Rhode Island State Energy Plan (RISEP)

EC3 Meeting, DEM

April 9, 2014

STATE OF RHODE ISLAND
OFFICE OF
ENERGY RESOURCES

What is the State Energy Plan?

- **The Rhode Island State Energy Plan (RISEP) is a long-range energy planning and policy document**
  - Statute requires five-year revisions; last update was in 2002
  - In 2013, OER worked with a twenty-member Advisory Council, stakeholder groups, and a consultant team to complete a 10-year update, with a planning horizon out to 2035
- **The RISEP is an element of the centralized and integrated State Guide Plan (SGP), which:**
  - Sets long-range state policy positions (generally twenty years)
  - Provides a means to evaluate and coordinate projects of state importance
  - Assures consistency of local plans
  - Provides a general background information source

Why do we need a State Energy Plan?

- **Gather Data, Set Goals, and Recommend Action**
  - Understand current and projected impacts of our energy usage
  - Discover opportunities to increase benefits to Rhode Island consumers, businesses, and communities
  - Provide policymakers with an overall picture of the complete array of actions needed to achieve energy goals
- **The RISEP provides necessary information to achieve a shared, positive, long-term energy vision for Rhode Island**

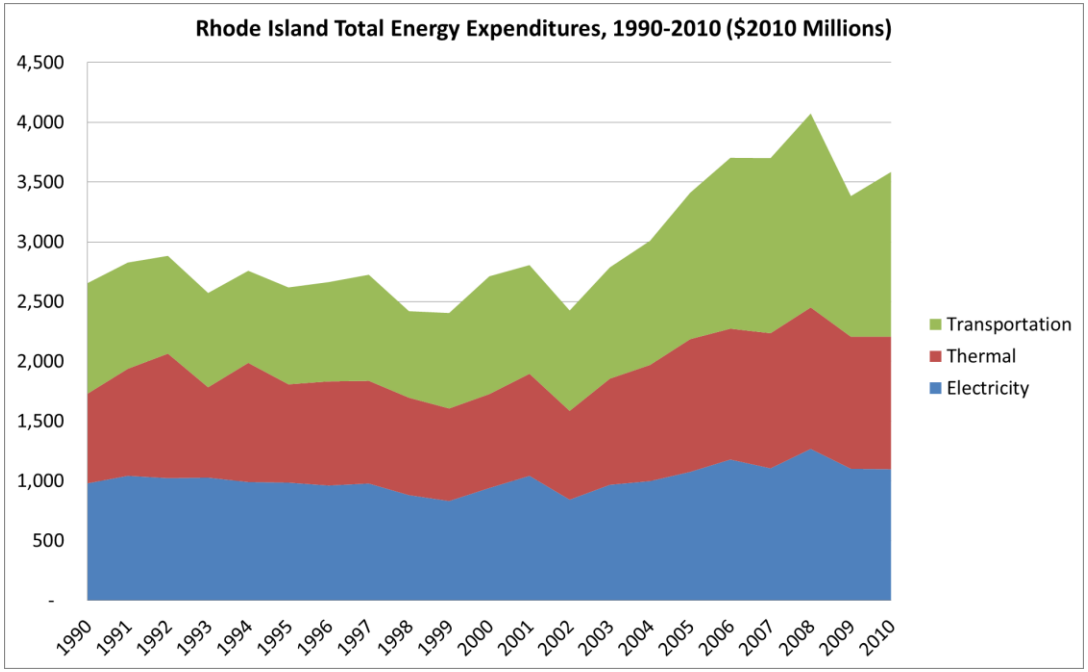
Why do we need a State Energy Plan?

- **RELIABILITY IMPACTS**
  - Rhode Island has experienced an increasing number of severe weather-related events over the last four years
  - These events contribute to power outages, fuel supply, and other energy assurance issues

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

Why do we need a State Energy Plan?

- **ECONOMIC IMPACTS**
  - In Rhode Island's ~$43 Billion economy, energy plays a significant role
  - Total annual energy expenditures have grown from $2.5 Billion to over $3.5 Billion in the last ten years

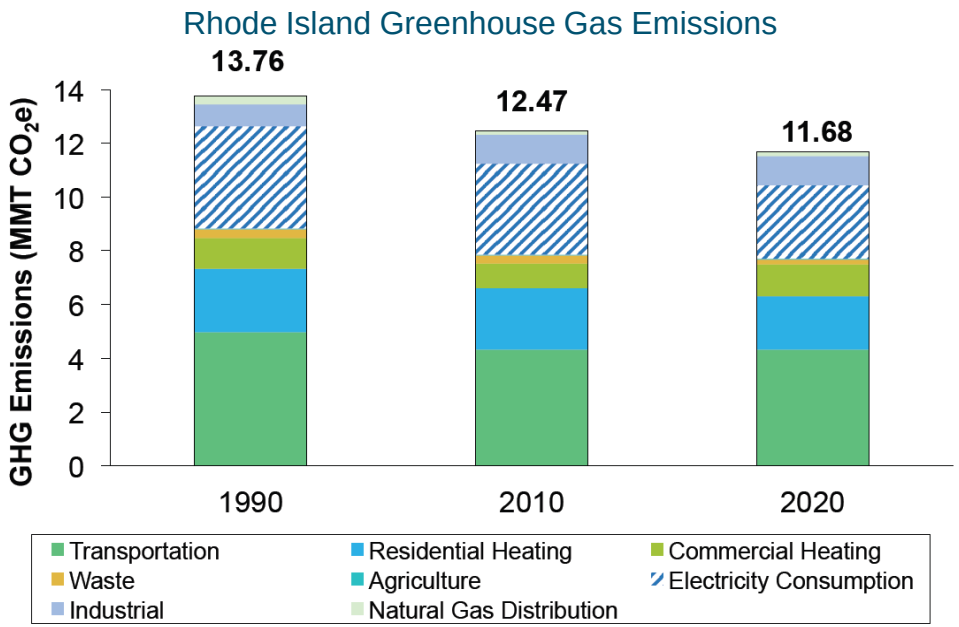


Source: EIA SEDS

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

Why do we need a State Energy Plan?

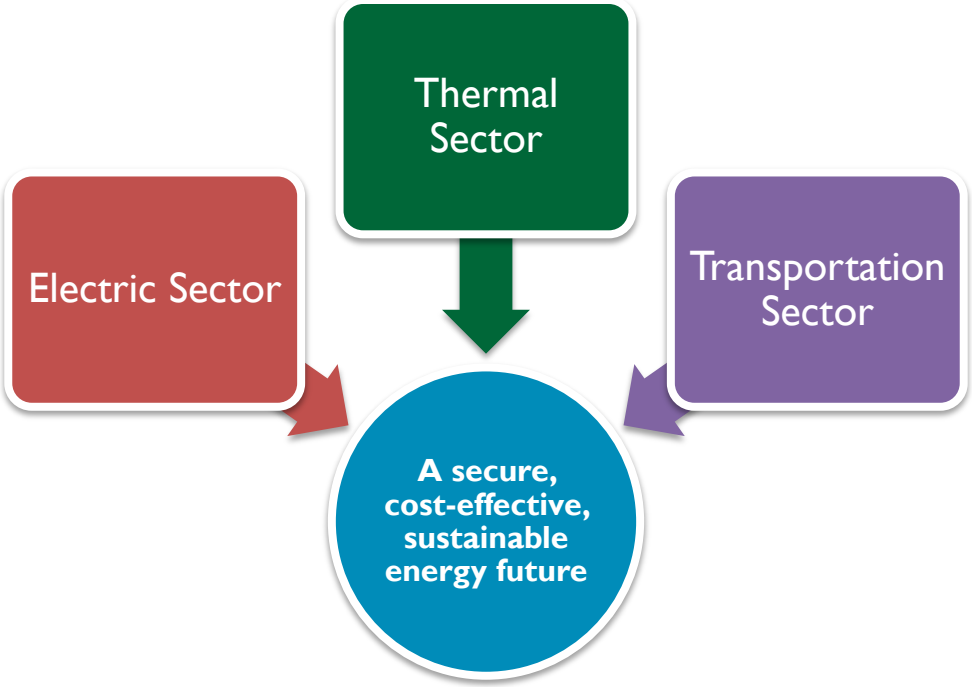
- **ENVIRONMENTAL IMPACTS**
  - Nearly all greenhouse gas emissions in RI are due to the generation and consumption of energy
  - To achieve carbon reduction targets, energy issues *must* be addressed



Source: NESCAUM

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

The 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."*

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

Components of the RISEP

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.

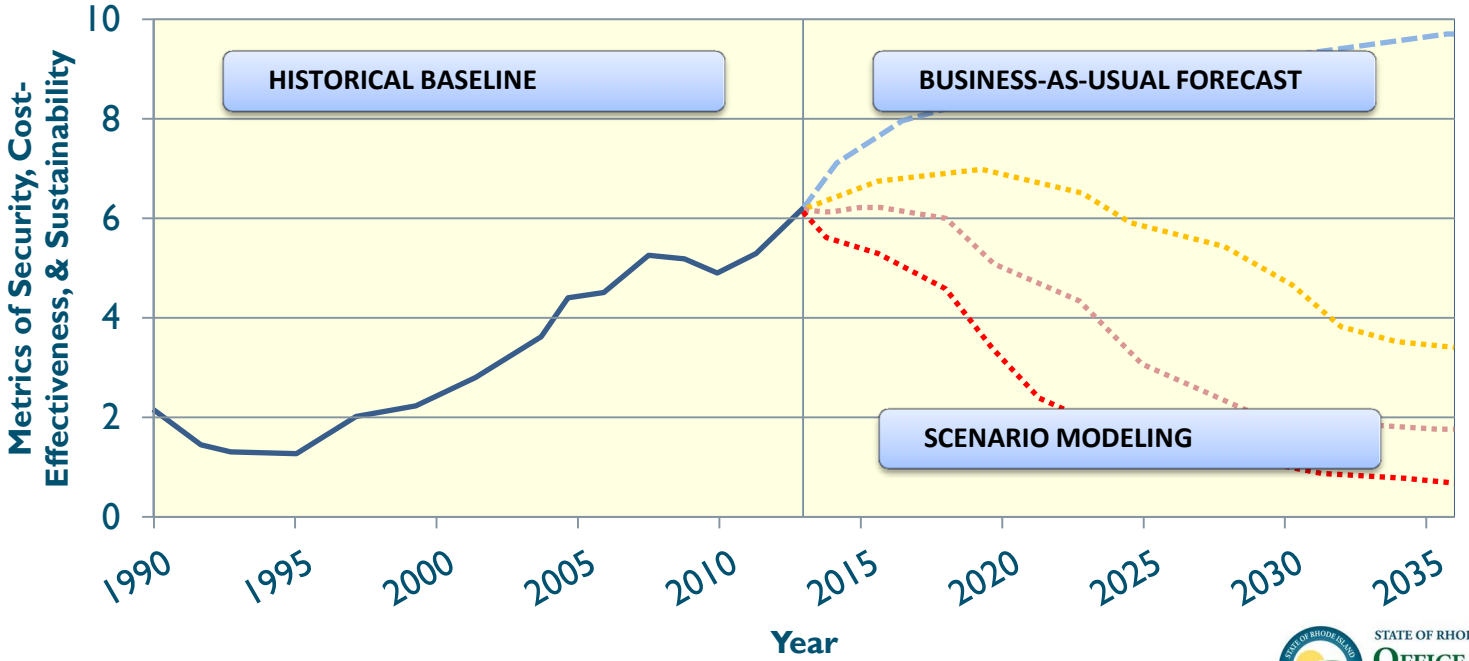
Recommend Action

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

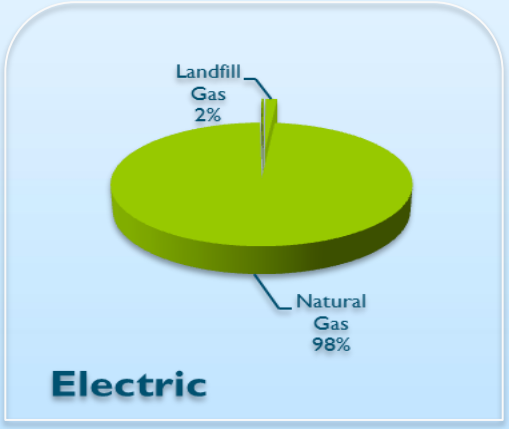
Gather Data

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.



STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

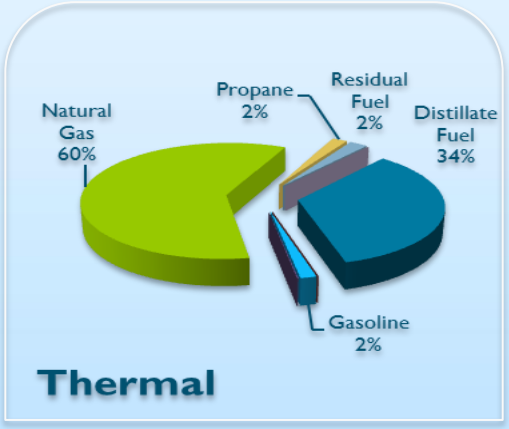
Rhode Island Energy Use Today



63 Trillion BTU

$1.1 Billion/Year

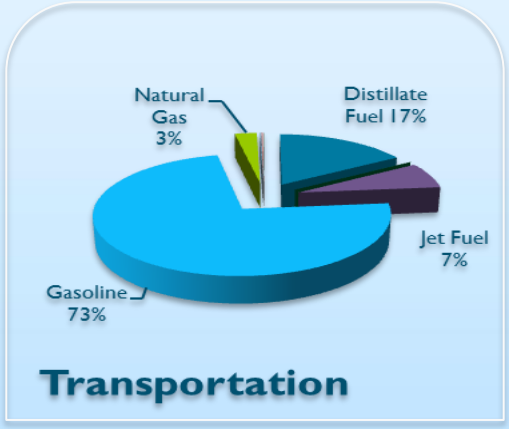
2.9 Million Tons CO_2



63 Trillion BTU

$1.1 Billion/Year

3.9 Million Tons CO_2



64 Trillion BTU

$1.4 Billion/Year

4.5 Million Tons CO_2

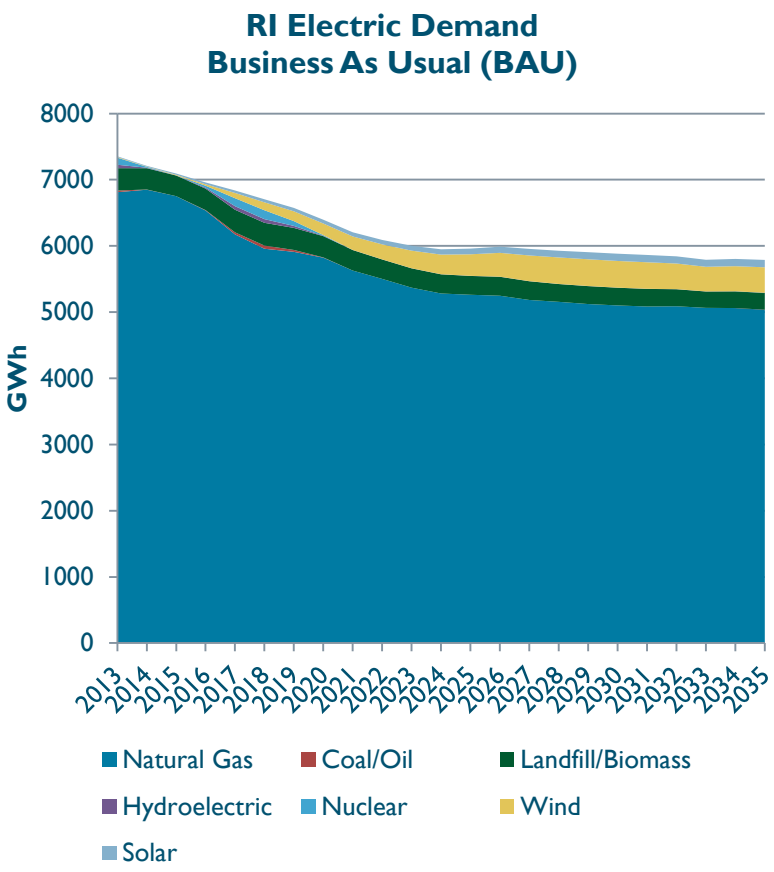
RI spends $3.6 billion annually on 190 trillion BTU of energy, emitting 11 million tons of CO2

Source: EIA SEDS, 2010 data

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

What's in store for the future?

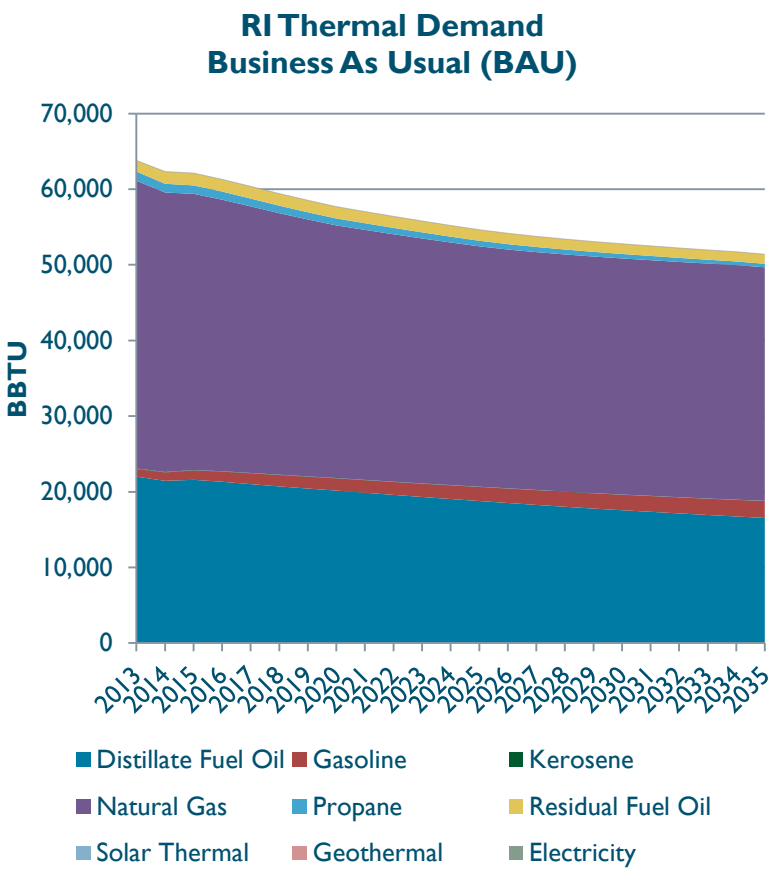
- **Electric Demand Decreasing**
  - Least-Cost Procurement of all cost-effective electric energy efficiency
    - ~20% projected energy reductions
  - Regional Greenhouse Gas Initiative (RGGI)
    - ~20% projected electric GHG reductions
- **Renewable Energy Increasing**
  - Renewable Energy Procurement
    - 16% Renewable Energy Standard
    - >200 MW of wind & solar



STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

What's in store for the future?

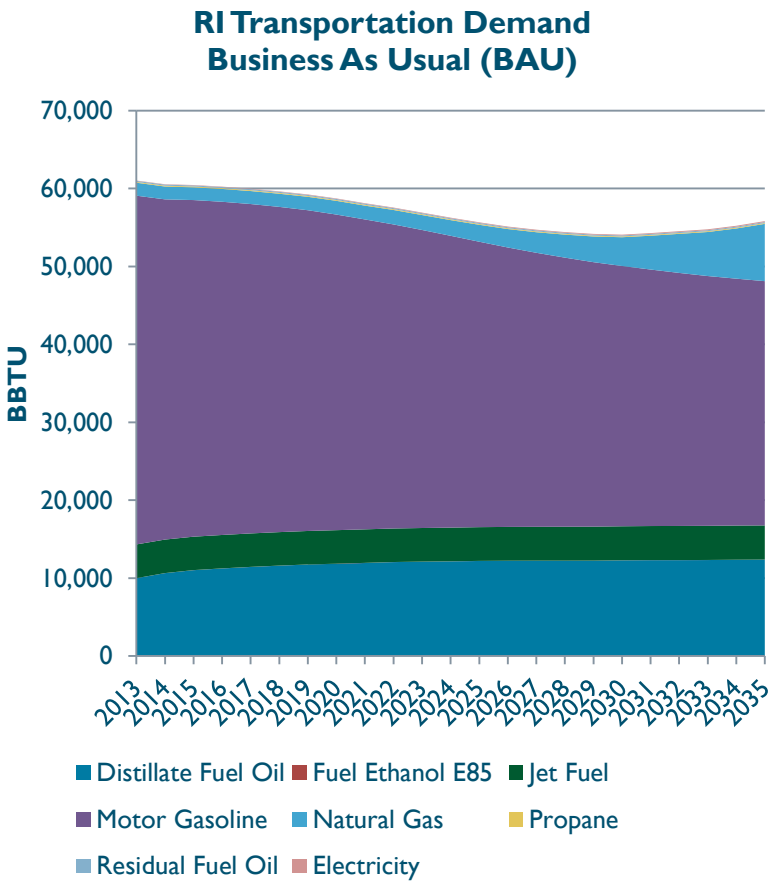
- **Thermal Demand Decreasing**
  - Least-Cost Procurement of all cost-effective natural gas energy efficiency
    - ~20% projected energy reductions
  - Biofuel Blends
    - 5% biofuel blend mandate



STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

What's in store for the future?

- **Transportation Demand Decreasing**
  - Federal Corporate Average Fuel Economy (CAFE) Standards
    - >10% projected GHG reductions
    - 17% project decrease in gasoline consumption
  - Zero Emission Vehicle (ZEV) MOU
    - 3.3 million ZEVs in participating states



STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

What does this mean?

Rhode Island is already poised to make significant progress towards a secure, cost-effective, and sustainable energy future

…but can we do better?

Components of the RISEP

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.

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.

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

RISEP Targets

- **Scenario modeling shows Rhode Island can:**

A Secure, Cost-Effective, and Sustainable Energy Future

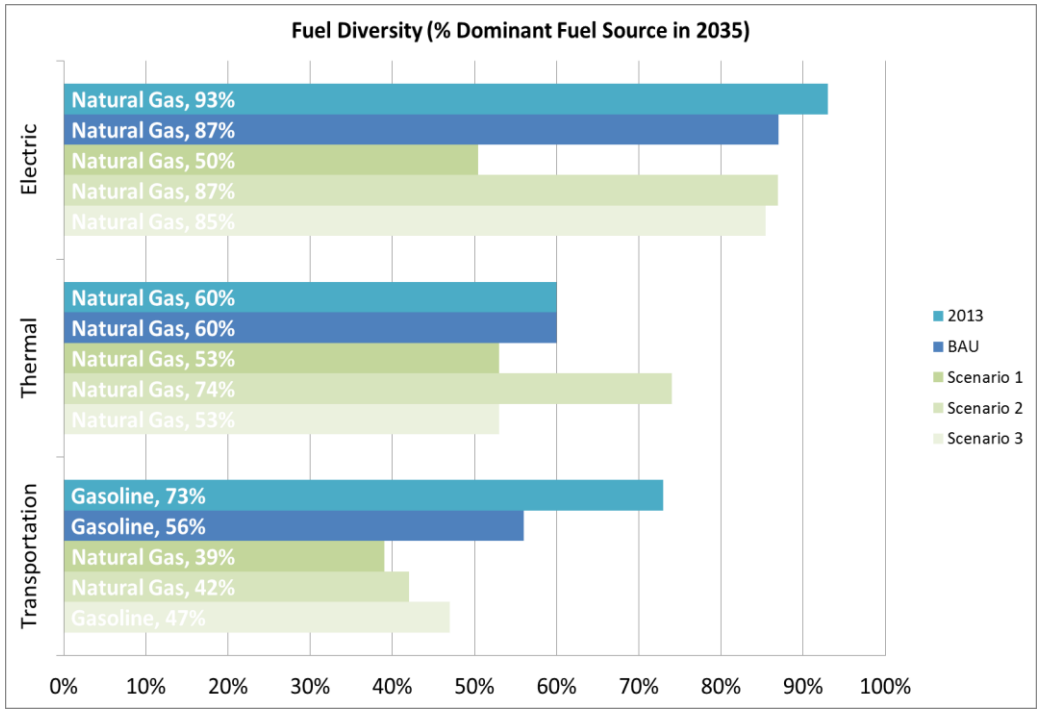
Increase fuel diversity in each sector above 2013 levels

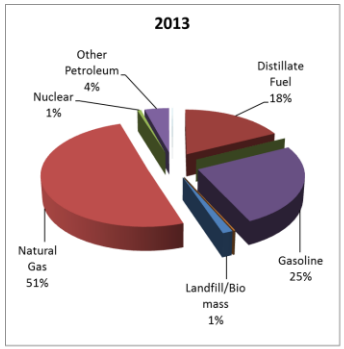
Produce economy-wide net benefits

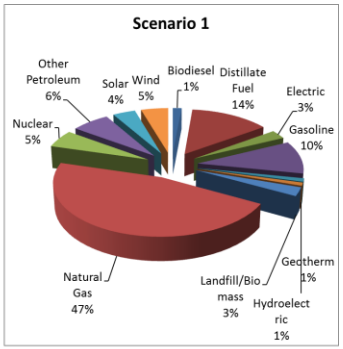
Reduce greenhouse gas emissions 45% below 2013 levels

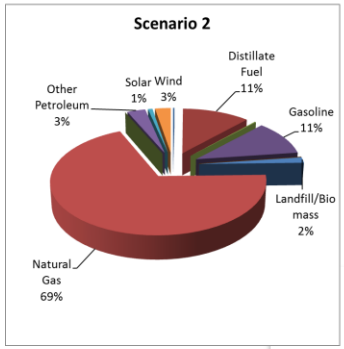
Energy Security: Fuel Diversity

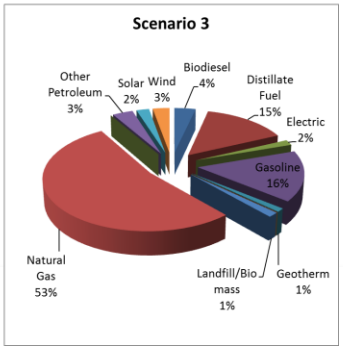
- **Individual sector fuel diversity gains are achievable**
  - Economy-wide gains may not be possible due to the increasing role of natural gas in transportation





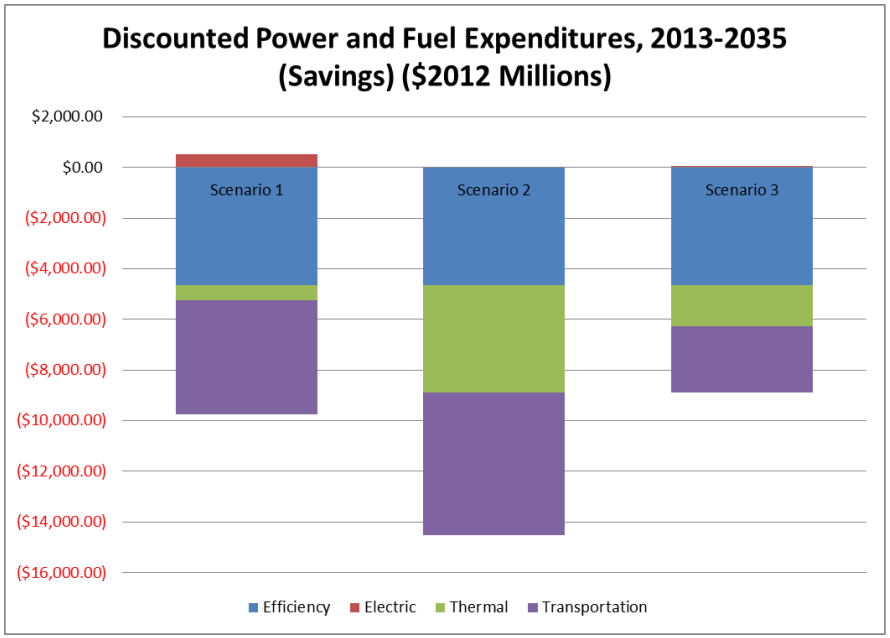


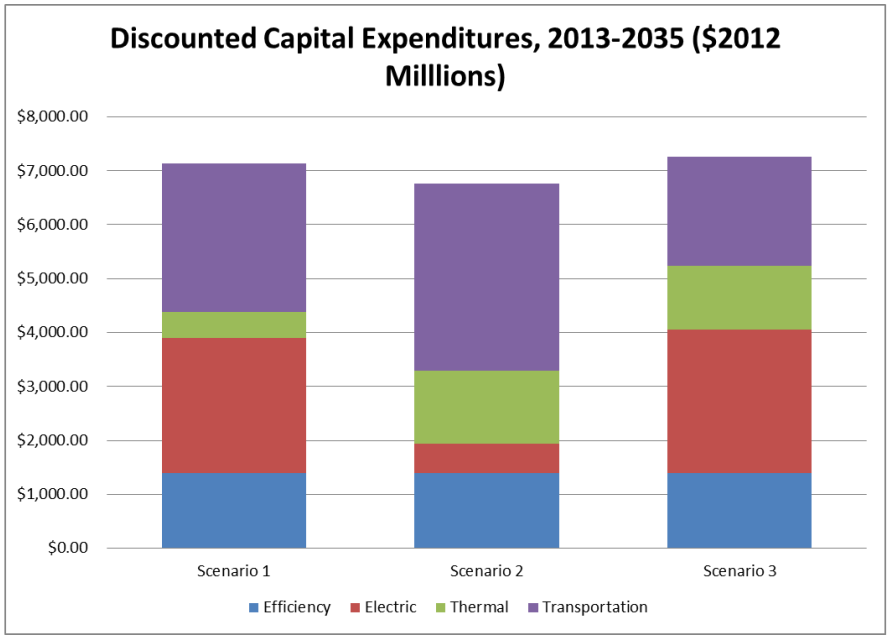




Cost-Effectiveness: Net Benefits

- **Business As Usual is the most expensive path for RI**
  - Potential for $8.8 to $14.5 billion in NPV savings
  - Requires approximately $7 billion of NPV investment

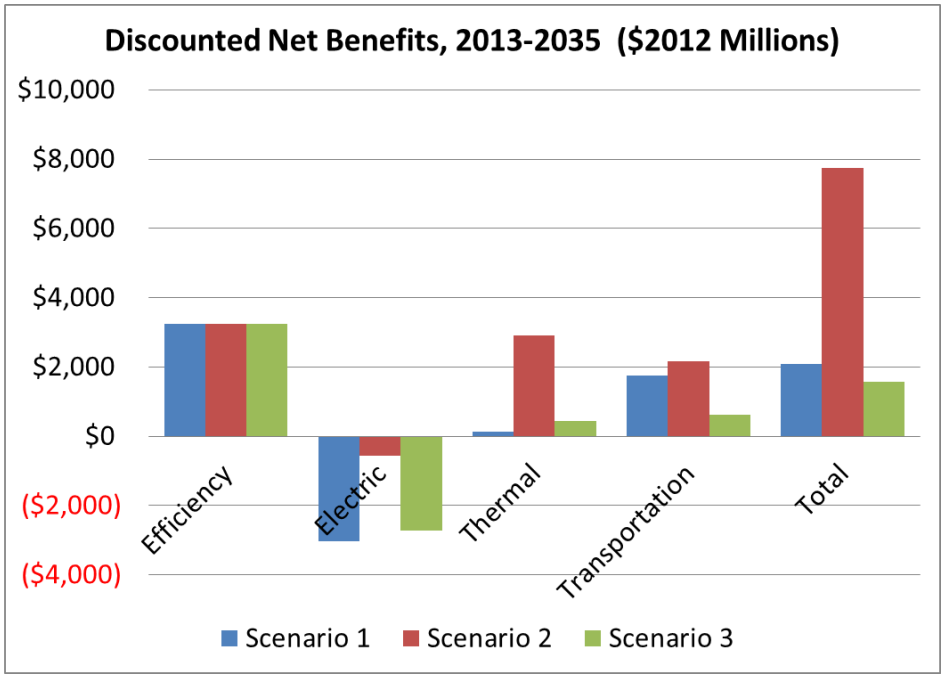




STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

Cost-Effectiveness: Net Benefits

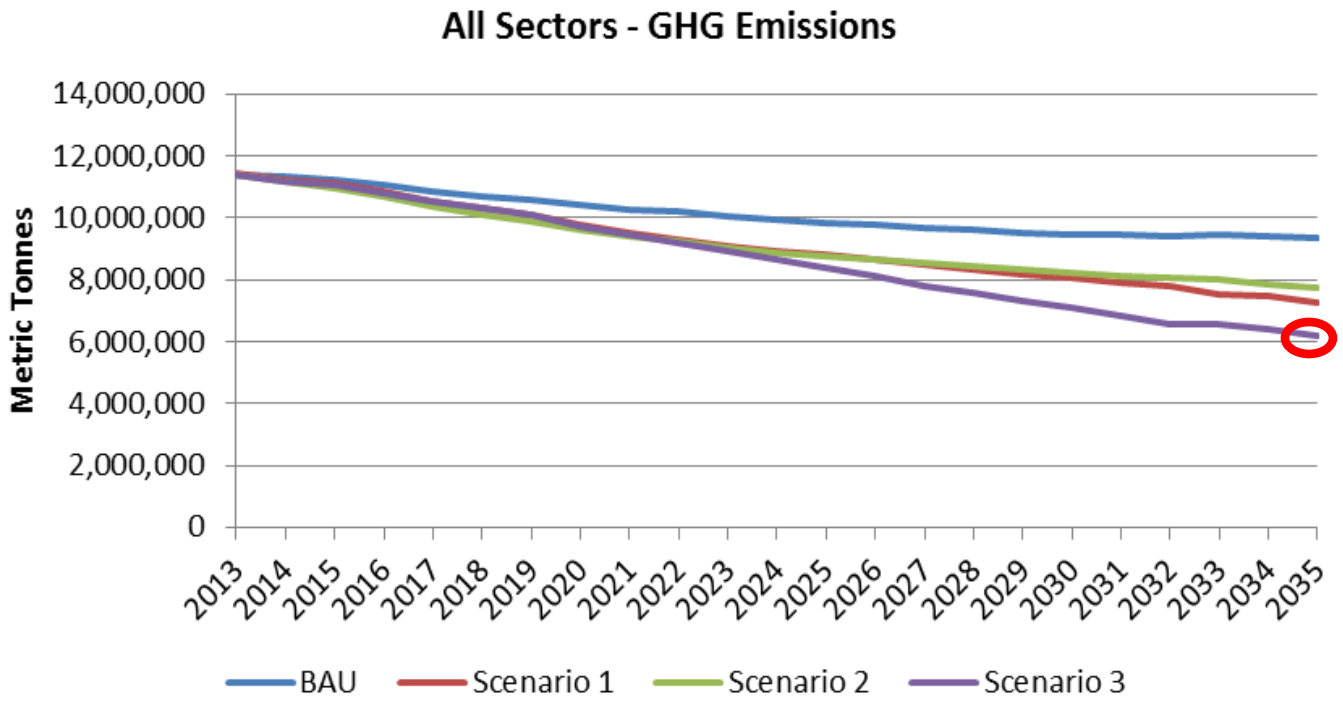
- **All scenarios are anticipated to provide economy-wide net benefits to Rhode Island**
  - Total NPV benefits range from $1.6 to $7.7 billion
  - All scenarios are net positive first order job creation → 20,000+ jobs!



STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

Sustainability: GHG Reductions

- 45% GHG reductions below 2013 levels by 2035 is achievable at reasonable costs



STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

Sustainability: GHG Reductions

Illustrative GHG Reduction Schedule

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%**		

- 45% reductions by 2035 corresponds to a 2-2.5% reduction per year, and sets Rhode Island on pace to achieve ~80% reductions by 2050
- 80% GHG reductions by 2050 is a generally-accepted target to avoid the worst consequences of climate change

*80% GHG reductions by 2050 is often given relative to a 1990 baseline. Rhode Island's economy-wide GHG emissions today are very similar to levels in 1990; 2010 emissions totaled 11,330,473 tons; 1990 emissions totaled 11,378,895 tons

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

What have others done?

- Every other northeastern state has adopted a legislative or executive goal ~80% by 2050
- Rhode Island's 2002 Greenhouse Gas Action Plan stated a goal of 75-85% reductions below 2002 over the long-term

State	GHG Reduction Goal	Source
Massachusetts	**80% below 1990 by 2050**	2008 Global Warming Solutions Act
Connecticut	**80% below 2001 by 2050**	2008 CT Global Warming Solutions Act
Vermont	**75% below 1990 by 2050**	10 V.S.A. § 578
New Hampshire	**80% below 1990 by 2050**	New Hampshire Climate Action Plan (2009)
Maine	**75-80% below 2003 long-term**	Act to Provide Leadership in Addressing the Threat of Climate Change (2003)
New York	**80% below 1990 by 2050**	Exec. Order No. 2 (2011); Exec. Order No.24 (2009)
Rhode Island	**75-85% below 2002 long-term**	Rhode Island Greenhouse Gas Action Plan (2002)

How do we get there?

There will be substantial benefits to pursuing a secure, cost-effective, and sustainable energy future, and substantial costs if we don't

…but how do we get there?

Components of the RISEP

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.

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

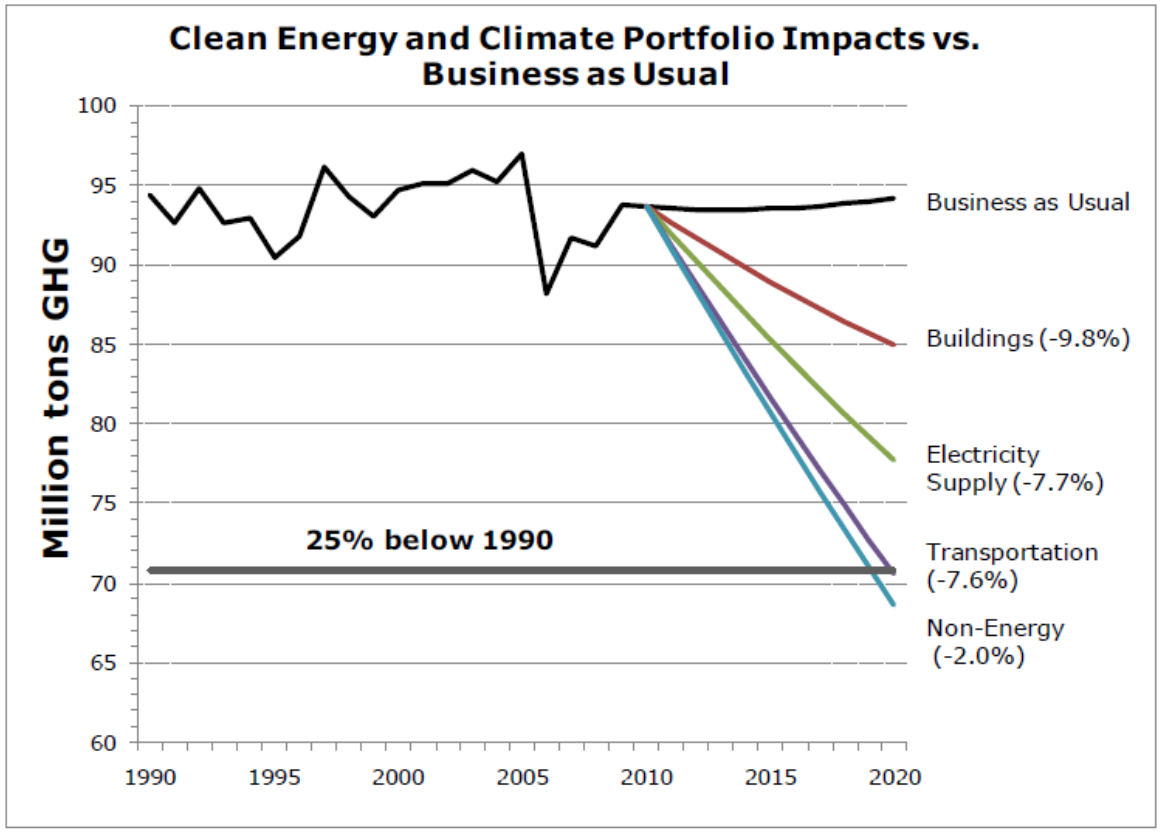
How will the policies be used?

- **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

Massachusetts' Approach

- **MA Clean Energy and Climate Plan 2020**
  - A quantitative strategy to meeting statutory reduction targets



STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

RISEP Recommendations (1/2)

- **An "all of the above" clean energy strategy:**
  - Maximize energy efficiency in all sectors
    - Continue electric and natural gas least-cost procurement
    - Innovate with efficiency codes and standards
    - Develop an LCP strategy for delivered fuels and transportation sector
    - Continue rapid deployment of combined heat and power (400 MW)
    - Potential total of 1/3 economy-wide energy reductions
  - Promote renewable energy in-state and regionally
    - Expand RES to 40%
    - Develop over 350 MW of local RE generation
    - Successfully develop the state offshore projects (180 MW)
    - Facilitate 1,200 MW of new imported Canadian hydropower

RISEP Recommendations (2/2)

- **An "all of the above" clean energy strategy (cont):**
  - Significantly expand alternative energy in thermal and transportation sectors
    - Develop the renewable thermal fuel market (15% by 2035)
    - Increase the use of alternative transportation fuels (25-40% by 2035)
  - Invest in energy infrastructure
    - Modernize the electric grid
    - Address leaks in the natural gas distribution system
    - Target power resiliency investments at critical infrastructure
  - Mobilize capital and reduce costs
    - Expand financing and investment tools ($7 billion!)
    - Reduce the soft costs of renewable energy

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*

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*