

MEMORANDUM

To: Governor Scott and Members of the Vermont Legislature
From: The Vermont Climate Council¹
Date: December 29, 2021
Re: Recommendations for Deployment of ARPA Funding to Support Climate Action Plan Implementation

Thank you for the opportunity to elevate priorities in Vermont’s Initial Climate Action Plan (CAP) that align with funding from the American Rescue Plan Act (ARPA). The CAP includes projects that are well-suited to ARPA funding and important to meeting the requirements of the Global Warming Solutions Act (GWSA). Recognizing this opportunity, we understand that the Governor and Legislature have committed approximately \$200 million to support implementation of the CAP, and that this is in addition to the investment of ARPA dollars in climate initiatives such as fuel-switching and the hazard mitigation buyout program made as part of the SFY22 budget.

The actions included in this memo represent current thinking on the highest priority uses of this funding; the areas of recommended ARPA funding investments are presented in no priority order. In addition, we have attached more detailed descriptions for each investment area which include information on the total investment necessary to meet the requirements established in the GWSA, as well as consideration for the capacity to put the funding on the ground in the required timeframe for ARPA. We recognize that the recommended investments in these priority actions add up to more than the ARPA funding presently intended for climate action. The amounts indicated are intended as both guidance on the upper range of funding that can realistically be obligated by the end of FY24 and in recognition of the complicated review process required to establish ARPA eligibility that may render some of the proposed investments ineligible.

Council ARPA Action Proposals	Suggested Maximum ARPA Investment
Increase funding for the State EV purchase incentive, Replace Your Ride, and Mileage Smart programs necessary to meet the Climate Action Plan’s 2025 benchmark for light duty vehicle electrification (approximately 40,000 additional EVs registered in Vermont by 2025).	\$100-\$150 million
Fully fund electrical upgrades and investments in electric vehicle supply equipment (EVSE or charging infrastructure) to necessary to ensure deployment of charging facilities at multi-family units and workplaces consistent with the <i>EVSE Deployment Plan</i> under development by Drive Electric Vermont.	\$27 million

¹ Please note that the eight administration officials who serve on the Vermont Climate Council abstained from these conversations and decisions. Therefore, this memo is submitted on behalf of the 15 Councilors who were appointed by the House and Senate.

<p>Support significant expansion of low- and moderate-income weatherization and energy efficiency improvement programs, including the workforce development activities necessary to support weatherization at scale (approximately 90,000 new weatherization projects completed by 2030). Program design should consider the needs of renters, in addition to homeowners, to maximize benefits from the energy cost savings and improved health and safety that weatherization provides.</p>	\$122-\$147 million
<p>Fund electrical service and panel upgrades for low- and moderate-income households, coordinated with weatherization, efficiency, and equipment incentive programs (EV chargers, storage, etc.) to enable decarbonization.</p>	\$45 million
<p>Fund refrigerant management programs, emphasizing opportunities for grocery stores and other facilities in rural community. This action would include three parts: 1) leak detection; 2) complete rehabilitation of a system; and/or 3) replacement of refrigerant systems with more efficient, modern systems.</p>	\$20-\$40 million
<p>Expand flood resilience investments for the restoration and reforestation of floodplains, wetlands, and river corridors, right-sizing culverts to reduce infrastructure vulnerability, removing dams, and incentivizing water storage through expansion of easements.</p>	\$30-\$40 million
<p>Expand funding for urban tree planting efforts which can improve air quality and reduce urban heat island effect in urban environments, which may disproportionately impact low-income Vermonters.</p>	\$1.5 million
<p>Increase funding to support the economic and ecological viability of small farm and forest landowners and businesses by: 1) increasing the Working Lands Enterprise Fund to \$20 million and authorizing the use of these funds to support infrastructure investments as necessary to take advantage of new markets, meat slaughter and processing, value-added dairy processing, and distribution and storage capacity utilizing sustainable production practices; 2) increasing funding for the Vermont Housing and Conservation Board's Farm and Forest Viability Program to \$10-15 million; and 3) increasing funding for food access infrastructure and to programs that dually support low-income Vermonters access to healthy local food and farm viability (\$7.5 million).</p>	\$37.5-\$42.5 million
<p>Expand and leverage existing State of Vermont funding for agronomic practices – such as cover cropping, conservation tillage – that generally improve soil health, prevent emissions by conserving existing carbon pools in soils and vegetation, and support state clean water goals.</p>	\$9.6 million
<p>Support electric utility resilience upgrades including: 1) communications networks that enable full utilization and participation of distributed energy resources in an interactive grid; 2) development of resilience Zones with batteries installed at or near critical facilities; 3) strategic upgrades to substations, distribution, and transmission capacity across the Vermont grid needed to enable the state's renewable and electrification goals, after first exploring feasibility of any lower-cost options, e.g. flexible load management,</p>	\$40-\$50 million

curtailment, and storage; and 4) emerging non-wires technologies that address major challenges to system resilience (e.g. long-duration outages).

Table 1. Vermont Climate Council Priority Actions for ARPA Funding.

The Council recommends the following principles be used to guide decisions around priorities for climate action:

1. We propose a mix of funding for GHG emissions reductions and adaptation/resilience initiatives. While critical to use these funds to advance emission reductions strategies to ensure we are successful in reaching our 2025 emission reduction requirements, Vermont is facing the brunt of climate change now and as a result, we must also invest in building resilience and adaptation to prepare.
2. The [Guiding Principles for a Just Transition and the Equity Scoring Rubric](#) should be used to inform decision-making around funding allocations and the ultimate design of the programs funded with ARPA dollars.
3. Funding should be directed primarily toward programs that benefit low-income Vermonters.
4. Advancing priority actions with other funding sources, such as utilizing FAST (Fixing America's Surface Transportation) Act funding for electric vehicle supply equipment, is strongly encouraged, allowing ARPA funding to be prioritized toward those recommendations where another source of revenue is not clearly identified/available.
5. Some of the recommended investments are straight-forward in terms of clearly meeting the criteria for ARPA eligibility, while other recommendations likely require more detailed evaluation. On-going coordination between the Council, Administration, and Legislature to evolve the list of investment recommendations as this information becomes available will be important.

Thank you for the opportunity to offer these recommendations that will make meaningful progress in the implementation of Vermont's initial Climate Action Plan.

APPENDICES

Vermont Climate Council Subcommittee Detailed ARPA Recommendations

MEMO

To: Vermont Climate Council
From: Rural Resilience and Adaptation Sub-Committee
Re: Recommendations for Climate Council ARPA Funding
Date: December 17, 2021

The Rural Resilience and Adaptation Sub-committee appreciates the opportunity to provide input to the Vermont Climate Council regarding funding priorities to support Pathways and Strategies in the Climate Action Plan. The first priority listed below originated from the Agriculture and Ecosystems Sub-committee. This recommendation closely aligns with the priorities of the RRA Sub-committee and we offer our full support of this proposal.

- A consistent theme across the Agriculture & Ecosystems and Rural Resilience & Adaptation subcommittees is the need to increase our investments in flood resilience, and realize the myriad co-benefits those investments will yield. Flood resilience, which is achieved through the restoration and reforestation of floodplains, wetlands, and river corridors, right-sizing culverts to reduce infrastructure vulnerability, removing dams, incentivizing water storage through expansion of easements, among other efforts, is a critical climate strategy for Vermont. Leveraging ARPA funds to support flood resilience would have lasting, positive impacts for Vermont and Vermonters, and would meet the ARPA eligibility criteria as follows:
 - Funding would be used for implementable projects that support both built and natural infrastructure and could be allocated by the 2024 deadline.
 - Low-income Vermonters are more likely to live in flood hazard areas (e.g. 12% of mobile homes in mobile home parks are located in floodplains versus 4% of single family homes).
 - Given Vermont's historic settlement patterns, many of our villages and downtown centers – our towns' economic hubs – are located in or near flood hazard areas.
 - Strategic investments should be directed by using existing tools, like AOT's Transportation Resilience Planning Tool (TRPT) and culvert upgrade inventory and DEC's Functioning Floodplain Initiative. Recommended ARPA investment: \$40-50 million
- Vermont's grid is increasingly susceptible to climate-change induced severe weather, mainly due to the rural nature of our landscape and our unique geography locally in the northeastern U.S. Threats to the grid include more frequent, stronger storms, high winds, ice, and heavy, wet snowstorms along with more frequent flooding from increasing heavy precipitation events. In addition, there are increasing cyber security threats to the grid as well and therefore additional risk to rural communities increasingly dependent upon it for transportation and heating and cooling. As Vermonters come to rely increasingly on electricity for heating and transportation, investing in grid resilience to keep pace with a changing climate will be essential. Seek federal stimulus (ARPA) to defray costs of utility resilience upgrades that exceed benefits to ratepayers, such as:
 - Ubiquitous communications networks that enable full utilization and participation of distributed energy resources in an interactive grid.

- Resilience Zones: batteries installed at or near critical facilities, potentially paired with solar (and/or small wind) and with a microgrid /islanding where possible, to allow them to continue to operate in the event of extended disruptions to electric service.
 - Strategic upgrades to substations, distribution, and transmission capacity across the Vermont grid needed to enable the state's renewable and electrification goals, after first exploring feasibility of any lower-cost options, e.g. flexible load management, curtailment, and storage.
 - Emerging non-wires technologies that address major challenges to system resilience (e.g. long-duration outages).
 - Sub-Committee recommend budgeting \$40-50 Million, prioritizing investments that lack other sources of funding, that leverage other funds, that promote the co-benefits of equity and greenhouse gas reduction, and/or that primarily benefit rural communities
- Fund Projects Identified in Municipal Vulnerability Index to Increase Local Resilience Efforts- The GWSA charges the RRA Sub-Committee with developing a municipal vulnerability index to determine which towns in Vermont need enhancements in resilience. ARPA presents a unique opportunity to fund projects that are identified in the assessment as vital to increasing overall resilience to the impacts of climate change to the extent they are eligible for funding. The RRA sub-committee recommends setting aside funding to be allocated as grants to towns that are found to be the most vulnerable to address their most pressing climate change resilience needs in line with eligibility requirements of ARPA.

Flood Resilience Recommendation

Developed by Agriculture & Ecosystems, Supported by Rural Resilience & Adaptation

A consistent theme across the Agriculture & Ecosystems and Rural Resilience & Adaptation subcommittees is the need to increase our investments in flood resilience, and realize the myriad co-benefits those investments will yield. Flood resilience, which is achieved through the restoration and reforestation of floodplains, wetlands, and river corridors, right-sizing culverts to reduce infrastructure vulnerability, removing dams, incentivizing water storage through expansion of easements, among other efforts, is a critical climate strategy for Vermont. Leveraging ARPA funds to support flood resilience would have lasting, positive impacts for Vermont and Vermonters, and would meet the ARPA eligibility criteria as follows:

- Funding would be used for implementable projects that support both built and natural infrastructure, and could be allocated by the 2024 deadline.
- Low-income Vermonters are more likely to live in flood hazard areas (e.g. 12% of mobile homes in mobile home parks are located in floodplains versus 4% of single family homes).
- Given Vermont’s historic settlement patterns, many of our villages and downtown centers – our towns’ economic hubs – are located in or near flood hazard areas.

Strategic investments should be directed by using existing tools, like DEC’s [Functioning Floodplain Initiative](#) and AOT’s [Transportation Resilience Planning Tool \(TRPT\)](#) and culvert upgrade inventory.

Recommended ARPA investment: \$30-40 million

Urban Tree Planting Recommendation

Developed by Agriculture & Ecosystems

Expand funding for urban tree planting efforts. This funding can be allocated by end of 2024, supports downtown economic development, and increases air quality and reduces urban heat island effect in urban environments, which may disproportionately impact low-income Vermonters.

Recommended ARPA investment: \$1.5 million

Farm & Forest Economies Recommendation

Developed by Agriculture & Ecosystems

We recommend that the State of Vermont significantly increase funding to support the economic and ecological viability of small farm and forest landowners and businesses, and to increase options for small farm and forest landowners to remain successful in a globally competitive market for food and fiber products through investments in innovation. Supporting the economic health of these landowners is a direct investment in keeping Vermont's lands working – in so doing, this investment will not only advance our climate mitigation and adaptation goals but will also advance rural prosperity and create local jobs. Further, the past two years have demonstrated the fragility of our food system and providing support for the development of the infrastructure to support the Vermont food system would increase food security to low-income Vermonters and increase the economic stability of agricultural producers in the State. Two existing programs that are proven to be successful and which are called out in the Subcommittee's recommendation could be strengthened in the following manner:

- (1) Increasing the Working Lands Enterprise Fund to \$20 million and authorizing the use of these funds to support infrastructure investments as necessary to take advantage of new markets, meat slaughter and processing, value-added dairy processing, and distribution and storage capacity utilizing sustainable production practices;
- (2) Increasing the Vermont Housing and Conservation Board's Farm and Forest Viability Program to \$10-15 million. Through these dramatic increases in our investment in Vermont's farmers and our forest landowners and businesses, we can ensure the long-term viability of these vital components of our state's ecology and economy; and
- (3) Increasing funding for food access infrastructure and to programs that dually support low-income Vermonters access to healthy local food and farm viability, including: the Local Foods Purchasing Incentives, Vermonters Feeding Vermonters, the Northeast Organic Farmers Association's (NOFA) Farm Share/Crop Cash program, Farm to School and Early Childhood grants, and grants for food-hubs and gleaning organizations to increase storage and distribution and for farmers markets to increase utilization of EBT machines (either obligated to existing grant programs or administered through a Local Food Access Funding Program) \$7.5 million.

Each of these recommendations support the natural and working lands economy – which supports not only low-income Vermonters, but visitors to the state – and should be considered support for existing, low-risk implementable programs that support critical infrastructure to be allocated by the end of 2024.

Recommended ARPA investment: \$37.5-42.5 million



MEMORANDUM

TO: Vermont Climate Council
FROM: Vermont Climate Council Agriculture & Ecosystems Subcommittee
DATE: December 17, 2021
SUBJECT: Agricultural Mitigation Funding Proposal Associated with the Initial VT CAP

Sections of the CAP considered in this proposal:
Section 11.4: Agricultural Pathways for Mitigation

Summary of Recommendations:

Total Funding Request: \$9,560,000 to be obligated by the close of Calendar Year 2024

	SFY 23	CY 24	Total Appropriation
Grand Total (\$ Million USD)	3.90	5.66	9.56

1. Agricultural GHG mitigation implementation

- a. Summary: Initial funding for agricultural mitigation strategies and actions outlined in the Initial Vermont Climate Action Plan (CAP) found in Section 11.4.
- b. Proposal: Leverage existing State of Vermont programs which provide a climate mitigation benefit by expanding funding for these programs.
- c. Funding: \$9.56 million for obligation by close of Calendar Year 2024.

Detail of Recommendations

Recommendation 1: Agricultural GHG mitigation implementation

Incentivize the adoption of new and emerging climate smart farming practices to meet state agricultural GHG mitigation goals.

- Description/rationale: Many farmers are interested in climate smart farming practices, and in using these practices are mitigating agricultural emissions of GHG, building resilience on their farms against extreme climate change related weather vents. Vermont should enhance existing programs that incentivize climate smart farming practices.
- Funding request: \$9.56 million for obligation by close of Calendar Year 2024

Whereas the 2016 EPA Overview of Clean Water State Revolving Fund Eligibilities includes the following Agricultural Best Management Practices as eligible practices on both cropland and Animal Feeding Operations (AFO), ARPA dollars can be argued to be eligible to be spent on the following project categories: Manure injection equipment; Manure spreaders; Water efficient irrigation equipment; Conservation tillage equipment; Windbreaks; Sediment control basins; Terraces; Diversions; Buffer and filter strips; Rip-rapping; Streambank stabilization; Chemical use reduction (e.g., chemical spray equipment and chemical storage containment structures); and Livestock/milk house waste management systems; Manure containment structures; Vessel composters; Manure

injection equipment; Well sealing and water diversions to avoid feedlots; Fencing/alternative water supply for animals to keep them out of water bodies. ARPA dollars have been recommended for appropriation to AAFM for these programs through the Clean Water Board budget development process.

The implementation of the above named BMPs is facilitated in the State of Vermont through clean water programs administered by the Vermont Agency of Agriculture, Food & Markets (AAFM). Where the CAP in Section 11.4 has provided a framework for how existing agricultural conservation programs that have a climate co-benefits can be quantified for GHG mitigation services, funding the following programs at the recommended levels will provide GHG mitigation services to the State of Vermont which – once fully quantified – will provide high impact, cost-effectiveness, leverage existing state, federal, and farmer efforts, as well as provide an approach towards GHG mitigation which is equitable¹ for the agricultural sector.

The following agricultural mitigation strategies and actions can leverage existing State of Vermont agricultural programs identified in the Climate Action Plan:

- a) Implement agronomic practices that reduce tillage and increase vegetative cover, e.g. no-till, cover crop.
- b) Expand Capital Equipment Assistance Program (CEAP) program to extend beyond water quality and incorporate climate change criteria.
- c) Implement grazing practices that increase vegetative cover and forage quality, e.g. rotational grazing.
- d) Implement agroforestry and silvopasture practices that integrate woody vegetation in agricultural production.
- e) Implement edge-of-field practices that increase herbaceous and woody vegetation, e.g. riparian forest buffer (e.g. CREP).
- f) Implement natural resource restoration practices that support climate mitigation and resilience, including river corridor easements, wetland restoration, and afforestation practices with consideration to agricultural land loss.
- g) Implement Nutrient Management and Amendments (e.g., biochar, compost) on cropland and grazing land.
- h) Implement methane capture and energy generation on farms, e.g., anaerobic digesters and covers.
- i) Research and implement into improved manure management and storage.
- j) Research and develop a climate feed management program, including both feed amendments (e.g., seaweed, biochar) and feed quality (e.g., forage quality) to reduce

¹ Excerpt: “Storing the carbon dioxide from negative emission technologies (NETs) [e.g. terrestrial carbon removal and sequestration – i.e. cover crop] has the same impact on the atmosphere and climate as simultaneously preventing an equal amount of carbon dioxide from being emitted. Recent analyses found that deploying NETs may be less expensive and less disruptive than reducing some emissions, such as a substantial portion of agricultural and land-use emissions and some transportation emissions.” National Academies of Sciences, Engineering, and Medicine 2019. Negative Emissions Technologies and Reliable Sequestration: A Research Agenda. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25259>.

enteric methane emissions; while considering downstream impacts, sustainability and equity.

Proposed budget for ARPA-Timeline CAP implementation for agricultural GHG mitigation efforts:

<u>Budget to Enhance Existing State Programs for Ag GHG Mitigation</u>		Millions of USD		
<u>AAFM Program</u>	Recommendation Reference Number: CAP Section 11.4, Strategy 1, Action (a) - (j)	SFY 23	CY 24	Total Appropriation for SFY 23
FAP²	a. Agronomic	1	1	2
	c. Grazing Management			
CEAP³	b. CEAP (capital eligible)	1	1	2
PSFW⁴	c. Grazing Implementation (capital eligible)	0.5	0.5	1
BMP⁵	e. CREP ⁶ (capital eligible)	0.25	1	1.25
	h. Methane Capture (capital eligible)			
Ag-CWIP⁷	d. Agroforestry	1	2	3
	f. AEM ⁸ (some options for capital)			
	g. Nutrient Management Plan implementation			
	i. Pilot Manure management			
	j. Pilot Climate feed management			
Staff Support	Administration: to administer and implement funding at AAFM - 1 FTE	0.15	0.16	0.31
	Total	3.90	5.66	9.56

² Farm Agronomic Practices (FAP) Program [6 V.S.A. § 4832]

³ Capital Equipment Assistance Program (CEAP) [6 V.S.A. § 4828]

⁴ Pasture and Surface Water Fencing Program (PSWF) [6 V.S.A. § 4821]

⁵ Best Management Practices (BMP) Program [6 V.S.A. § 4821]

⁶ Conservation Reserve Enhancement Program (CREP) [6 V.S.A. § 4829]

⁷ Agriculture-Clean Water Initiative Program (Ag-CWIP) [6 V.S.A. § 4811(8)]

⁸ Agriculture Environmental Management (AEM) Program [6 V.S.A. § 4830]

Cross-Sector Mitigation Subcommittee American Rescue Plan Act (ARPA) **Recommendations**

The Subcommittee is advancing five priority actions for consideration by the Council for ARPA funding. The Subcommittee approached their overall recommendations from the starting point of working to align investments to be consistent with sector proportionality spoken to in the GWSA. While the funding requests below go beyond the \$200 million allocated for climate action, the Subcommittee recommends that sectoral proportionality carry forward in the Council's recommendations (40% for transportation recs, 34% for thermal, 16% for Ag., etc.). There is one recommendation below in the non-energy emission space where a narrow sectoral view would limit cost-effective, high impact recommendations moving forward and appreciate that this is only a guidepost. Strictly speaking though, this would mean approximately \$80 million for transportation, \$68 million for thermal, \$32 million for Agriculture and so on. The total request below ranges from \$224-\$329 million and will need to be scaled as the Council determines how and what priorities to advance.

Transportation Recommendations

- EV Incentives for low to moderate income VTers, specifically: Fund the State EV incentive program, Replace Your Ride, and Mileage Smart to the degrees necessary to meet Vermont's 2025 EV benchmark (approximately 40,000 additional EV's replacing gas vehicles by 2025). Further investments should be considered for shared models like CarShare and EV micromobility model and increasing low-interest financing availability (expanding income-qualifying home energy loan program, providing as low as 0 percent interest loans) should also be considered. Broad funding range: **\$100 – \$150 million.**¹
- EV charging and related electrical upgrades for low- to moderate-income households, including, as necessary, panel upgrades that can further enable clean electrification for heating. Specifically, ensure that multi-family units and workplace charging level 2 needs are fully funded, in line with EV deployment benchmarks. (This assumes that Level 3/ fast charging infrastructure needs will primarily be covered by infrastructure bill dollars but, to the extent there is remaining need – especially in low to moderate income areas – ARPA funds should be considered for additional EVSE need build out. We need to confirm that this is an eligible expenditure and, if so, whether this is within qualifying census tracts (QCTs) or at the individual household level. Funding range: \$27 million-\$XX million (ask Liz Miller and Dan Dutcher). We also recognize the significant importance of investing now in critical water and sewer infrastructure that will foster smart growth and compact community settlements that will be essential to support affordable housing, housing choices and transportation solutions that provide

¹ Assumes 40,000 additional EVs needed by 2025, at least half of which could be funded by ARPA by LMI qualification (per State EV Incentive program data, approx. half of recent incentives have gone to LMI qualifying households). As a rough starting point, over four years, we assume 20,000 EVs x \$4,000 per low-income incentive + 6,500 EVs x \$3,000 for Replace Your Ride + \$10 million for Mileage Smart = approx. \$120 million. Note: there will likely still be remaining, non-ARPA investment needed for non LMI qualifying EV purchase incentives.

options other than a single occupancy vehicle to get people where they need to go and reduce VMT. We understand that every Vermont municipality has received ARPA allocations, and that some might choose to invest in this short- and long-term water/sewer infrastructure need. A significant limiting factor is municipal capacity to develop and manage projects. As well, regions are receiving revenue that we anticipate – and urge – to direct to these pivotal downtown and community-center water, sewer and other infrastructure investments, such as bike and pedestrian and public transit amenity investments. If further assessment highlights that municipalities are not investing ARPA dollars in essential water and wastewater infrastructure, then we can potentially reassess recommendation. Funding range is **\$27 million or more**.

We also recognize the significant importance of investing now in critical water and sewer infrastructure that will foster smart growth and compact community settlements that will be essential to support affordable housing, housing choices and transportation solutions that provide options other than a single occupancy vehicle to get people where they need to go and reduce VMT. We understand that every Vermont municipality has received ARPA allocations, and that some might choose to invest in this short- and long-term water/sewer infrastructure need. A significant limiting factor is municipal capacity to develop and manage projects. As well, regions are receiving revenue that we anticipate – and urge – to direct to these pivotal downtown and community-center water, sewer and other infrastructure investments, such as bike and pedestrian and public transit amenity investments. If further assessment highlights that municipalities are not investing ARPA dollars in essential water and wastewater infrastructure, then we can potentially reassess recommendation.

Buildings/Thermal Recommendation

The Buildings/Thermal Co-Leads of the Cross-Sector Mitigation Subcommittee recommend that **\$122 million to \$147 million** of the \$200 Million in ARPA funds be invested (i) in weatherization and energy efficiency improvements in buildings throughout Vermont, and (ii) in expanded workforce development activities to ensure sufficient workers for completing weatherization projects. See attached appendix for details to inform recommendation.

Electricity

Fund customer service upgrades for frontline communities. To do so, develop programs for implementation regarding 200-amp service and related building upgrades, coordinated with weatherization, efficiency, and equipment incentive programs (EV chargers, HP, storage, etc.), and ensure that any potentially related statewide program (such as Clean Heat Standard, if adopted, or enhanced weatherization efforts) includes building electrical upgrades in their design and funding models in order to enable decarbonization. ARPA presents us with opportunities right now to have “no regrets” actions – those that will avoid lost opportunities, particularly for disadvantaged communities who even if it is an option may not participate in a utility program to upgrade their wiring.

A rough estimate for 200amp service and related building upgrades is \$3,000 per household. If we are assuming 25,000 households to be weatherized, not every one of those households will need upgrade (more modern home, potentially, or multifamily housing more likely). Assume 60% or 15,000 of the weatherized households receive \$3,000 apiece to upgrade their service to enable all Vermonters to choose electrification. That is **\$45,000,000** to enable Vermonters to choose electrification. It can coordinate with other funding, is clearly eligible for ARPA, is a direct response to a high impact recommendation of the CAP, and promotes equity in delivery of the CAP. The Office of Economic Development is not in a position to manage these additional funds, but would likely be able to coordinate with any entity that received the funds (and manage the contractors).

Non-Energy Recommendation

Direct ARPA funding to support refrigerant management as a component of economic vitalization for grocery stores and other stores in rural community. This action would include three parts: 1) leak detection; 2) complete rehab of a system; and 3) replacement of refrigerant systems with more efficient, modern systems. This action could support spending **\$20-40 million** dollars.

ARPA Recommendation from the Buildings/Thermal Co-Leads - December 15, 2021

The Buildings/Thermal Co-Leads of the Cross-Sector Mitigation Subcommittee recommend that \$122 million to \$147 million of the \$200 Million American Rescue Plan Act (ARPA) funds be invested (i) in weatherization and energy efficiency improvements in buildings throughout Vermont, and (ii) in expanded workforce development activities to ensure sufficient workers for completing weatherization projects.¹

As noted in the Climate Action Plan (CAP):

“Thermal energy used for buildings produces over a third of the state’s GHG emissions and represents roughly 35% of our energy expenditures. Thermal modernization of our buildings to reduce GHG emissions, in a way that recognizes the economic challenges faced by the most vulnerable Vermonters in keeping homes, businesses, and other buildings heated and comfortable is essential. With a focus on the most burdened households and businesses, Vermont can begin to address its climate challenges and pair up clean fuel options and weatherization programs to deliver comprehensive, equitable, low-carbon buildings solutions.”²

The CAP establishes a weatherization target of 120,000 Vermont homes by 2030. Its primary focus is on low- and moderate-income homeowners and renters who can benefit most from the energy cost savings and additional health and safety benefits that weatherization provides. A multi-stakeholder, Weatherization at Scale Network Action Team convened in 2021 has been working to identify the funding, financing, and programs needed to achieve this target. The target is comprised of 90,000 new weatherization projects by 2030 on top of the 30,000 homes weatherized in Vermont as of 2021.³

Presented in Table 1 is the portion of new weatherization projects needed during the years 2023 through 2026 in order to meet the eventual target of 90,000 new projects by 2030. This is the time period for first obligating (through federal fiscal year 2024) and then expending (through federal fiscal year 2026) ARPA funds. The annual targets were established in a draft *Vermont Pathways Analysis Report* under development by Cadmus/EFG, technical consultants to the Climate Action Planning process.⁴ Also included in the table are estimates of the number of workers needed to complete the weatherization projects. The weatherization workforce estimates are based on research and analysis completed for the report, *Workforce*

¹ Christine Donovan and David Farnsworth.

² <https://climatechange.vermont.gov/sites/climatecouncilsandbox/files/2021-12/Initial%20Climate%20Action%20Plan%20-%20Final%20-%202012-1-21.pdf>

³ <https://www.eanvt.org/events-and-initiatives/weatherization-action-team/>

⁴ Draft report under development as of December 15, 2021.

Development in Vermont’s Thermal Sector: Challenges and Opportunities for Meeting Vermont’s 2030 Climate Goals published in August 2021.⁵ According to the report:

- “The most productive crew can weatherize around 20 homes per year with 4 workers in the crew
- The least productive crew can weatherize around 11 homes per year with 5 workers in the crew
- One office staff member is needed per 10 crew members
- One energy auditor is needed per 90 buildings”

This information was obtained through interviews with multiple weatherization providers in Vermont. The information is for traditional weatherization activities, such as air and duct sealing, installing insulation, etc. To be conservative, the information above for the least productive weatherization crew was used to develop the workforce estimates in the table.

To date, building improvements needed to upgrade wiring and service panels to enable electric vehicle charging and the installation of heat pumps for space and water heating have not typically been performed by weatherization crews, and are not included in the weatherization workforce estimates below. The number of licensed electricians and related workforce needed for strategic electrification improvements beyond traditional weatherization work would be in addition to the workforce estimates below.

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

Presented in Table 2 are estimates of the total amount of additional funding needed per year to meet weatherization targets in the CAP for years 2023 through 2026. Funding amounts in the Table are above and beyond expected traditional sources, i.e., funding from the Weatherization

⁵ <https://www.eanvt.org/wp-content/uploads/2021/09/Raquel-Smith-Workforce-Development-Final-Report-EAN.pdf>

⁶ Using the same workforce assumptions quoted from the Workforce Development report above, it is estimated 1,278 weatherization workers will be needed in 2022 to complete the target of 2,500 weatherization projects established in the CAP.

Assistance Program (WAP), Regional Greenhouse Gas Initiative (RGGI), Forward Capacity Market (FCM), and other Energy Efficiency Utility (EEU) funds, as well as additional appropriations currently used to fund weatherization in Vermont. Combined, these funding sources are not expected to be sufficient to achieve the CAP targets. The table illustrates the “delta” in total funding needed to achieve CAP targets compared to the substantially lower levels of funding expected to be available from traditional sources. The values in the table are based on modeling completed by the Weatherization at Scale Network Action Team, adapted to the most recent annual weatherization targets established for the CAP.⁷

In Table 2, the amounts of funding recommended from ARPA for new weatherization projects represent the expected shortfall for meeting CAP targets from existing funding estimates, as modeled by the Funding and Financing Work Group of the Weatherization at Scale Network Action Team. To account for uncertainty in future costs, funding ranges were calculated (and are reported) based upon a low (5%) and high (25%) increase in labor costs applied to 70% of the historic (2018-2020) average project cost (roughly estimated to be 70% labor and 30% material costs). Absent additional new sources of funding, such as ARPA funds, it is highly unlikely the weatherization targets in the CAP will be realized.

In addition, estimates are provided in Table 2 for new and expanded workforce development activities for recruiting, training, placement, and retention of weatherization workers. The current workforce shortage in Vermont is already hampering the ability to complete weatherization projects. This is expected to continue in the future in the absence of pay increases for weatherization workers and/or additional workforce development activities. The numbers in Table 2 for expanded workforce development activities are rough, order-of-magnitude suggestions that have not yet been vetted by organizations directly involved in workforce development. The estimates are offered as placeholders for now, with the expectation that further thought, and analysis will be conducted by workforce development professionals, including the Climate Workforce Coalition recently convened to better understand the workforce needs of meeting the Climate Action Plan.

Table 2: ARPA Funding Recommended to Achieve the Weatherization Projects and Level of Employment Needed to Meet the GWSA Requirements for the Buildings/Thermal Sector

	2023	2024	2025	2026	Total
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
ARPA Funding Recommended to Address Shortfall from Existing Funding Sources (eg WAP, RGGI, FCM, etc.)	\$300,000-\$4M	\$21-\$26M	\$37-\$44M	\$57-\$67M	\$115-\$140M
ARPA Funding Recommended to Expand Workforce to Meet Buildings/Thermal Sector GWSA Targets	\$2 M	\$2 M	\$2 M	\$1 M	\$ 7 M
TOTAL ARPA FUNDING RECOMMENDED	\$2.3-\$6M	\$23-\$28M	\$39-\$46M	\$58-\$68M	\$122-\$147M

⁷ The underlying model was developed by the Funding & Finance Work Group of the Weatherization at Scale Network Action Team.

