

Rhode Island State Energy Plan

EERMC & RECB Joint Meeting

November 27, 2012

What do we want?

- Energy efficiency and renewable energy are *means* of **providing energy services**
 - i.e. turning on the lights, heating a home, traveling to work

→ At the end of the day, what we want is to **provide energy services**

What do we want?

- We can decide *how* we provide our energy services...
 - i.e. which energy resources we want to use to provide energy services

→ What set of criteria should we use to determine which resources to prioritize?

Our criteria for delivering energy services

- Safety
- Reliability
- Affordability
- Environmentally sound
- Sustainable
- Where appropriate, in-State

Emergency planning & resiliency to contingencies... Sandy!

OUR VISION

*“In **2035**, we will provide energy services across all sectors—residential, commercial & industrial, municipal, power generation, and transportation—using safe, reliable, least-cost, environmentally sound, sustainable, and where appropriate, in-State resources”*

What are the benefits?

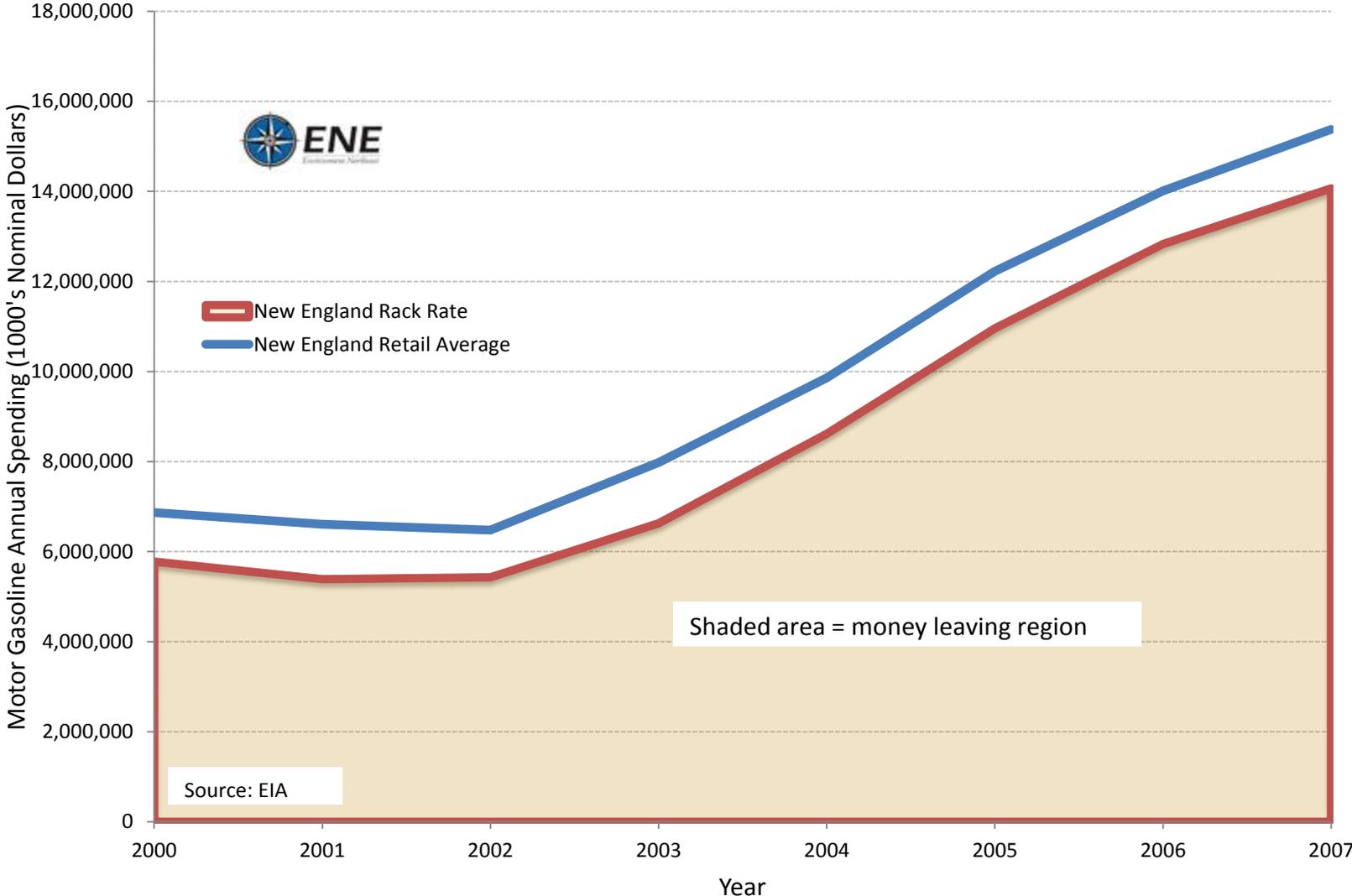
- Job creation
- Industry growth/Economic development
- Maintain regional competitiveness
- Better air and environmental quality
- Reduced carbon emissions

These benefits:

- must be realized through the Plan (i.e. we will not create a plan that does not deliver these benefits)
- can be measured in advance and after the fact
- are a vital means of justifying the intended course of action of the Plan

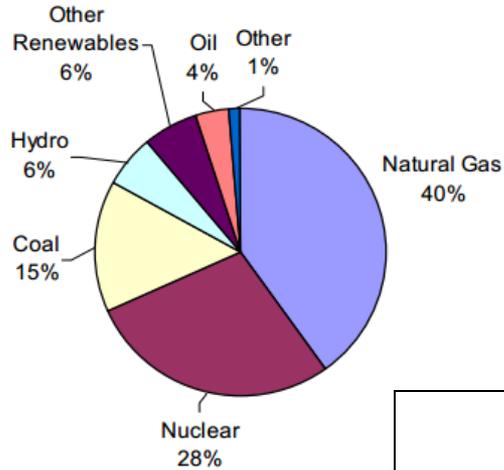
→ *But they are not direct end **goals** of the Plan in themselves; the end goal is to **provide energy services** based on our proposed criteria*

What are the benefits?



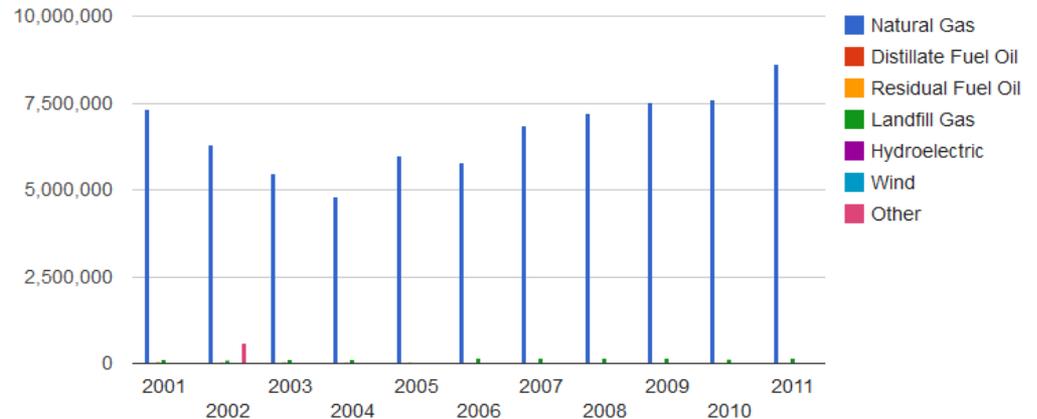
What are the benefits?

New England's Electricity Generation Sources



Source: ISO New England, Energy Information Administration, U.S. DOE

RI Annual Electricity Generation (GWh)



The Rhode Island State Energy Plan

Scope of Work

Rhode Island State Energy Plan Objectives

- **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.

What is the time frame?

- **2023: *By statute***
- **2035: *Long-range planning horizon***

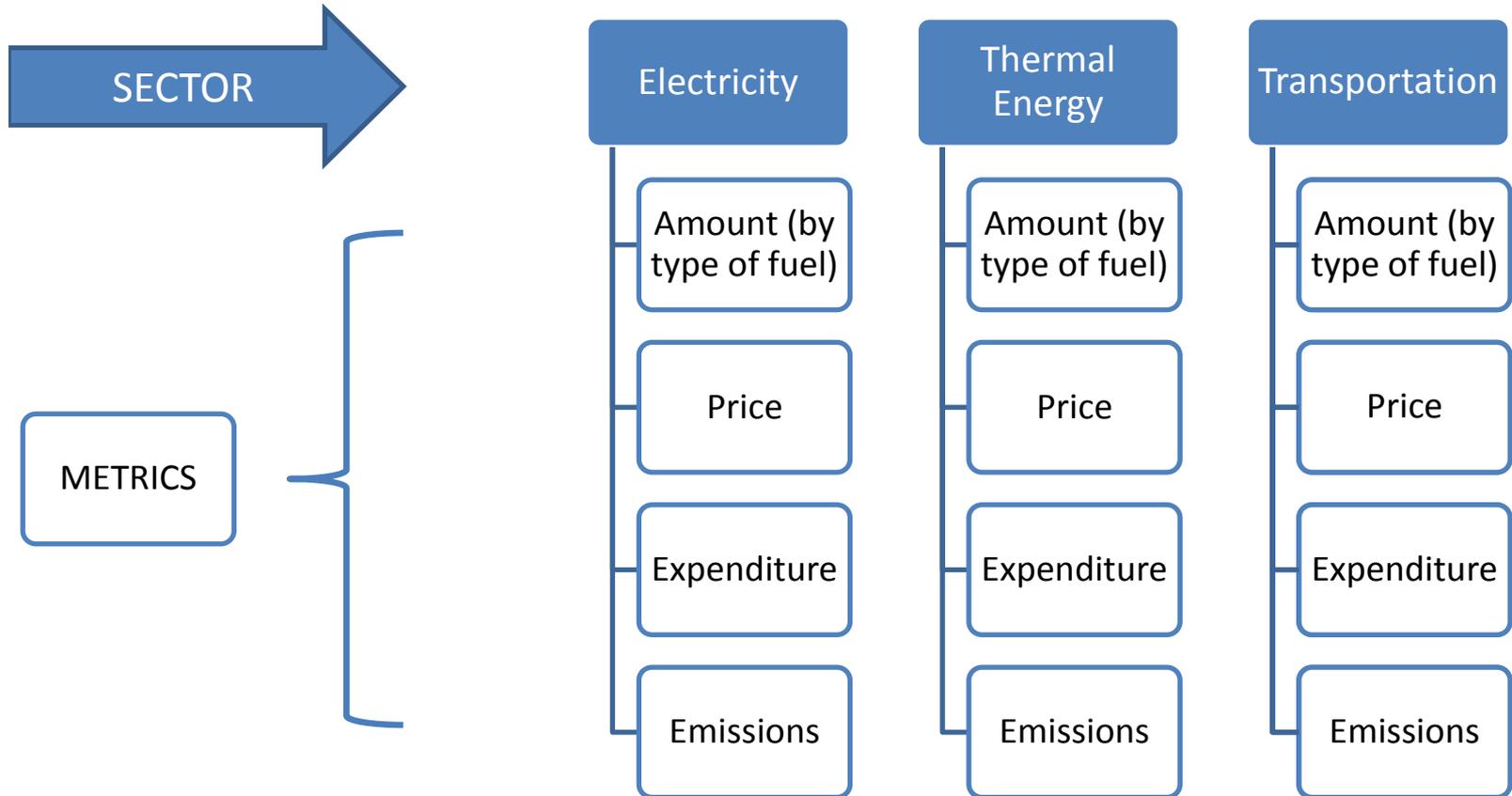
Step 1 - *Gather Data*

“What do we face?”

- **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.*

Step 1 - *Gather Data*

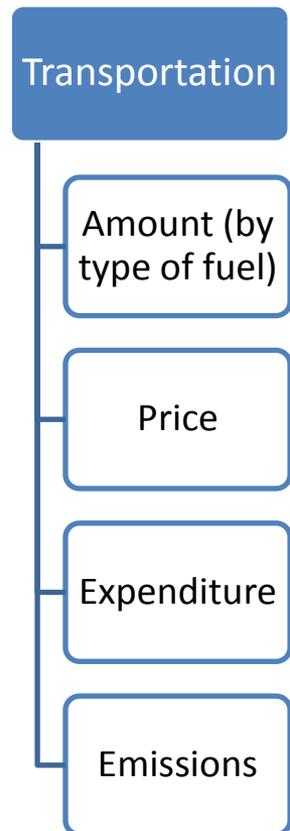
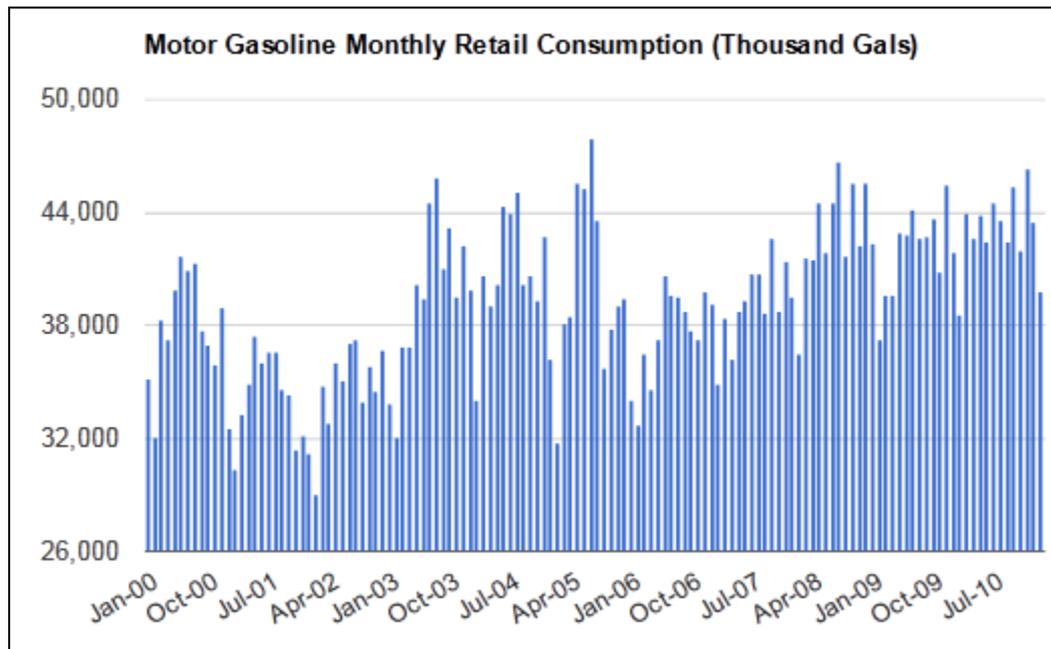
TASK 1: BASELINE



Step 1 - *Gather Data*

TASK 1: BASELINE

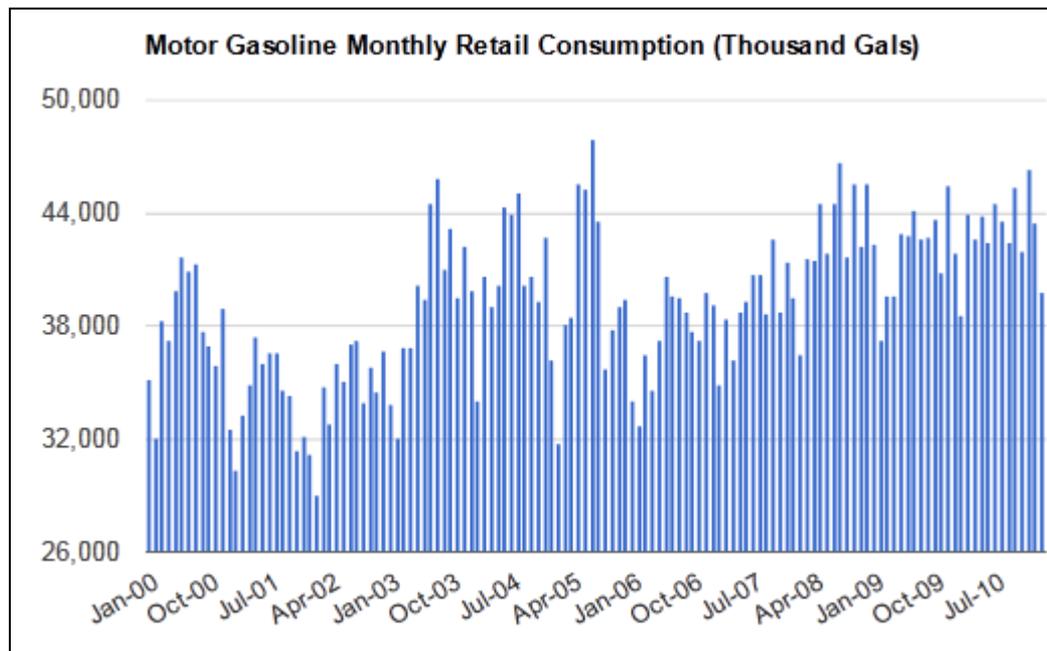
- Develop an **historical baseline** of energy demand & supply by sector*



*Sources include EIA, ISO-NE, utility and state agency data

Step 1 - *Gather Data*

TASK 1: BASELINE

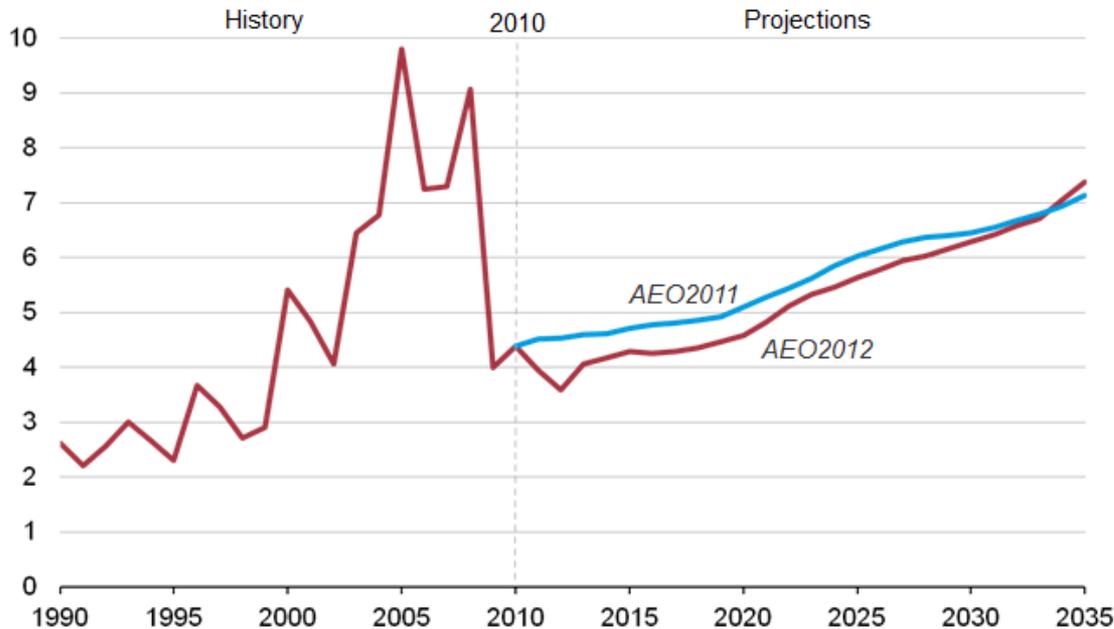


“In the year **2010** for Rhode Island, the transportation sector consumption was approximately **517,497 thousand gallons** with average rates around **2.33 \$/gallon** excluding taxes. The state’s expenditure on Gasoline was approximately **\$1.2 billion**. Out of this expenditure, approximately **\$1.1 billion** left the state as wholesale expenditure because the fuel was imported. This fuel consumption generated about **4.5 million tons of carbon dioxide (CO₂)** emissions”

Step 1 - *Gather Data*

TASK 2: FORECAST

- Develop a **business-as-usual forecast** of energy demand and supply by sector*



Transportation

Amount (by type of fuel)

Price

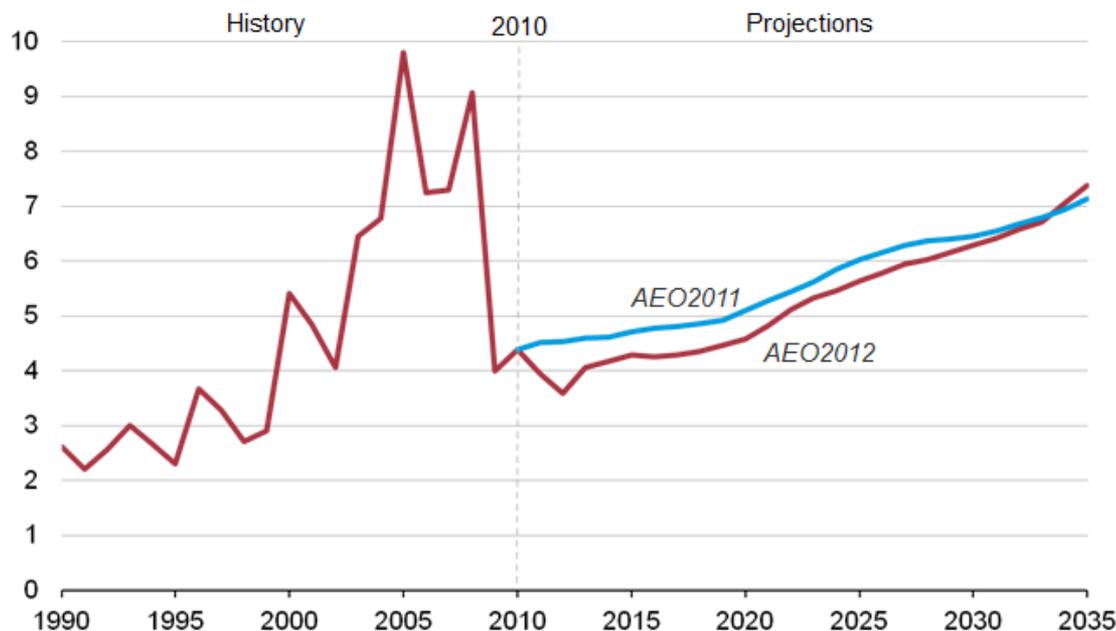
Expenditure

Emissions

*Sources include EIA, ISO-NE

Step 1 - *Gather Data*

TASK 2: FORECAST

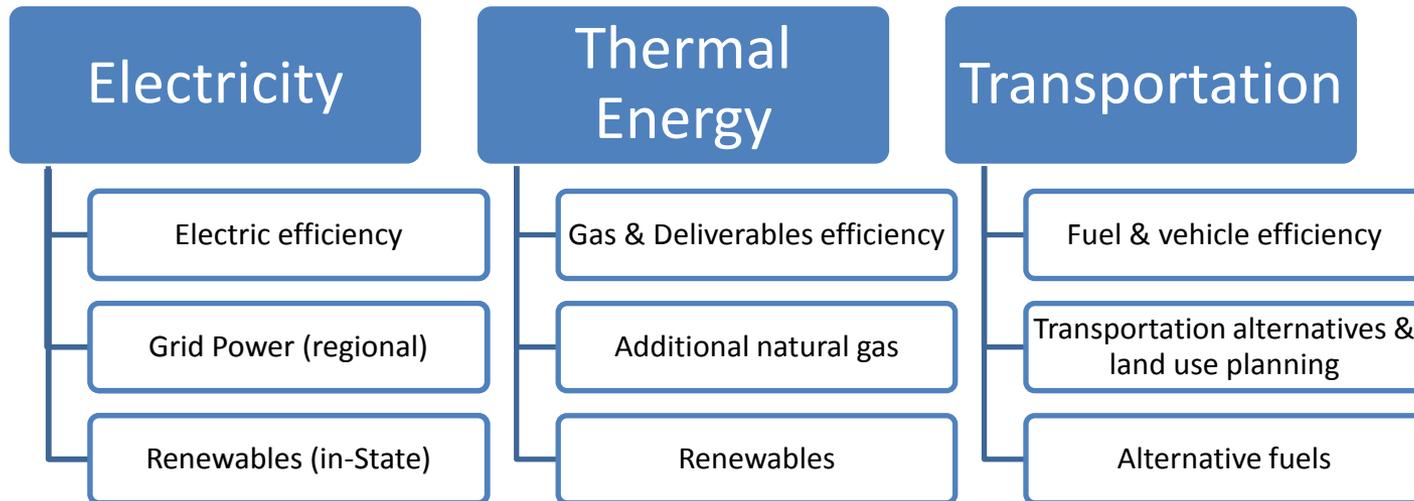


“In the year **2035** for Rhode Island, the transportation sector consumption will be about **XXX,XXX thousand gallons** with average rates around **X.XX \$/gallon** excluding taxes. The state’s expenditure on Gasoline will be about **\$X.X billion**. Out of this expenditure, approximately \$1.1 billion will leave the state as wholesale expenditure because the fuel is imported. This fuel consumption will generate about **X.X million tons of carbon dioxide (CO₂) emissions**”

Step 1 - *Gather Data*

TASK 3: RESOURCES

- Assess **potential supply, demand, and infrastructure resources** available to the State to meet future energy needs for each sector*



*Sources include existing Federal, State, and additional studies

Step 1 - *Gather Data*

TASK 3: RESOURCES

Electricity

Electric efficiency

Grid Power (regional)

Renewables (in-State)

Rhode Island Onshore Renewable Energy Potential

Energy Source	Capacity Factor	MW Capacity	MWh Generation
Solar (distributed & large-scale)	14%	150	183,960
Municipal Solid Waste/Landfill Gas	80%	80	560,640
Wind (on-shore)	25%	50	109,500
Hydropower (conventional)	50%	20	87,600
TOTAL ANNUAL POTENTIAL (MWh)		300	941,700
TOTAL ANNUAL DEMAND (MWh) (ISO-NE)	Year	2019	9,495,000
% of load met with clean energy sources			10%

An Example: “For the electricity sector, the development of **300 MW of onshore resources** – solar (150 MW), landfill gas (80 MW), wind (50 MW), and hydropower (10 MW) – could supply approximately **10% of 9 million MWh of anticipated demand.**”

Step 2 – *Set Goals*

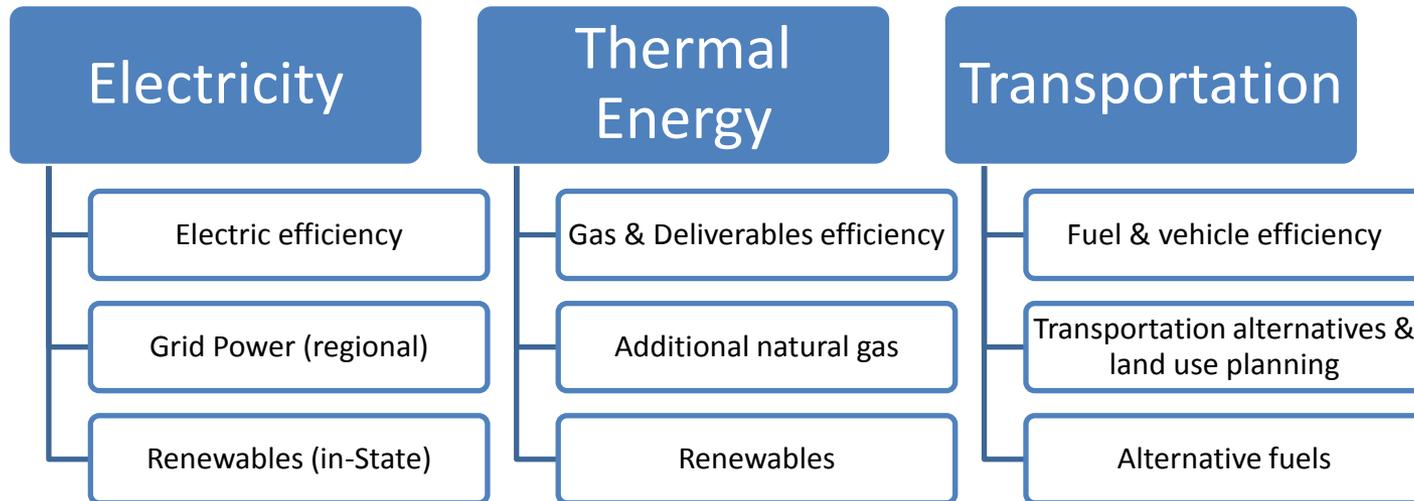
“What do we want?”

- **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.*

Step 2 – *Set Goals*

TASK 4: GOALS

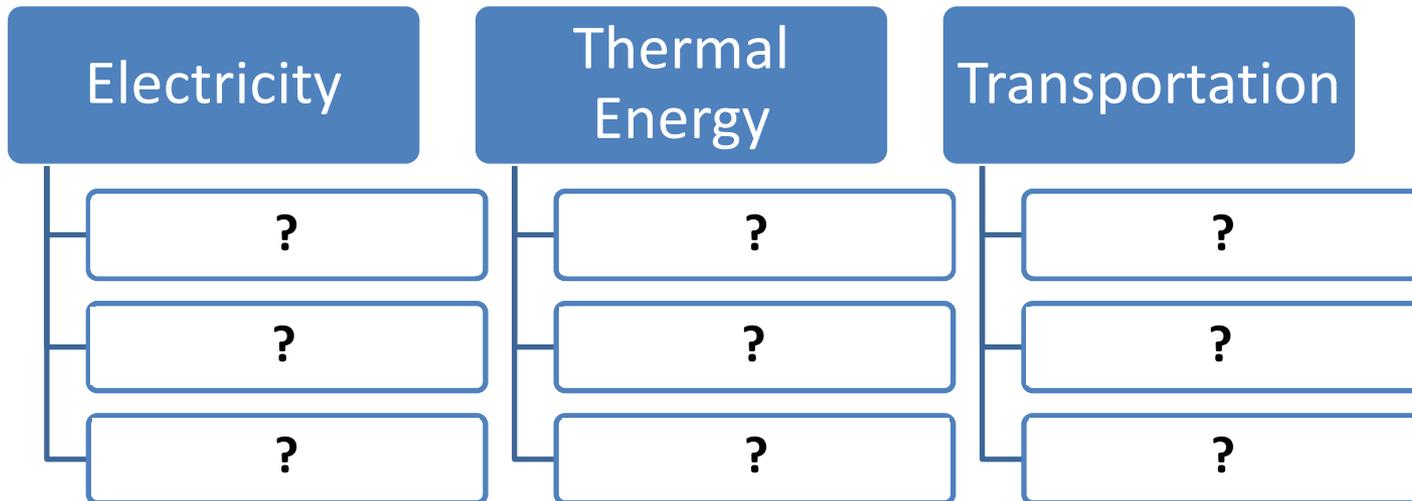
- Spell out **quantifiable targets** for the aspirational mix of supply and demand resources that could be used to provide energy services



Step 2 – *Set Goals*

TASK 4: GOALS

- Spell out **quantifiable targets** for the aspirational mix of supply and demand resources that could be used to provide energy services



Step 2 – *Set Goals*

- What goals have other states set?
 - **New Jersey:** “The Administration aspires to fulfill 70% of the State’s electric needs from “clean” energy sources by 2050”
 - **Vermont:** “90% of our energy needs from renewable sources by 2050”

Step 2 – *Set Goals*

TASK 5: JUSTIFICATION

- How do we know if our goals meet our criteria for a safe, reliable, least-cost, environmentally sound, and sustainable energy future?

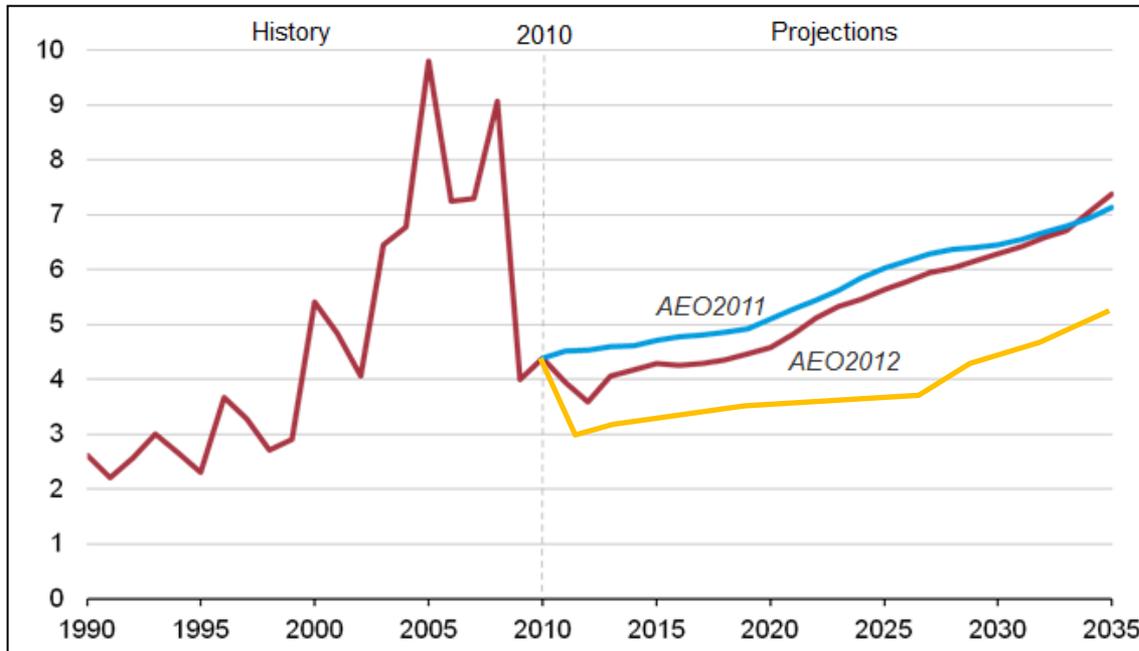
OUR VISION

*“In **2035**, we will provide energy services across all sectors—residential, commercial & industrial, municipal, power generation, and transportation—using safe, reliable, least-cost, environmentally sound, sustainable, and where appropriate, in-State resources”*

Step 2 – *Set Goals*

TASK 5: JUSTIFICATION

- Test **impact of goals** against **business-as-usual** forecast



Transportation

Amount (by type of fuel)

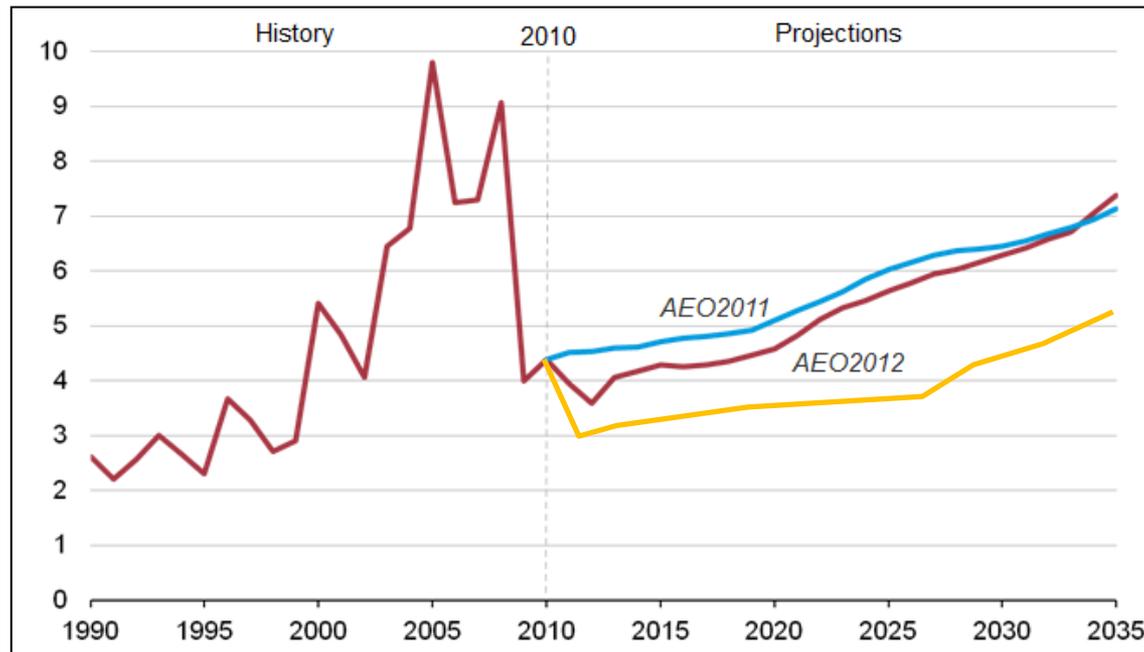
Price

Expenditure

Emissions

Step 2 – *Set Goals*

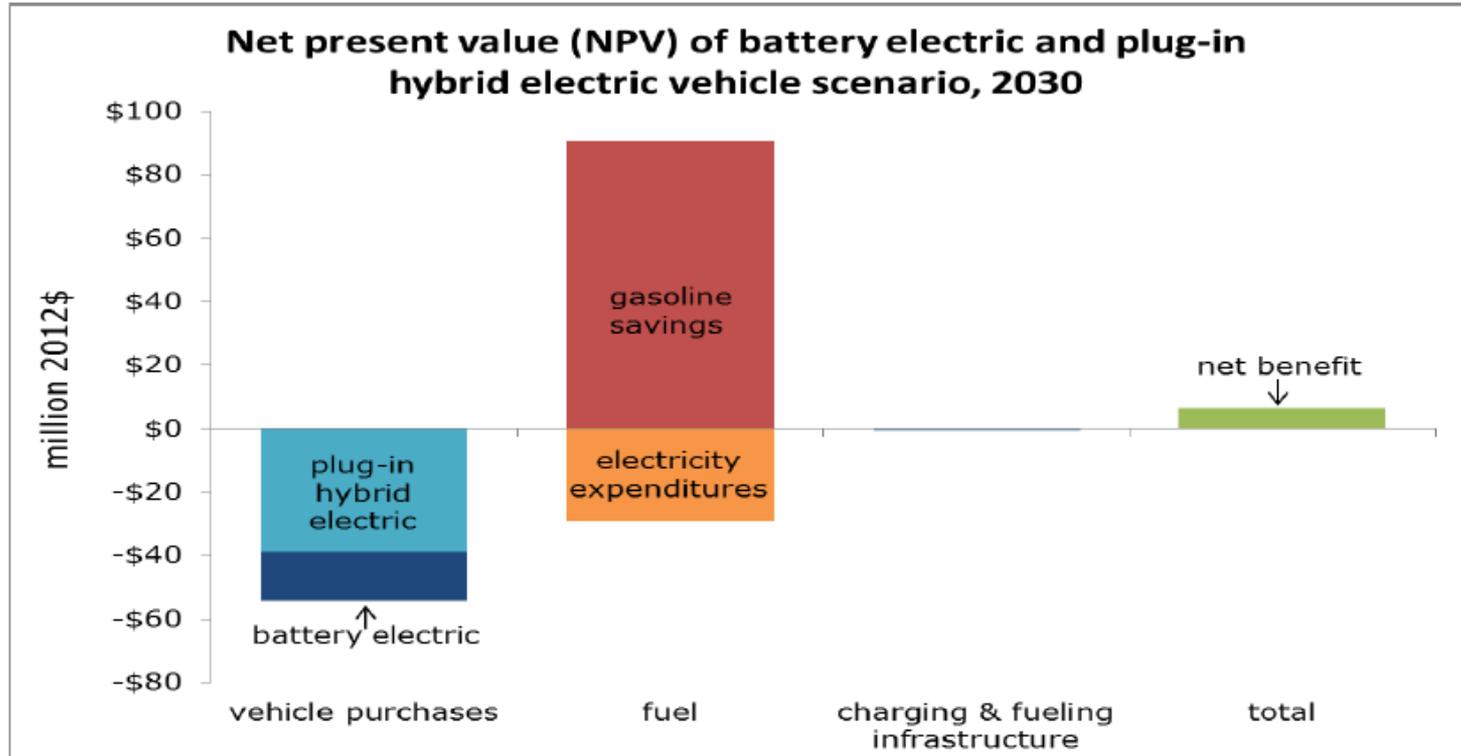
TASK 5: JUSTIFICATION



“In the year **2035** for Rhode Island, will the transportation sector consume **less fuel**, at a **lower average prices**, with **less total expenditure** on fuel (and less leaving the state), and **reduced amounts of carbon dioxide emissions (CO₂) emissions?**”

Step 2 – *Set Goals*

TASK 5: JUSTIFICATION



“In the year **2035** for Rhode Island, will the transportation sector consume **less fuel**, at a **lower average prices**, with **less total expenditure** on fuel (and less leaving the state), and **reduced amounts of carbon dioxide emissions (CO₂) emissions?**”

Step 3 – *Recommend Action*

“How do we get there?”

- **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.*

Step 3 – *Recommend Action*

TASK 6: ROADMAP

- Recommend concrete **near- and long-term policy options** designed to attain the Plan goals

Water Resource Management (WRM)		Lead	Support	Timeline
Goal WRM-3	Ensure a reasonable supply of quality drinking water for the State			
Demand Management Policy	1. Reduce the overall demand for potable water			
	• Strategies			
	A. Identify areas where water reuse for nonpotable purposes is feasible	DEM	WS, DOH	MT
	A.1 Establish opportunities for nonpotable water reuse	DEM	DOH, WS	LT
	A.2 Develop capacity to review and assist with water reuse projects	DOH	DEM, WRBS	LT
	B. Continue existing Interagency MOU for review of water withdrawals and include aquifer replenishment projects	DEM	DOH, WRB, DOP	O
	C. Reduce seasonal demands	WS, U	WRB, URI	O
	D. Reduce Rhode Island's vulnerability to annual seasonal dry periods			
	D.1 Adopt fines for improper lawn watering /outdoor water use	M	WS	ST
	D.2 Work with URI Master Gardeners/landscapers to encourage use of water efficient landscaping	WS, M	WRB, WC, RILA	ST
	D.3 Require use of rain sensors and soil moisture sensors in lawn irrigation systems.	M	WS	MT
	D.4 Educate public on installation and care of lawn irrigation technology	WS, M	WRB, RILA	O
	D.5 Educate private well owners and users not on public distribution systems on the need for water efficiency	WRB	DSC	O
	E. Promote public education for implementation of water efficiency measures	WS, M	WRB, URI	O
	E.1 Continue to support Drinking Water Week	WS	RIWWA, AII	O
	E.2 Revise Plumbing code to further promote efficient water use	WRBS	BCC	MT
	E.3 Promote use of EPA Water Sense Appliances	WRB	BCC, URI	O
	F. Continue to promote water use/meter sizing reviews for major users	WS	M, RIWWA	O
	G. Promote rate structures and conservation pricing	WRB	WS, M, PUC	O
	H. Investigate other incentives to further reduce demands	WRBS	WS, WS, GA	LT
	I. Ensure that leakage shall not exceed 10% of total system water produced or purchased	WS	WRBS, DOH	O
	J. Reconsider reuse of abandoned supplies in light of new technologies, non-potable use needs and anticipated future demands without impacting public health	WS	DOH, EPA	LT
Goal WRM-4	Ensure the protection of public health, safety and welfare and essential drinking water resources during water supply emergencies			
Emergency Management Policy	1. Manage and conserve essential potable water resources in times of emergencies and or shortages			
	• Strategies			
	A. Evaluate intersystem temporary capabilities and needs for supply during emergencies	DOH	WS, M	MT
	B. Ensure emergency memorandums of understanding, stand-by-contracts for emergency connections, and price agreements for purchasing potable water at competitive prices are kept current	WS, M	WRBS	O
	C. Ensure all water systems have emergency plans for alternative distribution before emergencies occur	WS, M	WRBS, RIEMA	O
	D. Ensure all water systems have established priority uses and use restrictions for use during emergencies before emergencies occur	WS, M	WRBS	O
	E. Identify interconnections for ongoing uses and for emergency responses	WS, M	DOH	ST
	F. Develop and enhance the redundancy capability of all systems	WS, M	WRB, DOH	ST
	G. Ensure that municipalities know the procedures to declare a water supply emergency	M, WS	DOH	O
	H. Ensure that state agencies involved in water emergency management have updated operational plans for water emergencies	SA	RIEMA	O
	I. Implement emergency preparedness plans of the PUC	WS, M	PUC	O
	J. Ensure that the state and municipal emergency operations plans and the emergency operations portions of WSSMPS are updated and implemented	WS, M	RIEMA	O

Step 3 – *Recommend Action*

TASK 6: ROADMAP

- Recommend concrete **near- and long-term policy options** designed to attain the Plan goals
 - Markets: RECs, clean energy standards, tariffs
 - Regulations: codes, permits, licenses
 - Land Use: zoning, uses, ordinances, comprehensive plans, siting, development
 - Funding: financing structures, loans, grants, subsidies, incentives, surcharges
 - Innovation: research, job training, business development and entrepreneurship

Step 3 – *Recommend Action*

TASK 7: REVISION

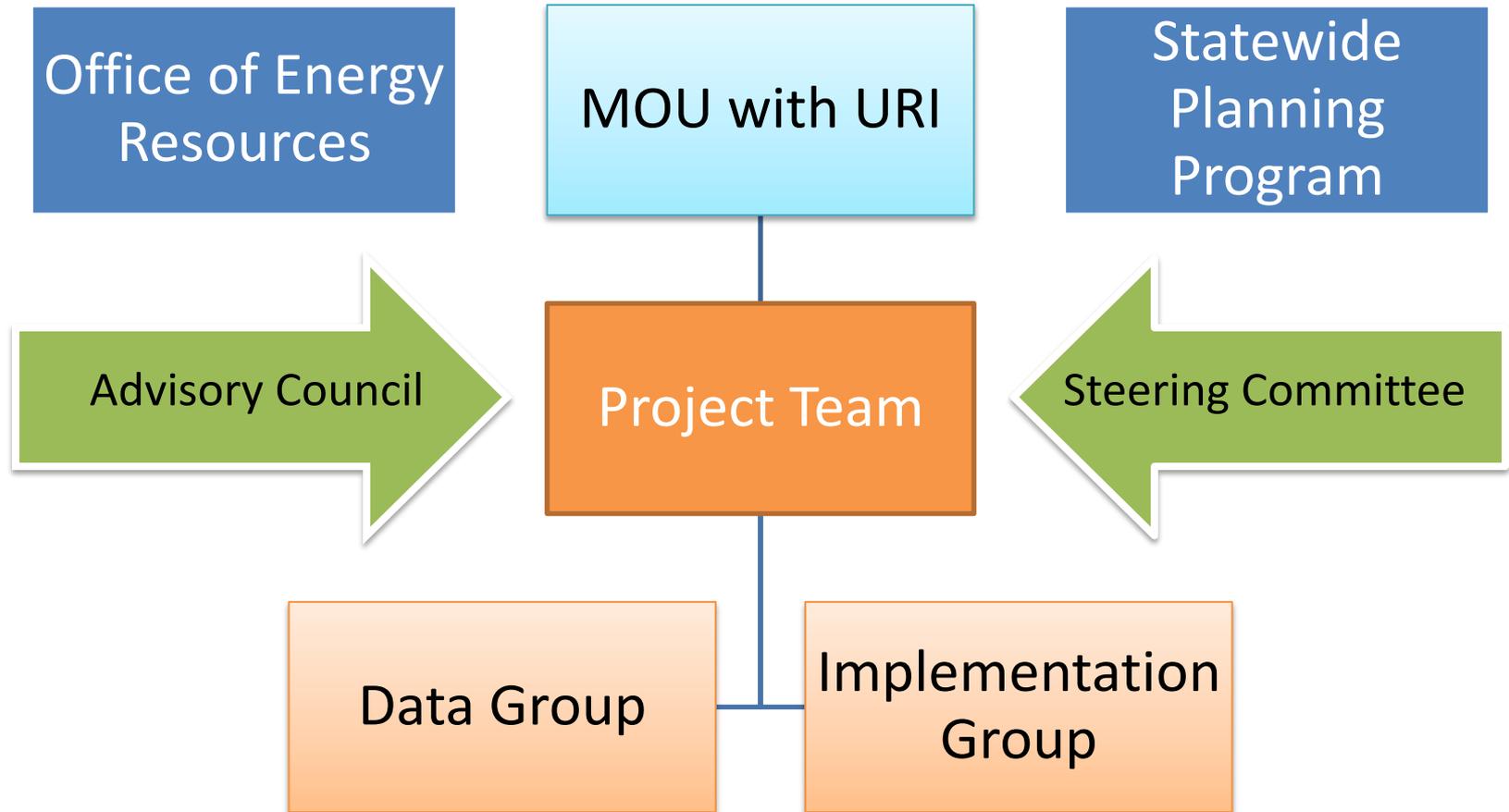
- Outline **mechanisms for revising** the Plan in order to monitor progress towards goals and reevaluate and adjust recommendations over time

“Provide support and information to the division of planning and the state planning council in development of a ten (10) year Rhode Island Energy Guide Plan, **which shall be reviewed and amended if necessary every five (5) years**”

The Rhode Island State Energy Plan

Advisory Structure

Advisory Structure



Advisory Structure

Supporting Groups

- Renewable Energy Coordinating Board (RECB)
- Energy Efficiency & Resource Management Council (EERMC)
- Petroleum Savings and Independence Advisory Commission
- State Planning Council
- State Planning Council Technical Committee
- State Agencies
- National Association of State Energy Officials (NASEO)
- Other states

Advisory Structure

Project Team – Data Group

- Office of Energy Resources

Member	Affiliation	Role	Task
• Danny Musher	<i>University of Rhode Island (URI)</i>	Project Management, Data Analysis	all
• Hannah Morini	<i>RI Economic Development Corporation (RIEDC)</i>	Project Management, Policy Analysis	all
• Christopher Damon	<i>URI Environmental Data Center (URI-EDC)</i>	GIS support	1, 3
• Jamie Howland	<i>ENE (Environment Northeast)</i>	Data Analysis & Forecasting	1, 2
• Varun Kumar	<i>ENE (Environment Northeast)</i>	Data Analysis & Forecasting	1, 2
• Kristina DiSanto	<i>University of Rhode Island (URI)</i>	Project Management, Outreach	1
• Wendy Lucht	<i>University of Rhode Island (URI)</i>	Transportation SME, Outreach	3
• [tbd]	<i>[tbd via RFP]</i>	Data Analysis & Scenario Modeling	5

Advisory Structure

Project Team – Implementation Groups

- Office of Energy Resources

Members	Affiliation	Role	Task
• [tbd]	[tbd]	Electricity	6
• [tbd]	[tbd]	Heating	6
• [tbd]	[tbd]	Transportation	6

Advisory Structure

Advisory Council

- Meets on a monthly basis
- Evaluates and provides feedback on research to assist staff in preparing a Preliminary Draft Plan
- Recommends Preliminary Draft Plan to the State Planning Council's Technical Committee for forwarding to the State Planning Council for public hearing, revision, and adoption

Timeline

Project Phases

Phase I: Research & Data Collection (December 2012 – May 2013)

Gather and synthesize the best available energy data; Set measurable goals based on expert and stakeholder feedback; Design an actionable implementation strategy

Phase II: Preparation of Preliminary Draft Plan (June 2013 – September 2013)

Distill research developed during Phase I into a Preliminary Draft Plan

Phase III: Technical & Public Review (October 2013 – March 2014)

Vet Preliminary Draft Plan through a technical and public review process; Adopt Plan as State Guide Plan Element

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