

Vermont Decarbonization Study

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Resources for the Future

Montpelier, VT on September 26, 2018

Woodstock, VT on September 27, 2018

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Courtesy of Green Mountain Club

Vermont Decarbonization Study - Background



In July 2017, the Vermont Climate Action Commission (VCAC) was assembled by Governor Scott.

In December 2017, the VCAC recommended the Governor conduct a study of policies to reduce GHG emissions.

Vermont Decarbonization Study – Legislation

In June 2018, the Vermont General Assembly passed Act 11, which included the study of decarbonization policies.

“The analysis shall include the comparative ability or potential of the policies:

- to achieve reductions in GHG emissions;
- to spur economic development in the State;
- to encourage innovation in the State;
- to cause shifts in employment, including job creation, job loss, and sectors affected; and
- to affect the cost of living in Vermont.”



Vermont Decarbonization Study - Resources For the Future (RFF)



Resources For the Future (RFF) was contracted to undertake the study

RFF and JFO signed a contract on August 15, 2018

RFF will provide a Final Report and spreadsheet model on or before January 15, 2019

Public Meetings and presentations of results will take place in early 2019

Today, we want to hear from you

RFF plans to look at various policies for reducing carbon emissions.

We can analyze three or four pricing mechanisms quantitatively
and can look at some complementary policies qualitatively.

We will ask for your input after a brief introduction.

- The pricing mechanisms include carbon fees and cap-and-trade approaches.
- The complementary policies might include policies to encourage more conservation, green investment, and the like.

Brief Background on Climate Change in Vermont



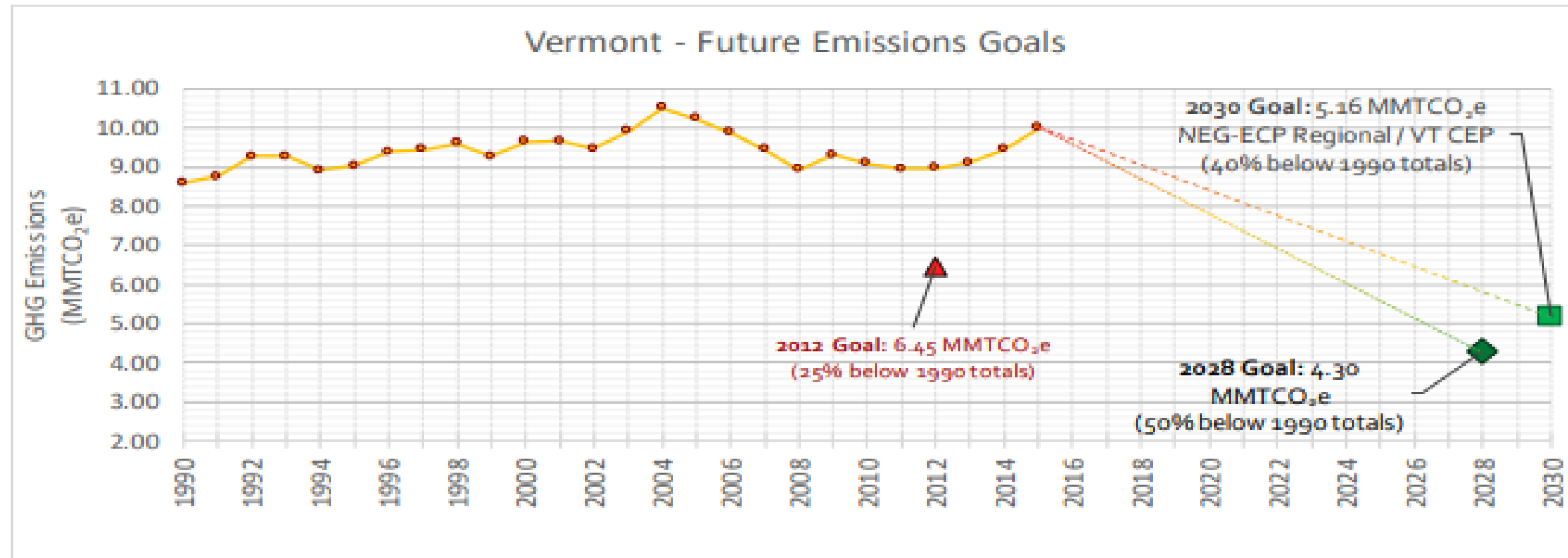
Climate Change Impacts in Vermont

The Vermont Climate Assessment (2014) and the Final Report by the Governor's Climate Action Commission identified the following threats posed to Vermont by climate change:

- Rising temperatures and precipitation;
- Greater infestation from pests, pathogens, and disease;
- In particular, a dramatic increase in tick-borne diseases and invasive species;
- Change in tourism/recreation (snowfall will vary and summer seasons are lengthened);
- More intense and frequent storms leading to devastating and costly floods.

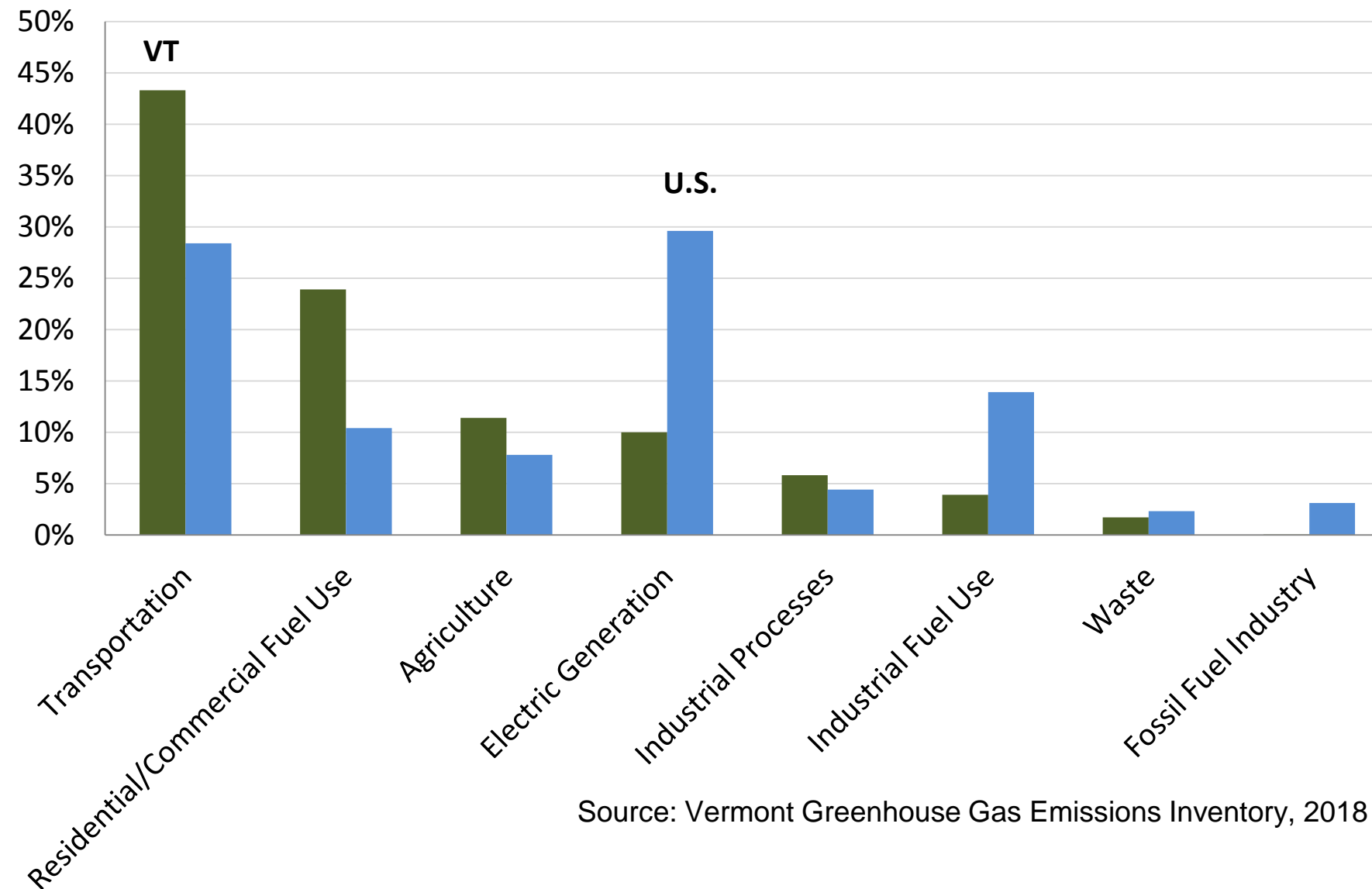


Vermont Greenhouse Gas Emissions: Trends and Goals



Source: Vermont Greenhouse Gas Emissions Inventory, 2018

Emissions Contributed by Sector in 2015: Comparing Vermont with the United States



Source: Vermont Greenhouse Gas Emissions Inventory, 2018

Economics of Reducing Emissions



What can we do to reduce emissions?

Many policies are capable of reducing CO₂ emissions

- Emissions Pricing
 - Cap and Trade
 - Carbon Fee
- Regulation
 - Performance Standards
 - Clean or Renewable Energy Standards
 - Fuel Efficiency Standard (CAFE)
 - Energy Efficiency Standards
- Policies to Encourage Conservation

Emissions Pricing: Market-Based Mechanisms to Reduce Pollution

Emissions pricing reduces emissions through three channels

1. Decrease emissions per unit of output
2. Reduce demand
3. “Capture” pollution
 - Currently cost prohibitive for CO₂

Emissions Pricing:

Market-Based Mechanisms to Reduce Pollution, part 2

For CO₂, emissions pricing leads to

- Efficiency improvements within emitting plants
- Shifts in output from dirty plants to existing clean plants
 - I.e., coal generation of electricity shifts to natural gas or non-fossil fuel generation
- Building clean plants
 - I.e., new nuclear, hydro, wind, or solar generating capacity
- Increased fuel economy for new vehicles
- Reduced demand for products produced with fossil fuels
 - I.e., electricity, gasoline
- Research on carbon capture and sequestration (CCS)

Alternatives to Emissions Pricing

Pollution standards require reductions in emissions per unit output

1. Decrease emissions per unit output

2. Does not reduce demand

Regulations often require specific technology adaptation, regardless of costs

1. Decrease emissions per unit output

- Ignores differences in firms

2. Does not reduce demand

How to Design an Emissions Pricing Policy

1. Timing of price path or emissions cap
2. Breadth of coverage
 - Economywide vs. sector-specific
 - Exemptions?
3. Who actually pays the tax?
4. Revenue use and/or allowance allocation
5. Special provisions
 - Border adjustments or other types of designs to mitigate leakage
 - Adjustment mechanisms

Questions for Discussion



Which ***policy approaches*** do you think it would be best for JFO and RFF to prioritize for this analysis, and why?

RFF plans to perform a quantitative analysis of four different policies to reduce carbon emissions and will discuss complementary policies.

1. Carbon fee-and-rebate as in H.791 or S.284 (2018) – The ESSEX Plan;
2. Expanding cap-and-trade if Vermont joined the Western Climate Initiative (WCI);
3. Expanding cap-and-trade if the Regional Greenhouse Gas Initiative (RGGI) covered transportation fuels as considered in the Transportation and Climate Initiative (TCI); and
4. A carbon pricing policy based on further research and input from stakeholders.

What should the fourth policy be?

What complementary policies should be examined?

What ***analytical angles*** do you think would be important for JFO and RFF to consider in this analysis and report, and what ***metrics or analytical outputs*** do you think would be important to include?

...Some examples

Analytical angles:

- Timeframe of analysis - through 2035, 2050, etc.
- Existing statewide greenhouse gas emissions targets
- Distributional progressivity (low-income households bear less burden than upper-income households)

Metrics or analytical outputs:

- Greenhouse gas emissions levels
- Public health costs & benefits
- State gross domestic product (GDP)

A photograph of a forest path. The path is made of flat, grey stones and is flanked by two moss-covered logs. The ground is covered in vibrant green moss and small green plants. Tall, thin trees are visible in the background, and the overall atmosphere is lush and serene.

Thank You for Your Participation!!

Courtesy of Green Mountain Club

EXTRA!

