Summary: Vermont's Priority Measures for Climate Pollution Reduction Grant (CPRG) funding

This document is a summary only. The full CPRG Priority Climate Action Plan, submitted by Vermont's Climate Action Office to the U.S. Environmental Protection Agency on March 1, 2024, may be found at www.climatechange.vermont.gov/cprg.

There is no single measure or strategy that will ensure the necessary transitions required to drastically reduce Vermont's greenhouse gas emissions. Action must be taken on multiple fronts to reach the required emission reductions in the GWSA. Most importantly, the policies and programs outlined in each of the measures included in this priority climate action plan (PCAP) represent a coordinated and continuing approach to mitigating greenhouse gas emissions, emphasizing approaches that are equitable and seek to ensure accessibility for all Vermonters.

The measures in this section have been identified as "priority measures" for the purposes of pursuing funding through CPRG implementation grants. **This list is not exhaustive of Vermont's priorities, which may be found in the Climate Action Plan developed by the Vermont Climate Council.** Instead, the selected priority measures included in this PCAP meet the following criteria:

1. **The measure is ready to be implemented.** The design work for the policy, program, or project is complete enough that a full scope of work and budget can be included in a CPRG implementation grant application.
2. **The measure can be completed in the near term.** All funds will be expended, and the project completed, within the five-year performance period for the CPRG implementation grants.
3. **The measure advances the following state priorities**:
    - Measurable impact to climate mitigation
    - Cost-effective emission reduction
    - Broad and varied co-benefits to Vermonters
    - Technical feasibility
    - Consistency with the Guiding Principles for a Just Transition (see "Low Income and Disadvantaged Community" Section)

Table 1: Priority Measure Summary

Priority Measure	**Cumulative GHG emission reductions (MT CO_2e)**		**Implementing Agency or Agencies**
	2025–2030	**2025–2050**	
Transportation Measures			
1. Medium- and Heavy-Duty fleet EV point of sale purchase and EVSE incentive, including infrastructure, technical assistance, and training	21,324	130,600	ANR and VTrans
2. Idle-reduction technology deployments for all vehicle weight classes	10,457	62,741	ANR

3. Clean Transportation educational programming	10,920	55,802	ANR
4. Passenger Electric Vehicles Incentives – Point-of-sale Purchase Incentive, Replace your Ride, Mileage Smart, E-Bike, and electrical panel upgrades	87,636	448,580	VTrans
5. Charge Vermont – Vermont's Electric Vehicle Supply Equipment Grant Program	4,018	24,109	ACCD
Buildings and Thermal Sector (RCI) Measures			
6. Centralized thermal efficiency clearinghouse and energy coaching program, mini-grants to Community-action agencies to bridge gaps in funding needs for Low Income Households	22,087	148,300	PSD
7. Low to Moderate Income thermal efficiency program expansion	440,000	1,720,000	PSD
Natural and Working Lands Measures			
8. Enhanced carbon sequestration and emissions reduction on farms	579,497	3,890,908	AAFM
9. Enhanced Carbon Sequestration through Wetland Restoration and Acquisition	1,681	10,085	ANR
10. Enhanced Carbon Sequestration through Land Acquisition	26,766	158,491	ANR
11. Enhanced Forest Sequestration	4,719	28,314	ANR
Non-Energy Measures			
12. Institutional Waste Reduction, Recycling, and Composting Initiative	1,032	7,914	ANR
13. Expanded High GWP refrigerant mitigation program	4,373	17,820	ANR
Multi-Sector Measures			
14. Mitigation activities at Wastewater Treatment Facilities and Solid Waste Management Entities in Vermont	288	1251	ANR
15. Climate focused housing	2,356	14,139	ACCD
16. Expansion of the Municipal Energy Resilience Program and the Municipal Technical Assistance Program	6,429	38,579	ANR and BGS

Transportation Sector Measure Details

1. *Medium- and Heavy-duty Electric Vehicle Incentive Program*

The goal of this measure is to accelerate the successful deployment of electric trucks in Vermont. This measure includes a comprehensive point-of-sale purchase incentive for electric medium- and heavy-duty (MHD) vehicles, a corresponding electric vehicle supply equipment (EVSE) purchase and installation incentive, and pre- and post-incentive technical and advisory support and training for fleets. The program will include the tools and financial assistance that vehicle and fleet owners need to transition to electric vehicle technology, including pre-application support and guidance on vehicle selection, outreach to electric utilities and other stakeholders, EVSE and infrastructure design, a point of sale rebate that will be scaled to support different vehicle weight class purchases and designed to be stacked with other federal funding sources to cover the full incremental cost of the vehicle, and post-deployment support and training related to vehicle operation and maintenance. Transit and School buses will not be eligible for the purchase incentive, but may be eligible to participate in the technical advisory and training programs associated with the comprehensive program.

With the passage of the Advanced Clean Trucks, Low NOx Omnibus, and Phase 2 Greenhouse gas rules in Vermont, it is critical that the requirements related to supply of electric trucks be met with the demand that is needed to ensure lower emitting vehicles are deployed at pace with or beyond the regulatory requirements. ANR and other state agencies have learned from the implementation of the Vermont Passenger car electric vehicle purchase incentive program, as well as the grant programs administered through the Diesel Emissions Reduction Act and Volkswagen Settlement funding, that the most impactful incentive opportunities include a point-of-sale incentive and robust technical support and assistance to ensure a successful vehicle deployment. A comprehensive incentive and advisory program for electric trucks will be critical to ensuring the emissions reductions of greenhouse gases and criteria air pollutants from the transportation sector in Vermont.

2. Idle Reduction Incentive Program

The goal of this measure is to reduce emissions from vehicles by reducing the amount of time they are idling. This is especially important for freight trucks and police vehicles that must run their engines while parked in order to operate auxiliary equipment, such as refrigeration or computer systems. This measure will be available to all vehicle weight classes, including light-duty fleets, and will provide an emissions reduction opportunity for trucks that have a long remaining useful life and currently must use an engine to power their auxiliary equipment.

An incentive program will support either the purchase and installation of software designed to reduce vehicle idling, or the purchase and installation of power systems that are not fossil fueled so that auxiliary equipment can be run without idling. These technology solutions can be on-board the subject vehicle, or they could be fixed equipment where a vehicle is dwelling for a period of time (such as rest stops for freight trucks). The Department of Energy's (DOE) IdleBox Toolkit as well as EPA's SmartWay Technology Program will be used to identify the appropriate and recommended idle reduction

technology to meet the needs of the subject vehicle while maximizing emission reductions. Incentive levels will vary based on the application of the technology and the vehicle weight class.

This measure will meet the goals of the CPRG program by achieving emission reductions within a category of vehicles or fleets that are some of the last to transition to electric technology given their long remaining useful life and/or potential infeasibility of electric technology to meet the vehicle's the intensive auxiliary power needs. These reductions will be likely to achieve reduction of CAPs and HAPs and are likely to have community benefits given that idling often exacerbates local exposure to these pollutants. This measure presents an innovative solution to achieve reductions from fossil-fuel vehicles that may be slower to transition to electric technology, and therefore could be scaled up and evolve as technology and vehicle use changes.

3. Clean Transportation Outreach and Education

The goal of this measure is to increase the deployment of electric vehicle (EV) technology and reduction of vehicle miles traveled (VMT) by incorporating relevant subject matter into science, technology, engineering, and mathematics (STEM) and driver education curricula. This measure would implement a broader clean transportation education and outreach program intended to deliver presentations for high school-level STEM educators, students and/or driver's education students to assist drivers in making informed decisions regarding their options for transportation. To advance a key strategy of Vermont's Climate Action Plan to educate drivers on the benefits of electrification and other transportation options to reduce VMT, ANR's Department of Environmental Conservation has recently deployed a Clean Transportation Outreach and Education pilot program. This measure would be a significant expansion of the recent program.

While EV technology is still in the early adopter phase and strategies to reduce VMT are not yet mainstream, reaching first-time drivers is critical to broadening EV adoption and normalizing behavior that reduces VMT. Transitioning to electric vehicles also means changing how we fuel our vehicles and how we drive; encouraging these behavior changes early in a driver's life is critical to broadening public support for and engagement in electrification of transportation.

The pilot program included development of a comprehensive overview of clean transportation topics that could be incorporated into high school-level STEM and/or driver's education curricula, including, but not limited to, the following topic areas:

1) The environmental and public health impacts associated with emissions from conventional internal combustion engines, including:
    a. an overview of the types of pollutants emitted by mobile sources in the transportation sector and the impacts associated with each pollutant and
    b. a discussion of environmental justice and how transportation sector air pollution can disproportionately affect overburdened and underserved communities.
2) An overview of zero tailpipe emission vehicles, including:
    a. an overview of different low and zero emission vehicle options (battery electric, hybrids, fuel cell-powered, etc.), charging infrastructure, cost of ownership and maintenance, features, and benefits and

b. a summary of Vermont's emissions reduction goals and how alternative fuel vehicles will help the state reach these goals.

3) A discussion around other means of transportation as an alternative to personal vehicle use (e.g., conventional bikes, eBikes, motor pool, public transit) and applicable state programs (e.g., Go! Vermont).
4) Coordination with and promotion of relevant statewide incentive programs (e.g., Incentive Program for New Plug-in Electric Vehicles, MileageSmart, Replace Your Ride, and the Electric Bike Incentive Program), utility incentives, and charging equipment/infrastructure incentive funding.

The pilot program also included an end-of-course evaluation component, allowing program participants (i.e., presentation audience members) to provide feedback and constructive criticism. The post-pilot program will use the curriculum developed in the pilot, and will expand the scope and scale of the use of the developed materials to be integrated into Vermont's driver's education curriculum state-wide.

Therefore, this measure meets the goals of the CPRG program by complementing and measurably improving the effectiveness of other transportation emission reduction measures aimed at reducing GHG, CAP, and HAP emissions. This program capitalizes on previous investments made in the pilot stage of the program to develop an impactful curriculum, however more funding is needed to expand the benefits of this program state-wide.

4. Passenger Electric Vehicle Incentive Programs Including Consumer Education and Outreach

Incentives to increase adoption of passenger electric vehicles are critical to meeting Vermont's GHG reduction requirements and for the transition to a fully electric transportation fleet. Climate smart transportation incentive programs help income-qualified Vermonters reduce their transportation-related emissions. VTrans works with partners including Drive Electric Vermont and Capstone Community Action to offer programs that replace internal combustion vehicles with new or used efficient and electric vehicles, bicycles, or other clean transportation options.

The Vermont Legislature has authorized four statewide vehicle incentive programs for income-qualified Vermonters, including:

1. Plug-in Electric Vehicle (PEV) Incentive Program: for the purchase or lease of a new plug-in electric vehicle;
2. MileageSmart: for the purchase of a high fuel-efficiency used vehicle;
3. Replace Your Ride: retires 10+ year old internal combustion engine vehicles and provides funds for cleaner transportation alternatives;
4. Electric Bike (eBike) Incentive Program: for the purchase of a new electric bicycle.

The authorization for this funding is set to expire with the exhaustion of the currently allocated funding, leaving a significant gap in the support available to help Vermonters transition to electric vehicles. This measure will further refine and implement these important programs with the following design elements and priorities:

PEV Incentive Program: Incentives will be available for the purchase or lease of a new plug-in all-electric vehicle (AEV) on a first-come, first-served basis for low income-qualified individuals. Incentives will be limited to AEVs with a base MSRP of $50,000 or less and may be combined with additional incentives from electric utilities and federal tax credits. Eligible customers may receive the incentive directly from a participating car dealer in the form of a reduced purchase or lease price, or they may receive a direct cash reimbursement from the state's incentive administrator, which would be selected pursuant to the state's competitive procurement process.

MileageSmart: The program will provide financial assistance to income-eligible Vermonters (80% of State Median Income, based on household size) at the point-of-sale to purchase used plug-in hybrid electric vehicles (PHEVs) or AEVs. MileageSmart can contribute up to 25% of the vehicle purchase price, with a maximum of $5,000. It can be used in combination with the other incentive programs the state administers, as well as federal incentives.

Replace Your Ride: The Replace Your Ride program encourages owners of older internal combustion engine vehicles to switch to cleaner transportation options by offering an incentive of up to $5,000 to scrap the high polluting vehicle. Eligible applicants must either meet the lower-income thresholds of the PEV incentive program or meet the income criteria for the MileageSmart program (80% of State Median Income, based on household size).

The program would offer two options on how to use the incentive:

1. Participants may apply their voucher towards the purchase or lease of a new or used PEV;
2. Participants seeking a more flexible option may apply their voucher towards active or shared mobility options including a bicycle, electric bicycle, or fully electric motorcycle; and/or shared mobility services that reduce the need for vehicle ownership (such as public transit fares, carsharing or bike sharing). Participants who chose the latter option will receive a clean mobility card, which is a pre-paid debit card that can be used at eligible businesses that help reduce or avoid vehicle miles traveled in single occupancy automobiles.

Incentives through this program may be combined with MileageSmart, PEV Incentive Program, and Electric Bike Incentive Program.

Electric Bike Incentive Program: The Vermont eBike Incentive Program has been a limited-time offering available to income-eligible Vermonters on a first-come, first-served basis. Funding for this incentive program ran out quickly because of its tremendous popularity.

The program would be restricted to serve only households with lower incomes and high transportation needs. Eligible eBikes must meet minimum safety standards and cannot exceed maximum price levels of a base MSRP of $4,000 for standard electric bikes and $5,000 for electric cargo bikes. eBike purchasers must first apply for and receive a pre-paid debit card that can be applied at the point-of-sale at participating bike shops. eBike incentives can be combined with offers from Vermont electric utilities to further reduce the cost of electric bikes.

Consumer support and technical assistance: Vermonters that are unfamiliar with EVs and the incentives available may access consumer information from the robust and intuitive support that is available through the Drive Electric Vermont (DEV) program. To ensure the continued success of these refocused

programs, DEV will remain a critical component of this program suite that will be supported by this measure. DEV partners with stakeholders to address knowledge gaps and provide opportunities to experience EV technology. DEV also works with partners to identify communities presently underserved by charging infrastructure and electric vehicle adoption. Resources are currently being developed to cultivate community connections and increase awareness of EVs.

Residential and multi-unit dwelling electrical panel upgrades: This proposed measure includes financial support for EV owners who need to upgrade their residential electrical service to charge their EV at home. Vermont's largest electricity distribution utility estimates that about half of Vermont households require an upgrade to 200A service in order to support at-home EV charging. While current and future home weatherization and fuel switching incentive programs provide some support for panel upgrades, an EV purchase is not a qualifying event for those programs. With CPRG funding, this new measure would mean that purchasing an EV qualifies a homeowner to receive incentives for panel upgrades.

Refining and enhancing Vermont's PEV incentives can serve as an innovative example for other jurisdictions seeking a program design that increases uptake in EV technology and provides critical assistance to ensure that all Vermonters can participate in the transition to an electric fleet. This measure prioritizes LIDACs with higher incentive amounts for low-income households, plus the ability to stack funding sources. Because lower income households are more likely to purchase a used vehicle, these programs also incentivize the purchase of used EVs. The MileageSmart program is currently administered by Vermont's community action agencies, which offer primary support for Vermonters who are living in poverty in both rural and urban areas. A robust incentive program that increases EV adoption for all Vermonters also yields improvements to air quality and public health benefits along high traffic corridors, and lowers transportation costs related to vehicle fueling and maintenance. In addition to the financial support, the DEV program will continue to enhance the incentive programs by identifying communities that can benefit from additional engagement.

5. Expansion and enhancement of the Charge Vermont Program

The goal of this measure is to enhance and expand the State of Vermont's existing Charge Vermont program, which has invested significantly in Electric Vehicle Supply Equipment (EVSE). Since 2014, the State of Vermont has invested more than $3.5M in public EV charging stations, installing 41 fast charging stations and 89 Level 2 charging stations across all 14 counties. Recent investments to bolster the EVSE network have positioned Vermont as #1 in the nation for the number of EV charging stations per capita, with 114 public charging stations per 100,000 people. Electric cars are spreading across the state and are now present in 92% of Vermont communities. This measure will enhance and expand the existing EVSE program to continue State investments in public charging stations as well as investments in home and workplace charging to ensure EV drivers have a reliable place to charge their vehicles.

This measure would support EV charging solutions that can meet the needs of multiunit properties, where many renters reside. These options have been slower to develop and tend to cost more than solutions available to owner-occupied housing with dedicated parking garages. Specifically, the incentives for multiunit property owners would help to overcome the cost and other barriers to installing EV charging in multiunit properties.

This measure would also support workplace charging, which is a particularly important solution for renters and residents of multiunit properties who don't have access to home charging. It provides another source of charging that may be more convenient and affordable than relying entirely on public charging, which tends to have high fees and reliability challenges, especially direct current fast charging (DCFC).

Buildings and Thermal Sector (RCI) Measure Details

6. Energy Navigator Services

The goal of this measure is to create five "energy navigator" jobs. These Navigators will work directly with low to moderate income families to provide direct support to change home energy systems to cleaner technologies. The Navigators will be technically trained to review the current home heating system and provide recommendations for energy efficient upgrades. The Navigator will work with the family to identify issues that may need to be addressed before the new heating system is installed (e.g. repairs on foundations, remediation, and funding to do so), identify and secure contractors, schedule work with contractors, and identify and help secure funding to pay for equipment and contract work. The Energy Navigation program will also help connect families to other "wrap-around" services that help meet other pressing needs (e.g. 3SquaresVT food security benefits).

The nature of whole-home thermal efficiency projects is complex; there are multiple sources of state, federal, and utility funding available and many options for cleaner energy appliances and weatherization. Vermonters with the highest energy burden are in need of one-on-one technical support and counseling to navigate this complex landscape of funding and home improvement. This measure will facilitate efficiency projects for the families who will most benefit from cleaner, lower-cost home heating and cooling. The measure will help achieve additional emissions reductions and a more equitable transition to clean technology.

This measure meets the goals of the CPRG program by: complementing and increasing funding available to complete thermal efficiency projects for low-income households; benefitting communities by lowering the energy burden and costs and improving indoor air quality for low-income households; and advancing an innovative program that can be applied to other climate mitigation incentive frameworks.

7. Low- to Moderate-Income Thermal Efficiency Incentive Program Expansion

The goal of this measure is to increase the amount of funding available for low- to moderate-income Vermonters to make thermal efficiency upgrades to single households and multi-family buildings in Vermont. These upgrades include weatherization activities, fuel switching, and the complementary and make-ready work required to facilitate these projects. Current modeling indicates that, even with the recent influx of federal funding to support weatherization and thermal efficiency work of State Energy Offices, additional measures are required to meet Vermont's 2030 GHG reduction requirements in the Thermal Sector. Based on a recent study, an estimated 90,160 homes require weatherization and

263,000 heat pumps will need to be installed to meet the thermal sector contribution to the economy-wide 2030 GHG reduction requirements. Current funding levels will not meet the estimated need, therefore additional funding is needed for existing, effective programs to support Vermonters who have the highest energy burden. In addition to weatherization and electrification, further funding for critical complementary programs, such as electric panel service upgrades, is also needed. A robust suite of efficiency and weatherization programs are currently administered by Vermont's three energy efficiency utilities (Efficiency Vermont, the Burlington Electric Department, and Vermont Gas Systems) and the Weatherization Assistance Program.

This measure will meet the goals of the CPRG program by further achieving GHG emission reductions in the buildings and thermal sector by 2030 and beyond, providing substantial benefits to low- and moderate-income Vermonters with higher energy burdens in the form of cost-savings and reduced exposure to poor air quality (indoor and ambient), and complementing existing funding and programs by capitalizing on existing administrative structures and partnerships.

8. Climate-focused Housing Development

The goal of this measure is to incentivize housing developers to exceed Vermont's Renewable Building Energy Standard (RBES). Vermont has recently updated its RBES and it is one of the most aggressive energy codes in the country. When affordable housing developers use certain funding sources, they are required to work with Efficiency Vermont to exceed RBES by building to their High-Performance Building standard. Recently one of the state's largest affordable housing developers, in partnership with Champlain Housing Trust, won the U.S. Department of Energy's Building Envelope Campaign Novel 40 Award for the Laurentide Apartment building in Burlington. The award was in recognition of the building's aggregate improvement of 60% in building envelope performance. The air sealing results for Laurentide exceeded Passive House standards.

Incentivizing a highly energy efficient thermal shell and mechanical system reduces emissions compared to less efficient and lower-emitting housing projects. It is also an investment in low and sustainable cost of living for Vermont's affordable housing owners and renters, since we include the cost of heat, cooling, and hot water in tenants' rent. Many private developers choose to take advantage of the split incentive when it comes to energy: investing less in a building's envelope or systems impacts their renters' pockets, not their own, as they generally do not pay for residents' heating, cooling, and hot water.

This measure would increase the current scope and scale of the incentive for affordable housing developers to exceed the RBES by creating a more realistic per-unit incentive. In addition to a per-unit incentive, installations of Zero Energy Ready Homes (ZERH) in place of a U.S. Department of Housing and Urban Development (HUD)-certified single wide mobile home unit will also be incentivized. Further, this measure has a strong equity component. This incentive would only serve homeowners up to 120% Area median income (AMI), and renters up to 100% AMI. The vast majority of homes in the current affordable housing portfolio serve Vermonters under 60% AMI, meaning that those most in need will receive the greatest benefit.

9. Enhanced Carbon Sequestration on Farms

The goal of this measure is to expand existing State programs that support agricultural practices that sequester carbon. These programs are administered by the Vermont Agency of Agriculture, Food, and Markets (AAFM). Funded practices would include: 1) agroforestry and silvopasture practices that integrate woody vegetation into agricultural land, 2) grazing practices that increase vegetative cover and forage, 3) edge-of-field practices that increase herbaceous and woody vegetation, and 4) agronomic practices that reduce tillage and increase vegetative cover. The current programs, with details on how new practices would be supported by this measure, include:

Capital Equipment Assistance Program (CEAP): Provides financial assistance for new or used innovative equipment that lessens a farm's greenhouse gas emissions, while reducing costs to farmers when they apply manure to their fields. With additional funding, CEAP would add and prioritize climate mitigation criteria into projects to reduce emissions from agricultural equipment and its use.

Farm Agronomic Practices (FAP): Funds soil-based agronomic practices that improve soil quality, increase crop production, and reduce erosion and agricultural waste discharges. In this program, practices achieving carbon sequestration would be prioritized and would include conversation of acres to rotational grazing practices, reduction in tillage, no tillage, cover crop, and crop to hay.

Pasture and Surface Water Fencing (PSWF) Program: Provides pasture management technical assistance and financial assistance to Vermont farmers to improve land use practices to sequester carbon. In this program, practices achieving carbon sequestration would include conversion of acres from crop to hay.

Grassed Waterway and Filter Strip (GWFS) Program: Provides technical and financial assistance to Vermont farmers for in-field agronomic best practices to achieve carbon sequestration, including conversion of acres to filter strip, and from crop to hay. All practices in this program achieve carbon sequestration.

Conservation Reserve Enhancement Program (CREP): Program designed to remove land from agricultural production and establish vegetative buffers along waterways, which protect water quality. In this program, practices achieving carbon sequestration would include conversion of acres to riparian buffer (streambanks and riverbanks that are vegetated or forested rather than farmed).

This measure will meet the goals of the CPRG program by achieving emission reductions through sequestration, positively impacting farmers in low-income communities by supporting work to improve their practices. CPRG funding would complement current state and federally funded programs administered by AAFM, enhancing the carbon benefits of existing programs. This measure will also increase capacity to allow AAFM to meet the increasing demand for these carbon-benefit programs in the agricultural sector, many of which are innovative ways to achieve land-use goals (such as protecting agricultural land from development) while sequestering carbon.

10. Wetland Restoration and Acquisition

The goal of this measure is to expand a regional wetland restoration and acquisition program statewide. The Vermont Fish and Wildlife Department (VFWD) has a long, successful history of conserving, managing, and restoring wetland habitat in Vermont. In fact, the first state-owned Wildlife Management Area (WMA) established in the eastern United States was Sandbar WMA, established as a refuge for migratory waterfowl in Milton, Vermont in 1920. Nearly 100 years later, VFWD protects more than 30,000 acres of some of the largest, most significant wetland systems in Vermont and is the largest owner of wetland habitat in the state. In 1986 VFWD established the Vermont Duck Stamp Program to enhance the Department's wetland conservation efforts. The Vermont Duck Stamp program has been responsible for some of our state's greatest wetland conservation success stories, raising $4.5 million for the conservation of nearly 12,000 acres spanning 100 unique conservation projects. Over the past 10 years VFWD, in conjunction with partners such as the federal Natural Resources Conservation Service (NRCS) and US Fish & Wildlife Service (USFWS), has restored more than 50 acres of wetlands on WMAs. In addition, hundreds of acres of wetlands restored through NRCS via the Wetland Reserve Program, with the critical support of USFWS and Partners in Fish and Wildlife, have been added to WMAs to ensure long-term, effective land stewardship. VFWD owns 103 WMAs constituting 145,000 acres of outstanding wildlife habitat; the majority of those areas have wetland habitat.

Since 2018 the VFWD has received funding from the US EPA, via the Lake Champlain Basin Program, for wetland acquisition and restoration in the Lake Champlain Basin. To date, VFWD has received $5.5M in funding and has acquired 1,585 acres. 1,200 of those acres acquired are restorable to wetlands. The funding for this restoration effort requires that 40% of the total acreage acquired be restorable to wetlands via a change in land use. The program is currently slated to have 70% of the acres acquired to date restorable to wetlands, far exceeding the requirements. Wetland restoration and restoration planning are underway, post-acquisition, on these properties with partner organizations and external contractors.

The VFWD is uniquely situated as an entity that has the capacity to plan and execute these projects and to be the ultimate landowner after acquisition and restoration. The effectiveness of the acquisition and restoration program and the unique role that VFWD plays in wetland conservation statewide make it a logical agency for additional grant funding to expand these efforts. To date, funding has been dedicated to the Lake Champlain Basin because of clean water co-benefits that support State goals to improve water quality in Lake Champlain. Nevertheless, wetland restoration opportunities exist statewide and represent a significant unmet opportunity. Due to VFWD's long-standing commitment to conserving, restoring, and stewarding wetland habitat throughout Vermont, robust systems, relationships, and administrative structures already exist to expand this work.

Projects will focus on state acquisition of marginal farmland in strategic areas where the farms are being retired or will implement wetland restoration in collaboration with our partners. VFWD staff currently complete between 7-10 land acquisition projects a year. By expanding funding, VFWD can complete an additional 3-5 projects annually. VFWD anticipates that a minimum of 40% of those projects' land area will include changes in land management practices (e.g. corn production to floodplain forest) to support additional sequestration and storage.

This measure will meet the goals of the CPRG program by 1) supporting farmers who are a disadvantaged community in Vermont 2) achieving community benefits by supporting climate resilience

through improving flood storage, and 3) increasing carbon sequestration and storage while supporting landscape-scale conservation.

11. Forest Management to Enhance Sequestration

The goal of this measure is to expand staff capacity at Vermont Fish and Wildlife Department (VFWD) and Vermont Department of Forests, Parks and Recreation (VFPR) to ensure the deployment of increased funding made through the Inflation Reduction Act (IRA) to the Natural Resources Conservation Service (NRCS) to support climate practices on private land. The IRA provides an additional $19.5 billion over five years to support NRCS's conservation programs that yield climate change mitigation benefits. Implementation began in 2023. These investments mean that more producers will have access to conservation assistance and include:

- $8.45 billion for the Environmental Quality Incentives Program
- $4.95 billion for the Regional Conservation Partnership Program
- $3.25 billion for the Conservation Stewardship Program
- $1.4 billion for the Agricultural Conservation Easement Program
- $1 billion for Conservation Technical Assistance
- $300 million to measure, evaluate, quantify carbon sequestration and greenhouse gas emission reductions from conservation investments (see fact sheet)

For fiscal year 2024, which began Oct. 1, 2023, the Inflation Reduction Act provides:

- $1.65 billion for the Environmental Quality Incentives Program
- $754 million for the Regional Conservation Partnership Program
- $472 million for the Conservation Stewardship Program
- $189 million for the Agricultural Conservation Easement Program

These additional funds will help farmers and forestland owners implement expanded conservation practices that reduce greenhouse gas emissions and increase storage of carbon in their soil and trees. The conservation funding is in addition to otherwise available program funds, and participation is voluntary, incentive-based and targeted to support climate-smart mitigation activities and other conservation activities that facilitate them.

NRCS is increasing Climate-Smart Agricultural and Forestry Mitigation Activities eligible for Inflation Reduction Act funding for fiscal year 2024 through EQIP and CSP. These in-demand activities are expected to deliver reductions in greenhouse gas emissions or increases in carbon sequestration as well as significant other benefits to natural resources like soil health, water quality, pollinator and wildlife habitat and air quality. In response to feedback received from conservation partners, producers and NRCS staff across the country, NRCS considered and evaluated activities based on scientific literature demonstrating expected climate change mitigation benefits. When applied through this framework, these activities are expected to deliver reductions in greenhouse gas emissions or increases in carbon

sequestration. NRCS will continue to evaluate additional practices as science progresses and will evaluate and identify quantification methodologies during the fiscal year. Find the FY24 list of Climate-Smart Agricultural and Forestry Mitigation Activities here.

Even prior to this substantial increase in funding, Vermont NRCS was limited by technical assistance providers to meet with landowners on the ground. As such, NRCS has partnered with VFWD to expand its capacity for nearly twenty years. During that time, NRCS also executed a MOU with VFPR to add capacity too but that is no longer in place. This measure will seek to add an additional staff capacity to both Departments to support developing projects on the ground and navigating the NRCS application process on behalf of the landowner. VFWD and VFPR are best suited to do this work because of their relationships with forestland owners and farmers, as well as expertise as biologists and foresters.

This measure will meet the goals of the CPRG program by supporting forestland owners and farmers who are both disadvantaged communities in Vermont, achieving community benefits by supporting climate resilience through improving flood storage, and increasing carbon sequestration and storage while supporting a working forest economy which keeps forests as forests. Vermont's forests are largely under private ownership. Working with private landowners strengthens Vermont's rural economy and is critical to protecting biodiversity. Vermont's forested landscape also plays a regional and arguably global role in meeting net-zero targets, with the state roughly 74% forested. While Vermont remains one of the most forested states in the country, the loss of forested habitat is of concern; Vermont saw a loss of 3.27 kha of natural forest in 2022, equivalent to 1.35 MT of CO_2 emissions sequestered.

12. Land Acquisition and Restoration

The goal of this measure is to further advance land conservation goals in the state to support the state's "30 by 30 goal" and increase carbon sequestration through land conservation. Vermont's Act 59 of 2023 establishes state goals of conserving 30% of the land of Vermont by 2030, and 50% by 2050. It requires the Vermont Housing and Conservation Board (VHCB), in consultation with the Secretary of ANR to develop an inventory of the existing conserved lands in Vermont and a plan on how to reach the goals. The act recognizes the critical state of biodiversity loss and the need for immediate action to combat climate change. The act emphasizes the importance of protecting natural habitats and biodiversity for future generations. These goals are aligned with global conservation efforts and build on past efforts, such as the Vermont Fish and Wildlife and Agency of Natural Resource's Vermont Conservation Design framework.

Conservation is defined as an area with permanent protection from conversion, and the act defines three categories of conservation:

1. **Ecological Reserve Area**: An area protected permanently from conversion, managed to maintain a natural state. This includes allowing natural ecological processes and disturbance events to proceed with minimal interference.

2. **Biodiversity Conservation Area**: An area with permanent protection from conversion for most of its part, managed primarily to sustain species or habitats. These areas may require active interventions for specific species needs or habitat maintenance/restoration.

3. **Natural Resource Management Area**: An area mostly protected from conversion but subject to long-term, sustainable land management practices.

There are two milestones in this work, both led by VHCB in consultation with ANR. The first is the Conservation Inventory Report and the second is the Conservation Plan. Both the conservation inventory and conservation plan will be developed in consultation with range of stakeholders, including private owners of forestlands and agricultural lands, land trusts, conservation organizations, environmental organizations, working lands enterprises, outdoor recreation groups and businesses, watershed groups, municipalities, regional planning commissions, conservation commissions, and relevant State and federal agencies. The plan will be updated biennially to track progress.

Preliminary work has shown that Vermont will need significant additional resources to increase the pace and scale of conservation to meet these goals. This measure will complement land acquisition funding at VHCB to emphasize projects that enhance sequestration and storage through a change in land management. Working with a statewide network of partners, VHCB funds the conservation of agricultural land, natural areas, forestland, recreational land, and the preservation and restoration of historic properties. These investments strengthen Vermont's rural economy, protect wildlife habitat, provide public access to forestland, trails and water, and restore our historic community buildings, creating jobs and bringing visitors to Vermont.

Through grant funding to conservation partners, VHCB will select competitive acquisition projects that include a restorative land management change on at least 40% of the parcel. The restoration area will be articulated in a permanent conservation easement to ensure the additionality in perpetuity on the parcel. Projects will largely occur on farm conservation projects being developed by the Vermont Land Trust but in unique circumstances, state and non-profit partners focused on upland conservation may be able direct funding to projects that restore upland natural communities on industrial forestland or retired pasture.

Non-energy Emissions Measure Details

13. Food Waste Reduction in Institutions

The goal of this measure is to reduce the amount of food wasted and improve food scrap diversion programs at schools, hospitals, nursing homes, other institutions, and businesses in Vermont. The EPA estimates that wasted food generates nearly 60% of methane emissions from landfills. Managing food scraps in other ways, such as animal feed, composting, or anaerobic digestion reduces overall emissions from wasted food. The biggest impacts on emission reductions, however, are from preventing wasted food in the first place because a large portion of food's environmental impacts take place during growing, processing, manufacturing, and transporting. While food waste can occur in many sectors, food service contributes 18% of greenhouse gas emissions associated with wasted food in the U.S., second to residential (64%) and above manufacturing (11%), retail (6%), and farms (1%). ANR has several past and ongoing initiatives aiming at decreasing residential food waste including media campaigns, including the www.scrapfoodwaste.org website, food waste reduction workshops, and an annual food waste reduction challenge. However, effective behavior change requires more intensive interactions than is typically feasible at the broad residential sector scale and quantifying the impacts of residential-sector food waste

reduction projects is challenging. The food service sector, however, is a great opportunity for targeted waste reduction projects; individual food service providers generate more food waste than individual residents and relatively simple changes in food service, such as reducing plate size, training staff, and putting up buffet signs encouraging coming up for seconds (as opposed to overloading plates) can lead to significant reductions in food waste.

This measure would involve working with participating institutions to: 1) conduct a food waste audit to determine how much food is currently being diverted and trashed, 2) conduct an evaluation of the wasted food (using food waste monitoring technology) and food scrap diversion program to ask: What is being wasted? Why is it being wasted? How much is being wasted? What happens to food scraps?, 3) develop and implement strategies for wasting less food and improving food scrap diversion, and 4) conducting a post-project audit to quantify progress.

Resources to measure food waste and waste reduction include existing technical tools, such as Lean Path, Phood, and Winnow.

This measure will meet the goals of the CPRG program by realizing significant emissions reductions across the entire food system. The program will also help all types of institutions, including those that support underserved communities, reduce costs and streamline services to improve efficiency of operations. ANR also sees this as an opportunity to demonstrate innovative technologies so that other jurisdictions can implement similar programs in conjunction with other state programs and requirements related to waste reduction and composting.

14. High-GWP Refrigerant Replacement and Recovery

The goal of this measure addresses emission from high global warming potential refrigerant in two ways: increasing the rate of recovery of refrigerants from systems and appliances at the end of their life, and replacement of refrigeration equipment with technology that utilizes non “f-gas” or natural refrigerants.

The removal and decommissioning of equipment containing refrigerant(s) requires proper refrigerant recovery equipment, techniques, and infrastructure to ensure potent greenhouse gases are not leaked or unintentionally released into the atmosphere. The decommissioning of larger equipment (e.g. commercial refrigerant “rack” systems) is assumed to be properly managed due to the large quantity of refrigerant and the economics of recovery. However, due to the market gaps illustrated below, proper recovery practices when working with small to mid-sized equipment (such as ductless heat pumps and condensing units) can be overlooked or challenging, resulting in significant GHG emissions. An effort aimed at supporting refrigerant recovery from small to mid-sized equipment would not only reduce emissions by improving opportunities for proper disposal but could also further reduce emissions by increasing the potential for recycling refrigerants for use in other purposes, which reduces the need to manufacture new high-GWP refrigerants.

The current market gaps for refrigerant recovery in small to mid-sized HVAC/Refrigeration systems would be addressed in the following ways:

- Provide contractor training and education materials to address lack of contractor training and education;

- Continue to explore Extended Producer Responsibility to support end of life refrigerant recovery efforts;
- Support supply chain development and contractor training to address lack of contractor access to best-in-class tools for completing refrigerant recovery;
- Leverage partnerships, supply chain relationships, and potentially incentives to support the development of infrastructure in Vermont to address the lack of access to refrigerant recovery infrastructure (refrigerant containers, drop-off facilities, etc.); and
- Offer incentives to ameliorate the lack of economic motivation for proper refrigerant recovery from smaller equipment.

Of particular concern are the growing number of heat pumps containing 410A refrigerant (GWP 2022), with more than 10,000 of these units being installed each year in Vermont. As this equipment reaches end of life, access to proper decommissioning protocols, infrastructure, and equipment is going to become increasingly important to ensure such activities assist, and not hinder, the state's ability to achieve its greenhouse gas reduction requirements. This program would support and enhance recovery of refrigerants in compliance with EPA requirements, such as Section 608 of the Clean Air Act, and the Responsible Appliance Disposal (RAD) program.

When refrigeration equipment that contains high GWP refrigerants requires replacement, there is a significant market decarbonization opportunity to replace the equipment with technology that utilizes non- "F Gas", or "natural" refrigerants, rather than replace the equipment with the market's current conventional HFC/HFO options. Non- "F Gas", or "natural" refrigerants have ultra-low GWP values and also do not contain PFAS chemicals when manufactured or dispersed into the atmosphere. The cost of Non- "F Gas", or "natural" refrigerant equipment has reduced in recent years, and the supply chain is ready for increased delivery of such systems in Vermont. Notwithstanding these cost reductions, these products have a cost premium compared to conventional high-GWP equipment. As such, with appropriate incentives this program can support replacement of high-GWP refrigeration equipment with ultra-low GWP systems, and significantly transform Vermont's refrigeration market by preventing emissions throughout the entirety of refrigeration equipment life.

A natural refrigerant incentive program for commercial refrigeration would include (but not limited to):

- CO_2 Ammonia Racks
- CO_2 Condensing Units
- Propane Self-Contained Equipment
- Propane Packaged Coolers for Walk-ins
- Natural Refrigerant Heat pumps

In addition to incentives, this program would also provide supply-side support to contractors through training and other support efforts to help contractors sell Non- "F Gas" or "natural" refrigerant systems. The program would also leverage Vermont Efficiency Utility's existing relationship network with Vermont's largest refrigerant users, mostly grocery stores, to boost customer awareness and uptake of

incentives. This program would also work in coordination with the Refrigerant Recovery, described above, program to ensure the replaced high-GWP refrigerant receives proper refrigerant recovery.

This measure, and the two programs contemplated within, will achieve the goals of the CPRG program by achieving significant and cost-effective GHG emissions, potentially avoid the use of hazardous substances that can cause significant health impacts especially to disadvantaged communities, compliments existing EPA programs related to refrigerant recovery, and facilitates implementation of innovative policies that can be expanded in scope and scale, and set examples for other jurisdictions. Additionally, the recovery program would address the contradiction of heat pump technology serving as a climate mitigation solution while also containing a high GWP refrigerant that could be emitted at the end of the heat pump's useful life.

Multi-Sector Mitigation Measure Details

15. Reduction of Emissions from Processes at Solid Waste Management Entities (SWMEs) and Wastewater Treatment Facilities (WWTFs) in Vermont

The goal of this measure is to incentivize changes to the handling, processing and storage of waste at wastewater treatment facilities (WWTFs), solid waste management entities (SWMEs) and landfills in Vermont by making improvements to processes that yield GHG emission reductions. This measure includes the creation of a grant funding program that would be open to eligible WWTFs, SWMEs, and private waste-handling businesses in Vermont for the completion of the following types of projects that would have demonstrated emissions reduction benefits associated with WWTF and SWME operations and materials management:

- Reduce methane from landfills or wastewater treatment facilities,
- Reduce or divert waste including food and yard waste, recyclables, etc. through improved production practices, improved collection services, and increased reuse or recycling rates,
- Reduce GHG emissions associated with movement of sludge, plastics production, use, and waste management, such as durable service ware that reduces single-use plastics,
- Expand composting and bio-digestion infrastructure to reduce GHG emissions and increase beneficial use of organic waste, and
- Reduce construction and demolition waste through building reuse, deconstruction, and material diversion and reuse.

Some examples of projects that could be implemented include: the acquisition of a slow-speed, high torque shredder in order to significantly reduce the volumes, mass, and frequency of outbound loads of tires requiring transport from Vermont to Maine; the distribution of small residential cone solar digesters to divert meat, fish, grease, and cooking oil waste from the landfill; replacement of recycling drop off facilities to be more energy efficient, allow for better access and safety, and better management of recycling to minimize processing; replacement of fossil fuel powered compost screeners with electric powered compost screeners; replacement of diesel backhoe or loaders used in transfer station with

electric powered equipment to collect, move and process waste materials to reduce emissions and exposure to employees; and switching from sludge dewatering techniques to sludge drying and recycling to reduce emissions.

This measure meets the goals of the CPRG program by achieving emissions reductions at WWTFs and SWMEs through innovative and replicable process improvements. The projects carried out through this measure will also likely benefit local communities that are co-located with these types of facilities through improvements to local air quality, and access to safer and user-friendly facilities. These process improvements are also likely to complement other state and federal funding sources that are aimed at reducing emissions from mobile sources or buildings and may also be applied to SWMEs.

16. Municipal Climate Mitigation Action Program

The goal of this measure is to support Vermont municipalities in advancing and implementing climate mitigation measures that meet their local goals and priorities related to climate change. Projects will be implemented as part of an expansion of the framework of at least two existing programs being administered by the State of Vermont. The first program is the Municipal Energy Resilience Program (MERP), which is administered by the Department of Buildings and General Services (BGS). Act 172 (2022) gave MERP $45 million to support dependable and sustainable connections to critical municipal services for all Vermonters. Municipally owned buildings in cities, towns, incorporated villages, fire districts, and all other governmental incorporated units (except school districts) are eligible. MERP targets communities in need of energy resilience investments, often having excessive energy burden (the portion of income spent on heating, electricity, and transportation). MERP provides the following funding opportunities: Up to $4,000 Community Capacity Building Mini Grants; free building Energy Resilience Assessments; and up to $500,000 Implementation Grants for weatherization, thermal efficiency, and supplementing/replacing fossil fuel heating systems with more efficient renewable or electric versions. BGS has reported to ANR that they expect this program to be significantly oversubscribed, therefore leaving an opportunity for additional resources to further support projects that will reduce GHG emissions but won't be able to receive funding from the current program at its current level of funding. This measure would increase the resources available to BGS to implement the MERP program, and therefore increase the amount of GHG benefits that municipalities in Vermont can realize from participating in this program.

The second program is the Municipal Technical Assistance Program (MTAP), which is part of the State's ongoing efforts to make the most of state and federal funding and expand funding to communities who need additional assistance. The Agency of Administration in coordination with local Regional Planning Commissions is granting funds to municipalities throughout the state for Municipal Technical Assistance. These funds are intended to assist those communities with a high need for state and federal grants but lower capacity for accessing and applying for those sources. The Agency of Administration developed the Vermont Community Index (VCI) to evaluate the needs of communities across the state, with any municipalities showing greater need prioritized for funding. Towns meeting the criteria based on the VCI are pre-approved for participation in a list published by the Agency of Administration. If you do not see your community on the pre-approved list, please have a representative of your community complete the Municipal Assistance Request below for the Agency to collect and evaluate your assistance request.

In October of 2023 the Agency of Administration expanded Municipal Technical Assistance to municipalities above the 50th percentile in the VCI needs based index, and select communities in the 25-50th percentile range who were determined by the state to be significantly impacted by the flooding in July of 2023. This measure would utilize the existing structure and function of the MTAP program to connect ANR with municipalities and regional planning commissions to identify GHG mitigation project priorities of municipalities that otherwise remain unfunded because of a lack of state of federal funds. ANR would administer a grant program, in partnership with the Regional Planning Commissions, to provide these additional resources to facilitate municipalities in meeting their GHG reduction goals.

This measure will meet the goals of the CPRG program by using the framework of existing state programs to further achieve significant GHG mitigation activities where funding is not otherwise available. Because both of these programs prioritize support and participation for municipalities that have limited capacity to implement mitigation activities, and also have a high energy burden, this measure will have the most positive impacts for LIDACs within municipalities that are prioritized through the existing programs. The ability to achieve reductions effectively and efficiently is the most impactful feature of this measure, because it connects additional resources to existing programs that are currently operating to achieve goals identical to the CPRG program. Finally, this measure represents programs that can serve as models for other states that want to support municipal action in achieving statewide GHG reduction goals.

Acronyms and Abbreviations

AAFM	Vermont Agency of Agriculture, Food, and Markets
ACCD	Vermont Agency of Commerce and Community Development
AEV	All electric vehicle
AMI	Area median income
ANR	Vermont Agency of Natural Resources
BGS	Vermont Department of Buildings and General Services
CAO	Climate Action Office
CAP	Criteria Air Pollutant
CCAP	Comprehensive Climate Action Plan
CEAP	Capital equipment assistance program
CEP	Comprehensive Energy Plan
CO	Carbon monoxide
CO2	Carbon dioxide
CPRG	Climate Pollution Reduction Grant
DEV	Drive Electric Vermont
EJ	Environmental Justice
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
GHG	Greenhouse Gas
GWP	Global warming potential

GWSA	Global Warming Solutions Act
HAP	Hazardous Air Pollutant
HFCs	Hydrofluorocarbons
IRA	Inflation Reduction Act
LIDAC	Low income and disadvantaged community
MERP	Municipal Energy Resilience Program
MMTCO2e	Million metric- tons of carbon dioxide equivalent
MSRP	Manufacturer Suggested Retail Price
MTAP	Municipal Technical Assistance Program
NOx	Nitrogen oxides
NRCS	Natural Resource Conservation Service
PCAP	Priority Climate Action Plan
PHEV	Plug-in Hybrid Electric Vehicle
PSD	Vermont Public Service Department
RBES	Renewable building energy standard
RCI	Residential, Commercial and Industrial Sector (Buildings Sector)
RES	Renewable Energy Standard
STEM	Science, Technology, Engineering, and Mathematics
SWME	Solid Waste Management Entity
USFWS	U.S. Fish and Wildlife Service
VFPR	Vermont Department of Forests, Parks, and Recreation
VFWD	Vermont Fish and Wildlife Department
VHCB	Vermont Housing and Conservation Board
VMT	Vehicle miles traveled
VT CAP	Vermont Climate Action Plan
VTrans	Vermont Agency of Transportation
WMA	Wildlife Management Area
WWTF	Wastewater Treatment Facility