Town of Becket

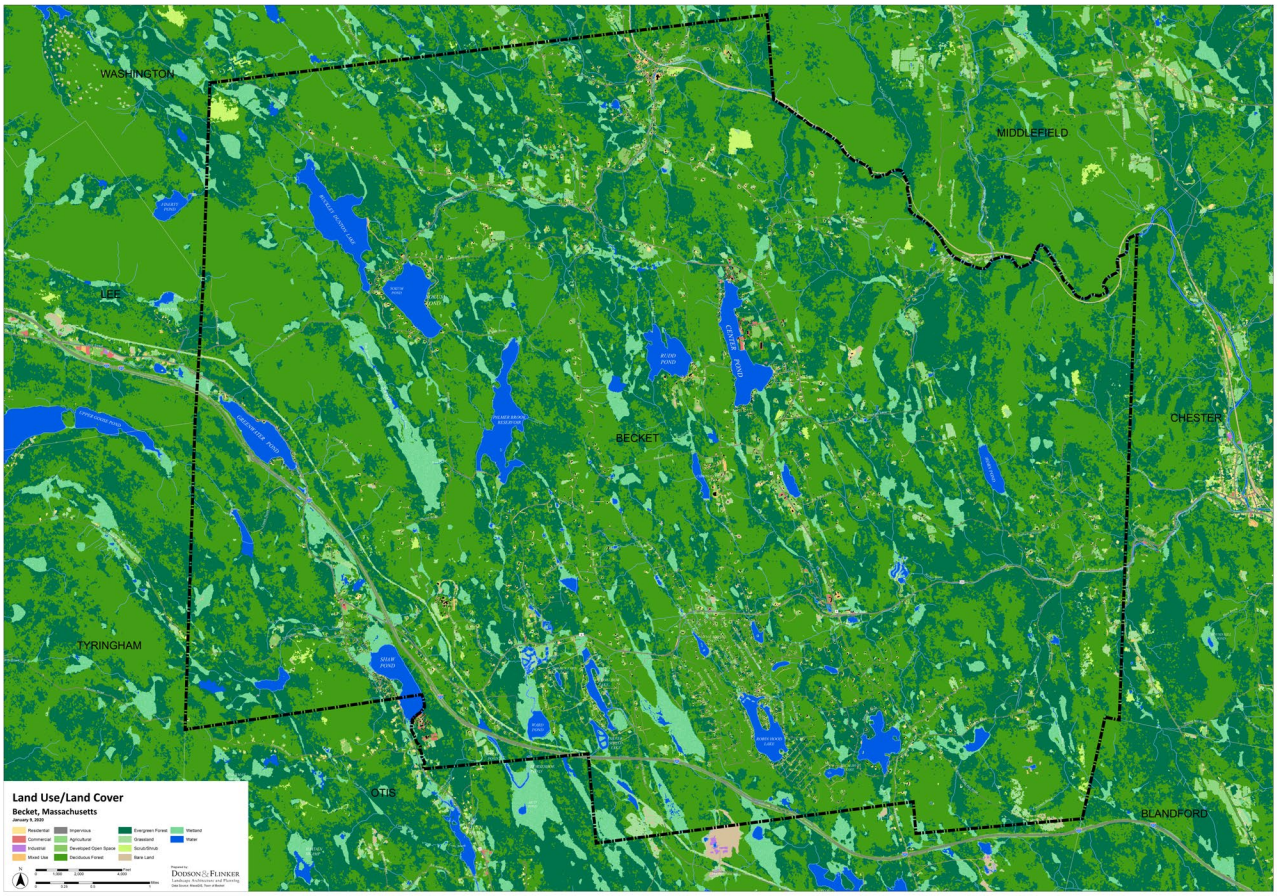
COMMUNITY RESILIENCE BUILDING WORKSHOP
SUMMARY OF FINDINGS

June 14, 2020

Cover Photos

Top: Bonnie Rigg Hill Road after culvert failure during Hurricane Irene, 2011. (Source: Massachusetts EOEEA)
Bottom: New span at Bonnie Rigg Hill Road. It is designed to withstand large storms and to enable wildlife passage. (Source: Meredyth Babcock)

TABLE OF CONTENTS



Land Use/Land Cover

Becket, Massachusetts

January 9, 2020

Residential	Impervious	Evergreen Forest	Wetland
Commercial	Agricultural	Grassland	Water
Industrial	Developed Open Space	Scrub/Shrub	
Mixed Use	Deciduous Forest	Bare Land	

N

Feet: 0 — 1,000 — 2,000 — 4,000

Miles: 0 — 0.25 — 0.5 — 1

Prepared by:

DODSON & FLINKER

Landscape Architecture and Planning

Data Source: MassGIS, Town of Becket

1. OVERVIEW

As the effects of climate change become more apparent globally and locally, the Town of Becket, like communities across the Commonwealth of Massachusetts, has begun to plan for the unavoidable impacts of climate change. In recent decades, the impacts of climate change have become widely evident. Average annual temperatures in Massachusetts have increased by about 3°F over the past century[1] with greater increases in more recent decades—half of a degree per decade since the 1970's. Meanwhile Massachusetts has seen an 81% increase in extreme precipitation events since 1948[2] In Becket, Tropical Storm Irene dropped up to nine inches of rain onto an already-saturated landscape after a particularly rainy summer in 2011.[3] During that storm, Route 20 to Chester was closed,[4] roads were damaged in Sherwood Forest, and a culvert washout cut off the southern portion of Bonny Rigg Hill Road from Route 20. The storm is but one example of the kind of future that Becket is likely to see.

Mindful that its future will be shaped by climate change, Becket applied for and was awarded a grant for Municipal Vulnerability Preparedness (MVP) Planning from the Executive Office of Energy and Environmental Affairs (EOEEA) MVP program. The MVP program is Massachusetts' flagship effort to support towns in building local resilience and preparing for climate change. Towns that complete the MVP Planning process become "MVP-certified" which makes them eligible for MVP Action grants to implement projects identified during the planning process. Communities across the state have received millions of dollars in recent years to protect or update local infrastructure, harness natural processes to reduce flooding and its impacts, update local bylaws, improve emergency communication, and more. Becket received funding to simultaneously complete a Municipal Vulnerability Preparedness Plan and update its Hazard Mitigation Plan. This report addresses the first task.

This report describes Becket's MVP planning process, records the key information it gathered, and presents recommendations for increasing resilience in Becket.

This plan is focused solely on climate change adaptation—which is trying to moderate the harm caused by climate change. This plan does not address climate change mitigation—the long-term reduction of climate change by reducing greenhouse gas emissions. Climate change and disruption predictions suggest it will not be possible to adopt or institute resilience measures able to fully manage the negative the impacts of climate change in the long term (50–100 years). However, with bold action the impacts can be more clearly understood and prepared for. The authors of this report strongly suggest that Becket also act to mitigate climate change. Mitigating climate change is the most effective way to reduce the immeasurable investment required to adapt to it.

[1] Northeast Climate Adaptation Science Center, "Massachusetts Climate Change Projections."
[2] Madsen and Wilcox, "When It Rains, It Pours: Global Warming and the Increase in Extreme Precipitation from 1948 to 2011."
[3] "Storm Events Database - Event Details | National Centers for Environmental Information."
[4] Fanto, "Tropical Storm Irene Five Years Later: 'A Lot Worse than Anybody Thought' | The Berkshire Eagle | Pittsfield Breaking News, Sports, Weather, Traffic."

2. COMMUNITY RESILIENCE BUILDING WORKSHOP

Becket received a Municipal Vulnerability Preparedness (MVP) grant in 2019. The project was led by Meredyth Babcock, supported by a core team which included Christopher Bouchard (Highway Department), Al Blake (Energy Committee), William Caldwell (Town Administrator), Cindy Delpapa (Conservation and Community Preservation Committees), Alison Dixon (Conservation Commission), Ray Ferrin (Ambulance), David Johnson (Conservation Commission), Kristopher McDonough (Police Chief and Emergency Management Director), Jim Peters (Ph.D in Forestry), Chris Swindlehurst (Board of Selectmen), and Maria Wallington (Health Specialist).

The Core Team selected MVP-certified provider Dodson & Flinker of Florence, Massachusetts and Jamie Caplan Consulting of Easthampton, Massachusetts to facilitate the process. The planning process began with a kick-off meeting on November 25, 2019, which introduced the MVP planning and Hazard Mitigation Plan processes. Core group members discussed Becket's key natural hazards, and its strengths and vulnerabilities. They identified critical facilities in the community, discussed local priorities for the MVP planning process, and reviewed a draft map of Becket for the workshop.

Over the course of the following months, the Core Team held several information sharing and gathering meetings around the Town. These "Mini-MVP" Sessions were held on November 23rd in Sherwood Forest, December 10th at the Becket Athenaeum (the Becket and Washington Community Library) and on December 16th at the Becket Town Hall. The sessions raised awareness of the MVP planning process, recruited individuals for the workshop, and introduced nature-based solutions and climate resilience planning. Information gathered from meeting participants was incorporated into the background materials for the MVP workshop.

Sign advertising a "Mini-MVP" Session at Sherwood Forest (Source: Meredyth Babcock)

Top Left: Core Group Meeting. Other Photos: Participants at the MVP Workshop (Source: Dodson & Flinker)

Meanwhile, the core team and the consultants prepared for the Community Resilience Building (CRB) workshop—a full day invitation only workshop which is the heart of the MVP planning process. They gathered background information, developed a schedule and agenda for the workshop, and recruited a group of invited stakeholders. Stakeholders were selected to represent a variety of Town departments, boards, and committees, as well as local businesses, regional organizations, and vulnerable populations. The participants included representatives from: Town departments, including Police and Fire, Highway; Town Boards, including the Conservation Commission, Planning Board, Energy Committee, Board of Health, and Historical Commission; local lake and road districts; local businesses and organizations; experts on river ecology, forests, fisheries and public health; representatives of neighboring communities; and State and regional agencies including MassDOT, and Berkshire Regional Planning Commission. See the full list of participants at the end of this report.

The Community Resilience Building (CRB) workshop was held on January 11, 2020. The workshops followed a community-driven planning process that has been tested and refined in dozens of communities throughout Massachusetts and beyond (see the CRB Workshop guide available at www.communityresiliencebuilding.com).

The workshop's central objectives were to:

- Define top local natural and climate-related hazards of concern

- Identify existing and future strengths and vulnerabilities
- Develop prioritized actions for the community
- Identify immediate opportunities to collaboratively advance actions to increase resilience.

In addition, local goals for the workshop were to identify opportunities for nature-based solutions, collect community input for an update of Becket's Hazard Mitigation Plan and to provide an opportunity for the Town's stakeholders to gather and discuss their respective focus areas and how they overlap and relate.

The workshop began with a presentation that explained the workshop process and terminology, gave background information on climate change including watershed-level projections of climate change in Massachusetts, described past climate-related natural hazard events in Becket, and provided background information about Becket's infrastructural, societal, and environmental strengths and vulnerabilities. See the Appendix for the full presentation. The presentation was followed by a group discussion of how climate change might influence natural hazards in Becket and which hazards would be most important to evaluate. For the next several hours, participants worked in small groups to identify Becket's top hazards and its infrastructural, societal, and environmental strengths and vulnerabilities.

The second half of the workshop began with a puppet interlude by Meredyth Babcock, the local MVP point person, followed by a discussion of Becket's long-term goals and how climate resilience actions could support those goals and a presentation about how to craft effective actions for building local resilience, in the short term under current climate change predictions, with a focus on nature-based solutions (see the Appendix). Workshop participants then worked for the afternoon in small groups to brainstorm and prioritize actions that could build on Becket's strengths or mitigate its vulnerabilities, in the short term under current climate change predictions, to the top climate change related natural hazards identified by the group.

At the end of the second workshop, the full group assembled again. Each small group shared their priority actions. The full group discussed the priority actions and at the conclusion of the day, were asked to vote by placing four dots on the list to indicate the highest priority actions overall.

Breakout groups were facilitated by MVP-certified consultants Peter Flinker, Allison Gramolini, Dillon Sussman and Dan Shaw from Dodson & Flinker.

This report captures the wealth of information and ideas that were generated during the CRB workshop. It highlights the top hazards, the key infrastructural, societal, and environmental vulnerabilities and strengths identified by workshop participants, and the key actions that Becket could take to build on its strengths and, to the extent feasible, reduce its vulnerabilities.

This report was reviewed by the MVP core team, who over the course of two meetings synthesized and prioritized the top actions that came out of the workshop. It was then revised based on input from twenty community members who attended a web-based listening session on May 18th, 2020. (Due to COVID-19 mandatory restrictions, an in-person meeting could not be held). The draft was posted on the town website for public review. Comments from that review have also been incorporated.

3. TOP HAZARDS & VULNERABLE AREAS

Natural hazards are natural events that threaten lives, property, and other assets. Often, natural hazards can be predicted. They tend to occur repeatedly in the same geographical locations because they are related to weather patterns or physical characteristics of an area.

The Berkshire County Regional Hazard Mitigation Plan from 2012 is Becket's most recent approved hazard mitigation plan. The Town is currently working on updating their hazard mitigation plan in conjunction with its MVP planning. The 2012 regional hazard mitigation plan evaluated Becket's risk from various hazards. Its findings are listed below.

High Risk Hazards:

- Flooding,
- Winter Storms (blizzards, snow, ice storms)
- Severe Weather (thunderstorms, wind, hail, lightning)

Moderate Risk Hazards:

- Tornadoes
- Hurricanes and tropical storms
- Extreme temperatures
- Dam failure
- Wildfire

Low Risk

- Drought
- Landslide
- Earthquake
- Ice Jams

The hazard risk evaluation above was the starting point for the assessment of hazards at the MVP workshop. It was augmented by climate change projections provided by the MVP program, information from the Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan about climate change and its interactions with natural hazards, and the knowledge, wisdom and experience of a broad range of Becket's citizens.

At the CRB workshop, each workshop group identified the top four natural hazards that they thought would have the greatest impact on Becket. The groups identified the following as top hazards that Becket faces:

- Flooding
- Severe weather (storms in all seasons)

- Ecosystem Change
- Average and Extreme Temperatures
- Impacts of Past Development

Flooding, Severe Storms, Ecosystem Change, Average and Extreme Temperatures, and the Impacts of Past Development are the town's top climate-related natural hazards according to participants in Becket's MVP Workshop (Sources, left to right: Flood by Iconathon US from Noun Project, Storm by Alexis from the Noun Project, Tree by Liane Kirschner from the Noun Project, Temperature by Vectors Market from Noun Project, Excavator by Marco Livolsi from the Noun Project)

Areas of Concern (Specific Locations)

Workshop groups mapped specific locations where natural hazards are particularly problematic. The marked-up maps are included in Appendix to this report. Specific areas of concern include:

- Summer camps which draw thousands of young people to Becket in the summer
- Jacob's Pillow which draws tens of thousands of visitors
- Roads that get may icy (Jacob's Ladder Road east of the Mass Pike, Leonhardt Road, Brooker Hill Road), may flood (Jacob's Ladder Road south of the Mass Pike near Greenwater Pond, Hamilton Road), or vulnerable to erosion (Leonhardt Road, Route 8 south of North Becket center, Main Street between McNerney Road and Carter Road). Often these roads are on steep slopes.
- Route 20 east of Main Street/Bonny Rigg Hill Road is a key route into, out of and through Becket. It has potential for landslide and/or flooding.
- Culverts that are undersized and/or structurally deficient including one on Hamilton Brook under Hamilton Road, Benton Hill Road at the intersection of Surriner Road, YMCA Road at South Cove Road, Werden Road over Thomas Brook,
- Priority areas for conservation and restoration including large, undeveloped tracks of land such as Palmer Brook Reservoir lands and wetlands.
- Areas of beaver activity with potential to flood roads or other infrastructure: behind the Becket motel; adjacent to YMCA road west of the First Congregational Church; north of the Mass Pike between Arrowhead Lane and Old Carriage Lane; County Road west of Stanley Road; near the intersection of Yokum Pond Road and Leonhardt Road; Bancroft Road near Surriner Road; Wade Inn Road east of Big Bass Lane; Bonny Rigg Hill Road near Spark Brook; Quarry Road near Cushman Brook

- Cell towers throughout the town that are critical for emergency communication
- Flooding: west of Shaw Pond
- Railroad right of way
- Waterways: the Westfield River which is a federally designated Wild and Scenic River; Palmer Brook which is impaired.
- Lakes throughout town. Lakes are a key draw for seasonal visitors and essential to Becket's economy. Most are man-made. Dams may be vulnerable to larger storm events, unanticipated volumes of runoff into impoundments and a lack of appropriate maintenance and repairs. Lakes may experience warming water, lower water levels, increases in toxic algal blooms, and increased invasive aquatic species.

Buckley-Dutton Lake in Becket. With climate change, lakes will likely continue to be a key draw for the town, especially for seasonal residents. However, lakes may be increasingly vulnerable to water quality degradation, invasive species, and other negative impacts. (Source: Meredyth Babcock)

4. CURRENT CONCERNS AND CHALLENGES PRESENTED BY HAZARDS AND CLIMATE CHANGE

Projected Changes in Becket's Climate

To prepare for the future, Becket needs to know how the climate of Becket may change over the coming decades and how that will impact natural hazards. The workshop built on the following key information resources: The Berkshire County Regional Hazard Mitigation Plan from 2012, the 2018 Massachusetts State Hazard Mitigation and Climate Adaptation Plan, and "Massachusetts Climate Change Projections" by Northeast Climate Science Center at the University of Massachusetts.

Although there is uncertainty about how rapidly the climate will change over the coming decades or how extreme the results will be, we do know the general direction of climate change and from that we can generally predict how climate change will influence natural hazards. We know that annual air temperatures in the Northeast have been warming at an average rate of 0.5°F (nearly 0.26°C) per decade since 1970. Winter temperatures have been rising at a faster rate of 0.9°F per decade on average.[5] The increases in temperature are projected to accelerate over the coming decades. Climate projections for the Westfield River Watershed that were produced by the Northeast Climate Science Center at the University of Massachusetts predict that by the 2050's:

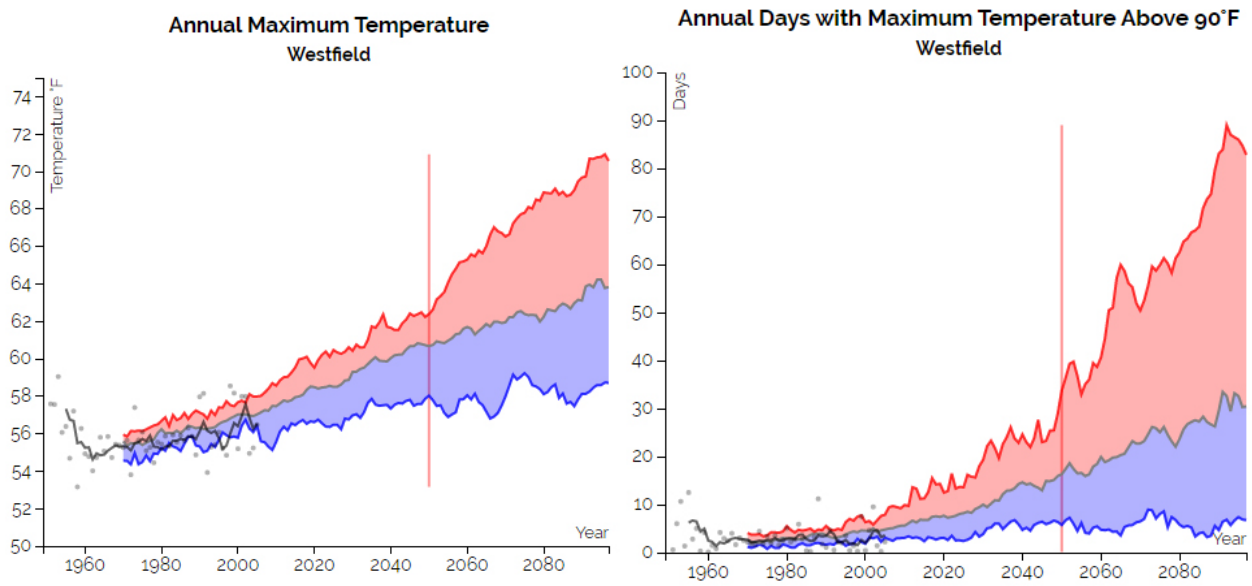
- Average annual temperature will rise 3.1°-6.6°F (7-15%)
- Average winter temperatures will rise from 23.3° to 26.5°-31.6° (13-35%)
- The biggest increases in maximum temperatures will happen in fall (3.6°-7.3° or 6-13%) and winter (2.8°-7.4° or 9-22%) by mid-century and then summer (3.9°-13° or 5-17%) and fall (4.2°-12.5° or 7-21%) by the end of the century.
- Increases in winter temperature will result in a longer frost-free season with 20-38 fewer days below 32°F (a decline of 12-23%) by the middle of this century and 24-62 fewer days below 32°F by the end of the century. The largest loss of frost-free days will occur in the fall.

Becket has historically been relatively cool in summer because of its high elevation and large areas of forest. Many buildings do not have air conditioning. Over the coming decades residents will likely increasingly install air conditioning as the number of cooling degree days increases 72%-199% by mid-century and 99%-414% by the end of the century. This will result in increased home energy use in warmer months and the associated costs will impact those with limited incomes the most. At the same time, energy use for home heating will decrease.

Along with higher average temperatures there will also be more extremely hot days. By mid-century, Becket may experience the following increases in extremely hot days:

- Days Over 90°F: from 3 days to 9-27 days per year
- Days Over 95°F: From <1 day to 1-9 days per year
- 9-60 more days over 90° per year by end of century

[5] Northeast Climate Adaptation Science Center, "Massachusetts Climate Change Projections."



Climate Change Projections for the Westfield River Basin from the Northeast Climate Science Center at the University of Massachusetts (Source: Resilientma.org, http://resilientma.org/datagrapher/?c=Temp/basin/maxt/ANN/Westfield/)

Extremely hot days can cause heat stress, especially for children, older adults, and those with chronic health conditions. Heat waves can be extremely dangerous and result in more deaths than cold snaps. Extreme heat can result in blackouts, stress pavement on the town's roads, contribute to forest fire risk. Meanwhile, overall warmer temperatures can stress numerous species that have adapted to cooler conditions and can increase the prevalence of invasive species and vector-borne diseases which can devastate ecosystems and human health.

With climate change more annual precipitation is expected, especially in winter when Becket will experience a 1%-25% increase in precipitation. Precipitation in summer and fall could increase or decrease. Likewise, drought may increase or decrease. More precipitation will fall in large events. Days per year with precipitation over 1" may increase from 8 days to 9–12 days (13-25%).

Overall, changes in temperature and precipitation patterns will continue to disrupt the relatively stable and hospitable climate that Becket's residents, plants, and animals have historically enjoyed. Although New Englanders like to complain about the weather, we know how to deal with minor snowstorms and our summers are relatively bearable. In the coming decades, as in recent decades, Becket will continue to experience increasingly unpredictable and extreme weather patterns.

Winter may bring more crippling snowstorms, more ice storms, winter flooding due to rapid thaws or rain on frozen ground, and decreased snowpack which will impact animal habitat and groundwater recharge which could impact drinking water and stream flow.

Spring, summer, and fall may bring more extreme temperatures, larger and more frequent tropical storms and hurricanes, thunderstorms, tornados, and microbursts. These larger storm events may exceed the design-capacity of some of Becket's road and stormwater infrastructure which were designed for more moderate events. They are likely to impact septic systems as episodes of elevated ground water levels could inundate leach fields or cause septic tanks to 'float'.

Already, some other communities have decided to consider the 500-year flood plain the new 100-year flood plain. Larger storm events may result in erosion and may reduce the ability of natural systems to cleanse and infiltrate stormwater which could reduce aquifer recharge and impact water quality.

Impacts of Climate Change on Hazards in Becket

The Town of Becket has been impacted by many natural hazards over the years, though its greatest hazard risks are associated with flooding, major winter storms, and other severe weather events. Of the 22 federally declared emergencies or disasters that have affected Berkshire County since 1953, nearly all were the result of these types of hazard events. Becket was also greatly impacted by a destructive dam failure in 1927 that wiped out much of the town's commercial center at the time (North Becket Village). The center never regained the level of development and activity it had at the time of the dam disaster. Some property transfers in this part of Becket are hobbled by the loss of boundary markers that are referenced on deeds, the land having been reshaped by the flood waters. In more recent years the town has been impacted by smaller but more frequent flood events that cause repeated damage and disruption to local roadways, bridges, and culverts. The hazards of greatest concern for the community today and in the future include flooding, severe weather events, and rising temperatures, each of which is projected to increase in frequency and magnitude due to climate change.

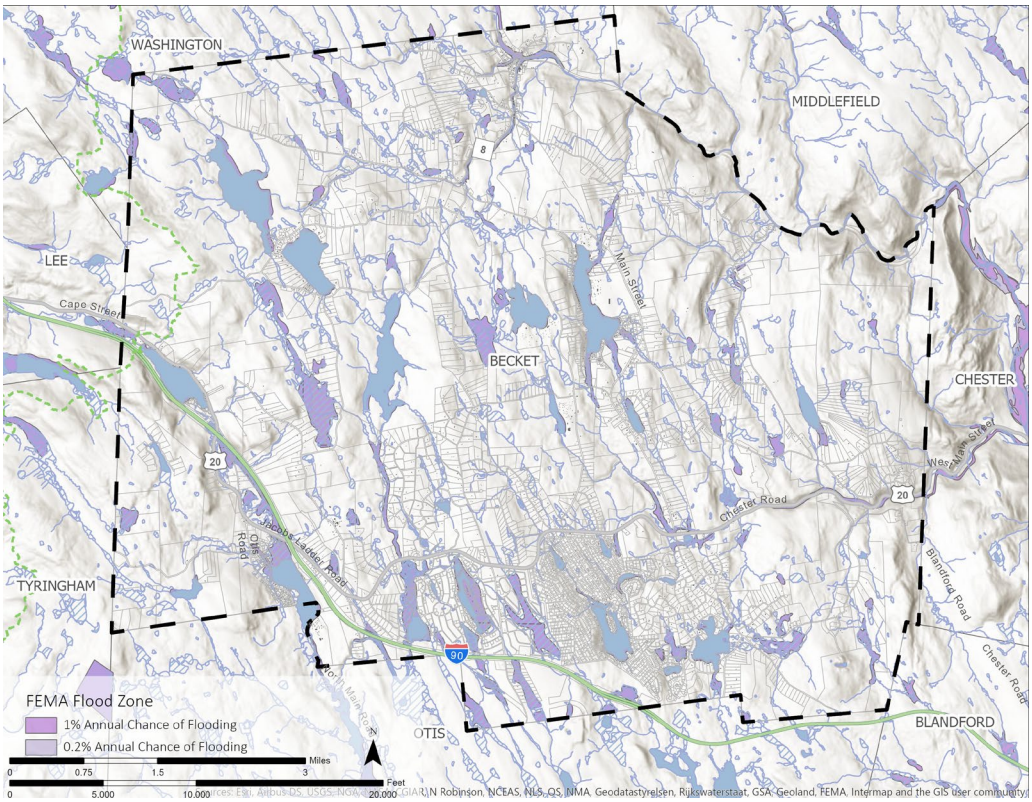
Workshop discussions about the impact of climate change on hazards in Becket recognized both the potential impacts on the developed portions of Becket—with harm to human lives, properties, and infrastructure—and impacts on the town's natural systems—with harm to forests, water systems, plants, animals, etc. Workshop participants also recognized that there are feedback loops between built and natural systems that could exacerbate harm to both.

On the human side, discussion of impacts to community members from identified hazards largely focused on roads, culverts, dams, flooding, and storms. Residents are concerned that Becket does not have adequate emergency response capacity to deal with increased natural hazards. They expressed that emergency communication may not be adequate. The town's shelters are not well publicized and may not be adequately distributed throughout the town.

Workshop participants highly value Becket's environment, its water bodies, forests, ecosystems, and biodiversity. They expect broad ecological changes as a result of climate change with impacts on plants and animals, carbon and water cycles, and ultimately people. Participants are particularly concerned about the possibility that changing temperature and precipitation patterns, combined with invasive species and pests will result in wide-spread forest dieback. Forest dieback could, in turn, lead to forest fires, erosion, and more rapid movement of water into streams and rivers, lakes, ponds and impoundments exacerbating flooding and degrading water quality. Likewise, warming and changing precipitation patterns threaten Becket's water resources, especially its cold-water fisheries. Many workshop participants expressed deep sadness and a shared sense of urgency about the potential loss of biodiversity in Becket.

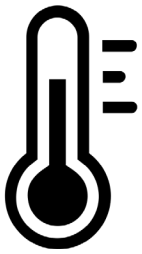
Key Hazards

Flooding: Flooding was cited as a top concern by workshop participants. Flooding will predominantly impact roads, especially at road-stream crossings. During Hurricane Irene, Becket experienced several damaged roads from blown out culverts and road washouts. Structures in Becket are also vulnerable to flooding, especially those that were built within floodplains and/or close to wetlands.



Map of FEMA Flood Zones

Severe weather (storms in all seasons): Between 1958-2012, the Northeast experienced a 71% increase in precipitation that falls as part of a heavy precipitation event. Severe storms create the risk of flood events, as highlighted above. They also bring additional hazards like high winds, lightning, snow, and ice that create additional challenges for homes and electrical utilities. Loss of electricity is particularly threatening to the elderly and those with health concerns, who may depend on heating, cooling, or lifesaving machines for survival. Power outages are particularly likely during winter storms, when snow and ice buildup on power lines often occurs. Most of Becket's population relies on private wells powered by electricity. Power outages can result in drinking water shortages for residents. Becket routinely loses power, but Eversource's efforts to trim trees and establish back-feed loops appear to be paying off. Recent power outages have been brief and limited in geographic area.



Average and Extreme Temperatures: Current trends indicate that the climate in New England is steadily warming, with more extremes in both rainfall and drought. On average, the Northeast experienced 10 more frost-free winter days between 1991-2012 than it did from 1901-1960. Current trends indicate there will be more and more days per year above 90 in the coming decades.[6] These changes are going to harm both Becket's people and its ecosystems, as described elsewhere.

Ecosystem change or collapse: Becket is fortunate to have large areas of forest, cold-water streams, wetlands, and a handful of natural ponds, that provide wildlife habitat, ecosystem services, recreational opportunities, and quality of life benefits. Changing temperature and precipitation patterns may stress or degrade these ecosystems. It is important to be able to respond to threats to ecosystem health in order that Becket maintain its high level of ecosystem services. Climate change may worsen the impact of pests, such as the Hemlock Woolly Adelgid and, Emerald Ash Borer, and blights, such as beech bark disease. In addition, heightened storm frequency and intensity increases the potential for destructive wind or ice storms to damage trees. Likewise, Becket's water resources are threatened by increased temperatures, changes in precipitation, and attendant invasive species and harmful algae blooms, and the potential response from people which will be to chemically treat the waterbodies. Broadscale change in Becket's ecosystems would threaten numerous native species and key qualities that make Becket what it is, its natural history and legacy. Direct impacts on humans include the potential for increased risk of forest fires due to large quantities of standing dead wood, the loss of valuable timber species and maple sugar production, potentially reduced property values, the potential closures of recreational waters, and decline of popular recreational fishing species.

Impacts of Past Development: Humans have heavily shaped Becket's landscape. Numerous streams were dammed, and wetlands were excavated, to make ponds and lakes in the town. The town experienced rapid growth and housing development between the 1960's and the 1990's. The development was predominantly along newly created lakes and in relatively large subdivisions compared to other Berkshire County communities. Workshop participants see this past development as a hazard because it resulted in a large number of dams, many small properties that lack adequate space for wells or septic systems, roads and structures located in flood-prone areas, and degraded ecosystems.

[6] Northeast Climate Adaptation Science Center.

5. SPECIFIC CATEGORIES OF CONCERNS AND CHALLENGES

Infrastructural Vulnerabilities

Roads

Climate change may exacerbate the difficulties of maintaining Becket's road network. Climate change could damage roads through the following: more frequent freeze-thaw cycles, larger storm events could cause road erosion, washouts, and blockages and damage from downed trees and power lines, increased erosion due to rain that follow periods of drought (rain on dry soil is more likely to run off than rain on moist soil), finally, extreme heat can soften asphalt leading to rutting and subsidence.[7] [8] [9]

- Route 20 – Route 20 is the Town's main route to the east with few good alternative routes. It is vulnerable to flooding in Becket and landslide in Chester.
- Town Roads – The Town has many miles of gravel and dirt roads that are susceptible to erosion and washouts, particularly when ditches fill up with debris. Examples include:
    - Leonhardt Road, which is steep with ledges, and is subject to washout, erosion, and flooding.
    - Hamilton Road, which is steep, has an undersized culvert, floods on upstream side, and the inlet has previously filled in.
    - YMCA Road which has beaver activity. Currently there are three beaver deceivers in place.
    - Luce Road has a culvert that is a severe wildlife barrier. There is only one house on the far side of the culvert.
    - McNerney Road to Carter Road.
- Private Roads – There are many miles of private HOA roads in Becket. Private roads are mostly in relatively good shape, but HOA's sometimes lack funding for emergency repairs and they do not qualify for many grants. Vulnerabilities include:
    - Sherwood Forest is a state-chartered road district. Taxes collected in the district pay for road maintenance, which is performed by the district, not the town. This could lead to inconsistency between practices the town uses and those used by the district. For example, recently Sherwood Forest is only plowed when there is 4" or more of snow. The Town sometimes needs to plow private roads to provide emergency access. During Tropical Storm Irene, roads in Sherwood Forest sustained significant damage.

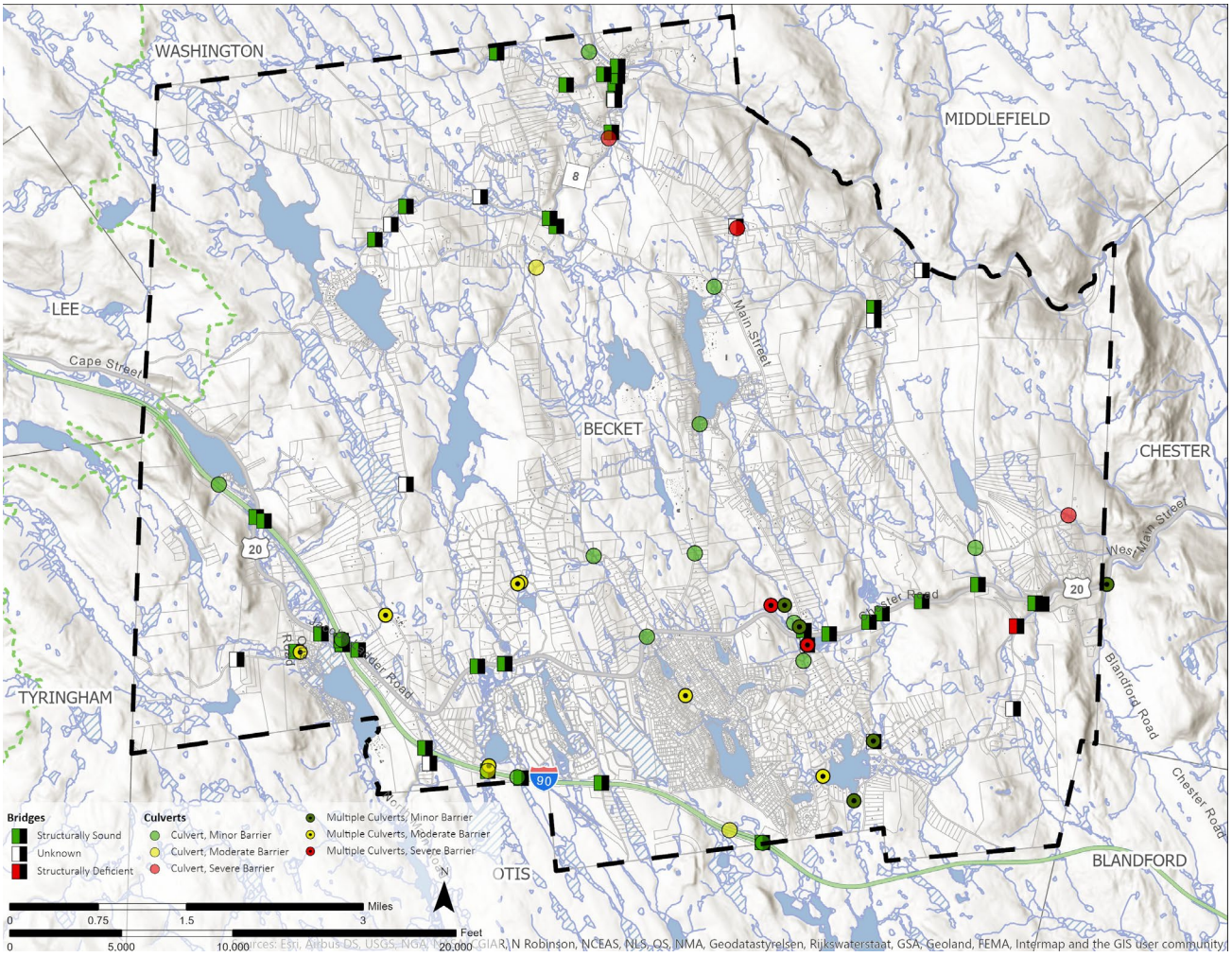
[7] "TechBrief: Climate Change Adaptation for Pavements, FHWA-HIF-15-015."
[8] "MA Climate Change Clearinghouse."
[9] Meyer and Weigel, "Climate Change and Transportation Engineering."

- It can be difficult for the town to keep track of the shifting contractors for HOA road maintenance. This could present communication challenges during a natural hazard event.

- State Roads – MassDOT road are generally in good shape. Some roads have issues with beavers and culverts. Route 20 east of Route 8 into Chester is a significant concern as described above. Other concerns:
    - An undersized culvert under Route 8 where it turns north off Route 20 occasionally floods, which blocks the road through town and can interfere with emergency access, and access to the MassDOT highway facility just north of the culvert.
    - The Massachusetts Turnpike passes through southern Becket. It could potentially flood from adjacent wetlands in Becket. Improper beaver management previously resulted in flooding on the Mass Pike in Becket.
    - Center Pond Brook which crosses Route 8 just north west of Benton Hill Road floods during high flow events.

Flooding on Route 8 at the Center Pond Brook (Source: Meredyth Babcock)

Road-Stream Crossings (Bridges and Culverts)



Map of known culverts and bridges in Becket

Climate change will impact culvert and bridges through large storm events that have the potential to scour or damage bridge piers and abutments, to overtop bridges, or to lift bridges off their piers.[10] In addition, many existing culverts in Becket, like the rest of the state, are undersized. When a culvert cannot adequately pass the required flow of water, either because the culvert is undersized, blocked by an ice dam, or clogged with debris, water can overtop the road leading to washouts and road closures.[11] For example, the culvert at Bonnie Rigg Hill Road washed out three times before it was finally replaced with a sufficiently sized span after Tropical Storm Irene. In addition to disrupting transportation, when roads wash out the resulting sediment degrades downstream habitat. There is also some evidence that climate change may accelerate degradation of materials used in bridges and culverts including steel and concrete. In addition, banks adjacent to bridges and culverts may erode faster and possibly fail due to faster stream velocities and the

[10] Nasr et al., "Bridges in a Changing Climate."
[11] "Baker-Polito Administration Helps Cities and Towns Upgrade Road-Stream Crossings."

loss of bank stabilizing vegetation.[12, 13] Knotweed is often dislodged during storm events and is deposited near road-stream crossings, where its sprouts further destabilize banks and can impede high flow.

Becket's primary bridge/culvert vulnerabilities include:

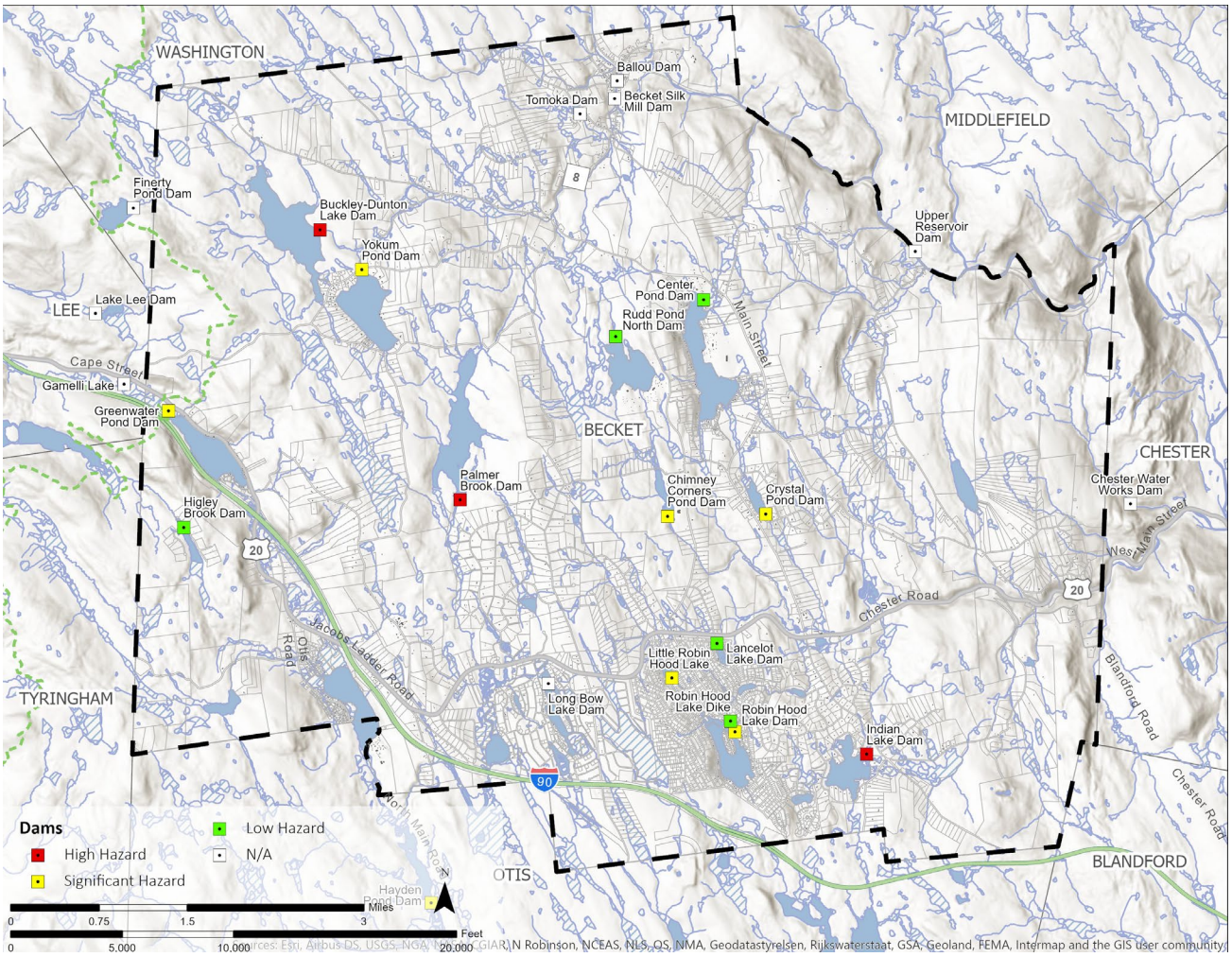
- Cushman Road bridge which is scheduled for a 2024 replacement
- The culvert on Benton Hill Road at the intersection of Surriner Road needs replacement. The culvert is a high priority wildlife barrier and the road provides an important transportation connection. Assessment work and concept design preparations were made possible through a grant from the Wild & Scenic Westfield River Committee. The town has applied several times for funding for its replacement, but the town has yet to obtain funding. The estimated project cost is $400,000.
- Other top priority culverts for replacement include one on Hamilton Road and one on YMCA Road at South Cove Road.
- Although the town regularly cleans out culverts, debris continues to be an issue. Major storm events can bring a lot of debris down from woods that can then clog ditches and culverts.

Dams

Almost all of Becket's lakes and ponds are man-made. There are at least eighteen dams in the Town, according to MassGIS data. Of those, at least three are owned by the Town of Becket, two by Department of Conservation and Recreation, several are owned by local Lake Districts, and the remainder are privately owned.[14] Massachusetts Office of Dam Safety is responsible for maintaining records on jurisdictional dams statewide to ensure that best practices related to inspection, maintenance, and emergency planning are followed by dam owners. The Office of Dam Safety assigns a hazard potential rating for each dam. This rating indicates how likely failure of the dam would lead to loss of life, damage to property, or interruption of important services—it does not indicate whether a dam is likely to fail (i.e. it is not based on structural integrity). All owners of jurisdictional dams are required to have their dam regularly inspected by a qualified engineer. The required interval for the inspection varies by the dam's hazard potential: every two years for a high hazard potential dam, every five years for a significant hazard potential dam, and every ten years for a low hazard potential dam. In addition, owners of high and significant hazard potential dams are required to annually submit an Emergency Action Plan to the Office of Dam Safety and any agencies who would be involved in emergency actions.[15] Several dams in town have recently been repaired. Sherwood Forest, received several state grants, totaling over $750,000 to study, design, and repair Lancelot Lake Dam. Workshop participants expressed concerns about the capacity of

[12] Nasr et al., "Bridges in a Changing Climate."
[13] Meyer and Weigel, "Climate Change and Transportation Engineering."
[14] "MassGIS Data: Dams." Note: this data has not been updated since 2012 and is likely out of date.
[15] "Office of Dam Safety."

dam owners throughout town to maintain and manage their dams, especially in the face of increasing storm events.

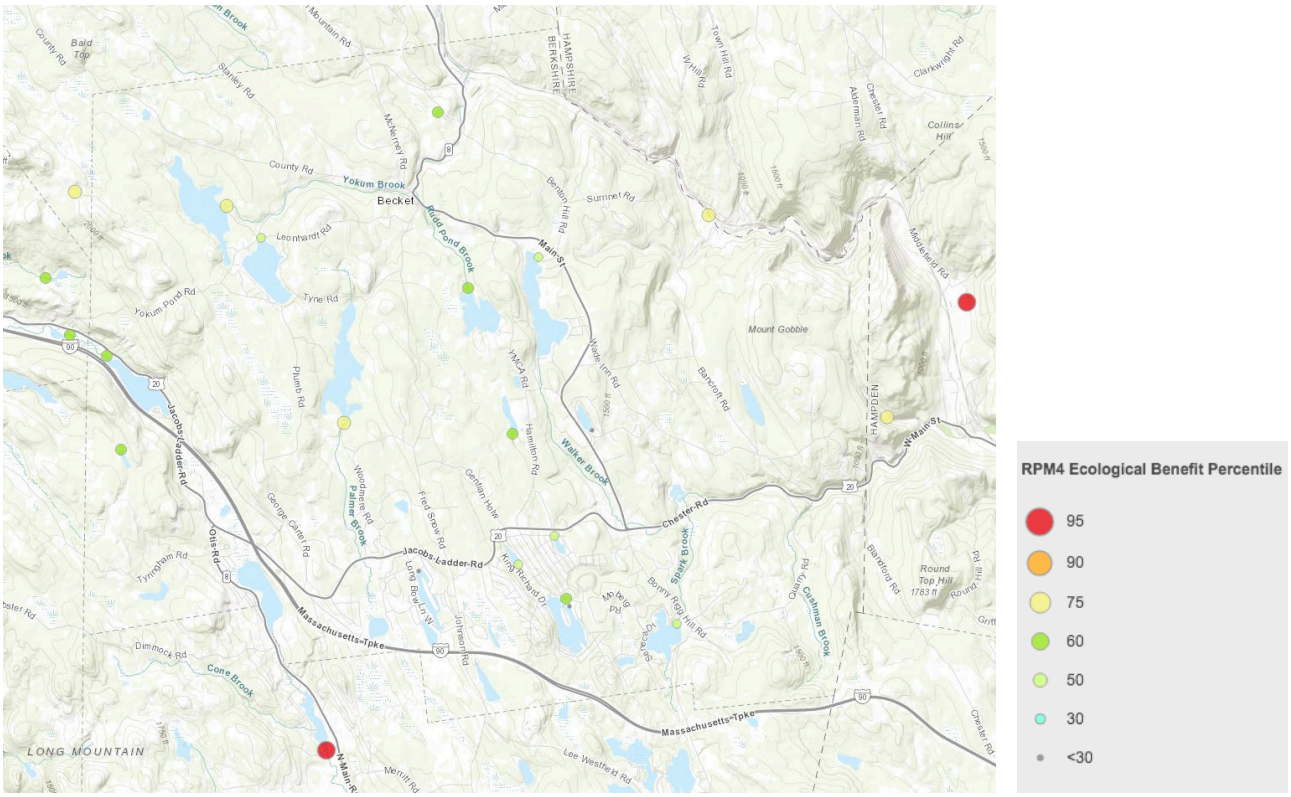


Map showing dams in Becket symbolized by Hazard Potential rating

- Buckley-Dutton, Indian Lake, and Palmer Brook Dams are classified as high hazard potential dams. The classification indicates dams whose failure would likely cause loss of life and serious damage to homes, facilities, and/or roads. The "high hazard" classification does not indicate that a dam is structurally unsound.
- The US Army Corps of Engineers maintains a database of dams in the United States. Data for Massachusetts was last updated in 2018. At that time, there was no record of inspection for two low hazard potential dams and one high hazard potential dam's inspection was not up to date. Of the ten high or significant hazard dams in Becket, the database showed only two had up to date emergency action plans (EAP), three had out of date EAPs, and there was no record of an EAP for the remainder.[16]

[16] "National Inventory of Dams."

- The Becket Police Department has a binder of information about dams in the town, including inspection reports and emergency management plans. It is not clear whether the owners of dams are regularly providing the Town with updated information or whether this information is being effectively shared with other relevant parties in Town.
- Massachusetts Division of Ecological Restoration created an online mapping tool that estimates the potential ecological benefit of removing a dam.[17] In the map below, each dam is color coded to show the relative potential benefit of its removal compared to other dams statewide (shown as percentiles). The highest-ranking dams in Becket are Palmer Brook Dam, Buckley-Dunton Lake Dam, and the Upper Reservoir Dam. They rank in the 75th percentile statewide (higher rank equals more benefit). As mentioned previously, Palmer Brook Dam and the Buckley-Dunton Lake Dam are also high hazard dams. It is important to note that several dams within adjacent communities are within the 95th percentile for potential benefit, including dams in Chester, Otis, Tyringham, and Lee.



Map from the DER Dam Removal and Ecological Benefit Estimation Tool. It shows that removal of any of the dams in Becket would have high benefits. All the dams rank within the top 50th percentile dams statewide for potential ecological benefit from removal. However, several dams in adjacent communities are more highly ranked—including dams that rank in the 95th percentile statewide.

[17] "Dam Removal and Ecological Benefit Estimation Tool."

Utilities

- Cell towers are essential for local communication. There are cell towers on Otis Road, Johnson Road, George Carter Road, McNerney Road, and Cross Road. Most are accessible if there is need for an emergency repair. The cell tower on George Carter Road is the most difficult to access, but because MassDOT also has a tower there, it is likely MassDOT would prioritize maintaining access to the tower
- Some locations in Becket do not have adequate cell service. This makes landlines the primary, or only, means of communication for some residents. These residents are more vulnerable to damage to phone lines, for example from downed trees.
- Powerlines are susceptible to damage from downed trees due to wind, ice, and snowstorms. Eversource actively maintains power lines in Becket and it has been creating back feed loops from multiple sources to prevent loss of electricity during severe weather events. During recent weather events, power outages have been short and limited to smaller areas. Due to the beautiful old maple trees along Bonnie Rigg Hill Road it may be the area that is most susceptible to power line damage from downed trees.
- The electrical grid may be more vulnerable to blackouts due to increasing demands in the future, particularly increased use of air conditioning during heat waves.
- Broadband – Becket has limited broadband service, but it is expanding. The lack of broadband limits communication and access to information within the town. This may hamper residents' ability to prepare and respond effectively to climate change. On the other hand, the expansion of broadband in Becket, may result in new residents settling in the town, which could have complex impacts on the town's land use, economy, and environment, and ultimately its climate resilience.

Beaver Activity

Beavers expand their territory continuously and flood areas. The flooding may directly impact structures and roads. Increased precipitation due to climate change may result in more water being held by beaver dams. This may increase the potential damage from beaver dam failure. However, beaver dams can also be beneficial to the overall hydrology, water quality, and the caliber of the habitat.

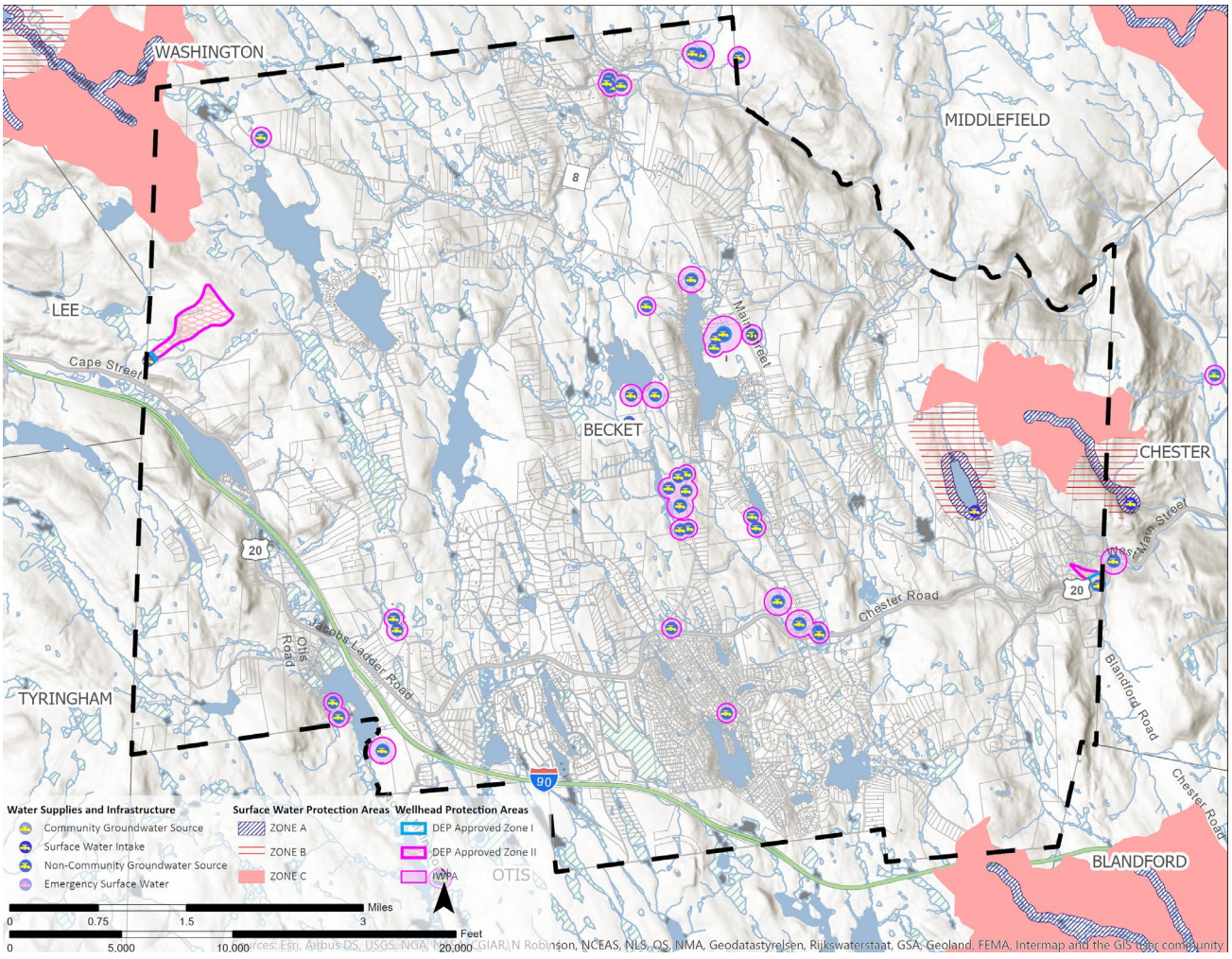
- The town has many beaver deceivers in place.
- Areas where beaver activity has the potential to flood roads or other infrastructure include:
    - Behind the Becket Motel
    - Adjacent to YMCA road west of the First Congregational Church
    - North of the Mass Pike between Arrowhead Lane and Old Carriage Lane
    - County Road west of Stanley Road
    - Near the intersection of Yokum Pond Road and Leonhardt Road

- Bancroft Road near Surriner Road
- Wade Inn Road east of Big Bass Lane
- Bonny Rigg Hill Road near Spark Brook
- Quarry Road near Cushman Brook

- The town has not delineated areas where beaver activity and/or expansion would be beneficial. As such, the town does not have a plan for accommodating or harnessing beaver activity for habitat enhancement.

Water and Wastewater

The Town of Becket does not have a public drinking water or wastewater system. Most residents rely on private wells and septic systems. There is a high number of community wells and private wastewater systems in Becket serving institutions like Jacob's Pillow, local businesses, and camps.



Map of Water Supplies, Infrastructure, and Protection Areas

- Climate change may reduce the availability of groundwater due to drought, or changes in precipitation patterns that result in more runoff of water and less groundwater infiltration (for example less snow, or more precipitation falling in heavy storm events). Some wells may run dry, while others may have increased pollutant loads.[18] Workshop participants pointed out that some Becket residents have already experienced wells that have gone dry.
- Becket may see a growth in population due to its comparatively mild climate and the abundance of lakes. This could result in an increase of groundwater withdrawals.
- As discussed under the Utilities section, climate change may increase power outages. With the loss of power comes the loss of drinking water for residents who rely on private wells and who do not have back up power. Power outages may also prevent sump pumps from working causing basements to flood and the possible loss of heating systems and other utilities.
- Becket does not have arrangements for emergency water supplies. In an emergency, the Town would likely bring in a tanker truck with water.
- Becket has an abundance of water and residents would benefit from access to a town owned natural spring. A town owned spring would give all community members access to drinking water, both when well runs dry and when power outages make wells inoperable.
- Septic systems can contribute nutrients to water bodies that can spur growth of algae blooms and/or invasive species. Increased temperatures due to climate changes may further accelerate growth. Climate change may also lead to more residents in Becket which could increase use of problematic septic systems. Septic systems may be contributing other contaminants into groundwater and surface waters. Emerging contaminants of concern include pharmaceuticals and household chemical such as cleaning products. Workshop participants were concerned that some Becket residents use septic systems improperly and/or do not pump them out frequently enough.

Structures

- Structures throughout Becket are vulnerable to wind, rain, snow, ice, and downed trees from storms throughout the seasons. The MVP workshop did not identify any particularly vulnerable structures, however a desire to assess these vulnerabilities was articulated.
- The impacts of flooding on structures is more predictable. There are no National Flood Insurance Program repetitive flood loss structures in Becket according to data in the Massachusetts State Hazard Mitigation and Climate Adaptation Plan.[19] Becket has numerous structures that are built close to areas that could flood. According to GIS analysis conducted by Dodson & Flinker based on data from MassGIS, there are approximately 200 structures on about 115 different parcels in Becket that are within the FEMA 100-year

[18] "Massachusetts State Hazard Mitigation and Climate Adaptation Plan."
[19] "Massachusetts State Hazard Mitigation and Climate Adaptation Plan."

floodplain. Structures range from small outbuildings to the Becket-Washington School, which appears to have a corner within the floodplain. The majority of these structures are associated with single-family use. It is important to note that the FEMA map for Becket that is available on MassGIS was digitized from paper maps and appears to be poorly aligned with other GIS data. This likely creates inaccuracies in the GIS identification of flood-risk structures in Becket. At the same time, since the FEMA flood map was delineated decades ago, precipitation in Becket has increased, especially the heaviest storm events. It is therefore likely the actual 100-year floodplain is more extensive than the FEMA map shows in some locations, as has been the case in recently updated FEMA flood maps for other areas in Massachusetts. Based on the GIS analysis, the following structures are particularly of concern due to flood risks:

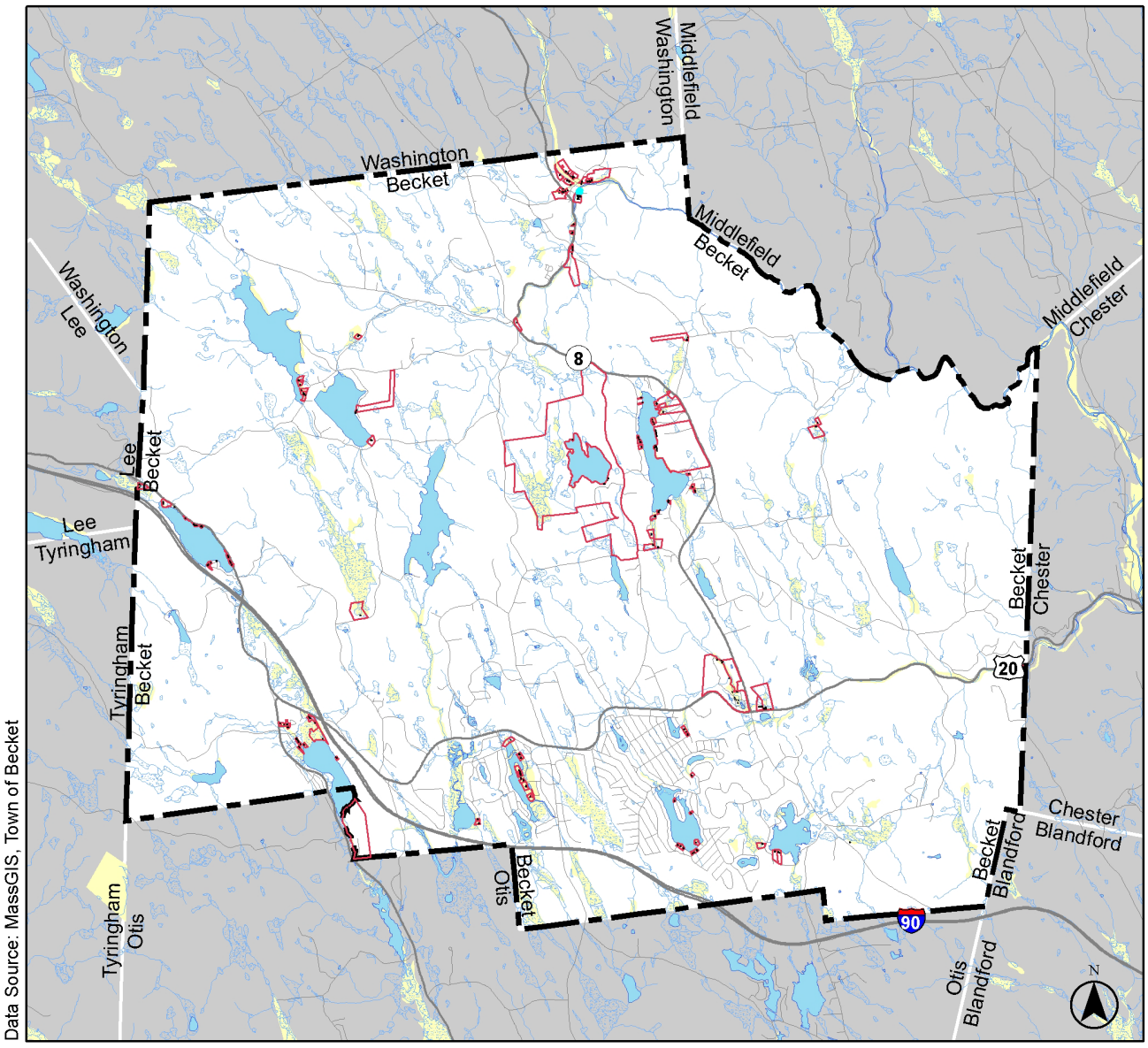
- Buildings, vehicles, and materials storage at the Highway Garage site which is adjacent to Depot Brook which feeds into the federally designated Wild and Scenic Westfield River.

Spare culverts on the banks of the Depot Brook below the Highway Garage site (Source: Meredyth Babcock).

- The Becket-Washington School
- Papa Bob's
- Bonnie Rigg Camping Club
- Camp Greylock—several structures
- Camp Becket YMCA—several structures
- A cluster of residential structures in North Becket Center
- Several structures along Long Bow Lane
- Several structures around Big Robin Lake
- Several structures on Shawnee Shore Road and nearby
- Structures north of Shaw Pond

- Becket has about 1,791 Housing Units. Of those units, 811 are occupied on a full-time basis, while 980 were vacant at the time of the American Community Survey (ACS). The ACS estimates that 858 of the vacant units are for seasonal, recreational, or occasional use. Vacant units are more common in the western part of the town (60% vacant units) as compared to the east (40% vacant units). The vacancy rate is high even by Berkshire County standards. Of the 145 Census block groups in Berkshire County, the block group comprising the western half of Becket has the 4th highest vacancy rate. The eastern half of the town has the 13th highest vacancy rate in the county. The high rate of vacant housing implies that during some hazard events—for example a hurricane in the fall—there will be no one in place to prepare more than half of Becket's housing units for the hazard or to address damage immediately after the event. In addition, first responders and clean-up crews may not know which houses are occupied and therefore may not know how best to prioritize their resources.

- About 75% of housing was built after 1960 with the biggest percentage of houses built 1980-1999. This implies that much of Becket's housing is built to higher building code standards than housing in other western Massachusetts communities where a greater share of housing is significantly older. Becket's newer housing may be better able to withstand natural hazards from climate change. However, much of the town's expansion was done around manmade lakes and in flood prone areas making it vulnerable to climate change. In 2010 Becket adopted the "Stretch Code." Housing built since it went into effect in 2011 has met higher energy efficiency standards and thus will be able to remain comfortable for longer periods of time when heat or air conditioning is unavailable due to a loss of power. Because these houses use less energy for heating and cooling than comparably sized houses, they help mitigate (slow) climate change.



Map of structures that may be vulnerable to flooding

Societal Vulnerabilities

The social aspects of a community shape its ability to prepare for and respond to natural hazards and climate change.

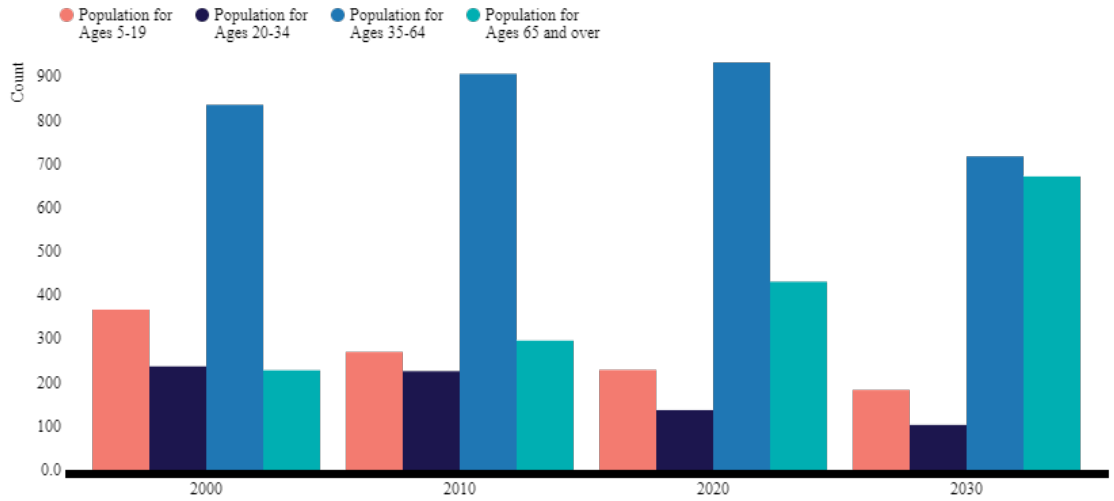
Vulnerable Populations

Climate change exacerbates existing social, economic, and health inequities. People with less economic or social power are more likely to be disproportionately impacted by the effects of natural hazards and climate change. People who have low incomes, elderly, disabled, or young experience heightened "mental, emotional and bodily stress due to natural disaster exposure."[20] Low income citizens, some ethnic minorities, some older adults, citizens with limited English proficiency, and people with disabilities may have fewer resources which may make it difficult to prepare for or evacuate from natural hazards when necessary. In addition, health problems can exacerbate harm from climate-related disasters.[21]

Becket has limited identified numbers of vulnerable populations, though there are certain groups and individuals that may benefit from extra attention from the Town. The remote nature and topography of Becket makes communication, access to information, highlighting available services and cohesion a challenge. The poverty rate in Becket is 7.3% vs. 10.8% for Massachusetts. Likewise, the percent of household receiving food stamps is lower in Becket (6.9%) than in Massachusetts (12%).[22] The west half of Becket is designated by the State of Massachusetts as an Environmental Justice area based on income (see map below).[23]

- Older Adults. The most significant vulnerable population in Becket is older adults. 32.1% of the Town's people are over 60 years old, compared to 22.1% for Massachusetts. The median age is 51.8 years significantly older than the state as a whole (38.2 years). The number of older adults in Becket is expected to grow over the next decade while the number of younger people is expected to fall.
    - Older adults with lower incomes, those who are socially isolated, and those who have health issues will be especially vulnerable.
    - Workshop participants explained that when older people get to the point of needing a lot of health care, they often leave Becket (if they can afford to) because services are not available in Town.
    - The Council on Aging provides a meals program, but it may not be effectively connecting with new older adult residents and seasonal residents.

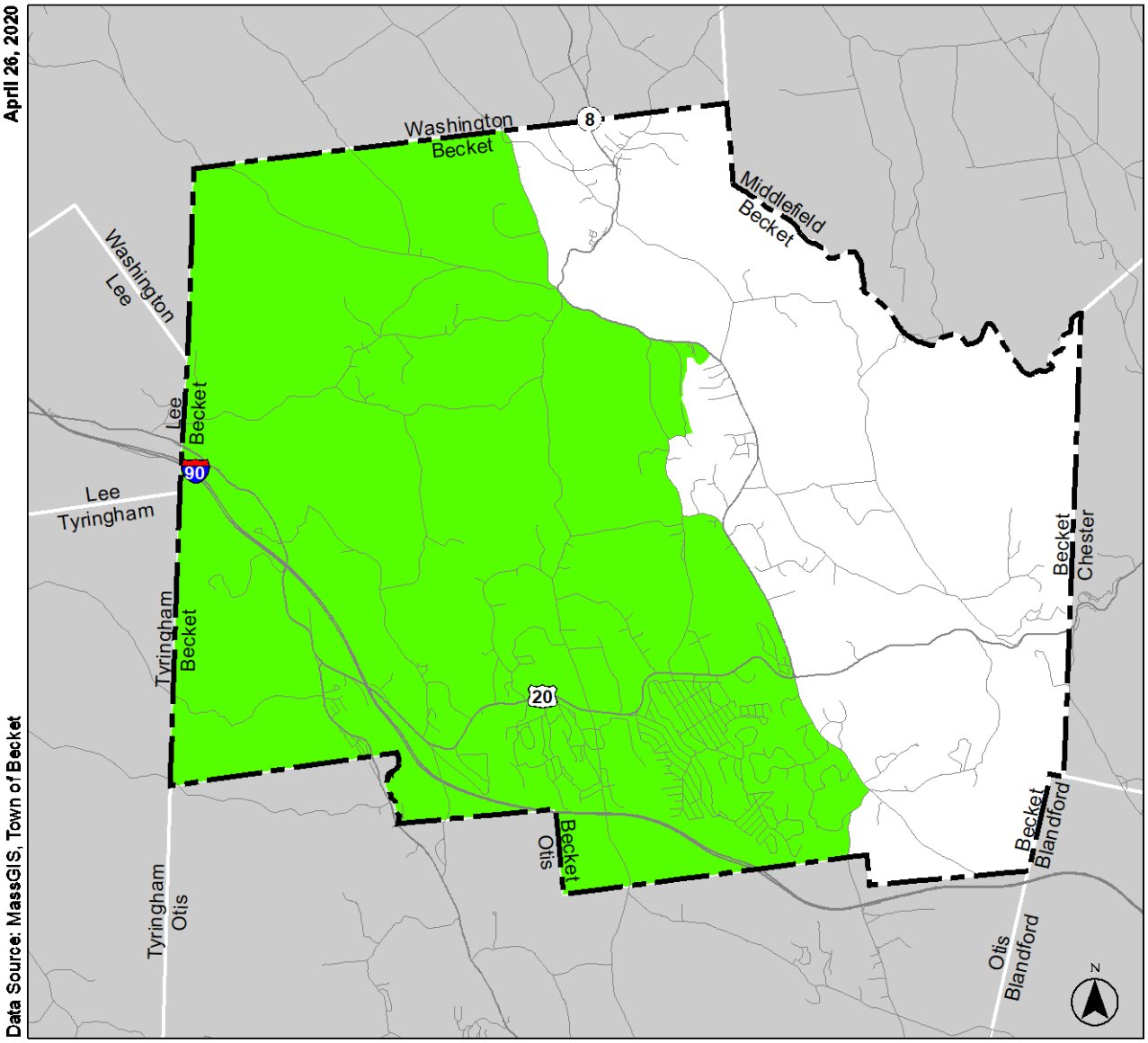
[20] Benevolenza and DeRigne, "The Impact of Climate Change and Natural Disasters on Vulnerable Populations."
[21] "Massachusetts State Hazard Mitigation and Climate Adaptation Plan."
[22] "Census - Geography Profile." All data in this paragraph and the next are drawn from the 2018 American Community Survey (ACS) 5-year estimate. The ACS is conducted by the U.S. Census Bureau. Data is available in various tables at data.census.gov
[23] An environmental justice area based on income is an area that has a median income less than or equal to 65% of the state median income. The designation was last completed based on 2010 Census Data. Based on 2018 ACS 5-year data, the area would no longer meet the criteria, but the 2010 designation is still in place.



Source: Housing MA: The Massachusetts Housing Data Portal[24]

- School-age Children. Children, particularly those in low-income families, are vulnerable to the impacts of climate change, especially average and extreme temperatures.
- People with health conditions that will be exacerbated by climate change—especially asthma and COPD.
- People with disabilities. About 12% of Becket's population, including 36% of residents 75 years or older, has one or more disabilities.[25] This group will be more vulnerable to climate change.
- Seasonal Residents. Another unique feature of Becket that may impact its societal climate resilience is the size of its seasonal population compared to its year-round population. The population swells from 1,859 people to about 8,000 in the summer. Workshop participants expressed concern that seasonal residents may not be adequately prepared for natural hazards. For example, some visitors to Becket for Thanksgiving 2019 were not prepared for winter weather conditions that occurred.
- Campers and Staff. Becket's summer population includes several thousand young people who attend summer camps in Becket. Workshop participants were particularly concerned about the Town's ability to assist summer campers in the event of a natural hazard. The camps likely have emergency management plans, but the town does not always know what they are. Staff changes at camps result in the town not knowing who to contact at camps and vice versa.

[24] MAPC, "Housing Becket MA."
[25] US Census Bureau, "American Community Survey, 2018 ACS 5-Year Estimates, Table S1810."



Legend

Environmental Justice 2010 Populations

Feet
0 4,000 8,000 16,000
Miles
0 0.75 1.5 3

EJ Criteria, by Block Group

- Income
- Becket Town Boundary
- Other Town Boundaries

Roads

- Interstate
- U.S. Highway
- State Route
- Non-numbered Road

Population Growth or Decline

- Becket grew rapidly in the between 1960 and 2000. Over that time its population increased 230%.[26] Since then, population has been much more modest. The town added just 4 people between 2000 and 2010, and another 4% of its population between 2010 and 2018. The current population is estimated to be 1,859. Rapid population growth can impact a town's sense of cohesiveness, which can impact its ability to prepare for and respond to stresses. Rapid growth can also have impacts on Infrastructural and Environmental resilience. Those impacts are discussed elsewhere.

- The UMass Donahue Institute produced population projections for every community in Massachusetts in 2018. They predict that Becket's population will shrink by about 8% over the next 15 years.[27] If Becket's population shrinks it could negatively impact its tax base and its volunteer base. The Donahue Institute projections "assume that recent historical trends in migration, mortality, and fertility will persist in future years."[28] They do not include disruptions in current trends based on climate migration, the impacts of major economic upheavals, or other similar factors.

- It is difficult to predict whether climate change will result in population growth in Becket and therefore increased development in the Town. Although Becket's climate is changing, and climate change is happening more rapidly in the Northeast than in other parts of the United States, Becket will likely continue to have a relatively comfortable and safe climate, with plentiful access to lakes and ponds compared to other parts of the country. The aspects of Becket that have previously drawn visitors and seasonal residents will likely only get more appealing in the future, especially as temperatures rise throughout the world.

- A thorough analysis of Becket's potential buildout has not been completed recently. The town does not have a complete understanding of the most likely parcels to be developed or how future development would impact its climate resilience.

Cohesion and Communication

- Becket's development and geographic patterns likely reduce its social cohesion. Historically, development was concentrated in Becket's two centers—North Becket and Becket Center. More recent development has been distributed throughout the town. Many people in Becket live far from their neighbors and do not see them regularly.[29] The town has a limited number of places where residents regularly congregate to see each other and build social bonds. The town's topography and road network has resulted in the town have several sections that are not well connected physically. For example, residents from different parts of town likely shop for groceries in different neighboring towns. Employed residents of

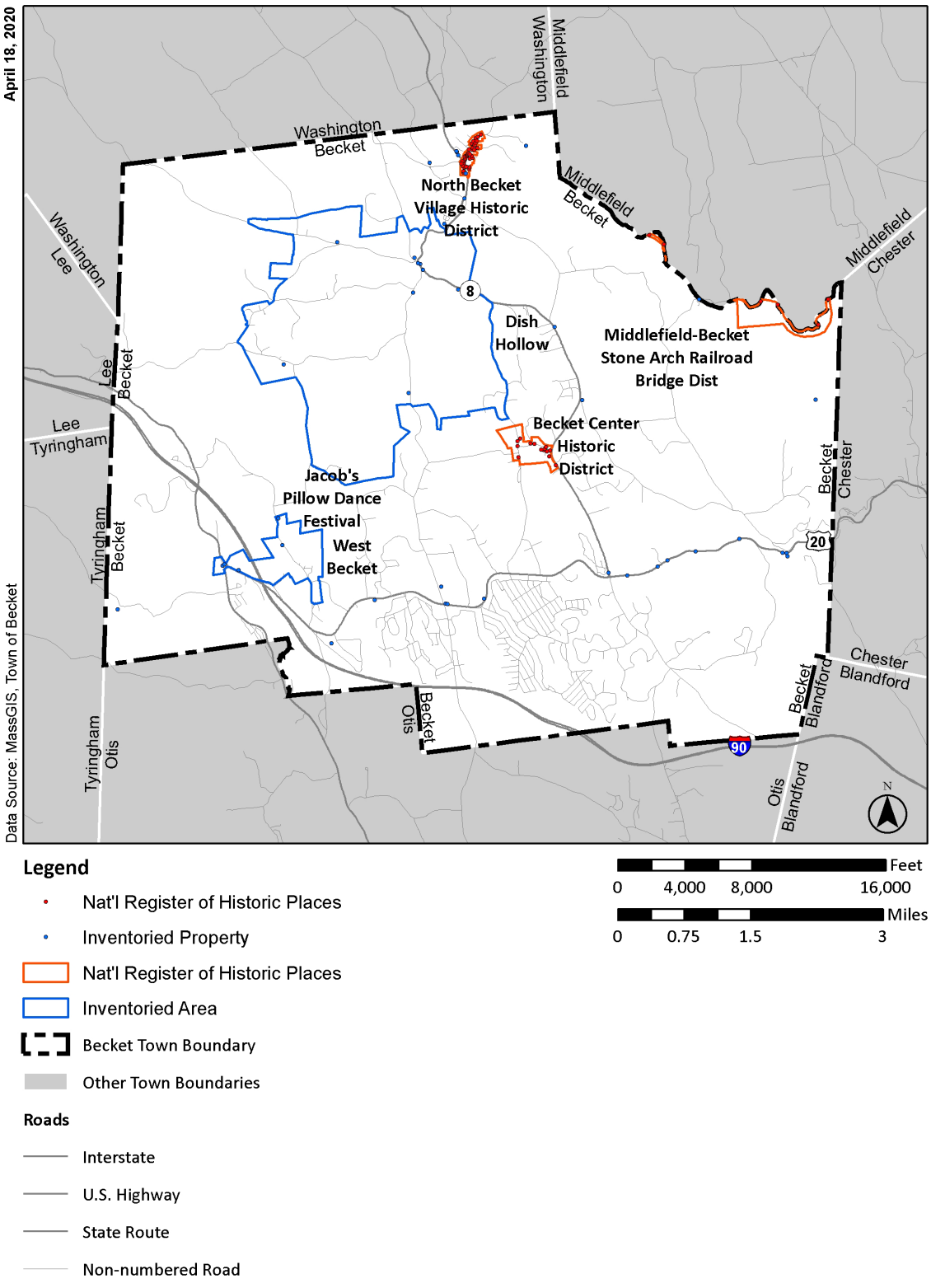
[26] "Becket, Massachusetts."
[27] UMass Donahue Institute, "Massachusetts Population Projections."
[28] Strate, "RE: 2018 Vintage Population Projections Full Report," April 24, 2020.
[29] Becket's population density is 39 people per square mile, which is lower than that of Berkshire County (142) or Massachusetts (839). Source: US Census Bureau, 2010 Census.

Becket also have long commutes to work, averaging 33.9 minutes.[30] This reduces their available time to participate in civic and social life. Overall, these patterns, may make it more difficult for the Town to prepare for, and respond to, climate change. For example, the spread of information through the town by word of mouth is likely hampered by the lack of strong social networks that cross all ages, classes, and parts of town.

- No single channel of communication is going to reach all people in town. Some residents primarily use cell phones. Others do not get a cell signal and rely on land lines. Some residents have email, while others do not. The lack of broadband means that accessing information by the internet can be difficult for many residents. There is no local television station. Most available broadcast news comes out of Albany and so is not focused on Massachusetts news.
- If Becket's school-age population declines as is projected, this may have outsized impacts on social cohesion in the Town because the school has been a major source of social connections for Town residents. Decisions around elementary school closures have been divisive in other Berkshire and Hilltown communities.

Becket Arts Center (Source: Meredyth Babcock)

[30] "Census - Geography Profile."



Map of historic districts and properties in Becket. The map shows the town's original centers of development in North Becket and Becket Center.

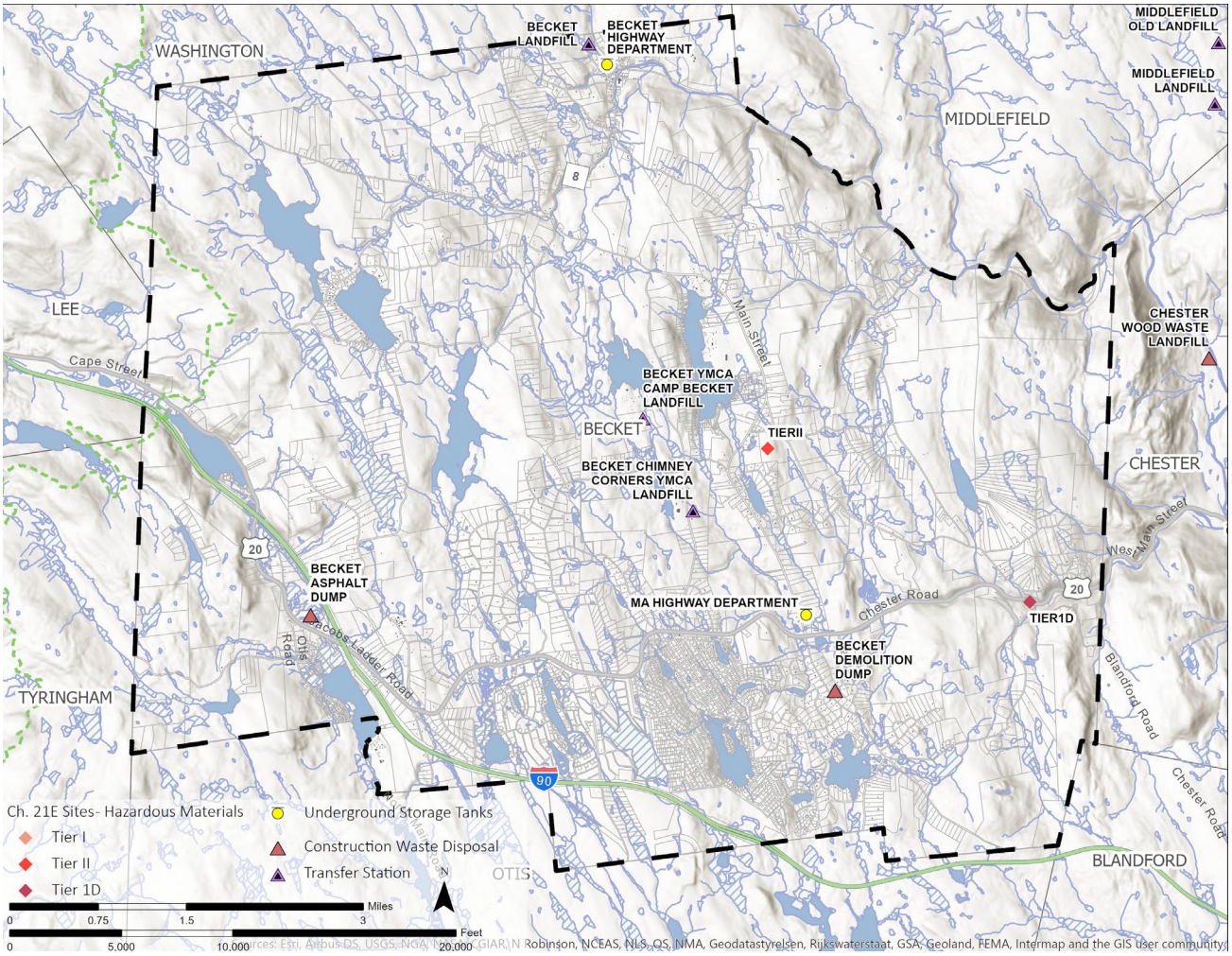
Town Government/Emergency Response

- The town's paid staff is small. The town lacks staff dedicated to proactive planning and grant writing. This reduces the Town's ability to prepare for climate change and natural hazards.
- Communication between town boards, and between the town staff and the general public, can be challenging.
- The town has shelters at: Town Hall, the Becket-Washington School, and the YMCA Camp (girl's side) seasonally
    - Workshop participants were concerned that shelters are not distributed throughout the whole town and that road closures could make it difficult for residents from some parts of town to reach shelters if needed.
    - The YMCA Camp has an emergency shelter at the girl's camp. It is only operational when the camp is open.
    - It is unclear whether all emergency shelters are full accessible for people with disabilities.
    - It is unclear whether all emergency shelters are fully provisioned.
- The town's EMS maintains a list of priority vulnerable residents to contact in an emergency.
- The town does not currently have a stormwater bylaw or other mechanism for ensuring use of low impact development and/or green infrastructure.
- The town does not have a bylaw regulating development on steep slopes or hilltops and ridgelines.
- The school has only one point of access for vehicles—a bridge. There is potential for an additional emergency evacuation route on foot through the woods, but it has not been formalized. This is particularly important because the school is an emergency shelter.

Environmental Vulnerabilities

Hazardous Materials

Climate change can increase the risk of harm from chemical releases. Floods can result in chemical releases and spills and emergency shutdowns. Extreme heat can increase chemical temperatures increasing risk for explosions. Extreme cold can result in power outages, frozen pipes, and HVAC failure, while storms can result in power outages, HVAC failure, and infrastructure failure. All these climate driven events can increase the risk of chemical release.[31]



Map of sites with potentially hazardous materials in Becket

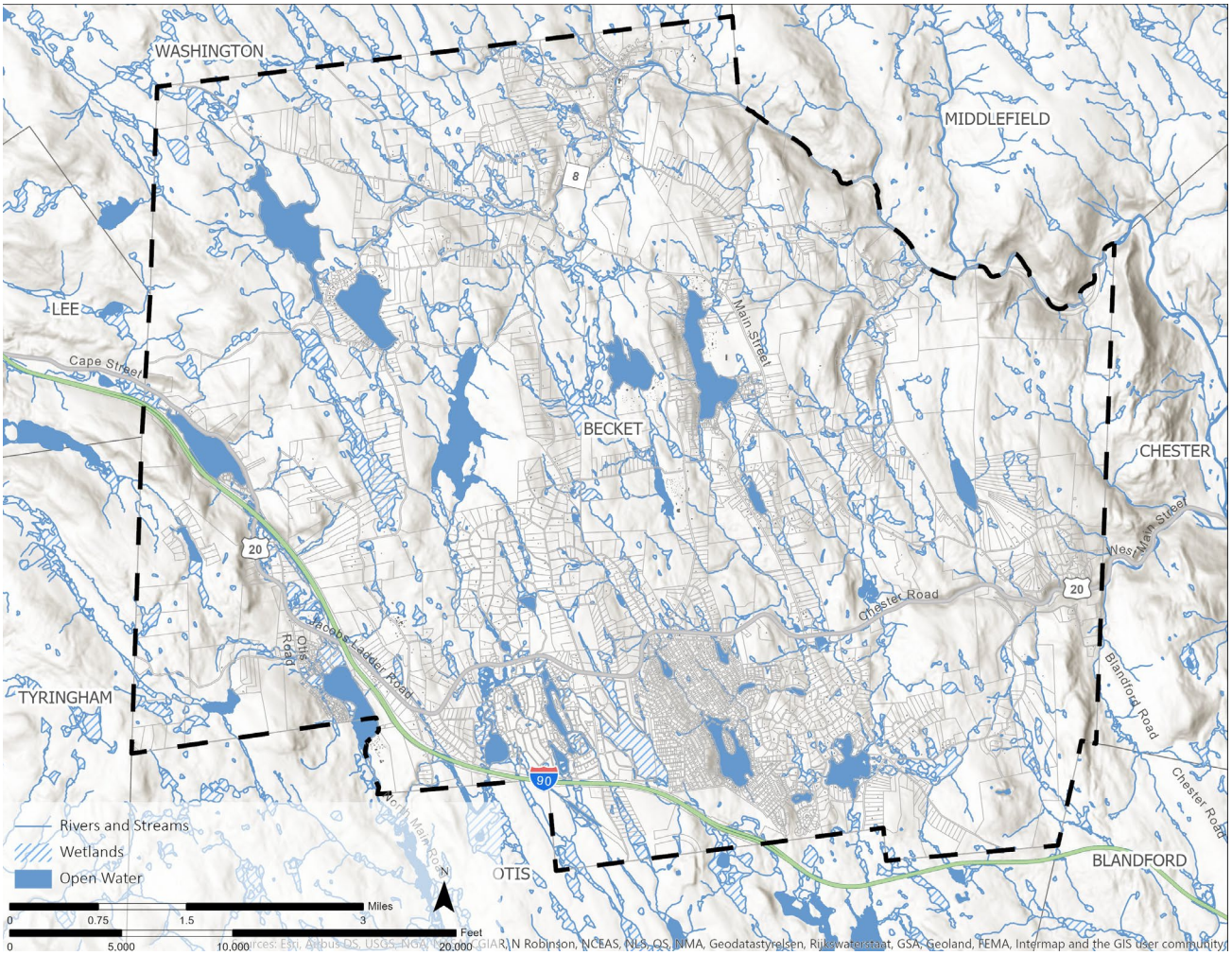
- The Mass Pike and the rail lines through town both carry hazardous materials. The railroad has CSX and Amtrak trains, including a 90-car methane train that regularly passes through Becket. Methane poses a risk of fire. Between Hinsdale and Chester (i.e. Becket) is one of the highest risk areas on the rail line because there is limited track access. The town is not prepared for a large-scale evacuation that could be required if there was a significant release of hazardous materials on one of these transportation corridors.

[31] Tiffany Skogstrom, "OTA Resources & Climate Change Preparedness."

- Other sources of potential hazardous materials in Becket include several landfills, underground storage tank at the MassDOT Highway Department site and the Becket Highway Department site, and several “21E sites”—locations where releases of oil or hazardous materials have been reported to the Massachusetts Department of Environmental Protection’s (MassDEP) Bureau of Waste Site Cleanup (BWSC). Climate change can impact these

Water Resources

Becket’s water resources are one of its most defining characteristics. The town is crisscrossed by numerous streams and rivers and studded with wetlands and lakes and ponds. The town’s water resources are both a major strength and vulnerability for the town. The water resources provide valuable habitat and high recreational value. That said, most lakes and ponds in Becket are manmade. They were often created by damming streams and/or excavating wetlands and floodplains resulting in the loss of natural flood protection, water cleansing, and diverse habitats throughout the town. These water resources will play a central role in the Town’s climate resilience.



Map of water resources in Becket

Lakes and Ponds

- Aquatic invasive species are already an issue in Becket's waterbodies. Aquatic invasive species may become more extensive due to increased air and water temperatures, increased CO2, altered stratification regimes, and altered hydrologic regimes. For example, increase water flows from increased precipitation may move seeds of invasive plant species into new territory.[32] Aquatic invasive species may also benefit from "decreased cold temperature or winter hypoxia that currently prevent survival."[33] Reservoirs, like the numerous manmade lakes and ponds in Becket, are particularly vulnerable to invasions which then are more able to spread to natural water systems.[34] The response to invasive species can themselves have negative effects. Herbicides can harm native species. Water drawdowns can result in increased water temperatures downstream. Drawdowns have a significant impact downstream owning to the fact that it reverses seasonal flow patterns.
- Climate change may increase the water temperature of Becket's water bodies. Becket's lakes are often shallow and so they warm quickly. Flow over dams further increases water temperatures. The warm water has downstream impacts and could get worse with climate change.
- Warmer weather and drought can contribute to harmful algae blooms in water bodies, particularly lakes.[35] The lakes sometimes need to be closed for recreational use. Cyanobacteria is a particularly harmful bacterium that can cause skin irritation, sore throat, or more serious health effects.[36] There is increasing evidence that climate change contributes to cyanobacteria blooms.[37]

Streams/Wetlands

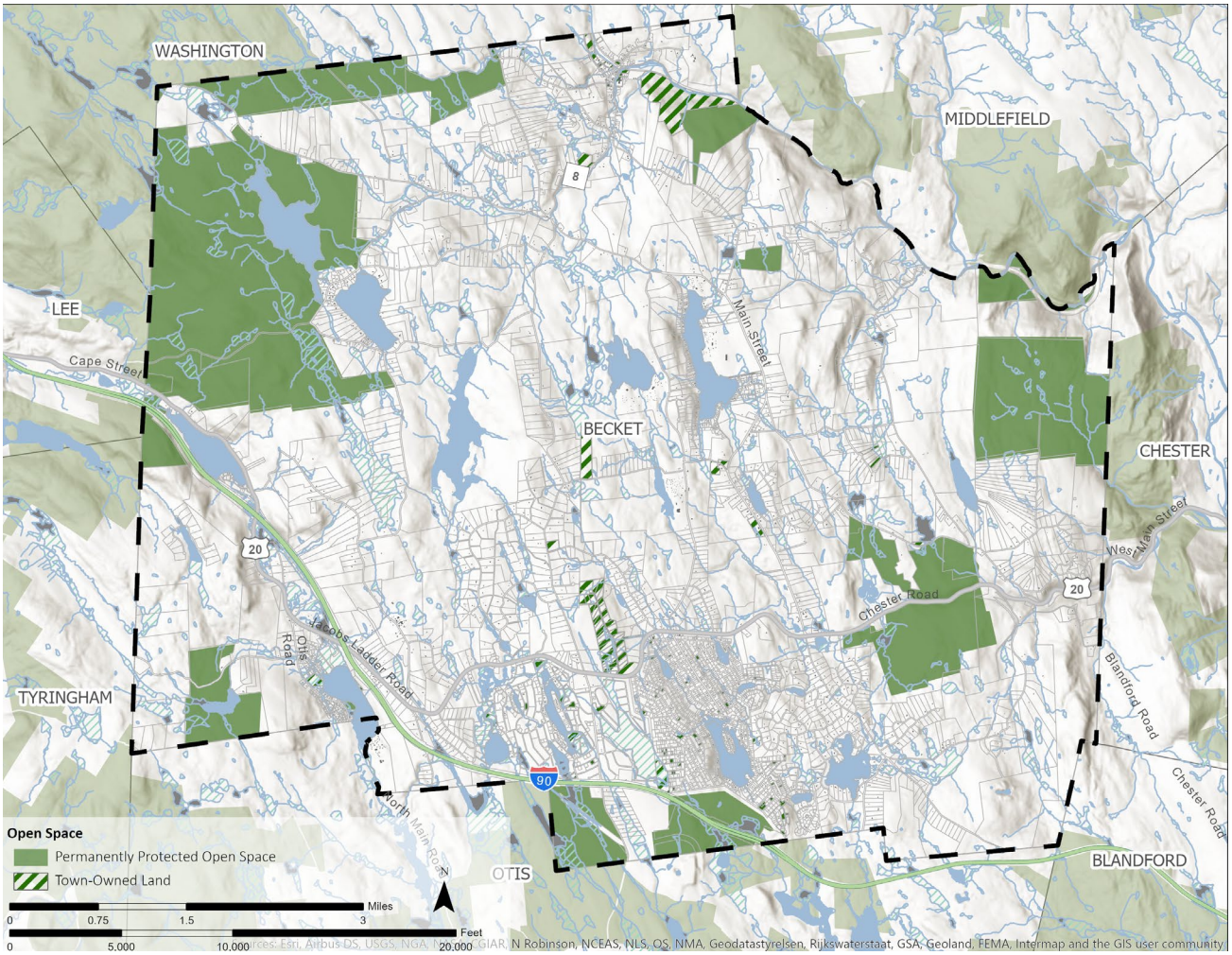
- The Westfield River is Massachusetts' first nationally designated Wild and Scenic River
- Becket has twenty-three cold water fisheries, which are a critical habitat. Becket is at headwaters of three watersheds: the Westfield River, the Farmington River, and the Housatonic River. Headwater streams are smaller waterways often more susceptible and sensitive to impacts but some of the most productive and ecologically vital class of waterways. Becket has a responsibility to all those downstream to pass on clean, cool water, to reduce seasonal flow disruptions, and to not increase flooding.
- There are extensive wetlands throughout town. The wetlands provide valuable services for the town, including water storage and filtering, and flood storage and attenuation. Over time, the town has lost wetlands as they were filled for farming or development or excavated for converted to lakes and ponds. Development that was located near current

[32] US EPA, "Effects Of Climate Change On Aquatic Invasive Species And Implications For Management And Research (Final Report)."
[33] Rahel and Olden, "Assessing the Effects of Climate Change on Aquatic Invasive Species."
[34] Havel et al., "Aquatic Invasive Species."
[35] "Massachusetts State Hazard Mitigation and Climate Adaptation Plan."
[36] "Climate Change and Cyanobacteria (Blue-Green Algae)."
[37] Bartosiewicz et al., "Effects of Climate Change and Episodic Heat Events on Cyanobacteria in a Eutrophic Polymictic Lake."

and former wetlands is particularly vulnerable to flooding. Becket does not have a local wetlands bylaw.

- Increased precipitation may increase the amount of sediment and road salt being washed into waterways from dirt roads.
- Increased use of salt during the winter to address more icing, rather than snowy conditions will also gravely impacts rivers and streams and aquatic life. It may impact drinking water wells as well.
- Extreme weather events can cause a shift in flow patterns. This can have a cascading effect on streams and rivers. Bank erosion, especially in segments without a meaningful and continuous vegetated buffer, can lead to instability, increased risk of flooding and degradation to water quality and habitat. Reduced water infiltration into groundwater and droughts means a loss of habitat, water quality and stress to aquatic organisms.
- Loss of wetlands and disruptions to flood plain exacerbate flooding in adjacent and downstream areas. Increased impervious surfaces (structures, roads, driveways and even lawns) also leads to increased flooding, decreased groundwater infiltration and an increase in nonpoint source pollution entering waterways.

Forests



- Approximately 3,275 acres of land in Becket are conserved (permanently protected from development under current laws). Most of that land is forested, including a large chunk of land in the northeast of Town which is part of October Mountain State Forest, and Chester watershed protection land in the east of town. The vast majority of forest in Becket is not protected. There is low use of Chapter 61 in town.[38]
- Land trust activity is limited in town. The Town does not have an established mechanism or funding source for purchasing conservation easements.
- The town's Open Space and Recreation Plan (OSRP) is outdated. The town lacks a prioritization process to identify land acquisitions with one or more significant benefits to the town (protect flood storage, protect rare or sensitive ecosystems, increase forest block size and/or connectivity of open spaces).
- Workshop participants expressed serious concerns about future changes to Becket's forests. Many of the key native trees in Becket's forests are threatened by invasive insects, pathogens, and/or climate change, including sugar maple, red maple, ash, beech, and hemlock. Emerald ash borer was found in Becket in 2019. It is possible that within ten years ash trees will be eliminated from Becket's forests. Hemlock woolly adelgid have been here for some time. Becket's forested ecosystems need to be monitored and managed so that its forests remain healthy and continue providing a high level of ecosystem services. A variety of forest management actions may be advisable to promote climate resilience, including selective thinning or harvesting to develop more uneven forest stands or to develop migration corridors. Becket's forests need to be assessed and long-term monitoring and planning processes instituted so that threats can be addressed as they arise.
- Workshop participants were concerned that many landowners do not currently have the knowledge or skills to manage their forests, have little awareness of the changes that are coming, and are unaware of steps they could take to make their forests more resilient. The situation is made more complicated by conflicting information about the best way to manage forests for climate change as the science develops.
- Invasive species are already displacing native species throughout Becket's ecosystems. Climate change will make the problem worse. Invasive plants such as Japanese knotweed and barberry outcompete native plants harming the integrity of the native ecosystem. These plants spread quickly and do not retain soil as well as a robust network of native plants, so the spread of invasive plants increases erosion and reduces ecosystem diversity. Some non-native invasive plants alter soil acidity and nitrogen levels, reducing the biological activity of native soils. Others form dense layers, interfering with succession and regeneration of native species, often crowding out, shading, or smothering natives. Some outcompete native plant species for pollinators, which is even more critical in the face of bee colony collapse disorder. The loss of pollinators endangers crop and orchard success. Some non-native invasive plants threaten native butterfly species by outcompeting their native host plants that are relied upon for egg laying and larval feeding. Caterpillars are

[38] Chapter 61 is a Massachusetts tax abatement program for land being used for agriculture or forestry. It offers limited protection from development; when land is withdrawn from the program, the property owner must pay back taxes and the town has a right of first refusal to purchase the property. In practice, municipalities rarely have sufficient cash or the ability to move fast enough to exercise their right of first refusal.

often highly specialized and therefore particularly vulnerable to loss of native plants. The loss of caterpillars can then impact bird populations, which rely heavily on caterpillars for feeding their young. Invasive plants can also reduce food supplies for other wildlife. Finally, invasive insects present widespread risks to trees and human health. For example, recent studies show that barberry is associated with much greater populations of ticks than native vegetation. Vector-borne diseases are discussed elsewhere in this report. Invasive species are often overlooked in the early phases of their introduction when it would be easiest to control their spread. More outreach and education of property owners could help spur early detection and control actions. Becket lacks a policy, guidance, or bylaw about best practices to prevent the spread of invasive that could guide work by the DPW and others in town.

- The Appalachian Trail passes through northwest Becket. Workshop participants expressed concern that trail users may accidentally start forest fires, especially if climate change causes drought or large-scale forest dieback that increases the risk of forest fire.
- Because of the value of large-scale solar installations, Becket, like other communities in Massachusetts, has experienced forests being cleared to make room for solar installations. Workshop participants were in support of locally or town owned solar farms that would offset the towns overall carbon footprint but are concerned this practice without adequate bylaws, could expand in Becket, from outside investors, without careful consideration to the value of the forest or wetlands being impacted.

Environmentally linked Diseases

- Warmer winter temperatures are likely to increase the number of ticks that carry Lyme disease, babesiosis, and other tick-borne diseases.
- Vector-borne diseases: Wetter and warmer conditions lead to increased mosquito populations which can increase human diseases like West Nile Virus, and Eastern Equine Encephalitis (EEE). Warmer winters can result in larger pest populations and increases the spread of tick-borne diseases like Lyme disease and babesiosis.
- Climate change may also impact the spread of water-borne illnesses
- By disrupting ecosystems and animal behaviors across the globe, and changing patterns of human development and food production, climate change may result in increased disease and pandemics in the future.

Land Use

The potential for future development is one of the key vulnerabilities of Becket's environmental assets, like its water resources and its forests. Compared to many of its neighbors, Becket has a relatively little protected land. Housing market demand and local and state regulations are the primary forces influencing how much development occurs in Becket. Currently, development is concentrated in North Becket, along major road corridors (Route 8, Route 20), along lake fronts, and in developments like Sherwood Forest. Almost all development in town is low density—meaning houses are spread far apart. On the one hand, this keeps the rural character of Becket. On

the other hand, low density development can fragment habitats, degrade water resources, and is dependent on automobiles—whose emissions are a major contributor to climate change.

To get a sense of the potential impacts of future development on Becket's natural resources, members of the Core Team evaluated future land use scenarios for Becket that were developed by the New England Landscapes Future Project. The scenarios show a diverse range of potential outcomes of development in Becket with a wide range of impacts on Becket's climate resilience. What is clear is that Becket can have a profound impact on the shape of future development (primarily through regulations and conservation) and that will in turn have powerful impacts on its climate resilience. For more on the scenarios, please see Appendix 4.

Yokum Brook (Source: Meredyth Babcock)

6. CURRENT STRENGTHS AND ASSETS

Infrastructural Strengths

Roads

- Town roads are generally well maintained
- Private roads, especially more recent ones, were well designed and are often well maintained, partially as a result of the Town's effective subdivision review regulations and process.
- The road districts provide an effective funding and maintenance mechanism for roads that could otherwise become problematic.

Road-Stream Crossings (bridges and culverts)

- Some culverts have been replaced and upgraded to current standards, including on Bonnie Rigg Hill Road and the span over the Wild & Scenic Shaker Mill Brook on McNerney Road.

Utilities

- Most cell towers are accessible in case there is need for an emergency repair.
- Eversource actively maintains power lines in Becket, has been creating back feed loops from multiple sources to prevent loss of electricity during severe weather events. During recent weather events, power outages have been short and limited to smaller areas.
- Broadband – Broadband is currently being installed in Becket.

Wells/Septic Systems

- The lack of a centralized drinking water and wastewater system provides a lot of redundancy for these essential services in Becket.

Structures

- Becket does not have a high number of flood-prone structures compared to other communities. However some discrepancies were identified in FEMA maps available in 2020. Waterways are often contained with channels with steep banks, this prevents the waterways from spilling their banks.
- Becket has a relatively high proportion of structures that were recently built compared to other western Massachusetts communities.

Societal Strengths

Populations

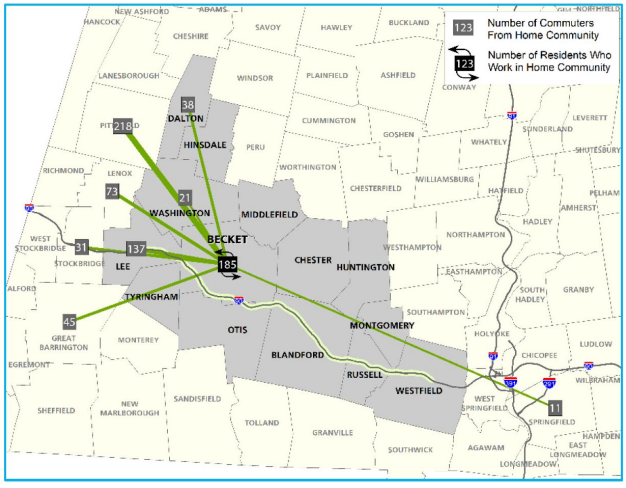
- Older adults are a resource for the town particularly related to volunteerism, expertise, and wisdom.
- Yankee Culture. Becket residents are generally self-sufficient/resilient, but some are unwilling to ask for or accept help.
- Seasonal houses support the town's tax base while requiring fewer services. This puts Becket it in a better fiscal position than some neighboring communities.

Social Cohesion

- The town has a strong sense of community and friendliness. There are many volunteers.
- Some vulnerabilities will only impact some parts of town leaving others able to help.
- There are several email lists in in town, for example: for the Athenaeum, the Arts Center, and the Town list. All are opt-in.
- Several businesses are social centers including The Dream Away Lodge, Sherwood Shoppes, General Store, and Papa Bob's

Good and Services

- Becket has several businesses. This is increasingly rare in rural communities in Western Massachusetts.
- Becket has a fair number of jobs for a rural community. About 185 Becket residents work in the town. At this time, it is unclear how the ongoing COVID-19 pandemic's economic impacts will impact the long-term viability of the town's businesses.



Map of workplace locations of Becket Residents from the recent I-90 Interchange Study)[39]

[39] Derrig et al., "I-90 Interchange Study."

Cultural Institutions

- Becket Athenaeum is a strength
- Mullen House, Becket Arts Center are strengths and provide youth programs.
- Hilltown Brouhaha (Becket/Washington Community Fair) builds community.
- Jacob's Pillow draws huge crowds to Becket. It is an economic and cultural asset, but also potentially a significant challenge if a hazard impacted it.

Town Government/Emergency Management

- Becket has strong municipal services compared to many small towns. For example, it has full time police, ambulance, and town administrator.
- Reverse 911 is in place, but enrollment is low, and the alerts only go to landlines. Greater redundancy would be beneficial. The phone list needs to be update regularly.
- The Berkshire County Sheriff provides 9-1-1 dispatch for 27 Hampden and Hampshire communities from its headquarters in Pittsfield. The Sheriff's Office also has a mobile command center and command tent. The Dispatch Center can be tapped into for MREs/emergency food resources.
- The camps have facilities like beds and kitchens and are equipped to take care of large groups of people. It may be possible to expand their use as shelters, and for emergency food supply.
- Town hall is located on high ground and is centrally located.
- One fire station and ambulance station are on high ground. The other fire station is on a low-lying parcel. The latter serves Washington and Becket.
- The Town's zoning bylaws and subdivision regulations have been updated regularly and are relatively progressive. However, the bylaws would benefit from a thorough review and revision to ensure that they are aligned with best practices for climate adaptation and low impact design. For example, Flexible Residential Development (also known as Open Space Residential Design) enables residential development to be more environmentally sensitive than conventional subdivision practices. The Town has a Flexible Residential Development bylaw. However, the bylaw requires a special permit, whereas current best practices is to make flexible development mandatory, or at least allow it by right. The bylaw also requires creation of a yield plan rather than the current best practice of using a formula to determine allowed density. Both requirements increase initial costs for the applicant which creates a disincentive to pursue flexible development. The zoning bylaws and subdivision also do not make specific mention of low impact development and in some cases may unintentionally create barriers to it, for example by requiring clearing and grubbing of the entire right-of-way in a subdivision.

Demographic Changes

In the coming decades, Becket is likely to experience demographic changes that will impact the town's resilience. Several trends may drive demographic changes:

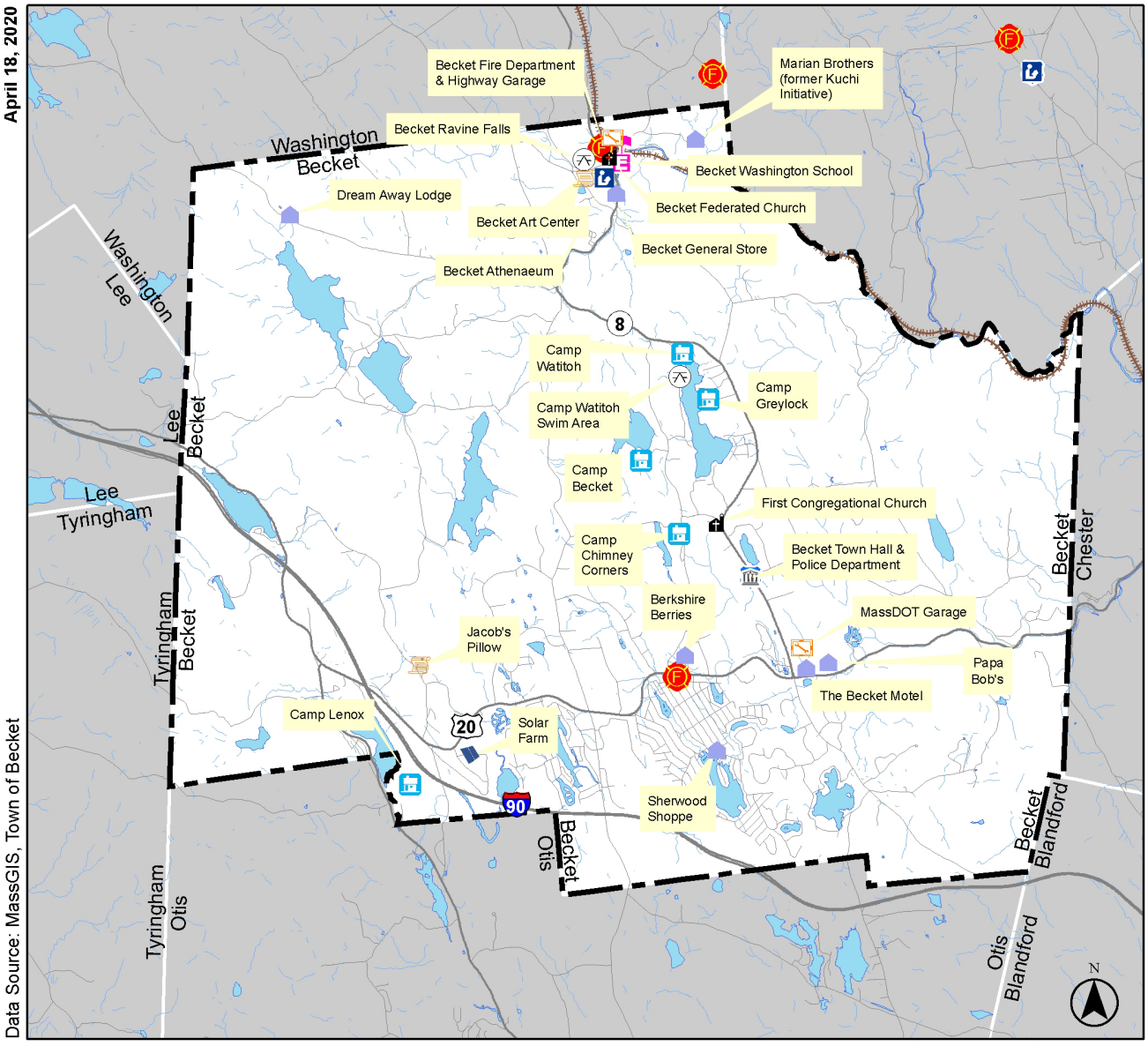
- Climate migration from areas that will become unbearably hot, storm-prone, or inundated by sea level rise.
- Regional transportation changes. For example, if another exit was added to the Mass Pike[40].
- Digital communication improvements. For example, expansion of broadband and 5G could make Becket more appealing to prospective residents, both seasonal and year-round.
- Changes in the broader economy. For example, an increase in remote working, especially when coupled with expanded broadband in the town
- Response to COVID-19. For example, people may migrate out of cities and other locations perceived to be riskier for virus exposure.

The potential demographic changes could impact the town's climate resilience in many ways:

- The number of members of vulnerable groups in the Town could go up or down.
- Changes in the culture of the town could impact self-reliance, volunteerism, or community connectedness for better or worse.
- The economy of the town could strengthen or weaken.
- New development could be sited in vulnerable areas or could improve the resilience of existing areas.

How the town plans for and responds to demographic and economic changes will play a major role in whether those changes decrease or increase the town's overall climate resilience.

[40] In March 2020, MassDOT completed a study of a new Massachusetts Turnpike exit between Westfield and Lee. The study concluded a new exit in Blandford would be feasible from a "conceptual engineering perspective." It ruled out a new exit in Becket. The report does not mean that a new exit is politically feasible or whether funding could be obtained. The report is available at: Derrig et al., "I-90 Interchange Study.". The report shows that a new exit would significantly increase traffic on Route 8 in Becket while even more significantly reducing traffic on Route 20 in town.



Legend

- Camp
- Commercial
- Garage
- Institution
- Outdoor Attraction
- Place of Worship
- Solar
- Local Police
- Fire Stations
- Town and City Halls
- Public Elementary
- Becket Town Boundary
- Other Town Boundaries
- Rivers and Streams
- Open Water

Roads

- Interstate
- U.S. Highway
- State Route
- Non-numbered Road
- Railroads - Active Service

Feet
0 4,000 8,000 16,000

Miles
0 0.75 1.5 3

Environmental Strengths

Water Resources

Wetlands:

- There are approximately 1,800 acres of wetlands remaining in Becket, which is about 6% of the Town's land area. These provide habitat for a wide variety of plants and animals, including rare and endangered species. They also provide temporary storage of floodwaters, which helps to reduce water volume and velocity in rivers and streams during storms. Numerous wetlands in Becket serve critical flood reduction functions but are not currently conserved. For example, a large wetland on the west side of Sherwood Forest that sits north of The Massachusetts Turnpike has significant flood storage capacity. This land was platted for house lots before environmental regulations made development of the lots infeasible.

Ponds and Lakes

- Becket's ponds and lakes provide natural cooling opportunities for residents and visitors. This will become increasingly valuable as temperatures rise due to climate change.
- Becket has an active and effective hand pulling program for aquatic invasive species. This could be expanded elsewhere. There is an interest in developing a training program for divers and managing DASH boats to reduce the use of herbicides in Becket's lakes and pond management.

Forests

- About 86% of Becket's land area is forested, including about 15,000 acres of deciduous forest and 10,000 acres of coniferous forest. Large forested areas filter air and water and reduce the speed of stormwater runoff. By performing these functions, they help maintain the health of the town's water bodies and drinking water supplies and reduce the risk for flood-prone structures. Becket's forests also sequester carbon. The northwest portion of Becket is part of October Mountain, Massachusetts's largest state park. There are significant blocks of unfragmented forest in Becket, particularly in this northwest quadrant of the town.

Protected Land

- About 6,000 acres of land are permanently protected in Becket, representing nearly 20% of the town's land area. The majority of that is October Mountain State Forest. This land is mostly upland forest and provides ecosystem services such as water and air purification, as well as wildlife habitat. Numerous studies have shown protected lands are a financial boon to communities.[41, 42]

[41] Sims et al., "Assessing the Local Economic Impacts of Land Protection."
[42] See: https://www.massaudubon.org/our-conservation-work/advocacy/shaping-the-future-of-your-community/publications-community-resources/losing-ground

7. TOP RECOMMENDATIONS TO IMPROVE RESILIENCE TO HAZARDS

Participants in the Community Resilience Building workshop identified dozens of potential actions to improve Becket's climate resilience. During the CRB workshop, workshop participants prioritized potential action and whittled them down to approximately ten top items. These priorities were subsequently evaluated and prioritize by the Core Team over the course of two meetings. They were then reviewed during the Listening Session held on May 18th, 2020. The top recommendations are described in detail below including recommended next steps, where appropriate. These are followed by lists of other recommended actions, which are organized by the workshop's three categories of infrastructural, societal, and environmental action items and classified into highest, moderate, and lower priority. The full list of recommended actions is included in the compiled matrix in the Appendix. The list below is also supplemented by top recommendations from the 2020 Hazard Mitigation Plan (HMP).

Culvert Assessment

Conduct a town-wide culvert assessment to identify those that need retrofit. The assessment would evaluate the existing structural condition of culverts, and their vulnerability to climate driven hazards. It would also evaluate the potential ecological restoration if culverts are improved. This would include an assessment of road and stream crossing redundancy, identifying locations where removal and riparian restoration would be part of the nature-based solutions sought by the town of Becket. The assessment should result in a prioritized list of culverts retrofits and replacements, with estimated design costs and likely funding sources.

Town Bylaws

Review and amend current local bylaws, subdivision ordinances, and zoning regulations to reduce risk and damages from extreme weather, heat, flooding, and other climate change impacts. Include requirements for low impact development best practices, incentives to develop away from high hazard areas, hydrologic study requirements, and updated road standards. Include a requirement that the Town consider the feasibility of pervious paving, stormwater best management practices, and best management practices for managing snow and ice whenever retrofitting or building parking lots on Town property and that private entities do the same for major developments.

Outreach and Education

Improve emergency communication in Becket and develop an outreach and education plan for all part- and full-time, residents related to climate change. The plan should include information on how to sign-up for the Reverse 911 system, where emergency shelters are located, and how to mitigate potential impacts of climate change such as heavier rain events, periods of drought or high heat, and power outages. Educate residents about nature-based solutions and how incorporating them into Beckets future planning will make the town more resilient. Develop creative and dynamic campaigns to encourage and foster the inclusion of nature-based climate resiliency at home, on private lands, and on Town-owned properties, including emergency shelters.

Emergency Shelters

Develop a shelter management plan that includes identifying and retrofitting shelters (Town Hall, YMCA Camp, and a location to be identified in Becket West) if deemed necessary. Include an education and a transportation component, so citizens know where to go during a disaster and those that cannot travel are assisted. Include a plan for cooling and warming centers. Include energy resilience strategies with clean energy sources. Prioritize locations that are currently significant energy users so that clean energy sources can be both used for shelters and reduce the emissions of Becket's largest greenhouse gas emitters.

Master Plan

Update the Town's Master Plan to include smart growth best practices as well as plans for climate adaptation and resiliency, forest and wetlands conservation, and hazard mitigation.

Forest Study

Conduct a broad-scale study and plan for forests in Becket. The study would document forest composition in Becket, the various functions of forests, and how forests may change in the coming decades. The plan would set the Town's goals, objectives, and actions for forest management, including climate resiliency. Disseminate findings of the study and plan to residents and landowners to encourage forestry across the town that is aligned with Town goals. Topics could include, use of nature-based solutions on private land, management of invasive plants, responding to forest pests, carbon sequestration, holistic forest management, fire management, and existing resources for landowners like the Landowner Incentive Plan (LIP) through UMass MassWoods.

Protect Wetlands and Floodplains

Identify and protect wetlands and floodplains that are especially valuable for mitigating the impacts of climate change, because they reduce floods, maintain water quality, and maintain biodiversity among other benefits. Where possible, acquire conservation restrictions or purchase high priority wetlands and floodplains and adjacent properties for floodplain expansion. Partner with land trusts where possible. If possible, coordinate this action with an update of the Open Space and Recreation Plan and/or the Town Master Plan. Develop a method by which parcels, that revert to or are owned by the town, are assessed for their overall ecological value prior to being sold or transferred.

Additional Priorities

Infrastructural Actions

Highest Priority

- Conduct a land use study of areas in Becket with concentrated development and a high probability of flood inundation to assess potential for, and mitigate, well and septic cross contamination and potential nature-based solutions for reducing flooding.
- Replace culverts at the following locations to prevent flooding, Leonhardt Road, Hamilton Road, YMCA Road, Route 8 between McNerney Road and George Carter Road. Replace Benton Hill Road culvert. Replace the culvert on Cushman Brook at Quarry Road.

- Move the Highway Garage out of the floodplain for the purposes of natural flood storage. Clean-up and revegetate the current site.
- Build a two-way radio repeater tower to enhance EMS and other emergency communications.

Moderate Priority

- Conduct a study of town owned roads to identify areas of high sedimentation and identify potential maintenance solutions to reduce sedimentation and maintain clean ditches.
- Maintain a list of dams and dam owners at the Town Hall. Develop an outreach program to private dam owners to educate them about dam maintenance requirements including inspections, pre-flood release coordination, and safety information.
- Create a climate mitigation plan for Becket including an inventory of greenhouse gas emissions across the town, development of a greenhouse gas emission reduction target, and identification of feasible actions to meet the target. The plan would expand upon the town's Green Community Program energy reduction plan, which focuses only on municipal energy use. This could include, for example, adding electric vehicle charging stations, expanding clean energy generation, and weatherization of buildings.

Lower Priority

- Communicate with MassDOT to support minimizing road salt application near sensitive environmental areas, utilizing green infrastructure to maximize the longevity of road maintenance, and to minimize risk to flooding and landslide along Route 20.
- Determine the best method for providing access to a public drinking water supply. At Town meeting in 2019, The Town of Becket voted to explore installation of external taps, with automatic shut off valves, at the Town Hall and the Becket/Washington Athenaeum. There has also been discussion about acquiring a piece of land that has a natural spring that could be monitored and made accessible to all as climate change could compromise community members' wells.

After an ice storm (Source: Meredyth Babcock)

Societal Actions

Highest Priority

- Review zoning and subdivision regulations for smart growth best practices.
- Develop a public education and communication program that educates citizens in rural Becket about the potential impacts of climate change and the organizations (such as the Berkshire Regional Planning Commission) who can provide support to home owners with issues such as sealing wells to prevent contamination from flood waters, back-up power and renewable energy sources.

Moderate Priority

- Partner with camps and other local organizations to promote and implement conservation, alternative energy sources and renewables. Explore the opportunities these organizations may have to act as shelters during a disaster.
- Expand outreach to seniors and include a system of interviewing seniors to understand their needs related to climate resilience and hazard mitigation. Collaborate with Age-Friendly Berkshires.
- Incorporate educational efforts into all other climate resilience actions to encourage alignment of public and private efforts.

Lower Priority

- Work with the Council on Aging and Age Friendly Berkshires to identify vulnerable residents and provide them with hazard mitigation and preparedness information.

Environmental Actions

Highest Priority

- Update the town's Open Space and Recreation Plan (OSRP). Include consideration of priority parcels to conserve, wildlife corridors, and ecological landscaping.
- Develop holistic plans for water resources in Becket, especially lakes. The plans could include cover management of the water resources themselves, including management of aquatic invasive species, water quality monitoring, citizen science efforts, consideration of establishing a town boat washing station, and maintenance and/or removal of dams. Plans could also establish recommendations for appropriate activities adjacent to waterways including development intensity, septic system maintenance, maintaining vegetated buffers, minimizing pesticide use, etc.
- Purchase Palmer Brook Reservoir for conservation (purchase by Town, land trust, conservation group, state, or likely a combination of these groups)
- Control flooding and erosion along stream banks with nature-based solutions like maintaining buffers, revegetation and slowing movement of water into streams.

- Adopt a local wetlands bylaw. Increase the community's understanding of the Wetlands Protection Act and its support for the board tasked with implementing it.
- Create a baseline survey and action plan for invasive species in Becket and neighboring communities. Survey trees near roads, powerlines, and other critical infrastructure to identify those impacted by pests. Remove dead or dying trees before they fall on roads, powerlines, and critical facilities. Focus on early eradication of invasive plants and animals, minimizing the movement of invasive species along waterways from their headwaters in Becket to downstream communities. Remove phragmites and restore native vegetation to improve floodplain functioning. Develop an early eradication program for Japanese knotweed to minimize streambank erosion. Educate residents of Becket about emerald ash borer and other tree pests, including proper disposal of effected wood, to minimize their spread.
- Develop plans for control of disease-vectors with a focus on nature-based solutions for controlling mosquitos and ticks.
- Review bylaws to identify measures that will preserve biodiversity, habitat integrity and water resources.

Moderate Priority

- Explore adoption of a stormwater management bylaw to address stormwater impacts of development in Becket
- Explore adoption of an erosion control and sedimentation bylaw to ensure best practices are used when sites are disturbed
- Promote ecological landscaping. Install demonstration projects on town owned land. Amend the zoning bylaw to include requirements for ecological landscaping. Conduct educational efforts about ecological landscaping, especially within areas under the jurisdiction of the conservation commission. The removal of trees along power lines or for other purposes, or their loss, provides the opportunity for replanting with native vegetation.

Lower Priority

- Continue to utilize best management practices for roads adjacent to sensitive aquatic areas, including road salt treatment. Continue to work with others who maintain roads in Becket to ensure they are using best practices.
- Continue use of beaver deceivers

8. POSSIBLE FUNDING SOURCES

Funding for implementation from public sector sources could include:

- MVP Implementation grants from Massachusetts Executive Office of Energy and Environmental Affairs, ranging from $10,000 - $2,000,000 are available to municipalities upon completion of the MVP planning process
- Massachusetts Emergency Management Agency (MEMA) grants
- FEMA's Hazard Mitigation Grant Program (HMGP)
- MassWorks Infrastructure grants from Massachusetts Executive Office of Housing and Economic Development
- Massachusetts Division of Ecological Restoration's Culvert Replacement Municipal Assistance grants
- Dam and Seawall Repair or Removal grants from Massachusetts Executive Office of Energy and Environmental Affairs, which addresses inland flood control infrastructure as well as coastal features
- Massachusetts Department of Environmental Protection 604b Water Quality Management Planning Grants
- Other state funds for land conservation
- EPA grants
- See additional grant opportunities on the Massachusetts Community Grant Finder at https://www.mass.gov/lists/community-grant-finder

9. CRB WORKSHOP INVITEES AND PARTICIPANTS

First Name	Last Name	Representing	Present
Meredyth	Babcock	Becket's MVP Point Person (Core Team)	*
Dave	Bacon	Canterbury Farms	
Linda	Bacon	Canterbury Farms	
Alvin	Blake	Planning Board, Energy Commission (Core Team)	*
Chris	Bouchard	Highway Department/Tree Warden (Core Team)	*
Sean	Cahill	Sherwood Forest Rep	*
Colleen	Cahill	Sherwood Forest Rep	
William J.	Caldwell	Town Administrator (Core Team)	*
Dave	Christopolis	Hilltown CDC	
Peter J	Connor	YMCA--Camps and Berkshire Outdoor Center	
Becky	Cushing	Mass Audubon Berkshire Wildlife Sanctuaries	*
Cindy	Delpapa	Conservation Commissioner (Core Team) CPA	*
Alison	Dixon	Conservation Commissioner (Core Team)	*
Ray	Ferrin	Ambulance (Core Team)	*
Peter	Flinker	Dodson & Flinker, Facilitator	*
Leanda	Fontaine	Mass Department of Fish and Game	*
Rita	Furlong	Parks and Recreation & USPS worker	
Allison	Gramolini	Dodson & Flinker, Facilitator	*
Francisca	Heming	MassDOT, District 1	*
Tim	Hickey	Environmental Science professor at BCC	
Ethan	Hoch	Community Member	
Lilly	Hoch	Community Member	
David	Johnson	Core Team member	*

Karen	Karlberg	Jacob's Pillow & Community member	*
Gail	Kusek	Historical Commission	
Gale	LaBelle	Board of Health	*
Denniis	Lynch	Monterey community member	
Caroline	Massa	BRPC	*
Kristopher	McDonough	Police Chief, EMD (Core Team)	*
Purr	McEwen	Yokum Pond area	
Paul	Mikaniewicz	Fire Department	*
Andrew	Myers	Chester community member	
Amy	Permutter	Community Member	*
Jim	Peters	Forestry specialist (Core Team)	*
Carrieanne	Petrik	MVP Program Western Coordinator	*
Sue	Purser	Sherwood Forest residents	*
Jodi	Shafiroff	Library Admin.	
Dan	Shaw	Dodson & Flinker, Facilitator	*
Dillon	Sussman	Dodson & Flinker, Facilitator	*
Chris	Swindlehurst	Select Board Member (Core Team)	*
Ann Marie	Visconti	Middlefield EMD	*
Carol	Waag	Middlefield Conservation Commission	*
Maria	Wallington	Health specialist (Core Team)	*
Jill	Weinberg	New resident, Business owner	*
Jeffrey	Zukowski	Massachusetts Emergency Management Agency	

10. ACKNOWLEDGEMENTS

The planning process was made all the sweeter and more fulfilling due to the brilliant breakfast, supplied by Jill Weinberg of the soon to open “Becket Village Kitchen” and the luscious lunch prepared by Chef Heather of the Becket General Store. We also want to thank the staff at the Becket Town Hall for making everything run smoothly and helping us carry this event off with a smile.

11. MVP PROJECT TEAM

Meredyth	Babcock	Becket's MVP Point Person (Core Team)
Alvin	Blake	Planning Board, Energy Commission (Core Team)
Chris	Bouchard	Highway Department/Tree Warden (Core Team)
William J.	Caldwell	Town Administrator (Core Team)
Cindy	Delpapa	Conservation Commissioner (Core Team)
Alison	Dixon	Conservation Commissioner (Core Team)
Ray	Ferrin	Ambulance (Core Team)
Kristopher	McDonough	Police Chief, EMD (Core Team)
Jim	Peters	Forestry specialist (Core Team)
Chris	Swindlehurst	Select Board Member (Core Team)
Maria	Wallington	Health specialist (Core Team)
Carrieanne	Petrik	MVP Program Western Coordinator
Peter	Flinker	Dodson & Flinker, Facilitator
Allison	Gramolini	Dodson & Flinker, Facilitator
Dan	Shaw	Dodson & Flinker, Facilitator
Dillon	Sussman	Dodson & Flinker, Lead Consultant, Facilitator

12. CITATION

Town of Becket (2020). Community Resilience Building Workshop Summary of Findings. Town of Becket, Dodson & Flinker. Becket, MA

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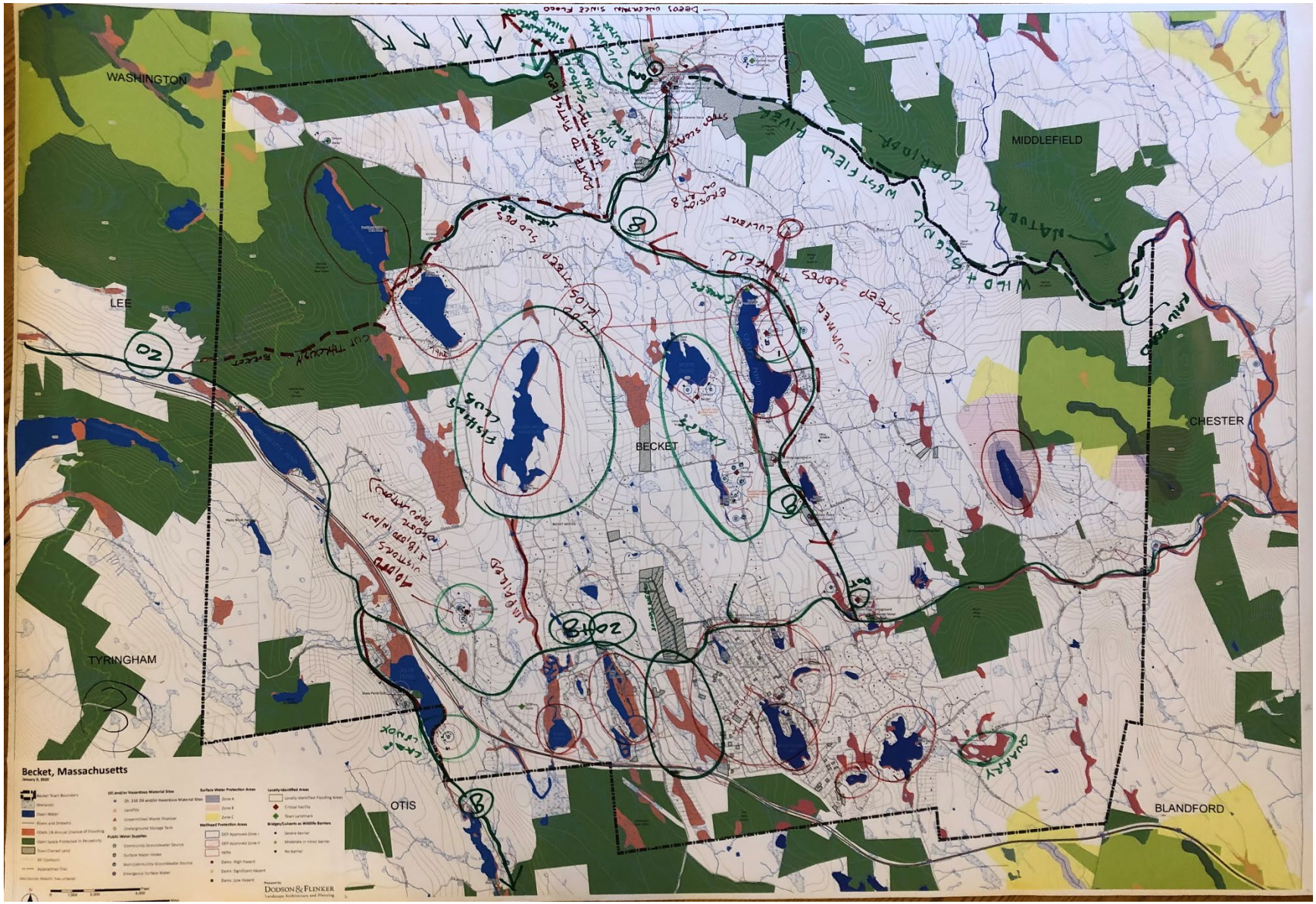
14. APPENDICES

1. Maps from Workshop Groups
2. Combined Workshop Matrix
3. Workshop Presentations
4. Future Land Use Scenarios

APPENDIX 1: BECKET MVP WORKSHOP MAPS

Group 1 Workshop Map

Group 2 Workshop Map



Group 3 Workshop Map

Group 4 Workshop Map

Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.org

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability **S** = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	Priority H - M - L	Time Short Long Ongoing
Infrastructural										
Route 20 - Main route to east and few good alternative routes. Vulnerable to flooding in Becket and landslide in Chester.	Route 20 from Route 8 to east (Chester Town Line and Beyond)	MassDOT	V	Work with MassDOT to minimize flood risk on Route 20. [Flooding]					H	O
Route 20	Route 20 from Route 8 to east (Chester Town Line and Beyond)	MassDOT	V	Develop emergency plans and detour routes for Route 20. Prioritize keeping alternative routes open. [Flooding]					H	O
Highways (Rt 8, Rt 20, Rt 90)	See map	MassDOT	V	Coordinate with MassDOT to install green infrastructure along highways. Explore converting some roads to pervious paving. [Flooding]					M	L
Roads, Town - Many miles of gravel and dirt roads that are susceptible to erosion, washouts.	Leonhardt Road (washout, erosion, flooding), Hamilton Road, YMCA Road, McNerney Road to Carter Road	Town	V				Continue to build and maintain roads with climate impacts in mind: frequent freeze-thaw cycles, larger storm events [Average and Extreme Temperatures]		H	S/O
Roads, All	All	Town, MassDOT, Private	V			Minimize road salt applications, especially adjacent to sensitive environmental resources. Communicate with other agencies about road salt. Consider use of alternatives like beet juice. [Ecosystem Changes]			H	S/O
Roads, All	All	Town, MassDOT, Private	V		Continue road maintenance practices, including cleaning ditches. Continue to explore best practices for road construction. [Severe Weather]				H	S/O
Roads, All	All	Town, MassDOT, Private	V	Catch sediment with green infrastructure, evaluate and revise dirt road maintenance practices with the goal of reducing sediment washing into watersheds [Flooding]					M	O

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Roads, Town	Leonhardt Road (washout, erosion, flooding), Hamilton Road, YMCA Road, McNerney Road to Carter Road	Town	V		Improve Leonhardt Road. [Severe Weather] [Should this action also call out other roads that have problems or should those be separate actions? E.g. Hamilton Rd, YMCA Rd, McNerney to Carter Rd.?]				H	S/O
Roads, Private Many miles of private HOA roads. Sherwood Forest has road district. Private roads in relatively good shape, but lack funding for emergency repairs and HOAs don't qualify for many grants.		HOAs, Sherwood Forest	V	Continue to ensure adequate design and maintenance of private roads via review of new subdivisions. [Flooding]					H	S/O
Roads, Private	All	Private	V	Review subdivision regulations and update road standards as needed, especially regarding low-impact design (LID). [Flooding]					H	S/O
Roads, Private	All	HOAs, Sherwood Forest	V		Improve communication with HOAs and Sherwood Forest Road District regarding maintenance and emergency access. [Severe Weather]				H	S/O
Culverts/Bridges - Some undersized, some compromised, many are wildlife barriers, susceptible to blockage and blow outs. Very expensive to replace. Town doesn't have necessary $.	Cushman Road, Benton Hill Road, Hamilton Road, Luce Road (severe wildlife barrier), Route 8 culvert	Town, MassDOT, Private	V	Undertake town-wide or regional assessment of culverts and bridges. Prioritize and undertake upgrades with focus on vulnerability and ecosystem impact. [Flooding]					H	S/O
Culverts/Bridges	Cushman Road, Benton Hill Road, Hamilton Road, Luce Road (severe wildlife barrier), Route 8 culvert	Town	V	Continue to seek funding for Benton Hill Road culvert replacement. [Flooding]					H	S/O
Culverts/Bridges	Cushman Road, Benton Hill Road, Hamilton Road, Luce Road (severe wildlife barrier), Route 8 culvert	Town	V	Continue to work toward 2024 replacement of Cushman Road culvert. [Flooding]					H	S/O

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Culverts/Bridges	Cushman Road, Benton Hill Road, Hamilton Road, Luce Road (severe wildlife barrier), Route 8 culvert	Town	V		Continue maintenance of culverts and debris management [Severe Weather]				H	S/O
Dams - There are concerns about the capacity of dam owners throughout town to maintain and manage their dams in the face of increasing storm events. Buckley-Dutton, Indian Lake, and Palmer Brook Dams are classified as high hazard. Ownership of the Yokum Pond dam is unclear.	Most dams, especially, Buckley-Dutton Palmer Brook Indian Lake Yokum Pond	Private, unknown	V	Compile a contact list for dam owners. Reach out to them about status of inspections, collect emergency management plans. [Flooding]					M	O
Dams	See map locations throughout town	Public and private	V	Create a county/ regional online portal of dams, showing locations, ownership, condition, and inundation areas. Could combine with culvert inventory (above). Much of this data exists (Becket Police dept has it for Becket), would just need to be consolidated. This would be more effective than relying on statewide dam safety dept, which is often unresponsive/ understaffed/ underfunded. Group 2's priority #3 [Flooding]					H	S
Dams	See map	Public and private	V	Coordinate pre-flood releases [Flooding]						
Dams	See map	Public and private	V		Develop ice safety plan [Severe Weather]					
Cell Towers - Could impede communication if damaged. Mostly are fairly accessible. George Carter Road is most difficult to access, but MassDOT has a tower there too so they are likely to be deal with it in case of problem.	Otis, Johnson Road, George Carter Road, McNerney Road, Cross Road, Tower Road	Mixed	S/V		Assess trees around cell towers and potential barriers to access (especially on/near Tower Road) [Severe Weather]				H	S
Cell towers	See map	American Tower (company)	V		Ensure cell towers have emergency energy backup [Severe Weather]				H	S
Cell towers	See map	American Tower (company)	V		Install cell service repeater to enhance EMS communication [Severe Weather]				H	S

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Power Lines - Susceptible to damage from falling trees. Potential future electrical system overloads in extreme heat. Eversource is effectively managing tree trimming and developing back feed loops.	Town-wide. Areas with fewest houses will have power outages longest.	Eversource	S/V		Continue to work with Eversource on preventative maintenance related to power lines					
Broadband - Limited service now, but expanding. Limits communication. Once expanded people will become dependent on it, and may increase number of people moving to Becket	Town-wide		S/V							
Beaver Issues. Beavers expand territory continuously and flood areas. Potential for beaver dam failure. Town has many beaver deceivers in place. Beaver activity near Yokum Pond Dam floods Leonhardt Road.	See map	Mixed	V	Continue use of beaver deceivers [Flooding]					M	O
Beaver Issues	See map	Mixed	V	Clarify ownership of Yokum Pond Dam and address flooding on Leonhardt Road [Flooding]					M	O
Wells -Potential for wells going dry, loss of water in power outage	Town-wide	Private	S/V				Prepare plans for drought management and emergency water supply, to prepare for temporary loss of private wells due to power outage and long-term failure of wells. Consider stockpiling water for emergencies and designating emergency water supply sources, e.g.Town Hall. [Average and Extreme Temperatures]		M/H	O
Wells	Town-wide	Private	S/V				Revisit past studies of public water supplies: Tighe and Bond study; OSRP study of Shaw Pond area [Drought]		M	O
Wells	Town-wide	Private	S/V		Educate residents about options for backup power for wells in case of extended outages [Severe Weather]				M	O
Wells	Town-wide	Private	V				Restore the spring off Rt 20 near Chester, which used to be a water supply but was shut down after testing. [Drought]		H	S

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Wells	Town-wide		V/S	Develop town fund, or other mechanism, to assist residents with sealing their wells to prevent contamination from flooding [Flooding]					L	L
Wells	Town-wide		V/S					Require hydrologic studies for large withdrawals [Impacts of Past Development]	L	L
Septic systems, private - effect of nitrogen leaching into water bodies is made more severe by warming temperatures	Town-wide	Private	V			Provide incentives or financial assistance for upgrading septic systems, explore use of neighborhood wastewater treatment plants. [Ecosystem Changes]			H	L
Highway Garage - On edge of town, in floodplain, adjacent to wild and scenic Westfield river	See map, North Becket	Town	V	Evaluate pros and cons of moving the Highway Department out of the flood zone to a more central location . A possible site could be town owned subdivision land on Rt 20 (potential public safety building site) [Flooding] [Flooding]					H	S
Highway Garage	See map, North Becket	Town	V	Clean up highway garage site to prevent materials being washed into Westfield River [Flooding]					H	
Highway Garage	See map, North Becket	Town	V		Assess, remediate, and revegetate highway garage site. Use it for flood storage [Severe Weather] [Ecosystem Changes]				H	
Parking Lots	Various	Mixed	V	Explore converting parking lots to pervious paving throughout Becket [Flooding]					M	L
Railroad	Westfield River Corridor	CSX	V/S					Pursue local passenger train service in Becket or adjacent community [Resilience]		
Societal										

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
All Residents, especially vulnerable populations	Dispersed	Private	S/V		Develop program to help residents, especially vulnerable populations, to increase the reslience of their homes so they can shelter in place--e.g. installing renewable energy sources that can operate when the grid goes goes down, generators or generator hook ups, back up water supplies, improved thermal envelope, daylighting, etc. [Severe Weather]				M	O
Camps- Vulnerable population because of high ratio of children to adults. Large number of campers would be difficult to deal with in an emergency	See map	Private	V		Increase sharing of emergency management plans and coordination between Town and Camps. Maintain up-to-date list of contacts at camps [Severe Weather]				M	O
Young people - Vulnerable population, especially those with limited economic resources and family challenges	Unknown	Private	V				Identify young people who may need additional support and connect their caregivers to programs and resources [Average and Extreme Temperatures]		M	O
School - School is a cultural hub and source of community cohesion. School age population is projected to decline. If insufficient to maintain school, there would be negative impacts on social resilience of town.	See map	Town	S/V	Build emergency access/nature trail for the school [Flooding]						
School	See map	Town	S/V		Install BMPs on school site [Severe Weather]					
Older Adults - Resource for town particularly related to volunteerism and expertise, wisdom. Also a vulnerable population, especially older adults with limited economic resources, social isolation, or health challenges.	Dispersed	Private	S/V				Do outreach to older adults about heat health risks. [Average and Extreme Temperatures]		M	O
Older Adults	Dispersed	Private	S/V				Expand public access to water bodies for cooling. [Average and Extreme Temperatures]		M	O
Older Adults	Dispersed	Private	S/V					Expand services of Senior Center and bring resilience discussion to this group. [Resilience]	M	O
Older Adults	Town-wide	Private	V					Create an emergency food distribution hub. [Resilience]	H	O
Older Adults	Town-wide	Private	V					Participate in Age-Friendly Berkshires [Resilience]	M	O

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Older Adults	Town-wide	Private	V					Plan for housing and transportation for older adults (and other vulnerable populations] [Impacts of Past Development]		
People with health conditions that will be exacerbated by climate change--especially COPD and asthma	Town-wide	Private					Incentivize air-source heat pumps for A/C and heat. Education re: cleaner energy sources (heat pumps, pellet stoves). [Average and Extreme Temperatures]		L/M	O
Fuel Supply - There is no gas station in Becket | **People with health conditions** that will be exacerbated by climate change--especially COPD and asthma	Town-wide	Private					Install additional electric vehicle charging stations [Average and Extreme Temperatures]		L/M	O
Yankee Culture - Becket residents are generally self-sufficient/resilient, but some are unwilling to ask for or accept help.	Dispersed	Private	S/V					Work to destigmatize asking for and receiving help. [Resilience]	M	O
Seasonal Residents - May not be adequately prepared for hazards. Seasonal houses supports the town's tax base putting it in a better fiscal position than some neighboring communities.	Town-wide	Private	S/V		Develop educational materials for seasonal residents regarding hazards, climate change, and environmental stewardship. [Severe Weather] [Ecosystem Changes]				H	O
Food Supply/Food Security	Camps	Private	S/V					Connect with Camps who are likely have back up food and other emergency resources during the summer. Dispatch center can be tapped into for MREs/emergency food resources [Resilience]		
Food Supply/Food Security	Town-wide	n/a	V					All hazards: Establish a community kitchen to assist in providing an emergency food supply during emergencies, at least to priority vulnerable residents (like older adults). [Resilience]	M	S
Dispersed Population - Sections of town are physically isolated from each other due to topography and road system. It can be difficult to communicate across the whole town and to develop community cohesion. On the other hand some vulnerabilities will only impact some parts of town leaving others able to help.	Town-wide	Private	V/S							

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Development/Population Growth - Climate change may result in increased development in Becket as people seek out places with a comfortable and safe climate, with access to lakes/ponds (natural cooling). However, there is limited remaining "good" land to develop, cost of development is high.	Town-wide	Private	V/S	Review zoning and subdivision regulations for low impact development best practices, incentivize development away from vulnerable locations. [Flooding]					M	S
Development/Population Growth	Town-wide	Private	V/S			Review zoning and subdivision regulations for smart growth best practices [Ecosystem Changes]			M	S
Development/Population Growth	Town-wide	Private	V/S				Continue to support stretch code and similar building code upgrades to limit carbon emissions [Average and Extreme Temperatures]		M	S
Development/Population Growth, including potential climate refugees	Town-wide	N/A	V/S					Create a town master plan, to create a guiding town-wide vision for: conservation planning; village centers with walkability, stores, services, and affordable housing; aging issues; growth issues; other action items captured in this MVP process. **Group 2's priority #4 [Resilience]**	H	S
Cultural Institutions -Becket Athenaeum, Hilltown Brouhaha (Becket/Washington Community Fair) building. Jacob's Pillow: draws huge crowds to Becket. Strength and vulnerability.	Various	Public/Private	S/V					Continue to support events that bring residents together. [Resilience]	M	O
Cultural Institutions	Various	Public/Private	S/V					Expand efforts to utilize culture as economic development driver [Resilience]	M	O
Cultural Institutions	Various	Public/Private	S/V		Increase sharing of emergency management plans and coordination between Town and cultural institutions. Maintain up-to-date list of contacts. [Severe Weather]				M	O
Cultural Institutions/Town Facilities	See map	Public and Private	V/S		Develop alternative energy service for institutions and town facilities, includes renewables [Severe Weather] [Resilience]				H	

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Cultural Institutions	See map	Public and Private	V/S			Develop a partnership with cultural institutions and camps to advance education, conservation, energy independence [Ecosystem Changes] [Resilience]			H	
Communication, General - No single channel of communication is going to reach all people. There are several email lists in in town—Athenaeum, Arts Center, Town list. All are opt-in. Stores are social centers: Sherwood Shoppes, General Store, Papa Bob's	Town-wide	Mixed	S/V					Do outreach to residents, especially new residents and seasonal residents, about rural living, who to contact in hazard event, general information about the town. Ideas: use Census 2020 process to publicize emergency info; distribute information via tax bills; distribute info via relators [Severe Weather] [Resilience]	H	O
Emergency communication - Reverse 911 in place but low enrollment, only goes to landlines. Greater redundancy, updated phone list needed	Town-wide	Becket	V					Upgrade "Reverse 911" to "Code Red". Expand modes of emergency communication beyond land line telephone, to include cell phone, text, email, internet, etc. Develop methods so second-home owners can get notifications remotely. Partner with/ coordinate with any neighboring emergency alert systems. Prioritize emergency communications to most vulnerable residents including residents with disabilities or other health challenges, older adults, young people [Severe Weather]**Group 2's priority #2** [Resilience]	H/M	S/O
Emergency communication	Town-wide	Becket	V		Develop or procure app/interactive map system to let residents know about road closures/issues in real time [Severe Weather]					
Emergency communication	Town-wide	Becket	V	Maintain a list of vulnerable residents that should be contacted in a flood/emergency situation; work with Age Friendly Berkshires [Flooding]						

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Emergency shelters	Town-wide	Public	V/S					Confirm if there are shelters for north, central, and south Becket, and designate, provision, and publicize additional emergency shelters if needed. Consider potential transportation disruptions like icy roads and damaged roads or bridges when designating shelter locations. Ensure ADA accessibility of shelters Account for seasonal residents when planning shelters. Consider needs of vulnerable populations [Resilience]		
Emergency Shelter	See map	Private	S/V		Publicize that YMCA camp girl's side is shelter when camp is open and ensure that it is adequately supplied [Severe Weather]				M	O
Emergency shelters	Town-wide	Public	V/S				Develop cooling/warming centers			
Lake and road districts	See map	Quasi-municipal, private	S				Ensure adequate firefighting water supply from ponds (pumps/ hydrants) [Drought]		M	S
Strong sense of community, friendliness; lots of volunteers	Town-wide	N/A	S	Develop a "skills bank:" ask people if they have special skills they could volunteer in case of emergency (i.e. heavy equipment operator to clear trees out of roads) [Flooding]					M	O
Environmental										
Forest, Water Resources, Etc.	All	All	V/S					Climate Resiliency Plan-Forest, Water Resources, Conservation Plan [Resilience]		
Hazardous Materials - Mass Pike and Railroad both carry hazardous materials. Railroad has CSX and Amtrak trains. 90 car methane train regularly passes through Becket. Between Hinsdale and Chester (i.e. Becket) is highest risk area on the rail line because there is limited track access. Risk of fire. Potential for large scale evacuation. Is town prepared?	Mass Pike, Rail Line	MassDOT, Unknown	V/S					Develop evacuation plans for hazard materials releases [Resilience]	H	S

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Lakes/Ponds - Major strength and vulnerability for town. Maintaining good water quality is important, fish habitat, high recreational value. Concerns about invasive species, algae blooms, lake depth—often shallow and so warm quickly, warm water has downstream impacts.	See map	Private	V/S			Conduct outreach and education to residents about appropriate activities near shorelines, wetlands, streams, rivers (e.g. not mowing close to edge, maintaining vegetated buffers, pesticide use, etc.) [Ecosystem Change]			H	S/O
Lakes/Ponds	See map	Private	V/S				Promote boat washing for aquatic invasive management [Average and Extreme Temperatures]		H	S/O
Lakes/Ponds	See map	Private	V/S				Promote and develop citizen science programs. Coordinate with watershed associations, lake districts, etc. [Average and Extreme Temperatures]		H	S/O
Lakes/Ponds	See map	Private	V/S			Expand management of aquatic invasives. Build on Center Pond weed pulling program. [Ecosystem Changes]			H	S/O
Lakes/Ponds	See map	Private	V/S			Develop a water quality testing program and publicize results [Ecosystem Changes]			H	S/O
Lakes/Ponds	See map	Private	V/S			Septic system maintenance - outreach to public/education to encourage people to properly upkeep. [Ecosystem Changes]				
Lake/Ponds	Palmer Brook Reservoir	n/a	V/S					Purchase Palmer Brook Reservoir for conservation (purchase by Town, land trust, conservation group, combination, etc.) **Group 2's priority #5 [Resilience]**	H	S
Lake/Ponds	Various	Mixed	V/S			Manage lakes and ponds for natural flow regime; [Ecosystem Changes]				
Lake/Ponds	Various	Mixed	V/S					Plan for future dam removals [Impacts of Past Development]		

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Streams/Wetlands - Westfield River is a nationally designated Wild and Scenic River Becket has 23 cold water fisheries, critical habitat. Becket is at headwaters of 3 watersheds: Westfield River, Farmington River, Housatonic River. Has a responsibility to all those downstream to pass on clean, cool water and not increase flooding. Extensive wetlands throughout town. Provide valuable services for the town, water storage and filtering. Many were converted to lakes/ponds in the past. There is no local wetlands bylaw in Becket.	Various	Mixed	V/S	Control erosion along stream banks with nature based solutions like maintaining buffers, revegetation and slowing movement of water into streams. [Flooding]					H	S/O
Streams/Wetlands					Improve road drainage into streams and rivers—catchment basins, retention basins [Severe Weather]					
Streams/Wetlands	Various	Mixed	V/S			Minimize road salt treatment in sensitive aquatic areas. Continue to work with others who maintain roads in Becket to ensure they are using best practices. [Ecosystem Changes]			H	S/O
Streams/Wetlands	Various	Mixed	V/S			Adopt a local wetlands bylaw. [Ecosystem Changes]			H	S/O
Streams/Wetlands	Various	Mixed	V/S	Adopt a Stormwater Management Bylaw. Consider a stormwater utility (?) [Flooding] [Ecosystem Change]					M	S
Streams/Wetlands						Continue to ensure that erosion control and sedimentation best practices are used when sites are disturbed [Ecosystem Changes]			H	S/O
Wetlands	wetland by Rt 90 and Sherwood Forest; other wetlands	Private	V/S	Work toward purchase of wetlands, including wetland by I-90 and Sherwood Forest, by town, land trust, conservation group, etc. for floodplain expansion. [Flooding]					H	S

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Floodplains	Town-wide	Private and public	V/S	Protect wetlands and floodplains. Purchase them and adjacent properties for floodplain expansion, in coordination with an open space plan/ master plan (and updated FEMA flood maps, ideally). Group 2's priority #1 [Flooding]					H	S: Analysis L&O: Acquisition of land
Forests - Key feature of the town in terms of resilience, identity, land area. Some forests are protected, but very large amount of land is not protected. Land trust activity is limited in Town. No real mechanism/source for purchasing conservation easements. There are serious concerns about future changes of Becket's forests. Most of key trees are under stress: sugar maple, red maple, emerald ash Borer found in Becket in 2019, Hemlock Wooly Adelgid. When trees die, they are replaced with species with less ecological value, including invasive species. Forest dieback can make wildfire worse (though Becket doesn't have thick duff layer like west coast). Can also increase speed of water across land—increases flooding and erosion, decreases infiltration-> drinking water. Many land owners are not educated about how to manage forests or the changes that are coming.	Town-wide	Mixed	V/S			Develop a forest survey and comprehensive forest management plan, including nature based invasive species management. Create a tree replacement program with an emphasis on climate resilient trees for Becket, as blighted trees die off. Incentivize carbon sequestration, habitat enhancement, and fire management, through coordinated and holistic forest management planning. [Ecosystem Changes] [Ecosystem Changes]			H	S/O
Forests, Lakes/Ponds, Streams, Wetlands, Etc.	Town-wide	Mixed	V/S			Update Open Space and Recreation Plan (OSRP) [Ecosystem Changes]			H	S/O
Forests	Town-wide	Mixed	V/S				Set a carbon reduction goal to mitigate climate change [applies to all vulnerabilities, forests are seen as key carbon sink]. [Average and Extreme Temperatures]		H	S/O
Forests	Town-wide	Mixed	V/S			Publicize Landowner Incentive Plan (LIP) through UMass MassWoods [Ecosystem Changes]			H	S/O
Forests	Town-wide	Mixed	V/S			Do outreach and education to residents about future of Becket's forests and land management, pesticide use, using nature-based solutions on private land, night lighting, etc. Consider distribution via relators (especially for new residents), or with tax bills. [Ecosystem Changes]			H	S/O

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Forests	Town-wide	Mixed	V/S			Partner with land trusts to acquire land and conservation easements [Ecosystem Changes]			H	S/O
Forests	Town-wide	Mixed	V/S	Establish bylaws to protect against clear cutting (clear cutting for solar arrays is a particular concern). [Flooding]					M	L
Forests	Town-wide	Mixed	V/S		See if electric company can pay for more appropriate/ resilient tree types where trimming occurs along power lines. [Severe Weather]				M	L
Appalachian Trail (as a fire risk)	See map	Federal	V/S				Education on fire safety for trail users [Drought]		L	O
Biodiversity	Town-wide	Mixed	V/S	Educate the community about climate change and the impacts it will have on the town—both so they are prepared and so they support the steps the Town needs to take—projects and bylaw changes, etc. Consider participation in the CREW program Survey residents about what they know and don't know, what they want to learn about [Resilience] [Flooding]					M	S/O
Biodiversity	Town-wide	Mixed	V/S			Adopt a pesticide ban [Ecosystem Changes]			M	S/O
Biodiversity	Town-wide	Mixed	V/S			Update lighting bylaw [Ecosystem Changes]			M	S/O
Biodiversity	Town-wide	State, local, private	V			Study potential wildlife migration corridors, especially along Appalachian Trail corridor [Ecosystem Changes]			M	O
Biodiversity	Town-wide	State, local, private	V			Promote ecological landscaping [Ecosystem Changes]			M	O
Invasive species - Japanese barberry, ash borer, forest pests like adelgid, beech disease	Town-wide	n/a	V			Early eradication program for Japanese knotweed and any other emerging invasives (rather than waiting until spread of invasive species reaches crisis-mode) [Ecosystem Changes]			H	S

H-M-L priority for action over the Short or Long term (and Ongoing) **V** = Vulnerability **S** = Strength				**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)					**Priority**	**Time**
				Flooding	Severe Weather	Ecosystem Change or Collapse	Average and Extreme Temperatures	Resilience/Impacts of Past Development	H - M - L	Short Long Ongoing
Features	**Location**	**Ownership**	**V or S**							
Invasive species	Town-wide	State, local, private	V	Remove phragmites and resotre to native vegetation. Phragmites prevent floodplains from functioning properly. [Flooding]					M/L	O
Invasive species	Town-wide	State, local, private	V			Do a baseline survey/inventory of native and invasive species [Ecosystem Changes]			M/L	O
Invasive Pests	Town-wide	Mixed	V/S			Education on disposal of ash wood to prevent spread of ash borer. [Ecosystem Changes]			M	L
Invasive Pests	Town-wide	Mixed	V/S		Survey trees near roads, powerlines, and other critical infrastructure to identify those impacted by pests. Remove dead/dying trees before they fall on roads) [Severe Weather]				M	L
Vector-borne diseases (Lyme, EEE, W. Nile)	Town-wide	Various	V			Look into natural mosquito-control measures. Public education around natural tick and mosquito management. [Ecosystem Changes]			L/M	O
Vector-borne diseases (Lyme, EEE, W. Nile)	Town-wide	Various	V			Include tick-resistant plants in native/pollinator gardens and plantings. [Ecosystem Changes]			L/M	O
Vector-borne diseases (Lyme, EEE, W. Nile)	Town-wide	Various	V			Encourage natural tick predators like possums and chickens [Ecosystem Changes]			L/M	O
Young people						Get kids/local volunteers involved in ecological restoration initiatives - vegetation for erosion control, pollinator gardens, stream cleanup, etc. [Ecosystem Changes]				
Lake and road districts	See map	Quasi-municipal, private	S			Engagement and education for ecological stewardship in each district [Ecosystem Changes]			M	S
Private communities	See map	Private, homeowners associations	S			Engagement and education for ecological stewardship in each HOA [Ecosystem Changes]			M	S
Day visitors	Town-wide	n/a	V/S			Education on resilience and ecological stewardship for day visitors [Ecosystem Changes]			L	O

Becket
Municipal Vulnerability Preparedness (MVP) & Hazard Mitigation Planning Project
Workshop

1

2

Today's Agenda

9:00 PM	Welcome, Presentation, Large and Small Group Discussions
10:15 AM	**Break**
10:45 PM	Small group discussion
12:30 PM	**Lunch**
1:15 PM	Large Group Discussion
1:30 PM	Presentation and Small Group Discussion
3:00 PM	**Break**
3:15 PM	Small Group Discussion
3:45 PM	Report Out and Group Prioritization
5:00 PM	Workshop Ends

3

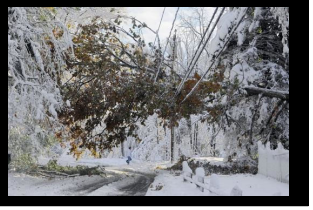
MVP Program

- Massachusetts' flagship climate change adaptation program
- MVP Planning Grants
  - Uses local knowledge to assess climate resiliency and create an action plan for improving resiliency
  - Result: MVP certification -> eligibility for state funding for action items
- MVP Action Grants
  - Up to $2,000,000 for climate adaptation actions identified in a community's MVP plan
  - Preference for "nature-based solutions"

4

Hazard Mitigation Planning

- Long-term planning to reduce loss of life and property by lessening the impact of disasters.
- A FEMA-approved Hazard Mitigation Plan is required to receive these Federal Grant Funds for Hazard Mitigation Projects:
  - Pre-Disaster Mitigation (PDM)
  - Flood Mitigation Assistance (FMA)
  - Hazard Mitigation Grant Program (HMGP)
    - Only available after a Presidential Disaster Declaration
- Update and review by FEMA required every 5 years.



5

Process: MVP/Hazard Mitigation Planning

1. Core Team Meetings
2. CRB Workshop (today)
3. Stakeholder Interviews
4. Two Public Meetings
5. HMP/MVP Plan
6. MVP Certification
7. MEMA and FEMA review and Approval of HMP
8. Implement Actions!

6

Mitigation Saves Lives

National Benefit-Cost Ratio (BCR) Per Peril *BCR numbers in this study have been rounded	Beyond Code Requirements	Federally Funded
Overall Hazard Benefit-Cost Ratio	$4:1	$6:1
Riverine Flood	$5:1	$7:1
Hurricane Surge	$7:1	Too few grants
Wind	$5:1	$5:1
Earthquake	$4:1	$3:1
Wildland-Urban Interface Fire	$4:1	$3:1

7

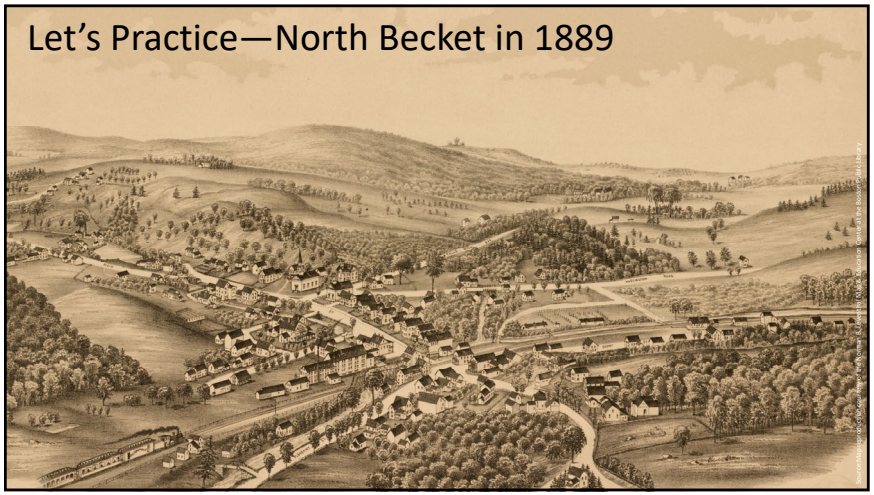
Definitions

- Hazard = a naturally occurring event with the potential to harm Becket's infrastructure, people, or environmental features. Hazards tend to occur repeatedly in same location because they are related to weather patterns or physical characteristics of a place.
- Vulnerability = An element of Becket that is especially susceptible to damage from hazard(s). Includes characteristics of the element and its exposure (how often and how severe the harm from the hazard).
- Strength = A feature of the community that increases its resilience—its capacity to anticipate, absorb, accommodate or recover quickly from the effects of a hazardous event

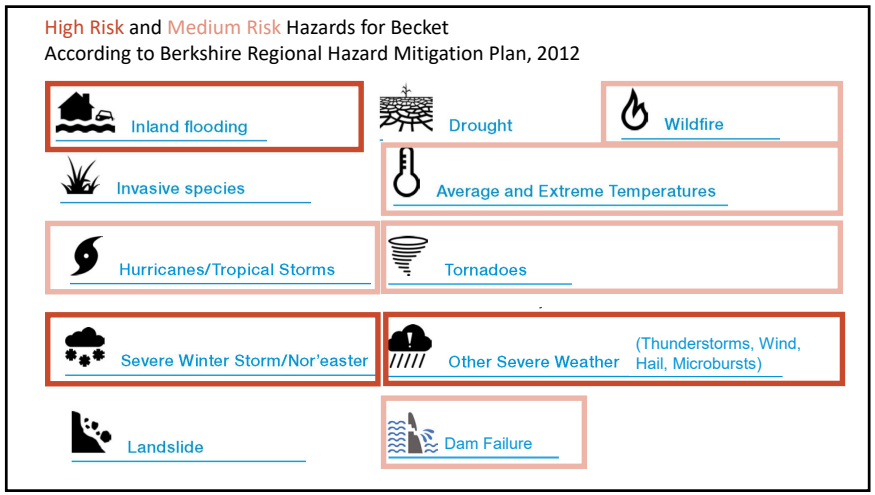
8


Today's Work
• Determine Top Climate-related Hazards
• Identify Vulnerabilities/Strengths
• Infrastructural
• Societal
• Environmental
• Identify actions
• Prioritize top actions

9


Let's Practice—North Becket in 1889

10


High Risk and Medium Risk Hazards for Becket
According to Berkshire Regional Hazard Mitigation Plan, 2012
Inland flooding
Drought
Wildfire
Invasive species
Average and Extreme Temperatures
Hurricanes/Tropical Storms
Tornadoes
Severe Winter Storm/Nor'easter
Other Severe Weather
(Thunderstorms, Wind, Hail, Microbursts)
Landslide
Dam Failure

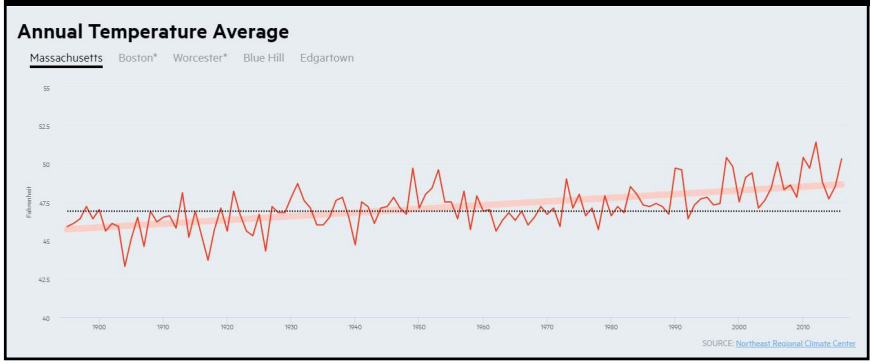
11


Predicting Future Hazards
Observed Climate trends from past century

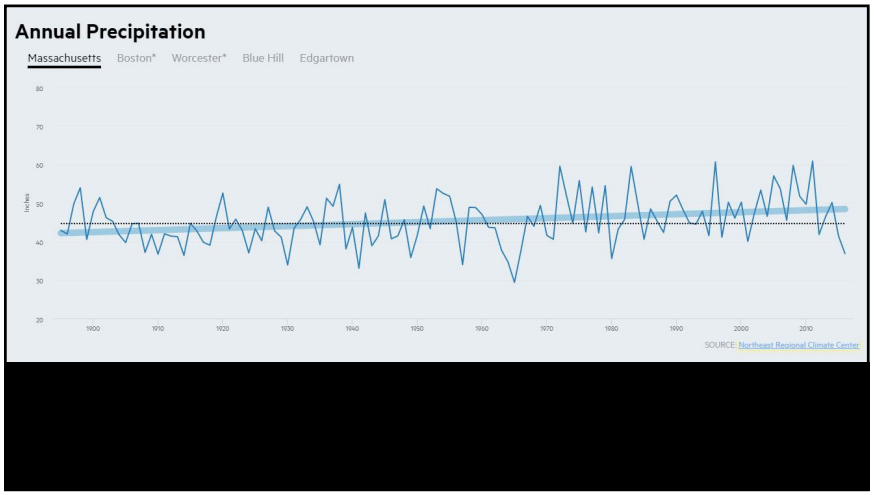
12

Annual air temperatures in the Northeast have been warming at an average rate of 0.5°F (nearly 0.26°C) per decade since 1970. Winter temperatures have been rising at a faster rate of 0.9°F per decade on average.

--Massachusetts Climate Change Projections" by Northeast Climate Science Center, UMASS

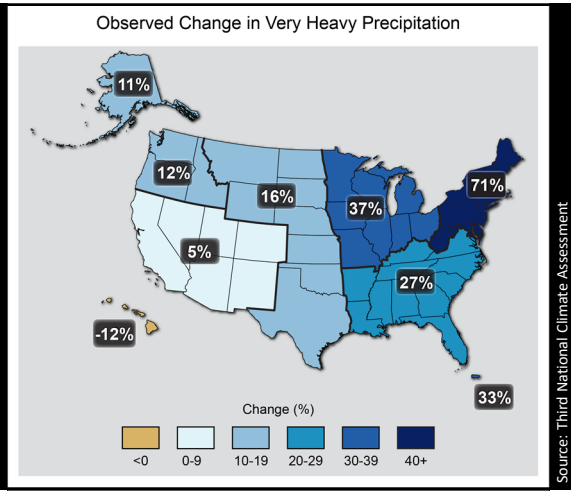


13



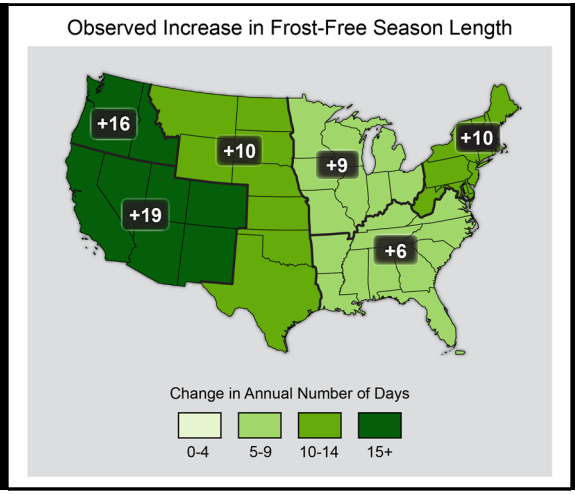
14

Percent increase in precipitation falling in heaviest 1% of all daily precipitation events. 1958-2012



Source: Third National Climate Assessment

15



1991-2012 compared to 1901-1960

Source: Third National Climate Assessment

16

Predicting Future Hazards

Projections of impacts of climate change

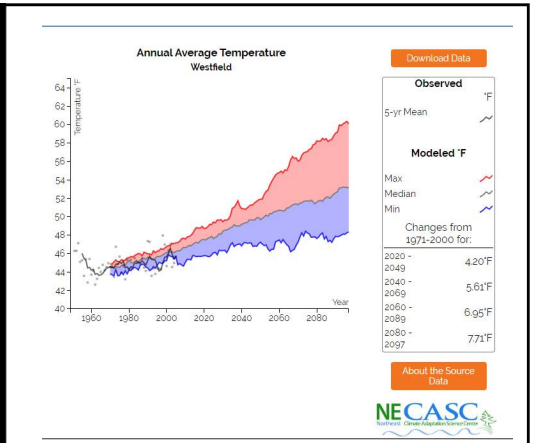
- Based on computer models
- Developed for Massachusetts by Northeast Climate Center at UMass Amherst

17

Expected in Westfield Basin

**Relative to the 1971-2000 average*

- Average annual temperature rises about 5.61°F (7-15%) by mid-century
- Rises by about 7.71°F by end of this century

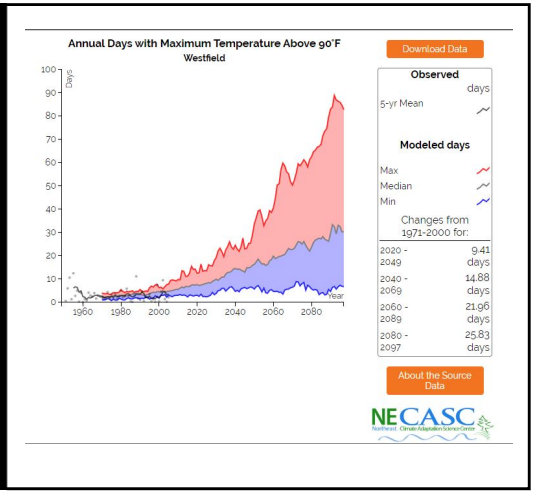


18

Expected in Berkshire County

**Relative to the 1971-2000 average*

- Days Over 90°F: From 3 days to 9-27 days per year mid-century
- Days Over 95°F: From <1 day to 1-9 days per year mid-century
- 9-60 more days over 90° per year by end of century

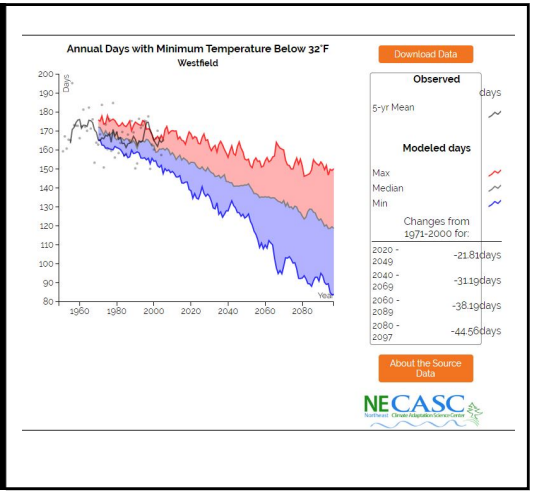


19

Expected in Berkshire County by mid-21stCentury

**Relative to the 1971-2000 average*

- Average winter temp rises from 23° to 29°
- About 30 fewer days below freezing by mid-century
- Predicted consequences for winter industries – maple sugaring, winter recreation
- Longer "mud-season" – impacts on dirt roads

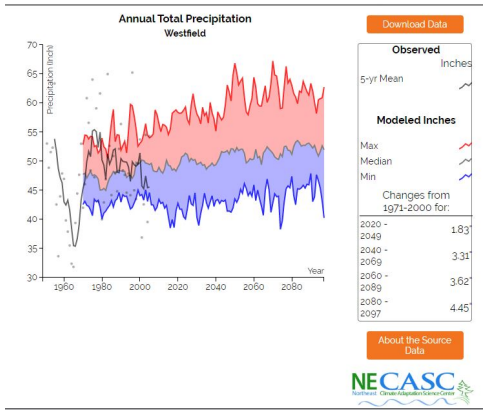


20

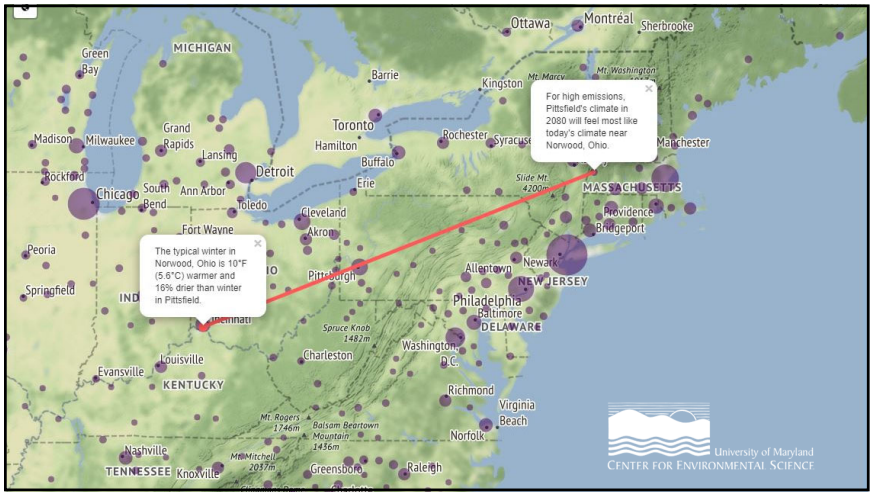
Expected in Berkshire County by mid-21stCentury

**Relative to the 1971-2000 average*

- More precipitation expected overall (2%-14%)
- Winter will have biggest increase in precipitation (2-25% increase)—but with less snow
- Summer and fall—potential for more drought or more rain or both.



21



22

Climate/Hazard Linkages

H=High Risk
M=Medium Risk
According to 2012 Berkshire County Hazard Mitigation Plan

CLIMATE CHANGES	RELATED NATURAL HAZARDS
Changes in precipitation	– Inland flooding (H) – Drought – Landslide - Dam Failure (M)
Rising temperatures	– Average/extreme temperatures – Wildfires (M) – Invasive species
Extreme weather	– Hurricanes/tropical storms (M) – Severe winter storms/nor'easters (H) – Tornadoes (M) – Other severe weather (H)

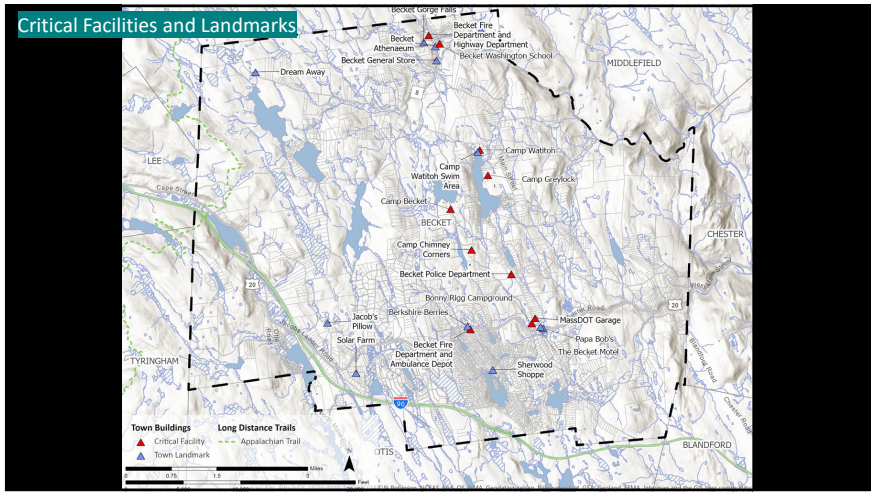
Source: Adapted from MA State Hazard Mitigation & Climate Adaptation Plan

23

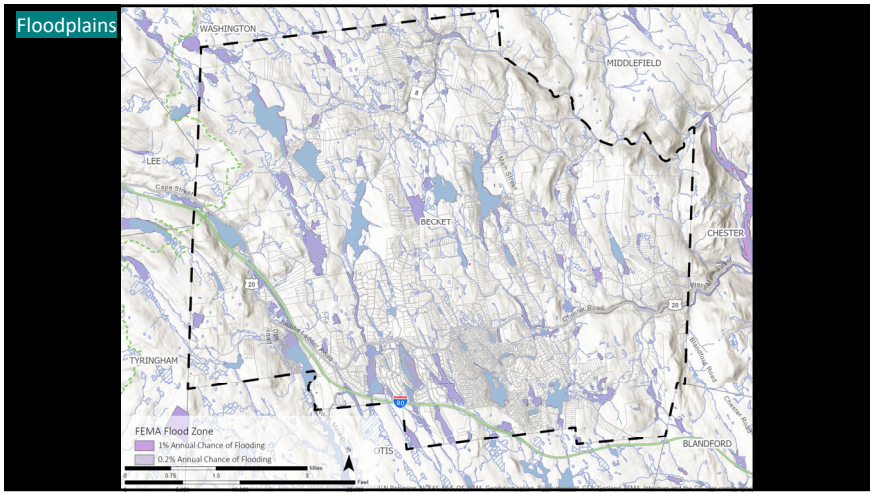
Becket's Vulnerabilities and Strengths

- Infrastructural
- Societal
- Environmental

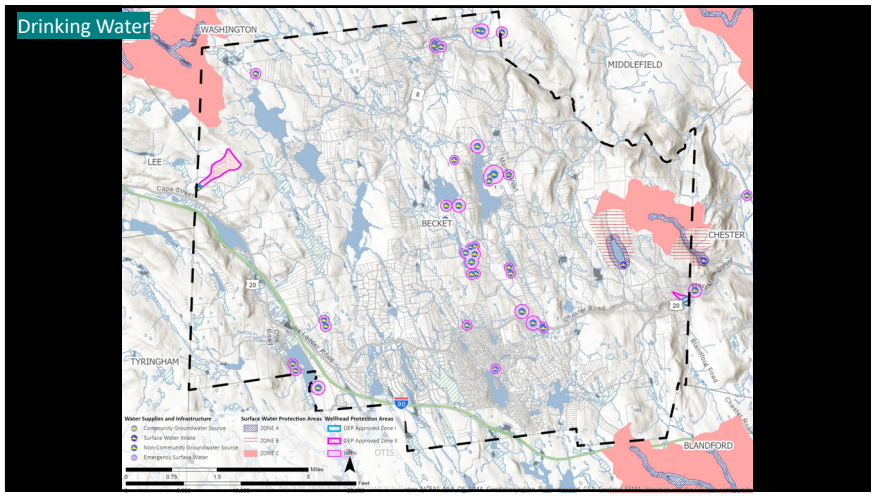
24


Critical Facilities and Landmarks
Becket Gorge Falls
Becket Fire Department and Highway Department
Becket Athenaeum
Becket Washington School
Becket General Store
Dream Away
Camp Wattoh
Camp Wattoh Swim Area
Camp Greylock
Camp Becket
Camp Chimney Corners
Becket Police Department
Bonny Rigg Campground
Jacob's Pillow
Berkshire Berries
Solar Farm
Becket Fire Department and Ambulance Depot
MassDOT Garage
Papa Bob's
The Becket Motel
Sherwood Shoppe
Town Buildings
Critical Facility
Town Landmark
Long Distance Trails
Appalachian Trail
WASHINGTON
MIDDLEFIELD
LEE
BECKET
CHESTER
TYRINGHAM
OTIS
BLANDFORD

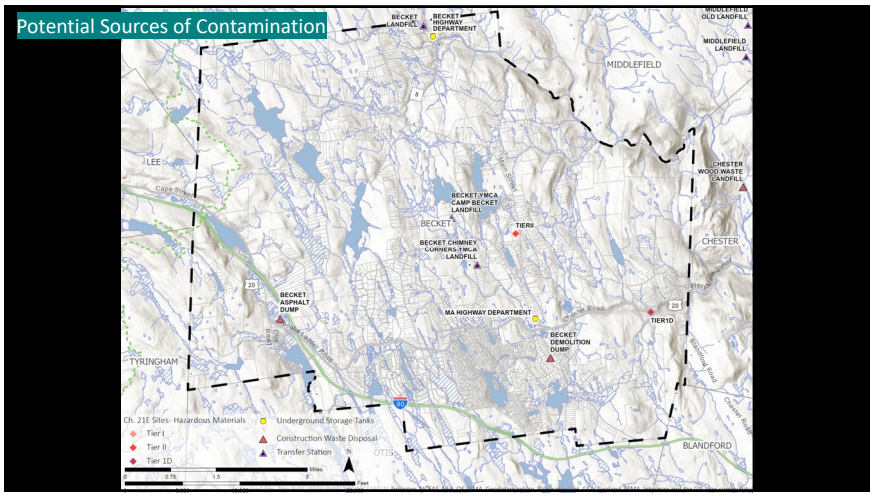
25


Floodplains
WASHINGTON
MIDDLEFIELD
LEE
BECKET
CHESTER
TYRINGHAM
OTIS
BLANDFORD
FEMA Flood Zone
1% Annual Chance of Flooding
0.2% Annual Chance of Flooding

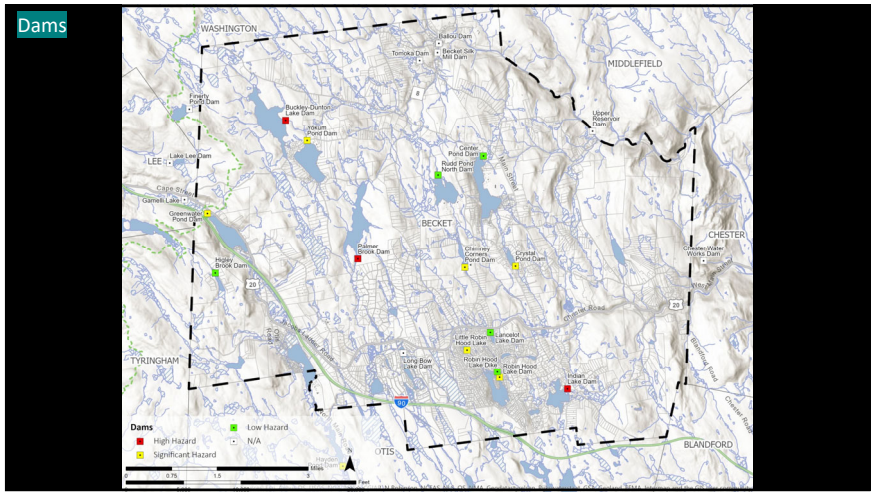
26


Drinking Water
WASHINGTON
MIDDLEFIELD
LEE
BECKET
CHESTER
TYRINGHAM
OTIS
BLANDFORD
Water Supplies and Infrastructure
Surface Water Protection Areas
Wellhead Protection Areas

27


Potential Sources of Contamination
BECKET LANDFILL
BECKET HIGHWAY DEPARTMENT
MIDDLEFIELD OLD LANDFILL
MIDDLEFIELD LANDFILL
CHESTER WOOD WASTE LANDFILL
BECKET-YMCA CAMP BECKET LANDFILL
TIER II
BECKET CHIMNEY CORNERS-YMCA LANDFILL
BECKET ASPHALT DUMP
MA HIGHWAY DEPARTMENT
TIER1D
BECKET DEMOLITION DUMP
WASHINGTON
MIDDLEFIELD
LEE
BECKET
CHESTER
TYRINGHAM
OTIS
BLANDFORD
Ch. 21E Sites- Hazardous Materials
Tier I
Tier II
Tier 1D
Underground Storage Tanks
Construction Waste Disposal
Transfer Station

28



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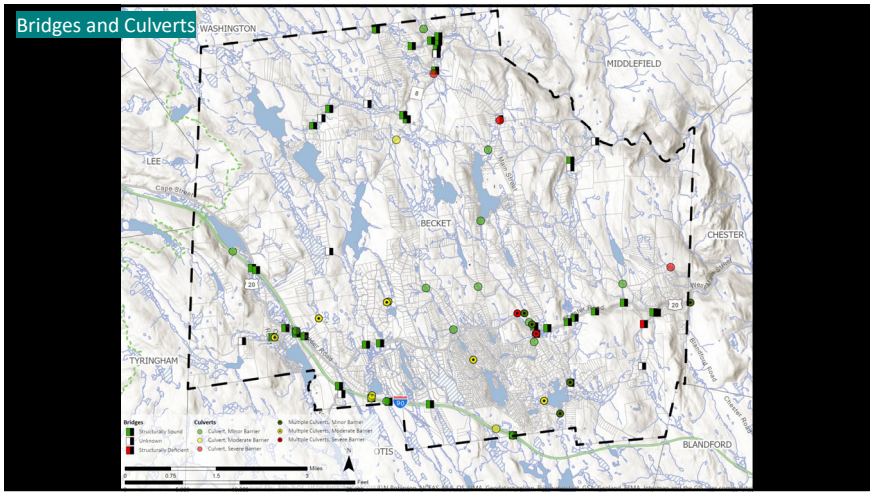
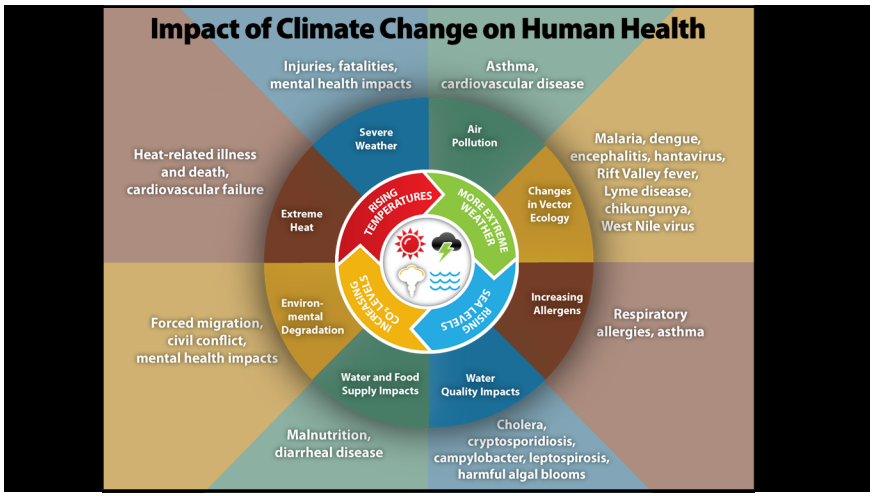


30

Other Infrastructural Considerations

- Roads
- Utilities
- Wastewater
- Stormwater Infrastructure
- Residential Property
- Town Facilities and Equipment

31



32

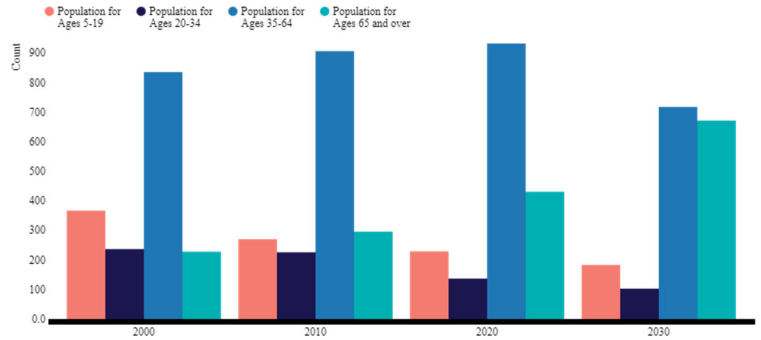
Population

Population: 1,852
Median Age: 50.9 years
Races: 94.4% white, 1.5% black, 2.3% two or more races, 1.8% some other race
Hispanic: 4.2%
Languages: 3% of population speaks a language other than English at home

- Population has been growing over past several decades
- Population is projected to shrink over next 15 years (Donahue Institute at Umass)
- Summer population significantly higher than winter
- Large population of children in summer (campers)

Data from 2017 Census ACS unless noted

33



Becket's Population by Age Group

34

Housing

1,778 Housing Units
796 Occupied Units; 982 Unoccupied Units
About 75% of housing was built after 1960, biggest % of houses built 1980-1999

- Over 50% of housing units are seasonal
- Private wells, septic systems
- High percentage using "other" heating fuel reported to Census Bureau—wood heat?

Data from 2017 Census ACS unless noted

35

Economy

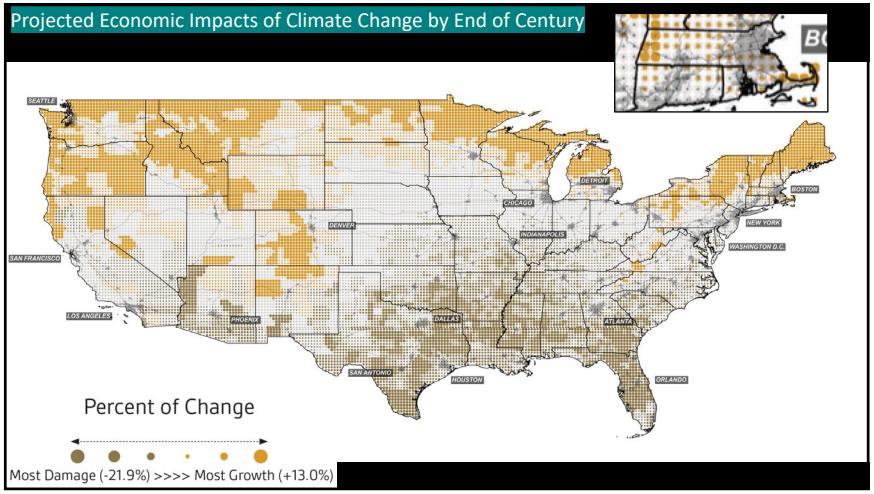
Median Household Income: $75,000
Unemployment rate: 5.5%
Unemployment Rate, single-mothers: 36.1%
Commute Time to Work (average): 35.2 minutes

- Median income significantly higher than Berkshire County; about the same as Massachusetts
- Poverty significantly less than MA
- Commute time higher than MA average

Data from 2017 Census ACS unless noted

36

Projected Economic Impacts of Climate Change by End of Century



37

Other Societal Considerations

- Communication
- Community Connectedness
- Public Health
- Economy
- Development
- Town Government
- Emergency Services
- Camps
- Cultural, Civic, and Religious Institutions

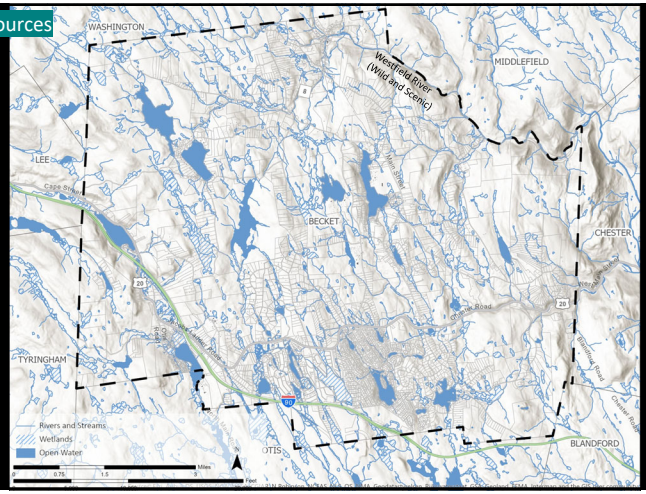
38

Landform

1888 USGS Map

39

Water Resources



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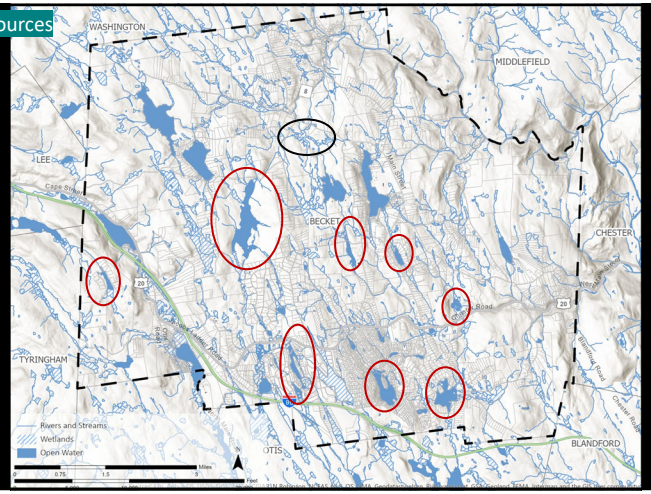
Water Resources



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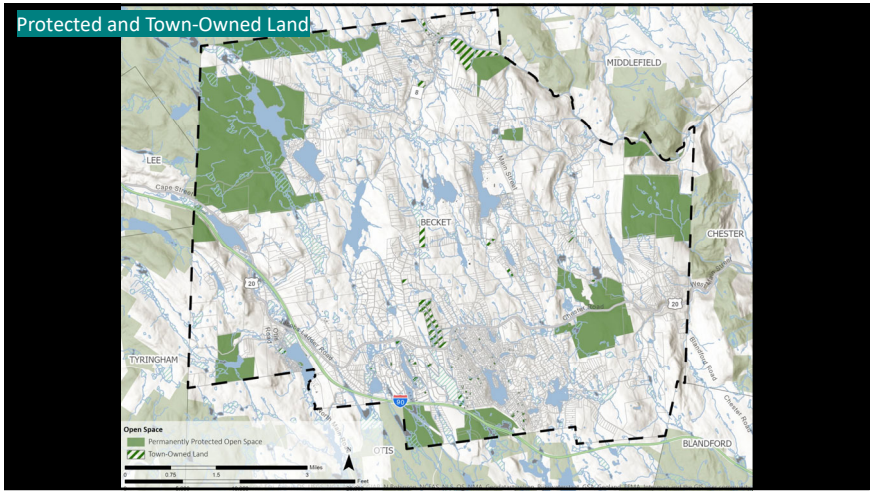
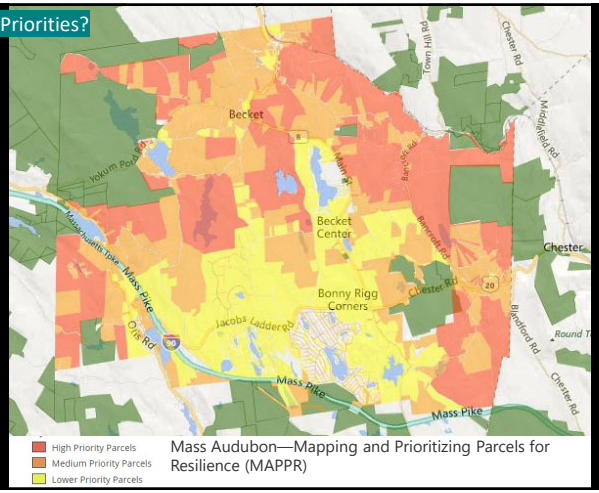
Protected and Town-Owned Land



42

Conservation Priorities?



Mass Audubon—Mapping and Prioritizing Parcels for Resilience (MAPPR)

Source: Mass Audubon MAPPR Tool 2.0

43

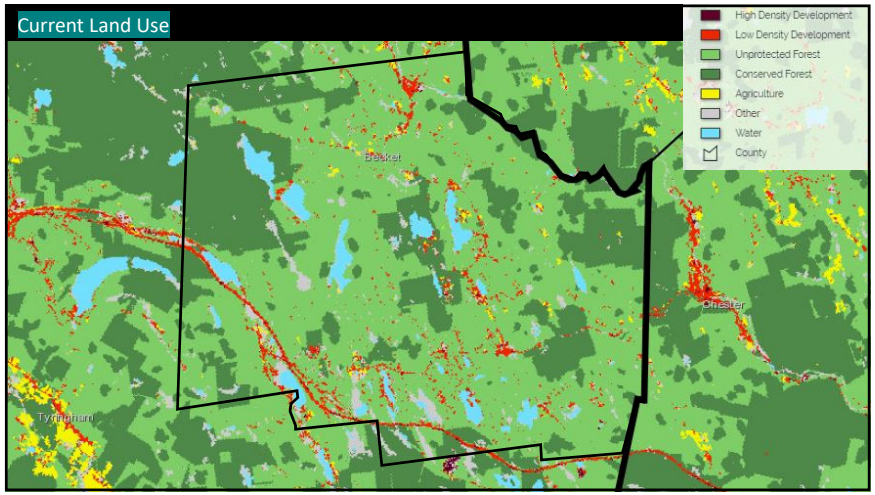
Other Environmental Considerations

- Species and Habitat Changes
- Invasive Species
- Drinking Water Quality
- Harmful Algae Blooms
- Erosion
- Beaver Dams
- Forest Management
- Lake Districts

Emerald Ash Borer—detected in Becket in 2019

Source: Minnesota Department of Natural Resources

44



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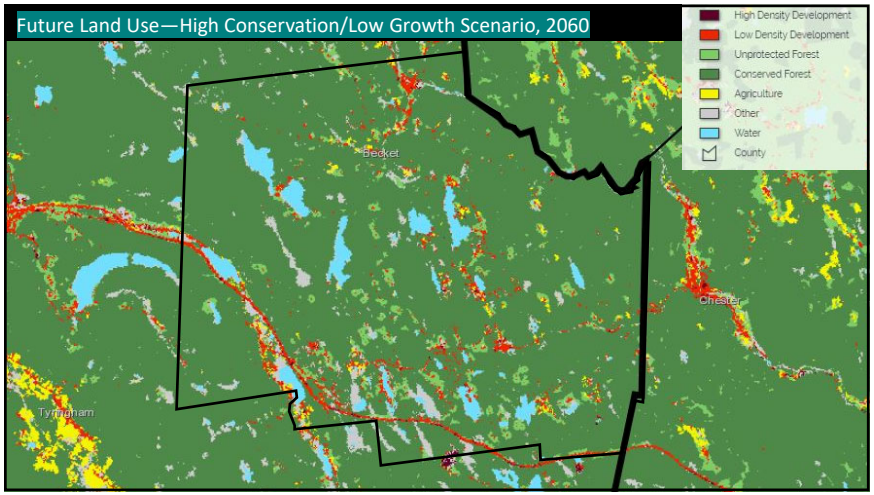

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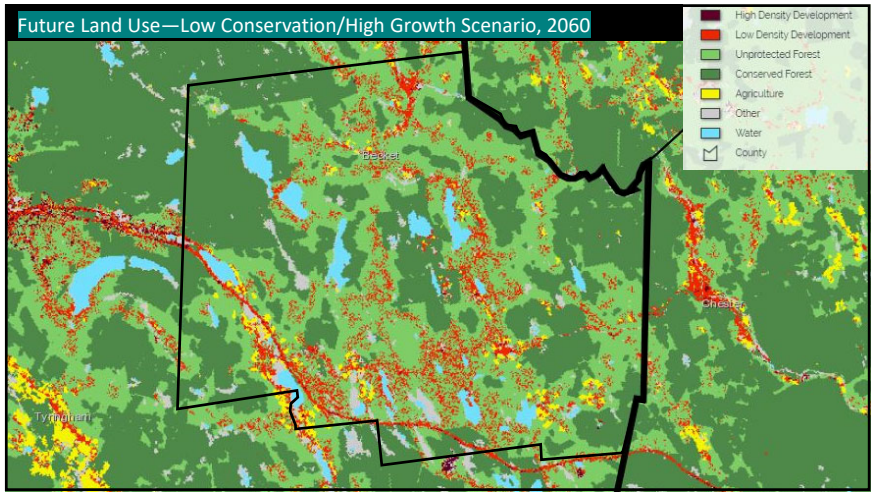
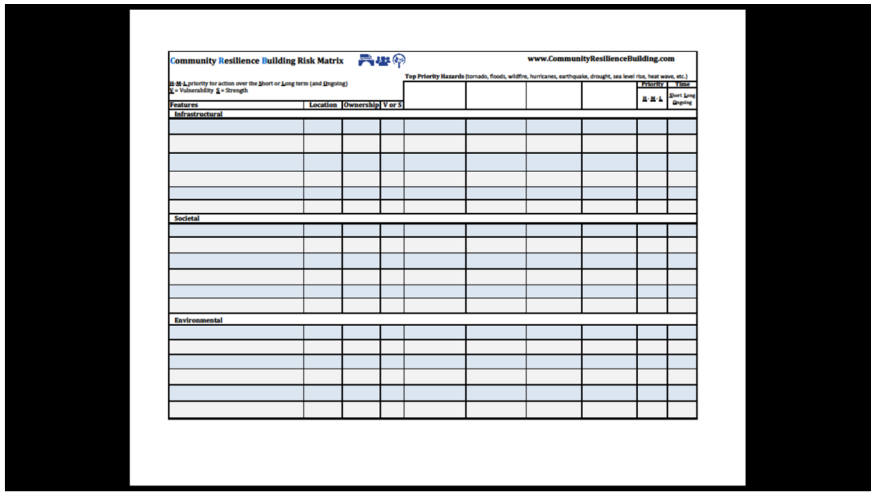


47

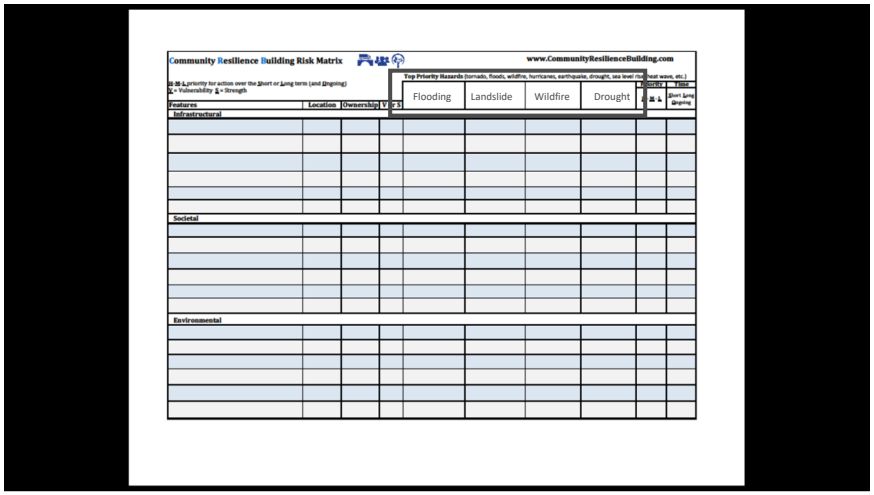
MVP Process

- Community Resilience Building Workshop
  - Characterize hazards
  - Identify community vulnerabilities and strengths
  - Identify and prioritize community actions
  - Determine the overall priority actions

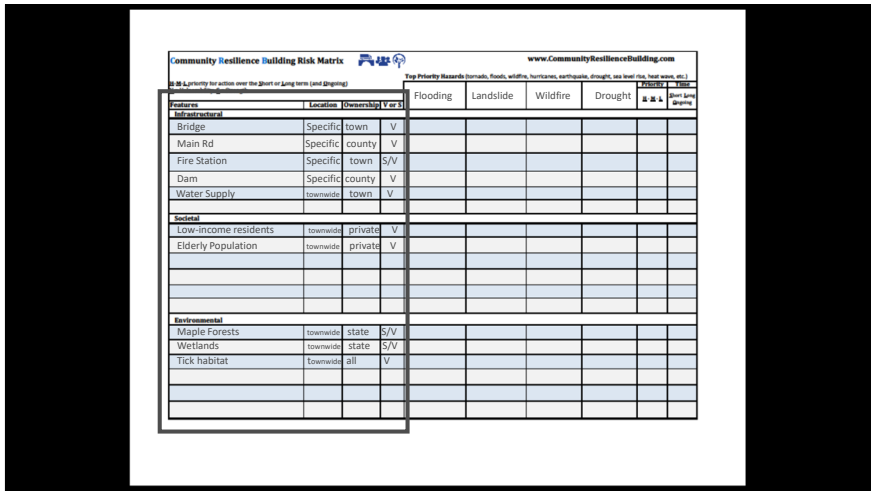
48


Community Resilience Building Risk Matrix
www.CommunityResilienceBuilding.com
Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)
Priority
Time
Features
Location
Ownership
V or S
Infrastructural
Societal
Environmental

49


Community Resilience Building Risk Matrix
www.CommunityResilienceBuilding.com
Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)
Flooding
Landslide
Wildfire
Drought
Priority
Time
Features
Location
Ownership
V or S
Infrastructural
Societal
Environmental

50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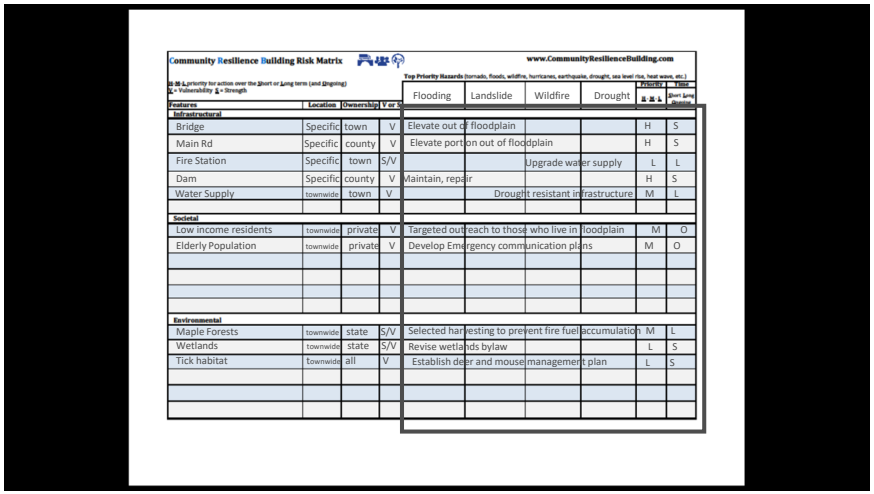
Flooding
Landslide
Wildfire
Drought
Features
Location
Ownership
V or S
Infrastructural
Bridge Specific town V
Main Rd Specific county V
Fire Station Specific town S/V
Dam Specific county V
Water Supply townwide town V
Societal
Low-income residents townwide private V
Elderly Population townwide private V
Environmental
Maple Forests townwide state S/V
Wetlands townwide state S/V
Tick habitat townwide all V

51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Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)
Flooding
Landslide
Wildfire
Drought
Features
Location
Ownership
V or S
Infrastructural
Bridge Specific town V Elevate out of floodplain H S
Main Rd Specific county V Elevate portion out of floodplain H S
Fire Station Specific town S/V Upgrade water supply L L
Dam Specific county V Maintain, repair H S
Water Supply townwide town V Drought resistant infrastructure M L
Societal
Low income residents townwide private V Targeted outreach to those who live in floodplain M O
Elderly Population townwide private V Develop Emergency communication plans M O
Environmental
Maple Forests townwide state S/V Selected harvesting to prevent fire fuel accumulation M L
Wetlands townwide state S/V Revise wetlands bylaw L S
Tick habitat townwide all V Establish deer and mouse management plan L S

52

Dodson & Flinker, Inc.
Landscape Architecture & Planning

Dillon Sussman
Dillon@dodsonflinker.com
413-628-4496 x102

53

Land Use Change

Compared to many of its neighbors, Becket has a relatively little conserved land. Development is concentrated in North Becket, along major road corridors (Route 8 Route 20, along lake fronts, and in developments like Sherwood Forest. Almost all development in town is low density—meaning houses are spread far apart. On the one hand, this keeps the rural character of Becket. On the other hand, low density development can fragment critical habitats and is dependent on automobiles—whose emissions are a major contributor to climate change. As discussed elsewhere it is difficult to predict whether climate change will result in increased or decreased development in Becket.

The following land use baseline and alternative future land use scenarios were developed by The New England Landscape Futures Project (NE-LFP), an initiative led by the Harvard Forest as a focus of its Long-Term Ecological Research program (LTER) and an associated Research Coordination Network (landscape scenarios, ecosystem services, and benefits to society; S3 RCN). Both the Harvard Forest LTER and the S3 RCN had the dual objectives of advancing research and informing sustainable land-use policy and planning in New England (McBride *et al*. 2017, p. 16).

The **New England Landscape Futures Project** was established in 2014 with support from the National Science Foundation, Highstead, and the Harvard Forest, and in 2018 a second major grant from the National Science Foundation was awarded to the project to support the design and development of an online scenario explorer to promote public engagement, uptake, and use of the scenario results (Lambert et al. 2018, p. i). The NE-LFP asked: (1) how might the New England landscape change over the next 50 years?; (2) what are the possible consequences for people and nature?; and (3) what actions could help sustain important resources in the face of change? The NE-LFP answered these questions by engaging scientists, business owners, government officials, landowners, and nonprofit representatives in the development of a set of alternative landscape futures scenarios for New England, and developed the **NELF Explorer** planning tool to coproduce legitimate and salient knowledge about the consequences of different land-use trajectories for ecosystem services that could inform land-use planning, conservation, and management decisions (McBride *et al*. 2017, p. 16). The **NELF Explorer** integrates landscape scenarios into an online mapping tool (https://newenglandlandscapes.org) that was designed via a user-engagement process to meet the needs of diverse stakeholders who are interested the future of the land and in using future scenarios to guide land use planning and conservation priorities (Thompson, *et al*. 2019, p. 1).

We used the **NELF Explorer** planning tool to ask: 1) ***How might Becket's landscape change over the next 40 years?*** 2) ***What are the possible consequences for Becket's people and nature?*** 3) ***What actions could help sustain important Becket resources in the face of change?***

Scenario planning is a rigorous way of asking "what if?" and it can be a powerful tool for natural resource professionals preparing for the future of socio-ecological systems. In the context of land-use or regional planning, scenario development uses a structured process to integrate diverse modes of knowledge to create a shared understanding of how the future may unfold (Thompson, *et al*. 2019, p. 1). We used the **NELF Explorer** to describe Land Use/Land Cover

configurations of the idealized ***Connected Communities***, ***Yankee Cosmopolitan***, ***Growing Global***, and ***Go It Alone*** landscape scenarios relative to the ***Recent Trends*** landscape scenario.

NELF Explorer Landscape Scenarios

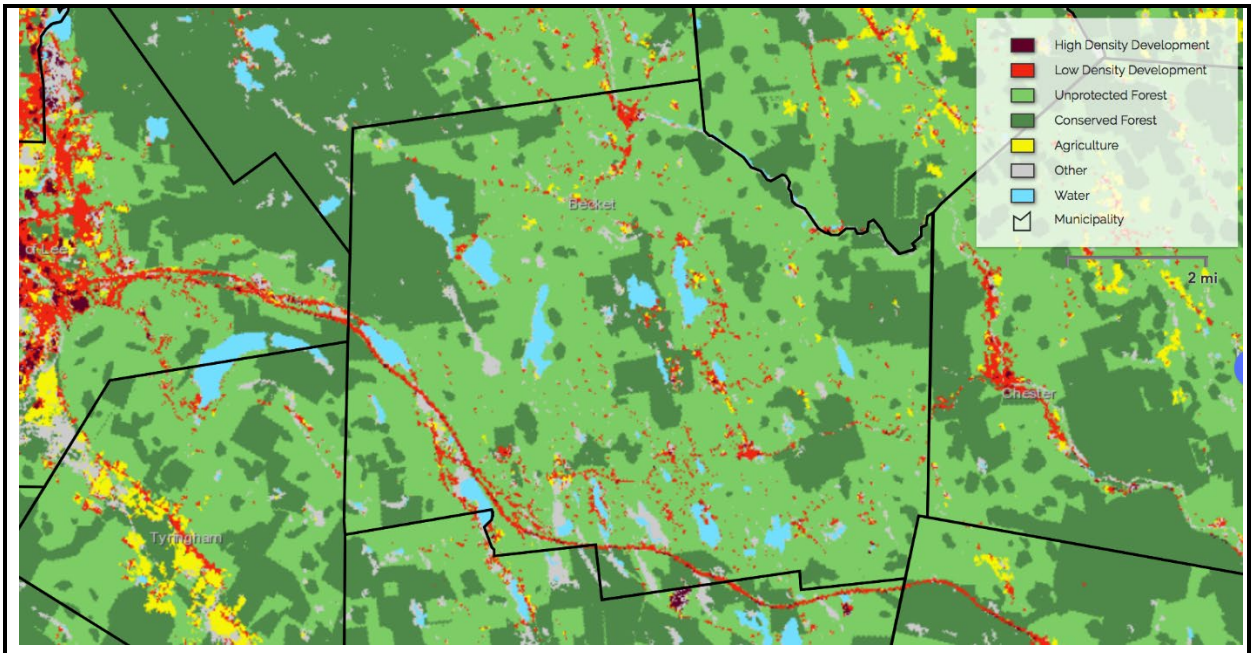
Recent Trends
This is a future of continuing along the current path where forest cover is declining in all New England states. Based on recent trends, New England will lose 1.2 million acres of forest by 2060, reducing forest cover by 4% from about 75% of the total land area today to 71% by 2060. Recent trends of land use indicate a future New England landscape with less forest overall and increasing fragmentation of our remaining forests with sprawling development.

Connected Communities
This is a future where a shift towards living 'local' and valuing regional self-sufficiency increases public interest in protecting local resources.

Yankee Cosmopolitan
This is a future where we embrace change through experimentation and proactive investments. While environmental changes break records and urbanization continues to pressure natural systems, society responds with greater flexibility and ingenuity.

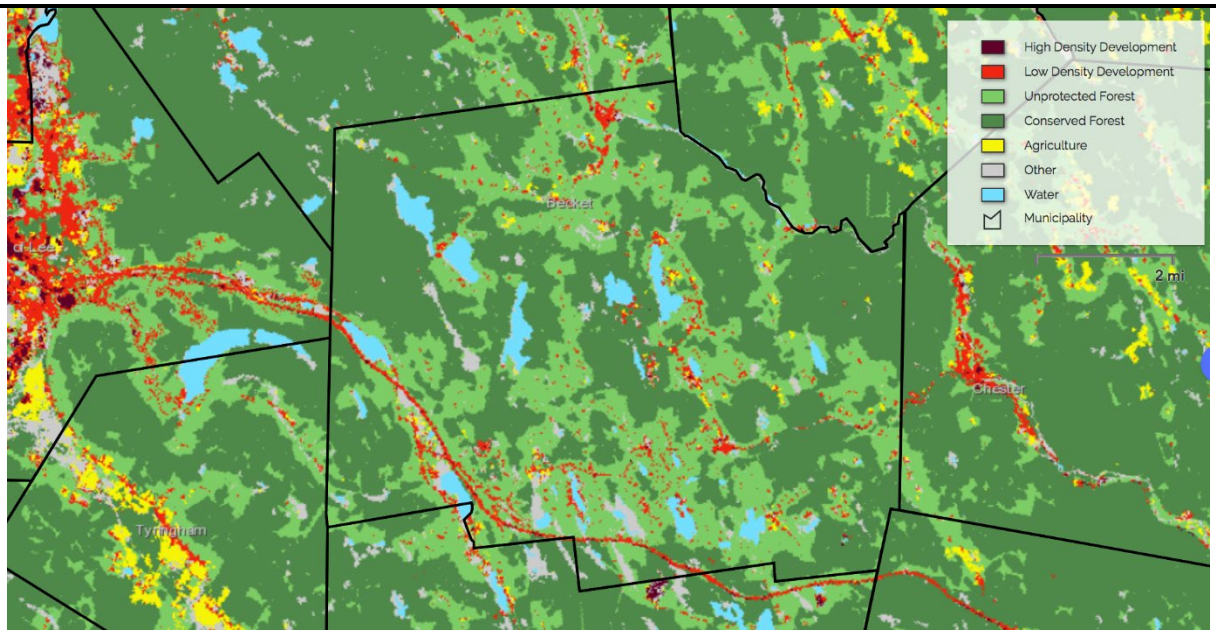
Go It Alone
This is a future where the region is challenged by shrinking economic opportunities paired with increasing costs to meet basic needs, yet innovation is stagnant and new technologies are not rising to increase efficiency or create new opportunities. With local self-reliance and survival as the primary objectives, natural resource protections are rolled-back and communities turn heavily to extractive industries.

Growing Global
This is a future where a large influx of climate change migrants seek refuge in New England and existing residents move inland, taking the region by surprise. New pressures on municipal services drive a trend toward privatization. Regional to national policies have promoted global trade but global agreements to address climate change have failed.



Becket, MA 2020 BASELINE (*Recent Trends* NELF 2020)

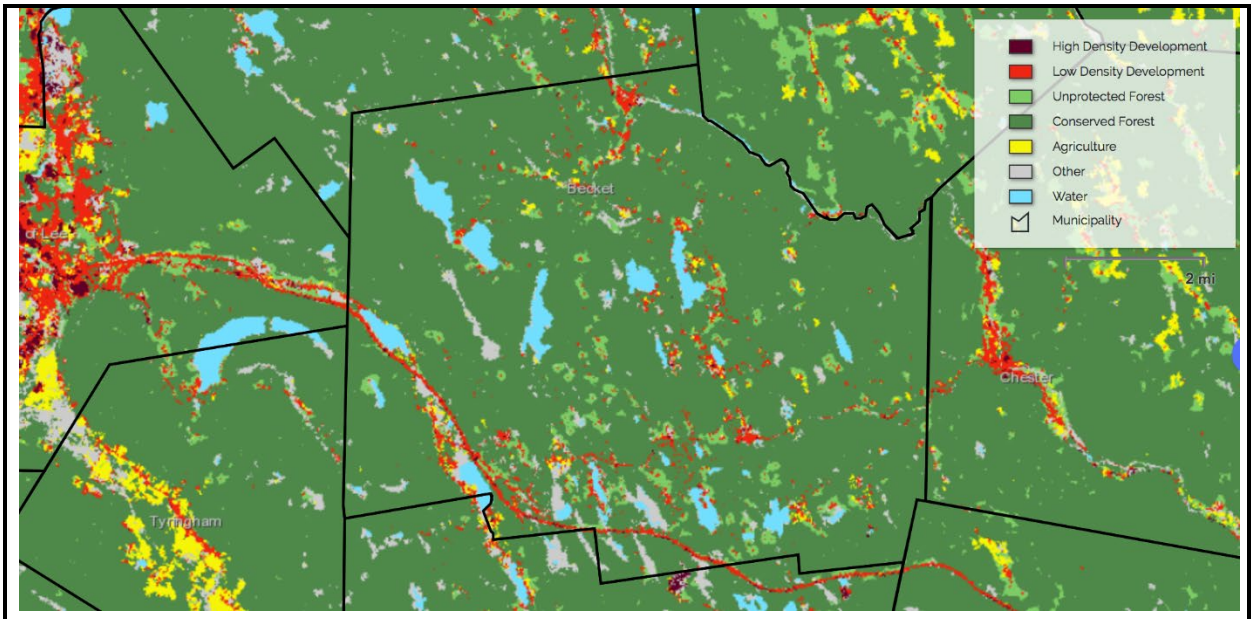
	Acres		Acres
Water:	1,219	Unprotected Forest	19,006
Other:	1,346	Low Density Development	1,090
Agriculture:	195	High Density Development	58
Conserved Forest:	7,905		



Becket, MA 2060 *Recent Trends* (NELF)

	Acres		Acres
Water:	1,219	Unprotected Forest	10,780
Other:	1,346	Low Density Development	1,093
Agriculture:	222	High Density Development	58
Conserved Forest:	16,101		

The Recent Trends landscape scenario assumes that the processes behind landscape change in Becket remain constant, not that Becket landscapes remain unchanged. It should be noted that the major changes from 2020 to 2060 are an increase in conserved forest and a corresponding decrease in unprotected forest.



Becket, MA 2060 *Connected Communities* (NELF)

Recent Trends scenario compared to *Connected Communities* scenario

FLOOD ZONES[1]

Conserved forest land does not change

By 2060 in Becket, conserved forest land in flood zones does not change in the Connected Communities scenario compared to the Recent Trends scenario.

Developed land does not change

By 2060 in Becket, developed land in flood zones does not change in the Connected Communities scenario compared to the Recent Trends scenario.

SURFACE DRINKING WATER[2]

Conserved forest land increases

Recent Trends: 7,894 acres | Connected Communities: 14,862 acres

By 2060 in Becket, conserved forest land in subwatersheds important for surface drinking water increases in the Connected Communities scenario compared to the Recent Trends scenario.

Developed land does not change

By 2060 in Becket, developed land in subwatersheds important for surface drinking water does not change in the Connected Communities scenario compared to the Recent Trends scenario.

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[1] Flood zones are defined as Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas. Special Flood Hazard Areas have the highest flood risk because they will be affected by 100-year floods, which are large flood events that occur approximately once every 100 years.

[2] Watersheds important for surface drinking water are defined as the top 25% most important watersheds as classified by the U.S. Forest Service in its Forest to Faucet report. To meet this criteria, watersheds must have populations which rely on surface water and forests which act as natural infrastructure to clean surface water without requiring the use of filtration facilities.

WILDLIFE HABITATS[3]

Conserved forest land increases
Recent Trends: 7,127 acres | Connected Communities: 10,791 acres
By 2060 in Becket, conserved forest land in wildlife habitats increases in the Connected Communities scenario compared to the Recent Trends scenario.

Developed land decreases
Recent Trends: 1 acres | Connected Communities: 0 acres
By 2060 in Becket, developed land in wildlife habitats decreases in the Connected Communities scenario compared to the Recent Trends scenario.

PRIORITY CONSERVATION AREAS[4]

Conserved forest land increases
Recent Trends: 5,235 acres | Connected Communities: 9,847 acres
By 2060 in Becket, conserved forest land in priority conservation areas increases in the Connected Communities scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 1 acres | Connected Communities: 3 acres
By 2060 in Becket, developed land in priority conservation areas increases in the Connected Communities scenario compared to the Recent Trends scenario.

WETLANDS[5]

Conserved forest land increases
Recent Trends: 454 acres | Connected Communities: 944 acres
By 2060 in Becket, conserved forest land in wetlands increases in the Connected Communities scenario compared to the Recent Trends scenario.

Developed land does not change
By 2060 in Becket, developed land in wetlands does not change in the Connected Communities scenario compared to the Recent Trends scenario.

PRIME FARMLANDS[6]

Conserved forest land increases
Recent Trends: 18 acres | Connected Communities: 159 acres
By 2060 in Becket, conserved forest land in prime farmlands increases in the Connected Communities scenario compared to the Recent Trends scenario.

Developed land decreases
Recent Trends: 2 acres | Connected Communities: 0 acres
By 2060 in Becket, developed land in prime farmlands decreases in the Connected Communities scenario compared to the Recent Trends scenario.

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[3] Important habitat for wildlife is defined as the areas identified by each state in their State Wildlife Action Plan (SWAP). SWAPs identify priority species and habitats for conservation, tailored to each state's needs while being consistent with national goals.

[4] Priority conservation areas are defined by The Nature Conservancy. These priority areas for conservation aim to represent the full distribution and diversity of native species, natural communities, and ecosystems such that a conserving these areas will ensure the long-term survival of all native life and natural communities, not just threatened species and communities.

[5] Wetlands are defined as all areas in the U.S. Fish & Wildlife Service's National Wetlands Inventory. These include forested swamps, freshwater herbaceous marshes, and saltwater marshes.

[6] Prime farmland is defined as such by the U.S. Department of Agriculture in its Gridded Soil Survey Geographic database. Prime farmland has soils, climate, and water resources best suited for agriculture. Prime farmland is not necessarily currently used for agriculture, but must be imminently available for agricultural use. Accordingly, this land must not have incompatible land uses such as development.

CORE FORESTS[7]

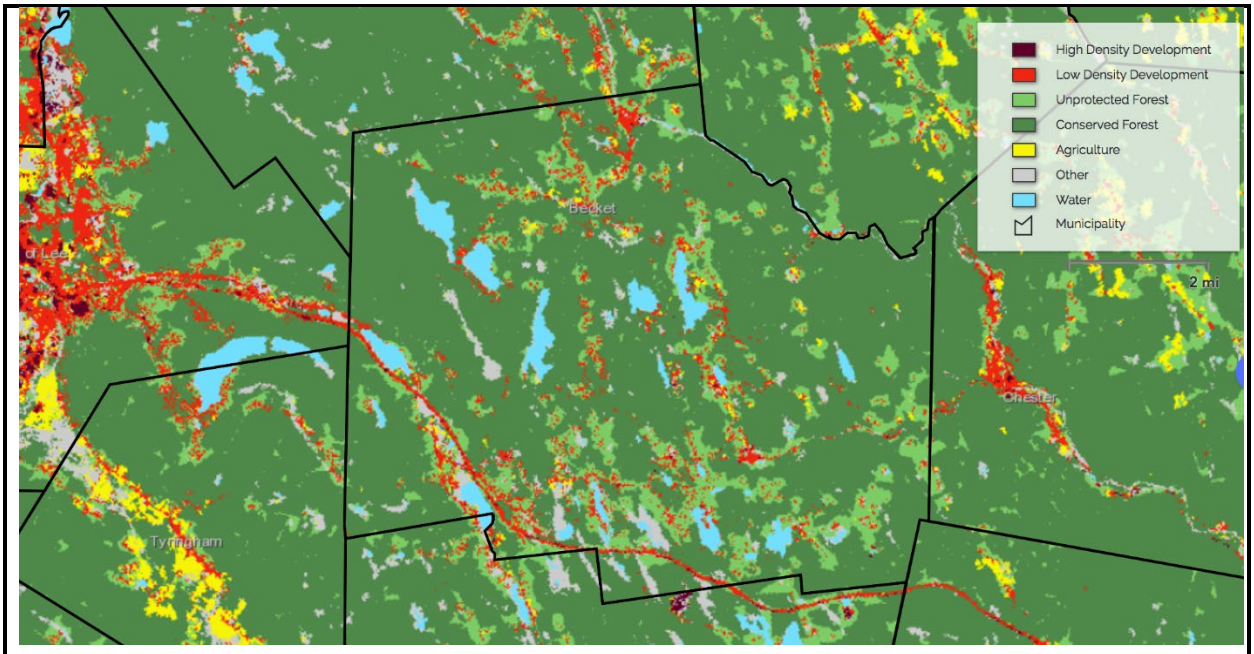
Conserved forest land increases

Recent Trends: 9,714 acres | Connected Communities: 16,835 acres

By 2060 in Becket, conserved forest land in core forest areas increases in the Connected Communities scenario compared to the Recent Trends scenario.

Developed land does not change

By 2060 in Becket, developed land in core forest areas does not change in the Connected Communities scenario compared to the Recent Trends scenario.



Becket, MA 2060 *Yankee Cosmopolitan* (NELF)

Recent Trends scenario compared to *Yankee Cosmopolitan* scenario

FLOOD ZONES

Conserved forest land does not change

By 2060 in Becket, conserved forest land in flood zones does not change in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

Developed land does not change

By 2060 in Becket, developed land in flood zones does not change in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

SURFACE DRINKING WATER

Conserved forest land increases

Recent Trends: 7,894 acres | Yankee Cosmopolitan: 12,262 acres

[7] Core forests are defined as forest greater than 30 meters from a forest edge. Many animal and plant species rely on these interior or mature forest habitats, and these large, contiguous forests also provide human health benefits and recreation opportunities.

By 2060 in Becket, conserved forest land in subwatersheds important for surface drinking water increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 1 acre | Yankee Cosmopolitan: 344 acres
By 2060 in Becket, developed land in subwatersheds important for surface drinking water increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

WILDLIFE HABITATS

Conserved forest land increases
Recent Trends: 7,127 acres | Yankee Cosmopolitan: 9,634 acres
By 2060 in Becket, conserved forest land in wildlife habitats increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 1 acre | Yankee Cosmopolitan: 167 acres
By 2060 in Becket, developed land in wildlife habitats increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

PRIORITY CONSERVATION AREAS

Conserved forest land increases
Recent Trends: 5,235 acres | Yankee Cosmopolitan: 8,151 acres
By 2060 in Becket, conserved forest land in priority conservation areas increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 1 acre | Yankee Cosmopolitan: 201 acres
By 2060 in Becket, developed land in priority conservation areas increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

WETLANDS

Conserved forest land increases
Recent Trends: 454 acres | Yankee Cosmopolitan: 780 acres
By 2060 in Becket, conserved forest land in wetlands increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

Developed land does not change
Recent Trends: 0 acres | Yankee Cosmopolitan: 0 acres
By 2060 in Becket, developed land in wetlands does not change in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

PRIME FARMLANDS

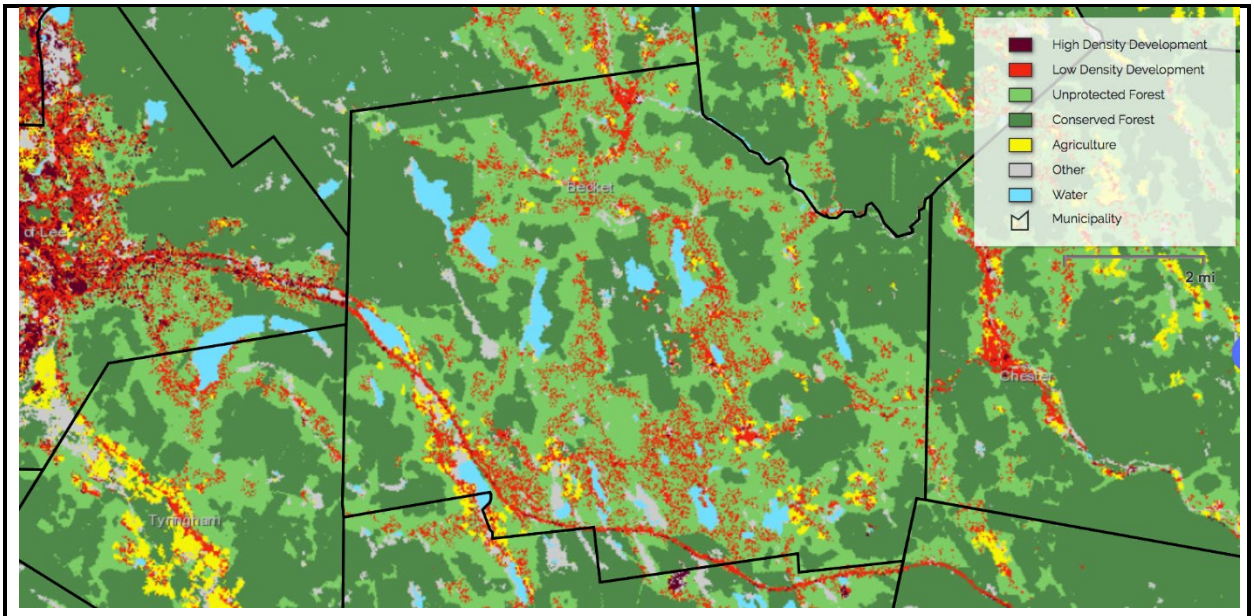
Conserved forest land increases
Recent Trends: 18 acres | Yankee Cosmopolitan: 70 acres
By 2060 in Becket, conserved forest land in prime farmlands increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 2 acres | Yankee Cosmopolitan: 10 acres
By 2060 in Becket, developed land in prime farmlands increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

CORE FORESTS

Conserved forest land increases
Recent Trends: 9,714 acres | Yankee Cosmopolitan: 14,499 acres
By 2060 in Becket, conserved forest land in core forest areas increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 0 acres | Yankee Cosmopolitan: 262 acres
By 2060 in Becket, developed land in core forest areas increases in the Yankee Cosmopolitan scenario compared to the Recent Trends scenario.



Becket, MA 2060 *Growing Global* (NELF)

Recent Trends scenario compared to *Growing Global* scenario

FLOOD ZONES

Conserved forest land does not change
By 2060 in Becket, conserved forest land in flood zones does not change in the Growing Global scenario compared to the Recent Trends scenario.

Developed land does not change
By 2060 in Becket, developed land in flood zones does not change in the Growing Global scenario compared to the Recent Trends scenario.

SURFACE DRINKING WATER

Conserved forest land decreases
Recent Trends: 7,894 acres | Growing Global: 4,271 acres
By 2060 in Becket, conserved forest land in subwatersheds important for surface drinking water decreases in the Growing Global scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 1 acres | Growing Global: 1,445 acres
By 2060 in Becket, developed land in subwatersheds important for surface drinking water increases in the Growing Global scenario compared to the Recent Trends scenario.

WILDLIFE HABITATS

Conserved forest land decreases
Recent Trends: 7,127 acres | Growing Global: 4,600 acres
By 2060 in Becket, conserved forest land in wildlife habitats decreases in the Growing Global scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 1 acres | Growing Global: 506 acres
By 2060 in Becket, developed land in wildlife habitats increases in the Growing Global scenario compared to the Recent Trends scenario.

PRIORITY CONSERVATION AREAS

Conserved forest land decreases
Recent Trends: 5,235 acres | Growing Global: 3,090 acres
By 2060 in Becket, conserved forest land in priority conservation areas decreases in the Growing Global scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 1 acres | Growing Global: 978 acres
By 2060 in Becket, developed land in priority conservation areas increases in the Growing Global scenario compared to the Recent Trends scenario.

WETLANDS

Conserved forest land decreases
Recent Trends: 454 acres | Growing Global: 242 acres
By 2060 in Becket, conserved forest land in wetlands decreases in the Growing Global scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 0 acres | Growing Global: 1 acres
By 2060 in Becket, developed land in wetlands increases in the Growing Global scenario compared to the Recent Trends scenario.

PRIME FARMLANDS

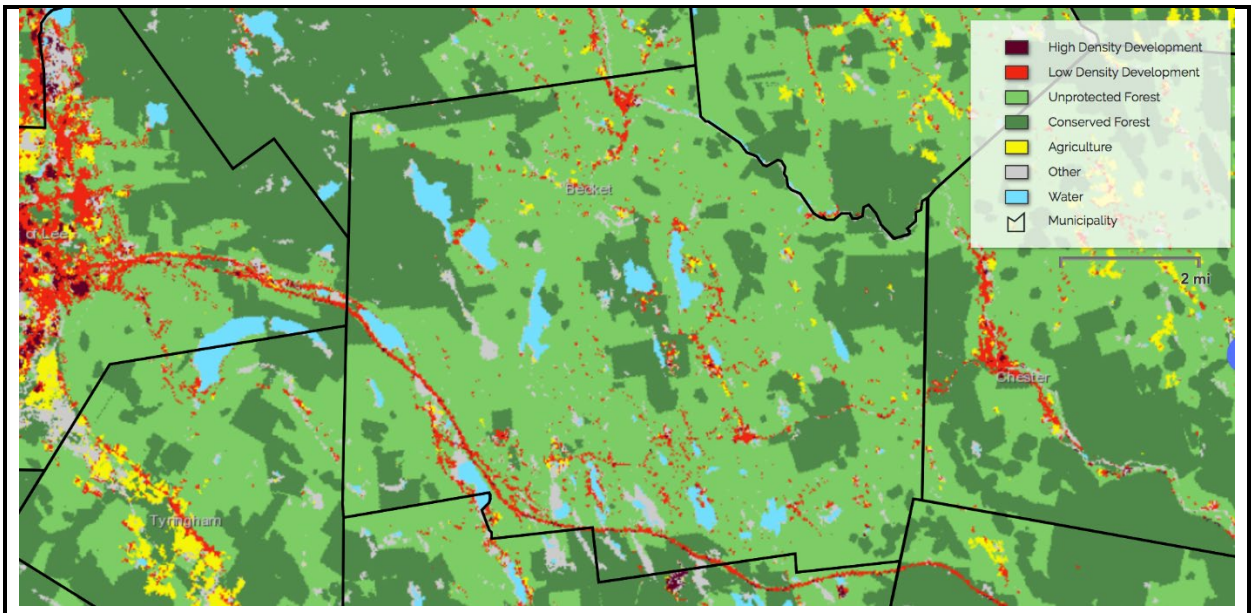
Conserved forest land decreases
Recent Trends: 18 acres | Growing Global: 12 acres
By 2060 in Becket, conserved forest land in prime farmlands decreases in the Growing Global scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 2 acres | Growing Global: 47 acres
By 2060 in Becket, developed land in prime farmlands increases in the Growing Global scenario compared to the Recent Trends scenario.

CORE FORESTS

Conserved forest land decreases
Recent Trends: 9,714 acres | Growing Global: 5,353 acres
By 2060 in Becket, conserved forest land in core forest areas decreases in the Growing Global scenario compared to the Recent Trends scenario.

Developed land increases
Recent Trends: 0 acres | Growing Global: 1,226 acres
By 2060 in Becket, developed land in core forest areas increases in the Growing Global scenario compared to the Recent Trends scenario.



Becket, MA 2060 *Go It Alone* (NELF)

Recent Trends scenario compared to *Go It Alone* scenario

FLOOD ZONES

Conserved forest land does not change

By 2060 in Becket, conserved forest land in flood zones does not change in the Go it Alone scenario compared to the Recent Trends scenario.

Developed land does not change

By 2060 in Becket, developed land in flood zones does not change in the Go it Alone scenario compared to the Recent Trends scenario.

SURFACE DRINKING WATER

Conserved forest land decreases

Recent Trends: 7,894 acres | Go it Alone: 1,311 acres

By 2060 in Becket, conserved forest land in subwatersheds important for surface drinking water decreases in the Go it Alone scenario compared to the Recent Trends scenario.

Developed land does not change

Recent Trends: 1 acres | Go it Alone: 1 acres

By 2060 in Becket, developed land in subwatersheds important for surface drinking water does not change in the Go it Alone scenario compared to the Recent Trends scenario.

WILDLIFE HABITATS

Conserved forest land decreases
Recent Trends: 7,127 acres | Go it Alone: 1,491 acres
By 2060 in Becket, conserved forest land in wildlife habitats decreases in the Go it Alone scenario compared to the Recent Trends scenario.

Developed land decreases
Recent Trends: 1 acres | Go it Alone: 0 acres
By 2060 in Becket, developed land in wildlife habitats decreases in the Go it Alone scenario compared to the Recent Trends scenario.

PRIORITY CONSERVATION AREAS

Conserved forest land decreases
Recent Trends: 5,235 acres | Go it Alone: 1,140 acres
By 2060 in Becket, conserved forest land in priority conservation areas decreases in the Go it Alone scenario compared to the Recent Trends scenario.

Developed land does not change
By 2060 in Becket, developed land in priority conservation areas does not change in the Go it Alone scenario compared to the Recent Trends scenario.

WETLANDS

Conserved forest land decreases
Recent Trends: 454 acres | Go it Alone: 51 acres
By 2060 in Becket, conserved forest land in wetlands decreases in the Go it Alone scenario compared to the Recent Trends scenario.

Developed land does not change
By 2060 in Becket, developed land in wetlands does not change in the Go it Alone scenario compared to the Recent Trends scenario.

PRIME FARMLANDS

Conserved forest land decreases
Recent Trends: 18 acres | Go it Alone: 0 acres
By 2060 in Becket, conserved forest land in prime farmlands decreases in the Go it Alone scenario compared to the Recent Trends scenario.

Developed land decreases
Recent Trends: 2 acres | Go it Alone: 0 acres
By 2060 in Becket, developed land in prime farmlands decreases in the Go it Alone scenario compared to the Recent Trends scenario.

CORE FORESTS

Conserved forest land decreases
Recent Trends: 9,714 acres | Go it Alone: 1,534 acres
By 2060 in Becket, conserved forest land in core forest areas decreases in the Go it Alone scenario compared to the Recent Trends scenario.

Developed land does not change
By 2060 in Becket, developed land in core forest areas does not change in the Go it Alone scenario compared to the Recent Trends scenario.

At this time it is not possible to predict which of these scenarios most accurately portrays the future development of Berkshire County, Massachusetts, or New England. However, it is clear that each scenario has its opportunities and challenges for the Town of Becket. The *Recent Trends* scenario has Becket relatively well positioned in terms of reducing climate change and

its effects. The *Connected Communities* scenario has Becket best positioned in terms of reducing climate change and its effects. In the *Yankee Cosmopolitan* scenario Becket does well in spite of increasing the area of developed land. It does this on the basis of increasing the area of conserved forestland beyond the forestland conserved in the *Recent Trends* scenario, while at the same time increasing development. Of course, these scenarios assume that Becket will continue to increase the conservation of its forests including the continuing development of bylaws and other town planning processes. Both the *Growing Global* and the *Go It Alone* scenarios would offer major challenges to Becket's environmental quality. In both, conserved forestland decreases.

REFERENCES

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