

2016



**FISCAL YEAR 2016 ANNUAL
PROGRAM PLAN &
ALLOCATIONS**

FOR THE YEAR JULY 1, 2015 TO JUNE 30, 2016

EXECUTIVE SUMMARY

The fiscal year (FY) 2016 plan and budget is largely a continuation of the FY 2015 plan and budget. In the FY 2015 plan over \$5.8 million was allocated to eight different programs and those programs are all continuing into FY 2016. The Clean Energy Development Fund (CEDF) did not receive any new funding for FY 2016 and therefore the only revenue to budget is the estimated loan repayments and interest earned on CEDF's balance of funds. In addition to the incoming revenue there is approximately \$750,000 of unencumbered funds that will be carried forward from FY 2015 into FY 2016.

The CEDF will continue to focus on advanced wood heating as a priority. Last year the Fund established the programs and parameters for this sector and anticipates that in FY 2016 it will start to see progress in the quality and quantity of advanced wood heating systems installed as well as in the maturity of the entire advanced wood heating economic sector in Vermont.

PURPOSE OF THE ANNUAL PROGRAM PLAN and BUDGET

The purpose of the Annual Program Plan is to identify the initiatives and programs that the CEDF will pursue during the fiscal year and to establish an annual budget for the expenditure and program allocation of CEDF funds.

The Annual Program Plan and associated budget represent the CEDF's efforts to use the funds available to meet the legislated purpose of the CEDF as well as the goals and strategic approach adopted in CEDF's 2012 Strategic Plan.

MANAGEMENT & GOVERNANCE

In accordance with 30 V.S.A. § 8015, the CEDF is administered by the Department of Public Service (PSD). A Fund Manager hired by the PSD, with assistance from other PSD staff, manages the day-to-day operations of the Fund.

The Clean Energy Development Board (Board) reviews and approves the CEDF Annual Program Plan, budget and program designs. As designed in 30 V.S.A § 8015, the Board consists of seven persons, three appointed by the Commissioner of the Public Service Department and two each by the Chairs of the Senate and House Committees on Natural Resources and Energy.

Clean Energy Development Fund Board

The current Board members, the appointing authority who appointed them, and the year each member's term expires are:

- Gaye Symington, Chair (*House Energy Committee Chair, 2015*)
- Sam Swanson, Vice Chair (*Senate Energy Committee Chair, 2015*)
- Jo Bradley (*PSD Commissioner, 2015*)
- Jennifer Hollar (*PSD Commissioner, 2015*)

- Linda McGinnis (*PSD Commissioner, 2017*)
- Johanna Miller (*House Energy Committee Chair, 2017*)
- Mark Whitworth (*Senate Energy Committee Chair, 2017*)

CEDF GOALS AND OBJECTIVES

To guide the CEDF a five year strategic plan was developed in 2012 (published in January, 2013). That Plan was built to advance the founding purpose of the CEDF to promote the development and installation of cost-effective and environmentally sustainable electric power and thermal energy resources for the long-term benefit of Vermont consumers, primarily with respect to renewable energy (RE) resources.¹

The CEDF reviewed the strategic plan in preparing this FY 2016 plan and determined that the goals and strategies established in 2012 should continue to provide guidance for the Fund's annual activities and expenditures.

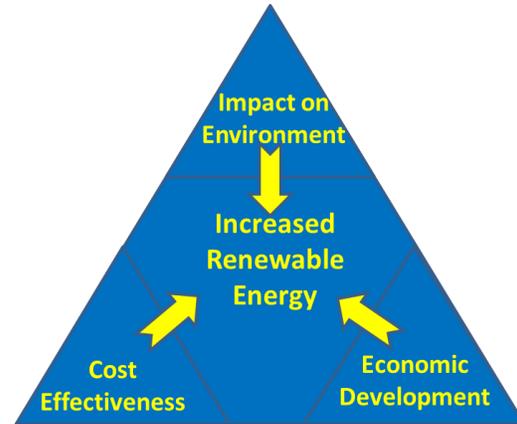


Figure 1.

Vision

CEDF's vision is to serve the citizens of Vermont by increasing local small-scale renewable energy generation while maximizing associated economic development. The Fund coordinates with other state programs and private entities to integrate and advance renewable energy across all sectors of the State's energy economy.

Goal and Objectives

Supporting the vision is a primary goal of **increased renewable energy generation** in Vermont (thermal and electrical). Supporting the primary goal are three objectives (Figure 1):

1. Increase the economic development of the renewable energy sector
2. Increase cost effectiveness of renewable energy
3. Decrease the environmental impacts of Vermont's energy use

Strategies

In pursuit of the primary goal and the three objectives the CEDF will focus on nine strategies:

- 1) Focus on select renewable energy technologies where funds can have the greatest impact in reaching the CEDF goals
- 2) Identify deployment barriers preventing increased renewable energy generation and coordinate with industry, state agencies, and private organizations to develop solutions that overcome those barriers in order to strengthen and build the markets for select distributed RE technologies
- 3) Build connections between renewable energy and energy efficiency
- 4) Increase jobs and revenue in the Vermont clean energy industry sector

¹ 30 V.S.A. § 8015 (c)

- 5) Educate and support clean energy developers and businesses in obtaining other incentives and financing
- 6) Support and strengthen clean energy finance and investment-related activities
- 7) Increase the leverage of CEDF funds while helping to drive the costs of renewable energy down
- 8) Focus support on the CEDF programs that maximize the reduction of Vermont's energy related carbon emissions, and other environmental impacts
- 9) Continually evaluate programs, activities, and outcomes in order to adjust programs as necessary to meet goals

PLANNING FRAMEWORK

While this annual plan focuses on the programs and spending of one year, the planning decisions are based on a framework that includes the assumption that the CEDF will receive additional funding of at least \$2 million annually. Even though there is not currently any secured on-going funding source for the CEDF, the Fund has chosen to plan its work as if there will be successive years of fully funded programs that evolve strategically.

Assuming multiple years of programmatic activity the CEDF will continue to use the planning framework of knowledge, practice, and results (KPR). The KPR framework provides a multi-year guide to make the best use of public resources in accomplishing CEDF's goals.

First, advancing the field of clean energy in the state requires knowledge about what is taking place in the renewable energy market. The CEDF will seek to obtain and maintain market knowledge in key renewable energy sectors. Secondly, this knowledge will be used to inform the strategic decisions that create programs, or CEDF's practice. Understanding how CEDF funds stimulate beneficial changes in the market place will provide results that will be evaluated. The evaluation results will provide additional data/knowledge that will be used for changes to the Fund's practice. These three (KPR) components form a cycle of continuous improvement that can be applied within the targeted clean energy sectors as well as holistically across Vermont's entire clean energy economy. The CEDF will use the KPR template as the framework to guide program development and strategic allocation of funds. When constructed annually, the KPR template will comprise the framework for the CEDF's annual work plan as well as provide the opportunity to update the Funds five year strategic plan.

During fiscal year 2015 the CEDF hired a firm specializing in clean energy program evaluation to evaluate the CEDF's programs and administration since the Fund was created through 2014. The evaluation report provided useful results that aided in the creation of this plan and how to improve the administration of the Fund. For example, the evaluation highlighted the need for better data management of CEDF award metrics.

Each annual plan can then be linked over time to compose a multi-year approach intended to follow the five year strategic plan in order meet the CEDF's goals.

OVERVIEW OF PLAN & BUDGET

Historically, the CEDF has focused on a set of core tools including rebates offered through the Small Scale Renewable Energy Incentive Program (SSREIP), competitive solicitations to award grants, and targeted loans. After the strategic planning process in 2012 the Fund transitioned away from loans and instead initiated efforts to provide credit enhancements for financial products offered by the private market for renewable energy projects.

Over the last two years the Fund has continued to use the SSREIP as its primary program to affect change. The CEDF reduced the use of broad-based competitive grants for installations in favor of working to overcome identified barriers that stymie growth for targeted technologies. For FY 2016 the CEDF will continue to follow the key strategies of its 2012 Strategic Plan and continue the programs identified, funded, and started in FY 2015.

The CEDF will continue to focus on a narrow scope of renewable energy technologies in order to have the greatest impact. With the funding available the CEDF cannot effectively promote all forms of renewable energy. The CEDF continues to believe that it best serves its mission and the people of Vermont by focusing its efforts on a strategic sector of the renewable energy economy, while monitoring and keeping a pace with other renewable energy technologies and clean energy clusters.

In 2015 the CEDF decided to focus on advanced wood heating, and in particular the bulk wood pellet heating market and supply chain throughout Vermont. Using the KPR process the CEDF reaffirmed that it can have the greatest impact on its goals by focusing on the advanced wood heating sector, but that it must continue to ensure that the wood heating systems are truly advanced in their emissions, efficiency, and use of locally and sustainably harvested wood.

The CEDF believes that the dollar for dollar investment of funds in the wood heating sector provide the biggest advancement towards the CEDF and state clean energy goals. Benefits of advanced wood heating include:

- Local fuel procurement
- Support of the local forest product industry
- Support for the maintenance and creation of a working landscape
- Creation of jobs for the installation and service of heating systems
- Building upon the Vermont wood heating manufacturing base and strong biomass heating history

In FY 2016 the CEDF will be working with the Department of Environmental Conservation's Air Quality and Climate Division and the Department of Forest, Parks and Recreation on incorporating a wood stove change-out component into the CEDF's small-scale renewable energy incentive program. This effort will provide an incentive for Vermonter's to get rid of older polluting wood stoves and install new cleaner burning wood and pellet stoves.

In addition to the wood heating programs the CEDF will continue to support other existing program areas, including food and farm-based anaerobic digesters and solar thermal technologies.

CEDF's largest program was established in fiscal year 2015 with the allocation of \$2.6 million for renewable energy programs in Windham County (representing 50% of the funds CEDF received from Energy Vermont Yankee at the end of FY 2014). In FY 2016 the CEDF will continue the programs started in FY 2015 and will take the same strategic approach to the Windham County funds as it with the state-wide funds with the addition of considering Windham County's regional economic and development plans, interests, and local input.

DESCRIPTION OF ADMINISTRATION

Administration of the Fund will continue largely unchanged from past years. The Fund Manager hired by the PSD will be responsible for the day to day operation of the Fund, creation of reports, plans, and budgets, interactions with the Clean Energy Development Board, as well as clean energy related tasks as required by the management of the PSD. PSD staff will continue to support the administration of the CEDF as needed and as according to PSD staff availability.

The 2015 evaluation of the CEDF programs identified a need for better data management in order for the Fund to more accurately and timely track programmatic and specific grantees' progress (or lack thereof) towards the Fund's goals. For this reason, the CEDF will prioritize the creation of a new CEDF database that will maintain and track all CEDF grant and contract information and performance metrics.

DESCRIPTION OF PROGRAMS

The programs, and program changes, described below provide details on the Fund's plan and provide a narrative for the budgeted line items (See Appendix A).

Windham County Programs

At least fifty percent of the funds the CEDF received from Entergy Vermont Yankee in April 2014 must be spent in, or for the benefit of Windham County. This is an important opportunity for Windham County to address the local effects of the closure of the Vermont Yankee power plant as well as the county's energy economy. The CEDF's guiding principle for the Windham funds is the same as for all CEDF resources: how can the CEDF make the most progress towards the CEDF goals while creating a catalyst that spurs continued economic and technological growth after the CEDF funds have been expended?

Similar to the CEDF's overall strategic focus on local biomass heating CEDF determined that the greatest lasting benefit to the County would be achieved through a strategic, high profile focus on wood heating. In FY 2015 the CEDF awarded a \$1.6 million grant to a Windham County team lead by the Sustainable Energy Outreach Network (SEON). This grant is focused on

building the wood heating market, with specific focus on building demand amongst Windham County's municipalities and public schools.

In FY 2016 the Fund will continue to work with SEON and their "Windham Wood Heat" program to maximize the positive impact of that grant.

In addition to the biomass heating grant the CEDF will continue the existing solar financing program started in FY 15 for Windham County residential customers. As the state-wide PV rebate drew to a close at the end of 2014 the financial products available to home-owners that want to install solar systems became critical to the growth of the Windham County solar sector. The CEDF has signed a \$300,000 grant agreement with VSECU – which has a branch in Brattleboro - to offer solar loans with a reduced interest rate (based on income, with lower income borrowers receiving a greater interest rate buy-down) to Windham County residence that will make "going solar" an easier option and that will help to build capacity and depth of the Windham County solar market.

Also as a continuation of the FY 2015 plan, the CEDF will issue a solicitation for anaerobic digestion projects located in the county during FY 2016. The CEDF sees potential in supporting new projects in Windham County's anaerobic digester sector. Like the rest of the state, Windham County is working to divert organic waste away from landfills. The CEDF will use \$300,000 to support anaerobic digestion on farms and/or food waste only digesters in the county.

In addition to specific programs listed above, the CEDF still has reserve \$400,000 from FY 2015 of the Windham County funds to be deployed by a Windham County stakeholder group in a way that the funds can be invested in the best way to provide the highest energy and economic development benefits to the citizens of Windham County while meeting the goals of the CEDF.

Small Scale Renewable Energy Incentive (SSREI) Program

The SSREI Program will continue with an allocation of \$500,000 in FY 2016. The program has been a proven mechanism to grow the residential, small commercial and municipal markets for mature small-scale renewable energy technologies in a widely distributed and accessible manner. The program's advantages are that it is market based, cost effective, highly leveraged, simple, and access to the funds is open and transparent.

At the end of 2014 the program ended incentives for solar PV to provide incentives for technologies with less mature Vermont markets, but that have a high level of potential. The program will continue to provide incentives for wood pellet heating systems for all of FY 2016, and for solar hot water systems through the end of December 2015. In addition, in FY 2016 the program will complete a pilot program investigation into solar air heating that was approved in the FY 2015 plan and budget.

The Vermont Small-Scale Renewable Energy Incentive Program will continue to be administrated under a contract with the Renewable Energy Resource Center (www.nerc-vt.org).

Credit Enhancements

When the SSREIP discontinued incentives for solar PV during FY 2015 the CEDF decided it should work to improve the development of the financial products for PV installations. The CEDF sees a benefit in working with financial institutions to offer financing to customers that want to have solar PV power, but don't have the up-front capital necessary. In FY 2016 the CEDF will continue the interest rate buy-down programs started in FY 2015. Community, residential, and commercial PV installations will all have access to credit enhancement programs in FY 2016.

The residential program will be focused on supporting loans to customers buying into group (*also called "community"*) net metered systems. This program is supported by a DOE Sun-Shot grant with a goal of reducing the soft costs of PV systems. Residential and commercial customers in Windham County will have access to an interest rate buy-down program as part of the Windham County special funds.

Commercial PV installations will be eligible for support through a program the CEDF is developing with the Vermont Economic Development Authority that will provide long-term fixed interest rates. This program will be funded with ARRA dollars and is further explained below in that section.

Biomass Heat - Bulk Pellet Market

The sustainable management, harvest, transportation, and refining of wood into fuel creates jobs and economic activity that is largely local. Switching from fossil fuel to wood heating provides great savings. The dramatic cut in heating costs leaves, on average, \$1,500 per year in the pockets of home owners and businesses that change over to wood heating.

Advanced wood heating will continue to be a focus of the CEDF. Advanced wood heating denotes wood heating that: 1) utilizes highly efficient combustion technology, 2) produces low levels of emissions, 3) supports healthy forest ecosystems, and 4) consumes local wood. For the CEDF to meet its goals it is imperative that all four of these conditions of modern wood heating are built into program designs.

What is considered "highly efficient", a "low level of emissions", a "healthy forest ecosystem" and/or "local wood" will evolve with technology improvements and the CEDF's program requirements will be adaptive in order that its programs are always leading the wood energy market to improve its performance.

The CEDF has set minimum requirements for advanced wood heating systems to receive support from the CEDF. For chip systems the efficiency of the system should be no less than 80% and limit particulate emissions to no more than a 0.2 lb/MMBtu output. The requirements

are restrictive for the residential pellet boilers. To be eligible for an incentive pellet boilers need to demonstrate compliance with the 85% efficiency and particulates of 0.08lbs/MMBtu for PM 2.5.

The CEDF believes that wood heating can have a positive carbon emission impact through sustainable forest management practices that ensure long-term forest health, biodiversity, and carbon storage. To help ensure this is the case, the CEDF will emphasize the use of local wood, for example wood primarily coming from a fifty mile radius woodshed from where it is consumed. Using local wood also makes it possible for the State to sufficiently monitor and manage the forest resource used for wood heat. The CEDF is committed to working with the Vermont Department of Forest and Parks, and other stakeholders, to promote sustainable harvesting guidelines for forest management.

Advanced wood heating has a foot-hold from which the CEDF plans to build and leverage further progress. In FY 2016 the CEDF will issue an RFP to support the bulk pellet delivery market and will continue to provide competitive grants for school and low-income housing organizations to install wood heating systems to build market demand for bulk delivered wood pellets.

Farm Energy Program:

The Farm Energy Program will leverage parallel efforts by collaborating with others. The primary partner will be the Agency of Agriculture, Food and Markets. The CEDF will also continue to collaborate with the Agency of Natural Resources and Green Mountain Power's Cow Power program, along with others.

The Farm Energy Program for FY 2016 will focus on strengthening the current fleet of agricultural digesters with an emphasis on driving down costs of operating the digesters, increasing the use of high-energy off-farm substrates, and in supporting the installation of smaller systems in order to make the technology increasingly feasible for smaller farms.

The program will build off the two food-waste digester pilot projects started in FY '15 farm energy program. The CEDF believes such systems could have great potential to divert food waste organics from landfills (as required by Act 148) into renewable energy co-generation plants while also helping the profitability of farms.

Clean Energy Knowledge Building:

With the Fund's focus on advanced wood heating there is a need for baseline data from which we can measure progress and use in our program evaluations. In addition, the fund has a need for detailed market data to help inform program design and market health. In FY 2016 the CEDF will issue a solicitation to hire a contractor to help with both the baseline data and developing more detailed knowledge for the CEDF of the Vermont wood heating market.

The CEDF will also investigate the potential to develop, together with industry stakeholders, a roadmap strategy for advanced wood heating expansion in VT.

The Fund will also look to contracting with a consultant to look at the issues and costs associated with installing solar PV on the roofs and parking canopies. The siting of solar in open fields that are highly visible as caused some concerns and questions as to why solar PV is not installed on roofs. The CEDF will seek an analysis of the issues that would help the CEDF and/or the state through other programs understand the issues involved and to discover any solutions that would support more PV to be built on roofs and parking canopies.

Program Evaluation

The CEDF will sustain its commitment to program evaluation. The CEDF has regularly tracked and reported how CEDF's resources have been used and what have been the resulting accomplishments, including the number and types of projects that have been funded, the renewable energy capacity that has been constructed, and the environmental benefits these projects would provide.

However, while these reports effectively track progress made toward increasing the installation of new renewable energy capacity in Vermont, they did not provide information on the: administrative efficiencies, impact as compared to other programs, or ways the CEDF could make improvements. In FY 2015 the CEDF hired a contractor to conduct a more comprehensive assessment of program and administrative effectiveness. One of the recommendations from that evaluation was for the CEDF to have better data control and management of the program metrics. Better information will allow the CEDF to have the continuous learning cycle consisting of planning, action and reflection based on data gleaned from funded activities that will enable the CEDF to improve program performance.

Accordingly, the CEDF will dedicate staff and other program resources to improve the data collection and management in order for the Fund and outsiders to better measure progress toward the CEDF goal and objectives. A continued prioritization of evaluation will help the CEDF to identify barriers facing the programs. Based on the data collected the CEDF staff will recommend action to overcome barriers, to address problems and to improve overall CEDF program performance. The successful conduct of this monitoring and evaluation should produce benefits in program productivity that far exceeds the costs. These monitoring and evaluation efforts will assess the:

1. Contribution the CEDF programs are making to increasing the amount of renewable energy in Vermont
2. Progress being made toward CEDF objectives
3. Effective use of the CEDF program investments
4. On-going performance of funded projects

Vermont Renewable Energy Industry Survey:

The Fund will continue to conduct its annual Vermont Renewable Energy Industry Survey. The 2016 survey will be the third year of this effort to research, analyze, and document the size, scope, and impact of the clean energy industry in Vermont. The CEDF will continue to work collaboratively with the Agency of Commerce and Community Development, the Department of Labor and make use of Castleton State College's Polling Institute for this program. The survey data and analysis will provide specific market information that can be used to gauge the effectiveness of state clean energy policies and incentives designed for growing this sector of the economy.

American Recovery and Reinvestment Act (ARRA) Revolving Loan Funds

The CEDF created a \$3.8 million revolving loan fund with ARRA funds in 2010. In 2012 the Fund decided to end the loan program and re-deploy the loan funds to other CEDF programs as they were paid back. The CEDF continues to believe the greatest benefit of these ARRA funds would be to leverage other financial products being offered and not through direct loans. Approximately \$1.6 million of the ARRA funds loaned out have been repaid and are available to the CEDF in FY 2016.

Instead of providing direct loans the CEDF will use the returned ARRA loan funds for a credit enhancement program that the Fund started in FY 2015 to develop a program with the Vermont Economic Development Authority. The program will provide the best leverage of other funds to support the development of the renewable energy finance market in Vermont. The program will provide credit enhancement for commercial loans to construct commercial solar and advanced wood heating systems.

The CEDF will also continue its support of the Heat Saver loan program. In FY 2015 the CEDF allocated \$240,000 towards this program that provides an interest rate buy-down for residential energy efficiency, solar hot water, and wood heating projects. This program started to make loans in FY '15 and will continue into FY 2016. For 2016 the CEDF will allocate an additional \$400,000 of the ARRA revolving loan funds for this interest rate buy-down program.

New Programs:**District Heating With Wood:**

This will be the only completely new program for the CEDF in FY 2016 as the fund continues and completes programs started in FY 2014 and 2015. The Fund will reserve \$100,000 for grants to support large advanced wood fueled districting heating projects such as a building a new community/downtown district heating system or converting an existing college or institutional campus' fossil fuel district heating system to one fueled with wood chips or pellets.

ACTIVITIES AS PART OF THE PUBLIC SERVICE DEPARTMENT

The CEDF will continue its collaborative work with other state agencies and entities in all programs. The CEDF will build upon its current role as a virtual clearinghouse in state government where many turn for information about renewable energy policies and funding options. By doing so, the CEDF strengthens relationships to help generate broader economic development outcomes such as job growth, increased revenue and clean energy cluster advancement to benefit Vermont.

Budget for Fiscal Year 2016:

The budget in appendix A shows the anticipated revenue and expenses of the Fund for FY 2016. The fiscal year 2016 budgeted expenses include new allocations, allocations remaining from FY 2015, or both – in the case of the SSREIP.

Appendix A	
Vermont Clean Energy Development Fund	
Fiscal Year (FY) 2016 Budget Allocations	
CEDF Fund Balance on June 30, 2015	\$ 6,251,912
CEDF FY 2016 Revenue	\$
CEDF Loan Repayments (P&I)	145,000
Other Revenue	7,500
SunShot Grant	126,000
TOTAL FY '16 Revenue & Available Cash	6,530,412
CEDF Program Allocations & Expenses	
Programs	FY '16 Budgeted Amounts
Windham County Programs	2,660,273
Clean Heat Community Challenge	540,000
Farm Energy Initiative - Digesters	244,430
Advanced Wood Heat - Bulk Pellet Market	600,000
Clean Energy Market Knowledge Building	125,000
Community Solar Credit Enhancements - SunShot	125,000
Solar Permitting Training	14,000
Competitive Community Solar Grants	157,750
RE Industry Survey	71,075
Program Evaluation	50,010
Power Storage Project	5,000
Community Solar Contract Template	10,459
Burlington City Solar Permitting - SunShot	26,000
District Heating Initiatives	119,000
Small-Scale Incentive Program	1,170,282
Loan Administration Fees	22,500
New Programs	434,633
CEDF Management/Administration	155,000
TOTALS	6,530,412
ARRA Loan Fund	
Fund Balance on June 30, 2015	1,438,805
Anticipated Revenue	
Loan Repayments (P&I)	150,000
Interest on Cash Balance	1,000
TOTAL ARRA Funds	1,589,805
ARRA FUND ALLOCATIONS	
Solar and AWH Interest Rate Loss Fund	1,000,000
Residential Credit Enhancement -Heat Saver	567,305
ARRA Loan Administration Fees	22,500
TOTAL ARRA \$ ALLOCATIONS	1,589,805