Recommendations from the 2016 Vermont Comprehensive Energy Plan

Recommendations relevant to regional planning commissions and municipalities excerpted from the Plan

These are the recommendations from Vermont's 2016 Comprehensive Energy Plan (CEP) that apply to municipalities and regions. The 2016 CEP was completed prior to Act 174, and therefore not written specifically with municipalities and regions in mind; consequently, most of the recommendations in the CEP are applicable primarily to state agencies or the general public. The recommendations below were identified as being relevant to municipalities and regions, but this is far from an exhaustive list of potential actions or strategies that municipalities and regions could employ. Future iterations of the CEP will provide recommendations that are germane to local planning. To supplement these recommendations for the inaugural planning efforts under Act 174, the Department of Public Service will publish guidance to assist regions and municipalities in their planning work to meet the determination standards. Our goal is to complete this guidance by the time the initial regional trainings under Act 174 take place at the end of 2016, but portions will be made available as they are completed. The final guidance document will incorporate the recommendations below, and will ultimately replace this recommendations document.

The full suite of CEP recommendations can be read in the plan at: http://legislature.vermont.gov/assets/Documents/2016/Docs/ACTS/ACT174/ACT174%20As%20Enacted.pdf

Heat For Buildings (Chapter 7)

A Whole-Building Approach

- Ensure that qualified contractors and service providers are available in the town or region.

District Heat / Energy Systems

- Identify the potential challenges for district energy systems in the region or town and complete recommendations for a clear method to identify potential communities for the deployment of this technology and how to address the first cost capital costs of construction.

Combined Heat and Power (CHP)

- Identify the barriers for biomass CHP systems in the town or region and provide recommendations for a clear method for the deployment of this technology and how to address the upfront capital costs of construction.

Energy Transformation In the Renewable Energy Standard

- Ensure that all ratepayers have an equitable opportunity to participate in, and benefit from, energy transformation projects regardless of rate class, income level, or provider service territory.

- Ensure the coordinated delivery of energy transformation projects with the delivery of similar services, including low-income weatherization programs.

Building Energy Standards

- Municipalities and regions should measure energy code compliance rates and work with the Energy Code Collaborative on prioritizing and implementing recommendations in the Vermont Code Compliance Plan, to continue to increase compliance.

- Municipalities should consider adopting beyond base code standards and adopt the stretch code versus other standards to maintain consistency across the state.

Transportation (Chapter 8)

Go Vermont, Rideshare, Vanpool, and Car Sharing

- Support employer programs to encourage carpooling, vanpooling transit, walking, and biking for employees' commute trips.

- Investigate software and other technology improvements to make taking transit easier and increase rideshare, vanpool, carshare, and other options.

Promoting Consumer Awareness of the Benefits of Evs and Fuel-Efficient Vehicles

- Work with nonprofit partners such as VECAN and VLCT and private-sector organizations to encourage broader implementation of incentives, such as free or reduced parking costs for EV owners and preferential access to parking spaces limited in supply.

- High-visibility events and recognition/awards programs, should showcase local residents and organizations that are helping to propel the transition to electric vehicles, as well as other strategies for reducing the energy used in transportation.

Deploying Infrastructure at Workplaces and Key Public Locations

- Municipalities and regions should partner with Drive Electric Vermont, the Vermont Clean Cities Coalition, and other organizations to promote the expansion of workplace charging, in particular by continuing funding for incentives that help

employers cover the costs of installing infrastructure, by implementing the Drive the Dream Vermont campaign, and by celebrating and showcasing employer investments in EV-friendly workplaces.

- Promote and fund the installation of DC fast-charging infrastructure at strategic locations along major travel corridors and in transit hubs such as Park and Rides.

Assessing and Improving Average Fuel Efficiency in Publicly-owned Fleets

- Evaluate potential strategies for promoting the purchase of more fuel-efficient vehicles and more fuel efficient driving and vehicle maintenance practices, such as expanding education and outreach through programs like Go Vermont, and establishing incentives using tools such as rebate and feebate programs.

Alternative Fuels

- Support the development of additional refueling stations for alternative fuels for both private and public transportation fleets by sharing station development costs between public and private interests.

- Work with the Clean Cities Coalition to encourage large fleets to switch to natural gas use where biodiesel is impractical in areas of the state where natural gas is available. Encourage the use of renewable natural gas where possible.

Meeting Vermont's Electric Demand (Chapter 11)

Land Use and In-State Energy Resources

- Deploy financial incentives and regulatory and other tools to encourage siting of renewables as appropriate on the built environment, other disturbed lands such as brownfields, and in places that offer the opportunity for optimizing multiple uses, such as grazing and recreation or parking in conjunction with solar arrays.

Regional Initiatives

- Consider the location of proposed large generation resources with respect to the impact on the transmission system and existing resources.

Renewable Resources (Chapter 12)

Strategies and Recommendations of Future Solar PV Market

- Encourage utility and commercial solar PV projects without allowing such projects to limit residential solar PV installations.

- Encourage the release of electric grid information, including circuit-level data of the distribution grid, to facilitate siting of projects that will maximize the benefits

of solar PV as well as to deter projects that will not be able to interconnect cost effectively.

- Increase and maximize the number of solar PV systems sited on the built environment.

- Structure policies and incentive programs to promote installation of solar PV projects where there is electric demand, and on locations where the land has already been built impacted (e.g. roofs, parking lots, landfills).

- Support updates to building standards and energy codes that promote solar PV for new construction and major renovations.

- Encourage the development of locally controlled solar PV projects as a way to strengthen community support for otherwise challenging siting projects.

- Encourage utilities to offer customers the option of making solar PV loan payments on their utility bills.

- Provide firefighters with basic training in fighting fires on structures that have solar PV installed.

- Provide training to solar PV installers on the latest fire and electric safety codes, to increase safety and help to secure solar PV generation.

- Protect, through the Section 248 process, farmland and especially primary agricultural (USDA NRCS-rated) soils, as defined by statute, by requiring that developers: attempt to avoid soils rated USDA NRCS 1-7 and/or actively farmed soils; do not remove from or scrape or grade soils on farmland sites; design sites to avoid restricting or preventing access to USDA NRCS-rated soils that are separate from the site itself; and decommission all infrastructure at the end of the its useful life.

- Establish construction practices for roads and other practices that facilitate low-cost decommissioning and effective soil reclamation.

- Ensure that municipalities, neighbors, and parties have sufficient opportunity and time to comment effectively on solar PV CPG petitions and the larger net metering applications.

Solar Thermal

- Lead by example by installing solar thermal systems on buildings where practical.

- Consider building code requirements that passive solar design and siting principles be incorporated into new buildings that have a large hot water load (i.e. laundromats, hotels).

Wind Energy

- Continue to facilitate development of in-state wind projects in order to achieve the state's renewable energy goals, with a particular focus on small- and medium-scale and community-directed projects and projects that offer a significant benefit for ratepayers.

- Facilitate the development of projects that are community-led or that have engaged communities in the planning, design, and benefits of the proposed project.

- For large-scale projects, development should be permitted if there are environmental, economic, and societal benefits to Vermonters, and all other Section 248 criteria are fulfilled.

- Learn from existing wind in-state wind projects to improve the siting and review requirements and processes for future wind development.

Solid Biomass: Strategies

- Encourage, promote, and incentivize converting fossil fuel heating systems to clean and advanced wood heating systems by: encouraging local manufacturing of advanced wood heat technology, supporting development of wood delivery infrastructure, supporting development of sustainable forestry and procurement services, expanding processing facilities, encouraging bulk delivery systems, advancing installation technology, and providing training and education on the benefits of heating with efficient, clean wood energy systems.

- Support programs that strengthen Vermont forest product economy, keeping forest land economically viable and maintaining working forest land.

- Support clean air and health of Vermonters through a combination of standards, regulations, incentives, education programs, impact assessments, and mitigation strategies designed to promote efficiency, minimize emissions, and avoid impacts on vulnerable populations or places.

- Diversify solid biomass options by continuing to support agriculture-based biomass (e.g., native and perennial grasses and short-rotation willow). Assess potential for grass and willow energy crop cultivation in coordination with regional planning agencies, conservation advocates, and farmers.

Solid Biomass: Short-Term Recommendations

- Conduct an intensive education campaign to provide best practices on cordwood and wood pellet selection, storage, and combustion to promote the most efficient, clean, and cost-effective use of technology while protecting human and environmental health.

- Maintain forest health as a prerequisite to a sustainable wood energy fuel supply, while ensuring continuity of other forest-derived products, values, and benefits. Actions include:

    - Be aware of monitoring efforts by ANR that include trends in forest growth and regeneration, forest harvest levels, tree health (including abiotic and biotic threats to tree health), water quality, forest carbon stocks, wildlife habitat quality, and other ecosystem measures that are essential to understand trends and provide assistance to forest landowners in maintaining forest health and a sustainable wood supply.

    - Promote the use of the 2015 Voluntary Harvesting Guidelines to inform best management practices.

    - Implement education programs for natural resource professionals and develop strategies that promote high-quality forestry practices, such as forester licensing, to further protect forest health.

    - Conduct outreach and education on quarantines and regulations designed to reduce the threat of destructive forest pests that may be moved on/in wood fuel.

- Promote the expanded use of advanced wood heating, where appropriate, using equipment that has high efficiency and low emissions. This includes supporting wood stove change-out programs, such as the one offered previously by the ANR Air Quality and Climate Division. This also includes supporting change-out programs to substitute fossil-fueled heating equipment with advanced wood heating equipment, where appropriate, to reduce net carbon emissions, promote local wood fuel sources, and expand the use of this renewable resource.

- New electric generation from wood should include combined heat and power technology to maximize efficiency. A priority should be placed on the expansion of wood in the thermal energy market, where efficiency can be as high as 80-90%.

Solid Biomass: Long-Term Recommendations

- In order to achieve the state's goal of doubling wood's share of building heating by 2035, improve local infrastructure and technology to support continued expansion of clean and efficient advanced wood energy systems in Vermont:

- Develop a roadmap for further expansion of the use of advanced wood heat in the town or region, including strategies to increase the number of buildings heating with wood fuels, promotion of locally sourced wood, expansion of "best in class" advanced wood heating equipment that is clean, efficient, and cost effective, expanding weatherization of buildings to keep heat in, replacement of fossil heating fuels, assessment of health impacts and mitigation options, ensuring

continuity of other forest-derived products, and strategies to maintain forest health and forest values and benefits beyond wood use for thermal energy.

Liquid Biofuels

- Public and private stakeholders should continue to develop a sustainable biofuels industry in Vermont to enable the production and use of biofuels for transportation, agricultural, and thermal applications.

- Increase the use of biodiesel in transportation and heating.

Biogas: Farm, Non-Farm, and Landfill Methane

- Municipalities that are remodeling their waste treatment facilities should consider including anaerobic digestion with methane capture as part of their treatment systems.

Hydropower

- Maintain production levels from existing Vermont-based hydro projects to the extent they comply with Water Quality Standards.

- Identify opportunities to increase production at existing facilities through implementation of advanced operational controls, more efficient equipment, and/or conservation flow turbines at the dam.

- Strategy: Develop new, local hydro projects to the extent they comply with Water Quality Standards.

- Provide financial support to projects that meet the Vermont Small Hydropower Assistance Program low-impact criteria in order to conduct engineering and environmental studies necessary to proceed through permitting.

- Work with ANR and other stakeholders to assess watershed-wide opportunities to increase hydropower (at existing dams or operations) while also decreasing the overall environmental impact of dams (through targeted removals of existing dams that have been determined as inappropriate for hydropower, after a review of their hydroelectric potential and environmental circumstances).

Non-Renewable Resources (Chapter 13)

Petroleum

- Municipalities and regions should take into account market dynamics and petroleum prices when designing programs to support low-carbon heating and transportation alternatives, especially during times of low petroleum prices when alternatives are less competitive.

- Municipalities and regions, in conjunction with DPS and Vermont Emergency Management, should continue long-term energy assurance planning to monitor liquid fuel supplies and respond to emergency shortages.

Natural Gas

- Encourage expansion of pipeline gas infrastructure to enhance system reliability, reduce costs, and increase fuel choice for Vermonters, while recognizing that to meet the goals outlined in the Comprehensive Energy Plan, any expansion would require serious commitment to energy efficiency and renewable natural gas across the entire service territory.

- In applications where wood or sustainable biofuels are not appropriate, natural gas is being used to move away from petroleum products, and pipeline gas is not available or planned, municipalities and regions should recognize the role that the strategic and efficient use of compressed natural gas transported via tanker truck can play in advancing the economic and environmental goals of the state.

- Municipalities and regions should encourage the development of the biomethane sector by supporting proposals for appropriately sited, cost-effective biomethane production facilities and related infrastructure.

Nuclear

- Vermont utilities and agents that are party to the negotiations of major contracts for nuclear power or capacity should help ensure that the smaller municipal and cooperative utilities gain access to those resource contracts on similar terms and conditions.

Town and Region Buildings and Vehicles (Chapter 14)

Strategies and Actions for Town- or Region-Owned and Operated Buildings, Construction Practices, and Leased Space

- Municipalities and regions should identify and prioritize further opportunities to improve their energy efficiency in their own buildings.

- Municipalities and regions should also evaluate opportunities to construct renewable energy facilities and participate in net metering on facility sites where possible. Sites should be carefully selected to ensure the protection of natural resources and to minimize visual impacts for site neighbors.

Implement Energy-Saving Construction Practices

- Municipalities and regions should utilize BGS Construction Guidelines when constructing or renovating facilities, and should adopt higher standards wherever possible given project budgets.

- Municipalities and regions are encouraged to assess the life cycle costs of potential energy improvements — including long-term cost savings — during design and construction planning. The National Institute of Standards and Technologies' Building Life Cycle Cost Program offers free calculation tools to help analyze potential capital investments in buildings.

Strategies and Recommended Actions for Transportation

- Municipalities and regions should work toward meeting the goal adopted in the Vermont ZEV Action Plan — to make 25% of light-duty fleet vehicles electric by 2025.

- Municipalities and regions should encourage and support the use of electric vehicles by employees, and should encourage trip planning and mobility practices that reduce fuel use and the associated air emissions. Go Vermont should be a key partner in this effort.

- Municipalities and regions should consider building charging infrastructure to service their growing EV fleet, and make that infrastructure accessible to the public where possible.

- Municipalities and regions should consider lessons from the project to install AVL equipment in VTrans plows and other vehicles, to reduce idling more broadly across their own fleets.

Increase the Use of Biodiesel in Transportation

- Municipalities and regions that purchase diesel fuel for transportation purposes should use the highest biodiesel blend available without compromising the manufacturer's engine warranty. All manufacturers fully warranty their engines with the use of B5, a blend of 5% biodiesel and 95% diesel.

Reduce On-the-Job Transportation and Solo Commuting by Employees

- Municipalities and regions should consider ways to monitor light-duty vehicle use and reduce unnecessary employee travel where possible.

- Municipalities and regions should seek to provide employees with the necessary equipment and training to facilitate conference calls, webinars, and other virtual meetings and information sharing.

- Municipalities and regions should support telework without causing any significant impacts to the productivity or quality of employee work.

Solar Initiatives

- Municipalities and regions should pursue additional opportunities to contract with solar businesses specializing in roof-mounted systems similar to the new system at the Waterbury State Office Complex.

- Municipalities and regions should work to incorporate solar photovoltaic panels into the built environment wherever feasible, and should ensure that:

  - Projects are sited in appropriate locations that comply with natural resource and flood hazard regulations and guidelines.

  - Projects are designed and built with practices that minimize natural resource impacts and visual impacts for neighboring properties.

  - Projects are not built on prime agricultural soils, and best practices are used to ensure soil health and vitality.

Increase the Use of Modern Wood Heating with Biomass

- Municipalities and regions should continue to replace older oil-fired heating systems with new, modern, clean wood product-burning heating systems. They should target the largest oil-consuming locations, and should prepare cost-benefit analysis studies that consider the cost of replacement relative to energy savings and environmental benefits. The age and useful life of the existing heating systems should be weighted when determining which projects to undertake first.

- Municipalities and regions responsible for buildings heated with oil should consider switching to a biomass heating system. The Biomass Energy Resource Center is a great resource, available through Vermont Energy Investment Corporation, for municipalities and regions interested in biomass for their facilities.

- Municipalities and regions should ensure that wood products purchased for use in state building heating systems are sourced from forests that are managed in accordance with ANR's voluntary harvesting guidelines for private landowners.