

Vermont Comprehensive Energy Plan

Public Hearing

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<http://energyplan.vt.gov>



Comprehensive Energy Plan

What is it?

- **Title 30, Section 202b-the CEP must include:**
- **Comprehensive Analysis and Projections**
 - Usage
 - Supply
 - Cost
 - Environmental Effects
- **Recommendations for State Implementation**
 - Actions – Public and Private
 - Regulation
 - Legislation
- **Title 30, Section 202 - Electric Plan**

Comprehensive Energy Plan

Why create it?

- **Title 30, Section 202a:**
- To assure, to the greatest extent practicable, that Vermont can meet its energy service needs:
 - In a manner that is **adequate, reliable, secure and sustainable**
 - Assuring **affordability** and encouraging the state's **economic vitality**
 - **Using** energy resources **efficiently** and managing demands cost effectively
 - Employing **environmentally sound practices**
- **Recommendations based upon all state law on the subject: e.g., GHG reduction goals, renewable energy goals**

Comprehensive Energy Plan

Team Effort

State Government

- Public Service Dept.
- Agency of Natural Resources
- Agency of Transportation
- Agency of Agriculture, Food, & Markets
- Agency of Commerce & Community Development
- Agency of Human Services
- Dept. of Bldgs & General Services

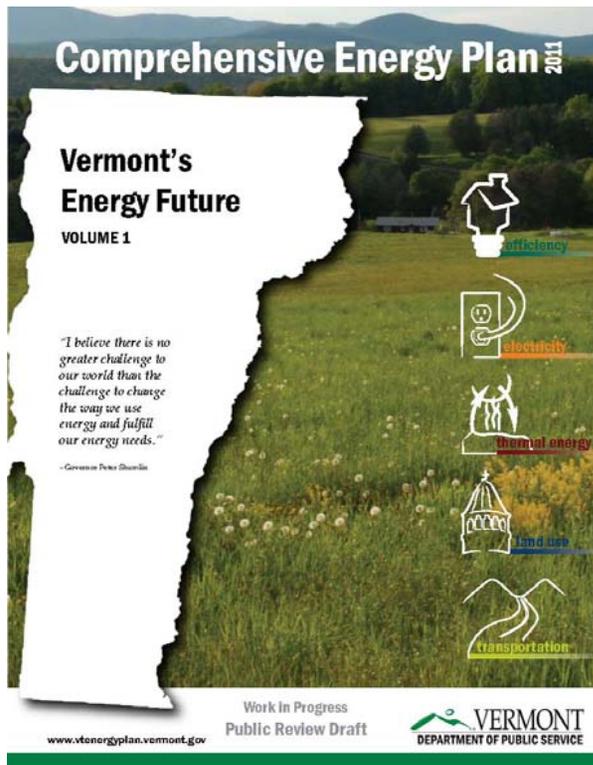
Community & Business Partners

- Public Comments
- Utilities
- Energy Services Companies and Consultants
- Public Interest Organizations and Community Groups
- Business Community
- Town Energy Committees

2015 CEP timeline

- Framing questions/request for information (written comments)
- Stakeholder meetings
- Regional public forums
- **Draft CEP – September**
- **Public hearings**
 - Lyndonville – 10/7
 - Essex – 10/13
 - Montpelier – 10/21
 - Bellows Falls – 10/26
 - Rutland – 10/29
- **Further written comments – through 11/9/2015**
- **CEP due – 1/1/2016**

Progress since 2011



Cross-cutting:

- ✓ Renewable Energy Standard
- ✓ Regional energy planning pilot

Heat:

- ✓ Thermal Efficiency Task Force
- ✓ Updated building codes
- ✓ New building labels
- ✓ "Heat Saver Loan" pilot

Transportation:

- ✓ 6% decrease in gasoline use
- ✓ 10x increase in electric vehicles
- ✓ ZEV rules and Action Plan
- ✓ Stronger state land-use designation programs

Power:

- ✓ Continued EEU performance
- ✓ Expanded Standard Offer and Net Metering
- ✓ Siting Commission and Solar Siting Task Force

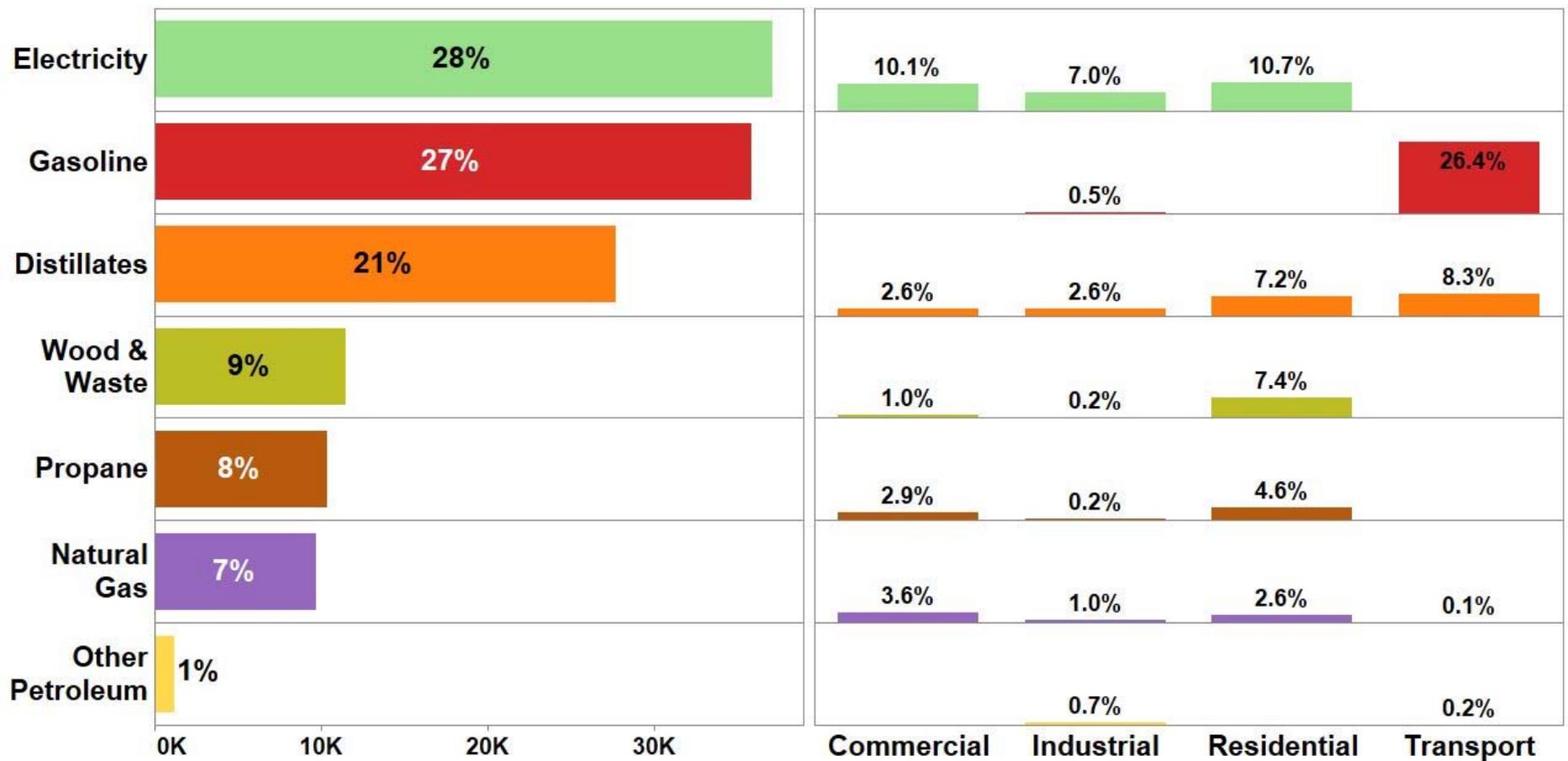
Guiding goals

- ❖ **A vibrant and equitable economy**
- ❖ **Healthy ecosystems and a sustainable environment**
- ❖ **Healthy Vermonters**

Economic, environmental, and human health ideals can be in conflict and implementation of a particular policy or program requires striking balances.

When there is consistency and an action positively impacts all of these areas, it deserves greater priority.

Energy in Vermont today: 16% renewable



Goals for 2025 and beyond

- Reduce total energy consumption per capita by 15% by 2025, and by more than one third by 2050.
- Meet 25% of the remaining energy need from renewable sources by 2025, 40% by 2035, and 90% by 2050.

Why 25% by 2025 and 90% by 2050?

- 25% goal is in statute (as is 75% renewable electric by 2032)
- 90% goal from extensive analysis & public comment in 2011
 - Total Energy Study affirmed achievability and affordability

A vibrant and equitable economy

- Energy security (affordable and stable prices, resources available in VT)
- Increase local energy \$, reduce waste ➔ economic benefit from keeping dollars in state
- Attract and inspire entrepreneurship

Healthy ecosystems and a sustainable environment

- Meet state GHG reduction goals
- Healthy and prosperous forests and farms

Healthy Vermonters

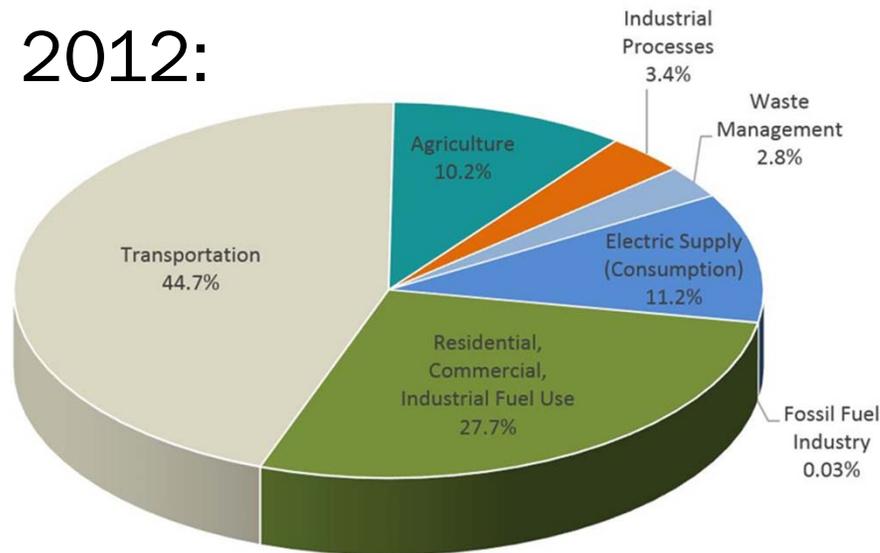
- Improved air quality and comfort
- Infrastructure for active lifestyles

Efficiency – 3 ways

- Continuing improvements in thermal and electric efficiency, accounting for 20% of the reduction in energy consumption.
- Fuel switching away from combustion technologies to more efficient electric powered technologies, accounting for 40% of the reduction.
- Declining source energy requirements of electricity generation, accounting for 40% of the reduction.

GHG emissions

2012:



Updated energy GHG goals:

- 40% reduction by 2030
- 80% or more reduction by 2050

Land Use and Siting

Energy and non-energy land use planning should be integrated as much as possible at the local, regional, and state levels

- Review the outcomes of the RPC energy planning pilot
- Expand to remaining RPCs as appropriate/possible
- Continue coordination as RPCs assess their regions' energy needs, opportunities, and challenges
- State agencies - work with municipalities and partners to provide tools & training to enhance local and regional energy planning, community-led project development, and regulatory process participation

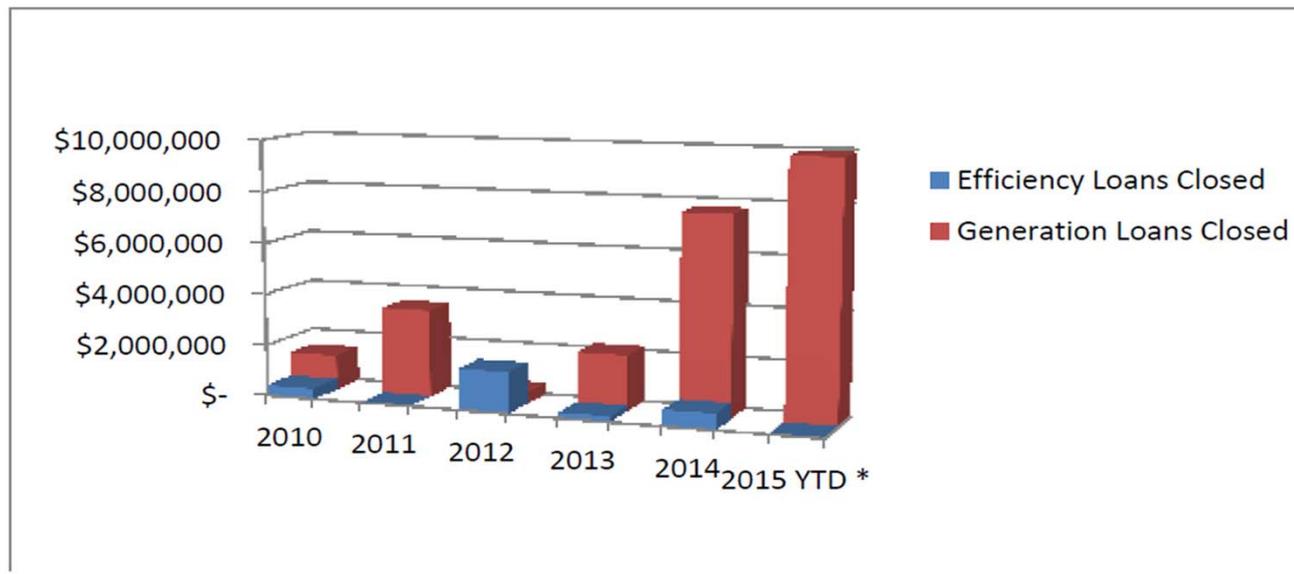
Prioritize energy development that enhances and/or is compatible with other state, regional, and local goals and policies

- Promote tools that encourage siting of renewables on the built environment, other disturbed lands, and in places that offer the opportunity for optimizing multiple uses

Finance

Demand is Growing

- Meeting CEP goals will require substantial infusions of private capital
- When prices and finance align, there can be significant demand:



* Includes \$8,901,486 in Energy Generation loans approved in 2015 YTD with closings pending;
Source: Vermont Economic Development Authority

Finance

New Finance Products:

- Assisting with increased access to affordable capital
- Examples: PSD Heat Saver Loan, NeighborWorks of Western VT energy loan, and on-bill payment for heat pump leases via GMP

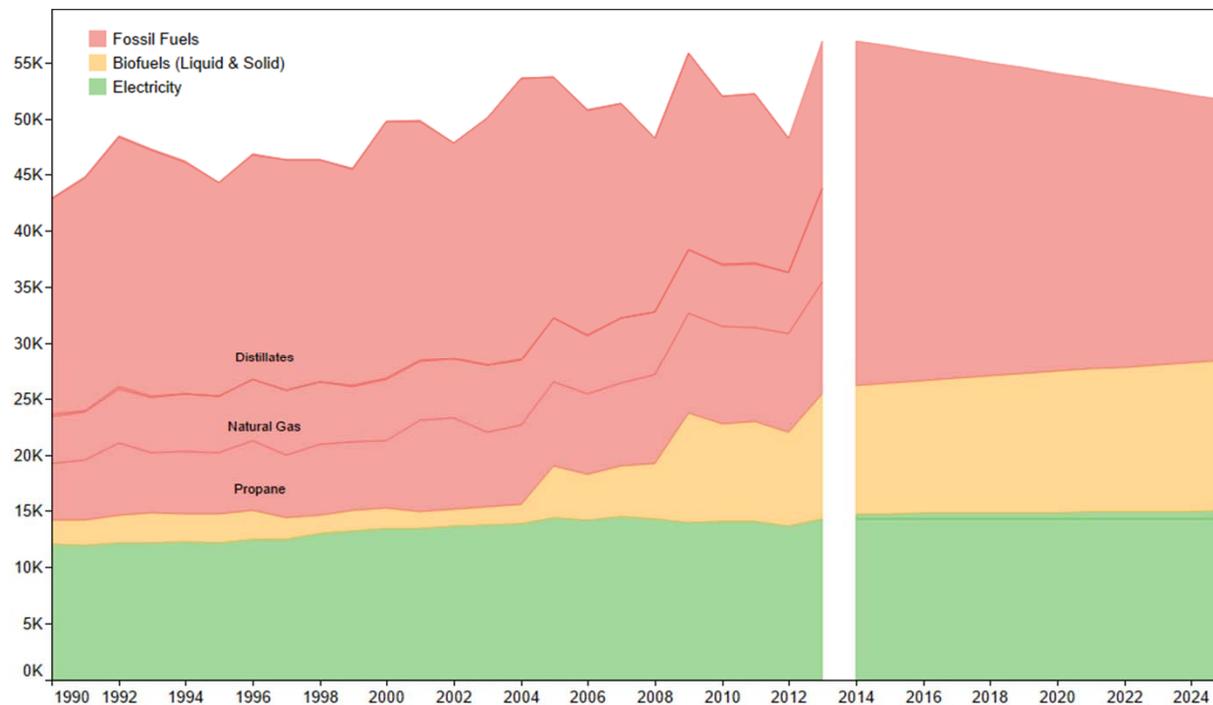
Strategies and Recommendations

- Convene a working group of finance leaders to help chart a viable pathway towards expanded energy financing; learn from other states
- Build local experience and capacity by continuing to test and evaluate new finance tools
- Continue using established tools
 - CEDF bridge \$
 - State leadership by example through revolving funds
 - Support for the Treasurer, VEDA and VHFA investments and financing for RE/EE

Building Heat Goals

Goals:

- 30% renewable by 2025
- All new buildings net zero by 2030



Approach to Building Heat

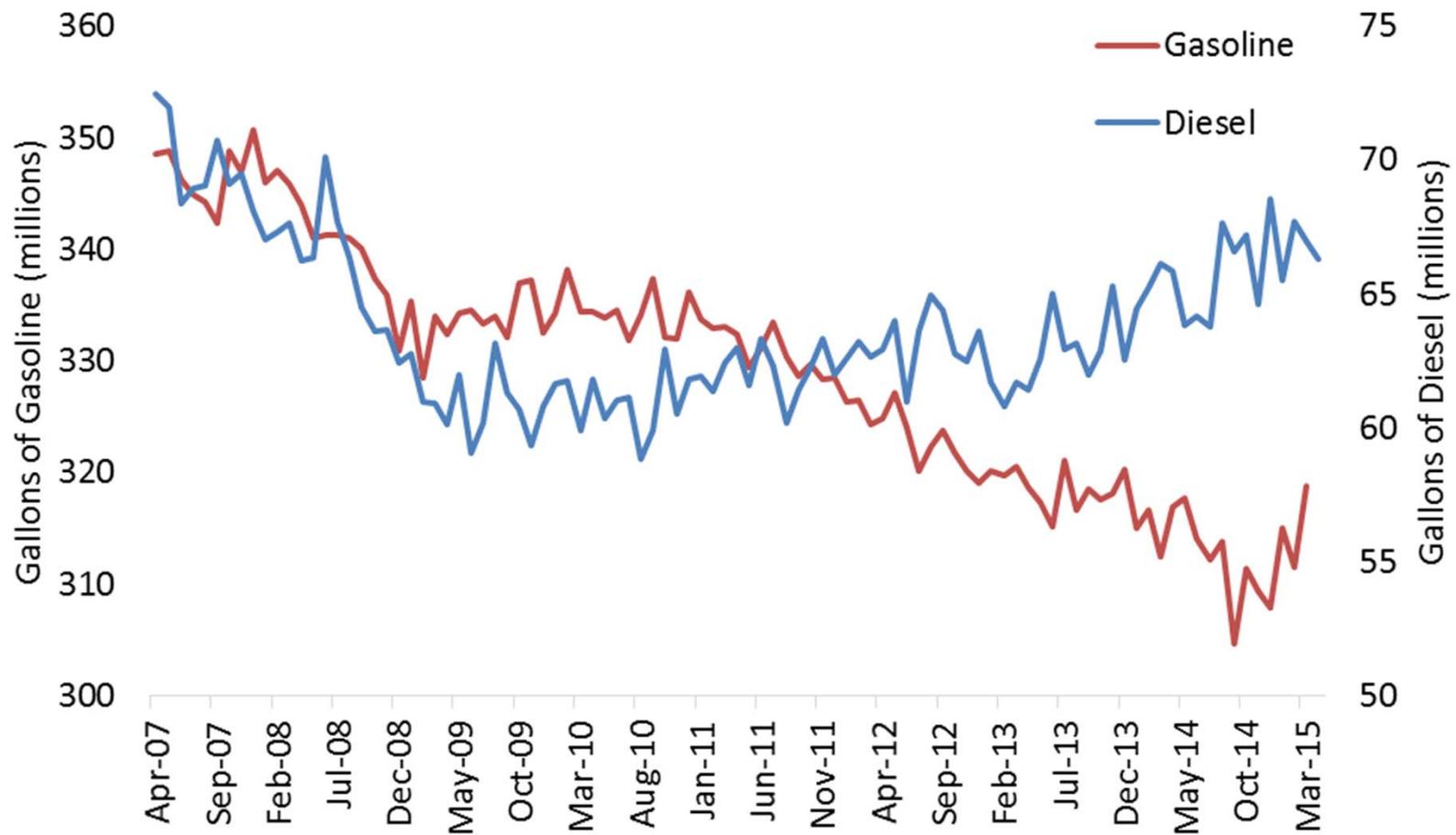
Whole-building approach

- Look at a building as a system and recognize the interaction of all the components within the building
- Coordination and partnerships between heating service companies, building performance contractors, and renewable energy installers to provide customers with a comprehensive roadmap for improving their building energy use

Tools to Meet Heat Goals

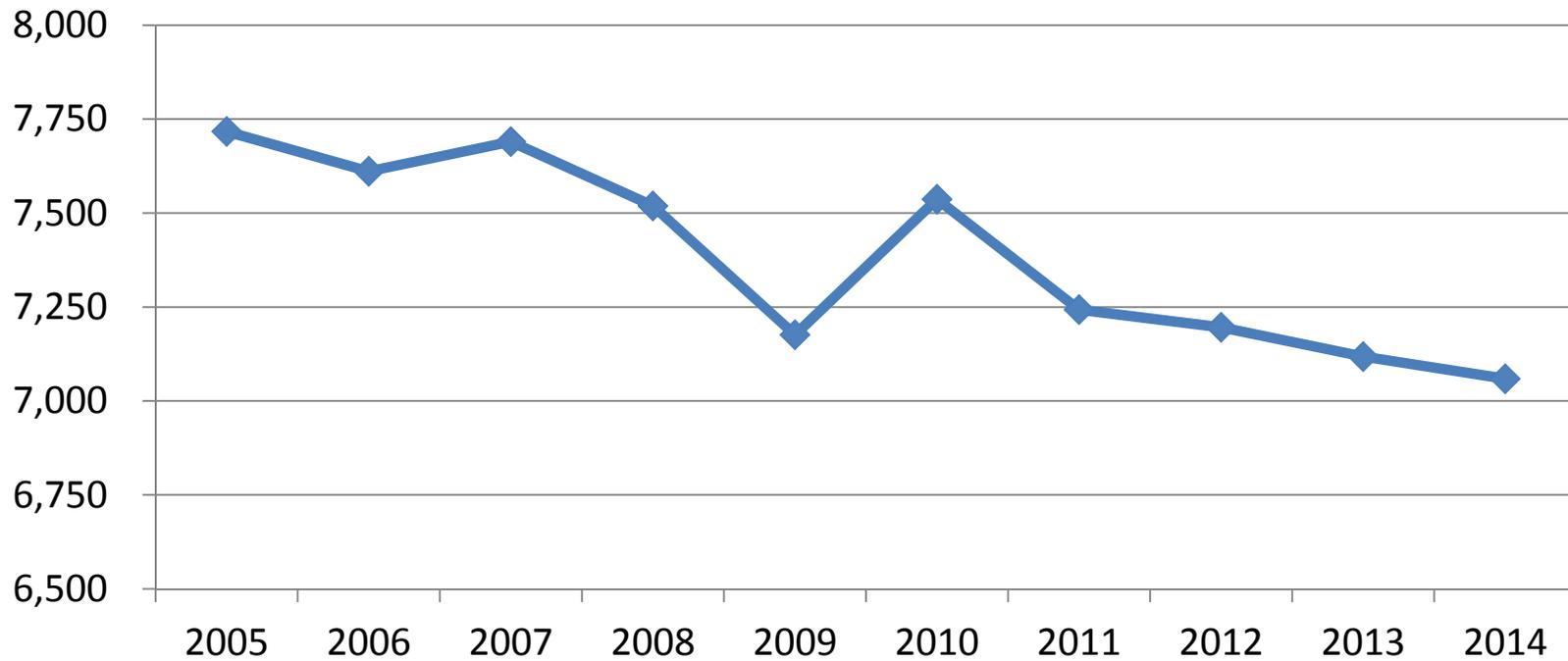
- **Outreach/Consumer Information**
 - Information Clearinghouse
 - Building Energy Ratings and Labeling
- **Thermal Efficiency Tools and Programs**
 - Low-Income Weatherization Assistance
 - EEU programs
 - Renewable Energy Standard – Tier 3
 - Building Energy Codes on a path to Net Zero

Gasoline Use Has Declined



Fall in VMT

Vehicle Miles Traveled in Vermont, 2005-2014 (in millions)



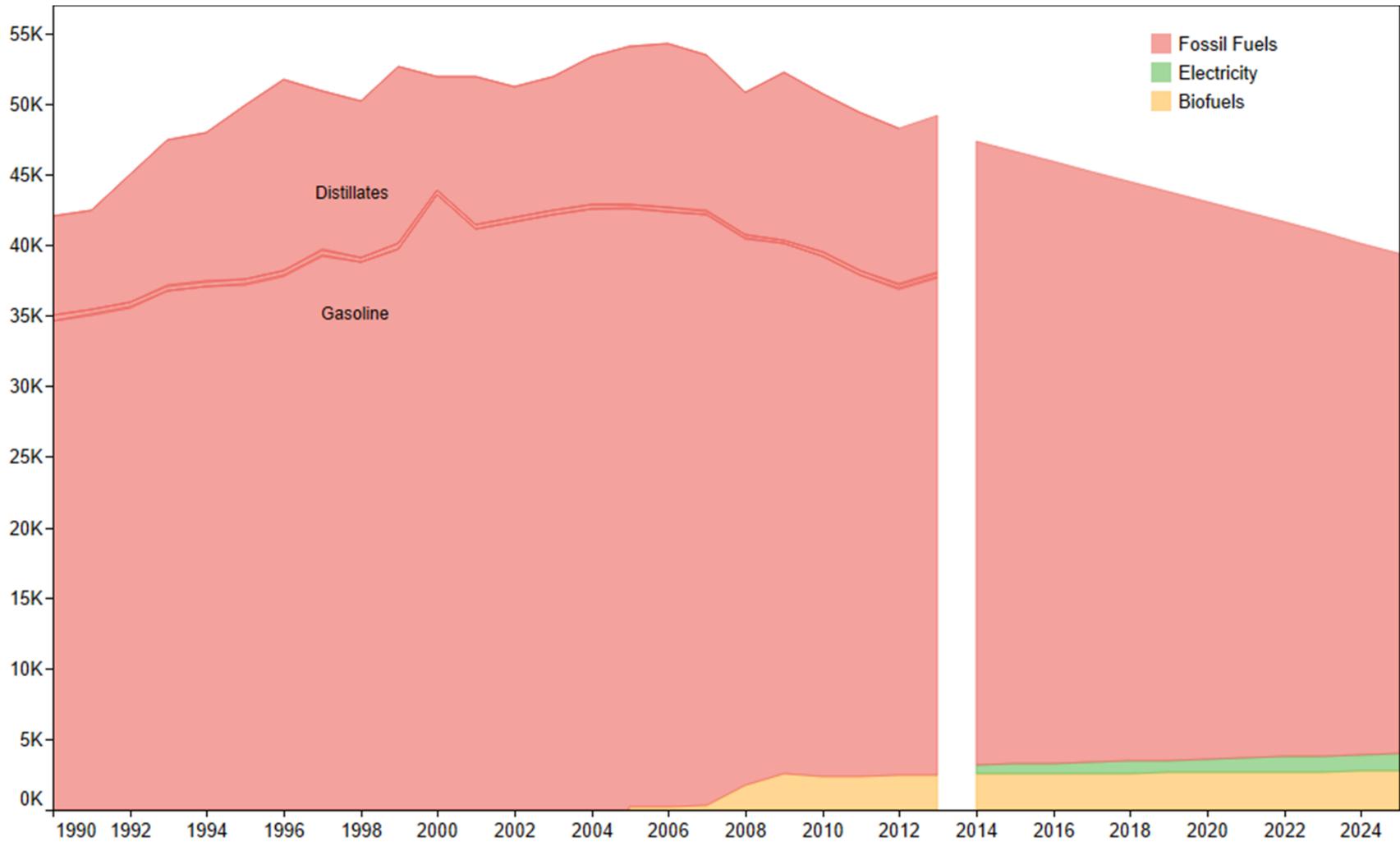
2025 Transportation Goals

Goal: 10% renewable by 2025

One way to get there:

- Keep VMT per capita at or below 2011 levels
- 10% of all light-duty vehicles plug in
- 10% average bio-content in diesel

Transportation



Transportation Efficiency

Transportation system energy efficiency through:

- Land use and development patterns that reduce commute and other trip distances
 - Continue and strengthen land use planning and state designation programs to support compact centers separated by countryside
- Increased use of alternatives to single occupancy vehicles
 - Transit, passenger rail, ridesharing, vanpooling, car sharing, biking, walking, etc.
 - Home-based work and telecommuting
- Also: truck to rail freight

Vehicles and Fuels

Increased energy efficiency through improved vehicle technology.

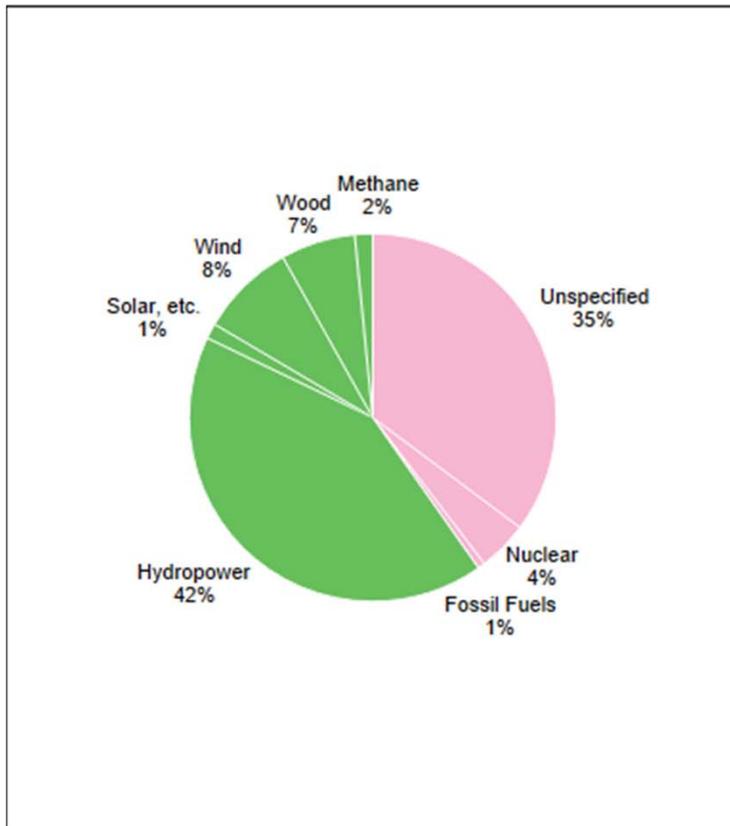
Increasing the use of renewable and less carbon intensive fuels, such as electricity, bio-fuels and CNG.

- **EVs: implement ZEV Action Plan**
 - Explore options of both monetary and non-monetary incentives
 - Public information
 - Workplace and public charging infrastructure
- **Biofuels and CNG:**
 - Support additional fueling infrastructure for fleets and public (esp. for medium and heavy duty)

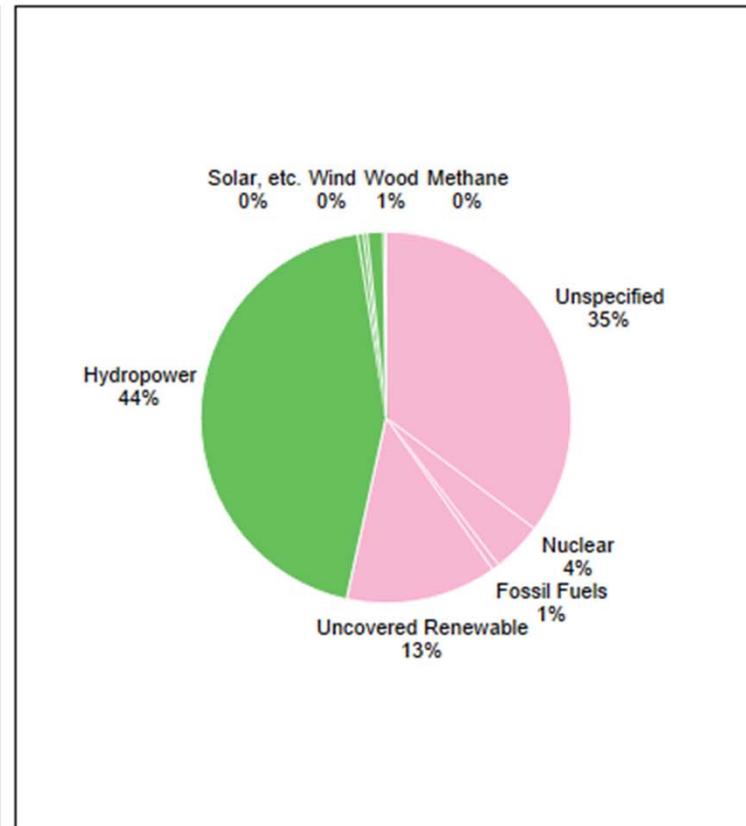
Remember the Transportation Fund!

2014 Electric Sources

Without Adjustments for REC Holdings

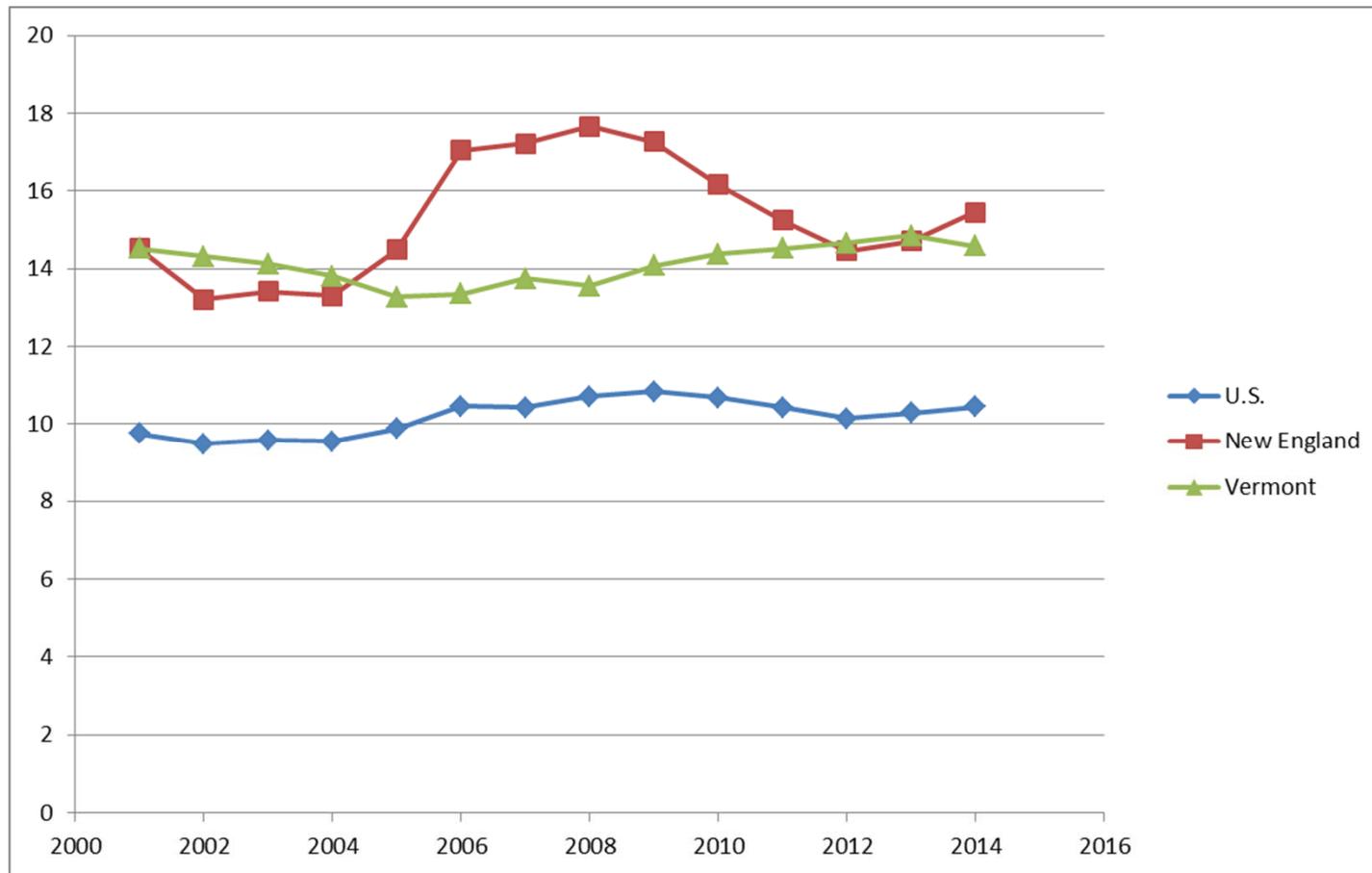


With Adjustments for REC Holdings



■ Non-Renewable ■ Renewable

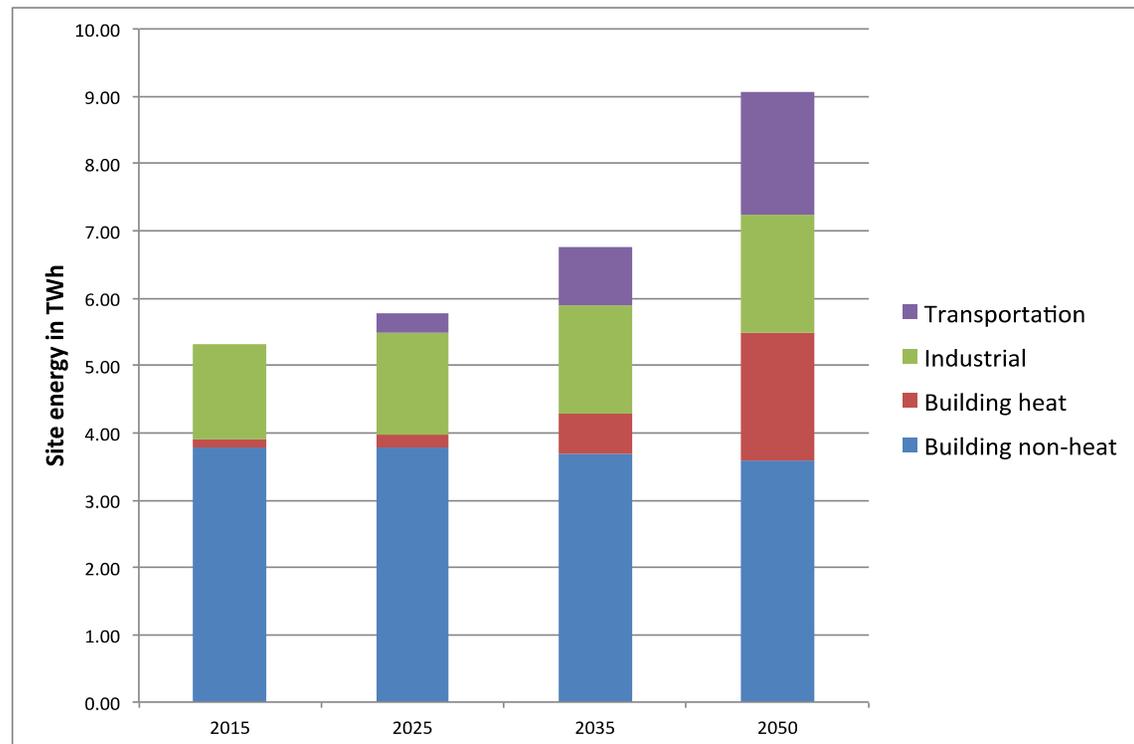
Electric Prices



Electric Power

Goal: 67% renewable by 2025

Electrifying heat and transport will increase electric energy demand:



Approach to Electric Power

Paradigm shift happening now:

- Growing portion of supply is not dispatchable
- While more demand is becoming controllable
- And storage technology is advancing

Use distributed energy resources (supply, demand, and storage) to manage the grid locally

Lower both bills and rates through efficiency and optimal use of electric infrastructure

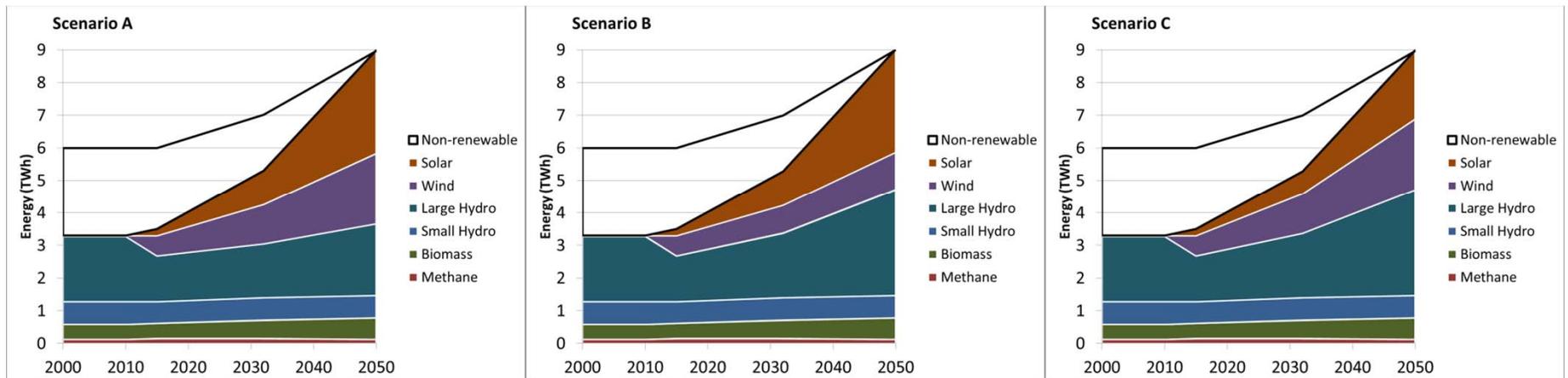
Managing Electric Demand

- Efficiency remains the lowest cost resource: Continue to pursue all reasonably available cost-effective efficiency
- Recognize need for load management of new electric uses (heat and transport)
- Use smart grid and related IT infrastructure to optimize management of the grid
 - Smart rates standard by 2018 for all Vermonters with smart meters (with choice of legacy flat rates)

2032 and 2050 Scenarios

Three illustrative 100% renewable scenarios for 2015 to 2050.

- 75% renewable (with 10% DG) in 2032
- 100% in 2050



Meeting Electric Demand

Sustainable growth in DG

- Net metering and Standard Offer
- Tier 2 of the RES

Regulatory transformation/innovation

- Tier 3 of the RES expands role of electric utilities
- Explicitly welcomes innovative technologies on our grid, and companies in our state
- Learn from other states' regulatory "transformation" processes, while respecting Vermont's uniqueness

Energy Resources

- Solar
- Wind
- Solid biomass
- Liquid biofuels
- Farm and Landfill Methane
- Hydroelectric
- Petroleum
- Natural Gas
- Coal
- Nuclear

About each:

- Overview
- State of the Market
- In-State Resources
- Out-of-State Resources
- Siting and Permitting
- Benefits
- Challenges
- Strategies and Recommendations

Questions?

**For more information on the energy plan and to
submit comments**

go to:

www.energyplan.vt.gov

