DRAFT outline for the revised energy chapter within Lyme's Master Plan

The current energy chapter within Lyme's Master Plan is just over 7 pages, with quite a few graphs and tables. This DRAFT outline presumes that we should shoot for a similar length – e.g., no longer than 8 pages – but if we have compelling content to include, I suspect we could go a bit longer if needed.

1) Introduction (1.0 page)
    a) Include a very small amount of global, US, and NH data and/or perspectives, in order to place Lyme within a broader context. For example:
        i) The only "native" energy resources that NH has are renewable: solar, wind, biomass, hydro
        ii) Climate change and local resilience suggest that NH (and Lyme) should strive to rely more-heavily on clean, renewable, local sources of energy
            - Increasingly, clean/renewable/local sources of energy save money as well, which is another reason for the Town to continue transitioning to them
        iii) NH's northerly climate means that heating is as much (or more?) of an energy consumer as are electricity and/or transportation (note: need to find data on relative rankings for NH)
            - But all three deserve our attention
            - In the future, transportation (and heating?) may become more electrified, which would increase the role of electricity and present opportunities for renewable electricity sources like wind and solar
        iv) At Lyme's 2020 Town Meeting, the Town voted to pass a goal of 100% reliance on clean, renewable sources of electricity by 2030 and clean, renewable sources for all other energy needs, including for heating and transportation, by 2050.
            - Lyme Energy Committee is working to implement and achieve this goal
            - There is more on this goal, and specific recommendations related to it, at the end of this chapter.
        v) Quick roadmap for how this chapter will proceed
            - Electricity
            - Transportation
            - Heating
            - 100% RE goal
            - Recommendations

2) Electricity (1.5 pages)
    a) Lyme is served by two electric utilities: Eversource and New Hampshire Electric Cooperative
        i) Though both utilities seem to be slowly moving towards cleaner sources of energy, there is still plenty of room for Lyme to do more, and to act more quickly than these utilities are likely to on their own
            - Present the fuel mix for each utility, drawn from annual disclosure labels for 2019 (update to 2020 once available)

b) Past Energy Committee efforts focused on electricity consumption in Lyme have targeted both energy efficiency and renewable energy (exclusively solar power), and include the following:
    i) Energy Efficiency
        - LED lighting upgrades (2017)
            (a) Town Highway Garage and Town Office Building
        - Weatherize Upper Valley (2018)
            (a) Provide a summary of number of audits completed, homes weatherized, etc.
            (b) Since then, ongoing weatherization efforts, targeted in particular at recipients of fuel assistance
    ii) Solar Energy
        - Solarize Lyme (2014)
            (a) Provide summary of systems installed – or refer to figure of Lyme PV deployment over time
        - Town office PV system (2017)
            (a) This installation has been cash-flow positive since day one (even after servicing the 10-year loan), and serves as a model for what we could do on a few other Town-owned buildings (e.g., the library, the new fire station)
        - Consistent with academic research showing strong "peer effects" (i.e., seeing a neighbor's PV system makes you more likely to install your own), residential PV deployment in Lyme has picked up the pace since the Solarize program ended (refer to graph of deployment over time)
        - Also mention the few non-residential systems? (Wagner, Crossroads, Lyme School, in addition to Town Office building)

3) Transportation (1.5 pages)
    a) Many Lyme residents commute to work and/or high school in more-populated towns just to the south of Lyme—Hanover, Lebanon, White River Junction—where there are a number of large employers (a college, several hospitals, manufacturers, etc.) as well as one of several high schools that Lyme students can attend
        i) Other than a daily school bus, there are currently no public transit options linking Lyme to the bus network in these employer towns to the south, which means many daily car trips
        ii) Fortunately, most daily commute distances are easily within the reach of current EV range
    b) Interest in, and deployment of, EVs has been growing in Lyme
        i) Summarize key data from Harry's EV survey, in terms of # of EVs, PIHs, etc.
        ii) Natural synergies with PV deployment to "green up" the bulk of home charging
    c) Note other transportation options, such as e-bikes?

4) Heating (1.5 pages)
   a) Due to Lyme's northerly climate, energy consumption for heating is significant (note: would be nice to dig up some data that we can refer to showing the relative ranking of electricity, heating, and transport in terms of total energy consumption in NH).
   b) No natural gas pipelines in Lyme; fossil fuel heating options are limited primarily to fuel oil and propane
   c) But wood is in widespread use, both in traditional (e.g., wood stove) and modern (e.g., pellet boilers) forms.
      i) There is a significant local wood pellet industry in Lyme and surrounding towns
      ii) Residential adoption has been significant
         - Numbers from Scott and Morty?
      iii) In addition, the Town of Lyme has been a pioneer in terms of using wood pellet boilers for municipal uses
         - Town Highway Garage installation back in 2003 (is that the right year?)
           (a) Any "firsts" to mention for this installation?
         - Lyme School pellet boiler upgrade in 2014 (is that the right year?)
           (a) One of the first systems in the state to qualify for and sell thermal RECs
         - Lyme Fire Station in 2020
         - Replacement of original Highway Garage system in 2021 (still uncertain)
   d) Looking ahead, heat pumps – both air-source and ground-source – are expected to make inroads.
      i) Air-sourced heat pumps paired with solar PV can result in relatively carbon-free heating
   e) Weatherization and passive solar design also help to reduce heating loads

5) 100% Renewable Energy Goal (1.0 page)
   a) As noted throughout this chapter, Lyme has made significant progress transitioning to clean, local, renewable energy in recent years, but much more can—and must—be done in order to (hopefully) avoid the worst projected impacts of climate change
      i) Fortunately, implementing such measures often saves money in the long run, making it a win-win for the Town
   b) To that end, in 2020 the Town of Lyme voted to pursue a goal of 100% reliance on clean, renewable sources of electricity by 2030 and clean, renewable sources for all other energy needs, including for heating and transportation, by 2050.
      i) Might be nice to flesh this out a little – e.g., Lyme's affirmative vote is part of a growing movement across the nation; Lyme is joining other UV towns that have also adopted these same or similar goals; etc.
      ii) Reasons for moving in this direction include x, y, z – pull from the Article language, where I think we listed some of these things like resilience, reduce fuel price risk, support local economies, etc.
   c) There is much work to done by all parties in Lyme – e.g., Town officials and staff, volunteer committees, and residents –to progress towards this ambitious goal
      i) Which leads to a set of recommendations…

6) Recommendations (1.0 page)
   a) Look over what is currently in there – retain any that are still relevant, get rid of those that aren't
   b) Add new recommendations focused specifically on moving us towards our RE 100 goal. For example:
      i) Consider community solar (or, more broadly, make sure zoning regs are workable from a community solar perspective)?
      ii) Encourage EV adoption, e.g., through the installation of a local charging station (or maybe through a reduced registration fee?)
      iii) Retain solar property tax exemption
      iv) Consider municipal aggregation for renewable electricity purposes
      v) I'm sure there are many other candidate recommendations that you all can think of…

   c) Make sure we include/retain recommendations about the following things:
      i) Select Board and building committees must always consider energy efficiency and renewable energy when there is work done on Town buildings
         - Town employees should recommend systems/fuels, but Select Board should be final decision-maker
      ii) Planning and zoning officials should take this Master Plan as a mandate to revamp or tweak zoning ordinances to be more-permissive on energy issues
      iii) Renewable Energy should be the default, not the alternative (but competition from fossil is welcome)

Member commentary:

From Harry

That's a really great outline. Here are a few thoughts:
1) If you need any additional data from US/world-wide usage, I can send you some slides from the Irving Institute Energy 101 sessions. They had quite a bit of that stuff.

2) For Recommendations, I see that Advanced Transit was mentioned on the 2014 but not here. Is this just because there's essentially no way that Advanced Transit will run a line (either extending the Brown line, or making a new line) this far?

3) One possible recommendation would be something like "Encourage/develop means to help small businesses or low-income households to overcome the high initial costs of implementing renewable energy options." I don't know if this is realistic, but one thing I could see doing is starting something like a "Lyme Energy Fund" into which we get people to contribute monthly. If we got 100 households to contribute $10/month, this would be $12K/year, which could help with roof re-building for solar, solar installation itself, or to off-set the cost of an EV. I am guessing we could probably do considerably better than $12K/year. Again, I am not sure how realistic this is.

Thanks,
Harry

From Mike

It looks pretty good.

One question I have is whether, given the 2020 vote, some of these items (notably town buildings, zoning, planning) should be incorporated into sections of the Plan other than the energy section. The current approach strikes me kind of like a supermarket that puts all of the healthy food in one isle, instead of having it in line with conventional products throughout the store.