Jobs and the Economy

"…Vermonters are creating answers to climate change that will be foundations for the economic renewal of the state. The Climate Economy is the economy of the future, informed by Vermont's history of independence, frugality, resiliency, and innovation."

-Vermont Climate Economy Action Team
"A Vision for Vermont's Economic Renewal"

The most effective solutions to climate change and greenhouse gas emissions are likely to come from smart, innovative business leaders that identify new markets and capitalize on those markets. As the Vermont Council on Rural Development's Vermont Climate Action Team recognized, Vermont needs to seize the opportunity and ensure it creates jobs and opportunities for all Vermonters. While Vermont has been a national leader in per-capita green job growth, to continue this trend requires bold action.

Fostering additional job growth requires a focus on matching the unique challenges of climate economy businesses with the competitive advantages that Vermont's energy sector and business ecosystem either already possesses or could possess with deliberate action. The Commission recognizes that while we must do everything we can to create an environment where climate economy entrepreneurs from across the globe would consider Vermont, our highest success would likely come from helping Vermont-based businesses grow, Vermont ideas turn into Vermont start-ups and Vermont start-ups turn into Vermont scale-ups.

As such, the Climate Economy Work group decided to focus on two parts of the Climate Economy that are well established and primed for expansion. The first of these is Clean Grid Modernization and the second is wood pellet production to support the efforts in promoting Advanced Wood Heating and to support the Vermont forest economy.

Grid modernization utilizes electricity user and generator data available through advanced metering infrastructure (AMI) which Vermont utilities have installed for most of its users. This real time data modifies generation decisions (when to turn on and off generators), use decisions (when to ramp down or ramp up specific electricity using devices and charging), and grid decisions (when to redirect loads to other parts of the grid and otherwise manage distribution substations). An important tool for managing generation and use is storage that allows for grid modulation, shifting the use of excess generation during times of higher demand, as well as providing back up power during outages.

In addition, the same AMI data can be used for short and longer term electricity purchase, generation and use planning. The key is to more closely match generation and electricity purchase profiles with use profiles allowing for utilities to purchase cost effective renewable supplies.

Distributed generation suppliers benefit from an improved grid infrastructure. Since the early introduction of distributed generations supplies, many economic benefits related to electricity demand peaks and the related high prices have been captured, and in order to meet the state's renewable generation goals, there is the need for expanded renewable generation. Furthermore, new distributed generation provides job-creating opportunities and reduces the flow of money out of state to pay for remote generation resources.

Clean grid modernization works in tandem with distributed generation. New generation supplies require a modern grid with demand controls and storage capacity to best utilize the new generation. Grid modernization, especially the use of greater storage requires more distributed generation to provide supply during periods of recharge.

Due to supply constraints and grid weaknesses in certain regions, it will be crucial to ensure that new distributed generation resources are strategically sited and grid beneficial. At a time when renewable resource development is slowing, Vermont cannot lose its capacity for these businesses to gain experience and market share. Incentives to these businesses will allow them to continue providing those benefits.

Second, the state should focus on expanding the wood pellet production to to promote Advanced Wood Heating and to support the Vermont forest economy.

Supporting Clean Grid Modernization Businesses

To gain a sense of the magnitude of impacts that are possible, we can establish benchmarks over the next five years:

- With flat electricity use, the overall costs of delivery of electricity are reduced 5% (about $35 million per year)
- The Clean Grid modernization businesses will have 200 employees (in addition to the jobs associated with the Distributed Generation businesses). Total salaries will equal $15 million. (For Vermont utilities only – expansion of services into other states will be above and beyond this amount)
- 10% of current electricity sales increase in Distributed Energy Generation in next 5 years (reducing out of state purchases by that same 10% - some portion of that from non-renewable sources)
- Capital investment at $100 million for grid modernization plus additional investments for distributed generation
- Ratepayer savings approximately $10 million per year

There are some system changes that make the growth of grid modernization businesses prosper in Vermont

1) **Restructure regulated electricity rate design** that provides the appropriate price signals related to electricity use and generation.

Recommendation	Impact	Feasibility	Cost
Restructure regulated electricity rate design	(See above)	Medium	Low
Action Step(s)		**Who's Responsible**	
Summarize research to determine the opportunities available for rate design restructure		PSD	
Review current law for constraints on rate design		PSD	
Initiate rate design case before the Public Utility Commission		PSD	

2) **Ensure access to user and generator data** to those businesses designing the algorithms and hardware that are the backbone of the grid modernization strategy.

Recommendation	Impact	Feasibility	Cost
Provide access to smart meter data for clean grid modernization companies	(See above)	Medium	Low
Action Step(s)		**Who's Responsible**	
Convene grid modernization companies to define their data needs		PSD, ACCD	
Work with the utilities to determine what data is currently available for the grid modernization companies		PSD	
Determine policy changes (through PUC) or law changes (via legislation) to allow for data to be made available		PSD	

3) **Determine the economic value of grid modernization** implementation so that state government and the state's utilities can assign the appropriate public dollar investment to its development. For each of these three factors, the state through the Interagency Climate and Economy work group should take the lead in implementation.

Recommendation	Impact	Feasibility	Cost
Determine value of grid modernization	(See above)	Medium	Low
Action Step(s)		**Who's Responsible**	
Complete literature study of existing studies that have assigned value to grid modernization		PSD, ACCD, Utilities	
Seek additional expertise, possibly through an RfP to refine the analysis and determine a value for Vermont		PSD	

In addition to the system changes (that will lead to docket development before the Public Utility Commission), the Climate Business work group proposes specific incentives to foster the start up and growth of these businesses. These include:

#1 - Innovation Fund: Using the existing structure at the Clean Energy Development Fund, create a new fund that provides equity investments for target climate economy businesses (similar to WLEB) to encourage the growth of the sector. The committee recommends that initial capitalization of this fund equals $1 million.

Recommendation	Impact	Feasibility	Cost
Establish an Innovation Fund	$ 1 million for investment in businesses	Medium	Low
Action Step(s)		**Who's Responsible**	
Convene experts in finance		Clean Energy Finance Collaborative (CEFC)	
Develop a strategy for developing the fund		Selected from CEFC	

#2 - Small Business Innovation Research Matching Program: Incentivize target businesses to do research and tech commercialization in Vermont by providing a state match to the existing SBIR grants. The result will be to encourage more businesses to do R&D and tech transfer here in Vermont.

Recommendation	Impact	Feasibility	Cost
SBIR Matching Program	Modest	Medium	$100,000 annual
Action Step(s)		**Who's Responsible**	
Interview past EPSCOR and SBIR recipients for their experiences		ACCD	
Design SBIR Matching program (including any legislative actions necessary)		ACCD	
Draft and promote legislative changes for program		ACCD and Administration	

#3 - Enhanced Vermont Employment Growth Incentive: the current VEGI program provides a cash incentive one to nine years after a particular employment and capital investment target is met. For businesses in this sector, our proposal is to front load the payments at the time of employment and investment (with after the fact checking to ensure that the positions are maintained). Another aspect of VEGI is that the incentive value is decreased based on an assumption of background growth – growth presumed to take place in the absence of any incentive payment. To enhance the VEGI program for target climate economy businesses, we propose to assign a zero rate of background growth to calculate incentive payments.

Recommendation	Impact	Feasibility	Cost
Enhanced VEGI	Modest	Medium	$200,000 annual (with future tax revenues to support)
Action Step(s)		**Who's Responsible**	
Draft legislative language to make the two changes in the VEGI statute		ACCD	
Develop impact analysis to show how the two changes affect future tax expenditures		ACCD	
Promote legislative changes for program		ACCD and Administration	

#4 - Research and Development Tax Credit: the existing Vermont credit provides tax benefit for conducting research in Vermont, but that credit is only available to companies that meet federal requirements and have an existing Vermont income tax liability (corporate or personal for pass through businesses). This proposal will make the credit fully refundable so that start up companies that often do not have a tax liability will be able to realize the benefit.

Recommendation	Impact	Feasibility	Cost
R&D Tax Credit	Modest	Medium	$100,000
Action Step(s)		**Who's Responsible**	
Review other state R&D programs		ACCD	
Draft legislative language for Vermont's R&D tax credit		ACCD, Tax	
Develop impact analysis to show how the two changes affect future tax expenditures		ACCD, Tax	
Promote legislative changes for program		ACCD and Administration	

#5 - Reduce student debt: A student loan forgiveness program for entrepreneurs and workers in the sector. Graduates of Vermont colleges and universities that work with Vermont businesses in this sector will receive a partial loan forgiveness for each year that they hold the job. In addition, students that pursue an academic field of study that prepares them for work in the clean grid modernization field will also be eligible for debt forgiveness.

Recommendation	Impact	Feasibility	Cost
Reduce student debt.	Modest	Medium	$100,000
Action Step(s)		**Who's Responsible**	
Convene representative businesses in the clean grid modernization sector to scope program qualifications		ACCD, DOL, PSD	
Design the debt forgiveness package and draft legislative language		ACCD, VSAC	
Promote legislative changes for program		ACCD and Administration	

#6 - Support for Free Legal Services to New Climate Economy Entrepreneurs

One critical area of support for new and emerging clean energy businesses, including clean tech and grid modernization businesses, is intellectual property and corporate legal services. Legal services for new businesses to support formation of the appropriate legal entities, structure outside investment, and even file for an Employee Identification Number can range from $6,000 to $20,000, placing a significant burden on new and emerging businesses at the time when they can least afford such capital outlays. Further, for clean technology companies or others developing new products, intellectual property legal services such as applying for a patent can be as high as $20,000.

In September, 2018, Vermont Law School will launch a new Entrepreneurship and Legal Laboratory (VLSell). This program will eliminate barriers to growth for early-stage companies in Vermont by providing low-cost or pro bono legal services. Legal services will be rendered by students, supervised by experienced legal practitioners. This program meets a need that all new and expanding businesses share, particularly businesses in the new climate economy sector who face complex legal challenges. This Sub-Committee recommends $50,000 in funding support for the VLSell to provide low-cost and pro bono legal services to start-up businesses in the clean technology, energy, and grid modernization sectors. This funding will allow the Program to specifically assist businesses in these sectors, addressing one of the critical barriers to growth that they face.

Recommendation	**Impact**	**Feasibility**	**Cost**
Support legal services for clean energy businesses.	Modest	Medium	$50,000
Action Step(s)		**Who's Responsible**	
Convene representative businesses in the clean grid modernization sector to meet with representatives from VLSeLL		ACCD, PSD , VLS	
Develop marketing materials for VSELL to be used in the clean energy business space		ACCD VLS	
Promote legislative support for an appropriation to support the program		ACCD and Administration	

Supporting Wood Pellet Manufacturing

The Climate Economy work group supports the efforts of the Building Work Group to provide incentives to building owners to install modern wood heat infrastructure. The focus of the incentives described below is to increase the production of wood pellets in Vermont to support forest-based economies and reduce the flow of energy dollars out-of-state.

Goal Statement : Support Wood Pellet production in Vermont

To gain a sense of the magnitude of impacts that are possible, we can establish benchmarks over the next five years:

- 100,000 tons annual production – wholesale value $20 million (retail $25-30 million)
- 200,000 tons pulp wood purchase from Vermont loggers – value $5 million
- The wood pellet businesses will have 200 employees (plus 50 jobs associated with logging). Total salaries at $10 million.
- Capital investment at $60 million
- Reduced out of state fuel purchases of $25 - $40 million annually depending on price of fuel oil
- (if all replacement fuel oil – reduced fuel oil use of 12 million gallons)

Current wood pellet production faces significant competitive pressures from parts of the US and Canada that have lower costs for production. In order to reduce costs for Vermont producers, this work group recommends a series of strategies:

Reducing Electricity costs

Recommendation	**Impact**	**Feasibility**	**Cost**
Economic Development Incentive electric rates	(See above)	Medium	Low
Action Step(s)		**Who's Responsible**	
Review the current incentive rates to determine if there are enhancements that are appropriate for wood pellet mills that would otherwise not be operating in Vermont.		PSD in cooperation with utilities	
Draft legislation if necessary to modify the current incentive rate structure		PSD	

Streamline the permitting for new wood pellet production plants:

Recommendation	Impact	Feasibility	Cost
Streamline pellet mill permitting	(See above)	Medium	Low
Action Step(s)		**Who's Responsible**	
Review Senate Bill #276, to determine additions that will be beneficial for wood pellet mills		ACCD	
Draft legislation if necessary to modify S. 276		ACCD	

In addition, the incentive strategies identified for the Clean Grid Modernization businesses will be available for wood pellet mills.