



Comprehensive Energy Plan: Energy Efficiency

Stakeholder Meeting
June, 2015

Presentation Overview

- ▶ Current Statutes
- ▶ Possible Energy Use Reduction Goal and Efficiency's role in meeting Renewable Energy goals
 - Informed by Total Energy Study modeling
- ▶ Current Energy Efficiency Programs
- ▶ Other Choices

Energy Efficiency – Relevant Statutes

30 V.S.A §218c and §209(d)

- ▶ §218c Least Cost Integrated Planning
 - Regulated Utilities must meet the public’s need for energy services at lowest present value life cycle costs
- ▶ §209(d)(4) “all reasonably available, cost-effective energy efficiency savings”

§202(a): State Energy Policy

- ▶ 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; that assures affordability and encourages the state's economic vitality, the efficient use of energy resources and cost effective demand side management; and that is environmentally sound.
- ▶ (2) To identify and evaluate on an ongoing basis, resources that will meet Vermont's energy service needs in accordance with the principles of least cost integrated planning; including efficiency, conservation and load management alternatives, wise use of renewable resources and environmentally sound energy supply.

§581

- ▶ Weatherize ~80,000 housing units by 2020 (25%)
- ▶ Reduce annual fuel needs and fuel bills by an average of 25% in the housing units served
- ▶ Reduce total fuel usage by 10% annually by 2025
- ▶ Increase low income weatherization services

§581 – Status

Thermal Efficiency Retrofits: Units completed by Program/Entity								
	2008	2009	2010	2011	2012	2013	2014	Program Total (as of 2014)
EVT	298	480	644	952	1,132	1,162	1,081	5,749
BED		3	2	8	7	2	13	35
VGS	164	239	176	171	214	207	223	1,394
WAP	1,427	1,570	1,832	1,722	1,773	1,100	1,281	10,705
VFEP	0	0	16	253	87	42	11	409
Statewide Total (Annual)	1,889	2,292	2,670	3,106	3,213	2,513	2,609	
Statewide Total (Running)	1,889	4,181	6,851	9,957	13,170	15,683	18,292	

Energy Use Reduction Goal?

- ▶ The 2015 CEP could establish a goal of reducing total energy consumption by ~33% or more by 2050, from our current level.
- ▶ Accomplished through increased efficiency in energy production and use.
- ▶ For context, Vermont's total energy consumption has declined about 7% from a peak in 2004.

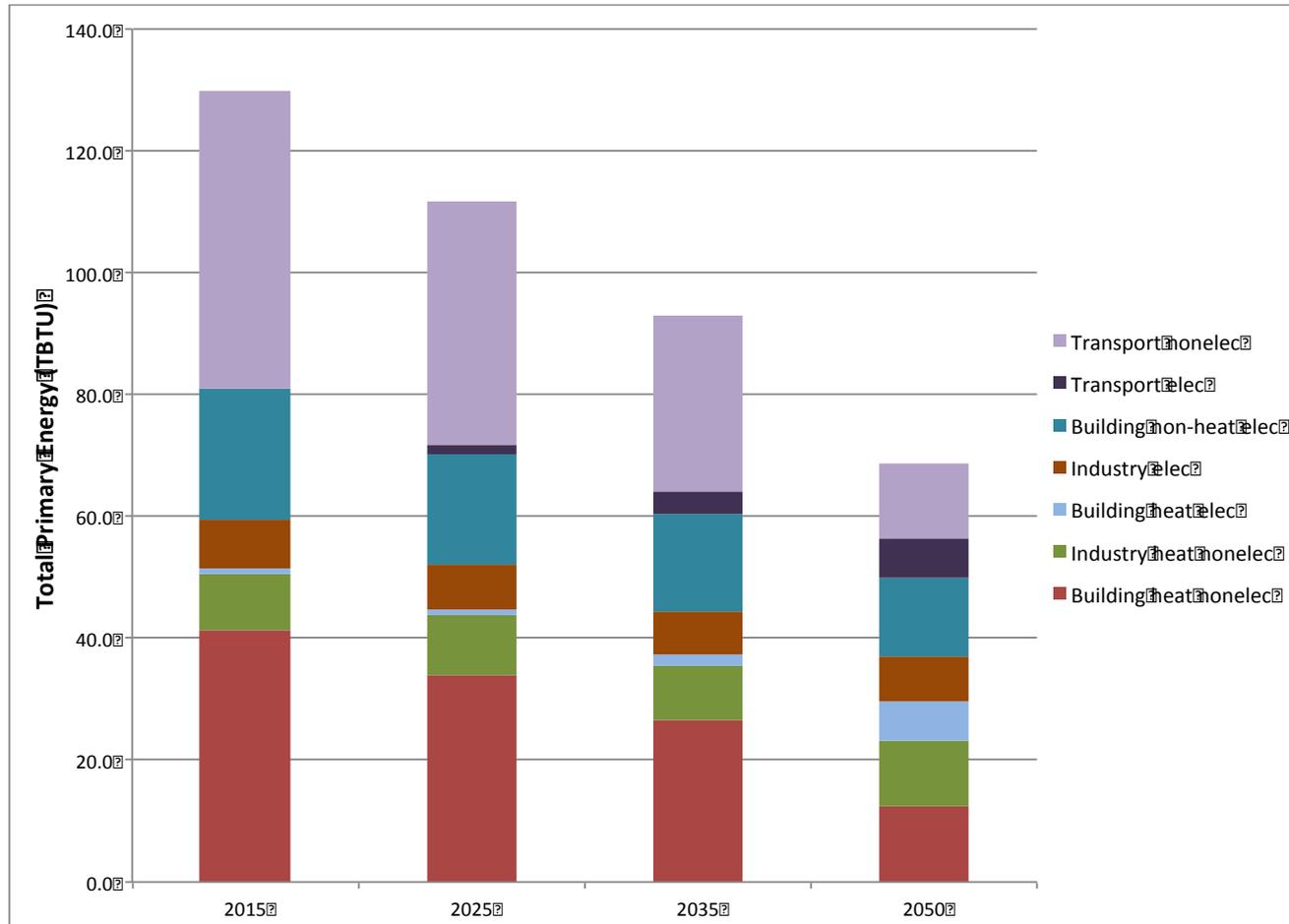
Two Types of Energy Efficiency

- ▶ Expending less energy to perform the same end use services
 - Also includes switching to new fuels/technologies that are fundamentally more efficient (e.g. EVs, heat pumps)
- ▶ More efficient production
 - Avoid the lost heat that comes from combustion and conversion to electricity

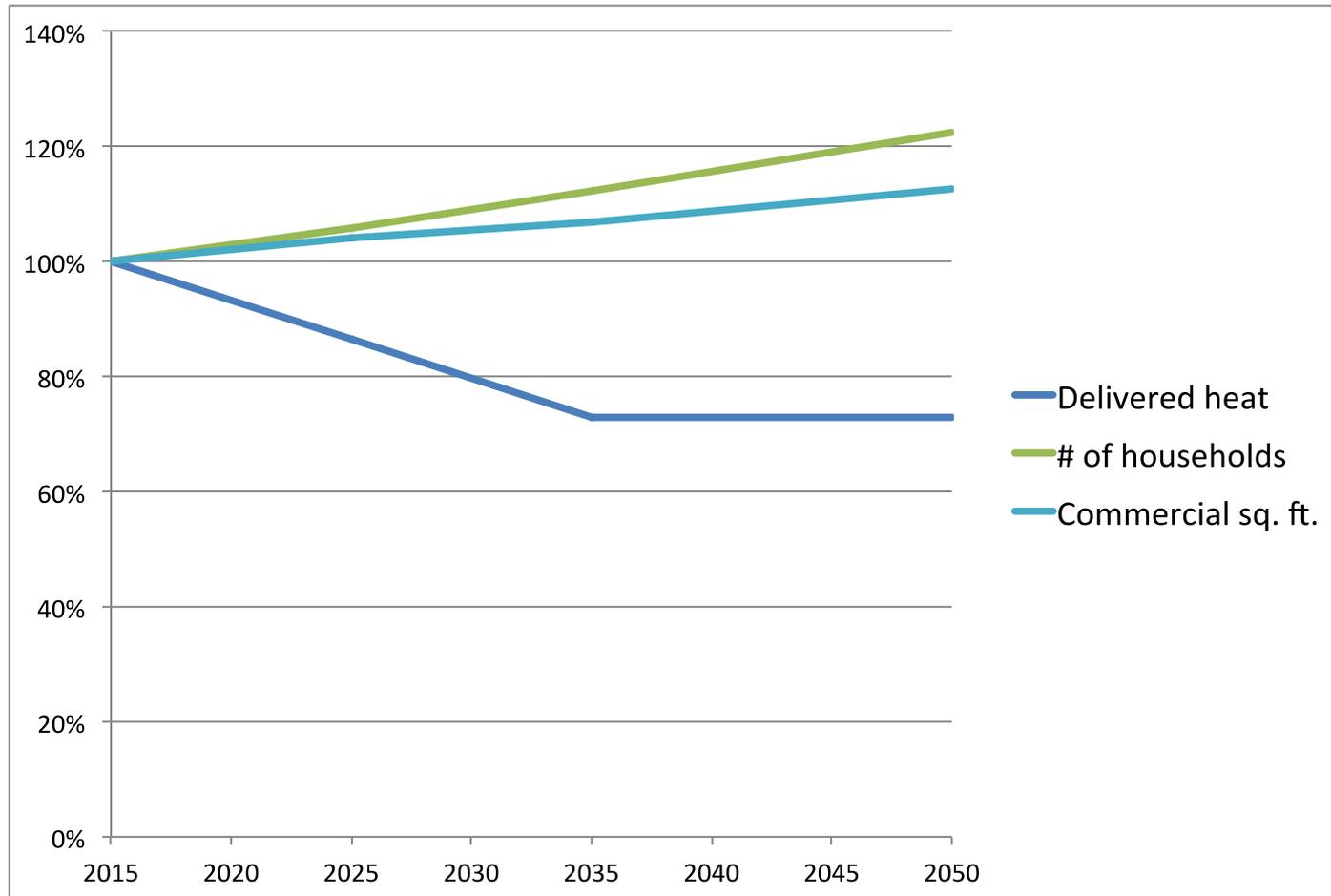
Energy Efficiency Example – Buildings

- ▶ 35% renewable overall and 30% renewable heat could look like this...
 - 1) Maintain current electric use in buildings level for purposes other than heat while the number and total size of buildings grow.
 - 2) Improve the energy efficiency of building shells so that the required heat delivered falls by 14% on average.
 - 3) Use 35,000 cold-climate heat pumps (using an assumption that each displaces the equivalent of 350–400 gallons of heating oil per year).
 - 4) Increase use of renewable bio-derived fuels by 20%, though a mix of increased use of wood and increased use of liquid biofuels blended into heating oil.

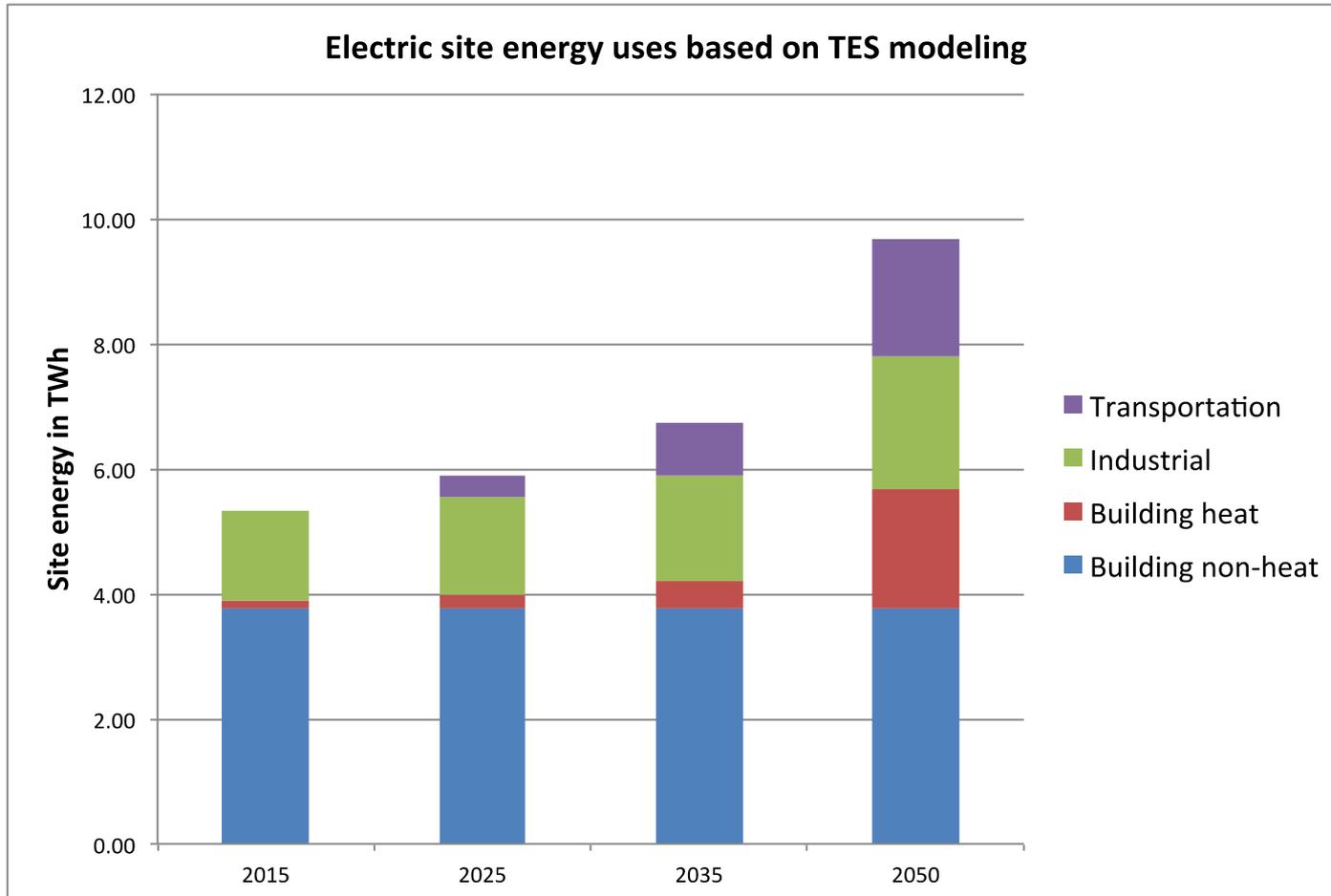
TES-based total primary energy



Heat requirements to fall, in spite of population and building growth?



TES-based electric site energy



Current EE Programs

EE Service Provider	Funding Source
Efficiency Vermont	EEC, FCM, RGGI (Ratepayers)
Burlington Electric	EEC, FCM, RGGI (Ratepayers)
Vermont Gas Systems	Natural Gas Ratepayers
OEO Weatherization	Gross Receipts, DOE
GMP CEED	Ratepayers
Self-Managed EE	SMEEP participants
DPS and other Direct Grant Recipients	SEP, CEDF
Distribution Utilities (Future, under H.40 – Tier III)	Electric Rates

EE Utilities Electric and Thermal

- ▶ 2015 Budgets
 - Electric: \$48.5 m (Energy Efficiency Charge)
 - Unregulated Fuels: ~\$6m (FCM and RGGI)
 - Natural Gas: ~2.5m
- ▶ Residential Examples
 - Upstream lighting and appliances
 - Home Performance with Energy Star
- ▶ Commercial Examples
 - Variable Frequency Drive
 - Boiler replacement

H.40 / Act 56 Tier III

- ▶ Electric Distribution Utility obligation
 - Starts 2017 for all but small municipal utilities; 2019 for small munis
- ▶ Known ramp of fossil fuel use reduction
- ▶ Uncertain exactly what programs will look like
- ▶ Expect some focus on responsible fuel shifting
 - Implications for both efficiency and energy supply planning

Other Methods for Encouraging EE

▶ Building Codes

- Res/Commercial Energy Codes in effect based on IECC 2015
- Contractors must certify compliance with code

▶ Voluntary Standards (LEED, Green Building)

▶ Act 250

- Stretch Res Code and Commercial Guidelines in effect December 2015 for Act 250 projects.

What's next?

- ▶ Hear your input
- ▶ What works? What doesn't?
- ▶ What is missing?
- ▶ What should we include in the CEP going forward?

Small Group Discussions

Break out groups:

- Thermal Efficiency – Residential
- Electric Efficiency – Residential
- Low-income Wx/Affordable Housing /Healthy Homes
- Thermal Efficiency – Commercial
- Electric Efficiency – Commercial
- Financing Efficiency

General Discussion Questions for ALL Small Groups:

- There are a variety of energy efficiency related goals and targets to consider (80,000 homes weatherized by 2020; all new buildings built to net-zero design by 2030; 14% reduction in heat usage by 2050; and keeping future electric use in buildings at the current level).
 - Are these targets reasonably achievable (focusing on those goals of particular interest to individuals in the group)? How would goals such as these impact your organization/ work?
 - Should there be different target/goals?
 - If so what should they be or where would you shift emphasis? (For example: more emphasis on the use of biofuels and less on electrification/cold-climate heat pumps)
- Given the existing state goals and targets to reduce energy demand for both electricity and heat/process fuels, what strategies would you propose to best achieve these goals? Consider a variety of lenses; program, policy, awareness, etc.
 - In terms of implementation, what is working now that needs more support, what is not working, and what new initiatives are needed?