Solar at Westwood High School

Target at University Station

SUSTAINABILITY AND RESILIENCY

Sustainability and Resiliency is a new section of Westwood's Comprehensive Plan and was added because these elements are critical to protecting Westwood's future. Charting a sustainable path as our Town grows will ensure that actions today contribute to a better future for our children and grandchildren. Resiliency will determine whether we meet the unknown challenges of the next decade and beyond with optimism, hope, and perseverance, or if we allow disruptions to diminish and harm our community.

One of the greatest challenges facing not only Westwood, but our entire planet in 2020, is whether or not we can collectively address climate change in a way that slows the impact of global warming in time to avoid a future of environmental catastrophes and conflict over resources. While climate change is being caused by worldwide patterns of industrial growth, we can and must do our part to have an impact locally. Failure to act would be a selfish abdication of our shared responsibility. Instead, we choose to challenge our community to do what needs to be done and provide an example and leadership to others.

Sustainability principles guide the proactive steps we must take. We must ask ourselves, does the action we take today protect or harm the future? Resilience is an acknowledgement of the reality of our changing world. We need to plan so that catastrophic events, such as severe storms, do not paralyze our town and put our residents at unnecessary risk.

SUSTAINABILITY

BACKGROUND

Sustainable practices are those that allow present generations to meet their needs without compromising the ability of future generations to meet their needs. Sustainability principles are applicable to all topics covered in this plan and have been imbedded throughout policies and recommendations of this plan along with a conscious attempt to balance social, economic, and environmental considerations, incorporate equity and resilience, and link local actions to regional and global concerns, such as the climate change.[1]

This section complements the plan's policies and recommendations for land use, transportation, housing, natural resources, and infrastructure by prioritizing renewable energy and presenting specific strategies and steps to mitigate the climate crisis which is creating severe impacts to:

- **The natural environment**: Water supply, food production, and the health, distribution, diversity, and abundance of plant and animal species.
- **Human health**: Vector-borne diseases, prevalence of oppressive heat and humidity, and the formation and dispersion of air pollutants.
- **Public safety**: Damage from storms, floods, droughts, and fires.[2]

Many common practices are not sustainable long-term, including, most significantly, the burning of fossil fuels (without major advances in atmospheric CO2 reduction technology) as the primary source for heating buildings and water, powering cars, and generating electricity. The buildup of greenhouse gases in the atmosphere, primarily from the burning of fossil fuels, is a major factor in causing the Earth to rapidly warm and has disrupted the relatively stable climate that humans depend upon. Billions of tons of CO_2 are released into the atmosphere from the use of coal, oil, and gas. As a result, climate and weather-related disasters have become more frequent and more intense as the Earth warms.

Climate change is a global, regional, and local threat that has become an urgent matter and is now a global crisis requiring aggressive actions. All efforts, big and small, to reduce greenhouse gasses over time will have measurable benefits. A significant reduction in fossil fuel use can be achieved through greater reliance on renewable energy sources such as photovoltaics, solar thermal systems, and wind power, as well as the use of heat pumps, electric cars, and conservation. These efforts are complemented by techniques such as net zero construction design. Achieving 100% renewable electricity is necessary and the most effective means to prevent irreparable damage. As of 2020, climate scientists are warning that conversion to clean renewable energy to drastically reduce fossil fuel use must occur within the next seven to ten years to avoid an irreversible change in the climate system.

In 2008, Massachusetts became one of the first states to establish a program to address climate change, set economy-wide greenhouse gas emission reduction goals, and outline a regulatory framework.

Westwood has taken many important steps to become more sustainable. Public Works has moved to single-stream recycling, added some electric vehicles and charging stations at the Carby Municipal Building, PV solar system installations at several schools, new energy efficient street and traffic lights, and numerous HVAC and lighting upgrades. The Town has participated in the state's Safe Routes to School program that assists with improvements for safe biking and walking to middle and elementary schools. A stormwater general bylaw was adopted by Town Meeting in 2015 requiring residential and commercial projects with any land disturbance over 5,000 sq. ft. to capture and treat stormwater runoff. The Westwood Land Trust, School Department, and Conservation Commission have been key players in implementing sustainable practices.

Westwood established an Environmental Action Committee (WEAC) in 2008 as an advisory committee on environmental concerns. WEAC proposes solutions to promote energy, water, and resource conservation, renewable energy, green building design, more efficient vehicles, recycling, and environmental education in Westwood. Each spring and fall, it sponsors a recycling event for items not accepted at curb side. In 2019, the Committee initiated a Community Electricity

Aggregation (CEA) purchasing program for the Town to start offering lower group electricity rates and renewable energy options to all residents and businesses.

WEAC was instrumental in Westwood becoming a Green Community, a state program offering municipalities energy efficiency and renewable energy opportunities. This required meeting a number of criteria such as allowing as-of-right rooftop solar, purchasing fuel efficient municipal vehicles, and adoption of the Stretch Code (780 CMR 115 AA) of the Massachusetts Building Code. The Stretch Code requires newly constructed buildings to use less energy to minimize the life-cycle costs. The Town participates in an annual Massachusetts Department of Energy Resources (DOER) certification process to demonstrate compliance with Green Community criteria to become eligible for grants for energy conservation projects.

Since receiving the Green Community designation, Westwood hired an Energy Manager to seek and manage grants to reduce energy use in municipal facilities. As of 2020, the Energy Manager has implemented over 50 projects valued at over $2.83 million using $1.43 million in Green Communities funding and approximately $500,000 in Eversource incentives. In 2018, the Energy Manager received the Lead by Example Award from the Massachusetts DOER. Some of the recent projects awarded Green Community funding include converting all streetlights to LED, and new lighting at the Martha Jones Elementary School, the High School hallways, and the swimming pool. Solar panels were installed at the High, Thurston, Martha Jones, and Downey schools. Most recently new energy efficient ventilators were installed at Thurston Middle School.

GOALS AND OBJECTIVES

The Town's sustainability goals should align with the Commonwealth's goals of zero CO_2 emissions by 2050. That includes emissions from vehicles, buildings, operations, and electricity generation. The Town must strive to be more sustainable, encourage all residents and businesses to do the same, and incorporate sustainability into the mission of every Town department, commission, board, and committee.

Objective 1: Develop a Climate Action and Resiliency Plan.

Objective 2: Instill a sense of urgency around climate change action.

Objective 3: Convert to clean renewable energy to drastically reduce fossil fuel use within the next seven to ten years.

Objective 4: Promote healthy living for a healthy community.

STRATEGIC APPROACH

Sustainable practices are found throughout this Plan, but this section focuses on what the Town can do to achieve sustainability by integrating this endeavor into all of the Town's operations, practices, policies, and municipal facilities with a strong emphasis on renewable energy.

IMPLEMENTING ACTIONS

The following actions are not formally prioritized but are organized under topic categories related to the above goals and objectives, followed by an informal order of significance.

S1. Develop a Climate Action and Resiliency Plan including but not limited to the following:

- Complete energy audit of all Town buildings.
- CO_2 reduction goals and actions to achieve those goals including:
  - Energy conservation.
  - Energy efficiency.
  - Energy purchasing progressing to 100% renewable.
  - Net zero energy standards for new Town buildings.
  - Promotion of residential solar.
  - Phase out of fossil fuel use.
- Purchase of Town supplies that are greener products, with less plastic, more recyclable content, and more energy efficient.
- Sustainable transportation with electric vehicles and charging stations.
- Shuttle bus service.
- Infrastructure that promotes walking and biking.
- Water conservation and pollution prevention.
- Community education focused on sustainability.
- Waste reduction and recycling improvements.
- Preservation, replacement, and planting of trees.
- Zero Waste by waste reduction, recycling improvements, and curbside composting.

S2. All Town boards, committees, and departments must commit to reducing Westwood's carbon footprint. All plans, programs, and decisions regarding use, re-use, or improvement of Town land and facilities should have as a primary consideration climate change and greenhouse gas emission.

S3. Install solar panels on existing municipal properties including buildings, parking areas, and school properties.

S4. Conduct an annual Town-wide CO_2 production and energy use audit and report.

S5. Create a sustainability manager position or expand the role of the energy manager.

S6. Continue energy conservation and the use of renewable energy in Town facilities, operations, and the Town fleet. Establish net zero energy standards for new Town buildings.

S7. Establish in the Zoning Bylaw requirements for the installation of ground mounted solar panels and set the determination criteria required by the Zoning Board of Appeals to issue a special permit, balancing the need for renewable energy with neighborhood concerns.

S8. Strengthen Environmental Impact Design Reviews by the Planning Board to emphasize energy efficiency, on-site stormwater treatment, Low Impact Design (LID), open space preservation, and tree plantings.

S9. Revise the Wetlands Protection Bylaw and the Stormwater Bylaw to better address climate change issues and enable the Town to meet federal and state requirements for stormwater quality. Consider a stormwater utility to fund stormwater system improvements.

S10. Utilize the features of the Town LED streetlight network to reduce lighting during late-night hours and save energy.

S11. Promote and incentivize energy efficiency, energy conservation, and renewable energy use by Town residents.

S12. Build awareness by all residents, students, and especially Town officials and personnel of the urgency to combat climate change.

S13. Use WEAC and other Town groups to increase public awareness and participation in the early design stages of the review of sustainability elements for municipal construction projects.

S14. Promote residential solar use and net zero energy potential by participating in state programs for residential solar power.

S15. Install automobile electric charging stations for public use throughout Town. Identify policies and incentivizes to expand the public and private electric vehicle charging infrastructure.

S16. Incentivize the transition to electricity to phase out commercial and residential natural gas, oil and propane use usage.

S17. Perform education, outreach, and enforcement for proper recycling through existing resources or hiring a recycling coordinator. Provide or require recycling receptacles at all fields, playgrounds, and other public facilities, and commercial areas.

S18. Partner with schools and extracurricular programs to children and residents about healthy lifestyle choices such as food, exercise, hygiene, and mental health to improve the overall health of the community.

S19. Actively pursue opportunities through the Green Communities program for grants to support energy efficiency initiatives.

S20. Encourage walking, biking, and carpooling to work or school.

S21. Continue to partner with the Dedham-Westwood Water District and Neponset River Watershed Association to maintain the community's drinking water supply and protect aquatic habitat through conservation and reduction/elimination of chemical fertilizers, herbicides, and pesticides.

RESOURCES

http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=06182019

https://climate.nasa.gov/evidence/

https://www.mass.gov/service-details/global-warming-solutions-act-background

4th National Climate Assessment https://nca2018.globalchange.gov/

Summary of Findings report entitled "Westwood, Massachusetts MVP Community Resilience Program, Resilience Building Workshop," prepared by BETA Group for Town of Westwood, February 2020.

US Environmental Protection Agency (EPA) Sustainability Primer, 2015
https://www.epa.gov/sites/production/files/2015-05/documents/sustainability_primer_v9.pdf

Massachusetts Vulnerability Preparedness Program: https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program

RESILIENCY

BACKGROUND

Resiliency refers to the ability of a community to adapt to new circumstances and the ability to respond and recover from extreme events such as climate change and/or other man-made or natural disasters. Resiliency requires a clear understanding and acknowledgment of potential risks and vulnerabilities, planning, and preparedness to mitigate those risks.

Climate change related natural and human-caused disasters are a major force that will impact Westwood and is a focus of resiliency planning in this element. Westwood may not be directly affected by sea level rise like coastal communities, but the Town is expected to experience more extreme weather events, more inland flooding due to intense precipitation, higher average temperatures, more summer days over 90 degrees, and other weather related events such as droughts, hurricanes, snow, and ice storms.[3] The summer of 2020 was the warmest on record for Massachusetts and the fourth warmest in the United States.[4] Westwood experienced periods of dry spells and periods of heavy rainfall such as a storm in late June 2020 that dumped 4 inches of rain in 90 minutes. The heavy rain in such a short time led to flooding, severe damage, and the closure of Norwood Hospital which serves many Westwood residents. With the increased heat there are expected health impacts and higher risk of vector borne diseases such as Lyme disease, West Nile Virus, and Eastern Equine Encephalitis (EEE). Disruption of critical infrastructure such as water, sewer, energy, transportation, and telecommunication will occur.[5] The severity and the rate of climate change depends on the global human response to this crisis and is a significant challenge for all communities.

Westwood has begun the process of resiliency planning by applying for and receiving a state Municipal Vulnerability Preparedness (MVP) grant in 2019. The purpose of the grant was to complete a community-led planning process to designate Westwood as an MVP community. Next will be further state resiliency funding to complete vulnerability assessments and action-oriented plans. A workshop held in late 2019 with community stakeholders identified flooding, high wind and winter storms, droughts and extreme temperatures, and invasive species as the top hazards facing Westwood.

Health concerns were also identified as a major concern impacting Westwood and the region. In summer 2019, the dangerous mosquito born disease EEE was prevalent and expected to begin a three-year seasonal cycle. The outbreak of novel Coronavirus known as COVID-19 followed shortly after and became a public health pandemic in 2020 with far reaching economic and social impacts

calling attention to the shortcomings of our resiliency preparedness. COVID-19 led to devastating economic impacts in the first six months when many industries were significantly impacted. Public health impact with the contagious disease has been fatalities and unknown long-term effects. Social services and regional healthcare systems were overwhelmed.

Overflowing dams both natural and beaver made have contributed to local flooding. Some areas that often experience flooding are University Avenue near the train station, which is also a community groundwater source. A second area that frequently floods is the neighborhood between Pond Street and Edgewood Road. High wind and winter storms pose a threat as they lead to fallen trees and downed power lines. Most of the Town is at risk having the vulnerable combination of tree-lined streets and above-ground power lines.

The state MVP program provides a framework for developing a Resiliency Plan. Westwood recently (February 2020) completed the first phase of this planning process with a state grant. Since resilience spans across many areas, a Resiliency Plan requires input from many governmental departments, officials, committees, and boards in Town. A Resiliency Plan should also include full public participation to effectively achieve continued participation and support.

GOALS AND OBJECTIVES

Resiliency planning is necessary to better prepare for, manage, and respond to any disaster, to minimize stress, and to cultivate a better quality of life.

Objective 1: Create a Town resiliency plan or plans to determine the existing and future vulnerabilities to the Town from climate change and artificial or natural causes.

Objective 2: Built awareness among residents, students, and Town employees of the need to take action to reduce risk and increase resilience.

Objective 3: Take action to implement the resiliency plans.

STRATEGIC APPROACH

The strategic approach aims to improve Westwood's resiliency by focusing on how Westwood can best prepare for and respond to challenges. Identifying possible weaknesses, threats, and having plans and procedures in place is necessary to respond to emergency situations. The strategic approach emphasizes community empowerment and regional engagement to be able to respond and requires diligent direction and leadership from local and state officials. This approach also focuses on how Westwood can advance infrastructure and services with nature-based solutions that will have long term impacts on climate change and other natural disasters. Nature-based solutions use natural systems to work in combination with traditional approaches to address and respond to natural hazards.

IMPLEMENTING ACTIONS

The following actions are not formally prioritized but are organized under topic categories related to the above overarching goals and objectives, followed by an informal order of significance.

R1. Develop a combined Climate Action Resiliency and a Hazard Mitigation Plan that evaluates existing gaps, identifies solutions, and develops implementation strategies.

R2. Complete the process to become a state-certified Municipal Vulnerability Preparedness (MVP) community to allow Westwood to qualify for future grants and programs.

R3. Conduct a hydrologic study to identify weaknesses leading to flooding and make recommendations for improving culverts, low-laying roads and areas, and the stormwater system.

R4. Develop updated flood maps to show areas that are at risk and vulnerable for increased extreme weather flooding.

R5. Pursue MVP action grants to develop vulnerability assessments and action-oriented programs.

R6. Expand the Emergency Planning Committee to include human service leaders, local businesses, and community organizations.

R7. Continue to review and improve the Town's emergency operations and communications system.

R8. Consider placing power lines underground to prevent storm-related power outages and allow more street trees.

R9. Educate the importance of resiliency planning to all Westwood residents, government officials, and board and committee members.

R10. Identify local businesses and community partners such as local grocers, food suppliers, transportation providers, and housing services such as local hotels, to create a resource list and develop a relationship to be utilized in emergency situations.

R11. Remove barriers that interfere with providing immediate and frequent day to day care during emergencies.

R12. Enhance the ability to share patient information from various hospitals and health care facilities.

R13. Improve community engagement skills of health, police, and fire departments to strengthen abilities for health and wellness and disaster preparedness.

R14. Build broad stakeholder networks that include social services, behavioral health, community organizations, businesses, academia, at-risk individuals, and faith-based organizations in addition to traditional public health, healthcare, and emergency management partners.

R15. Engage individuals with vulnerabilities to take an active part in protecting their health and assist programs that serve at-risk individuals.

R16. Develop a list of local volunteers to assist in the event of an emergency.

R17. Aid households in having a disaster kit to provide the ability to shelter in place for up to 72 hours.

R18. Facilitate strong social networks by establishing "neighbors helping neighbors" groups.

R19. Cooperate with nearby towns to conduct regional resiliency planning.

R20. Proactively reach out to senior, disabled, and assisted living facilities with vulnerable populations to prepare evacuation and emergency response plans.

R21. Conduct semi-annual catch basin cleaning.

R22. Strengthen and promote access to public health and social services by developing partnerships between local healthcare organizations and Westwood's human services departments such as the Division of Youth and Family Services and the Health Division.

RESOURCES

https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program

http://www.resilientma.org/mvp

https://nca2018.globalchange.gov/chapter/18/

https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/

ENDNOTES

[1] Sustaining Places: The Role of the Comprehensive Plan. Planning Advisory Services Report Number 567. By David Godschalk, and FAICP, William Anderson, FAICP, 2012.

[2] Presentation by John P. Holdren on *Climate Science and Public Policy* (pdf) November 9, 2015.

[3] Resilient MA, The Climate Change Clearinghouse for the Commonwealth, https://resilientma.org/changes

[4] *Assessing the U.S. Climate in August 2020*, National Centers for Environmental Information NOAA, September 9, 2020 https://www.ncei.noaa.gov/news/national-climate-202008

[5] Fourth National Climate Assessment - Chapter 18: Northeast, https://nca2018.globalchange.gov/chapter/18/