

“Total Energy” Study

Asa S. Hopkins
Public Service Department
House Natural Resources and
Energy Committee
January 21, 2014

1. Project background
2. Process to date
3. Reminder of VT energy and GHG facts
4. Policy analysis
5. Technology analysis
6. Next steps

1

The Basics

- WHAT you asked us to do:
Analyze (and recommend) policies and funding mechanisms designed to achieve GHG and renewable energy goals:
 - 50% GHG reduction by 2028
 - 75% GHG reduction by 2050
 - 90% renewable energy by 2050

This requires both *policy* and *technology* analysis.

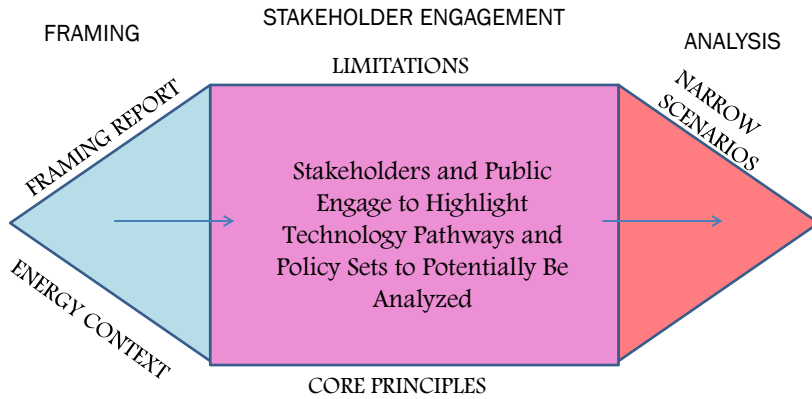
- WHO: Interagency, public, and stakeholder engagement have been key

- WHEN: Report submitted to Legislature on December 15 frames the challenge, lays out pros and cons of options, and identifies open questions.

Final process complete early summer 2014, with quantitative scenario analysis and any resulting recommendations.

2

Where we've been



3

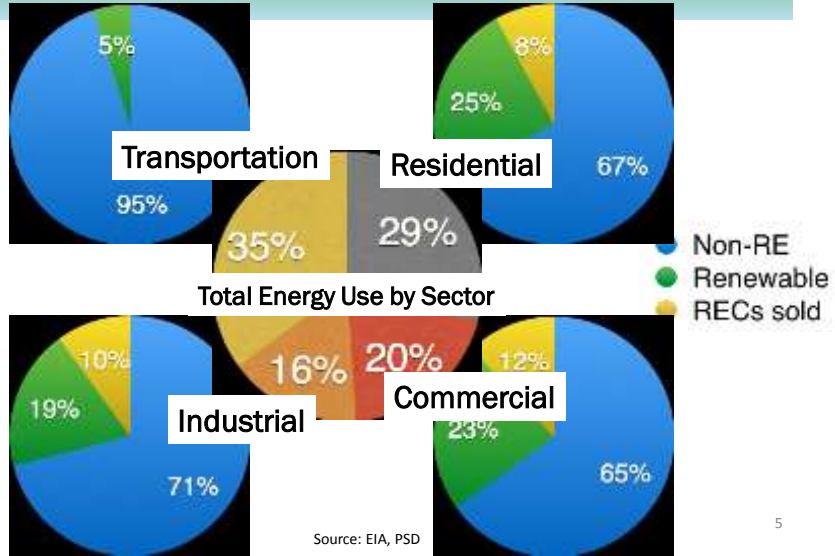
Next Steps



What are the critical questions you think we should try to answer with these three scenarios?

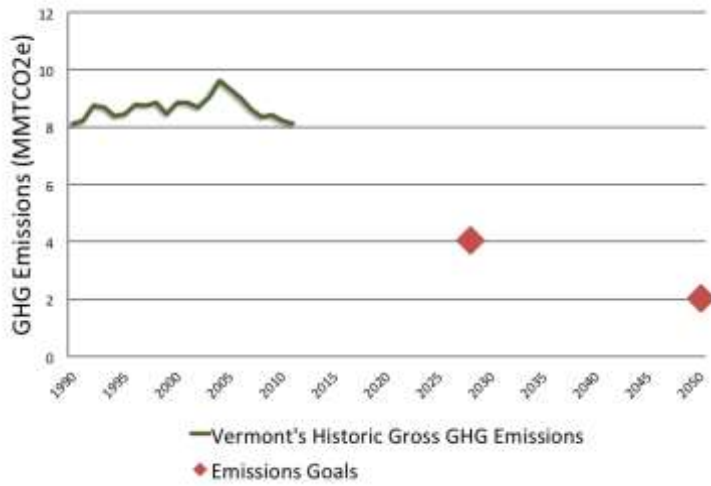
4

Energy Use in VT: % Renewable



5

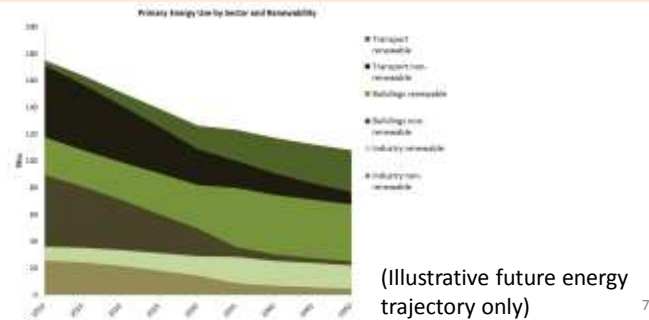
Meeting the GHG reduction goals



Source: ANR

6

Efficiency and Conservation: Imperative



Policy Insights

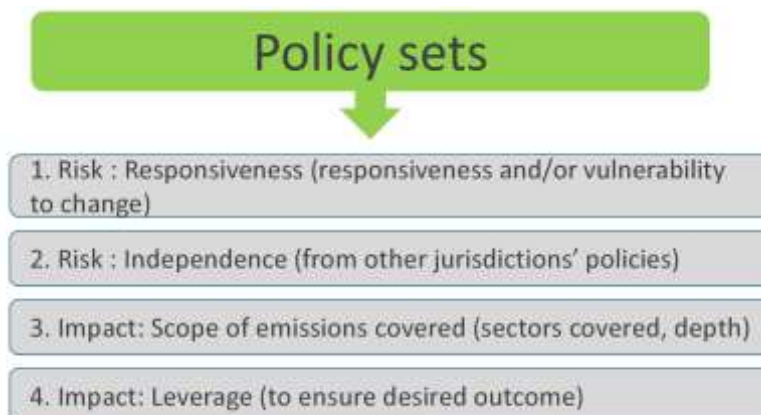
- Price signals are important, but other market failures may limit their impact.
- Future technologies generally have more upfront capital/infrastructure and lower operating costs than the status quo.
- State economic development, environmental, land use, forestry, and farm policies and state energy policies need to be compatible – and it looks like they can be.

Policy Sets

- 1) Total Renewable Energy and Efficiency Standard (TREES)
Require all energy suppliers to get some fraction of their energy from renewable sources or efficiency, with tradable credits
- 2) Nearly-Revenue-Neutral Carbon Tax Shift
Tax reform to "tax bads not goods"
- 3) Renewable Targets with Carbon Revenue
Establish a common structure, across all sectors/fuels, without mandates (at least to start); address market failures with some revenue from small carbon tax
- 4) Sector-Specific Policies
Identify and implement separate policies that work for each sector
- 5) Regional Policy Focus
NE states all moving together (largely with "standards"-based policies)

9

Evaluating Policies



10

Technology Insights

- New super-efficient technologies could transform sectors.
- Electric use will likely be between 20% and 50% higher in 2050 than it is today.
- There is potential competition for limited sustainable resources.
- Heavy duty transportation and the diverse industrial sector lack obvious game-changing solutions.

11

Supply Technology Directions

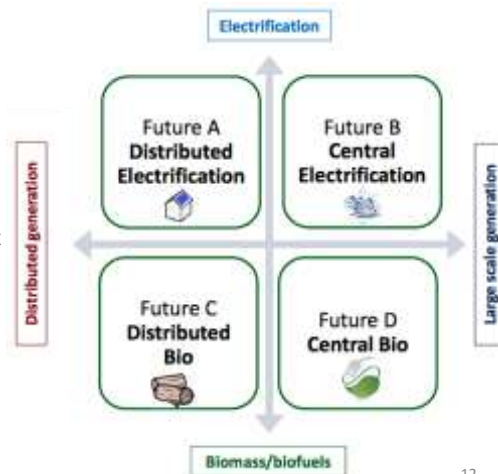
Demand reduction can only go so far.
Where does the supply come from?

TES identifies two primary axes,
making four “quadrants”.

Each quadrant represents a different overall approach/choice to growing renewable supply. VT can pursue a mix of these quadrants, making different choices by sector, scale, or date.

Future analysis will quantitatively weigh the pros and cons of choices:

- Cost
- Risk
- In-state capital



12

Next Steps

Put policy and technology analysis together:

- Pacing
- Complementarity (sweat the details)

Build *three detailed scenarios* for *quantitative* analysis.

What are the critical questions you think we should try to answer with those three scenarios?

13

Next Steps

TES Legislative Report public comment period until January 22
(tomorrow!)

Email: PSD.TotalEnergy@state.vt.us

View the project webpage at
http://www.publicservice.vermont.gov/publications/total_energy_study

Asa Hopkins
Asa.Hopkins@state.vt.us
802-828-4082

14