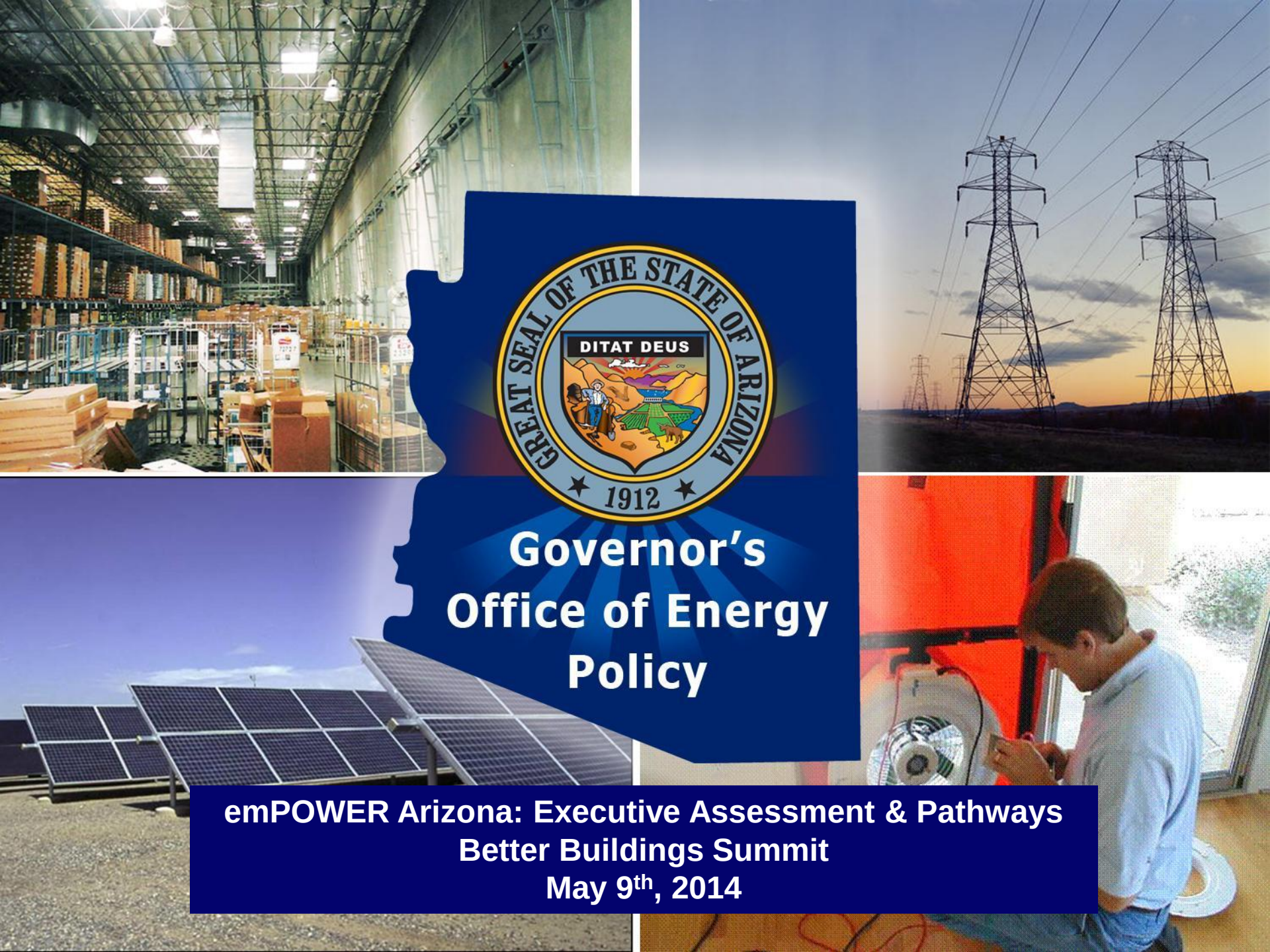
State and Local Energy Planning

Kate Marks, U.S. Department of Energy

Eric Fitzer, Arizona, Governor's Office of Energy Policy

Erick Shambarger, Milwaukee, WI, Office of Environmental Sustainability

Rachel Sholly, Rhode Island Office of Energy Resources



emPOWER Arizona: Executive Assessment & Pathways
Better Buildings Summit
May 9th, 2014

Better Buildings Summit
State & Local Energy Planning Session

- Summit Focused Attributes:
  - Leadership
  - Innovation
  - Partnerships
  - Results

Leadership

- The Master Energy Plan Task Force (now emPOWER Arizona) Fits into Governor Brewer's 2013 Four Cornerstones of Reform Collaborative effort by:
  - State Government – Operational Reforms.
  - Develop master energy plan with executive level leadership but coordinating multiple agencies.
  - Executive snapshot of energy in Arizona.
  - Update at least once every five years.
  - Governor Brewer's contribution to Arizona's energy future by Executive Order.

Innovation

- Preparation
  - May 2013 – Research state energy plans
  - July 2013 – Partner with Arizona State University (ASU)
    - Conduct 8-state energy policy analysis.
    - Series of meetings on format and content.
    - Discussions with leaders and participants on how the process would work.
    - Begin implementing the process.


MR.U
GOVT

Innovation / Partnerships

- Preparation
  - Collaborative effort by:
    - Governor's Office of Energy Policy;
    - Arizona Legislature;
    - Arizona Corporation Commission;
    - Arizona Commerce Authority; and
    - State Universities

First time this has been done in Arizona History

Innovation / Partnerships

- 40-member Master Energy Plan Task Force
  - Included Industry, Academia, Government, Elected Officials
- 16 meetings by the Task Force
- Stakeholder meetings in Phoenix, Tucson, Yuma and Flagstaff

Business Development, Regulation and Workforce

Focused on the combination of incentives, regulations and development efforts geared toward building an effective, diversified, and lasting energy market in Arizona

- **Group Host:** Arizona Corporation Commission
- **Group Leader:** Commissioner Gary Pierce

Environment, Natural Resources and Land Use

Focused on the range of industry perspectives regarding use of Arizona's traditional and non-traditional energy resources

- **Group Host:** Leisa Brug
  - Energy Policy Advisor to Governor Jan Brewer
    Director, Governor's Office of Energy Policy
- **Group Leader:** Kevin Kinsall
  - Natural Resources Policy Advisor to Governor Jan Brewer

Transportation, Fuels, and Infrastructure Planning

Focused on the structure and resources that make up Arizona's transportation energy sector, including fuel resources, infrastructure, financing, and incentives

- **Group Host:** Arizona State Senate
- **Group Leader:** Representative Frank Pratt, Chairman of the House Committee on Energy and Natural Resources

ARIZONA COMMERCE AUTHORITY

Technology Development

Focused on the efforts designed to upgrade existing energy technologies and foster the development of innovative new energy technologies in Arizona

- **Group Host:** Sandra Watson, President & CEO, Arizona Commerce Authority
- **Group Leader:** Bennett Curry, Vice President, Business Attraction, Arizona Commerce Authority

MEP Accomplishments - ☑

- 40- member Task Force divided into four work groups ✓
- 16 meetings held over four months ✓
- Bullet points established generating four draft sections of the MEP ✓
- All versions voted and approved ✓
- Bullet points transitioned in to the draft document ✓
- 4 Stakeholder meetings held around the state ✓
- Included stakeholder meeting comments ✓
- Submitted to the Governor in December 2013 ✓

Establishment of emPOWER Arizona: Executive Assessment and Pathways

- GOEP & ASU staff drafted the MEP
  - Draft based upon the bullet points of the Task Force
  - Outline – Intro by Governor Brewer
  - Executive Order established specific action items
  - Followed by “meat & potatoes” background on energy sources, current status, workforce and economic development & 10-year projections, emerging technologies
  - Appendices & other documentation

Results

- Governor Brewer's 2014 Four Cornerstones of Reform Economic Competiveness/Energy Planning Reforms:
  - emPOWER Arizona established by Executive Order with focus on five Executive level goals:
    - Increase solar development;
    - Educate the next generation of energy professionals;
    - Lead in energy-sector workforce development;
    - Statewide coordination to reduce energy use; and
    - Establish the State Energy Advisory Board

Results

- Progress on five Executive goals:
  - Increase solar development
    - Identifying suitable renewable energy developable lands
    - Working towards an Arizona specific Environmental Permitting handbook
  - Educate next generation of energy professionals
    - Creating an Energy Education Awards program
    - Showcasing the Arizona Energy Sector at events

Results

- Progress on five Executive goals:
  - Lead in energy-sector workforce development;
    - Creating a “one-stop shop” database for Arizonan’s looking to enter the energy workforce
    - Collaborating with community colleges curriculum development in energy-related programs
  - Statewide coordination to reduce energy use
    - Developed a State Energy Savings Performance Contracting pre qualified list
    - Establishing a State Energy Efficiency Development Fund

Results

- Progress on five Executive goals:
  - Establish the State Energy Advisory Board
    - 15 member Board made up of Gov't, Industry, Utilities and Policy Makers
    - Meet twice per year
    - Approve updates to emPOWER Arizona
    - Continue on-going energy related planning in the state
      - Emerging technologies, Bioenergy etc.

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ReFresh Milwaukee
FRESH COAST. FRESH IDEAS.
A Vision for Community Sustainability
www.ReFreshMKE.com
ReFresh
MKE

Presentation Overview

- Overview of Milwaukee Office of Environmental Sustainability
- ReFresh Milwaukee Overview
- Energy Chapter
  - Goals
  - Strategies

Milwaukee Office of Environmental Sustainability

- Created by Mayor Barrett in 2006
- Focus Areas
  - Smart Energy (efficiency and renewables)
  - Green Infrastructure (stormwater)
  - Economic Development
  - Urban Agriculture
- Energy Efficiency → Economic Development
- Programs that make City operations and the community more sustainable and economically competitive

ReFresh Milwaukee

- Milwaukee's Sustainability Plan
- Stakeholder input and public outreach
- Vision & strategic plan for community sustainability
- Sets goals and targets (2013-2023)
- Eight Issue Areas

Energy Chapter – 10 Year Goals

- Improve Energy Efficiency in Milwaukee
  - Retrofit 2000 homes
  - Retrofit 1000 business
  - 20% x 2020 in Better Buildings Portfolio
- Replace fossil fuel energy use with more clean renewable energy in city facilities
  - 25% of electricity in City facilities by 2025
- Grow Milwaukee's cluster of energy efficient and clean tech companies to create local jobs and exports
  - Smart Energy Hub formalized and an Energy Innovation Center created by December 2014
- Increase community resilience and customer choice by removing the regulatory and institutional barriers to distributed renewable energy projects
  - Intervene in contested rate cases at PSC
  - Create local Energy Engagement website

Energy Chapter - Strategies

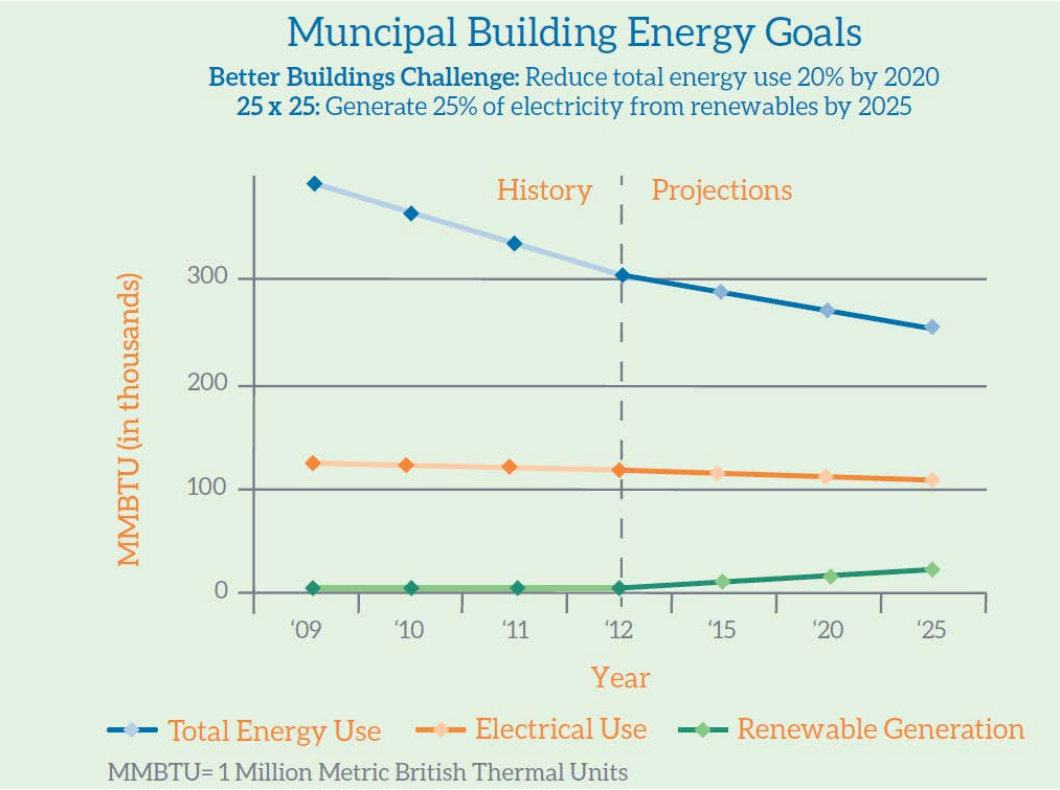
- City Energy Management Plan (Municipal Facilities)
- Innovative Financing Options for Energy Efficiency and Clean Energy
- Promote and enhance Milwaukee's Smart Energy Hub and energy innovation center
- Advocate for a Sustainable Energy Future (energy priorities law as basis)

City Energy Management Plan

- Energy Reduction Team Leads
- Six Steps to Energy Efficiency
  - Set goals (Better Buildings Challenge)
  - Measure city energy use (Portfolio Manager and Facility Dude)
  - Prioritize buildings for improvement
  - Identify cost effective projects
  - Implement projects
  - On-going monitoring, reporting and continuous improvement

1. City Energy Management Plan

- Energy Reduction Team (efficiency first)
- Better Buildings Challenge (reduce energy 20% by 2020)
- Renewable energy (25% by 2025)



Climate Change Averted!

2. Promote Innovative Financing for Efficiency

- Me^2 residential energy efficiency loans
  - Partnership with Summit Credit Union: LLR→ affordable loans
- Commercial PACE Financing
- Solar group buys (Bayview and Riverwest)

3. Smart Energy Hub

- Milwaukee as national leader in energy tech companies (M-WERC and partners, tech schools)
- Regional effort of M-WERC centered in Milwaukee
- Energy Innovation Center/Incubator Clean Energy Business Leaders gathering

4. Advocate for a Sustainable Energy Future

- Energy Priorities law as basis (energy efficiency first)
- Demonstrate that energy efficiency and renewable energy is *cost effective* and *technically feasible*.
- Advocate for improvements at utility level, PSC, and state legislature
  - Adequate funding for Focus on Energy
  - No new coal plants
  - Clarify rules regarding 3rd party ownership of solar installations
  - Net metering rules comparable to surrounding states (20KW vs 1MW)

Stay Connected

- ReFreshMKE.com
- SmartEnergyPays.com
- City.Milwaukee.gov/Sustainability

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Rhode Island State Energy Plan (RISEP)

Better Buildings Summit

May 9, 2014

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OFFICE OF ENERGY RESOURCES

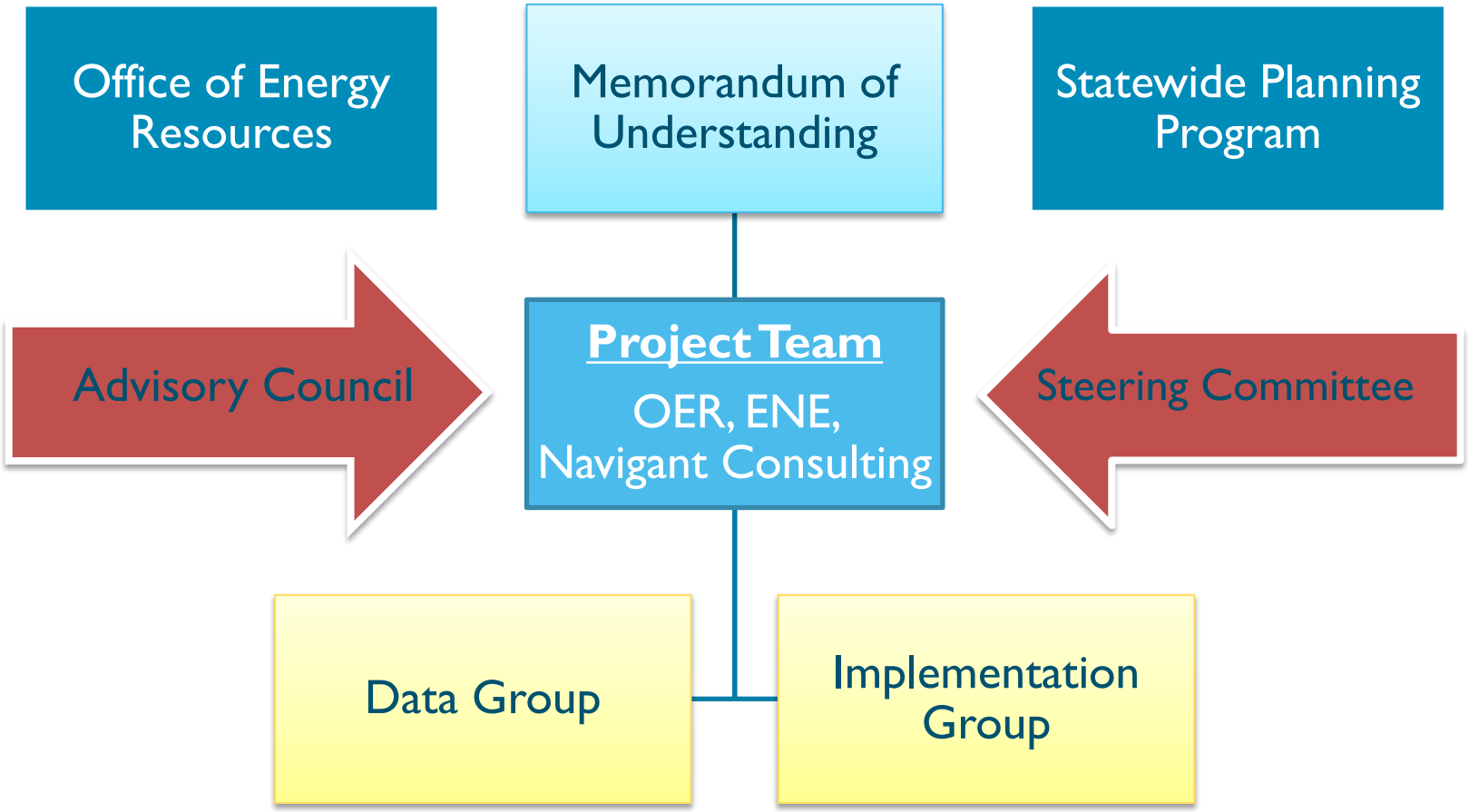
What is the State Energy Plan?

- **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
- **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**

The Process



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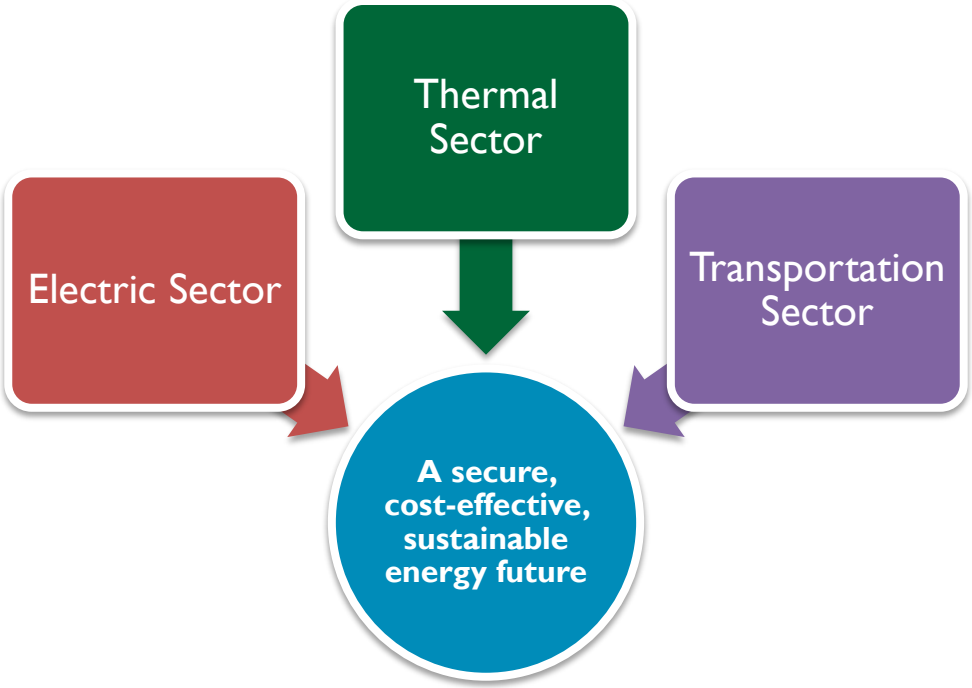
The Process

- **OER worked with a twenty-member Advisory Council during 2013 and 2014 to update the plan**
- **Two consultant groups provided analytical support:**
  - ENE: Business-As-Usual Forecast
  - Navigant Consulting: Scenario Modeling
- **Total budget (not inclusive of staff time) under $200,000**

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."*

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.

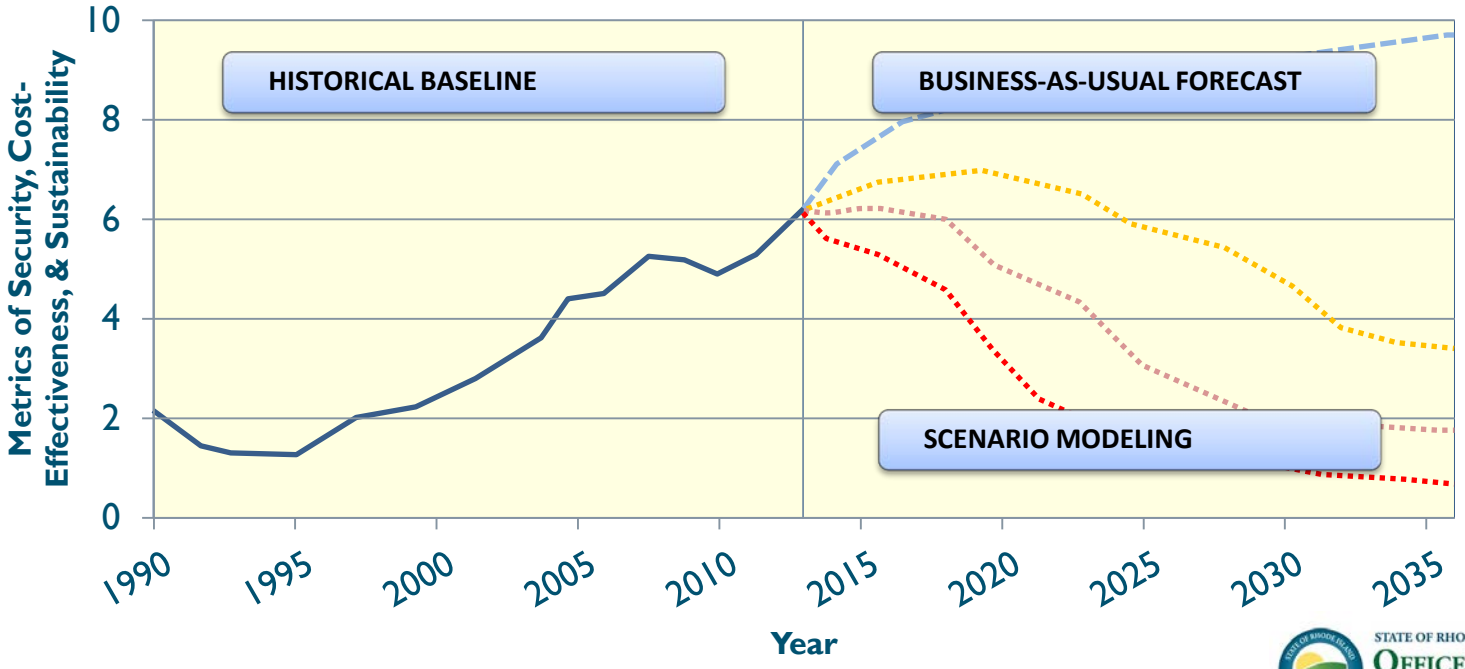
Recommend Action

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.



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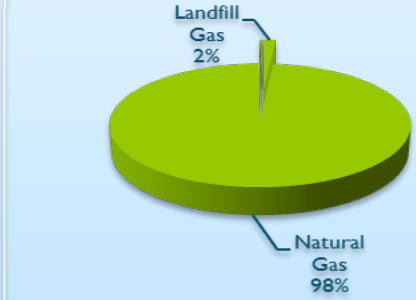
Rhode Island Energy Use Today

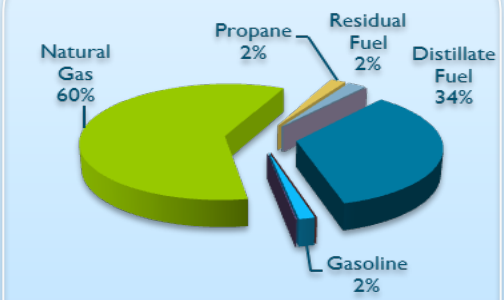


Electric

63 Trillion BTU

$1.1 Billion/Year

2.9 Million Tons CO_2

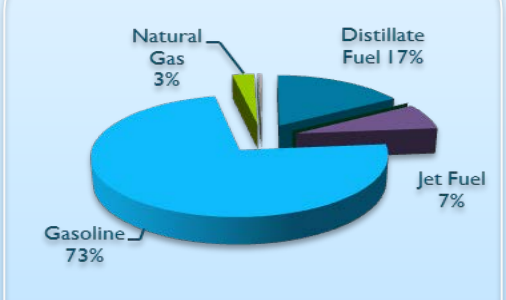


Thermal

63 Trillion BTU

$1.1 Billion/Year

3.9 Million Tons CO_2



Transportation

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

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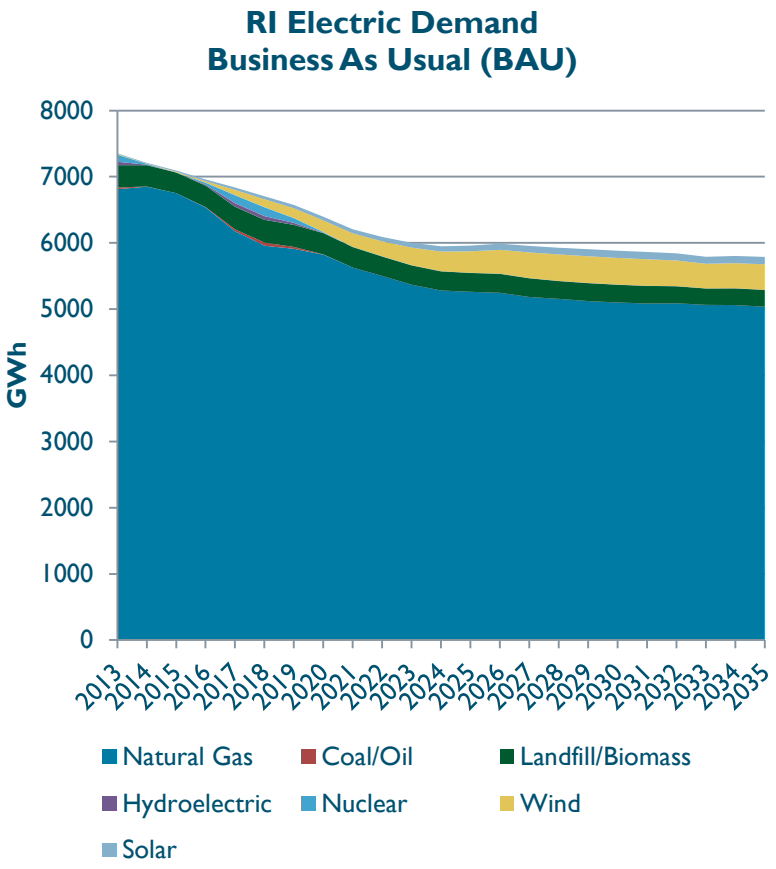
What's in store for the future?

- **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



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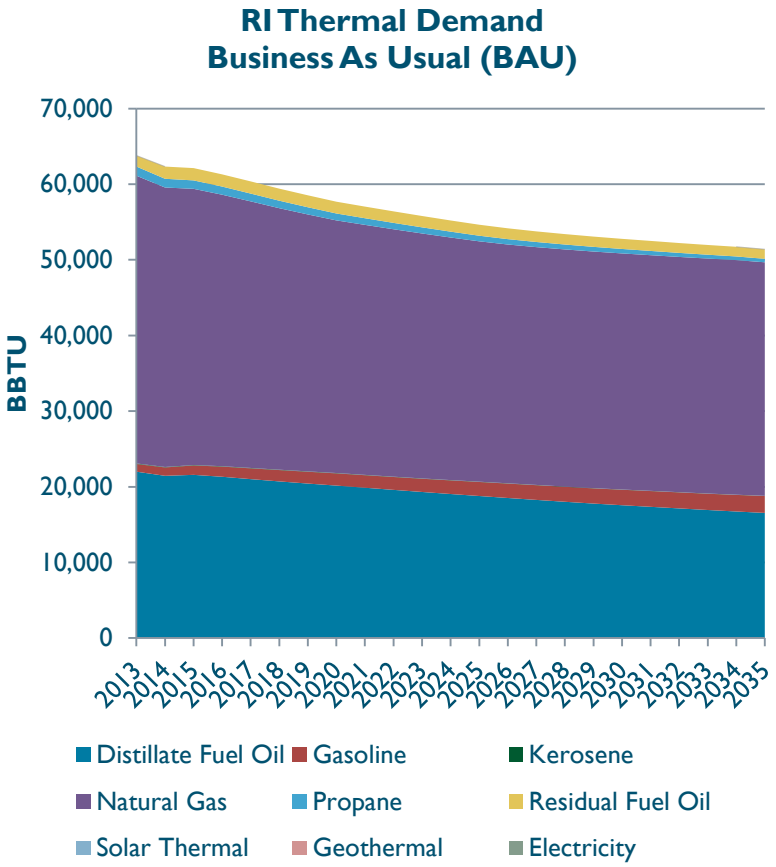
What's in store for the future?

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



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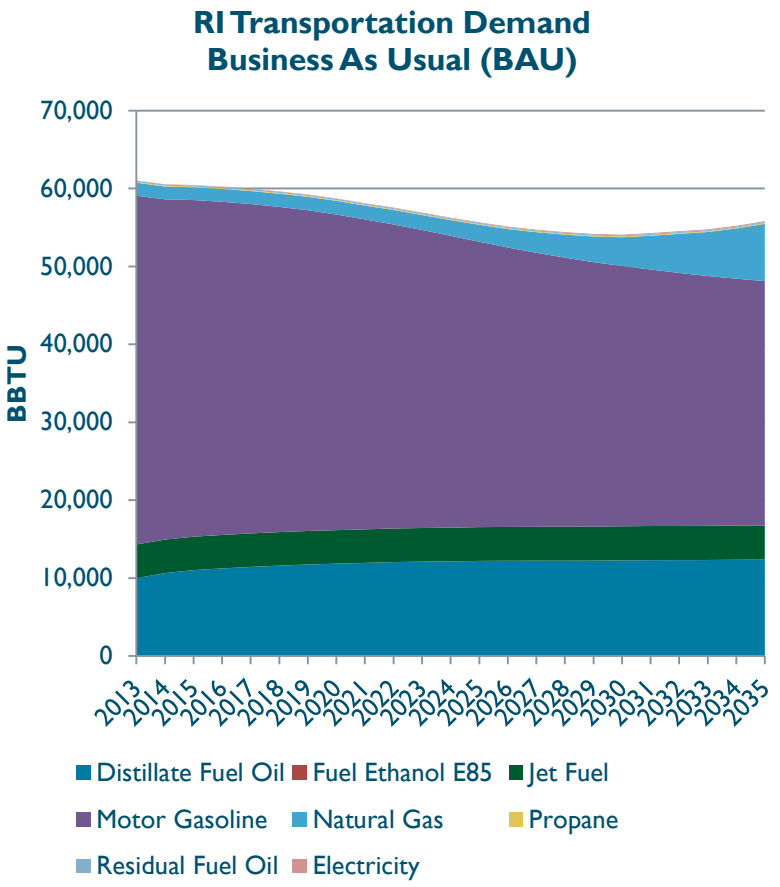
What's in store for the future?

- **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



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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

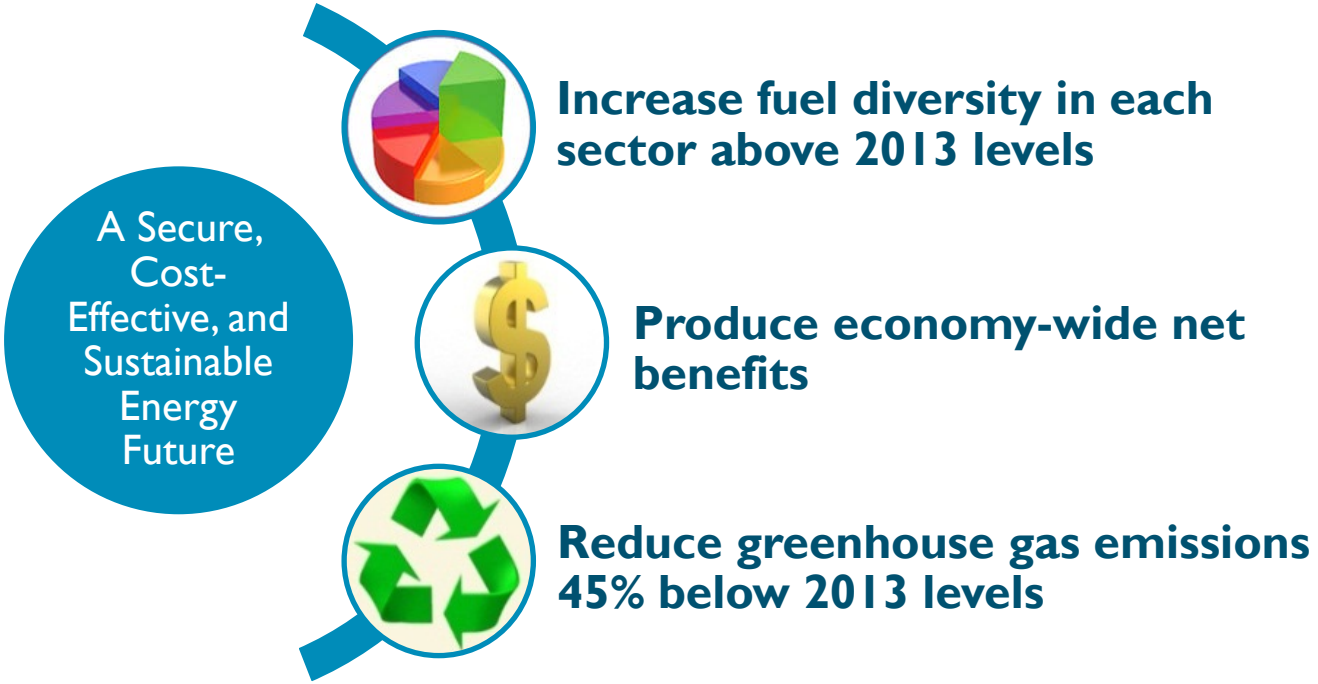
Identify measurable targets for providing energy services using a resource mix that meets a set of criteria advancing the health, environmental, economic, and human wellbeing of the people, communities, and environment of Rhode Island.

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

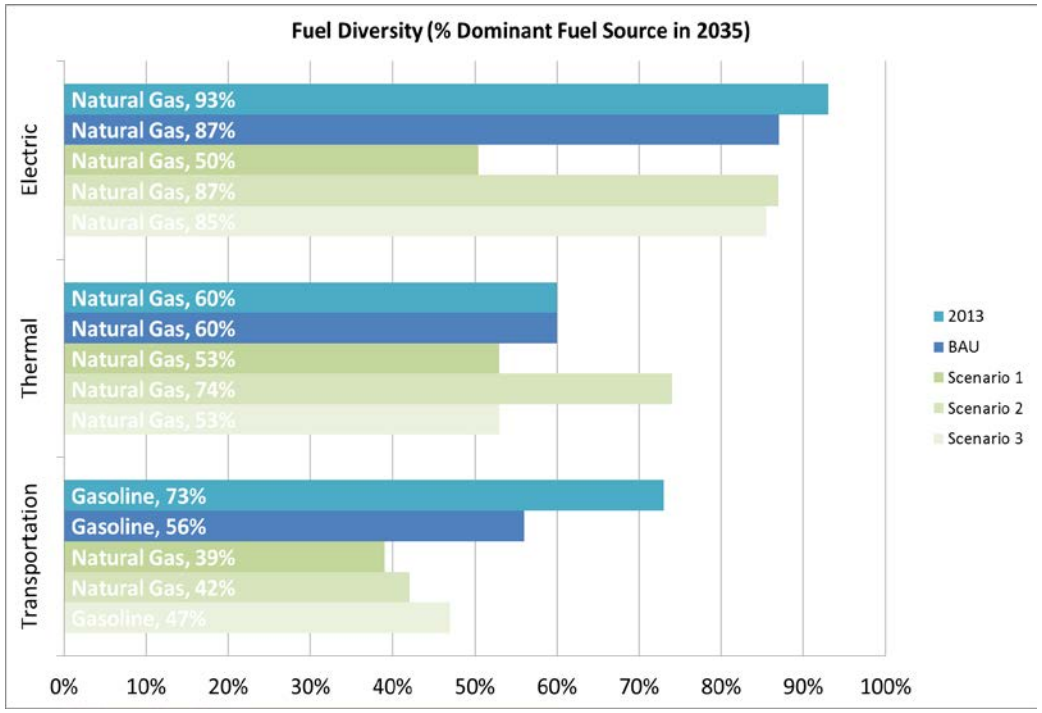
RISEP Targets

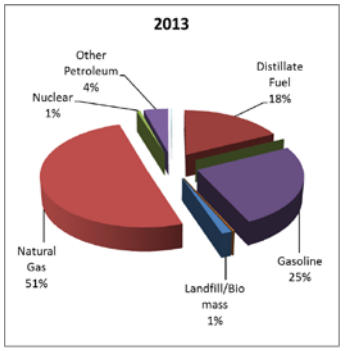
- **Scenario modeling shows Rhode Island can:**

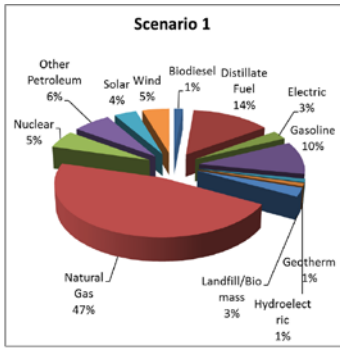


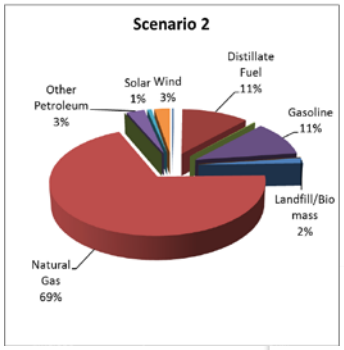
Energy Security: Fuel Diversity

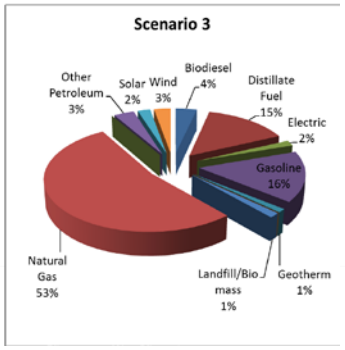
- **Individual sector fuel diversity gains are achievable**
  - Economy-wide gains may not be possible due to the increasing role of natural gas in transportation





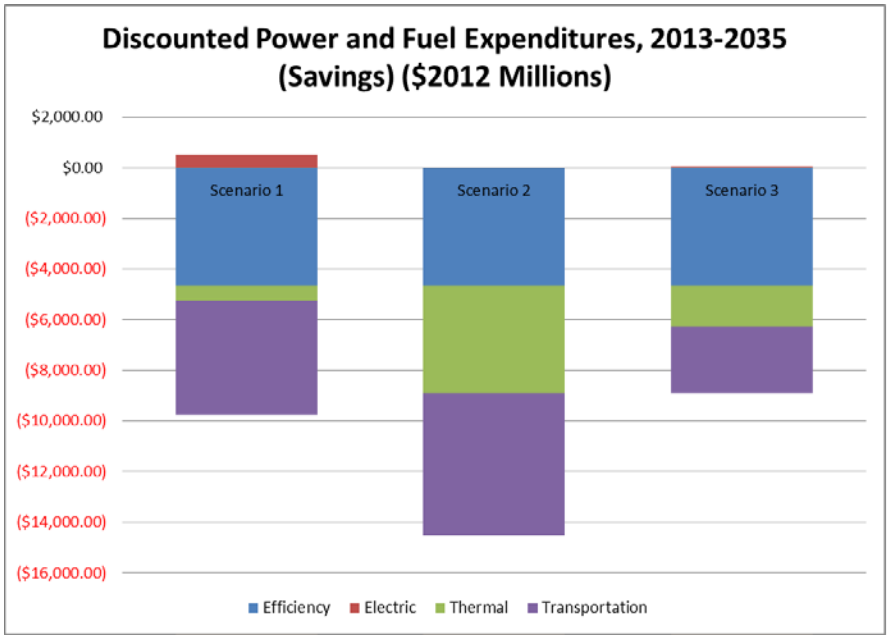


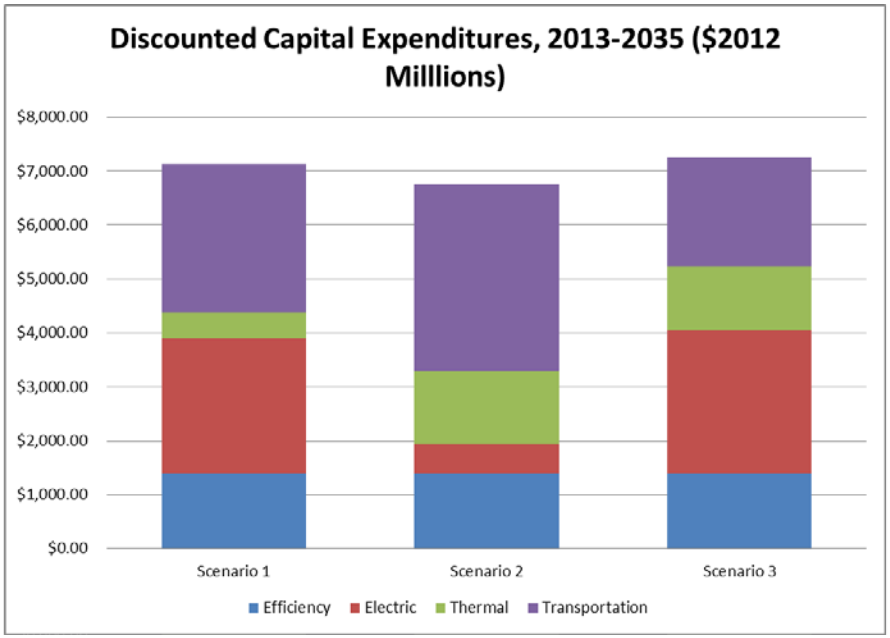




Cost-Effectiveness: Net Benefits

- **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





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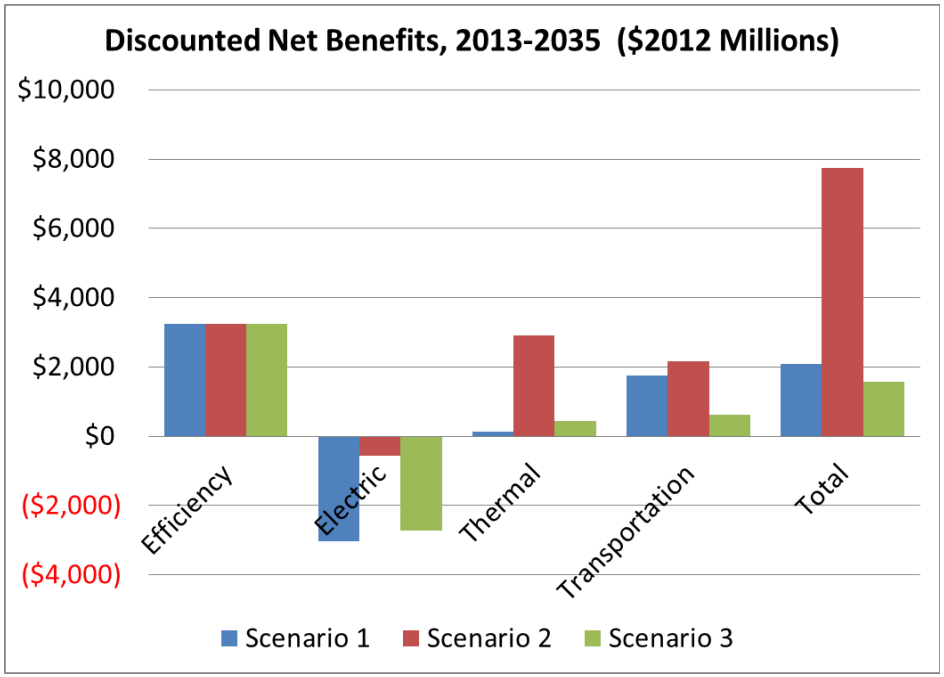
Cost-Effectiveness: Net Benefits

- **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!



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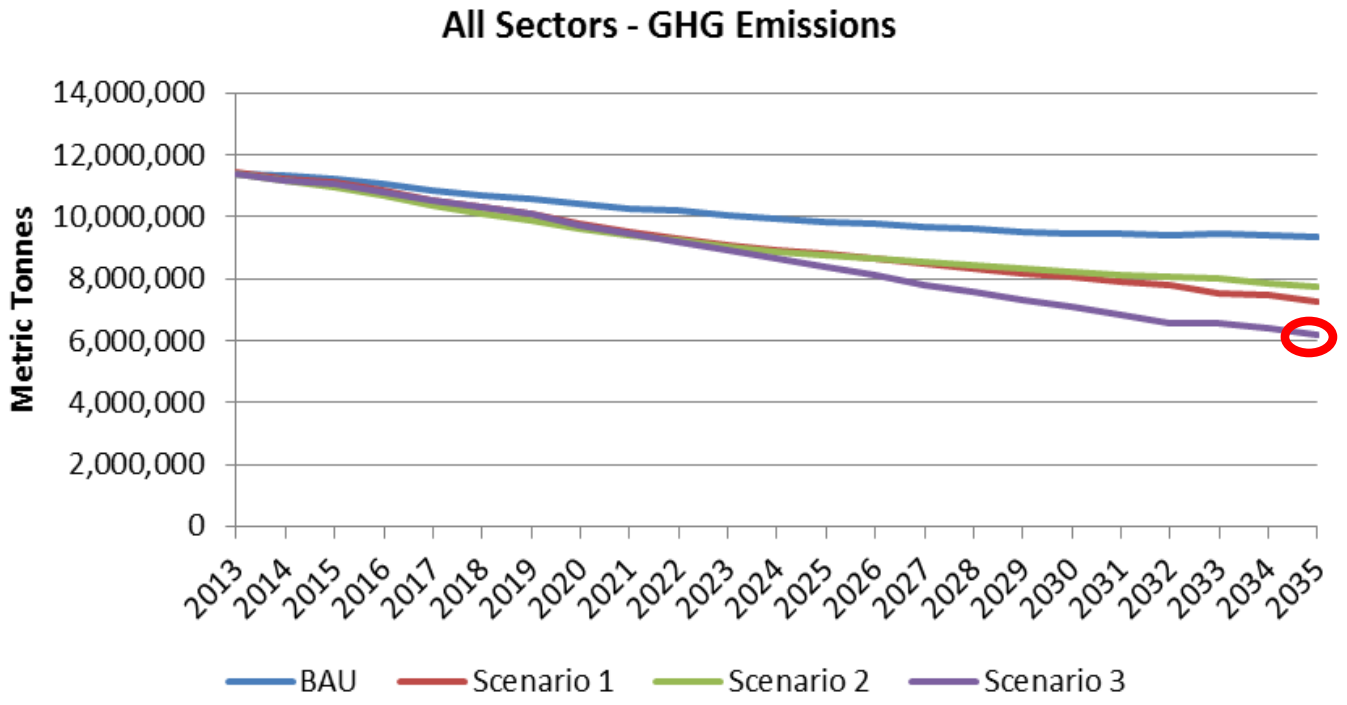
Sustainability: GHG Reductions

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



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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

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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

RISEP Recommendations

- **An "all of the above" clean energy strategy:**
  - Maximize energy efficiency in all sectors
  - Promote local and regional renewable energy
  - Develop markets for alternative thermal and transportation fuels
  - Make strategic investments in energy infrastructure
  - Mobilize capital and reduce costs
  - Reduce greenhouse gas emissions

Relevance to Municipalities

- **The RISEP outlines ways municipalities can set clean energy goals in their comprehensive plans:**

Sector	Public	Private
Energy Efficiency	• Establish energy baseline • Set energy reduction goal	• Designate municipality as a PACE community • Adopt stretch code
Renewable Energy (Electricity & Thermal)	• Install renewable energy systems (funding through DG Program, REF, RGGI)	• Designate Municipality as a PACE Community • Provide "As-of-Right" siting • Provide expedited permitting
Alternative Transportation	• Purchase only fuel efficient vehicles	• Preserve open space and promote "smart growth" through property tax and zoning policies