CHITTENDEN COUNTY RPC
Communities Planning Together

CCRPC Long Range Planning Energy Sub -Committee

AGENDA

*=attached to agenda in the meeting packet

DATE: Tuesday, October 18, 2016

TIME: **5:00 p.m. to 7:00 pm**

PLACE: CCRPC Office, 110 West Canal Street, Suite 202, Winooski, VT.

1. **Welcome + Introductions*** *(5 minutes)*
   Bios of committee members are attached. Please read these to get to know who is on the committee and which areas of expertise are represented.

2. **Vote on Committee Chair** *(5 minutes)*

3. **Review Minutes from the September 19, 2016 meeting*** *(5 Minutes)*

4. **Brief update on municipal planning commission meetings and feedback on local constraints to date** *(20 Minutes)*
   Staff will update the committee on which Planning Commissions have received a presentation on the Regional Energy Plan. Staff will also provide an update on the local constraints received from municipalities. Contained within this meeting packet are comments we have received from municipalities to date.

5. **Draft Comments on the Department of Public Service'S Act 174 Energy Compliance Standards*** (*25 minutes)*
   Please review the attached memo that has already been sent to the CCRPC board which details the comments on the draft energy compliance standards based on staff review and a discussion with the CCRPC Planning Advisory Committee. The Committee will discuss these comments and identify any needed additions. Staff will bring these additions to the CCRPC board meeting on October 19,2016 for them to approve. The draft standards can be found here.

6. **VEIC Staff Presentation on total energy consumption by fuel type and sector*** *(45 minutes)*
   Kate Desrochers, VEIC Senior Analyst and David Roberts VEIC Senior Consultant, will present the initial LEAP results on future energy demand by sector and fuel type.

7. **Review DRAFT FAQ*** *(10 minutes)*
   Staff has developed a FAQ for this project based on the questions that have come up at planning commission meetings. The committee will review to FAQ and assist with answering some of the unanswered questions, if possible.

8. <u>Next Steps</u> *(5 minutes)*

CCRPC Energy Sub Committee Bios

Irene Wrenner, Essex

Irene Wrenner's passion for local government likely stems from positive "public good" experiences in the hometown of her youth. Irene and her siblings benefited from town library services and rec programs, parks, and lessons.

Her interest in land use took root in the realization that if the rolling farms of her childhood could morph into housing developments, then any area is vulnerable to losing its uniqueness without constant vigilance and careful planning.

Irene represented Essex on the Regional Planning Commission from June 2007 until July 2011, when it merged with the Metropolitan Planning Organization, and she became Essex Alternate. She served on the ECOS Project Steering Committee – which used a $1 million federal grant to help develop sustainable communities in our county – then traveled to Texas in 2012 to speak on a panel of grant-winners.

Irene helped the Heart & Soul of Essex team win a $100,000 planning grant in 2011 from the Orton Family Foundation, then served two years on its H&S Community Advisory Team. She was appointed to the Thoughtful Growth in Action Working Group in 2015, which recommended transitioning to a Joint Planning Commission and two DRBs from the current Town and Village PCs and ZBAs.

Irene is a ten-year member of the Essex Selectboard and Energy Committee. Her focus as a public servant is on improving communication and transparency with the aim of leveling the playing field between insiders and outsiders, helping taxpayers to easily obtain accurate info on multiple sides of an issue.

Karen Purinton, Colchester

Karen Purinton is the Planner for the Town of Colchester, Vermont, where she participates in long range and economic development planning for the community, acts as the coordinator for the Town's involvement with FEMA's CRS program, and assists applicants with their development proposals and the review process. Karen graduated from the University of Maine with a B.S. in Environmental Policy, and holds a Master's Degree from the University of Southern Maine in Planning and Development. She is certified by the State of Vermont in Natural Shoreland Erosion Control Practices and is also a Certified Floodplain Manager with the Association of State Floodplain Managers, Inc.

Keith Epstein, South Burlington

Keith Epstein has been a volunteer member of the South Burlington Energy Committee since it was formed in 2008. He is currently serving as committee chair and the co-coordinator of the South Burlington Energy Prize, South Burlington's entry in the Georgetown University Energy Prize. South Burlington is one of 50 semifinal communities in this national energy efficiency competition with a $5 million prize.

Keith's day job is mechanical design engineer at AllEarth Renewables, where he designs, develops, builds, tests, operates, and improves dual-axis solar trackers and other renewable energy equipment

including wind turbines, meteorological towers, and wind tunnels. He is an avid bicycle commuter, riding 7 miles each way year-round, thanks to the fantastic network of bicycle/pedestrian facilities in South Burlington.

Prior to AllEarth Renewables, Keith designed micro accelerometers to measure motion and vibration for Kionix in Ithaca, NY. He has a bachelors degree in mechanical engineering from Cornell University, where his interest in energy efficiency and renewable energy was sparked by a single renewable energy class in the college of agriculture. That one class inspired Keith to seek out a career in the renewable energy field and devote countless hours to improving the energy efficiency of his community.

He lives in South Burlington with his wife and two daughters

Robin Pierce, Essex Junction

Worked for large developers as designer/project manager/client representative, and as a small developer myself for historic tax credit projects in Philadelphia. Worked for an affordable housing organization with an holistic approach to design that was inclusive for disabled people in all aspects of the design interior and exterior. Worked for a national (ecological) museum that was developed on the Skansen Model which originated in Sweden, in charge of the Open Air portion of the museum. I have written on energy issues, one attached, which focuses on how person mindfulness can reduce energy consumption and be the bridge to a renewable energy future. I have degrees in planning, landscape and urban design: I tried work once, didn't see any future in it, hence back to University

Kate Desrochers , VEIC

Kate Desrochers is a Senior Analyst on the energy planning team at VEIC. She has conducted modeling, analysis and potential studies for clients including the Department of Energy, the US Forest Service, and the state of Rhode Island. Her other projects include program review of state energy efficiency programs in Maryland and Rhode Island, development of Technical Reference Manuals, and research on innovative efficiency financing mechanisms.

Sharon Murray, Bolton

Jim Donovan, Charlotte

Jeff Forward, Richmond

Catherine McMains, Jericho

CHITTENDEN COUNTY RPC
Communities Planning Together

CCRPC Long Range Planning Committee—Energy Subcommittee

DATE: Wednesday, September 21, 2016

TIME: 5:00 p.m. to 6:00 pm

PLACE: CCRPC Office, 110 West Canal Street, Suite 202, Winooski, VT.

Attendees Present:
Jim Donovan, Charlotte
Keith Epstein, South Burlington
Jeff Forward, Richmond
Robin Pierce, Essex Junction
Catherine McMains, Jericho
Irene Wrenner, Essex

Staff Present:
Charlie Baker, Executive Director
Regina Mahony, Planning Program Manager
Melanie Needle, Senior Planner
Emily Nosse-Leirer, Planner

1. Welcome
No changes were proposed to the agenda.

2. Project Overview
Melanie Needle gave a brief overview of the Regional Energy Planning process, including the statutory requirements for RPCs to complete energy plans, CCRPC's contract with the Department of Public Service and the project timeline, and the new provisions for substantial deference. The presentation was an abbreviated version of the PowerPoint that CCRPC staff have begun presenting to the towns; it can be found on the Regional Energy Plan page on our website.

3. Detailed Schedule and Brief Update on Municipal Planning Commission Meetings to Date
Melanie Needle presented the detailed schedule for the work of the Energy Sub-Committee and the energy planning process in general (schedule document included in the packet). Charlie

Baker suggested that the October meeting also include a discussion of the Department of Public Service's draft standards, which will be released by the Department of Public Service by the end of September and will need to be finalized by November 1. The sub-committee agreed that this discussion would be valuable.

Melanie Needle discussed that CCRPC will have a chance to give feedback on the LEAP model results from VEIC in October. Keith Epstein suggested that a staff member from VEIC come to present the model results and answers questions after the model results are available.

Melanie Needle mentioned that draft siting maps have been distributed to all municipalities and CCRPC staff are going to PC meetings throughout the region to discuss municipal input on energy siting maps. Several committee members mentioned their desire to have a larger conversation about the criteria included on the maps. Charlie Baker mentioned that the Department of Public Service is continuing their conversations about what constraints should be included on the maps.

Jeff Forward mentioned that development constraints on solar and wind are different than on other developments, as agricultural soils are thought to be useable after solar projects are decommissioned. Robin Pierce mentioned that soil compaction and other development issues should still be considered for renewable development, and that any renewable development should not take away from the goal of sustaining the "Vermont Brand." Charlie Baker mentioned that many utilities have also expressed an interest in as much production as possible near loads rather than produced far away with large transmission lines.

4. Discuss Staff memo on the procedure for seeking municipal input regarding constraints to renewable energy generation

Melanie explained that the meetings CCRPC staff have had with towns over the last few weeks have made clear that there is a need for a standardized process to be determined for how towns can give feedback. When this information has been presented to towns, some towns have wondered whether they should create new policies to be included on the regional map, ex. creating scenic overlays so they will be included as constraints. CCRPC staff is of the opinion that the creation of new local regulations for this process will not be feasible give the timeline of the Regional Energy Plan, and is suggesting that the regional maps only reflect local policies that are in place or will be adopted by May 2016.

Melanie gave an overview of what has already been identified by the Department of Public Service with the Bennington RPC and ANR. Jim Donovan mentioned that the state-identified Level 1 and 2 criteria do not seem adequate. Jeff Forward asked if anyone has asked a developer whether these criteria line up with what can be financed.

The committee felt that the memo as written did not make it clear that towns can identify <u>new</u>

Level 1 and Level 2 constraints that have not already been identified by the state, and suggested changes in the order of the memo to make that clear.

Discussion ensued about the places in which energy generation facilities can or cannot be built. The issue of how to map conserved land came up, including that all types of conserved land have different restrictions based on how they are conserved and who conserves them and this is why they are Level 2 instead of Level 1.

The committee did not want to see the memo again before it was distributed.

5. Review DRAFT FAQ

This item was postponed.

6. Next Steps

Melanie will send a Doodle poll to determine the time and date of the next meeting.

CONSERVATION COMMISSION

Meeting Type: **Special**
Date: **Wednesday, October 12, 2016**
Time: **7:00 p.m.**
Place: **Municipal Building Community Room**
Address: **43 Bombardier Road Milton, VT 05468**
Contact: **(802) 893-1186**
Website: **www.miltonvt.org**

MEETING MINUTES

1. CALL TO ORDER
The meeting came to order at approximately 6:10 p.m.

2. ATTENDANCE
Members Present: Dan Gaherty, Chair; Judy Kinner, Vice-Chair; Laurie DiCesare, Clerk; Bonnie Pease.
Members Absent: None.
Staff Present: Jacob Hemmerick, Planning Director
Public Present: Lori Donna, Planning Commission Chair

This meeting was intended to be a co-commission sub-committee meeting (of the Planning and Conservation Commissions), but a quorum was established by the Conservation Commission -- so this meeting is recorded as a Conservation Commission meeting.

3. AGENDA REVIEW
Additions: None.
Deletions: None.
Corrections: None.

4. PUBLIC FORUM
Hemmerick presented an e-mail dated October 5, 2016 from Henry Bonges, Planning Commission Member, Development Review Board Member, and Regional Planning Commissioner Alternate, who was unable to attend. His key points on the item of business below include:

- The mapping lacks the on-the-ground expertise and priorities of individual towns affected.
- A 3-tier classification addressing forest and habitat fragmentation and biodiversity is in order.
- The constraints should also address encumbered open space/common land set aside in the development review process [that does not have a conservation easement].

5. BUSINESS
6(A). Regional Energy Plan
Those present discussed the Regional Energy Plan's proposed Level 1 and 2 constraints, which will be used to inform Public Service Board proceedings on the placement of renewable energy facilities. The Regional Planning Commission is developing the plan to achieve certification of energy compliance, which will grant substantial deference to the Regional Energy Plan by the Public Service Board, the judicial panel with authority over energy installations. Individual towns may also seek to have their town plans certified, but Hemmerick noted that several other planning directors in the County have looked at the draft plan evaluation criteria (which will be used to judge both regional and municipal plans) and noted that it will be heavy lift for an individual municipality to tackle this prior to the Regional Energy Plan being finalized. Nevertheless, he noted that considering this question for inclusion as a possible project goal in the 2018 Town Plan update may be in order.

Hemmerick noted that comments to the RPC on the proposed constraints are due by November 1 and must be tied to existing planning goals. Those present felt the timeline for this legislation was rushed in order to really do a thorough review of the constraints. To this point, Lori Donna reminded the group of

the importance of legislative outreach on this and other state matters to ensure that rule-making and implementation is not rushed.

Pease noted that Milton, having industrial-scaled wind and hydroelectric generating dams, is a leading host in renewable energy generation and that the concentration of such facilities should be taken into account to ensure equity among the region. There was further discussion about whether the overall efficiency of certain industrial-scaled renewable generation is fully worth the impact to scenic ridgelines, habitat blocks, rare natural communities and so forth, underlying the importance of siting that takes these aspects into account.

After reviewing some of the available mapping, those present agreed that a three-tier system would be more beneficial than a two-tiered system, and found that development within level-2 and -3 constrained areas should be linked to the scope and impact of the installation, taking into account noise, height and footprint. For instance, while industrial-scaled projects might not be appropriate in level-2 constrained areas, those projects of a lesser scope might be.

The Commission also noted the striking differences of impact between solar, wind, and hydroelectric projects and that the constraints should be customized to correspond to the type of renewable energy facility and its typical impacts.

Generally, those present were favorable to prioritizing the following level-2-identified constraints at a higher level:

- Habitat Blocks 10, 9, and 8;
- Agricultural and Hydric Soils; and
- Conserved Lands.

Those present were also favorable to adding the following as constraints:

- Encumbered Open Space (set aside in local development review); and
- Town Forests and other Municipal Natural and Recreational Areas with adopted Management Plans.

Finally, those present were interesting in seeing local studies on wildlife impact, post-installation of renewable energy facilities. The Commission expressed a general sentiment that more should be done by the State to incent residential-scale generation and storage innovation to increase the overall dependability and efficiency of wind and solar generation, given its variability.

8. ADJOURNMENT

Adjourned by unanimous consent around 8:30 p.m.

Minutes approved by the Commission this _____ day of _____, 2016.

_____

Lori Donna, Chair /jh

Draft filed with the Town Clerk this _____ day of _____, 2016.

Filed with the Town Clerk this _____ day of _____, 2016.

Colchester

Comments on Level 1 and Level 2 Constraints.

The Planning Commission met last night to discuss your request about the Level 1/Level 2 constraints, and they request that the local constraints for Colchester include the following (highlighted are ones we propose adding):

Level 1:
FEMA Floodways
Federal Wilderness
Rare & Irreplaceable Nat Areas (S1-S3)
Vernal pools (including a 600 foot buffer)
Class 1 and Class 2 Wetlands
Existing Transportation Infrastructure

Level 2:
Agricultural and Hydric Soils
100-Year Flood Zone
500-Year Flood Zone
Habitat Blocks (9&10)
Conserved Lands
Deer Wintering Areas
Class 3 Wetlands
Shoreland District
Town-owned Park and Recreation Properties
Water Protection Overlay District
GD4 Open Space Overlay District (located near Exit 17 area)
Historic Protection Overlay District (located near Fort Ethan Allen)
Planned Transportation Infrastructure Locations
Steep Slopes (Over 20% grade)

List of Parks & Rec Properties and a map of them can be found here:
http://www.colchestervt.gov/Facilities?clear=False

In addition are natural areas not maintained by the Town: UVM Bog, Windemere Fishing Access, Malletts Bay Fishing Access, Half Moon Cove, Munson Flats, and Niquette Bay State Park (though I think some of those are protected through other constraints categories).

Planned Infrastructure can be found as adopted in the Official Map here:
http://colchestervt.gov/documentcenter/view/98

Since they are on our official map, we take easements for proposed roadways and bike paths (called "separated paths") when proximate properties develop. Ideally both would be included.

General Comments from Robin Pierce

Below is something I wrote after our first meeting. Feel free to share.

1. These is an idea that renewable energy development is less disruptive to the land. Equipment used to ready sites for renewable energy is as heavy as that used for residential developments. Therefore soil microbes are crushed, the land is compacted, thus its ability to retain water is reduced, and stormwater runoff is increased. Yes at renewable energy sites grass can grow and animals can eat. However, the differences aren't that large in terms of soil, or indeed visual impacts. A residential PUD with open land that produced vegetables and supported animals would not be that different and if designed well will look more at home in the landscape.
2. The discussion regarding selection of optimum sites for renewable energy had me concerned; it seems to be a one dimensional look at an important issue.
   The two criterion groups that are being considered should be expanded. Developing something akin to Ian McHarg's Layer Cake method espoused in his seminal book, Design with Nature. This could bring the Vermont Brand; **compact settlements surrounded by productive open farmland** into the matrix as a critical component, and hopefully the umbrella under which all other criteria should fit. The optimal site for energy production should NOT be the deciding factor.
3. There is no nexus yet between renewable energy and aesthetics. I'm sure someone who designs a wind turbine would find it beautifully engineered and very efficient. But does it look at home in the landscape? I assume over time this will change. We are not there yet.
4. There is no doubt that renewable energy is the way forward. However we need to take a step back and look at how we make decisions. Why can't we design a wind sculpture that has energy producing turbines but is first and foremost a work of art? Let's make STEM, STEAM.
5. We should be right sizing renewable energy installations so that they produce the energy needed for the place they are in. Transmission lines are an important part of our energy infrastructure. However, do we need to hook renewable energy into them? Energy is lost in the transmission and if it's from a renewable source it's a little like putting wooden wheels on a Tesla! There are lots of flat roofed building in our major settlements. We could put solar panels on them in a way that is screened (perhaps by green garden roof edges that produce flowers, and perhaps food), and have the energy collected where it is needed most and used. No transmission lines needed in this scenario.
6. Education for young children, not parents (old habits die hard) in the vein of the recycle movement so that children 'educate' or bug their parents to the point that they become more energy conscious and use less. I believe using less is the bridge to a renewable energy future: A building designed to the highest energy standards could be the least energy efficient building on the street if the users have the thermostat at 75 degrees and all the windows open on a subzero night. Energy conservation is not a passive activity; it is not enough to build more efficient buildings, or increase renewable resources. We also need to use less and that is a critical component of any Energy Plan or Energy Policy moving forward.

7. It would be more than ironic if we despoiled the Vermont Brand in a rush to add renewable energy to our list of achievements. I don't think the two are mutually exclusive. But, we do need to insure that when we make renewable energy decisions they are compatible with our Brand that garnered the reputation Vermont currently has. Looking back I believe we would be proud to think the way we moved our renewable energy future forward is a model for others, rather than a warning of what not to do.

Thank for listening/considering these thoughts.

CHITTENDEN COUNTY RPC
Communities Planning Together

Chittenden County Regional Planning Commission
October 19, 2016
Agenda Item 8

Comments on DRAFT Determination Standards for Energy Compliance

Issue

As required under Act 174, the Department of Public Service (DPS) will set regional and municipal energy planning standards needed for issuance of a determination of energy compliance by November 1, 2016. A determination of energy compliance is needed in order for the Public Service Board to give a Regional or Municipal Plan substantial deference in a proceeding – meaning a land conservation measure or specific policy shall be applied in accordance with its terms unless there is a clear and convincing demonstration that other factors affecting the general good of the State outweigh the application of the measure or policy. Currently these plans are given due consideration which is less influential than substantial deference.

Prior to issuing these standards, Act 174 directs the Department to obtain comments on the draft standards. The DRAFT standards can be found on the Department's website here. The comments below in italics reflect staff's review and discussion with the Planning Advisory Committee. Additionally, staff will discuss the compliance standards with the CCRPC LRPC Energy Sub-Committee on October 18th. Staff will bring any additional comments identified by the Energy Sub-Committee to the CCRPC board meeting on October 19, 2016.

1. In Part II item 1 of the energy compliance standards on page 2, it is stated that: Act 174 requires regional and municipal plans be adopted/approved in order to qualify for a determination of energy compliance.
    - *CCRPC feels that the timing of seeking energy compliance determination after a plan is adopted makes it very difficult for a region or town to address any necessary changes in their plan if a negative determination is received. CCRPC requests that an **optional** pre-application process be put in place to assure that the Department of Public Service can identify deficiencies prior to plan adoption. In developing this process, CCRPC asks that the process be simple as to not introduce a lengthy time of review.*
2. In Part II and Part III, the energy compliance standards state that if the requirement is not met, the checklist must satisfactorily explain and justify why it does not, and refers to the consistency standard.
    - *CCRPC appreciates incorporation of the consistency standard that we currently use for all state goals in regional and municipal planning. However, we ask for further clarification on the ultimate threshold for standards that are not relevant or attainable. In other words, is there a maximum number of standards that a region or municipality can mark as not relevant or attainable before they receive a negative determination?*
3. Part II describes the components of a town/regional energy element of a plan as required in 24 V.S.A. § 4348a(a)(3).
    - *CCRPC feels that the checklist can be greatly simplified by combining Part II and Part III. It appears that these are separate sections based on separate sections of statute, however they are asking for the same language in the Plans so it*

should be combined. This would also help clarify that the consistency standard will be applied throughout. For example, Part II item 2 is asking for the same type of analysis as the Analysis & Target standards in Part III and the questions from Part II that apply to analysis should be integrated into Part III where appropriate.

4. The description in Part III on page 5 under that Analysis & Target heading refers to a Regional Plan breaking out the analysis for their municipalities.
    - *CCRPC asks whether a region is required to also break out the targets discussed in item 2 on page 6. If so, please clearly state that this is a requirement.*
5. In Part III Analysis & Targets, the standards say municipalities may choose to rely on a regional plan that has received an affirmative energy determination and is also presumed to meet the energy compliance standards.
    - *CCRPC asks for guidance on how a municipality would rely on the Regional Plan to serve as its energy element in the section 248 process. Also, could a municipality rely on the Regional Plan for the analysis and supplement the pathways and/or mapping components with their own local plan? We presume the municipality would need to either have everything in their local plan, or rely completely on the regional plan if the method for this is 24 VSA § 4349(a), but would appreciate the clarification. We anticipate that there may be a level of specificity in the local plans that we won't be able to fully incorporate in the Regional Plan.*
    - *Additionally, if a municipality chooses to do its own analysis prior to the Regional Energy Plan receiving a positive energy determination, CCRPC asks whether data available on the Energy Action Network's Community Energy Dashboard is sufficient to meet this analysis and target standards. If so, please include that this is resource for towns to comply with Act 174 and provide guidance on its proper use for achieving energy compliance. If not, we find the analysis too onerous for a municipality to do this work on their own before the RPC completes their planning process.*
6. Part III Analysis and Targets item 2 on page 6, asks if a plan establishes targets for energy conservation, efficiency, fuel-switching, and use of renewable energy for transportation, heating, and electricity*?*
    - *CCRPC asks if a target range is acceptable to meet this part of the standard and if renewable generation targets from wind, solar, biomass, and hydro-electric energy are also required.*
7. Part III Pathways includes an "other" category under each sector (an example is Part III, Item 6.a.vi. on page 8).
    - *CCRPC asks can the pathways/implementation actions that a region or municipality lists under "other" replace all of the previous pathways (in this example it would be Part III, Item 6.a.i to 6.a.v.)?*

Staff Recommen-dation:

Staff recommends the Board consider these comments as may be amended by the Energy Sub-committee for approval.

For more information contact:

Melanie Needle, mneedle@ccrpcvt.org or 845-4490 ext. *27

Summary Results and Methodology

Introduction

This document supplements the regional energy plans created by each Regional Planning Commission (RPC). It was developed by Vermont Energy Investment Corporation (VEIC) as documentation to modeling work performed for the RPCs. An award from the Department of Energy's SunShot Solar Market Pathways program funded the creation of a detailed statewide total energy supply and demand model. The VEIC team used the statewide energy model as a foundation for the region-specific modeling efforts. More detailed methodology is included at the end of this report.

Statewide Approach

Historic information was primarily drawn from the Public Service Department's Utility Facts 2013[1] and EIA data. Projections came from the Total Energy Study (TES)[2], the utilities' Committed Supply[3], and stakeholder input.

Demand Drivers

Each sector has a unit that is used to measure activity in the sector. That unit is the "demand driver" because in the model it is multiplied by the energy intensity of the activity to calculate energy demand.

The population is assumed to grow at 0.35% per year.[4] People per house are assumed to decrease from 2.4 in 2010 to 2.17 in 2050. This gives the number of households, the basic unit and demand driver in the model for **residential energy** consumption.

Projected change in the **energy demand from the commercial sector** was based on commercial sector data in the TES. The demand driver for the commercial sector is commercial building square feet which grow almost 17% from 2010 to 2050.

The team entered total **industrial consumption** by fuel from the TES directly into the model. It grows from 1.1 TBtu in 2010 to 1.4 TBtu in 2050.

Transportation energy use is based on projections of vehicle miles traveled (VMT). VMT peaked in 2006 and has since declined slightly. Given this, and Vermont's efforts to concentrate

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[1] Vermont Public Service Department, *Utility Facts 2013*, http://publicservice.vermont.gov/sites/dps/files/documents/Pubs_Plans_Reports/Utility_Facts/Utility%20Facts%202013.pdf

[2] Vermont Public Service Department, *Total Energy Study: Final Report on a Total Energy Approach to Meeting the State's Greenhouse Gas and Renewable Energy Goals.* December 8, 2014. http://publicservice.vermont.gov/sites/psd/files/Pubs_Plans_Reports/TES/TES%20FINAL%20Report%2020141208.pdf.

[3] Vermont Public Service Department provided the data behind the graph on the bottom half of page E.7 in *Utility Facts 2013.* It is compiled from utility Integrated Resource Plans

[4] Jones, Ken, and Lilly Schwarz, *Vermont Population Projections-2010-2030*, August, 2013. http://dail.vermont.gov/dail-publications/publications-general-reports/vt-population-projections-2010-2030.

development and to support alternatives to single occupant vehicles, VMT per capita is assumed to remain flat at 12,000.

The regional models use two scenarios. The **reference scenario** assumes a continuation of today's energy use patterns, but does not reflect the Vermont's renewable portfolio standard or renewable energy or greenhouse gas emissions goals. The main changes over time in the reference scenario are more fuel efficient cars because of CAFE standards and the expansion of natural gas infrastructure. The **90% x 2050 $_{\text{VEIC}}$ scenario** is designed to achieve the goal of meeting 90% of Vermont's total energy demand with renewable sources. It is adapted from the TES TREES Local scenarios. It is a hybrid of the high and low biofuel cost scenarios, with biodiesel or renewable diesel replacing petroleum diesel in heavy duty vehicles and electricity replacing gasoline in light duty vehicles. Despite a growing population and economy, energy use declines because of efficiency and electrification. Electrification of heating and transportation has a large effect on the total demand because the electric end uses are three to four times more efficient than the combustion versions they replace.

Regionalization Approach

The demand in the statewide model was broken in to the state's planning regions. Residential demand was distributed according to housing units using data from the American Community Survey. Commercial and industrial demand was allocated to the regions by service-providing and goods-producing NAICS codes respectively. Use of natural gas in the industrial fuel sector was limited to regions currently served by natural gas. Other non-electric fuels were distributed among regions without access to natural gas, as it was assumed that other non-electric fuels were primarily used for combustion purposes, and that purpose could likely be served more cheaply with gas. Transportation demand was primarily regionalized through population and the number of vehicles per capita. The passenger rail sector of transportation demand was regionalized using Amtrak boarding and alighting data at particular stops to create percentages of rail miles activity by region.[5] The freight rail sector of transportation demand was regionalized using the assumption for industrial activity by region mentioned above. Regions without rail infrastructure were determined using a Vermont Rail System map and then assigned an activity level of zero.[6] A weighting factor was applied regions with rail infrastructure bring the sum of activity back up to the calculated statewide total of freight rail short-ton miles in Vermont. Each region's share of state activity and energy use is held constant throughout the analysis period as a simplifying assumption.

Results

The numbers below show the results of the scenarios in "final units," sometimes referred to as "site" energy. This is the energy households and businesses see on their bills and pay for. Energy analysis is sometimes done at the "source" level, which accounts for inefficiency in power plants and losses from transmission and distribution power lines. The model accounts for those losses when calculating supply, but all results provided here are on the demand side, so do not show them.

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[5] National Association of Railroad Passengers, "Fact Sheet: Amtrak in Vermont," 2016, https://www.narprail.org/site/assets/files/1038/states_2015.pdf.
[6] Streamlined Design, "Green Mountain Railroad Map" (Vermont Rail System, 2014), http://www.vermontrailway.com/maps/regional_map.html.

The graphs below show the more efficient 90% x 2050 $_{VEIC}$ scenario, which is one path to reduce demand enough to make 90% renewable supply possible. This scenario makes use of wood energy, but there is more growth in electric heating and transportation to lower total energy demand. Where the graphs show "Avoided vs. Reference," that is the portion of energy that we do not need to provide because of the efficiency in this scenario compared to the less efficient Reference scenario.

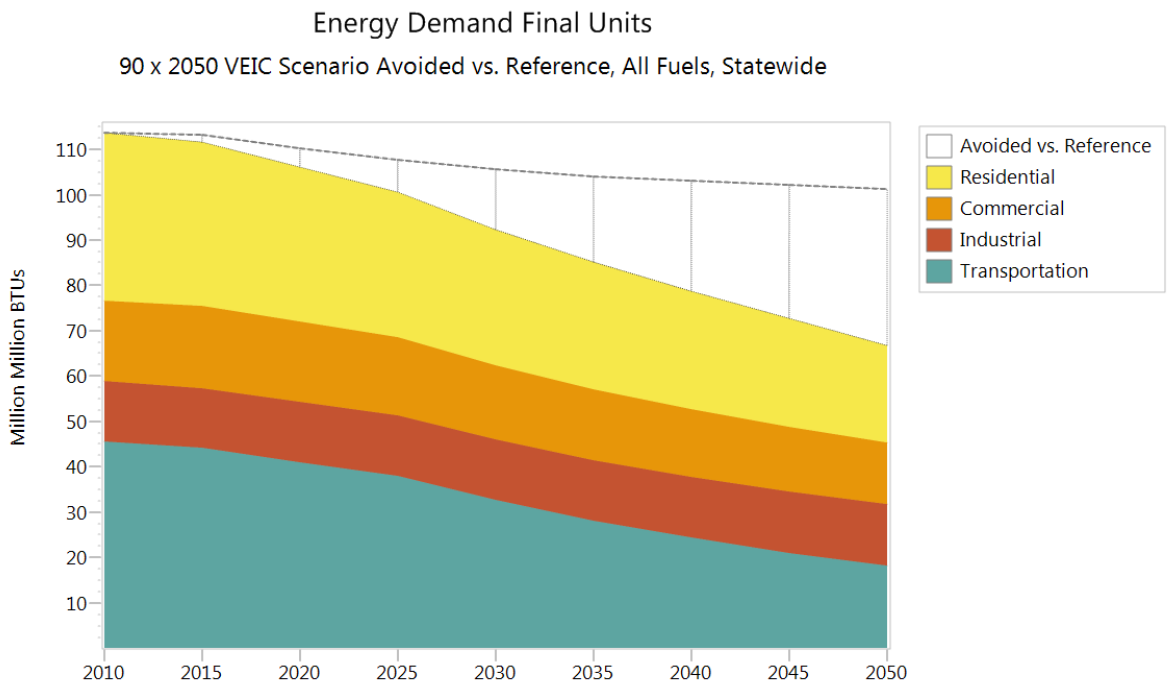

Figure 1 - Statewide energy consumption by sector, 90% x 2050 $_{VEIC}$ scenario compared to the reference scenario

Total Regional Energy Consumption

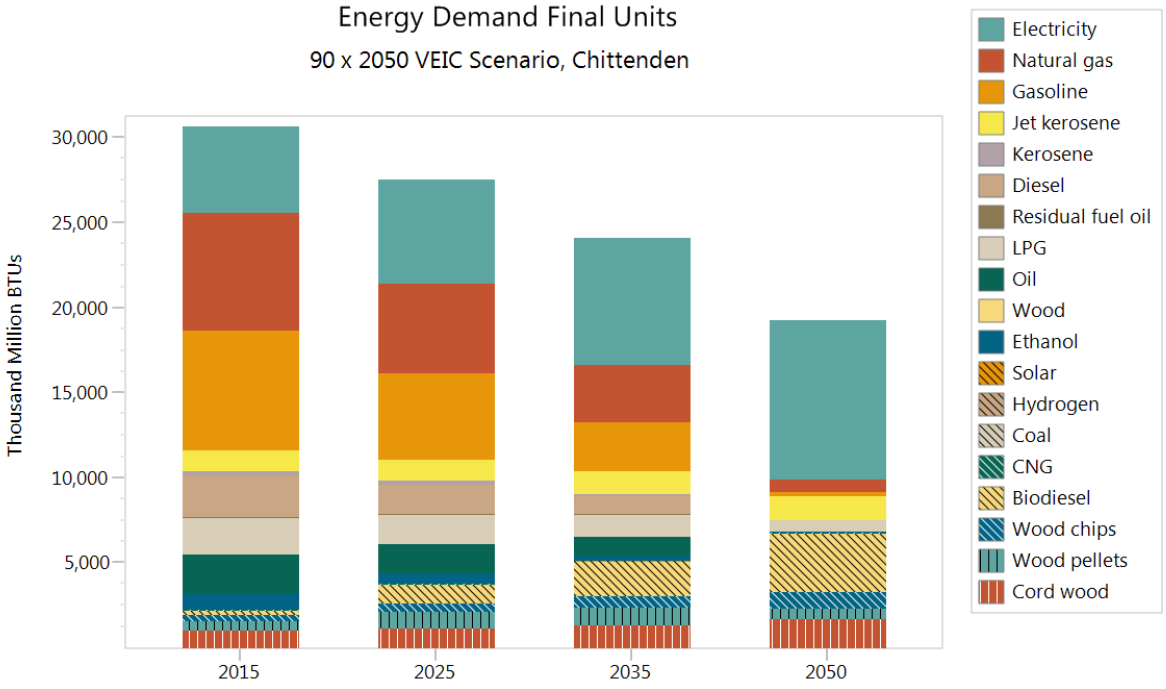

Figure 2: Regional energy consumption by fuel

Residential Energy Consumption by Sector

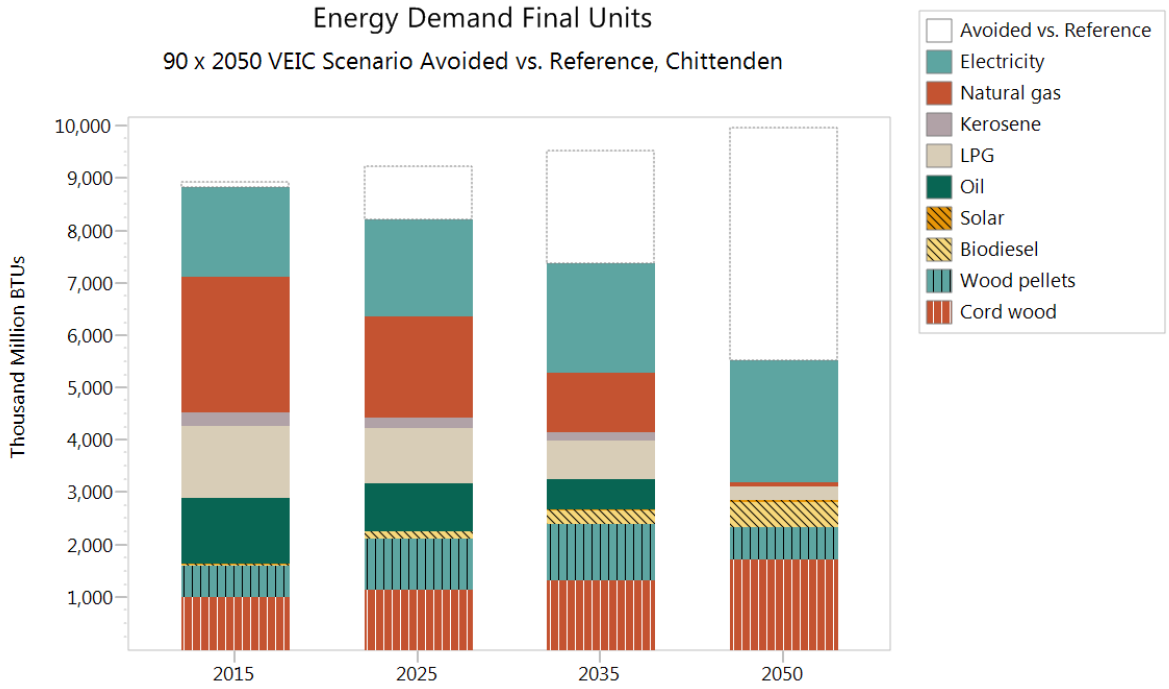

Figure 3: Regional residential energy consumption by fuel

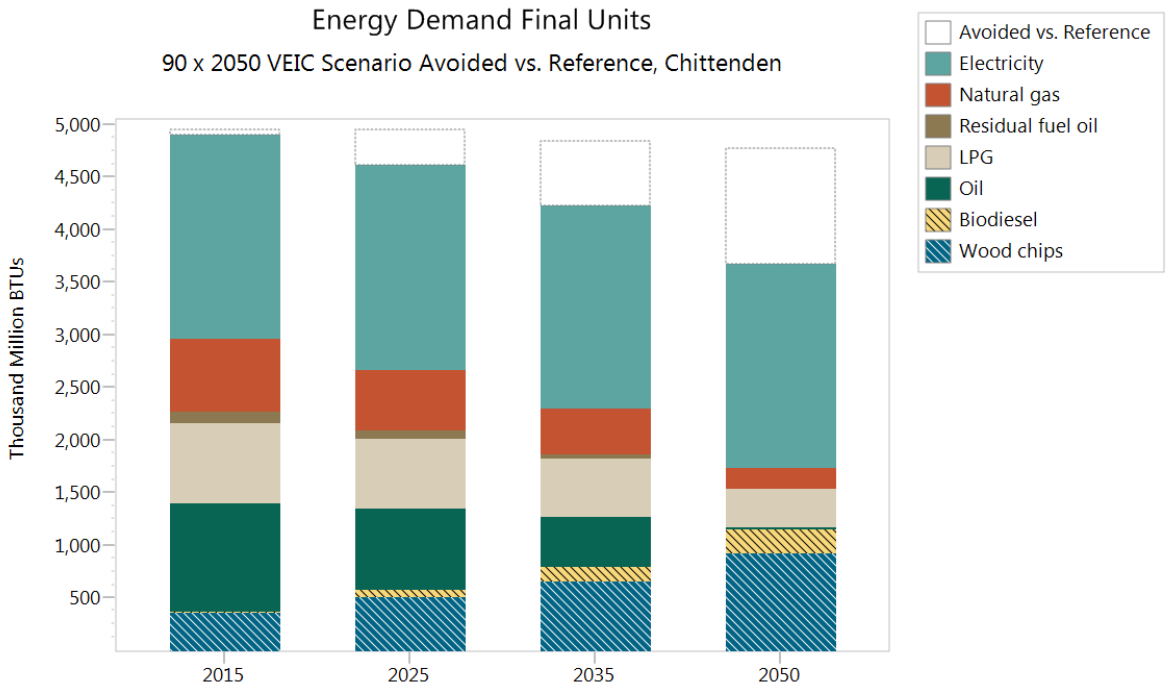

Figure 4: Regional commercial energy consumption by fuel

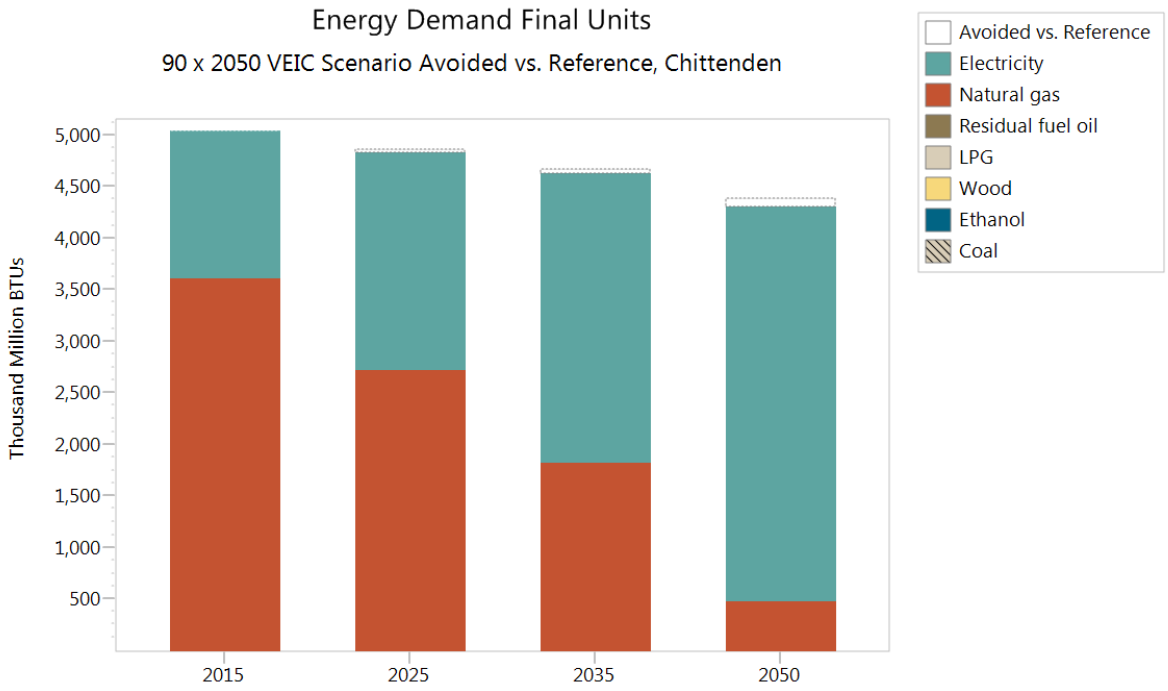

Figure 5: Regional industrial energy consumption by fuel

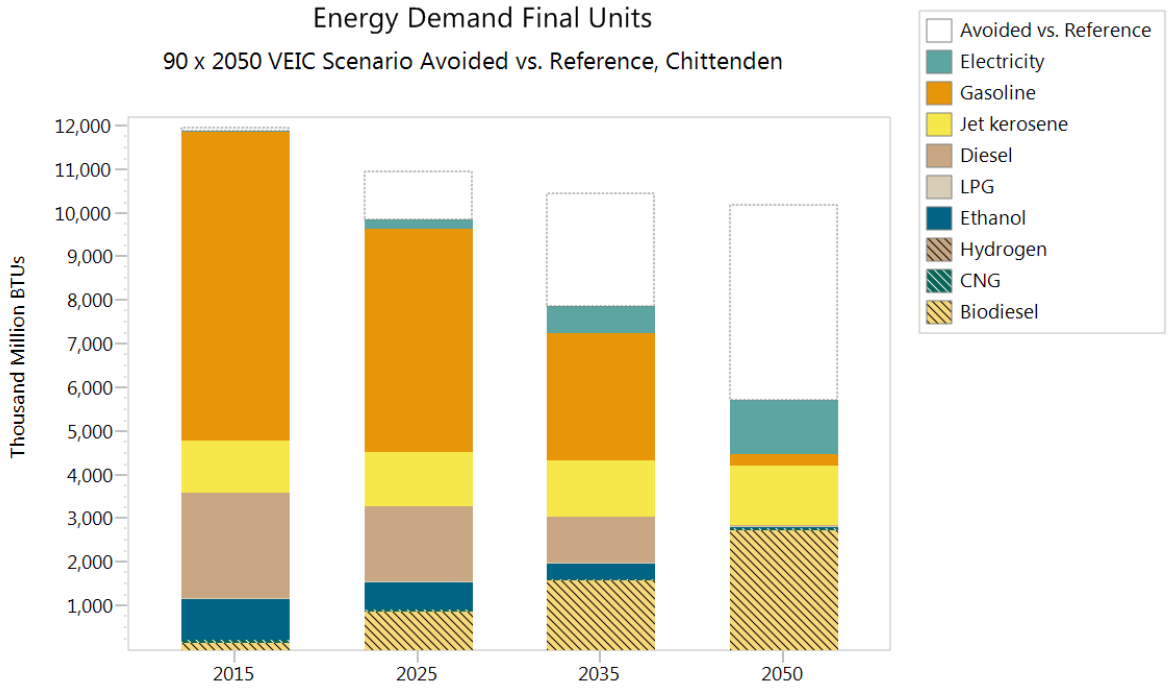

Figure 6: Regional transportation energy consumption by fuel

Detailed Sources and Assumptions

Residential

The TES provides total fuels used by sector. We used a combination of industry data and professional judgement to determine demand inputs at sufficiently fine level of detail to allow for analysis at many levels, including end use (heating, water heating, appliances, etc.), device (boiler, furnace, heat pump) or home-type (single family, multi-family, seasonal, mobile). Assumptions for each are detailed below. All assumptions for residential demand are at a per-home level.

Space Heating

The team determined per home consumption by fuel type and home type. EIA data on Vermont home heating provides the percent share of homes using each type of fuel. 2009 Residential energy consumption survey (RECS) data provided information on heating fuels used by mobile homes. Current heat pumps consumption estimates were found in a 2013 report prepared for Green Mountain Power by Steve LeTendre entitled *Hyper Efficient Devices: Assessing the Fuel Displacement Potential in Vermont of Plug-In Vehicles and Heat Pump Technology*. Future projections of heat pump efficiency were provided by Efficiency Vermont Efficient Products and Heat Pump program experts.

Additional information came from the following data sources:

- 2010 Housing Needs Assessment[7]
- EIA Vermont State Energy Profile[8]
- 2007-2008 VT Residential Fuel Assessment[9]
- EIA Adjusted Distillate Fuel Oil and Kerosene Sales by End Use[10]

The analyst team made the following assumptions for each home type:

- Multi-family units use 60% of the heating fuel used by single family homes, on average, due to assumed reduced size of multi-family units compared to single-family units. Additionally, where natural gas is available, the team assumed a slightly higher percentage of multi-family homes use natural gas as compared to single family homes, given the high number of multi-family units located in the Burlington area, which is served by the natural gas pipeline. The team also assumed that few multi-family homes rely on cordwood as a primary heating source.
- Unoccupied/Seasonal Units: On average, seasonal or unoccupied homes were expected to use 10% of the heating fuel used by single family homes. For cord wood, we expected unoccupied or seasonal homes to use 5% of heating fuel, assuming any seasonal or unoccupied home dependent on cord wood are small in number and may typically be homes unoccupied for most of the winter months (deer camps, summer camps, etc.)
- Mobile homes—we had great mobile home data from 2009 RECS. As heat pumps were not widely deployed in mobile homes in 2009 and did not appear in the RECs data, we applied the ratio of oil consumed between single family homes and mobile homes to estimated single family heat pump use to estimate mobile home heat pump use.
- The reference scenario heating demand projections were developed in line with the TES reference scenario. This included the following: assumed an increase in the number of homes using natural gas, increase in the number of homes using heat pumps as a primary heating source (up to 37% in some home types), an increase in home heated with wood pellets, and drastic decline in homes heating with heating oil. Heating system efficiency and shell efficiency were modeled together and, together, were estimated to increase 5-10% depending on the fuel type. However, heat pumps are expected to continue to rapidly increase in efficiency (becoming 45% more efficient, when combined with shell upgrades, by 2050). We also reflect some trends increasing home sizes.
- In the 90% x 2050 $_{\text{VEIC}}$ scenario, scenario heating demand projections were developed in line with the TES TREES Local scenarios, a hybrid of the high and low biofuel cost scenarios. This included the following: assumed increase in the number of homes using heat pumps as a primary heating source (up to 70% in some home types), an increase in home heated with wood pellets, a

[7] Vermont Housing and Finance Agency, "2010 Vermont Housing Needs Assessment," December 2009 http://www.vtaffordablehousing.org/documents/resources/623_1.8_Appendix_6_2010_Vermont_Housing_Needs_Assessment.pdf.
[8] U.S. Energy Information Administration, "Vermont Energy Consumption Estimates, 2004," https://www.eia.gov/state/print.cfm?sid=VT
[9] Frederick P. Vermont Residential Fuel Assessment: for the 2007-2008 heating season. Vermont Department of Forest, Parks and Recreation. 2011.
[10] U.S. Energy Information Administration, "Adjusted Distillate Fuel Oil and Kerosene Sales by End Use," December 2015, https://www.eia.gov/dnav/pet/pet_cons_821usea_dcu_nus_a.htm.

drastic decline in homes heating with heating oil and propane, and moderate decline in home heating with natural gas. Heating system efficiency and shell efficiency were modeled together and, together, were estimated to increase 10%-20% depending on the fuel type. However, heat pumps are expected to continue to rapidly increase in efficiency (becoming 50% more efficient, when combined with shell upgrades by 2050). We also reflect some trends increasing home sizes.

Lighting

Lighting efficiency predictions were estimated by Efficiency Vermont products experts.

Water Heating

Water heating estimates were derived from the Efficiency Vermont Technical Reference Manual.[11]

Appliances and Other Household Energy Use:

EnergyStar appliance estimates and the Efficiency Vermont Electric Usage Chart[12] provided estimates for appliance and other extraneous household energy uses.

Using the sources and assumptions listed above, the team created a model that aligned with the residential fuel consumption values in the TES.

Commercial

Commercial energy use estimates are entered in to the model as energy consumed per square foot of commercial space, on average. This was calculated using data from the TES.

Industrial

Industrial use was entered directly from the results of the TES data.

Transportation

The transportation branch focused on aligning with values from the Total Energy Study (TES) Framework for Analysis of Climate-Energy-Technology Systems (FACETS) data in the transportation sector in the Business as Usual (BAU) scenario. The VEIC 90% x 2050 scenario was predominantly aligned with a blend of the Total Renewable Energy and Efficiency Standard (TREES) Local High and Low Bio scenarios in the transportation sector of FACETS data. There were slight deviations from the FACETS data, which are discussed in further detail below.

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[11] Efficiency Vermont, "Technical Reference User Manual (TRM): Measure Savings Algorithms and Cost Assumptions, No. 2014-87," March 2015, http://psb.vermont.gov/sites/psb/files/docketsandprojects/electric/majorpendingproceedings/TRM%20User%20Manual%20No.%202015-87C.pdf.

[12] Efficiency Vermont, "Electric Usage Chart Tool," https://www.efficiencyvermont.com/tips-tools/tools/electric-usage-chart-tool.

Light Duty Vehicles

Light Duty Vehicle (LDV) efficiency is based on a number of assumptions: Gasoline and ethanol efficiency were derived from the Vermont Transportation Energy Profile.[13] Diesel LDV efficiency was obtained from underlying transportation data used in the Business as Usual scenario for the Total Energy Study, which is referred to as TES Transportation Data below. Biodiesel LDV efficiency was assumed to be 10% less efficient than LDV diesel efficiency.[14] Electric vehicle (EV) efficiency was derived from an Excel worksheet from Drive Electric Vermont. The worksheet calculated EV efficiency using the number of registered EVs in Vermont, EV efficiency associated with each model type, percentage driven in electric mode by model type (if a plugin hybrid vehicle), and the Vermont average annual vehicle miles traveled. LDV electric vehicle efficiency was assumed to increase at a rate of .6%. This was a calculated weighted average of 100 mile electric vehicles, 200 mile electric vehicles, plug-in 10 gasoline hybrid and plug-in 40 gasoline hybrid vehicles from the Energy Information Administration Annual Energy Outlook.[15]

Miles per LDV was calculated using the following assumptions: data from the Vermont Agency of Transportation provided values for statewide vehicles per capita and annual miles traveled.[16] The total number of LDVs in Vermont was sourced TES Transportation Data. The calculated LDV miles per capita was multiplied by the population of Vermont and divided by the number of LDVs to calculate miles per LDV.

The number of EVs were sourced directly from Drive Electric Vermont, which provided a worksheet of actual EV registrations by make and model. This worksheet was used to calculate an estimate of the number of electric vehicles using the percentage driven in electric mode by vehicle type to devalue the count of plug-in hybrid vehicles. Drive Electric Vermont also provided the number of EVs in the 90% x 2050 $_{\text{VEIC}}$ scenario.

Heavy Duty Vehicles

Similar to the LDV vehicle efficiency methods above, HDV efficiency values contained a variety of assumptions from different sources. A weighted average of HDV diesel efficiency was calculated using registration and fuel economy values from the Transportation Energy Data Book.[17] The vehicle efficiency values for diesel and compressed natural gas (CNG) were all assumed to be equal.[18] Diesel efficiency was

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[13] Jonathan Dowds et al., "Vermont Transportation Energy Profile," October 2015, http://vtrans.vermont.gov/sites/aot/files/planning/documents/planning/Vermont%20Transportation%20Energy%20Profile%202015.pdf.
[14] U.S. Environmental Protection Agency: Office of Transportation & Air Quality, "Biodiesel," *Www.fueleconomy.gov*, accessed August 19, 2016, https://www.fueleconomy.gov/feg/biodiesel.shtml.
[15] U.S. Energy Information Administration, "Light-Duty Vehicle Miles per Gallon by Technology Type," *Annual Energy Outlook 2015*, 2015, https://www.eia.gov/forecasts/aeo/data/browser/#/?id=50-AEO2016&cases=ref2016~ref_no_cpp&sourcekey=0.
[16] Jonathan Dowds et al., "Vermont Transportation Energy Profile."
[17] Ibid.
[18] "Natural Gas Fuel Basics," *Alternative Fuels Data Center*, accessed August 19, 2016, http://www.afdc.energy.gov/fuels/natural_gas_basics.html.

reduced by 10% to represent biodiesel efficiency.[19] Propane efficiency was calculated using a weighted average from the Energy Information Administration Annual Energy Outlook table for Freight Transportation Energy Use.[20]

In the 90% x 2050 $_{VEIC}$ scenario, it was assumed HDVs will switch entirely from diesel to biodiesel or renewable diesel by 2050. This assumption is backed by recent advances with biofuel. Cities such as Oakland and San Francisco are integrating a relatively new product called renewable diesel into their municipal fleets that does not gel in colder temperatures and has a much lower overall emissions factor.[21] Historically, gelling in cold temperatures has prevented higher percentages of plant-based diesel replacement products.

Although there has been some progress toward electrifying HDVs, the VEIC 90% x 2050 scenario does not include electric HDVs. An electric transit bus toured the area and gave employees of BED, GMTA, and VEIC a nearly silent ride around Burlington. The bus is able to fast charge using an immense amount of power that few places on the grid can currently support. The California Air Resources Board indicated a very limited number of electric HDVs are in use within the state.[22] Anecdotally, Tesla communicated it is working on developing an electric semi-tractor that will reduce the costs of freight transport.[23]

The total number of HDVs was calculated using the difference between the total number of HDVs and LDVs in 2010 in the Vermont Transportation Energy Profile and the total number of LDVs from TES Transportation Data.[24] HDV miles per capita was calculated using the ratio of total HDV miles traveled from the 2012 Transportation Energy Data Book and the 2012 American Community Survey U.S. population estimate.[25,26] The total number of HDVs and HDV miles per capita were combined with the population assumptions outlined above to calculate miles per HDV.

Rail

The rail sector of the transportation branch consists of two types: freight and passenger. Currently in Vermont, freight and passenger rail use diesel fuel.[27,28] The energy intensity (Btu/short ton-mile) of

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[19] U.S. Environmental Protection Agency: Office of Transportation & Air Quality, "Biodiesel."
[20] US Energy Information Administration (EIA), "Freight Transportation Energy Use, Reference Case," *Annual Energy Outlook 2015*, 2015, http://www.eia.gov/forecasts/aeo/data/browser/#/?id=58-AEO2015&region=0-0&cases=ref2015&start=2012&end=2040&f=A&linechart=ref2015-d021915a.6-58-AEO2015&sourcekey=0.
[21] Oregon Department of Transportation and U.S. Department of Transportation Federal Highway Administration, "Primer on Renewable Diesel," accessed August 29, 2016, http://altfueltoolkit.org/wp-content/uploads/2004/05/Renewable-Diesel-Fact-Sheet.pdf.
[22] California Environmental Protection Agency Air Resources Board, "Draft Technology Assessment: Medium- and Heavy-Duty Battery Electric Trucks and Buses," October 2015, https://www.arb.ca.gov/msprog/tech/techreport/bev_tech_report.pdf.
[23] Elon Musk, "Master Plan, Part Deux," *Tesla*, July 20, 2016, https://www.tesla.com/blog/master-plan-part-deux.
[24] Jonathan Dowds et al., "Vermont Transportation Energy Profile."
[25] "Transportation Energy Data Book: Edition 33" (Oak Ridge National Laboratory, n.d.), accessed August 18, 2016.
[26] U. S. Census Bureau, "Total Population, Universe: Total Population, 2012 American Community Survey 1-Year Estimates," *American Fact Finder*, 2012, http://factfinder.census.gov/bkmk/table/1.0/en/ACS/12_1YR/B01003/0100000US.
[27] US Energy Information Administration (EIA), "Freight Transportation Energy Use, Reference Case."

freight rail was obtained from the U.S Department of Transportation Bureau of Transportation Statistics.[29] A 10-year average energy intensity of passenger rail (Btu/passenger mile) was also obtained from the U.S Department of Transportation Bureau of Transportation Statistics.[30] Passenger miles were calculated using two sets of information. First, distance between Vermont Amtrak stations and the appropriate Vermont border location were estimated using Google Maps data. Second, 2013 passenger data was obtained from the National Association of Railroad Passengers.[31] Combined, these two components created total Vermont passenger miles. We used a compound growth rate of 3% for forecast future passenger rail demand in the 90% x 2050 $_{VEIC}$ scenario, consistent with the historical growth rates of rail passenger miles in Vermont.[32] Passenger rail is assumed to completely transform to electric locomotion. Freight rail is assumed to transform to biodiesel or renewable diesel.

Air

The total energy of air sector used appropriate FACETS data values directly. The air sector is expected to continue using Jet Fuel in both scenarios.

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[28] Vermont Agency of Transportation Operations Division - Rail Section, "Passenger Rail Equipment Options for the Amtrak Vermonter and Ethan Allen Express: A Report to the Vermont Legislature," January 2010, http://www.leg.state.vt.us/reports/2010ExternalReports/253921.pdf.

[29] U.S. Department of Transportation: Office of the Assistant Secretary for Research and Technology Bureau of Transportation Statistics, "Table 4-25: Energy Intensity of Class I Railroad Freight Service," accessed August 26, 2016, http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_04_25.html.

[30] U.S. Department of Transportation: Office of the Assistant Secretary for Research and Technology Bureau of Transportation Statistics, "Table 4-26: Energy Intensity of Amtrak Services," accessed August 26, 2016, http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_04_26.html.

[31] National Association of Railroad Passengers, "Fact Sheet: Amtrak in Vermont," 2016, https://www.narprail.org/site/assets/files/1038/states_2015.pdf.

[32] Joseph Barr, AICP et al., "Vermont State Rail Plan: Regional Passenger Rail Forecasts."

LEAP Results: Chittenden County October 14,2016

1) Reference Scenario Total Regional Residential Heating Consumption Thousand MMBTUs				
Branches	**2015**	**2025**	**2035**	**2050**
Biodistillates	-	-	-	-
Cord Wood	1,012	1,114	1,263	1,617
Electric Resistance	298	189	134	62
Heat Pump	35	178	332	479
Heat Pump Water He	6	24	82	171
Kerosene	267	220	195	31
LPG	1,082	850	609	160
Natural Gas	2,915	2,909	2,992	3,297
Oil	1,323	1,121	708	182
Wood pellets	408	502	522	372
Total	7346	7107	6837	6371

2) 90x50 Scenario Total Regional Residential Heating Consumption Thousand MMBTUs				
Branches	**2015**	**2025**	**2035**	**2050**
Biodistillates	29	138	257	481
Cord Wood	1,016	1,157	1,336	1,743
Electric Resistar	315	240	144	19
Heat Pump	56	292	560	809
Heat Pump Wat	34	102	199	323
Kerosene	261	204	168	-
LPG	1,352	1,045	728	244
Natural Gas	2,572	1,899	1,116	59
Oil	1,262	907	566	-
Wood pellets	596	970	1,078	611
Total	7493	6954	6152	4289

5) Reference Scenario Total Regional Light Duty Vehicle Consumption Thousand MMBTUs				
Branches	**2015**	**2025**	**2035**	**2050**
Gasoline	7042	5791	5063	4528
Ethanol	955	781	677	598
Electricity	6	22	35	56
Diesel	256	245	244	259
Biodiesel	3	2	1	0
Hydrogen	-	-	-	-
Total	8262	6841	6020	5441

6) 90x50 Scenario Total Regional Light Duty Vehicle Consumption Thousand MMBTUs				
Branches	**2015**	**2025**	**2035**	**2050**
Gasoline	7068	5115	2920	244
Ethanol	943	636	353	43
Electricity	6	199	595	1232
Diesel	238	150	83	3
Biodiesel	20	93	152	231
Hydrogen	-	-	-	-
Total	8275	6193	4103	1753

3) Reference Scenario Total Regional Commercial Consumption Thousand MMBTUs				
Branches	**2015**	**2025**	**2035**	**2050**
Biofuel	-	-	-	-
Distillate Fu	1,046	845	614	251
Electric Use	1,922	1,942	1,924	1,933
LPG	782	803	809	835
Natural Ga	754	915	1,070	1,341
Residual Fu	106	79	48	-
Wood and	338	359	375	408
Total	4,947	4,944	4,840	4,768

4) 90x50 Scenario Total Regional Commercial Consumption Thousand MMBTUs				
Branches	**2015**	**2025**	**2035**	**2050**
Biofuel	11.1	69.6	130.5	232
Distillate Fu	1,034.50	773.80	479.90	12.5
Electric Use	1,921.80	1,941.80	1,923.60	1,932.80
LPG	760.10	664.10	548.30	371.20
Natural Ga	698.70	572.50	426.10	197.2
Residual Fu	106	79	48.5	-
Wood and	362.60	515.20	667.50	928.10
Total	4,894.90	4,615.80	4,224.40	3,673.90

7) Reference Scenario Total Regional Heavy Duty				
Branches	**2015**	**2025**	**2035**	**2050**
Biodiesel	24	22	17	4
CNG	68	136	227	413
Diesel	1979	2173	2269	2191
LPG	26	26	23	13
Total	2097	2357	2536	2621

8) 90x50 Scenario Total Regional Heavy Duty Vehicle				
Branches	**2015**	**2025**	**2035**	**2050**
Biodiesel	131	645	1151	1953
CNG	56	50	45	39
Diesel	1811	1261	759	26
LPG	25	21	18	13
Total	2023	1977	1973	2032

9) 90 % Renewable by 2050 vs Reference
Residential Non-Thermal Electric
Consumption, Thousand MWH

2015	**2025**	**2035**	**2050**
234.30	847.60	1,436.10	2,325.20

FREQUENTLY ASKED QUESTIONS
REGIONAL ENERGY PLAN
October 14, 2016

1. If a municipality chooses NOT to pursue the path towards 'substantial deference' would the enhanced Regional Energy Plan be sufficient to represent the municipalities concerns in Section 248 proceedings?

   As we are just beginning our planning process, we cannot guarantee the Regional Energy Plan will be sufficient to reflect each and every town's concerns in the PSB process. We do know if a municipality is not pursuing 'substantial deference' and they choose to intervene in the Section 248 process their concerns will only be given 'due consideration'. However, there is a provision in Chapter 117 that allows a municipality to adopt a section of the Regional Plan as their own. If a municipality wanted to, they could do this for their energy plan. Unsure whether substantial deference is automatic or CCRPC has to request party status for the regional plan to be granted this. ACT 174 is silent on procedural items.

2. How does the future total energy demand in the State's Total Energy Study compare to the future energy demand produced by LEAP? Need to ask DPS staff

3. What is the connection between the Tier 1-3 requirements for utilities and the Regional Energy Plan?

   The Regional Energy Plan ensures that local and regional policies are considered when utilities are siting new renewable energy generation facilities.

   Comment [EN1]: Will there be more connections than this?

4. Will RPCs and Towns still have to intervene in a Certificate of Public Good petition process in order for their plans to be given substantial deference?

   We cannot say how the PSB is going to operate in practice. Act 174 did change the definition in order to give the Plan greater weight. The towns/RPCS may still need to proactively intervene in order to get their interests addressed.

5. If a town receives certificate of energy compliance from DPS before 2018 do they need to recertify once the RPC finalizes and receives their certification?

   No. The determination of energy compliance from the Department of Public Service is in effect for five years. The Department of Public Service will cease reviewing town plans July, 1 2018. When a town needs to re-certify it will be with the RPC.

6. Are towns required to produce renewable energy generation targets?

   We will not know until the standards are finalized on November 1.

7. Are regions required to produce renewable energy generation targets in order to received energy certification?

   We don't know yet. However CCRPC is obligated to do this because it's a requirement of the DPS's regional energy project contract.

8. What type of local constraints will the RPC reflect in the regional energy map?

   The regional energy plan map will likely reflect local constraints as requested by a municipality so long as protection of the local constraint is a clearly stated goal or policy in an adopted Town Plan or Zoning bylaw. The Regional Plan at a minimum will include the Public Service Board/Agency of Natural Resources list of constraints.

9. Is there a public fund for decommissioning renewable energy projects once they reach their useful life?

10. How are community solar agreements counted? If one community is buying solar energy from a facility outside their town does that count towards municipality's target?

11. How is the energy counted if the renewable energy is sold out of state?

12. If a town does not have 3-phase power to accommodate the distribution of energy from new renewable facilities? Can that town meet its target through concentrating its effort on the transportation and heating sector?