RISEP Advisory Council #7

Friday, September 6, 2013

Today's Agenda

1. Review of timeline & process
2. Draft RISEP goals
3. Next steps

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Review: 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.*

Outline of RISEP Final Report

- The RISEP Report will contain three main sections that correspond to each of the three major project tasks:
  - ***Gathering Data:*** Provides a historical context for Rhode Island energy usage and trends
  - ***Setting Goals:*** Describes a vision for transformations to Rhode Island's energy system
  - ***Recommending Action:*** Offers a menu of policy options to achieve the stated goals

Status of RISEP Project Tasks (1)

- ***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.**

➢ The RISEP Project Team and project partners have completed the data-gathering phase of the project

HISTORICAL BASELINE – *RISEP Project Team*
- How well have we met our criteria in the past?

BUSINESS-AS-USUAL FORECAST – *ENE*
- How well are we poised to meet our criteria going forward?

SCENARIO MODELING – *Navigant Consulting*
- Can we do a better job of meeting our criteria going forward?

Status of RISEP Project Tasks (1)

- ***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.**

➢ Status of Navigant Report:

  - ➢ Over 50 comments received and addressed
  - ➢ Navigant work products submitted to the RISEP Project Team for review last week
  - ➢ Navigant's final report and data tables will be circulated to the Advisory Council during the coming ~two weeks

Status of RISEP Project Tasks (2)

- ***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.**

➢ Today we will solicit feedback from the Advisory Council on draft goals developed based on analysis and research

Status of RISEP Project Tasks (3)

- ***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.**

➢ During the next month, we will hold Implementation Group meetings to solicit feedback on the Project Team's proposed menu of policy options

Reminder: Overall RISEP Timeline

Phase I: Research & Data Collection (December 2012 – May 2013) Gather and synthesize the best available energy data
Phase II: Preparation of Preliminary Draft Plan (June 2013 – October 2013) Set measurable goals based on modeling analysis and stakeholder feedback; Design an actionable implementation strategy Distill research into a Preliminary Draft Plan
Phase III: Technical & Public Review (November 2013 – March 2014) Vet Preliminary Draft Plan through a technical and public review process; Adopt Plan as State Guide Plan Element

Today's Agenda

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Purpose of Today's Presentation

- Describe rationale for proposed RISEP goals
- Describe analysis & research supporting proposed RISEP goals
- Solicit Advisory Council feedback on proposed RISEP goals

Rationale for Proposed Goals

- The RISEP Project Team proposes using the original RISEP directional objectives as a guide for stating goals:
  - **SECURITY**
  - **COST-EFFECTIVENESS**
  - **SUSTAINABILITY**
- Directional Objectives → Quantifiable Values → Measureable Performance Metrics

RISEP Directional Objectives

Security

- **ADEQUACY.** Plan to meet overall energy supply needs
- **SAFETY.** Increase the safety of energy conversion and use
- **RELIABILITY.** Increase the system's ability to withstand disturbances
- **RESILIENCY.** Increase the system's ability to rebound from disturbances

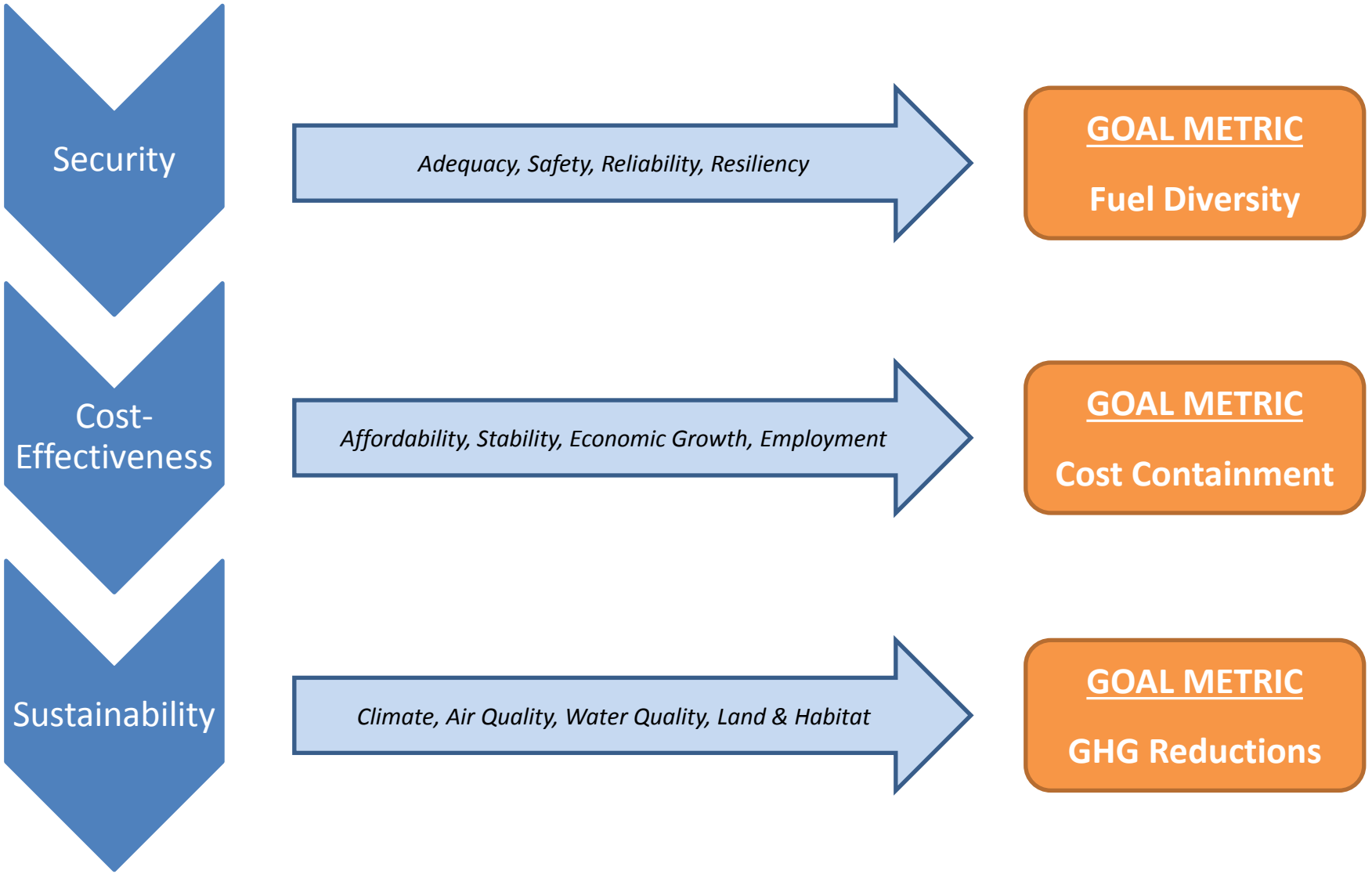
Cost-Effectiveness

- **AFFORDABILITY.** Lower overall energy bills
- **STABILITY.** Reduce the impacts of energy price volatility on consumers
- **ECONOMIC GROWTH.** Grow and maintain a healthy state economy
- **EMPLOYMENT.** Increase employment

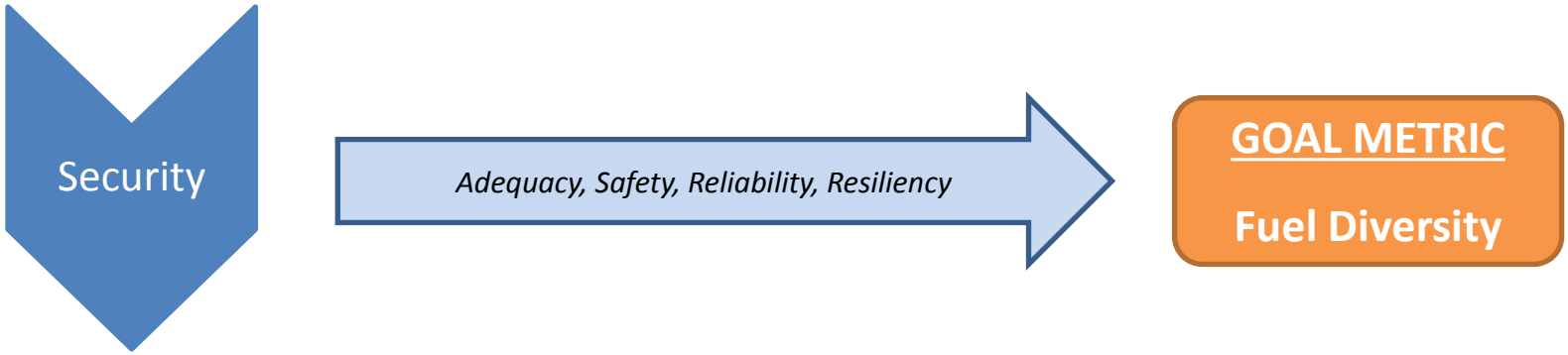
Sustainability

- **CLIMATE.** Reduce greenhouse gas emissions from energy consumption
- **AIR QUALITY.** Reduce criteria pollution from energy consumption
- **WATER USE & QUALITY.** Reduce the water impacts of energy consumption
- **LAND & HABITAT.** Reduce the impacts of energy projects on ecosystems

The RISEP Project Team is proposing a **representative goal metric** for each directional objective

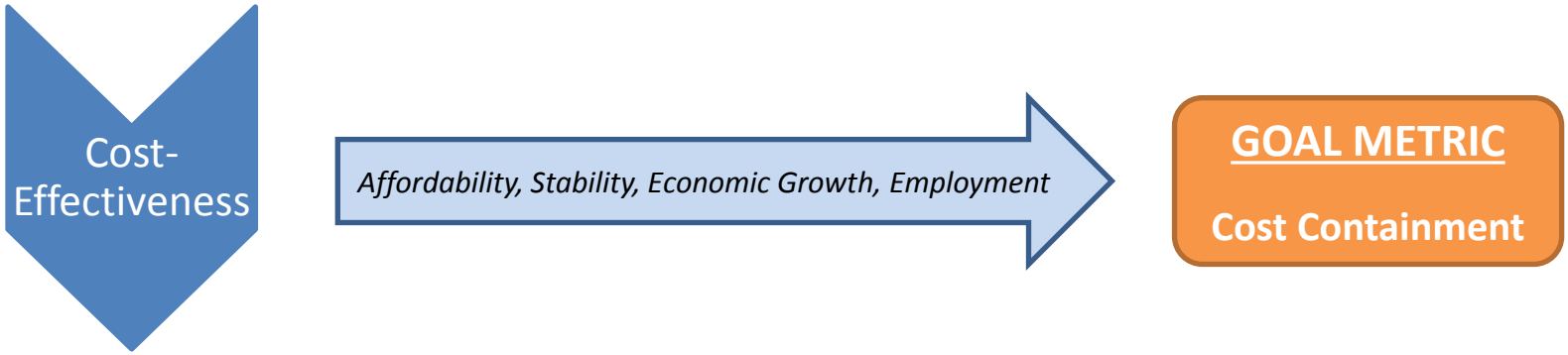


Security Goal Metric – **Fuel Diversity**



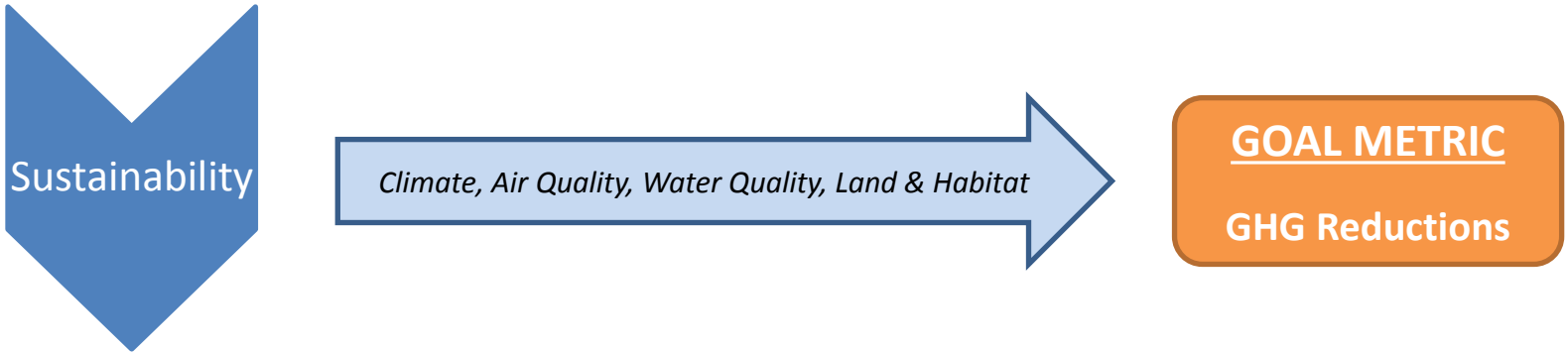
- Many indicators of energy security are difficult to quantify; **Fuel Diversity serves as a reasonable proxy indicator of many measures of energy security**. Fuel Diversity is a risk management strategy that:
  - Increases system redundancies
  - Increases consumer choices
  - Reduces impacts of price volatility
  - Decreases potential harm of supply disruptions
  - Increases potential for synergistic energy resources

Cost-Effectiveness Goal Metric – **Cost Containment**



- Changes in energy costs should yield **similar directional effects on other cost-effectiveness performance measures**:
  - **Stability:** Increasing consumption of cost-effective local & regional energy resources can reduce reliance on volatile national and global energy markets
  - **Economic Growth:** Lower energy costs = increased disposable income and business revenue, economic growth
  - **Jobs:** Lower energy expenditure = economic growth = direct, indirect, induced job creation

Sustainability Goal Metric – **GHG Reductions**



- Changes in GHG's should yield **similar directional effects on other sustainability performance measures**:
  - **Air Quality:** Reducing GHG emissions will often reduce other air pollutants
  - **Water Use & Quality:** Reducing fossil fuel power generation will lower water consumption and reduce acid rain impacts
  - **Land & Habitat:** Reducing GHG emissions poses different types of natural resource impacts depending on the relative emphasis of habitat preservation, increased renewable development, and fossil generation

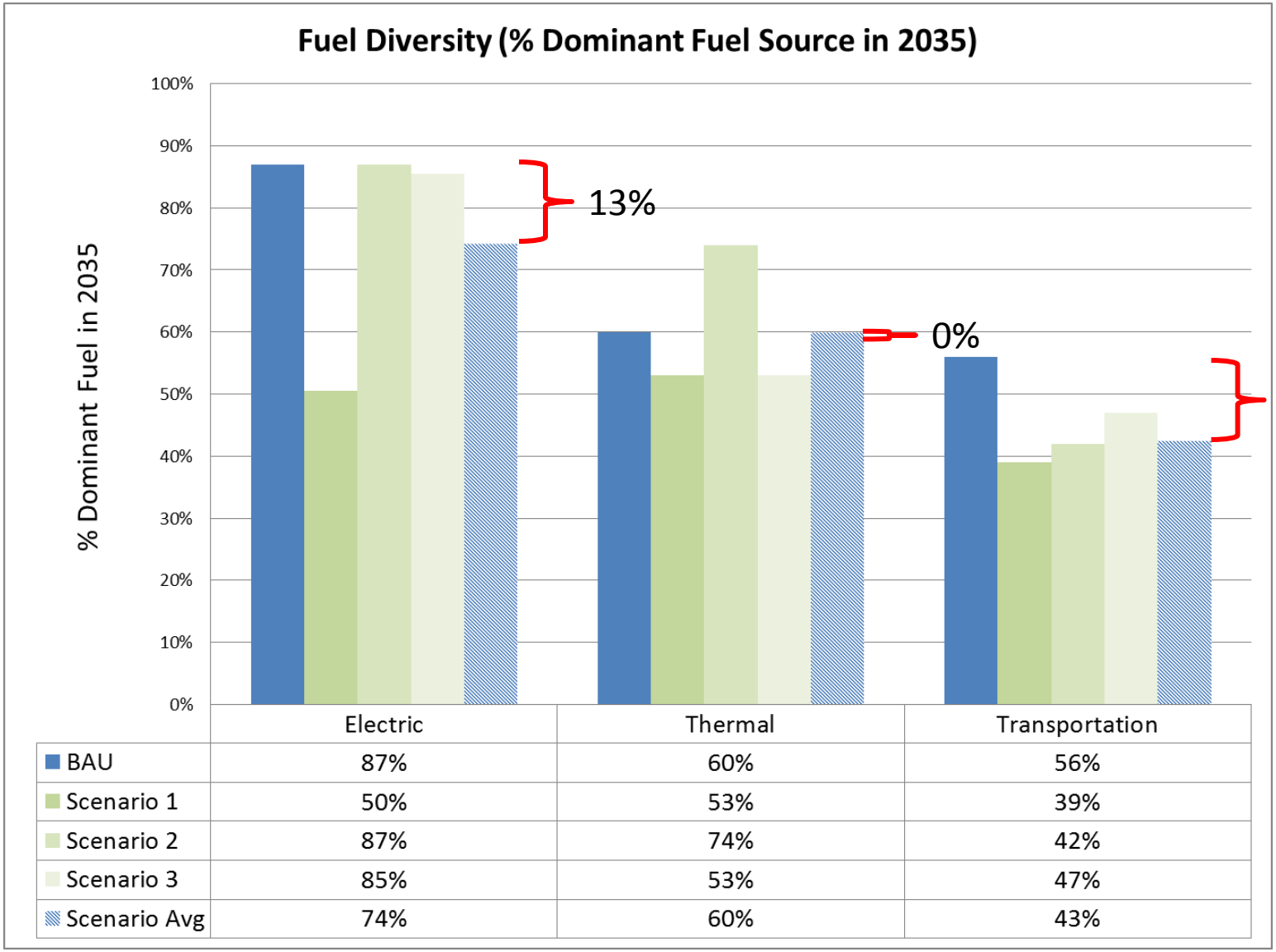
Analysis & Research Supporting Proposed Goals

- Sources of information:
  - **Results of Navigant Scenario Modeling**
    - *Helps answer → is the goal feasible?*
  - **Best Practices and Goals in Neighboring States**
    - *Helps answer → is the goal reasonable?*
  - **Feedback and Input from Advisory Council**
    - *Helps answer → is the goal right for Rhode Island?*

Draft Proposed Goals

- Refresher on Scenarios:
  - **Scenario 1:** Prioritize Energy Security
    - Fuel diversification and grid modernization efforts
    - No more than 50% reliance on one fuel in electric sector
    - Aggressive buildout of in-state renewables
    - Expanded fuel choice and diversification in thermal and transportation
  - **Scenario 2:** Prioritize Economics
    - Cost-effectiveness and in-state economic development
    - Large gains in efficiency and fuel switching
    - Emphasis on demand-side transportation resources
  - **Scenario 3:** Prioritize Sustainability
    - Deployment of renewables, thermal alternatives, and vehicle electrification
    - 25% RPS by 2023 and 75% RPS by 2035
    - Zero-emission thermal resource development and promotion of alternative fuel and demand-side resources in transportation

Fuel Diversity Modeling - Results

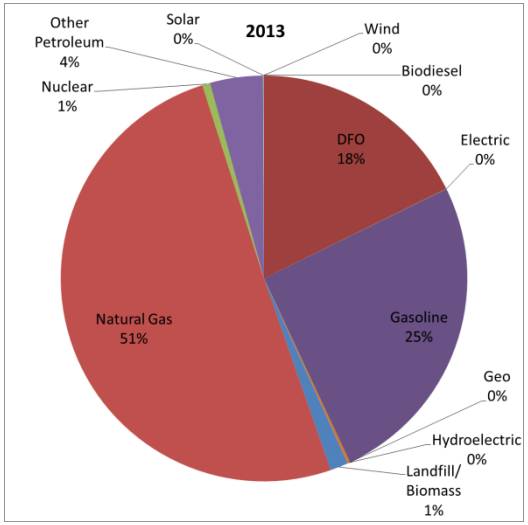


	Electric	Thermal	Transportation
BAU	87%	60%	56%
Scenario 1	50%	53%	39%
Scenario 2	87%	74%	42%
Scenario 3	85%	53%	47%
Scenario Avg	74%	60%	43%

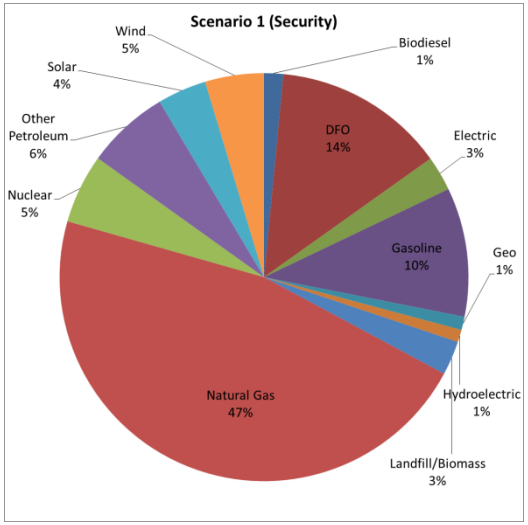
*Scenario average does not include BAU

Fuel Diversity Modeling - Results

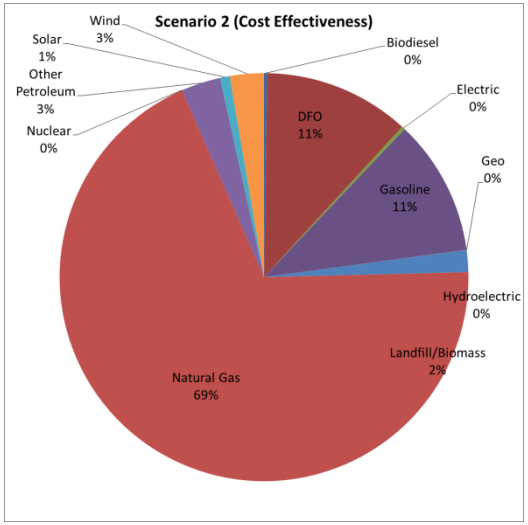
Rhode Island Fuel Consumption 2035 – All Sectors



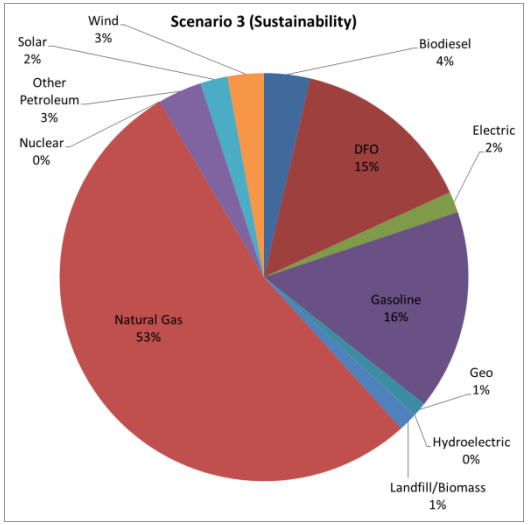
Economy-wide BBTU consumption = 180,741



Economy-wide BBTU consumption = 142,432



Economy-wide BBTU consumption = 111,058



Economy-wide BBTU consumption = 131,714

- Results show a tension between decreasing natural gas % of total fuel consumption and increasing fuel diversity in transportation sector
- An important link exists between energy efficiency and overall fuel diversity goals

*Electric sector BBTU fuel consumption was estimated assigning recent power plant heat rate data to corresponding fuel consumption in the future

Fuel Diversity: High-Level Findings

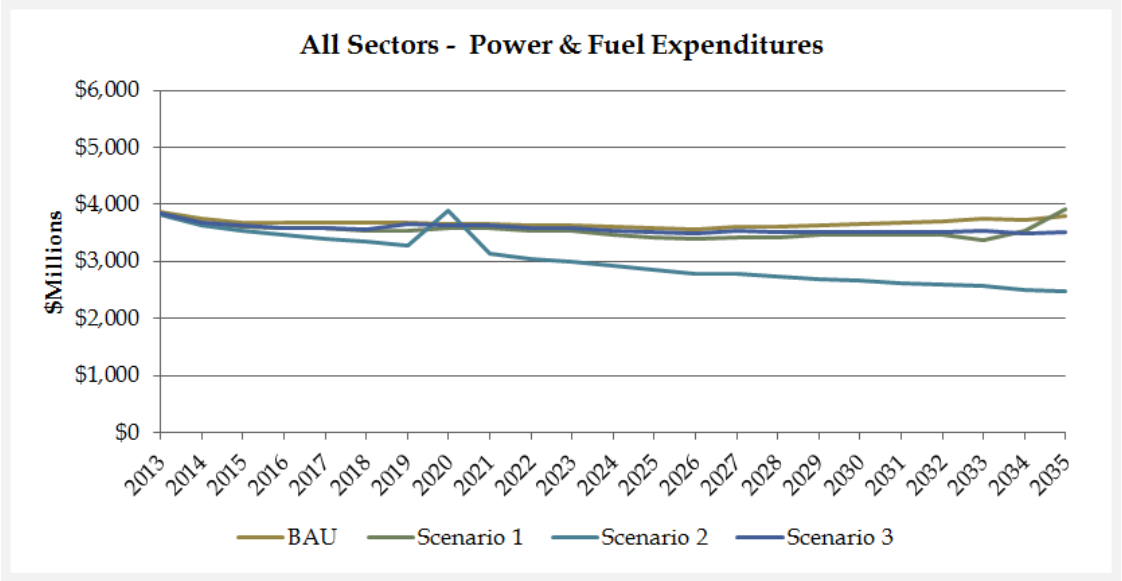
- Navigant's scenario modeling shows that fuel diversity gains are achievable in individual sectors, but difficult to attain on an economy-wide basis
  - Best opportunities to increase diversity are likely in transportation sector
  - More difficult to increase diversity in thermal sector
  - Potential for dramatic (>30%) increases in diversity in electric sector, but likely expensive
- Potential to reduce reliance on dominant fuel by 9% on average (13% in electric and transportation sectors)

Proposed Fuel Diversity Goal

- **Rhode Island should set a goal of increasing fuel diversity in each sector as measured against a 2013 baseline by 2035**

- **Is it feasible?**
  - The goal is within the range of credible outcomes modeled by Navigant
- **Is it reasonable?**
  - Neighboring states have cited fuel diversity as a desired outcome in their energy policy decisions; NARUC has identified support for fuel diversity as a general principle

Cost Containment Modeling Results



Average Annual Energy Costs - Power, Fuel, & Capital Expenditures (Million $)

	INDIVIDUAL SECTORS - 2035			
	Electric	*Thermal*	*Transportation*	*Total*
BAU	902	1,075	1,697	3,673
Scenario 1	1,118	1,067	1,568	3,754
Scenario 2	934	867	1,539	3,339
Scenario 3	1,090	1,039	1,648	3,777
Average	**1,047**	**991**	**1,585**	**3,623**

*Average does not include BAU

Cost Containment Modeling Results

- Navigant's scenario modeling showed that **economy-wide energy cost containment** is possible even with significant changes to Rhode Island's energy economy
- Scenarios 1 & 2 are only ~2-3% more expensive than the BAU; All scenarios are less expensive than today
- The electric sector is the only sector where modeled average annual costs exceed the BAU

Average Annual Energy Costs - Power, Fuel, & Capital Expenditures (Million $)

	INDIVIDUAL SECTORS - 2035			
	Electric	*Thermal*	*Transportation*	*Total*
BAU	902	1,075	1,697	3,673
Scenario 1	1,118	1,067	1,568	3,754
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Scenario 3	1,090	1,039	1,648	3,777
Average	**1,047**	**991**	**1,585**	**3,623**

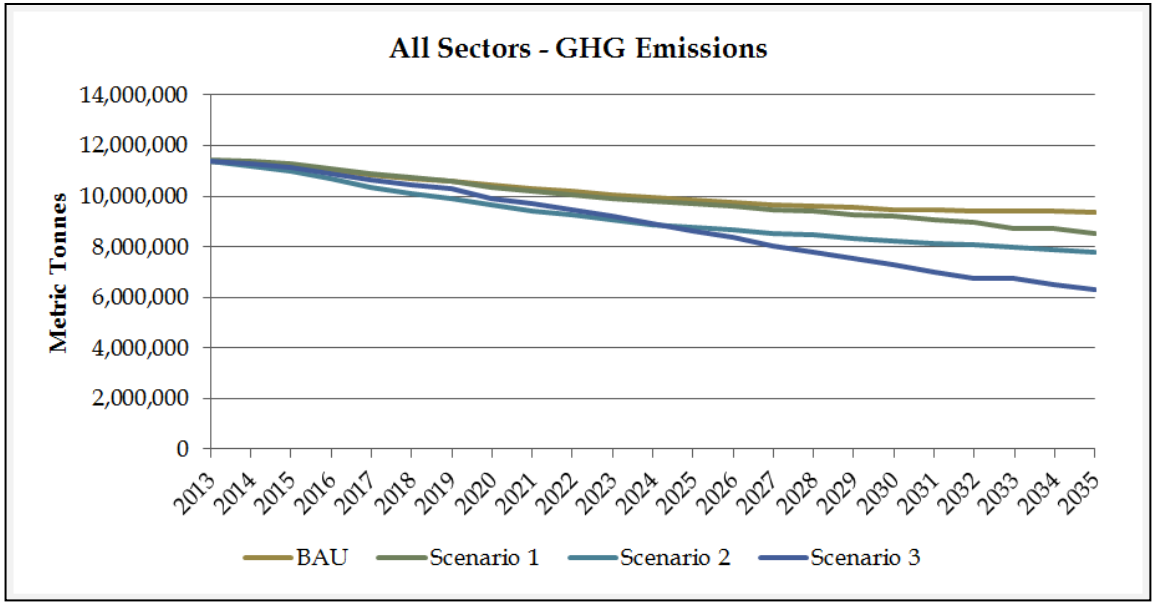
*Average does not include BAU; 2013 economy-wide expenditure is estimated at $3,856

Proposed Cost Containment Goal

- **Rhode Island should set a goal of containing economy-wide energy costs as measured against a 2013 baseline by 2035**

- **Is it feasible?**
  - The goal is within the range of credible outcomes modeled by Navigant
- **Is it reasonable?**
  - Addressing energy costs is a ubiquitous policy priority in New England and nationwide

GHG Modeling Results



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	14%	25%	35%	8%	34%
Scenario 2	21%	32%	23%	34%	36%
Scenario 3	19%	45%	56%	40%	40%
Average	**18%**	**34%**	**38%**	**28%**	**37%**

*Average does not include BAU

GHG Modeling Results

- Navigant's scenario modeling shows that significant GHG reductions are feasible under 3 distinct scenarios
- The average GHG reduction among the scenarios is 34%
- The results show that it is feasible to reduce RI GHG emissions **~45% below 2013 levels by 2035**

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	14%	25%	35%	8%	34%
Scenario 2	21%	32%	23%	34%	36%
Scenario 3	19%	45%	56%	40%	40%
Average	**18%**	**34%**	**38%**	**28%**	**37%**

*Average does not include BAU

What does 45% by 2035 look like?

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

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)

Proposed GHG Reductions Goal

- **Rhode Island should set a goal of reducing greenhouse gas emissions 45% below 2013 levels by 2035**

- **Is it feasible?**
  - The goal is within the range of credible outcomes modeled by Navigant
- **Is it reasonable?**
  - The goal is in line with policies adopted by neighboring states in the region

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Next Steps

September

- **Vet Draft Goals**
  - Week of September 16: *Navigant Report circulated to AC*
  - Week of September 23: *Advisory Council comments on goals*

October

- **Vet Plan Recommendations**
  - Friday, October 4 (9-11am): *Thermal Implementation Group*
  - Monday, October 7 (9-11am): *Electricity Implementation Group*
  - Friday, October 11 (9-11am): *Transportation Implementation Group*

November

- **Vet Preliminary Draft Plan**
  - Advisory Council Meeting to Review Preliminary Draft Plan

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