



## **ENERGY & CLIMATE COMMITTEE MEETING AGENDA**

Wednesday, June 3, 2020, 8:00 AM

**Virtual Zoom Meeting**

### **TO JOIN THE MEETING:**

- The public may join the meeting online by visiting [www.zoom.us/join](http://www.zoom.us/join) and entering the Meeting ID: **854 6847 7949**.
- If you are unable to attend the meeting online, you may listen to the meeting by calling the toll-free # (888) 475-4499 and entering the Meeting ID: **854 6847 7949**.
- More info on how to access this meeting is available on the Energy and Climate Committee webpage at [ci.keene.nh.us/energy-and-climate-committee](http://ci.keene.nh.us/energy-and-climate-committee).
- If you encounter any issues accessing this meeting, please call 603-757-0622 during the meeting.

### **Members:**

Dr. Ann Shedd, Chair  
Peter Hansel, Vice Chair  
Terry Clark, Councilor  
Jake Pipp  
Ken Dooley  
Cary Gaunt

Anna Schierioth  
Rod Bouchard  
Andrew Dey  
Zach Luse  
Meaghan Rafferty  
Paul Roth, alternate

### **Staff:**

Rhett Lamb, ACM/Community Development Director  
Mari Brunner, Planner

1. Call to Order and Roll Call
2. Approval of May 6, 2020 Meeting Minutes
3. UNH Sustainability Fellow Introduction
4. Energy Plan
  - a. Energy Plan Outline
  - b. Draft Chapter: Priority Implementation Tools & Strategies
  - c. Energy Plan Outreach Options
5. Legislative Updates
6. Communication: Letter from Mr. Russ Thompson, dated May 13, 2020
7. New Business
8. Next Meeting: Wednesday, July 1, 2020
9. Adjourn

**City of Keene**  
**New Hampshire**

**ENERGY AND CLIMATE COMMISSION**  
**MEETING MINUTES**

**Wednesday, May 6, 2020**

**8:00 AM**

**Remote via Zoom**

**Members Present:**

Dr. Ann Shedd, Chair  
Peter Hansel, Vice Chair  
Terry Clark, Councilor  
Jake Pipp  
Rod Bouchard  
Zach Luse  
Paul Roth, Alternate  
Andrew Dey

**Staff Present:**

Mari Brunner, Planner  
Rhett Lamb, Community Development  
Director  
Morgan Urquia, Community Development  
Intern

**Members Not Present:**

Anna Schierioth  
Cary Gaunt  
Ken Dooley  
Meaghan Rafferty

**1) Call to Order and Roll Call**

Chair Shedd called the meeting to order at 8:00 AM. She read a prepared statement explaining how Emergency Order #12, issued by the Governor of the State of New Hampshire, pursuant to Executive Order #2020-04, gives authority for public meetings to be held remotely. Ms. Brunner shared information about how members of the public can listen and share comments.

Roll call was conducted.

**2) Approval of April 1, 2020 Meeting Minutes**

Councilor Clark made a motion to accept the minutes of April 1, 2020. Mr. Roth seconded the motion, which passed by a roll call vote of 7-0. Mr. Dey did not vote, due to technical difficulties.

**3) Energy Plan**

**a) Draft Priority Strategies for Thermal and Transportation Sectors**

Chair Shedd stated that the draft list of priority strategies is in the agenda packet, and they discussed it at the last meeting. She asked Ms. Brunner to speak.

Ms. Brunner stated that there is a memo with a draft list of priority strategies on pages 14-15 of the agenda packet. She continued that she thought the easiest way to share the priority strategies would be through a memo that also explained all the other attachments. The priority strategies for the thermal sector came from the strategy prioritization survey and last month's discussion. She is bringing these back to the ECC a final time to make sure this is really what the committee wants to see in the plan as priorities.

Ms. Brunner continued that the first priority strategy is adopting a "Home Energy Labeling" program for residences, as the Northeast Energy Efficiency Partnerships (NEEP) representatives presented on in December. They described it as similar to a "miles per gallon" sticker, so that people searching for a home have another piece of information to take into consideration as they make their choice, and so they have an idea of how much they will be paying on energy bills. It also lets homeowners know if there are opportunities for energy efficiency upgrades.

Ms. Brunner continued that the second priority is a Benchmarking Ordinance, which would be similar to the Home Energy Labeling program but would be for the commercial sector – requiring buildings of certain sizes or in certain districts to report their energy use data to the City. A program like this would typically be rolled out over time, and the City or municipality would provide resources, such as EPA Portfolio Manager, to help people benchmark their energy use and water use. Sometimes a program like this would be paired with incentives.

Ms. Brunner continued that the third priority is to partner with existing weatherization programs to enhance public outreach and education, amplify impact, and increase capacity. This was not on the original list, but this came from the discussion from last month's meeting. There was a lot of interest in energy efficiency in general but people expressed concern about trying to create a brand new program when there are already so many existing ones they could be working with to leverage what is already out there and increase their capacity.

Ms. Brunner continued that the fourth priority is to provide education and information/resource sharing to increase awareness and understanding of energy efficiency and efficiency building design, including the benefits, available incentives, and so on and so forth.

The fifth is to explore options for a renewable district heating and/or combined heat and power pilot project, including possible public/private partnerships, grants and other funding opportunities. She has a note on this one to flesh it out more, into actual, concrete steps that can be taken.

The sixth priority, Ms. Brunner concluded, is to offer financial incentive programs to incentivize renewable energy for residents and businesses. Such programs could include local tax rebates

for renewable energy installations, tax credits, exemptions from property taxes, and zero interest and forgivable loans. These would help people afford improvements.

Mr. Hansel stated that he attended a Home Energy Labeling Information Exchange (HELIX) Program webinar, which summarized programs in neighboring states, about #1, the Home Energy Labeling program. He continued that there are some well-established programs in Vermont, particularly. Maine has a mandatory disclosure program for rentals. It was a very educational webinar and got him more excited about the possibilities for Keene. Chair Shedd asked Mr. Hansel to provide Ms. Brunner with information about the webinar, to share with the ECC. Mr. Hansel replied that he can see if a copy is available for the public. Ms. Brunner replied that she attended the webinar as well and has the recording she can send out.

Mr. Bouchard asked, regarding #2 (Benchmarking Ordinance), if they have discussed making that data publicly available once it is collected. That way, building owners can look up and see what similar buildings of similar sizes are tracking. Chair Shedd replied that EPA Portfolio Manager does include the opportunity to compare similar size and similar function buildings. She continued that she is not sure how deep into that it goes. She thinks it is geographically-based, so it is not a comparison of comparable-sized buildings in different climate zones. She asked Ms. Brunner if this is correct. Ms. Brunner replied that is her understanding. She continued that anyone who uses EPA Portfolio Manager could be doing this on their own right now and they could compare to similar-size buildings. She thinks it can be done by region, but she is not entirely sure. However, with a Benchmarking Ordinance, because the data would be shared with the City, it is possible to do what some municipalities have done – take any identifying information off of the data so they can say “Buildings of this size use an average of this much energy per square foot” and share that with the community. She has talked with staff in communities that have done this, however, and it seems like it takes a while to build up to that. They want to make sure they have a pretty high compliance rate first, otherwise people could still kind of figure out which buildings are being talked about, even if you take off identifying information. Making the data publicly available is a goal of the program but maybe not something they would be able to do right away. Mr. Bouchard replied that he was thinking it would be 2 or 3 years after the data was acquired and sorted, but it might be a useful database for developers, landlords, and people buying buildings – homes or commercial buildings.

Mr. Hansel asked – when they say the goal is to adopt a “mandatory” ordinance, isn’t it quite typical that it would start with voluntary practices and then move towards mandatory ones? Ms. Brunner replied yes. She continued that that would depend on the design of the ordinance, but what a lot of communities seem to do is start out with doing all of the public buildings for a year or two and putting that information out to the public just to show in good faith that the City is willing to do this, too, and then there might be a period of time during which people could voluntarily comply, and then they could incrementally require buildings of certain sizes to comply. They could design it so it was not something that everyone had to comply with overnight. Mr. Hansel replied yes, they could include language saying something like “this is a process that would be worked towards,” instead of adopted immediately and affecting everyone.

Ms. Brunner replied that is a good point. She continued that she will add something like “Start out as voluntary, and over time, transition to a mandatory structure” to #2. Mr. Hansel replied that sounds good, if the other ECC members agree with it.

Chair Shedd stated that she had a process question. When Ms. Brunner went through the 5<sup>th</sup> priority, she said that it would have to be fleshed out, but she would assume that for each of these priorities, the full Energy Plan will include action steps and timelines. Ms. Brunner replied that that is correct. She continued that is the point of doing this prioritization exercise. The plan will have a much longer list of potential strategies, but in terms of spending the time to delve deeper into certain strategies, they wanted to try and pick the top priority ones – that is the list they see today. Each of these six priorities would have a longer description, talk about potential funding sources, talk about potential partners, and have recommended implementation steps. All of this that will be going into the plan will also be brought back to the public for review and comment and eventually be brought to City Council. It will be important to have that information filled out a little more.

Chair Shedd stated that regarding these six particular priority strategies, numbers 1 to 4 deal with energy efficiency. Number five is the only one that deals specifically with thermal energy sources, and it does not look at other options. One of the earlier strategies they at least talked about was something like Massachusetts’ Heat Smart Program to increase the penetration of air source heat pumps. Finally, #6 does not really focus on thermal, specifically – it talks about incentivizing “renewable energy.” That is just an observation she made, as she looked these over and thought about refining them a little further.

Councilor Clark stated that these options are the ones brought to them by Cadmus. He asked if this would be the place to talk about whether the committee supports or opposes the expansion of fracked gas. And what is the definition of “renewable”?

Ms. Brunner replied that these are the priority strategies that the committee and staff worked on. She continued that the ones that Cadmus proposed are next on the agenda. There is a lot of similarity between these, because the Cadmus strategies are geared towards electricity and the thermal sector is geared towards heating and cooling, and both affect buildings. Number six, like Chair Shedd was saying, would apply both to strategies that would provide renewable electricity and renewable thermal energy. Just to clarify, these are not the strategies that Cadmus proposed, although there is a lot of overlap, such as the Benchmarking Ordinance.

Councilor Clark thanked her for the clarification and again asked about the fracked gas topic, and the definition of “renewable energy.” Chair Shedd replied that, had they been able to have the April community workshop, some of the focus of that would have been a discussion on what renewable energy is. She continued that she agrees that they need, somewhere in this context, to talk about the fuels that they are moving away from. She is not sure how to best fit that into this framework. She asked Ms. Brunner for her thoughts.

Ms. Brunner replied that it is an important question. She continued that during the agenda item “Energy Plan Outreach Options” she was going to ask the committee for ideas on how to replace that April workshop they were going to do, online. The committee has wrestled with the question a bit and they also need to get feedback from the community about how renewable energy is defined. Regarding getting to specifics such as fracked gas, what she has heard so far is that the committee would not consider that renewable energy, and #5 of the priority strategies would be trying to create something that could a viable replacement for fracked gas or a piped gas system. She asked if that answered Councilor Clark’s question.

Councilor Clark replied partially. He continued that he would then ask, straight out: is the committee going to recommend, in this Energy Plan, that the City pass a Resolution opposing the expansion of fracked gas. That is something looming very soon and it could have a huge impact on their efforts to move toward renewable energy. Chair Shedd replied that she would note that there is precedent, in some combination of the 100% renewables resolutions of other municipalities and/or their renewable energy plans to specifically call out no development of new infrastructure for fossil fuels. Councilor Clark replied that that is well put.

Mr. Hansel stated that he is wondering if #4 could be expanded to include increasing people’s awareness and understanding of alternative types of heating systems, like ground source heat pumps. He continued that the other possibility is incorporating Councilor Clark’s thoughts, not as a separate item, but into #5, referring to infrastructure as well as the renewable district heating. They could include some concept about providing infrastructure to encourage the use of renewable energy, as opposed to fossil fuels.

Chair Shedd replied that she believes that the entire document that will be the Energy Plan will include some “vision and values statement” that they had worked on before many of the current members of the committee were members of this committee. She continued that they will probably need to revisit that, in the process of completing the draft plan. She wonders if that would be an appropriate place to include statements about fossil fuel infrastructure.

Councilor Clark said that sounds good. He continued that this concern was that they should at least talk about it and decide one way or the other whether it should be a part of their recommendations.

Mr. Bouchard asked if the document could somehow include the encouragement of energy audits, to help determine the path forward for some of these projects. Chair Shedd asked if that could be paired with #1 and #2. Mr. Bouchard replied or even #3, because people will want to know how to approach a weatherization program and why you are doing it and what your goals are going to be. An energy audit would help layout your approach. It just seems like something that is not being addressed. Chair Shedd replied that it could be part of a weatherization campaign. She continued that Upper Valley was going to be releasing a guidebook on how it has done weatherization campaigns, and it includes broadened access to energy audits, at least for residential. She thinks there would be merit for including that as part of the benchmarking.

Ms. Brunner stated that she heard comments from Mr. Hansel and Chair Shedd about other renewable heating options that are not shown here. For example, the Heat Smart campaign that Chair Shedd mentioned, which is similar to a Solarize campaign – you would use the same model to get more cold climate heat pumps into the community. She continued that this type of program is usually geared towards residential and smaller businesses that could benefit from that type of technology. She was curious – if they are going to try and keep this list of priorities to five or six items, do committee members want to add that to the priority list? And if so, which of these six strategies would be bumped from the list?

Chair Shedd asked if it could be incorporated into #5. Ms. Brunner replied that they are pretty distinct things – a “renewable district heating and/or combined heat and power pilot project” is a specific strategy, whereas doing a renewable heating campaign like a Solarize campaign would be something separate. Chair Shedd replied that they are very different scales. Ms. Brunner replied yes, and the target audiences and steps to take would be different, too. The funding would be very different. It does not really make sense to combine them. They go together thematically, but if they are trying to provide more information about each of these, break out steps, identify potential partnerships, etc., it probably does not make sense to combine them.

Chair Shedd asked if #5 could be reframed as “Explore options for electrification of heating” and have subcategories like “having a more immediately accessible air source heat pump program” and “exploration of the renewable district heating and/or combined heat and power pilot project.” Ms. Brunner replied that they could, but that is still combining two different strategies into one. She continued that to take a step back: they are going to have a larger list of strategies in the plan. If the committee thinks it is more worthwhile to dig into the Heat Smart campaign right now, then she thinks they should just replace the renewable district heating strategy with the Heat Smart one and focus on that, since that is a more immediate one that they could do. Chair Shedd replied that that they need to remember they are looking at a 30-year timeframe for these strategies, so it probably does need to include near-term and longer-term strategies.

Mr. Hansel asked if they have talked about a Heat Smart campaign, stating that he does not remember that. Ms. Brunner replied that it was one of the strategies in the longer list that the committee got a meeting or two ago, but they did not get to it in their discussion. She continued that after that 2.5-hour meeting they had, she sent out the strategy prioritization survey, and it was listed in there, but they did not really go through and describe what it was. In a nutshell, it is taking the Solarize campaign model and repurposing it for renewable thermal technologies, like cold climate air source heat pumps. She talked with the Sustainability Officer in Northampton, MA – that community did a very successful Heat Smart campaign there, using the Solarize campaign model to get a bunch of air source heat pumps into the community. She thinks that program was geared toward residential but allowed small businesses to participate. It is a program with a different scale, aimed toward residential and small business, whereas a district heat program could serve larger commercial and industrial buildings.

Mr. Hansel stated that he agrees with Chair Shedd that something like this should be part of their initial recommendations because of the timeframe involved. He continued that people every day are making decisions about what they are going to invest in. If their current system is failing, are they going to replace it with the same, or look at something new? Somewhere in these six they should refer to the concept of changing your system to an electrified version of heat.

Chair Shedd stated that they should move on, given the time. Ms. Brunner stated that today she needs a confirmation of what she can move forward with, regarding these priority strategies.

Mr. Roth stated that #4 would address that, if they get the right information out, although it would not provide a program to do it, necessarily. He continued that he agrees with Mr. Hansel that they need to have short-term and long-term, because the lifespan of a residential heating system is 10-15 years.

Mr. Bouchard agreed. He continued that if they are talking about a renewable district heat program like what exists with Concord Steam, that is years away from possible implementation, so it would be better for #5 to be a shorter-term, achievable goal. Mr. Dey stated that he would support replacing #5 with a shorter term goal like Heat Smart.

Councilor Clark stated that from what he is hearing, this may not be ready for more staff work until they flesh it out some more. Ms. Brunner replied that she is bringing these to the group for confirmation today – it is fine to make changes today but she does not plan to spend another month discussing what the priority strategies should be, because she is trying to get a draft ready for when a UNH Sustainability Fellow arrives in June. She would like to know what the ECC's top five or six strategies are for each sector so she can start building out those sections of the plan.

Mr. Hansel stated that he would go with the suggestion of replacing #5 with a shorter-term one, like replacing fossil fuel heating systems with electrical energy sources.

Chair Shedd asked if there is consensus on that. Councilor Clark, Mr. Bouchard, Mr. Pipp, Mr. Luse, and Mr. Roth agreed. Mr. Roth stated that he thinks it will be addressed in other reports, but currently he will agree with replacing #5. Chair Shedd stated that she agrees but would like to frame it in a larger electrification of thermal heating and cooling thermal systems.

Ms. Brunner stated that it is a little challenging because the committee is only seeing distinct pieces one at a time, not everything together, but yes, she thinks the concern would be addressed in the overall plan. She continued that these would be just the priority strategies in the section where they have the implantation steps listed out. She wants to make sure people are aware – these are just a small piece of a larger document. There will be other sections of the plan that go into more detail about the overall approach.



Chair Shedd asked if the draft plan will be ready for the ECC next month and if there will still be opportunity for the ECC to edit it. Ms. Brunner replied that she is not sure if she can guarantee having the draft of the full plan completed by then, but she will have the major pieces of it.

Mr. Lamb stated that he thinks it is important to reassure everyone that the idea of a renewable heating district, in #5, can still exist. He continued that they are not walking away from it, just identifying a more near-term priority in this current list. And it does not mean it could not happen in the near-term if a third party or private entity like the one that approached the City several years ago came forward with a plan. They can put it in, even if it does not appear in the first six items on the priority strategies list. Mr. Hansel replied that he is glad he mentioned that, because he does not want the heating district strategy to disappear altogether.

### **b) Cadmus Report**

Ms. Brunner stated that this is the final deliverable that the City's energy planning consultants, the Cadmus Group, has been working on. She continued that there are a few changes from what the ECC last saw from them, the biggest being the updated data from Eversource. They have been working with them to do spot-checking of the data, making sure the data is correct, so there has been a pretty substantial change in the baseline data for the electricity sector. Before, the residential sector was showing as the largest energy user within the electricity sector and that has shifted quite drastically and now it is showing that about 70% is the commercial sector. That changed a few things, including the "business as usual scenario."

Ms. Brunner continued that the overall conclusion of the report was that community power, also known as community choice aggregation, combined with a virtual power purchase agreement (VPPA), would have the most far-reaching impact in our community, regarding moving towards the renewable energy goal. The next steps are to incorporate Cadmus's report into the draft Keene Sustainable Energy Plan document, and Cadmus needs any comments/feedback from the committee by Friday.

Chair Shedd stated that she, personally, still needs to better understand the potential of community power programs to incorporate demand management and local energy efficiency programs to include relatively local or regional renewable generation with or without the VPPA. What she understood from presentations from Clean Energy NH and Community Power NH is that those potentials are there without discussion of VPPAs. She needs more education on this piece, since it is something they are leaning on heavily for the electrical section of the plan.

Mr. Bouchard replied that he agrees 100%. He continued that he is one of the organizing members of those two organizations that Chair Shedd mentioned. He can send her a draft of a document they are just getting ready to release, which would address some of Chair Shedd's questions. They could then have a quick conference call to go over it.

Mr. Hansel stated that he has not had a chance to go through the revisions since the last version of the Cadmus report, particularly on the baseline information. He would like to read through that and give his comments to Ms. Brunner in the next day or two. Chair Shedd stated that she and Mr. Hansel, as Chair and Vice Chair, had additional time to review the report but at that point the Eversource data was not updated. Other than that, the report has stayed substantially the same. Ms. Brunner replied yes, the strategies in the report are the same as the ones shared at the April 2 presentation, which some ECC members attended.

Chair Shedd asked if the ECC needs to take action at this point to incorporate Cadmus's report into the Energy Plan. Ms. Brunner replied no, she just wanted to let everyone know that if anyone has feedback on Cadmus's report, she needs it by the end of the day on Friday. People can email her with comments or questions. Chair Shedd added that members of the public can share comments or questions as well by emailing Ms. Brunner.

### **a) Draft Priority Strategies for Thermal and Transportation Sectors**

Ms. Brunner stated that the draft strategies for the transportation sector starts on page 15 of the agenda packet. She continued that, based on the results of the survey and the conversation from the last ECC meeting, she tried to take what seemed to be the consensus around the top six strategies for the Transportation Sector. She combined some things. For the first strategy, they talked about Complete Streets and there seemed to be a number of people who thought it was important, so she added to it language about pursuing grants and making sure they have sufficient funding in the budget to maintain the existing infrastructure, because it goes along with that strategy.

The second priority strategy is the more general approach of working to accelerate the shift to electric vehicles and other alternative fuel vehicles. There seemed to be strong consensus that that should be a priority. Based on discussion, she added underneath that, "Install public EV charging stations" and a line about switching public buses to electric buses.

The third priority is "Continue to support the City Express and Friendly Bus program, and consider increasing support for this program and helping to promote and expand services/routes." The ECC had a long discussion about these bus programs and about how potentially increasing the times that the buses run or increasing the routes that they travel, thus making them more convenient for people to use, might help increase the services they provide. They also had a discussion about how these programs do not have enough funding to do that. She added that in because the ECC seemed to support it, but she wanted to check with them about this.

Ms. Brunner continued that priority strategy #4 is "Work with the Southwest Region Planning Commission (SWRPC) and other community partners to explore options for a multi-modal transportation center in Keene." She thinks it was Mr. Hansel who mentioned that it would be a timely project to include, as it already has a lot of momentum.

Priority #5 is “Explore intercity transit options for commuters along the Route 9 corridor between Brattleboro, VT and Keene.” She thinks this is something Cary Gaunt brought up. There are no current programs or plans that she is aware of addressing this need, so this would be starting from scratch. It seemed like there was a good amount of support among the ECC for this.

Priority #6 is “Advocate at the state and federal level for more funding to support EVs and other alternative fuel technologies, public transportation, and active transportation.”

Mr. Hansel stated that in both the heating and transportation sectors they are relying on transitioning toward electric use. He continued that somewhere in their plan they need to say that they also need to push the conversion of electricity to renewable energy, from Eversource or other sources besides what they generate in Keene. Because if they are pushing more toward electrifying transportation and thermal networks, they will need them to be converting more rapidly to renewable energy. Chair Shedd replied that that is relatively addressed in the electricity part of the Energy Plan as the overarching, “What will Keene’s energy demands be,” and foreseeing the electrification of transportation and thermal in projections of Keene’s future consumption. Mr. Hansel replied that he thinks she is right, but just wanted to make a point of it here, because it part of their strategy to drive the market in that direction.

Mr. Pipp stated that #3, when he read it, did not feel reflective of what the ECC talked about last month. He continued that somebody, he thinks Councilor Clark, was talking about how the budget is pretty small for the bus program. What the ECC wanted to see, which Ms. Gaunt brought up, was doing an analysis on the use, to figure out ways to make it more effective and serve more people, since it does often run empty or with one or two people. They would need more funding to do an analysis like that. As currently worded, #3 looks like it says “continue as is.” It says “consider” increasing support, instead of saying “increase support.” It sounds like ‘we’ll think about it.’ He would like to change the language there, to address more of what Ms. Gaunt and Councilor Clark were saying. He continued that 2.b. (encouraging buses to switch to electric) could maybe be dropped down to #3, to be included with the more specific points about the City Express.

Chair Shedd stated that she sees #5 as sort of subset of #4. If they are going to have multimodal that would include intercity transportation, so they would explore not only connection to Brattleboro but maybe also to the medical centers in Lebanon, to public transportation options like Amtrak in Brattleboro, to the municipalities to the east (both in the Monadnock region and beyond), public transportation options from Nashua to Logan Airport (for instance), and more.

Mr. Bouchard stated that he agrees that #5 is a subset of #4. Mr. Hansel stated that he agrees, and when Chair Shedd mentioned cities to the east, it made him think about how no one can get to Concord by public transportation, not even state representatives. Pointing out only Brattleboro is missing the bigger picture.

Mr. Bouchard agreed. He stated that the county nursing home in Westmoreland has employees from all over eastern VT, Brattleboro, and up and down the western side of NH, and every single one commutes via private vehicle. He sees that as melded into #4, not a separate item.

Ms. Brunner stated that maybe #5 could drop off of this priority list for now. She continued that it would still be in the plan as an option to consider in the future, but it sounds like to the ECC it is currently more of a priority to make sure they get the multimodal transportation center going, which could help support future intercity transportation options. Mr. Bouchard agreed.

Chair Shedd stated that one of the SWRPC presentations mentioned State plans that may include a connection to Concord by bus. She continued that just like how #1 has a. and b., she thinks “Explore intercity transit options” is a subset of #4. If they have a multimodal transportation hub, where is it taking people? They could tag that on to the efforts of the SWRPC and whatever comes out of the proposed Arts Corridor or others to potentially include the multimodal hub. There is some work in that direction already.

Ms. Brunner stated that they heard from Mr. Pipp on #3. She continued that she is curious to hear if others agree with his suggestion to change it to say “increase support and help expand the program,” or if they should take it off the priority list. Councilor Clark replied that that over the past couple years in the Finance Committee he has suggested increasing support, and has been told that they are waiting for a recommendation from the ECC. He continued that he thinks they should keep #3 in the priority strategies list and make the language stronger. Even with #5, where it says “explore” – he thinks it is the ECC’s job to make a solid recommendation. He can understand putting soft language there to stay in their lane, but he thinks they should make a recommendation that they increase support/do something, rather than just “consider” it.

Chair Shedd stated that she would like to keep #3 and say “Continue and expand support for the City Express & Friendly Bus Program,” which would include both the logistics of the ridership analysis and route analysis that have been mentioned and financial support. Mr. Roth stated that he thinks they should keep #3, because it is the short-term/long-term concept – they have to do something in the short-term to keep this program and increase it. Mr. Bouchard agreed, and suggested something like “Continue to strongly support, and increase support.” He continued that “Consider increasing support” is too wishy-washy.

Mr. Pipp stated that he fully agrees with Councilor Clark regarding the need for stronger language in certain areas. He continued that he brought that up last month with the electricity sector. Using words like “explore” leads him to fear that they will end up with a really nice report that sits on a shelf, as opposed to something that gets implemented. The report might end up being the needed catalyst for action, but he would like stronger language than “explore.” Regarding #3, he would say “Increase support,” instead of “continue” or “consider.” The word “continue” implies staying with the status quo. They need to increase what they are doing. He

does not think the City Express is strongly supported right now. As Councilor Clark expressed, it is rather under-funded.

Mr. Roth suggested changing the word “explore” to “promote.” That would be an endorsement. Ms. Brunner asked if he is thinking of, for #5, something like “Promote intercity transit options for commuters,” so that it is about commuters in general, not specific to the Route 9 corridor to Brattleboro. Mr. Roth replied yes. Ms. Brunner replied that that is helpful. She continued that she appreciates everyone’s feedback on #3 as well, and she is hearing consensus on the strategy to “increase” or “expand” support for the City Express & Friendly Bus Program.

Mr. Hansel stated that he agrees with Chair Shedd about combining #4 and #5, making that one strategy of the multimodal transportation center, which would involve increased intercity transportation options.

#### **d) Energy Plan Outreach Options**

Chair Shedd stated that her understanding is that the UNH Sustainability Fellow will be working with the City this summer on outreach options. Ms. Brunner replied yes, the main deliverable the intern will be working on is a “visual implementation roadmap.” It is about taking those priority strategies and the overall strategic approaches they talked about and laying it out in a more visual format so that people can more intuitively understand what the City is trying to do. To support that, the intern will also be preparing outreach materials. The person they have hired has a background in creating podcasts and doing audio storytelling, so there is potential there for telling success stories through that format.

#### **e) Keene Resident Energy Cost Survey Results**

#### **4) SolSmart Project Update**

Ms. Brunner showed a slide that gives a brief overview of what has been done. She stated that a lot of the work has been in the background. They completed the application and signed a “Solar Statement” committing to the program. Cadmus conducted a solar zoning review, and the Zoning Administrator signed the zoning review memo. Staff developed permitting checklists for residential and commercial solar, and that is currently under review. She continued that the slide then lists the next steps, which include posting the permitting checklists online, doing some program wrap-up with SolSmart and going through the application and get their designation, and receiving training from SolSmart. Once the City receives its initial designation, likely “Bronze,” they will have opportunities to increase to “Silver” or “Gold” in the future.

Chair Shedd added that for anyone who did not already know, SolSmart is a program that works with political divisions to help them have solar-friendly regulations. That is a quick summary. Ms. Brunner added that it a US DOE program geared towards reducing what they call the “soft costs” of solar and streamlining the process where it makes sense to do so.

## 5) Legislative Updates

Chair Shedd reported that municipal participants in Clean Energy New Hampshire received an email asking for combined action on a letter to the State about net metering legislation.

Ms. Brunner stated that staff received this letter yesterday, from Clean Energy New Hampshire, requesting that communities sign on to a letter addressed to the State legislature – all of the State representatives, Senators, and Governor Sununu - in support of “common sense net metering.” She continued that the letter asks the legislature to pass legislation that would expand the net metering project cap size. The letter argues that this issue is even more important because of the global pandemic and its economic impact. It is promoting a “common sense compromise approach” to increase the 1 megawatt cap to 5 megawatts for individual projects, specifically for political subdivisions of the state and low/moderate income community solar projects. The letter also states the signatories’ support for expanding the cap for businesses “after careful review by the PUC of the appropriate value of net metering credit for renewable projects that serve businesses.” She continued that the key takeaway is that this letter is specifically asking to increase the 1 megawatt cap to 5 megawatts for political subdivisions of the state and that includes SAUs, municipalities, counties, and so on and so forth; and low/moderate income community solar projects.

An ECC member asked how they define “low/moderate income community solar projects.” Ms. Brunner replied that it is defined in State law, because they have had legislation passed in the past that talks about low/moderate income community solar projects. She continued that she believes that it is already defined and they are just referring to a program that already exists.

Councilor Clark asked if the compromise referred to is to exclude private ventures. Chair Shedd replied that the last bullet on the slide [which shows current signatories] does show vague support for expanding the cap for businesses, with PUC review, so it is a compromise at least for the time being that would cover the political subdivisions and low/moderate income community projects.

An ECC member asked if they know who the sponsor was of this particular bill. Ms. Brunner replied that she does not believe there is a specific bill referenced in the letter, but the letter was written by Clean Energy New Hampshire.

Chair Shedd asked if the intent of the letter to State representatives, Senators, and the Governor fits with the mission of the ECC. She continued that she would say yes. An ECC member replied that he thinks it is a strong fit, and another ECC member agreed.

Chair Shedd stated that she would welcome a motion.

Mr. Bouchard made a motion for the Energy and Climate Committee to recommend to the City Council that the City of Keene sign the “Common Sense Net Metering Letter” shared by Clean

Energy New Hampshire on May 5, 2020 in order to show support for expanding the net metering project cap size from 1 MW to 5 MW for political sub-divisions of the state and low-moderate income community solar projects. Mr. Hansel seconded the motion, which passed by a unanimous, roll-call vote.

Chair Shedd stated that in terms of legislation, she also wants to bring to the ECC's attention (and Ms. Brunner will send a follow-up email) information that a 501©4 organization, the New England Ratepayers Association, has filed a petition with the Federal Energy Regulatory Commission (FERC), asking it to declare exclusive federal jurisdiction over wholesale energy sales from generation sources located on the customers' side of the retail meter. She continued that this basically guts net metering at every scale and would reimburse any sales from anything from your residential rooftop solar to the City's installation at Marlboro Street to commercial scale solar (or any renewables) only at the wholesale rate. They pushed to have this request fast tracked, with the deadline for interveners to file with FERC by May 14. There will be legal challenges to this, she is sure, but in the meantime, Ms. Brunner will send a summary of this challenge and information about how people, if they are so inclined, can communicate with FERC as individuals.

Ms. Brunner asked if Chair Shedd is looking for the ECC to weigh in on this, or just sharing the information so they can act as individuals. Chair Shedd replied that she is not sure what their status is, to recommend that the City be an intervener, because becoming one is a specific process. She continued that if the committee has enough understanding of this to express their dismay at this proposal, they could. Or express opposition to the proposed change.

Mr. Hansel replied that he is trying to think what they can do at this point – they do not have much time or much status. Anything they did would have to go through the City Council. He continued that at least the meeting minutes can reflect that the ECC is very alarmed by this prospect and they will be watching it carefully to see how they might be able to influence it in the future. He does not think they have time between now and May 14 to take official action. Councilor Clark replied yes, even if they went through the City Council, there would not be enough time to do a Resolution.

Chair Shedd asked if there is consensus that they are alarmed and opposed to this proposal to remove from State control the jurisdiction over wholesale energy sales from generators. Mr. Dey replied that he is alarmed and would oppose it. Mr. Hansel replied that he would add that individuals should do everything they can in their networks to get the word out about this. Councilor Clark stated that what former Mayor Lane did a few times was wrote a letter, instead of doing a resolution. Staff could ask that they suspend the rules tomorrow night [at the City Council meeting] and ask the Mayor to draft a letter about this disapproval. He believes they could get that done by tomorrow night. He asked if Ms. Brunner could put that together and coordinate with the City Clerk. Ms. Brunner replied that she can look into it – she is not quite sure what the process is. She asked if the idea would be to ask if the Mayor could write a letter opposing this whole process. Councilor Clark replied yes, the City Council would have to

suspend the rules, so that it would not have to first go through the committee process to see if the City Council would vote on sending the letter out if they could have a letter drafted in time by tomorrow night so that the councilors could look at it and see if that is something they want to do. They have done that in the past.

Mr. Lamb replied that staff would be happy to get that in motion, but he thinks the best way would be for Councilor Clark to introduce a letter or send an email to let the Mayor and the City Clerk know that the ECC wants to bring this forward and that it is time-sensitive and requires a suspension of the rules. Staff is happy to start a draft letter and let the City Manager know, if Councilor Clark can do the same through the City Clerk's Office and the Mayor. Councilor Clark replied that he would do that. Chair Shedd stated that she can share the letter that was sent by the chair of the Rindge Energy Committee, who is a retired engineer, as a starting point for drafting a letter. Councilor Clark stated that he will call the City Clerk and Mayor and see if they are willing to do this. He will call the Community Development Office after this to coordinate. He asked Chair Shedd to email him the letter from Rindge.

### **3) Energy Plan**

#### **c) Draft Thermal and Transportation Context and Baseline Chapters**

Chair Shedd stated that they are over time, but she wants to recognize Morgan Urquia's work on the thermal and transportation baseline sections of the Energy Plan. She asked if there is anything they should call out about this. Ms. Brunner replied that this is Ms. Urquia's last week with the City. She has done an amazing job wrestling with the assessing data and tracking down all the different data sources for the transportation sector, and put together draft chapters for those two sectors, specifically for the baseline and the context.

Ms. Urquia stated that one big change that has happened in the thermal context is that she has been spending much of the week investigating what "gas" could mean. She continued that in all of the charts one of the heat fuels listed is "gas," and Keene does not have natural gas. The recent updates she made in the last few days that do affect the thermal section are in the consumption section, taking out the "natural gas consumption," because that "gas" section is actually for the propane/air mix that Liberty Utilities uses. According to Liberty Utilities, Monadnock Marketplace is the only place in Keene that has natural gas. Thus, the gas numbers do not mean "natural gas" and she has updated that, calling it "propane/air." She continued that regarding the transportation section, they added a Complete Streets section since they added that to the priority strategies list.

Chair Shedd thanked Ms. Urquia for that update and for all of her hard work with this. She continued that anyone who has feedback can email it to Ms. Brunner. Mr. Hansel asked if they have a time limit for giving feedback on these two chapters. Ms. Brunner replied that she would recommend focusing more on the Cadmus report for now, since there are more time constraints with that. They could always return to these two chapters at the next meeting. It would be most helpful if ECC members could get their comments to her before the next ECC meeting, but staff



will be continuing to receive comments about the draft right up until they submit it to the City Council.

Mr. Hansel thanked Ms. Urquia for doing a great job.

6) **New Business**

7) **Next Meeting: Wednesday, June 3, 2020**

8) **Adjourn**

There being no further business, Chair Shedd adjourned the meeting at 9:34 AM.

Respectfully submitted by,  
Britta Reida, Minute Taker

Reviewed and edited by Mari Brunner, Planner

# CITY OF KEENE SUSTAINABLE ENERGY PLAN

## Draft Outline / Table of Contents

### I. Executive Summary

### II. Introduction

- a. Planning Context (Connection to CMP & other related planning initiatives)
- b. Planning Process – public outreach, consultant’s work, etc.

### III. Plan Vision, Goals, and Pathways/Strategic Approaches

*Note: This section is where we could define “renewable” in the context of this plan, state the goals, and outline the strategic approaches for each sector (e.g. “Reduce energy use for all buildings” and “accelerate the shift to EVs).*

### IV. Current Energy Context (overview of current policies, regulations, incentives, and baseline data)

- a. Electricity
- b. Thermal (Heating and Cooling)
- c. Transportation

### V. Priority Implementation Tools & Strategies

- a. Overview
- b. Table
- c. Tool / Strategy Descriptions

### VI. Appendices

# Keene Energy Plan: Priority Implementation Tools & Strategies

DRAFT – 5/29/2020

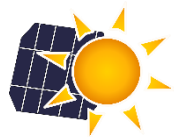
## OVERVIEW

The City recognizes that in order to meet its ambitious energy goals, the City and its community partners need to act now using the tools that are available today. Future technologies, policies and incentives will – and should – influence the specific actions and strategies that the City and others deploy to reach the energy goals by the 2030 and 2050 target dates. However, given the urgency of climate change and the short time frame for achieving the community’s energy goals, implementation must start sooner rather than later. To that end, the Energy and Climate Committee, with input from community members, identified a list of priority implementation strategies for the City to pursue in the near-term.

These priority tools & strategies fall into three broad categories:



**Energy Efficiency:** Many of the priority strategies focus on reducing energy use as a first and critical step in reducing the total supply of renewables needed to meet energy demand and control costs. This is especially true with the electricity sector, as the electrification of thermal and transportation energy consumption will lead to a substantial increase in total electricity consumption.



**Renewable Energy – Generation & Procurement:** In order to reach the 100% renewable energy goals, the City, businesses, and residents will need to both procure electricity from renewable sources and substantially increase local renewable energy generation.



**Fuel Switching:** The long lifespan of heating and cooling systems, vehicles, and new construction means that the City should start encouraging and supporting the replacement of fossil fuel systems with electric or renewable systems as soon as possible. Each fossil fuel-based vehicle and/or heating & cooling system purchased today will be around for years to come.

Table 5.1 summarizes the 20 priority implementation tools & strategies by category (energy efficiency, renewable energy, and fuel switching) and sector (electricity, thermal, or transportation). It also includes information about the potential lead organization for each strategy, potential partners, and implementation timeframe (1-2 years, 3-5 years, or 5-10 years).

**TABLE 5.1 - Priority Implementation Tools & Strategies**

	<b>Tool / Strategy</b>	<b>Description</b>	<b>Sector(s)</b>	<b>Lead</b>	<b>Partners</b>	<b>Timeframe</b>
Energy Efficiency	Benchmarking Ordinance	Require building owners of certain sizes or in certain districts to report energy use data to the City.	Electricity, Thermal	City of Keene	Business community, large energy users	1-2 years
	Home Energy Labeling Program	Require energy efficiency disclosure for existing and new residential properties at the time a property is listed for rent or sale.	Electricity, Thermal	City of Keene	Association of Realtors, NEEP	1-2 years
	Weatherization Program	Partner with existing weatherization programs to enhance public outreach and education, amplify impact, and increase capacity.	Electricity, Thermal	ECC/City of Keene	SCS, Eversource, Keene Housing	1-2 years
	Complete Streets Program	Incorporate the adopted City of Keene Complete Streets Design Guidelines (2015) into the City's street standards for new streets, and develop Complete Streets standards for re-construction of existing streets.	Transportation	City of Keene	SWRPC, MAST, BPPAC	3-5 years
	City Express Bus	Increase financial support for the City Express and Friendly Bus programs, and encourage HCS to expand services/routes.	Transportation	HCS	City of Keene, SWRPC	3-5 years
	Multi-Modal Transportation Center	Work with community partners to construct a multi-modal transportation center in Keene and promote inter-city transit options.	Transportation	City of Keene	SWRPC, Greyhound, HCS	5-10 years
	Advocacy for Public Transportation & Active Transportation	Advocate at the federal and state level for more funding to support public transportation and active transportation.	Transportation	ECC/City of Keene	MAST, MRCC	1-2 years
Renewable Energy	Community Power Program	Establish a Community Power Program to aggregate community load and purchase electricity from an alternate electricity supplier.	Electricity	City of Keene	Cheshire County, Other towns	1-2 years
	Virtual Power Purchase Agreement	Enter into a long-term, fixed price contract for renewable energy from a specific project (i.e. agree to a contract for differences, or CfD).	Electricity	City of Keene		3-5 years
	Pilot Battery Storage Program	Collaborate with Eversource to provide a pilot batter storage program for residents and businesses to reduce demand on the grid during peak times.	Electricity	Eversource	City of Keene	3-5 years
	Renewable Energy Loans	Partner with a local financial institution to create a loan product to finance renewable energy installations targeted at businesses or residents.	Electricity, Thermal	Financial Institution(s)	City of Keene	3-5 years
	Solar & EV Ready Guidelines	Adopt Solar & EV Ready Guidelines to encourage new buildings to be built in a way that accommodates future solar installations.	Electricity, Thermal, & Transportation	City of Keene		1-2 years
Fuel Switching	Heatsmart Campaign	Host a "Heatsmart" campaign to encourage the installation of renewable thermal technologies for space heating and cooling or for hot water heating through targeted local out-reach efforts and bulk discount prices.	Thermal	ECC / Community Volunteers	City of Keene, Local contractors	1-2 years
	Public EV Charging Stations	Install public EV charging stations (level 2 and fast-charge) in on-street parking areas and in public parking lots or structures.	Transportation	City of Keene	Eversource	1-2 years
	Electric Buses	Work with the Keene School District/local school bus company and HCS (City Express and Friendly Bus) to encourage switch to electric buses.	Transportation	First Student / HCS	SAU 29	5-10 years
	Advocacy for EVs and Alternative Fuel Vehicles	Advocate at the federal and state level for more funding to support EVs and other alternative fuel technologies.	Transportation	ECC/City of Keene	MAST	1-2 years
	Renewable District Heating system	Commission a study to assess the potential for a renewable district heating system in Keene to understand what areas of the city would have the appropriate demand characteristics to justify a district energy system, as well as what local renewable sources are available and at what potential and likely cost.	Thermal	City of Keene		3-5 years

## Benchmarking Ordinance

### Overview

A municipal and commercial building benchmarking ordinance is an effective strategy that enables building owners to **measure the energy efficiency of their building** against comparable buildings from across the country and **identify buildings that could benefit most from energy efficiency improvements**. The vast majority of building benchmarking ordinances rely on the use of the Environmental Protection Agency's (EPA's) **ENERGY STAR Portfolio Manager, a free online benchmarking tool** that helps building managers track data and measure progress. Portfolio Manager allows building managers to compare their building to similar buildings using the 1-100 ENERGY STAR score. Achieving a score of 50 would be considered the median, while a score of 75 would indicate that the building is performing better than 75% of its peers and may be eligible for ENERGY STAR certification. Portfolio Manager allows building managers to compare their building to similar buildings across the country, using the 1-100 ENERGY STAR score. Achieving a score of 50 would be considered the median, while a score of 75 indicates that the building is performing better than 75% of its peers and is eligible for ENERGY STAR certification.

Through the identification of inefficient buildings, a benchmarking ordinance can be effective in **driving increased participation in already existing energy audit and energy efficiency programs**, such as those offered through Eversource. These programs can accelerate the path towards decreased energy consumption, energy cost, and GHG emissions. Many benchmarking programs feature a public disclosure component, which can have beneficial impacts such as empowering prospective tenants to make informed decisions before entering into a lease agreement. Benchmarking programs can be **voluntary or mandatory**, include energy and/or water consumption, and can be customized by square footage and building type. For example, many benchmarking ordinances have **stricter reporting requirements for larger commercial buildings** that exceed a certain square footage threshold. Some benchmarking ordinances also link the program to mandatory energy audits or energy efficiency improvements for inefficient buildings. Since over 70% of total electricity consumption in Keene is associated with commercial and municipal buildings, a benchmarking ordinance has significant potential to reduce electricity consumption in Keene's existing building stock.

### Keys Benefits and Challenges

Key benefits and challenges associated with implementing a building benchmarking ordinance are summarized in the table below:

Key Benefits	Key Challenges
Identifies commercial and municipal buildings in Keene that could benefit most from <b>energy efficiency improvements</b>	Potential <b>political hurdles</b> associated with passing a mandatory ordinance through City Council
<b>Drives participation</b> in existing energy audit and energy efficiency programs offered through Eversource	Mandatory benchmarking <b>does not guarantee energy-efficiency upgrades</b> and improvements
Encourages utilization of, and recognition from, EPA's ENERGY STAR Portfolio Manager, a <b>free online benchmarking tool</b>	Potential issues with <b>data access, quality, and accuracy</b>
Opportunity for Keene to <b>lead by example</b> by benchmarking municipal buildings	<b>Compliance</b> with, and <b>enforcement</b> of, mandatory ordinance
Potential to link <b>financial incentives</b> to energy-efficient upgrades (see South Portland example below)	<b>Administrative burden</b> associated with ongoing support and management of the program

## Implementation Steps

Initial implementation steps for developing a building benchmarking ordinance are listed below:

	Implementation Steps
✓	Review EPA's list of <i>Benchmarking Programs and Policies Leveraging ENERGY STAR</i> <sup>i</sup> to get a sense of program design, requirements, and incentives being utilized by other localities.
✓	Consider a voluntary program to precede a mandatory ordinance.
✓	Draft ordinance language and pass through City Council.
✓	Develop or enhance a webpage to host relevant resources and materials.
✓	Determine which metrics will be disclosed publicly.

## Examples from Other Communities

This section includes communities that have implemented best practices related to implementation of municipal and commercial building benchmarking ordinances in the US. Each example includes a few key points and differentiating factors as well as a hyperlink to each ordinance. For additional examples, the EPA's ENERGY STAR program developed an interactive map<sup>ii</sup> to track benchmarking programs in the US that are utilizing Portfolio Manager in their ordinance. All of the ordinances listed below involve mandatory reporting requirements and utilize Portfolio Manager as the primary benchmarking platform.

### **Energy & Water Benchmarking Ordinance: South Portland, Maine<sup>iii</sup>**

Adopted in 2017, the Energy & Water Benchmarking Ordinance in South Portland, Maine requires all municipal, school, and commercial buildings larger than 5,000 square feet to benchmark and disclose their annual energy and water consumption to the city each year. The ordinance also applies to residential multifamily buildings with more than 10 units. In order to encourage increases in energy efficiency, the ordinance mandates that each covered property subject to reporting requirements must complete a building energy audit once every five years. However, while disclosure of the building energy use and periodic audits are required, the policy does not mandate buildings to meet certain levels of energy efficiency, reach energy reduction targets, or make energy-related improvements. Typically, it's uncommon for mandatory benchmarking ordinances to offer incentives, but in the case of South Portland, they offer a \$5,000 compliance incentive that can be used as a credit for future expenses stemming from city application, review, or inspection fees associated with construction or redevelopment projects at the property.

### **Building Energy Saving Ordinance: Berkeley, California<sup>iv</sup>**

Adopted in 2015, the Building Energy Saving Ordinance (BESO) in Berkeley, California requires that all covered buildings report their annual energy consumption. The BESO phases in reporting requirements by building size so that larger buildings over 50,000 square feet must report first in 2018 while smaller buildings, such as those below 5,000 square feet, are not required to report until 2022. Similarly, covered buildings over 25,000 square feet must conduct an energy assessment every five years while covered buildings below that threshold must only conduct an energy assessment every ten years. Berkeley also operates an Energy Efficiency Incentive Program that complements the BESO and encourages building upgrades and improvements.

### **Building Energy Use Disclosure Ordinance: Cambridge, Massachusetts<sup>v</sup>**

Adopted in 2014, the Building Energy Use Disclosure Ordinance (BEUDO) in Cambridge, Massachusetts is a time-tested ordinance that provides a wealth of resources and data that can be leveraged by those looking to create ordinances in other jurisdictions. Covered buildings include all buildings over 25,000 square feet, residential buildings with over 50 units, and municipal buildings over 10,000 square feet. Each of these building subsets are required to report energy and water usage to the city on an annual basis. The results of the reporting are publicly disclosed on a building-level basis on the Cambridge Open Data Portal. Cambridge also publishes annual reports, summary statistics, and compliance maps.

DRAFT

## Home Energy Labeling Program

### Overview

A Home Energy Labeling program provides an assessment of a home's energy performance, typically in MMBtu/year, and compares it to that of other similar homes. It uses the same approach as other labeling programs, such as miles-per-gallon ratings on cars, nutrition labels on food, and Energy Guide labels on appliances, to compare two "products." Homebuyers, homeowners, and renters can use this information not only to estimate energy use, but also to estimate energy costs and potential energy efficiency upgrades to make a home more comfortable and less expensive to run. When properly designed, home energy labels allow the consumer to make an informed decision about home purchases, rentals, or upgrades they can make.

A key benefit of Home Energy Labeling is its ability to help overcome the "split incentive," an often-cited barrier to energy efficiency for homes and rental properties. For new homes, the split incentive arises when builders have little or no incentive to build to higher efficiency standards, which is largely invisible to homebuyers and increases the build cost. A home energy label addresses this by adding visibility to the energy costs of operating a home, which in turn increases the marketability of homes that are more efficient and helps builders sell more quickly and for a better price.<sup>vi</sup> With rental properties, the split incentive arises when the building owner, who is responsible for maintenance and major appliances, does not pay for the energy that the building uses. In this case, a home energy label allows renters to understand how much they can expect to pay for utilities and more accurately compare the options available to them.

Local governments can adopt a Home Energy Labeling Policy to encourage or require a home energy label in real estate listings, at time of sale, point of lease/rental, at time of building renovation, and/or when major systems are replaced. Mandatory programs have higher rates of participation; however, they are often preceded by a voluntary program to help demonstrate benefits and provide proof of concept.

A variety of rating systems can be used for the scorecard, including DOE Home Energy Score (HES), RESNET Home Energy Rating System (HERS) rating, ENERGY STAR Certified Homes (HPwES), and state-created stand-alone scorecards (which are often tied to the modeling engines of other labels like HERS or HES). The scorecard should be designed to include metrics that are clear and easy to understand, are aligned with local and state policy goals, and allow for tracking progress on those goals. An example scorecard from Efficiency Vermont is shown on the next page.

#### *Common components of a Home Energy Label:*

- Home profile (year built, area, # of bedrooms).
- Details about home's current structure and systems.
- Home Energy Score, Energy Star score, or similar rating.
- Annual energy use and cost based on energy modeling.
- Home's carbon footprint.
- Custom energy improvement recommendations.



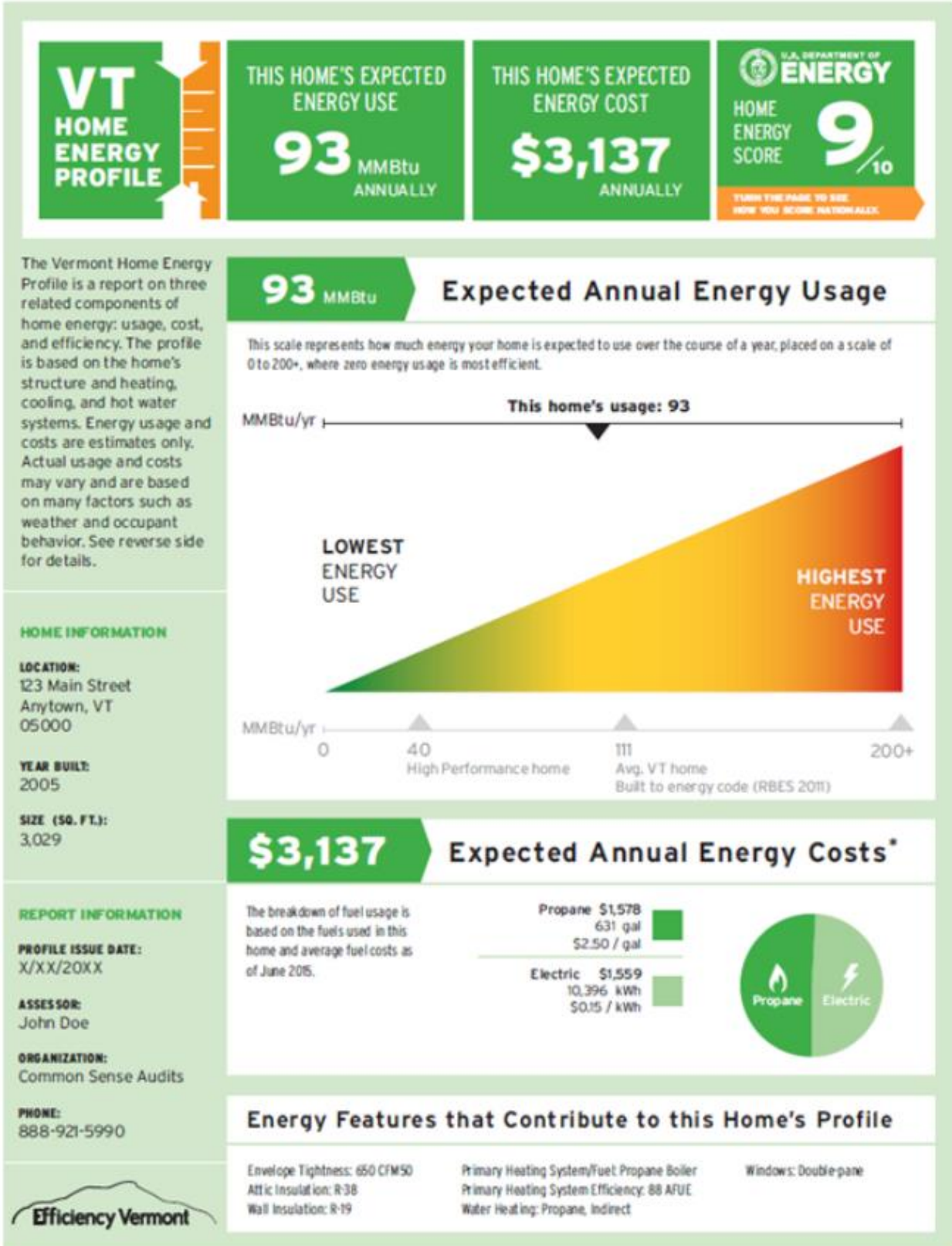


Figure 5.1. An example of the front page of the Efficiency Vermont Home Energy Profile.

## Keys Benefits and Challenges

Key Benefits	Key Challenges
Identifies rental properties and homes in Keene that could benefit most from <b>energy efficiency improvements</b> .	Potential <b>political hurdles</b> associated with passing a mandatory ordinance through City Council
Applies to both <b>existing housing stock</b> and <b>new homes</b> .	Mandatory energy labeling <b>does not guarantee energy-efficiency upgrades</b> and improvements
Provides consumers with <b>greater transparency</b> and a <b>measure of protection</b> when making large financial investment in a home or rental.	<b>Compliance</b> with, and <b>enforcement</b> of, mandatory ordinance
Helps to <b>overcome the “split incentive”</b> for rental properties and construction of new homes.	<b>Administrative burden</b> associated with ongoing support and management of the program
Potential to link <b>financial incentives</b> to energy-efficient upgrades	Requires <b>buy-in and support</b> from stakeholders groups including builders, real estate professionals, and contractors / appraisers.

## Implementation Steps

	Implementation Steps
✓	Review policies and ordinances from other communities to get a sense of program design, requirements, and incentives being utilized by other localities.
✓	Consider a voluntary and/or pilot program to precede a mandatory ordinance.
✓	Draft ordinance language and pass through City Council.
✓	Develop or enhance a webpage to host relevant resources and materials.
✓	Determine which metrics will be disclosed publicly.

## Examples from Other Communities

This section includes communities that have implemented Home Energy Labeling programs in the US. Each example includes a few key points and differentiating factors as well as a hyperlink to each program page. All of the ordinances listed below involve mandatory reporting requirements and utilize a variety of tools for reporting. For a state-by-state list of home energy labeling programs in the Northeast and Mid-Atlantic, see the Northeast Energy Efficiency Partnerships Residential Labeling Dashboard.<sup>vii</sup>

### Home Energy Score Ordinance: Portland, Oregon<sup>viii</sup>

The City of Portland adopted the Home Energy Score Ordinance in December 2016, which went into effect just over a year later in January 2018. The ordinance requires sellers to obtain a home energy performance report prior to listing their properties. The report must contain the DOE Home Energy Score and must be provided to prospective buyers and included in the real estate listing. Home Energy Score data is entered into a local Green Building Registry, which then auto-populates Portland’s local multiple listing service, which in turn, populates several consumer-facing real estate portals, such as Zillow and Trulia. Sellers who fail to comply with the ordinance receive a warning notice, and if the seller does not take corrective action within 90 days, they must pay a fine of \$500. The City of Portland maintains a dedicated webpage with information, tools, and resources to help support homeowners with compliance - [www.pdxhes.com](http://www.pdxhes.com).

### **Building Energy Saving Ordinance: Berkeley, California<sup>ix</sup>**

Berkeley's Building Energy Saving Ordinance (BESO) applies to 1-4 unit homes in addition to buildings of a certain size or greater. Homeowners are required to get a Home Energy Score prior to sale. However, this requirement may be deferred to the buyer for up to 12 months at time of sale. Data from the first year of the ordinance shows that the majority of homes scored lacked proper insulation and had single paned windows. The three most common recommendations included in Berkeley Home Energy Score reports to date have been floor insulation, attic insulation and air sealing, and installing a central gas furnace. In a recent report that evaluates the BESO program, recommendations for improving the program for 1-4 unit homes include requiring the Home Energy Score at time of listing rather than at time of sale, among other recommendations.<sup>x</sup>

DRAFT

## Support and Enhance Existing Weatherization Programs

### Overview

This strategy leverages existing programs and seeks to extend the reach and/or enhance the impact through local volunteer support for outreach, education, and marketing. In addition, it is possible that additional financial support could extend the eligibility of these programs to currently ineligible households.

There are a couple well-established, existing weatherization programs available to homeowners, renters, and businesses in Keene:

- **NHSaves** is a collaboration of New Hampshire's electric utilities working with the New Hampshire Public Utilities Commission and other interested parties. The program provides links and information on how customers can qualify for rebates and other incentives, including commercial and industrial energy efficiency options.<sup>xi</sup> According to Frank Melanson, Supervisor in Energy Efficiency with Eversource, the High Performance with Energy Star (HPwES) program, which assists homes with high heat fuel usages to transition to energy efficient appliances, has reached 17 households in Keene in the past 5 years, nearly doubling their 2018 totals in 2019 due to the success of the program. The **Home Energy Assistance Program (HEA)** has worked closely with Keene Housing and saw a dramatic increase in income eligible homes who are served by this program in recent years. In total, HEA has reached 124 homes in Keene in the past three years, 116 of which were in 2019. NH Saves Energy Efficiency Department predicts HEA will reach over 200 homes in 2020.
- Southwestern Community Services (SCS) **Weatherization Assistance Program** is designed to help reduce heating and other energy costs for income eligible households by improving living conditions and providing warmer, safer, and more comfortable homes. It also aims to **lower energy costs by 19 to 22** percent. Priority is given to the elderly, the disabled, and households with small children. Eligibility for the program is determined by gross household income and vulnerability to heating and electricity costs.<sup>xii</sup> In addition, the SCS **Heating Repair and Replacement Program (HRRP)** can help clients repair or replace their heating systems. Recipients must be income-eligible and receiving fuel assistance in order to qualify for HRRP. Assistance for heating replacement is based on availability of funds.

By hosting local Button-Up Workshops, organizing weatherization campaigns run by a group of volunteers, or even cost sharing to hire a local or regional NHSaves representative, the reach and efficacy of these programs could be increased by building off of their existing successes.

## Keys Benefits and Challenges

Key Benefits	Key Challenges
Leverages existing program structure and design + <b>builds on pre-existing success.</b>	Would require an <b>engaged group of volunteers</b> with a <b>high time commitment.</b>
Takes advantage of <b>utility/state funding, technical expertise, and preexisting infrastructure and programs.</b>	City not in direct control of program development and implementation + <b>success is largely dependent on Eversource / SCS being active + willing participants.</b>
Helps <b>lower energy costs</b> for residents and businesses.	Need to identify the <b>right points of contact</b> at all participating organizations. Partnership may require connection at the upper management/admin level.
Potential to <b>expand the reach of existing programs</b> to residents and businesses who do not currently qualify.	Due to the high percentage of rentals in Keene, <b>overcoming the split incentive</b> for rental properties could be a major challenge.
Opportunity to <b>support local economy</b> by engaging with <b>local contractors.</b>	

## Implementation Steps

	Implementation Steps
✓	Reach out to Eversource and/or SCS to discuss potential opportunities to collaborate on an existing weatherization program.
✓	Reach out to local energy groups / advocates to assess level of interest in volunteering or otherwise supporting a local weatherization program.
✓	Assign resources (volunteers, City staff time, and financial commitments).
✓	Develop or enhance a webpage to host relevant resources and materials.
✓	Measure and track metrics to evaluate program impact.

## Examples from Other Communities

This section includes examples of how communities have partnered with existing programs and utilities to enhance weatherization efforts.

### Weatherize Upper Valley: Weatherize Campaigns<sup>xiii</sup>

Coordinated by the nonprofit organization Vital Communities, Weatherize Upper Valley enlisted community volunteers to local outreach teams responsible for increasing participation in existing energy efficiency programs in New Hampshire (NHSaves) and Vermont (Efficiency Vermont). Energy consultants offered free or discounted home energy consultations, and the volunteer teams helped generate leads for the contractors, helping justify the discounted services. This approach created economies of scale in small communities and made the vendor selection process easier for participants. According to the Island Institute 2018 report, *“Bridging the Rural Efficiency Gap,”* Pilot Weatherize campaigns in 14 Vermont towns resulted in 100 weatherization projects in just six months, an increase of 40% above their typical annual average. During the program’s second round, six New Hampshire towns with virtually no history of weatherization projects helped weatherize over 90 homes with help from seven New Hampshire contractors.

### **Rural Alaska Community Action Program: Energy Wise Outreach Program<sup>xiv</sup>**

The Rural Alaska Community Action Program (RurAL CAP), formed in 1965, piloted their “Energy Wise” program in 2009 to help Alaskans reduce energy consumption, create local jobs and training opportunities, and save on electric bills and home heating costs. However, in an assessment conducted in 2011, insufficient public awareness was identified as a major barrier to program success. In order to address this barrier and improve public education and outreach, RurAL CAP developed a Community Energy Education Kit that utilized the existing infrastructure of the Energy Wise Program to pilot a public education delivery system. This system included the creation of nine different “Booth in a Bucket” hand-on science kits, which were featured at energy fairs in 13 Alaskan communities. RurAL CAP also created a “how-to” guide to replicate the bucket booth and energy fair model in other communities.

DRAFT

## Expand Complete Streets Program

### Overview

The City of Keene formally adopted a Complete Streets policy and a set of Complete Streets guidelines in 2015. The policy directs the City to consider and incorporate all modes of transportation and the safety needs of all users, including motorists, transit, pedestrians, bicyclists, seniors, youth, and persons with disabilities, when making improvements to existing infrastructure or building new projects.<sup>xv</sup> The Complete Streets Guidelines establish a street typology system, shown in Figures 5.2 and 5.3. The guidelines provide a checklist of recommended Complete Streets treatments, such as sidewalks, pedestrian crossings, green buffers, lighting, etc. that are appropriate for each street type.<sup>xvi</sup>

Since its adoption, the City has used the Complete Streets policy and guidelines to help guide decisions related to infrastructure improvement projects. The City has actively pursued grants to help offset the increased cost associated with these projects, including the NH DOT Transportation Alternatives Program (TAP) grant, the Monadnock Alliance for Sustainable Transportation (MAST) Complete Streets grant, and the US Department of Transportation Better Utilizing Investments to Leverage Development (BUILD) grant.

Providing funding for up-front capital costs as well as for ongoing maintenance of Complete Streets infrastructure is critical the success of the Complete Streets program. Often, the rationale for including or not including Complete Streets elements in a given infrastructure project is driven by the project budget. In addition, as the City has added new bicycle and pedestrian infrastructure over the past few years, the operational budget for maintaining this infrastructure has not increased. This puts a greater burden on existing resources and can cause delays in maintenance and upkeep of infrastructure, such as re-stripping bicycle lanes, crosswalks, and repair of pedestrian crosswalk beacons.

As a next step, the City should incorporate the adopted City of Keene Complete Streets Design Guidelines into the City's street standards for new streets, and develop Complete Streets standards for re-construction of existing streets. As part of this effort, the maintenance budget should be re-evaluated and adjusted to account for increased costs associated with Complete Streets infrastructure. In addition, the City should continue to pursue grant funding to install new infrastructure to support Complete Streets.

#### *What is a Street Typology?*

Typology classifies streets by roadway function and surrounding context, including right of way width, building types, predominant travel modes and land uses. The designation of Keene's roadways as different street types serves as a methodology to ensure that the design and use of a street complements the surrounding area and vice versa.



**Figure 5.2.** City of Keene Complete Street Types.

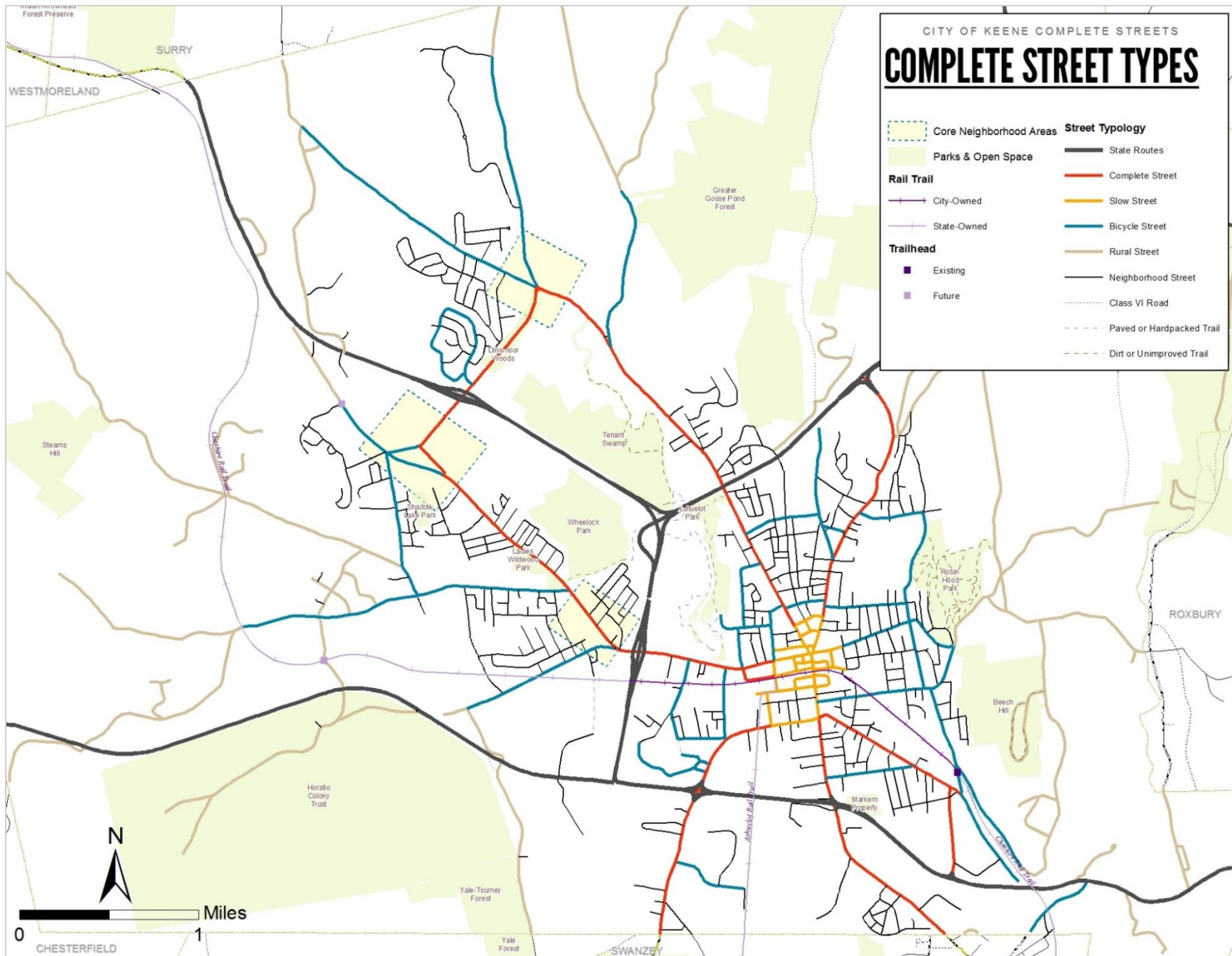


Figure 5.3. City of Keene Complete Street Types Map.



## Keys Benefits and Challenges

Key Benefits	Key Challenges
Increased <b>safety</b> for all users of the roadway. <sup>xvii</sup>	Constrained <b>right-of-way widths</b> of existing streets.
Increase in <b>foot traffic</b> and <b>economic vitality</b> of downtown centers and neighborhoods. <sup>xviii</sup>	Balancing <b>competing interests</b> of different users within the roadway.
Improved <b>public health</b> due to features that promote regular walking, cycling and transit use. <sup>xix, xx</sup>	<b>Increased cost</b> of already expensive infrastructure projects.
<b>Reduced barriers</b> for seniors, young children, people with disabilities, and individuals & families who do not own a motor vehicle. <sup>xxi, xxii, xxiii</sup>	Ensuring <b>adequate funding for maintenance</b> , repair, and operation of infrastructure.
Potential to increase <b>property values, support existing businesses, and attract new businesses.</b> <sup>xxiv, xxv</sup>	<b>Building and maintaining public support</b> for projects with a lengthy delay between planning/public outreach and construction.
Encourages people to take <b>more trips by foot, bicycle and transit</b> , with associated <b>reduction in GHG emissions.</b> <sup>xxvi, xxvii, xxviii, xxix</sup>	<b>Administrative burden</b> associated with developing and writing standards for existing streets, and revising standards for new streets.

## Implementation Steps

	Implementation Steps
✓	<b>Reach out to community groups and advocates to build public support.</b> The City of Keene has a long history of citizen support for Complete Streets dating back to the 1980s. Past initiatives include the 1987 Downtown Revitalization Project, which transformed Main Street from a wide, car-centric thoroughfare to a pedestrian-friendly downtown street, a 1999 Council policy to evaluate the installation of bike lanes during road construction projects, the incorporation of Complete Streets into the City's 2010 Comprehensive Master Plan, a 2011 City Council resolution to adopt a Complete Streets policy, and the 2015 Complete Streets policy and design guidelines. This existing momentum should be leveraged to demonstrate strong community support.
✓	Submit proposal to City Council for review and approval.
✓	Assign resources (City staff time and financial commitments).
✓	Develop Complete Street standards for existing streets, and incorporate Complete Street standards for new streets into City Code.
✓	Submit the draft Complete Street standards to City Council for adoption.
✓	Advocate for funding in the Capital Improvement Program and the annual City budget.
✓	Measure and track metrics to evaluate program impact.

## Expand and Improve City Express Bus Services

### Overview

The City Express Bus, operated by Home, Healthcare, Hospice and Community Services of Southwestern New Hampshire (HCS), is currently the only fixed-route transit system in Keene serving an average of 72 riders per day and over 30,000 rides annually.<sup>xxx</sup> There are two year-round bus lines that operate from 8:00 a.m. to 5:00 p.m. on weekdays, and a campus shuttle that operates during the Keene State College school year from 7:30 am to 7:00 pm, as shown on the bus route map in Figure 5.5. The program operates on an annual budget of about \$410,000.<sup>xxxi</sup>



**Figure 5.4.** Image of a City Express Bus. Source: [www.hcsservices.org/transportation](http://www.hcsservices.org/transportation)

It is possible that increasing hours of service and the frequency of bus stops would better serve a greater number of residents and increase ridership. However, doing so would require a significant investment of resources, and would not be possible without additional funding for the program and the full support of HCS and the New Hampshire Department of Transportation (NH DOT). Charlie Pratt, the Transportation Manager for the City Express Bus, estimates that adding an additional bus route would add approximately \$125,000 to the annual operating budget.<sup>xxxii</sup> HCS already has a spare bus; however, there are significant costs associated with maintaining and operating the bus, as well as hiring a bus driver. Mr. Pratt notes that the City Express program is always thinking about ways to increase ridership and better serve its riders, and would like to expand services if the resources are available.

Operating costs for the City Express are based on a number of variables, including the number of bus routes offered, the level of service on each route, the span of service (start and end time for each route), and the number of days that the service is operated. Before making a decision to expand service, careful study is required in order to determine when and how to make investments to expand or improve services. Conducting a study and comparing various route alternatives can also help to build the case for additional funding from major funders, including the Federal Transit Administration (through the NH DOT) and local match providers (City of Keene and HCS).

In 1999, Southwest Region Planning Commission (SWRPC) completed a planning study to support the design of a proposed service expansion for the City Express Bus in 2000.<sup>xxxiii</sup> At the time, the City Express operated a single fixed-route bus with limited hours, serving primarily area elders for daytime trips between housing, services, and shopping. The NH DOT, HCS, and City of Keene identified a need and opportunity for expansion of public transportation services in Keene in order to better serve residents without reliable access to personal transportation. Ultimately, many of the findings and recommendations from the study were implemented, including the addition of a second bus route; however, some of the recommendations have not been implemented.

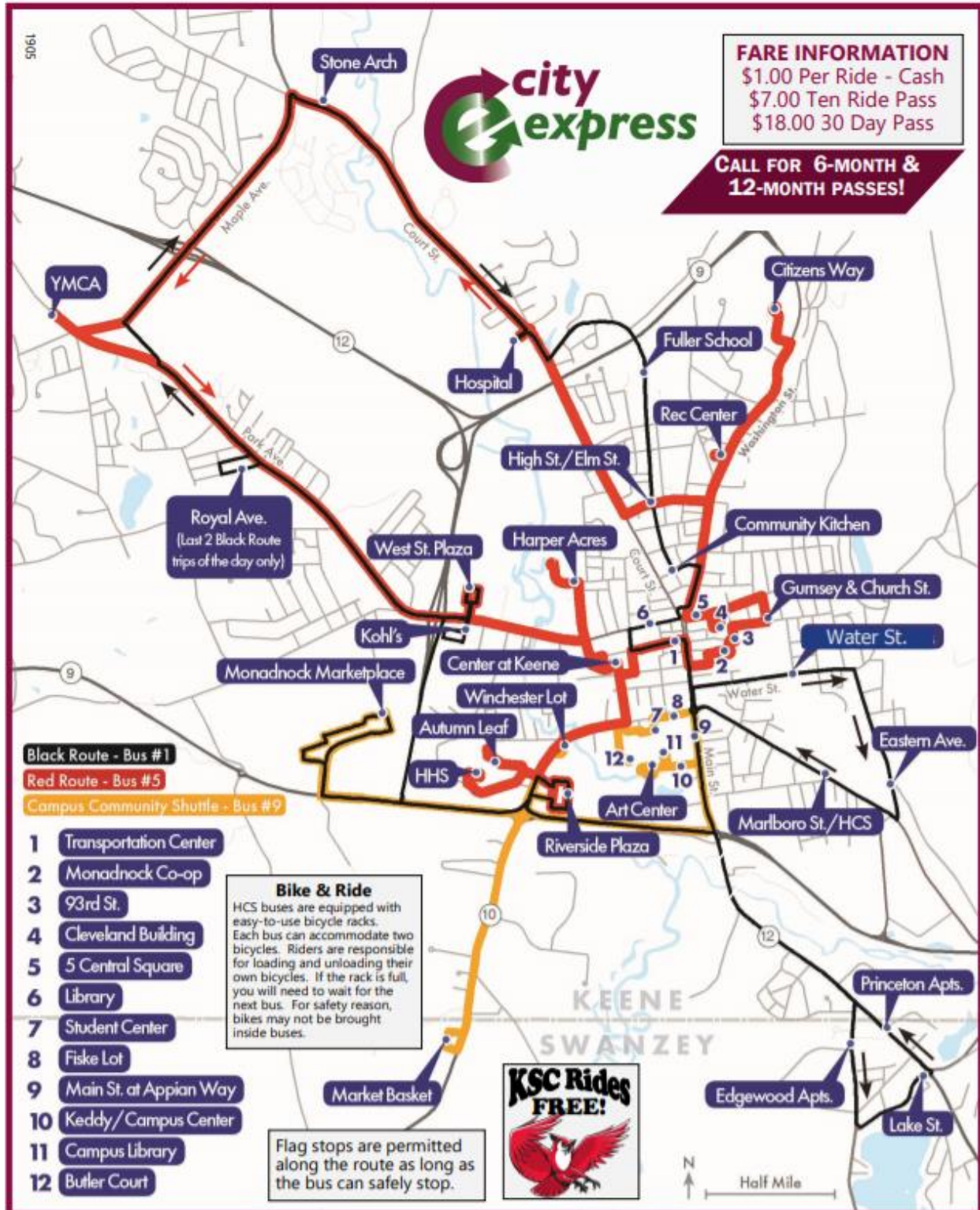


Figure 5.5. City Express Bus Route Map. Accessed on May 27, 2020.

## Keys Benefits and Challenges

Key Benefits	Key Challenges
Enhanced mobility and transportation choice for people without reliable access to a personal vehicle.	Requires <b>up-front capital investment</b> in buses and supporting infrastructure.
Equitable and affordable transportation option.	Securing funding for high ongoing <b>maintenance and operational costs</b> .
Moves people <b>more efficiently</b> and produces <b>less air pollution</b> per passenger mile than a single occupancy vehicle.	<b>Lack of public awareness</b> and understanding of benefits of public transit as well as needs and funding sources.
Potential to <b>reduce traffic &amp; parking congestion</b> .	Effectively <b>advertising and marketing</b> to potential riders to increase ridership.
Potential to support <b>economic development</b> by shifting consumer expenditures, creating local jobs, improving access to education, job training, and employment, and increased property values. <sup>xxxiv</sup>	<b>Less convenient</b> than a door-to-door service or personal vehicles.

## Implementation Steps

	Implementation Steps
✓	<b>Conduct a study to assess opportunities for expanding and/or improving City Express Bus Services.</b> The most recent study for the City Express Bus was completed in 1999; however, local markets and conditions have shifted since that time. A new study could help identify potential new routes or expansion to existing routes, and/or improvements in service, that would be most effective at increasing ridership.
✓	<b>Provide ongoing education</b> to local employers and public regarding the benefits of the City Express Bus to both riders and non-riders, as well as the needs and funding requirements for the bus service.
✓	<b>Advocate</b> for more federal and state funding for public transportation. Work with local community partners, such as the Monadnock Region Coordinating Council for Community Transportation (MRCC) and SWRPC to educate decision-makers about the need for additional public transportation funding.
✓	<b>Pursue new funding sources</b> to supplement existing sources, such as grants, matches from local institutions that benefit from the bus service, and support from not-for-profit organizations and charitable foundations.

## Multi-Modal Transportation Center

### Overview

A multi-modal transportation center is a facility that ties together several modes of transportation, such as driving, fixed-route bus transit, intercity bus transit, bicycling, walking, car-sharing, and more. It provides a convenient location for travelers to transfer among multiple types of transportation in a comfortable and attractive environment. Potential features include short-term and long-term parking, bicycle parking & storage, passenger waiting areas, carsharing services, EV charging stations, and dining facilities and/or vending machines. Southwest Region Planning Commission (SWRPC) is currently in the midst of a study to better understand what services would be most appropriate and beneficial to include in a multi-modal transportation for Keene and the surrounding region.<sup>xxxv</sup> This study will also evaluate potential sites where a transportation center could be located. Following the conclusion of this study, the City should review the recommendations included within the report and determine whether to pursue construction of a multi-modal transportation center.

### Keys Benefits and Challenges

Key Benefits	Key Challenges
Enhances the <b>image and effectiveness</b> of public transportation and other transportation options.	Providing <b>sustainable funding of operation and management</b> through revenue from meters, permits, and fines.
Increases <b>mobility</b> and <b>transportation choice</b> for people without reliable access to a personal vehicle.	Managing impacts to parking, traffic, and existing transportation system <b>during construction</b> .
<b>Improves connections</b> within Keene and the region, and between the Monadnock Region and other regional centers.	Securing grants, private investments, and other funding sources to <b>cover the up-front cost</b> without increasing the tax burden.
Potential to <b>support existing and future intercity transit</b> , including possible connections to Brattleboro, Concord, and Boston.	<b>Political challenges</b> with funding and supporting a high-cost, long-term capital project.
If located in the downtown, <b>potential to meet parking needs of businesses</b> that do not have the opportunity to provide on-site parking.	

### Implementation Steps

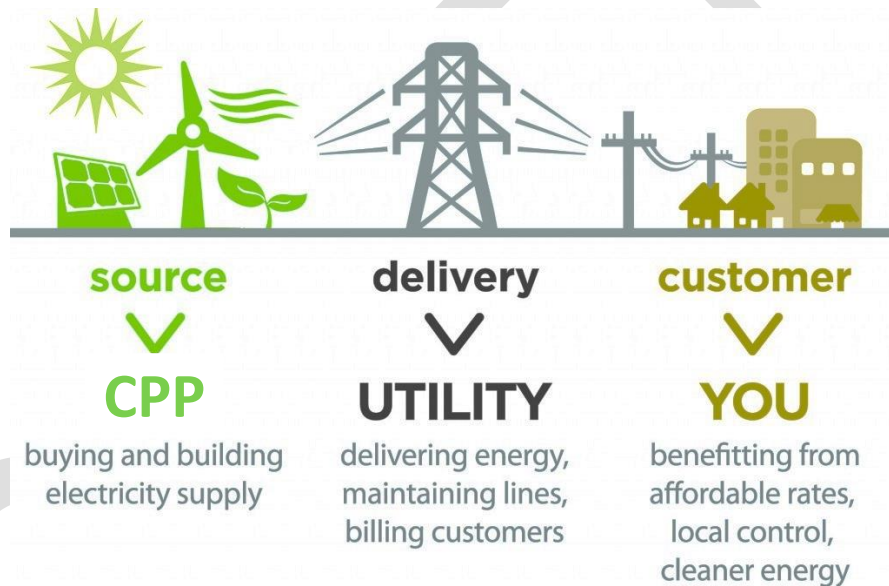
	Implementation Steps
✓	<b>Review the results and recommendations of the Greater Keene Intermodal Transportation Center Feasibility Study.</b> According to JB Mack, Principal Planner for SWRPC, this study is due to be released in the summer 2020.
✓	<b>Build a coalition of advocates and community supporters</b> to demonstrate public support for a multi-modal transportation center.
✓	<b>Provide education and outreach</b> to increase understanding among the public, large employers, and decision-makers of the potential benefits of a multi-modal transportation center in the Keene area.
✓	Work with decision-makers to <b>select a location</b> for the transportation center.
✓	<b>Pursue funding sources</b> to cover project costs, including land acquisition (if necessary), project design, and construction.

# Community Power Program

## Overview

A community power program (CPP), also known as community choice aggregation (CCA), enables a local government (or multiple local governments) to **pool the electricity load of residents and small businesses and procure electricity on their behalf**, while the utility continues to be responsible for electricity delivery, transmission, and distribution and maintenance of poles and wires. Community power programs (CPP) are “opt-out”, meaning that residents and businesses would participate in the program by default, but would have the option to “opt-out” if they preferred to receive basic service from Eversource or purchase electricity from a competitive supplier. This is an impactful strategy because it provides New Hampshire communities with **greater control over their energy mix and the opportunity to increase the percentage of renewables** within the mix at potentially lower energy prices.

Figure 1: How Community Power Programs (CPP) Work<sup>xxxvi</sup>



Source: Adapted from LEAN Energy

## Key benefits and challenges

community power program are summarized below:

associated with establishing a

Key Benefits	Key Challenges
Increases <b>local control</b> over the energy supply mix	<b>Political and regulatory uncertainty</b> in New Hampshire
Provides the ability to <b>increase the percentage of electricity from renewables</b> through RECs	<b>Limited ability to achieved “additionality”</b> due to reliance on RECs (see description below)
Potential <b>cost savings</b> to the community	Some <b>administrative burden</b> on city staff to set up program and identify a broker
Potential expansion in the future to <b>drive local renewables, energy efficiency, and other innovative offerings</b>	<b>Political coordination required</b> with neighboring communities if Keene wants to enhance economies of scale

When implementing this strategy, it will be important to have a strong understanding of renewable energy credits, or RECs. RECs are tradeable, market-based instruments that represent the legal rights to one megawatt-hour (MWh) of renewable electricity generation. There are two main types of RECs:

**Unbundled RECs:** Unbundled RECs are those that are sold, delivered, or purchased separately from physical electricity. Many CPPs rely on unbundled RECs as the primary means of increasing the renewable percentage of the electricity product delivered to customers. The key advantage of unbundled RECs is they can be sourced from renewable energy projects across the country, are relatively low cost and simple to procure. However, Unbundled RECs are often criticized for capitalizing on the presence of existing renewable energy projects and not driving the development of new renewable energy projects that would not have otherwise been built. Thus, unbundled RECs are generated by renewable energy projects that are referred to as “**non-additional**”.

**Bundled RECs:** In contrast to unbundled RECs, bundled RECs are sold together with the physical electricity generated by a specific renewable energy project. Bundled RECs, and their associated clean electricity, are typically procured by CPPs through PPAs or VPPAs (see Strategy 2 below). Advantages of bundled RECs are that they drive the development of new (or “**additional**”) renewable energy projects that would not have otherwise been built (i.e. **achieving additionality**). However, identifying and contracting electricity that is bundled with RECs can often be more administratively burdensome, and sometimes more expensive, for CPPs.

CPPs, especially in early stages, often rely on unbundled RECs to increase the renewable percentage of the electricity product delivered to customers; however, it is possible to shift towards bundled RECs over time as the CPP program generates revenue and potentially partners with neighboring communities to increase scale.

### Implementation Steps

Initial implementation steps for establishing a Community Power program are listed below:

	Implementation Steps
✓	<b>Conduct research</b> on community power and its potential role in achieving local RE goals.
✓	<b>Form an electric aggregation committee</b> or designate an existing committee to develop a Community Power Plan.
✓	<b>Gain local approval</b> for the finalized Community Power Plan from the local legislative body (e.g. City Council).
✓	<b>Select a supplier</b> and enter into a short-term (1-3 year) contract to supply residents and businesses with a greater amount of renewable electricity.
✓	<b>Notify residents &amp; businesses</b> about newly formed program and ability to opt-out prior to service beginning.

### Key Examples from Other Communities

A number of communities are establishing community power programs across the country and within the region. As of 2017, there were approximately 750 operational CPPs procuring electricity on behalf of about 500 million customers.<sup>xxxvii</sup> While these programs operate differently across states due to state-level regulation, CPPs in Massachusetts operate similarly to how they would operate in New Hampshire. Although there are no New Hampshire towns or cities that have

actually launched a CPP, state legislation does allow this method of energy procurement and there is growing interest across several communities, with some in the advanced stages of the planning process. New Hampshire communities have the ability to pursue a CPP through the standard single procurer model, and there is some interest in a regional approach that would involve multiple communities combining their energy purchasing power to achieve economies of scale. This latter type of CPP is referred to as the alternate or “joint-office” model.

### **Cambridge Community Electricity: Cambridge, Massachusetts<sup>xxxviii</sup>**

One example is the Cambridge Community Electricity (CCE) program, a city-run aggregation program established in 2017. CCE selected Direct Energy as the program’s electricity provider from January 2019-2021 and will offer fixed electricity prices throughout this contract duration. This type of CPP program, where city staff interact with a single electricity broker, is the most simplified and the least administratively burdensome. The program currently offers Cambridge residents and businesses two electricity products, including Standard Green and 100% Green Plus. The Standard Green option provides an electricity product that is similar in renewable energy content to the regional grid, about 20%, while the 100% Green Plus option offers a 100% renewable electricity product. As with most CPPs, customers “opting up” to the 100% renewable electricity product pay a slight price premium per kWh compared to the standard electricity product offering. Additionally, as of April 2020, both electricity products offered through Cambridge’s CCE have lower rates for residential and small business customers than the standard Eversource offering.<sup>xxxix</sup> However, these savings are subject to change as Eversource rates change every six months for residents and small businesses. One unique aspect of the Cambridge’s CCE is that both rate options include a small fee, known as an “operational adder”, that will go towards the development of new solar projects within the City of Cambridge.

### **Community Power New Hampshire<sup>xl</sup>**

Community Power New Hampshire<sup>1</sup> (CPNH) is a municipal and county-led initiative working with Clean Energy New Hampshire and local governments throughout the state to offer an alternative to the standard CPP model, which typically involves a single community contracting with an energy broker to procure renewable energy through the purchase of RECs. Under this alternative model, also known as the joint-office CPP model, cities can form their own community power program and then join the centralized CPNH network. The intention of a combined-joint office is to expand the communities’ technical capacity, reduce and centralize administrative costs, leverage pooled revenue to develop and administer innovative energy efficiency, demand response, and renewable energy programs, and bolster the group’s purchasing power. CPNH is still in the planning phase of development, but many New Hampshire communities are hopeful it will enable accelerated grid modernization and renewable energy adoption in the near future.

---

<sup>1</sup> For more information on the structure, goals, and services of CPNH, please visit: [Community Power New Hampshire \(CPNH\)](#).



## Virtual Power Purchase Agreement

### Overview

Cities and community power programs can **support the creation of additional renewable energy by entering into long-term contracts with renewable energy generators** in the form of a power purchase agreement (PPA) or virtual power purchase agreement (VPPA).

A **PPA** is a contract between a buyer and renewable energy generator where the buyer takes ownership of the electrons and RECs produced by the renewable energy project.

A **VPPA** is a financial transaction where the buyer does not own the electrons produced by the renewable energy project, but receives titles to the RECs.

Both contracting instruments, but especially VPPAs, allow both the buyer and the generator to hedge against electricity market price volatility and allow the buyer to benefit from long-term price stability. Another key advantage of VPPAs over traditional PPAs is their geographic flexibility. With PPAs, the renewable energy generator and the consumer must be physically connected to the same regional grid. However, with VPPAs, this is not the case, increasing the diversity of renewable energy generators a customer can contract with. If Keene were to launch a CPP, there are strong potential synergies between a CPP and VPPAs. Leveraging VPPAs, the City could transition their CPP away from unbundled RECs and towards bundled RECs over time, driving the development of renewable energy projects that would not have otherwise been constructed.

**Figure 2: How a Virtual Power Purchase Agreement (VPPA) Works<sup>xli</sup>**

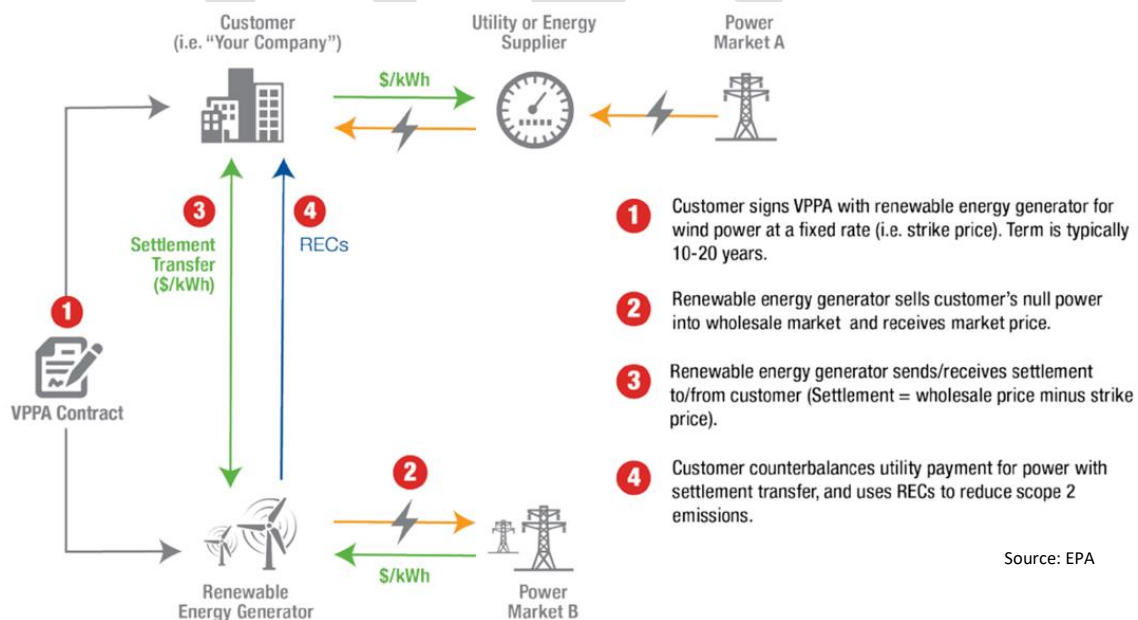


Figure 7 demonstrates the step-by-step process for how a VPPA works. There are a few notable takeaways from the above graphic. First, **the power market that the renewable energy generator is selling electricity into ("Power Market B") does not have to be the same as the power market that the customer (e.g., Keene CPP) is physically connected to ("Power**

**Market A”**). In practical terms, this means that the Keene CPP could sign a VPPA with, for example, a wind farm project in Iowa that may have more favorable financial terms than a similar renewable energy project in New England. Secondly, step 3 in the above figure demonstrates the **price hedge value of a VPPA**. By entering into a VPPA, the customer (e.g., Keene CPP) locks in a fixed price, or strike price, for Bundled RECs from the renewable energy generator. If the wholesale price of electricity rises, the customer will be insulated from these price increases because of the long-term nature of the VPPA. Conversely, if the VPPA strike price is greater than the wholesale market price, the customer would pay the net difference to the renewable energy generator. In this way, the VPPA acts as a price hedge against potentially volatile future energy costs.

Keene could consider entering into a VPPA with a renewable energy generator within NEPOOL to support the development of local/regional renewables and resilience. However, it is possible that the financial terms will not be as favorable as they could be in another power market.

### Keys Benefits and Challenges

Key benefits and challenges associated with engaging in virtual power purchase agreements are summarized below:

Key Benefits	Key Challenges
Supports the development of <b>new, additional renewable energy projects with no upfront cost</b>	The commitment of a small CPP program to purchase the energy <b>may not be sufficient to cover the financing of a project</b>
Provides the opportunity to <b>increase the community’s % of electricity from renewables</b> without unbundled RECs	<b>Contracts can be complex and may be challenging to navigate</b> without additional legal support
Enables the community power program to <b>purchase large volumes of electricity</b> in a single transaction <b>from generators located across the country</b>	By committing revenue to a long-term project, the CPP is <b>limiting its ability to implement other initiatives</b> in that timeframe
<b>Hedge</b> against electricity market price volatility, <b>long-term price stability</b> , and <b>potential cost savings</b> to the community	By locking into a long-term contract, <b>risk that basic supply rate will dip</b> below CPP rate

### Implementation Steps

Initial implementation steps for engaging in virtual power purchase agreements are listed below:

	Implementation Steps
✓	Customer signs a VPPA with a renewable energy generator for wind power at a fixed rate (i.e. strike price). Term is typically 10-20 years.
✓	Renewable energy generator sells customer’s null power into wholesale market and receives strike price.
✓	Renewable energy generator sends/receives settlement to/from customer (settlement = wholesale price – strike price).
✓	Customer counterbalances utility payment for power with settlement transfer and uses RECs to reduce scope 2 emissions <sup>2</sup> .

<sup>2</sup> Scope 2 emissions are indirect emissions from the generation of purchased energy. For most cities, the vast majority of scope 2 emissions come from electricity that is generated outside of the city boundary but consumed inside the city boundary.

## Examples from Other Communities

This section includes an example of how one Virginia community is utilizing a VPPA to reach their renewable energy goals.

### **Amazon Arlington Solar Farm: Arlington County, VA<sup>xliii</sup>**

Arlington County, in partnership with Dominion Energy and Amazon, recently agreed to purchase 31.7% of the energy generated by a Dominion owned solar farm in Pittsylvania County, VA. The solar farm is projected to cover 1,500 acres of agricultural land and produce 250 million kWh annually upon completion in 2022. Procuring 31.7% of the electricity produced by the solar farm equates to more than 79 million kWh and will offset 83% of the electricity currently used by the county government to operate its buildings, streetlights, water pumping station, and wastewater treatment facility. For reference, annual electricity consumption across all of Keene is equivalent to approximately 222 million kWh. This VPPA agreement is key to Arlington County reaching the targets outlined in their Community Energy Plan, including a goal to use 100% renewable energy for government functions by 2025.

DRAFT

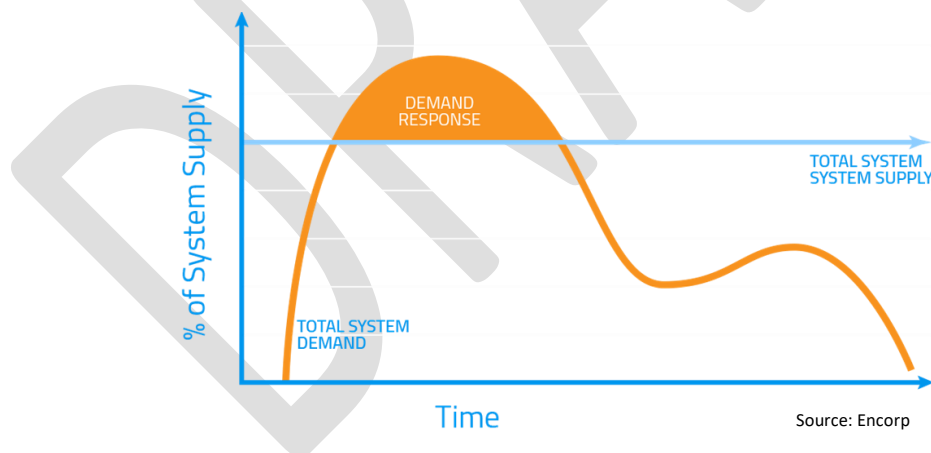
## Pilot Battery Storage Program

### Overview

This strategy involves the City of Keene establishing a close working partnership with their local utility, Eversource, to develop a pilot battery storage program. This could include efforts to collaboratively develop ideas with the utility that support battery storage initiatives and build on preexisting Eversource programs. Existing battery storage programs in other regions or operated by other utilities have utilized **rebates, demand response incentives, or a combination of the two to increase proliferation** of battery storage systems.

Battery storage is a rapidly developing technology that can be **coupled with solar and other renewable energy resources**. This strategy has the potential to significantly benefit residents, businesses, the City, and the utility by **reducing demand on the grid during peak times**. Through the strategic deployment of electricity stored in batteries during peak times, **local businesses can significantly reduce their demand charges**. Demand charges for commercial customers are based on the highest level of electricity supplied by the grid at one time during the billing period and can make up a large portion of total electricity expenses for some businesses. From an environmental perspective, the ability of batteries to reduce peak demand on the grid also **reduces the reliance on natural gas “peaker” power plants**, which generate a large amount of greenhouse gasses, to meet this peak demand. As battery costs continue to decrease over time, implementing a pilot battery storage program will position Keene well to take advantage of the environmental, cost, and resiliency benefits of modernizing the grid, which will be key in the City’s efforts to achieve 100% renewable electricity by 2030.

**Figure 3: How Battery Storage Helps Reduce Demand Charge Peaks<sup>xliii</sup>**



The above figure highlights the costs saving and environmental potential of battery storage systems paired with solar PV. When total electricity demand on the grid (orange line) exceeds the total electricity being supplied by power plants currently on line (the horizontal blue line), electricity stored in batteries can be deployed (orange shaded region) to reduce electricity demand charges for local businesses and reduce the need for polluting natural gas power plants to come online to meet peak demand.

## Keys Benefits and Challenges

Key benefits and challenges associated with this strategy are summarized below:

Key Benefits	Key Challenges
Takes advantage of <b>utility funding, technical expertise, and preexisting infrastructure and programs</b>	City not in direct control of program development and implementation + <b>success is largely dependent on Eversource being an active + willing participant.</b>
<b>Reduces electricity costs for consumers</b> and the utility by minimizing peak demand	Need to <b>identify the right points of contact</b> at both organizations. Partnership may require connection at the upper management/admin level.
<b>Modernizes the grid, boosts resilience, and reduces the need for gas “peaker” plants</b>	Utility <b>priorities can shift</b> during a project
Pilot program is a <b>low-cost strategy for the City</b> to pursue	Third-party complexity is introduced, as <b>battery vendors (i.e. Tesla, LG, Generac) often play a role in demand response</b>
<b>Potential to expand the pilot program</b> by partnering with other local governments, nonprofits, and businesses in the future	Keene is at the forefront of exploring battery storage pilot program models in New Hampshire, with <b>minimal in-state precedent to leverage</b>
Provides a <b>cleaner and cheaper alternative for back-up power</b> , which can be deployed to <b>support essential infrastructure</b>	

## Implementation Steps

Initial implementation steps for collaborating with the utility to develop a pilot battery storage program are listed below:

	Implementation Steps
✓	<b>Discuss potential opportunities to partner with Eversource on a pilot battery storage program.</b> Given the preexisting demand response thermostat program Eversource has already made available in New Hampshire and the demand response battery storage program deployed by the utility in Massachusetts, there is already proven interest and precedent that the City of Keene can build from.
✓	<b>Invest in battery storage at municipal facilities through Eversource’s pilot program, potentially providing City co-funding.</b> The City can serve as an example, showing the benefits of utilizing battery storage while reducing electricity costs and minimizing the environmental footprint of municipal operations. Installing battery storage as an alternative to diesel generators for essential infrastructure could be explored.
✓	<b>Seek opportunities to expand and publicize the pilot battery storage program to local businesses and residents,</b> leveraging strong interest in the strategy expressed during both the community presentation and Environment and Climate Committee meetings.

## Examples from Other Communities

This section includes examples of how communities and their local utility have implemented best practices related to the implementation of battery storage technology. Utility administered battery storage incentives typically compensate utility customers in one of two ways. Demand response programs pay customers for the energy their battery contributes to the grid during periods of high

demand, while other programs simply provide a rebate to customers for installing battery storage at their home or business. Examples of demand response, rebate, and a hybrid program options are explained in more detail below.

**ConnectedSolutions Demand Response Program: Eversource, Massachusetts<sup>xliv</sup>**

The ConnectedSolutions Demand Response Program is a program run by Eversource in Massachusetts that enables participating residents to be compensated for allowing the utility to use the energy stored in their batteries during periods of high demand on the grid. Residents with battery storage can also choose not to be enrolled in the program, saving the electricity stored in their battery as a personal back-up generator instead.

**Bring Your Own Device Program: Green Mountain Power, Vermont<sup>xlv</sup>**

Developed in partnership with Renewable Energy Vermont, the Bring Your Own Device Program enables participating utility customers with onsite battery storage to choose between an upfront payment from the utility or a compensation rate for demand response use. The level of compensation is determined by the size of the customer's battery storage system.

**Home Battery Storage Pilot: Liberty Utilities, New Hampshire<sup>xlvi</sup>**

The Home Battery Storage Pilot was recently approved by the New Hampshire PUC. This program will allow residents to sign up for a home battery installation in partnership with the utility and qualify them for varying time-of-use rates.

DRAFT

## Renewable Energy Loans

### Overview

Renewable energy loans, particularly for distributed solar PV systems, can help make the installation of renewable energy projects more affordable for Keene residents and businesses by **minimizing the up-front capital costs** required to complete an installation and offering low-interest, fixed rates with flexible terms. With limited renewable energy financing options currently available for residents and businesses, the City of Keene could potentially partner with a local financial institution to offer **competitive financing for renewable energy projects**. By financing projects with more capital from local banks or credit unions, Keene can **maximize the number of renewable energy installations** within the City, as well as the economic and environmental benefits associated with deployment of these technologies.

### Keys Benefits and Challenges

Key benefits and challenges associated with this strategy are summarized below:

Key Benefits	Key Challenges
<b>Increased financing access for local residents and businesses</b> to overcome financial barriers to renewable energy adoption	<b>City not in direct control of program development</b> and implementation. Success is largely dependent on local banks and co-ops being an active and willing participant
Opportunity to <b>support local economy</b> by engaging with local banks credit unions	Keene is at the forefront of exploring partnering with local financial institutions to finance solar in the state of New Hampshire, with <b>minimal in-state precedent to leverage</b>
Equitable solution that <b>increases ability of low-income residents to install solar</b>	Potentially <b>high administrative burden</b> on City staff engage with local banks and co-ops to establish program
<b>Established best practices to draw on</b> for engaging with local banks and co-ops to develop similar programs	

### Implementation Steps

Initial implementation steps for partnering with a local financial institution to offer a renewable energy loan are listed below:

	Implementation Steps
✓	Conduct a review of local financial institutions that may serve as a potential partner based on current or past offerings.
✓	Conduct outreach to local institutions and provide educational materials on the benefits of offering loans for renewable energy. Keene could further support private sector lending by offering to provide a loan loss reserve or credit enhancement program.
✓	In parallel, considering advocating for the expansion of existing state or regional loan offerings, such as NH Saves, to include renewable energy or energy storage offerings.

## Examples from Other Communities

This section includes examples of other communities and organizations that have implemented innovative financing solutions to accelerate clean energy adoption.

### **Milwaukee Shines: Milwaukee, Wisconsin<sup>xlvii</sup>**

The City of Milwaukee, Wisconsin partnered with Summit Credit Union to create “Milwaukee Shines,” a special loan program for city residents. With a \$2 million budget, the program offers eligible customers up to \$20,000 at a low-interest, fixed-rate with flexible terms. Financing can be applied to solar electric systems up to 6 kW and solar hot water systems of 1-8 panels in size. Eligible expenses include all equipment, labor, permits, and interconnection fees, as well as structural re-enforcement and re-roofing expenses, if needed.

### **Admirals Bank & Solarize: Multiple Locations<sup>xlviii</sup>**

Admirals Bank, a Boston-based bank active in lending for residential solar projects, has partnered with local governments and non-profits administering Solarize programs in Connecticut, Massachusetts, and North Carolina to provide financing options for participants. For example, during the Solarize Connecticut Durham Pilot Project, the selected installer referred customers to Admirals Bank, which worked with homeowners to put together a loan package that allowed customers to participate in the program and purchase the system. Admirals Bank Relationship Managers and Solar Financing Experts have also attended town information sessions to educate homeowners on available lending products for other campaigns they have participated in.

### **New Hampshire Examples**

Several New Hampshire banks and credit unions offer energy efficiency loans and could potentially expand to provide renewable energy loans as well.

- BCCU<sup>xlix</sup> is a credit union with locations in Manchester, Nashua and Bedford offering energy efficiency loans.
- NHSaves<sup>l</sup> is a utility-run program that has partnered with local savings banks/credit unions to offer energy efficiency loans.



## Solar & EV Ready Guidelines

### Overview

The City of Keene can adopt solar PV and electric vehicle (EV) ready guidelines that encourage or require new developments to be built in a manner that accommodates future solar and EV charging station installations. Designing new buildings with future installations of these technologies in mind, opposed to installing them at existing buildings not designed to accommodate the required infrastructure, can significantly reduce total costs associated with the installation. For example, one study found that installing an EV charging space at an existing commercial building is 2.8 to 4.0 times more costly than installing the same EV charging space at a new commercial building.<sup>li</sup> Preemptively reducing cost barriers to entry for these key technologies can accelerate community-wide adoption of solar and EV charging in commercial developments. Access to EV charging, especially at the workplace, is key to the widespread adoption of EVs. This policy could also serve as a foundation for more far-reaching guidelines in the future that could, for example, require new residential buildings to also be built solar and EV ready.



Source: City of Keene

EV charging stations, like the ones pictured above at the Commercial Street parking lot in Keene,<sup>lii</sup> will be more cost effective to install if new construction is designed to accommodate future installation by taking steps such as installing all necessary electrical infrastructure, pulling conduit and wire to the appropriate locations, and ensuring concrete work accommodates mounting of charging stations.

## Keys Benefits and Challenges

Key benefits and challenges associated with adopting solar and EV ready guidelines are summarized in the following table:

Key Benefits	Key Challenges
<b>Reduces technical and financial barriers to solar and EV</b> infrastructure implementation over the medium/long-term	Limited direct energy impacts expected as <b>the strategy does not directly generate clean energy</b> and is limited to the new construction market
<b>Facilitates community adoption of EVs</b> by increasing access to publicly available charging infrastructure	<b>Limited precedent</b> , with few examples of extensive solar and EV ready guidelines currently implemented in New England
<b>Low-cost step for building owners</b> , positioning them to take advantage of <b>lower infrastructure costs in the future</b>	<b>Additional upfront construction costs</b> to ensure solar and EV readiness may need to be reconciled
Several <b>resources outlining best practices</b> are already available via <b>SolSmart<sup>liii</sup></b> and other sources	<b>Administrative burden</b> associated with development of guidelines or ordinance.
<b>Establishes a foundation for future action</b> in the residential market and surrounding communities	

## Implementation Steps

Initial implementation steps for establishing a Community Power program are listed below:

	Implementation Steps
✓	<b>Leverage the City's ability to adopt more stringent building regulations or (stretch codes).</b> Local governments in New Hampshire have the ability to adopt stretch codes, which can be used to implement stricter guidelines than those explicitly outlined by the New Hampshire State Building Code. Stretch codes are a tool Keene can use to require higher building standards that coincide with solar and EV readiness guidelines.
✓	<b>Evaluate if solar and EV ready guidelines will be a recommendation or requirement for new construction.</b> For example, some communities opt to make solar and EV readiness a recommendation at first, then transition to a requirement later.
✓	<b>Consider if Keene's solar and EV ready guideline requirements will vary based on size, function, and financial ability of the building owner.</b> For example, communities may require larger commercial buildings to follow building guidelines and relax the guidelines for smaller entities.

## Examples from Other Communities

This section includes examples from communities that have implemented best practices related to the implementation of solar and electric vehicle readiness guidelines in the United States. Each example includes a few key points and differentiating factors.

### Commercial Buildings Solar Requirement<sup>liiv</sup>: Watertown, Massachusetts

In 2018, Watertown's Planning Board amended their zoning language, requiring all developments greater than or equal to ten thousand (10,000) gross square feet or containing ten (10) or more residential units to include a solar energy system that is equivalent to a minimum of 50% of the

roof area of all buildings. In cases where a site includes an uncovered parking structure, the structure will also be required to have a solar energy system installed.

**Solar Friendly Best Planning Practices<sup>iv</sup>: Southern New Hampshire**

The Southern New Hampshire Planning Commission (SNHPC) created this resource to assist New Hampshire communities interested in facilitating solar PV adoption. This includes guidance on how to develop solar friendly land use and zoning regulations and the policies and planning practices that remove barriers to development and reduce burdensome soft costs.

**Solar and EV Readiness Reach Codes<sup>vi</sup>: San Mateo, CA**

The City of San Mateo has effectively leveraged their ability to implement reach codes to facilitate solar and EV infrastructure adoption in their community. The City requires all new construction to install a minimum size solar PV or solar thermal system in addition to requiring a minimum number of EV capable spaces or charging stations at qualifying sites. San Mateo has found that establishing minimum requirements often results in owners and developers far exceeding what is required in order to maximize cost-effectiveness.

DRAFT

## Heatsmart Campaign

### Overview

Heatsmart campaigns (also called “thermalize”) are a community-based outreach and education tool that aims to increase adoption of renewable thermal technologies such as air source heat pumps, solar thermal, wood pellets, and ground source heat pumps. In addition, some campaigns have encouraged homeowners to consider energy efficiency improvements and home weatherization upgrades. Heatsmart leverages partnerships with installers, group purchasing power, and volunteer energy to provide focused community outreach and education around renewable thermal technologies, reduce logistical and financial barriers to participation, and reduce heating and cooling costs for residents and small businesses.

Renewable thermal technologies are relatively unknown by most customers, and as a result, the “soft costs” of educating consumers can be a barrier for contractors making sales. Heatsmart campaigns use the same model as “solarize” to promote public awareness of renewable thermal technologies, increase consumer confidence, and help reduce customer acquisition costs for installers. A successful campaign should include the following<sup>lvii</sup>:

- **Outreach to local contractors** in advance of program launch to ensure they understand the goals of the program, how to position themselves to participate, and how to successfully leverage the program to generate leads. Due to the nature of the HVAC contractor industry, which is typically composed of smaller, more localized firms, it may be worth exploring a contractor arrangement that utilizes multiple installers in a campaign in order to address concerns such as perceived favoritism, challenges in meeting a sudden surge in demand, and sensitivity of smaller firms to competition from larger external firms.
- **A dedicated campaign leader and a team of community volunteers** are critical to the success of a program. The leader and volunteers manage the program, plan and coordinate events, serve as a point of contact, and provide the “boots on the ground” for one-on-one outreach.
- **Support or sponsorship from a trusted organization** helps to build trust and increase consumer confidence in the program. Often, local governments will play a role in organizing or supporting a program, especially if it is aligned with local policy goals.
- **An easy sign-up process** is essential to make it as easy as possible for people to participate in the program.
- **Consistent messaging and coordinated outreach** are necessary to drive participation in the program and overcome barriers such as lack of awareness / familiarity with renewable thermal technologies and available financial incentives and programs.
- **A limited sign-up period with deadlines for customer enrollment.** This helps to create a sense of urgency and drive higher participation rates; however, the program length should be longer than a typical solarize campaign to build in extra time for education, outreach, and messaging to overcome lack of consumer awareness / familiarity with renewable technologies.

## Keys Benefits and Challenges

Key Benefits	Key Challenges
Reduces <b>technical and financial barriers</b> to renewable thermal adoption over the short-term.	If offering a diversity of renewable thermal technologies, the <b>potential to achieve economy of scale is diluted</b> and may affect ability to offer discounts.
Helps to <b>build a local installer base</b> and <b>support existing contractors</b> .	Potential for <b>unforeseen installation costs and heating system upgrades</b> (i.e., upgrading electrical system to accommodate an air source heat pump), which can add to overall costs
<b>Existing federal and state rebates and loans</b> are already available to <b>reduce up-front costs</b> of installation and improve rate of <b>return on investment</b> .	Explaining the <b>complexity</b> of the various renewable thermal technologies and <b>how they integrate with existing heating systems</b> presents a challenge for outreach and education.
Effective strategy for <b>raising consumer awareness</b> and <b>increasing confidence</b> in renewable thermal technologies.	Barriers to participation from <b>low and moderate income households</b> without additional funding to provide affordable access.
Opportunity to <b>pair program with energy efficiency</b> and weatherization programs and/or <b>financial incentives</b> , such as local or utility rebates.	<b>Overcoming the split incentive</b> for rental properties where the building owner does not pay for energy use.

## Implementation Steps

	Implementation Steps
✓	<b>Identify a local champion to serve as a team lead.</b> A successful program hinges on having a local champion or group of champions to run and manage the program and coordinate volunteers.
✓	<b>Reach out to local installers during program design phase.</b> Local HVAC contractors should be engaged early on so that their perspectives and concerns can be addressed through the local program design.
✓	<b>Review examples from other communities and identify structure/design of a Keene-specific program.</b> Heatsmart campaigns are less established than solarize campaigns, and there are various different models that Keene can learn from. The design of a local program should be informed by best practices and lessons learned from other communities, as well as the unique characteristics of Keene.
✓	<b>Identify community partners to help amplify messaging and outreach.</b> For example, Northampton, MA's initial Heatsmart campaign was a collaboration between the City of Northampton Energy and Sustainability Department, Mothers Out Front, and Climate Action Now – Western Massachusetts.

## Examples from Other Communities

This section includes examples from communities that have implemented a Heatsmart campaign. Information in this section was taken from the Clean Energy States Alliance June 2019 report, *“Community Campaigns for Renewable Heating and Cooling Technologies: Four Case Studies.”*

lviii

### **Northampton, MA: 2017 / 2018 HeatSmart Campaign**

The first iteration of this program, which ran from August 2017 through February 2018, focused on cold climate air source heat pumps and owners of one- to four-unit residential buildings. The project lead was the City’s Energy and Sustainability Officer; however, the program relied heavily on volunteers to provide outreach. Goals of the program included increased awareness of air source heat pumps and their benefits, increased adoption of air source heat pumps, reduced costs associated with air source heat pump installations, and reduced greenhouse gas emissions. Program outreach included “Meet the Installer” workshops, open houses at the homes of residents with air source heat pumps, social media and other online outreach, media placements in newspapers, TV, and radio, signage, direct mailings, and tabling at farmer’s markets and other local community events. The program resulted in 162 people who expressed interest, 130 installer site visits and 106 price quotes, and 54 installed air source heat pump systems. Of the systems installed, there were 19 single-zone, 34 multi-zone, and one heat pump water heater.

### **Boulder, CO: Comfort365 Program**

Launched in April 2018, the Boulder Comfort365 program provides information and resources related to air source heat pumps and helps to connect interested consumers with EnergySmart-registered contractors, evaluate contractor bids, and access rebates and incentives at no charge. The first iteration of this campaign, which ran throughout the spring and summer, focused on the cooling aspect of heat pumps, and the second on the heating aspect. The City of Boulder and Boulder County spearheaded the program, providing free one-on-one time with personal energy advisors, access to a broad array of incentives and rebates, and assistance evaluating bids from prequalified, vetted contractors. Through a collaboration with Mitsubishi, the outreach efforts of the City and County were complemented by a regional marketing campaign that included paid advertisements, Google ads, and television marketing. Comfort365 estimates that the program resulted in the installation of 66 air source heat pumps in 2018, and set a goal of 120 installations for 2019.

## Renewable District Heating & Cooling System

### Overview

District Heating and/or Cooling Systems transfer thermal energy from a central source using a system of insulated pipes to residential, commercial, and industrial consumers for use in space heating (or cooling), water heating, and process heating. District energy systems are best suited to areas with a higher density of buildings/population and relatively cold climate zones. Historically, many district heating and cooling systems have relied on fossil fuels as either a primary or backup energy source. However, the central thermal energy source could come from a number of different options, such as boiler units (which could use a variety of different fuels), geothermal, biomass, solar energy, waste-to-energy, and combined heat and power (CHP), which can result in GHG emission reductions unachievable on a building-by-building basis.

By connecting multiple buildings to a district system and providing thermal energy in a usable form, district heating and cooling systems help to improve efficiency, enable fuel flexibility, simplify building operations and maintenance, eliminate the need for installing boilers in individual buildings, and reduce or avoid costs for operation, maintenance, repair, and replacement of individual building energy systems. However, building a district energy system is a major engineering project that would require buy-in from a wide array of stakeholders. It requires a local champion to build support for the concept, availability of local renewable sources of energy, a potential customer base, and turnover in existing equipment in a districts building stock. Understanding these conditions and building a business case can be a hurdle for project developers to overcome. As a first step, the City could consider commissioning a study that analyzes the local market and conditions for a renewable district heating system to set the stage for future developers.

### Keys Benefits and Challenges

Key Benefits	Key Challenges
Stable thermal energy services and costs could help <b>retain and attract industry</b> by providing reliable thermal energy, both in terms of supply and cost.	<b>Requires collaboration and cooperation</b> from utility and other partners, which can add time and complexity to the process.
Creation of short-term and long-term <b>employment opportunities</b> , resulting from both construction and ongoing maintenance and operation of the system.	Feasibility studies are generally <b>expensive and time-consuming</b> . A long-term champion is required to keep momentum and interest in the project going.
<b>Adaptable</b> to a wide variety of fuel types.	<b>High capital costs</b> to design and construct a system.
<b>Improves local air quality</b> by replacing small, uncontrolled sources of air pollution with a more efficient, centralized source. This benefit is enhanced if a non-polluting source of energy is used.	<b>High perceived risk</b> to investors due to long lead time before district energy system is operational and generating revenues.
<b>Requires and encourages collaboration</b> among public and private sector, building relationships that could be applied to other projects / endeavors.	Requires <b>strong and ongoing political support</b> at local, state, and federal level to eliminate regulatory, policy, and institutional barriers.

## Implementation Steps

	Implementation Steps
✓	<b>Assess level of interest among key stakeholders and identify a local champion.</b> District energy requires careful study, and the process from planning to construction can take years. Before committing resources, key stakeholders such as the City of Keene, Keene State College, and large commercial and industrial energy users who may benefit from a district energy system should be engaged to determine whether there is enough interest to warrant further exploration. Due to the long timeframe for implementation, a local champion or champions will be needed to maintain interest and momentum for the project.
✓	Commission a <b>preliminary feasibility study</b> to determine whether a renewable district heating system is technically and economically feasible in Keene, including cost estimates.
✓	If the study shows that a system is feasible, seek funds to <b>commission an engineering study</b> to examine system feasibility for a specific location in detail. The study should include a preliminary / conceptual design and improved cost estimates.
✓	If renewable district energy appears feasible and beneficial for Keene, an advisory committee should be formed (or an existing committee should be tasked) to <b>conduct education / outreach</b> and verify whether the concept is acceptable to the public. In addition, it is critical to <b>engage potential users</b> to determine whether they support further study and the commitment of resources for a local system.
✓	<b>Secure funding and identify regulatory requirements.</b> This may require exploring ways to reduce financial barriers, such as offering tax-exempt financing, identifying sources of grant funding, and working with regulators at the state and federal level to understand permitting requirements.
✓	Hire a firm to <b>prepare engineering drawings and detailed cost estimates.</b>
✓	Finalize <b>institutional and financing arrangements</b> for the district energy system. This step is critical, and should be done prior to finalizing construction drawings (an expensive and time-consuming task) or beginning construction.
✓	<b>Finalize construction drawings and begin construction.</b>





- 
- <sup>i</sup> EPA. *Benchmarking Programs and Policies Leveraging ENERGY STAR* (2019). [https://www.energystar.gov/sites/default/files/tools/Benchmarking\\_Programs\\_and\\_Policies\\_Factsheet\\_06242019.pdf](https://www.energystar.gov/sites/default/files/tools/Benchmarking_Programs_and_Policies_Factsheet_06242019.pdf)
- <sup>ii</sup> EPA. *Interactive Benchmarking Tool* (Accessed 2020). [https://www.energystar.gov/buildings/owners\\_and\\_managers/existing\\_buildings/use\\_portfolio\\_manager/find\\_utilities\\_provide\\_data\\_benchmarking](https://www.energystar.gov/buildings/owners_and_managers/existing_buildings/use_portfolio_manager/find_utilities_provide_data_benchmarking)
- <sup>iii</sup> South Portland, Maine. *Benchmarking Ordinance* (2016). <https://www.southportland.org/our-city/board-and-committees/comprehensive-plan-committee/b/>
- <sup>iv</sup> Berkeley, California. *Benchmarking Ordinance* (Accessed 2020). [https://www.cityofberkeley.info/benchmarking\\_buildings/](https://www.cityofberkeley.info/benchmarking_buildings/)
- <sup>v</sup> City of Cambridge, Massachusetts. *Benchmarking Ordinance* (Accessed 2020). <https://www.cambridgema.gov/CDD/zoninganddevelopment/sustainablebldgs/buildingenergydisclosureordinance.aspx>
- <sup>vi</sup> Northeast Energy Efficiency Partnerships. *Regional Residential Energy Labeling Action Plan* (April 2019). <https://neep.org/sites/default/files/resources/RRELAP%20final%20Draft%20-%20OCT%20FORMAT%202019.pdf>
- <sup>vii</sup> Northeast Energy Efficiency Partnerships. *Residential Labeling Dashboard* (Accessed 2020). <https://neep.org/residential-labeling-dashboard>
- <sup>viii</sup> City of Portland, Oregon. *Home Energy Score Program* (Accessed 2020). <https://www.pdxhes.com/program/>
- <sup>ix</sup> Berkeley, California. *Benchmarking Ordinance* (Accessed 2020). [https://www.cityofberkeley.info/benchmarking\\_buildings/](https://www.cityofberkeley.info/benchmarking_buildings/)
- <sup>x</sup> City of Berkeley, CA. *Building Energy Saving Ordinance Evaluation Report* (February 2020). [www.cityofberkeley.info/uploadedFiles/Planning\\_and\\_Development/Level\\_3\\_-\\_Energy\\_and\\_Sustainable\\_Development/BESO%20Evaluation%20Final%20Report.pdf](http://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/BESO%20Evaluation%20Final%20Report.pdf)
- <sup>xi</sup> NH Saves. About NH Saves. <https://nhsaves.com/about-nhsaves/>
- <sup>xii</sup> Southwest Community Services. Weatherization. <http://www.scshehelps.org/weatherization.htm>
- <sup>xiii</sup> Island Institute. *Bridging the Rural Efficiency Gap* (2018). [file:///C:/Users/mbrunner/Downloads/Bridging%20the%20Rural%20Efficiency%20Gap%20WP%20-%20final%20optimized\\_0.pdf](file:///C:/Users/mbrunner/Downloads/Bridging%20the%20Rural%20Efficiency%20Gap%20WP%20-%20final%20optimized_0.pdf)
- <sup>xiv</sup> Island Institute. *Community Energy Efficiency Education “Booth in a Bucket” Kits – Implementation Model* (December 2013). <http://www.islandinstitute.org/sites/default/files/EnergyWise%20Toolkit.pdf>
- <sup>xv</sup> City of Keene Resolution R-2015-40, Relating to Complete Streets. <https://ci.keene.nh.us/community-development/projects/complete-streets>
- <sup>xvi</sup> City of Keene Complete Street Design Guidelines (2015). <https://ci.keene.nh.us/community-development/projects/complete-streets>
- <sup>xvii</sup> Surface Transportation Policy Project (2004). Mean Streets.
- <sup>xviii</sup> National Complete Streets Coalition Fact Sheet. *Create Livable Communities Benefits of Complete Streets* (Accessed May 2020). <https://smartgrowthamerica.org/resources/create-livable-communities-benefits-of-complete-streets/>
- <sup>xix</sup> Powell, K.E., Martin, L., & Chowdhury, P.P. (2003). “Places to walk: convenience and regular physical activity.” *American Journal of Public Health*, 93, 1519-1521.
- <sup>xx</sup> Giles-Corti, B., & Donovan, R.J. (2002). “The relative influence of individual, social, and physical environment determinants of physical activity.” *Social Science & Medicine*, 54 1793-1812.
- <sup>xxi</sup> Lynott, Jana. (2009, January). “Planning Complete Streets for an Aging America.” AARP Public Policy Institute.
- <sup>xxii</sup> Ewing, R., Schroener, W. & Greene, W. (2004). “School Location and Student Travel: Analysis of Factors Affecting Mode Choice.” *Transportation Research Record: Journal of the Transportation Research Board*, (1895). TRB, pp 55-63.
- <sup>xxiii</sup> National Complete Streets Coalition Fact Sheet. *Equity: Benefits of Complete Streets* (Accessed May 2020). <https://smartgrowthamerica.org/resources/equity-benefits-of-complete-streets/>
- <sup>xxiv</sup> CEOs for Cities (2009, August). *Walking the walk*. <http://www.ceosforcities.org//research/walking-the-walk/>.
- <sup>xxv</sup> National Complete Streets Coalition Fact Sheet. *Economic Revitalization: Benefits of Complete Streets* (Accessed May 2020). <https://smartgrowthamerica.org/resources/economic-revitalization-benefits-of-complete-streets/>

- 
- <sup>xxvi</sup> Saelens, B., Sallis, J., & Frank, L. (2003). "Environmental Correlates of Walking and Cycling: Findings From the Transportation, Urban Design, and Planning." *Literatures. Annals of Behavioral Medicine*, 25(2). pp 80-91
- <sup>xxvii</sup> Smart Growth America National Complete Streets Coalition. (Accessed May 2020) <https://smartgrowthamerica.org/program/national-complete-streets-coalition/>
- <sup>xxviii</sup> Davis & Hale. (2007, September). Public Transportation's Contribution to U.S. Greenhouse Gas Reduction. SAIC
- <sup>xxix</sup> National Research Center Inc. (2004, May). "Modal Shift in the Boulder Valley 1990 – 2003."
- <sup>xxx</sup> Keene Sentinel. "Expansion proposed for City Express bus routes" by Meg McIntyre (July 3, 2018). [https://www.sentinelsource.com/news/local/expansion-proposed-for-city-express-bus-routes/article\\_b97c6da0-ec3d-5db3-887e-901bbac12cbc.html](https://www.sentinelsource.com/news/local/expansion-proposed-for-city-express-bus-routes/article_b97c6da0-ec3d-5db3-887e-901bbac12cbc.html)
- <sup>xxxi</sup> Phone conversation with Charlie Pratt, HCS Transportation Manager, on May 28, 2020.
- <sup>xxxii</sup> Phone conversation with Charlie Pratt, HCS Transportation Manager, on May 28, 2020.
- <sup>xxxiii</sup> Southwest Region Planning Commission. *City Express Service Expansion* (1999). [https://www.swrpc.org/trans/trans\\_public](https://www.swrpc.org/trans/trans_public)
- <sup>xxxiv</sup> Victoria Transport Policy Institute. *Evaluating Public Transit Benefits and Costs* (April 2020). <https://www.vtpi.org/tranben.pdf>
- <sup>xxxv</sup> Southwest Region Planning Commission. *Greater Keene Intermodal Transportation Center Feasibility Study project webpage* (Accessed May 2020). <http://www.swrpc.org/ITC>
- <sup>xxxvi</sup> LEAN Energy. *What is a CCA?* (2018). [http://leanenergyoregon.org/wp-content/uploads/2018/07/how-it-works\\_final-1024x729.jpg](http://leanenergyoregon.org/wp-content/uploads/2018/07/how-it-works_final-1024x729.jpg)
- <sup>xxxvii</sup> NREL. *Community Choice Aggregation: Challenges, Opportunities, and Impacts on Renewable Energy Markets* (Publication 2019). <https://www.nrel.gov/docs/fy19osti/72195.pdf>
- <sup>xxxviii</sup> Cambridge Community Electricity (Accessed 2019). <https://www.cambridgema.gov/CDD/climateandenergy/energyefficiencyandrenewableenergy/switchingtocompetitivesupplyandgreenpowerpurchasing>
- <sup>xxxix</sup> City of Cambridge, Massachusetts. *Cambridge Community Electricity Program* (Accessed 2020). <https://masspowerchoice.com/cambridge/options-pricing>
- <sup>xl</sup> New Hampshire Local Energy Solutions. *Community Leaders Join Together to form "Community Power New Hampshire"* (Accessed 2020). <https://www.nhenergy.org/city-town-county-leaders-form-cpn.html>
- <sup>xli</sup> EPA. *Financial Power Purchase Agreements* (Accessed 2020). <https://www.epa.gov/greenpower/financial-power-purchase-agreements>
- <sup>xlii</sup> The Washington Post. *New Amazon-Arlington solar farm to fulfill most of county's renewable pledges* (2020). [https://www.washingtonpost.com/local/virginia-politics/amazon-arlington-solar-farm/2020/01/28/c44baf76-41e2-11ea-b503-2b077c436617\\_story.html](https://www.washingtonpost.com/local/virginia-politics/amazon-arlington-solar-farm/2020/01/28/c44baf76-41e2-11ea-b503-2b077c436617_story.html)
- <sup>xliii</sup> Encorp. *Demand Response Graphic* (2017). <http://encorp.com/wp-content/uploads/2017/09/demand-infographic2.png>
- <sup>xliv</sup> Eversource Massachusetts. *ConnectedSolutions Demand Response Program* (Accessed 2020). <https://www.eversource.com/content/ema-c/residential/save-money-energy/manage-energy-costs-usage/demand-response/battery-storage-demand-response>
- <sup>xlv</sup> Green Mountain Power. *Bring Your Own Device Program* (Accessed 2020). <https://greenmountainpower.com/bring-your-own-device/>
- <sup>xlvi</sup> Liberty Utilities. *Home Battery Storage Pilot* (Accessed 2020). <https://new-hampshire.libertyutilities.com/concord/liberty-utilities-home-battery-storage-pilot-approved--1.html>
- <sup>xlvii</sup> Milwaukee Shines. *Solar Financing* (Accessed 2020). <https://city.milwaukee.gov/MilwaukeeShines/Get-Solar/Solar-Financing.htm#.XozQilhKjIU>
- <sup>xlviii</sup> Admirals Bank. *Admiral's Solar Loans* (Accessed 2020). <https://www.admiralsbank.com/renewable-energy-lending/loan-programs/solar-step-down>
- <sup>xlix</sup> Bellwether Community Credit Union. *Energy Efficiency Loan* (Accessed 2020). <https://www.bccu.org/personal-accounts/credit-and-loans/greenlight-energy-efficiency-loans>
- <sup>l</sup> NHSaves. *Financing* (Accessed 2020). <https://nhsaves.com/programs/financing/>
- <sup>li</sup> Energy Solutions. *Plug-In electric Vehicle Infrastructure Cost-Effectiveness Report for San Francisco* (2016). <http://evchargingpros.com/wp-content/uploads/2017/04/City-of-SF-PEV-Infrastructure-Cost-Effectiveness-Report-2016.pdf>

- 
- <sup>lii</sup> Keene Sentinel. *Group Aiming for Fast-charging Electrical Vehicle Station in Keene* (2019). [https://www.sentinelsource.com/news/local/group-aiming-for-fast-charging-electric-vehicle-station-in-keene/article\\_0088f6e7-ac82-50e0-a4cb-a31f00f51ebf.html](https://www.sentinelsource.com/news/local/group-aiming-for-fast-charging-electric-vehicle-station-in-keene/article_0088f6e7-ac82-50e0-a4cb-a31f00f51ebf.html)
- <sup>liii</sup> SolSmart. *Resources* (Accessed 2020). <https://solsmart.org/resources/>
- <sup>liv</sup> Watertown, Massachusetts. *Commercial Buildings Solar Requirement* (2018). <https://www.watertown-ma.gov/DocumentCenter/View/26235/2018-11-27-Zoning---Solar-Assessments>
- <sup>lv</sup> Southern New Hampshire Planning Commission. *Solar Friendly Best Planning Practices* (2015). [https://www.nl-nh.com/vertical/sites/%7B26F9F697-D5BE-4423-95D7-E1EECB7F549%7D/uploads/Solar\\_Friendly\\_Best\\_Planning\\_Practices\\_for\\_NH\\_Communities\\_Jan\\_2015\\_SNHPC.pdf](https://www.nl-nh.com/vertical/sites/%7B26F9F697-D5BE-4423-95D7-E1EECB7F549%7D/uploads/Solar_Friendly_Best_Planning_Practices_for_NH_Communities_Jan_2015_SNHPC.pdf)
- <sup>lvi</sup> San Mateo, California. *Solar and EV Readiness Reach Codes* (2019). <https://www.cityofsanmateo.org/DocumentCenter/View/78357/August-19-2019-Administrative-Report?bidId=>
- <sup>lvii</sup> Clean Energy States Alliance. *Community Campaigns for Renewable Heating and Cooling Technologies: Four Case Studies* (June 2019). <https://www.cesa.org/resource-library/resource/community-campaigns-for-renewable-heating-and-cooling-technologies-four-case-studies/>
- <sup>lviii</sup> Clean Energy States Alliance. *Community Campaigns for Renewable Heating and Cooling Technologies: Four Case Studies* (June 2019). <https://www.cesa.org/resource-library/resource/community-campaigns-for-renewable-heating-and-cooling-technologies-four-case-studies/>

DRAFT

May 13, 2020

Keene Energy and Climate Committee  
C/O City of Keene

Dear Honorable Members of the Energy and Climate Committee,

First of all, thank you for your continuing efforts to address the future energy needs of the city of Keene.

On Monday, I read with great interest the Keene Sentinel article detailing the discussions during the committee meeting of May 6, which addressed the priorities toward meeting the energy goals of 2030 and 2050, as established by the City Council in January of 2019.

Coincidentally, this past weekend, an acquaintance of mine spoke with me about a new documentary from Michael Moore. You may have seen some of Moore's prior documentaries such as Roger and Me, Bowling for Columbine, Fahrenheit 9/11, and several others. His latest release is named Planet of the Humans. I found the complete film on YouTube at <https://www.youtube.com/watch?v=Zk11vl-7czE> and watched it in its entirety.

I found the film to be very thought-provoking, and at the same time, very upsetting. I have been thinking about it ever since. As citizens concerned about climate, as well as about sustainable alternative energy sources, I believe that it is a film that each member of the committee should take the time to see. I believe that it will engender strong reactions from each of you, as it did me.

I also urge you to read a book published in 2017 by Gregory Wrightstone entitled Inconvenient Facts, which was written in response to former Vice-President Al Gore's film, An Inconvenient Truth. Like the above-cited film, this book has challenged and influenced my view of climate change and of the steps required to address it.

I am hopeful that members of the committee will access these two resources. Thank you for your consideration, and thank you for your efforts.

Sincerely yours,

Russ Thompson  
30 Greenbriar Road  
Keene  
dthompson2@ne.rr.com