

# THE ESSEX PLAN

---

AN ECONOMY STRENGTHENING  
STRATEGIC ENERGY EXCHANGE

---



NOVEMBER 2017

MARK CURRAN, JON D. ERICKSON, RICK HAUSMAN, DAN HOXWORTH, REBECCA M. JONES, JEN KIMMICH,  
BRAM KLEPPNER, KAREN LAFAYETTE, DAVID MEARS, CHRISTOPHER MILLER, ASHLEY ORGAIN, ANNE WATSON, JENN WOOD

## HOW A VERMONT-SPECIFIC, FUTURE-ORIENTED ECONOMIC DEVELOPMENT STRATEGY CAN:

- Create jobs, attract new businesses, spur strategic electrification and provide the cleanest electricity at the lowest rates in New England,
- Prioritize the most vulnerable and the middle class by lowering utility bills for every Vermonter and Vermont business and provide fully-refundable rebates for low-income and rural Vermonters, and
- Harness the power of the market to reduce carbon pollution and help the state meet its climate and clean energy goals.

## AUTHORS

MARK CURRAN

JON D. ERICKSON

RICK HAUSMAN

DAN HOXWORTH

REBECCA M. JONES, M.D.

JEN KIMMICH

BRAM KLEPPNER, MBA

KAREN LAFAYETTE

DAVID MEARS

CHRISTOPHER MILLER

ASHLEY ORGAIN

ANNE WATSON

JENN WOOD

## ABOUT THE AUTHORS

**Mark Curran** is the co-founder and COO of Black River Produce, a distribution company in Springfield essential to Vermont's local food movement.

**Jon Erickson** is a Fellow of the Gund Institute for the Environment and the David Blittersdorf Professor of Sustainability Science and Policy in the Rubenstein School of Environment and Natural Resources at the University of Vermont.

**Rick Hausman** is a former state legislator from the Northeast Kingdom and Research Director at Clean Yield Asset Management.

**Dan Hoxworth** is the Executive Director of Capstone Community Action in Barre.

**Dr. Rebecca M. Jones, M.D.** is a Brattleboro dermatologist and serves on the Vermont Climate and Health Alliance steering committee.

**Jen Kimmich** is the co-founder of The Alchemist Brewery in Waterbury and Stowe. She is the Chair of the Main Street Alliance Vermont board.

**Bram Kleppner, MBA** is CEO of Danforth Pewter in Middlebury, Board Chair at the Population Media Center, and immediate past Co-Chair of Vermont's Medicaid & Exchange Advisory Board.

**Karen Lafayette** is the Public Policy Advocate for the Vermont Low Income Advocacy Council and a former state legislator who served on the House Ways & Means Committee.

**David Mears** is the Associate Dean for Environmental Programs and the Director of Environmental Law Program at Vermont Law School in South Royalton. He is a former Commissioner of the Vermont Department of Environmental Conservation.

**Christopher Miller** is the Social Mission Activism Manager at Ben & Jerry's and is the Vice Chair of the Vermont Businesses for Social Responsibility board.

**Ashley Orgain** is the Director of Mission Advocacy and Outreach at Seventh Generation, an international leader in sustainable products and business practices headquartered in Burlington.

**Anne Watson** is a Montpelier City Councilor and teaches physics, engineering, and math at Montpelier High School.

**Jenn Wood** of Grand Isle is a sustainability consultant and was the low-income Weatherization Program Director at the Champlain Valley Office for Economic Opportunity (CVOEO) from 2011-2016.

Affiliations are for identification purposes and do not connote organizational endorsement.

## INTRODUCTION

The ESSEX Plan is a Vermont-specific, future-oriented economic development strategy designed to:

- 1) Provide Vermonters *the cleanest electricity at the lowest rates* in New England,
- 2) Prioritize working families and rural Vermonters in the transition to the lower-cost/lower-carbon energy future, and
- 3) Harness the power of the market to reduce carbon pollution and help the state meet its climate and clean energy goals.

The ESSEX Plan is unprecedented in its scope and commensurate to the challenge and opportunity that climate change presents.

It proposes a partnership between state government and Vermont's regulated electric utilities whereby all of the proceeds of a gradually rising fee on carbon pollution are returned to Vermonters and Vermont businesses on a monthly basis in the form of lower effective electric rates.

The ESSEX Plan prioritizes working-class Vermonters through additional per-person rebates for families earning less than 400% of the federal poverty level (about \$90,000/year for a family of four). And rural Vermonters earning less than \$75,000 annually (\$150,000 per couple) will receive additional monthly rebates to cover their necessary travel expenses.

The ESSEX Plan builds on two existing programs. It expands carbon pricing in Vermont beyond the limited reach of the Regional Greenhouse Gas Initiative (RGGI) by requiring the Petroleum Cleanup Fund to cover climate pollution as well as ground and water spills. It uses Green Mountain Power's existing and successful Energy Assistance Program partnership with the state as a model for additional rebates to Vermont's most vulnerable.

Because Vermont already has one of the lowest-carbon electric portfolios in the nation and is on pace to decarbonize further due to the state's Renewable Energy Standard and the Regional Greenhouse Gas Initiative, The ESSEX Plan is both "revenue neutral" and a 100% investment in clean energy.

The ESSEX Plan is comprehensive. It covers approximately 94% of the carbon dioxide pollution emitted from Vermont's heating and transportation sectors.

Economic analyses of similar carbon pricing proposals completed by the Department of Public Service, Regional Economic Models, Inc., and the Congressional Budget Office indicate that the ESSEX Plan would create up to 6,000 new jobs, hold harmless Vermonters on the lowest rungs of the economic ladder, and reduce carbon pollution by 15%-25% by 2025 and 30%-50% by 2050.

# THE VERMONT ENERGY CONTEXT

More than sixty nations and states around the world put a price on carbon pollution – and every jurisdiction does it differently. In addition to charging a fee for climate pollution, the one thing that unites the various policies is that each is designed to fit its local energy context.

The ESSEX Plan is designed specifically to fit the Vermont energy context.

**Fossil Fuels in Vermont:** As the *Comprehensive Energy Plan* notes, “In 2013, the state spent nearly \$2.3 billion annually — about 8% of Vermont’s GDP — on petroleum products...” At the tail end of the distribution chain, Vermonters have little control over extraction techniques, refining practices, transportation safety, or price.

Fossil fuels in Vermont are a low-margin industry with 80% or more of revenues leaving the state’s borders. With no value-adding industry in state, what fossil fuel jobs there are in Vermont are mostly low-wage end-distribution roles. The industry has been struggling for years to attract and retain employees. Because of these factors and more, Vermont’s successful home heating fuel dealers are rapidly diversifying their equipment offerings beyond propane and oil and becoming energy service providers that deliver complementary conservation and efficiency measures.

In addition to their drain on the economy, fossil fuels used for heating and transportation are the primary cause of the Vermont’s 4% increase in greenhouse gas emissions since 1990.

**Electricity in Vermont:** For all the strategic weaknesses on the fossil fuel side of its energy portfolio, Vermont’s electric sector is one that other states should emulate. For decades the state’s utilities and policy makers have been working to reduce carbon pollution. The outcomes of this effort are evident in:

- Efficiency Vermont – the nation’s first electric efficiency utility – which has made Vermont one of the most efficient consumers of electricity in the nation;
- A Renewable Energy Standard (RES) that requires electric utilities to source an ever-increasing supply of renewable energy;
- The Regional Greenhouse Gas Initiative (RGGI) that prices what carbon pollution there is in electric generation, and is poised to reduce CO<sub>2</sub> emissions a further 30% by 2030;
- Robust renewables, with Vermont leading on many per-capita metrics for solar PV and wind deployment;
- A clean energy industry that employs about one in 16 working Vermonters;
- Progressive utilities eager to lead the transition to renewable energy; and
- The highest percentage of low-carbon electricity generation and some of the lowest-carbon electricity consumption in the nation.

It is this energy context that makes the strategic energy exchange at the core of The ESSEX Plan possible.

# THE THREE PILLARS OF THE ESSEX PLAN

## 1. A GRADUALLY INCREASING FEE ON THE POLLUTION CAUSING GLOBAL WARMING

The first leg of The ESSEX Plan is a gradually rising fee on the carbon content of fossil fuels paid by the companies that distribute these fuels in Vermont. The proposal begins at \$5 per ton of CO<sub>2</sub> in 2018 and increases by \$5/ton annually until reaching \$40/ton or the Social Cost of Carbon (an estimate of the monetized damages caused by greenhouse gas emissions) as calculated by the U.S. Environmental Protection Agency during the Obama administration.

The Department of Public Service should be tasked with determining the percentage of carbon pollution fees that come from the sales of fossil fuels to the residential sector (primarily home heating and personal transportation fuels) and the percentage of fees from the sale of fuels to Vermont's commercial and industrial sectors.

## 2. DRAMATIC ELECTRIC RATE REDUCTIONS FOR EVERY HOUSEHOLD AND BUSINESS

All carbon pollution fees derived from Vermont's commercial and industrial sectors will be returned to those sectors of the economy through lower effective electric rates. All fees derived from the residential sector will be returned to Vermont households. There is no cross-sector subsidization under The ESSEX Plan.

Fully implemented, The ESSEX Plan will reduce Vermont's commercial and industrial rates 27% below current levels, allowing Vermont businesses to enjoy effective electric rates 25%-40% below the New England average.

Similar to Vermont businesses, the ESSEX Plan would allow all Vermont households to benefit on a monthly basis from the lowest electric rates in the region.

## 3. ADDITIONAL REBATES FOR WORKING-CLASS FAMILIES AND RURAL VERMONTERS

The ESSEX Plan dedicates 50% of all carbon pollution fees derived from the residential sector to working class and rural Vermonters through additional per person rebates.

- Low & Moderate-Income Rebate: Working-class Vermonters earning less than 400% of the federal poverty level will receive an additional monthly rebate
- Rural Rebate: Rural Vermonters earning less than \$75,000 per year (\$150,000 per couple) will qualify for an additional monthly rebate.

These rebates would expand an existing and successful public/private partnership: the Green Mountain Power/Department for Children and Families Energy Assistance Program which reduces monthly charges for the most vulnerable. The ESSEX Plan would utilize a similar model, extended to all utilities and with a higher qualification threshold of 400% of the poverty level.

If a customer's rebates exceed their electricity charges, they will receive a check instead of a bill.



# OUTCOMES

## CREATING JOBS

By reducing electricity rates to the lowest in the region, The ESSEX Plan helps retain and attract the low-carbon businesses and industries of the 21<sup>st</sup> Century.

By steering Vermonters to lower-carbon options for heating and transportation, The ESSEX Plan will increase demand for weatherization, renewable energy, and travel efficiencies while simultaneously spurring business innovation in these sectors. The transition to a clean energy economy will be a generational effort, and there is at least a generation's worth of work to be done.

The Public Service Department's Total Energy Study of 2014 estimated that a similar carbon pollution policy would create 2,000 – 6,000 new jobs in the state.

## STRENGTHENING VERMONT'S ECONOMY

While greenhouse gas emissions in Vermont are up since 1990, since the turn of the 21st century Vermont's economy has begun to "decouple" from fossil fuels. In other words, the state has reduced its carbon pollution emissions by almost 13%, while Vermont's real GDP has grown by almost 23% – the fastest rate in New England.

It is easy to see why decoupling is good for Vermont's economy – all fossil fuels used in Vermont are imported. The state has no known petroleum reserves. We don't mine for coal, drill for oil or frack for gas. There are, however, nearly 20,000 Vermonters working in clean energy – and the industry is growing at a rate ten times faster than the workforce as a whole. It makes economic sense to build on that success.

According to the 2016 Comprehensive Energy Plan, "In 2013, the state spent nearly \$2.3 billion annually — about 8% of Vermont's GDP — on petroleum products that are extracted and refined elsewhere." This is a significant drain on the Vermont economy, particularly when there are

abundant, low-carbon and comparably-priced sources of energy available locally.

Consider this economic phenomenon in terms most Vermonters understand implicitly: maple syrup. It makes little sense for Vermont to import maple syrup when we produce the best product and all the



**BEFORE & AFTER:  
BUY LOCAL**

quantity we need. Buying Vermont maple syrup creates jobs and boosts our local economy. The same applies to energy. Our economy is stronger when we use locally generated energy instead of imports from distant states and countries.

Since all electricity is generated regionally instead of imported from distant states and countries, the ESSEX Plan in its first decade is a billion dollar “Buy Local” campaign.

## **HELPING WORKING-CLASS AND RURAL VERMONTERS**

In addition to boosting the competitiveness of Vermont businesses, The ESSEX Plan prioritizes those most vulnerable to the financial and physical impacts of climate change: working-class and rural Vermonters. The plan accomplishes this by expanding an existing public/private partnership: the innovative Green Mountain Power Energy Assistance Program.

Under The ESSEX Plan, every Vermont family earning less than 400% of the federal poverty level will be eligible for additional refundable rebates on their electric bill. If a household’s rebates exceed their electricity costs, then they will receive a check instead of a bill.

Rural Vermonters earning less than 400% of the federal poverty level will be eligible for rural rebates to cover the additional costs of rural driving.

Unlike other carbon pricing proposals, The ESSEX Plan distributes rebates on a monthly basis – alleviating cash-flow concerns for those living paycheck-to-paycheck.

An additional, indirect benefit of The ESSEX Plan is that it benefits Vermont’s Low-Income Weatherization Fund. That Fund is currently supported by a combination of a cents/gallon charge on heating fuels and a percentage charge on electricity sales. By encouraging the rapid adoption of electric vehicles, The ESSEX Plan expands the sources of Low-Income Weatherization funding to include transportation energy – a source of revenue not currently contributing to efforts to help the most vulnerable save money by saving energy in their homes.

To address weaknesses in Vermont’s transportation sector, The ESSEX Plan should be one component of a comprehensive transportation plan to increase efficiency, reduce carbon emissions, and provide all Vermonters with alternative means of transport including but not limited to walking, cycling, carpooling, and public transit.

## **THE CLEANEST ELECTRICITY AT THE LOWEST RATES IN NEW ENGLAND**

Two of Vermont’s largest utilities – Burlington Electric Department and Washington Electric Co-op – are 100% renewable already. Green Mountain Power is 55% renewable and 90% carbon-free, and all of Vermont’s electric utilities have a requirement to reach 75% renewable by 2032. Vermont has the highest percentage of low-carbon electric generation in the country, and our electric consumption is among the cleanest.



It is time to build upon Vermont's low-carbon strategic advantage by making the cleanest electricity the least expensive. Fully implemented, The ESSEX Plan would reduce effective commercial and industrial electric rates by an estimated 27% - attracting and retaining the low-carbon businesses of the future. For example, a carbon pollution fee of \$40/ton would generate approximately \$120 million in commercial and industrial rebates. Vermont utilities collected approximately \$440 million for commercial and industrial electricity sales in 2015.

$$\$120,000,000 \div \$440,000,000 = 27\% \text{ Rate Reduction}$$

A rate reduction of this magnitude would slash energy bills at some of Vermont's most dynamic businesses and largest employers.

Further, the benefits would not be limited to commercial and industrial enterprises. The ESSEX Plan spurs strategic electrification by dramatically reducing the operating costs of electric heating and transportation options. Every Vermonter will benefit from the lowest residential electric rates in New England, which will make it spectacularly attractive to replace oil-fired furnaces and gasoline-powered cars and trucks with low-carbon technologies like heat pumps and electric vehicles.

## **ADVANCING CONSERVATION, EFFICIENCY AND RENEWABLE ENERGY**

By including the true cost of carbon pollution into the cost of fossil fuels, conservation and efficiency measures becomes more financially attractive.

The "negawatt" (the kilowatt hour not needed because of conservation and efficiency) remains the least expensive energy, while the pay-back period shortens for low-carbon investments and the financial benefits of using less fossil fuel accrue more quickly.

Under ESSEX, renewable generating programs and facilities become more financially attractive. Programs like Cow Power, Burlington Electric Department's wind and hydro facilities, the Cassella/Washington Electric Co-op landfill gas station, and Vermont Gas System's Renewable Natural Gas will benefit relative to the fossil fuels outside the electric sector they displace.

The ESSEX Plan exempts the non-fossil fuel portion of bio-fuel blends of home heating and transportation fuels. Biomass is similarly exempted, giving a new boost to Vermont's forests and wood products industry as pellets and advanced wood heating become an even better financial proposition relative to heating with fossil fuels.

Demand for distributed solar will climb as Vermonters transition to electric heating and transportation and seek ways to displace that additional load with new renewables.

## **SAVING LIVES AND MONEY**

In addition to the damage carbon dioxide pollution is causing our climate, the co-pollutants generated by the burning of fossil fuels are deadly to human health. One recent study conducted by MIT estimated that more than 200 Vermonters suffer premature deaths annually due to air

pollution attributable to the burning of fossil fuels. These cases of heart and lung disease put even more burden on Vermont’s already strained health care systems.

The ESSEX Plan can help reduce these health and financial costs.

A comprehensive study of the health benefits of the RGGI program released earlier this year found that it has helped save over 300 lives and over \$5 billion in health care costs in the region over the last decade. A second study conducted by the Harvard School of Public Health forecast additional lives and dollars saved if Massachusetts enacted a similar price on carbon pollution.

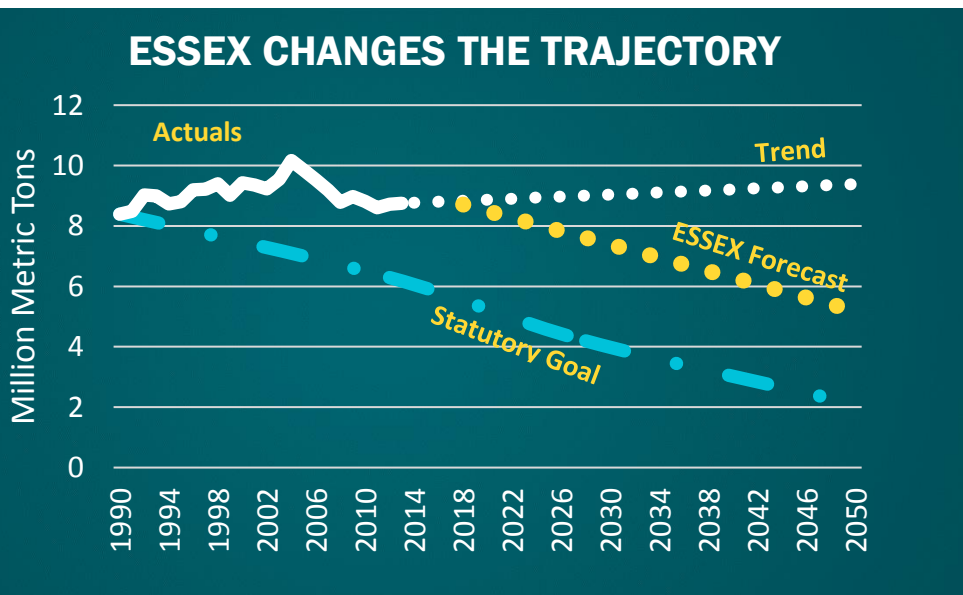
By attacking the major drivers of Vermont’s carbon pollution – transportation and heating – the ESSEX Plan would also help save lives and money in our state’s health care system.

## A CLEANER CLIMATE

Carbon pricing is both essential and inevitable. To achieve Vermont’s climate and clean energy goals, some form of carbon pricing will need to be implemented. Until the state begins to address the source of the problem – carbon pollution – we will only be dealing with the symptoms of climate change, rather than seeking ways to prevent the problem.

The ESSEX Plan addresses Vermont’s carbon pollution issue head on. By putting a price on pollution, The ESSEX Plan begins to recoup the true costs of fossil fuel combustion. By reducing the cost of the low-carbon alternatives to fossil fuels, The ESSEX Plan speeds the solution climate change.

Based on economic analyses of similar carbon pricing proposals completed by the Department of Public Service and Regional Economic Models, Inc., as well as the experiences in other jurisdictions that price carbon pollution, a sensible forecast of The ESSEX Plan is that it would achieve a 15%-25% reduction in carbon pollution below 1990 levels by 2025 and a 30%-50% reduction by 2050.



The ESSEX Plan is not the only climate and clean energy policy Vermont needs to achieve its goals, but it is an essential component of the suite of policies Vermont needs.

# ▶▶▶ ATTRIBUTES

## WHY BEGIN AT \$5/TON? WHY CAP AT \$40/TON?

The ESSEX Plan recommends starting at \$5/ton of carbon pollution because that is close to what a ton of pollution has been selling for through the RGGI auction process for the last several years. Five dollars per ton of pollution is too low a price to significantly affect behavior. It is, however, a reasonable starting point and gives businesses and homeowners nearly a decade to implement strategies to reduce carbon pollution before the program rises at \$5/ton/year to its maximum \$40/ton.

A \$5/ton fee on carbon pollution equates to three cents on a gallon of propane or CCF of natural gas, four cents on a gallon of gasoline, and five cents on a gallon of diesel or home heating oil. In Year 1, The ESSEX Plan would generate about \$30 million dollars in electric rate reductions for Vermont rate payers.

The ESSEX Plan recommends capping the carbon pollution fee at \$40/ton for three reasons:

### PUT A PRICE ON CARBON POLLUTION

FY19 FY20 FY21 FY22 FY23 FY24 FY25 FY26

### SLASH ELECTRIC RATES FOR ALL VERMONTERS

1. That is the approximately the "Social Cost of Carbon" as calculated by the Environmental Protection Agency during the Obama administration,
2. It is the same level that other states in the region (MA, RI, CT) are considering in their carbon pricing legislation, and
3. It is the same level the *Conservative Case for Carbon Dividends* (proposed by Reagan and Bush administration cabinet secretaries) suggests as a starting price. The ESSEX Plan is more conservative than the *Conservative Case for Carbon Dividends*.

## REVENUE NEUTRAL AND A 100% INVESTMENT IN CLEAN ENERGY

Other climate and clean energy proposals often flounder in arguments over revenue neutrality versus investments in clean energy, with conservatives demanding no net change to government budgets and liberals advocating for spending on the technologies that reduce carbon pollution. The ESSEX Plan resolves this standoff.

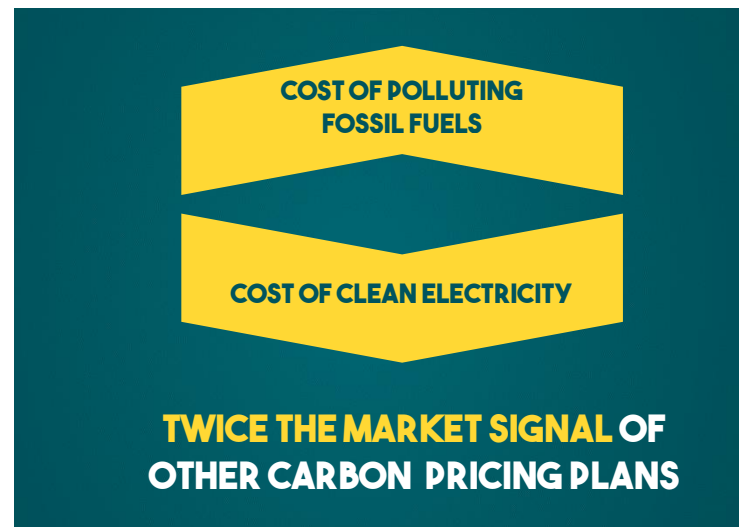
The ESSEX Plan is revenue neutral. 100% of the carbon pollution fees will be returned to Vermont electric ratepayers, and the program will be assessed annually by Vermont's Auditor of Accounts.

The plan is also a 100% investment in clean energy since Vermont's electric portfolio is already low-carbon and is on pace to become even cleaner.

For Vermont as a whole, there is no increase in energy spending – in fact, total spending on energy will decline. For every \$1 more Vermonters pay for polluting fossil fuels they will save \$1 on clean electricity ... if no one reduces their carbon emissions. But thousands of Vermonters will transition to the more efficient, lower-cost and lower-carbon technologies – cutting total energy spending and leaving hundreds of millions of dollars in Vermonters' pockets.

## TWICE THE CLIMATE BENEFITS OF OTHER PLANS

Beyond early adopters and committed environmentalists, what drives the purchase of low-carbon technologies like heat pumps and electric vehicles are financial considerations. While many Vermonters would like to “go green” they also must watch their bottom line. All carbon pricing plans raise the operating costs of polluting technologies, making the lower-carbon alternatives more financially attractive. In addition to the price signal of other plans, The ESSEX Plan also reduces the operating cost of the low-carbon technologies. In effect, The ESSEX Plan offers twice the market signal of other carbon pricing concepts.



## THE BENEFITS OF LEADERSHIP

There are advantages to being a proactive innovator on climate action.

- 1) The ESSEX Plan will drop Vermont's electric rates below other states in the region, making the Green Mountain State an attractive place for 21st century businesses.
- 2) The policy will drive technology and service innovation inside Vermont that can then be marketed to other states and countries in the years ahead, as well as expand our successful and increasingly critical clean energy sector.
- 3) Vermont's brand identity will be enhanced and our rhetoric will match reality.

**SAMPLE VERMONT ELECTRIC BILL  
UNDER THE ESSEX PLAN**

<b>KILOWATT HOURS USED</b>	<b>500</b>	<b>\$0.1484</b>	<b>\$74.20</b>
<b>CUSTOMER CHARGE</b>			<b>\$12.99</b>
<b>ENERGY EFF. CHG-KWH</b>	<b>500</b>	<b>\$0.0091</b>	<b>\$4.55</b>
<b>SUBTOTAL</b>			<b>\$91.74</b>
<b>CLIMATE RATE SAVINGS</b>	<b>500</b>	<b>\$0.0276</b>	<b>-\$13.80</b>
<b>LOW-INCOME REBATE</b>			<b>-\$21.24</b>
<b>RURAL REBATE</b>			<b>-\$13.92</b>

**BALANCE DUE: \$**

**42.78**

See appendix for supporting calculations.

## IMPACTS ON FOUR SAMPLE VERMONT INDUSTRIES

One of the reasons that The ESSEX Plan is an ideal fit for Vermont is that there are few carbon-intensive industries in the state. Carbon-intensive businesses long ago recognized that Vermont is at the tail end of the fossil fuel distribution chain with little control over extraction, refining, transportation, supply or price. Those fossil fuel-heavy industries have located closer to fossil fuel producers or have transitioned to electricity.

The Vermont industries that consume a lot of fossil fuels also tend to be heavy consumers of electricity. For them, The ESSEX Plan is an energy shift and encouragement to transition more of their operations to low-carbon electricity.

### **High-Tech Industrial Manufacturing**

In 2014, IBM reported that its energy expenses included \$5.9 million on fossil fuels and \$37 million on electricity. Fully implemented, The ESSEX Plan would save a facility with that energy mix profile would save millions of dollars on energy costs annually.

### **Agriculture**

The ESSEX Plan benefits Vermont's farms – some of which have electricity bills of \$10,000 a month – by reducing electricity costs by over 25% and doing so without raising the costs of driving a tractor. Farm diesel is exempt under The ESSEX Plan because there are no ready low-carbon alternatives available on the market for heavy equipment.

### **Ski Areas**

Vermont's largest ski areas consume as much as 25 million kilowatt hours of electricity a year because many of the lift systems and snow machines are electrified. The ESSEX Plan slashes their bills without adding costs on grooming equipment which, like farm tractors, are exempt under the proposal.

### **Health Care**

Most hospitals in the United States and in Vermont spend more on electricity than they do on fossil fuels. The ESSEX Plan helps reduce their operating costs. Couple these savings with the health benefits of cleaner air, and The ESSEX Plan reduces overall health care costs in Vermont.



## POLICY FINE PRINT

A gradually rising carbon pollution fee should be steady, transparent and predictable. All rebates and rate reductions should be exempt from Vermont income tax. The State Auditor should review the program annually to assure Vermonters that every dollar in revenue is returned to Vermont rate payers. In addition, the General Assembly should commission a regular, independent 5-year review of the climatic and economic results of this program.

While The ESSEX Plan is as comprehensive as possible, the following fossil fuels should be exempt from the carbon pollution fee for the following reasons:

- Fossil fuels used by Vermont utilities to generate electricity because that carbon pollution is already priced through RGGI,
- Aviation fuels because of a federal law preemption,
- Dyed diesel used for heavy equipment because there are no readily-available low-carbon alternatives on the market at this time, and
- The non-fossil fuel content of bio-blends such as biodiesel and Renewable Natural Gas because The ESSEX Plan is limited to fossil fuel emissions.

To maintain fairness, equity and commitments to existing programs, programs that are based on the retail rate of electricity such as the following should continue to use the retail rate, not the new effective rate in their calculations:

- Energy Assistance Program (EAP)
- Net Metering
- Low-Income Weatherization Fund
- Efficiency Vermont screening

To protect economically vulnerable Vermonters whose rent includes electricity (those at or below 200% of the poverty level) and those whose homes are off the electric grid, a plan to ensure that they will receive the benefits of a The ESSEX Plan will be developed.

## APPENDIX: SAMPLE BILL DETAILS

The following assumptions and calculations were used to determine the rate reductions and rebates shown in sample electricity bill on page 12:

- A pollution fee of \$40/ton of carbon dioxide.
- 50% of total ESSEX Plan revenue was dedicated to the residential sector, based on 2015 EIA data and the transportation section of VEIC's energy burden report updated with 2015 VTrans gas price data.
- 50% of residential revenue went to the per kWh rebate, divided by total residential kWh sales (EIA data).
- 25% of residential revenue went to the low income rebate. Households up to 400% of FPL were considered eligible, with households above 300% of FPL up to 400% receiving 25% of the rebate of households from 0-100% of FPL, with a linear slope for households between 100-200% and 200-300%.
  - Data from <https://www.kff.org/other/state-indicator/distribution-by-fpl/> (calculations assumed % population and % household are the same at 57%.)
  - The household in the bill is at 200% of FPL.
- 25% of residential revenue went to the rural rebate. "Ruralness" was based on the Economic Research Service's Rural-Urban Commuting Areas, with codes 1-3 being excluded (roughly 30% of the state). Households with over \$75,000 (single filer) or \$150,000 (joint) in income were also excluded, as were out of state filers, excluding another 21% of the state.
  - Ruralness data: [https://www.ers.usda.gov/webdocs/DataFiles/53180/25600\\_VT.pdf?v=39329](https://www.ers.usda.gov/webdocs/DataFiles/53180/25600_VT.pdf?v=39329)
  - Tax data: <http://tax.vermont.gov/research-and-reports/statistical-data/income-tax>

## SELECT BIBLIOGRAPHY

Abt Associates. Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009–2014. January 2017.

Baker, James A., et al. The Conservative Case for Carbon Dividends. Climate Leadership Council, January 2017

Brookings Institution. Growth, carbon, and Trump: State progress and drift on economic growth and emissions 'decoupling'. December 2016.

Congressional Budget Office. Offsetting a Carbon Tax's Costs on Low-Income Households. November 2012.

Efficiency Vermont. Mapping Total Energy Burden in Vermont. 2016.

Environmental Protection Agency. EPA Fact Sheet: Social Cost of Carbon. 2016.

Harvard T.H. Chan School of Public Health. Air Quality and Health Co-Benefits of a Carbon Fee-and-Rebate Bill in Massachusetts. April 2017.

Kavet, Rockler & Associates, LLC memorandum to Steve Klein, Legislative Joint Fiscal Office. Initial FY18 Estimate of Revenue Yield Associated with Proposed Carbon Pricing Plans. February 2017.

Regional Economic Models, Inc. (REMI). The Economic, Fiscal, Emissions, and Demographic Implications from a Carbon Price Policy in Vermont. November 2014.

U.S. Energy Information Administration.

Vermont Department for Children and Families. Green Mountain Power Energy Assistance Program.

Vermont Department of Environmental Conservation, Air Quality & Climate Division. Vermont Greenhouse Gas Emissions Inventory Update: 1990-2013.

Vermont Department of Public Service. 2016 Comprehensive Energy Plan. January 2016.

Vermont Department of Public Service. Vermont 2017 Clean Energy Industry Report.

Vermont Department of Public Service. Total Energy Study: Final Report on a Total Energy Approach to Meeting the State's Greenhouse Gas and Renewable Energy Goals. December 2014.

World Bank. State and Trends of Carbon Pricing 2017. November 2017.