

900%
RENEWABLE BY
2050



ENERGY ACTION NETWORK

ANNUAL REPORT 2015

We can do this.



EAN brings a
NETWORK
approach to creating a
clean, affordable and secure
energy future through
EFFICIENCY
and **RENEWABLES.**

From EAN's Executive Director and Board Chair

2015 was a highly productive year for EAN, with significant progress on projects that support our mission of transforming Vermont's energy system to one based on efficiency and renewables. The Network engaged in a broad range of activities using the framework of our four leverage points to move Vermont toward a clean, affordable, and secure energy future. It is again with great pleasure, that we offer this Annual Report as a summary of EAN's work to date and priorities for the year ahead.

SOME HIGHLIGHTS OF EAN'S 2015 PROGRAMS AND ACCOMPLISHMENTS INCLUDE:

- Developed a proposal for a Clean Energy Finance Collaborative to expand markets and attract private capital to fuel energy transformation at scale.
- Worked towards a new insurance/weatherization partnership through Union Mutual of Vermont to provide reduced rates for homeowners who invest in weatherization.
- Partnered with the Vermont Energy Investment Corporation (VEIC) to support their new \$46 million financing program from the USDA Rural Utilities Service.
- Implemented EAN's Brighter Vermont campaign to begin to "move the middle" to understand that clean energy is critical to Vermont's economy, environment and values.
- Gained national recognition for the Net Zero Montpelier project through designation of the City of Montpelier as an Obama Climate Action Champion and as a semi-finalist in the national Georgetown University Energy Prize competition.
- Construction of EAN's Community Energy Dashboard to support grassroots energy action in communities around the state.
- Convened and supported a new Regional Energy Planning partnership among Vermont's Regional Planning Commissions (RPC), Vermont Public Service Department (PSD) and Vermont Energy Investment Corporation (VEIC).
- Provided strategic input on the 2016 Comprehensive Energy Plan (CEP), supporting specific milestones towards the state's goal of 90% by 2050 and on clean energy finance.
- Worked with the Public Service Department (PSD) to identify key statutes and progress indicators that drive the state's energy transformation.
- Secured a commitment to double the portion of the state building electric load (10MW) powered by renewable energy.

We are deeply grateful to our foundation supporters and highly committed Network members who have made all of this progress and good work possible.


ANDREA L. COLNES
Executive Director


LEIGH SEDDON
Board Chair

Members

Addison County Regional Planning Commission:

Adam Lougee

Associated Industries of Vermont:

William Driscoll, William Sayre

Bennington County Regional Commission:

James Sullivan

Biomass Energy Resource Center:

Adam Sherman

Bourne's Energy:

Peter Bourne

Burlington District Energy Services:

Jan Schultz

Burlington Electric Department:

Mike Kanarick, Neale Lunderville

Butternet Mountain Farm:

Ira Marvin, David Marvin

Catalyst Financial:

Marianne Barton, Robert Barton

Champlain Valley of Economic Opportunity:

Jennifer Wood

Chittenden County Regional Planning Commission:

Charlie Baker, Melanie Needle

City of Montpelier:

John Hollar

Diamond & Robinson, P.C.:

Ronald Shems

Donella Meadows Institute:

Marta Ceroni

Efficiency Vermont:

Liz Gamache

Encore Redevelopment:

Chad Farrell, Derek Moretz

Energy Co-op of Vermont:

John Quinney

Energy Futures Group:

Richard Faesy, Chris Kramer

Environmental Consultant:

Elizabeth Courtney

Fresh Tracks Capital:

Lee Boyeau, Cairn Cross

Gardener's Supply:

William Rapp

Goddard College:

Robert Kenny, Catherine Lowther

Google:

Matthew Dunne

Green Lantern Capital:

Ralph Meima, Bill Miller, Luke Shullenberger

Green Mountain Power:

Kristin Carlson, Robert Dostis, Brian Otley, Mary Powell, Dorothy Schnure

Hardwick Electric Department:

Mary Westervelt

High Meadows Fund:

Gaye Symington

Interfaith Power and Light:

Richard Hibbert

L.W. Seddon, LLC:

Leigh Seddon

Lake Champlain Regional Chamber of Commerce:

Catherine Davis, Tom Torti

Legislator:

Mary Sullivan

Lintilhac Foundation:

Crea Lintilhac

Maverick Lloyd Foundation:

Anne Berndt, Arthur Berndt

National Life Group:

Tim Shea

NeighborWorks of Western Vermont:

Ludy Biddle

New England Clean Energy Council:

Janet Besser

New England Grassroots Environment Fund:

Leigh Cameron, Julia Dundorf

Pace Law School Energy and Climate Center:

Sam Swanson

Pomerleau Real Estate:

Ernie Pomerleau

Regulatory Assistance Project:

Rick Weston

Renewable Energy Vermont:

Ansley Bloomer, Olivia Campbell-Anderson (Gabrielle Stebbins)

Shelburne Farms:

Megan Camp

SunCommon:

James Moore

SunEdison:

Jeff Bower

Sustainable Energy Resource Group:

Bob Walker

Two Rivers-Ottoqueechee Regional Commission:

Peter Gregory

Union Mutual Insurance:

Michael Nobels

University of Vermont:

Jennie Stephens, Richard Watts

University of Vermont - Gund Institute:

Jon Erickson, Eric Zencey

University of Vermont Medical Center:

Dawn LeBaron

Veris Wealth Partners:

Anders Ferguson

Vermont Businesses for Social Responsibility:

Daniel Barlow

Vermont Council on Rural Development:

Paul Costello

Vermont Economic Development Authority:

Jo Bradley, Steve Greenfield

Vermont Electric Power Company:

Tom Dunn, Kerrick Johnson

Vermont Energy Education Program:

Cara Robechek

Vermont Energy Investment Corporation:

Peter Adamczyk, Christine Donovan, Karen Glitman, David Hill, Scott Johnstone, Paul Markowitz, Jim Merriam Scudder Parker, Christa Shute

Vermont Fuel Dealers Association:

Matthew Cota

Vermont League of Cities and Towns:

Abby Friedman, Karen Horn

Vermont Natural Resources Council:

Johanna Miller

Vermont Public Interest Research Group:

Paul Burns, Ben Walsh

Vermont State Employee Credit Union:

Laurie Fielder, Rob Miller

Vermont Sustainable Jobs Fund:

Ellen Kahler, Scott Sawyer, Janice St. Onge

Vermont Technical College:

Dan Smith

Vermontivate!:

Kathryn Blume

Vital Communities:

Sarah Simonds

Washington Electric Cooperative:

Patty Richards

Waterbury LEAP:

Jamie Ervin

STATE PARTNERS:**USDA, State Director VT/NH Rural Development:**

Ted Brady

Agency of Health and Human Services, Secretary:

Hal Cohen

Agency of Transportation, Secretary:

Chris Cole

Agency of Natural Resources, Secretary:

Deb Markowitz

Agency of Commerce and Community Development, Secretary:

Pat Moulton

Vermont State Treasurer:

Elizabeth Pearce

Clean Energy Development Fund:

Andrew Perchlik

Department of Financial Regulation:

Michael Pieciak

Public Service Department, Commissioner:

Chris Recchia

Agency of Agriculture, Secretary:

Chuck Ross

Vermont Housing and Conservation Board:

Gus Seelig

Department of Forests, Parks and Recreation, Commissioner:

Michael Snyder

History of Energy Action Network

WHO WE ARE

Energy Action Network (EAN) is a diverse group of non-profits, public agencies, businesses, and other high-level stakeholders seeking to advance Vermont's transition to a sustainable energy future and meet 90% of our 2050 energy needs through efficiency and renewables. EAN recognizes that achieving our goals will require more than the capacity of individual organizations. Changing large, complex systems requires a network approach to harness the power of individual efforts into a leveraged whole. EAN makes this collaboration possible by providing a structure through which private, non-profit and public organizations can work together to transform Vermont's energy system.

MISSION

EAN's mission is to end Vermont's reliance on fossil fuels and to create clean, affordable and secure electric, heating, and transportation systems for the 21st Century.

APPROACH

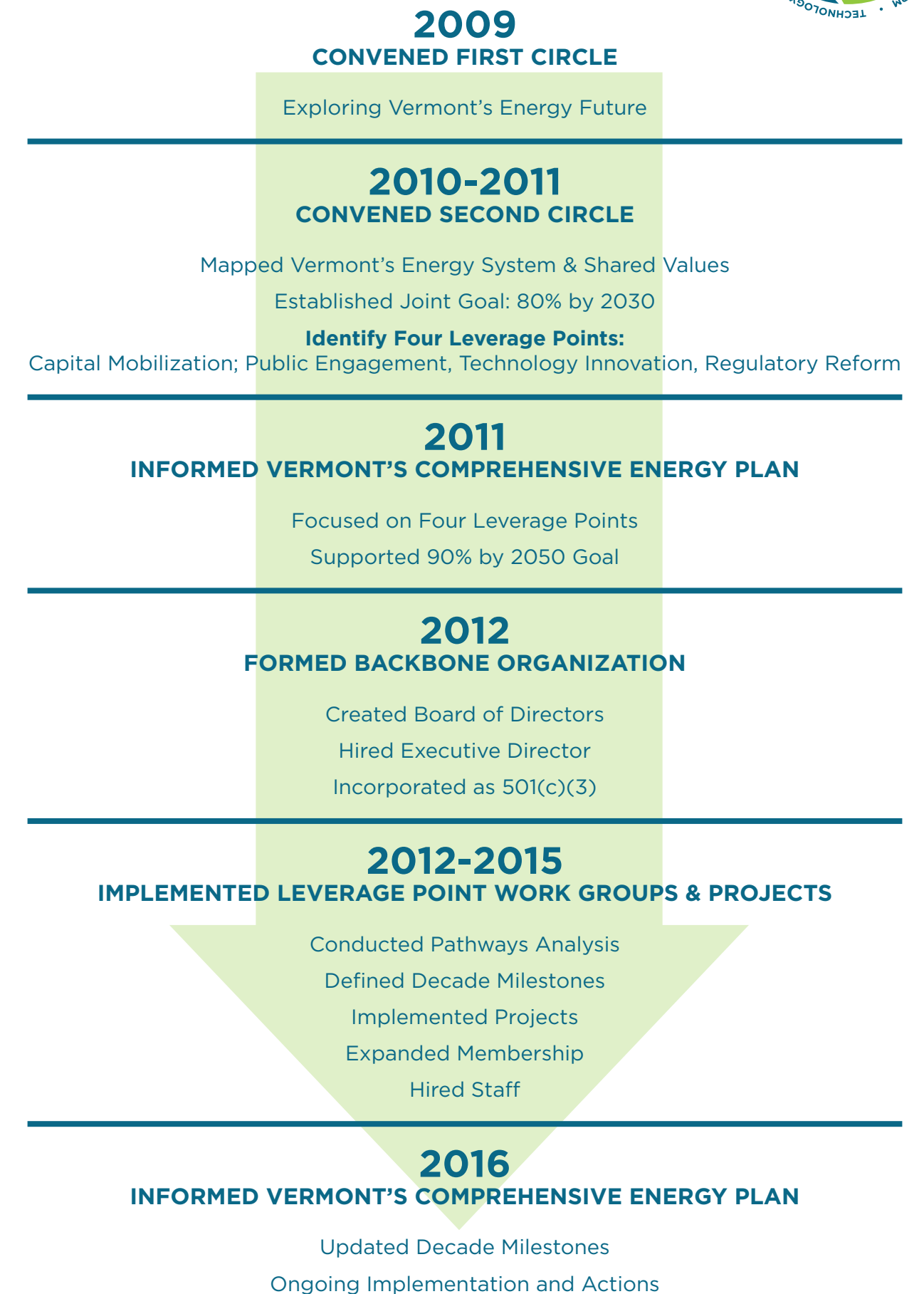
EAN's work is based on an in-depth systems analysis of Vermont's energy systems. Our members used their diverse perspectives and viewpoints to identify four core leverage points that could catalyze a shift to a system based on efficiency and renewables. The four leverage points that form the backbone of EAN's structure include:

- **Capital Mobilization**
- **Public Engagement**
- **Technology Innovation**
- **Regulatory Reform**

EAN also strives to provide a replicable model of best practices and innovation that can serve as a model for other states in the Northeast and elsewhere across the US.



EAN Timeline



Capital Mobilization

GOAL: Develop strategies to apply capital on a transformative scale to investments in energy efficiency and renewables across all energy sectors in Vermont through innovative public/private partnerships.

The focus of EAN's Capital Mobilization work group over the past year has been our "Clean Energy Finance Initiative" (CEFI). In close partnership with the Coalition for Green Capital and relevant state agencies, EAN convened the "Clean Energy Finance Initiative" to develop market-building finance strategies to drive Vermont's energy transformation. Members of the CEFI Steering Committee include the Public Service Department (PSD), Agency of Commerce and Community Development, State Treasurer, Clean Energy Development Fund, Vermont Economic Development Authority (VEDA), VT/NH USDA, Efficiency Vermont, Department of Financial Regulation, and the High Meadows Fund.

IN ADDITION, THE CAPITAL MOBILIZATION WORK GROUP HAS SUPPORTED SEVERAL ADDITIONAL PROJECTS INCLUDING:

- Identification and development of specific finance strategies for priority clean energy markets.
- Support for VEIC's efforts to create their new \$45 million Rural Utility Service financing program.
- Work towards creation of a new insurance/weatherization partnership with Union Mutual of Vermont, the Vermont State Employees Credit Union (VSECU), Efficiency Vermont, and Green Mountain Power (GMP).
- Work towards creation of a Technical Assistance program for Energy Service Performance Contracting (ESPC) in Vermont.

CLEAN ENERGY FINANCE INITIATIVE

New Institutional Capacity: To make clean energy accessible and affordable for Vermonters

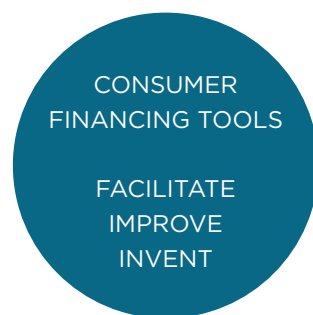
GOAL & CHALLENGE



WHAT'S MISSING



KEY SOLUTIONS



FEATURED PROJECT:

Clean Energy Finance Collaborative

Create a Vermont Clean Energy Finance Collaborative, based on a partnership with existing Vermont institutions. Achieving Vermont's goal of meeting 90% of its energy needs through efficiency and renewables by 2050, presents an enormous economic development opportunity. New investment will be needed to fuel this transition across all sectors of Vermont's economy.

To expand and catalyze clean energy and efficiency development in Vermont, the state should structure and invest in a Clean Energy Finance Collaborative to work with the State's efficiency utilities, banks, VEDA, credit unions, utilities and others to simplify the consumer experience. The Collaborative would utilize public/private partnership to leverage private capital into Vermont's clean energy markets. It would also provide consumer assistance to help make energy and efficiency investments easy and affordable for the average Vermont resident and business.

CLEAN ENERGY FINANCE COLLABORATIVE: THREE AREAS OF WORK

1

ALIGN EXISTING CLEAN ENERGY / EFFICIENCY FINANCE PROGRAMS

2

DEVELOP NEW FINANCIAL TOOL TO BUILD MARKETS

3

PROVIDE A CLEAN ENERGY INFORMATION CLEARINGHOUSE

VERMONT IDENTIFIES OVER \$33 BILLION IN CLEAN ENERGY INVESTMENT

DATA AS OF JAN 2015

SELECTED TECHNOLOGIES	TOTAL CURRENT INSTALLED CAPACITY	TOTAL POTENTIAL MARKET	TOTAL UNFILLED POTENTIAL COST
WIND	214 MW	329 MW	\$312 M
SOLAR	87 MW	2,248 MW	\$6,000 M
ENERGY	ELECTRIC	993 GWH	\$1,884 M
	THERMAL	218,000 MM BTU	\$9,699 M
BIOENERGY ELECTRIC GENERATION	88 MW	132 MW	\$158 M
TRANSPORTATION	1100 EVS 100 PUBLIC EVSE	400,000 EVS 127,000 BIO VEHICLES 20,000 BIO TRUCKS 500 PUBLIC EVSE	\$415 M FOR VEHICLES \$779 M FOR E VSE \$1194 M TOTAL
THERMAL FUEL SWITCHING	N/A	N/A	\$6,898 M
ELECTRIC GRID UPGRADES	N/A	N/A	\$7,304 M
TOTAL	N/A	N/A	\$33,322 M

DATA SOURCE: ENERGY ACTION NETWORK AND COALITION FOR GREEN CAPITAL



MEMBERS:

Peter Adamczyk, Vermont Energy Investment Corporation
Marianne Barton, Catalyst Financial, Co-Chair
Robert Barton, Catalyst Financial, Co-Chair
Ludy Biddle, NeighborWorks of Western Vermont
Lee Bouyea, Fresh Tracks Capital
Jeff Bower, SunEdison
Sam Buckley, Vermont Community Loan Fund
Marta Ceroni, Donella Meadows Institute

Richard Faesy, Energy Futures Group
Chad Farrell, Encore Redevelopment
Laurie Fielder, Vermont State Employee Credit Union
Abby Friedman, Vermont League of Cities and Towns
Steve Greenfield, Vermont Economic Development Authority
Karen Horn, Vermont League of Cities and Towns
Mark Kelley, Vermont Energy Investment Corporation
Chris Kramer, Energy Futures Group
Ralph Meima, Green Lantern Capital

Bill Miller, Green Lantern Capital
Rob Miller, Vermont State Employee Credit Union
James Moore, SunCommon
Duane Peterson, SunCommon
William Raap, Gardener's Supply
Luke Shullenberger, Green Lantern Capital
Christa Shute, Vermont Energy Investment Corporation
Janice St. Onge, Vermont Sustainable Jobs Fund
Sam Swenson, PACE
Gaye Symington, High Meadows Fund
Mary Westervelt, Hardwick Electric Department

STATE PARTNERS:

Jon Copans, Public Service Department
Jared Duval, Agency of Commerce and Community Development
Pat Moulton, Agency of Commerce and Community Development
Beth Pearce, State Treasurer
Andrew Perchlik, State of VT Clean Energy Development Fund

Public Engagement

GOAL: Implement a unified communications strategy to “move the middle” so mainstream Vermonters understand that clean energy is necessary, achievable and critical to Vermont’s economy, environment and values.

PROGRESS TOWARDS THIS GOAL INCLUDES THE FOLLOWING WORK:

— LAUNCH OF BRIGHTER VERMONT COMMUNICATIONS STRATEGY

EAN used “Brighter Vermont” brand to provide strategic direction, underpin message consistency, and support a positive, accessible tone.

— LAUNCH OF INFORMATION HUB

EAN created the Brighter Vermont website (www.brightervermont.org) to provide a centralized public “entry point” to information on efficiency and renewables and as a source of EAN’s “open source” communications materials for member use.

— LAUNCH OF SOCIAL MEDIA TOOLS

EAN launched a “Brighter Vermont” Facebook page to provide a social media platform to inspire and inform energy action.

— CLEAN ENERGY STORIES VIA TRUSTED MESSENGERS

EAN created a first round of “Champion Videos” and media outreach tools that used trusted local messengers to communicate that energy efficiency and renewable technologies are accessible, affordable and doable.

— NETWORK COMMUNICATIONS

Strengthened communications among EAN members to enhance collaboration and impact, via new EAN Newsletter and individual outreach.

— FOCUSED COLLABORATION – SOLAR WORKS!

EAN has launched a state-wide communication effort tagged “Solar Works!” - a coordinated communications plan to inspire solar in Vermont, through shared message development and delivery strategies.

FEATURED PROJECT:

Solar Works!



To build support for the next phase of solar energy development in Vermont, and to encourage solar energy that supports Vermont values and our working landscape, EAN is working with the Vermont Energy and Climate Action Network (VECAN) and many other partners to raise public awareness about the benefits of solar energy to our economy, communities and environment. EAN will underpin this effort by serving as a “Network Hub” to support a broad-based collaborative effort.

SOLAR WORKS! GOALS:

- Provide a positive educational and public awareness effort that any interested organization, developer or company can join, co-promoting that “Solar Works!”.
- Encourage solar projects that demonstrate best practices (e.g. not “solar at any cost,” but solar done right).
- Promote stories from Vermonters on why solar works for them and their communities.

USE A NETWORK STRATEGY

Keep it simple! Create an overarching communications effort to align Network members around common messages and goals. EAN will serve as a central hub to support the following efforts:

- Develop positive messaging and deploy consistently and repeatedly.
- Create and utilize EAN’s “open source” communications tools (Facebook, website, videos, stories, Dashboard)
- Engage and mobilize grassroots leaders.
- Implement a “Network” press strategy.
- Create a state-wide calendar of events and outreach activities.
- Engage artists in showing how solar is part of Vermont’s working landscape.

MEMBERS:

Ansley Bloomer, Renewable Energy Vermont

Kathryn Blume, Vermontivate!

Megan Camp, Shelburne Farms, Co-Chair

Kristin Carlson, Green Mountain Power

Robert Dostis, Green Mountain Power

Julia Dundorf, Northeast Grassroots Environment Fund

Deena Frankel, VELCO

Peter Gregory, Two Rivers-Ottawaquechee Regional Commission

Richard Hibbert, Interfaith Power & Light

Karen Horn, Vermont League of Cities and Towns

Paul Markowitz, Vermont Energy Investment Corporation

Julia Michael, Vermont Energy Investment Corporation

Johanna Miller, Vermont Natural Resources Council

James Moore, SunCommon

John Quinney, Energy Co-op of Vermont

Cara Robecheck, Vermont Energy Education Program

Dotty Schnure, Green Mountain Power

Sarah Simonds, Vital Communities, Co-Chair

James Sullivan, Bennington County Regional Commission

Mary Sullivan, Legislator

Gaye Symington, High Meadows Fund

Bob Walker, Sustainable Energy Resource Group

Ben Walsh, Vermont Public Interest Research Group

Richard Watts, University of Vermont

Eric Zencey, UVM Gund Institute

STATE PARTNERS:

Jon Copans, Public Service Department

Alex DePillis, Agency of Agriculture

Sarah McKernan, Agency for Natural Resources

90%^{BY} 2050 PATHWAYS TO CLEAN ENERGY

Analysis demonstrating how Vermont can transition to a clean energy economy by replacing fossil fuels with renewables and increasing efficiency.

In 2011, the State of Vermont revised its Comprehensive Energy Plan (CEP) and established a bold goal - to meet 90% of Vermont's 2050 energy needs from renewable sources and increased efficiency. The just-released 2016 CEP continues to support this goal and identifies specific targets and milestones for the years 2025 and 2035 enroute to 2050. These include energy used in all sectors - transportation, thermal and electric - by residential, commercial and industrial users.

In order to illustrate what this energy transition might look like over the next three decades, the Energy Action Network developed a series of milestones across all three energy sectors. Two key factors are fundamental to this transition: 1) significant improvements in efficiency across all energy sectors; and 2) increasing electrification of both the thermal and transportation sectors. **EAN's analysis is not meant to be a "roadmap," but rather a means to identify known technology pathways, key policy drivers and important questions for policy makers to consider.** These milestones also compliment and support the targets and goals set out in the new 2016 CEP. To access the complete EAN analysis, please contact EAN.

EFFICIENCY

30% MORE ENERGY EFFICIENT ACROSS ALL ENERGY USE THROUGH:

- Efficient technologies such as electric vehicles, cold climate heat pumps, weatherized and energy efficient buildings, and more.
- Generating energy from renewable sources instead of fossil fuel sources to reduce the energy associated with extracting, processing and delivering energy to customers.
- Shifting to locally-sourced distributed generation to reduce transmission and distribution losses.

ENERGY SOURCES

MOST IMPORTANT RENEWABLE ENERGY SOURCES INCLUDE:

- Solar Power
- Wind Power
- Hydro Quebec
- Biomass & Biofuels

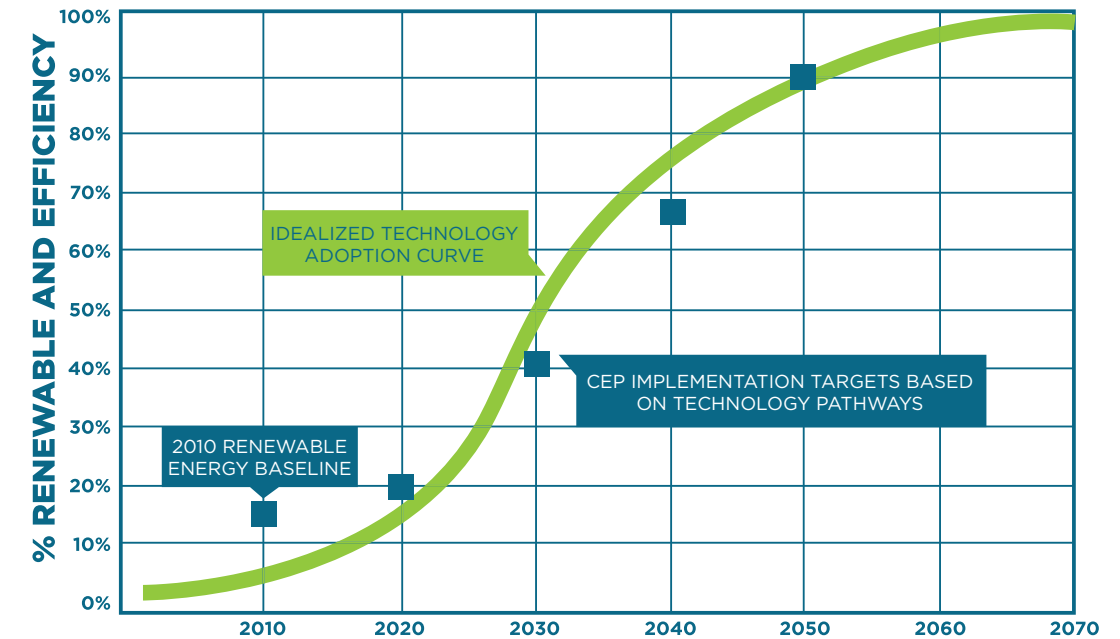
ENERGY USE

SHIFT AND REDUCE ENERGY USE THROUGH:

- Shifting our light vehicle fleet to Electric Vehicles
- Increasing vehicle fuel economy (CAFE standards)
- Shifting to biofuels for heavy vehicle transportation and certain heating needs
- Use of renewably-powered cold climate heat pumps
- Energy efficient building technologies and appliances

Note: This analysis does NOT assume that all of Vermont's energy needs will be produced from in-state sources.

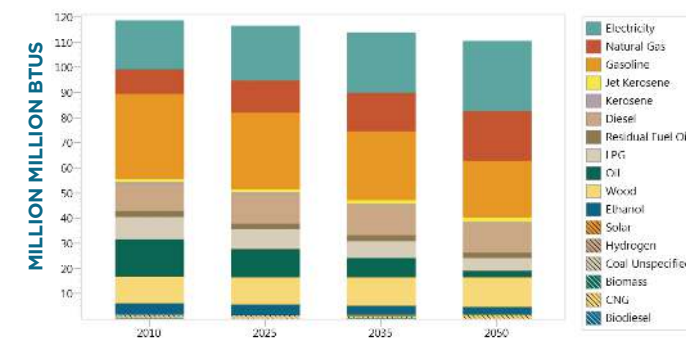
90% BY 2050 ADOPTION CURVE & MILESTONES



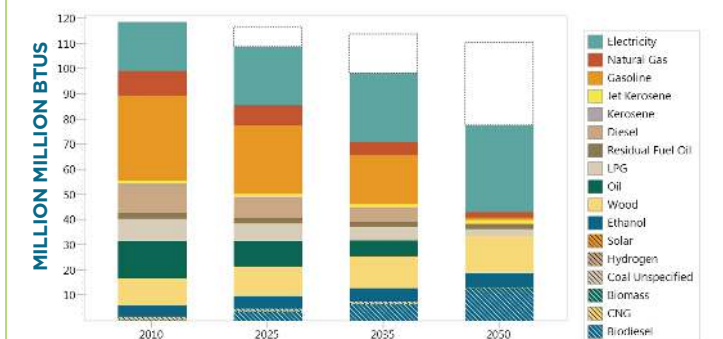
To further define what the adoption curve for 90% by 2050 might look like, EAN devised a series of decade milestones to provide a snapshot of where we might be in 2020, 2030, and 2040. One valuable insight gained during this process was the importance of balancing the transition across all three energy sectors -- transportation, thermal and electricity. For example, additional renewable electricity will only have a significant impact once electricity is used to displace fossil fuels (e.g. power electric vehicles or thermal heat pumps). The rate of adoption of certain technologies, such as electric vehicles, will determine how swiftly Vermont moves toward a renewable energy future.

VERMONT END-USE ENERGY DEMAND BY FUEL TYPE: TWO SCENARIOS

BUSINESS AS USUAL



90 BY 2050 SCENARIO



EFFICIENCY PAYS!

ENERGY EFFICIENCY HAS BIG PAYBACKS FOR VERMONT'S RATEPAYERS:

- From 2000 to 2014, Vermonters have saved \$48 million from our investment in electric energy efficiency through the Efficiency Charge and our Efficiency Utilities (Efficiency Vermont and Burlington Electric Department).
- By the end of 2025, Vermont ratepayers will have saved more than \$400 million through our Energy Efficiency Utilities.

SOURCE: PSD REPORT TO THE JOINT ENERGY COMMITTEE ON ENERGY EFFICIENCY INVESTMENTS (JANUARY 13, 2016).

Collaborative Energy Scenerio Modeling

90% BY 2050 MILESTONES

SECTOR	UNIT	2010 BASELINE	2015 ACHIEVED*	2020 MILESTONE	2030 MILESTONE	2040 MILESTONE	2050 MILESTONE	EAN TARGET DESCRIPTION
TRANSPORT								
Electric Vehicles & Plug-In Hybrids	# of Vehicles	100	1,046	17,160	114,400	228,800	400,400	% of light vehicle fleet (LVF)
Light Vehicle Fleet Efficiency (combustion engine only)	Fleet MPG	20.3	21.7	22.3	25.9	30.2	32.4	% Fuel efficiency increase of LVF combustion engine fuel (over 2010)
Commerical-Industrial Fleet Efficiency (combustion only)	Fleet MPG	6	N/A	6.6	7.2	8.4	9	% Fuel efficiency increase for commerical/industrial fleet (over 2010)
Biofuels**	Million Gallons	1.2	N/A	12.5	68	122	211	% of total fuel use for combustion engine fleet (LVF, commercial, industrial)
THERMAL								
Building Efficiency	Trillion BTU (TBTU)	38	37.2	36.1	32.3	28.5	26.6	Residential & Commercial Heating Load
Biomass	Trillion BTU (TBTU)	4.9	5.4	6.6	7.4	8.2	8.2	% reduction in residential & commercial building heat energy (over 2010)
Biofuels	Trillion BTU (TBTU)	0	N/A	0.3	3.3	5.0	8.3	% of VT residential and commercial heating demand met by biomass
Heat Pumps	Cumulative # of retrofits	0	1,800	20,000	80,000	160,000	200,000	% VT res & com heating demand met by liquid biofuels
			0.1%	3%	15%	34%	38%	% of VT res and com heating demand met by heat pumps
ELECTRIC								
Wind	Megawatts	7.4	211	300	350	550	650	Cumulative MW capacity from in-state and regional wind plants
Solar	Megawatts	11	137***	300	600	1,000	1,500	% of total electric power generation
Hydro (VT small)	Megawatts	190	200	205	215	225	225	Cumulative MW capacity from small-scale hydro
HydroQuebec (import)	Megawatts	400	218	218	400	550	550	% of total electric power generation
Methane (Farm and Landfill Methane)	Megawatts	15.1	17.2	20	30	40	45	Existing HQ contract (2012) remains unchanged until 2030
			1%	2%	3%	3%	4%	% of total electric power generation

Note: All data are drawn from State Reports and EIA data. Projections are those of EAN, building upon Vermont's 2016 Comprehensive Energy Plan.

*2015 data is most recent public information: Transportation data from The Vermont Transportation Energy Profile (VTTRANS), Oct 2015; Thermal data from Efficiency Vermont, Oct 2015), The Heat Pump Report (PSD, Dec 2015) and the 2016 Comprehensive Energy Plan (PSD, Jan 2016); Electric data from the 2016 Comprehensive Energy Plan (PSD, Jan 2016). Electric generation includes Net Metering, Standard Offer, and SPEED Projects reported through November 2015. NA indicates incomplete data.

** Includes Light Vehicle Fleet (LVF) and Commercial-Industrial Fleet (CIF). Excludes aviation and corn ethanol.

*** Permitted as of Nov 2015



LEAP allows policy analysts to create and evaluate different scenarios by comparing the associated energy requirements, social costs / benefits and environmental impacts.

EAN is collaborating with the Vermont Energy Investment Corporation (VEIC), Regional Planning Commissions (RPCs) and Vermont Public Service Department (PSD) on a state-wide energy model that can be used by towns and regions to build long-range energy plans that are consistent with the state's 90% by 2050 goals. Using the Long-range Energy Alternatives Planning model (LEAP), EAN is supporting VEIC's efforts to build energy scenarios and milestones for three of Vermont's eleven Regional Planning Commissions. The goal of this effort is to allow all RPC's to initiate comprehensive energy planning within the framework of overall state goals. The LEAP model data also underpins EAN's "Community Energy Dashboard" which will enable towns across the state to understand their energy use and plan a renewable energy future.

SOURCE ENERGY

EAN's analysis measures source energy which includes all the energy inputs required to deliver the energy we consume in all sectors. This includes energy associated with extracting, processing, and delivering primary fuels. For electricity, source energy also includes conversion inefficiencies at power plants and transmission and distribution losses.

NOTE:

This analysis is not meant to be a "roadmap", but rather identify the known technology pathways, key policy drivers, and most important questions for policy makers to consider.

Technology Innovation

GOAL: To drive on-the-ground transformation of Vermont's energy infrastructure to a system based on efficiency and renewables.

REGIONAL PLANNING COMMISSIONS (RPCs): ON-THE-GROUND ENERGY PLANNING
 EAN played a leadership role in launching a new partnership between Vermont's Regional Planning Commissions (RPCs), Vermont Public Service Department (PSD) and Vermont Energy Investment Corporation (VEIC) to implement region-specific energy planning with clear metrics, mapping and decade milestones to drive transformation. This work is underway and will be a powerful driver for on-the-ground action and siting of renewable energy.

COMMUNITY ENERGY DASHBOARD:
 To engage communities in their energy future, EAN is developing a powerful online tool to help communities understand energy at the local level across all energy sectors. The Dashboard will establish baselines, set goals, track progress, map current and future actions, engage community members, and share stories. The Dashboard is a collaborative partnership between EAN, the Vermont Sustainable Jobs Fund (VSJF), VEIC, VECAN, VLITE, the PSD, and many others.

NET ZERO MONTPELIER (NZM):
 Building on the Net Zero Montpelier initiative originally launched by EAN, the City of Montpelier and the Montpelier Energy Advisory Committee (MEAC) have implemented a range of NZM initiatives in collaboration with partner organizations, including:

- Cold Climate Heat Pump Pilot Program
- GMP eHome Pilot Program
- Installation of Electric Vehicle (EV) Charging Stations
- Net Zero Workshops and a state-wide Net Zero Conference
- Selected as a semi-finalist for the "Georgetown University Energy Prize"
- Montpelier named National "Climate Action Champion" by Obama Administration
- Solar Net Metering Project at City entrance to serve several Montpelier non-profits

STATE BUILDINGS INITIATIVE:
 As part of an effort to have Vermont become the first state in the nation to power all state facilities with renewable energy, EAN worked with Buildings & General Services, PSD, GMP and others to double the amount of solar power contracted to state buildings, (to 10MW, or about 25% of the electric load of state buildings). Implementing this commitment is still in process.

MEMBERS:
Matthew Dunne, Google
Jamie Ervin, Waterbury LEAP
Jeff Forward, Renewable Energy Vermont
Karen Glitman, Vermont Energy Investment Corporation
David Hill, Vermont Energy Investment Corporation
John Hollar, City of Montpelier
Alison Hollingsworth, Vermont Energy Investment Corporation
Kerrick Johnson, VELCO
Dan Jones, Montpelier Energy Advisory Committee
Dawn LeBaron, UVM Medical Center
Jim Merriam, Vermont Energy Investment Corporation
Johanna Miller, Vermont Natural Resources Council

Brian Otley, Green Mountain Power
Tim Shea, National Life Group
Dan Smith, Vermont Technical College
Jenny Stevens, UVM
Kate Stephenson, Montpelier Energy Advisory Committee
Scott Sawyer, Vermont Sustainable Jobs Fund
Jim Sullivan, Bennington Regional Planning Commission, Chair

STATE PARTNER:
Anne Margolis, Public Service Department

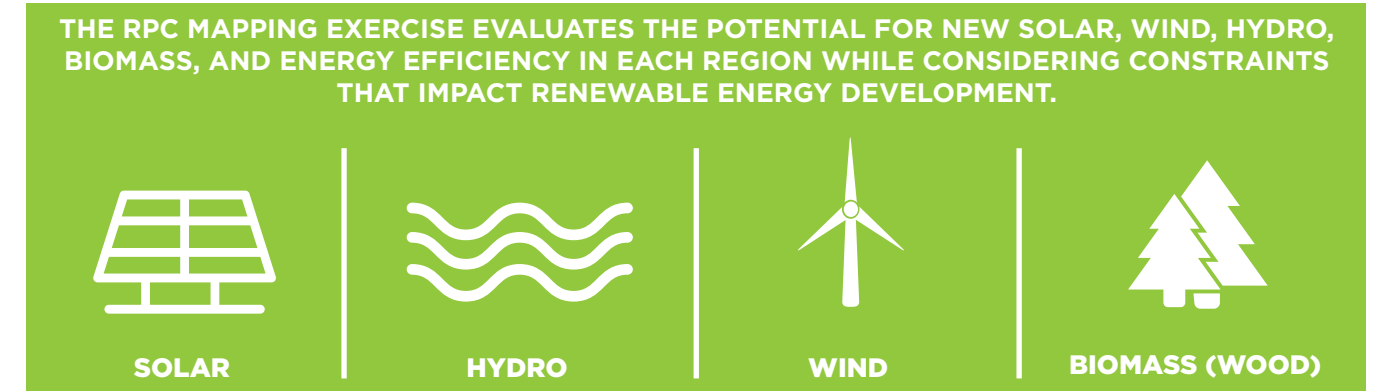
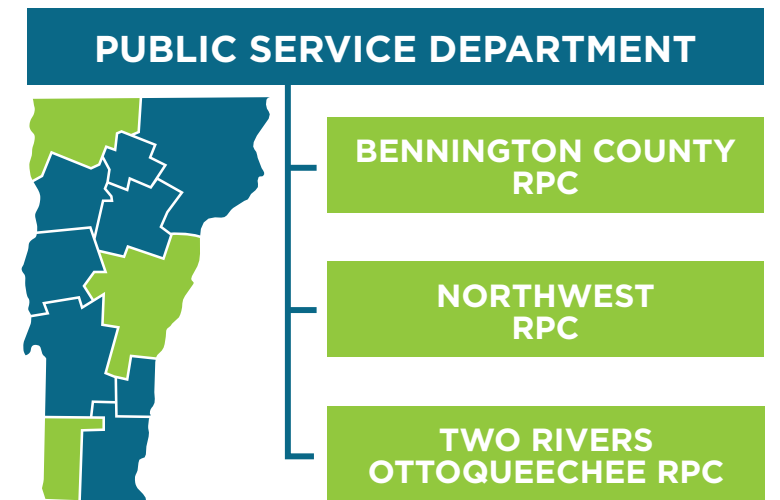
FEATURED PROJECT 1: RPC Energy Planning

The Public Service Department (PSD) is funding three of Vermont's Regional Planning Commissions (RPCs) to create region-specific energy plans to achieve state energy goals. The first three participating RPCs include Bennington County, Two Rivers Ottoqueechee, and Northwest. These energy plans will be completed in 2016.

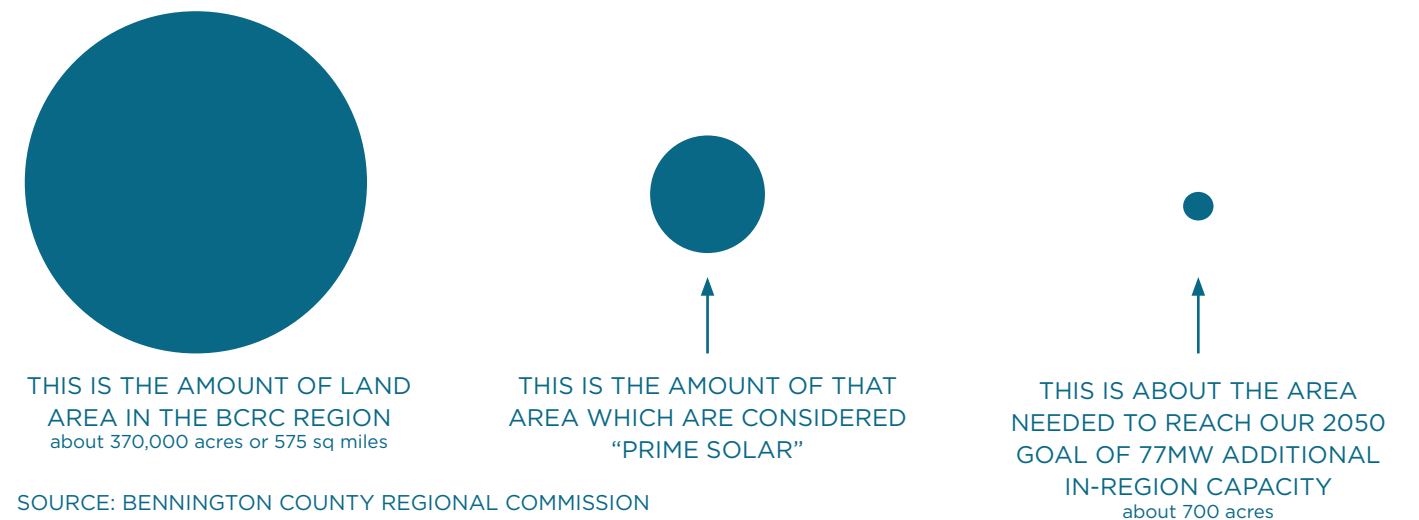
This project stems from collaboration among the RPCs, EAN, VEIC and the PSD using the Long Range Energy Alternatives Planning (LEAP) model to provide energy scenarios and milestones. The LEAP model also underpins EAN's Community Energy Dashboard and the state's 2016 Comprehensive Energy Plan.

REGIONAL ENERGY PLANNING PROCESS

- LOCAL INPUT
- RESOURCES
- CONSTRAINTS
- MAPPING
- OPTIONS
- SCENARIOS



THE AMOUNT OF LAND THAT WOULD BE NEEDED TO REACH THE 2050 SOLAR ENERGY GOALS FOR BENNINGTON COUNTY.



Community Energy Dashboard

The Community Energy Dashboard is an invitation for communities to engage in shaping their energy future at the local level. It is designed to help communities translate 90% by 2050 into achievable local action across all energy sectors – efficiency, heat, electricity and transportation.

HOW DOES THE DASHBOARD HELP COMMUNITIES?

The Dashboard provides a powerful set of interactive online tools to help set goals, track progress, map actions, share stories, and hear from trusted neighbors.

WHY WAS THE DASHBOARD DEVELOPED?

Towns across Vermont are asking for concrete ways to make clean energy and efficiency choices at the local level and accelerate action by learning from their neighbors.

WHO SHOULD USE THE DASHBOARD?

Municipalities, businesses, farms, schools, institutions, individuals, energy committees ... everyone! The Dashboard will be piloted by 6 towns in early 2016 and will be made available to all 251 towns across Vermont by Fall 2016.



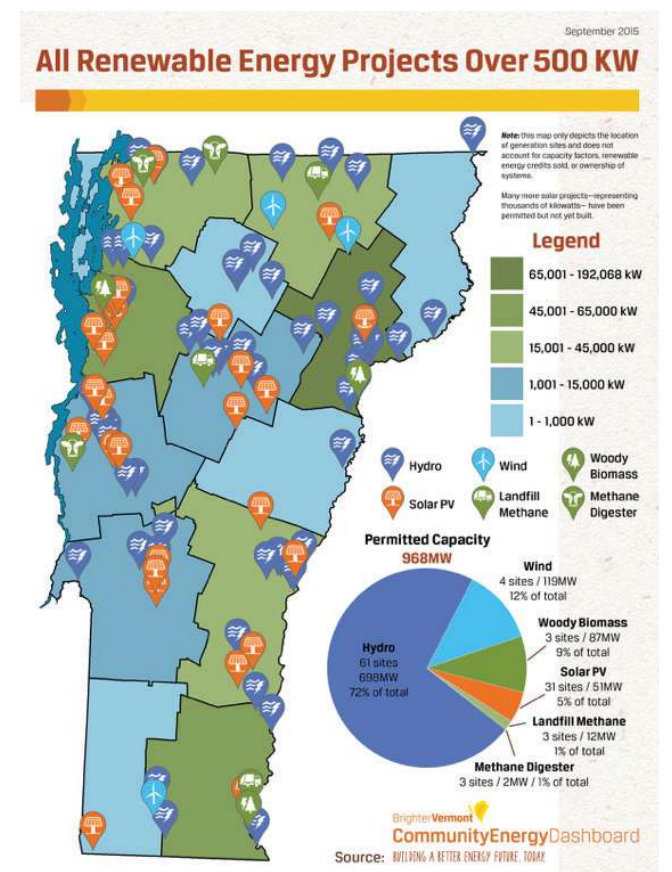
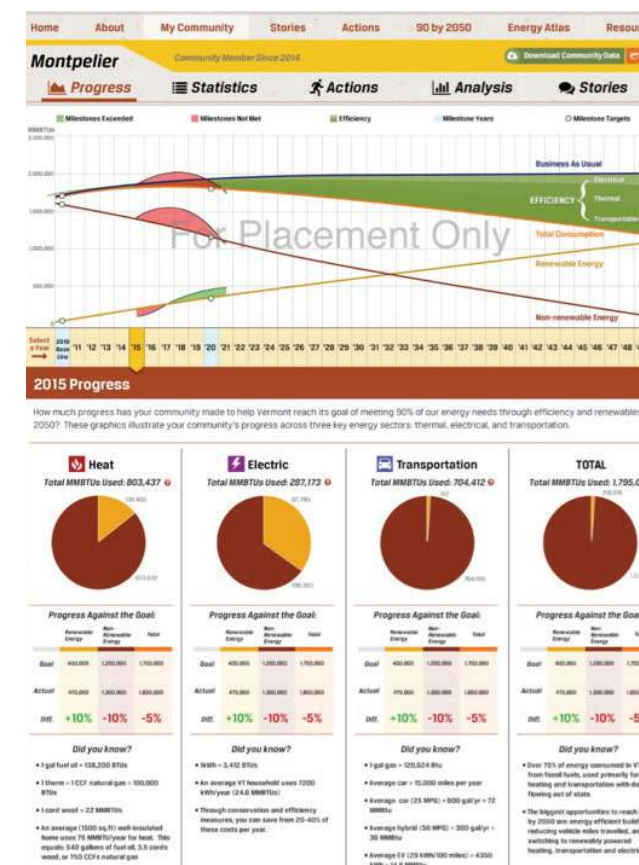
WHAT DOES THE DASHBOARD DO? SEVEN TOOLS:

- **Timeline:** An interactive timeline that shows local progress from a baseline year of 2010 to meeting 90% of local energy needs through efficiency and renewables by 2050.
- **Statistics:** Information on all local renewable energy generation; ability to crowd source efficiency info.
- **Actions:** An easy and fun way to watch collective impact build in your community by tallying specific actions from individuals, businesses, etc.
- **Analysis:** Communities can share local energy analyses, helping other towns avoid reinventing the wheel!
- **Stories:** Neighbors can share their stories to inspire others to action
- **Mapping:** The updated Energy Atlas maps existing renewable energy sites, and helps identify new potential sites based on environmental resources and constraints
- **Resources:** Links to important resources, energy information and partners to help towns accelerate their progress

DASHBOARD PARTNERS:

The Dashboard was created by EAN in collaboration with VSJF (developers of the Renewable Energy Atlas), VEIC, Efficiency Vermont, GMP, VECAN, RPCs and pilot communities. It will be offered to communities in partnership with VECAN and others. The Dashboard is funded by VLITE, the PSD and the US Department of Energy.

Community Energy Dashboard



THE DASHBOARD PROVIDES AN INTERACTIVE TIMELINE THAT SHOWS PROGRESS TOWARD LOCAL ENERGY GOALS BY:

- Tracking annual town-level energy generation and use across energy sectors.
- Demonstrating annual progress towards the 90% by 2050 state energy goal.
- Illustrating the share of each energy sector that is powered by renewables.
- Providing communities with data from official sources.
- Enabling towns to analyze progress, prepare energy plans and demonstrate actions.

Data is drawn from official sources: utilities, Efficiency Vermont, US Census, Agency of Transportation, etc., and will be updated annually.

THE ENERGY ATLAS TOOL MAKES IT POSSIBLE TO:

- Map every renewable energy site in your community.
- Add new energy and efficiency sites through crowd sourcing.
- Determine the potential for new sites based on resources and constraints.
- Create community maps by technology, town, utility, site type and system size.
- Make energy visible by showing where it is and where it could be sited.

Data for the Atlas comes from the Vermont Public Service Department (Certificates of Public Good), the Agency for Natural Resources, the Vermont Center for Geographic Information, Renewable Energy Vermont, and you. Data will be updated quarterly.

Regulatory Reform

GOAL: To explore and develop simpler, more consistent regulatory policies for renewable energy sources, energy efficiency, and effective permitting.

STATUTORY ENERGY TARGETS AND PROGRESS:

EAN worked with the Public Service Department (PSD) to identify key statutes that drive the state's energy transformation, and to track key progress indicators for the state's energy goals. (See facing page)

INPUT ON 2015 COMPREHENSIVE ENERGY PLAN:

EAN provided strategic input to help shape the 2016 Comprehensive Energy Plan (CEP), as presented to the Legislature in January 2016. EAN encouraged the use of milestones and metrics towards the state's goal of 90% renewables by 2050 and provided input on clean energy finance.

SOCIETAL BENEFITS/COSTS OF ENERGY AND EFFICIENCY:

EAN convened a discussion of the future of a "societal benefit/cost test" for efficiency and renewables to encourage including non-energy benefits in Vermont's energy policies and investments. The objectives were:

- To more accurately and transparently capture the full impacts of the energy transformation in Vermont.
- To move beyond applying the societal cost test only to efficiency, and to begin applying a broader set of these metrics to both efficiency and renewables.
- To better inform the Public Service Board (PSB) dockets on Act 56.
- To identify challenges in meeting these objectives with a view to defining next steps.

OTHER KEY REGULATORY REFORM TOPICS AND ANALYTICS:

The work group identified additional topics to explore in the coming year.

- Potential win-win-wins for clean water, sustainable farms and clean energy.
- Land use impacts presented by the energy transformation (including the role of built surfaces).
- The economic case for 90% by 2050.
- Cap and trade and carbon pollution tax.
- Low carbon fuel standard.
- Implementation of Tier III of Vermont's new energy law, Act 56.

MEMBERS:

Janet Besser, New England Clean Energy Council
Paul Burns, Vermont Public Interest Research Group
Gina Campoli, Vermont Department of Transportation
Robert Dostis, Green Mountain Power
Jon Erickson, UVM Rubenstein
Chad Farrell, Encore Redevelopment
Karen Glitman, Vermont Energy Investment Corporation
Asa Hopkins, Department of Public Service
Karen Horn, Vermont League of Cities and Towns
Crea Lintilhac, Lintilhac Foundation
Neale Lunderville, Burlington Electric Department
Jim Merriam, Vermont Energy Investment Corporation, Co-chair
Johanna Miller, Vermont Natural Resources Council
James Moore, SunCommon

William Sayre, Associated Industries of Vermont
Leigh Seddon, L.W. Seddon, LLC
Ronald Shems, Diamond-Robinson, Co-chair
Ansley Bloomer, Renewable Energy Vermont
Sam Swanson, Pace Law
Ben Walsh, Vermont Public Interest Research Group
Rick Weston, Regulatory Assistance Project
Jeff Forward, Renewable Energy Vermont
Jim Sullivan, VAPDA

STATE PARTNERS:

Ted Brady, USDA
Billy Coster, Agency of Natural Resources
Jon Copans, Public Service Department
Rebecca Ellis, Agency of Natural Resources

COMPREHENSIVE ENERGY PLAN GOALS AND STATUTORY TARGETS FOR ENERGY RELATED GOALS (SEPTEMBER 2015)

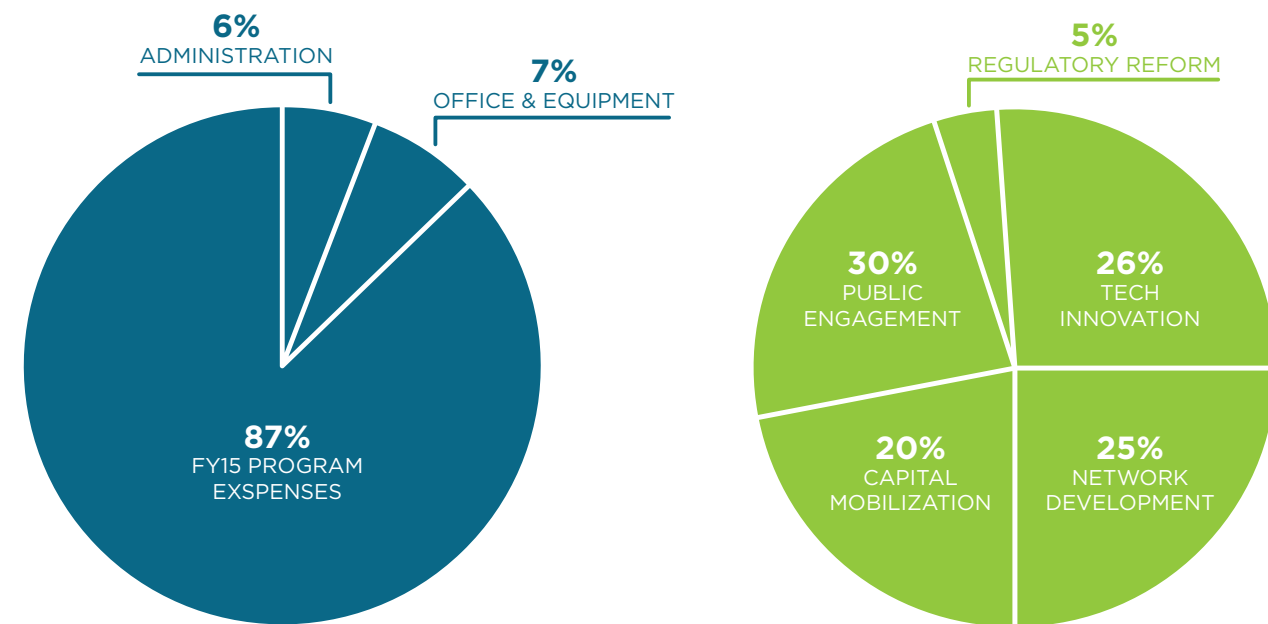
GOALS	TARGET	TARGET DATE	CURRENT STATUS	GOAL OR STATUTE
CEP: Meet 90% of the state's energy needs through renewables - including thermal, transportation and electric (Note: energy sourced in-state and out of state)	90%	2050	16%	CEP Goal (2011)
25 by 25: Produce 25% of all energy consumed within the state through the use of renewable energy sources, particularly from forests and farms (in-state)	25%	2025	15%	10 V.S.A. 580(a) (2007)
EIP Tier 1 - Total Renewable Electric: Obtain 55% of annual electric sales from renewables for each retail electricity provider in Vermont by 2017, and 75% by 2032. RECs retained (in-state and out-of-state)	55% 75%	2017 2032	50%	Act 56 (2015)
EIP Tier 2 - Distributed Generation: Require 1% of electric sales to come from distributed generation in 2017, rising to 10% by 2032. Projects starting in mid 2015 are eligible, and new NM and SO projects count if RECs are retired (in-state)	1% 10%	2017 2032	N/A	Act 56 (2015)
EIP Tier 3 - Energy innovation Projects: Require 2% of utility sales (BTU equivalency) in 2017 to reduce fossil fuel consumption, rising to 12% in 2032 as measured by the PSB. Projects must be 'additional' and in service in 2015 or later (tools: leasing, on-bill financing, marketing, direct investments). (in-state)	2% 12%	2017 2032	N/A	Act 56 (2015)
S.O: Issue Standard Offer contracts to new SO plants until a cumulative capacity of 127.5 MW is reached (new plants 2.2MW or less commissioned on or after Sept 30, 2009) (in-state)	127.5 MW	2022	68.4 MW (contracts awarded)	30 V.S.A. 8005a(c) (2011)
GHG: Reduce greenhouse gas emissions within the state and from outside the state's boundaries caused by the use of energy within the state by 50% of 1990 levels by 2028, and if practicable using reasonable efforts, by 75% of by 2050 (in-state and out-of-state)	50% 75%	2028 2050	102% of 1990 levels	10 V.S.A. 578(a) (2005)
Efficiency: Improve the energy fitness of at least 20% of the state's housing stock (total 2007 = 300,000 units) by 2017, and 25% by 2020.	60,000 80,000	2017 2020	18,292 (6.1% total)	10 V.S.A. 581 (2007)
Reduce the annual fuel needs and fuel bills by an average of 25% in housing units served	6%	2017	N/A	
Reduce total fossil fuel consumption across all buildings by an additional .5%/year for a total of 6% annually by 2017 and 10% annually by 2025	10%	2025	N/A	
Transportation:				
– Increase the share of all vehicles registered in VT powered by renewable sources to 25%	25%	2030	0.05% (2012)	CEP Transportation Goals (2011)
– Hold vehicle miles traveled (VMT) per capita to 2011 base year levels	11,399		11,399 (2011)	
– Limit VMT annual growth rate to 1.5% (half national ave.)	<+1.5%		-1.4% (2011)	
– Reduce the share of commute trips taken in a single occupancy vehicle by 20%	62.7%		82.7% (2011)	
– Double the bicycle and pedestrian share of commute trips to 15.6% (from 2010 7.4% value)	15.6%		7.4% (2010)	
– Double the carpooling-to-work share to 21.4%	21.4%		11.7% (2010)	
– Increase number of medium and heavy-duty vehicles powered by biodiesel or CNG by up to 10%	10%		N/A	
– Increase public transit ridership by 110% to 8.7 million annual trips	8.7 m		4.2m (2011)	
– Triple the number of state park-and-ride spaces to 3,426	3,426		1,690 (2012)	
– Improve combined ave. fuel economy (in mpg) of VT Vehicle fleet to meet national CAFÉ standard or improve it by 5% (whichever) is greater by 2025	48.7-49.7mpg	2025	27.6 mpg (2012 VT CAFÉ)	

SOURCE: VERMONT STATUTES AND PUBLIC SERVICE DEPARTMENT – COMPILED BY THE ENERGY ACTION NETWORK

Funding, Expenses & Financial Sustainability

In the past year of operation, EAN has maintained and strengthened ties with our existing funders and engaged several new supporters as well. Our next steps toward long-term financial stability will continue to focus on diversifying EAN's business model to extend beyond foundation support.

The charts below show the broad components of EAN's operating budget for Fiscal Year 2015. Overall, 87% of EAN's budget supported direct program work across our four leverage points and development of the capacity of our network. Administrative costs continue to be small and highly leveraged in support of active, value-added programs.



TOTAL EXPENSE

ADMINISTRATION	\$23,873.72
OFFICE & EQUIPMENT	\$28,115.78
FY15 PROGRAM EXPENSES	\$331,046

TOTAL EXPENSES (FIG. 1) \$383,035.50

TOTAL REVENUE

MAVERICK LLOYD FOUNDATION	\$215,000
CANADAY FAMILY CHARITABLE FUND	\$50,000
JOHN MERCK FUND	\$50,000
SUSTAINABLE FUTURES FUND	\$25,000
HIGH MEADOWS FUND	\$10,000
INTEREST & OTHER	\$929

FY15 GRANT REVENUE	\$350,929
FY14 GRANT CARRY FORWARD	\$32,106.50

TOTAL FUNDS \$383,035.50

2015 EAN Anne & Arthur Berndt Award

The Energy Action Network's Anne & Arthur Berndt Award honors members who have demonstrated vision, leadership and commitment to creating a clean energy future for Vermont. It will be awarded on an annual basis to individuals or organizations that have shown bold leadership in support of efforts to advance broad, systemic change of Vermont's energy system towards one based on efficiency and renewable power.

THE CRITERIA FOR THIS AWARD INCLUDE THE FOLLOWING:

- Extraordinary vision
- Bold, courageous leadership
- Support for change at a transformative, system-wide level
- Deep investment in relationships and network capacity for change
- Commitment to working across diverse perspectives towards a higher goal
- Time, commitment, and passion for the cause



Jim Sullivan, 2015 Anne & Arthur Berndt award winner, and EAN Board President - Leigh Seddon

JIM SULLIVAN

Our 2015 winner is Jim Sullivan, Executive Director of the Bennington Regional Planning Commission. Jim's work on behalf of energy transformation in Vermont exemplifies all of these qualities and more. He has been a tireless, insightful, courageous, hardworking advocate and champion of energy efficiency and renewables at the local, regional and state-wide levels. His collaborative and professional approach to finding balanced solutions that move the conversation forward is exemplary and includes, but is not limited to:





- His leadership as Chair of the Vermont Association of Planning & Development Agencies (VAPDA), and VAPDA's Energy Committee to support the capacity of all of Vermont's RPCs to engage in energy planning work.
- His leadership of the current RPC Energy Planning Project in collaboration with the PSD, VEIC and EAN to model proactive, constructive energy planning to achieve our joint goal of 90% by 2050.
- Jim's passionate efforts as Executive Director of Bennington's Regional Planning Commission to envision and plan for an energy future that meets economic, social and environmental needs.
- His courageous and effective contributions to the Energy Generation Siting Policy Commission and subsequent siting policy discussions.

2015 Board of Directors & EAN Staff





Notes

BOARD

			
LEIGH SEDDON EAN Board Chair L.W. Seddon Consulting, President	BOB BARTON Catalyst Financial Group, Founder & CEO	MEGAN CAMP Shelburne Farms, Vice President and Program Director	CHRISTINE DONOVAN Vermont Energy Investment Corporation, Director, Business Strategy and Innovation

			
KAREN GLITMAN Vermont Energy Investment Corporation, Director of Policy and Public Affairs	ELLEN KAHLER Vermont Sustainable Jobs Fund, Executive Director	ROB MILLER Vermont State Employees Credit Union, President and Chief Executive Officer	RON SHEMS Diamond and Robinson, Attorney

STAFF

			
JIM SULLIVAN Bennington County Regional Commission, Executive Director and Planning Program Coordinator	ANDREA COLNES Executive Director, Energy Action Network	LINDA MCGINNIS Network Program Director, Energy Action Network	ALISE CERTA Communications Manager, Energy Action Network





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