

Overview of Vermont's Climate Action Plan

26 PATHWAYS

64 STRATEGIES

234 SPECIFIC ACTIONS



Global Warming Solutions Act

GWSA Enacted:

September 23, 2020

1st Climate Council Meeting:

November 20, 2020

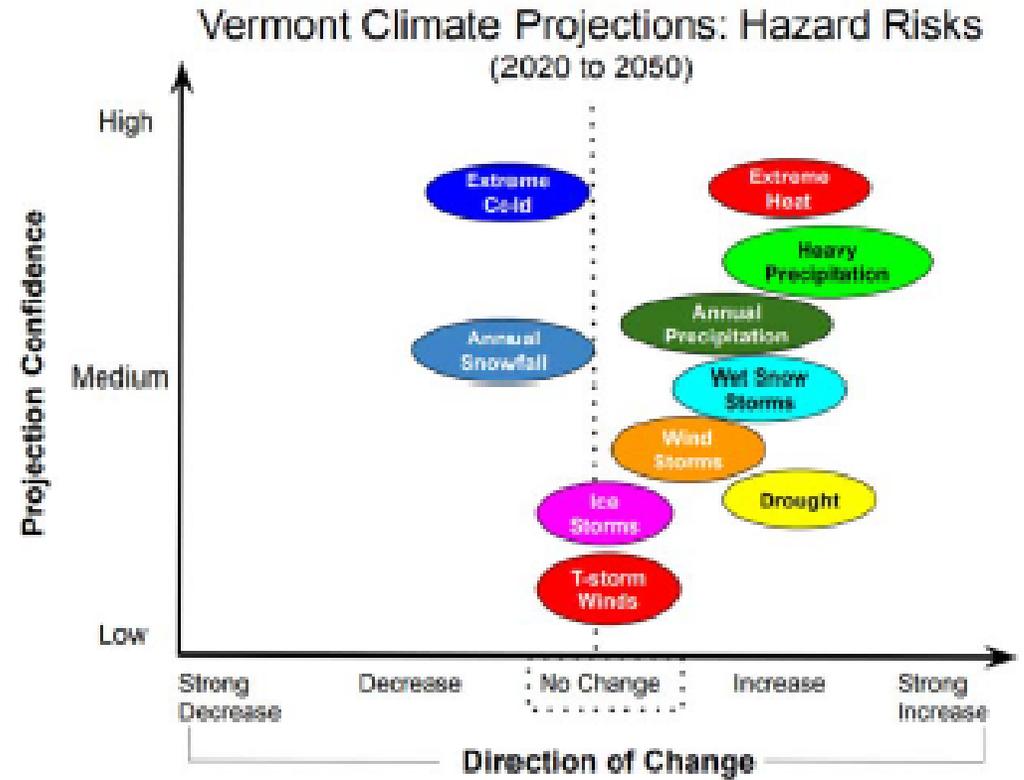
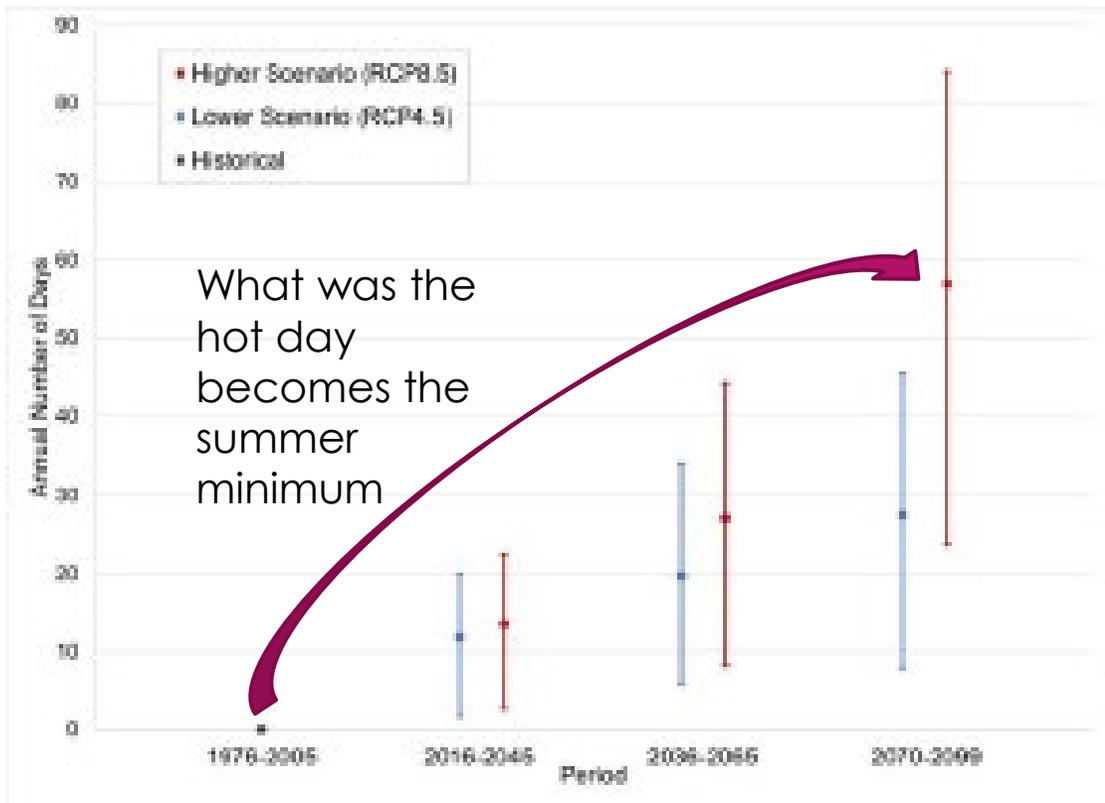
Climate Action Plan adopted:

December 1, 2021

Required updates:

every 4 years

Why care?



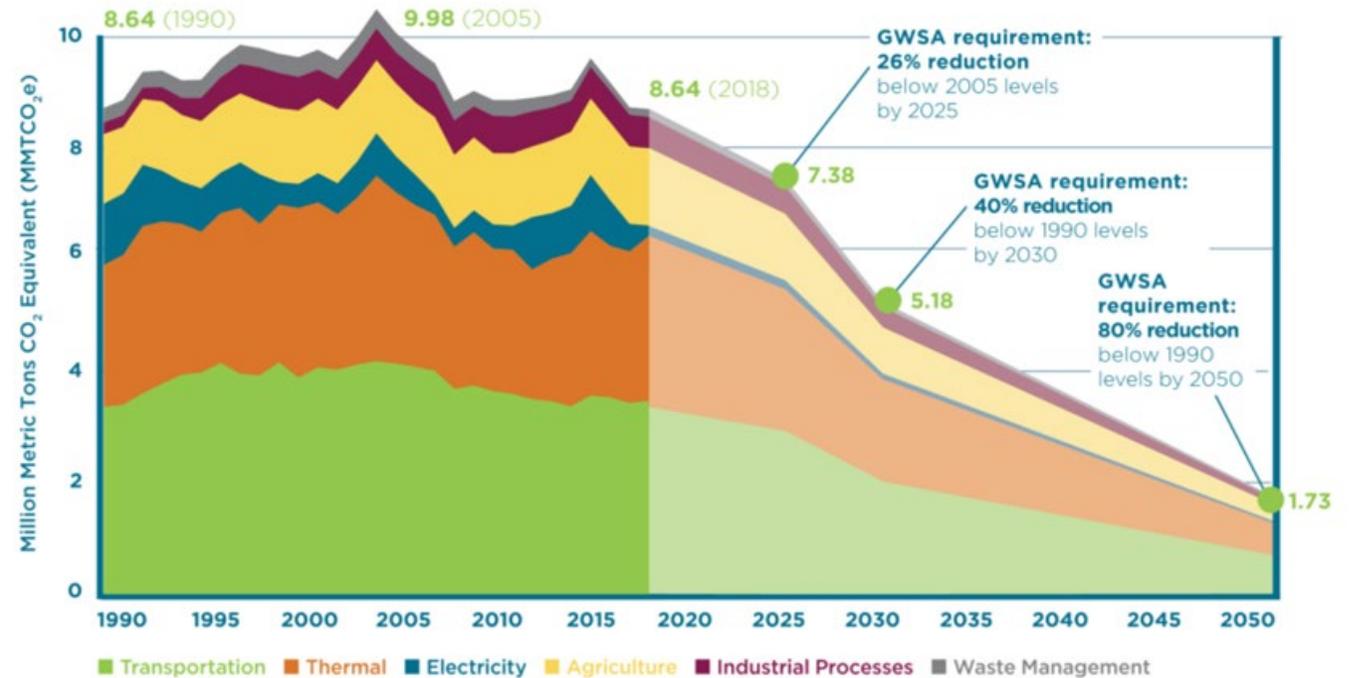
Emissions Reductions Requirements

By 2025: 26% below 2005 levels

By 2030: 40% below 1990 levels

By 2050: 80% below 1990 levels

Vermont's historical GHG emissions and future requirements



Source: Vermont Agency of Natural Resources, Vermont GHG Emissions Inventory and Forecast (1990-2017), 2021.

The Plan has a 2021 Carbon Budget for Vermont

AFOLU:
 Agriculture
 Forestry
 Other
 Land
 Uses

Table 1⁵⁹. Estimates of carbon stocks and fluxes of Vermont’s agriculture, forestry, and other land use (AFOLU) sector compared to the state’s greenhouse gas (GHG) emissions⁶⁰.

AFOLU sub-sector	Carbon storage (MMT CO ₂ e)	Net carbon flux (MMT CO ₂ e per year) ⁶¹			Components
		2020	1990	2005	
Agriculture	63	+0.70	+0.61	+0.49	Crops (including hay), fertilizers, livestock, management
Forests	1,859	-5.1	-3.2	-3.2 ⁶²	Forests, conversion to/from forests, harvested wood products (combustion, decay, and storage in use and in landfill)
Grasslands and shrublands	41	+0.06	+0.05	+0.05	Unmanaged and managed (e.g., pasture)
Wetlands and water bodies	57	-0.01	-0.01	-0.01	Wetlands and water bodies
Urban and developed	15	-0.26	-0.27	-0.28	Trees
Net for AFOLU sector	2,035⁶³	-4.61	-2.82	-2.95	AFOLU sectors and components listed above
VT GHG emissions ⁶⁴		+7.41	+8.68	+7.22	Electricity, heating, transportation, fossil fuel industry, industrial processes, waste management ⁶⁵
Net of AFOLU sector and VT GHG emissions⁶⁶		+2.8	+5.86	+4.27	All sectors listed above

Since 1990, wetland and waterbodies, grasslands and shrublands, and urban and developed lands saw fairly stable annual net flux rates, and emissions from the agricultural sector declined.

Further investigation into this declining forest sector sink is warranted and important to developing strategies for complying with the GWSA requirement that Vermont achieve net zero emissions by 2050.



Climate
Action Plan is
organized around
five areas:

emissions
reductions

resilience and adaptation
natural and
working lands

resilience and adaptation
communities and
built environment

carbon
sequestration
and storage

cross-cutting
pathways

Cost of Carbon is
Key to Cost/ Benefit
of Actions and the
Discount Rate is the
Critical Number

Your car emits
about 1 metric
ton of CO₂ per
2,500 miles driven
(assuming 22 mpg)

U.S Social Cost of Carbon Dioxide by Discount Rate, Adjusted for New York State (2020\$ per metric ton of CO₂)

Emissions Year	Recommended Range of Discount Rates			
	3% Average	2% Average (Central Rate)	1% Average	0% Average
2020	51	121	406	2,130
2021	52	123	409	2,125
2022	53	124	411	2,119
2023	54	126	414	2,114
2024	55	128	416	2,108
2025	56	129	418	2,103
2026	57	131	421	2,098
2027	59	132	423	2,093
2028	60	134	426	2,088
2029	61	136	428	2,083
2030	62	137	430	2,077



Equity Lens: Guiding Principles for a Just Transition

A framework for the Climate Council and subcommittees to evaluate, adjust and prioritize recommendations based on how they will impact Vermont's impacted and frontline communities.

01

**Ensuring
inclusive,
transparent,
and
innovative
engagement**

02

**Creating
accountable
& restorative
recommend-
ations**

03

**Moving at the
speed of
trust**

04

**Incorporating
solidarity to
create
inclusionary
spaces**

05

**Prioritizing
the most
impacted
first**

06

**Developing
supports for
workers,
families, and
communities**

This slide cut/pasted from the presentation used by VT Secretary of the Agency of Natural Resources, Julie Moore.

The Vermont Legislature will likely consider an Environmental Justice Bill this session

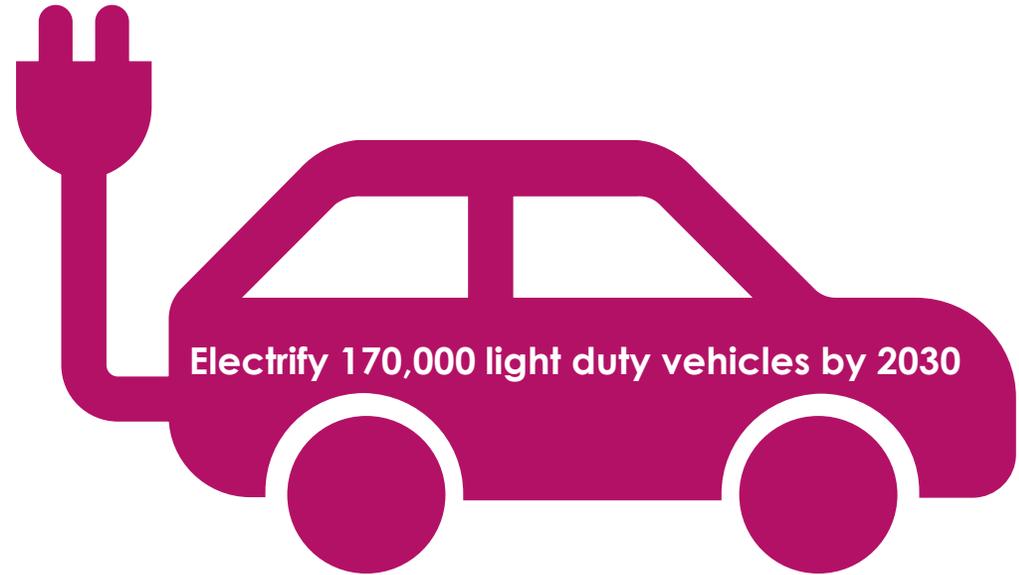
Emissions Reductions Pathways and Actions

- ▶ **Transportation**
- ▶ **Buildings and Thermal Needs**
- ▶ **Electricity Generation**
- ▶ **Agriculture**
- ▶ **Other (industrial processes, landfills, etc.)**

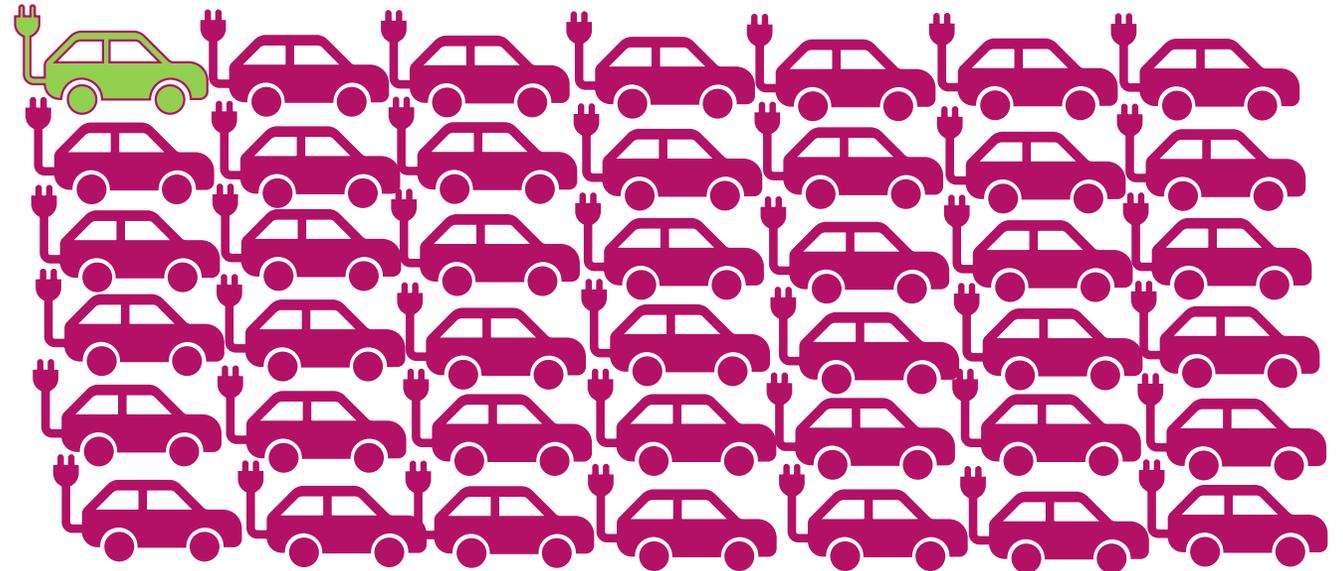
Transportation

Pathway 1: Light Duty Vehicle Electrification Recommendations

- ▶ Regulation - By 2035 all car sales will be zero emissions
- ▶ Expand Incentives for EVs and E-bikes
- ▶ Continue Equity Programs - Replace Your Ride, Mileage Smart, etc.
- ▶ Install More EV Charging 



Currently there are 4,360 Evs registered in Vermont

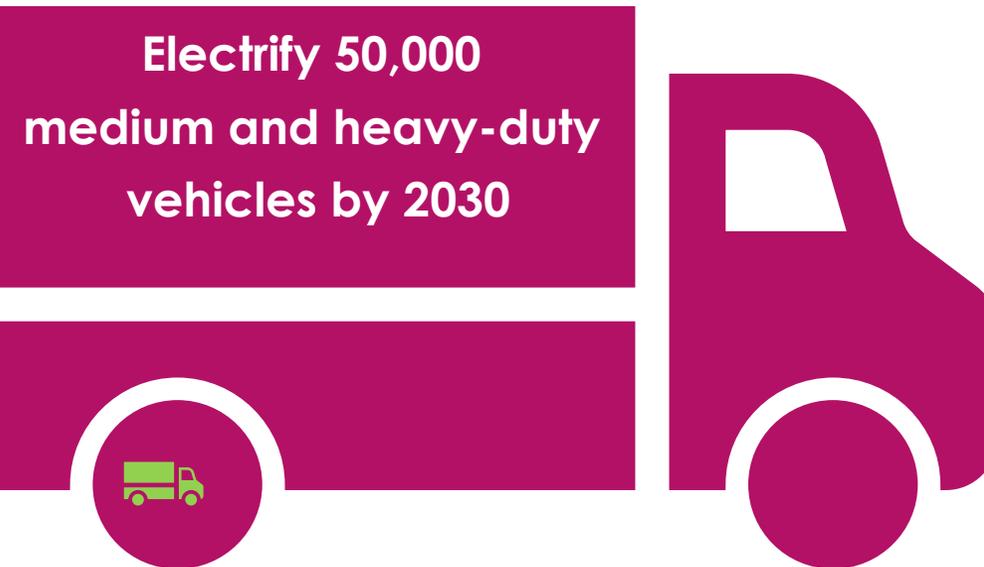




Transportation

Pathway 2: Heavy Duty
Electrification
Recommendations

- ▶ Incentives
- ▶ Regulation of Sales
- ▶ Electrify Truck Parking
Spaces for Auxiliary Power
Needs





Transportation Pathway 3: Reduction in Vehicle Miles Traveled (VMT)

VTrans to create Sustainable Transportation Implementation Plan:

- **Smart Growth strategies and research on their effect**
 - **Establishing VMT targets**
 - **Increase public transit**
- 

If feasible, affordable, and effective at reducing GHG emissions:

- **Free public transit**
 - **Expand and improve Amtrak/rail**
 - **Enhance Complete Streets**
- 



Buildings & Thermal

Pathway 1: Weatherization and Energy Code

- ▶ Weatherize 90,000 homes by 2030
- ▶ Workforce development (see next slide)
- ▶ Energy and financial coaching
- ▶ On-bill financing
- ▶ Efficiency standards for rental properties (RPES)
- ▶ Zero Energy Ready building energy code by 2030 
- ▶ Code training and enforcement assistance to municipalities 

Weatherization: actual & projected



Sources: What We've Done: Vermont Department of Public Service, "2019 Report on VT's Progress Toward Building Energy Fitness Goals"; What we said we'd do: 10 V.S.A § 581. Others: EAN.
1. Vermont Housing Finance Agency (VHFA), Vermont Housing Needs Assessment: 2020-2024, 2020.

Source: [Energy Action Network Progress Report](#)

Better Buildings

The CAP envisions

- ❑ Massive weatherization
- ❑ An updated building code, but not heating source regulations, instead relying on a 'clean heat standard' (page 98) There is room here for local and regional policy and regulation. 
- ❑ Increased training to, and enforcement by, towns assisted by a state energy circuit rider (page 97) 



Buildings & Thermal

Pathway 1: Weatherization and Energy Code

- ▶ Workforce development

Table 1: Weatherization Workforce Estimates for Completing Weatherization Targets in the CAP

	2023	2024	2025	2026	Cumulative
Total Weatherization Projects (Cumulative)	36,000	41,000	48,000	57,500	57,500
New Weatherization Projects (Annual)	3,500	5,000	7,000	9,500	25,000
Crews Needed (Assuming 11 projects completed per year by a crew of 5)	318	455	637	864	864
Crew Members Needed	1,590	2,275	3,182	4,318	4,318
Office Members Needed (Assuming 1 per 10 crew members)	159	228	318	432	432
Energy Auditors Needed (Assuming 90 completed per year per auditor)	39	56	78	106	106
TOTAL NEW WORKERS – CUMULATIVE	1,788	2,559	4,215	5,720	5,720
TOTAL NEW WORKERS – ANNUAL	510⁶	771	1,616	1,505	N/A

Source: Vermont Climate Council December 29, 2021 Recommendations for Deployment of ARPA Funding to Support Climate Action Plan Implementation



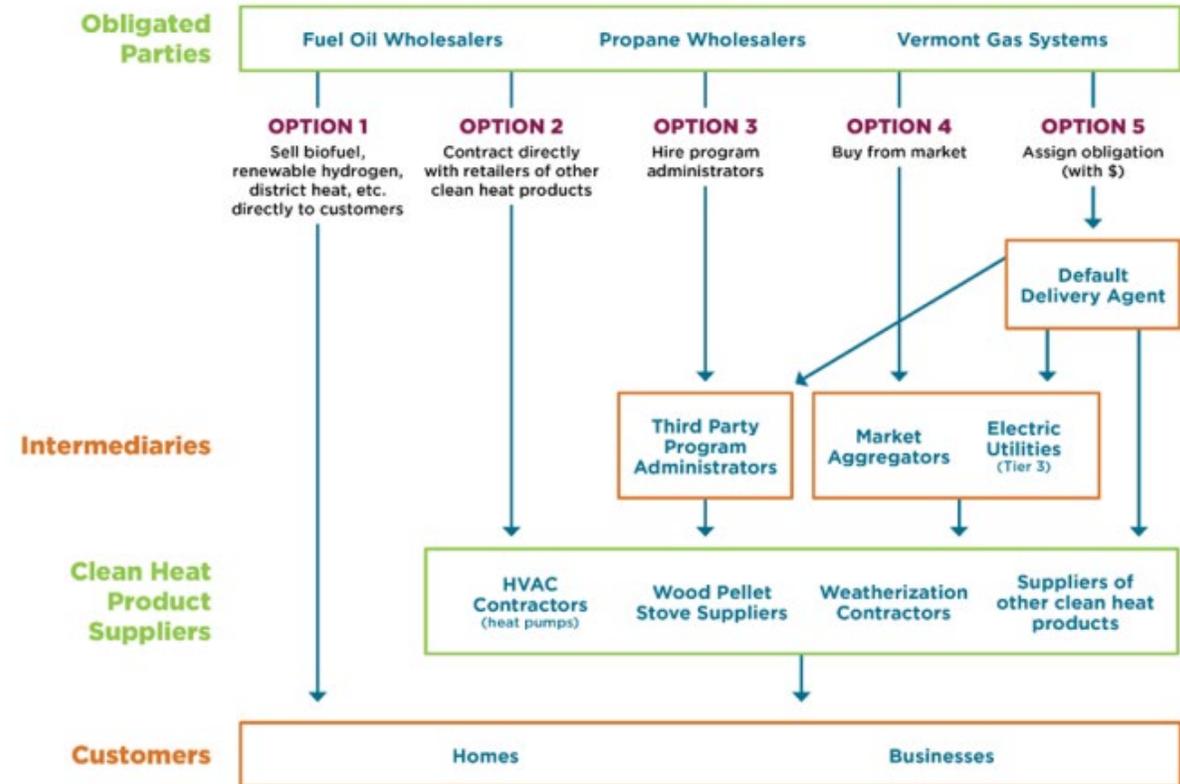
Buildings & Thermal

Pathway 2: Reduce carbon content of fuels

Clean Heat Standard for fossil fueled heat wholesalers

Timeline to Implement 2022-24
“While a CHS will increase costs to fossil wholesalers, it is unclear how large this effect will be, and what fraction of costs will be passed on to Vermont customers. . . . The greatest impacts would be in later years on fossil heat customers who do not choose a clean heat option or are unable to do so. To ensure that the CHS minimizes negative effects on energy-burdened Vermonters, the program will need to incorporate income-sensitive policies from its beginning.” (page 98)

Obligated Party Options



Electricity

Pathway 1: Further decrease GHG emissions from electric sector purchases



Pathway 2: Enable All Vermonters to Choose Electrification

Pathway 3: Load Management and Grid Optimization

100% Carbon Free or Renewable Electricity by 2030

200-amp service

Utility load control programs

**Resilience and Adaptation, Carbon
Sequestration, and Cross Cutting Pathways**
Noteworthy Actions

Resilience and Adaptation Pathways

(pages 169-177, and 188-204)

Pathway 1: Adaptation

Sustain, restore, and enhance the health and function of Vermont's lands and water to help both natural and human communities adapt to climate change

Pathway 4: Land Use

Shape land use and development that support carbon sequestration and storage, climate resilience and adaptation, and nature and human communities for a sustainable future.

Cross-Cutting Pathways

(pages 218-226)

Pathway 1: Support compact settlement patterns that contribute to the reduction of GHG emissions, enhance community and built environment resilience, and help conserve natural and working lands.

Land use (where and what we build) locks us in to energy usage and future climate-driven impacts

- ✓ Land use pattern is a driver of energy use (related to **transportation emissions**)
- ✓ Buildings are a driver of energy use in **thermal** needs in their envelope, but heating systems are not thought of in the same code framework in the CAP
- ✓ Land use is most thought of as having to do with adaptation and resilience, especially as it relates to flooding.

What we have will not work, if you want it to work

“Vermont’s current approach to land use planning is decentralized and relies on voluntary adoption and implementation of land use policy at the municipal and regional scale (that) . . . results in a patchwork of inconsistent local and regional land use policies to regulate and guide current and future land use. **These inconsistencies compromise the ability of the State to implement land use policy that also meets climate goals,** and raises equity and environmental justice concerns. . . . **If an adaptation and resilience strategy or action is deemed essential, it is necessary for the state to give objective consideration to what level of government has the ability and capacity for actual implementation in a timely manner, and what partnerships are necessary for effective execution.**” (Page 159)

Land use planning is interconnected with many goals, and needs to be created

“The way in which Vermonters live on and interact with the land ~~will directly affect~~ (directly affects) our ability to meet our goals to reduce greenhouse gas emissions, sequester and store carbon, and adapt and build resilience to the impacts of climate change. Further, the climate crisis is exacerbating other crises, including a shortage of housing, as more people move to Vermont to escape the impacts of harsher climates and harsh climate events elsewhere. Similarly, along with the climate crisis, we also have a biodiversity crisis. Past land use decisions have resulted in declines in the number of species, reductions in the size of populations, and losses of habitats across Vermont. It is critical that we use this opportunity to address all climate-related crises and **create thoughtful land use planning for Vermont** that helps to increase biodiversity and resilience to climate change, while accommodating the need for more housing and new sources of energy.” (page 188)

Resilience and Adaptation Noteworthy Actions

Land Use

- ▶ Low impact development 
- ▶ Support smart growth 
- ▶ Walking, biking and transit – increase investment 
- ▶ Train local builders in small and mid-sized and accessory dwelling units 
- ▶ Statewide conversation on land use and housing 
- ▶ Increase Municipal Planning Grant (MPG) funds to support more housing 
- ▶ Multi-stakeholder committee process to develop a statewide land use planning policy 
- ▶ Explore **creation of a State Planning Office** and/or other potential structure 
- ▶ Significant revisions to Act 250 to support Compact Settlement (Cross Cutting Pathways) 

Resilience and Adaptation Noteworthy Actions

Support for Local Energy
and Resilience Projects

- ▶ **Climate and energy planning funding** 
- ▶ Evaluate Enhanced Energy Plans for ability to site renewable energy, avoid the conversion of working and natural lands, and loss of carbon sequestration 
- ▶ Support electrification of municipal fleet vehicles 
- ▶ **Weatherization and Efficiency Navigators at RPCs** 
- ▶ Climate planning toolkit (looks a lot like a hazard mitigation plan) 
- ▶ **Natural resource position at RPCs** 
- ▶ Fund adaptation and resilience projects 
- ▶ Require collection of fossil fuel usage data for municipal operations 

Resilience and Adaptation Noteworthy Actions

Forest Health
and Conservation

- ▶ Farmland Conservation & Protection tools - easements, Act 250, planning, zoning. 
- ▶ Develop program for forest landowners for climate-adaptive management practices.
- ▶ Protect forest health and biodiversity on state and private lands 
- ▶ Establish "climate resilience zones"
- ▶ Enhanced planning support to municipalities and regions to maintain forest blocks and connecting habitats 
- ▶ Authorize ANR to have **statewide jurisdiction and permitting authority for river corridors for all kinds of development.** 

What Happens Now?

- ▶ **Activity largely moves back into the Legislature to:**
 - ▶ Identify high-impact policy priorities that will support durable environmental outcomes
 - ▶ Fully appropriate ARPA funds for climate action
 - ▶ Understand additional analyses and contractor support needed to fully achieve the requirements of the GWSA, including:
 - ▶ Advancing improvements to the emissions inventory and carbon budget
 - ▶ Establishing an approach for data collection and management to track progress
 - ▶ Creating a municipal climate toolkit, including vulnerability index
 - ▶ Continuing and expanded public outreach and engagement
 - ▶ Ensure diverse appointments to the Council, and support with just compensation