

Section IV: Climate Adaptation Priority Goals and Targets

After identifying and categorizing the sectors and subsectors that will be most impacted by climate change, Committee members were tasked with prioritizing the opportunities to strengthen Keene's ability to adapt. The Committee found that there was significant overlap between what actions they believed were important to address from an adaptation perspective and those typically associated with climate mitigation. The Committee worked diligently to frame most efforts through the adaptation lens, but strongly believe that their mitigation efforts are key to their adaptive success, and therefore included some measures that may also be construed as mitigation efforts.

After the top priorities were determined from the ranking system, Committee members divided into three teams (one team per sector) and each team developed goals and targets for each priority opportunity. Goals were defined as broad, general statements about the expectations of a program, project, or activity. Goals, in general, are immeasurable; they provide direction for a program, project or activity. Targets (or objectives) were defined as being more specific statements that provide a standard of measurement. Targets evaluate progress toward achieving the stated goal, and can provide a performance measure, an estimated time for completion, or a specific scope.

Given that many parts of the world are already beginning to feel the impacts associated with a changing climate and that growing and existing concentrations of greenhouse gases in the atmosphere will continue to warm our planet, addressing both adaptation and mitigation in climate protection activities is increasingly necessary.

It is important to keep in mind that the following opportunities, goals, and targets were identified as ways in which City government could begin efforts to adapt to climate change vulnerabilities. Some of these efforts impact City government only, while others are inclusive of the community at large. The Committee felt strongly that a priority should be reducing greenhouse gas emissions associated with climate change. Given that many parts of the world are already beginning to feel the impacts associated with a changing climate and that growing and existing concentrations of greenhouse gases in the atmosphere will continue to warm our planet, addressing both adaptation and mitigation in climate protection activities is increasingly necessary. Keene has therefore identified certain mitigation strategies in this plan that will ideally lessen the need for long-term adaptation efforts.

Keene's Climate Adaptation Opportunities, Goals, and Targets

SECTOR 1: THE BUILT ENVIRONMENT

Opportunity: Building and Development

Goal A: Reduce the likelihood of structural damage resulting from predicted increases in severe weather events.

Target A: Encourage more pitched roofs and incorporate design standards that consider snow stacking (zones and increase in roof loads) and ice falling zones.

Target B: Identify a 200-year floodplain and prevent future development in these areas.

Target C: Investigate design standards for buildings that currently handle weather conditions similar to the climate forecast New England can expect in the future (e.g., buildings constructed in the southern states).

Target D: Continue to research and allow City staff to participate in educational opportunities to learn about advances in green building design and practice.

Goal B: Create, adopt, and implement a City building and energy code that incorporates sustainability, green building materials, and energy conservation principles by 2012.

Target A: Research and review existing information and how similar codes have been developed and implemented in other communities.

Target B: Improve existing energy conservation standards by a minimum of 25% through implementation of the code in both commercial and residential development.

Target C: Garner input from the development community and other stakeholders to ensure the development of a code that is easy to understand and easy to implement, while simultaneously achieving the City's sustainable development and energy conservation goals.

Target D: Explore the use of traditional and alternative building materials for added strength and durability of construction to improve the longevity of buildings and then incorporate these materials into building code requirements.

Goal C: Make all new development in Keene “green” (i.e., sustainable).

Target A: Build a green building (City-owned or private) in Keene that can serve as an example for the community that incorporates sustainable design and materials and is 50 to 70% more energy efficient than a conventionally designed building, within five to seven years.

Target B: Incorporate sustainable stormwater design and management techniques to lessen the ecological footprint of new development, and take into account the potential for greater storm loads, by 2012.

Target C: Explore, craft, and implement design standards that will support development that creates a smaller ecological footprint for municipal and public buildings (e.g., LEED certification for municipal buildings) while enhancing their resiliency to severe weather events.

Goal D: Lower the ecological footprint of existing buildings.

Target A: Update City code to include green building standards for all major renovations, in a fashion consistent with Goal A outlined above, by 2012.

Target B: Include options and incentives in the building and energy code for developers and homeowners: alternative building materials, alternative energy sources, HVAC system designs that achieve, at a minimum, 50% greater energy efficiency, by 2012.

Target C: Update the City’s Infrastructure Standards to ensure public safety in the event of major flooding or severe storm events.

Goal E: Reduce sprawl and promote infill development/redevelopment.

Target A: Identify areas within the City that have infill or redevelopment potential and are outside an area of potential significant impact to flooding. Aim to have 50% of these areas developed by 2027.

Target B: Adopt smart growth principles in the comprehensive master plan to support this goal, which provide for growth boundaries to avoid new or continued development in areas that are deemed high risk through a vulnerability assessment.

Target C: Revise conservation subdivision regulations to create incentive for the developer to provide greater densities and community services in this type of development, while achieving open space conservation.

Target D: Devise incentives to foster infill development in areas within the City that have been identified as being at low risk for flooding.

Opportunity: Transportation Infrastructure

Goal A: Create alternative route options for movement of goods and people.

Target A: Identify alternate routes and modes for goods transport and evacuation efforts during emergency situations.

Target B: Incorporate requirements into site plan, subdivision, or zoning regulations that require a grid system for future street layout patterns.

Goal B: Design and reconstruct roadways to handle changes in temperature and precipitation as a result of a change in climate.

Target A: Change design requirements for new or refurbished roadways to include different pitches combined with stormwater design and/or use of more permeable surfaces to effectively remove water from the roadway.

Target B: Explore roadway materials that may be utilized in road construction that are more tolerant to quick changes in hot or cold weather in order to decrease repair costs, enhance safety, and increase longevity of road surfaces.

Goal C: Provide sustainable transportation mode choices (locally and regionally).

Target A: Identify and implement Transportation Demand Management (TDM) techniques.

Target B: Increase multi-modal trail infrastructure throughout the City to connect people from where they live to services and work through walking, bicycling, etc. Changes in site plan, subdivision, and land use policies may support the development of a more comprehensive system.

Target C: Identify and obtain funds (local, state, federal) for the development of a local public transportation system that connects with the regional transportation system.

Target D: Lobby policy makers to make changes in transportation policy to support the development of state-wide multi-modal transportation infrastructure in areas less susceptible to significant climate impacts.

Opportunity: Stormwater Systems

Goal A: Safely and efficiently remove stormwater from the built environment.

Target A: Work with the Regional Planning Commission to create a regional management plan for future stormwater runoff levels. Aim to develop and have all municipalities endorse or adopt the plan by 2015.

Target B: Research, create, and begin the implementation of a green streets and a sustainable infrastructure program in Keene, similar to those developed by the City of Portland, Oregon and the City of Seattle, Washington by 2012.

Target C: Adequately assess the need for new culvert capacity in the City; identify where capacity and infrastructure upgrades are needed; and begin a replacement program.

Target D: Include the reassessment of stormwater infrastructure into the City's Comprehensive Master Plan and Capital Improvement Program to replace failing or antiquated infrastructure (inclusive of Three Mile Reservoir, Ashuelot River, Surry Mountain, and Otter Brook dams).

Target E: Approach Army Corps of Engineers for reassessment, using climate change scenarios, of the capacity of existing dams and recommend changes to ensure the ability of these systems to withstand increases in precipitation by 2009.

Target F: Devise and implement a process for coordination of stormwater, utility, and streetscape improvements to occur in sync with the City's capital improvement schedule for road repairs by 2009.

Target G: Identify stormwater treatment and management standards to minimize discharge from private property and from public improvement projects.

Goal B: Decrease stormwater runoff and flash flooding.

Target A: Foster innovative storm water design requirements (on and off site) and include these in site plan requirements.

Target B: Adopt a Net Zero Runoff site plan requirement.

Target C: Identify areas where increased infrastructure capacity is needed to hold/divert water and include replacement or upgrade in Capital Improvement Program.

Opportunity: Energy Systems

Goal A: Decrease the ways in which energy supplies could be interrupted.

Target A: Identify low-risk areas that would allow for the safe burial of existing power lines (coordinate with road improvement projects and upgrades in the Capital Improvement Program) to avoid interruptions due to increased precipitation events.

Target B: Establish the requirement that new construction builders bury utilities during the construction phase.

Goal B: Increase the resiliency of emergency energy systems.

Target A: Connect emergency centers with onsite renewable energy sources to reduce susceptibility to lapses in the conventional energy supply.

Goal C: Increase municipal and community energy security, use of renewable resources, and overall energy efficiency.

Target A: Provide 50% of municipal and community energy needs locally through local renewable energy resource development (such as small scale wind, micro hydro, solar, geothermal, and other renewable resources) by 2027.

Target B: Take steps to decrease municipal and community energy consumption by 25% and decrease greenhouse gas emissions caused by the production of energy by 75% through energy conservation measures and the development of renewable energy resources by 2027.

Target C: Create a wind assessment specific to Keene that identifies sites for wind generation facility development, if feasible, including the City's recycling center, by 2010.

Target D: If Target C above results in adequate wind availability for a wind generation facility to be installed at the recycling center, the City should install such a facility and seek grants, other funds, or partnerships to leverage local dollars to cover the cost of purchase and installation of a wind generation facility by 2011.

Target E: Incorporate solar hot water heating into 20% of households by 2020.

Target F: Incorporate passive solar, micro hydro, geothermal, and micro wind into residential and commercial development and zoning codes by 2012.

Target G: Provide training for developers and designers to include these technologies (e.g., wind generation, solar, geothermal) into development design.

Target H: Expand City's green fleets program.

Target I: Develop alternative energy supply demonstration projects including micro hydro, wind, alternative fuels, etc.

Goal D: Engage energy providers to enhance local renewable generation opportunities.

Target A: Encourage the state to increase amount of renewable energy produced in the state and to keep that energy in the state.

Target B: Work with local energy providers to provide incentives for the development of renewable energy resources for residents and local businesses.

SECTOR 2: THE NATURAL ENVIRONMENT

Opportunity: Wetlands and Sub-surface Waters Protection and Management

Goal A: Increase the protection of existing and future wetlands to maintain the ability of these systems to naturally recharge aquifers and decrease stormwater run-off.

Target A: Develop a wetlands management strategy by 2010 that includes the identification of and recommendation to preserve key wetland areas in the City that will reduce the impact of a flooding event.

Target B: Develop a City-wide hydrologic study identifying the hydrologic areas, particularly those most susceptible to changes in climate and develop management plans, by 2010.

Target C: Incorporate wetland and sub-surface waters protection into the comprehensive master plan.

Target D: Update all relevant City standards to consistently support the protection of wetlands and sub-surface waters, whether during plan review, construction, or during operations.

Goal B: Educate the public about wetland protection as a climate adaptation strategy.

Target A: Develop a guide for homeowners, developers, architects, etc., by 2009, to educate them about the significance of wetlands and their role in adapting to climate change.

Target B: Devise a public outreach campaign/presentation.

Target C: Incorporate wetland education into Earth Week and Community Planning Month activities.

Goal C: Increase Keene's water storage capabilities in the face of drought conditions.

Target A: Create a watershed management plan.

Target B: Protect aquifer recharge areas.

Target C: Devise greywater storage and reuse systems to recycle and utilize water resources more efficiently.

Opportunity: Fauna and Flora

Goal A: Integrate into recently published state wildlife action plan.

Target A: Align City policies to support goals of New Hampshire wildlife action plan by 2010.

Goal B: Protect habitats and migration routes.

Target A: Identify existing and future potential animal migration routes and techniques for crossing protection, and coordinate installation of crossing route protection infrastructure, by 2012.

Target B: Develop a habitat protection program and finance options by 2010.

Target C: Establish conservation-related standards for rural development to protect migration routes. Utilize these regulations to ensure habitat connections, or corridors, to allow animal movement.

Goal C: Devise land use regulations to preserve forests.

Target A: Require sustainable forest management plans for all commercial logging conducted in the City.

Target B: Create a ban on clear-cutting existing forested areas for building lots in the City and create standards for preparing a forested site for development.

Opportunity: Agriculture

Goal A: Increase Keene's food security.

Target A: Develop a food security plan for Keene by 2010.

Target B: Incorporate the food security policy and actions into planning efforts by 2012.

Target C: Create a local food security baseline and increase local food production by 20% within five years. The baseline should be completed by 2010, as part of the food security planning process.

Target D: Identify and protect prime agricultural soils through ordinance, conservation measures, or other protection measures.

Goal B: Research and identify what crops will be productive in our region with a warmer climate and changing soil composition.

Target A: Identify research currently underway.

Target B: Develop a "Farmer's Guide" and a residential growers guide that will identify appropriate crops by 2010.

Goal C: Encourage value added economic activities for agricultural products.

Target A: Develop a micro/incubator business program focused on agriculture and value-added agricultural products.

Target B: Create wood processing opportunities locally.

Target C: Create co-generation opportunities locally.

Target D: Develop a downtown food co-op by 2012.

Target E: Link local farmers with food-related businesses within the community and devise a public education campaign to link the public with establishments that support local farms.

SECTOR 3: THE SOCIAL ENVIRONMENT

Opportunity: Economy

Goal A: Create support services for people who lose their jobs (e.g., snowplowing, sugaring) as a result of climate change.

Target A: Establish retraining programs.

Target B: Establish scholarship programs.

Target C: Establish loan programs for citizens who need to revamp their businesses.

Target D: Prepare for possible in-migration of affected coastal populations as a result of rising sea level. All areas of social support will be impacted, including housing, jobs, social services, and food supply.

Opportunity: Public Health

Goal A: Increase public awareness about the public health implications of climate change, including risks and the need for emergency preparedness.

Target A: Provide public education on mosquito and tick protection and disease prevention.

Target B: Provide public education on emergency preparedness (e.g., creating an emergency food supply, community evacuation procedures, etc.). In developing a public education program, consider the methods available to effectively communicate the issue to a general audience.

Target C: Provide public education on how to handle flood emergency situations (e.g., toxic substances in basement, electrical lines, etc.).

Target D: Develop a program that identifies various vector control methods and policies to apply those methods.

Target E: Anticipate the arrival of new vectors and associated diseases and identify alternative methods to control or eradicate those vectors (develop early detection and warning systems, review the use of spraying and consider the health implications of those actions, etc.).

Goal B: Train and Educate Emergency/Human Services/Public Health officials and workers.

Target A: Establish training programs for public health workers to deal with the emotional aspects associated with loss of life and property caused by extreme weather events.

Target B: Establish a support system to identify and manage emergency worker burnout.

Opportunity: Emergency Services

Goal A: Improve the reliability of emergency communications during severe weather events.

Target A: Inventory the telephone land-line availability in local businesses and private residences by 2009.

Target B: Devise a plan to effectively identify community communications vulnerabilities and options by 2010.

Goal B: Increase community communication for emergency events.

Target A: Devise and coordinate a county-wide system to effectively communicate emergency information to the community.

Target B: Address loss of cellular service and identify other means of communication that can be used when conventional systems are down.

Target C: Develop an Incidence Command System (ICS) to identify a process and/or chain of command for communication.

Goal C: Increase the ability of the public to respond/recover from extreme weather events.

Target A: Create an education program to increase public awareness of extreme weather event resources in coordination with Keene All-Health Hazard Region Annex by 2012.

Target B: Identify and designate convenient, reliable shelters for cold/warm extreme weather events by 2012.

Target C: Create excessive-heat/cold weather emergency policies.

Target D: Establish a Reverse 911 (10 towns in New Hampshire currently have it in place) automated call-back system in the community to notify residents of evacuation routes or other information in the event of an emergency or disaster.

Target E: Consider how to create and then disseminate information to the public for new extreme-weather related emergencies (e.g., what to do with toxic materials that may be in a flooded basement, what to do with the water in a basement that becomes contaminated, etc.).

Target F: Identify a waste management program for debris.

Target G: Identify distribution points for life-essential goods and services.

Target H: Create programs to provide assistance beyond the event (e.g., counseling, job placement, etc.).

Goal D: Continue to train and educate staff and the public regarding current and future diseases and associated vectors.

Target A: Increase special fund for training, monitoring, and education by 100% in five years.

Opportunity: Promote a Local Climate Appropriate Economy

Goal A: Support environmentally sustainable businesses and economy.

Target A: Review and rewrite zoning code and land development regulations in five years to include sustainable building materials, design, and energy conservation measures.

Target B: Provide incentives for businesses to locate in Keene that produce sustainable and environmentally friendly products or that utilize sustainable principles in their production processes.

Target C: Create an Economic Development Coordinator position within the City to achieve Target B, above, and Goal B, below.

Goal B: Increase the vitality and competitiveness of local business.

Target A: Identify economic development policies and goals that incorporate sustainability; then seek out businesses that meet those goals.

Target B: Support business incubators to bolster local business development that provides “niche” services or products that are environmentally friendly.

Target C: Provide assistance in the creation or identification of markets for sustainable businesses or their products.

Target D: Create a media package that invites target companies to locate in Keene and highlights Keene’s commitment to the environment and sustainability.

Target E: Create a way-finding system to increase ease of movement and access to key areas (e.g. downtown, evacuation routes, warm/cool shelters) of the City via alternative transportation modes and prioritize clearing of these paths in the event of emergencies.

Opportunity: Food Security

Goal A: Support local agricultural economy.

Target A: Inventory and map existing farms (acreage and commodity) by 2010 and update every five years.

Target B: Increase local food production by 20% within five years of establishing baseline of community food production. The baseline should be completed by 2010, as part of the food security planning process.

Target C: Double the size and number of community gardens by 2027.

Target D: Identify protected and unprotected agricultural areas by 2010 and aim to protect at least 10% of unprotected lands by 2020.

Target E: Identify plants that will be compatible with future projected climate and soil conditions by 2010.

Target F: Educate the community about the relationship between food production and greenhouse gas emissions that contribute to global warming.

Target G: Provide the local farmers' market with a permanent space (land or building) for the market to occupy.

Target H: Coordinate City events with farmers' market days, when feasible.

Target I: Explore changes to the zoning code to encourage farming (on any scale) and discourage the development of open space areas that could be utilized as agricultural land.

