1. Program Strategy Narrative

Executive Summary

Vermont has been a leader in the development and deployment of distributed solar and storage for almost three decades. An early adopter of net-metering, Vermont has more than 330 MW of net-metered solar serving homes and small businesses across the state, and nearly 500 MW of grid connected solar resources overall, relative to a statewide peak load of approximately 950MW. Vermont was ranked as having the 6th highest amount of solar per capita ($/kW) by *CleanTechnica* in 2020.[1]

However, it is clear that these solar resources are not available to all Vermonters: The towns with the highest energy burden in Vermont have the least amount of installed solar, and the towns with the lowest energy burden have the highest amounts of installed solar.[2] While Vermont has begun to make strides in providing access to renewable electricity production to the most vulnerable of its citizens, the Vermont Department of Public Service's Solar for All Vermont (SAV) proposal will mobilize financing and private capital to accelerate the energy transition for the most vulnerable with reduced electric bills and ownership of solar, while significantly reducing greenhouse gas emissions and air pollution.

The primary objective of SAV is to lower the cost of electricity though the benefits of solar to low-income and disadvantaged Vermonters across the entire state, no matter their dwelling situation. SAV will provide the incentives, organizational structures, and program policies needed to install thousands of solar systems on the roofs of low-income and disadvantaged homeowners, on the roofs and sites of managed permanently affordable apartment buildings, and in community arrays that will provide meaningful benefits to the homeowners, affordable housing residents, and renters.

Meaningful benefits to participants and communities will accrue through electric bill savings of over 20% for the life of the solar systems and emission free power generation that will provide local economic development through workforce and solar market development. Ownership options will ensure that these savings endure. Storage installations will increase resilience to grid outages for participants. An estimated 10% of homes receiving SAV assistance for a solar system will also receive support for a battery back-up system and others will benefit from with needed upgrades or repairs to their electric service and/or roofs to that they are able to install solar. The Department of Public Service (PSD) will achieve these meaningful benefits through the implementation of three interconnected programs under the umbrella of SAV.

The Residential Assistance in Solar Energy (RAISE) Program will use $25 million to provide financial incentives and technical support to low-income Vermonters and those in disadvantaged communities who own single-family homes that are suitable for solar installations. The RAISE program will create several avenues for the direct ownership of solar panels on the houses of homeowners who have not previously been able to obtain these technologies, lowering electric bills by an estimated average 23.5% for the first six years with increased savings in future years,

[1] https://cleantechnica.com/2020/10/05/top-us-states-for-percentage-of-electricity-from-solar-cleantechnica-report/
[2] *Vermont Energy Burden Report,* October 2019. Efficiency Vermont. Pg. 24. https://www.efficiencyvermont.com/Media/Default/docs/white-papers/2019%20Vermont%20Energy%20Burden%20Report.pdf

facilitating approximately 8 MW of solar deployment and 4,006 tons of avoided greenhouse gas emissions across 1,598 household participants. It is estimated that the battery storage systems installed will provide a resiliency benefit valued at $25/month to each household that installs one.

The Managed Affordable Solar Housing Program (MASH), will use $40 million to offer benefits to residents of permanently designated affordable housing, facilitating the installation of solar panels on their buildings, and making opportunities for their involvement in community solar projects. The PSD will subgrant awards to an administrator, which in turn will award funds as grants and low interest loans alongside other housing and energy resources to developers and property owners of subsidized housing projects. Leveraging affordable housing organizations' ability to coordinate these resources alongside other housing resources will efficiently target this hard-to-reach market with on-site installations including on multifamily rental housing and manufactured homes and community projects whose benefits are delivered to participants. MASH will facilitate approximately 10.27 MW of solar deployment and 4,162 tons of avoided greenhouse gas emissions across 8,000 participants.

The Affordable Community Renewable Energy (ACRE) 2.0 program will use $35 million to focus on MW-scale community solar arrays, providing low-income renters and homeowners who cannot participate in RAISE or MASH with an opportunity for long-term benefits from shares in these projects. Building upon the existing ACRE Program, funds would support the installation of larger scale projects (1 to 5 MW), with energy generated directed to recipients through a tariffed, discounted block of energy that reduces participants' bills. The participants will own a membership in the community array. Given the size and scale of the projects expected to be constructed under this portion of SAV, it is expected that ACRE 2.0 will reach the most Vermonters—approximately 6,000, with 13.3 MW constructed and 13,310 tons of greenhouse gas emissions avoided. Moreover, ACRE 2.0 is expected to create mechanisms for funds to be reinvested back into the program through a revolving fund that will create a multiplier effect for the investment that can extend the reach of SAV to more Vermonters in the future.

Collectively SAV programs will result in the construction of more than 30MW of distributed and community solar infrastructure, and the avoidance of 29,160 tons of greenhouse gas emissions, as well as other air pollutants. Annual household savings are estimated to range from about $325 to $350 per year, well over 20% of participant's electric bill. Beyond these direct benefits to participants, SAV will have a significant positive financial impact on some of Vermont's most vulnerable communities through the indirect spending caused by bill savings, and by accelerating job creation in the solar industry and among electrical contractors. Vermont leads the nation with the highest per capita employment rate in the clean energy industry with about 6% - almost 18,000 Vermonters – of the state's workforce being employed in the space. SAV will build on this foundation to increase the good-paying jobs in the clean energy sector.

Through the above comprehensive set of programs, this $100 million SAV proposal will lower low-income Vermonter's and disadvantaged communities' electric bills through an array of options that allow all Vermonters to better participate in the energy transition, while making significant reductions in greenhouse gases and other air pollutants.

1.1. Impact Assessment

Vermont has been a leader in the development and deployment of distributed solar and storage for almost three decades. An early adopter of net-metering, Vermont has more than 330MW of net-metered solar serving homes and small businesses across the state, with more than 500MW of distributed generation installed, relative to an annual peak of approximately 950MW. Vermont was ranked as having the 6th highest amount of solar per capita by *CleanTechnica* in 2020[3], despite the state not having a comparatively high amount of sun. In addition to net metering, three of Vermont's 17 vertically integrated electric distribution utilities (DUs) make residential-serving distributed solar available to their customers through their own programs, and three distribution utilities are 100% renewable. To better distribute the benefits of solar across all customers, the Vermont PSD in concert with the state's distribution utilities designed a covid-relief program with American Rescue Plan Act (ARPA) funding that utilizes solar generation for utility assistance.

Because Vermont's high penetration of distributed generation is made up of mostly solar, and because solar has a low-capacity factor, it provides a relatively small portion of the state's energy. Peak solar production occurs in late spring, often overlapping with small-scale hydro, another significant energy source in Vermont, creating transmission and distribution constraints on generation. In recent years, storage has started to be deployed at a greater rate with two utilities offering compensation to customers who enter agreements for utility-access to their batteries to reduce the impacts of peak load events. Where appropriate, Solar for All Vermont (SAV) will consider supporting storage combined with solar to enhance resilience of the system and avoid generation constraints.

This impact assessment section describes Vermont's solar programs that have created a robust infrastructure that makes Vermont an ideal place to build programs that will deliver lasting benefits and access to the most vulnerable Vermonters. It will then describe how these programs have failed to reach those vulnerable Vermonters, the geography and demographics served by the SAV program, and outline clear estimates of impact metrics to be reported upon.

1.1.1. Support for Residential Solar and Storage

Vermont and its utilities have a rich history of supporting solar and storage deployment to reach energy and climate goals as part of vertically integrated utility least-cost planning requirements through various programs, giving the PSD vast experience in developing and deploying solar services.

The programs described below largely fall under the rubric of the state's Renewable Energy Standard (RES)—Vermont's Renewable Portfolio Standard—that sets requirements for distribution utilities to procure renewable energy, both broadly (75% of annual retail sales in 2032 must be supplied with renewable energy) and locally (10% of annual retail sales must be supplied with renewable energy from renewable energy connected to the Vermont distribution system and under 5MW).

[3] https://cleantechnica.com/2020/10/05/top-us-states-for-percentage-of-electricity-from-solar-cleantechnica-report/

Much of Vermont's continued development of renewable energy, including solar PV, is driven by RES obligations and a general expectation that RES obligations will increase in the near future in order to meet our climate requirements.

Net Metering

Vermont homeowners have been able to install solar via net metering since 1999. The state's net metering program allows for the installation of projects up to 500kW (AC) and is well subscribed, with around 333MW of installed solar capacity deployed. All of the Renewable Energy Credits from net metering are retired by distribution utilities. Vermont was the second state in the U.S. to allow for "virtual" or "group" net metering (GNM). While Vermont doesn't have a statutorily defined "Community Solar" program, GNM has allowed for the increased availability of the benefits of solar energy to those who cannot install solar where they live—renters who have electric utility accounts and homeowners with properties that have less than ideal siting or other issues that may prevent on-site installation. Net metering will be a core component of the Residential Assistance in Solar Energy (RAISE) program and will likely be utilized for smaller-scale on-site generation as part of the Managed Affordable Solar Housing Program (MASH) program.

Net metering has been extremely successful in Vermont accounting for more than two-thirds of the state's overall installed solar generation. But with this success, net metering has also caused rate impacts that have increased electric rates by more than 5% across the state's utilities. The 2023 Annual Energy Report explains that for Vermont "the cost of net-metering in 2021 was more than $49 million higher than the market products provided, resulting in an inequitable cost-shift from participating net-metering customers to non-participating customers."[4] Non-participating customers have often been low-income and those in disadvantaged communities. Despite continual decreases in net-metering compensation rates, the cross subsidy continues, making the SAV program critical to ensuring equitable participation in this program, as well as developing alternative mechanisms to participate in the energy transition.

Vermont Electric Cooperative - Community Solar

Through Vermont Electric Cooperative's (VEC) Community Solar Program, VEC members can "sponsor" panels from a solar array for ten or twenty years and by doing so receive a fixed monthly credit for the duration of the sponsorship. This program offers a sponsor two options for enrollment in the program, an upfront payment in full, or a 10-year low-interest (~5%) loan through NeighborWorks of Western Vermont, a community development nonprofit. Sponsorship costs and the consequent benefits reflect the number of panels that the participant chooses to sponsor. The program utilizes projects that are third-party owned, so tax benefits have been captured, however the expense of the investment to the in the project to the sponsor reflects this with a lowered cost. While successful, this program requires upfront investment or the incurrence of debt, significant barriers for low-income and disadvantaged Vermonters. This program has informed the development of the ACRE program.

GMP Solar Energy Affordability Program

[4] https://publicservice.vermont.gov/document/2023-annual-energy-report

The Solar Energy Affordability Program was developed by Green Mountain Power—Vermont's largest and only investor-owned distribution utility—in cooperation with the PSD's Clean Energy Development Fund (CEDF) and the Vermont Housing Foundation (HFI). The program gives GMP customers who are residents of an HFI property access to lower-cost electricity through solar. HFI manages a variety of affordable housing properties and mobile home communities for Vermonters with low-income, the elderly, and those with disabilities. Through CEDF grant funding, a solar array developed on the rooftop of an HFI property in Berlin, VT has been specifically dedicated to the program. Participating customers receive a credit on their electric bill each month of up to $27 ($0.09 discount for up to 300kWh). This is a limited program with a cap of 25 participants at any time. The program has informed development of the MASH proposal.

Village of Hyde Park Electric Department Community Solar Rider Program

The Hyde Park Electric (HPE) Department—one of Vermont's fourteen municipal electric utilities—offers a Community Solar Rider Program that makes the benefits of solar available to HPE customers who are unable to participate in net metering. HPE utilizes generation from their Waterhouse Solar project to support the program. Each participant receives a credit of $0.02616 per kWh consumed during a billing month amounting to a 14.5% discount on their overall electric utility bill. However, this program serves less than 1% of HPE's almost 1,200 customers and less than 3% of their low-income (LI) ratepayers assuming a statewide average of 31% LI. This program has informed development of the ACRE 2.0 program.

1.1.2. Affordable Community Renewable Energy (ACRE)

The ACRE Program was established through an allocation of $10 million of ARPA funding as part of the 2022 fiscal year Vermont budget. The program is designed to improve access to clean distributed energy for Vermonters who have historically been left out of the clean energy transition while reducing the energy burden of those who are most vulnerable, similar to the goals of SAV. PSD designed the program to meet those goals while also avoiding cost-shift and cross-subsidization to the extent possible, and to explore different methods and mechanisms that may offer lower cost alternatives to net-metering.

Specifically, the ACRE program offers up to approximately 8,000 memberships to community-scale renewable energy projects to households disproportionally impacted by the effects of covid-19 at or below 185% of the federal poverty guideline with monthly savings ranging from $12 to $45 per billing cycle depending on the participating electric utility, for a period of five years. If members move, they can transfer their membership to their new location, so long as it is in the same utility territory, or they can transfer it to another income qualifying utility customer, again, within the same service territory. This program is limited in duration and size due to ARPA rules and funding.

Green Mountain Power Energy Storage Program(s)

Vermont's largest utility Green Mountain Power (GMP) offers two tariffs designed to enhance customers' access to home energy storage systems (ESS). Participation in GMP's original ESS pilot programs and now tariffed "ESS Lease" and the "Bring Your Own Device (BYOD)" programs has steadily increased since their launch in 2017. Currently, there are over 2,800

customers enrolled in GMP's battery programs, with participant numbers expected to increase quickly now that a cap on participation has been lifted. The ESS Tariff allows participating customers to lease residential ESS for 10 years for a monthly charge of $55 or a one-time, $5,500 payment. Under the BYOD Tariff, participating customers select, purchase, and install ESS that are compatible with GMP's Energy Management Platform. After systems are enrolled into the program, customers receive an upfront per kilowatt incentive from GMP and provide GMP access to the ESS during peak events. While successful, low-income, and disadvantaged customers have difficulty affording the upfront or monthly payments associated program. This program has informed the potential to include support for storage within the RAISE program design.

Standard Offer

The "Standard Offer" program in Vermont was one of the first "feed-in-tariff" programs in the country, offering a state contract for a guaranteed rate per kWh generated for eligible renewable energy resources 2.2MW or less in size. Project procurement was administered by the Public Utilities Commission through a reverse auction which set a per/kWh ceiling to ensure lowest cost procurement. Most distribution utilities are statutorily required to purchase energy generated from projects procured through this program based on their pro rata share of retail sales in the state. The program has facilitated over 127MW of contracts for renewable generation—mostly solar—in the state but has recently expired. It has informed the development of the ACRE 2.0 portion of this SAV proposal.

1.1.3. Historical Deployment Compared to Uptake by Low-Income and Disadvantaged Residents

The successful development of solar in Vermont has not been equitable. Solar development has been largely limited to upper- and upper-middle-income single-family homeowners, and utility, commercial, and institutional ownership. Vermont's energy burden report illustrates the trends of the lack of uptake of solar through net-metering amongst the LI population. [5]

In contrast to its other neighbors in the northeast, Vermont is the only state in New England without a required state-wide low-income electric rate. There is also no requirement that renewable energy procurement programs direct benefits towards individuals who have low-income, or that live in disadvantaged households or communities. Vermont has remained a vertically integrated regulated electricity market where utilities own or contract for generation, distribution, and transmission. While this regulatory framework provides benefits such as consumer protection and rate stability, it doesn't allow a customer to choose a retail power provider that may be able to sell solar or otherwise renewable power directly to the customer.[6]

While as described above improvements in programs have been made to deliver the benefits of solar and storage to disadvantaged communities (DACs) and those with low income in Vermont, thus far benefits have been marginal and difficult to quantify this impact. Data provided from GMP on the uptake of net-metered solar and storage by customers in their service territory

[5] Efficiency Vermont's 2019 energy burden report shows solar penetration is highest in towns that had low to moderate energy burdens. *Vermont Energy Burden Report*, October 2019. Efficiency Vermont. Pg. 24.
[6] Three Vermont distribution utilities have 100% renewable power portfolios.

overall versus the uptake of those technologies in The Climate and Economic Justice Screening Tool (CEJST) identified DACs that are within GMP service territory illustrate a disparity of benefits. Nearly one in twenty (4.91%) households in non-DACs has an electric service account that is tied to net metering and just over 1% of households in those same communities also have storage systems. For DACs in GMP's service territory, uptake of those technologies is less than half: 2.3% and 0.43% respectively.

Based on this limited available data, it can be inferred that uptake rates of solar by those with low-income have been substantially lower than other Vermonters generally, and particularly those Vermonters that are financially positioned to realize the Investment Tax Credit (ITC) that have sufficient liquid assets to pay cash for solar, or those with a credit score that allow them access available loans or leases that can make solar more attainable. This has been true of both rooftop and on-site solar as well as group net metered solar.

With the recent development of the ACRE and an Energy Storage Assistance Program (ESAP) that is yet to be implemented, there are new opportunities that will increase the uptake of solar and storage for those with low-income and residents of DACs. These programs are expected to serve approximately 7,800 and 250 low-income and disadvantaged households, respectively However both the ACRE and the ESAP programs are supported through the ARPA whose funding requires them to be time limited. These programs are best characterized as COVID relief programs that provide low-income and DAC support, rather than renewable energy equity programs. The ACRE Program will act as a pilot to develop longer term, innovative models for the delivery of the benefits of renewable energy to those with low-income, SAV may be able to help fund this program long-term in modified form that supports targeted communities more effectively.

1.1.4. Geography Served

The SAV program includes three program features intended for the broadest coverage of low income and disadvantaged populations in the state: All three components will be available to all Vermonters with low income or living in disadvantaged communities statewide, reaching geographically dispersed households with an additional focus on CJEST identified disadvantaged communities as well as those households living in affordable housing, manufactured homes, and shared equity homes. Additional focus will be placed on those areas that historically have had low solar uptake.

Vermont has more than 50 energy burdened communities, where the annual energy spending as a percentage of household income is "high" or "highest", with town energy burdens as high as 23% and individual census tracts as high as 44%.[7] Rates of energy improvements (including solar PV) remain lower in these communities than those with lower energy burdens. The three programs in this proposal will provide on-ramps for participation in solar PV to families in these energy burdened communities

To determine eligibility for SAV eligibility will be set based on the Area Median Income (AMI) Federal Poverty Levels of the county in which the household resides. For Metropolitan Areas

[7] 2023 Vermont Energy Burden Report, Efficiency Vermont. August 2023. https://www.efficiencyvermont.com/Media/Default/docs/landing-pages/energy-burden-report/2023-EfficiencyVermont-EnergyBurdenReport.pdf

(Chittenden, Franklin, and Grand Isle counties), an individual or household can have an income that is at or below the greater of (1) 80% AMI and (2) 200% of the Federal Poverty Level, wherein the maximum of these two figures determines the income limit. For the other eleven Vermont counties (as Non-Metropolitan Areas), an individual or household can have an income that is at or below the greater of (1) 80% AMI; (2) 80% Statewide Non-Metropolitan Area AMI; and (3) 200% of the Federal Poverty Level, wherein the maximum of these three figures determines the income limit.

1.1.5. Demographics

The size of Vermont's disadvantaged community, calculated using CJEST data, is 87,807 people in 26 eligible census tract locations. This is about 14% of the total population (2010 census data). The portion of these people who own single family homes with suitable sun for solar installations will be the target for RAISE. MASH and ACRE 2.0 will target the remaining population.

The Vermont Housing Finance Agency (VHFA) reports that there are 14,647 rental units in 536 subsidized multifamily housing projects statewide. This includes projects funded by the Low-Income Housing Tax Credit (LIHTC), US Housing & Urban Development (HUD) programs, USDA Rural Development (RD) programs, and Vermont state housing resources. All of these subsidized projects described above are expected to meet the definition of "properties providing affordable housing" as described in the Notice of Funding Opportunity. Of these projects, 158 are located in the 26 CJEST-flagged disadvantaged census-tracts in Vermont, comprising 4,056 units (28%).

VHFA, which awards LIHTC for the state of Vermont, directly oversees 8,057 of Vermont's subsidized units in 300 properties statewide. Ninety-four percent of these units are rent-restricted to serve households at or below 80% of AMI. Most households in these properties earn far less than the income restrictions on the unit, with 53% of households in LIHTC-funded units earning just 30% of AMI or lower. The MASH Program will target these demographics.

The ACRE 2.0 program will provide access to solar for all other types of eligible Vermonters, making SAV programs available to many more participants.

1.1.6. Impact Projections

The three elements of this SAV proposal will operate in distinctive market segments, each requiring different competencies and resources to reach. The rules, procedures, and economics for developing community solar projects supporting multifamily affordable housing tenants differ from net metered individual household projects, rooftop multifamily affordable housing units, and larger, commercially sized projects that will serve dispersed low-income homeowners through a tariffed model. PSD and SAV partners will bring direct experience in all areas.

Through the PSD's Clean Energy Development Fund, the PSD has experience with more than 3,000 single family residential solar PV projects through the Small-Scale Renewable Energy Investment Program (SSREIP), low-income solar projects, and the current ARPA-funded ACRE program. The PSD's role in working with Distribution Utilities provides experience with community-scale Solar PV projects such as The Hilltop Townhouses in Berlin, VT owned by The Housing Foundation and coordinated by Green Mountain Power through its Solar Electric Assistance Program Pilot.

This proposal's three program segments focus on expanding the PSD's ACRE community-scale program, coupled with new programs for affordable housing occupants, and individual residential homes for rooftop installations. Over 15,000 Vermont households are expected to be served across the suite of programs, with a weighted average savings of $336 per year. The program will facilitate over 30 megawatts (MW) of solar, and 3MW of storage, providing access for customers to technology that improves their resilience. The table below provides preliminary estimates for output and outcomes metrics for each segment.[8]

[8] Estimates are likely to be further refined during the planning year of the program. Estimates for the Managed Affordable Solar Housing program are based on smaller, more expensive group net metered projects that may be roof or ground mounted solar systems (less than 500 kW). Larger, more cost effective commercial sized solar arrays (greater than 500 kW) will be explored with affordable housing partners during the planning period. Fossil fuel power generation displacement and CO2 emission reductions from AVERT model: https://www.epa.gov/avert

Table 1: Impact Metrics

	Market Segment Programs			
Impact Metrics	**RAISE**	**MASH**	**ACRE**	**Totals or Averages**
Number of households served by solar projects	1,598	8,000	6,000	**15,598**
Solar Capacity to be Installed *(MW)*	8.00	10.27	13.30	**31.57**
Cost of Solar to be Installed *($)*	$18,173,500	$30,810,000	$26,600,000	**$75,583,500**
Capacity of Storage to be Installed *(kWH)*	2,249	1,300	-	**3,549**
Cost of storage/household	$5,500	$5,500	-	**$5,500**
Cost of Storage to be Installed *($)*	$951,500	$550,000	-	**$1,501,500**
Program Award Funding per Household *$*	$15,648	$5,000	$5,833	**$6,411**
Fossil Fuel Power Generation Displacement *(GWh/year)*	12	18	25	**55**
CO2 Emissions avoided *(short tons)*	6,240	9,610	13,310	**29,160**
Cost of CO2 Emissions Reduction *($ Program Award Funding/Short Ton)*	4,006	4,162	2,630	**3,429**
Total Bill Savings/year *($)*	$517,299	$2,784,430	$1,944,000	**$5,245,729**
Annual Household Savings *($)*	$324	$348	$324	**$336**
Household Savings Ratio *($ awarded per household/$ household savings)*	48:1	14:1	18:1	**19:1**
Monthly Percent Household Electric Bill Savings	23.5%	25.2%	23.5%	**24.1%**

1.2. Meaningful Benefits Plan

As described in Section 7.1, the planning phase of SAV will be informed by electric sector public engagement conducted by the PSD in 2022-23, include significant additional public engagement to inform final program design. The benefits of SAVs three market sector programs are expected to be similar but each of the three sub-programs are intended to reach a different sector of Vermont's low-income population and DACs. The three sub-program approach will provide multiple avenues for Vermonters to access solar, meeting them where they are at and engaging them in SAV participation in the way that is most significant for them:

- The Residential Assistance in Solar Energy (RAISE) program will provide incentives and support for those in DACs and/or low-income Vermonters that own their own single-family home to install solar systems on their roofs.
- The Managed Affordable Solar Housing (MASH) program will provide incentives and technical support for the owners of permanently designated affordable housing to install solar on their buildings as well as participate in community solar projects. Participants will receive transferable ownership shares.
- The Affordable Community Renewable Energy (ACRE) program will support the installation of MW-scale community solar arrays of which ownership shares will be offered to low-income renters that don't have access to solar though the other two programs or homeowners whose homes aren't suitable for the RAISE program option.

Broadly, the SAV program will:

- Increase access to roof-top and community distributed solar generation for low-income customers and those in disadvantaged communities (DACs) through various models that deliver the value of solar asset ownership, including via:
    - Small solar arrays (i.e., 5 kW) with permitting and compensation through Vermont's net metering program. Eligible single-family homeowners will be able to have solar system installed on their roofs through direct purchase, a lease-to-own, or a co-ownership structure;
    - Net metered solar on-site of managed affordable housing providing benefits for their permanently affordable rental property tenants as well as on single family shared-equity homes, including manufactured homes;
    - Large community solar arrays that low-income and disadvantaged renters can participate in with memberships leading to direct on-bill savings at no cost;
- Provide a minimum of 20% and a projected average of 24.1% household savings on the average electric bill of a program participant.
- Increase the resilience to over 170 low-income and/or disadvantaged households through the installation of battery storage, allowing customers to ride through weather events;
- Support and increase workforce development in the solar and storage sector;
- Provide approximately 10% of single-family homes battery storage systems with their solar system; A limited number of participating homes will receive electric panel upgrades, or roof repairs to enable the solar and/or battery storage system;
- Include features that revolve funding back into the program through savings over time and loan repayment, multiplying the investment in SAV to provide lasting benefits.

Vermont's SAV program will focus on providing financial benefits to program participants of at least a 20% monthly savings on their electric bill (or equivalent for renters that don't pay an electric bill) for the life of the solar system providing the benefit. Homeowners will either receive support to install a solar system that they will own, whether physically on their roof or through ownership shares in a community solar array.

The program will also provide non-financial benefits to select participants in the form of battery storage and home repairs that are necessary for the household to take advantage of a solar system on their roofs. The battery storage systems will be targeted to participants in single-family homes where they have electric powered medical equipment and where the frequency and duration of power outages have been above the Vermont average. Homes that receive incentives for back-up battery systems will also receive technical support to make their homes more energy efficient to further lower energy costs and to extend the time the back-up batteries can provide power to the home. These battery systems will leverage and participate in utility storage programs where available to lower costs of the systems and increase the critical resiliency benefits for these participants. Home repairs (roofs and/or electrical service) will be limited to under 10% of the solar home participants and are expected to be initially targeted to those in disadvantaged communities or that have incomes below 60% of AMI.

In addition to direct participant benefits, the SAV program will provide community-wide benefits. The program will help to create high-quality and long-lasting jobs in the solar industry and with electrical, battery storage, and solar contractors. The solar and battery systems installed through the program will help to build a trained workforce not only for the solar sector but also for jobs in other renewable energy and general electrical contracting sectors. The SAV program will be able to leverage other workforce development efforts happening in Vermont in the clean energy sector. There are at least ten different workforce development programs/efforts happening in Vermont that the SAV program will tap into for building local jobs and careers for residents in the solar and related industries.

Individually, each component of the SAV program is expected to provide benefits as follows in the next three subsections.

1.2.1. Residential Assistance in Solar Energy Program Benefits

Vermont's RAISE program will provide lasting benefits at the community and household level. lowering electric bills by an estimated average 23.5% for the first six years, with an expected increased savings thereafter. Because this sub-program will leverage the Vermont net-metering program and its incentives, it will be the simplest of the three to ensure meaningful benefits through the established net billing system for customers. The program will also create asset growth for the participants with ownership of the solar systems on their roofs, resulting in increased property values. Avenues for direct ownership will be offered through three options:

1. Shared ownership with selected Vermont non-profit financial institutions (or a consortium or non-profit financial institutions) that can utilize the elective pay option of the federal investment tax credits for solar. The non-profit financial institutions would co-own the solar system with the homeowner for the first six years and then would transfer full ownership of the solar array to the homeowner. The homeowner's portion of the costs could be covered by a subsidized loan that would not require any up-front costs and

could be paid off in six years. If homeowner funds are needed at the end of the six years to obtain ownership there would be an option for a low-interest loan.

2. Direct ownership via subsidized loans through selected residential lenders. This option would be for low-income and/or DAC homeowners that can monetize the federal solar tax credits.
3. A path to ownership via a subsidized lease with a selected solar leasing company. Leasing agreements would include an option to own the solar system after the first six years. The homeowner could exercise the option to own the systems or to continue with lease payments depending on what options would be best for them. If homeowner funds are needed at the end of the six years to obtain ownership there would be an option for a low-interest loan.

On the community level the program will help to create high-quality jobs, build, and train the solar and electrical sector workforce. The program will provide back-up battery systems interconnected to the installed solar systems that will not only provide emergency power during electrical utility outages for those that need it most, such as those with electrical medical equipment. This will support their community's resiliency during power outages by reducing the strain on emergency services and can make power restoration happen more efficiently and quickly. The batteries can also provide demand response value for the utility, reducing all ratepayers' cost of service.

1.2.2. Managed Affordable Solar Housing Benefits

Vermont's SAV affordable housing sub-program will provide lasting benefits at the community and occupant level. Under SAV, the affordable housing market will be served by a program administrator who will administer subaward funding as grants or loans for solar on new or existing subsidized affordable housing. The program administrator will coordinate with existing compliance systems for housing resources to ensure that the financial benefits of solar arrays are received by income eligible tenants, homeowners, and resident communities. The affordable housing program will ensure that a meaningful portion—at least 20%—of the savings achieved through the installation of solar arrays flows to tenants.

Affordable multifamily housing projects subsidized by and managed under state and federal housing programs would receive grants, low-interest loans and/or bridge financing for tax equity for roof-top, on-site ground-mounted, and larger off-site solar installations providing electric bill savings to tenants – or commensurate savings for tenants that do not pay an electric bill. All applications for solar funding by affordable housing developers will be required to be accompanied by calculations of the required dollar amount of benefits per tenant (or a plan to do so, for buildings that are not completed) and a plan for how these benefits will be delivered. Benefits could be delivered to all residents of an eligible building.

In some cases where roof-top and on-site arrays are ideal and eligible for Vermont's net metering program, that program will be leveraged to provide on-bill benefits. Larger off-site solar arrays would provide bill credits via specialized utility tariffs similar or equal to the tariffs designed in the ACRE 2.0 program

In situations where there is a concern that offering savings on electric bill would be considered income that could negatively impact a tenant's eligibility for their affordable housing benefit the value of solar will flow to those tenants in other meaningful ways such as reduced rent, free

internet, or other free/reduced cost services. In addition, depending on the housing subsidy, program partners will be required to ensure that property owners can pass on solar created benefits while working within the housing program restrictions on base rent and utility allowances that work in tandem.

Most housing for seniors and as well as a growing number of general occupancy properties in Vermont are master-metered, therefore the tenants do not receive utility bills. These property owners will deliver benefits that are financial or non-financial benefit with an equivalent financial value to the minimum 20% average electric bill savings and that directly and meaningfully improves the lives of the households. The program will allow multifamily property owners that are mastered metered to select permissible benefits from the list provided by U.S. HUD[9]. The preferred approach would give property owners substantial flexibility within this list, as properties vary in what they already provide and what could benefit their tenants. The program administrator will need to ensure that ongoing services or one-time investments would be calculated to match the lifetime benefit of the solar equipment and are 'but-for' benefits that would not otherwise be delivered without SAV funding.

The SAV will make it a requirement of any solar assistance to a multifamily affordable housing organization to be overseen by strict compliance systems tied to housing, ensuring that rents meet the required affordability limits. The program administrator could tie SAV awards into regular compliance processes to ensure that tenants are receiving the specified benefits.

Other types of affordable subsidized housing, including permanently affordable homes developed for purchase by low- and moderate-income homebuyer households, to the extent that these units can meet SAV eligibility for income-eligible households, will also be eligible for grants or loans under the managed affordable housing program.

Also included in the Managed Affordable Solar Housing program are manufactured homes that receive subsidies from through housing development programs. These include financing individual highly energy efficient new manufactured homes to replace older models using Vermont Affordable Housing Tax Credits and other resources. SAV grants and/or credit enhancements would be made to the housing developers to subsidize rooftop solar equipment and some battery back-up systems, which would be installed on these solar ready manufactured homes and included in the sale to the eligible household. These households would receive all the benefits of the solar equipment via Vermont's net metering program, which would represent significant electrical bill savings, unless a tariff program is determined to provide greater value during the planning process.

The program design includes plans to explore the possibility of offering grants or loans to non-profit or cooperatively owned manufactured home communities for community solar arrays located on-site. These manufactured home communities are often located in rural areas with significant potential for community solar or ground-mounted solar. These projects would need to

[9] The U.S. Department of Housing and Urban Development (HUD) has provided an extensive list of possible benefits that could be substituted for a direct financial benefit, including additional services offered by property managers (e.g. security, resident services, wellness programs), facility upgrades (e.g. playgrounds, community spaces) or internet services.

be designed with a method of passing the required financial benefits to all residents, potentially with a decrease in community fees or lot rent.

Although these activities represent a diverse range of housing types and ownership structures, these are all already financed by the state's housing finance agency together with many affordable housing organizations. Thus, the eligible benefits can be layered into existing incentive and compliance models to deliver SAV benefits efficiently and effectively to Vermont's most vulnerable households.

Similar to the RAISE program, demand created by solar projects and program requirements will foster high-quality jobs, support the training of the workforce in the solar and electrical sector, lower participants energy costs, help occupants of manufactured housing build wealth, and with inclusion of storage, increase resiliency by providing back-up power during electrical utility outages.

1.2.3. Affordable Community Renewable Energy (ACRE) 2.0 Benefits

The ACRE program is an existing initiative that the PSD started in 2022 that is working with electric utilities to install large solar arrays to provide lasting electric bill savings for low-income customers. The SAV ACRE 2.0 program will provide ownership shares in community solar arrays to renters and others that do not own a roof where solar can be installed. Benefits will accrue through specialized utility tariff with a path to household ownership of their portion of the community arrays. Because these community arrays will be larger sized solar arrays, ACRE 2.0 will leverage economies of scale to build more solar and deliver benefits to a greater number of households per dollar than possible with smaller scale projects (see impacts table, above).

The PSD will partner with utilities and the solar development industry to continue the deployment of solar projects, preferably ranging from 2-5MW in size to take advantage of the economies of scale that can be realized at this size. Because systems of this size are beyond what is allowable in Vermont's net-metering program, benefits will be delivered to participants through a specialized tariff that would discount the cost of power for a selected block of energy – projected to be 150-300kWh per monthly billing cycle. Energy from the community solar projects would be delivered or banked to participants so that the benefit would be dependable, being spread out throughout the year so that each participant's electric bill will have at least a 20% reduction due to the solar energy from the solar array they own a part of.

Unlike homeowners who may have the opportunity to own the solar on their homes and gain potential property-value enhancements that come with it, participants in the community solar program may not have the same level of proximity to their solar. However, in the ACRE program they will have the opportunity to maintain their bill savings for the life of the projects that they participate in similarly to their neighbors who own their homes. The availability to the benefits of solar for all Vermonters, not just those who own homes, is a critical aspect to an energy transition that is just and equitable.

If the participant moves out of their utility's service territory or decides that they no longer want to participate in the program, they will have the option to transfer their membership on to an income-qualified family member, friend or neighbor who has an account within that DU's service territory.

Similar to RAISE and MASH programs, ACRE 2.0 will also foster creation of high-quality jobs, strengthen, and train the workforce in the solar and electricity sector, lower participants' electricity bills, and help low-income participants to build wealth through ownership of their shares in the community arrays.

1.3. Distributed Solar Market Strategy

Vermont's SAV plan comprises of three approaches to developing the distributed solar market. The Residential Assistance in Solar Energy (RAISE) program would give income eligible Vermonters a path to rooftop solar ownership. The Managed Affordable Solar Housing (MASH) program would develop projects specifically serving residents in subsidized managed affordable housing. Finally, Vermont would direct funds to improve and expand an existing program, the Affordable Community Renewable Energy (ACRE) program, which is an income-targeted program that uses community-scale renewable energy projects to deliver economic assistance to Vermonters through their electric bills. Distributed Solar Deployment Plans for each of these three programs are described below.

1.3.1. Residential Assistance in Solar Energy

Low-income homeowners cannot easily realize the benefits of residential rooftop solar. In the current marketplace, the significant upfront cost associated with purchasing and installing solar panels is typically addressed through the financing options and the ITC. However, homeowners with limited financial resources and tax liability are effectively excluded from the benefits of solar energy and generation ownership. RAISE addresses this accessibility issue by creating three new incentive pathways to solar ownership that will reduce participants' energy costs by giving them access to Vermont's net-metering program. RAISE offers Temporary Shared Ownership, Subsidized Direct Ownership, and Lease-to-own pathways.

The preliminary design of the RAISE program will offer incentives covering approximately 45% of the total cost of the roof-top systems. This 45% will be similar regardless of the ownership model used (direct ownership, shared ownership, or a lease). The solar tax credits will cover 30-40% and the homeowner would pay 15-25% via a low interest loan with no money needed up front. Administration costs of the program will be covered separately from the capital stack of each project.

The program will be structured so that the homeowner will realize a monthly electric bill savings of at least 21% in the first-year net of any lease or loan payments, an estimated $324 annually in savings per household. Importantly, *households will see greater bill savings once the loan or lease payments end,* and they take full ownership of the array. Program projections show that by year six, when the participating household takes full ownership of the system, the average RAISE participant will save over 50% on their electric bill. To maximize the number of Vermonters that could participate and to simplify the design process in the RAISE, all solar arrays must be no larger than five kilowatts, and all arrays would be installed on the roof.

Solar contractors selected to participate in the program via a solicitation, leveraging Vermont's network of dozens of active solar installation firms. Despite periodic and regional workforce challenges, Vermont has a healthy solar contractor/installer market with dozens of active companies across the state. PSD has worked directly with these installers in previous years, and the program base for deploying solar on homes will form a foundation for the anticipated work

under this proposal. The volume of potential projects would help spur hiring and training of new workers (See Section 1.5). Some solar development companies currently seek local workers from the areas where new projects will locate. In cases where a sufficient workforce exists, these companies would tap the local supply. Where local labor pools remain insufficient, or where the opportunities are lacking, this program will provide opportunities to bring disadvantaged or low-income employees into the workforce.

The program will also leverage battery storage installations and electrical service upgrades that will be combined with a selection of the solar arrays. This additional electrical work will allow the program to provide additional workforce training and broaden the reach and resiliency of solar market contractors and the overall solar market.

RAISE Subprograms

Because a one-sized-fits-all approach is likely to leave certain Vermonters behind, SAV expects three options under RAISE for supporting eligible Vermonters.

1. Shared ownership with credit unions using elective pay.

   This model reaches Vermonters without tax liability, providing access to the 30-40% ITC for residential solar projects through entities that can monetize the credits using elective pay. In this model, a Vermont credit union or credit union consortium will initially co-own the solar project with the eligible participant who is contracting with a selected solar installer. The credit unions would monetize the tax credits on behalf of the customer utilizing elective pay while owning the system for six years to satisfy tax law requirements. After six years, full ownership of the solar array would transfer to the homeowner.

   The remaining cost of the solar project to the homeowner will be covered by a subsidized loan. The incentives will ensure households have a net positive cash flow between loan/lease payments and solar bill credits and would not require a down payment.

   PSD will issue a request for proposals (RFP) to select one or more non-profit financial institution to offer the above solar financing product using elective pay of the federal solar ITC with shared ownership of the solar system between the homeowner and the financial institution. The participating financial institution(s) would be selected to offer low-interest loans for the portion of the total costs assigned to the homeowner to allow for homeowner participation without any up-front capital required.

2. Direct ownership via a subsidized loan

   This model targets income-eligible Vermonters for whom direct ownership of solar is not financially advantageous, even with the ITC, by reducing the cost of financing. Leveraging SAV funding and partnerships with financial institutions, such as banks, credit unions, and Community Development Financial Institutions (CDFIs), the model would buy down loan interest and could also back loans with a loss reserve. Financial participants would be selected via RFP process to offer the loans under State terms. Loan interest buy down would be estimated to be ~$6K for solar and ~$11K for solar with storage, panel upgrades, or roof repair.

3. Ownership via lease

This model offers a lease option for low-income households, allowing them to benefit from solar energy without the need for large upfront investments. Participating households would receive an average incentive of ~$7,500, reducing the financial barrier of high upfront costs of solar. Furthermore, a limited number of battery storage systems, electric panel upgrades, or roof repairs will be funded to enhance the feasibility and benefits of solar adoption. SAV funds will be used to buy down lease payments, and homeowners will have the option to take full ownership after six years. To select lease-to-own solar retailers, PSD will issue an RFP. While Vermont allows for 3rd party ownership and at one point had active solar leasing companies in Vermont, there is currently only one leasing company operating in part of the state.

1.3.2. Multifamily and Affordable Solar Housing (MASH)

Through this program segment, PSD would subgrant funds to an administrator which would in turn award funds as grants and low interest loans leveraging other housing and energy incentives to developers and property owners of subsidized housing projects that serve low-income renters and homeowners (e.g., tax credits, technical assistance for project development). All repayments from SAV loans would be reloaned to future solar projects in affordable housing, stretching the impact of the funds for years to come.

Where appropriate, these projects could include on-site solar installations serving multifamily rental housing, owner-occupied housing, and manufactured homes, and offer benefits through the net metering program. To serve a larger number of households than can be served by on-sight solar it is expected that some larger projects would be developed under this program, utilizing tariffs similar to the ACRE 2.0 program. PSD anticipates that the subaward could serve an estimated 8,000 households. Altogether, the projects could conservatively yield about 18 GWh of fossil fuel generation displacement annually from the additional solar PV installed.

PSD estimates the multifamily affordable housing solar program will save approximately $325 per residential participant on the average annual utility bill of $1,300 (~25%) and reduce carbon dioxide emissions by about 4,900 tons per year.

1.3.3. Affordable Community Renewable Energy (ACRE 2.0)

Not everyone can install solar at their home and not everyone lives in subsidized housing. The ACRE 2.0 program is intended to extend the benefits of SAV, allowing access for all other types of eligible Vermonters. Building upon the existing ACRE Program, ACRE 2.0 supports the installation of projects that are larger in scale than those that are allowed in Vermont's net-metering program – up to 5MW – to achieve economies of scale and deliver benefits to the most Vermonters possible. These projects would be funded through one of two different ownership models, either a distribution utility ownership model or a third-party ownership model. In both models, the energy generated would be directed to recipients through a tariffed, discounted block of energy, thereby reducing the bills of participants in the program.

Energy generated from projects developed via either model will be passed along to participants through a "Solar for All" tariff. This tariff will offer a reduced rate to eligible participants for the first block of energy consumed – expected to be between 150-300kWh – on the participant's monthly electricity bill. The block size and rate will depend on each utility's rates and the

average consumption of residential customers within that utility service territory; in all cases it will be calculated so that participants will receive a reduction on their bill equaling no less than 20% of the average residential utility bill in their utility's service territory. Each participating distribution utility will file a unique tariff with the Public Utilities Commission for its approval. Participants in the program would need to be income qualified – with income at or below 80% of AMI, 200% of federal poverty guideline or 80% of non-metropolitan statewide AMI. The frequency with which a participant would need to qualify (or requalify) – annually, biannually, etc. – will be determined in the planning phase of this overall project. The details of "ownership" of that tariff, whether through membership or another mechanism, similarly will be determined during the planning phase of the project. In other words, customers would have a right to that tariff rate in perpetuity through the life of the generation plant and so long as they reside in that utility service territory.

ACRE Expansion – Utility-Owned Community Solar

Under the ACRE Expansion model, the PSD will grant funds to distribution utilities for proposed solar projects. Projects would be vetted for their locational value and the cost of the system. Once constructed and operating the electric distribution utility (DU) would then begin delivering the financial benefits of the generated energy to program participants through the tariffed design described above. Any of Vermont's DU's will be eligible to receive the ITC either as a tax return displacing their tax burden, or through the Elective Pay provisions that are now available through the IRA. PSD would require DUs to then reinvest the ITC (30% or greater) into the program creating a revolving fund for its continued expansion. Additionally, depreciation tax credits that may be available through accelerated depreciation would be expected to be similarly treated for the DUs that can make use of this tax provision. PSD would also like to further explore DU reinvestment of, or some portion of, energy expenditures not made back into the program once the generation project has reached parity for what the DU would have otherwise spent on a PPA for a third-party owned merchant generation system.

ACRE Extension - Third-party Owned Community Solar

Extending the ACRE Program, as it exists currently, would allow for the continuation of a program that is expected to increase the uptake of the benefits of solar generation for thousands of households of Vermonters with low-income and living in DACs. The program would be extended beyond the expected five years that it currently is required to be by funding restrictions, allowing participants to enjoy the benefits for the life of the systems that they receive benefits from. The current program has four different options based on the DU participating in the program. The Extension would, through the planning period, determine the pros and cons of each of these options and choose the mechanisms that best serve Vermonters.

1.3.4. Market Barriers and Regulatory Issues for Solar in Vermont

Barriers to Solar Adoption in Affordable and Subsidized Housing

Vermont's affordable housing developers are increasingly moving towards electrifying their buildings, which allows them to provide air conditioning across the board using high-efficiency heat pumps while simultaneously reducing greenhouse gas emissions. Fully electric buildings with air conditioning, however, can have ongoing operational costs that are more than double those of buildings heated with natural gas. In this changing landscape, housing developers will

need to determine how growing electrical costs will be covered. The Vermont affordable housing community is attempting to reject the so-called 'split incentive' and make efficiency improvements without shifting the increased electrical bills to tenants.

Solar PV is a currently underused resource to help this effort. Housing subsidies, however, are oversubscribed, and affordable housing funders do not typically have enough resources each year to consistently subsidize solar in multifamily buildings. Affordable property owners have limited operating reserves, and are unable to increase rents, thus making it difficult to self-finance new solar projects.

For residents of multifamily facilities, their ability to benefit from solar is limited to the activities of the property owner and what is available in the overall grid mix. In buildings where tenants are responsible for paying electricity bills, property owners may lack the incentive to pursue upgrades. Since mission-driven nonprofits represent the majority of Vermont's tax credit housing developers, there is less risk in this context, but projects still need to make financial sense for developers and cover at least some building-level costs.

In affordable multifamily housing properties, owners typically cover heating costs, while their tenants pay for the unit-level electrical costs, but in some buildings, the owners master-meter and cover all utility costs. These property owners pay for more of a building's power load and therefore may be more incentivized to install solar. At the same time, these projects will require an alternate means of demonstrating benefits to tenants. The master-metered-model is widespread for senior housing properties and may be increasingly adopted in Vermont as it can offer design efficiencies for all-electric buildings.

Meanwhile, most other affordable housing development subsidized by Vermont's housing funders, including shared equity and other affordable homeownership development models and manufactured homeowners and communities, have had very limited financial support to access solar in any capacity to date.

With the costs and limits on subsidies, many solar projects do not make economic sense (especially for projects with limited on-site capacity) without grant funding. This risk is highest in dense downtown developments with limited rooftop space. All-electric multifamily buildings also may site heat pumps on rooftops, further limiting space for solar arrays. Similarly, not all rooftops of multifamily housing facilities are deemed "solar ready." Many such properties would require additional investment to upgrade rooftops to accommodate solar racking.

When considering location of solar arrays for multi-family housing, there are barriers to MF housing related to the size of arrays needed to service properties and the amount of roof space and/or land to construct the facilities. Smaller ground-mounted net-metered arrays up to 500kW may pencil out financially, but this runs into grid-constraints and/or siting-related challenges in Vermont's already highly developed solar energy landscape.

If Vermont multifamily affordable housing owners are asked to pursue solar on their own, many have limited experience or resources to explore solar project development. To make the economics work, owners would need to consider the tax provisions. In Vermont, the housing tax credit structure (LIHTC and the Vermont Affordable Housing Tax Credits) will require careful consideration to work well with energy tax credits; monetizing the new elective pay provisions of the ITC will take time to implement with non-profit housing developers.

There are also barriers to solarizing manufactured homes. About 6% of all Vermonters live in manufactured homes.[10]

Net Metering and Community Solar Policies

Net metering can be a straightforward process in Vermont, particularly in the residential context. Systems sized up to 15kW only require a registration that has a 10-business-day comment period and for rooftop systems larger than 15kW and up to 500kW, there is a 30-day comment period. During comment periods utilities may raise any objections or concerns about the proposed projects which generally pertain to the interconnection of the system, which rarely happens unless there are grid constraints (see below). Ground -mounted systems greater than 15kW and up to 500kW undergo a more rigorous process including an environmental study, site plans, land-use planning, and aesthetic review. Very few net metering projects that request a Certificate of Public Good are denied.

Currently, net-metering compensation is provided to solar projects up to 500 kW in size, with four tiers of rates, diminishing as project size increases to account for economies of scale and environmental impacts.

Table 2: Vermont Net Metering Rates

Category	**Net Metering Rate: September 1, 2022 – July 31, 2024**
Category I (up to 15 kW)	$0.15141/kWh
Category II (>15 to 150 kW on preferred site)	$0.15141/kWh
Category III (>150 to 500 kW on preferred site)	$0.12141/kWh
Category IV (>15 to 150 kW on non-preferred site)	$0.11141/kWh

Net metering compensation rates have been trending downwards as costs to install solar have fallen, and as regulators balance growing residential solar adoption with the impacts of cost-shifting to those without solar. To balance the interests of program participants and non-participants, Vermont's SAV program will rely on net-metering to some degree for single-family homes and roof-top installations on affordable-housing rooftops. Cost-shifting is more pronounced with larger net metering projects that are not sited adjacent to consumer load, so the limits on the use of net metering proposed by SAV limit the cost-shift. The PSD will work with utilities to develop program-specific tariffs for larger projects enabled by the award.

Vermont does not have a Community Solar Policy or Program, per se. While group net metering (GNM) allows for the distribution of the benefits of net metering to multiple off-takers from a single installation, any system is limited to the capacity limits of the state's net-metering program – 500kW. When compared to some of the MW-scale projects that are often deployed for Community Solar Gardens in other states, these projects seem fairly small in scale. Many of these projects can also be difficult to site because of a rigorous permitting process that includes a requirement for "preferred siting" which is defined in Vermont's net-metering rule. The additional regulatory requirements around preferred siting qualification anecdotally deters

[10] American Community Survey, 2021

developers from pursuing these larger net-metered systems when combined with the lower compensation rates. Both the MASH program and the ACRE 2.0 program are expected to support projects outside of the net metering program, avoiding a cost shift and taking advantage of economies of scale.

When GNM solar projects are installed, they typically involve a substantial upfront investment for a participant or a group of participants to purchase a share of a project from which they would like to receive the benefit. Alternatively, a prospective GNM participant may be able to enter into an agreement with a third-party owner of a system, that may guarantee a certain percentage of savings, or a share of the generation coming from the solar installation; however, this type of arrangement typically involves a credit check, which would likely disqualify potential participants that may have low credit scores or no credit history. Again, the Vermont SAV program will directly serve potential participants that would not otherwise qualify.

Third Party Ownership

Third-party ownership or leasing of residential solar projects is permissible under Vermont state policy. And Vermont has historically seen several solar developers with lease options come to the state to offer third-party ownership of solar to homeowners. However, anecdotally, because of Vermont's lack of population density, many of these companies struggled to operate with sales volumes that were sufficient to meet their revenue goals and as a result they have discontinued offering the lease or have left the state altogether. At least one company in Vermont continues to offer leases, and the SAV program will solicit proposals from others, which may drive companies to return to Vermont.

Workforce

Vermont has a robust set of solar development companies. However, for solar development envisioned in this proposal, there may be locations with an insufficient workforce needed to install the volume of new arrays in the state. The current solar PV jobs market in the state faces a difficult period with inadequate numbers of qualified workers needed to meet projected demand. The state had about 1,770 solar workers in 2022 down from the market high of 2,379 in 2017. While there are new workforce development programs in motion and in development via Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA) resources awarded to the State (among others), these programs will take time to stand up and may not necessarily focus on development of a solar jobs pipeline.[11] However, SAV program funding could encourage companies to locate in Vermont or build their staff further.

[11] Vermont received $1.7M from US DOE to support weatherization and other construction trades in recruiting, training, and placing workers in careers. This funding is supporting the development of a Weatherization Training Center (WxTC) that will serve as a hub to coordinate existing training programs and develop new training programs for Vermont. A specific goal of the WxTC is to diversify the workforce and bring underrepresented individuals into the weatherization field. It is possible that the business model for this new facility could include training for solar installers as well.

Interconnection

The interconnection process for distributed solar projects is generally straightforward in Vermont, with no excessive fees or procedural opacities at the regulatory level. However, there are some unique interconnection barriers that can affect timelines and costs related to physical limitations that must be addressed to ensure the success of the SAV program. These barriers primarily stem from grid constraints, land-use limitations, and excess renewable capacity in certain regions of Vermont.

Given the significant amount of distributed generation already on the Vermont grid relative to the limited load, thermal limitations of grid infrastructure can require costly upgrades to site additional renewable energy generation. Some utilities have issued moratoriums on new generation installations until upgrades are in place; others have established grid fees for new interconnections. The SAV proposal targets generation close to load (RAISE and portions of MASH that site on rooftops) and seek to develop utility tariffs for larger generation (portions of MASH and ACRE 2.0), some of which will be developed by utilities in locations that are not generation constraints.

The service territory of Burlington Electric Department is highly developed, meaning there is a scarcity of available rooftops and land parcels suitable for accommodating large-scale solar projects. This limitation can hinder the deployment of solar systems in this region, especially for residential and affordable housing projects. In less urban areas, concerns about competing use for prime agricultural lands, as well as wetlands regulations, can be barriers to effective siting.

The Northeast Kingdom region of Vermont, specifically the Sheffield Highgate Export Interface area, faces a unique challenge. This area has a substantial excess of generation compared to load, leading to curtailment of generation including ratepayer-funded generation approximately 20% of the time. The addition of new renewable generation sources exacerbates this curtailment issue and creates additional costs. Utilities are working on cost-effective solutions to this issue.

These constraints mean that there is not a "one-size-fits-all" solar solution for every Vermont resident, which is why the PSD proposes a variety of programs that can be applied where most appropriate for ratepayers in different service areas. Vermont's SAV program will adopt a collaborative request for proposal (RFP) approach involving utilities, developers, and relevant stakeholders. This approach aims to identify suitable locations for solar projects that can overcome grid constraints and land-use limitations. All utilities, including those facing infrastructure challenges, are expected to actively participate in these RFPs. This strategic approach will minimize issues in project interconnection and ensure that solar energy can be efficiently integrated into the grid. The ACRE 2.0 program will collaborate with utilities to create opt-in tariff structures that benefit low-income Vermonters across the state, even if the solar project is not located within their specific utility's service area. This inclusive approach ensures that all ratepayers can access the benefits of low-cost solar power, mitigating any regional disparities.

1.4. Financial Assistance Strategy

The SAV program will deploy different financial assistance strategies that are designed for different segments of the solar market and needs of the different beneficiaries to meet the Solar

for All objectives. SAV has developed financial assistance strategies for single-family homeowners, the tenants of managed affordable housing, and renters and others that otherwise don't have access to the benefits of solar ownership.

1.4.1. Single-Family Homeowners

The SAV will design and develop the RAISE program to provide financial assistance to owner-occupied single-family homes for rooftop solar installations. For a select number of homes financial assistance will also facilitate the installation of battery storage systems and necessary upgrades to electrical service and roofs to facilitate solar. The financial model will maximize the leverage of private and other public funds with credit enhancements while also maximizing participation, program simplicity and solar system cost efficiency.

The RAISE program will use seven financial assistance strategies for homeowners to leverage private funds and non-Solar for All incentives, to install solar on their roofs:

- Flat up-front capital incentives to lower the cost of the solar systems;
- Requirements for selected solar contractors to sell/install only 5kW systems (or smaller if there isn't the roof space) with a set price structure that will lower costs through bulk purchases and more efficient system design and customer interface;
- Competitive selection of a solar leasing company to offer leases for 5kW roof-top systems providing at least 20% monthly savings and allow for a path to ownership;
- Competitive selection of one or more non-profit financial institutions that would use the elective pay provisions of the federal solar tax credits to co-own the solar arrays with the homeowner in a structure that allows the financial institution to capture the full value of the tax credits and provides for the maintenance and operations of the solar arrays for the first six years;
- Competitively select one or more financial institutions to offer RAISE program subsidized solar loans through credit enhancements such as a revolving loan fund to cover the capital needed from the homeowner for costs not covered by the up-front incentive payment made by the RAISE program. The credit enhancements could be extended to also provide assistance for homeowners that need capital and/or credit to take full ownership after the first six years of their lease or loan has ended;
- Fully utilize Vermont's net metering system for both its incentivized compensation system through electric bill credits and its registration system for small-scale solar that allows for a simpler permitting and interconnection process; and
- Technical assistance on maximizing the value of federal solar tax credits and navigating the permitting and financing needed as well as for the SAV program.

1.4.2. Managed Affordable Solar Housing

The affordable housing work envisioned under the SAV program will be managed by an administrator, which in turn will issue grants or loans to developers or owners of subsidized affordable housing, including multifamily housing, permanently affordable homeownership housing, and manufactured housing. The administrator would source solar projects from within existing pipelines of housing projects in development or existing housing projects, though housing funding partners across the state.

SAV program funding subawards would be tied into housing funding awards, including the LIHTC and Vermont state housing funding. PSD anticipates that any projects requesting SAV resources as part of a new housing project would make those requests when the project is submitted for housing resources. VHFA currently allows developers to apply for housing tax credits and loans during annual funding rounds, or on a rolling basis. Underwriters review the project for program compliance and for competitiveness under a Qualified Allocation Plan, or other funding guidance. For any other projects, including solar ready retrofits, it would be possible for the administrator to create annual or semi-annual rounds of applications, depending on demand, that could work in concert with this existing process.

To facilitate program participation, the administrator would create and publish clear funding criteria and application instructions. All projects will be brought forward to the appropriate Board for review and approval. To the degree that the administrator can coordinate SAV funding within housing funding processes as much as possible, that coordination would help reduce the administrative burden for housing developers, as well as leveraging the rigorous project review process already in place. A portion of the administrative funds for the proposal could be directed to ensure that such coordination is built into program development activities.

The administrator will award funding as grants and loans, with interest rates expected to be capped at no more than 3% and may include 0% financing or forgivable loans. Loans should be awarded as revolving loans whenever possible. Funding may also be sub-awarded in the form of bridge loans to allow housing developers to cover the up-front costs of solar projects until they can transfer investment tax credits or take advantage of the elective pay option.

This one-time investment in the managed affordable solar housing program will be a transformational moment for Vermont, where future investments could be made with repaid loaned dollars envisioned with SAV program. However, this application acknowledges limitations to this model. To reach the goals that Vermont's environmental justice statute requires, it is possible there will need to be considerable funding granted to housing developments and individual homeowners that lowers the amount of funds that can be leveraged.

To determine award amounts, a subsidy analysis will be carried out to analyze a project's total debt capacity and future cash flow potential, including its ability to leverage energy tax credits and other subsidies alongside housing resources. VHFA performs rigorous financial needs assessments while underwriting projects for tax credits and debt. PSD anticipates that SAV resources could be leveraged by the administrator for housing developers of new or rehab projects applying for SAV funds.

Program partners will balance equity with this analysis, ensuring that projects serving households with the lowest incomes and least resources receive the greatest SAV benefits.

1.4.3. Renters & Community Solar

Renters and others that don't have the ability to install solar on their own roofs will receive financial support to access solar through the ACRE 2.0 Program. ACRE 2.0 operates as a utility assistance program, providing participants with reduced energy rates. The reduced energy rate will vary between DUs but will result in the participants seeing a reduction in their utility bill that will be equivalent to, or greater than, 20% of the average utility bill in their DU's service territory. Participation in the program will not require the participant to pay membership fees of

any kind, with the only barrier to their participation being the income-verification process. While participants will be required to income-qualify prior to their participation in the program, their participation in the program will be perpetual, lasting for the useful life of the generation plant that they receive benefit from, so long as they remain in the DU service territory. If the participant leaves that service territory, they could then pass along their place in the program to another income-qualified electric customer in that service territory. If the participant cannot find an individual the DU would then fill that spot with the next prospective participant in the queue for the program.

Reduced energy rates coming from participation in the ACRE program are reflective of the participant receiving energy at the cost of delivery – the embedded transmission and distribution costs as well as administrative costs. The value received is the energy rate being offset by the projects that are developed through the ACRE Program. A participant would be delivered the first 100-300kWh block of energy – the "ACRE Block" - at this reduced rate.

1.5. Project-Deployment Technical Assistance Strategy

In June 2023, EPA Administrator Michael Regan chose to announce the Solar for All program in Waterbury, Vermont, citing Vermont's demonstration of "exemplary leadership in implementing solar technology." Indeed, as described above, Vermont is home to a mature, well-established industry of developers and installers serving the residential, commercial, and utility-scale solar and storage markets.

Yet technical assistance is critical to bring solar benefits to more Vermonters. The SAV program will contract with an entity with solar, financial, and incentive program expertise to provide technical assistance to both the beneficiaries and solar developer participants in the program. Additional details will be addressed in the planning phase, and equity and inclusion in program design and implementation will be central.

The established industry actors will need technical assistance for connecting with new financial and operational partners to become capable of utilizing the SAV program to effectively work with low-income residents, affordable housing providers, and the community-based organizations that work with disadvantage Vermonters.

1.5.1. Residential Assistance in Solar Energy (RAISE)

This program advances underserved market categories, requiring specialized technical assistance about how solar and net metering work, how to connect with solar developers, how the SAV program and its support financing programs can make it possible to install roof on one's home and save money by doing so.

Technical assistance will include step-by-step project coordination to assist participants overcome obstacles from beginning to end. It will leverage experienced industry partners and reputable community-based organizations to market, educate, and recruit participants. Recruiting and education will build on community engagement and shared governance methods and include trusted community partners working in the low-income and disadvantaged communities, such as Vermont's Community Action Agencies.

Technical assistance will be especially relevant in explaining the financial mechanisms and credit enhancements that enable disadvantaged homeowners to participate in the program that

will be supporting the installation of solar systems as well as activities such as roof repairs, electric panel upgrades, and/or battery storage system installation. The technical assistance will include walking participants though contractor selection, program requirements, permitting, and the possible variations in ownership models to maximize the financial benefits to the household.

Direct and indirect technical assistance for the participants and the solar developers will be delivered in easy-to-understand terms and be easily accessible and readily available.

1.5.2. Managed Affordable Solar Housing

Affordable housing has been largely overlooked by solar developers, and serving residents of affordable housing requires the most technical assistance of any program element. The complexity involves matters of property ownership, financing, management, and, typically, how electricity bills are paid (e.g., master metering). Multifamily property managers must follow an array of rules and procedures addressing energy costs, applicable in both master-metered and individually metered buildings. Vermont's SAV projects will work through this complexity to bring benefits to residents and the housing operators that serve them.

Technical assistance will utilize partner expertise in financial aspects of affordable housing development and operation. This includes experience in housing tax equity partnerships, shared ownership consortiums (for example, credit unions and other non-profit financial institutions), manufactured home communities (including resident-owned cooperatives). Partner expertise—from both housing finance entities and utilities—will be necessary in designing and implementing utility tariffs that calculate and apply necessary Solar for All benefits to participating households.

During the design process for any project, the Managed Affordable Solar Housing program will require housing developers to the greatest extent possible to engage with their residents to understand concerns and interests with obtaining power from solar PV. This may vary in some instances, for example, new construction projects in development will not yet have tenants. Obtaining resident input will help provide opportunities for addressing concerns in project development.

While most housing organizations have previous experience incorporating solar onto their facilities, there are some non-profit and for-profit housing organizations with limited or no exposure to solar. To address this gap, this proposal includes technical assistance to help these property owners work through the solar development process. This may include, but not be limited to site selection and permitting processes, contracting with solar developers, community engagement, interconnection and regulatory compliance, tax credit planning, financing and grant proposal development, compliance with federal requirements, and program reporting.

1.5.3. Affordable Community Renewable Energy

Technical assistance needs are relatively limited given the experience of distribution utilities (nearly all of which are experienced in soliciting competitively procured solar projects). The ACRE element's technical assistance consists of partnering with distribution utilities for recruitment, marketing, and financial management of solar credits.

1.5.4. Supporting Activities Technical Assistance

Technical assistance is a key component of support activities that support SAV activities and achieve program objectives. Community outreach and workforce development efforts, including engagement with disadvantaged communities and organizations that serve those communities, are described below.

1.5.5. Workforce and Apprenticeships

All activities will entail working with the state's workforce development sector to build on pre-existing training programs that help qualify the next generation of employees. Currently, some of the larger solar developers in the state offer apprenticeship programs to train new workers in the electrical and mechanical sides of solar PV. Recruitment and retention of installation crews remains a challenge. Vermont is currently developing a workforce training center funded under the IIJA focusing on weatherization; a new program focused on contractor training to be funded under the IIJA will also be developed in 2024. Resources from these programs will be offered to eligible workforce development organizations to assist with growing the solar employee workforce. This work will be integrated into the existing and proposed workforce development programs to foster overall coordination toward meeting unmet employment needs and drawing in workers from underserved, disadvantaged communities.

SAV will work with Vermont's Registered Apprenticeship Program, which is the Vermont's Department of Labor's (DOL) occupational training program. Additionally, SAV will work with solar industry employers and DOL to provide individuals with hands-on experience and on-the-job training in the specific industry of their choosing.

1.6. Equitable Access and Meaningful Involvement Plan

PSD acknowledges that low-income and disadvantaged households generally lack access to the benefits of renewable energy and, particularly solar energy. Those reasons go beyond those presented by market barriers like affordability, access to credit, and real estate property ownership. Disadvantaged communities have not been afforded the involvement in the process of developing policies and programs in the past that could have created avenues for their participation are also barriers to the involvement of those with low income or who are otherwise disadvantaged. Through recent engagement events described below, the PSD has gained valuable recent experience that positions it well perform effective public engagement and develop educational opportunities for the broader public, and with a focus on disadvantaged communities.

1.6.1. Participant Acquisition

The definition of "participant" for the SAV Program will go beyond just those who are the beneficiaries of the program. PSD's participant acquisition process is already underway. The development of this application, outreach to potential partners and their participation to begin the development of the program has been vital to ensure that a solid foundation has been laid so that it will deliver meaningful benefits to thousands of Vermonters.

Prior to the commencement of the program PSD will leverage the networks made available by our partners to broadcast the availability of the SAV Program. Many of our partners are focused exclusively on working directly with the intended recipients of the benefits that will come from

the SAV Program. Other partners have broader networks throughout the state while also having experience in directing resources to those communities that the Program is intended for.

Potential partners have already been engaged in conversation about the SAV Program. We intend to continue developing relationships and expand the breadth of our outreach through public engagement and education through a variety of platforms and forums.

1.6.2. Implementation Partners

The PSD is working to develop programs with organizations who have built trusted relationships with communities that have low-income or are disadvantaged. The PSD will also engage directly with those communities through outreach and marketing to create opportunities for education and engagement as well as meaningful participation in the development of the programs that will be funded with SAV funding. The organizations and divisions of Vermont State government listed below will be among the organizations engaged as possible implementation partners.

Vermont Department for Children and Families: PSD is working with multiple divisions within the Vermont Department for Children and Families (DCF), leveraging their established relationships with the low-income households around the state to develop plans for participant acquisition in the roof-top and community-solar features of Vermont's SAV Program. DCF's Office of Economic Opportunity (OEO) and Economic Services Division (ESD) administer programs that reach Vermont's most vulnerable residents through direct financial assistance and delivery of services.

Vermont Office of Economic Opportunity (OEO): OEO administers the state's Weatherization Assistance Program (WAP) through the state's regional Community Action Agencies (CAAs) to deploy weatherization services and energy-efficiency retrofits in income-qualified households. PSD will work with OEO to develop materials to share with homeowners that are receiving WAP services to increase awareness of the availability of SAV.

Vermont Economic Services Division (ESD): ESD administers assistance programs to meet the basic needs of Vermont's most vulnerable. ESD operates programs like Reach Up and SNAP and acts as the state's LIHEAP Office. ESD currently works with two of Vermont's largest utilities—Green Mountain Power and Vermont Gas Systems—offering income-eligibility verification services for their Energy Assistance Programs (EAP). ESD will also be working with electric distribution utilities to perform income verification services for the ACRE program. PSD is collaborating with ESD to not only provide income verification services for Vermont's SAV Program, but also to help increase awareness of its availability to their clients seeking assistance from other programs they administer.

Vermont Department of Labor (DOL): Vermont's DOL operates the Registered Apprenticeship Program, occupational training including for obtaining an electrical license, and other workforce development programs. DOL has existing programs available to the solar industry that the SAV program can leverage to provide individuals with hands-on experience and on-the-job training in the solar and electrical sectors.

Electric Distribution Utilities: Vermonters are served by 17 different electric distribution utilities, including one investor-owned utility, two rural cooperatives and 14 municipal electric providers. Vermont's electric utilities pride themselves on providing innovative programs that

drive the renewable energy transition and are committed to being active and interested partners in ensuring the success of the SAV program.

Non-profit Community Financial Institutions. Vermont's non-profit financial institutions have a long record of working with Vermont families to help finance energy-related products and services. These entities bring expertise with financing for residential projects.

Community Action Agencies: Vermont's five Community Action Agencies offer financial and energy coaching to income qualified Vermonters. Through the Green Saving Smart program, coaches offer clients assistance in developing budgets and exploring opportunities for savings including through reduced energy usage.

Vermont Housing Finance Agency (VHFA): VHFA is Vermont's federally designated statewide affordable housing finance entity and has a 49-year history of outreach and marketing with the state's affordable housing stakeholders. VHFA works closely with state agencies awarding other housing resources to build out a shared multi-year pipeline of all affordable housing development in the state. VHFA communicates regularly with housing funders, developers, advocates, and the Legislature to help address the state's housing needs. VHFA has an established network of housing developers across its statewide service area, many of whom VHFA has worked with for decades. Historically, over 90% of VHFA's housing resources have been awarded to mission driven non-profit developers that are deeply embedded in their communities and committed to the broader statewide goal of deep and perpetual affordability for housing investments.

1.6.3. Education and Engagement

PSD will engage the public with educational opportunities and events that will allow for input from disadvantaged communities and community organizations that advocate for those communities in the final program design. PSD is developing Community Engagement Plan that was developed following the passage of the state's Environmental Justice Law (EJ Law); prior to that development it has gained experience with directly relevant public engagement on Vermonter's electric supply procurement priorities. Much of this engagement has informed this SAV proposal.[12]

Through lessons learned in this recent and other engagement events, PSD is well positioned to perform effective public engagement and develop educational opportunities for the broader public and with a focus on disadvantaged communities. PSD is currently wrapping up its Comprehensive Review of Vermont's Renewable & Clean Electricity Policies and Programs (Comprehensive Review). Over an 18-month timeframe, the Comprehensive Review provided educational opportunities, began engagement with Community Based Organizations, conducted statewide polling and focus groups, and engaged with Regional Planning Commissions to further reach Vermonters. The results of this process and the input of the will be directly informing PSD's recommendations to the legislature as they consider changes to the Renewable Energy Standard (RES) and renewable energy programs like net metering and the Standard Offer Program. The results will also be informative to SAV, and relationships forged will be utilized to better inform SAV program design.

[12] For more information, see: https://publicservice.vermont.gov/renewables

1.6.4. Outreach and Marketing in a Culturally Appropriate Manner

Methods for different communities: Using experience gained from the Comprehensive Review conducted over the last 18 months, the PSD will utilize different methods of outreach to reach different communities. Engagement with Community Based Organizations will be critical to reach different communities, as they have existing relationships. The PSD's recent efforts will be critical. In addition, potential partners described above have a wide network of relationships that can be leveraged to ensure that we can reach different communities through online and in-person events, meeting communities where they are at and with appropriate language and accessibility services.

1.6.5. Meeting Accessibility

Language Access Plan (LAP): PSD's Language Access Plan describes how PSD makes provisions for those who do not speak English or have limited English proficiency as well as others with differing modes of communication including the hearing, vision, or speech impaired. This includes five steps that include: 1) identifying people for language access, 2) providing language and communication access, 3) training staff and parties that receive grants and contracts, 4) providing public notice of language and communication access, and 5) monitoring, evaluating, and updating the LAP. The Vermont Office of Racial Equity is currently developing guidance for state agencies for updating LAPs which PSD anticipates utilizing this guidance to update the current PSD LAP.

Accessible Terminology: PSD will develop marketing materials and host engagement events that meet participants where they are. This includes making conversation around what can be expected from their participation in SAV programs using terminology that is accessible and less technical, building from simple concepts, up to more sophisticated ideas as needed.

1.6.6. Meaningful Involvement in Program Design

Vermont's Legislature passed Act 154 – the Environmental Justice Law (or EJ Law) – in the 2022 legislative session creating an environmental state policy. The EJ Law makes it environmental justice state policy "...to provide the opportunity for the meaningful participation of all individuals, with particular attention to environmental justice focus populations, in the development, implementation, or enforcement of any law, regulation, or policy."[13] The EJ Law goes on to define the PSD as a "covered agency" and as such, it is required to "consider cumulative environmental burdens... and access to environmental benefits when making decisions about the environment, energy, climate."

The PSD has a statutory responsibility to "provide for the meaningful participation of all" in decisions about the development and implementation of the SAV Program. During the engagement phase, a Community Engagement Plan will be developed that will be applied for SAV and all PSD programs.

[13] 3 V.S.A. §6003. Found at: https://legislature.vermont.gov/statutes/section/03/072/06003.

1.6.7. Native American/American Indian Communities

While Vermont has no federally recognized tribes in the geography being served, the State of Vermont has state-recognized four American Indian communities. Those are the Elnu Abenaki Tribe, the Nulhegan Abenaki Tribe, the Kaosek Traditional Band of the Koas Abenaki Nation, and the Abenaki Nation at Missisquoi. These tribes are regularly involved in state land use policy and the PSD sees this as an opportunity to work with this communities to ensure that development of the projects funded through the SAV program not only offer benefits of the program to the members of these communities, but also that these projects are developed without impacting culturally sensitive lands.

1.7. Program Planning Timeline and Workplan Narrative

The PSD is proposing a planning period of ten months from the time funds are available to conduct the outreach, community, and stakeholder engagement, as well as the program design and planning necessary for a successful program. While the PSD and program partners began coordinating on development of solar market segment strategies the spring of 2023 in preparation for the Solar for All application there was not sufficient time before this application needed to be complete for meaningful engagement and community participation in the program design or planning. The Comprehensive Review for electricity programs conducted by the PSD provided a sound basis for this proposal, but further engagement is necessary and appropriate. The PSD will continue with some outreach work until a cooperative agreement with EPA is finalized, at which point the PSD will start implementing the Program Planning Workplan and Timeline as detailed in Attachment D.

The PSD's program design and workplan will be fully developed during the ten-month planning period and will be based on the input and information learned from engaging and involving members of the disadvantaged and low-income communities and a wide range of stakeholders in designing the program and the detailed workplan.

A first step in the workplan will be to hire staff at the PSD commensurate with the level of the SAV funding awarded and the necessary program planning needed. The PSD will also look to hire contractors to assist with the technical assistance as well as for the outreach, community involvement, and education activities needed. Hired contracts will assist the PSD with the development of the SAV program including a detailed workplan and timeline for the program's five-year period of performance.

The PSD is expecting one component of its SAV program to be able to become operational within the planning period. The MASH program will be able to start working with existing multi-family affordable housing organizations that have already begun investigating and planning for roof-top solar projects based on existing programs, partnerships, and pent-up demand for on-site solar projects. The PSD is planning on issuing an RFP to select a state-wide affordable housing organization that can operate the MASH program within the first three months of the program.

2. Program Administration Narrative

2.1. Budget Narrative

PSD has developed an overall Program Budget of $108,196,428 as reflected in the SF-424A. This Program Budget total is based on $100,000,000 in federal funding through SAV with the remaining $8,196,428 cost share from the participants of the RAISE Program. The Solar for All Competition requires applicants seeking award option #1 to ensure that no less than 75% of award funding is directed to financial assistance. PSD's budget exceeds this requirement, directing more than 77% of federal funds, $77,087,594, to projects delivering financial incentives to participants in SAV programs.

2.1.1. Personnel

Personnel Budget		
Budget Category		EPA SFA Funding
Position/Annual Salary	% of FTE	
Grant Manager @ $91,478/yr. x 5yr.	100	$457,390
Grant Specialist @ $60,882/yr. x 5yr.	100	$304,410
Admin. Services Mngr. @ $88,608/yr. x 5 yr.	100	$443,040
	Total	$1,204,840

2.1.2. Fringe

Fringe Budget	
Budget Category	EPA SFA Funding
FICA, Retirement, Health Insurance, Worker's Compensation – 100% FTE Personnel $91,478 x 72% x 5 yr.	$330,030
FICA, Retirement, Health Insurance, Worker's Compensation – 100% FTE Personnel $60,882 x 56% x 5 yr.	$171,925
FICA, Retirement, Health Insurance, Worker's Compensation – 100% FTE Personnel $88,608 x 73% x 5 yr.	$324,915
Total	$826,870

2.1.3. Travel

Travel Budget		
Budget Category		EPA SFA Funding
2 Staff Travel to DOE Technical Assistance Workshop	Airfare – 2 @ $600 Round Trip	$1,200
	Per Diem – 2 staff 4 days @$60/day	$480
	Lodging – 2 staff 3 nights @ $250/night	$1,500
Local Mileage	Outreach Coordinator, 100mi./mo. @$0.54/mi. x 12 mo. X 5 yr.	$3,240
	Total	$6,420

2.1.4. Equipment

Equipment Budget	
Budget Category	EPA SFA Funding
Equipment – Computer, Cell Phone, etc. – 3 Staff @ $2,500	$7,500
Total	$7,500

2.1.5. Supplies

Supplies Budget	
Budget Category	EPA SFA Funding
Office and related supplies to support outreach meetings, trainings, etc. $8,000/yr. x 5 yr.	$40,000
Total	$40,000

2.1.6. Contractual

Contractual Budget	
Budget Category	EPA SFA Funding
Program planning technical assistance - National Lab tools and services	$150,000
Energy System Modeling Services	$200,000
Translation Services for Community Meetings yr. 1	$4,500
Translation Services for Community Meetings yr. 2-5 – $2,500/yr. x 4 yr.	$10,000
Total	$364,500

2.1.7. Other

Other Budget	
Budget Category	EPA SFA Funding
Subgrant(s) to MASH Subgrantee(s) @ $7,840,000/yr. x 5 yr.	$39,200,000
RAISE Program Subrecipient Agreement(s) to FIs Year 1	$1,333,333
RAISE Program Subrecipient Agreement(s) to FIs Year 2-5 @ $2,666,667 x 4 yr.	$10,666,667
RAISE Program Direct Incentives Year 1	$1,166,666
RAISE Program Direct Incentives Year 2-5 @ $2,333,333/yr. x 4 yr.	$9,333,332
ACRE Subgrants to DUs Year 1	$3,694,444
ACRE Subgrants to DUs Year 2-5 @ $7,388,889/yr. x 4yr.	$29,555,555
Workforce Development Subgrant(s) @ $400,000/yr. x 5 yr.	$2,000,000
Printing and Publication Services @$2,501/yr. x 5 yr.	$12,505
Total	$96,962,503

2.1.8. Indirect

Indirect Budget	
Budget Category	EPA SFA Funding
Indirect Rate (28.91%) x Personnel ($406,342) x 5 yr.	$587,367
Total	$587,367

2.1.9. Administrative Cost Expense Cap

While there is no specific administrative cost expense cap required by SAV, 75% of funds must be used for financial assistance. PSD has budgeted 77% for financial assistance and conservatively budgeted $20,899,903 for program implementation, administrative, and indirect costs. PSD's administrative costs, including personnel, fringe, travel, equipment, supplies, contractual and indirect, total $3,034,903 or just a little over 3% of the total award being requested. PSD has budgeted up to $7,840,000 administrative and program implementation costs, for the MASH Program totaling 7.84% of PSD's requested award. Anticipated subrecipient agreements for program implementation and administration of the RAISE Program are budgeted at$2,325,000 or 2.33% of the total request. PSD expects that administration of the direct incentives that will be part of the RAISE program will be $1,050,000, about 1% of the total request. Finally, PSD expects that the ACRE 2.0 Program will be $6,650,000 or about 6.65% of the $100 million request.

2.1.10. Matching Funds and Cost-Share Funds

While the EPA has no cost-share requirement as a part of SAV, PSD has included a cost-share component as part of the RAISE Program. Participants in this program will have a 30% cost-share requirement in the form of low-interest loans through non-profit financial institutions. For the RAISE Program this will total $8,196,428 in cost share. Through the planning year, PSD will seek to identify additional cost-share and fund matching opportunities that may expand the financial-assistance capability of this, or any of the SAV programs.

2.2. Fiscal Stewardship Plan

Vermont is fully dedicated to adhering to federal law, regulations, and terms and conditions governing grant awards. The Public Service Department (PSD) will adhere to its official Granting Plan which it updates annually. The Granting Plan details the PSD's procedures governing awards to subrecipients, including comprehensive policies to ensure risk management; prevent waste, fraud, and abuse, and prudently manage grant funds. The Granting Plan establishes internal controls to maintain compliance with applicable laws, evaluates risk of noncompliance, and sets out monitoring and accountability procedures for all subrecipients. The Granting Plan requires that grant agreements made by the PSD outline requirements of the award including services to be rendered, authorized amount, payment provisions, reporting requirements, performance measures, Federal regulations, and any other requirement necessitated by accepting the grant. All programmatic, performance, and financial reporting requirements will also be described in the grant agreement. The State of Vermont also requires that all grant recipients comply with all applicable federal and state laws, regulations, and policies, including but not limited to those related to nondiscrimination, diversity, environmental and consumer protections, and labor standards.

For all grant awards greater than $750,000, the PSD applies the highest level of routine scrutiny to recipients to ensure that funds are expended only for their intended and authorized uses. This includes Desk and On-site Monitoring. Desk monitoring requires grantees to issue periodic reports to the PSD. Reporting will include updates on progress towards programmatic and impact metrics, such as program/project successes; workshops/meetings held; energy cost savings; and renewable energy capacity built. Grantees will be required to submit a final report.

PSD grant managers and division directors may conduct on-site visits as a concluding phase of the monitoring process. These on-site visits are guided by the PSD's on-site monitoring checklist, serving as a structured tool to document observations and any follow-up actions needed to ensure grantee compliance and the successful execution of the funded projects. This comprehensive approach to monitoring enables PSD to uphold accountability and transparency in the management of federal grants.

In the event that the PSD identifies non-compliance with state or federal regulations, the terms and conditions of the agreement, performance benchmarks, or auditing prerequisites, or detects any suspicion of fraudulent activities or improper fund utilization, or if the grantee fails to address audit findings adequately, PSD retains the authority to impose sanctions against the grantee. These sanctions will be selected with a clear intent to promote compliance or reduce potential risks to the State. The array of possible sanctions encompasses but is not limited to:

- Delaying disbursements or partially withholding payments.
- Transitioning to a reimbursement-based payment structure.
- Imposing additional reporting obligations on the grant, as permitted by the terms of the grant agreement.
- Disallowing incurred costs and/or requesting repayment in cases where funds have been previously advanced.
- Initiating or facilitating an audit.
- Rescinding the grant award.
- Designating the grantee as a "high-risk" entity and withholding future grant awards.

2.2.1. Consumer Protection Plan

The importance of consumer protection in the realm of solar energy projects cannot be overstated. As solar initiatives expand, there's an increased risk of consumers being misled by companies that may misrepresent the financial benefits, exaggerate tax and billing credits, or conceal additional costs. PSD will mandate that participating solar companies interfacing with consumers under any of the SAV programs adhere to the following consumer protection guidelines. These requirements go above and beyond state law, addressing transparent disclosures, contract terms, fee structures, and accountability measures.

Required Transparent Disclosure of Terms. Solar companies contracting with a consumer to build a project using SAV funding through any program must provide to consumers:

- A plain language disclosure, specifying pricing terms over the contract's lifetime, given as either a flat monthly rate or on a per kilowatt-hour basis, and notification of any charge increases and the advance notice to be provided.

- A copy of the calculations for estimated energy output, monthly payments, interest, assumptions about utility rate increases, and net financial savings including tax credits.
- Clear terms regarding how a subscription can be transferred or terminated, and any associated costs.
- A disclosure of all one-time and recurring charges and any other fees or charges that could be incurred.
- A clear statement outlining the contract's length, including rollover provisions if applicable.
- A description of all procedures and penalties associated with early termination, including both the process and any associated costs for unsubscribing.
- A description of any compensation for underperformance or non-performance must be included.
- Terms under which both the subscriber and the solar company can terminate the contract early, including fees and notice periods.
- A description of the procedures for contract renewal, if applicable.
- Up-to-date contact information for both customer service and complaint handling.
- Clear terms outlining options and obligations if a solarized property changes ownership during the contract term.

Program Administration Procedures for Consumer Protection:

- The PSD will establish a clear arbitration or grievance redressal mechanism for consumers to avail themselves of, should there be a conflict with the solar provider.
- Solar companies using SAV funding must submit regular reports to PSD for compliance verification and will include a review of customer complaints and resolutions.

2.2.2. Revolving Loan Fund Financial Management

Any funds channeled into a revolving loan fund will exclusively be used for SAV projects. This policy ensures that the financial resources are strategically focused on fulfilling the grant's objectives, increasing access to solar energy for low-income Vermonters. While PSD envisions complete utilization of the award money by the end of the performance period, if any funds remain in a revolving loan fund after this time, PSD will continue to use the leftover funds for eligible projects, thus ensuring the longevity and ongoing impact of the SAV program.

2.3. Reporting Plan

PSD is well prepared to track and report all program and administrative performance measures. The PSD has extensive experience managing both competitive and formula-based federal grants, including provisions for record retention, Single Audit participation, and quarterly and annual financial reporting. PSD is experienced in coordinating and collating subawards reports into requisite summary reports for federal partners.

The PSD will provide standard administrative and financial reporting, including quarterly summaries of subaward spending and activities, and annual reporting (SF-425, MBE/WBE Utilization, etc.) as set in the grant terms and conditions. Reporting will address program progress, comment on project timing across all program areas, and identify barriers and concerns.

As described below, the PSD proposes reporting on each element of Vermont's SAV program. Reporting will also address resulting environmental benefits through avoided greenhouse gas emissions (and describe underlying assumptions). The reporting plan focuses on data categories that are relevant to program objectives, are useful for measuring program performance, and can be reliably reported by the subrecipients and the PSD. The PSD is prepared to modify or add reporting metrics as required by EPA. The notation in brackets below indicates proposed quarterly [Q] or annual [A] reporting.

Table 3: Reporting Plan Elements

Category	Planned Reporting Metric - Outputs	Planned Reporting Topic - Outcomes
Performance	• Capacity (MW) deployed by project type and technology (e.g., solar, storage) [Q] • Unit price ($/watt) deployed and change over time [Q] • Count of participants (households) [Q] • Count of physical projects by utility territory and type of project (rooftop, community solar, etc.) [Q] • Amount of household savings delivered by utility and type of project [A] • Count of workers trained by geography and starting wage/benefit [A] • Investments in or in partnership with women- and minority-owned businesses by geography and relationship type ($ and count) [A] • Financial assistance deployed by geography, type of cost (solar, storage, and enabling upgrades), type of financial assistance (e.g., subsidy, loans), type of project, type of technology [A] • Number of community-based organizations engaged by SAV services [A]	• MWh generated [A] • Count of participants/ with resiliency improvements [A] • Count of jobs created [A] • Reduced disparities in energy burden between low-income and non-low-income households [A]
Program & Financial	• Grant funds deployed by type of cost, such as financial assistance, technical assistance, program administration, by type of project, technology, and geography [Q]	• Award funding per participant (household) by type of project [A]

	• Private sector financing mobilized alongside projects funded directly by SAV by geography, type of project [A]	• Cost of GHG emissions reductions ($/short ton of CO2) [A] • Total participant savings [A] • Household savings ratio [A] • Percent household savings [A]
Environmental	• Environmental assumptions (emissions per kWh intensity, capacity factor) [A]	• Avoided GHG emissions (statewide and accounting for utility power portfolios) [A] • Other avoided air pollutants [A] • Fossil fuel power generation displacement (GWh) [A]
Qualitative	• Reports on program feedback from all stakeholders participating in the program [A]	• Findings from evidence building activities on program operations, impact, outcomes including but not limited to program evaluation reports [A]

3. Programmatic Capability and Environmental Results Past Performance

PSD has provided a response to the Programmatic Capability and Environmental Results Past Performance in Attachment F.