Proposed draft "Solar" and "Wind" sections for the revised Town Plan.

If the Select Board adopts this draft on Monday, October 3, then the 'Select Board draft would be forwarded to the Planning Commission for consideration at its meeting scheduled for Tuesday, October 11. We would request the Planning Commission to vote on accepting this draft.
I will also ask the Select Board to hold a special meeting on Wednesday, October 12 to address the results of the Planning Commission meeting.
This may seem to be moving rather quickly but we are in a position of having to do so. The Town Plan is more than three years out of date. It cannot be amended because of the tardiness and the proposed application for "Village Center Designation" and attendant possible grants must remain on hold. The current Plan with it's non-discussion of renewable wind and solar energy allows, by default, all proposals. This puts the Town in a particularly poor position should it have to appear before State agencies and/or negotiate with a developer. Finally, the voters of Grafton have a right to know what the Town Plan is expected to say about solar and wind development, once the Plan is officially adopted.

There are two versions currently before the Planning Commission. With respect to solar and wind energy, they tend to be diametrically opposed one to another. The third version given below represents a real compromise for the solar section and at least a movement away from the either/or choices on wind energy as now before the Planning Commission.

This draft does not address concomitant changes to other parts of the Energy Chapter that would become necessary if it were adopted by the Planning Commission. In particular, statements building upon VLCT Municipal Action Paper No. 3, a Collaborative Energy Development Resolution similar to that for the Town of Newark, and the recently released Vermont Department of Public Service Draft Energy Planning Standards would require to be incorporated. Those parts of the two versions currently before the Planning Commission which are similar to each other have been incorporated into this draft with little change.

DRAFT PROPOSAL:

SOLAR
The sun is earth's ultimate source of energy. Grafton has much of its settlement open to southern sun exposure which allows capture of solar energy. Where there is such southern exposure available on a residential parcel both solar thermal and solar photovoltaic technologies are viable passive technologies. Solar thermal energy can displace electricity and propane as sources of hot water. If new housing architecture follows good energy efficiency standards, which include passive solar, household heating by fuel can be reduced or eliminated.

In recent years there has been great progress in solar technology making it both more efficient and more cost-effective. Locally, both individual and shared (Community Solar) installations are increasingly common. The Federal Government incentive in 2016 is a 30% tax credit based on

the cost of installation. Vermont utilities will credit an additional 5 cents kwh above the current residential rate for solar generated power. These rates may change in the future. The net-metering law requires utilities to permit customers to generate their own power using small-scale renewable energy with the excess power being fed back to the utility for future credit. Excess production from one facility can also be credited to other customers within the same utility company territory through Group net-metering.

Municipal contracts for solar power credits (Community solar) are available from independent solar developers. Detailed and current information on net-metering and opportunities for businesses and homeowners can be found on the Vermont Public Service Board website: http://publicservice.vermont.gov/topics/renewableenergy/netmetering

Grafton is actively seeking solar sites that are in alignment with the overall land use goals of the Town, avoid erosion or loss of property value, and do not detract from the fundamental economic base of the Town -- namely a relatively high-end tourist, wedding venue, second homeowner, and retiree driven economy. To this end, ground-based solar systems within the planned Village Center Designation area should be avoided even on individual home sites. Rooftop solar systems would be appropriate within the Village Center area. Ground and roof systems for private use would be appropriate elsewhere in the Town although roof systems where feasible are preferable. Locating in floodplains is acceptable but locating in floodways would not be. Driven piles maintain ground absorption and minimize runoff while concrete bases do not. Grafton needs to keep what agricultural land it has (see Land Use Chapter) so that solar projects on agricultural land requires careful consideration of its suitability. Abandoned gravel pits and non-productive open areas are suitable. Community solar projects should be made available for businesses, homeowners, and renters who do not have suitable locations of their own.

Specifically, the Town owns land near the Town garage where conditions appear advantageous for a solar array. Three distinct parcels around the garage are all south to southeast facing. Altogether, the acreage could contain a 1.4 MW facility, enough to power 280 average homes. Private entrepreneurs are also engaged in identifying ground locations that appear suitable for a microgrid or a community array. An area in the Cambridgeport section could host a ground array with 300kW.

WIND

Large-scale commercial/industrial wind facilities are one potential source of renewable energy generation. In 2015, about 6% of the energy used in Vermont was provided by wind power. Currently there are four large-scale wind facilities in Vermont. They have generated a good deal of public discussion and media attention and, as a result, Vermonters are becoming informed about the positive benefits and negative impacts of such facilities. Some of the issues to be addressed in such projects and mitigated where possible by the developer of the project include: public health, property values, effect on the local economy, conservation of wildlife, endangered wildlife, watershed drainage, water quality, erosion and storm-water run-off. Since

the facilities need to be built where the wind resource is located (high altitude land and ridges) where headwaters of streams originate, careful consideration must be given to concerns about flooding. This is especially the case for Grafton which has experienced three devastating floods within the last twenty years. A 1998 NOAA/National Weather Service report on the 1996 Grafton flood (resulting in Grafton being declared a federal disaster area) noted the topological effects "with terrain forcing likely a major factor in determining where thunderstorms formed."

In addressing the issues of health and property values, setback requirements are increasingly common throughout the world. Jurisdictions have adopted setback ordinances ranging from less than one-fifth mile to one and one-half miles. A leading developer, Volkswind, recommends a one kilometer (six-tenths mile) setback in Germany but, surprisingly, only a one-half kilometer (three-tenths mile) setback for the United States. In the 2016 Vermont legislative session, bill H.677 was introduced but did not go forward. It would have required setbacks of "One and one-quarter miles from an occupied building, if the elevation change between the wind turbine and the occupied building is equal to or less than 500 feet." and "Two miles ... if the elevation change ... exceeds 500 feet." The issue of setbacks also involves whether the setback should be to the nearest dwelling or property boundary. Since one should be able to enjoy all of one's property, any recommended setback should be to the nearest property boundary.

Around the world, numerous cases of illness have been reported in relation to wind turbines. There is a relationship of reported illness based on distance from wind turbines. The wind industry argues that these illnesses are psychogenic in origin and, thus, not directly related to any effect from the operation of the wind turbines. There is no accepted resolution in the research literature as to whether or not these illnesses are directly attributable to the nearby wind turbines. What is clear is that many people have become ill. If we follow the prescription of "first, do no harm," suitable setbacks should be considered. A one mile setback from the nearest turbine to the nearest property boundary is a reasonable minimum.

There are many environmental concerns in addition to flooding that must be taken into account when considering industrial wind development in Grafton. These include the presence of wildlife and their critical habitat, particularly the well-documented bear habitat; the many fragile natural areas including wetlands and vernal pools; several listed high-elevation headwaters (Clean waters Act of The United States 2015) draining through rugged terrain; pristine views and natural quiet and darkness.

As noted above in the discussion on solar energy, it is equally important that industrial wind development not detract from the fundamental economic base of the Town -- namely a relatively high-end tourist, wedding venue, second homeowner, and retiree driven economy. Grafton depends to a large degree on tourism, being recognized as one of New England's most picturesque and historic towns. Many of its full-time residents and second homeowners are motivated to locate in Grafton because of its quiet, unspoiled, rural, and historic nature and, as with so much of Vermont, scenic vistas. These essential assets of the Town may change if

Grafton is the site of an industrial wind facility. A large-scale industrial wind project would substantially increase the Town's Grand List. However, much or all of this increase could be lost to decreased commercial and residential property values. A significant number of jobs in what is predominantly a service economy could also be lost.

Whereas there is a real opportunity based on suitable locations for Grafton to develop suitable commercial or community solar systems, this is not obviously the case for industrial wind development.

Although it would be difficult if not impossible to find a suitable location for industrial wind development in Grafton, small-scale wind power installations that serve homes or businesses may provide benefits to Town residents and business owners. With an average wind speed of 12 mph required for a 50% performance from most wind turbines it is likely that small wind assets will gain only limited popularity. The challenges of siting and the costs associated with such single-turbine facilities may discourage their widespread use given the available current technology. Some residents have installed turbines on their properties but eventually dismantled them because the wind resource was insufficient. Some residential locations may be such as to produce a sound that is disturbing to neighbors and should therefore be discouraged.