Town of Grafton Planning Commission Minutes
Tuesday, May 8, 2018, Grafton Town Garage

Planning Commissioners Present: Eric Stevens, Liisa Kissel, Dave Culver, Kim Record, Matt Siano, Chris Wallace, Chuck Wise (Land Use Coordinator). Community Members Present: Sam Battaglino, Carol Lind, and Charles Hooker

Call to order: 6:35PM

Agenda Review: Include discussion on the Act 250 permit issued to Grafton VT LLC.

Minutes:
Motion to approve the April 10, 2018 minutes as corrected (Liisa 2nd Matt) PASSED. Chuck stated that he is continuing to work to access the website – there are security requirements before gaining access. Eric stated the Selectboard voted yesterday to authorize Chuck to access the website page that includes agenda and minutes. Chuck said he will continue to work with Bill and Kim and eventually will access the website directly.

Public Comment: Sam will reserve comments for later in the meeting.

Town Plan Update – General
Chuck reviewed the various changes proposed over the last month (excluding energy). They are all minor edits and no substantive changes. Chuck requested the Commissioners specifically consider a proposed recommendation for VT 121. This addresses an earlier discussion about grant funds being available for a bicycle tourism corridor from Grafton Village to Bellows Falls. Chuck believes anything that promotes public investment along this road is helpful. VT121 was in poor condition, the pavement is good now but will not be in 5-10 years. It is important to make this road a priority with the state's paving ranking program and having an identified bicycle corridor elevates VT121 in paving project prioritization. Eric and Matt reviewed those miscellanea comments that impacted the energy chapter.

Town Plan Update – Energy Chapter
Eric started the review of his revised Energy Chapter submitted to the Planning Commissioners via email on Saturday.

Liisa was surprised to see substantive changes to the energy chapter so late in the process – the draft has been worked on since November and appeared to be the draft people agreed upon. Eric indicated that these changes were foreshadowed in a previous energy working group meeting and that they are now available for review, discussion. Discussion covered the following;

- Planning Commission and/or Energy Group meeting scheduling. Examining the last few months and when meetings could or should have been held.
- Versions of the Town Plan. There is a Town Plan 2018 on dropbox – that is the official version. There is a Dave edited copy produced in November that has been kept because so many edits were made and Chuck wanted this copy preserved just in case he wanted to revisit it. There is an Eric provided Energy Chapter that has NOT been included in the official Town Plan 2018. Chuck will only update the official version after

all Commissioners have reviewed and approved those revisions and until then the Eric version of the Town Plan will remain as a separate document.

Commissioners proceeded with reviewing Eric's chapter revisions. Dave recommended the Planning Commission review each page, then approve that page by consensus before proceeding to the next page. The page by page review and approval format will help organize our process. Liisa expressed a concern that Valerie is not in attendance.

p.27 – No changes proposed. APPROVED.

p.28 – Dave inquired about the data in the tables and trying to understand the various abbreviations. For clarity, every abbreviation should be spelled out completely the first time it is referenced. Chuck stated that he will have WRC review all data charts and tables to make sure they are accurate. We are using WRC provided data and they will know best if we are using it accurately. APPROVED.

p.29 – Observation that the data and the table do not match because they are different years (2014/2016). Chuck to look and see if we cannot standardize those data and the years they are referenced. We also need to clean up the transportation energy table so that it reads better. APPROVED

p.30 – Dave asked about municipal energy use and how that fits within the existing energy categories. Dave reiterated the need to explain abbreviated terms. Liisa pointed out that these acronyms do not all seem to be used in the same way – references to million BTUs can be different depending on the chart or table. APPROVED.

p.31 – Dave asked about the duplicative pie chart. Chris stated it was helpful to see those charts side by side for reference. Dave reiterated that the data has been updated since he made his energy chapter edits. Chuck wants WRC to re-review all datasets for accuracy, there is a great deal of technical information in this chapter and those changes can be reviewed by the energy planners. Dave stated the data changes are small. Eric made a few edits to the Energy Resources section to emphasize the focus on energy and not on natural resources. Dave asked about the practice of making recommendations within the narrative versus in the recommendations section – '*care must be taken not to significantly alter both the village and the surrounding scenic landscape'* – is considered a recommendation. Liisa stated that this is an important statement to make here and should be left in the document as well as being repeated in the recommendations section.

Commissioners reviewed the narrative concerning the November 2016 vote on the 28 turbine facility project. Extensive discussion followed with several attempted rewrites proposed. Motion to table this page until we have all Commissioners present for the meeting (Dave 2nd Matt) FAILED. Sentence was recrafted to more precisely identify the perceived consequence of the vote which drew consensus from the Commissioners.

Commissioners reviewed the last paragraph for grammatical concerns. Edits were created to improve how the discussion on hydroelectricity reads.

APPROVED

Discussion followed about the amount of work to be done at this meeting and a realistic break point.

p.32
Eric added commercial wind turbines. Commissioners expressed interest in defining what exactly are residential, commercial and industrial wind systems. Having definitions for those terms is essential, Eric provided some ballpark estimates based on electrical generation rates. Liisa requested that the term plateau be changed to ridgeline, agreement was that the ridgeline is technically separate from the plateau. Discussion followed without a conclusion to the needed revisions on this page.

Commissioners instructed Chuck to poll members and schedule an additional meeting.

Kim asked about the adoption schedule. Chuck stated that the existing deadlines were tight and we are not going to be done in time. Kim asked about adopting the Town Plan with the old energy chapter, Dave concurred this was a good option.

WORKING NOTES BY CHUCK

Chuck has enclosed the section of the Energy Chapter that was edited during the May 8, 2018 meeting. This carefully captures all the proposed changes using a clean copy and track changes! Please note that with the proposed changes the pagination no longer matches the minutes perfectly because we added items that have lengthened the document.

Chuck personally downloaded the most recent energy datasets and confirmed data for accuracy/consistency in the sections covered at the meeting. An additional review by WRC is still required – there is so much data in this chapter, it is all very technical. The energy planners who specialize in this field should really conduct a final review and confirmation.

Chuck started a definitions section in the revised Energy Chapter. Sometimes the definition for a term is nearly as opaque as the term. We should all plan to work together to craft layperson language for the various acronyms and terms!

Adjournment (Dave 2nd Kim) PASSED.
9:13 PM

Next meeting:
May 29, 2018

ENERGY

Introduction

Energy is essential to our quality of life. But we recognize that energy procurement and consumption is a local, state, national and global issue and that Grafton must do what we can to contribute to a solution. This plan will address three areas of concern for the Grafton community.

Heating – Grafton's long, cold winters require significant energy to heat homes and other buildings in the Town.

Transportation – Because of Grafton's isolated geographic location, transportation energy costs can be considerable for its residents.

Electrical Devices – Virtually all of today's technologies rely on electricity to operate and all projections indicate that our electronic consumption needs will continue to increase.

Commented [CW1]: Wanted to create Term Definitions based on Dave's comments. Dave is correct that these acronyms have to be explained up front.

Energy and the Local Economy

The cost of energy in Grafton, including residential, commercial and governmental use for heating, electricity, transportation, was estimated to be $2,289 million in 2014. The Energy Plan will be used as part of the larger effort to continually improve economic conditions in Grafton, thereby improving the quality of life for its residents. The Energy Plan can accomplish this by reducing energy costs through energy conservation and by localizing energy sources. Because a large majority of energy is imported from outside of the Town and Windham Region, most of the money spent on energy does not directly benefit the local economy. Reducing the use of energy sources from outside the Town, and shifting reliance to locally produced power, can improve household financial security and stabilize the local economy.

Terms and Acronyms Defined

Energy is a technical field that uses many different terms and acronyms that are not easily understood by the average person. Here is a list of terms used in this chapter and their meaning.

Energy, Commercial -

Energy, Industrial -

Energy, Residential -

kW - Kilowatt hour is a unit of energy equivalent to one kilowatt (1 kW) of power sustained for one hour.

kWH - One kilowatt hour is the amount of energy converted if work is done at an average rate of one thousand watts for one hour.

MMBTU, or MBTU - One million British Thermal Units (BTU). The term denotes both the amount of heat energy in fuels and the ability of appliances and air conditioning systems to produce

Energy and the Environment

While Grafton can do little to shift the broader state or federal policies, we can do our part to decrease energy usage and increase local power production, both of which will have a positive impact on the environment. This chapter will identify Grafton's local plans for increasing our energy efficiency and promoting local power generation as a way to do our part to help solve the global situation.

Energy sources can be classified as infinite (i.e. solar & wind), finite (i.e. fossil fuels 7 uranium), or renewable (i.e. ethanol & fire wood). Every energy source has both advantages and disadvantages, but because of the multiple, significant, negative environmental impacts of fossil fuels, the Town will make all reasonable efforts to reduce fossil fuel consumption. Fossil fuel-dependent energy systems are a significant cause of localized and global environmental damage. From the point where the fuels are produced and refined, to the emissions generated during their use, fossil fuels are responsible for human-induced climate change, related climate-change disasters, and ecological degradation. Reducing the use of fossil fuels and shifting to more environmentally sustainable energy sources will benefit the town's environment.

Grafton's Current Energy Use

This section describes Grafton's current estimated energy demand in detail. These current-use estimations provide a starting point from which the town can develop informed energy policies that directly address its current context and opportunities going forward. As mentioned above, the current-use data is analyzed in the following sectors of energy consumption:

1. Electrical Equipment
2. Heating
3. Transportation

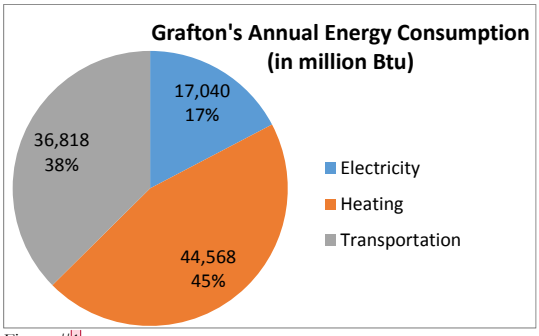

Figure #1

Commented [CW2]: Confirmed this is most recent data (20180511)

Current Electricity Demand

Commercial electricity is supplied from Green Mountain Power for the residents of Grafton. Electricity consumption data from Efficiency Vermont was produced for each zip code in the state, and is the primary source of this information. This data set combines the energy supplied from all potential electricity providers to that town. It also separates the usage for both the residential and commercial or industrial sectors.

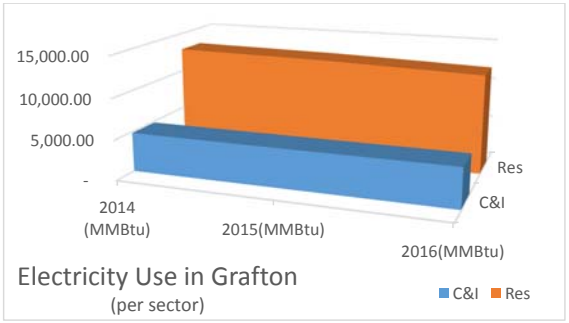

Figure #2

Unlike many larger towns, where commercial and industrial sectors use the majority of electrical energy, in Grafton, residential use is historically about twice that of commercial and industrial use.

To translate this energy demand into dollar amounts, we can estimate a cost of $0.1484 per kilowatt-hour based on energy costs in the fall 2017. ~~As shown below,~~ In 2016, the total cost of electricity in Grafton was almost $716,625~~K in 2016~~.

Sector	Kwh Used in 2016	Total Cost
Residential	3,560,066 Kwh	$510,869,471
Industrial/Commercial	1,433,839 Kwh	$205,755
Total	4,993,905 Kwh	$716,625

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Current Transportation Use

Grafton's isolated location makes personal vehicles the primary source of transportation. Below are the calculations showing Grafton's transportation fuel consumption for 2014.

Number of primary housing units in Grafton	313 housing units
Estimated number of fossil-fuel burning vehicles	537 vehicles
Estimate of the average annual number of miles travelled per vehicle	12,500 miles
Estimated annual miles traveled by Rockingham vehicles	6,712,500
Estimate of the average fuel economy	22 mpg
Estimated gallons of fossil fuel consumed annually	277,871 gallons
Regional cost per gallon (*Fall, 2017*)	$2.39
Grafton's estimated annual fossil fuel cost for transportation	**$664,111**
Number of Btu's in a gallon of fossil fuel *(95% gasoline and 5% diesel)*	121,259
Estimated total annual energy consumption of internal combustion vehicles. *(In millions of Btu's)*	**33,694**

Commented [CW5]: Commissioners requested the table be reformatted for improved clarity.

Current Heating Demand

To account for the different building types and their respective uses, the following estimates divide thermal energy demand by residential buildings (primary residence), seasonal, or commercial use (industrial building thermal demand is not included). As Figure #3 below shows, the large majority of energy usage for heat is for primary residential homes. It should be noted that, although 'Seasonal Homes' account for 36% of the 'Residential Homes' in Grafton, the Btu calculations assume 15% energy usage for a 'seasonal home' compared to a 'primary residence'.

Figure #3

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For residential buildings, it was assumed that average annual heating load per residence is 110 million Btu per year, for both space and water heating (Vermont state average). With 313 primary housing units in the town, this arrives at an estimated 34,430 MBtu annual total heat consumption. This translates to an estimated $650,000 spent in home heating in Grafton during 2014 (roughly $570,000 from primary residence owners and $82,000 from seasonal home owners).

The two primary sources for heating in Grafton are fossil fuels and wood, which make up almost 90% of Grafton's heat energy source. Wood is an abundant, locally grown energy source. Many residents own their own woodlots and processing and selling firewood is part of Grafton's economy.

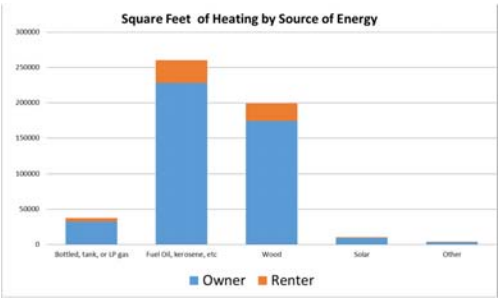


Figure #4

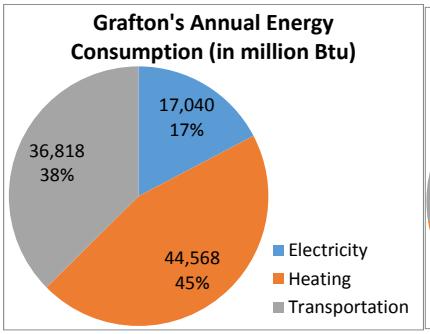
Commented [CW7]: Graph appears to come from the older energy data. No reason to believe the square footage has changed.

Our data source identified only seventeen (17) commercial buildings in Grafton. It is estimated that the average heating load of these establishments is 425 MBtu per year per building, which is well below the state average range of 700 MBtu to 750 MBtu per year per building. Based on these numbers, we estimate that commercial establishments use approximately of ~~7,233 Btu's~~ 7,225 MBtu's per year in Grafton. There was no data on the annual heating costs for commercial buildings.

Total Energy Costs

In sum, Grafton pays a staggering amount in energy across the three use sectors. The total estimated cost to the town for electricity, heating, and transportation is roughly $2.3 million per year. There are significant financial incentives for the town to move toward energy efficiency, on behalf of both the residents and its business owners.

Grafton, VT Energy Summary		
	Total Energy Consumption	**Total Energy Expenditures**
Electricity	17,040 MBtu	$716,625
Heating	44,568 MBtu	$994,584
Transportation	36,818 MBtu	$650,996
Totals	**98,426 MBtu**	**$2,362,206**



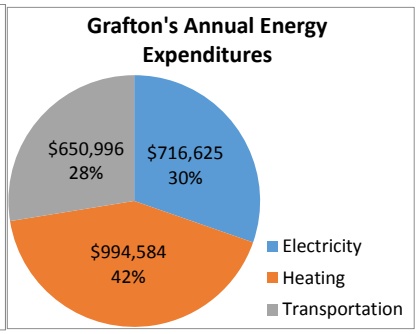


Figure #5 and Figure #6

Grafton's Energy Resources, Constraints, & Potential for Power Generation

Energy resources available in Grafton include wood, solar, wind and hydro energy. There is significant data available to make informed decisions about wind and solar energy, but there is less data available in regards to wood and hydro energy. Grafton's most used local energy resource is wood, which is renewable; almost 40% of the heat produced in Grafton is generated from wood. Continued burning of wood, along with the use of high efficiency wood stoves will be encouraged by the Town.

~~Grafton's most valuable resource is its dense historic village surrounded by its rugged, scenic landscape, including its undeveloped ridgelines.~~ As new power generation sites are considered, care must be taken not to significantly alter both the village and the surrounding scenic landscape, because Grafton's most valuable resource is its dense historic village surrounded by its rugged, scenic landscape, including its undeveloped ridgelines.

Wind energy has been a controversial and often talked about subject in Grafton since 2012, when an international wind company proposed a 28 turbine facility to be located on a large ridgeline that spans the Grafton and Windham town line. On November 8, 2016, with a vote of 235 to 158, the town voted against the proposal. ~~This vote sent a clear message that the Town does not view industrial or commercial wind power generation as appropriate for the Town of Grafton.~~ This vote is a strong indication that Grafton residents are opposed to industrial wind projects of that scale.

Finally, the rivers and streams that flow through Grafton have potential for hydroelectric energy generation. ~~the town are of utmost concern for several reasons.~~ Because of Grafton's high elevation, the headwaters of several streams that eventually become The Saxtons River. These headwaters are delicate ecosystems and must not be disturbed. Flooding of the village, as well as surrounding areas is also a concern. Any development of hydroelectric power should utilize run-of-river diversion with no

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significant impoundment of water. ~~Any development in or around streams of flood plains should be avoided.~~

Resource Mapping Process and Policy Tool

The suite of maps included with this Enhanced Energy Element were developed using state-wide GIS data that modeled resource potential for solar and wind energy, identified potential constraints on renewable energy development, and created an energy potential map.

This energy potential map provides energy planners and developers with a "coarse screen" method to roughly identify areas in Grafton that may have energy generation potential. These maps are not siting maps, and further site analysis would need to be done to determine if a proposed generation facility is appropriate and comports with Grafton's Town Plan policies. Instead, these maps provide Grafton planners with tools to develop sound and informed energy generation policies within this Enhanced Energy Element.

Solar Resource Maps

The attached solar Resource Map indicates that the Town of Grafton has similar modeled solar resource availability as compared to other towns in the region. The Town supports solar facilities that are properly sited, the where the development conforms to the siting policies outlined in this Town Plan.

Total acres in Grafton	24,456
Total acres available for prime solar (with no constraints)	659
Percentage of Grafton land	2.7%

Large scale solar projects require access to three phase transmission lines. Grafton has limited access to three-phase power, with lines only along Route 121 from Cambridgeport to the village and along Fisher Hill Road. Grafton also has a high voltage transmission line cutting across the southern and western corner of the town. This greatly limits viable locations for large scale solar projects.

Refer to the "Energy Goals, Policies, and Action Steps" section below for policy statements regarding solar generation.

Wind Resource Maps

The attached Wind Resource map indicates that the high plateaus on the western border of the Town and several isolated ridges within town are the only commercially viable location for "generally suitable wind for large scale commercial generation"~~, but~~ (as previously noted, the Town voted against a proposal on the western border ~~that~~ site in November, 2016. Residential or small-scale commercial wind turbines may be acceptable, as long as they conform to regulations for that respective land use, and do not adversely affect the surrounding landscape or communities through the diminishment of the natural environment, economics, or human health.