

## Vermont Clean Energy Development Fund Five Year Strategic Plan

*“I believe there is no greater challenge and opportunity for Vermont and our world than the challenge to change the way we use and produce energy.”*

-Governor Peter Shumlin

**F**or the past seven years the Clean Energy Development Fund (CEDF or Fund)<sup>1</sup> has been successfully increasing renewable energy use and development in Vermont. The Fund has improved the lives of Vermonters by supporting clean, local energy sources, creating jobs and economic development, reducing harmful emissions, and building a more resilient and independent energy economy. The Fund aims to achieve continued success by following the recommendations in this plan, in order to maximize its effect on the Vermont energy economy and renewable energy development.

### The CEDF Vision

The vision of the CEDF is to serve the citizens of Vermont by increasing distributed, small-scale, community-supported renewable energy generation and usage across all sectors.

Four key elements underpin the vision for the CEDF for the next five years:

1. Vermont’s 2011 Comprehensive Energy Plan set a visionary goal that Vermont achieve 90% of its total energy, across all sectors, from renewable sources by 2050. The Energy Plan recognizes that all forms and sizes of renewable technology – both built here and acquired from out of state – will be needed to meet that goal. The Energy Plan also recognizes that transformation of our energy system will require simultaneous, intentional action in four key areas: Outreach & Education; Innovation & Expertise; Regulatory Policies & Structures; and Funding & Finance. Meeting the Comprehensive Energy Plan vision requires a paradigm shift from viewing renewable energy as a minor energy source to embracing it as the main source of energy across all sectors: electricity, heating, and transportation. The CEDF should work in the next five years to target its actions to help meet the state’s renewable energy vision.
2. Clean energy markets are maturing, and new tools to foster their further growth are required. Since the inception of the CEDF, Vermont has seen a great shift in the acceptance of, and efforts to acquire, renewable energy by our electrical utilities. This has been aided by legislative action supporting renewable electricity use. The clean energy sector is also experiencing declining costs, faster permitting for residential systems, greater access to financing, increased numbers of businesses, and record

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<sup>1</sup> 30 V.S.A. § 8015 creates the CEDF and states its purpose as: “to promote the development and deployment 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 resources, and the use of combined heat and power technologies.”

demand. These market changes call for a fresh look at the development and deployment tools used to promote clean energy in Vermont.

Meanwhile, wholesale electricity and natural gas prices in the region have fallen dramatically. This provides an immediate challenge to the economics of many renewable energy technologies. Clean energy cost effectiveness and program efficiency must be reviewed based on new cost assumptions, without losing sight of the long-term benefits of renewable energy in terms of cost and price stability.

3. Community ownership and use of renewable energy projects is now an emerging interest across the State. There is a growing sense of urgency and demand from Vermonters for clean energy solutions that will address climate change, increase our energy security and sustainability, and return financial benefits directly to citizens. Vermont's strong history of community and desire for greater energy independence must be interwoven into the structure of CEDF's clean energy projects and development programs.
4. The need for coordination to create collective impact is evident. Our energy goals cannot be achieved without broad cross-sector and cross-technology coordination. There are many players in the state who are seeking to advance the clean energy economy; in a small state, in particular, we must ensure that multiple players do not inadvertently dilute or diffuse the progress we could make through cooperative action. At the state level, the CEDF can and should work with its partners such as the Vermont Economic Development Authority (VEDA) and play a coordinating role in bringing together all of the entities already engaged in clean energy financing, project analysis, program delivery, and grant-making.

### **The CEDF Goals**

This five-year plan springs from the CEDF's vision statement and the four elements listed above. While the goals and strategies may be pursued independently, they should be considered to be interdependent.

In order to fulfill the vision of increased renewable energy usage, across all sectors (thermal, electrical, and transportation), the CEDF shall be guided by three goals (Figure 1):

1. Promote economic development of the clean energy economy
2. Increase cost effectiveness of clean energy
3. Decrease environmental impacts of Vermont's energy use

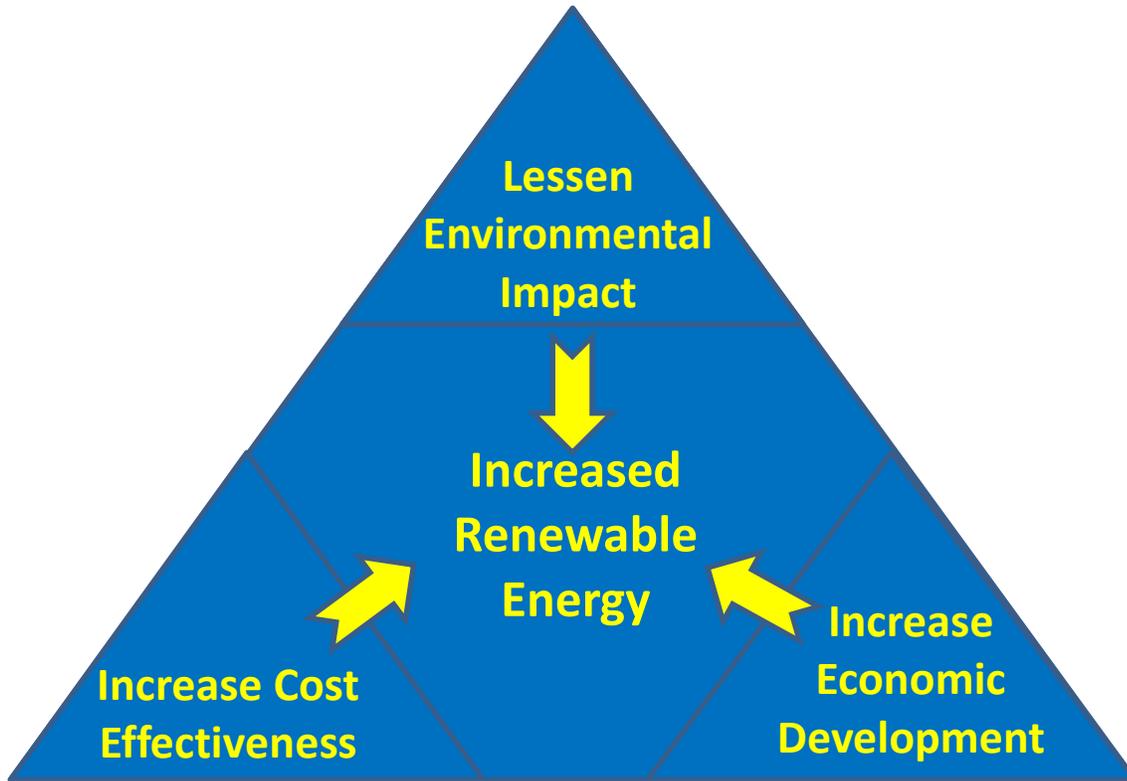


Figure 1. CEDF Vision & Goals

### **Background**

Since its creation by the Vermont General Assembly in 2005, the Clean Energy Development Fund (CEDF) has been at the forefront of Vermont's renewable energy expansion. The CEDF gained valuable clean energy market experience and knowledge in deploying over \$27 million in CEDF funds into Vermont's clean energy<sup>2</sup> economy. The CEDF has provided funding to individuals, businesses, municipal governments, communities, institutions, and non-profit organizations that has resulted in over 1,000 new renewable energy systems being installed. These systems have added over 14 MWs of new electric generating capacity that will generate nearly 44,000 MWh annually, plus millions of BTUs of new thermal energy generating capacity.

From 2009 to 2012, the CEDF awarded an additional \$31.7 million of federal American Recovery and Reinvestment Act (ARRA) funds for clean energy projects. These projects, most of which focused on energy efficiency, will save Vermonters over \$2 million in energy costs every year. In addition, funded projects added over 6 MW of new electrical generating capacity that will generate an estimated 8.8 million kWh annually.

With CEDF leadership, the clean energy industry has become a significant part of the Vermont economy and continues to be a bright light during dim economic times. The \$59 million of combined CEDF and federal funds have leveraged total investments of over \$195 million, providing a tremendous investment in Vermont's clean energy infrastructure.

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<sup>2</sup> The CEDF defines clean energy as including renewable energy and energy efficiency.

The CEDF is overseen by the CEDF Board, with administration, management, and implementation tasks covered by the Public Service Department (PSD). The PSD employs a Fund Manager for the CEDF and assigns other PSD staff to CEDF programs as needed. The PSD staff brings considerable clean energy market, technology, and regulatory knowledge to the management of the fund. The CEDF Board<sup>3</sup> has approval authority of the plans, budget, and program designs of the CEDF. The Board also functions in an advisory capacity to the Commissioner of the PSD on all other aspects of CEDF activity.<sup>4</sup>

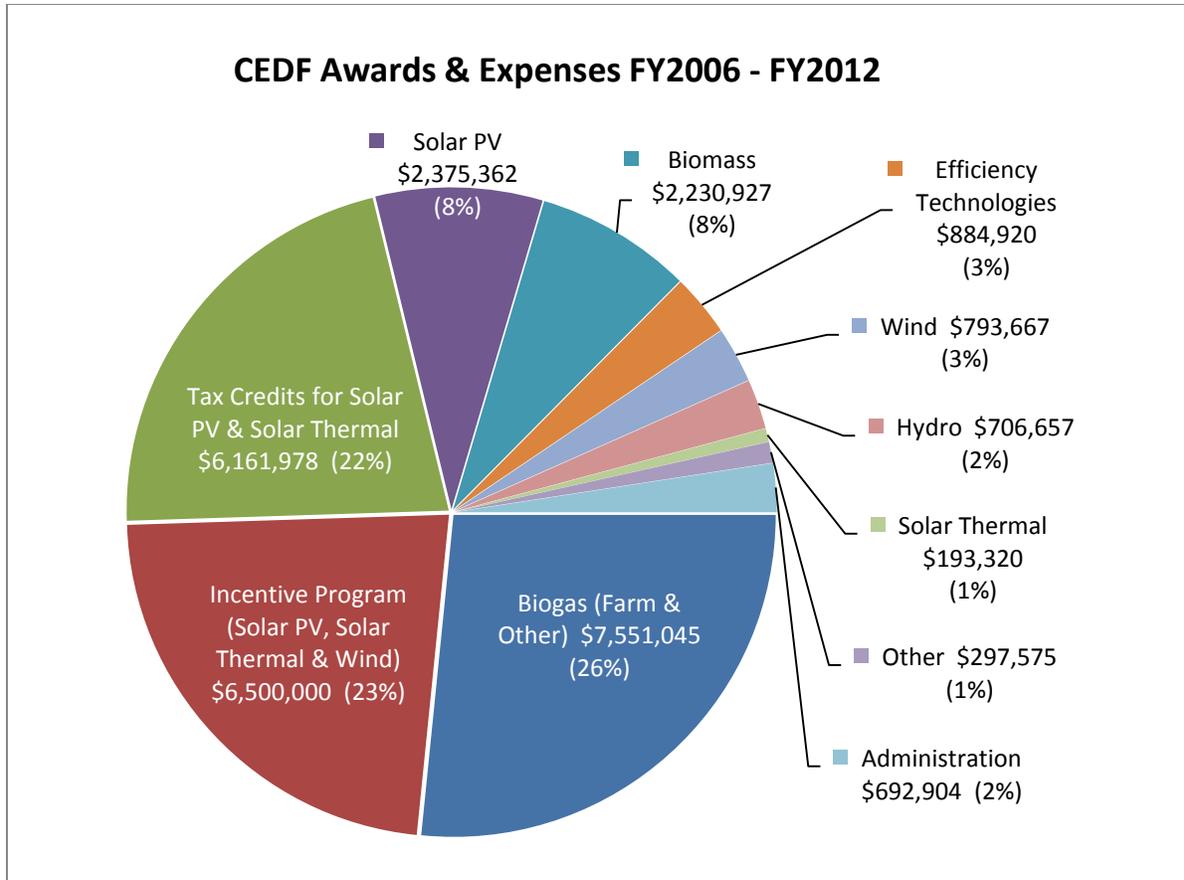


Figure 2. CEDF Expenditures (does not include federal funds) FY2006-FY2012

### CEDF Funding

Since its inception, the CEDF received funding from Entergy Vermont Yankee as agreed upon by the State and Entergy Vermont Yankee in two different memorandums of understanding. These payments varied annually over the last six years from a high of \$6.8 million in fiscal year (FY) 2009 to a low of \$3.5 million in FY 2012. Additionally, the CEDF together with the PSD deployed \$31.5 million of federal ARRA funding for clean energy projects over the past three years.

<sup>3</sup> A list of current Board members can be found in the appendix

<sup>4</sup> 30 V.S.A. § 8015 (e)(3)(A)

The CEDF anticipates receiving appropriations from the legislature on an annual basis going forward through some sustainable funding mechanism. The State's fiscal year (FY) 2013 budget indicates that the CEDF will receive \$3 million. For FY 2014 and beyond, this plan is based on an anticipated annual appropriation of at least \$5 million. The strategies and activities of the CEDF and success of this plan will depend greatly on the level of CEDF appropriation. This plan includes strategies and clean energy development tools that would likely not be significantly realized with appropriations under \$5 million and would be scaled for effectiveness at higher levels.

More details on the CEDF budget, funding, and programs can be found in the CEDF annual reports and plans.

### **Past Clean Energy Development Fund Activities – Lessons Learned**

In creating this plan, the CEDF first took a critical look at past CEDF activities and programs, in search of lessons and insights to guide a successful course of action for the next five years. The clean energy technologies that have been promoted by the CEDF include wood biomass, farm methane, ground source heat pumps, small hydro, photovoltaic, solar thermal, wind, landfill methane, and energy efficiency.

The fund has deployed its resources through a variety of forms including competitive grant solicitations, low-interest loans, market-based incentive payments, tax credits, contracts, and technical assistance grants. Originally limited to electrical production, the legislature broadened the scope to include thermal energy generation in recognition of the great potential for renewable thermal energy as an economic development driver and a key resource in meeting the State's total energy and carbon reduction goals. The CEDF began funding energy efficiency projects in 2009, with the additional ARRA funds.

Several insights were derived from the funding and financing activities of the CEDF. These lessons offered practical guidance to help improve program performance and optimize the use of public resources to achieve the goals of the Fund. The overarching lessons learned are described below, followed by lessons gained from each program.

#### **❖ *Overarching Lessons Learned:***

- The fund best serves, and can offer the most leverage to, small-scale and community-centered projects, rather than utility-scale projects.
- Given limited funding, the CEDF can best meet its goals by narrowing its focus to specific clean energy technologies, and limiting its efforts to a few well-coordinated programs targeting the middle phases of the clean energy development pathway (*see Figure 4*).
- The fund can help increase market efficiency by coordinating efforts among clean energy finance providers and state agencies.
- The CEDF has not adequately developed evaluation tools for its programs and funded projects. Ongoing robust evaluation of projects should be undertaken in order to learn whether estimated outcomes, such as energy production levels, are achieved and to gain critical insights about project performance to guide future activities.

- Policy developments and market advances in the region and nation have the potential to impact CEDF-funded activities. CEDF should regularly examine the activities, experiences, and trends from outside Vermont to inform program design and practice.
- The CEDF would benefit from establishing clear, measureable goals and objectives that can be used to guide annual operating plans and budgets.

❖ ***Small Scale Renewable Energy Incentive Program (SSREI)***

This market-based rebate program has been a central focus for the CEDF since the creation of the fund. The CEDF has learned that this program can be a powerful and efficient tool to build the market for clean energy technologies in the residential, small commercial, non-profit, and municipal sectors. Key findings from the rebate program include:

- It is critical to maintain continuity of the program in general and specifically, in regard to both funding availability and program design. The program needs to send a consistent market signal or it risks becoming a force for painful market disruption instead of market growth.
- Incentive levels should drop as markets develop, but should be done in a predictable and timely manner so market participants can plan and adapt adequately.
- Beyond providing incentives for clean energy systems, the SSREI enables the State to track market data and require installation standards. This improves the quality and safety of installations and helps protect consumers.
- Transparency and clear communication are critical to maintaining open access for all citizens.
- Random site visits, product standards, and training for certification of installers are important elements of success.
- Ease of application and a quick review process are important, especially as incentive levels shrink.
- For maximum effectiveness, participation by a diverse mix of businesses (type, size, and location) and strong customer demand for the technologies is necessary.
- Incentives for wind projects need to be based on energy production performance and/or minimal performance standards to ensure CEDF funds support projects in locations that have adequate wind resources to perform cost effectively.

Progress in the photovoltaic market provides a good example of what worked well in the SSREI. Since 2003, the incentive payment has dropped 78% from \$2.50/watt to \$0.55/watt, yet PV installations have increased by 489% over the same period. By tracking costs and market conditions, the CEDF was able to adjust the incentive payment down without decreasing market activity.

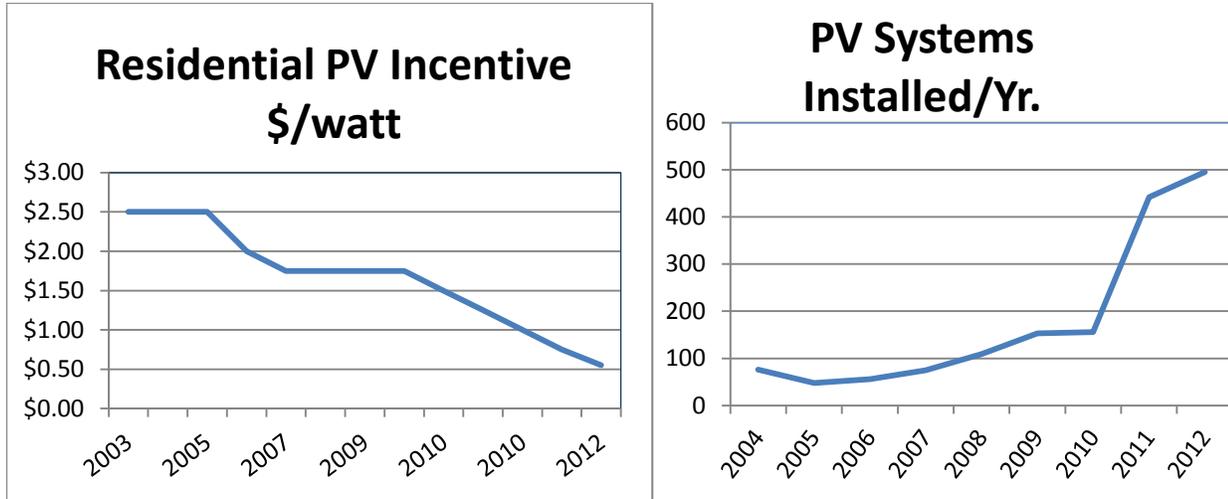


Figure 3. CEDF incentives for PV and the number of PV installations (2012 # of instatons as of 12/11/12).

❖ **Competitive Grant Program**

The competitive grants helped specific applicants fill funding gaps, enabling construction of projects that otherwise would not have been built. These grants also fostered creativity, leading to advances that benefited the clean energy industry broadly. Strategic competitive grant making helped identify new arrangements among public and private partners, foster linkages within supply chains, and discern which areas of the market were in need of assistance. The funded projects helped to determine how particular technologies can be best adapted for use in Vermont.

CEDF’s experience with grants for farm methane digesters demonstrates well the value of strategic competitive grant making. Strategic grants supported the installation of a wide range of digester technologies, effectively leveraging federal and private funds and enabling farm digester technology to build its own support network. While there is value in reducing the capital costs needed by the projects, and in helping expand the market, there has been greater value to CEDF from selective, strategic competitive grants designed to answer specific questions or fill gaps in the market. In the case with methane digesters, the fund can now draw from productive experience to help adapt the technology to smaller farms that still face significant cost barriers.

❖ **Loan Program**

The CEDF offered loans to businesses for clean energy project installations and, in a few select instances, for clean energy business development. In reviewing applications, the CEDF conducted the energy technology evaluation and the Vermont Economic Development Authority conducted the underwriting analysis. This collaboration has served the State well, leveraging each entity’s expertise. The original emphasis on offering loans was to assure revolving and perpetuating funding for clean energy projects. As loans are paid off, money flows back to the CEDF and can be used to help finance new projects. However, the loan program was administratively difficult and time consuming for applicants and staff. It was also difficult to determine which loan applicants were “free riders,” and there was not an adequate mechanism to manage the risk of the loan portfolio as a whole. The CEDF learned that it may be

more efficient for loan program management to be performed to a greater degree by our financial partners who already have loan programs in place.

The CEDF also gained experience utilizing funds for credit enhancements via a loan loss reserve and an interest rate buy down program, which enables the CEDF to leverage its funds, to reduce risk for credit providers, and to encourage new lenders to participate in clean energy finance.

#### ❖ *Tax Credits*

The CEDF has learned that tax credits that are capped are not a desirable tool for clean energy market development. The program created by the legislature requiring the CEDF to certify and pay for a limited amount of solar tax credits was effective in getting the state's first large-scale solar projects built, and it did give a great boost to the number and type of solar projects. However, the tax credit program was difficult to administer, and there was no method for the solar market as a whole to use the credits to expand sustainably or strategically given the limit on the total tax credit awards (imposed due to the limited funding available in the CEDF). Any future tax credit programs should have no cap (implying an adequate funding source) and be available for several years, or not offered at all.

#### **CEDF Strategic Activities**

Informed by the lessons learned, the CEDF will pursue its vision and goals by employing the following key strategies. These strategies shift the program from a past emphasis on a broad application of resources (primarily through the Small-Scale Renewable Energy Incentive program) to a more focused approach that entails deeper market assessments, technology evaluations, and customized approaches to project finance.

The Fund's annual appropriation from the Legislature necessarily will govern the level and scope of program activity. The ability of the CEDF to implement the menu of strategies presented below will be governed by the resources available. The CEDF annual program plans will address directly the task of establishing priorities and allocating available resources, priorities that will be guided by the vision and goals.

Key strategies:

- 1) Select distributed clean energy technologies for development. Technologies that have the greatest opportunity to create jobs, lower carbon and other emissions, and deliver clean energy at competitive costs over time will be the focus of CEDF programs. In addition, targeted technologies or market segments will be chosen based on consideration of the CEDF vision and goals, current market factors, CEDF funding availability, and an analysis of a technology's development level on the clean energy sector development pathway (Figure 4). For example, primary research and development of prototypes is neither something the CEDF has promoted nor should promote, given its size and scope. Nor can it carry a promising technology to market maturity on its own. Rather, the CEDF niche will focus on technologies that have advanced beyond the early stages of development (i.e., pre-commercialization) but have not yet reached market maturity.

Clean Energy Sector Development Pathway – *Technology & Market Development*

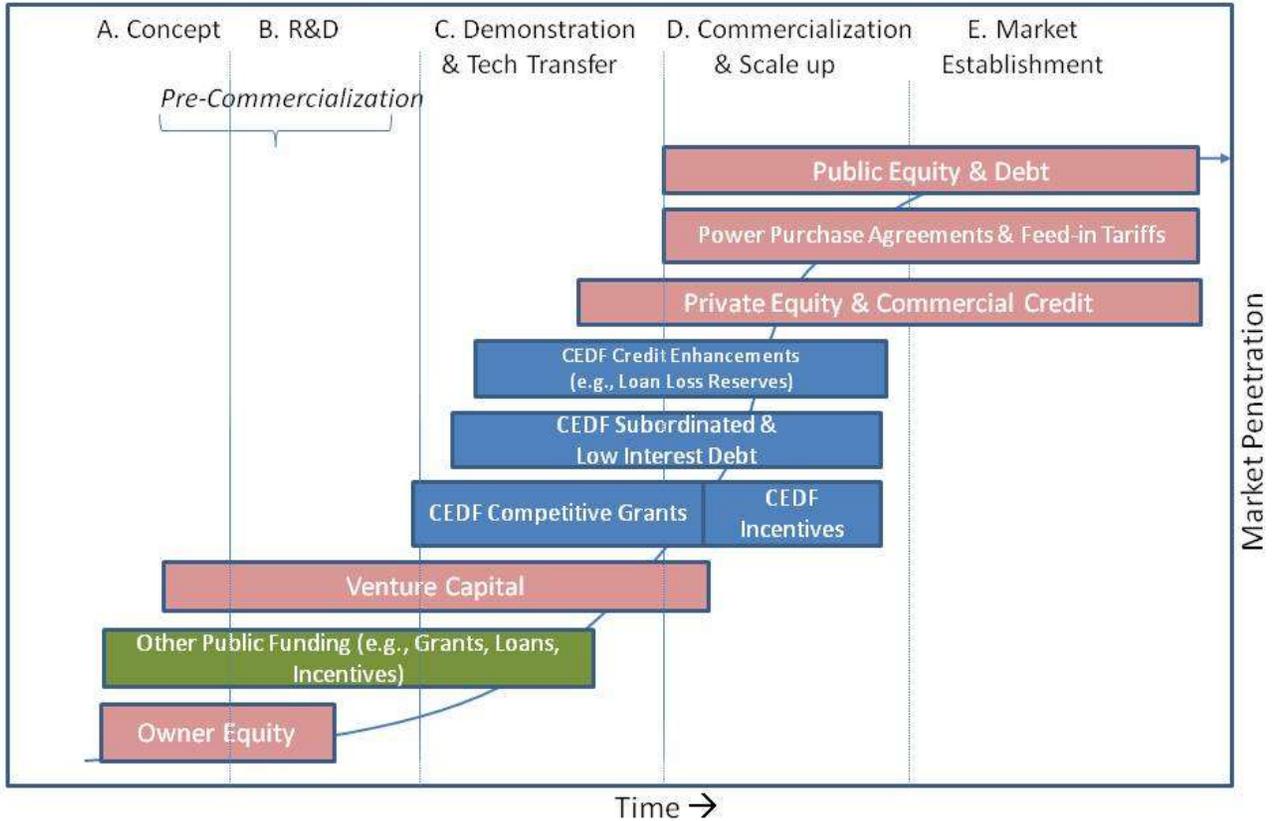


Figure 4. Clean Energy Development Fund niche showing the select use of competitive grants, incentives, low-interest loans, and credit enhancements to help foster greater investment in clean energy projects.

- 2) Identify funding and deployment barriers to renewable energy development and coordinate with industry, state agencies, and private organizations to develop solutions that overcome those barriers.
- 3) Support and strengthen clean energy finance activities. The CEDF seeks to increase private investment and financing in clean energy over the next five years, by leveraging its resources to the greatest extent practicable while retaining the momentum created over the past seven years. The CEDF will seek to provide credit enhancements such as loan loss reserves and subordinated and/or patient debt. Central to this strategy is the creation of an integrated clean energy finance collaborative with other financing entities in the State. See Figure 5 for more on this strategy.
- 4) Continually evaluate programs, activities, and outcomes in order to make adjustments for effectiveness in meeting goals.

The following describes CEDF's suggested approach for deploying funds in forthcoming funding cycles using five possible development tools. Regardless of the tool used, there is a strong commitment to the evaluation of CEDF activities. A dedication to evaluation and continuous

learning will allow the CEDF to verify progress toward the Fund's goals and make changes when necessary. The type and extent of tools used in developing programs will depend on the level of funding provided to the CEDF.

### **Implementation Tools and Programs**

#### ❖ Coordinating Role on State Clean Energy

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

Clean energy sector and technology development typically follow pathways that include pre-project development, development, implementation, and replication stages (see Figure 5). Projects and companies moving toward larger scale typically require a combination of technical, legal, and financial supports along the way. Vermont currently has service and finance providers with experience in many domains of clean energy; however, gaps in these services may emerge periodically as technologies mature and markets evolve.

CEDF has experience working as a partner helping to build out the continuum of services for certain clean energy sectors. However, the State lacks sufficient programs to comprehensively assist promising community- or small-scale clean energy projects or technologies through the entire development cycle. Further, numerous funding and finance providers operate with relatively little coordination across sectors. Ramping up the rate of investment and successful clean energy project implementation will require increased programmatic efficiency and coordination across sectors and geographies.

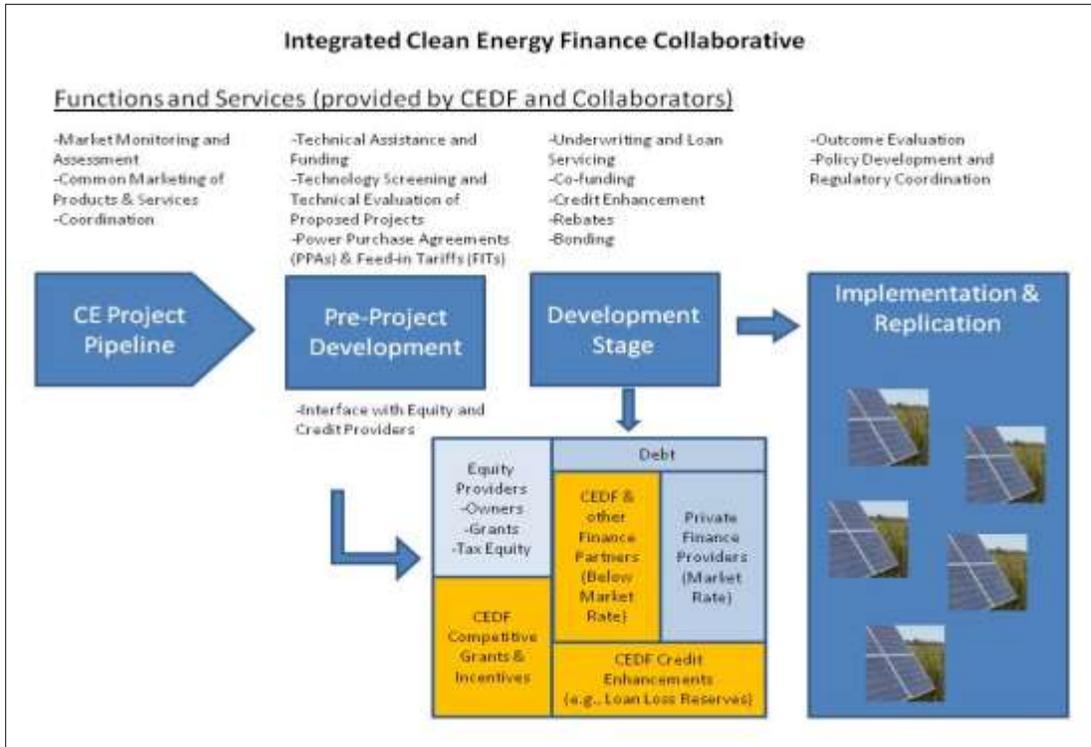


Figure 5. The CEDF operating model features collaboration among finance and service providers.

To help increase coordination within the state, the CEDF proposes the concept of an integrated clean energy financial collaborative. The clean energy financial collaborative would bring together existing entities and serve as a virtual hub through which the CEDF, development finance authorities (such as VEDA), and other development financial institutions (i.e. the Vermont Community Loan Fund) would organize their efforts to identify prospective clean energy finance recipients and would strengthen the overall capacity to evaluate the prospects for potential clean energy projects and/or businesses in the state. The collaborative would harness the existing strengths of current funding and finance authorities and institutions. Through such coordination, the participants would have the opportunity to develop a shared measurement system of success indicators along with ongoing communications and streamlined administration of grants and loans. The CEDF could serve as the primary coordinator for such a collaborative.

❖ **Small Scale Renewable Energy Incentive**

As required by the CEDF statute, funding will continue for the SSREI program as a proven mechanism to grow the residential and small commercial markets for small-scale clean energy technologies in the most widely distributed and accessible way possible. The program’s advantages are that it is market based, cost effective, highly leveraged, simple, and access to the funds is open and transparent.

The need for state incentive dollars will shift as technologies and markets grow from concept to initial maturity. Solar PV, for instance, appears to be approaching a tipping point after which the need for direct CEDF grants may no longer be required. By reducing incentives as installation costs drop, the CEDF can re-direct funds towards other technologies.

The CEDF will adjust the SSREI program design and administration based on funding, evaluations, and market conditions. The program will lower incentive levels for maturing technologies in favor of other technologies that haven't received incentives but that have great potential to help the CEDF meet its goals.

❖ **Clean Energy Financing**

The focus of the CEDF financing program will be to support a vibrant financing market in Vermont for clean energy projects and businesses. This program will expand from the former loan program to include the potential use of credit enhancements, such as loan loss reserves. The loan program will continue, provided sufficient funding, but under a different structure. As the markets for clean energy evolve with increased demand from consumers and investors, there has been a shift in the financial sector. Banks, credit unions, development finance agencies, and community development finance institutions are expressing interest in, and increasingly participating in the growth of, the clean energy sector. The CEDF has an opportunity to coordinate with these entities and units of state government to expand access to, and reduce the cost of, the capital needed to drive additional investment in clean energy.

The use of some CEDF resources for risk mitigation and credit enhancements invites more private capital into the market. For example, the CEDF could provide a loan loss reserve fund to utilities that create on-bill financing options for clean energy projects by their customers.

The CEDF could also facilitate private participation in projects and assist other financial resources such as bonds to be utilized effectively for clean energy projects.

❖ **Competitive Grants**

With sufficient funding, the CEDF may continue to issue competitive solicitations. Potential areas include the development of renewable energy heating projects in the commercial, municipal, and public institutional sectors, specifically small-scale district heating. As with other programs, there will be a strong effort to coordinate these grants with energy efficiency upgrades in the relevant buildings. CEDF also intends to explore the use of competitive grants to identify potential high-impact projects that illustrate innovative community or business models.

Another focus of the competitive grant program may be farm energy projects, which the fund will continue to advance as it has in the past. Of particular interest will be the development of farm methane projects at smaller dairy farms. The CEDF will focus on coordinating this effort with the Agency of Agriculture, Green Mountain Power's Cow Power program and the US Department of Agriculture's energy programs.

❖ **Clean Energy Business Development**

Clean energy project developers working in under-developed sectors and at smaller scales often lack adequate resources. In addition, undeveloped markets themselves may lack certain components that other, more mature markets contain. CEDF can help such projects achieve success by providing targeted, limited support to small- and community-based projects for feasibility planning, marketing, technical assistance, and other pre-development activities. The

CEDF will work to coordinate this program with other state entities such as the Agency of Commerce and Community Development.

### **Continuous Performance Evaluation**

This plan commits the CEDF to sustained program evaluation, a regular process of intelligence gathering on program performance.

The CEDF has regularly tracked and reported how the CEDF resources have been used and what the resulting accomplishments have been, including the number and types of projects that have been funded, the renewable energy capacity that has been constructed, the estimated clean energy output from these new projects, and the environmental benefits these projects would provide. Though this reporting effectively tracks progress made toward increasing the number of renewable energy systems, it does little to address many other important aspects of program effectiveness. This plan commits to initiating regular program evaluation activities that offer a continuous learning cycle of planning, action, and reflection based on data gleaned from funded activities. This will enable program managers to improve program performance and provide a way to communicate the progress that the program is making.

Accordingly, the CEDF will dedicate staff and other program resources to measuring progress toward the CEDF goal and objectives, identifying barriers facing the programs, and revealing program delivery problems. Based on the data collected, the CEDF staff will recommend action to overcome barriers, address problems, and improve overall CEDF program performance. The successful conduct of this monitoring and evaluation should produce benefits in program productivity that far exceed the costs. These monitoring and evaluation efforts will assess the:

- contribution the CEDF programs are making to deploying renewable energy in Vermont
- progress being made toward CEDF objectives
- cost-effectiveness of the CEDF program investments
- effectiveness of the CEDF program implementation processes
- on-going performance of funded projects

The CEDF will also develop a discrete set of evaluation baseline metrics that characterize the fund's work based on the programs being funded. These baseline metrics will assist the CEDF and the public in measuring progress and will potentially include:

- Amount (\$) and types of clean energy project financing provided
- Amount (\$) of CEDF financing and funds leveraged
- Renewable energy capacity, generation, and number of systems added
- Amount of energy and carbon emissions saved
- Default rates on CEDF-supported activities
- Change in number/rate of clean energy installations

To the extent practicable, CEDF staff will work with clean energy finance partners to characterize the overall state of the clean energy economy in Vermont as part of its evaluation and monitoring efforts. The CEDF will seek to include in its annual report information such as:

- CE sector job count
- CE sector business count
- Number of clean energy finance providers active in Vermont
- CE clusters market metrics in Vermont
- Investments made in clean energy businesses
- % of total energy generated by renewable energy

It will only be through continual monitoring and evaluation of the above metrics that the CEDF will be able to make necessary adjustments in order to realize the vision and meet the goals set out in this plan. The CEDF is now well positioned and prepared to meet the challenges and take advantage of the opportunities that the next five years will bring.

**Appendix**

**Clean Energy Development Board Members (and affiliation):**

Jo Bradley	<i>(VT Economic Development Authority)</i>
Elizabeth Catlin	<i>(Bluestone Wealth Management LLC)</i>
Alex Ibey	<i>(VT Dept. of Economic, Housing and Community Development)</i>
Patty Richards -vice chair	<i>(La Capra Associates)</i>
Sam Swanson	<i>(Pace Energy and Climate Center)</i>
Gaye Symington -chair	<i>(High Meadows Fund)</i>
Will Wiquist	<i>(Green Mountain Club)</i>

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**Federal Incentives**

Following are key federal programs that play an important role in Vermont renewable energy markets. The CEDF understands that Vermont’s renewable energy industry exists within the context of a larger universe of state and federal renewable energy incentives. It is important to understand the nature of these incentives in order to design complementary programs to strategically leverage limited funds and human resources.

**Renewable Energy Production Tax Credit (PTC):** Provides a \$0.022/kWh tax credit to the owner, lessee or operator of a facility for wind (primarily) as well as geothermal and closed-loop biomass (generally for a 10-year period). A similar credit of \$0.011/kWh is available for open-loop biomass, geothermal, landfill gas, municipal solid waste, irrigation hydroelectric, and marine and hydrokinetic technologies. Current enabling legislation requires all facilities to be placed in service by the end of 2013, except for wind, which had to be operational by the end of 2012. There are many efforts underway to renew this perennially expiring tax credit, but no action is expected until a new Congress is seated in early 2013.

[http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=US13F&re=1&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US13F&re=1&ee=1)

**Business Energy Investment Tax Credit (ITC):** Provides a 30% tax credit for solar, fuel cells, and small wind; and a 10% tax credit for geothermal, microturbines, and combined heat and power. Credits are generally available for systems placed in service by the end of 2016. The American Recovery and Reinvestment Act (ARRA) allowed taxpayers and projects eligible to take the PTC to take the ITC instead, and those projects along with traditionally eligible ITC projects were allowed to receive an up-front grant, equivalent to the ITC amount, from the Treasury Department instead of the ITC. However, those systems had to begin construction (sometimes referred to as “safe harboring”) prior to the end of 2011 and be placed in service by the end of 2012. Developers cite that 1603 grant-in-lieu of tax credit provision for incentivizing much of the wind and solar development in the last three years, since it significantly drove down the cost of capital for those installations during a difficult economic period.

[http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=US02F&re=1&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US02F&re=1&ee=1)

**Residential Renewable Energy Tax Credit:** This residential version of the ITC allows individuals to recoup 30% of the capital costs of solar electric, solar hot water, small wind, geothermal heat pump, and fuel cell systems (up to set maximums) as a tax credit through the

end of 2016. Unlike businesses, residents were not able to take the grant in lieu of tax credit under ARRA.

**Modified Accelerated Cost-Recovery System (MACRS) + Bonus Depreciation:** Businesses may recover renewable energy investments through depreciation deductions over five years. MACRS is available for solar electric, solar thermal, fuel cell, geothermal electric, geothermal heat pump, wind, and combined heat and power systems. Some biomass systems may take their depreciation deductions for up to seven years. A first-year, 50% bonus depreciation was available for projects through the end of 2012 (down from 100% for projects placed in service 9/8/10-1/1/12). Businesses claiming the ITC are required to reduce the adjusted basis of the project by half of the amount of the energy credit before calculating bonus depreciation.  
[http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=US06F&re=1&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US06F&re=1&ee=1)

**USDA Rural Energy for America Program (REAP) Grants and Loan Guarantees:** This federal program, funded through the Farm Bill, provides grants and loan guarantees for energy efficiency improvements and renewable energy systems to agricultural producers and rural small businesses through periodic solicitations. Many of Vermont's methane digester systems would not have happened without the combined incentives of CEDF and REAP. Grants are limited to 25% of a project's cost, and loan guarantees are offered up to \$25 million; the combined grant and loan guarantee must not be more than 75% of a project's cost. Eligible technologies include solar hot water, solar hot air, solar electric, wind, biomass, hydropower, geothermal, combined heat and power, anaerobic digestion, wave and tidal, renewable fuels, and fuel cells. Future funding for REAP is uncertain. The current Farm Bill expired on 9/30/12; a new version was passed in the Senate Agriculture Committee, but it stalled in the House, which has adjourned until after the November elections. A Continuing Resolution was passed which provides \$5 million in funding to REAP – compared with the \$70 million allocated in 2012 alone.

[www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=US05F&re=1&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US05F&re=1&ee=1)

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