

Thermal Energy and Process Fuels Funds EEU-2013-01 (EEU Demand Resources Plan)

Introduction

Since its inception, Efficiency Vermont has achieved a relatively low level of heating fuel savings through comprehensive building efficiency strategies for new and existing buildings—primarily because Efficiency Vermont is funded principally by electricity ratepayers. However, in 2006, the Vermont Energy Investment Corporation (VEIC) became a Market Participant in the New England Forward Capacity Market on behalf of Efficiency Vermont customers. Further, the State began receiving revenue from its participation in the Regional Greenhouse Gas Initiative. Prior to these developments, thermal energy savings were incidental or were leveraged with electrical measures, and were typically associated with the promotion of comprehensive building efficiency improvements.

Since 2009, Efficiency Vermont has delivered additional thermal energy efficiency services, using revenues from the ISO New England Forward Capacity Market (FCM) and the Regional Greenhouse Gas Initiative (RGGI). Collectively, these mechanisms create a source referred to as *Thermal Energy and Process Fuels* (TEPF) funds. These funds are used to support energy efficiency services for homeowners and businesses using unregulated heating and process fuels (that is, not natural gas, but oil, propane, kerosene, and woody biomass).

This TEPF Demand Resources Plan provides a general description of anticipated TEPF energy efficiency strategies and services for a 10-year period beginning in 2015. It outlines the objectives for the TEPF services, and provides an overview of the plans. Efficiency Vermont will continue to refine and revise these services, as appropriate, throughout this period. This approach will allow Efficiency Vermont to respond to the challenges of fluctuating and unpredictable budgets; to respond to changing technological and market opportunities; and to maximize benefits provided to Vermont's business and residential energy consumers.

The TEPF Demand Resources Plan (DRP) balances the funding constraints of the available TEPF budget with the State's ambitious energy savings goals. The plan seeks to prioritize the core comprehensive residential retrofit services and existing partnerships, while continuing to strengthen the infrastructure to support the scaled-up services envisioned for achieving Vermont's energy efficiency goals.

Objectives of the Thermal Energy and Process Fuels Demand Resources Plan

The 2014 – 2024 TEPF DRP forecasts cumulative thermal energy savings of over 875,000 MMBtu in more than 29,000 businesses, apartments, and houses. Although significant work is proposed, the available budget forecasts for the plan will not achieve the State’s thermal energy goals as outlined in the *Comprehensive Energy Plan* and codified in Vermont law.¹ Accordingly, VEIC’s plan for TEPF is based on these objectives:

- **Support of diverse customer classes.** Commercial and residential customers will receive Efficiency Vermont TEPF services. Programs will deliver benefits to low-income customers. Reflective of the amount of heating and process fuels consumed by these sectors, 75% of Efficiency Vermont Resource Acquisition funding is forecast to serve the residential sector, and 25% the commercial sector. Additionally, 21% of the overall Resource Acquisition funding is forecast to benefit low-income customers.
- **Addressing the needs of low-income Vermonters.** The Weatherization Assistance Program (WAP) provides comprehensive thermal energy retrofit services to low-income Vermont homeowners and renters. Efficiency Vermont expects to supplement WAP funding for rental properties that house low-income people. This strategy provides a deeper level of retrofit than the level of retrofit available through WAP funding, and it supports project management for complicated multi-unit properties through the Vermont Fuel Efficiency Partnership program.
- **Establishing and supporting a scalable service infrastructure to achieve Vermont’s energy goals.** Efficiency Vermont’s TEPF service infrastructure is designed to support the “continuous and proportional progress toward attaining the overall state building efficiency goals.”² Although current resource acquisition is constrained by available TEPF funding,³ Efficiency Vermont’s services are designed to be scalable. That is, if changes occur in the marketplace, and / or other conditions arise that would favor an expansion of retrofit activity, Efficiency Vermont is organizationally and technologically prepared to support the retrofit goals envisioned in the Vermont Energy Efficiency and Affordability Act (Act 92; the law establishing 10 V.S.A. §581). Over the ten-year forecast, such changes might involve fuel price signals, new regulations such as

¹ 10 V.S.A. § 581: (1) Improving the energy fitness of 25% of the state’s housing stock by 2020 (approximately 80,000 housing units); (2) reducing annual fuel use and fuel bills by an average of 25% in the housing units served; (3) reducing total fossil fuel consumption across all buildings by an additional 0.5% each year, leading to a total reduction of 6% annually by 2017 and 10% annually by 2025; (4) saving Vermont families and businesses over \$1.4 billion on their fuel bills over the lifetimes of the improvements and measures installed; (5) increasing weatherization services to low-income Vermonters.

² See V.S.A. Title 30 section 235 (d) 15.

³ See V.S.A. Title 30 section 235 (d) 15.

mandatory building energy labeling, and fluctuating program budgets. The scalable services support:

- o A market-based network of Building Performance Contractors and fuel supplier strategies for delivering comprehensive whole-house retrofits through the Efficiency Excellence Network; and the Home Performance with ENERGY STAR® and Building Performance programs.
 - o Migrating selected efficient HVAC / R incentives up the supply channel to manufacturers, manufacturer representatives, and distributors. This enables Efficiency Vermont to assist customers in securing the maximum benefits of high-performance HVAC / R technologies by using current market structures that bring these technologies to the end user in the most efficient manner.
- **Comprehensive thermal energy retrofits that minimize lost opportunities.** Comprehensive thermal improvements will continue to be prioritized in houses, apartments, and small businesses through the Home Performance with ENERGY STAR, Building Performance, and Vermont Fuel Efficiency Partnership programs. These programs will deliver comprehensive thermal shell and mechanical improvements in support of the Act 92 goal of reducing residential fuel consumption by an average of 25% in households served.
- **Managing long-term comprehensive thermal energy retrofits through ongoing customer engagement.** Our core market rate retrofit programs will be adapted to meet the needs of customers for whom a single, comprehensive retrofit is not a viable option. These constraints might be due to conditions within a particular home or business; and lack of financial or time resources necessary to implement comprehensive investments in efficiency. Efficiency Vermont will build a long-term foundational plan for customers to realize the benefits of a comprehensive efficiency retrofit. Customers and Efficiency Vermont will mutually benefit from addressing customers' needs where and when the best opportunities exist, maximizing the benefits of market opportunities, and creating long-term successes from smaller individual steps.
- **Leveraging opportunities by coordinating services across fuels, geographic regions, and income levels.** Efficiency Vermont has designed its TEPF services in collaboration with services funded by electric efficiency charges (EECs). This coordination promotes consistent messaging to customers, and supports measures benefiting electric efficiency as well as efficiency from unregulated fuels. These can involve conservation savings through changes in customer behavior, solar thermal installed measures, and new and emerging technologies such as heat pumps for space heating and domestic hot water. Each of these technological measures could be implemented through an electricity baseline or a TEPF baseline. Program level coordination among funding sources ensures that ratepayers across the state receive consistent messaging and services for energy efficiency measures, regardless of fuel source or geography. Efficiency Vermont also coordinates TEPF program implementation with other energy

efficiency funders, including Green Mountain Power (Community Energy and Efficiency Development funding), Burlington Electric Department, Weatherization Assistance Program, NeighborWorks of Western Vermont, and Vermont Gas Systems.

Demand Resources Plan Methodology

The TEPF Demand Resources Plan involves services for all heating and process fuels except natural gas. Vermont Gas Systems (VGS) separately provides energy efficiency services for natural gas customers.⁴ Efficiency Vermont coordinates closely with VGS and the Burlington Electric Department (BED) in the design and delivery of services.

The overall method for the 2015 – 2024 TEPF DRP forecast is closely related to that of the 2012 forecast. Due to the budget constraints of the TEPF-funded programs, the model estimates future savings and completed projects on a forecast of savings yields (MMBtu savings / \$1,000 gross spending) and project yields (quantity of completed projects / \$1,000 gross spending). Total estimated savings and completed projects are determined by allocating the budget for each reporting sector and each program. This method allows Efficiency Vermont to arrive at an appropriate mix of services that optimally meet Efficiency Vermont's strategic objectives within the constrained funding of TEPF.

All forecasts for program funding and savings are in compliance with Act 89 requirements;⁵ thermal energy and process fuel savings are directly allocated to thermal energy and process fuels funding sources. There are no EEC or VGS funds allocated to Efficiency Vermont's TEPF savings forecast.

All individual programs roll up into one of five Efficiency Vermont reporting sectors:

- i. Residential Existing Homes
- ii. Residential New Construction
- iii. Efficient Products
- iv. Business Existing Facilities (retrofit and equipment replacement)
- v. Business New Construction

The Residential New Construction sector has historically been supported through EEC funding sources. Although a Residential New Construction project might apply for a residential

⁴ VEIC is aware of VGS's proposal to provide efficiency services outside their current service territory. VEIC understands that a review and approval of those plans will take place in Docket 7676, Investigation into the appointment of an entity to provide natural gas efficiency services.

⁵ An Act Relating to Reducing Energy Costs and Greenhouse Gas Emissions, 2013-2014 Legislative Session. <http://www.leg.state.vt.us/docs/2014/Acts/ACT089sum.htm>.

biomass system incentive,⁶ such occurrences have been relatively rare. Efficiency Vermont does not anticipate a significant increase in these measures. If such measures are submitted for a project, Efficiency Vermont will provide consistent technical advice and financial support to customers, and manage funding sources and savings claims to meet the requirements of Act 89. This DRP forecast retains this historical method for including Residential New Construction.

The Vermont Public Service Department presented the 10-year TEPF budget projection to VEIC on January 10, 2014. The TEPF budget anticipates funding from both RGGI and the FCM. VEIC subtracted funds attributable to Burlington Electric Department's TEPF program from both FCM and RGGI. The FCM budget has been adjusted to nominal dollars, with a 2.0% inflation factor applied for future years. RGGI funding does not contain an inflation factor, presented in 2015 dollars.

VEIC reduced the overall budget by 20%, to account for Non-Resource Acquisition costs, Operation Fees, and Compensation. Note that these final budgets have not yet been approved. Beyond maintaining that 20% set-aside, Efficiency Vermont has made no assumption in the TEPF plan with respect to either the allocation or the total amount of these costs.

The remaining Resource Acquisition budget was split 75% residential, 25% commercial, per the December 20, 2013, Public Service Board Order. Further, 21% of the overall Resource Acquisition budget was forecast to serve low-income households, equating to approximately 28% of the residential sector budget. This is referenced through the Department's information and the Board Order. Note that current low-income spending requirements are 17% of the overall Resource Acquisition budget, whereas the DRP forecast projects 21%. The effect of this adjustment is a projected first-year increase of approximately \$200,000 in low-income spending, with a corresponding decrease in other residential market sectors—primarily the Home Performance with ENERGY STAR program.

Yield rates have been derived from a combination of historical precedent and estimates of future changes, based on market activity to date. Yield rates for the Home Performance with ENERGY STAR and Building Performance programs have been adjusted according to the recent savings adjustment processes.

The Board Order on modeling assumptions required VEIC to forecast the DRP both with and without the benefits of conservation savings through behavioral approaches. These behavioral approaches have been captured within Efficiency Vermont's EEC DRP. The methodology proposed through the Opower Home Energy Scores and the basis for the EEC DRP assumes spillover thermal savings from the broad messaging of conservation. Because these behavioral

⁶ Biomass incentives have been, and will continue to be, provided through TEPF funding, consistent with Act 89.

savings are captured through the electric funding source, VEIC has determined it would not be appropriate to include them in the TEPF DRP.

The TEPF DRP does not show demonstrable effects from the expansion of services by Vermont Gas. Phase 1 and 2 of VGS's expansion to Middlebury and Cornwall are forecast to reach approximately 3,000 accounts, a small portion of the overall TEPF market. Vermont Gas has additional long-term plans to deliver natural gas service, and presumably energy efficiency services, to Rutland County. Although this expansion to Rutland will likely have a more significant impact on TEPF customers, the approval, construction timing, and subsequent impacts on energy efficiency programming are not well enough defined to be considered in this planning process.

VEIC submits this plan with the understanding that future expansion of Vermont Gas service territory will result in a re-evaluation of the plan's assumptions.

The Demand Resources Plan process will also lead to Board-ordered Quantitative Performance Indicators (QPIs) and Minimum Performance Requirements for the period 2015 - 2017. Based on this TEPF Demand Resources Plan, Efficiency Vermont will propose QPIs under separate cover, addressing the following categories:

- Overall MMBtu
- Comprehensiveness
- Customer market segment equity (Residential / Commercial)
- Low-income participation

Ten-Year Thermal Energy and Process Fuels Plan

This TEPF Demand Resources Plan provides descriptions of services and initiatives available to Vermonters and the forecast of three- and ten-year thermal savings from those activities. Efficiency Vermont will create budgets and determine savings goals for specific TEPF initiatives through the annual planning process. This will align the initiative offerings with marketplace changes and available budgets. To that end, specific details of the 2015 thermal energy and process fuels budgets and savings will be presented in the *2015 Efficiency Vermont Annual Plan*. Although future services will be built on the foundation of the existing initiative structure, Efficiency Vermont anticipates adding some smaller-scale, measure-based initiatives to augment the comprehensive programs. This strategy is believed to best meet the needs of Efficiency Vermont customers.

Due to the limits on and variability of TEPF funding relative to the scope of Vermont's efficiency goals, Efficiency Vermont targets funding in three selected market sectors. Efficiency Vermont proposes these sectors because they (1) provide the best options for aligning with EEC-funded programs; (2) realize increased yields in narrow commercial market sectors; and (3) continue to

support historical investments in contractor partnerships and education. (See additional program-specific details on page 11, “Portfolio of Programs by Reporting Sector”). The market sectors and the funding strategies are:

1. **Comprehensive Thermal Shell Retrofits:** Continue to build market demand for the core comprehensive building retrofits available to low-income multifamily and market rate households; small businesses, and mixed-use buildings. The comprehensive retrofits within these market sectors are critical components in meeting the State’s energy goals. Efficiency Vermont continues to improve the delivery infrastructure to expand the initiatives, in the event that future funding develops. These initiatives support the Comprehensive Retrofit Strategy.
 - a. **Low-Income Multifamily Services:** Providing deep energy retrofits in multifamily buildings, in coordination with the Central Vermont Community Action Council’s (CVCAC’s) Vermont Fuel Efficiency Partnership (VFEP), the state’s weatherization and low-income housing providers.
 - b. **Home Performance with ENERGY STAR:** Providing comprehensive retrofits in 1- to 4-unit residential properties through a qualified network of contractors who understand and make energy efficiency improvements based on best practices in building science. These improvements are appropriately sized; they take into consideration safety for the contractor team and the residents; and they are cost effective.
 - c. **Building Performance:** Providing comprehensive retrofits in residential properties with 5 or more units, small businesses, and mixed-use properties through the Home Performance with ENERGY STAR network of qualified contractors.
2. **Mechanical Systems:** Increase the market penetration of energy-efficient mechanical equipment through partnerships and education campaigns with contractors and suppliers. This component also provides certain prescriptive incentives to reduce the consumer barrier of the higher initial costs of efficient equipment.
 - a. **Oil and Propane Heating Systems:** Efficiency Vermont proposes expanding this market opportunity initiative to benefit residential customers. This initiative will provide energy savings benefits to residential and commercial consumers who invest in replacement TEPP heating systems.
 - b. **Biomass Heating Systems:** Continued support of incentives for biomass-fueled boilers in residential and commercial projects. This initiative will provide cost, energy, and carbon savings benefits to residential and commercial consumers who invest in biomass heating systems.
 - c. **Solar Thermal:** This new retrofit measure uses oil and propane space heating and domestic hot water systems as a baseline. It has been developed in conjunction with an EEC-funded measure. The measure will position Efficiency Vermont to support customers who seek the increased comprehensive energy

efficiency benefits available through solar thermal systems. It will also provide consistent messaging to the marketplace, regardless of whether a customer uses electricity, oil, or propane gas for fuel. The solar thermal initiative will coordinate with other funding sources, including the Clean Energy Development Fund, to reduce the significant upfront capital investment barrier to customers.

- d. **Heat Pumps:** This new retrofit measure uses oil and propane heating and domestic hot water systems as baseline. It has been created in conjunction with an EEC-funded measure, providing consistent messaging to the marketplace regardless of electric, oil, or propane gas fuel type. The related EEC measure will be utilized for electric heating baselines and new construction projects. The Heat Pump initiative will be available to both commercial and residential sectors.
3. **Targeted Market Sectors:** Investments in these targeted market sectors support specific commercial customers with very high TEPF energy use. Efficiency Vermont will use TEPF resources on these targeted market sectors because:
- Of a need to support market sectors that are challenged with very low operating reserves for investing in energy-efficient equipment,
 - It is important to support market sectors that have historically been underserved because they use a certain mix of energy sources,
 - The proposed initiatives support installation of very cost-effective measures and provide significant economic benefits to fragile sectors of Vermont's economy
 - The proposed initiatives provide Efficiency Vermont with the capability to closely monitor and balance program implementation capacity with available funding.

Targeted market sectors and Efficiency Vermont's strategies for them are:

- a. **Agriculture:** Continue to provide targeted services benefiting agricultural market sectors where upfront costs of implementation are a disproportionately large barrier to participation in energy efficiency opportunities:
 - i. Dairy farm heat recovery units (HRUs): Dairy farms tend to have very high hot water use. An HRU takes the waste heat from the bulk milk tank compressor and transfers it to a tank of water, which is then used to pre-heat the hot water heater (typically fueled by fuel oil, propane, and / or electricity). An efficient HRU can cut water heating costs by 50%.
 - ii. Maple sugaring Reverse Osmosis (RO) systems: An RO is typically designed to remove up to 75% of the water from the sap, dramatically reducing evaporator use (typically fueled by fuel oil or cord wood), and therefore cutting energy costs by 50-75%.
- b. **Commercial Kitchens:** Commercial kitchens have the highest energy use per square foot of any commercial use. This initiative assists commercial

kitchens realize benefits of energy savings available from ENERGY STAR commercial kitchen equipment, including fryers, oven griddles and steamers.

- c. **Custom Commercial Projects:** Although funding limits constrain the introduction of major new strategies and services for this sector, Efficiency Vermont is considering augmenting its services by supplementing existing electrical efficiency Custom services with a small number of specific custom measures. Planned funding for TEPF will not enable Custom commercial projects to become a standard offering. In addition, the associated challenges of consistently providing and messaging thermal services to what would be a limited quantity of commercial customers is also a constraint.

Significant Differences between 2014 TEPF Implementation and the 2015 - 2024 Demand Resources Plan

There are two significant differences between how Efficiency Vermont is currently implementing programs funded through TEPF, and the DRP forecast. These differences relate to the modeling assumptions ordered by the Board on December 20, 2013, as well as the implementation of Act 89.

1. For 2015, Efficiency Vermont has projected an approximate 35% reduction in Home Performance with ENERGY STAR (HPwES) completed projects compared to 2014 planned project completion rates. Efficiency Vermont has made every attempt to maximize HPwES production in this scenario, while maintaining limited program visibility in other critical residential market sectors—in measures such as mechanical systems. Note that even if the residential Mechanical Systems Initiatives were completely de-funded, the overall effect on HPwES program production would be negligible. Significant factors affecting this are:
 - a. Ramifications of Act 89 (costs reallocated from EEC to TEPF budget)
 - b. Low-income modeling assumption at 21% of Resource Acquisition, rather than the historical 17% requirement
 - c. Modeling 75% of Resource Acquisition to residential, as compared to 2012-2013 spending of approximately 87.5%)
2. The DRP forecast projects an increase in overall MMBtu savings. This difference reflects the increased allocation of 25% of the implementation budget to commercial programs with their higher yield rates, and is a result of reducing the residential and HPwES budgets.

Portfolio of Programs by Reporting Sector

The following sections summarize each major initiative within the TEPF Resource Acquisition budget:

1. Residential Existing Homes

a. **Home Performance with ENERGY STAR** (comprehensive retrofit for 1-4 residential units): The HPwES program has two major components:

- i. **Contractor partnerships:** Efficiency Vermont has trained and certified more than 70 insulation and mechanical contractors to Building Performance Institute standards. This market-based system of ongoing contractor training and support is the primary source of residential audits and energy efficiency project implementation.
- ii. **Homeowner outreach and support:** Through statewide marketing and outreach campaigns, Efficiency Vermont informs Vermont homeowners about the benefits of professional audits by BPI-certified contractors, the benefits of comprehensive energy efficiency projects, and available incentives and financing options.

High-level objectives for the HPwES (and Building Performance) program in 2015-2017 are:

- i. **Improve energy performance and durability** of Vermont's residential housing, and ensure a healthy and safe environment for household occupants
- ii. **Increase awareness of, and demand for, building performance contracting** to meet State energy goals
- iii. **Strengthen the infrastructure of trained and certified contractors** to deliver high-quality building performance services

Efficiency Vermont expects to make adjustment to the HPwES (and Building Performance) program in the coming performance period, in response to changes within the marketplace and in support of the State's building energy goals. Adjustments that have been factored into program yield rates are:

- i. An increase in incentives for smaller, but effective projects that emphasize air sealing and insulation. This approach reflects an emphasis on realizing comprehensiveness in a home over time, particularly for moderate-income households
- ii. Incorporating new measures such as heat pumps and solar thermal systems into program offerings

- iii. Expansion of the Efficiency Vermont Customer Support role as “HPwES Energy Advisors,” to help customers’ complete projects and develop long-term plans to achieve comprehensive energy efficiency improvements.
 - iv. Use of advanced program management software that allows both contractors and customers to track and streamline their projects
- b. **Building Performance (BP)** (comprehensive retrofit for 5+ unit apartment buildings): The BP multifamily initiative operates in tandem with the HPwES program, delivering similar benefits to property owners and residents of 5+ unit multifamily properties. The program uses the same BPI-certified contractors, program management software, and savings estimating software, enabling the program to be consistently available to residential buildings, regardless of apartment configuration. Efficiency Vermont has created a modest budget and savings allocation for the Building Performance multifamily initiative, to reflect the relatively small market demand in this sector. (The majority of 5+ unit properties are owned by nonprofit affordable housing entities, seeking the increased incentive and installation benefits offered through the State’s Weatherization Assistance Program and Vermont Fuel Efficiency Partnership; see c., **Low-Income Services**.) See also a. **Home Performance with ENERGY STAR**.
- c. **Low-Income Services** (comprehensive retrofit to apartments, in partnership with the Weatherization Assistance Program and the Vermont Fuel Efficiency Partnership): Vermont’s WAP provides comprehensive thermal energy retrofit services to low-income homeowners and renters. Efficiency Vermont plans to continue supplementing WAP funding for rental properties that house low-income people. This initiative provides the technical and financial support of the deeper level of energy retrofit sought by Vermont’s nonprofit affordable housing providers to achieve long-term housing affordability for low-income Vermonters.

The funding is an increase over that available through WAP. In addition to offering deeper measures, it also uses VFEP to support project management for complicated multi-unit properties. VFEP overcomes challenges faced by tenants and property owners who must confront “split incentives”—situations in which property owners who fund energy efficiency investments do not benefit from long-term energy efficiency savings, because building units are separately metered. That is, the tenants benefit from the savings, when the investment is the burden of property owners.

The Vermont Fuel Efficiency Partnership is an initiative coordinated by the Central Vermont Community Action Council (CVCAC), the state’s Weatherization Assistance Program, the Office of Economic Opportunity, and nonprofit affordable housing providers. The initiative’s high-level objectives:

- i. Deep, energy-only retrofits of affordable multifamily housing,
- ii. Improving the long-term affordability and viability of low-income housing

- d. **Mechanical Systems:** Efficiency Vermont will increase the number of energy-efficient mechanical systems installed in Vermont through the Mechanical Systems initiative. The initiative will take advantage of market opportunity projects when customers are installing new heating or domestic hot water heating systems.

Efficiency Vermont will use two primary strategies:

- i. Target upstream channels: Building from the success of the heating system circulator pump program, Efficiency Vermont will reach out to suppliers and contractors with an information campaign and incentives delivered at the point of purchase, to support increased market penetration.
- ii. Customer education: Efficiency Vermont will build demand for high-efficiency equipment through marketing campaigns directed at customers to build awareness of efficient equipment options, availability, and associated energy savings.

Mechanical system types that will be supported through the initiative are:

- i. **Biomass, oil, and propane gas boilers and furnaces.** This measure will encourage the installation of high-efficiency, TEPF systems.
- ii. **Space heating and domestic hot water heat pumps.** This measure will transition TEPF-based systems to high-efficiency air source heat pump technology. Note that this is a companion measure to the EEC-proposed measure, which uses electricity as a baseline. This measure will use existing oil and propane gas-fired systems as a baseline when either one of those fuel types is being reduced. Including the measure in both the EEC and TEPF DRPs allows Efficiency Vermont to promote the measure consistently to the marketplace, regardless of fuel type.
- iii. **Solar thermal systems.** This measure will support “packaged” solar thermal systems and reduce oil and propane gas use associated with space heating and domestic hot water systems. The measure will position Efficiency Vermont to support our customers who seek the increased comprehensive energy efficiency benefits available through solar thermal systems. The solar thermal initiative will coordinate with other funding sources, including the Clean Energy Development Fund, to reduce the significant barrier of insufficient upfront capital.

Note that this is a companion measure to an EEC proposed measure that uses electricity as a baseline. This measure will use oil and propane gas-fired space heating and domestic hot water systems as a baseline, when that fuel type is being reduced. Including the measure in both the EEC and TEPF DRPs allow Efficiency Vermont to promote the measure consistently to the marketplace, regardless of fuel type.

2. Business Existing Buildings

- a. **Building Performance (BP)** (comprehensive retrofit for small businesses and mixed-use buildings): The BP commercial initiative operates in tandem with the HPwES program, delivering similar benefits to property owners and residents of commercial and mixed-use properties. The program uses the same BPI-certified contractors, program management software, and savings estimating software, enabling the program to be consistently available to buildings that thermally perform like a house, regardless of their use. In addition to the program-wide objectives and adjustments highlighted in the HPwES section, BP for commercial buildings has the following objectives for 2015-2017:
 - i. Reduce energy use in the state's small commercial, and mixed-use buildings
 - ii. Leverage the technical knowledge and methods of Vermont's BPI-certified contractors and Efficiency Vermont program systems to streamline energy efficiency retrofits in applicable buildings, and provide consistent messaging to the marketplace,
 - iii. Strengthen Efficiency Vermont customer support activities to complete projects by providing financing options to increase program enrollment and completions
- b. **Commercial Kitchens** (efficient kitchen equipment): Commercial kitchens have a higher energy use per square foot than almost every other commercial business. As a market sector, Commercial Kitchens has not significantly benefited from the historical electrical offerings of Efficiency Vermont, since the majority energy use is non-electrical. The TEPF Commercial Kitchen initiative will provide prescriptive incentives encouraging the purchase of energy-efficient kitchen equipment, including ENERGY STAR-qualified fryers, griddles, convection ovens, and steam cookers. This equipment is typically used in restaurants, schools, state facilities with kitchen, and group- and assisted-living facilities.
- c. **Agriculture**
 - i. **Dairy farm heat recovery units:** This initiative continues to serve dairy farms in ways that resonate most with their energy needs; the HRU is the epitome of energy efficiency on a dairy farm, where waste compressor heat from milk cooling is used to heat water for washing.

Note that this is a companion measure to an EEC measure that uses electricity as a baseline. This measure will use oil and propane gas-fired domestic water systems as a baseline, when either one of those fuel types is being reduced. Including the measure in both the EEC and TEPF DRPs allows Efficiency Vermont to promote the measure consistently to the marketplace, regardless of fuel type.

- ii. **Maple sugaring RO systems:** The maple sugar industry has historically been underserved by Efficiency Vermont, because the majority of their energy use tends to be TEPF, using fuel oil or cord wood-fired evaporators to remove water from maple sap. The initiative will provide outreach and information about reverse osmosis technology, and incentives to reduce upfront cost barriers faced by this fragile industry.
- d. **Mechanical Systems:** Efficiency Vermont will increase the number of energy efficient mechanical systems installed through the Mechanical Systems initiative. The initiative will take advantage of market opportunity projects when customers are installing new heating or domestic hot water heating systems.

Efficiency Vermont will use two primary strategies:

- i. **Target upstream channels:** Building from the success of the heating system circulator pump program, Efficiency Vermont will reach out to suppliers and contractors with an information campaign and with incentives delivered at point of purchase to support increased market penetration.
- ii. **Customer education:** Efficiency Vermont will build demand for high-efficiency equipment through marketing campaigns directed at customers, to build awareness of efficient-equipment options, availability, and associated energy savings.

System types:

- i. **Biomass, oil, and propane gas boilers and furnaces.** This measure will encourage the installation of high-efficiency TEPF systems.
- ii. **Space heating and domestic hot water heat pumps.** This measure will transition TEPF-based systems to high-efficiency air source heat pump technology. Note that this is a companion measure to an EEC proposed measure that uses electricity as a baseline. This measure will use existing oil and propane gas-fired systems as a baseline when either of those fuel types is being reduced. Including the measure in both the EEC and TEPF DRPs allows Efficiency Vermont to promote the measure consistently to the marketplace, regardless of fuel type.
- iii. **Solar thermal systems.** This measure will support “packaged” solar thermal systems and reduce oil and propane gas use associated with space heating and domestic hot water systems. The measure will position Efficiency Vermont to support customers who seek the increased comprehensive energy efficiency benefits available through solar thermal systems. The solar thermal initiative will coordinate with other funding sources, including the Clean Energy Development Fund, to reduce the significant barrier of insufficient upfront capital.

Note that this is a companion measure to an EEC proposed measure which uses electricity as a baseline. This measure will use oil and propane gas-fired space heating and domestic hot water systems as a baseline when either fuel type is being reduced. Including the measure in both the EEC and TEPF DRPs allows Efficiency Vermont to promote the measure consistently to the marketplace, regardless of fuel type.

- e. **Custom Commercial Projects:** Although funding limits constrain the introduction of major new strategies and services, Efficiency Vermont might augment existing services by supplementing existing electrical efficiency custom services with a small number of specific custom measures. Efficiency Vermont does not expect that custom commercial projects will be a standard offering, because of the limited TEPF budget and the associated challenges of consistently providing and messaging thermal services to commercial customers.

3. Business New Construction

- a. **Mechanical Systems** (new biomass, oil, and propane gas boilers and furnaces): The Retrofit Mechanical Systems initiative will also serve Business New Construction projects. The initiative will work in tandem with Efficiency Vermont's EEC-funded New Construction initiative to promote energy-efficient mechanical systems and reduce the higher cost of installation to encourage project design teams to involve efficient systems in project planning.