

ENERGY & CLIMATE COMMITTEE

AGENDA

Wednesday, August 3, 2022, 8:00 AM

Members:

Peter Hansel, Chair Zach Luse, Vice Chair Diana Duffy Jake Pipp Councilor Raleigh Ormerod Jude Nuru Paul Roth Linsey Edmunds City Hall, Second Floor Council Chambers

Councilor Bryan Lake Beth Campbell Clair Oursler, Alternate

<u>Staff</u>: Mari Brunner, Senior Planner

- 1. Call to Order and Roll Call
- 2. Approval of Minutes July 6, 2022
- 3. Community Power Update Bob Hayden, Standard Power
- 4. Energy Plan Work Group Report-outs
 - a. Weatherization
 - i. Window Dressers
 - b. Electric Vehicles
 - c. Community Solar
- 5. Membership
- 6. Legislative Updates
- 7. Upcoming dates of interest:
 - a. Window Dressers Community Build Oct. 27-Nov. 3, 2022
 - b. Keene Energy Week October 16-22, 2022 keeneenergyweek.com
- 8. New Business
- 9. Next Meeting: Wednesday, September 7, 2022 8:00 am
- 10. Adjourn

- d. Renewable Energy Loans
- e. Outreach and Education
 - i. Keene Energy Week

1 2 3 4 5 6 7	<u>City of Keene</u> New Hampshire <u>ENERGY AND CLIMATE COMMITTEE</u> <u>MEETING MINUTES</u>		
	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 Presen Jesse Rounds Will Schoefr Evan Cleme	t <u>:</u> s, Community Development Director nann, GIS & Mapping Technician nts, Planner
	<u>Members Not Present:</u> Diana Duffy Jude Nuru Linsey Edmunds		
8 9 10 11	1) <u>Call to Order and Roll Call</u>		
 12 13	Chair Peter Hansel called the meeting to or	der at 8:00 AM.	
14 15 16 17	2) <u>Approval of Minutes</u> - Councilor Bryan Lake moved to approve the minutes from June 1, 2022. Motioned seconded by Paul Roth. Roll call vote for unanimous approval.		
17 18 19 20 21 22 23 24 25 26 27	3) <u>Guest Presentation-</u> 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.		

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- 28 During a short period of technical issues, Will Schoefmann introduced two new staff members,
- 29 including the new Community Development director, Jesse Rounds and the new Planner, Even
- 30 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:

- 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 H20 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
- 42 considered a carbon neutral molecule. It is possible to blend about twenty percent
- 43 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
- 45 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
- 48 make the renewable molecules. Anywhere there are wires, there is the ability to develop solar,
- 49 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
- 52 allowing for a true net zero on all modalities for transportation, thermal and electric.
- 53 In the slide deck and appendix slides, there are some case studies on hydrogen. The European
- 54 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
- 57 pipelines to do loads.
- 58 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.
- 61 Mr. Clark turned it over to Ms. MacGregor. Ms. MacGregor pointed out that with this Green
- 62 Keene project, they looked at a number of different issues. The main object was to transition
- 63 away from propane air and onto a CNG (compressed natural gas), RNG (renewable natural gas)
- 64 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

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- 67 supply. They looked at compressed natural gas (CNG), liquid natural gas (LNG), renewable
- 68 natural gas (RNG) and also hydrogen. Hydrogen was always in mind because Keene is very well
- 69 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
- vould 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.
- 73 To date, Mr. Clark said they responded to a request for information from the U.S. Department of
- 74 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
- 76 community. He stated they have lots of information and research that was done as part of that
- 77 effort.
- 78 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
- 80 a consortium of New York, New Jersey, Connecticut and Massachusetts that will be vying for
- 81 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
- 83 (roughly) for other projects in which Keene could get money. Keene is uniquely positioned as
- 84 the only system of its kind and this would be a fantastic project to demonstrate key attributes of
- 85 hydrogen decarbonization. It is a fifty percent cost share so if it is a 10 million dollar facility,
- 86 Keene could get up to 5 million from the Federal Government.
- 87 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.
- 90 MacGregor pointed out that she thought what was most important (and why they are here today)
- 91 is to work together and share an open dialogue about suggestions to be able to learn from each
- 92 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
- 95 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
- 97 that is going to address the peaks. On a peaky day, they can run the biogas through the reformer
- 98 with hydro capture and it becomes a storage component for the future.
- 99 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
- 101 how hydrogen gas was produced/used in the past in Keene. Mr. Clark responded the creation of
- 102 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.
- 104 Chair Hansel opened the discussion up for questions and comments from the committee.

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- 105 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.
- 107 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
- 110 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
- 112 repurpose it for concrete manufacturing, biofuels, etc.
- 113 Feedstock waste is the most economical with the second being landfill waste. The Bethlehem
- 114 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
- 116 it. Roughly, 500,000 dekatherms of gas is being flared. If the methane is collected before flare,
- 117 processed to the pipeline quality and put it into local distribution networks, it would displace
- 118 what would what would traditionally be coming from a pipeline.
- 119 Food waste and dairy waste are gaining traction as a source of methane. If it was a country, it
- 120 would be the fourth largest CO2 emitter in the world. Depending on the feedstock and methods
- 121 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
- 123 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,
- 126 once sold, it is no longer considered carbon neutral. One could claim the carbon benefits, but
- 127 cannot sell the credit. It would require converting one hundred percent of the load to maintain net128 zero.
- 129 Jake Pipp asked if there was enough supply in Keene. Mr. Clark responded that there are not
- 130 enough resources left in the old Keene landfill to warrant an investment to clean it up. They
- 131 would have to incorporate a food waste collector and digester from Keene and surrounding area.
- 132 There is one in the North Country that is estimated to produce 150 dekatherms a year from food
- 133 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.
- 137 Chair Hansel asked if any other questions. It was noted that hydrogen is pretty flammable and138 asked whether there were any concerns about leaks.
- 139 Mr. Clark said it is being studied. The National Renewable Energy Laboratory (NREL) is doing
- 140 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
- 143 mindful of, but not something that should hinder us from moving forward. Some of the projects

144 are looking to blend one percent in Keene to test equipment more than anything else. The plan

- 145 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
- 147 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
- 150 project.
- 151 Councilor Raleigh Ormerod spoke up and thanked Mr. Clark and Ms. MacGregor for the
- 152 presentation and their time. He noticed that Beth Campbell had her hand up and asked Chair
- 153 Hansel to recognize Beth first.
- 154 Beth Campbell wondered why nuclear was not any part of the mix. She wondered if there will be 155 any percent of nuclear being wrapped in.
- 156 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
- 158 going to be considered here in Keene, but it is an option that is out there.
- 159 Councilor Ormerod said his question is from a security standpoint and asked if the City of Keene160 was to go right to LNG/CNG, would it be viable to provide some energy security.
- 161 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
- 167 contract change on paper. If it is CNG today, it can be changed to RNG in the future with no cost
- 168 or infrastructure change.
- 169 The current gas supply is problematic for end users. It was asked if any of the grant money
- 170 would go towards users. Mr. Clark said it was included as part of request for funding. They had
- 171 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
- 174 considered.
- 175 Councilor Lake questioned what the timeline is for roll out. Mr. Clark said the rough plan is
- 176 within the next two to three years to start the transition to CNG/LNG solution and ideally, get the
- 177 RNG at the same time. There is a slide in the deck of a ten year horizon with the end goal being a
- 178 safe, economic and reliable fuel source.
- 179 <u>**Community Power Update-**</u> Patrick Roche, Good Energy, updated the group on a meeting held
- 180 yesterday at public utilities commission to vote on community power rules. There was a statue
- 181 and amendment made last year that made improvements that were overlooked in the original
- 182 legislation and for the last 6-9 months there has been a group working on rules that the Public

183 Utilities Commission (PUC) has to adopt that would govern how communities would get data

- 184 from utilities and key operational issues that were not spelled out in the statute. The PUC was
- 185 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 186
- critical part of that. He was planning to have an update on the voting and what the rules say and 187
- 188 what that means for Keene. From his knowledge, the PUC has not published rules, but he is
- 189 hoping to see those before the vote.
- 190 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 191
- the primary reason was because they did not have their own rules in place. In their rejection, they 192
- 193 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 194
- what comes with final rule making and what tweaks they need to make, such as how to request 195
- and receive data. Mr. Roche is hoping to submit very soon after their rules are voted on. There 196
- are definitely some factions amongst the stakeholders that some are pushing for more expansive, 197 some less and Patrick is hoping the PUC can chart a path forward for communities like Keene,
- 198
- who are ready to launch and also provide areas for expansion. 199
- Chair Hansel asked Mr. Roche why the meeting and vote were delayed and Mr. Roche said the 200
- PUC reported that it was due to a scheduling error. He gathers it might be more than that, but 201
- that was the only reason provided. Chair Hansel asked if Mr. Roche thought this might be an 202
- intentional stone-walling. Mr. Roche responded he was unsure and the challenging thing is that 203
- PUC has been slowed by some of the recent charters for them. He added that the Governor and 204
- legislature was supportive on this and did support the amendment, so there is clearly a lot of 205
- 206 support.
- Councilor Ormerod mentioned that there are other economic factors that push electric costs up, 207
- like cost of gas because unless we have a regulated utility, they are going to want to make as 208
- much as they can from that. If we are transitioning to electricity for transportation needs, they are 209
- 210 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 211
- industry and families and develop the economy. 212
- 213 Chair Hansel asked if there were any other comment or questions. As there were none, Chair Hansel thanked Mr. Roche for the update. 214
- **4**) **Energy Plan Work Group Report-outs** 215

Weatherization/Window Dressers A)

216 The weatherization workgroup reported that most of the updates are on the Window Dressers 217 program. They are doing the build event from October 27-November 3 and have secured a 218 location at 310 Marlboro Street. The owner, Randall Walter, is really supportive and wants to 219 partner with the committee. He is looking to do more with his space around renewable energy, 220 and has recently installed a solar array and is converting the boiler to a woodchip boiler. He 221 also seems like he is interested in creating an ongoing relationship. 222

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224 Recruitment is an on-going measure to lighten the load. Carolyn Jones on the Clean Energy 225 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 226 with recruiting volunteers and helping with the actual build. They will start promoting it to their 227 volunteers after their restore vard sale at Home Depot. Some communities have a resale shop 228 and use the money from sales to invest. They seem excited to partner and have an ongoing 229 project that meets one of their project goals. Next steps for Window Dressers (getting a space 230 and getting volunteers were biggest priority) include finding people in that low to medium 231 income bracket to do free or low cost inserts for. The workgroup is reaching out to 232 Southwestern Community Services to see if they can distribute information to the customers 233 they provide fuel assistance to. They are also reaching out to the rotary clubs to recruit 234 volunteers to speak as well. The workgroup included a flyer for Habitat for Humanity in the 235 agenda package for today's meeting and the donation process is on the flyer along with a phone 236 number for contact. 237

238 B) Electric Vehicles

The electric vehicles (EV) workgroup had another fairly short meeting. Most of the time was 239 240 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 241 the years and this data provides information on why having more and better stations are 242 243 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 244 thirty minutes at a time. Now, people are willing to stay longer. Demand is only half the day, as 245 it is being used about twenty-five percent of the available time. Roughly one out of four times 246 247 an individual goes to use it, it is going to be occupied, which shows the importance of getting more for the public to use. 248

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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.

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Councilor Ormerod added that while he was not assigned to the committee, he was tasked with 255 some items. One of which was to provide a report out of interest of local dealership 256 257 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 258 259 known that there is a shortage of components, but it was brought to his attention that the State 260 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 261 262 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 263 264 legislative barriers. Some of the local dealers are willing to contribute on their own. As a result ECC Meeting Minutes July 6

- of legislative rules and policies at the state level, it has inhibited our share of electric vehiclesbecause manufacturers are not sending them to NH.
- 267
- 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.
- 270 C) Community Solar
- 271 D) Renewable Energy Loans
- 272 E) Outreach and Education
- 273
- 274 **5**) New Business
- 275 6) Next Meetings: Wednesday, August 3, 2022- 8:00AM
- 276 **7**) <u>Adjournment</u>
- Having lost a quorum, Chair Hansel adjourned the meeting at 9:02 AM.
- 278
- 279 Respectfully submitted by,
- 280 Amanda Trask, Minute Taker
- 281
- 282 Reviewed and edited by,
- 283 Mari Brunner, Senior Planner

DRAFT



Introductions



Neil Proudman President, New Hampshire



Huck Montgomery Director, Governmental Affairs



Bill Clark Sr Director, Business Development



Morgan MacGregor Project Manager, Business Development







Green KEENE Transitioning Keene to a cleaner future

Liberty's natural gas distribution utilities in the Northeast are well-positioned to play a key role in demonstrating and deploying hydrogen and RNG energy projects.

Overview:

- Transition Keene's aging propane-air facility and distribution network to a safe, reliable, clean and economic fuel and system for customers.
- ٠ Liberty to develop a supply and implementation strategy for a conversion to LNG/CNG and RNG in Keene while future proofing for hydrogen.
- With Liberty's pathway to net-zero announcement, and the City's, there is alignment and an opportunity to future proof Keene's gas distribution network.

KEENE



Green KEENE Transitioning Keene to a cleaner future

Work Performed to Date:

- Working with US Department of Energy to identify federal resources to support clean hydrogen for Keene
- Began a multi-phase study on transitioning Keene to a clean, reliable and economic fuel
- Performed an assessment of gas supply options for Keene
 - CNG/LNG/RNG
 - Hydrogen
- Have begun a design study on conversion of the propane-air facility to CNG/LNG/RNG
 - Also evaluating futureproofing for hydrogen

Next Steps:

- Develop a working partnership with the City of Keene to support the City's Sustainable Energy Plan and enable the City to achieve 100% clean energy by 2050
- Leverage federal clean energy resources, industry best practices around emerging technologies, and Liberty's expertise as a leading clean energy company to develop a community-centric pathway to 100% renewable energy
- Begin transitioning Liberty's Keene system to become "2050 ready"





Hydrogen in the World

A Global Perspective

- <u>https://www.toyota-europe.com/world-of-toyota/feel/environment/better-air/fuel-cell-vehicle</u>
- https://www.bbc.com/news/uk-scotland-scotland-business-41257407
- <u>https://www.alstom.com/press-releases-news/2021/12/alstoms-coradia-ilint-hydrogen-powered-train-wins-german-sustainability</u>













