CLIMATE RESILIENCE AND SUSTAINABILITY ELEMENT TECHNICAL PAPER

While not a required element of a Master Plan in Massachusetts, the Town of Blandford has chosen to include a special section on Climate Resilience and Sustainability as this is not an ordinary Master Plan, rater it is a resilient Maser Plan. This element lifts up the climate resilience and sustainability actions the Town can take to assure a resilient future. However, the land use and natural resources and environment related climate resilience and sustainability content is found in those chapters.

A range of local and state and federal regulatory actions can create a supportive framework from which to launch Blandford's climate resilience and sustainability actions.

Defining Blandford's Climate Resilience and Sustainability foundation

Blandford is a certified Green Community and a certified Municipal Vulnerability Preparedness Community. Blandford has an up to date Hazard Mitigation plan.

The purpose of this section is to provide an inventory of existing climate resilience and sustainability characteristics, an analysis of zoning and other regulations related to the topic, as well as a summary of projected and future climate and sustainability-related trends; it will draw on other plan elements and identify opportunities to address resilience and sustainability. The conclusion of this section lays out recommendations for zoning changes, resilience efforts, management tools and other implementation techniques designed to assist Blandford in implementing its vision for climate resilience and sustainability.

INVENTORY AND EXISTING CONDITIONS

In 2013, atmospheric CO2 levels exceeded 400 parts per million (ppt) – higher than anytime in human history, (800,000 years of ice core data). World-wide, each of the last three decades has been increasingly warmer than the previous. Twenty of hottest years on record have occurred in the past 22 years. The last five years were the five hottest ever.

A few summers ago, July 2016 went down in the books as the hottest month ever recorded according to NASA. The following month then tied that record. And one year later, July 2017 tied with August and July of 2016 as the hottest month on record.

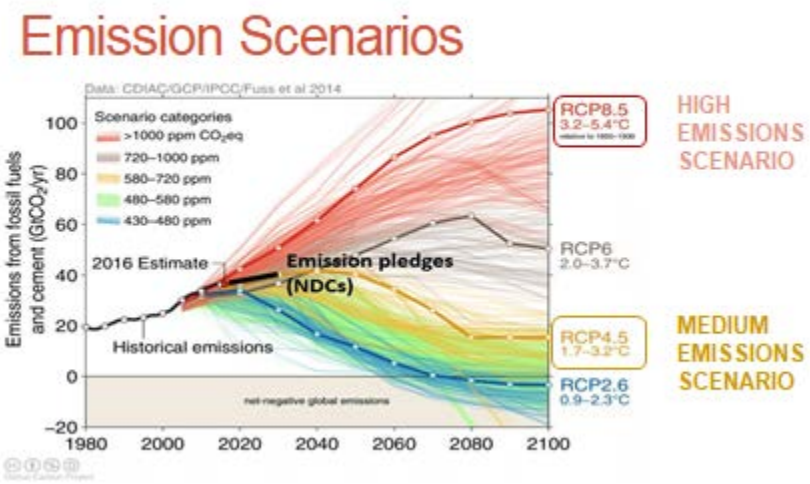
According to the Commonwealth of Massachusetts Resilient MA website, the Westfield River basin is expected to experience:

- increased average temperatures, and in minimum and maximum temperatures, throughout the 21st century
- increase in days with daily temperatures over 90, 95, and 100
- Decrease in days below 32 and 0
- decrease in heating degree days (under 65), and increase in cooling degree days (over 65) seasonal projections for total precipitation are variable for most of our

region, but

- the winter and spring seasons are expected to experience the greatest seasonal increase both in total precipitation and the frequency of heavy downpours, or days receiving precipitation over one inch

Concerns and challenges identified by Town officials include: Uneven distribution of snow/rain; Transportation infrastructure and accessibility; Downed trees blocking roadways; Dirt roads washing out during flash thaws, and Pole-based electricity and communication lines



The scenarios of how emissions change in the future become vastly different as we look further out towards the end of the century. The IPCC considers a range of scenarios from the extremes of approximately 3.6°F (RCP2.6) to between 7°F (RCP8.5). RCP = REPRESENTATIVE CONCENTRATION PATHWAYS, essentially defined by their cumulative measure of human emissions of GHGs from all sources, expressed in Watts per square meter. This variability tells us that mitigation (as in mitigating our current contributions to GHG emissions) is so important to help shape a less disastrous future.

Reducing vulnerability is not just about the challenges Blandford faces but also the assets we have at our disposal to deal with those challenges. CRB workshop participants were quick to point out Blandford's strengths in responding to the previously identified challenges. Assets are important because they help increase our resiliency to hazards and climate change. It's important that these assets are safeguarded so that they continue to serve as strengths well into the future.

Green Communities certification

Blandford has taken the important step toward climate resilience and sustainability of being a certified Green Community. This means the town is regularly monitoring municipal energy use in buildings and vehicles and is working to reduce overall municipal energy use

by 20%, succeeding in achieving a 14% reduction so far. The town has also facilitated clean energy generation and adopted a more energy efficient building code, assuring that all new construction in town is energy efficient.

Municipal Vulnerability Preparedness (MVP) certification
Blandford achieve MVP certification in 2020, making the town eligible ot apply for millions of dollars of funding for resilience and climate action. The top four hazards identified by the Community Resilience Building workshop participants (2019) are listed below:

- Flooding
- Severe Weather, such as Severe Storms (including high winds) and Winter Weather
- Extreme Temperatures
- Drought and Wildfire

Areas of Concern identified are:

Infrastructure: Pole-based electricity and communication lines, town and state-owned roads, road passability

Water Infrastructure: Dams, culverts, and bridges; drinking water pump and distribution system; stormwater flooding, especially at Town Hall

Natural Resources: Tree canopy and hazard trees, invasive species, habitat change

Human and Social: Changing age-related demographics, residents with limited mobility, poverty-level and low- income populations, emergency shelter network, emergency communications platform (Blackboard Connect)

Transportation infrastructure

The specific issues identified within Blandford's roadway network were two-fold: infrastructure maintenance and culvert functionality. Road passability is important for residents who may need to evacuate or travel in case of emergency, and it was noted the town features many roadways with only access point which, should they ever be blocked by flood or debris, could trap residents. Undersized culverts contribute to local street flooding on North Blandford Road, Russell Stage Road near Nye Brook, Birch Hill Road, Hiram Blair Road, and at South Street and Cobble Mountain Road. Many roads in Blandford lack winter maintenance and what may be a passable road in the summer becomes unpassable due to seasonal weather and debris build-up.

Cobble Mountain Road has been inaccessible to the public since 2001, when Springfield Water and Sewer Commission closed it due to terrorism concerns over the reservoir following the September 11 attacks. The road was historically a gateway for residents to have easier access to the Mass Pike and other important connections in the region. Closing the road increased commute times and reduced accessibility to emergency services for residents in neighboring Granville. Blandford participants noted that the road closure also eliminates access to one neighborhood in the southwest corner of town, colloquially

referred to as "Land's End," via town roads. Anyone traveling to or from that area today must drive through the Town of Otis to get to this part of Blandford.

Electrical distribution system

At the CRB workshop (2019) participants identified the need to increase storage capacity for electricity generated by renewable resources and to ensure back-up power for a more resilient grid while also advocating for increased communication with Eversource for preventative tree-trimming

Communication Networks

The town has reverse 911 and has lifted up the need to reach out to all residents to make sure they are enrolled so that they receive urgent messages in the event of emergencies.

Other sections of this plan address resilience issues related to stormwater, related flooding and drinking water concerns

Hazard Mitigation Plan

The Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) define Hazard Mitigation as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards such as flooding, storms, high winds, hurricanes, wildfires, earthquakes, etc. Mitigation efforts undertaken by communities will help to minimize damages to buildings and infrastructure, such as water supplies, sewers, and utility transmission lines, as well as natural, cultural and historic resources. In 2016, the Town of Blandford completed their first Local Natural Hazards Mitigation Plan, in collaboration with the Pioneer Valley Planning Commission. Planning for hazard mitigation involved a Hazard Mitigation Committee comprised of members of the Town.

The Fire Department has two engines that are out of date, a brush truck and a rescue truck. Ambulance service for the town is from Huntington and it can take almost thirty minutes for an ambulance to arrive on scene in Blandford. The Fire Department rescue truck does not have the ability to transport patients. The disrepair of the Fire House is significant. The building is so small that a regular size fire truck would not fit and the small Blandford trucks have only inches of room to back-in. The Fire House does not have adequate heat, it has a combination of bathroom-kitchen, and the ceiling is falling down. (need to check on status)

Emergency Management Director and Local Emergency Planning Committee

The town has a designated Emergency Management Director and an active local emergency planning committee.

Engagement with Western Region Homeland Security Advisory Council (WRHSAC)

The town is not currently actively engaged in the WRHSAC.

Zoning

Zoning regulations and other land use laws constitute a town's "blueprint" for its future. Blandford has by right zoning for solar and has adopted the stretch code. Additional regulatory review is being conducted as part of this grant by Dodson Flinker and will be completed by May.

ISSUES AND OPPORTUNITIES

The Master Plan process has provided the opportunity for residents to present comment and concerns about growth in Blandford and the 170 survey respondents, along with committee members and focus group members, have affirmed the importance of the Town's "rural character" which may come under threat in the face of increasingly severe and unpredictable weather events.

As with many other rural towns where there are large tracts of open land, solar developers are seeking to site large scale developments taking 20-30 acres of land per parcel, and that is no different in Blandford, where within the past few years, six solar developers have received permits to construct solar arrays. While it is great that the Town is doing its part to host solar projects that assist the Commonwealth to meet its ever increasing clean energy goals, the Town is cautious about balancing concerns for climate resilience, erosion and increased run off with new solar development.

Climate Change and Clean Energy focus group highlights

Some highlights presented in this focus group include:

- Remote lifestyles have resulted in challenges.
- Climate-related issues:
  - Power outages and Eversource has poor response time
  - Slower response times with tornadoes
- In the event of an emergency, community comes together and the senior needs prioritized – strong sense of comradery; mobilization in an emergency situation.
- Maintenance of the water system and water lines take priority.
- An emergency management strategy would be restarting and having a checklist in place with neighboring towns.
  - Need a professional staff member to help with emergency management.
- We have a "take care of it attitude"
- Trimming trees is an "ongoing/losing battle;" they are growing higher than the tree line.

In the community survey when asked "The Town should prioritize energy efficiency, reducing emissions, and responding to the impacts of climate change", 61% of respondents answered strongly agree or agree. 24% were neutral and only 15% disagreed or strongly disagreed.

In the survey 94% of respondents reported that it is important or very important that they be able to live independently in their own home as they age.

Given this desire it will be very important that all home owners take advantage of no cost home energy assessments from Mass Save to receive recommendations and no cost air sealing and insulation to reduce energy costs

Facilitating climate resilience and sustainability for residents

Facilitate and encourage access to Mass Save no cost home energy assessments

Leading By Example—advancing Green Communities certification to include the GRSD

Blandford has been a certified Green community since 2016 and has already secured and completed an additional competitive grant after completing all the work funded by the initial designation grant.

In 2020-2021 the Town of Blandford implemented three (3) energy saving, comfort improving and cost saving projects at the Town Hall (Energy Management System**)** and Library and Post Office (weatherization) from September 2020 to February 2021. The bulk of this work was funded by the Massachusetts Green Communities program grant award of $110,764 including the Energy Management System at Town Hall and weatherization at the Library. In addition utility rebates ($10,655) were secured to complete weatherization work at the Post Office. All energy efficiency work was performed by Energy Source an approved utility provider under MGL 25As.14

The new energy management system is anticipated to save 2,285 gallons of oil and 8,450 kWh of electricity each year. Combined this equates to an energy savings of 346.5 MMBTU annually. The project is anticipated to reduce the energy use of the Town Hall by 29% from the 2019 fiscal year. Additionally, this work is anticipated to save the town $9,607 in energy and maintenance costs annually. Currently, Town Hall is the largest energy user in town, using more than three times as much energy as the next most energy consumptive building. Implementing energy savings at Town Hall will have the greatest impact on the Town's overall energy use.

Promoting Clean Transportation Options

In the survey, focus groups and at the vision session there was considerable support for walking and biking in Blandford.

Community Resilience

The Town's ability to utilize its available resources (energy, communication, transportation, food, etc.) to withstand and recover from adverse situations is known as its community resilience. Blandford's resilience will rely on a proactive and planned approach to protect its resources and direct where development and redevelopment can occur. See related recommendations in the Land Use technical paper.

Town of Blandford -- Green Infrastructure and Climate Resiliency Policy DRAFT

Section 1. Goals:

The goals of this Town of Blandford policy are to:

1. promote the use of green street facilities and green infrastructure in public and private development as a cost-effective and sustainable practice for stormwater management in current and future projects wherever possible. This includes: road construction and reconstruction projects; sewer projects; and new development and redevelopment projects.
2. promote climate resiliency in public buildings and infrastructure and private development.

Section 2. Definitions:

Green Infrastructure: Keeps rain close to where it falls, using structures to improve on-site infiltration, such as rain gardens, green roofs and permeable pavements, to promote cleaner, slower, and smaller storm flows to nearby rivers and streams.
Green Streets: Green Streets are a subset of Green Infrastructure in which the street handles significant amounts of stormwater on site through use of vegetated and/or soil-infiltration facilities. Green Streets can include landscaped street-side planters or swales or tree box filters or porous pavement that capture stormwater runoff and allow it to soak into the ground as soil and vegetation filter pollutants.

Section 3. Policies:

WHEREAS,

The Town of Blandford recognizes:

1. Stormwater runoff from streets, roads, parking lots, and other impervious urban surfaces is a significant source of water pollution to our rivers, streams and water bodies;
2. The local impacts of climate change in Blandford include more frequent 100-year floods and more severe storms; an increase in insect populations and insect-borne diseases; rising water tables and increases in invasive species.
3. Green Streets can provide cost-effective infrastructure solutions to reduce and manage stormwater runoff and flooding from more intense storm and flooding events and can reduce localized flooding from surcharging, providing some adaptation to climate change.
4. Green Streets can improve water quality by filtering stormwater, removing contaminants, including total suspended solids (TSS), organic pollutants /oils, and heavy metals, and cooling the stormwater before it encounters groundwater or surface water bodies, which benefits watershed health.
5. Green Streets foster unique and attractive streetscapes that protect and enhance

neighborhood livability, integrate the built and natural environments, enhance the pedestrian environment, and introduce park-like elements into neighborhoods.

6. Green Streets encourage the planting of landscapes and trees which contribute environmental benefits such as reduced summer air temperatures, reductions in global warming through carbon sequestration and air pollution screening.
7. Green infrastructure can reduce the long-term costs of gray infrastructure maintenance, and complement gray infrastructure with hybrid systems of gray, piped infrastructure combined with green, vegetated infrastructure.
8. Green infrastructure will be an investment in Blandford's village centers. The costs for installing green infrastructure may be initially higher, but long term costs of climate changes, storm damages and flooding will be mitigated. Green infrastructure, when built in tandem with grey infrastructure, extends the lifespan of both green and grey infrastructure. Green infrastructure reduces water pollution more cost effectively than grey infrastructure alone.
9. Recharge of groundwater sources is a key mitigation activity under the Massachusetts Water Management Act regulations 310 CMR 36.00.

NOW, THEREFORE BE IT ORDERED,

The Town of Blandford policy is to promote the use of green street facilities and green infrastructure in public and private development through regulation, capital investment, and management mechanisms as a cost-effective and sustainable practice for stormwater management in current and future projects when technically and economically feasible. This includes road development and reconstruction, bicycle and pedestrian projects, stormwater projects, and other development and redevelopment.

It is Town of Blandford policy to:

1. Incorporate and maintain green street facilities and green infrastructure into all publicly funded development, redevelopment, and enhancement projects, to the extent technically and economically feasible.

To achieve this, *where feasible*, Blandford will:

a) Evaluate new municipal projects to determine if they will make the town more climate resilient and green, and will provide long-term benefits to the town.
b) Install new and replacement culverts that are open-bottom culverts designed for fish and wildlife passage, and sized to handle larger storm events expected with climate change.
c) As streets and parking lots are replaced, re-paved or installed, utilize green streets and parking lot designs with tree box filters, permeable pavement, and curbless planted medians and shoulders.
d) Purchase electric or hybrid municipal vehicles.
e) Install EV charging stations and priority EV parking spaces
f) Support "Solarize" neighborhood programs to incentivize group solar panel purchases
g) Conduct and periodically update energy audits and upgrades in energy efficiency

for all municipal buildings, and utilize Mass Energy Insight data to track and reduce energy use.

h) Green existing and new municipal buildings, schools and facilities, using, but not limited to, such techniques as rain gardens, green roofs, rainwater harvesting and porous pavements.
i) Install LED lighting for traffic lights, street lights and municipal buildings.
j) Install green stormwater infrastructure in public green spaces.
k) Work toward Blandford generating its own green power with solar or wind installations.
l) Work with power companies to bury powerlines to reduce vulnerability to storm-related power outages.
m) Work to make improvements to municipal buildings, schools and municipal infrastructure including:
    a. Resiliency improvements for flooding;
        - Green roofs, rainwater harvesting, and re-use for watering;
        - Plant trees, shrubs and vegetation around municipal facilities;
        - Install bioswales, rain gardens, porous pavements and bioretention to infiltrate stormwater on site and reduce flooding;
        - Reduce impervious surfaces and replace with greenspace;
        - Install complete streets including bike lanes, sidewalks, and pedestrian infrastructure;
        - Energy efficiency and weatherization improvements.

2. Ensure that regulations require and incentivize all development to incorporate green streets and green infrastructure features. To achieve this, Blandford will enforce current stormwater regulations, and work toward adoption of zoning best practices for:

a) On-site stormwater retention, low impact development and minimized impervious surfaces;
b) Tree protection and planting;
c) Complete streets and green parking;
d) Green roofs;
e) Solar access and streamlined solar permitting.

3. Ensure coordination and communication between town boards and departments, in particular Selectboard, Public Works Department, Building Department and Planning Board to ensure implementation of this policy, as well as fully addressing competing priorities.

Section 4. Amendments:

This policy may be amended at any time with the approval the Blandford Selectboard.

Section 5. Effective Date/Authorization:

This policy will become effective for when it is approved by vote of Blandford Select Board.

Approval by Blandford Select Board:

_____ _____ Chair, Select Board Date