



**NORTH
SUFFOLK
OFFICE of
RESILIENCE &
SUSTAINABILITY**

Annual Report

2021

Chelsea City Hall, Room 101

500 Broadway,
Chelsea, MA 02150

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LETTER FROM THE REGION

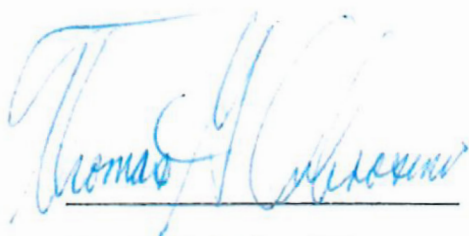
On behalf of the City of Chelsea, the City of Revere, and the Town of Winthrop, we would like to thank the Barr Foundation for its generous support of greater collaboration on sustainability and resiliency issues in the North Suffolk region. Over the past decade, our region has experienced unprecedented growth and economic activity, our population has become more diverse, and climate change has emerged as a key challenge to our wellbeing.

Our region's population grew by 17%, from 104,429 residents to 122,289, with our Hispanic/Latino population increasing by 47% (35,538 to 52,414 residents) and non-white population increasing by almost 96% (33,193 to 64,923 residents). As a result of these demographic trends, the share of residents living in environmental justice areas throughout the region has increased by almost 7%. To accommodate this growth and economic activity, the region has increased housing by 11% (43,041 to 47,914 units).

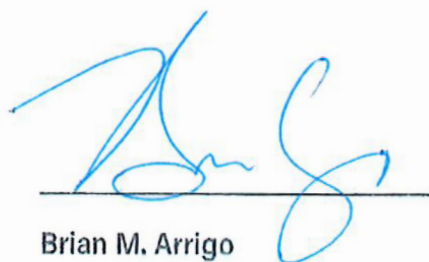
The North Suffolk communities are directly vulnerable to the risks of climate change: sea-level rise and stronger storms will expose people and our built environment to increased flooding, and as temperatures rise, extreme heat will become an even greater public health concern for our residents and businesses. To mitigate the worsening effects of climate change, Massachusetts adopted the "Climate Roadmap Law" that requires emissions reduction by 50% for 2030 and reach net-zero emissions by 2050. Chelsea, Revere, and Winthrop are committed to reducing our contributions to the climate crisis, while also preparing for the impacts that are occurring now, and that will continue to worsen as decades of greenhouse gas emissions take their toll.

The COVID-19 pandemic seriously limited our capacity to effectively address climate issues individually, and the challenges revealed by this event are comparable to the challenges local governments confront to mobilize towards greater sustainability and resiliency. The North Suffolk Office of Resilience and Sustainability is working to fill this capacity gap by increasing collaboration between our governments and embarking on critical projects to further mitigate our GHG emissions and adapt to impacts equitably. The following report highlights these projects and initiatives, and we look forward to continue this important work and innovative approach in the coming years.

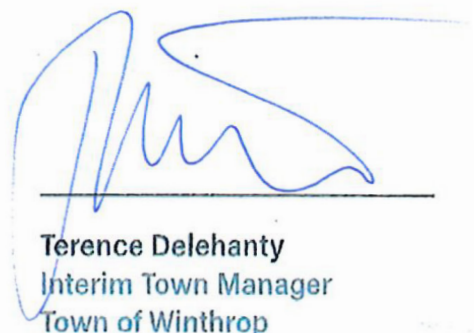
Sincerely,



Thomas G. Ambrosino
City Manager
City of Chelsea



Brian M. Arrigo
Mayor
City of Revere



Terence Delehanty
Interim Town Manager
Town of Winthrop

ABOUT THE OFFICE

North Suffolk County, which includes the cities of Chelsea and Revere and the town of Winthrop, are facing profound threats from climate hazards in the coming decades. As described in each community's Municipal Vulnerability Preparedness Plan and Hazard Mitigation Plan, coastal areas are expected to see significant increases in flooding as a result of sea level rise, while inland flooding, caused by more intense storms and an increase in impervious cover, will also expand in prevalence, depth, and frequency. Higher summer temperatures in these urban areas will lead to intensely hot areas known as urban heat islands, and will exacerbate the effects of air pollution from major roadways, industry, and Logan Airport.

Low-income individuals, people of color, immigrants, seniors, and other vulnerable groups stand to face some of the largest hazards with the fewest resources to adapt, and these groups comprise a majority of the region's population, with over 85% of North Suffolk residents living in census block groups classified as Environmental Justice areas as of the 2019 American Communities Survey. In addition, sustainability efforts such as clean energy, promotion of electric vehicles, and overall carbon emissions reduction can disproportionately benefit higher income individuals and organizations, while bypassing or negatively impacting marginalized groups. In order to address these systemic failures, it is essential to plan and implement sustainability and resilience measures with equity issues at the forefront.

In 2019, the North Suffolk municipalities agreed to pursue a regional approach to address climate change issues. To accomplish this goal, the municipalities created a regional office called the North Suffolk Office of Resilience and Sustainability (NSORS), where staff would dedicate equal time to support both regional and individual municipal projects, with a specific focus on improving equity for demographics who are often overlooked or negatively impacted by conventional sustainability and climate adaptation strategies.

The municipalities, through the City of Chelsea, applied for funding from the Barr Foundation in early 2020 to establish this regional office. In December 2020, the municipalities received \$600,000 to support the Office for 3 years and committed to collaborating on an initial list of projects and initiatives to address racial inequity, climate adaptation, and sustainability throughout this funding period. As the years progress, the municipalities will increase their share of local funding to achieve financial sustainability, and Office is also pursuing state, federal, and private grant funding to support its work now and in the future. Housed within and administered by the City of Chelsea's Department of Housing & Community Development, the Office consists of a Resilience Manager, centered on issues of climate resilience, and a Sustainability Manager, focused on energy and climate mitigation.

The North Suffolk Office of Resilience and Sustainability has started work on the region's priorities. Although climate change planning and policy has many categories and subtopics, the Office instituted two key focal areas, each grounded in equity: sustainability and resilience. Sustainability efforts in the region, necessary to mitigate climate change, include the development of a regional zero carbon plan to reduce emissions and comply with State law and Paris Agreement, deployment of clean energy options, management of bilingual, culturally competent civic engagement to promote energy conservation measures through the MassSave program, and advancement of air quality improvement initiatives. Resiliency projects include a range of efforts to prepare for the impacts of climate change in the region, which will include flooding from rising seas, stronger storms, as well as extreme heat. In both of these areas, the Office is pursuing state and federal policy initiatives to promote equity, increase sustainability and adaptation funding for the region, and address deeply-rooted racial and economic disparities.

The Office collaborates closely with municipal staff, community based organizations, and a variety of partners in its planning, design, implementation, and policy activities.

NORTH SUFFOLK PROJECTS SUMMARY

	Project Details		Geographic Extent			
	Grant Funded	Manager	Regional	Chelsea	Revere	Winthrop
Community-Based Emergency Preparedness Network	NO	RESILIENCE	●			
Mill Creek Flood Mitigation and Restoration Project	YES	RESILIENCE	●			
Zero Carbon Action Plan	YES	SUSTAINABILITY	●			
Building Energy Reporting & Disclosure Program	NO	SUSTAINABILITY	●			
Mass Save Community First Partnership Program	YES	SUSTAINABILITY	●			
Community Ratings System Adoption	YES	RESILIENCE	●			
Racial Equity & Social Vulnerability Assessment	YES	BOTH	●			
Neighborhood-Scale Green Infrastructure	YES	RESILIENCE		●		
Resilient Zoning Development & Implementation	YES	RESILIENCE				●
Saugus River Regional Resilience Working Group	YES	RESILIENCE			●	
Tree Inventory & Management Planning	YES	RESILIENCE			●	
Chelsea Microgrid Initiative	YES	SUSTAINABILITY		●		
Green Communities Compliance	NO	SUSTAINABILITY				●

MEET THE STAFF



DARYA MATTES
RESILIENCE MANAGER

dmattes@chelseama.gov

Darya holds a Masters in Urban and Environmental Policy and Planning from Tufts University, and has previously worked with the cities of Medford and Salem on climate resilience and environmental efforts. She is a resident of Watertown, where she is a board member for the small nonprofit Watertown Community Gardens.



IBRAHIM LOPEZ-HERNANDEZ
SUSTAINABILITY MANAGER

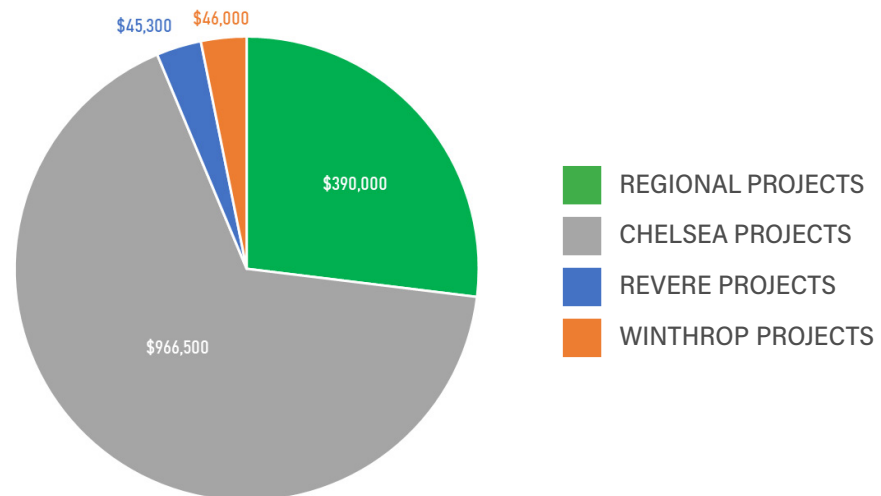
ilopez@chelseama.gov

Ibrahim moved to the Boston area from Puerto Rico after the passage of Hurricane María. He worked on energy policy issues in Puerto Rico, interned in the US House of Representatives and was more recently a Climate Justice Organizer in Chelsea for GreenRoots. He is a resident of Lynn, where he enjoys walking along the Lynn Shore Drive.

GRANTS UNDER MANAGEMENT

LOCATION	PROJECT	GRANT SOURCE	AMOUNT	COMPLETION DATE
Regional	North Suffolk Mass Save Program	Community First Partnership 2022-2024	\$ 180,000	June 2024
	North Suffolk Zero Carbon Action Plan	Community Compact Cabinet	\$ 160,000	Mar 2023
	Social Vulnerability Assessment	MAPC ACR	\$ 50,000	May 2021
Chelsea	Chelsea Microgrid Initiative	Green Communities	\$ 200,000	June 2024
		MVP	\$ 624,000	June 2023
		MAPC ACR	\$ 142,500	June 2022
Winthrop	Winthrop Flood Resilient Zoning	Land Use Planning Grant (shared with Gloucester)	\$ 45,300	June 2022
Revere	Saugus River Watershed Regional Working Group	MAPC ACR	\$ 46,000	June 2022

The North Suffolk Office of Resilience and Sustainability currently manages \$1,447,800 in grant funding for regional and individual projects. The Office plans to increase this figure by applying to recurring funding sources such as the Municipal Vulnerability Preparedness program and Green Communities program. Opportunities from non-recurring sources may be pursued for ad-hoc initiatives that do not require continuous funding.



RESILIENCY PROJECTS

COMMUNITY-BASED EMERGENCY PREPAREDNESS NETWORK

The COVID-19 pandemic exacerbated stark inequities affecting Environmental Justice communities in the North Suffolk region, and it is possible to draw parallels from the pandemic to climate impacts; we assume that if we do not prepare with equity in mind, vulnerable residents will bear the brunt of the negative consequences of climate change.

To effectively prepare for emergencies, engaging the broader community and expanding access to community resources are essential. While municipal emergency preparedness officials bring crucial expertise and resources to plans and procedures, the Office recognizes that community based organizations, local networks, and social infrastructure are equally important. Community groups provide a wealth of social services and communications, particularly for residents who may not be well-connected through official channels, especially residents that distrust and fear interacting with government, due to past injustices, immigration matters, and systemic barriers.

Municipalities have begun to recognize that in order to prepare for the increasing emergencies climate change will bring, they must expand community-based partnerships and develop collective models for recovery. A wide array of strategies are emerging: some cities, such as New York, provide trainings and information for community and faith groups to help them prepare for disasters, while several Massachusetts communities are considering establishing resilience hubs, physical locations in the community that can provide resources during and emergency and beyond. Here in the North Suffolk region, the City of Chelsea experimented with its own hybrid municipal-community model during the Covid-19 pandemic, when dozens of nonprofit groups and individuals joined the City on daily calls to share information and coordinate services to residents.

The North Suffolk Office is currently exploring the development of a community-based emergency preparedness network that could be deployed during emergency events. The goal of the project is to improve our collective capacity to respond to climate-related and other emergencies. The Office is currently researching models used elsewhere and engaging with key partners. In 2022, NSORS will seek a funding source to enhance this research and to move the project toward implementation.

MUNICIPALITY
Regional Effort

GRANT FUNDING
No

STATUS
Planning

OFFICE ROLE
Support



A recent mural depicts the Covid-19 response in Chelsea, which featured remarkable response by community-based groups and individuals, in partnership with the City. A community-based emergency preparedness network could institutionalize this type of partnership throughout the region. Credit: Darya Mattes.

RACIAL EQUITY & SOCIAL VULNERABILITY ASSESSMENT

A key aspect of NSORS' mission is to ensure that sustainability and climate resilience occur equitably in the North Suffolk region, accruing greater benefits to individuals and demographic groups who are most vulnerable to climate impacts and least able to adapt. In order to do this, the Office will conduct a racial equity and social vulnerability assessment of the North Suffolk region in Spring of 2022. The project will identify which groups are most at risk from climate hazards, highlight structural barriers to equity, and deepen our understanding of vulnerabilities across the region. We will then work to develop a tool or framework to help NSORS prioritize serving marginalized groups and measure the advancement of equity in our future work. NSORS's goals for this project are:

- To understand how different groups in the North Suffolk region may experience disparate impacts from climate hazards, including storms, flooding, and extreme heat. We hope to identify both specific groups of people and specific locations that are vulnerable, in order to direct resilience efforts more effectively to them.
- To develop a tool or framework to help the three communities determine whether projects or interventions being considered will reduce these disparities and increase the resilience of more-vulnerable groups.
- To ensure that the framework is well integrated into the decision-making processes in all three municipalities to ensure longstanding benefits and accountability.

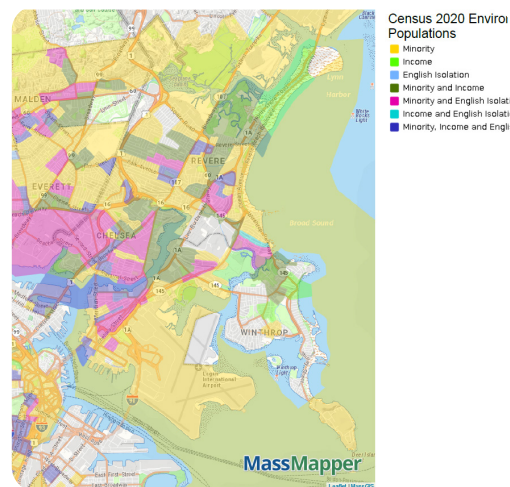
In collaboration with GreenRoots, NSORS is poised to retain a consultant and begin working on this project in January 2022.

MUNICIPALITY
Regional Effort

GRANT FUNDING
Yes

STATUS
Planning

OFFICE ROLE
Project Manager



Most of the North Suffolk region is classified as an Environmental Justice area, but demographics vary widely within and between the three municipalities.

MUNICIPALITY
Regional Effort

GRANT FUNDING
No

STATUS
Planning

STATUS
Support

COMMUNITY RATINGS SYSTEM ADOPTION

Originally a project designated in the NSORS workplan for Chelsea, NSORS has expanded the exploration of the Community Rating System to all three North Suffolk communities. In fact, the City of Revere has more than ten times the number of flood insurance policies as Chelsea does, at over 2,000 and Winthrop residents

hold over 1,000 flood insurance policies, in spite of Winthrop's relatively smaller population. Joining the CRS would offer property owners a discount on their flood insurance, while incentivizing flood prevention measures at the municipal level.

NSORS staff have attended CRS trainings, informed municipal stakeholders about the program, and coordinated with a wide range of municipal staff to determine what measures each community is already taking to reduce flood risk, and which might be easy to add. The communities will make a decision about whether to pursue CRS certification and officially join the program early in 2022.

	Chelsea	Revere	Winthrop	TOTAL
Average savings per premium, class 9	\$81	\$47	\$68	
Total community savings, class 9	\$20,578	\$104,411	\$68,886	\$193,875
Average savings per premium, class 8	\$122	\$88	\$125	
Total community savings, class 8	\$30,915	\$197,491	\$126,436	\$354,842

North Suffolk residents could save around \$350,000 in flood insurance premiums if the three communities are able to join the Community Rating System at class 8 (the second tier). As they implement additional flood resilience measures, that savings would grow.

MUNICIPALITY
Regional Effort

GRANT FUNDING
Yes

STATUS
Implementation

OFFICE ROLE
Support

MILL CREEK FLOOD MITIGATION AND RESTORATION

Mill Creek, a tributary of Chelsea Creek that forms the boundary between Revere and Chelsea, has significant water quality impairments and was graded an "F" water quality rating by the EPA in 2020 – the lowest grade in the Mystic River watershed. Mill Creek is challenged by its industrial past, physical barriers that

impede tidal flow and cause the growth of invasive species, and current sources of pollution that degrade water quality and the surrounding environment. The surrounding, low-lying area is susceptible to flooding. Furthermore, public waterfront access to this natural resource is limited.

The Mystic River Watershed Association, GreenRoots, The Nature Conservancy, and the City of Chelsea have been meeting regularly for years to coordinate efforts on the restoration of Mill Creek, which could also resolving flooding issues and provide community access to this natural resource. NSORS is supporting Chelsea's work on these efforts, while also serving as a liaison with Revere, which may become more involved in this work over time. In 2021, the Mill Creek working group has explored new projects, which are in varying stages of development:

- The City of Chelsea is in the process of acquiring of a property at 88 Clinton Street, adjacent to Mill Creek. Once it is City-owned, and grant funding is secured, this parcel would become a public open space that could address residents' desire for greater access to Mill Creek.
- GreenRoots and a consulting team created an initial design proposal for a larger creekside park that would incorporate City-owned and private land, and that could provide numerous opportunities for engaging with the natural areas along Mill Creek.
- A very large vacant parcel, formerly home of the Forbes Lithograph Company, which lies at the confluence of Mill Creek and Chelsea Creek, has been targeted for residential development, but several iterations of this ambitious plan have not come to fruition. The Mill Creek working group has been in conversation with statewide conservation organization Mass Audubon, as well as other key stakeholders such as the MBTA, to consider how improvements to this site could enhance climate resilience and public access in the future.
- In November 2021, NSORS supported the City and the working group in submitting a grant application that would help identify sources of pollution and therefore a path toward a cleaner Mill Creek.



Mill Creek, on the Chelsea/Revere line, has high levels of contamination and obstructed flow, leading to poor water quality and the loss of its natural salt marsh ecosystem.

RESILIENT ZONING DEVELOPMENT & IMPLEMENTATION

Much of the town of Winthrop lies in the current FEMA floodplain, with even more properties at risk of flooding as sea level rises. As a result, Winthrop is working with MAPC to identify zoning changes that would make both current and future development more flood resilient. MAPC staff are assisting Winthrop in identifying a menu of potential zoning solutions, which Winthrop's planning director and NSORS are exploring with stakeholders such as municipal employees and members of local boards and commissions.

This project will be completed by June 2022, and will be a critical step in protecting Winthrop's built environment from coastal flooding.

MUNICIPALITY	GRANT FUNDING
Town of Winthrop	Yes

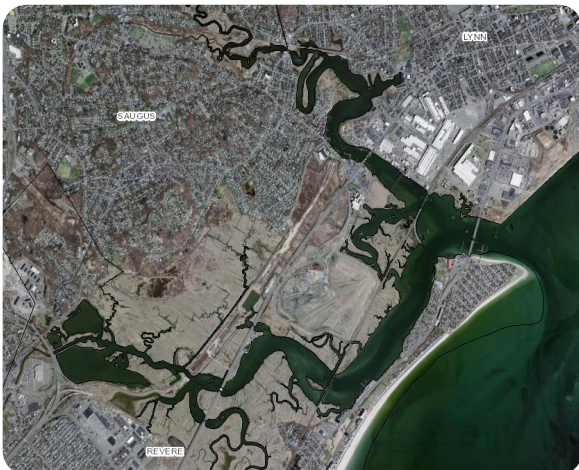
STATUS	OFFICE ROLE
Planning	Support



Many of Winthrop's residential neighborhoods are located directly on the coast, requiring new strategies for flood resilience as the sea level rises.

MUNICIPALITY	GRANT FUNDING
City of Revere	Yes

STATUS	OFFICE ROLE
Planning	Support



REGIONAL RESILIENCE WORKING GROUP

Flood risk links Revere with its neighbors to the north and east that are located in the Saugus and Pines River Watershed: Lynn, Saugus, Malden, and Everett.

These rivers are an important flood pathway that put all five of these communities at risk, and Revere, supported by a grant and technical assistance from MAPC, is bringing them together in a regional effort to share information about local flooding, flood pathways, and mitigation projects, and to advocate more strongly together to state agencies and other regional decision-makers.

NSORS staff is supporting this regional effort, which will run through June of 2022.

The Saugus and Pines Rivers serve as coastal flood pathways to the cities of Revere, Lynn, Saugus, Malden, and Everett.

MUNICIPALITY
City of Chelsea

GRANT FUNDING
Yes

STATUS
Planning

OFFICE ROLE
Support

NEIGHBORHOOD-SCALE GREEN INFRASTRUCTURE

Chelsea is an extremely dense city, with over 50,000 residents living within 2 square miles, and access to green space for its residents is limited. Unhealthy air quality, stormwater flooding, and heat are some of the climate hazards that will most affect residents, due to a history of redlining and haphazard development. Residents of color, populations with underlying health conditions, persons with disabilities, and seniors face the worst impacts and negative public health outcomes associated with these climate risks. To address these challenges in a tight space, while promoting healthy, vibrant public open spaces and social connectivity, neighborhood-scale green infrastructure will be a key tool.

In 2021, NSORS supported the development of new neighborhood-scale green infrastructure through several open space projects:

Bellingham Square Plaza Redesign: This bustling community gathering space in downtown Chelsea, adjacent to City Hall, is well-used but currently lacks amenities and features few plantings and no shade. Working with community-based organizations, such as La Colaborativa and GreenRoots, as well as landscape architecture firm Brown, Richardson, and Rowe, NSORS is supporting overseeing the redesign of this public space to incorporate green infrastructure for extreme heat and flood mitigation. Funded by Chelsea City Council, the design phase is striving to create a space that meets the needs of Chelsea residents, beautifies the downtown area, and anchors civic life in the downtown. As part of the project, the Office is collaborating with La Colaborativa, who are introducing a group of youth involved in a STEM internship program to climate and infrastructure issues, and GreenRoots, who are advising on equitable civic engagement and design best practices.



Duane Davis and Justin Reyes, participants in La Colaborativa's STEM internship, document water ponding in front of Chelsea City Hall. The redesigned Bellingham Square plaza will include features to reduce stormwater flooding and urban heat. Photo: Erin Gallagher.

Chelsea Street Bridge Waterfront Park Design: Historically, residents of Chelsea have been deprived of waterfront access, and the waterfront remains exceedingly vulnerable to sea level rise and coastal surge. The City of Chelsea, with assistance from the Office, is in the process of acquiring several vacant state-owned parcels at the base of the Chelsea Street Bridge to create a new riverfront park. The location lies in a key flood pathway from Chelsea Creek, and the project offers an opportunity to reduce flooding to the adjacent roadway and nearby neighborhoods, safeguarding residents and critical infrastructure, while enhancing public access to the waterfront. The Office has retained an interdisciplinary design team for this project, which will begin in 2022.

Lafayette Street park projects: a vacant City-owned parcel on a hillside in a residential neighborhood is being considered for a new public park. Currently wooded and inaccessible, a new public space would create a cool, shaded outdoor area for residents. This project is in the design phase, with the potential for funding in 2022 or later.

TREE INVENTORY & MANAGEMENT PLAN

The City of Revere has not inventoried its public trees since electronic records were kept, and a full inventory is a key first step in creating a management plan for Revere's urban tree canopy. NSORS and the City of Revere have submitted a grant application for funding for an inventory and management plan development, which will put Revere on a path toward reducing urban heat through strategic urban tree canopy management.

MUNICIPALITY
City of Revere

GRANT FUNDING
Yes

STATUS
Planning

ROLE
Support



Street trees along Broadway in Revere.

SUSTAINABILITY PROJECTS

MUNICIPALITY	GRANT FUNDING
Regional Effort	Yes
STATUS	OFFICE ROLE
Implementation	Project Manager



An regional action plan will enable municipalities to prioritize actions that focus on a variety of sectors, from buildings to transportation.

ZERO CARBON ACTION PLAN (ZCAP)

The North Suffolk region encompasses vibrant neighborhoods, diverse populations, and an array of industries and critical infrastructure. Disconcertingly, the region is responsible for significant emissions, which are a hazard to public health and fuel climate change. Endeavoring to eliminate carbon emissions and air pollution, the Office is embarking on the creation of a Zero Carbon Action Plan to reduce emissions and enhance air quality. Recent policy events, namely the Commonwealth's Climate Roadmap Law, have made GHG emissions reduction a mandate. The State is required to cut emissions in half (50%) by 2030 and achieve net zero emissions by 2050. The requirements aim to comply with the Paris Agreement signed in 2015 by international governments, including the United States. Grounded by community engagement, the development of an action plan will enable the communities to understand where emissions are coming from, formulate strategies for emissions reduction, and set out a roadmap for aggressively phasing out fossil fuels.

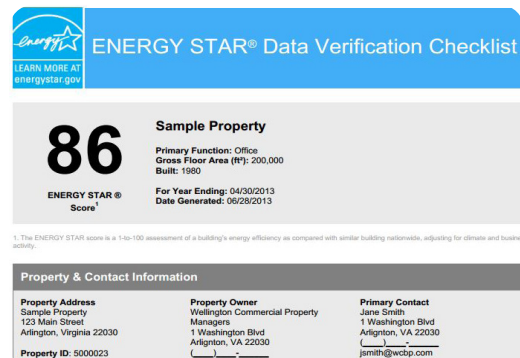
Currently, the ZCAP project is scheduled to begin in early-January 2022. The Office, in partnership with the Metropolitan Area Planning Council (MAPC) and Green-Roots, will form the project team. The ZCAP team will soon begin compiling the necessary data to develop a GHG emissions inventory for the communities, developing a community engagement schedule, and completing significant civic engagement. In turn, this will inform the team's creation of policies, strategies, and projects, culminating with a final plan in early 2023.

BUILDING ENERGY REPORTING & DISCLOSURE

In order to comply with GHG emissions reduction targets, municipalities have enacted energy benchmarking ordinances to track the emissions of large buildings. In Massachusetts, the City of Boston and City of Cambridge have managed energy benchmarking programs for more than 5 years. The MAPC recently published its “Net Zero Playbook,” listing policies, regulations and strategies municipalities can take to comply with the Climate Roadmap Law, energy benchmarking policies being one of these policies.

The Office has worked to analyze how an energy benchmarking ordinance throughout the region would allow the region to comply with the Climate Roadmap Law, curtailing emissions. Data analysis has included identifying buildings that would have a responsibility to report their energy consumption, based upon their size and presumed emissions. The analysis concluded that this policy will allow for the monitoring of energy use and emissions from roughly 37% of the building area in the region. The City of Chelsea's building area accounts to 46%, the City of Revere accounts to 38%, and the Town of Winthrop account to 15%. Instituting this policy will allow the Office to develop and implement targeted strategies and policies to curtail greenhouse gas emissions.

MUNICIPALITY Regional Effort	GRANT FUNDING No
STATUS Planning	OFFICE ROLE Project Manager



Energy Star's Portfolio Manager is a key technology that enables building owners to track and disclose their energy consumption to municipalities

MUNICIPALITY
Regional Effort

GRANT FUNDING
Yes

STATUS
Planning

OFFICE ROLE
Project Manager



The Mass Save program is funded by utility rate payers, this program has successfully increased energy efficiency throughout Massachusetts.

MASS SAVE COMMUNITY FIRST PARTNERSHIP

The Mass Save program has been an integral part of increased energy efficiency in Massachusetts throughout the years. Historically, the program has focused heavily on single-family homes to transition their equipment to more efficient, often natural gas-powered heating equipment. As a result, the program has primarily benefitted communities that are more affluent. The housing stock in the North Suffolk region has had a sizable share excluded from the program. Although the program does not cover all residential buildings in the region, it serves as an effective tool to increase sustainability. Through this Program, the Office is managing a variety of bilingual civic engagement to increase access to the Program. The Office is prioritizing low and moderate-income residents, as well as small businesses in environmental justice areas to address energy cost burden, public health, and resident comfort.

In 2022, the Office will lead efforts throughout the three municipalities to sign up residents and small businesses in environmental justice areas for free energy audits and help them to take advantage of the energy conservation measures offered by the Mass Save program. Relatedly, the Office will promote the electrification of homes, a crucial step to reduce emissions. Community-based partners will be actively conducting engagement activities to educate on energy efficiency, weatherization, as well as heating and cooling retrofits. The municipalities have agreed to sign up a total of 1,800 households and small businesses throughout the 3-year program.

CHELSEA MICROGRID INITIATIVE

The Boston metro area is expected to experience stronger weather events due to climate change. These events represent a risk to energy supply to homes, businesses and critical facilities, which can acutely impact low-income and vulnerable residents, such as households dependent on electricity for medical devices. In collaboration with GreenRoots, the Office is supporting the development of a Community Microgrid, an innovative system to adapt to climate risks and achieve energy resilience to support their operations and the wider community. These systems are centered on a battery energy storage system (BESS) that supplies electricity to the facility where it is sited, solar panels that generate electricity, energy conservation measures, and a virtual control system. In practice, when extreme weather disrupts the grid, the Community MicroGrid would allow users to maintain their power supply.

The Office is providing procurement and project management support to the microgrid team. The City of Chelsea, in partnership with GreenRoots, Climable and Clean Energy Solutions, has successfully obtained grant funding to implement a microgrid that includes four buildings. Each BESS will be managed through a cloud-based management system where all facilities can act as a single unit without being physically connected, giving the city an economic advantage by participating in demand response programs. The microgrid team competitively procured and selected Ameresco as the contractor for implementation. Community engagement activities through GreenRoots and Climable, designed to educate residents about the benefits of energy resiliency, are currently underway.

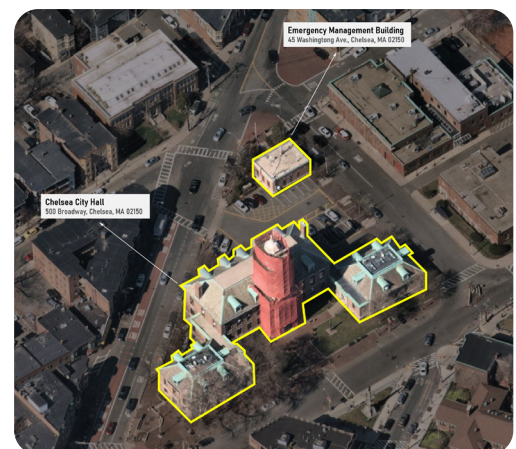
In 2022, the team will complete an energy audit of all buildings, continue robust, bilingual civic engagement, and manage the installation of the first phase of the project.

MUNICIPALITY
City of Chelsea

GRANT FUNDING
Yes

STATUS
Implementation

OFFICE ROLE
Support



The Chelsea microgrid includes City Hall and the Emergency Management building, batteries will be installed to maintain operations during a power outage.

MUNICIPALITY
Town of Winthrop

GRANT FUNDING
No

STATUS
Planning

OFFICE ROLE
Support

GREEN COMMUNITIES COMPLIANCE

Municipalities in Massachusetts have various grant sources to implement energy efficiency and renewable energy projects. Once such source is the Green Communities program administered by the Massachusetts Department of Energy Resources (DOER). The eligibility for municipalities to apply for funding through this program centers around energy benchmarking of municipal facilities and vehicle fleets. The primary platform used to track energy usage data is MassEnergyInsight.

The Office is providing administrative support to the Town of Winthrop for the development and submittal of required reports. The tasks include data collection on vehicle fleet fuel usage, changes in fleet composition, importing utility data of electric and gas accounts. Coordination efforts include educating relevant departments in documentation needed for yearly reporting compliance.



The Town of Winthrop will be able to apply for state grants that focus on energy efficiency and sustainability in municipal buildings. Massachusetts buildings, such as Winthrop Town Hall shown here, are very old, making energy conservation measures desirable and financially attractive.

REGIONAL COLLABORATION

Beyond the tasks specified in the 2021 workplan, NSORS has begun to represent the three North Suffolk communities in several regional forums for climate action. While municipal staff from all three municipalities also continue to be involved in these broader regional efforts, NSORS is able to add representation and capacity.

RESILIENT MYSTIC COLLABORATIVE

The RMC is a network of municipalities and community based organizations within the Mystic River watershed, convened by the Mystic River Watershed Association. The RMC seeks to bring communities together to address climate threats collectively, both through resiliency projects and advocacy. All three North Suffolk communities are located within the watershed and are part of the RMC. NSORS staff have been particularly engaged in the RMC's Lower Mystic Working Group and the Social Vulnerability Working Group which, this year, released a report social vulnerability to critical infrastructure failure in the Lower Mystic. The coalition is currently crafting an advocacy campaign to attract significant federal infrastructure funding and protect Lower Mystic community assets from the impacts of sea level rise, urban heat, and extreme storms. More information is available at resilient.mysticriver.org/.

METRO MAYORS CLIMATE PREPAREDNESS TASKFORCE

Convened by the Metropolitan Area Planning Council, greater Boston's regional planning agency, this group brings together municipal staff from 15 communities in Boston's urban core, including all three North Suffolk municipalities. The Climate Preparedness Taskforce has been meeting since 2015 to identify regional climate change mitigation and adaptation priorities, and to take collective action. In 2020-21, the taskforce focused on mitigating the impacts of climate-driven heat in the region. More information can be found at mapc.org/our-work/expertise/climate/mmc/.

OTHER PROJECTS

The following projects were included in the original list of NSORS projects, but NSORS staff did not work on them, either because they were complete as of June 2021, have not yet begun, or were de-prioritized.

City of Revere

POINT OF PINES & RIVERSIDE MVP PROJECT IMPLEMENTATION

This research project, conducted by AECOM, was completed in June 2021, just as NSORS staff were hired. NSORS was therefore not directly involved in this project. The project identified short-term coastal flooding solutions for these areas of Revere, but also highlighted that these areas, which are low-lying and highly susceptible to flooding, may not be feasibly protected in the coming decades.

City of Revere

COMPOSTING / SOLID WASTE REDUCTION

This project focuses on the reduction of food waste to comply with Department of Environmental Protection regulations. The City is interested in pursuing composting programs to deviate waste from landfills. NSORS will be assisting in identifying programs and coordinating with Chelsea and Winthrop.

City of Revere

MARSH RESTORATION PROJECT IMPLEMENTATION

This project, which would restore salt marsh along the Route 1A corridor in Revere, has not yet begun and is seeking funding for 2022.

Town of Winthrop

WETLANDS PROTECTION PLANNING & COMPLIANCE

Winthrop's planning director and NSORS contact, Rachel Kelly, also serves as the town's Conservation Agent, and manages these areas of work. It has been discussed that NSORS could provide staffing for these functions in the future.



**NORTH
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RESILIENCE &
SUSTAINABILITY**

APPENDIXES

APPENDIX A



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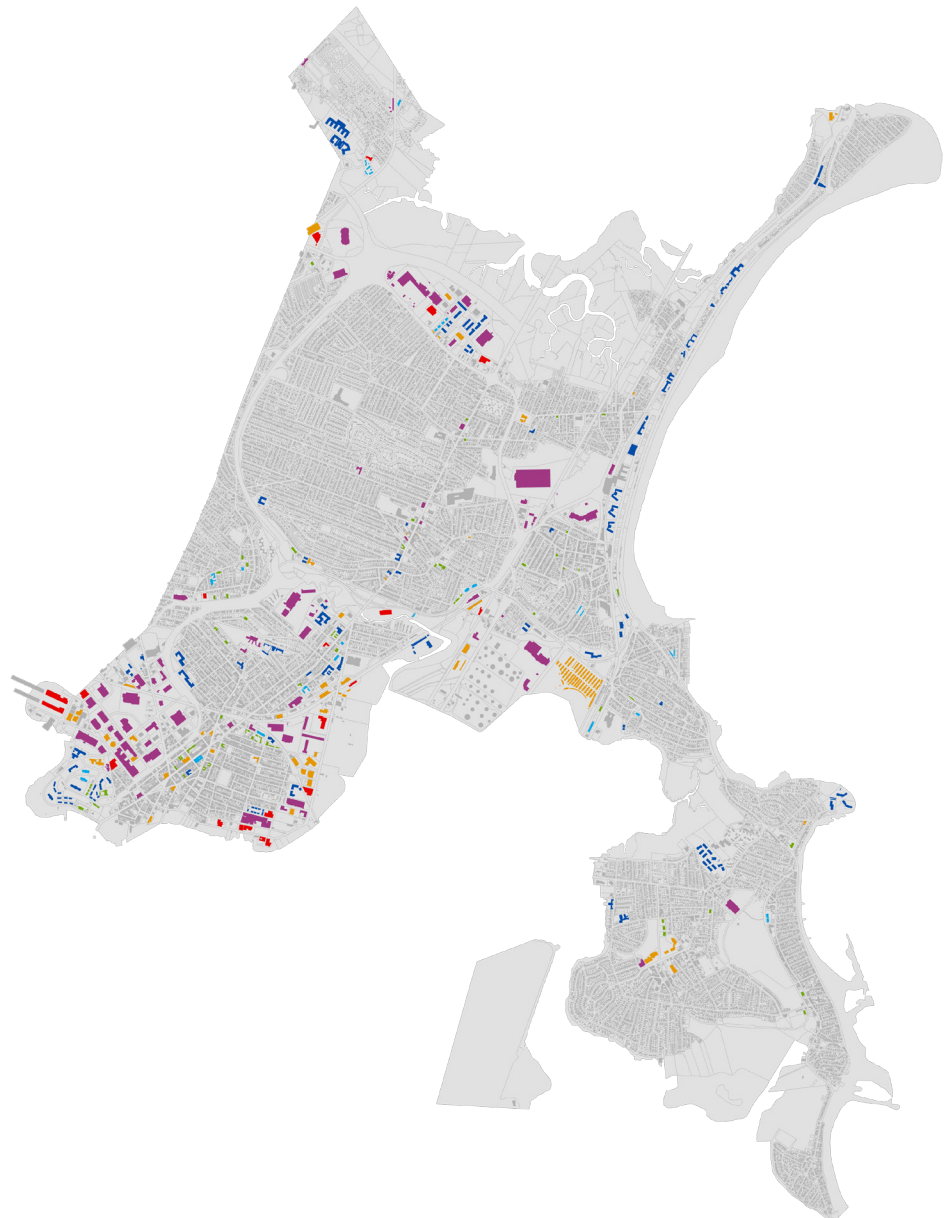
NOT FOR OFFICIAL USE

Preliminary Map: North Suffolk BERDO 1.0 Covered Properties Covered Properties (Buildings) – Residential & Non-Residential

The following preliminary map identifies buildings within the North Suffolk region that would be required to report building energy use under current *Covered Property* threshold and classification framework. The preliminary map does not include parcels that are owned by the City of Chelsea, City of Revere or Town of Winthrop.

Parcels that were described as having both *Residential* and *Non-Residential* gross square footage were assigned the *Covered Property* classification which represented a majority when combined. *Residential* parcels were not identified through the dwelling unit thresholds, only by the gross square footage identified in the respective Assessor's dataset.

-  **Large Non-Residential Covered Property**
($\geq 50,000$ sqft)
-  **Medium Non-Residential Covered Property**
($\geq 35,000$ sqft & $< 50,000$ sqft)
-  **Small Non-Residential Covered Property**
($\geq 20,000$ sqft & $< 35,000$ sqft)
-  **Large Residential Covered Property**
($\geq 50,000$ sqft)
-  **Medium Residential Covered Property**
($\geq 35,000$ sqft & $< 50,000$ sqft)
-  **Small Residential Covered Property**
($\geq 20,000$ sqft & $< 35,000$ sqft)



APPENDIX B



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Chelsea Microgrid Initiative – Implementation Facilities Scheduled for Battery Energy Storage System (BESS)

The following buildings are the first set of facilities to include microgrid controls and BESS to increase resilience in the event of a grid disruption. The City of Chelsea, in collaboration with GreenRoots, Climable and Clean Energy Solutions, has successfully selected Ameresco as the general contractor tasked with implementing the project.

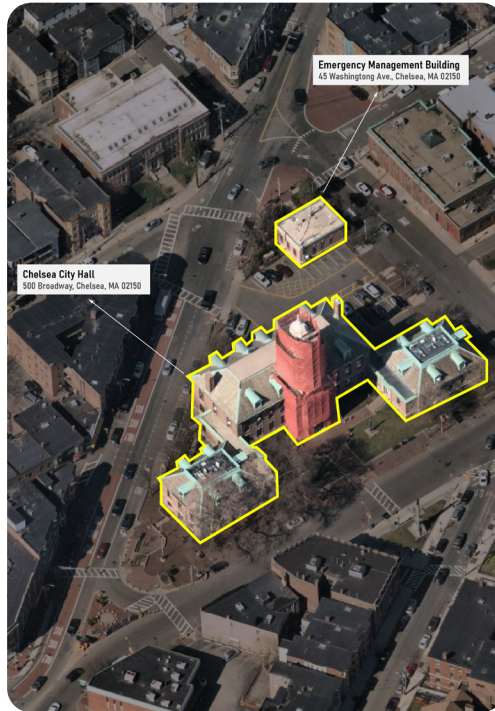
The North Suffolk Office of Resilience and Sustainability has provided procurement and project management support to the microgrid team by pursuing a Request for Qualifications through MGL 25A §11i. The Office worked closely with the Massachusetts Department of Energy Resources to guarantee regulatory compliance.

Chelsea Police Department



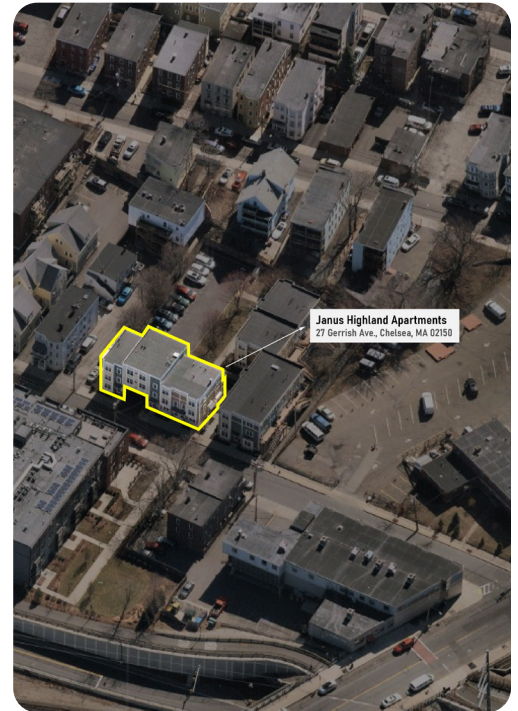
SAFETY

Chelsea City Hall
Emergency Management Building



GOVERNMENT & COMMUNICATIONS

Janus Highland Apartments



AFFORDABLE HOUSING