CEP Public Involvement Report

Comments from stakeholders and the public

"Vermont must develop its renewable, clean energy industry—reducing our carbon footprint and creating jobs here in Vermont."

8/3/2011

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Executive Summary

Complementing the Comprehensive Energy Plan (CEP), this document compiles and catalogs public comments received during the energy planning process from March 2011 through July 15, 2011. It is not an exhaustive record of public comments, nor is it a scientific survey of Vermonters. Rather, it captures general trends and suggestions to form a snapshot of public opinion across a variety of energy issues. It reflects the views of the comments received, but it is not necessarily representative of the views of all Vermonters or the Administration. Comments have not been edited for factual accuracy.

Comments were received via email and the CEP website, as well as verbally at stakeholder meetings and public forums. They are categorized according to areas of focus in the CEP outline; each category contains a brief summary of trends followed by a more detailed list of public suggestions.

The CEP focuses on three broad areas of energy policy: electricity, thermal, and transportation and land use. Briefly, public input in these three areas is as follows:

Electricity

Comments strongly support greater reliance on renewable energy and distributed in-state generation through investment, incentives, and regulation—especially community solar and wind with limits on ridgelines. They stress that these projects can and must create jobs and spur the green energy industry in Vermont. Biomass is also a focal point of public commentary, drawing both support (as a way to create jobs and replace fossil fuels) and strong criticism (as less clean and sustainable than is commonly held.)

Thermal

Comments generally treat efficiency as the most important and cost-effective component of thermal energy policy. Increasing funding for thermal efficiency through some kind of carbon tax is a popular theme, especially since efficiency programs tend to keep money in Vermont. The public would like the State to lead by example, with targets for carbon-neutral state buildings in the near term and net-zero new construction within the next 10 to 20 years. Comments tend to agree that education, financing, and time of sale requirements must be integral strategies for achieving carbon neutrality in existing housing stock. Comments would also like to see increased support for combined heat and power (CHP).

Transportation and Land Use

Comments reflect a desire for increasing the focus of the plan on energy related transportation issues. These comments promote advanced planning for plug-in hybrid infrastructure by increasing investment in efficiency and renewables, better permitting and planning for multi-modal transportation, and a renewed culture of walking and biking through the adoption of a Complete Streets Policy. Many comments call for transportation and land use to be complementary components of the plan: transportation planning must discourage sprawl, and clustered development should reduce both vehicle miles traveled (VMT) and single-occupancy vehicles (SOVs).

Cross-Cutting

Many issues—such as renewable fuel sources and better efficiency—cut across energy sectors. Notably, economic development and job creation is a major theme in public comments. Vermonters believe there is great potential for the green energy industry to stimulate economic growth, and energy investment is best directed at creating sustainable jobs and keeping money in Vermont. Comments suggest a willingness to pay more for cleaner energy if investments stay in-state.

Electricity—general

Summary: **There is a desire to have more choice in the aggregate to buy power from local sources, and to avoid socializing costs for benefits that are only enjoyed by a few. Most electrical comments were more targeted and are addressed in more detailed categories below. Also generally, people want to avoid large new generation plants.**

- There should be a way for a group of residents, and or, businesses to get together and buy specific local power from their power company.
- There is a perception of unfairness in the system in terms of who bears the cost burden of supporting more expensive renewable energy.
- Minimize large-scale plants in favor of small distributed generation.
- Achieve 80% renewables by 2030 and reduce demand by 3% per year.
- Smart grid comments reflect general support with some calls for caution.
- The plan should focus on low cost, safe, reliable base load power for all ratepayers in Vermont.
- Inclining block rates work well, for example, at Hardwick Electric, and do not require expensive meter investments the way peak power pricing does. Lack of data should not be a reason *not* to try inclining block rates.
- Long-term incentives are critical. It takes time for home-owners and businesses to make energy investment decisions. Incentives that appear and disappear are just confusing.
- An energy cost model that predicts future electric rates over the plan horizon should be an update to, and an extension of, the economic modeling done by DPS on feed-in tariffs.
- Support is expressed for cost-based rate making policies that fairly allocate costs to the customer classes that incur them, as well as for avoiding cross-subsidies.
- Comments strongly support inclusion of demand-side resources as the lowest cost transmission solutions.

Thermal—general

Summary**: Comments generally called for an increase in funding for thermal efficiency, specifically solar hot water heating and space heating, and geothermal heating and cooling, as well as the wide-scale adoption of thermal efficiencies in certain areas, such as schools. Comments also widely reflected a concern over the inefficiencies and carbon emissions of using wood for electricity, and trended more towards the selective use of woody biomass for heating purposes (pending a sustainable harvesting plan) citing increased efficiency.**

- Reduce demand for heating and process fuel by 33% by 2030.
- Reach 23 trillion BTUs of renewable thermal by 2032.
- All water should be preheated by solar hot water or geothermal.
- Increase funding and resources for thermal efficiency programs and work in buildings.
    - Strong financial incentives should be provided to encourage property owners to retrofit their heating systems to carbon-neutral, sustainable-fuel based systems, such as biomass burners, geothermal heat pumps, and solar space heating.
        - Quote: "After efficiency upgrades, solar hot water technology is the lowest-hanging fruit. Every homeowner, every dairy, every cheese maker, every restaurant, every hotel and inn, every laundromat, and every other business that uses hot water should have a solar hot water system in Vermont!"

    - Residential, commercial, and school buildings should have solar hot water heating and space heating (to minimize need for Biomass). Some say to require solar hot water heating in schools. Also, comments reflect the need for more incentives for these measures.
- Consider thermal electrical generation options.
- The CEP is a forward looking document and should not recommend one fuel source over another based on cost because cost is a volatile aspect of the fuel market, and bound to change.
- The statement in the old draft, that it is in the best interest of the state to encourage wood heat, needs some caveats: this is true to a point, but wood could not provide 100% of heat/process energy without devastating our forests.
- It is not true that virtually all of Vermont's wood energy use is from mill waste – McNeil uses mostly whole tree chips from dedicated forest harvest, and procurement standards are minimal and do not guarantee "sustainable" rates of harvest. As institutional heating has expanded recently, most of that wood also comes from new round-wood harvest.
- While we can expand harvest for wood energy, we should be managing our forests for higher value products, so harvest guidelines should ensure that future crop trees, with their higher carbon storage potential, are protected.
- Carbon emissions from wood electricity are not minimal – this needs to be updated in light of the Manomet report at: http://www.mass.gov/Eoeea/docs/doer/renewables/biomass/Manomet_Biomass_Report_Full_LoRez.pdf
- In general, wood-fired electricity is much less efficient than wood heat. Vermont policy should prioritize high-efficiency uses.

Transportation and Land Use—general

Summary: **Comments reflect a concern and greater need for increasing the focus of the plan on energy-related transportation issues. These comments called for: 1) advanced planning for plug-in hybrid infrastructure by increasing investment in efficiency and renewables; 2) better permitting and planning for multi-modal transportation; 3) a renewed culture of walking and biking through the adoption of a *Complete Streets Policy*; and 4) unifying rideshare services in VT into a statewide system.**

Another trend in land use comments reflects a greater need for compact/mixed-use planning to lower energy consumption associated with transportation - an effort currently hampered by current land use codes.

- The result of the "Smart Mobility" report in Chittenden County "…shows very strong support for changing our direction of growth and development to be more compact, more mixed-use, and as a result, lower in energy consumption. There is a great mismatch between our existing land use codes, which make compact development difficult if not impossible, and most resident/citizen's goals."
    - There should be a focus on Chittenden County, which accounts for a significant portion of VT's energy use, since that would generate the most bang for the buck. (See the National Household Travel Survey 2010 completed by UVM.)
- Co-locate park and rides near small businesses (e.g. cafés, convenience stores, etc.) to generate business.
    - There is a need for more and "smarter" park and rides (such as the one stated above).

- The transportation section of CEP needs bolstering, as most GHGs in VT come from transportation.
- Establish a transportation efficiency utility.
- Focus on the aspects of transportation associated with energy issues; let other agencies address the other aspects.
- Have a local sustainability index, so towns know what they would have to do to improve their sustainability.
- Vermonters are aging and we need to keep their mobility in mind.
- Vermont has a system predicated on cheap energy—what happens when energy is no longer cheap?
- Vermont may have a system we can't afford; how do we fund a new system?
- Vermont is in a transitional era:
    - What is Vermont transitioning to?
    - How long will the transition take?
    - How will Vermont minimize the impacts on the most vulnerable?
- "(Shift the paradigm) from providing a transportation system to providing a system of mobility for Vermonters and visitors alike."
- "Development patterns are at the root of increased energy consumption in the U.S. Much of Vermont is on the cusp of suburbanization. Perhaps it is the right time for the current administration to work hand-in-hand with the Vermont legislature to re-open and re-tool Act 250. Act 250 has the potential to reduce scattered development and its associated energy costs much more successfully than at present. For example, impacts associated with length and steepness of new driveways should be reviewed on a more granular scale than under current statewide land use policy.

  Vehicle Miles and new development patterns are intrinsically linked. It is time to internalize those costs associated with sprawl and habitat fragmentation as a result of scattered subdivision development. This is a big, politically charged topic, and cannot be approached lightly. Private property rights must be acknowledged and respected. Thoughtful revisions to Act 250 could incorporate matrices, economic incentives and deterrents rather than absolutes. Nonetheless, without a willingness to re-open Vermont's land use planning framework, we are ultimately doomed to failure in many of the most-promising avenues of transportation efficiency."
- Conservation will be the best tactic.
- Vermont must put transportation and land use into a virtuous, rather than vicious, cycle.
- Bring awareness to local food initiatives, which ultimately brings awareness to transportation issues.
    - Create an "RPS" for the percentage of local food cultivated in each community, region, and/or county.

Efficiency

Summary: **Overall, comments tended to support greater reductions in energy consumption through energy efficiency programs (e.g. 40% reductions by 2032). While acknowledging the long term benefits of efficiency measures, industry groups and businesses all together urged for a decrease in reliance on the energy efficiency charge (EEC) and for alternate methods of funding to be adopted out of concern for the economic burdens the EEC places on businesses. However, the general trend of public comments supported energy efficiency investments overall. These comments ranged from**

creating an enforceable green building code to establishing a Net Zero Goal for state buildings and vehicle fleets in the next 30 years. Other comments ranged from suggesting new financing and funding mechanisms/strategies to adopting a more community based marketing approach, such as Project Porch Light (in addition to an incentive-based approach).

- Strong energy efficiency and reductions in energy use by as much as 40% are necessary by 2032. Other comments ranged from 30% to 90% reductions. Many comments suggested retrofits of new and old housing stock, and that buildings should be carbon neutral by 2030 (others said by 2050.)
    - With one of, if not the oldest housing stock in the nation, Vermont's energy plan should prioritize home weatherization - by investing in low income weatherization and financing mechanisms for both middle and upper income people.
    - Focus on making our existing building envelopes more efficient and then encourage the use of local renewable fuels to heat our buildings, but Vermont must continue to develop PV solar and other renewables now.
- Prioritize efficiency and reduce load through conservation.
    - Vermont should think about how it can make the best energy reductions for the money we have. Use a carbon tax and participation grants (up to 30%) to fund capital costs. This will positively impact the environment and in-state job creation.
- Energy audits on all buildings and major appliances should be mandatory, not optional. Building owners should be required to install adequate insulation, upgrade outdated inefficient appliances, and other energy efficient retrofits. Low-cost financing for these measures should be available to all Vermonters, regardless of income and creditworthiness.
- Efficiency improvements cycle money through the local economy, whereas money spent on oil flows out of state.
- Recognize that electrical energy efficiency is a growing portion of the electrical energy supply portfolio and plan as such. Plan for how consumers will use smart grid technology (they will be using less).
- Correspondents and stakeholders alike expressed considerable support for the adoption and enforcement of a Green Building Code, and/or rating system for new homes.
    - For older homes, a time of sale or time of lease requirement could be used—have an energy auditor sign off on it.
    - Mandatory energy audits should be implemented.
    - Towns have to use words like “encourage” when trying to get people to build green homes, but there is a desire for something enforceable.
    - Legislate new construction with an eye to solar orientation and better insulation.
    - Set tax rates based on BTUs per square foot.
    - Incentivize through density bonuses.
    - Incentivize smaller homes. (<1500sf)
- New construction codes should require net-zero carbon emissions starting in 2030. Ramping up to this will require significant technical assistance and subsidies over the next decade. Policies addressing the definition and boundaries of “net zero” will require further development.

- The state should lead by example through upgrading state buildings to net zero in the next 20-30 years.
- Financing is a big obstacle to efficiency. Vermont could use a loan guarantee program to leverage banking dollars towards home efficiency improvements. Time of failure money is also needed because that is when people have the opportunity to replace things.
    - Securitize loans to come back into the state through lending entities.
    - Support vendor financing.
    - Create a simple integrated portfolio of financial solutions for funding massive energy improvements to building infrastructure. This includes increased weatherization funding to town energy committees. The competition model didn't work because many towns didn't get any funding.
        - Target mobile homes and churches with weatherization.
        - Landlords need to be targeted.
    - Create a statewide competition/incentive program that offers rewards to towns and government entities that reduce energy use the most over time.
    - Use a carbon tax of significant increase in unregulated non-transportation fuel for the Weatherization Fund.
        - Create a program that helps people who would be disproportionally affected by a fuel tax increase, and require fuel assistance participants to get homes weatherized.
        - "We must fully fund the Weatherization Program with <u>all</u> gross receipts monies. No more raids."
- Put in place appropriate statutory and regulatory provisions to encourage and facilitate private investment in energy efficiency.
- Adopt a community based social marketing approach to energy efficiency program design (e.g. Project Porchlight), and use less of an incentive based approach.
- Make noise about conservation efforts: have ribbon cuttings, etc.
- Efficiency Vermont does a good job at present, but they need to focus on more than the electrical side of efficiency (i.e. thermal) for their customers.
- Recognize energy efficiency efforts and how they would impact the plan, including the incorporation of new technologies such as smart grid.
- A variety of business and industrial organizations across the state argued to balance the need for strong energy efficiency utility (EEU) programs against reliance on an EEC that is burdening businesses. While recognizing the long-term importance of efficiency programs on making it easier to do business in Vermont, they would like to see a decrease in the EEC and alternate mechanisms for funding the EEUs developed.
    - "As has been widely recognized, energy efficiency can greatly benefit Vermont employers by reducing the already too-high cost of doing business in the state, thereby helping to secure and grow jobs and investment to the benefit of working Vermonters and their families. Clearly, the EEUs can contribute to this. However, the cost of supporting EEU programs through the Energy Efficiency Charge (EEC) and other factors affecting effective electric rates can create short and long-term financial

burdens for many Vermont employers that can also put employment and investment at risk. Therefore a balance must be struck between supporting efficiency programs and avoiding undue costs for ratepayers."

  - There was an echo of this sentiment at the stakeholder meeting, where a stakeholder noted that the EEC spreads costs among non-beneficiaries, who are often least able to pay.

Renewables in general

Summary: **Comments trend towards accelerating development, funding, incentives and investment in long-term, local, regional and community-based distributed renewable energy projects, especially community solar and wind (with limits on ridgelines). Comments also stress that these projects can and must spur the green energy industry in the state, as well as local economies. Many comments expressed the view that biomass is not sustainable. Other comments reflect an interest to remove the barriers to net metering and group net metering.**

- A renewable energy mix should include at least a 33% mix of wind and solar photovoltaic by 2032 as the percentage of electrical energy supply.
- The state's goal of 20% renewables by 2025 falls short of the kind of goals necessary to address climate change.
- Generate or obtain 2000MW renewable power by 2032.
- The target of achieving a certain percentage of renewables by a certain date is less important than putting a cap on carbon.
- Achieve net zero for state buildings and vehicle fleet in 30 years by investing in renewables and efficiency.
- Vermont should develop its own renewables, in addition to looking to the wider region.
- Multiply Vermont owned and located energy businesses (by 5) in the next 5 years.
- Focus on regionally appropriate portfolios that are civilian powered instead of large scale utility projects.
- Invest in long-term, local, distributed renewable projects to stabilize the rising costs of energy.
- In shifting to a more renewable energy-based portfolio, Vermont should protect the most vulnerable from unaffordable energy cost burdens, and programs that increase the cost of fuel should be accompanied by rebates or income sensitivity for low-income people.
  - Even so, the energy-conscious people at the public forums indicated they would generally be willing to pay more for in-state renewables with higher costs than out-of-state renewables with lower costs.
- Conservation, efficiencies, solar, wind, geothermal, tidal, and ocean current are the way to go, not biomass burning. We can't burn anything and get ourselves out of the fix we are in.
- The sustainable business council urges the administration to continue support for RGGI standards and initiatives. Similarly, stakeholders generally believe that renewable energy standards are a good way to make renewables economical.
- Create a community based RPS: work towards 20MW of clean/new power in all 12 counties.

- Reduce and/or end subsidies for wind and solar since they form only a limited part of Vermont's projected energy portfolio, and place greater emphasis on crop biomass, which is projected to be a major source of renewable energy.
- The Property Assessed Clean Energy program (PACE) was widely supported in the comments.
- The Sustainably Priced Energy Development Program (SPEED) was widely supported in the comments.
- It is problematic to allow the sale of Renewable Energy Credits (RECs) in SPEED.
- The Standard Offer is the next step up in scale from net metering, which is growing very quickly in Vermont. The initial response indicates that prices were set too high. Auctioning or accepting bids would be more economically efficient in achieving the program objective.
- Develop a micro-standard offer program.
- Externalities need to be better accounted for when costing out renewable energy projects.
- There are ways to store renewable energy as a base load source of power, such as kinetic energy. The state should encourage businesses and instigate the research, development, and deployment of these technologies to jump start economic opportunities in the state.
- It is important to be clear about why we need renewables.
    - What is the goal specifically? Money? Jobs? CO2? Can these be better achieved in other ways?
- There should be a strong focus on the development of small-scale renewable resources for VT. In particular, there needs to be a statewide 'aggregator' to make it easier for communities to decide to participate in the PACE program. Also, to make or keep Vermont a business-friendly state, perhaps Efficiency VT could provide funding (grants) for renewable energy systems for businesses on some matching basis.
- After aggressive state programs are instituted to assure that the top three energy priorities are met (efficiency upgrades to all buildings, solar hot water heating in all buildings, retrofitting heating systems to carbon-neutral sustainable-fuel based systems), public resources should be spent towards the generation of electricity from renewable energy resource technologies, including but not limited to solar power, wind power, and micro-hydro power.
- Consider renewable sources of energy where they are economically feasible, on a time scale that is relevant to business.
- Focus on the most cost-effective renewables, such as hydro, first.
- Account for the cost of backup generation. Achieve a diversity of resources and contracts in order to limit exposure to any one source or market timing.
- Vermont should have an RPS, or at least not permit utilities to qualify under SPEED goals and be able to sell RECs as well. It should be one or the other. We appreciate the advantages of this approach to Vermont ratepayers, but to be intellectually honest it is double-counting with respect to environmental cost accounting.

Alternate Fuels—Biofuels, Biomass

Summary: **Support for biomass in the comments is mixed. Many are opposed to an increased reliance on biomass, in particular wood, especially for electricity. Inefficiencies and carbon emissions were cited as reasons for opposition. Many form letters argue that biomass, or any fuel source involving**

combustion, is not the answer to Vermont's energy needs, but rather our forests are priceless and are better left standing. The bulk of comments received prioritize other sources of energy. Yet, woody biomass for heating, and crop biomass in general, seem to enjoy more support.

- The form letter also points out that biomass is only 20-25% efficient, and not really carbon neutral. The letter requests for the state not to force taxpayers/ratepayers to subsidize biomass.
    - Quote from a variation on the form letter: "We … are very worried about the big increase in proposals to build biomass woodburning incinerators in our region. These plants make huge demands on our forests, our air and water, and our public health. Biomass burning produces some of the most toxic emissions for humans of any energy source, including the very small particulates that cannot be completely filtered out of the smokestacks and that enter our lungs and bloodstream. Both the American Lung Association and the MA Medical Society, among other organizations, strongly oppose the building of biomass plants."
- Biomass should be used for heat where it is most effective, but there are cleaner ways for producing electricity.
    - "In Europe, the policy focus is on heating with biomass, and not electricity generation because of the far superior efficiencies associated with direct combustion and heat utilization."
    - "Making heat with biomass represents the most efficient way to utilize this resource, as compared to generating electricity from conventional steam generation or manufacturing liquid biofuels such as cellulosic ethanol."
    - The best use for biomass fuel is to address Vermont's greatest need, heating of our homes, schools, and businesses. At only 20% efficiency, burning biomass for electrical generation is a poor use of this resources and something that could be better served by renewables like wind and solar.
    - VT forests should not be used for large scale electric power generation. These resources should be reserved for thermal heating where the efficiency return is much greater (80 to 85 % vs 35% at best): where electrical generation is a byproduct of a thermal plant that is fine. Another unintended consequence of electrical generation using our forests is that these plants are voracious consumers of wood and they will drive up the price of wood for heating.
    - Current wood chip and pellet gasification heating systems reach over 80% (some say 90%) efficiency and can provide Vermont with an affordable alternative to imported heating fuel. As a state and as a matter of policy, Vermont needs to focus on increasing the use of our woody biomass for small-scale, highly efficient space heating. The State needs to encourage innovation in the area of wood pellet heating, and offer larger incentives to Vermonters in making the switch from fossil fuels to wood pellet heating.
- There is a realistic additional supply (to current use) of wood-biomass from forests in VT of around 200,000 dry tons. VT can replace 13% of its electricity with wood (25% efficiency, potentially coupled with heat production), OR 25% of its residential heat with pellets, OR 58% of its industrial/commercial heat with wood chips, OR 18% of its diesel transport with diesel derived from wood, OR 5% of its road gasoline with cellulosic ethanol from wood. While Vermont should pursue these options (in the first case heat and combined heat and power

production), Vermont also needs to acknowledge the limited room for expansion of biomass for energy use.

- The State of Vermont should not adopt policy encouraging the use of woody biomass in any system that is less than 60% efficient.
- When wood is burned, homeowners are encouraged to use (whenever possible) efficient wood and pellet stoves that capture up to 90% of the BTU content of the fuel. To minimize the environmental impact of wood used for home heat, we recommend that when wood is being harvested from a woodlot for personal use, homeowners avail themselves of the services of a licensed forester to assure wise long-term woodlot management. We also urge homeowners to abide by the standards of Vermont Family Forests.
    - See http://www.familyforests.org/publiceducation/TFHC/TFHC_Guidebook_web.pdf for forest management.
- Owners of land parcels exceeding five acres of forested land who wish to leave their land untouched (except for the felling of such trees as might pose safety threats to individuals and structures in or near the forest), shall be eligible for state and federal funds that reward the landowner for carbon sequestration.
- Because of the inconsistencies in the quality of wood pellets, there should be statewide standards – comparable to those found in Europe -- for all wood pellets sold or manufactured in Vermont.
- The state should create a statewide plan for forests and all harvests must conform to this plan.
- All commercial-scale wood harvests from Vermont forests should be performed according to a plan approved by a forester and following the sustainable harvest techniques developed by Vermont Family Forests.
- In planning and policy making, it is important to look at the long-term sustainability of biomass. It is a plentiful resource but not an unlimited resource.
- Update data on school and other institutional/district wood use, which is growing rapidly.
- Encourage the development of a new product and industry, biochar, in conjunction with the building of a new biomass electricity generating power plant. The attendant benefits could be great: remediation and productivity of our soils, the sequestering of carbon, the reduction of other harmful greenhouse gases, to reducing pollution in and the preservation of our water supplies, and to the production of clean, locally generated electricity. If there is any virtue in Beaver Wood Energy's basic model of electricity generation and wood pellet production from waste wood, then the production of biochar can only add flexibility to the model, both in general and in particular in terms of an industrial facility like those proposed by Beaver Wood Energy.
- In April, the Governor's Information Referral Office (GIRO) received several calls in support of the Beaver Wood biomass project.
    - Quote from CEP comments: "Also, in support of wood fired bio-mass energy production in general because given the newest technology, it is safe, clean and sustainable, providing good jobs and a positive economic impact."
- Local biomass plants create jobs. Vermont has enough capacity to support another 20-30 MW facility.
- There is a need for a new forest management plan because forests will be threatened by future energy needs.
- It is doubtful that Vermont forests can be used for energy: we need forests as intact as possible.
- Comments tend to support crop biomass:

    - There should be greater emphasis on, and encouragement of, the development of crop biomass for heating fuel, such as switch grass, low grade hay and other crops, rather than a single-minded focus on wood biomass. The best way to do this would be to establish a large scale pilot facility burning grassy biomass. However, if all the incentives are in favor of wood: why would anyone do this?
    - Several surveys in Vermont have shown there is in excess of 150,000 acres of underutilized farm land that can be brought into productive use growing crop biomass fuel, assuming a moderate yield of 3 ton/acre.
    - Crop biomass is the fastest method to reduce carbon dioxide (CO2) emissions since the CO2 emitted by combustion in year 1 will be reabsorbed in year 2 by re-growth of the grasses, thus achieving true carbon neutrality in the second year, compared to trees which take 30-40 years to re-grow and absorb the carbon emitted in year 1.
    - Twice as much energy will be derived from crop biomass compared to wood biomass, but so far there has been little work done to promote crop biomass. The energy plan needs to address this.
    - The energy plan needs to clearly state that biomass is not limited to wood, but includes crop, agriculture, cow power, etc.
- Support is expressed for cogeneration:
    - Steps to using on-demand residential combined heat and power (CHP) as a component of a Comprehensive Energy Plan include:
        - Maximizing efficiencies;
        - Incorporating smart grid features that are designed to support and control distributed generation;
        - Investing in research and development of residential biomass, micro-combined heat and power systems;
        - Growing and harvesting switch grass and short rotation woody perennials on non-producing lands; grow switch grass on state house lawn; ash from burning grass can be recycled as fertilizer as long as boiler standards are flexible; and
        - Producing pellets for use as stored renewable power in residential, micro-combined heat and power generators, creating space heat in winter, domestic hot water in summer and backup, on-demand electric generation year round.
- Support wood/pellet heat instead of nuclear.
- Biomass boiler regulations are out of date and raise costs.
- The CEP should guide the best ideas for biomass forward, not just the ideas that are the loudest or the first. On the positive side, biomass will become more cost-effective, and although it is a limited resource, it is a very large indigenous resource in VT.
- Farmers should be allowed to grow hemp; it can be used for pellets and paper.
- "Even the cleanest thermal biomass combustion devices can be improved by technology that is evolving. The recognition of future technology that can improve the health of VT residents should be considered as part of the comprehensive energy plan."

Biofuel

Summary: **Comments support biofuel as long as priority is given to food production.**

- Progress around farmers' ability to produce biofuel at a very cost-competitive rate while providing feed for dairy and livestock is encouraging. Vermont farms could fully replace diesel with biodiesel. The CEP should help farms be fuel-independent.
    - But, the priority is to retain land for food and animal crops, then see how much land is left over for biofuel, which leads to the need for examining the impact on agriculture.
- Incentives should exist for farms willing to devote up to 20% of current cropland to the cultivation, harvest, and conversion of biofuel crops, such as canola and sunflower, into biodiesel for on-farm use.
- Comments express support for other biodiesel opportunities, such as the use of algae oil as a biofuel.
- Large scale use of biofuel for communities, campuses, and business districts (making shared use of biomass for thermal production using locally and sustainably harvested woody biomass) should only be undertaken after a full life cycle analysis has been conducted and submitted to the state for approval.
- Homegrown biodiesel should replace at least 15 percent of the 6.5 million gallons of imported petrodiesel used in Vermont's agricultural sector, by 2020.
- Develop cold climate algae-to-biofuel processes and enterprises that can replace 10 percent of Vermont's transportation diesel and No. 2 heating oil demand (.i.e., 43 million gallons annually) by 2020.
- Convene a Vermont bioenergy development committee.
- Establish a low carbon fuel standard that supports biodiesel blends.
- Pursue opportunities to support the construction of in-state biodiesel blending facilities, through tax credits, loan guarantees and grants.
- When economic conditions allow, revisit the viability of offering biodiesel incentives, such as the rebates and fuel tax reductions introduced in the Vermont legislature in 2007.

Biodigester

Summary: **Comments stressed the importance of sizing bio-digesters according to the local waste stream in order to prevent the unnecessary need for long distance trucking of manure and compost.**

- There should be one digester per town at the largest farm.
    - Farmers should be prorated based on the amount of compost and manure that is supplied.
- Incentives should exist for farms to invest in bio-digesters that are capable of converting manure and used bedding into methane, which could then get collected for use as a fuel, both for equipment and electricity.
    - Similar incentives should exist for towns willing to install community sized digesters capable of converting wastewater into similar products.

Waste to Energy

Summary: **There was both support and opposition expressed; however, there was not a large focus in the comments overall towards this topic.**

- Waste to energy is a good source of hydro carbons with fewer emissions than coal.

- Consumer waste and byproducts of other industries: tires, solvents, unrecyclable plastics, paper, and packaging, should be considered as fuel sources.
- Don't consider additional waste to energy or methane in the energy plan because of the environmental impacts associated with methane gas which are far greater than carbon.
- "Waste to Wheels" support was expressed for producing natural gas from landfills.

Wind

Summary: **Comments generally support wind development to augment Vermont's renewable portfolio, with limitations on ridgeline development. Comments against wind argue that it has large environmental/ecological impacts and high costs (capital and transmission) while only producing a trivial amount of energy for Vermont's portfolio.**

- Some comments believe large scale wind is a promising option for VT, but should be sited properly, such as away from homes because of the sound and sight downsides. It is also stressed that minimizing impacts to wildlife should be a priority.
- There should be a mix of 33% (others say 40%) of wind and solar by 2032
- Vermont needs thousands of micro-sized wind turbines for residential buildings and commercial roof tops, not just large projects and units.
    - Some comments disagree, arguing small wind doesn't work.
- Ridgeline wind turbines are recommended not to exceed 2% of Vermont's ridgelines per 10 years.
- Wind capacity in Vermont is overstated and wind farms negatively impact tourism and fragment habitats, as well as destroy our mountaintops.
- Some comments expressed opposition to the Lowell Wind project citing environmental issues, impacts on property values and the economy
- Unless the burden is shared equally by all parts of the state with reference to industrial scale wind power, then wind projects should not go forward. 400-foot strobe-lighted turbines are an eyesore. How about wind turbines on Lake Champlain? There must be acceptable, if not good winds there. Plus, since they can be placed near the centers of population, the transmission needs will be greatly reduced.
- The CEP should include a plan for where we do and don't want to site wind projects, so we can incentivize projects in desirable areas.
- The CEP should look at what maximum build-out would look like, rather than considering each project in isolation.
- Involve the Department of Health in studying the health impacts of wind farms. If there are impacts, developers should buy out neighbors.
- It is vitally important that the State of Vermont take a proactive role in identifying potential wind sites, rather than reacting to proposals on an ad hoc basis through the Act 248 process. Furthermore, after Sheffield, Georgia, and the Lowell Range, the State of Vermont should step back and assess the impacts of, and reactions to, wind power development on Vermont's landscape. Consider a moratorium on permitting of new wind power projects in the interim.

- Towns can bill technical analysis of proposed cell towers back to the applicant under Title 24, but can't do the same for wind under Title 30.

Solar

Summary: **Comments advocated for photovoltaic (PV) development, especially community -supported solar projects.**

- Incentivize millions more of PV installations on homes, outbuildings, yards, parking garages, and big box stores.
- Install 1MW or more of industrial size PV near existing transmission, not scattered littering landscape. Use rooftops and avoid taking up agricultural lands, which would hurt tourism and the economy.
- Distributed PV creates new jobs, system reliability, clean energy, and a boost to the economy
- Pay to have solar panels put on farm buildings.
- There is strong support among comments for solar hot water heating and solar thermal space heating, to minimize the need for biomass.
- Residential and commercial buildings, as well as schools should have solar hot water heating and space heating. More incentives are needed to fund these projects and installations.
- Require solar hot water heating in schools.
- All water should be preheated with geothermal or solar.
- Solar hot water works well in VT and is a low-hanging fruit.
- Solar energy is better for VT than wind energy.
- Use brownfields for energy parks.
- The Department of Public Service should create a model for community solar.
- Comments expressed support for solar roads technology.

Hydro

Summary: **Comments generally support small-scale hydro if there is proper oversight, although there is concern over its environmental impact. By comparison to other energy choices and the impacts of climate change, however, comments indicate that small hydro energy should be compared with these factors in mind. Lowering the cost and removing the red tape to permitting was also a trend in the comments. Comments generally do not support buying more power from Hydro-Quebec (HQ) for environmental reasons, and oppose qualifying HQ as a renewable resource under SPEED because it is considered "double dipping".**

- Encourage small-scale hydro.
- Lower the cost, remove the red tape to development, and utilize an oversight board that understands its ecological impacts.
- Purchase local dams on the Connecticut River if the opportunity knocks, but don't underestimate the impact on fish. But, these impacts should be considered in comparison to other energy choices in light of climate change.
- Enter into an MOU with FERC to encourage small-scale hydro development as in Colorado.

- Simplify permitting for community-scale and home-owner scale hydro. Right now it is a "one size fits all" process, which creates a financial and regulatory hurdle for community-scale and home-owner scale projects.
- Large-scale hydro causes environmental degradation. We don't need more hydro and already get enough from Quebec.
- While conceding that Hydro-Quebec is cleaner than coal and natural gas, there is considerable basis for concern about the long term greenhouse gas emissions associated with Hydro-Quebec.
- Hydro Quebec should not be considered renewable under SPEED. The recent negotiation has resulted in Vermont "double dipping", thereby taking advantage of neighboring states.
- Major new impacts are coming as a result of the major expansions plans by HQ and NALCOR which are aimed at export markets. This reinforces the point that HQ is not clean renewable power.

Geothermal

Summary: **Comments focus on how to make the geothermal industry more viable.**

- Vermont needs a cohesive geothermal industry, with technicians that have standardized training so that it is easier to install and maintain geothermal systems.
- It is important to consider the fuel savings and electrical load provided by space heating and cooling with geothermal over the long run.

Group/Net Metering

Summary: **Comments focus on restructuring utilities to be more encouraging with respect to net metering/group metering, with some caveats about fairness of who pays vs. who benefits.**

- Utilities need to be restructured to encourage net metering.
- Group net metering needs to be distributed by utility, not the group.
- Increase group net metering.
    - Net metering can be used as a way to power electric vehicles.
    - Pay electric car owners to share their power.
- Net metering benefits the few who can afford it while spreading costs among the many ratepayers.
    - To address the problem of socialized costs, there should be a way for a group of residents/businesses to get together and buy specific local power from their power company, so the end-users are the payers as well.
- Negative attitude toward net metering in the draft needs to be changed.
- Net metering obstacles are a lack of opportunity to sell surplus power, or to work off service charges.

Natural Gas

Summary: **Many comments opposed natural gas because of the ecological and ground water considerations of hydrofracking, but some comments concede that natural gas could be a bridge to renewables and used for cogeneration.**

- No to hydrofracking: it contaminates water resources despite that it is "cheap."

- Natural gas can be used as a bridge to renewables, but not in the long run.
- There should be more incentives for natural gas-fired cogeneration.
- Natural gas is an important part of our energy portfolio. It is low carbon in comparison to other fossil fuels. Maintaining and upgrading the natural gas transmission system will be important to ensure an adequate supply of natural gas in the future.
- There is concern that we have undervalued the costs associated with shale oil extraction.
- Fuel-switching: larger fleets should be converted to natural gas.
- The natural gas section needs to be updated to reflect impacts of Marcellus shale, including higher fugitive emissions.

Petroleum Products—Oil, Gas, Propane, jet Fuel

Summary: **Many comments voice support for a carbon tax, and argue that we must aim for carbon neutrality.**

- Stakeholders express support for a carbon tax, and are enthusiastic about how well it has worked out for British Columbia.
    - Discuss what to do with the revenues.
- There is a general belief in the comments that carbon should be a major driver in energy policy, relative to other considerations such as cost; Vermont must head toward carbon neutrality and eliminating dependence on fossil fuels.
- Externalities somehow need to be captured in the cost of non-renewables; costs are being undervalued.

Nuclear

Summary: **Many comments opposed nuclear based on safety concerns, environmental concerns, and the costliness of building, maintaining, and decommissioning a plant, though some feel that our energy future should include nuclear, at least as a bridge.**

- Nuclear is too costly; construction costs are underestimated; there are historical cost overruns; decommissioning costs are not well known; it is not a renewable resource.
- Currently there is no agreed upon way to dispose of waste safely.
- Many comments express general opposition to nuclear.
- Vermont's energy portfolio should aim for 0% nuclear.
- Some comments are concerned over the potential effect of nuclear fallout on the agricultural sector.
- Some think we should preserve nuclear as an option and that relying on out of state sources and wind and solar is unpredictable and irresponsible. Nuclear is an important tool to combat climate change.
- The statute guiding the comprehensive energy plan clearly states desired results. Many of these desired results reflect what the power supplied by Vermont Yankee would offer. Yet Vermont Yankee is not being considered in the comprehensive energy plan.

Non Renewables in general

Summary: **Comments favor renewables over nonrenewable sources of energy. They believe petroleum-based fuels must be phased out entirely, and most comments received only support temporary if any reliance on natural gas and nuclear.**

- Zero coal: Don't rely on coal to make up shortfall.

Energy Infrastructure Reliability

Summary: **Comments indicate distributed local generation and Smart Grid will be important for reliability.**

- Comments generally support in-state generation for grid stability.
- Many voiced support for Smart Grid.
- Support smart metering in homes, businesses and government buildings that offer detailed, real-time feedback loop on energy use. This will drive behavior change.
- Smart Grid is not as straightforward as it seems; use caution.
    - Radio Frequency Smart Meters are possibly carcinogenic.
- Getting enough base-load power will require tradeoffs against environmental values.
- The proliferation of sophisticated electronic devices in all aspects of our business and personal lives demands a consistent and highly reliable electric supply. In semiconductor manufacturing, even a momentary voltage deviation can cost millions of dollars in damaged product and equipment down time. A reliable transmission system constructed and maintained to Federal Energy Regulatory Commission standards is necessary. The plan needs an effective mechanism to implement cost effective solutions beyond ISO New England.
- Intermittent renewables present significant challenges in management of grid stability as the share of intermittent resources increases. Installation of Vermont's smart grid infrastructure will be an important enabler, but the hardware will not in itself provide reliable integration of intermittent generation. In the short to medium term at least, the supply portfolio will need to be dominated by base load power sources.

Resilience, Security, and Emergency Planning

Summary: **Comments are not focused on this topic, though one comment advocates for emergency preparedness.**

- The State should develop an emergency plan to harden essential systems to accommodate the community during conditions of failure. For example, schools, hospitals, Town Halls should have reliable alternative energy systems, allowing them to function as working hubs during conditions of failure.

Mobility Options—Transit, Human powered, and Linkages

Summary: **Comments reflect a desire for better permitting for multi-modal transportation and more investment in public transportation, not just roads, to prevent the perpetuation of single-occupancy driving. Specifically, comments call for investments in local and regional train infrastructure/services. Comments advocate for the adoption of a Complete Street Policy and a renewed culture of walking**

and biking with more bike and walking friendly routes. Also, a group of comments requested unifying Rideshare into a statewide system.

Public Transportation

- There should be increases in and better permitting for multi-modal transportation.
- Develop train infrastructure locally and regionally–Vermont could have high speed rail alongside 2 lane interstate highway.
- Make investments to create and ensure that a reliable public transit system (rail and bus) exists for the greatest number of people as possible over the long-term.
- Vermont should investigate on-demand transit in small communities, such as college or elderly residential shuttles.
- Combat school bus inefficiencies by pooling resources; buses and mail trucks can double as commuter vehicles.
- Put money into local transportation services instead of into road infrastructure (where safely possible). Make sure we provide a range of options; don't just invest in roads, which perpetuate the status quo serving single-occupancy vehicles.
- When talking about public transit investment, we should also take into consideration the private cost savings derived from decreased driving.
- "Work with towns to allow public transit companies to sell advertising spaces at bus shelters. Bus shelters help people access transit, but bus companies lack funding to install shelters at all stops. Public-private partnerships can help overcome this hurdle."
- Some think mass transit won't work for VT.
- Public transit doesn't have to be economically self-sustaining; there are government subsidies for all kinds of public goods.

Bike and walk

- Foster renewed culture in biking and walking:
    - Adopt a Complete Streets policy: fund and incentivize bike sharing.
    - Create bike lanes when repaving roads; make biking safer.
        - Safe Streets Act needs more teeth: any repaving project needs to widen roads 4-6 feet for bike lanes; all class 1 roads need 3 foot shoulders. A two-cent per gallon fuel tax can fund these improvements.
    - Fund bike shelters and establish bike accessible mass transit.
    - Develop more bike- and walking-friendly routes, such as adding bike lines to state roads and building/redeveloping recreational trails with access and commuting in mind.
    - Vermont could produce "efficient bike path" guidelines that the towns could use when developing their own bike paths. This would also help with bicycle tourism.

Ride share/Car share

- Unify regional ride services into a single statewide system; expand car share past Chittenden county.
    - Make one central website for ridesharing.
- Increase carpooling.
    - Education: demonstrate savings; play up the fact that adding one person to a car is more efficient than a bus with average ridership.

    - Support GoVT.
    - Establish an instant "cell phone hitchhiking" system.
    - Use new media to facilitate ride-matching.
- Park and rides: see General Transportation/Land Use section.

Various Comments:

- Address youth needs through access to gathering places; reward opportunities such as internships and community service.
- Workplace trip-reduction programs are successful and should be funded.

Vehicles—Trains, Planes, Auto, Trucks

Summary: **Comments concentrate on investing in infrastructure to support plug-in hybrid vehicles and trains. Other comments focus on improving CAFE standards from 60-100mpgs. There were also miscellaneous comments from taxing vehicle miles traveled to parking fees.**

Plug-in Hybrids

- Plan on Electric Vehicles (EVs) using the grid; invest in infrastructure: install solar electric charging stations (i.e. parking garages); shift away from fossil fuels.
    - Parking lots could provide solar recharging stations; the fleet will probably have to be hybrid on account of Vermont's climate, rather than fully electric.
        - Nevertheless, the fleet should be reduced to 0 ICE in 30 years.
- Better plug in hybrid technology is wanted so people can use excess electricity created by distributed renewables.
- Incentivize charging at off-peak times.
- Consider an interesting analysis by Google that estimates 90% of new light duty vehicle sales could be electric by 2030 with EV breakthroughs.
- Support local alternative vehicle entrepreneurs/pilot scooters and alternative vehicles.
- Electrify the bus fleet.
- Conduct an analysis of carbon emissions moving forward with the proposed energy plan and how it will impact the use and benefits of electric cars in the future.

Trains

- Improve permitting for multi-modal transportation.
- Develop train infrastructure locally and regionally.
- Develop high speed rail alongside 2 lane interstate highway.
- Increase use of rail for freight.

CAFE

- Support strong Federal CAFE standards, on the order of 60-100mpg.
- Low carbon fuel standard needs to acknowledge and take into account the substantial pressure on wood resources from heat and electricity demand, as well as forest carbon impacts of heavy harvesting, and not overestimate the potential for cellulosic biofuels.

Miscellaneous Comments:

- Use taxation as a way to reduce Vehicles Miles Traveled, (as opposed to bringing employment closer to people, which can drive people away and raise the cost of living).
    - Make a mileage check part of the state inspection, and charge for high use.
        - Or, make insurance "pay as you drive."
    - On the other hand, taxation is punishing. Instead, do a discount for lower VMT.
- Use the DMV to create incentives for fuel efficient vehicles, but have income sensitivity.
    - E.g. base registration fees on mpg.
- The State can make conference calls and telecommuting easier to reduce VMT.
- Institute or raise parking fees.
- Have special/close parking for fuel efficient vehicles and bikes.
- "Mitigate congestion first through travel demand management before building new roadways."
- Create a tailpipe emissions incentive.
- Building better roads and paving dirt roads will reduce need for 4x4s.
- Upgrades to infrastructure need to reduce both energy consumption and greenhouse gas emissions (GHGs), such as implementing roundabouts throughout the state. The plan needs to identify ways to ensure that policies are implemented.

Fuel Distribution, Fueling Stations

Summary: **One comment suggests taxing fuel oil to fund natural gas or electric refueling stations.**

Land Use, Smart Growth

Summary: **Some comments discuss the problem of sprawl, while others focus on the landscape impacts of building new transmission. The former focus on building in clusters and villages to prevent sprawl; the latter generally propose distributed generation over large scale, centralized power.**

- Retrofit dilapidated buildings to conserve open space to prevent sprawl.
- Act 250 promotes sprawl and should be retooled.
    - Look at weaving energy, transportation and CO_2 costs and benefits into Act 250 or local land use processes.
- Distributed generation mitigates the impact of transmission lines on the landscape; when considering energy production sources, we must also look at the impact of transmission on the land.
- We need to encourage villages and clusters; we need to cluster commercial and residential developments, including community scale energy generation projects to reduce the distance electricity has to travel.
    - We need smart growth regulations.
        - E.g. tax driveways by the foot to discourage setbacks.
- Figure out a way for people who are land poor to make money without dividing up their land.
- Vermont must have land use incentives that match employment centers with residential population centers.

- The storm water permitting process and smart growth are 2 policy objectives working in opposition—Offset infill and redevelopment; agricultural offsets.
- When implementing land use policy or tools to reduce Vehicle Miles Traveled (VMT), keep in mind the potential for unintended consequences. VMT can also be a measure of vitality, growth, and overall economic health. If we reduce VMT, we need a new metric for assuring that people and goods have mobility and access to services. Furthermore, VMT doesn't take into account type of vehicle being driven: SUV vs. hybrid, for instance.
- "Consider directing renewable energy investments to productive and carefully managed land use, especially permanent pasture and forest lands. These land uses are the state's best solar collectors, as well as great for carbon sequestration. Consider an associated program to offer payments for ecosystem services (PES)."
    - UVM has an ecological economics program.
    - Get the public involved in stewardship with incentives.
- Can we allow exemptions to smart growth regulations for rural homesteads, if they can prove they are productive and require minimal trips to town?
- Compute average commuting costs at time of sale—require labeling.
- Facilitate affordable housing so people don't have to drive so far.
- Support VHCB—conserving land saves energy and vice versa.
- The current use program is good for forests.
    - Working landscape project.
- Keep farms viable.
    - Foster solar farms.
    - Support local food to minimize food energy costs; support farm to plate (help institutions invest).
    - Identify underutilized farmland/acreage to grow energy; make energy cash crops.
- Consider soil sequestration.

Other Infrastructure Development

Summary: **Comments suggest there is need for easier telecommunications and greater broadband access so people can telecommute, which will save time, money and reduce fuel usage.**

- The State should make it easier to telecommute.
    - Extend broadband.
        - The plan should promote a fast statewide internet that would support video conferencing: this will reduce time, cost, and reduce fuel usage.
- Extending broadband to every corner of VT does not make economic or common sense. Instead, the state should leverage existing HughesNet Technology and provide subsidized user fees for that service.
    - Internet service should not be used to encourage the dispersal of our economic activity.
- Build better, longer-lasting roads (like in Europe).
- Electric utilities, and in particular the municipal electric utilities, need to be encouraged or given incentives to upgrade their transmission and distribution systems. More than once, an inability

to serve a commercial or industrial customer in a given area has ended with no new business or no business expansion.

- Affordable and convenient access to renewable energy education is lacking in Vermont. Renewable energy education and accreditation to facilitate energy development is needed. Vermont lacks the trained work force to build the future renewable energy infrastructure that is needed. We have an educational infrastructure that has largely ignored renewable energy needs. A comprehensive approach that involves more than just UVM, VTC and Green Mountain College is needed. CCV and the state college system at minimum need to join in this effort with a geographically distributed offering that engages both traditional students and adult learners whose only contact time may be on-line, nights, or periodic short courses. The education must be affordable, with loan or grant aid available. Conflicts with public safety boards must also be resolved so that accreditation for competency to design and install can be gained by routes other than traditional apprenticeship.

Public Adoption, Messaging, and Education

Summary: **Education is a central issue in public comments, which tend to agree that education will be of paramount importance in the success of the energy plan. Specifically, they recognize that Vermont must use less and that this entails behavioral change.**

- Schools can educate youth to develop good habits early, and this education will trickle back to their parents.
    - Make sustainable driving practices part of driver's education.
        - E.g. anti-idling.
    - Have an energy educator travel to schools.
- "Sometimes I am just not sure which are the best choices for the environment. There is a lot of confusing, contradicting information for the consumer to weed through."
- Support for programs that increase the number of early adopters of renewable energy—like PACE or a rating system for new homes—will also help bring about a cultural shift where good energy practices are more highly valued.
    - We must educate people about efficiency so that they want to have high home performance.
    - Promote more homebuyer education.
- People's willingness to absorb the high costs of renewable, distributed generation is going to be a really tough challenge. The public should have input into setting rates.
- Use the bully pulpit.
- Target realtors and banks.
- "Coordinate with University of Vermont to create a progressive professional planning graduate program, to encourage and improve statewide planning in VT and New England."
- The CEP should be widely distributed, be accessible to the lay reader, and include a glossary.

Collaboration—Local, Regional, Federal

Summary: **Comments center on coordinating agency efforts with respect to energy and climate change.**

- Coordinate duplicitous agency and non-governmental programs/efforts to address energy and climate change issues; the current approach is fragmented.
    - Provide ongoing financial support for energy coordinators and energy planners to help facilitate the implementation of energy initiatives at the grassroots level.
- Establish a Department of Energy and Climate Change.
- Involve the public health department.
    - Retrofitting involves asbestos, wind involves vibrations, buttoning up homes has implications for air quality.
- Local and regional plans should have a strong role in our energy future and collaboration; local energy committees and RPCs can bring surveys to different groups of people. We have good policy goals in our state statutes that are often not followed in either our local or regional plans and zoning.
- Political agendas and prejudices are barriers to inter-agency cooperation.
    - E.g., Agricultural hemp could be used as a biofuel, but law enforcement attitudes toward the cultivation of marijuana prevent this from being a viable policy option; ANR opposition to new dams is an obstacle to small-scale hydro. These options need to be looked at from multiple perspectives, without allowing one agency alone to set the policy.
- Look to energy cooperative model.

Economic Development

Summary: **Public comments are generally optimistic that the burgeoning green energy industry can be a driver of economic development in the state, especially if energy generation is kept in-state. For this reason, there seems to be strong support among comments for distributed generation, which can stimulate local economies and have a multiplier effect, even if capital costs are high. Public investments in energy should prioritize creating jobs and keeping money in Vermont.**

- The CEP should focus on keeping energy dollars local to spur economic development and create jobs in the state.
    - In-state green construction projects, including but not limited to wind farms, hydro power, solar power, and biomass projects must be produced with Vermont labor and provide all workers with livable wages, health care and all other necessary benefits. These criteria should be part of what the Public Service Board utilizes before approving any such project.
    - Local renewable projects will have multiplier effect.
- Many comments emphasize that incentives must be stable, because ups and downs make doing business hard.
- Public investment should be used strategically to promote market development and the private sector.
- Use GPI (Genuine Progress Indicator).
    - Or, Happy Planet Index.

    - The goal of growing the economy is just plain wrong. It's an outdated model and one which doesn't lead to sustainability or carbon reduction. Vermont needs to re-think the metrics of economic health.
- Bike lanes can promote bicycle tourism.

Workforce Development and Educational Initiatives

Summary: **Workforce development should focus on training people (especially the long-term unemployed) in weatherization and the efficiency industry.**

- Contractors should be reeducated around green building codes, and people need to be properly trained in weatherization.

Clean Energy Innovation Development

Summary: **RPS and RECs can stimulate innovation, and the Department of Public Service should be on the lookout for innovative possibilities.**

- "The Business Council for Sustainable Energy encourages the state of Vermont to maintain its support of RGGI and to continue the strategic reinvestment of auction proceeds in clean energy and energy efficiency programs."
- "First, on a technical level, if intermittent renewable electricity sources such as wind and solar power are extensively developed, it would be very useful for the grid to have means of storing electrical energy. Most methods now available are expensive, so the DPS should be on the lookout for innovative possibilities."
    - E.g. Banks of used vehicle propulsion batteries with diminished capacity.
- Invest in R&D of residential biomass micro-combined heat & power systems.
- Support PACE through funding for statewide outreach to towns and communities (currently not in the plan). PACE has tremendous potential to eliminate a hurdle for homeowners for both energy efficiency retrofits and renewables. Also, it's important that state incentives are more certain over a longer period of time (rather than changing often or being taken away then brought back). This creates more stability in the marketplace.
- Support a fund that gives financial support, mentoring and technical support to energy entrepreneurs (similar to VSJF's new fund).
- "Although renewable energy, particularly wind and solar hold great promise to augment power supply in Vermont, there are significant hurdles remaining. Not least of these is the intermittent nature of the power production. Vermont must start planning and designing a "renewable, on-demand" power source that would fit into the Vermont landscape and culture. There are possible technologies on the horizon that show promise for this challenging component."

In-State Generation, Production, Distributed Generation

Summary**: Comments favor in-state generation and distributed production, even though they realize that Vermont will have to look to the wider region to meet its energy needs. They emphasize the link between in-state distributed generation, local economies, and energy security/independence and reliability, in addition to the positive environmental aspects of keeping generation near end-use.**

- Distributed generation also decreases transmission loss and saves expensive new transmission infrastructure costs.
    - Invest in local wind, solar, hydro, whatever it may be—but no more centralized power.
- Large scale utility is not the way to go.
    - More small community district power is needed (e.g. biomass possibly).
- Rather than increasing the importing of power, the State of VT should be developing more in-state generation capacity. This seems to make the most sense in the area of smaller-scale and community based systems.
- On the other hand, energy independence is not a realistic goal and is "economic folly." We do not have a comparative advantage when it comes to producing energy. The best thing we can do in-state is increase our efficiency.
- Smart grid: "It is crucial that this grid also be designed to support a system of distributed power generation, which is not always included in these kinds of plans. This would be necessary for a significant shift to renewable sources of power for the state."
- The state should establish and subject all new electric generation facilities to the following mandatory requirements: minimum efficiency ratings; maximum particulate discharge limits per megawatt generated; maximum GHG emission limits per megawatt generated; verifiable and responsible methods of fuel procurement; state-certified management plans for the installation, operation, and handling of all filters and scrubbers; state-certified management plans for the handling, treatment and disposal of all byproducts; unannounced inspections, with penalties for the irresponsible harvest or burning of fuel, or disposal of burned materials. Such penalties should be well publicized, swiftly administered, and severe enough to serve as a strong deterrent.
- We strongly agree (with the last plan) that a measured pace is best and we need to break up large contracts and diversify to spread risk.
- An analysis is needed for how local generation could lower costs and/or improve reliability of the system, including options for non-transmission alternatives. Development of new tools and methodologies will be required for reliably managing the additional grid complexity introduced by substantial distributed generation.
- Vermont's plan should give equal consideration to out-of-state solutions where other regional sources are more economically efficient in meeting our resource and transmission needs. We should seek to reduce or remove barriers or market constraints to achieving the least cost solution for Vermont ratepayers.

Climate Change

Summary: **Climate change is an important issue in the comments and many agree that carbon and climate change should be major drivers of energy policy.**

- Many agree that carbon should be a major driver of energy policy.
    - The Plan should include a statement on climate change.
- On the other hand, talking about carbon tends to pit left against right, whereas we can all agree on affordability, economic development, and energy independence, more or less.

- Climate change could cause a catastrophe for our children, and the CEP must be strong enough to avert this catastrophe.

Other Environmental Impacts

Summary: **Comments express concern over the environmental degradation caused especially by large-scale hydro and hydrofracking for natural gas.**

- The point about external environmental costs of some technologies is hidden in a footnote in the last plan and should be emphasized more.
- Acid rain is mostly from sulfur and nitrogen emissions – not carbon as it is stated in the old plan. The carbon footprint of wood combustion is not minimal, and depends totally on wood source – see the Manomet study conducted for MA for details (below). A footnote claims that only indirect emissions count for wood, and that is not true, as many types of harvest for wood fuel reduce forest carbon stocks, which increase carbon in the atmosphere – at least for many decades and maybe permanently if those high harvest levels persist. The Manomet report is at http://www.mass.gov/Eoeea/docs/doer/renewables/biomass/Manomet_Biomass_Report_Full_LoRez.pdf
- Reduce carbon emissions by 80% by 2050.
- We should think about other ramifications of our currently unsustainable trajectory—loss of biodiversity, death of oceans, etc—in addition to climate change, and address overpopulation.
    - www.vspop.org
    - 300 Years of FOSSIL FUELS in 300 Seconds (post-carbon institute, youtube)
    - *How Bad are Bananas: The Carbon Footprint of Everything*

Health

Summary: **The public would like to see the Health Department involved because energy decisions will have health consequences.**

- Involve the health department—wind, retrofitting, all can have health impacts.

General Comments

Summary: **General comments focus on the planning process, goals, and other cross-cutting issues from affordability to the format of the plan.**

- The state needs to relinquish the idea that everything should be at zero-cost; sometimes, benefits are hard to quantify.
    - E.g., a bus system that pays for itself may be unrealistic but not undesirable.
    - E.g., public education operates at a "loss" because it doesn't turn a profit, but it still provides a great benefit.
- When appropriate use/allow higher costs to influence individual behavior patterns of conservation.
- Towns should conduct energy inventories (i.e. as in Waterbury and Duxbury), and they need to be able to collect the relevant data from utilities, property owners, and businesses.

- Prioritize the strategies and policies (perhaps use a stakeholder engagement process for this) and have solid implementation steps. Boil all the recommendations down to ten that are highlighted in executive summary. This will greatly improve the likelihood that the plan will be implemented.

Planning Process (Present and Future)

Summary: **Overall, people who commented believe that we have a solid base of recommendations that we should build on; that this plan must focus on implementation and action; and that the energy sources considered should be based on a cradle to grave perspective.**

- Benefit and learn from existing energy plans: Massachusetts Clean Energy and Climate Plan for 2020; and 2011 update of the Strategic Energy Efficiency Plan adopted by the California Public Utility Commission.
    - Also, use previous work done in Vermont such as the Governor's Commission on Climate Change and the 2008 stakeholder draft CEP.
- A common sentiment is that we've had many recommendations; what we need now is implementation and action.
- Evaluate energy sources using cradle to grave perspective; think globally, act locally; long-term.
- Use a holistic approach.
- "Please refer to Daniel Lerch's book, "Post-Carbon Cities", as well as a book titled "Local Action", for specific ideas for planning for less oil and carbon reduction."

Goals

Summary: **The overarching theme of the comments highlights the importance of having specific goals that succinctly aim at reducing CO_2 emissions through higher investments in efficiency, renewables, and transportation.**

- Thousands of form comment cards recommend the following targets:
    - 80% Renewable electricity by 2030, required through a renewable energy standard;
    - 80% Renewable heating fuel by 2030, supported by incentives to help Vermonters switch to local fuel from our farms and forests;
    - Ambitious energy efficiency programs to ensure Vermont reduces its electric energy needs by more than 3% per year and we reduce our demand for heating and process fuel by 33% by 2030.
- It is important to have sufficient, specific goals derived from statutory goals:
    - The plan should have a clearly defined goal to reduce carbon, including a timetable and strategy to get there; the draft fails to holistically show where we need to get, and how we are going to get there.
        - In order to mitigate impacts of climate change and to address a possible looming supply gap, the plan must be rooted in the efficient and sustainable use of clean, renewable power; focus on renewables, transportation, and efficiency.
        - Aim for 6 million metric tons of CO2 below 1990 levels by 2015 = 25% below 1990 levels.

        - Current goal of 25% is not enough.
    - The energy plan should be more closely aligned to the VT 25x'25 imitative for sustainable energy
    - Clean energy should be the goal of plan, not cheap energy.
    - Energy plan should be adoptable and enforceable by towns.
    - The CEP needs a streamlined message with a few themes and actionable items for the next 5 years.
- The overall draft goals aren't bold enough. The scale of the solution doesn't match the scope of the problem.
- Reprioritize our goals and strategies toward energy efficiency and energy production.
- Prioritize and score recommendations (there are too many strategies and recommendations in the old plan) using factors such as economic and environmental impacts to weigh and calculate priority.
- Be holistic: talk about total energy usage, not just electricity, transportation, or thermal.