

Town of Grafton Planning Commission Minutes

Tuesday, June 12, 2018, Grafton Town Garage

Planning Commissioners Present: Eric Stevens, Liisa Kissel, Dave Culver, Kim Record, Matt Siano, Valerie Rooney, Chris Wallace, Chuck Wise (Land Use Coordinator). Community Members Present: David Acker, Ellen Szepessy, Sam Battaglino, Anna Vesely Pilette, Kent Armstrong, Al Sands, Noreen Sands, Christine Tattersall, Kirk Goodwin, Cathy Siano Goodwin.

Call to order: 6:30PM

Agenda Review: Liisa mentioned a petition and Town Plan are being circulated around town and stated that this should be discussed tonight. Eric stated the petition has been withdrawn. Kim stated the petition was invalid because it did not have the required number of registered voters.

Minutes:

Motion to approve the May 29, 2018 minutes as corrected (Liisa 2nd Kim) PASSED.

Public Comment:

Anna talked about the definitions of the various wind energy facilities (residential, commercial, utility/industrial). Liisa provided explanation of this categories using power generation rates from each type of facility. Anna mentioned that it would be helpful to have examples so that the layperson has a better idea of what is being discussed. There is no way to evaluate/understand a wind mill based on energy generation, maximum clarity would be helpful so that every person has a clear idea of what is being proposed, discussed. Anna also commented on the maps. Eric clarified that the resource maps are really there to help the town understand where there is energy generating potential. The maps are not siting maps and further siting analysis would need to be done to determine if a specific location could support renewable energy generation.

Town Plan Update – Energy Chapter

Liisa requested clarity about the version of the Town Plan. Chuck stated that the Town Plan version is using track changes rather than font highlighting. Liisa's copy has green highlighting, that is all captured in the Town Plan using track changes. Discussion followed on which format to use.

P.34

Discussion followed on the preferred locations list. A few editorial comments were made. Eric stated the list is good for guidance but that determining preferred projects should be a flexible process that is continually updated. Valerie indicated the Commissioners decided this list at the last meeting. Motion to accept Page 34 / Grafton's Preferred Locations as is (Kim 2nd Chris) Discussion followed. Dave asked to delete the reference to policies sentence at the end of each section – the sentence is not necessary. PASSED.

P.35

Liisa discussed the paragraph related power generation facilities being incompatible in selected areas of town. Discussion followed on the wording of this paragraph. Motion to amend paragraph (Liisa, 2nd Matt) PASSED

In addition to these state-identified constraints, power generation facilities “are not compatible” along high elevation lands, ridgelines, and any areas immediately viewable from our historic villages and hamlets. Installations are not suitable if they have undue adverse impacts to cultural or historical resources including state or federally designated historic districts, and structures.

Motion to amend Liisa motion to change the language “are not compatible” to the revised language “may not be suitable” PASSED

Final language added to the Town Plan

In addition to these state-identified constraints, power generation facilities may not be suitable along high elevation lands, ridgelines, and any areas immediately viewable from our historic villages and hamlets. Installations are not suitable if they have undue adverse impacts to cultural or historical resources including state or federally designated historic districts, and structures.

Eric provided background on the paragraph he wrote that discusses energy generation in the region and how Grafton benefits from other wind generation facilities in Windham County. Liisa stated the paragraph does not have to be in the Energy Chapter. Eric emphasized the clarity does help us understand what Grafton should generate within the town to meet energy goals versus what Grafton needs to generate within a region where other communities generating a disproportionate share (thereby offsetting Grafton’s need to internally generate that energy). Liisa emphasized that this paragraph is not needed as part of the energy planning process and should not be included in the Energy Chapter. Eric stated this is a philosophical issue and that town residents ought to know the difference between the two goals: generating enough renewable energy as a community; generating enough renewable energy as community to satisfy a regional formula.

Motion to move the paragraph to a footnote in the Energy Chapter (Valerie 2nd Liisa) PASSED

¹ Based on current technology, the presence of substantial wind generating facilities in southwestern Windham County allowed the renewable energy generation targets for the remainder of the region to be significantly less than would be required without wind generation. In the case of Grafton, our generation goals set below match about 20% of our consumption. As an example, 2016 electric energy consumption was approximately 5000 MWh. If solar generation were to offset that on a net-metered basis then approximately 30 acres of land with good solar exposure would be required. This result can be computed from approximately 1.3 MWh of energy yield per year from 1 kW of well sited solar modules using the National Renewable Energy Laboratory program PVWatts and the approximate solar density of 1 MW of solar modules per 8 acres of land as cited by the Windham Regional Commission. Additional progress towards meeting our goals can be accomplished through conservation.

P.36

No comment

P.37

Minor editorial changes made

P.38

No changes

P.39

No changes

P.40

No changes

P.41

No changes. Liisa asked about the Vermont Building Energy Standards, Eric clarified that these are not standards but guidance. There are some incentives to follow energy standards, but builders do not have to follow the code. Consensus is to leave the sentence as is.

P.42

No changes. Dave asked about the formatting of Policies and Action Steps. Chuck indicated this standard was created by Windham Regional Commission and he just followed their recommendation. The format for the Energy Chapter (Policies/Action Steps) does not conform to the rest of the Town Plan (Goals/Policies). The question is whether their format should be changed to fit the model of our Town Plan. Valerie stated that if the format has to stay this way or can be adjusted to match the rest of the Town Plan, Chuck can make that change.

P.43

Minor editorial changes.

P.44

Minor editorial changes. Removal of an Action Step to avoid redundancy – the town will consider technology advancements and that does not need to be said twice.

P.45

Minor editorial changes. Amendment to Policy #4, Action Step remove small-scale and reflect with residential. Amendment to Policy #4 to be clear about the set of criteria for Grafton's Preferred Locations section.

P.46

No Changes

Dave reviewed the last Windham Regional Commission review/audit of the energy chapter to ensure our final revisions meet all those standards.

Review of Town Plan:

Eric recommended we wait to review the entire town plan for another meeting. Discussion followed about if this is necessary. Consensus is to review the entire Town Plan for consistency. In order to achieve this, we should have one additional supplemental meeting that Chuck can schedule after making his final updates. Discussion followed about the timing of town plan adoption – there will be a lapse where the old town plan will expire before we are able to adopt the new plan.

Motion to adopt the Town Plan as written and to give Chuck the authority to make grammatical/format changes only (insofar as it does not change the meaning) and to start the adoption process. (Dave 2nd Kim) WITHDRAWN

Chris indicated he cannot attend the regularly scheduled meeting on July.

Reorganization:

Valerie added this to the agenda because with all the new Commissioners now on board we should discuss the process of getting agendas developed, minutes posted in a timely fashion. Chuck indicated that there is a larger discussion that needs to take place this summer which involves looking at the Planning Commission and considering a split to a Planning Commission and Development Review Board model.

Eric called for a nomination of a Chair.

Kim nominates Dave, Liisa second. PASSED

Kim indicated in 2007 the Planning Commission developed rules and procedures for its meetings, but never followed up to adopt them.

Eric called for a nomination of a Vice Chair.

Chris and Liisa discussed as roles for Vice Chair. Final nomination unclear.

Clerk discussed.

Nomination never finalized.

Valerie applauded Eric for all his hard as Chair of the Planning Commission.

WORKING NOTES BY CHUCK

Chuck enclosed the remaining sections of the Energy Chapter (Attachment #1) that was edited during the meeting. Carefully review those pages to make sure edits conform to meeting outcomes. A copy of those pages is appended/referenced to the minutes. While Plan changes are ongoing, the document will continue to evolve, the pages discussed at this meeting will be archived with these minutes.

Adjournment (Liisa 2nd Dave) PASSED.

9:13 PM

Next meeting:

June 12, 2018

Total acres available for utility wind (with no constraints)	69
Percentage of Grafton land	0.28%

~~Refer to the “Energy Goals, Policies, and Action Steps” section below for policy statements regarding wind generation.~~

Grafton’s Preferred Locations

Grafton supports locally sourced and power generation facilities in a manner that supports existing and proposed land use designations, does not adversely affect the landscape pattern or character of the Town, and supports positive community development.

Grafton promotes power generation development in locations that are previously disturbed and do not offer significant opportunities for future development. These areas may include former gravel pits, former and existing parking lots, landfills, etc. Consideration should be given to these under-utilized and previously disturbed areas that exist within the areas modeled to have prime resource potential (see Energy Maps), and do not conflict with existing and proposed designated land uses.

Areas of special consideration should be all publicly owned lands and buildings. Solar is a particular asset that can directly supplement the electric power requirements of municipal facilities. Solar cited on public lands provides an educational value for citizens and landowners considering solar power generation.

~~Another area that is~~ Other areas that are highly desirable are lands located on or adjacent to agricultural and forestry lands. Grafton understands it must work to preserve its agricultural heritage and facilitate commercial agriculture. Farms that utilize renewable energy generation to augment their farm revenue are highly desirable. While energy generation must be clearly subordinate to the agricultural land use, energy income will bolster existing farms and create an impetus to open new farms in our community.

Effective land use planning can promote energy conservation. Targeting new development toward areas located close to the community's major roads and existing settlements will minimize the energy consumed by residents commuting, and will reduce the energy required to deliver essential services to residents and businesses.

Factors that would look favorably upon determining a preferred site designation which would include:

- Proximity to 3 phase power – this means a solar facility does not need to have a line upgrade
- Located near the end of utility distribution lines – this helps support the electric grid
- Aesthetic considerations – ensuring viewsheds are not impacted by the appearance of renewable energy facilities.
- Existing roads – important to have existing access without requiring a developer to upgrade roads.
- Minimal impact of agriculture and agricultural soils – this is the path of least resistance for energy companies and we should not endanger our future ability to produce food.
- No obstruction of wildlife and habitat corridors as well as riparian buffers.
- South facing slopes with low quality agricultural soils. These areas have high solar value, but otherwise low value as working landscapes.

Refer to the “Energy Goals, Policies, and Action Steps” section below for policy statements regarding preferred generation sites.

Areas Unsuitable for Renewable Energy Siting

As shown in the Known Constraints map, there is a suite of geographic characteristics that are deemed to exclude any energy generation development. They are mapped vernal pools, Class 1 and 2 wetlands, DEC River Corridors and/or FEMA floodways, National Wilderness Areas, and State-significant Natural Communities and Rare, Threatened, and Endangered species.

The Possible Constraints are a set of data layers that don’t necessarily exclude energy development, but give a signal to potential developers and planners that more site analysis may be required. These layers include steep slopes, hydric soils, FEMA Special Flood Hazard Areas, Protected lands, deer wintering areas, Vermont Conservation design highest priority forest blocks, habitat connectivity, and agricultural soils. If generation facilities are proposed in these areas, due diligence is required in the siting of those facilities to ensure there is are no adverse impacts.

~~Aside from these state-identified constraints, Grafton has determined that power generation facilities are not compatible in along high elevation lands, ridgelines, and any areas immediately viewable from our historic villages and hamlets. Installations are not suitable if they have undue adverse impacts to cultural or historical resources including state or federally designated historic districts, structures, and other local resources identified in the Town Plan. . Some of those prohibitive impacts include removal or damage to the resource and visual intrusion directly or indirectly that creates a distracting influence on the historical landscape. In addition to these state-identified constraints, power generation facilities may not be suitable along high elevation lands, ridgelines, and any areas immediately viewable from our historic villages and hamlets. Installations are not suitable if they have undue adverse impacts to cultural or historical resources including state or federally designated historic districts, and structures.~~

Refer to the “Energy Goals, Policies, and Action Steps” section below for policy statements regarding unsuitable generation sites.

Grafton’s Energy Targets and Conservation Goals¹

The Windham region was given an overall renewable energy generation target, as determined by the Department of Public Service, based on its percentage of the state’s population (which directly affects its share of statewide consumption). The Windham Regional Commission (WRC) then determined energy generation targets for each of their member-towns, based on both the resource availability in town and its population. The resulting town generation targets are an average between those two characteristics.

Power Generation Targets

According to Vermont’s 2016 Comprehensive Energy Plan, in order to meet the state’s overall goals, Grafton should be generating approximately 949 megawatt-hours of power per year by 2050. This goal is based on averaging the following two calculated numbers:

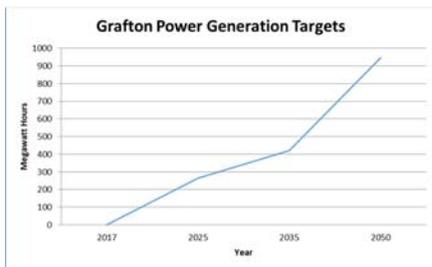
¹ Based on current technology, the presence of substantial wind generating facilities in southwestern Windham County allowed the renewable energy generation targets for the remainder of the region to be significantly less than would be required without wind generation. In the case of Grafton, our generation goals set below match about 20% of our consumption. As an example, 2016 electric energy consumption was approximately 5000 MWh. If solar generation were to offset that on a net-metered basis then approximately 30 acres of land with good solar exposure would be required. This result can be computed from approximately 1.3 MWh of energy yield per year from 1 kW of well sited solar modules using the National Renewable Energy Laboratory program PVWatts and the approximate solar density of 1 MW of solar modules per 8 acres of land as cited by the Windham Regional Commission. Additional progress towards meeting our goals can be accomplished through conservation.

The Town's Share of the Regional Population	854 MWh/year
Share of Regional Resource Availability	1,043 MWh/year
Average of the Two	949 MWh/year

This goal includes the following benchmark targets:

Year	Power Energy Generation/Year
2017 (present generation)	85 MWh
2025	263 MWh
2035	422 MWh
2050	949 MWh

Figure #7

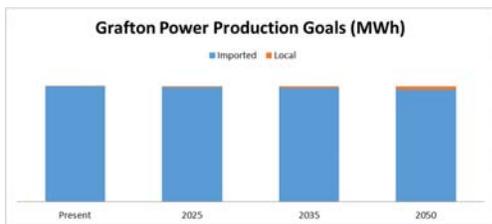


Commented [ECS12]: The title needs to be Grafton Energy Generation Targets

As Figure #8 below shows, even if Grafton meets the power-energy production goal above, it will have minimal impact on the overall amount of energy we will still need to import. That said, we believe that, as a Town, we must do our part, no matter how small to contribute to the larger cause.

Energy Source	2017	2025	2035	2050
Imported	32,144 MWh	31,966 MWh	31,808 MWh	31,281 MWh
Local	85 MWh	264 MWh	422 MWh	949 MWh

Figure #8



Grafton believes this goal through can be met through the installation of a series solar photovoltaic panels arrays. In order to meet the goal of 949 MWh of electricity per year, 730 KW of solar

photovoltaic will need to be installed. Using 60 acres of land per megawatt of electricity as an extreme high estimate, it will require the identification of 44 acres of solar capable land to be set aside as a "safety net". On average, solar installations actually require about eight acres per megawatt, which means Grafton will need approximately six acres of land for solar photovoltaic panel installation. [See Footnote #1](#)

Although localized power generation can occur in the town and supply its residents with reliable, affordable, and clean power, the town is challenged by the current amount of energy being consumed. In order to minimize the amount of energy generation required, the town must also develop strategies to reduce the amount of energy consumed.

Projected Energy Use: LEAP Model Results

To help inform the town's policies on energy conservation measures, the town used guidance from the Long-Range Energy Alternatives Planning (LEAP) system model, conducted by the Vermont Energy Investment Corporation as part of the state's comprehensive energy planning initiative.

The LEAP model is used to guide the state's regions towards reducing the amount of greenhouse gas emissions and consuming 90% renewable energy by 2050 (referred to as the "90x50" goal). To accomplish the state's energy goals, there are several interim benchmarks built into the LEAP model which ensure a progressive pace in attaining that "90 x 50" goal. The state energy goals are:

1. Greenhouse gas reduction goals of 50% from 1990 levels by 2028 and 75% by 2050.
2. 25% of energy supplied by renewable resources by 2025 (25 x 25)
3. Building efficiency of 25% of homes (80,000 units) by 2020.

Incorporating those goals into the model produced power generation, conservation, and fuel conversion targets for benchmark dates for all regions in the state, and is informed by the region's current energy profile. The WRC received the results from this model and was tasked with making those results relevant to its member-towns. The WRC therefore divided its region-wide benchmark targets among its towns based on their population (which is assumed to most directly impact the amount of energy the towns consume).

The following paragraphs and figures show Grafton's LEAP model results, and how much energy could be conserved in order to reduce the burden of energy generation facilities in the region.

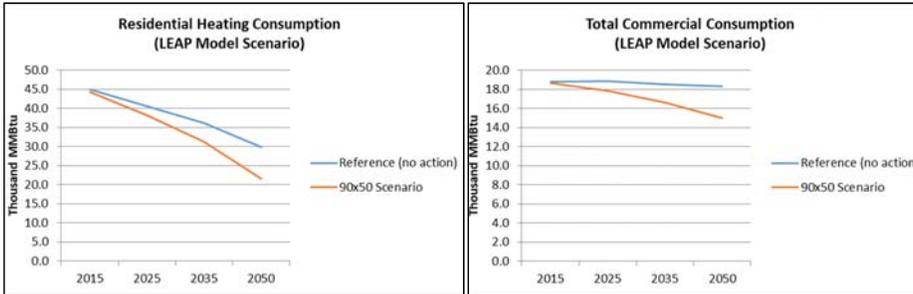
Residential Heating Conservation & Fuel Conversion

In order to determine how much energy would have to be conserved, ~~or combined with how much~~ fuel conversion to renewable energy, the LEAP model produced both a "Reference" and "90x50" scenarios. The Reference scenario is meant to depict energy use over decades if no major changes were made in Grafton's energy profile. The "90x50" scenario shows the pathway that Grafton will adopt in order to reduce greenhouse gas emissions, conserve energy, and generate renewable energy so as to meet the state's goals. It is another data estimate that serves to help inform the Town to develop its own policies for energy conservation and fuel conversion.

Figures #9 & #10 show the LEAP results for Grafton's residential and commercial heating sectors. In both the Reference and 90x50 scenarios, energy consumption is modeled to decrease (because of

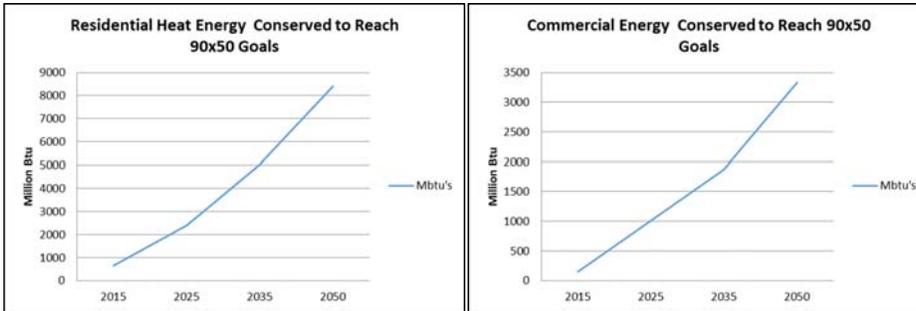
technological improvements, building innovation, and home efficiency improvements). However, the 90x50 scenario shows a sharper increase in the amount of energy conserved in residential heating.

Figure #9 and Figure #10



Figures 11 & # 12 show Grafton’s energy conservation targets through 2050. Not only will energy need to be solely conserved by building efficiency measures, but fuel conversion to more efficient energy sources will be promoted.

Figure #11 and Figure #12



In order to attain the overall energy goals, the following energy efficiency targets have been established for Grafton.

Grafton Weatherization and Energy Efficiency Improvement Goals			
Sector/Use	2025	2035	2050
Residential thermal			
Percent of municipal households to be weatherized	14%	28%	57%
Estimated number of municipal households to be weatherized.	69	134	276
Commercial thermal			

Percent of commercial establishments to be weatherized.	9%	16%	30%
Estimated number of commercial establishments to be weatherized.	2	4	7
Electricity			
Electrical energy to be conserved, annually.	307,500 kWh	502,500 kWh	735,000 kWh
Percentage of homes and buildings to be upgraded with electric efficiency improvements.	42%	68%	100%

Additionally, the LEAP 90x50 scenario has set the following ‘Fuel Switching’ goals for Grafton between now and 2050.

Grafton Fuel Switching Goals			
Sector/Product	2025	2035	2050
Residential and Commercial Thermal Fuel			
New high efficiency wood stoves	169	156	146
New wood pellet systems only (in units)	36	39	49
Residential and Thermal Fuel			
New heat pumps (in units)	64	126	178

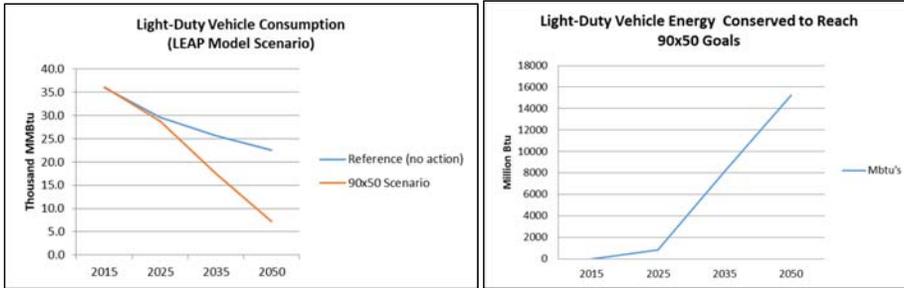
Transportation System Changes

Transportation-related efficiency strategies are a very significant part of Grafton’s efforts, since it represents a significant portion of the energy demand. Simple changes, such as ride-sharing, combining trips and using alternative transportation, will conserve fuel and reduce wear and tear and maintenance costs on individual vehicles. Fuel efficient and electric cars will use less gasoline and emit less pollution.

The LEAP model created benchmark targets for both light and heavy duty vehicles, assuming a difference in residential and industrial energy needs and changes over time. Below are the two interpretations of these sector’s efficiencies over time.

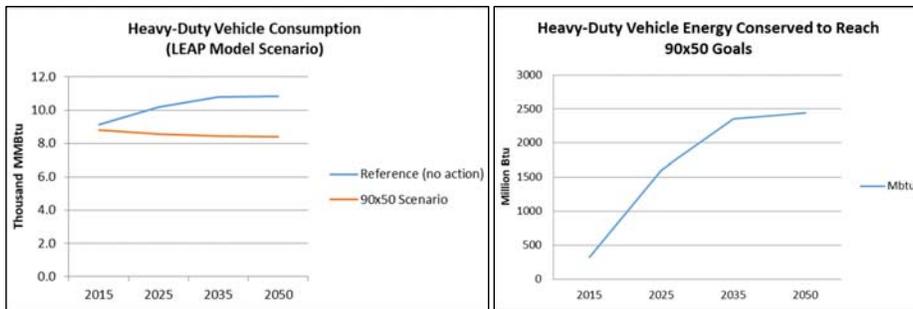
Light Duty Vehicles

Figure #13 and Figure #14



Heavy Duty Vehicles

Figure # 15 and Figure # 16



Light-duty vehicle consumption represents a larger portion of the total amount of energy consumed by the transportation sector, and there is a large amount of energy conservation required. The LEAP model projects much of this conservation of energy comes from the electrification of the vehicle fleet, especially as market demand changes and technology improves. This reduction in gasoline consumption and electrification of the car motor comes in addition to increased cluster developments and other land use changes that improve the efficiency of our community’s transportation network. The following goals are identified by the 90X50 model for the town’s transportation fuel conversion:

Transportation Fuel			
Vehicle Type	2025	2035	2050
Estimated new electric vehicles in Grafton	44	311	658
Estimated new biodiesel-powered vehicles in Grafton	67	129	223

Heavy-duty vehicle consumption doesn’t show the same curves as per light-duty vehicles, since commercial and industrial applications for this vehicle fleet isn’t anticipated to change as much. However, efficiency in this sector is achieved by changing the fuel type for these vehicles from diesel to bio-diesel.

Electricity Conservation

Over the benchmark years, electricity rates are anticipated to increase in the Reference scenario, due to a combination of more amenities, appliances, and motors being supplied by electric power, and an increase in the number of people using those products. The 90x50 scenario promotes electricity conservation in the form of energy-efficient appliances, lighting, and heating/cooling. Pursing these upgrades, the town is targeted to save the following through electrical conservation measures:

Goals	2015	2025	2035	2050
Number of Buildings To Be Upgraded	21	69	134	276
Energy Savings Goals	161 MWh	599 MWh	978 MWh	1,431 MWh

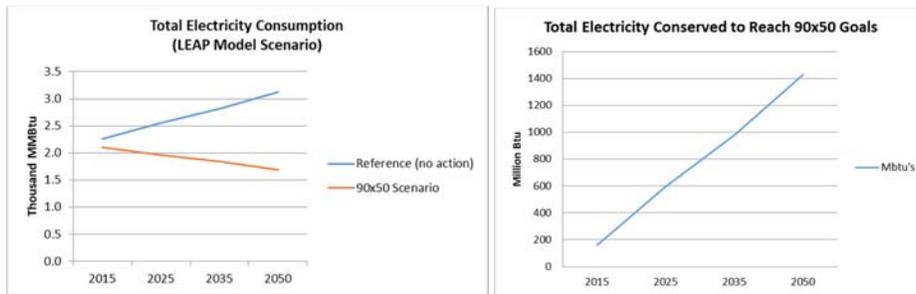


Figure # 17 and Figure # 18

Conservation and Efficiency Strategies

With total annual energy expenditures in the Town of approximately \$362 million, there is considerable opportunity for savings from various energy conservation and improved efficiency measures. Because most of the energy use in Grafton is for private uses (home heating, commuting, etc.), savings would accrue primarily to residents. Public education is one of the most effective strategies to bring about savings through energy conservation and improved efficiency, though there are some specific policies that can also move the community in that direction.

Most new construction in Grafton is required to meet or exceed guided by the Vermont Building Energy Standards (for both residential and commercial buildings) through the use of air sealing, insulation, heating systems, and weatherproof windows and doors. Current building codes provide basic energy efficiency requirements standards for buildings; however, technology advancements have generated higher standards such as net-zero energy construction standards in which buildings generate as much energy as they consume. Green construction and LEED Construction (Leadership in Energy and Environmental Design) standards promote the use of natural, recycled and durable building materials, as well as energy efficiency. These efficiency standards are also applied to landscaping, advocating for native plantings that are low maintenance.

The siting, design, and construction of buildings strongly influences the amount of energy needed for heating as well as the amount of electricity needed for lighting. Proper subdivision design, building orientation, attention to solar access by easement, construction and landscaping provide opportunities

for energy conservation such as less vehicular travel, and by designs incorporating passive solar space and domestic hot water heating, natural lighting and photovoltaic electricity production.

Energy savings can be realized by retrofitting existing buildings with air sealing insulation, installing high-performance windows and doors to reduce heat loss, weather-stripping, replacing incandescent lights with fluorescent/LED's, and using energy efficient appliances.

Programs and Organizations Available to Support Grafton's Energy Goals

Southeastern Vermont Community Action (SEVCA) is the service provider in Windham County that runs the Weatherization Assistance Program. Weatherization services, which include an energy audit, diagnostic tests, analysis and installation measures, are available at no cost to income-eligible homeowners and renters. SEVCA is also available to help in the event of a heating emergency. They can help purchase oil, kerosene, propane or wood. In addition, they also work with electric companies in order to prevent disconnection and help negotiate payment plans.

Efficiency Vermont is the State's provider of energy efficiency services. They provide technical and financial assistance to electrical consumers for the purpose of improving the efficiency of existing and new facilities.

ENERGY STAR Home Rebates are available for homes that meet strict energy efficiency guidelines set by the U.S. Environmental Protection Agency and U.S. Department of Energy. Efficiency Vermont provides free financial, design, and technical to help build an ENERGY STAR qualified home. Benefits of being an ENERGY STAR home include financial incentives such as product rebates; utility savings; higher resale value; increased comfort and air quality; and other environmental benefits.

Vermont Housing Finance Authority's Energy Saver Loan Program is administered by Windham Housing Trust, this program offers low interest loan funding for homeowners for an energy audit and improvements specified in the audit.

Policy #1

The Town of Grafton will reduce total energy use by promoting energy conservation and efficiency measures and a shift toward renewable energy sources.

Action Step: Encourage appropriate energy conservation and efficiency measures and renewable energy generation by individuals and organizations through public education, awareness, and engagement.

Action Step: ~~Appoint as~~The Energy Coordinator, appointed by the Selectboard, that works will work directly with the Planning Commission. The Energy Coordinator will provide resources to residents on energy conservation, efficiency, and renewable fuel options.

Action Step: Support programs for insulation and weatherization of new and existing dwellings, especially for low and moderate-income households.

1. The Energy Coordinator shall work to make residents aware of recent state energy codes.

2. The ~~Administrator~~ Town's Administrative Officer will ~~enforce compliance with the~~ inform homebuilders about the Vermont Residential Building Energy Code ~~by ensuring that certificates are filed upon completion of construction and encourage contractors to file certificates of compliance upon completion of construction.~~
3. The Energy Coordinator will encourage the retro-fitting of existing structures with energy saving measures such as air sealing insulation, ~~storm~~ energy efficient windows, heating equipment, and energy efficient appliances.
4. The Energy Coordinator will increase public awareness of weatherization programs.

Action Step: Encourage and support awareness programs on energy conservation and the availability and use of renewable and alternative fuels.

1. Promote switching to wood, liquid biofuels, biogas, geothermal, and ~~or electricity~~ air sourced heat as fuel sources, when applicable.
2. Promote other suitable devices such as advanced wood heating systems and cold-climate heat pumps, or other energy efficient heating systems.
3. Identify potential locations for, and barriers to, deployment of biomass district heating ~~systems and/or thermal led combined~~ preferably configured as combined heat and power systems.
4. Promote the sale of energy-efficient light bulbs.
5. The Energy Coordinator, with town support, shall encourage an energy awareness curriculum in the Grafton Elementary School.

Action Step: Commit to energy conservation in all Town properties, facilities, and vehicles.

1. The Town will conduct periodic energy audits on all town properties and other facilities and prepare an energy efficiency plan that emphasizes energy reduction and efficiency as facilities are upgraded, replaced, or expanded.
2. Energy Coordinator, working in concert with the Selectboard, can help locate public lands that are appropriate for renewable energy generation.

Action Step: Support the use of energy efficient ~~automobiles~~, appliances, heating units, lighting, and other powered devices.

1. The Energy Coordinator will encourage the reduction of outdoor lighting costs by the use of energy-efficient lighting fixtures and ~~timing devices~~ motion sensitive security lighting.
2. The Energy Coordinator can examine opportunities for providing home energy audits for resident and property owners so that they may take action to conserve energy and reduce related costs.

Policy #2

The Town of Grafton will work to reduce transportation energy demand and single-occupancy vehicle use, and encouraging use of renewable or lower-emission energy sources for transportation.

Action Step: Encourage the increased use of public transit, as appropriate.

Action Step: Promote a shift away from single-occupancy vehicle trips through strategies identified in the Transportation chapter.

1. The Planning Commission will examine the feasibility of creating a park-and-ride facility within walking distance of Grafton Village.
2. The Energy Coordinator will promote *Go! Vermont* (www.connectingcommuters.org) on the town website and examine ways to facilitate car and van pools and ride-sharing.

Action Step: Encourage, through transportation policies, opportunities for walking, and cycling, or other energy efficient alternatives to the automobile.

1. The Town will consider implementing improvements that encourage safe and convenient walking and biking.
2. The Town will create a bicycling corridor between Grafton and Bellows Fall Villages to promote seasonal commuting and tourism. This will include prioritizing design of highway and bridge upgrades to include space such as safe shoulders and separate lanes, when space allows, to enhance safety when bikers are passed by motorists.

Action Step: Promote the individual use of electric vehicles, instead of fossil fuel consuming light-duty vehicles.

1. The Planning Commission ~~can develop~~ will investigate a plan for locating an electric vehicle charging station in Grafton Village.
- ~~2. The Town will lead by example in terms of transportation related energy use.~~
- ~~3.2.~~ The Town will encourage the posting of “No Idling” signs at public facilities and businesses.
- ~~4.3.~~ The Town will consider current and future technological advancements for fuel efficiency in ~~town~~ Town vehicles.

Policy #3

The Town of Grafton will promote appropriate land use patterns and development densities that result in the conservation of energy.

Action Step: Maintain the Town’s historic settlement pattern of thickly settled villages and hamlets and open landscapes. Protect these areas from undue adverse impacts associated with commercial energy generation and new transmission facilities.

Action Step: Minimize the need for new facilities and reliance on the private automobile by directing development to designated concentrated development, and limiting such development in the least accessible areas of the community.

Action Step: ~~In conformance with Act 171, Promote-promote~~ land use and conservation policies that ~~protect forest blocks and habitat corridors. encourage-Encourage~~ ongoing forest management to maintain a local source of fuel-wood ~~harvested no faster than regeneration. Encourage~~ and local ~~agriculture-farms~~ to maintain and increase the supply of locally produced food.

Policy #4

The Town of Grafton will locate zones and/or areas appropriate for renewable energy generation based on resource potential and development constraints.

Action Step: Support appropriate renewable energy generation in town, including biomass using local wood supplies, solar, and dispersed ~~small-scale-residential~~ wind, solar and hydro-power sources. Throughout this plan, the Town of Grafton will direct and support renewable energy generation to ~~the any~~ defined preferred areas ~~and to areas that the Selectboard and Planning Commission jointly accept as a preferred site.~~

1. Support residential and ~~community-commercial~~ sized net-metering energy production projects where siting constraints are favorable.
2. Support the preference of small-scale active and passive solar installations, specifically on rooftops, rather than larger scale ground mounted utility installations.
3. Support ~~small-scale,~~ residential ~~or-commercial~~ wind generation facilities where there are no adverse wildlife, ecological, or sound affects to nearby residences.
4. Support small-scale micro-hydro systems along small streams where there are no adverse impacts on natural resources.
5. ~~Develop a set of criteria, based upon the guidance listed in "Grafton's Preferred Locations" section, to be used by the Selectboard and Planning Commission for determining the preferred status of renewable energy generation sites.~~

Action Step: Discourage ~~industrial-utility-scale and commercial-scale-renewable-wind~~ energy generation.

Action Step: Encourage any potential commercial generation facilities to be within the areas deemed most suitable as described in this Enhanced Energy Element and within the Energy Generation Potential maps, and maximize potential for those facilities in these preferred areas.

Action Step: When considering upgrades to or expansion of transmission infrastructure or 3-phase power lines, encourage the strategic development of energy generation facilities so that community centers and local businesses may benefit from the infrastructure upgrades, thereby maximizing positive community development overall

Action Step: Promote the siting of renewable energy generation facilities within compatible Land use districts, namely within ~~Mixed Use, Commercial or Industrial and Rural Residential and Productive Rural Land~~ in such a manner that minimizes site disturbance and development, reduces impacts on local roads and infrastructure, and maximizes energy resource availability so as to provide the most benefit.

Action Step: Encourage energy generation facilities in existing or prospective agricultural areas where the energy generation installations conform to, complement, or add value to the agriculturally-productive landscape or to the surrounding ecosystem services. The design of these facilities should complement existing agricultural operations.

Action Step: Discourage any renewable energy generation facilities in the identified unsuitable areas.

Action Step: Town of Grafton will demonstrate leadership by example with respect to the deployment of renewable energy by promoting energy generation facilities ~~on all town buildings.~~ to offset the energy consumption of all Town buildings.