

City of Keene
New Hampshire

ENERGY AND CLIMATE COMMITTEE
MEETING MINUTES

Wednesday, July 6, 2022

8:00 AM

**Council Chambers,
City Hall**

Members Present:

Peter Hansel, Chair
Zach Luse, Vice Chair
Councilor Raleigh Ormerod (by video)
Councilor Bryan Lake
Jake Pipp
Paul Roth
Beth Campbell (on video)
Clair Oursler, Alternate (voting)

Staff Present:

Jesse Rounds, Community Development Director
Will Schoefmann, GIS & Mapping Technician
Evan Clements, Planner

Members Not Present:

Diana Duffy
Jude Nuru
Linsey Edmunds

1) Call to Order and Roll Call

Chair Peter Hansel called the meeting to order at 8:00 AM.

2) Approval of Minutes

Councilor Bryan Lake moved to approve the minutes from June 1, 2022. Motioned seconded by Paul Roth. Roll call vote for unanimous approval.

3) Guest Presentation

Huck Montgomery from Liberty Utilities introduced himself as the Director of Governmental Affairs. Also with him is Neil Proudman, President of New Hampshire branch, Bill Clark, Director of Business Development, and Morgan MacGregor, Project Manager of the Business Development office, who are leading the Green Keene Initiative with Liberty Utilities. Mr. Montgomery spoke about how enthusiastic Liberty Utilities is about the City of Keene's target to have one hundred percent renewable energy by 2050. Liberty Utilities also has a net zero target by 2050, so it makes sense to be planning and future proofing the systems to meet those goals that both the city and Liberty share.

During a short period of technical issues, Will Schoefmann introduced two new staff members, including the new Community Development director, Jesse Rounds and the new Planner, Even Clements, who will be administering the meeting for the group today. Mari Brunner is out today, so Will is stepping in for her.

Mr. Clark thanked the committee for the opportunity to speak today. The plan for Keene is to upgrade and future proof the existing facility today to a more modern and then natural gas and eventually hydrogen production. Hydrogen has become a big buzz word, especially as the global economy is looking to go towards clean hydrogen production. There are currently two main feed stocks for hydrogen production:

- 1) Methane-renewable natural gas, or biodegradable gas from food production, land fill, wastewater treatment facilities, or dairy waste.
- 2) Electrolysis- Using an electrical current to split H₂O molecules, which are two hydrogen molecules bound to an oxygen. By using an electrical current, you can split the molecules out into separate hydrogen and oxygen. If you use green power for the electrolysis, this is considered a carbon neutral molecule. It is possible to blend about twenty percent hydrogen and existing gas without having to change end use equipment. This provides a rapid de-carbonization approach for the next three to five years. The remaining eighty percent will be targeted for renewable natural gases.

Keene is unique as it is the only system in the country with an underground network base-loaded and not connected to underground pipeline- anywhere there are waste and wires, it is possible to make the renewable molecules. Anywhere there are wires, there is the ability to develop solar, off-shore wind, and on-shore wind and harness it to create green hydrogen via the electrolyzer. It also leads to expansion opportunities to extend the network to more people. If the hydrogen network takes hold and one hundred percent convert, the energy can then be put in fuel cells allowing for a true net zero on all modalities for transportation, thermal and electric.

In the slide deck and appendix slides, there are some case studies on hydrogen. The European Union is far more advanced than the United States. The United Kingdom is most advanced on actually building hydrogen networks. High-net and High Deploy are two of the largest networks they have, which utilize industrial clusters, underground storage networks, and interprovincial pipelines to do loads.

Mr. Clark explained their plan for Keene is to upgrade the existing plant to a safer, more resilient and more reliable system. It has also been shown to be less expensive to transition to natural gas and then convert to one hundred percent renewable hydrogen.

Mr. Clark turned it over to Ms. MacGregor. Ms. MacGregor pointed out that with this Green Keene project, they looked at a number of different issues. The main object was to transition away from propane air and onto a CNG (compressed natural gas), RNG (renewable natural gas) or hydrogen fuel.

The project has been active for about a year. They contracted a consultant to assist, who has been employed for a multiphase project. In phase one, the consultant completed an analysis of the fuel supply. They looked at compressed natural gas (CNG), liquid natural gas (LNG), renewable natural gas (RNG) and also hydrogen. Hydrogen was always in mind because Keene is very well positioned for this type of project. After the analysis came back, it was suggested to begin with a transition away from propane air to CNG/LNG and then eventually to a hydrogen network. This would require future-proofing with pipeline upgrades, valves and upgrades to accommodate this type of fuel for the future. There is also an alignment with Liberty Utilities goals.

To date, Mr. Clark said they responded to a request for information from the U.S. Department of Energy (DOE). In their response, they talked about island communities and opportunities for future proofing and taking an older system to revamp it to make it something worthwhile for the community. He stated they have lots of information and research that was done as part of that effort.

Mr. Clark added that the DOE has earmarked 9.5 billion for hydrogen gas research. Roughly 8 million of that has been earmarked for four to six hydrogen hubs. The northeast hydrogen hub is a consortium of New York, New Jersey, Connecticut and Massachusetts that will be vying for that funding. New Hampshire has not joined as of today. There may be an opportunity to join in the future, but even if they decide not to join, there are other avenues. There is another 1.5 billion (roughly) for other projects in which Keene could get money. Keene is uniquely positioned as the only system of its kind and this would be a fantastic project to demonstrate key attributes of hydrogen decarbonization. It is a fifty percent cost share so if it is a 10 million dollar facility, Keene could get up to 5 million from the Federal Government.

For the second phase, they engaged the same consultant. The consultant determined it would be cheaper, more reliable and economic to start with a CNG/LNG solution. The consultant will be coming at some point to evaluate locations for sites and future proofing for that hydrogen. Ms. MacGregor pointed out that she thought what was most important (and why they are here today) is to work together and share an open dialogue about suggestions to be able to learn from each other.

Bill mentioned the challenge is the undulating nature of heating loads in winter. Here, Keene may have 5,000/day mmBTU in the summer and 9,000/day in the winter because of heating loads. Designing an infrastructure to handle that undulating nature is key but also quite tricky. If they put in a supply, and in seven years transition to hydrogen, they need to consider whether that is going to address the peaks. On a peaky day, they can run the biogas through the reformer with hydro capture and it becomes a storage component for the future.

Chair Hansel clarified that this is an advisory committee and have no authority to make any decisions, and their role is to provide information and advise the city council. He asked about how hydrogen gas was produced/used in the past in Keene. Mr. Clark responded the creation of it was a pretty toxic method as it was made from coal. Those big silos located on Emerald Street are from the manufacturing and production.

Chair Hansel opened the discussion up for questions and comments from the committee.

Zack Luse said renewable gas sounds a lot like clean coal and asked how it was different. He also asked what the cost is to produce it compared to natural gas.

Bill Clark responded that renewable natural gas is non-fossil gas that has surface level methane that is created through human waste streams. It is being created anyways, but you are capturing it and upgrading it. Most natural gas (before you convert it) is fifty-five to sixty-five percent methane with the rest being CO₂ and contains trace other gases. To pull it off to be molecularly interchangeable, you have to get about ninety-seven percent methane, capture CO₂ and repurpose it for concrete manufacturing, biofuels, etc.

Feedstock waste is the most economical with the second being landfill waste. The Bethlehem landfill has been the largest landfill waste collection facility. All the organic matter in the landfill is breaking down naturally so they put wells in there to capture it. Right now, they flare it or burn it. Roughly, 500,000 dekatherms of gas is being flared. If the methane is collected before flare, processed to the pipeline quality and put it into local distribution networks, it would displace what would traditionally be coming from a pipeline.

Food waste and dairy waste are gaining traction as a source of methane. If it was a country, it would be the fourth largest CO₂ emitter in the world. Depending on the feedstock and methods for destruction of CO₂, there will be a CI (carbon intensity) score. Conventional natural gas is CI of eighty, renewable from landfill is twenty to thirty. Renewable gas from food waste is negative one hundred because there are limited ways to treat it. The score can get to negative four hundred for dairy and swine, but food waste and dairy waste are also the most expensive. Credits are worth a lot of money and are based on carbon scoring. While it is possible to sell the credits, once sold, it is no longer considered carbon neutral. One could claim the carbon benefits, but cannot sell the credit. It would require converting one hundred percent of the load to maintain net zero.

Jake Pipp asked if there was enough supply in Keene. Mr. Clark responded that there are not enough resources left in the old Keene landfill to warrant an investment to clean it up. They would have to incorporate a food waste collector and digester from Keene and surrounding area. There is one in the North Country that is estimated to produce 150 dekatherms a year from food waste. Existing Keene usage is about 130 dekatherms a year so that would supply enough.

For hydrogen conversion, the most important thing needed is the wires. With a PP electrolyzer and PPA for off-shore, hydrogen particles can be created right there and then collected and put right in the pipe.

Chair Hansel asked if any other questions. It was noted that hydrogen is pretty flammable and asked whether there were any concerns about leaks.

Mr. Clark said it is being studied. The National Renewable Energy Laboratory (NREL) is doing testing on that as well as the Gas Technology Consortium. Southwest Gas had done a field test and discovered that a certain percentage of hydrogen gas blend tripped off the gas detectors. It required changing to a different gas detector. Mr. Clark said leaks are something we have to be mindful of, but not something that should hinder us from moving forward. Some of the projects

are looking to blend one percent in Keene to test equipment more than anything else. The plan would be to perform the testing in a closed environment first, look at indoor equipment, and evaluate smart meters to detect leaks with automatic shutoffs. Neil has great contacts in the United Kingdom that are three to four years ahead of us that have already performed a lot of this testing. They are planning to continue that dialogue and they will take a prudent approach on implementing where nothing would be done without DOE and city approval of the demo project.

Councilor Raleigh Ormerod spoke up and thanked Mr. Clark and Ms. MacGregor for the presentation and their time. He noticed that Beth Campbell had her hand up and asked Chair Hansel to recognize Beth first.

Beth Campbell wondered why nuclear was not any part of the mix. She wondered if there will be any percent of nuclear being wrapped in.

Mr. Clark responded that small modular reactors are getting a lot of traction. It is an option, and in Brunswick, small modular reactors are gaining a lot of traction. Morgan does not think it is going to be considered here in Keene, but it is an option that is out there.

Councilor Ormerod said his question is from a security standpoint and asked if the City of Keene was to go right to LNG/CNG, would it be viable to provide some energy security.

Mr. Clark said it would provide some security. He pointed out that contained in the slide set is a slide on the three pillars- Carbon neutrality, reliability, security. Access is more abundant in this region than propane. Distribution rates and meter charges would stay the same. There would actually be a twenty-five percent decrease of cost compared to what customers are paying today, plus adding in the reliability and security part of it. The beauty of this is when one moves to a renewable fuel choice, a change in infrastructure is not required, and it is essentially just a contract change on paper. If it is CNG today, it can be changed to RNG in the future with no cost or infrastructure change.

The current gas supply is problematic for end users. It was asked if any of the grant money would go towards users. Mr. Clark said it was included as part of request for funding. They had mapped out and asked for money for supply facility, generational, and money for end use equipment conversions. They are not certain they will get all the funding, but asked for everything. Hydrogen blending has a lot of research still to be done, but does have to be considered.

Councilor Lake questioned what the timeline is for roll out. Mr. Clark said the rough plan is within the next two to three years to start the transition to CNG/LNG solution and ideally, get the RNG at the same time. There is a slide in the deck of a ten year horizon with the end goal being a safe, economic and reliable fuel source.

4. Community Power Update

Patrick Roche, Good Energy, updated the group on a meeting held yesterday at public utilities commission to vote on community power rules. There was a statute and amendment made last year that made improvements that were overlooked in the original legislation and for the last 6-9

months there has been a group working on rules that the Public Utilities Commission (PUC) has to adopt that would govern how communities would get data from utilities and key operational issues that were not spelled out in the statute. The PUC was supposed to vote yesterday, but postponed the meeting until July 27th. It is disappointing to see the delay as Keene and many other communities are eager to launch ASAP and the rules are a critical part of that. He was planning to have an update on the voting and what the rules say and what that means for Keene. From his knowledge, the PUC has not published rules, but he is hoping to see those before the vote.

Keene did submit a revised community power plan to the PUC for approval back in mid- April. They have sixty days to approve before automatic approval. They rejected on day fifty-nine and the primary reason was because they did not have their own rules in place. In their rejection, they complimented the city on a very thoughtful plan and did not offer any specific areas of improvement and encouraged for resubmission soon. The City of Keene is really eager to see what comes with final rule making and what tweaks they need to make, such as how to request and receive data. Mr. Roche is hoping to submit very soon after their rules are voted on. There are definitely some factions amongst the stakeholders that some are pushing for more expansive, some less and Patrick is hoping the PUC can chart a path forward for communities like Keene, who are ready to launch and also provide areas for expansion.

Chair Hansel asked Mr. Roche why the meeting and vote were delayed and Mr. Roche said the PUC reported that it was due to a scheduling error. He gathers it might be more than that, but that was the only reason provided. Chair Hansel asked if Mr. Roche thought this might be an intentional stone-walling. Mr. Roche responded he was unsure and the challenging thing is that PUC has been slowed by some of the recent charters for them. He added that the Governor and legislature was supportive on this and did support the amendment, so there is clearly a lot of support.

Councilor Ormerod mentioned that there are other economic factors that push electric costs up, like cost of gas because unless we have a regulated utility, they are going to want to make as much as they can from that. If we are transitioning to electricity for transportation needs, they are going to want to create an industry on that. Councilor Ormerod wants to underscore things like what we should be pushing out legislature for such as security, reasonable prices to grow our industry and families and develop the economy.

Chair Hansel asked if there were any other comment or questions. As there were none, Chair Hansel thanked Mr. Roche for the update.

4) Energy Plan Work Group Report-Outs
A) Weatherization/Window Dressers

The weatherization workgroup reported that most of the updates are on the Window Dressers program. They are doing the build event from October 27-November 3 and have secured a location at 310 Marlboro Street. The owner, Randall Walter, is really supportive and wants to partner with the committee. He is looking to do more with his space around renewable energy,

and has recently installed a solar array and is converting the boiler to a woodchip boiler. He also seems like he is interested in creating an ongoing relationship.

Recruitment is an on-going measure to lighten the load. Carolyn Jones on the Clean Energy Team introduced members to Monadnock Habitat for Humanity. They do a number of small projects between builds and one of them is weatherization. They were excited to help and assist with recruiting volunteers and helping with the actual build. They will start promoting it to their volunteers after their restore yard sale at Home Depot. Some communities have a resale shop and use the money from sales to invest. They seem excited to partner and have an ongoing project that meets one of their project goals. Next steps for Window Dressers (getting a space and getting volunteers were biggest priority) include finding people in that low to medium income bracket to do free or low-cost inserts for. The workgroup is reaching out to Southwestern Community Services to see if they can distribute information to the customers they provide fuel assistance to. They are also reaching out to the rotary clubs to recruit volunteers to speak as well. The workgroup included a flyer for Habitat for Humanity in the agenda package for today's meeting and the donation process is on the flyer along with a phone number for contact.

B) Electric Vehicles

The electric vehicles (EV) workgroup had another fairly short meeting. Most of the time was spent talking about charger information that Ms. Brunner was able to provide from the Gilbo Avenue charging stations (in the Commercial Street parking lot). Usage has accelerated over the years and this data provides information on why having more and better stations are important. The data showed that usage totaled roughly 2300 hours with an average session being two and a half hours long. During the first few years, people were only staying twenty to thirty minutes at a time. Now, people are willing to stay longer. Demand is only half the day, as it is being used about twenty-five percent of the available time. Roughly one out of four times an individual goes to use it, it is going to be occupied, which shows the importance of getting more for the public to use.

Mr. Roth added that since the meeting, he has had a conversation where he learned they (EV charging companies) are developing technology so that when a person's car is fully charged, they get a text. After that time, the rate goes up to provide incentive to move the car optimizing the use of the station for other people.

Councilor Ormerod added that while he was not assigned to the committee, he was tasked with some items. One of which was to provide a report out of interest of local dealership involvement. Second was electrification of school busses and whether there was anything that can be done with that. He reached out to local dealers and some of the legislators. It is well known that there is a shortage of components, but it was brought to his attention that the State of NH is the only state that has not adopted the California standards in the region. All the auto manufacturers that would contribute are overlooking New Hampshire because our state has signaled that we are not interested. There are several efforts in the New Hampshire House and

Senate and other standards to pave the way for electric school buses, but there have been legislative barriers. Some of the local dealers are willing to contribute on their own. As a result of legislative rules and policies at the state level, it has inhibited our share of electric vehicles because manufacturers are not sending them to NH.

Mr. Roth left for another meeting resulting in a loss of quorum at 9:02 AM. The meeting was called to close and report outs would continue at the next meeting.

- C) **Community Solar**
- D) **Renewable Energy Loans**
- E) **Outreach and Education**

- 5) **New Business**
- 6) **Next Meetings: Wednesday, August 3, 2022- 8:00AM**
- 7) **Adjournment**

Having lost a quorum, Chair Hansel adjourned the meeting at 9:02 AM.

Respectfully submitted by,
Amanda Trask, Minute Taker

Reviewed and edited by,
Mari Brunner, Senior Planner

Additional edits by,
Katryna Kibler, Clerk's Office