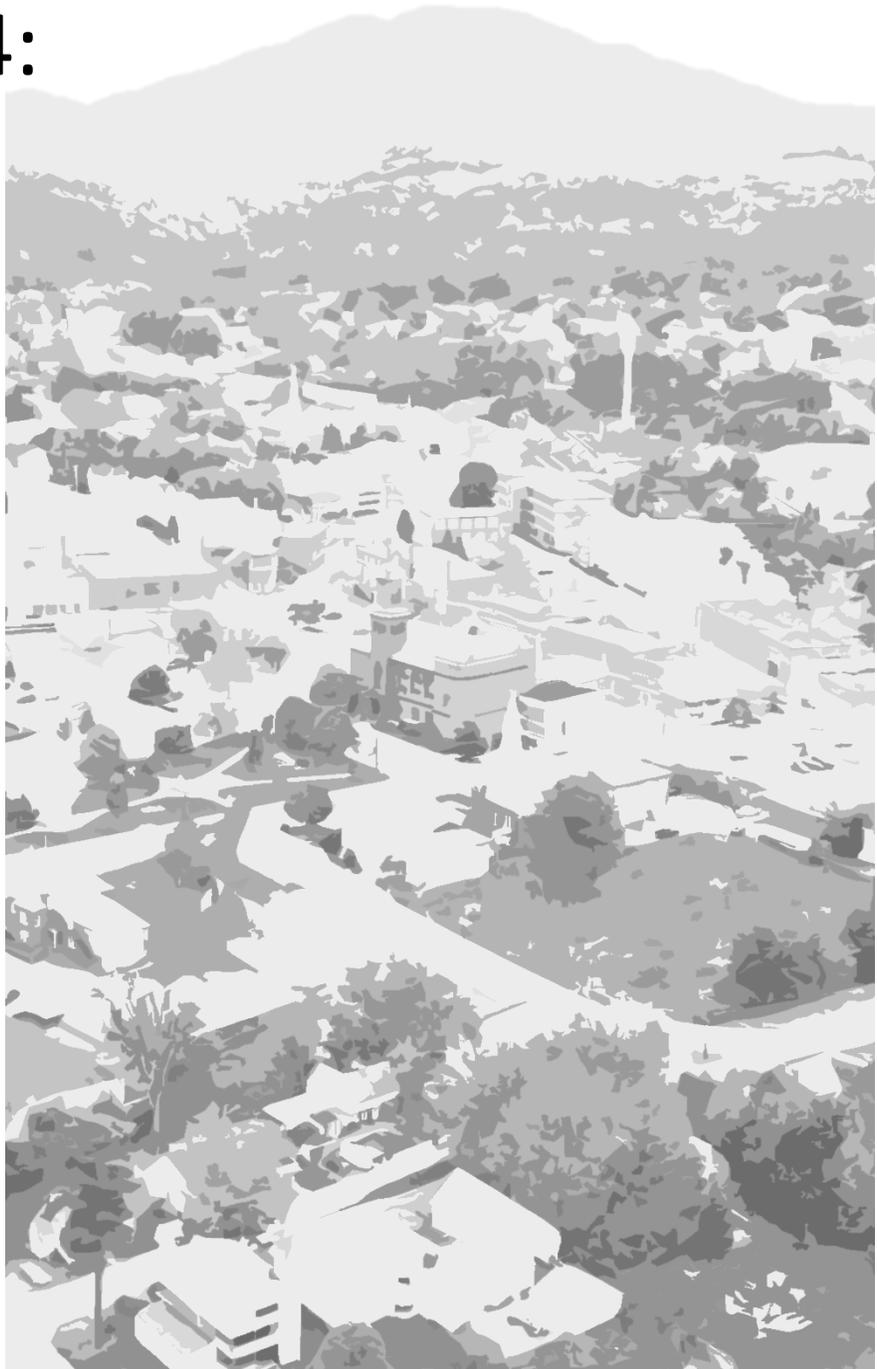


CITY OF CLAREMONT MASTER PLAN 2017

CHAPTER 4: ENERGY



Prepared by the
Claremont Planning Board
and the
Claremont Planning and
Development Department

Chapter 4: Energy

Vision

Claremont will be a resilient, energy-efficient community able to adapt to and mitigate the effects of local, regional and global changes, by creating and implementing comprehensive, sustainable and regenerative energy policies for all.

Process

This chapter has been written by members of the Master Plan Energy Chapter Subcommittee, with input and guidance from City of Claremont staff, along with information gathered from two public surveying events.

During the Master Plan Public Forum, hosted in March of 2016, City staff led attendees through a visual preferences exercise, designed to gauge the public mood related to residential- and commercial-scale energy generation projects. Of the 75 Claremont residents who attended this meeting, 77% responded favorably to roof-mounted residential solar and 65% responded favorably to LED street lighting. Commercial scale solar operations were more evenly split, with just under 50% responding favorably (note that the process used did not allow for an “unfavorable” vote). Commercial and residential biomass generation received the fewest favorable votes [Appendix A].



Additionally, the Master Plan Public Survey, undertaken in May of 2016, prompted residents to consider key questions related to energy and its relationship to City policy and City ordinances. Over 200 Claremont residents responded to the Master Plan Survey. A large majority responded favorably to questions about municipal energy efficiency, small scale residential solar, encouraging local agriculture and protecting some key City land from development. The closest vote was on the question “Should Claremont encourage large scale solar arrays in rural areas?” where 45% of respondents agreed, 40% as neutral, and 15% disagreed [Appendix B].

Local, Regional, and Statewide Context

At the time of this writing, public attention at the local, regional, and national levels is increasingly focused on energy, climate, and the relationship between public policy and environmental sustainability and resilience.

At the state level, energy efficiency and renewable investment in Claremont will help New Hampshire reach its ambitious energy savings goals. The goals and strategies of this energy chapter have been developed with awareness and understanding of the New Hampshire

Climate Action Plan (NH CAP)¹. The NH CAP has chosen a mid-term goal of reducing greenhouse gas emissions below 1990 levels - 20% by 2025 and 80% by 2050.

The following strategies of the NH CAP are most relevant to Claremont:

- Maximize energy efficiency in buildings.
- Increase use of renewable and low-CO₂-emitting sources of energy in a long-term sustainable manner.
- Support regional and national actions to reduce greenhouse gas emissions.
- Reduce or eliminate vehicle emissions through state (or municipal) actions.
- Encourage appropriate land use patterns to enable fewer vehicle miles traveled.
- Reduce vehicle miles traveled through an integrated multimodal transportation system.
- Protect natural resources (land, water, wildlife) to maintain the amount of carbon fixed or sequestered.
- Lead by example in government operations and policy.
- Develop plans to address existing and potential climate change impacts.
- Develop an integrated education, outreach and workforce training program.

The Local Energy Solutions conference in New Hampshire, held each spring, offers an opportunity to connect on energy issues at a state level.

Several organizations work to strengthen our region's energy outlook, such as Vital Communities, which offers resources for governments, businesses, and citizens to advance clean energy and knowledge of energy systems. COVER Home Repair, Upper Valley Habitat for Humanity, and Southwestern Community Services offer weatherization services to qualifying residents in Claremont as well.

In addition, each May, Vital Communities, the Upper Valley Lake Sunapee & Southern Windsor County Regional Planning Commissions, and the Two Rivers Ottauquechee Regional Commission organize a roundtable event for local energy committees in the Upper Valley Region.

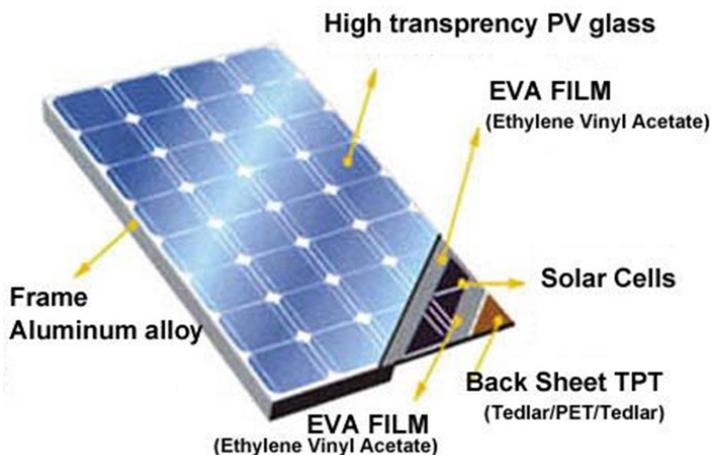
Existing Conditions

Claremont's municipal officials have undertaken significant work on energy-related projects in the last decade. The following section serves as an update on some key energy projects.

- Municipal Lighting Conversion
 - The City undertook a major street light conversion in 2004, when the Department of Public Works used a grant program to convert existing streetlights to efficient high-pressure sodium bulbs. In the last decade, however, LED light technology has



- become the most energy-efficient lighting option available.
- Starting in February 2016, Public Works officials began talks with Eversource (our regional energy provider) about undertaking a conversion to LED lights, in order to reduce the City’s energy usage and decrease light pollution. By Summer 2016, a two-year plan for full conversion was underway. At the time of this writing, the City almost 100% of the 1,000 streetlights in Claremont will were converted to LED bulbs by the end of 2017. This conversion is expected to save 159.7 tons of CO₂ annually and to decrease the light pollution from streetlights in the City. Additionally, the City expects to save approximately \$1,390,000 in lighting costs over the 20-year life of the project.
- Energy Audits for Municipal Buildings
 - In 2011, the City of Claremont was awarded a grant to undertake a Municipal Building Energy Audit, in order to determine the energy usage characteristics of eight municipal buildings. The audit focused on energy efficiency and weatherization at City Hall, the Visitor’s Center, the Public Works Garage, the Fire Station, and the Fiske Free Library (Note: Three other buildings included in the audit are no longer owned by the City).
 - The findings of the Municipal Building Energy Audit were generally positive. The report stated that Claremont’s buildings were “better than many towns of similar size and location” due to “good energy awareness by the town government.” Most of the recommendations offered in the report focused on weatherization and improved HVAC and boiler equipment to increase energy efficiency.
 - In response to these recommendations, new energy-efficient boilers have been installed at City Hall, DPW, and the Fire Station. Weatherization projects have been completed at all five of the remaining municipally owned buildings covered in the report.
 - A grant application has been submitted to the New Hampshire Land and Community Heritage Investment Program, to perform a baseline assessment of the historical features of City Hall and pave the way for future grant applications for energy efficiency work at that building. At the time of this writing, the City is awaiting a response.
- Exploration of municipal solar/energy generation
 - In Summer 2015, the Planning and Development Department issued an RFP for Municipal Solar Energy Generation to explore whether Claremont could build a municipal solar array to offset the City’s electrical usage.



- During the RFP process, bidding contractors agreed the only municipally-owned site which could accommodate an array of the necessary size was at the Claremont Transfer Station. In fact, developers repeatedly told City officials this site – specifically the south-facing hill that made up the old landfill – was geographically ideal for a solar array. Unfortunately, the nearest three-phase power lines were approximately one mile from the site. When factoring

in the cost of bringing three-phase power to the transfer station, it became clear that the City could not develop a solar array in a cost-effective manner. The City decided to cancel the RFP in August 2015.

- Rail access improvements
 - In 2015 and 2016, an ad-hoc committee of the City Council worked to develop more of an awareness of existing passenger rail service in Claremont and to create a space to support commuters who use the only New Hampshire Amtrak station on the Vermonter line. This work has strengthened the City's position with regard to rail transportation.
 - The committee upgraded our rail service area signage throughout the City and erected a waiting area for rail commuters.



- Findings of Transfer Station Committee – The Transfer Station Ad Hoc Committee was tasked in 2015-16 to examine the cost, need, and increased efficiency of the Claremont Transfer Station.
 - The Committee affirmed the importance of recycling, reusing, and reducing residuals and the function of the Transfer Station in light of its environmental impact. Its contribution to saving energy and mitigating climate change is a value and a virtue for present and future generations.
 - Through the Committee's field trips and consultations with other area transfer station managers, there were lessons learned about traffic flow, the use of decals to determine who should be using the Transfer Station, and the physical handling of recyclable materials that have been or will be applicable to increasing its efficiency.
 - The Committee will reconvene as needed.
- Existing energy generation facilities – Appendix C.
- New Hampshire State Energy Profile (updated 6/16/16) – Appendix D.

Current and Future Challenges

While the energy projects above are a sign of positive developments for Claremont, the City does face significant energy challenges.

- Current zoning and permitting conditions
 - City ordinances lack specificity in regard to residential and commercial energy generation projects. Since solar panels, wind turbines, and biomass stations are not explicitly addressed by Claremont’s zoning ordinance, Planning officials have been left to interpret these types of applications on a case-by-case basis.
 - Residential projects have, in most cases, been considered general accessory structures (e.g. a shed) and therefore follow the same zoning guidelines.
 - While the City has not dealt with a commercial project to date, it is understood such a project, of any size, would require a full variance.
- Energy use tracking
 - No systematic tracking of energy use and/or expenditures is currently in place. Instead, energy data must be collected manually. This is inefficient, costly, and a deterrent to proper analysis.
- Age of infrastructure and housing
 - The City of Claremont is an old city, incorporated as a town in 1764 and as a city in 1947. Claremont’s growth in the 19th and 20th centuries demanded significant buildout of housing and infrastructure to accommodate a swelling population. Today, much of that housing and infrastructure remains.
 - According to the Census, 60% of the 6,189 units of housing in Claremont were built before 1959, including almost 40% built before 1939. Many of these homes are not energy-efficient.
 - The existing infrastructure in the City is dated in many places, and serious repair projects remain unaddressed due to funding pressures.
- Climate change and greenhouse gasses

Most of New Hampshire has warmed 2°F to 3°F in the last century. [Appendix D] The U.S. Environmental Protection Agency anticipates that the changing climate will increase the frequency, intensity, and length of heat waves and drought conditions in the Northeast in the future. The EPA also projects dramatic increases in heavy precipitation events in our region, which can lead to flooding and soil erosion. <https://www.epa.gov/climate-impacts/climate-change-and-human-health-risks-your-state#healthmap>. For further information the Sustainability Institute at the University of New Hampshire published a 2014 report, “Climate Change in Southern New Hampshire – Past, Present, Future,” that is available at <http://sustainableunh.unh.edu/sites/sustainableunh.unh.edu/files/images/southernnhclimateassessment2014.pdf>. The New Hampshire State Energy Profile produced by the U.S. Energy Information Administration is printed in Appendix E.

Goals

In consideration of the above conditions and challenges, the following goals and objectives have been outlined to help move Claremont toward a future in line with the vision presented at the beginning of this Chapter.

Goal 1. Encourage widespread understanding of and support for energy consciousness throughout the City of Claremont.

- Objective 1.1: Create a City of Claremont Energy Committee.
 1. Empower the Energy Committee to conduct project work in the community, especially work that encourages skill-building around energy issues.
- Objective 1.2: The City will become a resource for energy issues, and will be connected to other stakeholders around such issues.
 1. The Planning and Development Department should keep Claremont citizens, businesses, and nonprofit agencies informed of relevant local, regional, statewide and national energy incentives and initiatives. This should be achieved using all available media resources.
 2. The City should participate in local, regional, statewide and national energy forums and roundtables to study best practices, form regional energy alliances, and share information gained with the public in order to support awareness and a transition to sustainable practices city-wide.
 3. The City should encourage collaboration among the city schools, Sullivan County, and other public and private agencies to promote sustainable energy production and energy efficiency for citizens and business owners.
 4. The City should stay abreast of emerging technologies in the fields of energy efficiency and production, waste disposal, composting, recycling, and energy use monitoring, and push for the adoption of these technologies.

Goal 2. Encourage municipal, commercial, and private efforts to promote local, sustainable energy production that enhances the community and quality of life for its residents and businesses.

- Objective 2.1: Amend ordinances and technical review procedures to encourage sustainable energy production.
 1. Encourage on-site supplemental renewable electricity generation by incorporating amendable zoning language into City ordinances for such projects.
 2. Encourage medium-scale commercial renewable energy generation by incorporating amendable zoning language into City ordinances for such projects. City officials should seek public input when crafting language to govern siting rules for medium-scale commercial renewable energy production, and should take into account the specific attributes of each type of production mechanism when crafting said language.
 3. The City should rewrite zoning ordinances to allow for significant public input on any large-scale fossil fuel or biomass energy production in the City, in recognition of the lack of public support for such facilities.
- Objective 2.2: Provide incentives for small-scale, secondary use renewable energy generation projects that are in keeping with the above-mentioned zoning changes.
 1. Adopt RSA 72:61-72, which will permit the City to offer a property tax exemption for small-scale renewable energy generation projects, such as solar panels and small wind-powered energy systems.
- Objective 2.3: The City should continue to explore opportunities to create its own power through renewable energy projects.

Goal 3. Develop policies, regulations, and best practices to promote energy-efficient renovation, construction, and development in the City's built environment.

- Objective 3.1: Invest in infrastructure upgrades to enhance energy-efficiency and long-term cost savings.
 1. In recognition of the success of the LED conversion for the City's streetlights, the City should audit City-owned buildings and explore LED upgrade options for those buildings.
 2. The city should explore maximizing use of the Whitewater Reservoir. The raw water line from Whitewater to the treatment plant should be upgraded.
- Objective 3.2: Make City facilities energy-efficient through an ongoing process of monitoring, assessment, improvement, and further monitoring.
 1. Recognizing the importance of balancing the historic nature of many City-owned buildings and the need for improved energy efficiency, the City should seek additional grant opportunities like the LCHIP grant used to inventory City Hall, and present workable energy upgrades.
 2. The City should audit its water - pumping infrastructure and explore opportunities for energy efficiency upgrades.
 3. The City should utilize the Environmental Protection Agency's Portfolio Management Software (or like software), which allows users to track energy spending and use. This will ensure City staff have a clear understanding of the City's relationship to energy use and can easily analyze data.
- Objective 3.3: Development projects in the City should consider energy efficiency and sustainable development, whenever possible.
 1. The City should direct its development review staff to ask questions about energy efficiency during technical review, to be knowledgeable about solutions to issues raised, and seek expert consultation when necessary.
 2. City staff should encourage the Planning and Zoning Boards to ask questions related to energy efficiency and conservation.
 3. City staff and boards should encourage Dark Sky Community best practices when reviewing development projects. These include but are not limited to: requiring fully-shielded or full-cutoff lighting, capping color temperature at 3000 Kelvins or lower, placing restrictions on unshielded lighting, and a limit to the total lumens allowed per site or per acre. (Resource: [http://darksky.org/wp-content/uploads/bsk-pdf-manager/IDSC Guidelines Oct2015 9.pdf](http://darksky.org/wp-content/uploads/bsk-pdf-manager/IDSC_Guidelines_Oct2015_9.pdf))
 4. The City should explore the adoption of C-PACE², through RSA 53-F, which would allow the city to establish special assessment districts where commercial building owners may finance energy-efficiency and renewable-energy projects.
- Objective 3.4: The Planning and Development Department must have a thorough understanding of the potential impacts of climate change on the built environment and understand the risks to property posed by climate change.
 1. An emergency evacuation and crisis plan should be developed for areas prone to flooding.
 2. New construction and replacement should be discouraged in flood-prone areas.

3. Planning for drought management should be undertaken; adaptation and mitigation will help make our community resilient.
4. Educational programs encouraging community and home gardens and food storage should be part of resilience planning.

Goal 4. The City should support regional and national actions to reduce greenhouse gas emissions.

- Objective 4.1: The Planning and Development Department will expand its awareness of regional and national actions that reduce climate change, and recommend policies and practices that support these actions.
 1. Initiatives to educate the public and create incentives for business and organizations will be prioritized.
- Objective 4.2: The City should reduce or eliminate vehicle emissions through municipal actions.
 1. As municipal vehicles age out, renewable energy vehicle options should be considered.
 2. The City should institute a “no-idling” policy for City vehicles wherever appropriate.
 3. The City should explore policies that promote reduced vehicle usage.
 4. The City should explore the creation of electric vehicle charging stations for municipal and public use.
- Objective 4.3: Encourage appropriate land use patterns that enable fewer vehicle miles traveled.
 1. The localization of community resources will be a priority in creating a more sustainable and resilient community.
 2. The City should consider relocating the Transfer Station to a more centralized location to increase travel efficiency for the public, to create a more accessible location, and thereby promote additional use.
- Objective 4.4: Reduce vehicle miles traveled through an integrated multimodal transportation system.
 1. The City must support existing forms of public transportation, including a public bus service and passenger rail service. The City should seek to expand these services whenever possible, especially to build linkages between housing, education, and employment centers.

Goal 5. Gain a competitive advantage in the region through the adoption of ecology-friendly community programs.

- Objective 5.1: To become a Dark Sky Community by 2037.³
- Objective 5.2: Consider becoming a Tree City USA Community by 2022.⁴
- Objective 5.3: Consider joining the New England Resilience and Transition Network or similar organizations and charge the City of Claremont Energy Committee with exploring becoming a Transition Town.⁵
- Objective 5.4: Consider participation in other opportunities or programs consistent with this goal.

Conclusion

In the pursuit of the goals, objectives, and actions listed above, the City of Claremont – through its staff and its citizens – will act as a leader in the region and the state through forward-thinking vision and by continually seeking out, evaluating, and embracing best-in-class energy initiatives.

¹ *New Hampshire Department of Environmental Services, The New Hampshire Climate Action Plan, 2009, http://des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/documents/nhcap_final.pdf*

² Commercial Property Assessed Clean Energy (C-PACE) is an innovative program that is helping commercial, industrial and multi-family property owners access affordable, long-term financing for smart energy upgrades to their buildings.

C-PACE allows building owners to finance qualifying energy efficiency and clean energy improvements through placing a voluntary assessment on their property tax bill. Property owners pay for the improvements over time through this additional charge on their property tax bill and the repayment obligation transfers automatically to the next owner if the property is sold. Similar to a sewer tax assessment, capital provided under the C-PACE program is secured by a lien on the property, so low-interest, long-term capital can be raised from the private sector with no government financing required. This arrangement spreads the cost of clean energy improvements – such as energy efficient boilers, upgraded insulation, new windows, or solar installations – over the expected life of the measure.

<http://www.ctcleanenergy.com/YourBusinessorInstitution/CommercialPropertyAssessedCleanEnergyC-PACE/tabid/642/Default.aspx>.

C-PACE stands for **P**roperty **A**ssessed **C**lean **E**nergy financing for **C**ommercial buildings. Municipalities voluntarily adopt NH RSA 53-F which allows them to establish special assessment districts where commercial building owners may finance cash-positive energy-efficiency and renewable-energy projects and tie the financing to the property through a voluntary special assessment/lien. This effectively ties the repayment to the building, not the borrower, and has many unique benefits. Learn more by perusing the resources at www.cpace-nh.com. <http://www.jordaninstitute.org/c-pace.html>

³ An International Dark-Sky Association Dark Sky Community (DSC) is a town, city, or municipality that has shown exceptional dedication to the preservation of the night sky through the implementation and enforcement of quality lighting codes, dark sky education, and citizen support of dark skies.

⁴ Tree City USA is a nationwide movement that provides the framework necessary for communities to manage and expand their public trees. <https://www.arborday.org/programs/treecityusa/about.cfm>.

⁵ The New England Resilience & Transition (NERT) network is a network for grassroots groups working on community resilience, Transition, the new economy, permaculture, renewable local energy, local food, sustainability, environmental justice, climate justice, time banking, and more.

<https://nertnetwork.org/>.

Appendices:

The following appendices have not been included in this printing.
Digital copies are available online:

Appendix A: Community Health Improvement Plan 2015-2020

http://www.claremontnh.com/MP2017/Energy_AppA.pdf

Appendix B: Claremont Health Survey, 2014

http://www.claremontnh.com/MP2017/Energy_AppB.pdf

Appendix C: Community Health Needs Assessment, September 2015

http://www.claremontnh.com/MP2017/Energy_AppC.pdf

