



ENERGY & CLIMATE COMMITTEE MEETING AGENDA

Wednesday, December 5, 2018, 8:00 AM

2nd Floor Conference Room, City Hall

Members:

Dr. Ann Shedd, Chair
Peter Hansel, Vice Chair
Terry Clark, Councilor
Chris Brehme
Jess Baum
Jake Pipp
Ken Dooley
Larry Dachowski, Alternate
Aperr Naadzenga, Alternate

Staff:

Rhett Lamb, ACM/Planning Director
Mari Brunner, Planning Technician

1. Call To Order and Roll Call
2. Approval of November 7, 2018 Meeting Minutes
3. Committee Membership
4. Keene Building Better Together Project Update
5. U.S. Department of Energy – Home Energy Score Program
6. Sustainable Energy Plan Working Group Updates
 - a. Proposed Sustainable Energy Resolution
 - b. Transportation Sector – Data Collection Needs
 - c. KSC Student Residential Solar Project
7. Clean Energy NH Membership Request
8. Committee Retreat: January 2019
9. Updates:
 - a. Fourth National Climate Assessment – Released 11/23/18
 - b. Monadnock Energy Hub speaker/event regarding Volkswagen settlement funding for EV Charging Stations
 - c. “Sideline Science” event: 12/5/18 at 6:30 p.m. at the Keene State College Alumni Center
10. Other Business
11. Next Meeting: Wednesday, January 2, 2019

**City of Keene
New Hampshire**

ENERGY AND CLIMATE COMMITTEE MEETING MINUTES

Wednesday, November 7, 2018 8:00 AM 2nd Floor **Committee** Conference Room, City Hall

Members:

Ann Shedd, Chair
Peter Hansel, Vice Chair
Chris Brehme, Member
Ken Dooley, Member
Jessica Baum, Member
Jake Pipp, Member
Aperr Naadzenga, Alternate
Larry Dachowski, Alternate

Staff:

Mari Brunner, Planning Technician

Members not present:

Terry Clark, Councilor

Guests present:

Caroline Jones, Community Member
Nancy Gillard, Community Member
Charles Daloz, Agriculture Commission Member
Cary Gaunt, Keene State College Sustainability Coordinator
Henry Underwood, Southwest Region Planning Commission
Janine Marr, Antioch University New England

1. **Call to Order and Roll Call**

Chair Shedd called the meeting to order at 8:00 am and roll call was conducted.

2. **Approval of October 3, 2018 Meeting Minutes**

Chair Shedd moved to accept the October 3, 2018 minutes with revisions, Mr. Dachowski seconded and motion was passed unanimously with the following revisions:

Page 6 of 14: “Ms. Gillard replied they have *met* with some of the City Councilors.”

Page 8 of 14: “He reported that SWRPC and Antioch University are both *working* in capacity of consultants for the region’s public health network.”

3. **Establishing New GHG/Energy Targets**

Chair Shedd stated that the Monadnock Progressive Alliance (MPA) presented a draft Sustainable Energy Resolution at the City Council meeting on Thursday, November 1, 2018. The item was referred by the Mayor to the Energy and Climate Committee (ECC) and the Municipal, Services, Facilities, and Infrastructure (MSFI) Committee, which is a City Council committee. After the ECC provides a recommendation, the MSFI Committee will discuss the draft document and

provide a recommendation to City Council. She said that the ECC can choose to take one of the following courses of action at today's meeting:

- 1) Recommend adoption of draft Resolution with no changes
- 2) Recommend adoption of Resolution with modifications
- 3) Recommend against adoption
- 4) Put the item on more time (for further discussion at the next ECC meeting)

Chair Shedd said the committee does not need to make a decision today, however, when they are ready to make a recommendation it will go to the MSFI committee. She said the MSFI committee is meeting tonight, but she doubts ECC members will be ready to present that soon. The next MSFI meeting is scheduled for Wednesday, November 28, 2018. After the MSFI Committee provides a recommendation, it would go to City Council, which could happen as soon as December 6th. She said there are opportunities to provide both spoken and written public comment at MSFI meetings.

Chair Shedd asked committee members to provide comments on the draft Resolution. Vice Chair Hansel stated that he is comfortable with the Resolution as it is. Mr. Brehme and Mr. Naadzena replied they were comfortable with the Resolution as it is. Mr. Pipp entered the room.

Chair Shedd introduced Mr. Dooley as ECC's newest member. He is the Facilities and Grounds Director for the School District. Chair Shedd said ECC has wanted representation from the School District on the committee for a long time. She asked Mr. Dooley what his first impressions are on the Resolution and Mr. Dooley replied that needs more background information before he comments on it. Mr. Dachowski said he is comfortable with the Resolution as a starting point but he wants much more to be done very soon. Chair Shedd agreed that the Resolution represents just one part of the plan, mainly setting targets for the Energy Plan. Ms. Gaunt, who hopes to join the ECC in 2019 as a member or an alternate, stated that she is very much in favor of supporting the Resolution. ECC member Mr. Pipp stated that he is also in support of the Resolution as it is written.

Chair Shedd announced that Ms. Gillard and Ms. Jones are the two community members who brought forward the proposal as members of the Monadnock Progressive Alliance and Keene citizens. Chair Shedd asked Ms. Gillard and Ms. Jones to speak about their outreach process. Ms. Gillard stated that she shared the draft Resolution with individual Council members prior to submitting the Resolution to City Council. In addition, they shared the draft Resolution with various community entities and the support has been overwhelmingly positive. She said they have a number of letters of support from businesses and churches, the Greater Keene Chamber of Commerce, the City Manager, Bensonwood, Green Energy Options, MoCo Arts, MAPS Counseling Services, Southwest Region Planning Commission, the Provost of Antioch University New England, the Church Interfaith Council and other individual churches. Ms. Gillard said that a wide variety of community entities are showing support and they have gotten some valuable input on the challenges of implementing the Resolution and most supporters were impressed with the timeline for the Energy Plan. Chair Shedd thanked Ms. Gillard and Ms. Jones and their organization for their work in stakeholder engagement as it was an excellent start for ECC's Energy Plan.

Member of the Agricultural Commission, Mr. Daloz, stated that agriculture is an important component of the plan; however, the Agricultural Commission currently needs new members to participate fully. Mr. Lamb stated that he is available for support about explaining the procedural elements for the City Council process. Ms. Brunner agreed that there are multiple possible

timelines for bringing the Resolution to MSFI. However, if they make a motion tonight they could possibly get the Resolution on the MSFI agenda for their meeting on November 28, 2018. Chair Shedd asked if ECC members would be required to give a formal presentation at MSFI meeting or just a brief verbal comment. Mr. Lamb replied that given the Resolution has been submitted, it is up to Ms. Gillard to represent the request. He said the report from ECC would be secondary but could include a short presentation of the committee's work. Initially the responsibility is with the folks who submitted the petition.

Chair Shedd asked Mr. Lamb about the window of time for the public to submit written comment. Mr. Lamb said that is more associated with a public hearing. He said City Council operates as a committee structure and most of the lengthy evaluation of topics is done at the committee level, therefore, ECC members should be prepared to answer questions. Ms. Gillard and Ms. Jones may wish to consider having people in the room who are in support of the Resolution. Chair Shedd clarified that once it goes from MSFI to the Full Council there is no other opportunity for public comment; however there will be discussion amongst Councilors.

Ms. Baum joined the meeting and Chair Shedd introduced her to Mr. Dooley. Chair Shedd asked Vice Chair Hansel to share the draft motion he prepared in advance of the meeting. Vice Chair Hansel stated that he made some changes to the draft motion he prepared in advance of the meeting. The only changes include the wording in the second to last sentence and the last sentence:

“While there is much work yet to be done, we believe that Keene is ready to develop a strategic energy plan that will allow us to transition away from fossil fuel energy sources and towards 100% renewables. We therefore move to recommend that the Keene City Council adopt the proposed Sustainable Energy Resolution.”

Chair Shedd noted that an important stakeholder that has not been represented in developing an Energy Plan is the school system. She asked Mr. Dooley whether, based on his experience and knowledge of the school system's energy future, he sees any benefits, issues, or has any other thoughts on adopting the Resolution. Mr. Dooley replied that there would certainly be financial obligations for changing diesel energy use, propane and particularly the large amounts of heating fuel the school systems continue to use. He said changing the infrastructure for #2 heating fuel would be massive.

Chair Shedd announced that on Friday, she, Ms. Brunner, Mr. Watson and the Chair of the Peterborough Energy Committee attended an event at Dartmouth College which was led primarily by the Town of Hanover and the New Hampshire Sustainable Energy Association (NHSEA). She said that the Town of Hanover hired a consultant to help the Town develop a plan for transitioning to 100% renewable electricity, and this consultant presented an interesting array of financial tools that will allow them to broker deals with alternative energy suppliers. One example is a virtual power purchase agreement which will allow them to buy a share of a turbine 14 miles offshore of Martha's Vineyard. This one measure would cover all of Hanover and Dartmouth's energy consumption. The Town of Hanover has been working with the consultant to crunch the numbers and determine the impact on their budget. They are contemplating refining the community choice aggregation model they have used for several years. In addition, they are looking at ways to encourage citizen participation in consumer electricity “buying co-ops.” Chair Shedd said other communities around the country like Atlanta have plans in place to transition to 100% renewable electricity, so these types of measures can be scaled up to larger communities. Chair Shedd said Burlington, VT, which is already 100% renewable, did very aggressive energy efficiency work early on and they use less energy now than they did in the winter of 1989.

Mr. Lamb encouraged Chair Shedd and members to be able to define exactly what 100% renewable means when they go to Council because utilities are very different than transportation. Vice Chair Hansel stated that the Resolution splits that into two different time frames, and noted that achieving 100% renewable energy from the utilities will be easier than achieving the same goal for transportation. He said he received a call from someone who is interested in building a one megawatt solar array on his property in Hillsboro and is considering Keene as a purchaser, so there are methods to obtain that type of energy. The other thing to consider is that Keene utility companies are already providing a percentage of their power that is renewable (up to 14%) and if you look at municipal solid waste it is up to 50%. Vice Chair Hansel said there are ways to solve the electrical side of the equation. However, the thermal and transportation issues are not as much under the City's control, for example, automobile efficiency. For that reason, the Resolution provides more time to solve that part of the problem, until 2050. Mr. Lamb reiterated that they are going to need to be clear about what they mean by 100% renewable as committee members would appreciate an explanation.

Ms. Brunner stated that the Hanover event brought together different municipalities that are thinking about adopting, or have already adopted, ambitious renewable energy targets. She said the highlight of the day was the consultant presentation from 3Degrees, which outlined five different scenarios under which the Town of Hanover could achieve 100% renewable energy for electricity. The consultant also provided a baseline scenario that looked at what would happen if the Town does nothing. For example, because of the renewable energy portfolio standard in NH, if they do nothing then 25% of their electricity will come from renewable energy sources by 2025. She said the consultant outlined five different paths that the town of Hanover could use to get to 100% renewable electricity, which was inspiring to see. Ms. Brunner said there was very little talk about transportation or heating and that the event was focused instead on electricity. She said there was also a great presentation from Henry Herndon from the NHSEA about the Public Utilities Commission (PUC) docket process, which included information about how municipalities can become interveners and participate in that process to promote policies that are more environmentally-friendly.

Vice Chair Hansel stated that he is beginning to gather information on renewable energy production in Keene. He said that with the help of Ms. Brunner and Keene State students, he is creating an inventory of solar production in Keene which Eversource places at about 1.3 megawatts. He said he is making good progress on inventorying installed solar sites in Keene. Vice Chair Hansel stated that the percentage of solar production is probably less than 5% but that is significantly more solar production than several years ago. Chair Shedd added that by the time the City adds the 350 Marlboro Street location it will bring solar production up to 2 megawatts.

Chair Shedd said her take-home lesson from looking at some of the renewable energy plans from other communities is that it requires a balance of locally-distributed generation of renewables which is important for Keene's emphasis on local resilience. She added that with various forms of community aggregation and aggregate purchasing among different institutional consumers, as well as some creative financing models, renewable energy is achievable. Chair Shedd stated that fundamentally changing how we power our society is a paradigm shift but the changes are happening and there are resources moving forward. She said ICLEI possesses a whole set of resources on going 100% renewable that are available to Keene as a member of ICLEI.

Mr. Naadzenga asked Chair Shedd what the public perceptions of this shift are and if there are any measures of willingness to support this type of change. Chair Shedd said there is no currently no public perception survey data for Keene, however, a majority of U.S. citizens recognize climate change as an important issue. Mr. Brehme added that there are creative ways to motivate

the public and to engage others in how to go about addressing climate change. Ms. Baum replied that “Gamification” and “Community-Based Social Marketing” are important tools for motivating the public.

Mr. Lamb suggested moving the last sentence of the Draft motion to the front of the statement. He said the memo from the community would include today’s minutes and any background information.

Mr. Hansel made the following motion:

We move to recommend that the Keene City Council adopt the proposed Sustainable Energy Resolution.

Since the Spring of 2000 when the Keene City Council passed Resolution R-2000-14 which committed Keene to join other cities around the country in the Cities for Climate Protection campaign, our City has been a model both in New Hampshire and the country in pursuing the reduction of greenhouse gas emissions and preparing for the effects of climate change. Not only has it set goals for municipal and community-wide GHG reduction, but it has also set up the mechanisms for measuring results and monitoring performance going forward. While there is much work yet to be done, we believe that Keene is ready to develop a strategic plan that will allow us to transition away from fossil fuel energy sources and towards 100% renewables.

Chair Shedd stated that the committee has not yet defined what the word “renewables” means, and suggested that they refine the definition. Mr. Lamb said that they can speak in general terms and then tell the committee that those specifics will be detailed in the plan. He said they have already submitted the Resolution so unless they want to make recommendations about the language it is already in front of City Council. Mr. Pipp asked whether or not they should omit the word “draft” from the Resolution. Mr. Lamb says it has a Resolution number by now at City Clerk’s office so the Community Development department will insert the number for them.

Chair Shedd noted that the MPA has shared the draft Resolution with various City department heads and Council members, who have not raised any objections to the language. She asked Mr. Lamb if there are other steps where City Staff would want to amend this, perhaps at MSFI. Mr. Lamb said the MSFI committee can propose changes and make recommendations. He said they may have questions about goals so the more examples they can provide them with, the better. He said there are a lot of people in the City who are involved in energy issues and setting energy policy and these are the groups they will draw together for writing the Energy Plan. Ms. Gillard said Mr. Bohannon informed her that he would like to be included in the process as he is in charge of parks and recreation and Mr. Blomquist, the Public Works Director also wants to be involved in the process of moving the plan forward.

Hearing no more discussion, Chair Shedd asked for a second for the motion made by Mr. Hansel. Ms. Baum seconded the motion, which passed unanimously.

Chair Shedd thanked everyone for their support and said that the Resolution sets the stage for a lot of changes and also a lot of work for ECC to create an Energy Plan for Keene by the proposed 2020 deadline. Ms. Gillard thanked the ECC and other community entities for their help and support.

4. Sustainable Energy Plan Discussion

- a. Antioch University CSI Proposal update- Ms. Brunner informed the committee that so far, the City's CSI proposal has not been selected by any Antioch University graduate students. She said there may be other avenues, for example, a student internship or a Master's Project. She suggested that the committee continue to discuss options at future meetings.
- b. KSC Student Project – Residential Solar - Mr. Brehme said there are 3 parts to the KSC student senior project: (1) An assessment of the current status of solar installations in Keene, (2) A geographic information systems (GIS) model of the suitability of rooftop residential solar in Keene, which will be based on aspect and slope, and (3) A resident survey. This last item still needs a lot of work. Mr. Brehme said there is a good chance that Mr. Klem, one of the KSC students working on this project, would be interested in an independent study focusing on solar installations in Keene. Chair Shedd stated that the GIS data may inflate the number of actual available roofs because there are other considerations to consider, such as the roofing material. She noted that slate roofs can be a barrier to solar, even though in Germany they install solar on old slate roofs.
- c. Energy Plan Working Group update - Vice Chair Hansel said the students have helped motivate him to figure out what the installed solar baseline is in Keene today. He said Eversource would not share actual installations, but they did provide a gross number of installations. He said through the City of Keene Assessing department, information from the public utility, and contacting the contractors (ReVision Energy, Solar Source and Green Energy Options) he was able to get a good estimate of installed solar and entered the data into a spreadsheet. Vice Chair Hansel stated that there are about 80 installations in Keene and many have been installed in the last 5 years. He said installations are growing and there are still some gaps to fill in. Most of the gaps are residential, which is the smaller end of the spectrum. He said this is a valuable tool for the committee for measuring change over time.

Chair Shedd said one of the topics that came up at the Dartmouth conference was metrics for following the transition to 100% renewable energy and is a question that needs to be addressed. Vice Chair Hansel said that the data he has gathered covers only solar energy and there are also other sources of energy including thermal energy.

5. Climate and Health Planning in the Monadnock Region (Henry Underwood & Janine Marr)

Mr. Underwood introduced himself as a Planner for the Southwest Region Planning Commission (SWRPC), joined by Ms. Marr, a PhD student in the Environmental Studies department at Antioch University New England (AUNE) and a research assistant on the project. He asked if there are any objections to recording the presentation. Ms. Brunner said no as they already are recoding the presentation. He explained that SWRPC and AUNE are two partners working with the Greater Monadnock Public Health Network on the BRACE project (Building Resilience against Climate Effects). He said their tasks are to create a plan of action and implement a public health intervention with the public health network that is focused on extreme precipitation events like flooding and severe weather aimed at protecting vulnerable populations during those events.

Mr. Underwood stated that part of their proposal involves targeted outreach with key groups like emergency responders, vulnerable groups and the ECC. He said they have developed a set of discussion questions aimed at gathering experiences during flooding events, knowledge

about who is perceived as more vulnerable and sharing ideas about what interventions should be considered. Ms. Brunner said discussion questions are on page 13 of the packet. Mr. Underwood handed out a questionnaire to collect information from ECC members.

The first question is about organizational experiences before, during, and after extreme precipitation events. Vice Chair Hansel responded that the question is more geared towards emergency responders so he cannot speak to the question. However, he did attend an AUNE conference that discussed these types of precipitation events and a break-out session he attended focused on the idea of having an independent emergency energy grid that could supply emergency energy to important lifelines of the community during an extreme event (i.e. the hospital, medical facilities, and grocery stores). He stated that idea would be something to consider.

Referring to the Dartmouth conference she attended, Chair Shedd stated there was discussion about facilities being outfitted with battery storage to make them “islandable” so that emergency services departments would still be functional if the power is cut off. She said she asked Mr. Watson whether battery storage is available for the Public Works Department solar installation, and he responded that it does not have battery storage yet, however the installer said it is “battery ready.” Ms. Brunner noted that other critical infrastructure includes the Water Treatment Facility and the Wastewater Treatment Plant, which uses a lot of energy.

Ms. Marr asked if members are aware of communities that have already established this type of infrastructure. Chair Shedd said she could find that information for her. Ms. Marr asked if members have had the experience of observing flooding events in Keene that required emergency responders. Members did not have any first-hand experience with flooding and observing emergency responders. Chair Hansel shared his experience about a flooding event in which a brook overflowed and almost damaged his plant, however this occurred on the weekend and no workers were present at the time. Ms. Marr stated that fortunately, a lot of the extreme weather events have been happening on the weekends when most people are at home, however if these events begin to happen on work days an important consideration is whether businesses are set up to deal with extreme weather events that could shut down operations. She asked if there are guidelines in place for Vice Chair Hansel’s company. Vice Chair Hansel responded that Filtrine currently does not have an emergency operations plan but that they probably should.

Chair Shedd stated that with extreme precipitation events there is usually some warning beforehand, but there is less opportunity for warnings for tornadoes and microbursts. She said Brattleboro may be a source of information on building resilience and emergency preparedness in extreme weather events. Chair Shedd stated that the manufacturer Whitney Brothers has experienced flooding on their ground level and there are at least two senior housing facilities close to that area behind the Mondanock Co-Op which may also be vulnerable, as well as Bentley Commons and the homeless shelters on Roxbury Street as they are also in the flood zone.

Ms. Marr stated that the first responders they have spoken with said storms can be forecasted but there is really no reliable way to warn people in advance of flooding. She said the warm weather in the winter causes flooding and river overflows that are not well-predicted by early warning systems. Ms. Marr stated that they are looking for members’ thoughts on what else can be done to prepare in advance for these events. Mr. Naadzenga replied that he was involved in a study last spring with a town in Vermont. The town manager provided them an overview of how their response system worked during a flooding event in 2012. He said the

town first identified the most vulnerable populations and examined the topography to identify higher areas and collaborated extensively with neighboring towns which resulted in minimal losses. He said they implemented preliminary efforts to safeguard the vulnerable quickly and to mobilize food and resources for vulnerable groups.

Ms. Marr asked members if neighborhood associations might be a valuable element in assisting and providing resources, for example neighborhood watches who could share resources. Chair Shedd said southeast Keene has a neighborhood association but not in prime flooding areas, Ms. Brunner agreed that there are neighborhood groups but she is not sure about how active they are.

Ms. Gaunt stated that Keene is a low-lying area which is prone to flooding, which causes longer-term issues with mold and allergies. She noted that the condo association where she lives is currently struggling with this issue. She encouraged presenters to also examine the health related issues that can arise in the aftermath of flooding events. Ms. Marr agreed that the health-related issues have to do with what happens after the event. She said that extreme heat following a weather event that knocks out power is also a problem, and therefore this comes into play as a secondary issue related to extreme weather.

Ms. Baum stated that she runs along the Ashuelot River and there are encampments of people living in tents and she is concerned for that population if the river floods suddenly. The homeless and addict population is at risk and there may be support needed during those events for people who may not be able to help themselves. Ms. Gaunt said they are planning to touch on that population. Ms. Baum said she also she sees hypodermic needle use in the park and it is may be the responsibility of the average citizen to help with the administration of NARCAN®. Chair Shedd said the One Hundred Nights shelter offers that population resources and alternative lodging on the nights of the year that shelter is not open. Mr. Brehme added that prioritizing clearing sidewalks after the snow events is important as people struggle on West Street. Ms. Marr said the storm drains are also full of leaves at this time of year as well. She said ECC's perspective is important in understanding these issues, for example, solar energy being a backup during these extreme events.

6. Monadnock Energy Hub

- a. Solarize Campaigns- Chair Shedd stated Peterborough, Hancock, Jaffrey, Rindge and possibly Fitzwilliam will be able to launch solarize campaigns this winter. She said the Hub feels that is the scale they can support at this point. She said there is still no volunteer team assembled for Keene and there is some concern if they are using local solar contractors if they can have concurrent campaigns in Keene and the eastern Monadnock towns. She said it is probably still a good idea to mobilize a team for a solarize campaign for Keene and perhaps they can do a weatherize campaign instead which would use a different set of contractors. The model at Upper Valley includes how to run a weatherize campaign as well and she will get back to ECC on the plan for that.
- b. Volkswagen Settlement Funds – Speaker from NH Department of Environmental Services- Chair Shedd stated that she spoke with the Monadnock Energy Hub about having an event this winter to discuss the Volkswagen diesel settlement funds that will be available for EV charging infrastructure. She said they are requesting co-sponsors for that event and Mr. Schoefmann, the chair of the Monadnock Alliance for Sustainable Transportation (MAST) said they could possibly sponsor an event in January. Chair Shedd asked members are interested in co-sponsoring the event. Vice Chair Hansel asked

if it would involve a monetary contribution. Chair Shedd stated that it would not as they would be able to use City meeting space, for example, the public library meeting space or the Keene Recreation Center.

Vice Chair Hansel moved that the Energy and Climate Committee co-sponsor an event with the Monadnock Energy Hub to deliver a public presentation on EV charging infrastructure and the Volkswagen diesel settlement money sometime this winter.

Mr. Brehme seconded the motion, which passed unanimously.

- c. ECC Retreat- Chair Shedd said the committee will plan for a retreat after the 1st of the year. Ms. Brunner asked if she should send out a Doodle Poll to schedule the retreat. Chair Shedd encouraged members to think about the structure of the retreat, including whether or not they need a facilitator again and what the overall focus of the Retreat should be (i.e. Energy Plan or other topics).

7. **Updates:**

a. Local Energy Solutions Conference 11/16/18- Ms. Brunner stated that paper copies of the agenda are on the table, and the agenda is also available online at the link provided in the packet. Chair Shedd said scholarships are still available for the Conference. The conference is \$50 and scholarship funds would cover \$35 of the total fee.

b. ICLEI Resources- Ms. Brunner stated that the City of Keene is a member of ICLEI and members should look at their Resources page. She has been saving resources that are most pertinent to group to Google folder.

c. Safe Routes to School project- Ms. Brunner said the City of Keene is working on a Safe Routes to School project with Keene Middle School. The City recently hired a part-time, temporary contract employee to plan and coordinate a walk/bike to school day, among other tasks. The project will begin soon and she will keep the ECC updated on the project progress.

8. **Other Business:**

Mr. Brehme stated that he will get the KSC student residential solar survey cleaned up and edits incorporated. He asked members to please provide feedback on the draft survey. Once it is ready, he asked for help with circulating the survey around. Chair Shedd said it is aimed at students and residents but anyone can respond to the survey.

9. **Next Meeting: Wednesday, December 5, 2018.**

Chair Shedd adjourned the meeting at 9:32 am.

Respectfully submitted by,
Ayshah Kassamali-Fox, Minute Taker

Reviewed and edited by Mari Brunner, Planning Technician

ECC RESOURCES & LINKS

DECEMBER 5, 2018 MEETING PACKET

1. Keene Building Better Together Project:
 - a. Project Website: <https://www.keenebuildingbetter.com/>
 - b. Downtown Zoning Update: <https://www.keenebuildingbetter.com/zoning>
2. Keene 79-E incentive zone & U.S. Department of Energy Home Energy Score
 - a. Community Revitalization Tax Relief Incentive (NH 79-E): Keene has adopted this tax incentive, which delays the impact of property tax increases resulting from property rehabilitation. To learn more: <https://choosekeene.com/incentives>
 - b. New Hampshire Department of Energy – Home Energy Score: <https://betterbuildingsolutioncenter.energy.gov/home-energy-score/home-energy-score-about-score>
3. Fourth National Climate Assessment (released November 23, 2018):
<https://nca2018.globalchange.gov/>
4. Volkswagen Settlement:
 - a. [NH Office of Strategic Initiatives webpage](#)
 - b. [State of New Hampshire Beneficiary Environmental Mitigation Plan](#), September 7, 2018.
5. Event: “[Sidelining Science: How Did We Get Here, What's It Matter to Us, and What Do We Do About It?](#)”
 - a. Date: Wednesday, December 5, 2018
 - b. Time: 6:30 p.m.
 - c. Location: Keene State College Alumni Center, Norma Walker Hall, 229 Main St., Keene, NH 03435



CLEAN ENERGY NH
Your Voice in All Energy Matters

NOVEMBER 2018



**BECOME A
MUNICIPAL
MEMBER**

JOIN CLEAN ENERGY NH

Your voice in all energy matters.

Clean Energy NH, formerly known as New Hampshire Sustainable Energy Association, is the state's only non-profit dedicated exclusively to education and advocacy on clean energy issues. For over a decade, our organization has been a highly effective champion of clean energy policies and local energy solutions.

Clean Energy NH is dedicated to empowering New Hampshire cities and towns so they may enrich their communities with the benefits of renewable energy and energy efficiency.





CLEAN ENERGY NH

Your Voice in All Energy Matters

OUR MISSION

To promote clean energy and technologies through education and advocacy for a stronger economic future

OUR VISION

To be recognized and respected across NH as an effective advocate for and facilitator of a lasting clean tech economy

Clean Energy NH provides the following services to its Municipal Members:

- Neutral expertise, technical assistance, training for energy project execution:
 - Incorporating energy considerations into zoning, ordinances, and master plans;
 - Energy benchmarking with Portfolio Manager;
 - Energy efficiency incentives and financing for new construction, building retrofits, LED streetlight conversions, etc. (NHSaves);
 - Guidance on Group Net Metering, Power Purchase Agreements (PPAs), and other renewable energy procurement models for solar, biomass, hydro-electric power, etc.;
 - Training in Solarize/Weatherize public outreach campaigns;
 - Electric Vehicle (EV) fleet and charging infrastructure deployment;
 - Personalized technical assistance for any and all energy projects.
- Two-way policy communication:
 - Nonpartisan expertise on local, legislative, and regulatory energy policies;
 - Empowering municipalities and energy committees with a voice in state energy policy issues.
- Networking, story telling, publicity, and media relations.
- Two (2) Complimentary registrations to the annual Local Energy Solutions Conference
- Certificate to display in town or city offices that proclaims the community is a supporter of clean energy in NH

If you support clean energy in New Hampshire please join us as a Municipal Member in 2019!

Membership dues are \$250. Please direct inquires to Henry Herndon, henry@nhsea.org; 781-439-2177.





Bartram Bridge in Pennsylvania

Key Message 1

Changing Seasons Affect Rural Ecosystems, Environments, and Economies

The seasonality of the Northeast is central to the region's sense of place and is an important driver of rural economies. Less distinct seasons with milder winter and earlier spring conditions are already altering ecosystems and environments in ways that adversely impact tourism, farming, and forestry. The region's rural industries and livelihoods are at risk from further changes to forests, wildlife, snowpack, and streamflow.

Key Message 2

Changing Coastal and Ocean Habitats, Ecosystem Services, and Livelihoods

The Northeast's coast and ocean support commerce, tourism, and recreation that are important to the region's economy and way of life. Warmer ocean temperatures, sea level rise, and ocean acidification threaten these services. The adaptive capacity of marine ecosystems and coastal communities will influence ecological and socioeconomic outcomes as climate risks increase.

Key Message 3

Maintaining Urban Areas and Communities and Their Interconnectedness

The Northeast's urban centers and their interconnections are regional and national hubs for cultural and economic activity. Major negative impacts on critical infrastructure, urban economies, and nationally significant historic sites are already occurring and will become more common with a changing climate.

Key Message 4

Threats to Human Health

Changing climate threatens the health and well-being of people in the Northeast through more extreme weather, warmer temperatures, degradation of air and water quality, and sea level rise. These environmental changes are expected to lead to health-related impacts and costs, including additional deaths, emergency room visits and hospitalizations, and a lower quality of life. Health impacts are expected to vary by location, age, current health, and other characteristics of individuals and communities.

Key Message 5

Adaptation to Climate Change Is Underway

Communities in the Northeast are proactively planning and implementing actions to reduce risks posed by climate change. Using decision support tools to develop and apply adaptation strategies informs both the value of adopting solutions and the remaining challenges. Experience since the last assessment provides a foundation to advance future adaptation efforts.



The distinct seasonality of the Northeast's climate supports a diverse natural landscape adapted to the extremes of cold, snowy winters and warm to hot, humid summers. This natural landscape provides the

economic and cultural foundation for many rural communities, which are largely supported by a diverse range of agricultural, tourism, and natural resource-dependent industries (see Ch. 10: Ag & Rural, Key Message 4). The recent dominant trend in precipitation throughout the Northeast has been towards increases in rainfall intensity, with increases in intensity exceeding those in other regions of the contiguous United States. Further increases in rainfall intensity are expected, with increases in total precipitation expected during the winter and spring but with little change in the summer. Monthly precipitation in the Northeast

is projected to be about 1 inch greater for December through April by end of century (2070–2100) under the higher scenario (RCP8.5).

Ocean and coastal ecosystems are being affected by large changes in a variety of climate-related environmental conditions. These ecosystems support fishing and aquaculture, tourism and recreation, and coastal communities. Observed and projected increases in temperature, acidification, storm frequency and intensity, and sea levels are of particular concern for coastal and ocean ecosystems, as well as local communities and their interconnected social and economic systems. Increasing temperatures and changing seasonality on the Northeast Continental Shelf have affected marine organisms and the ecosystem in various ways. The warming trend experienced in the Northeast Continental Shelf has been associated with many fish and invertebrate species moving northward and to greater depths. Because of the diversity of the Northeast's coastal landscape, the impacts from storms and sea level rise will vary at different locations along the coast.

Northeastern cities, with their abundance of concrete and asphalt and relative lack of vegetation, tend to have higher temperatures than surrounding regions due to the urban heat island effect. During extreme heat events, nighttime temperatures in the region's big cities are generally several degrees higher than surrounding regions, leading to higher risk of heat-related death. Urban areas are at risk for large numbers of evacuated and displaced populations and damaged infrastructure due to both extreme precipitation events and recurrent flooding, potentially requiring significant emergency response efforts and consideration of a long-term commitment to rebuilding and adaptation, and/or support for relocation where needed. Much of the infrastructure in the Northeast, including drainage and sewer systems, flood and storm protection assets, transportation systems, and power supply, is nearing the end of its planned life expectancy. Climate-related disruptions will only exacerbate existing issues with aging infrastructure. Sea level rise has amplified storm impacts in the Northeast (Key Message 2), contributing to higher surges that extend farther inland, as demonstrated in New York City in the aftermath of Superstorm Sandy in 2012. Service and resource supply infrastructure in the Northeast is at increasing risk of disruption, resulting in lower quality of life, economic declines, and increased social inequality. Loss of public services affects the capacity of communities to function as administrative and economic centers and triggers disruptions of interconnected supply chains (Ch. 16: International, Key Message 1).

Increases in annual average temperatures across the Northeast range from less than 1°F (0.6°C) in West Virginia to about 3°F (1.7°C) or more in New England since 1901. Although the relative risk of death on very hot days is lower today than it was a few decades ago, heat-related illness and death remain significant

public health problems in the Northeast. For example, a study in New York City estimated that in 2013 there were 133 excess deaths due to extreme heat. These projected increases in temperature are expected to lead to substantially more premature deaths, hospital admissions, and emergency department visits across the Northeast. For example, in the Northeast we can expect approximately 650 additional premature deaths per year from extreme heat by the year 2050 under either a lower (RCP4.5) or higher (RCP8.5) scenario and from 960 (under RCP4.5) to 2,300 (under RCP8.5) more premature deaths per year by 2090.

Communities, towns, cities, counties, states, and tribes across the Northeast are engaged in efforts to build resilience to environmental challenges and adapt to a changing climate. Developing and implementing climate adaptation strategies in daily practice often occur in collaboration with state and federal agencies. Advances in rural towns, cities, and suburban areas include low-cost adjustments of existing building codes and standards. In coastal areas, partnerships among local communities and federal and state agencies leverage federal adaptation tools and decision support frameworks. Increasingly, cities and towns across the Northeast are developing or implementing plans for adaptation and resilience in the face of changing climate. The approaches are designed to maintain and enhance the everyday lives of residents and promote economic development. In some cities, adaptation planning has been used to respond to present and future challenges in the built environment. Regional efforts have recommended changes in design standards when building, replacing, or retrofitting infrastructure to account for a changing climate.

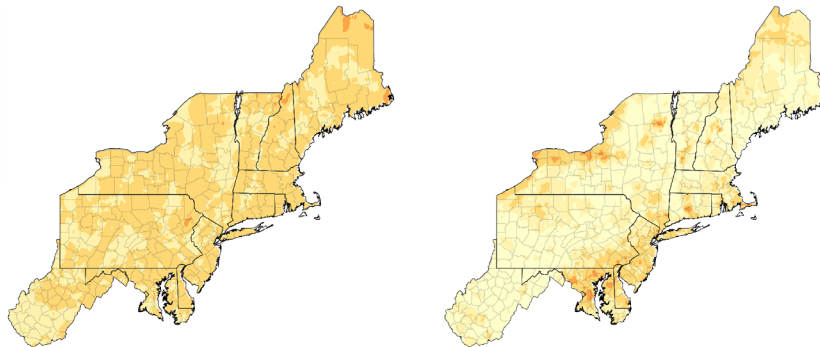
For full chapter, including references and Traceable Accounts, see <https://nca2018.globalchange.gov/chapter/northeast>.

Lengthening of the Freeze-Free Period

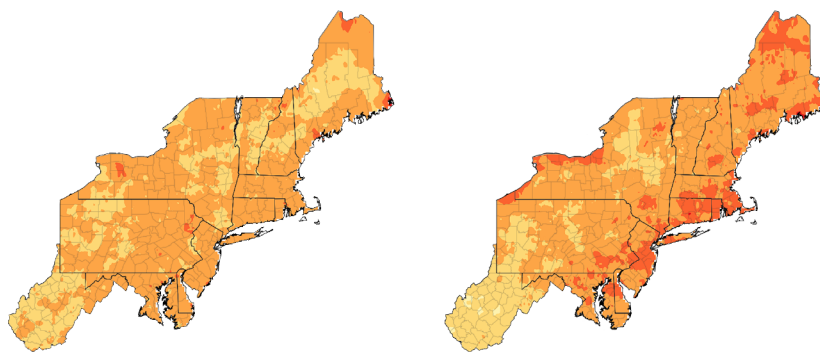
Last Spring Freeze

First Fall Freeze

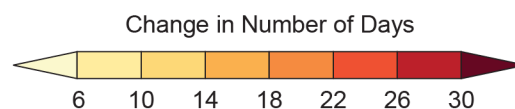
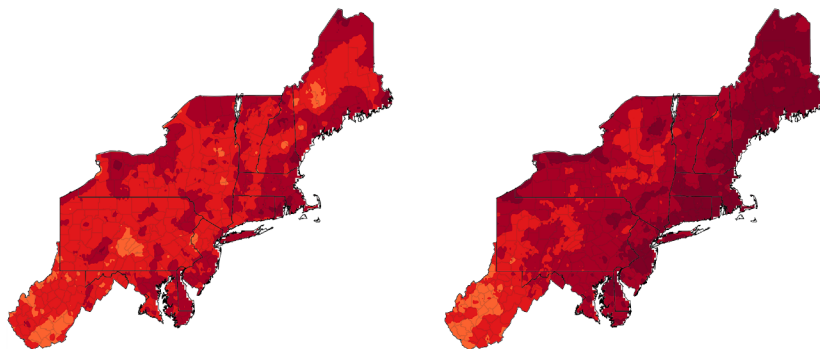
2040–2069, Lower Scenario (RCP4.5)



2040–2069, Higher Scenario (RCP8.5)



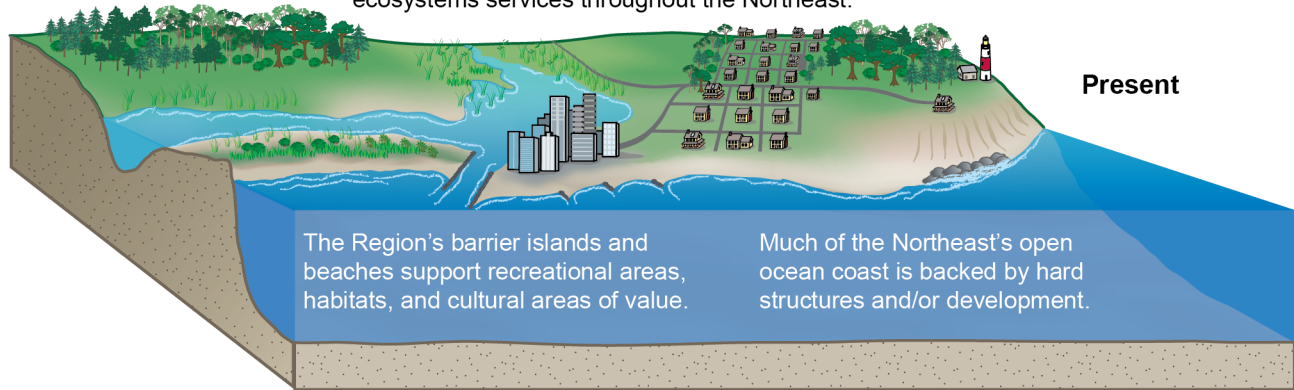
2070–2099, Higher Scenario (RCP8.5)



These maps show projected shifts in the date of the last spring freeze (left column) and the date of the first fall freeze (right column) for the middle of the century (as compared to 1979–2008) under the lower scenario (RCP4.5; top row) and the higher scenario (RCP8.5; middle row). The bottom row shows the shift in these dates for the end of the century under the higher scenario. By the middle of the century, the freeze-free period across much of the Northeast is expected to lengthen by as much as two weeks under the lower scenario and by two to three weeks under the higher scenario. By the end of the century, the freeze-free period is expected to increase by at least three weeks over most of the region. *From Figure 18.3 (Source: adapted from Wolfe et al. 2018).*

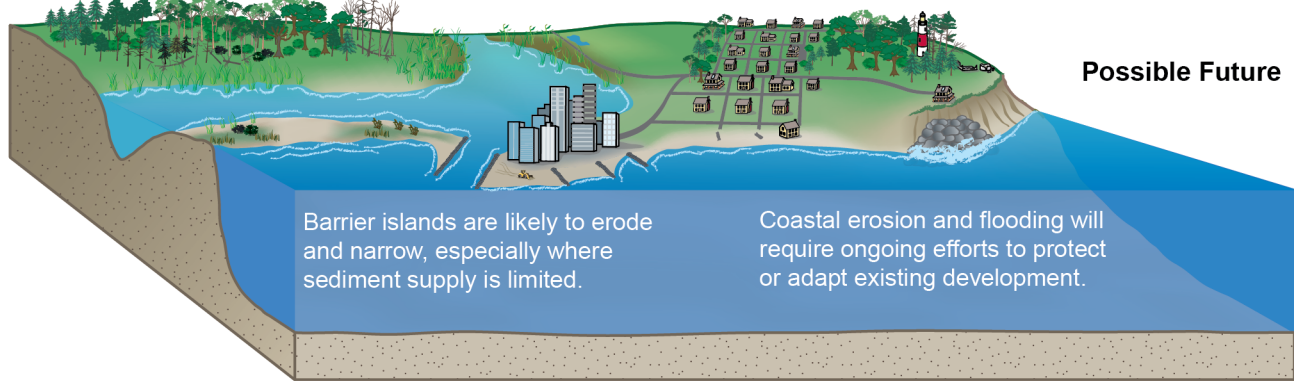
Coastal Impacts of Climate Change

Coastal marshes, uplands, forests, and estuaries provide critical habitat and ecosystems services throughout the Northeast.



Forests, uplands, and marshes will either adapt to changing conditions by migrating landward or will become submerged.

Bluffs will erode, and barrier islands and beaches will migrate landward, erode, or narrow, particularly where sediment supply is limited.



(top) The northeastern coastal landscape is composed of uplands and forested areas, wetlands and estuarine systems, mainland and barrier beaches, bluffs, headlands, and rocky shores, as well as developed areas, all of which provide a variety of important services to people and species. (bottom) Future impacts from intense storm activity and sea level rise will vary across the landscape, requiring a variety of adaptation strategies if people, habitats, traditions, and livelihoods are to be protected. *From Figure 18.7 (Source: U.S. Geological Survey).*