Comments for the 2019 Energy Master Plan

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Maplewood's Experience over the Last Decade: Local Community Engagement Indicates the Need for New Directions

Maplewood Context

Maplewood committed to significantly reducing our Greenhouse Gas impact over a decade ago. We recognized early on that, in our town at least, a key locus of decision-making to achieve lower emissions was in the individual household. We hope that our experience can help inform the next Energy Master Plan by adding a voice of the individual household to the stakeholder input process. Our submission to this process is based on thousands of hours of volunteer work as intermediaries and advocates for the Clean Energy Program components and other ad hoc initiatives since 2006.

Maplewood is a heavily residential community with about two-thirds of our energy use in that sector. Industrial energy use is quite small; so much of the remaining third is commercial, including government and schools. Beyond government and school district operations, which account for a few percent of the total energy use, we have been unable to develop a good sense of the energy use patterns for the rest of the commercial sector. Maplewood's residential sector therefore has been our major focus. It is the area where we feel our experience will best contribute to the Plan.

Most of Maplewood's housing is single family dwellings build before 1940. Although the construction was typically of high quality, our experience says that almost every household could reduce its energy

use by 20% to 30% with a few, very cost effective, structural and behavioral measures. Beyond efficiency, we estimate that about 20% of households have suitable locations for solar installations, which would generate enough to cover most of their net-metered electricity use. For sake of clarity we split apart our residential energy efficiency experiences from our work with residential solar even though the outreach campaigns were not always so distinct.

Energy efficiency

Energy efficiency was to be a major part of our overall reduction strategy. However despite considerable work by our volunteer committees and the almost continuous support of the Maplewood Township Committee to encourage residents and businesses to take measures to reduce their energy use, there has been remarkably little progress in this area. Most of these efforts have involved promoting the NJ Clean Energy Program (NJCEP) components: first Clean Power Choice, later Home Performance with Energy Star, Comfort Partners, plus appliance and light bulb rebates/discounts. To a lesser degree we have also encouraged self-directed owner financed efforts and behavioral measures outside the NJCEP programs such as the federal Change-a-Light program. The uptake from these efforts has been quite modest despite our best efforts and learning-informed changes in strategy. We take little comfort from knowing that our experiences seem to be typical of other New Jersey communities that have made similar efforts.

No good data exists to capture all of the efficiency upgrades that have been implemented in Maplewood, but it seems likely that the number of comprehensive upgrades over the last decade is probably in the low hundreds out of about 6500 residences and dozens of commercial properties. We were able to get consistent quarterly community-wide utility use from PSE&G for the 2010 to 2015 (PSE&G changed its computer system in 2009 and stopped providing us with data in 2016). Overall we estimate that during the six-year period, residential electricity usage, corrected for seasonal temperature variations, declined about 2% to 3% while heating fuel use remained at the same level. Since heating is about three-quarters of the total household energy use, the overall reduction comes to less than 1% over six years. Clearly with programs in place over the last decade, Maplewood is not on a pace to meet the level of efficiency required to achieve the energy use reduction levels needed for an 80% reduction in emissions by 2050.

Areas for Improvement in the Next Generation Clean Energy Program

1. **Flexibility to pursue what works, not just a "one-size" fits all approach**
   New Jersey's communities vary considerably in the size and age of their housing stocks, as well as the fractions of single versus multi-family housing, income levels, and other key characteristics relevant to how they respond to residential energy efficiency programs. Most of Maplewood's housing stock was built between 80 and 100 years ago with some range of initial quality and subsequent non-energy upgrades. A significant majority are single and two-family owner-occupied homes. Because of their age, most houses can benefit from many non-energy upgrades and repairs that compete with energy efficiency upgrades for the owners' attentions.

It is our impression that past energy-efficiency promotion programs have been based on the premise that if homeowners find out about available programs and see them as at least slightly financially advantageous, they can be convinced to take on the necessary upgrades. We have concluded however that lack of information about available programs is well down the list of barriers to owners choosing major energy efficiency upgrades, so more is needed to tip the balance than better publicity programs with stronger incentives.

To be more effective, energy efficiency programs need to be tailored to get residents started on what will become a multi-year process, with support for taking care of quick success items, education about behavioral improvements, and a plan for longer-term measures. A residential energy efficiency strategy that starts small but encourages a transition to more comprehensive upgrades holds more promise. Owners need feedback along the way about what makes a difference, including financial and environmental successes and comparisons to progress being made by neighbors. Rather than being presented upfront with a daunting list of upgrades with a large price tag, owners need help developing a schedule of upgrades, with appropriate incentives along the way. These will be implemented when they make sense, for example when equipment needs to be replaced or other work is done which reduces the disruption inevitably caused by the energy efficiency measure.

2. **Contractor Focused Programs with Captive Customers Cause Distrust**

Too often the design of past NJCEP programs seems to direct contractors to make residential proposals for very large projects. While there remains an imperative to build up a base of high quality home efficiency contractors, this will best be done by expanding the volume of work being done, not by encouraging exclusive relationships between a homeowner and a single contractor.

The current Home Performance with Energy Star program comes across as merely matching residents with a contractor and then offering financial assistance if the project is big enough to meet ambitious efficiency targets. Too often the resulting project proposals are so daunting that homeowners recoil from taking any action. Low uptake means that considerable expenses come from doing audits that function as quotes, but end up having a low likelihood of work actually getting done. If the costs of these quotes are fully borne by the homeowner they come across as a serious barrier to starting efficiency work. Or if the contractor offers a deep discount to entice customers to get an audit, this becomes a business expense for them that needs to be recouped when some fraction of residents actually get efficiency work done.

A reconfigured Home Performance program or its replacement needs to focus intensely on getting homeowners started on the path to energy efficiency rather than trying to fix all of the house's problems in one fell swoop. More successful programs in other states such as the Mass Save program in Massachusetts, and even New Jersey's Comfort Partners program, start with a free baseline audit that includes some measures that have an immediate impact in both

eliminating low-hanging waste and consumer education. Once started, further incentives lead residents to take on measures that allow deeper efficiencies. There are now enough active programs elsewhere that benchmarking successful programs against New Jersey's past results should a foundation for the next Master Plan.

3. **Related Residential Improvements Needed to Switch to Electric Economy**
   Improved energy efficiency programs need to be combined with plans to facilitate the other major investments that will be needed to transition to a ultra-low carbon economy. Apart from the major investments needed to convert to heat pump based heating and electric vehicle charging, many of our older houses will need significant electrical service upgrades to handle the increased electrical loads. These are all sizeable and disruptive investments. They will need to become part of long-term efficiency plan and require subsidies and regulation if they are to take place universally in the timeframe of the next three decades. They are investments whose payback will be spread over decades and therefore require financing mechanisms that recognize their value in the price of the home at the time of eventual sale.

4. **Need Better Data about Energy Use**
   We were able to get quarterly community-wide totals of natural gas and electricity data for each of the three major sectors for almost a decade from PSE&G, but in 2016 this data source stopped responding. Despite numerous attempts we have been unable to find any usable data to measure and to gage progress on transportation energy use. Municipal and community efforts directed at energy efficiency are severely handicapped by this inability to evaluate, and report back to the community, the effectiveness of measures.

Residential Rooftop Solar

As of August 2018 there were close to 200 solar installations in Maplewood. That is approximately 3% of the total number of residential structures and perhaps one-sixth of the structures with suitable roofs. All installations are rooftop, and all but two are residential. Something like 80% of the structures are not suitable, usually because of shade but some because of the roof configuration. The 15% to 20% of remaining residences that are suitable for solar will be our local focus. There are a handful of medium-large commercial roofs that might be suitable, but beyond that there are not many real opportunities available for siting solar installations. There is essentially no open space in Maplewood where ground-mounted solar or even parking-lot canopies would make sense.

As much as we are advocates for solar, we also have to recognize that there is no imaginable scenario where the available renewable energy resources exist locally to meet more than a small fraction of our ambitious decarbonization goals. In this regard we are probably typical of most New Jersey communities. Offshore wind is the real opportunity but it is beyond our experience to suggest how towns like ours can actively participate locally in pushing this resource forward.

Our two extensive solar promotion campaigns in the last four years lead us to conclude that New Jersey needs to significantly revamp its solar program to complete the buildout of our solar capacity. Solar is but one means to achieve decarbonization and local residents and businesses are rate payers; so the cost effectiveness of the revamped program, in light of the full range of options, needs to be paramount. Despite its significant head start, we recognize that support for solar always needs to be fully integrated with other zero-carbon technologies (wind, efficiency, nuclear, peak demand reduction, and storage) into a comprehensive plan that most cost-effectively achieves the required carbon reductions.

Perspectives on Current Solar Support Programs to Inform Master Plan Changes

In that context let us share our perspective on the past solar support programs and how we have experienced them in Maplewood with the hope that our experience will help inform the future direction for the support for renewable energy. Three areas where improvements are needed stand out: financial uncertainty has been major barrier for residents, the current program has been disadvantageous to low- and moderate-income residents (but not in the way normally presented), and there are no good options for residents who are motivated to go solar but do not have a suitable site.

1. **Financial Uncertainty a Major Negative Factor**

   As we worked to encourage residents who had suitable roofs and good offers from contractors, neither we nor contractors could confidently tell them what their payback period would be because of the speculative nature of the SREC program. When combined with questions about how a solar installation would affect the resale value of a home this was far too frequently a deal breaker.

   The virtue of the SREC program is that it suggests a way, along with net metering, to recoup the initial investment in a solar system for 15 years. The problem is that the future value of SRECs is highly speculative. While it has been possible at any given time to sell future SRECs as much as five years out, the later years are highly discounted and there is no certainty of any future value. Residents do not feel like informed speculators so they need a level of certainty about future paybacks which the current SREC market is unable to deliver. If residents choose to go the Power Purchase Agreement (PPA) route, an investor assumes the SREC market risk but typically charges a substantial risk premium, significantly limiting the resident's financial benefit and consequently their interest in moving forward.

   We believe that the future program should provide much more assurance to residents about the financial stream. The new Master Plan is an opportunity to set targets for solar development, including a target for new distributed solar capacity, while providing incentives that are adjustable to meet the capacity targets, but are fully predictable to potential system owners.

2. **Recent Installation Trends Inversely Related to Income**

   We have heard often that the current solar policy has been a benefit for the well-to-do but is mostly a regressive cost to low- and moderate-income residents of the state. Maplewood's experience over the last several years indicates that this situation is more complicated than this assessment

would indicate.

Maplewood is an economically diverse town: the per capita income in its wealthiest Census Tract is double the New Jersey average, while that in our lowest income Census Tract is 18% below the state average. It is notable and interesting that 80% of new solar installations between the 2015 and the summer of 2017 occurred in Maplewood's two lowest income Census Tracts. And it is worth noting that a very high proportion of new installations were done as PPAs. Our anecdotal conclusion is that for some of our low- and moderate-income households the amount of savings that is possible for solar makes enough of a difference to the household budget, shifting the reward to risk ratio in favor of solar, in a way that it does not for higher income households

The first impression might be that Maplewood's lower income households are benefitting more from solar incentives than higher income ones. The problem with this impression could be however that the really big beneficiaries of the solar incentives might not be the households who take on PPAs but the investors who underwrite them and thereby profit from the federal tax benefits and the risk premiums built into the NJ SREC program.

Keeping in mind that the Energy Master Plan needs to find the most cost effective route to decarbonization while keeping energy affordable for all, it might be helpful to recognize more fully the intensity of motivation among some lower income households that we have observed in Maplewood. Consideration should also be given to the degree to which incentives for renewable energy are the means by which inherently regressive energy pricing mechanisms are corrected. A progressively variable rate of societal benefits charge that lowered the rate for lower levels of use but added a higher rate for greater use, in effect akin to a built-in carbon tax, would shift the burden to higher users who are also typically higher income.

3. Community Solar Not a Strong Option

Community solar is moving forward as an option to spread out the benefits of solar incentives. As detailed earlier there are almost no significant potential sites for community solar installation in Maplewood. In fact we have not been able to identify sizeable areas anywhere nearby. In any event it would seem to conflict with the intention of community solar if Maplewood residents were to invest in adjacent lower income communities like Irvington and Newark. Recognizing the value of allowing residents to invest and share the financial benefits of New Jersey's energy transformation, perhaps the Community Solar model can be expanded to support investment in other forms of renewable energy including efficiency and peak demand reduction in communities where solar is not feasible.