Cap-and-invest Systems

Critical to Achieving Emission Reductions

REV2019 CONFERENCE & EXPO
“Our house is on fire.

Greta Thunberg
Too Hot for Human Survival
Vermont Consumer Expenditures

Taxable Gas and Diesel Sales: $1,100,000,000.00
Projected Fuel Costs of Electrified Fleet: $826 Million

$274,000,000.00
Vermont Consumer Expenditures

78% Leaves the VT economy

22% Recirculates in the VT economy

Vermont Consumer Expenditures

Vermont’s GHG emissions by sector:

- Transport: 43%
- Building Thermal: 28%
- Agriculture: 11%
- Electric Generation: 10%
- Industrial Processes: 6%
- Waste: 2%


*Energy generation and consumption account for 81% of VT’s GHG emissions.*

Vermont Consumer Expenditures

INDEX: 2000 = 100

REAL GDP

+22.0%

+3.6%

GREAT RECESSION

GHG EMISSIONS

## Vermont GHG Reduction Commitments

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2025</th>
<th>2028</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 1990 Levels (CEP Targets)</td>
<td></td>
<td></td>
<td></td>
<td>40%</td>
<td>80-95%</td>
</tr>
<tr>
<td>Below 2005 Levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Statutory Goal)</td>
<td></td>
<td></td>
<td></td>
<td>45-54% (NEC/ECP Agreement)</td>
<td></td>
</tr>
<tr>
<td>(Paris Accord Commitment)</td>
<td>37%</td>
<td>26-28%</td>
<td>58% (Statutory Goal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Statutory Goal)</td>
<td></td>
<td></td>
<td></td>
<td>79% (Statutory Goal)</td>
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</table>
10 V.S.A. § 578 (d) (2005)

In order to increase the likelihood of the State meeting the goals established under this section, the Public Utility Commission, the Secretary of Natural Resources, and the Commissioner of Public Service shall advocate before appropriate regional or national entities and working groups in favor of the establishment of a regional or national cap and trade program for greenhouse gas emissions, including those caused by transportation, heating, cooling, and ventilation.
Percent of Emissions Covered by Statewide Decarbonization Program

Filled-in portions indicate energy sector emissions capped by policy.

Sources and Notes:
1. 2018 Greenhouse Gas Emissions Inventory Brief (1990-2016), VT Agency of Natural Resources
2. New York State Greenhouse Gas Inventory, 1990-2015, NYERDA
3. MA-GHG
4. MA-GHG
5. LCIA
6. Executive Office of Energy and Environmental Affairs
7. California Greenhouse Gas Emissions Inventory - 2018 CA Clean Energy Resources Board
8. Canada's Greenhouse Gas Inventory Environment and Climate Change Canada

Energy Action Network
## North American Cap-and-Invest Systems

<table>
<thead>
<tr>
<th></th>
<th>California</th>
<th>Quebec</th>
<th>RGGI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sectors Covered</strong></td>
<td>Electricity, Transportation, Heat, Industry</td>
<td>Electricity, Transportation, Heat, Industry</td>
<td>Electricity</td>
</tr>
</tbody>
</table>
| **% of total GHG covered** | 80%                                                                        | 85%                                                                   | 20% (region)  
                              |                                                                            | 10% (Vermont)                                                      |
| **Emissions covered** | CO₂, CH₄, N₂O, SF₆, HFCs, PFCs, NF₃                                        | CO₂, CH₄, N₂O, SF₆, HFCs, PFCs, NF₃                                    | CO₂ only              |
| **Emissions reduction** | 8% (2012-2016)                                                             | 2.8% (2012-2016)                                                      | 40% electric sector  
                              |                                                                            | (2009-2016)                                                         |
| **Proceeds received** | $9.3B in 5 years (2013-2018)                                              | $2.8B (CAD) in 4 years (2014-2018)                                   | $2.6B in 10 years (2008-2018) |

**WCI**
Disposition of Auction Proceeds

Vermont RGGI funds are deposited into the electric efficiency fund and used for thermal efficiency programs.

California revenues are broadly appropriated to state agencies that develop the programs and projects in support of AB 32 and SB 32 objectives.

Quebec revenues are directed by the Green Fund Board in support of the 2013-2020 Climate Change Action Plan.
## Investment Priorities

<table>
<thead>
<tr>
<th>California Investments</th>
<th>Quebec Investments</th>
<th>RGGI Investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation and Sustainable Communities</td>
<td>Mobility of People and Goods</td>
<td>Energy Efficiency</td>
</tr>
<tr>
<td>(11 programs)</td>
<td>80%</td>
<td>55%</td>
</tr>
<tr>
<td>Clean Energy &amp; Energy Efficiency</td>
<td>Industry support</td>
<td>Clean &amp; Renewable Energy</td>
</tr>
<tr>
<td>(10 Programs)</td>
<td>5%</td>
<td>17%</td>
</tr>
<tr>
<td>Natural Resources and Waste Diversion</td>
<td>Sustainable Buildings</td>
<td>GHG Abatement</td>
</tr>
<tr>
<td>(16 programs)</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td>Community support - Land Use, planning, risk management</td>
<td>5.0%</td>
<td>Direct Bill Assistance</td>
</tr>
<tr>
<td>Research and Development</td>
<td>4.0%</td>
<td>Administration</td>
</tr>
<tr>
<td>Education and Outreach</td>
<td>3.0%</td>
<td>5%</td>
</tr>
<tr>
<td>Renewable Energy</td>
<td>2.0%</td>
<td>RGGI, Inc.</td>
</tr>
<tr>
<td>Coordination, monitoring and accountability</td>
<td>2.0%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>Government lead the way</td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>Support vulnerable economic players</td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>Adaptation</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Waste management</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Establishing carbon market</td>
<td>0.3%</td>
<td></td>
</tr>
</tbody>
</table>
California - Emissions and Economic Growth

INDEX: 2000 = 100

REAL GDP
+41.4%

GREAT RECESSION

CALIFORNIA Joins Western Climate Initiative

GHG EMISSIONS
-9.0%
California - Emissions and Economic Growth

Making California Climate Investments

Legislature

Cap-and-Trade Auctions

Requirements

Greenhouse Gas Reduction Fund (GGRF)

State Agencies

PROGRAM DESIGN & IMPLEMENTATION

Cap and Trade Dollars at Work
Clunkers to EVs
Quebec - Emissions and Economic Growth
Quebec Green Fund Revenue and Investments

Combating Climate Change

REVENUES
Carbon Auction Proceeds

INVESTMENT
Climate Change Action Plan
Cap-and-Invest - Elements to Establish

1. States determine the emissions and sectors to be capped and develop emissions reporting requirements.
2. States establish a cap on the emissions.
3. States establish a point of regulation, set rules for applying the compliance obligation, and establish monitoring and enforcement protocols.
4. States auction allowances.
5. Regulated entities comply by procuring allowances equal to their obligations.
6. States decide how to invest the auction proceeds.
Cap-and-Invest System Outline
Vermont – Potential Annual Gross Carbon Revenues by Sectoral Coverage

<table>
<thead>
<tr>
<th>Sectoral Coverage</th>
<th>2012</th>
<th>2025</th>
<th>2028</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economy-wide (Electricity Exempt)</td>
<td>99.4</td>
<td>120.8</td>
<td>147.0</td>
</tr>
<tr>
<td>Transporting and Heating</td>
<td>94.1</td>
<td>114.3</td>
<td>138.9</td>
</tr>
<tr>
<td>Transportation Only</td>
<td>62.1</td>
<td>74.7</td>
<td>89.6</td>
</tr>
</tbody>
</table>
Concluding Thoughts

A successful cap-and-invest program should not last indefinitely.

A successful program will achieve its emission reductions and phase out.

The goal of this effort is to use market forces to adopt cost-effective low/no-emitting practices in time to solve the climate crisis.

The sooner we begin this work, the sooner the benefits can be realized.
One simple mission —

DECARBONIZE.

Our vision is a future with sustainable, equitable and resilient transportation, buildings and communities.
A mission-driven 501(c)(3) nonprofit organization
Offering scalable clean energy program administration and technical advisory services for more than 20 years.

A national footprint, headquartered in San Diego, CA
Regional offices:
CA: Los Angeles, Oakland, Sacramento, MA: Boston, NY: Brooklyn, Stony Brook

185+ dedicated, mission-driven employees
Managing ~50 projects and programs
National programs | Statewide incentive projects | Region-specific solutions
Neutral and Trusted

Operations
Funded by delivering service for value under contract
  • No members or donors to influence positions or actions
  • Less than .2% donor funding

Nonprofit
No shareholder pressure for profit and dividends

Neutral funding source drives credibility
  • Program administration
  • Program evaluation
  • Advisory services
  • Demonstration/Validation
  • Policy
Core Values

We lead with the passion and heart of a nonprofit and the operational experience and efficiency of a for-profit. To execute our mission and realize our vision, we integrate our values throughout our operations.
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Sustainability  Equity  Transparency  Resiliency  Policy
Areas of Expertise

Clean Transportation
Adoption of electric vehicles and deployment of charging infrastructure

Built Environment
Advancing energy efficiency and renewable resources

Technology Convergence
Interconnecting systems to achieve decarbonization
Billion Dollar Program Management Experience

Clean Vehicle Rebate Program
- $700 million+
- 300K vehicles
- 800 GB EV consumer data

CALeVIP
- $100 million+
- 421 DC fast chargers; 256 Level 2 chargers
- Diverse: urban, rural, mountains, deserts, plains

SOMAH
- $1 billion
- 300 MW + virtual net energy metering
Our Reach

We work with governments, regulators, utilities, CCAs, businesses, property owners and consumers as a trusted and objective implementation partner and technical advisor.

- Tackling issues of national importance
- Statewide incentive and distributed energy programs
- Region-specific solutions