EnergizeVermont.org

Mark Whitworth
Senate Natural Resources and Energy
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The Vermont Energy Rebellion

- Vermont has adopted ambitious energy goals that will require the siting of small, distributed electricity-generation facilities in just about every town in the state.
- The state could have engaged Vermont's communities in the achievement of these goals.
- Instead, achievement of our energy goals was turned over to energy developers
- Helter-skelter merchant projects interfere with achievement of goals in the smartest, most cost-effective, and most efficient ways
- Poor treatment of towns by developers and the PSB has sparked a grassroots energy rebellion that includes 108 towns. And it's spreading.
- Cities and towns are rebelling against Vermont's energy policies by:
    - Adopting municipal plans that discourage certain technologies or siting options (23 towns)
    - Opposing poorly-sited energy projects and inappropriate energy technologies (24)
    - Passing resolutions that demand that energy developers comply with appropriately-developed municipal siting standards (96)
- Rebellion towns are in every region of the state
    - They lie in 63 House districts and are represented by 91 House members
    - Six Senate districts have more than 50% of their populations in rebellion towns: Addison, Bennington, Caledonia, Essex-Orleans, Franklin, and Rutland

Move Energy Land-Use to Act 250

- The PSB is good at evaluating electricity reliability, cost, and rate issues.
- The PSB was not created to regulate land use and it has little aptitude for it
- Act 250 is a good place for land-use decisions associated with energy
    - Forty years of case law
    - Distinguishes between major and minor applications
    - Easily accessible by citizens
    - Nine regional commissions attuned to local sensibilities

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Collaborative Development to Achieve Energy Goals

- Collaboration between communities and the utilities that serve them will assure:
  - Good projects in the right places—projects that bring communities together
  - Achievement of our goals in the most sensible way
  - Wisest use of existing utility distribution and transmission assets
  - Land use consistent with regional and municipal conservation and orderly development goals
- Newark's Collaborative Energy Development Resolution
  - Pledges town to work with the utilities that serve it to:
    - determine how much generation would be appropriate in the town,
    - design projects that could help meet state goals and improve reliability,
    - identify locations agreeable to landowners, the utilities, and the town,
    - facilitate project development by reputable developers, and
    - define projects that can help utilities meet the energy transformation goals that were established under Act 56
  - Asks utilities to help discourage projects that aren't the result of collaboration

Attachments: Rebellion Town Map

House District Map

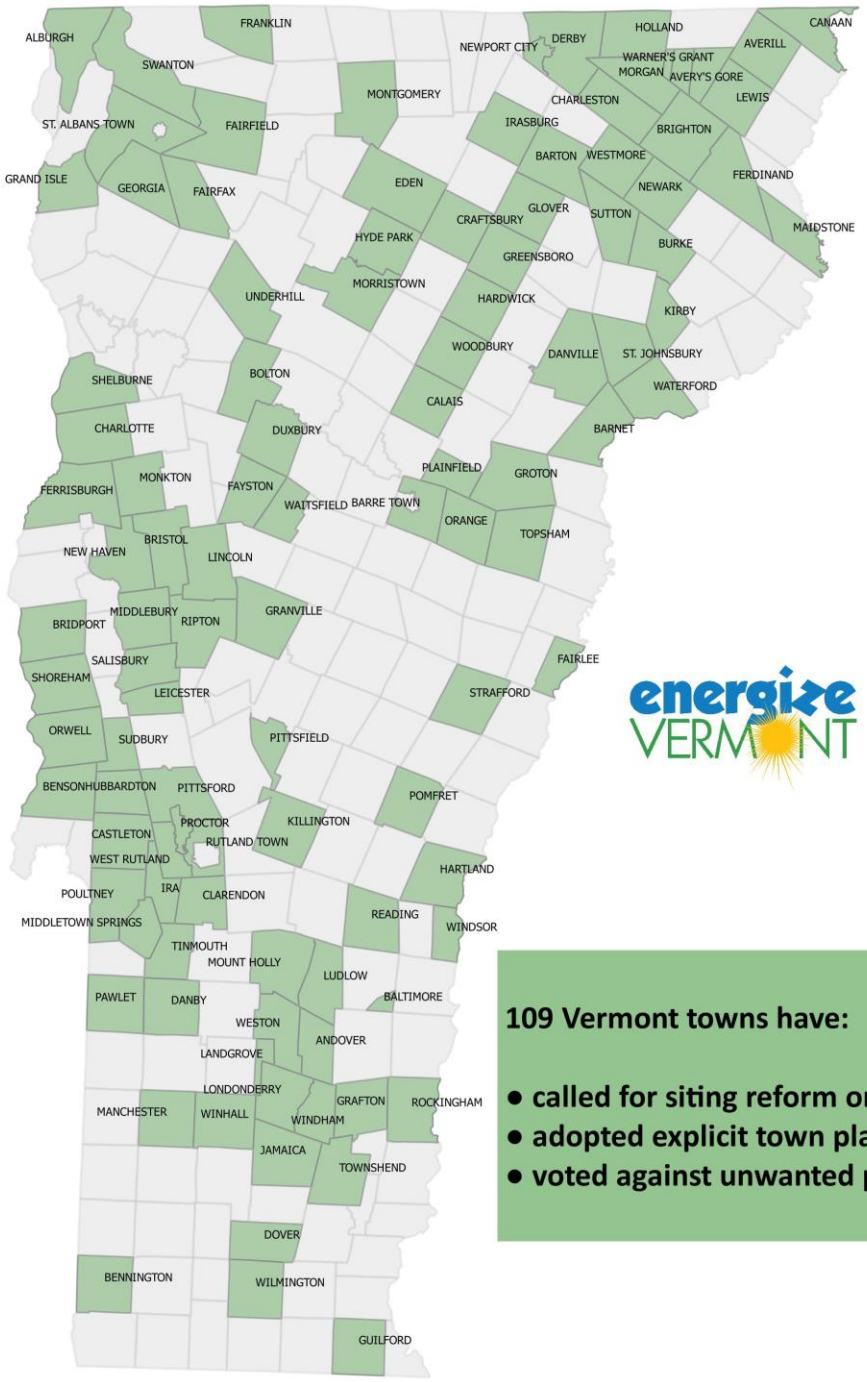
Senate District Population Map

Town of Newark Collaborative Energy Development Resolution

Christine Hallquist on proper siting of generation

The Vermont Energy Rebellion
109 Towns

Updated February 23, 2016

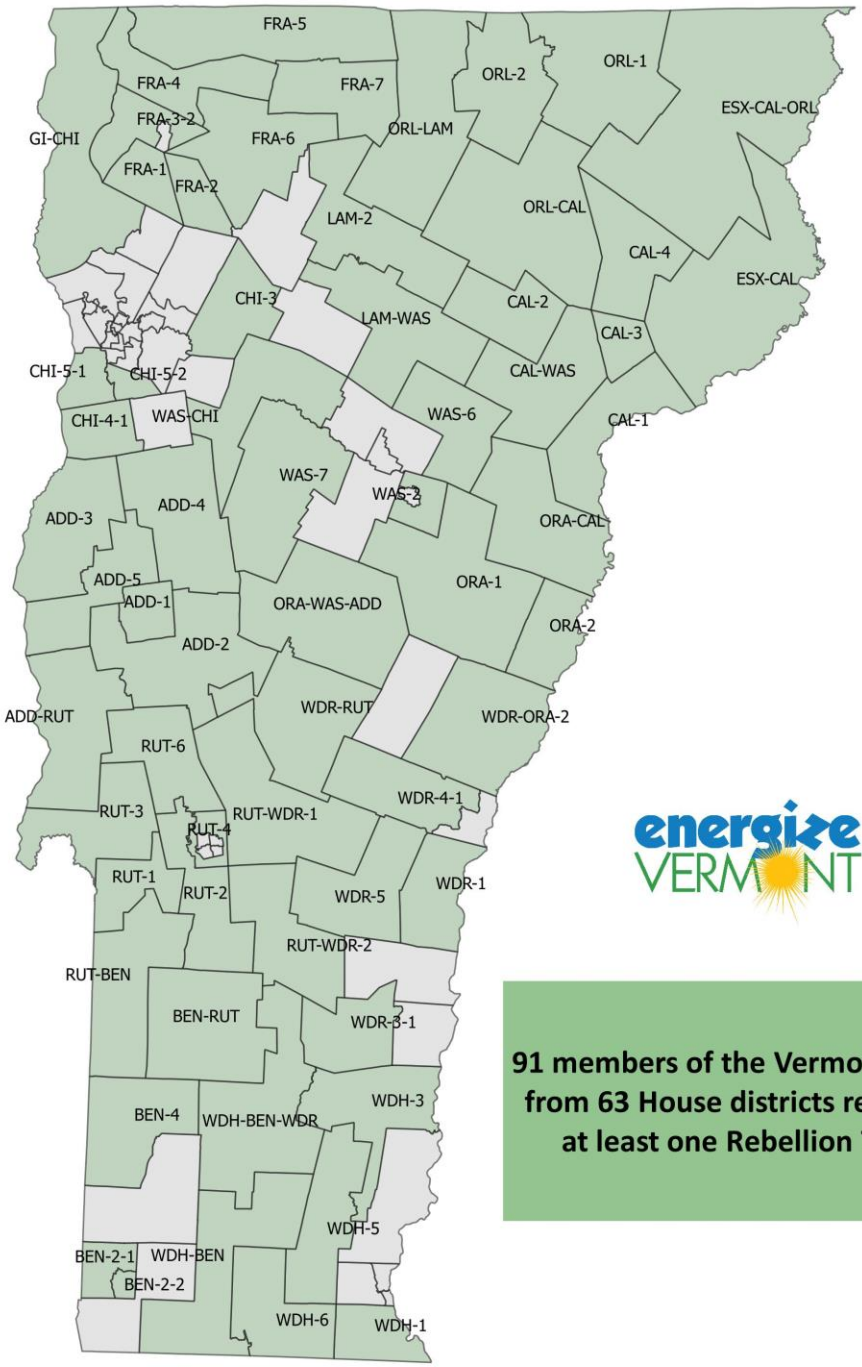


109 Vermont towns have:

- called for siting reform or
- adopted explicit town plans or
- voted against unwanted projects

Vermont Energy Rebellion
63 House Districts

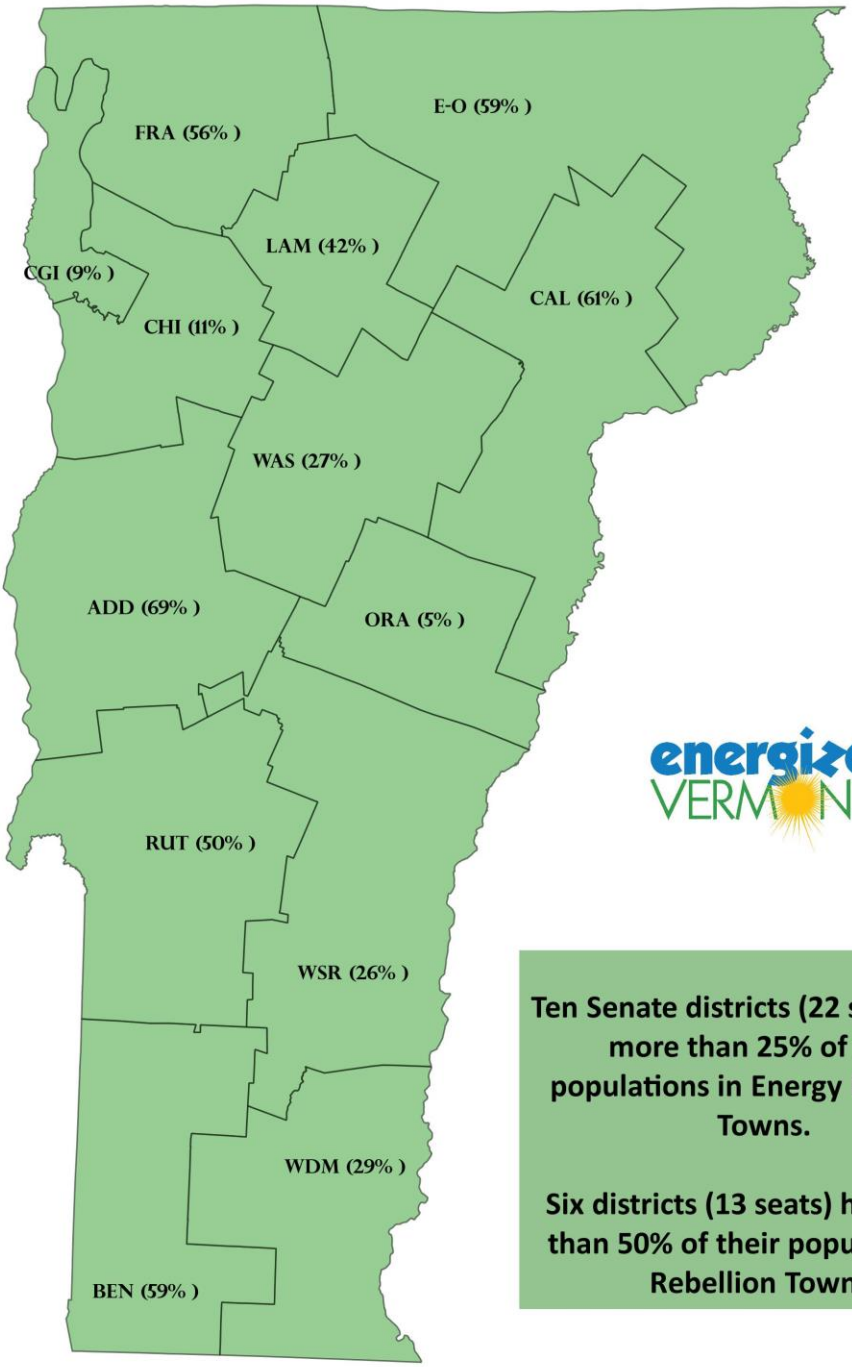
Updated February 23, 2016



91 members of the Vermont House from 63 House districts represent at least one Rebellion Town

Vermont Energy Rebellion Senate Districts

Updated February 23, 2016



Ten Senate districts (22 seats) have more than 25% of their populations in Energy Rebellion Towns.

Six districts (13 seats) have more than 50% of their populations in Rebellion Towns.

Town of Newark
Collaborative Energy Development Resolution

The Town of Newark pledges to collaborate with the utilities that serve it in order to help them meet their state-mandated energy goals in a manner that serves both the utilities and the town.

In particular, the Town of Newark will work with its utilities to:

- determine how much electricity generation would be appropriate in the town,
- design projects that could help meet state goals and improve reliability,
- identify locations agreeable to landowners, the utilities, and the town,
- facilitate project development by reputable developers, and
- define projects that can help utilities meet the energy transformation goals that were established under Act 56

In addition, Newark requests the utilities that serve it to:

- help to oppose projects proposed for Newark (and other towns) which are not the result of a collaborative process involving the town and
- refuse to purchase power, whenever possible, from projects that have not been the result of a collaborative process involving the host municipality

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Vermont Electric CO-OP LIFE

When Considering Distributed Generation, It's Location, Location, Location!

Christine Hallquist, CEO Vermont Electric Cooperative

"Generation in the right place is helpful; generation in the wrong place is hurtful." This is what we have been saying at VEC since 2012. With the rapid deployment of distributed generation over the past two years and the entry of largescale solar to Vermont, this basic tenet is more important than ever.

The rule for generation is "use it or move it." Either there needs to be existing demand (ie "load") close to the generation, or sufficient transmission capacity to move the power to places where there is load. This year, VELCO, Vermont's transmission authority, did a study of the state of Vermont to determine where generation could be sited and concluded that most of the VEC system outside of Grand Isle and Chittenden Counties does not have capacity for additional generation without costly transmission upgrades.

Developers ran into these same constraints with the Seneca Mountain wind project in 2013 in the town of Newark. They erected measurement towers to evaluate the potential for a 20-turbine wind development. One year later, the developers decided not to pursue the project due to the high cost of upgrading the electrical system to get the power out of this sparsely populated area of the Northeast Kingdom.

Recently, a developer proposed five large-scale solar projects, which would consume at least 120 acres each; three of the proposed projects are in VEC's service territory. These projects are being proposed under federal laws that were established at a time when no one foresaw the distributed generation revolution that is occurring today.

These large projects are a good example of how important location is when evaluating the impact of distributed generation to the grid. As the VELCO study found, the northern section of VEC's service territory is completely full in terms of the amount of generation it can handle without major transmission upgrades. All of the Hydro Quebec power that Vermont uses has to flow through these wires, along with the Kingdom Community, Georgia, and Sheffield wind projects. Additional generation in these areas would mean that other renewable generation would need to be scaled back during peak generation times, as there simply is not enough load to consume all the power. This is not an outcome many would want—hundreds of acres of land being used for solar panels with no corresponding increase in the amount of renewable power on the grid.

The great opportunity for Vermont is to put the generation where the load is. For VEC, this is in the western part of the VEC service territory from Chittenden County south. VEC has seen some significant benefits from strategically located, smaller-scale renewable projects. These projects

improve the efficiency of the grid by minimizing system losses (each wire has small losses that collectively add up to larger "system losses"). Over the past several years, VEC has experienced reductions in system losses. That improvement translates to a direct savings for members and has helped VEC minimize rate increases to an average of 1% annually, while other costs have increased over 3% on average. VEC has to buy less power to cover the losses, and we can attribute that at least partly to the rise of well-located distributed generation.

Some would suggest that we should simply build more transmission, but that suggestion is problematic for a number of reasons.

First, it would reduce the average load factor and make our grid less efficient. Load factor is a measure of how much the grid is used. For VEC, our system is used half the time, for a 50% load factor. That means that extra capacity is available half of the time, usually at night.

Like any piece of capital equipment, if you can use it more without having to pay more, the unit cost goes down. If you use it less or invest large sums in upgrades, the unit cost goes up. Solar in Vermont has a 15% capacity factor, meaning that solar panels produce 15% of what they would if the sun shone 24 hours a day year-round at full output (no clouds, peak sun). Building dedicated transmission lines for large solar projects would reduce the average load factor and make our grid less efficient.

Second, it costs a lot of money to build transmission, and it has to be paid for somehow. Often it is necessary to recover increased transmission costs in rates, and we know that keeping rates stable is a top priority for members. Finally, and maybe most importantly, it may not be prudent to invest in transmission now, when utility-scale storage is likely to be cost-effective in five years and consumer storage sometime after that. As storage is adopted, it will cause transmission to be idle more of the time, potentially making costly transmission investments less useful. We need to be thinking about the future and reserving resources for the technologies that will help us transition most effectively to a more renewable electric grid.

For the past several years, VEC surveys have consistently told us that our members are equally concerned about climate change and not increasing rates. That means that we need to look for ways to construct renewables at the lowest possible cost and use the grid efficiently. Solar projects that are strategically sized and located to serve load can help achieve both those goals. We are prioritizing solar sites that are close to load centers, and, if those load centers peak during summer afternoons, even better, because that is when the sun is brightest.

Over the past 15 years, VEC has been an innovative leader in the use of technology. We were the first in Vermont to use GPS coordinates on our field assets (poles, wires, substations), the first to use smart meters, the first to automate our outage system, and the first to fully automate the distribution grid. We recognize that innovation is critical to ensure that our grid operates well. VEC is fully prepared and enthusiastic to transition to a distributed grid that optimizes storage, renewables, and traditional generation sources. We will continue to develop our expertise in how to accomplish these goals in the most efficient, cost-effective, and reliable way possible for our members.