; however, fuel efficiency improvements produce cost savings over the life of the vehicle. For instance, the EPA estimates that an average driver of a model year 2025 vehicle could enjoy an estimated $3,400 to $5,000 in net lifetime savings[222].

Design or Implementation Issues

Rhode Island does not have any direct authority to issue emissions standards; it can only opt to adopt more stringent CARB standards as they are promulgated.

DRAFT

[222] http://www.epa.gov/otaq/climate/documents/420f12051.pdf

20. PROMOTE ALTERNATIVE FUEL & ELECTRIC VEHICLES

Mature the market for alternative fuel and electric vehicles through ongoing efforts to expand fueling infrastructure, ease upfront costs for consumers, and address other barriers to adoption

ESTIMATED NEED: 25-40% ALTERNATIVE FUELS BY 2035

CRITERIA/SECTOR	POLICY TYPE	TIMEFRAME
•SECURITY •COST-EFFECTIVENESS •SUSTAINABILITY •ELECTRIC •THERMAL •TRANSPORTATION	•EXISTING •EXPANDED •NEW	•NEAR TERM (0-5 YEARS) •LONG TERM (0-20 YEARS)

Policy Description

Background

Nearly 920,000 vehicles are registered in Rhode Island[223], and almost all of these vehicles use motor gasoline or diesel for fuel[224]. Vehicles using alternative transportation fuels— biofuels, electricity, hydrogen, natural gas, propane, etc.—can often provide lifetime fuel savings, performance improvements, and reduced harmful emissions compared to conventional vehicles. Despite the economic and environmental benefits, a variety of market barriers currently discourage widespread adoption of these vehicles.

Rhode Island policymakers have begun exploring ways to address two of the primary barriers to alternative vehicle adoption: a lack of fueling infrastructure and high upfront costs to consumers. To address a need for electric vehicle public charging, Governor Lincoln Chafee announced in June of 2013 that the Rhode Island Office of Energy Resources (OER) would use funds from the American Recovery and Reinvestment Act (ARRA) of 2009 to purchase and install 50 electric vehicle charging stations around the state[225]. Also in 2013, two bills that would have provided a 30% tax credit for alternative fuel infrastructure—House Bill 5813[226] and Senate Bill 128[227]—were introduced but held for further study. A

[223] http://www.fhwa.dot.gov/policyinformation/statistics/2011/pdf/mv1.pdf
[224] http://www.eia.gov/state/seds/sep_sum/html/pdf/sum_btu_tra.pdf
[225] http://www.ri.gov/press/view/19599
[226] http://webserver.rilin.state.ri.us/BillText/BillText13/HouseText13/H5813.pdf
[227] http://webserver.rilin.state.ri.us/BillText/BillText13/SenateText13/S0128.pdf

dozen other fueling stations for compressed natural gas, biodiesel, and propane also exist in the state as of January 2014[228].

Several policy proposals have been put forward to help defray the upfront costs of alternative vehicles, including 2013 Senate Bill 129[229] and 2013 Senate Bill 28[230], which would have offered an excise tax exemption for electric vehicles and a similar exemption for sales and use taxes, respectively. Policy EN.3.f in the Rhode Island Long Range Transportation Plan "Transportation 2035" (LRTP 2035) proposed legislation establishing a revenue-neutral "Vehicle Efficiency Incentive Program", providing rebates to purchasers of fuel-efficient vehicles, funded by fees levied on purchases of inefficient vehicles[231].

In October 2013, Governor Chafee announced Rhode Island's participation in a multi-state effort to put 3.3 million zero-emission vehicles (ZEVs) on the road by 2025[232]. Through the initiative, the eight partner states will develop measurable goals for ZEV deployment; promote ZEV readiness through favorable building codes, electric rates, and metering options; increase ZEV purchases for public fleets; offer monetary and non-monetary incentives for ZEVs; and develop uniform standards including for signage, payment processes, and interoperability of networks[233].

"Alternative fuels could supply between 25% and 40% of Rhode Island's transportation energy needs in 2035"

Summary

This policy recommends maturing the market for alternative fuel and electric vehicles through ongoing efforts to expand fueling infrastructure, ease upfront costs for consumers, and address other barriers to adoption. The state should cultivate and maintain existing interagency collaborations between the Rhode Island Office of Energy Resources (OER), the Department of Transportation (DOT), the Department of Motor Vehicles (DMV) and the Department of Environmental Management (DEM), as well as stakeholder partnerships, namely Ocean State Clean Cities Coalition (OSCCC). These groups can provide ongoing forums to monitor alternative fuel vehicle market growth; evaluate the potential need for additional infrastructure; and identify regulatory reforms to facilitate increased market penetration. Separate but parallel grid modernization efforts should support discussions on how to smoothly integrate electric vehicles into the marketplace. In the near term, policymakers should evaluate the economic case for establishing a revenue-neutral "feebate" incentive program for purchasing higher-efficiency vehicles, including alternative fuel vehicles.

Experience in Other States

States around the country are implementing hybrid and electric vehicle incentives, including high-occupancy vehicle lane exemptions; monetary incentives; vehicle inspection or emissions test

[228] http://www.afdc.energy.gov/locator/stations/
[229] http://webserver.rilin.state.ri.us/BillText/BillText13/SenateText13/S0129.pdf
[230] http://webserver.rilin.state.ri.us/BillText/BillText13/SenateText13/S0028.pdf
[231] http://www.planning.ri.gov/documents/trans/LRTP%202035%20-%20Final.pdf
[232] http://www.ri.gov/press/view/20551
[233] http://www.mass.gov/eea/docs/dep/air/priorities/zev-mou-final.pdf

exemptions; and parking incentives[234]. As part of its Clean Energy and Climate Plan for 2020, Massachusetts proposed establishing a sliding-scale car sales tax, designed as a revenue-neutral means to encourage consumers to purchase efficient and alternative fuel vehicles[235]. As of January 2014, over 12,000 alternative fueling stations are already located throughout the United States[236].

Rationale

What is the Need?

Federal policy, namely the joint fuel economy and motor vehicle emissions standards promulgated by the U.S. Department of Transportation (DOT) National Highway Traffic Safety Administration (NHTSA) and the U.S. Environmental Protection Agency (EPA), will help nearly double the fuel efficiency of average vehicles by 2025[237]. The standards will spur auto manufacturers to offer not only higher-efficiency vehicles to consumers, but also an expanded selection of alternative vehicle types. As a state, Rhode Island has limited ability to influence the availability of alternative fuel vehicles; however, the state can hasten their adoption by influencing consumer choice through incentives and disincentives, and reducing market barriers.

Alignment with RISEP Goals/Modeling

All scenarios modeled by Navigant display an increase in the use of transportation alternative fuels: compressed natural gas, electric vehicles and biofuels[238]. This suggests that the adoption of alternative fuels provides underlying or explicit benefits in each of the security, economic, and sustainability categories. Although Navigant's modeling analysis demonstrated significant opportunities for transportation sector demand reduction—at least one-third in every scenario—it is clear that without increases in the market share of alternative fueled vehicles, it is very difficult or impossible to meet the RISEP targets. The results of the modeling suggested that alternative fuels could supply between 25% and 40% of Rhode Island's transportation energy needs in 2035. The expansion of alternative fuel markets will 1) support transportation sector fuel diversification displacing gasoline, the dominant fuel; 2) help contain and decrease transportation fuel costs by offering (in general) lower-cost alternatives to gasoline and other conventional fuels; and 3) assist in meeting the 45% greenhouse gas emission reduction target by further lowering the carbon intensity of the transportation fuel mix after demand reduction measures have been exhausted.

Natural Gas: The Navigant scenario modeling results showed major opportunities to expand the use of natural gas in transportation. Substantial increases in the consumption of compressed natural gas are already built into the BAU forecast. In Scenarios 1 and 2, natural gas' market share approximately doubles above and beyond the BAU, representing a dramatic increase to about 40% of the total sector

[234] http://www.ncsl.org/research/energy/state-electric-vehicle-incentives-state-chart.aspx#states
[235] http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf
[236] http://www.afdc.energy.gov/locator/stations/
[237] http://www.nhtsa.gov/About+NHTSA/Press+Releases/2012/Obama+Administration+Finalizes+Historic+54.5+mpg+Fuel+Efficiency+Standards
[238] With the exception of biofuels in Scenario 2 and natural gas in Scenario 3.

fuel usage. According to Navigant's resource targets, achieving this outcome roughly corresponds to the real-world equivalent of converting all public and private buses to natural gas.

Biofuels: Diesel fuel currently accounts for a material portion of Rhode Island transportation fuel consumption. Establishing a mandatory bioblend standard for transportation diesel fuel consumed in the state would assist in decreasing GHG emissions from vehicles using this fuel. For Scenario 3, Navigant modeled a B20 blend of biodiesel by 2035, equivalent to biofuels providing about 5% of total transportation fuel needs. Refer to Policy X for a more detailed description of the opportunities to expand the use of bioblends in Rhode Island.

Electric Vehicles: Navigant's scenario modeling showed increases in electric vehicles (EVs) in all scenarios. By 2035, the BAU shows 7,000 EVs; Scenarios 1 and Scenario 2 show 17,200 EVs; and Scenario 3 shows 84,900 EVs. Based on 2011 data[239] documenting 527,589 registered passenger vehicles in Rhode Island, Scenario 3 suggests that 20 years from now, 16.1% of all passenger cars could be EVs, equivalent to electricity accounting for approximately 4% of total transportation fuel consumption. Assuming a ten year average turn-over of the fleet, achieving this outcome would require an aggressive and concerted effort to replace conventional vehicles with EVs.

Figure: RI Transportation Demand 2035

Rhode Island Transportation Demand - 2035

	2013	*BAU*	*Scenario 1*	*Scenario 2*	*Scenario 3*
Gasoline	73%	56%	32%	29%	47%
NG	3%	13%	39%	42%	17%
DFO	16%	22%	19%	22%	19%
Jet-A	7%	8%	7%	7%	8%
RFO	0%	0%	0%	0%	0%
Propane	0%	0%	0%	0%	0%
E85	0%	0%	0%	0%	0%
Bio	0%	0%	2%	0%	5%
Electric	0%	0%	1%	1%	4%
TOTAL	100%	100%	100%	100%	100%

What are the Impacts/Benefits?

POLICY EFFECTIVENESS		
Electric Security	Thermal Security	Transportation Security
* * *	* * *	* * *
Electric Cost-Effectiveness	Thermal Cost-Effectiveness	Transportation Cost-Effectiveness
* * *	* * *	* * *
Electric Sustainability	Thermal Sustainability	Transportation Sustainability
* * *	* * *	* * *

[239] http://www.fhwa.dot.gov/policyinformation/statistics/2011/pdf/mv1.pdf

Implementation

Legal Authority

None currently exists.

Lead/Responsible Actor

Rhode Island General Assembly
Rhode Island Department of Transportation
Rhode Island Office of Energy Resources
Rhode Island Department of Environmental Management
Rhode Island Department of Motor Vehicles
Electric & Gas Distribution Companies
Rhode Island Public Utilities Commission

Expected Costs/Potential Funds

Alternative fueling infrastructure is costly. The state expended more than $780,000 in ARRA funds to site and install a network of 50 electric vehicle charging stations in Rhode Island during 2013[240]. A "feebate" incentive program for higher-efficiency and alternative fuel vehicles, however, could be designed as a revenue-neutral policy. Developing uniform standards, regulations, and policies to facilitate the adoption of alternative fuel vehicles require only administrative funding.

Design or Implementation Issues

Experience in Rhode Island with most alternative fuel vehicles is fairly new. In some cases, entirely new standards and regulatory structures must be developed to support deployment of these vehicles—for example, electric vehicles. Siting and managing alternative fueling stations also presents a challenge in terms of identifying suitable locations that balance the considerations of cost-effectiveness, public access, and visibility.

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[240] http://www.ri.gov/press/view/20373