



NB RESILIENT

NEW BEDFORD'S PLAN FOR COMMUNITY
CLIMATE ACTION + RESILIENCE







CITY OF NEW BEDFORD
JONATHAN F. MITCHELL, MAYOR



Dear Readers:

“Resilient” sums up the character of New Bedford quite well, going all the way back to its founding as commercial whaling port, through the City’s various boom and bust cycles, and continuing to the present time, a moment at which we must rise to the challenge of a changing climate to ensure that this unique place will thrive long into the future.

Several years ago we got to work transforming New Bedford into a national leader in renewable energy. The City deployed more municipal solar capacity per capita than any American city in the continental U.S., positioning New Bedford as the launch point for the North American offshore wind industry, establishing the largest municipal electric vehicle fleet in Massachusetts, and entering into a robust energy services contract which allowed us to significantly increase the efficiency of our public facilities and street lights. We modernized our refuse collection system to reduce litter and increase recycling rates, expanded our Environmental Stewardship Department’s role to include resilience activities, officially became a Massachusetts Green Community, and continue to invest in critical resilience-oriented upgrades to our water and wastewater systems.

NB Resilient lives alongside other comprehensive planning efforts undertaken in the last several years and represents the next stage of New Bedford’s evolution as a city at the vanguard of climate resilience. Thanks to funding from the Commonwealth’s Municipal Vulnerability Preparedness (MVP) program, we were able to convene a resilience planning process through which we could identify priority assets and evaluate the vulnerability of these assets to the effects of climate change. Numerous city departments, community-based organizations, and other city stakeholders have met over the last two years to:

- Define top local natural and climate-related hazards of concern;
- Identify existing and future strengths and vulnerabilities;
- Develop prioritized actions for the city; and
- Identify immediate opportunities to collaboratively advance actions to increase resilience.

New Bedford has wasted no time implementing many of the top priorities that have emerged from the process, even as the planning effort was ongoing. We have an opportunity now to enhance New Bedford’s resilience to future physical, social, and economic challenges and to boost the quality of life equitably across the entire city.

NB Resilient lays out a vision to make New Bedford a thriving, self-sustaining city that is physically, culturally and economically secure and ready to implement innovative approaches to prepare for tomorrow’s possibilities. One of the most rewarding outcomes of the *NB Resilient* process is the opportunity to collaborate with so many people and organizations whose missions align with the *NB Resilient* vision. This builds upon the great work already underway by adding bandwidth to support existing programs. These combined efforts provide the opportunity to get the word out to the entire city about available resources and programming.

I’d like to thank our Director of Resilience and Environmental Stewardship Michele Paul and Kim Lundgren Associates for their yeoman’s efforts in developing a plan that is comprehensive in scope, inclusive in approach, and highly actionable. I look forward to our work ahead to make this vision a reality.

Sincerely,



Jon Mitchell



NB Resilient



NB Resilient was a coordinated effort of:

City of New Bedford Department of Environmental Stewardship

Steering Committee Members and Technical Advisors:

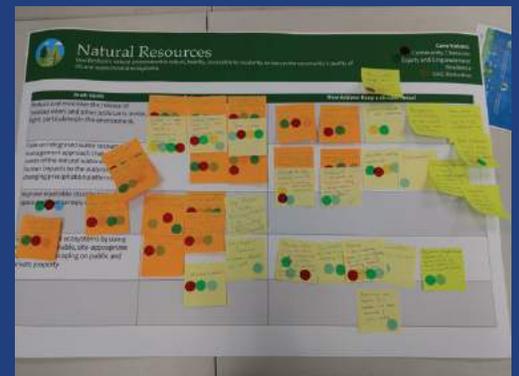
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Steve Bern	Citizens Energy
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Kirsten Bryan	Department of City Planning
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Michele Paul	Department of Environmental Stewardship
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Adam Hart	Department of Public Infrastructure
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Justin Ohlson	Department of Public Infrastructure
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Bob Smith	Eversource
Cheryl Bartlett	Greater New Bedford Community Health Center
Scott Alfonse	Greater New Bedford Refuse Management
Maura Ramsey	Groundwork Southcoast
Damon Chaplin	Health Department





Steering Committee Members and Technical Advisors *(continued)*

Stephanie Harrington	Health Department
Anne Luouro	Historical Commission
Liz Wiley	Impact Lab - Marion Institute
Christina Connelly	New Bedford Chief Operating Officer
Scott Lima	New Bedford City Council
Debra Lee	New Bedford Council on Aging
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Cesar Duarte	New Bedford Port Authority
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Pat Sullivan	Office of Housing & Community Development
Rachel Mulroy	Parks, Recreation & Beaches Department
Mary Rapoza	Parks, Recreation & Beaches Department
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Ana DaRocha	Veterans' Services
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Consultant Team:



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NB RESILIENT

The City of New Bedford is in a unique location in the Commonwealth of Massachusetts that provides access to a bustling waterfront, a historic downtown, a diverse housing stock and abundant natural resources. According to the 2011 *Massachusetts Climate Adaptation Report*, there are four broad ecosystem types in the Commonwealth: aquatic, coastal, forested and wetland. New Bedford is home to all four of these habitats. As a former manufacturing hub, many of the city's natural resources have been taxed due to past activities and ensuring the protection of these rebounding ecosystems is a priority.

In the Spring of 2018, New Bedford applied for funding through the Massachusetts Municipal Vulnerability Preparedness (MVP) Program to better understand and prioritize how the City's infrastructure, people and environment are vulnerable to a changing climate. Priorities include increasing communication capabilities, ensuring protection of New Bedford's aquifer protection zone and creating an evacuation and sheltering plan.

Armed with these and other priorities to adapt to a changing climate, the City applied for MVP Action Grant funds to create a Climate Adaptation and Resilience Action Plan. Although the City has demonstrated its ability, with support from state and other funding, to successfully implement adaptive and green infrastructure, energy efficiency and redundancy, and habitat restoration initiatives, it had not had the opportunity to look at the bigger picture with a comprehensive risk and vulnerability assessment that can then be translated into action. Funding to create a Climate Adaptation and Resilience Action Plan offered that opportunity and is what we now call *NB Resilient*.

STRONG
TODAY

STRONGER
TOMORROW

STRONGER
TOGETHER



WE ARE

CREATIVE

COASTAL

WELCOMING

INNOVATIVE

STRONG

WE WILL USE
THESE STRENGTHS
TO BECOME MORE
RESILIENT.



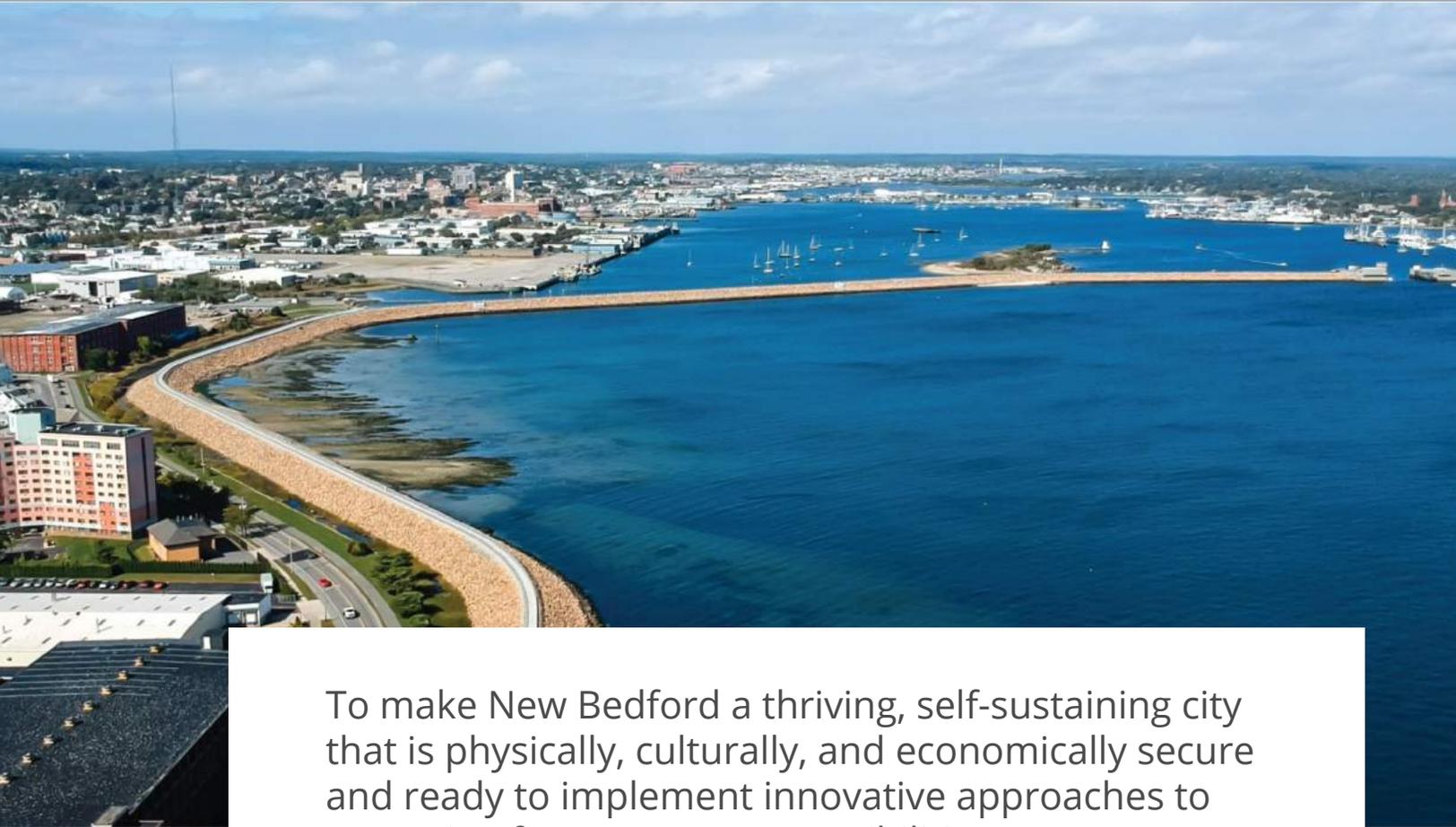
NB RESILIENT

NB Resilient is the roadmap to both reduce greenhouse gas emissions and to ensure the entire city is prepared for and resilient to the changes we are experiencing. Under the leadership of Mayor Mitchell and led by the Department of Environmental Stewardship, New Bedford created a Climate Action Steering Committee to support and develop a plan that was shaped by four core values and six focus areas designed to cover all aspects of our city.

The development of *NB Resilient*, the first climate action plan in our City's history, brought together municipal departments, community partners and residents. The City adopted a robust engagement strategy to reach New Bedford's neighborhoods and city organizations, to make every effort to include as many voices as possible in the plan. *NB Resilient* is a climate action and resilient plan with 45 ambitious but achievable actions that helps New Bedford achieve its vision: "a thriving, self-sustaining city that is culturally and historically secure and is ready to implement innovative approaches to prepare for tomorrow's possibilities."

Although the plan itself is complete, the work to move toward a more resilient New Bedford is just beginning. New Bedford's greatest asset is its people, and our climate action and resilience plan will have the greatest impact if everyone is involved. *NB Resilient* calls upon the entire city to get involved and take action. Together, we are NB Resilient.

VISION

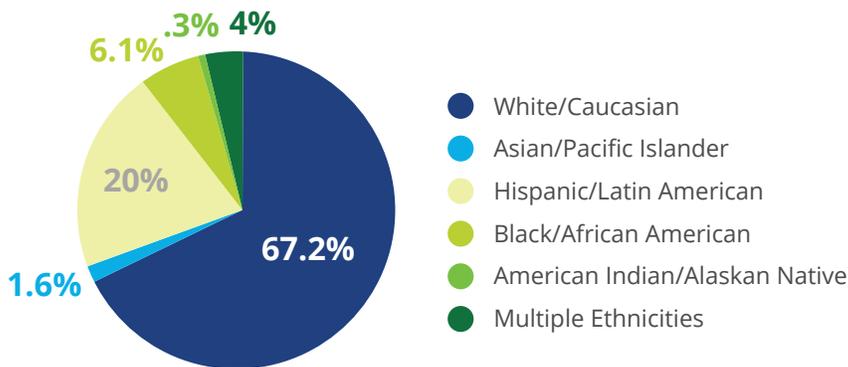


To make New Bedford a thriving, self-sustaining city that is physically, culturally, and economically secure and ready to implement innovative approaches to preparing for tomorrow's possibilities.

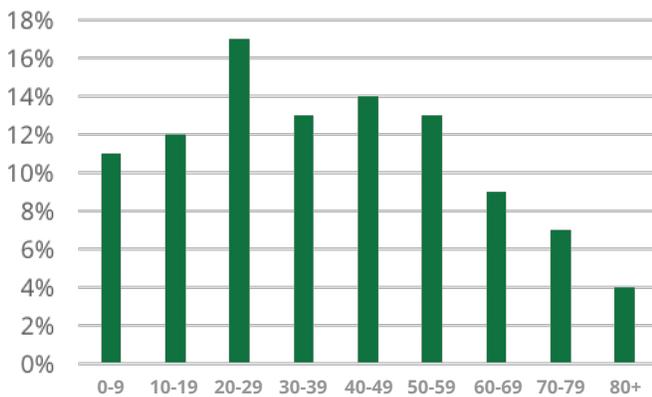
NEW BEDFORD TODAY

New Bedford is a robust and resilient city that is home to a vibrant immigrant population. Despite the economic benefits that come from the largest fishing port in the country, the City has a 23.5% poverty rate.^{1.1}

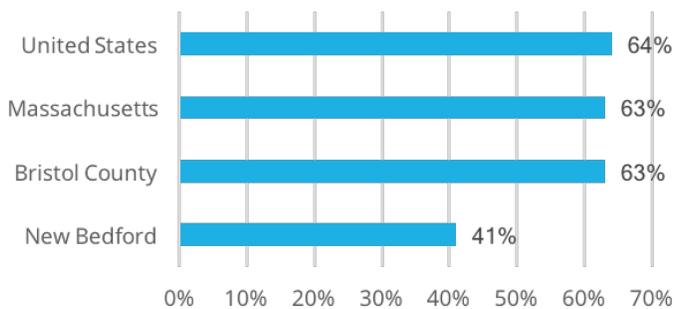
Ethnicity/Race Distribution^{1.2}



Age Distribution^{1.3}



Owner-Occupied Housing Unit Rate^{1.4}



4TH

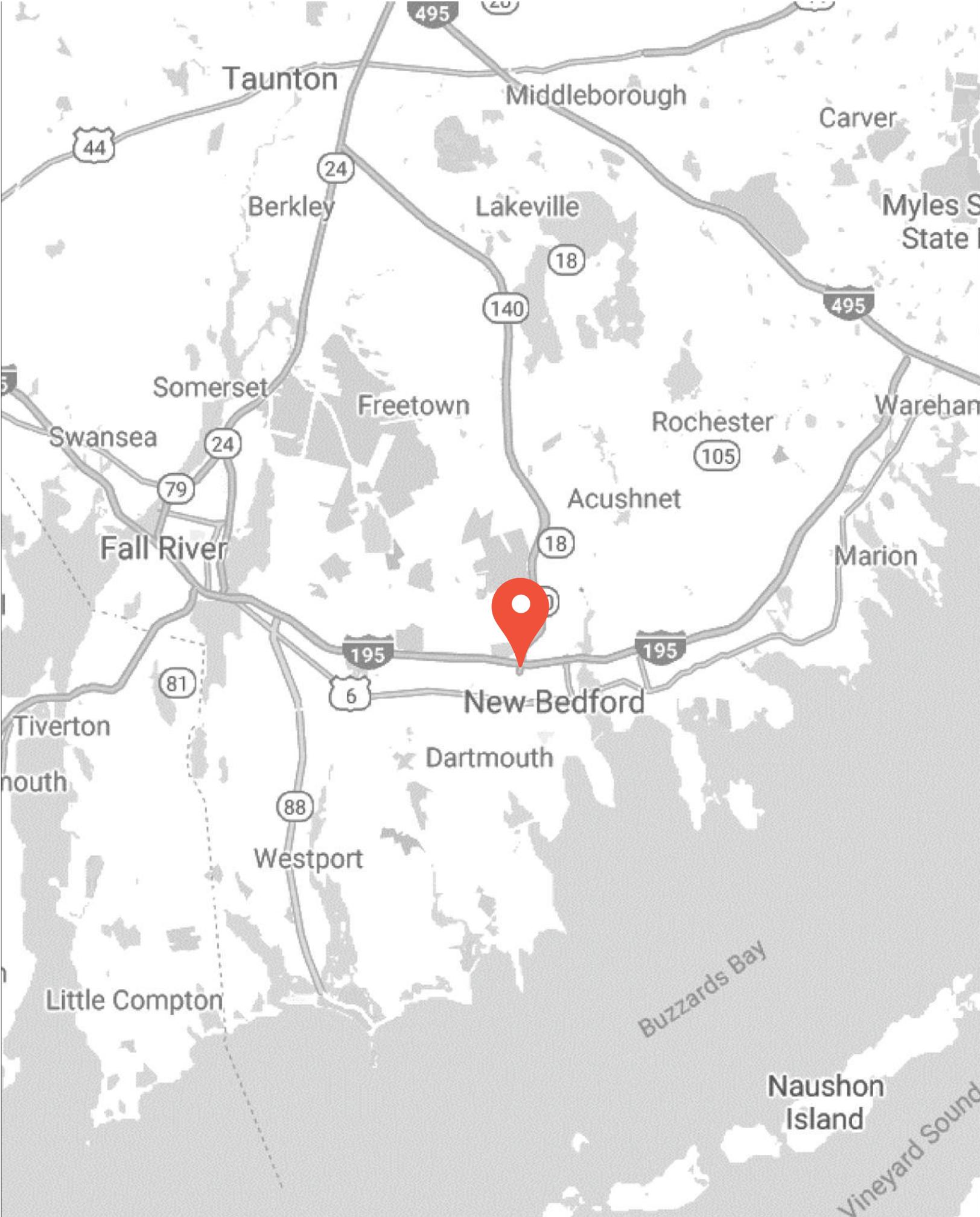
largest metropolitan area in MA^{1.5}

24

total square miles^{1.6}

95,315

total population^{1.7}



HOW IS NEW BEDFORD DOING?

SUCSESSES



8,000
street and traffic lights replaced with power-saving LEDs^{1.8}

CLIMATE & ENERGY



#1
Port in the nation based on dollar value and landing^{1.12}

ECONOMY & JOBS



1,500-1,600
lead service lines replaced in 2017^{1.16}

INFRASTRUCTURE, UTILITIES, & WASTE



23
electric vehicles in the municipal fleet^{1.9}

CLIMATE & ENERGY



3,000
residents have completed MassSave home energy audits^{1.13}

CLIMATE & ENERGY



7,000-9,750
immigrants served by the Immigrants Assistance Center^{1.17}

PUBLIC HEALTH & SAFETY



400
residential rooftop solar systems installed^{1.10}

CLIMATE & ENERGY



3,226
trees planted since 2015^{1.14}

NATURAL RESOURCES



32
electric vehicle charging stations^{1.18}

TRANSPORTATION & LAND USE



25,000
patients served by the New Bedford Community Health Center^{1.11}

PUBLIC HEALTH & SAFETY



82,000+
meals served to low income youth during the Play in the Park and Summer Food Program^{1.15}

PUBLIC HEALTH & SAFETY



1,399
increase of local jobs in 2017 alone^{1.19}

ECONOMY & JOBS

CHALLENGES



23.5%
of people at or below the federal poverty level^{1.20}

ECONOMY & JOBS



76%
of commuters drive alone to work rather than carpool or use alternate modes of transportation^{1.24}

TRANSPORTATION & LAND USE



22%
of residents have low access to a grocery store and are low income^{1.27}

PUBLIC HEALTH & SAFETY



22.6%
of people over 25 without a high school diploma^{1.21}

ECONOMY & JOBS



\$400,000
increase in city-wide utility costs during a 2-day hot or cold spell^{1.25}

CLIMATE & ENERGY



\$300 million
needed investment in storm and wastewater systems over the next 20 years^{1.28}

INFRASTRUCTURE, UTILITIES, & WASTE



82.9%
of people over 25 without a bachelor's degree^{1.22}

ECONOMY & JOBS



50.6%
of New Bedford renters are financially burdened due to housing costs^{1.26}

TRANSPORTATION & LAND USE



236
asthma emergency department visits per 10,000 people (compared to 71 in MA)^{1.29}

PUBLIC HEALTH & SAFETY



\$40,626
is the median household income in 2017 dollars^{1.23}

ECONOMY & JOBS





CLIMATE CHANGE IN NEW BEDFORD

The climate in Massachusetts and in New Bedford is already changing. Rising temperatures are leading to more storm activity, extreme weather and increased precipitation. Heat, drought, sea level rise, flooding, and other changes associated with climate change are already a concern in our region and are projected to be exacerbated in the future.

As New Bedford looks forward, it is important to consider **both existing and projected** future conditions to ensure we are prepared for today's as well as tomorrow's climate.

EXISTING CONDITIONS

1.43 °F

Average air temperature increase in the Buzzards Bay basin since mid 1900s.^{1.30}

1 inch
per decade

Regional annual precipitation rate increase since late 1800s.^{1.32}

55%

Increase in total volume of rainfall in extreme events since mid 1900s.^{1.33}

10 inches

Relative sea level rise over the last century.^{1.34}

PROJECTED CONDITIONS

2.5-5.8 °F

Expected air temperature increase by 2050.^{1.31}

1.6 feet

Sea level rise possible by 2050.^{1.35}

TODAY. TOMORROW. OUR FUTURE.

Hotter Days



Days with temperature at or above 90°F are not currently very common within the Buzzards Bay Watershed. By mid-century (i.e., 2050), models suggest an increase of anywhere from 4 to 21 more days per year over 90°F, and an increase of 8 to 55 more days per year over 90°F by end of century.

On the flip side, the watershed is expected to experience fewer nights below 32°F with decreases of 20 to 44 days projected by mid-century, and declines of 24 to 67 less days below 32°F by end of the century.^{1,36}

Wetter Days



Models project an increase in annual precipitation, ranging from .3 inches to 5.43 more inches by mid-century and .28 inches to 6.8 more inches by end of century.^{1,37}

Flooding and Drought



Over the last five decades the Northeast has experienced a 55% increase in the amount of precipitation falling during extreme precipitation events. Models project that the Buzzards Bay basin will see .8 to 2.7 more days with 1" or more of precipitation falling by mid-century and 1 to 4 more days with 1" of precipitation falling by end of the century.^{1,38}

Even though more annual precipitation is projected overall, more is anticipated to fall in shorter, extreme events. Thus, there will be longer periods of time that experience no rainfall, increasing the potential for drought.

Rising Seas



By mid-century, sea levels are likely to be 0.9 to 1.6 feet higher (and possibly up to 2.7 feet higher) than current levels. By end of the century, sea levels around Buzzards Bay are likely to be 2.0 to 4.1 feet higher (and possibly 9.8 feet higher). Sea levels of this magnitude will completely overwhelm coastal infrastructure, transportation systems, and natural assets bordering the coastline. Moreover, higher sea levels mean that storm surge and flooding events are likely to be significantly more intense in the future.^{1,39}

GREENHOUSE GASES (GHGs)

Greenhouse gases (GHGs) are essential to life on Earth. They provide a “blanket” in our atmosphere, trapping heat and regulating the Earth’s temperature. The primary greenhouse gases in the Earth’s atmosphere are water vapor (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and ozone (O₃). By burning fossil fuels to power our homes, businesses and automobiles and placing material in our landfill to decompose, we increase the level of GHGs in the atmosphere to levels that have led to disruptions in the Earth’s climate. This is resulting in flooding, heat waves, increased storm intensity, sea level rise and ocean acidification.

What is MTCO₂e?

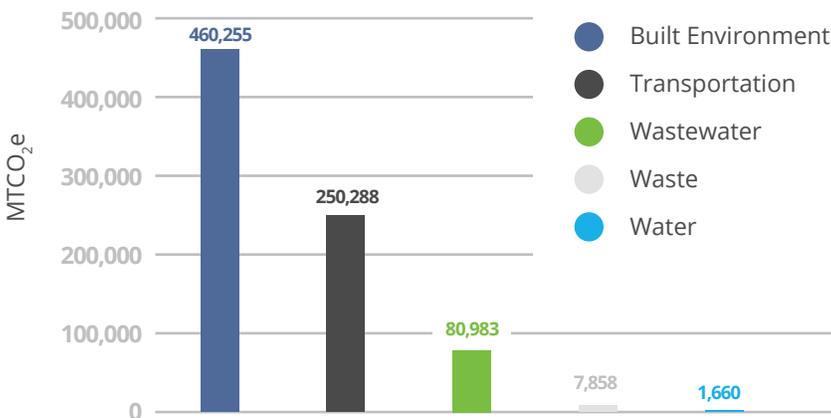
MTCO₂e stands for metric tons of carbon dioxide equivalent. GHGs have a heat trapping capacity which varies by gas. Humans produce more carbon dioxide (CO₂) than any other GHG. Therefore, we count emissions of GHGs based on how each gas's heat trapping capacity relates to CO₂. This common way of measuring GHGs, apples-to-apples, is called CO₂ equivalent (CO₂e).

NEW BEDFORD GHG EMISSIONS^{1.40}

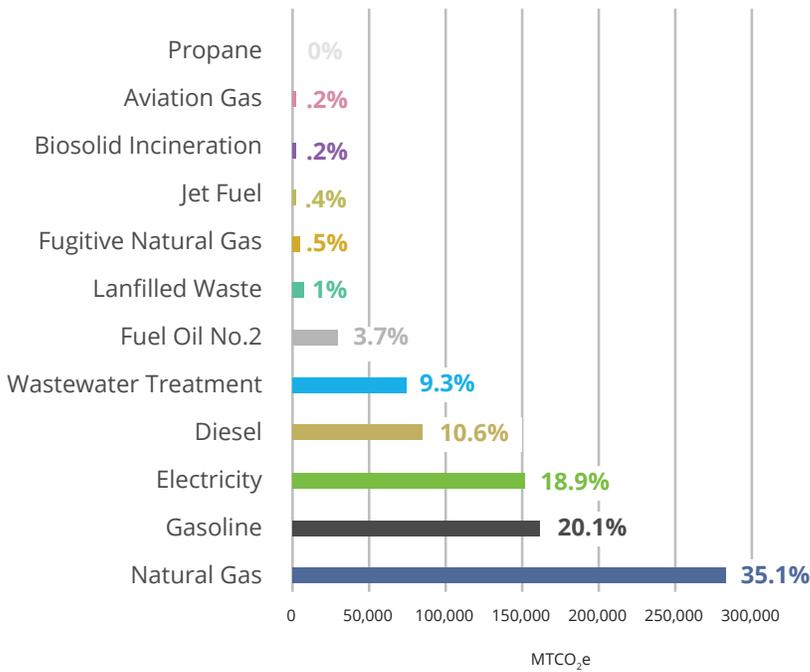
The *NB Resilient* planning project included conducting a community-wide GHG emissions inventory to better understand the quantity and sources of local emissions. This community-wide GHG inventory followed international GHG accounting protocols to be consistent with cities around the world.

The 2017 community-wide GHG inventory totaled **801,044 MTCO₂e**, similar to the emissions produced by an average passenger vehicle driven 1.95 billion miles. Total emissions are organized categorically by **sector** (built environment, transportation, waste, etc.) or by **source** (such as electricity, natural gas, and gasoline).

2017 New Bedford GHG Emissions by Sector

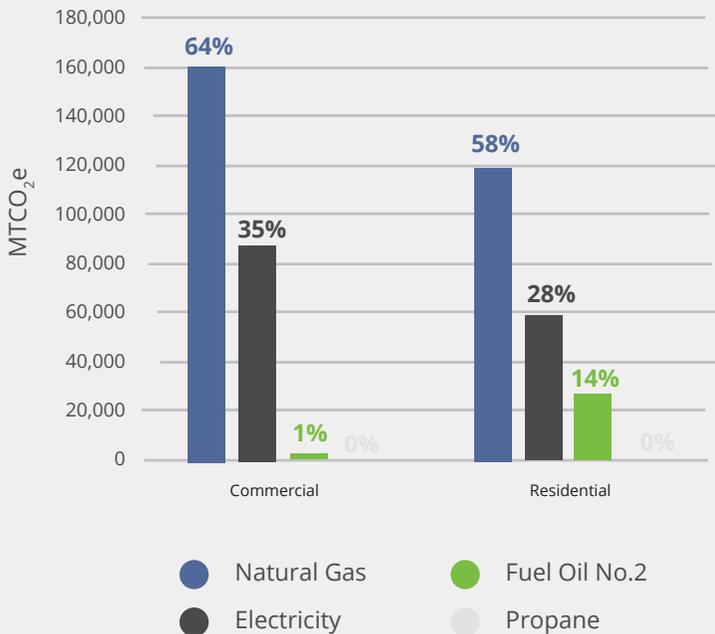


2017 New Bedford GHG Emissions by Source

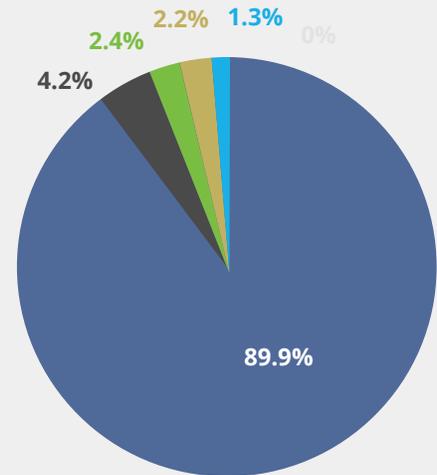


The largest emissions **sectors** are the Built Environment (57.5%), Transportation (31.2%), and Wastewater Treatment (10.1%). The largest emissions **sources** are Natural Gas (35.1%), Gasoline (20.1%), Electricity (18.9%), and Diesel (10.6%). Commercial buildings use more natural gas and electricity than residential buildings. There is a significant use of heating fuel oil in residential buildings. Methane, nitrous oxide, and carbon dioxide emissions from wastewater treatment and incineration accounted for roughly 94% of wastewater emissions, with energy use at facilities contributing the remaining 6%. Solid waste and drinking water treatment and delivery emissions are relatively low in New Bedford.

Commercial & Residential Buildings



Wastewater Emissions



- Treatment - CH₄
- Electricity Use
- Treatment - N₂O
- Incineration - N₂O
- Natural Gas Use
- Incineration - CH₄

EMISSIONS FORECAST AND GHG REDUCTION TARGETS

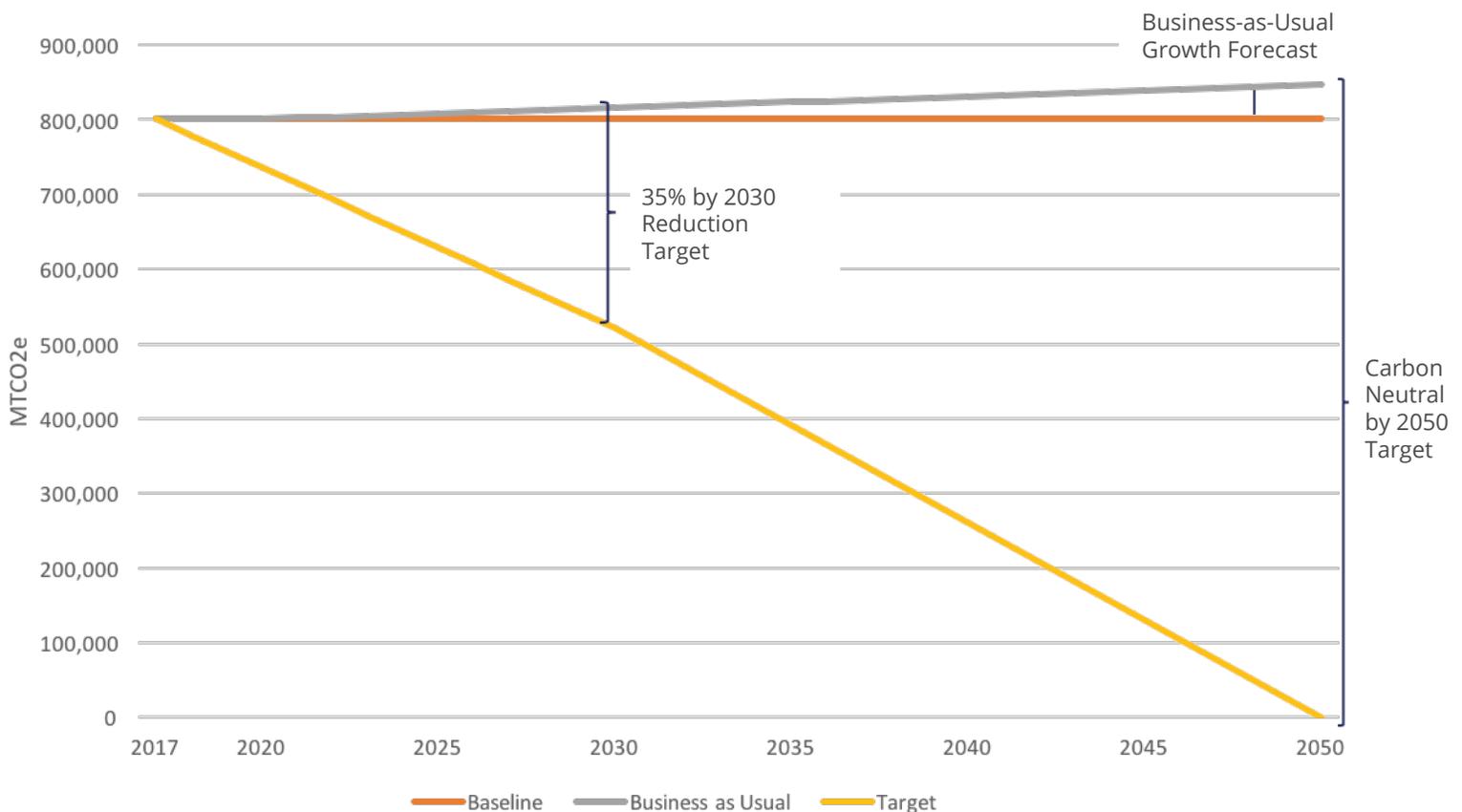


NB Resilient establishes GHG reduction goals of 35% below baseline levels by 2030 and to be carbon neutral by 2050.

In order to better understand the path ahead in achieving these emissions reduction goals, New Bedford conducted a business-as-usual emissions forecast, using best available forward-looking information, to understand population and employment growth trends and the potential effects on future emissions. Per capita emission rates are assumed constant while taking into account the projected growth. The forecast weighted planning estimates for various forward-looking timeframes in population and housing projections as well as employment projections.^{1,41}

As shown in the figure below, overall, the change in population and employment is expected to have a minor effect – emissions are forecast to grow 5.5% between 2017 and 2050, from 801,044 to 847,405 MTCO₂e. New Bedford’s goal of reducing emissions 35% by 2030 requires that emissions are reduced to 520,679 MTCO₂e. Achieving the carbon neutral target, however, may require a reduction of as much as 847,405 MTCO₂e. *NB Resilient* takes steps toward this goal through targeted actions like increasing renewable energy resources, conserving energy, and harnessing the benefits of our natural systems.

City-wide Emissions



SOCIAL VULNERABILITY

National assessments of climate risk have repeatedly demonstrated that residents who are considered potentially vulnerable will be the ones most impacted by a changing climate.

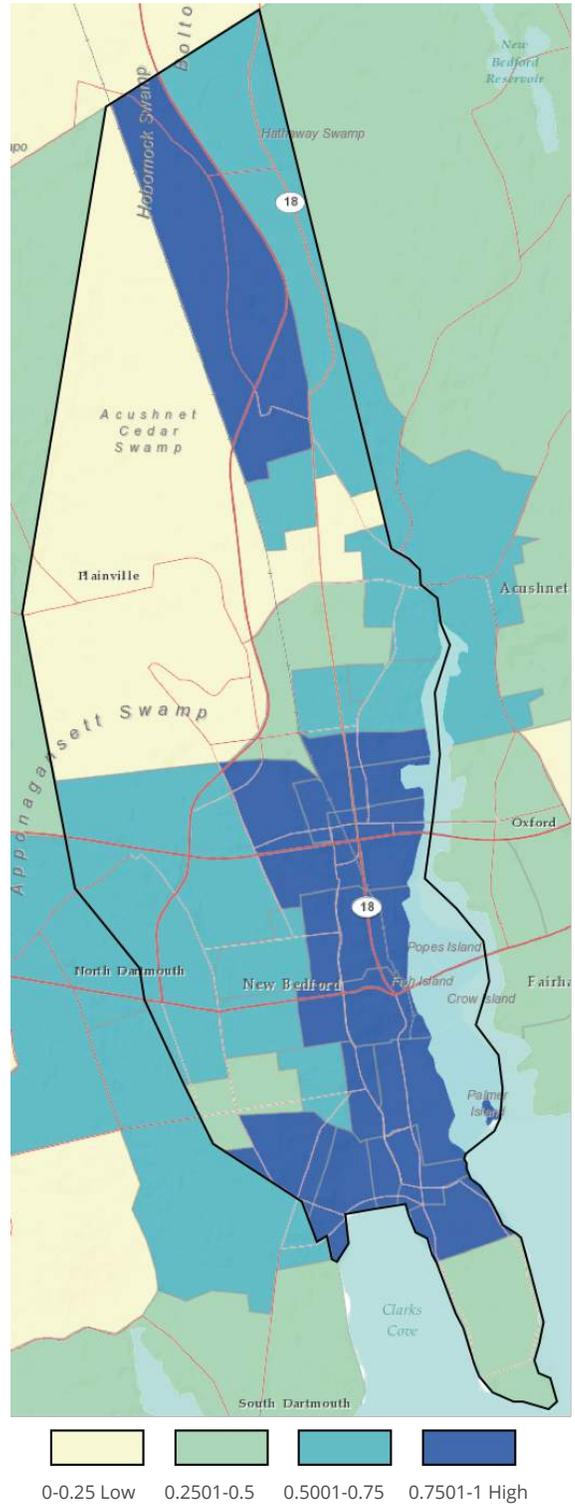
The Centers for Disease Control and Prevention's Social Vulnerability Index (SVI) helps local officials identify residents that may need support in preparing for hazards or recovering from a disaster.^{1,42}

The SVI groups U.S. Census tract data into four vulnerability themes. Each Census tract is assessed nationally, receiving an overall SVI ranking and a ranking for each theme:

- Socioeconomic Status
- Household Composition/Disability
- Race/Ethnicity/Language
- Housing/Transportation

The map on the right shows how the Census tracts in New Bedford ranked. The higher the score, the more vulnerable the tract is. According to the SVI, in 2016 there were 31 Census tracts in New Bedford with an average ranking of 0.7374. This indicates that the community as a whole is more socially vulnerable than 73.7% of national Census tracts.

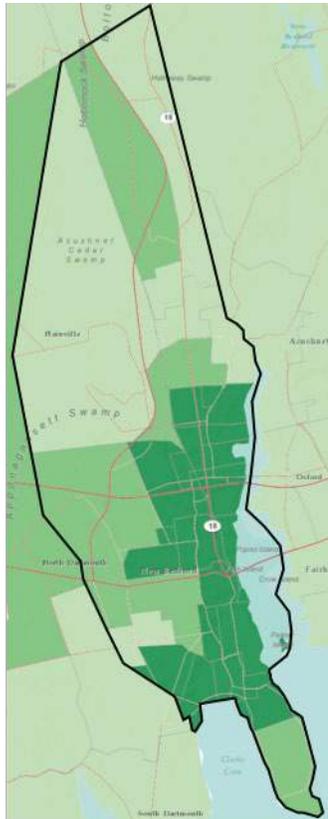
New Bedford is committed to conducting a Vulnerable Populations Assessment (see the Public Health and Safety Focus Area) to assess these vulnerabilities. The outcomes of this Assessment will inform city plans, policies and programs to ensure equitable distribution of resources and services.



What "Vulnerable" Does and Does Not Mean

An individual's race, ethnicity, gender identity, sexual orientation, age, social class, physical ability or attributes, religious or ethical values system, national origin, immigrant status, linguistic ability or ZIP code does not make him/her inherently vulnerable. When referring to "vulnerable" populations, we are acknowledging the system's deficiencies rather than judging any particular community members or neighborhoods.

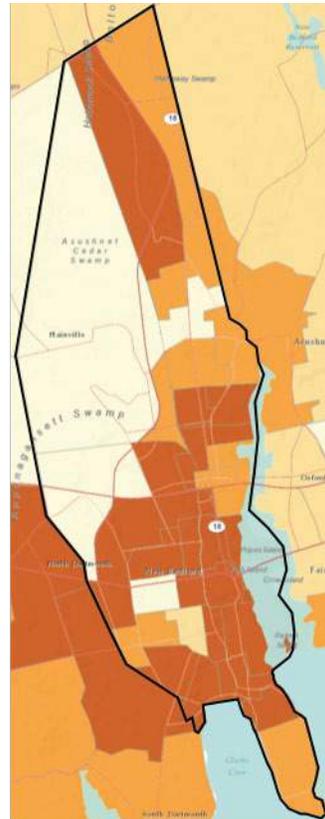
SOCIAL VULNERABILITY



Theme 1: Socioeconomic Status

This theme includes variables such as Persons below poverty, Civilian (age 16+) unemployed, and Persons (age 25+) with no high school diploma.

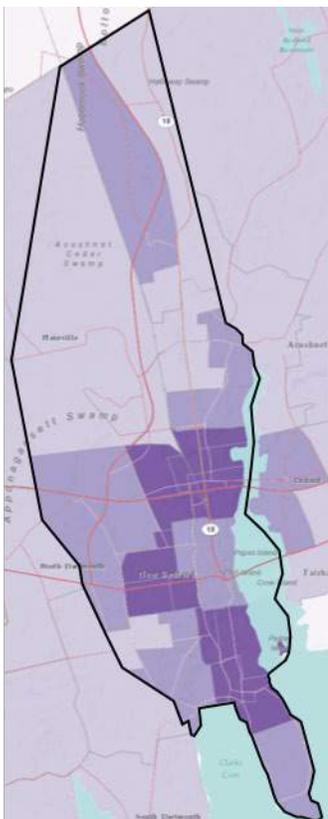
- 27 of 31 Census tracts ranked above 0.5, indicating above US median risk for roughly 79,944 residents.
- 19 of 31 tracts containing 53,843 people ranked in the upper quartile of socioeconomic risk
- The most at-risk ranking was 0.9741, indicating that these residents are more socioeconomically vulnerable than 97.4% of all Americans.



Theme 2: Household Composition / Disability

This theme includes variables such as Persons aged 65 and older, Persons aged 17 and younger, Single parent households with children under 18, and Civilian non-institutionalized population with a disability.

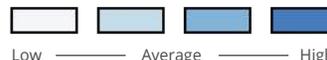
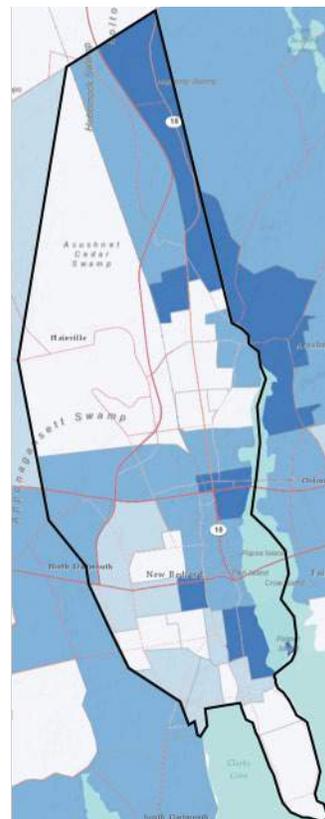
- 27 of 31 Census tracts were above the average risk for about 82,169 residents
- 20 of 31 tracts in upper risk quartile comprising about 60,530 people



Theme 3: Race/Ethnicity/Language

This theme includes variables such as Persons (age 5+) who speak English "less than well" and Minorities (all persons except white, non-Hispanic).

- 27 of 31 Census tracts were above average risk, or about 81,025 people
- 14 of 31 tracts were in the upper risk quartile, which is a population of about 40,815



Theme 4: Housing/Transportation

This theme includes variables such as Housing in structures with 10 or more units, Mobile homes, More people than rooms at household level (occupied housing units), Households with no vehicle available, and Persons in institutionalized group quarters.

- 15 of 31 Census tracts were above average risk, which includes about 46,550 people
- 5 of 31 tracts were in the upper quartile, which includes about 14,709 people

HOW THIS PLAN WAS BUILT

New Bedford embraced equitable engagement strategies to create *NB Resilient*. Working with a Steering Committee and Technical Advisors totaling 43 people, we reached out broadly to community members in the City from August 2018 through June 2019. Our outreach included direct discussions with stakeholders, online surveys, a website, events, and meetings with organizations that represent New Bedford's residents and businesses.



STEERING COMMITTEE AND TECHNICAL ADVISORS

43

members

33

departments/
agencies represented

16

meetings



Targeted Approach

For *NB Resilient*, our approach brought us throughout the City to events that people were already attending, in addition to hosting *NB Resilient*-specific events. Our outreach included a round table discussion with the fishing community, attendance at a Homeless Services Providers Network meeting to discuss the needs of those experiencing homelessness, chatting with residents at six different neighborhood association meetings including Love the Ave, meetings with Access2Opportunity and Coastline Elder Services, and a brainstorming session with the Green Team at Groundwork Southcoast. We also hosted a *NB Resilient* Community Day to further engage youth and their families.



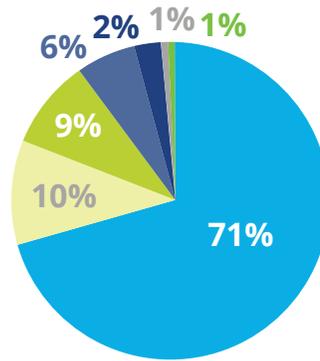


25
events

421
survey responses

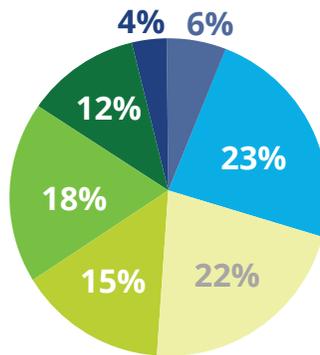
15,000
individuals reached

Race/Ethnicity of Participants



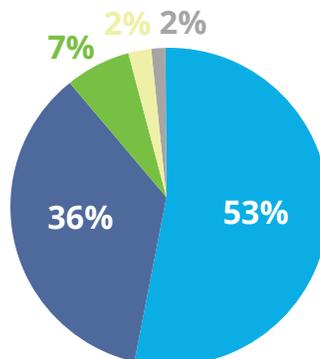
- White/Caucasian
- Multiple Ethnicities
- Other
- Black/African American
- Hispanic/Latin American
- Asian/Pacific Islander
- American Indian/Alaskan Native

Age of Participants



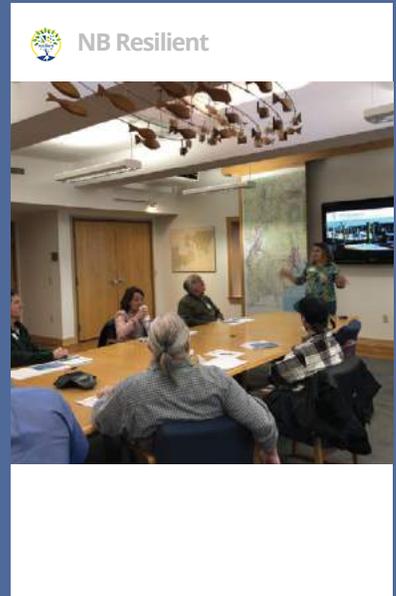
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75+

Housing Status of Participants



- Homeowner
- Renter
- Live with family/friends
- Live in group quarters
- Other

PUTTING PEOPLE IN THE PLAN



PUTTING PEOPLE IN THE PLAN



CROSS-CUTTING THEMES

The four cross-cutting themes represent the City's values and will drive the decision-making about the NB Resilient process itself. They will also be used to evaluate the actions identified for the plan and will ensure NB Resilient truly aligns with our community's needs.

EQUITY & EMPOWERMENT

Ensuring equitable access to services and opportunities for civic engagement.

CITY CHARACTER

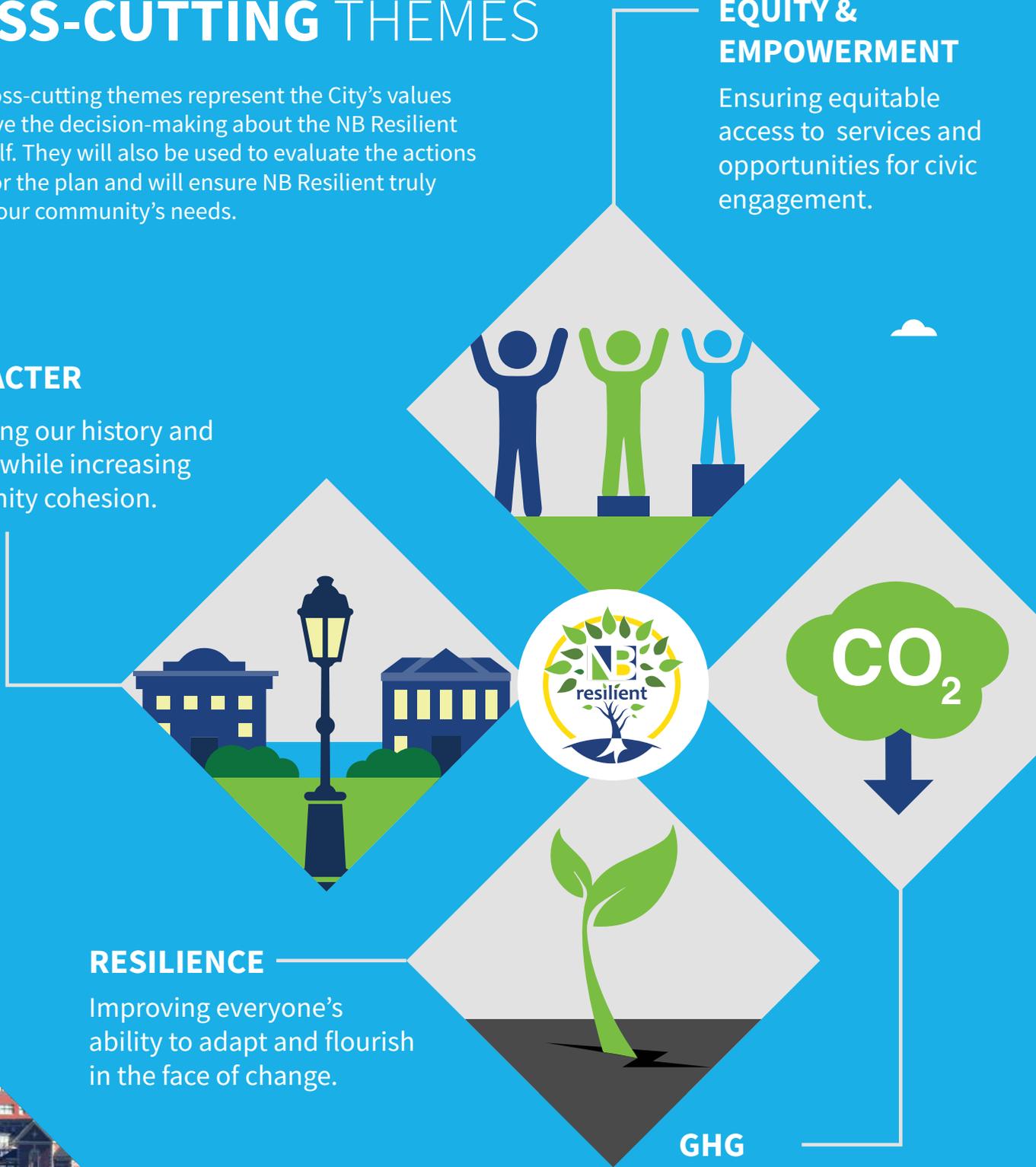
Preserving our history and culture, while increasing community cohesion.

RESILIENCE

Improving everyone's ability to adapt and flourish in the face of change.

GHG REDUCTION

Reducing greenhouse gas emissions that results from energy used in our homes, businesses, cars, and through City operations.



FOCUS AREAS

Climate change has the potential to impact each sector of our community. Therefore, we're building our resilience on all fronts. **NB Resilient has six broad focus areas.**



CLIMATE & ENERGY

Greening our energy supply and preparing for tomorrow's potential extremes.



NATURAL RESOURCES

Protecting our ecosystems on land and in water.



ECONOMY & JOBS

Supporting our local businesses and advancing equitable economic opportunities.



PUBLIC HEALTH & SAFETY

Ensuring everyone is prepared for disasters while addressing our chronic stressors.



INFRASTRUCTURE, UTILITIES, & WASTE

Enhancing the services that keep our City functioning.



TRANSPORTATION & LAND USE

Providing safe and accessible travel to the places we can work, play, and live.



USING THIS PLAN

This is the part of the Plan where we present the results of all of the planning that occurred over the past 12 months. As you review the following pages you will find several pages specific to each of the 6 Focus Areas:

1 1st Page: Focus Area Overviews

The first page of each of the 6 Focus Areas in *NB Resilient*, you will find a summary page that provides baseline information and a description of why the Focus Area is important to Climate and Resilience Planning.

2 2nd Page: Focus Area Action Snapshot

What do all these images, dots, numbers and symbols mean? The 2nd page includes all of the actions for that Focus Area and how they “scored” using the Cross-Cutting Themes. Each Cross-Cutting Theme has several sub-themes (see Appendix for the definitions), but to make this simpler we indicate how they scored based on the following:

- **Community Character:** Historic & Cultural Preservation
- **Empowerment:** Engage Non-Traditional Stakeholders
- **Equity:** Reduce Disparities in Accessing Community Resources
- **GHG Reduction:** Reduce Greenhouse Gas Emissions
- **Resilience:** Prepare Infrastructure & Development for Flooding & Extreme Heat



The actions on the Snapshot that have a ribbon symbol means they were chosen as the top actions by community members in the final *NB Resilient* survey.

ACTIONS		Community Character	Empowerment	Equity	GHG Reduction	Resilience
1	████████████████████ ████████████████████	●	●	●	●	●
 2	████████████████████ ████████████████████	●	●	●	●	●

3 3rd Page: Priority Action Blueprints

The actions on the Snapshot pages were ranked by the *NB Resilient* Steering Committee. Blueprints, or action plans, were created for the highest ranked actions. Each Blueprint includes: an action description, a champion(s) who will manage implementation of the action, and steps required to implement the action. Each implementation step has a key partner(s), the cost to implement (including time to secure funding) and the timeframe. A complete list of actions and their implementation steps will be included in the final web-based dashboard of for the plan.

	IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1	Apply for funding to acquire electric vehicles and install charging stations	MA Department of Energy Resources	1-2 years	\$
2	Work with Traffic Commission/Parking Clerk to implement parking maximums downtown	Traffic Commission	1 year	\$

*Cost: \$ =<\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ => \$250,001

Climate & Energy



VISION

NEW BEDFORD is an international model of how the City, residents and businesses actively play a role in reducing our contribution to climate change by lowering our greenhouse gas emissions and greening our energy supply.

WHERE DO NEW BEDFORD'S GREENHOUSE GASES COME FROM?

Reducing greenhouse gas emissions from our major contributors - buildings and transportation - will be key to our emission reduction efforts.



LEADING THE WAY ON CLIMATE & ENERGY SOLUTIONS



8,000
street and traffic lights replaced with power-saving LEDs ^{2.4}



23
electric vehicles in the municipal fleet ^{2.5}



400
residential rooftop solar systems installed ^{2.6}



\$7,000,000
dollars saved from residential **energy aggregation** since June 2014 ^{2.7}

GOALS

- Use 100% renewable sources for the City of New Bedford's energy by 2050.
- Reduce residential, municipal and commercial energy consumption 35% by 2030, using 2013 as a baseline.
- Reduce community-wide greenhouse gas emissions 35% below 2017 levels by 2030, toward a path to net zero GHG emissions by 2050.
- Work with partners to reduce the vulnerability of the energy system due to extreme weather or peak demand.

TAKING ACTION TODAY REDUCES COSTS FOR TOMORROW

\$400,000

spike in natural gas cost to the City from a 2-day cold snap in Jan 2018 ^{2.2}

\$600,000

increase on the City's natural gas bill from the polar vortex in 2014 & 2015 ^{2.3}

energy aggregation

noun • Bulk-purchasing methods that result in reduced electricity costs for participating municipalities or organizations.



CLIMATE & ENERGY ACTIONS SNAPSHOT



ACTIONS	Community Character	Empowerment	Equity	GHG Reduction	Resilience
1 Develop a long-term adaptation strategy for the Port	●	●	●	●	●
2 Create a city-wide energy and water conservation campaign and tracking system	●	●	●	●	●
3 Increase the type and number of community installations of renewable energy sources	●	●	●	●	●
4 Encourage community electric vehicle adoption	●	●	●	●	●
5 Create a green business certification program	●	●	●	●	●



● POSITIVE CONTRIBUTION ● NEUTRAL CONTRIBUTION ● NEGATIVE CONTRIBUTION





CLIMATE & ENERGY BLUEPRINT



ACTION 1

Develop a long-term adaptation strategy for the Port

This action would develop a plan to fortify the Port, including a study on vulnerabilities and actions to lessen them.



CHAMPION(S)

New Bedford Port Authority

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Survey and map existing shoreline features and NBPA-owned or operated facilities to determine the assets and facilities that are vulnerable	Department of Environmental Stewardship	8 months	\$-\$\$
2 Inventory existing infrastructure and evaluate each element relative to remaining useful life and resilience to SLR	MA Seaport Council	3 months	\$-\$\$
3 For those infrastructure assets identified as vulnerable, evaluate redesigns and retrofits	A Coastal Zone Management	1 year	\$\$-\$\$\$
4 Conduct public outreach with general public and stakeholders in the port area to understand their current experience with climate change	Department of Environmental Stewardship	1 year	\$
5 Determine how to translate the results of the assessment into guidelines, best practices, and adaptation plans to ensure that private development is resilient to future coastal storms and climate impacts	Department of Environmental Stewardship	5-6 months	\$

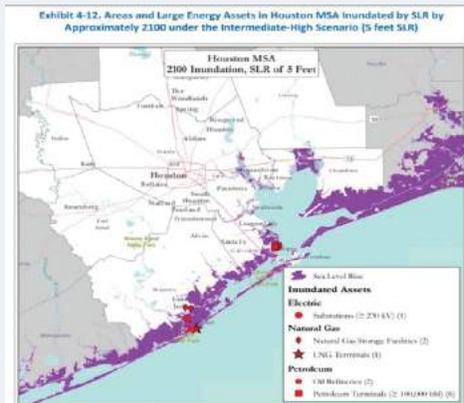
*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

U.S. Department of Energy Sea Level Rise Study^{2,15}

In 2014, the U.S. Department of Energy conducted a study on the effect of sea level rise on energy infrastructure in four major cities—New York City, Miami, Houston, and Los Angeles. The study examined a range of sea level rise scenarios and identified critical infrastructure that would be inundated under each scenario.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
A comprehensive plan for fortifying existing facilities and adoption of design standards for future facilities		
OUTCOMES		



CLIMATE & ENERGY BLUEPRINT



ACTION 2

Create a city-wide energy and water conservation campaign and tracking system

This action creates a city-wide education and action program to reduce overall energy and water use.



CHAMPION(S)

- Energy Office
- Department of Public Infrastructure

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Re-engage steering committee with representatives from each sector, including commercial, municipal, and community partners to understand the entire City's energy and water needs/demands	Department of Public Infrastructure Energy Office Mayor's Office	1 year	\$
2 Leverage steering committee to create goals, design a campaign, and develop a timeline for implementation	Department of Public Infrastructure Energy Office Mayor's Office	1 year	\$\$
3 Identify the appropriate methods for tracking energy and water use, using the existing NB Resilient dashboard as a framework to collect, integrate and track energy and water use data community-wide	Management Information Systems Department Department of Public Infrastructure	6 months	\$
4 Implement an education campaign	New Bedford Public Schools Eversource Offshore wind companies	4-5 years	\$\$
5 Promote existing programs for upgrading residential heating and cooling systems and for construction of energy efficient buildings	NB Economic Development Council MassSave	1-2 years	\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

St. Paul's Race to Reduce Program^{2,12}

St. Paul, Minnesota's Race to Reduce Program was a three-month long voluntary benchmarking program, in which building owners enter their electricity and natural gas use. Simply tracking these numbers reduced energy use by an average of 2.4 percent annually.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Number of visitors to the new online resource center per year	N/A (New Initiative)	
OUTCOMES		
Reduce residential, municipal and commercial energy consumption 35% by 2030 ^{2,13}	76,362,607 MMBTU	2017
Reduce water use to 45 GPCD ^{2,14}	50 GPCD	2018



CLIMATE & ENERGY BLUEPRINT



ACTION 3

Increase the type and number of community installations of renewable energy sources

This action would facilitate the installation of more renewable energy sources throughout the city through assessments, collaboration with renewable energy providers, policy and program review, and pilot projects.



CHAMPION(S)

Energy Office

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Analyze regulations to identify and find opportunities to remove barriers that restrict residential and small business renewable energy installation	Department of City Planning Department of Public Infrastructure	1 year	\$
2 Work with Mass Solar Loan Program to ensure that low and moderate-income customers have access to solar power, as well as community solar	Mass Solar Loan Program	2 years	\$
3 Using available state/federal grants, promote/develop community solar, solar-thermal and biomass projects for the residential sector	Solar companies	2-5 years	\$\$-\$\$\$\$
4 Support the School for Marine Science and Technology's study on the impact of offshore wind on fish populations and habitats to explore mutually beneficial best practices	School for Marine Science and Technology	1-2 years	\$\$\$\$
5 Expand the City's education campaign on the health and environmental benefits of solar/wind energy, and how to get involved	Health Department Department of Environmental Stewardship	Ongoing	\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

California's Solar on Multifamily Affordable Housing (SOMAH) program^{2,8}

The SOMAH program provides up to \$100 million in rebates annually for a decade to put solar on multifamily affordable housing in California. SOMAH is designed so that tenants can share in the benefits, by receiving credits on their utility bill corresponding to their portion of the output of the systems.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Increase number of rooftop residential solar systems ^{2,9}	400	2018
OUTCOMES		
100% renewable sources for energy by 2050 ^{2,10}		
Reduce community-wide greenhouse gas emissions by 35% by 2030 ^{2,11}	801,044 MTCO _{2e}	2017

Economy & Jobs



VISION

NEW BEDFORD is the commercial and cultural center of the region, boasting a diverse economy that optimizes its competitive assets consistent with the Regeneration Committee's economic development plan, etc.

GOALS

- Ensure all businesses in New Bedford are aware of and prepared for the impacts of climate change.
- Bolster current port industries and capitalize on opportunities for secondary industries.
- Increase the diversity of local industries and support the growth of the creative economy, cultural tourism, technology, green manufacturing, renewable energy and entrepreneurship.
- Promote pathways out of poverty and build financial stability through training and professional development programs.

WE CAN BUILD UPON OUR STRENGTHS TO ADAPT TO OUR CHANGING CLIMATE



OUR LOCAL ECONOMY IS GROWING

46,157 JOBS IN OUR LOCAL ECONOMY ^{3.3}
5,005 OF THESE JOBS ARE NEW SINCE 2014 ^{3.4}
+1,399 INCREASE OF JOBS IN 2017 ALONE ^{3.5}



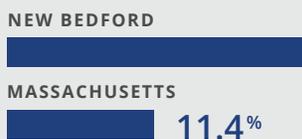
We need to ensure this trend continues so that everyone in our community can build financial stability and prepare for the future.

BUILDING OPPORTUNITIES FOR THE ENTIRE COMMUNITY

Some of our community members face additional challenges that make it more difficult for them to actively engage in our growing economy or to worry about climate change. **Our actions for a resilient future need to address these stressors.**

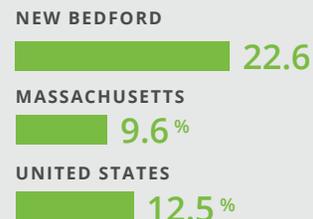
POVERTY RATE ^{3.6}

% of people living in poverty



EDUCATION ^{3.7}

% of population over 25 without a high school diploma



All data sources can be found at nbresilient.com

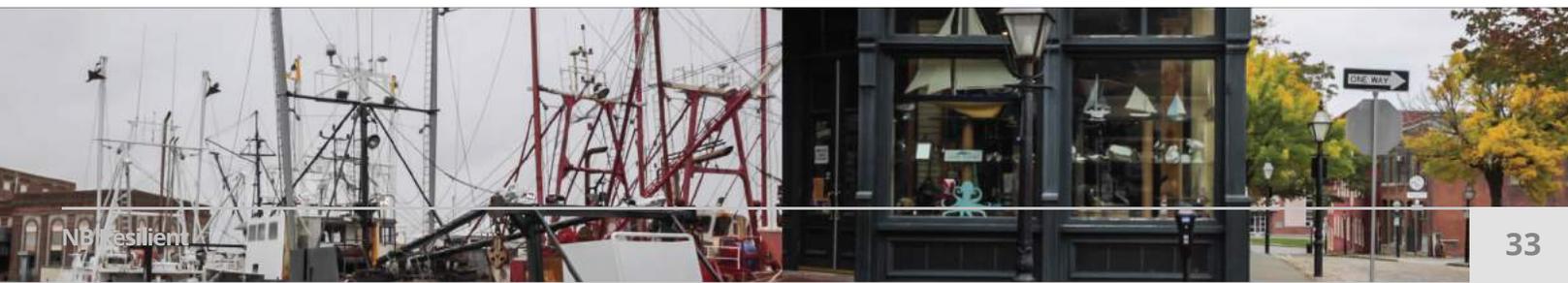


ECONOMY & JOBS

ACTIONS SNAPSHOT

ACTIONS	Community Character	Empowerment	Equity	GHG Reduction	Resilience
1 Fully develop and activate the New Bedford Ocean Cluster (NBOC)	●	●	●	●	●
2  Develop and promote education and skills training for both college and non-college career tracks in emerging sectors where New Bedford has natural advantages (marine economy, advanced manufacturing, creative economy, etc.)	●	●	●	●	●
3  Develop cross-sector collaboration and structured pathways for the cultivation of local leadership and professional development opportunities, with a focus on engaging youth, seniors, veterans, immigrants, and previously incarcerated people	●	●	●	●	●
4 Create a resiliency program for businesses to raise awareness of and prepare for climate change	●	●	●	●	●
5 Ensure maximum access to employment by enhancing transportation to existing employment centers and growing local businesses and jobs in the downtown and other neighborhoods with good multi-modal transportation options	●	●	●	●	●
6 Create a Community Benefits Coalition	●	●	●	●	●
7 Develop a campaign that promotes consumer awareness of the origins of products and services and encourages people to buy locally and sustainably	●	●	●	●	●
8 Build more co-working spaces	●	●	●	●	●

● POSITIVE CONTRIBUTION ● NEUTRAL CONTRIBUTION ● NEGATIVE CONTRIBUTION





ECONOMY & JOBS BLUEPRINT

ACTION 1

Fully develop and activate the New Bedford Ocean Cluster (NBOC)

This action will ensure that the opportunities created through a New Bedford Ocean Cluster, such as promoting a local fishing brand, are equitably shared among the fishing community.



CHAMPION(S)

- New Bedford Port Authority
- Spherical Analytic (Southcoast Development Partnership)

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Conduct the research needed to maximize effectiveness of NBOC, including: fishing trends, avenues to bring in more manufacturing, mitigation of climate change impacts, strategies for becoming an environmentally friendly and resilient port	School for Marine Science and Technology NB Economic Development Council	Ongoing	\$\$
2 Promote local seafood brands at restaurants and grocery stores	Media	Ongoing	\$\$\$
3 Create a public education campaign around buying local seafood, healthfulness and quality of local seafood, and what's happening on the waterfront	NB Economic Development Council	1-2 years	\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

The Alaska Ocean Cluster (AOC)^{3,8}

AOC was launched by the Bering Sea Fisherman's Association to increase opportunities for innovation and entrepreneurship, increase awareness of the blue economy, increase collaboration between businesses, government and non-profits, and strengthen links with other Arctic nations.

CORE PURPOSE
The Alaska Ocean Cluster promotes and grows Alaska's ocean economy by leveraging existing strengths and supporting innovation and emerging opportunities to diversify our economy, for the benefit of Alaskans.

CORE VALUES

- Results Oriented** - Create investable opportunities.
- Collaborative Partnerships** - Cultivate partnerships with private industry, academia, non-profits, public entities who will work together on shared outcomes.
- Stewardship** - Provide leadership support; be the coordinating body for the ocean cluster.
- Inclusivity** - Ensure our practices and decision-making processes are inclusive of multiple generations across different socio-economic and educational attainment levels, industries, and rural and urban communities.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Increase New Bedford Seafood Brand recognition		
OUTCOMES		
Direct job growth from the Port (not including induced and indirect job creation) ⁹	6,808	2018
Growth of the total economic value of the Port ^{3,10}	\$11.1 billion	2018





ECONOMY & JOBS BLUEPRINT

ACTION 2

Develop and promote education and skills training for both college and non-college career tracks in emerging sectors where New Bedford has natural advantages (marine economy, advanced manufacturing, creative economy, etc.)

This action will develop and promote education and skills training opportunities in emerging sectors and non-college base careers to open opportunities for the unemployed and low-income residents.



CHAMPION(S)

MassHire Greater New Bedford Workforce Board

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Understand employer needs and demand through ongoing analysis, convening industry sectors, hosting CEO roundtables, etc. Develop a list of sectors that need skills training	NB Economic Development Council	Ongoing	\$\$
2 Connect local businesses with the Career Center to train their workforce: resume workshops, leadership training and hard skills training programs, resilience-oriented job training, etc.	NB Economic Development Council VoTech/Marine Schools New Bedford Public Schools	1-2 years	\$\$
3 Develop On-the-Job Training Modules for employers through State Skills Cabinet or specialized trade organizations	U.S. Economic Development Administration	1-2 years	\$\$\$
4 Research existing Work Readiness Skills training throughout the Southeast Region and coordinate on a regional scale	Southeastern Regional Planning and Economic Development District	1-2 years	\$\$
5 Host a job/skills training fair to promote training opportunities	NB Economic Development Council	6 months	\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

RichmondBUILD Academy^{3.11}

Launched in 2007, RichmondBUILD Academy works with participants from low income households to develop talent and skill in high-growth, high-wage construction and renewable energy fields. The organization partners closely with Solar Richmond to provide a solar training module, as well as transitional employment and placement services.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Participation in job training programs	N/A (New Initiative)	
OUTCOMES		
Unemployment rate ^{3.12}	5.7%	2016
Median household income ^{3.13}	\$38,178	2016
Poverty Rate ^{3.14}	23.5%	2016

Infrastructure, Utilities & Waste



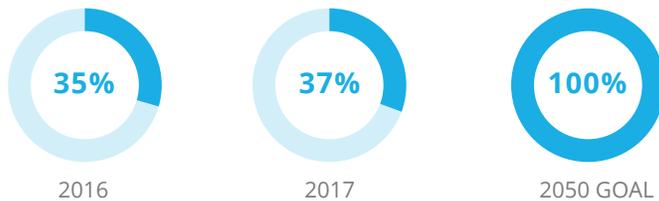
VISION

NEW BEDFORD'S critical infrastructure, utilities, and waste disposal services are modernized and prepared for future population, economic, and climate impact projections.

TOTAL AMOUNT OF WASTE IN NEW BEDFORD (TONS)



% OF TOTAL WASTE DIVERTED (FROM LANDFILL)



GOALS

- Reduce waste tonnage 30% by 2030 and become a zero-waste community by 2050.
- Design, build, and maintain all infrastructure to be energy efficient and resilient to the impacts of climate change.

EVEN WITH REMARKABLE PROGRESS IN RECENT DECADES, **COMBINED SEWER OVERFLOWS (CSOs) ARE STILL AN ISSUE**

--particularly with more heavy rain events predicted with climate change. Green infrastructure, like rain gardens, can help reduce the pollution impacting our waters.

MILLION GALLONS DISCHARGED FROM CSOs



combined sewer overflow (CSO)

noun • Combined sewer overflows (CSOs) are channels designed to collect rainwater runoff and sewage in the same pipe. Most of the time, CSOs transport all of their wastewater to a sewage treatment plant. During periods of heavy rainfall the volume of wastewater in a CSO can exceed the capacity of the system and overflow discharges into waterbodies.

SMART INFRASTRUCTURE CHOICES HELP US PREPARE FOR & REDUCE THE INTENSITY OF CLIMATE CHANGE

POTENTIAL IMPACTS

Climate change will disrupt the services that keep our city running, such as:



Damage critical assets, like our bridges



Stress our stormwater, wastewater, & drinking water systems



Fills landfills with storm debris

REDUCE THE INTENSITY

Emitting greenhouse gases into the atmosphere warms our global temperature and leads to extreme weather events. Greenhouse gases are emitted when we:



Extract and use fossil fuels



Fill landfills with our waste



Treat drinking water and wastewater

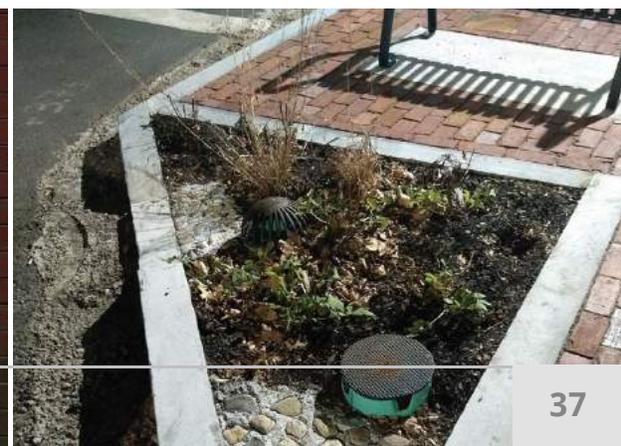
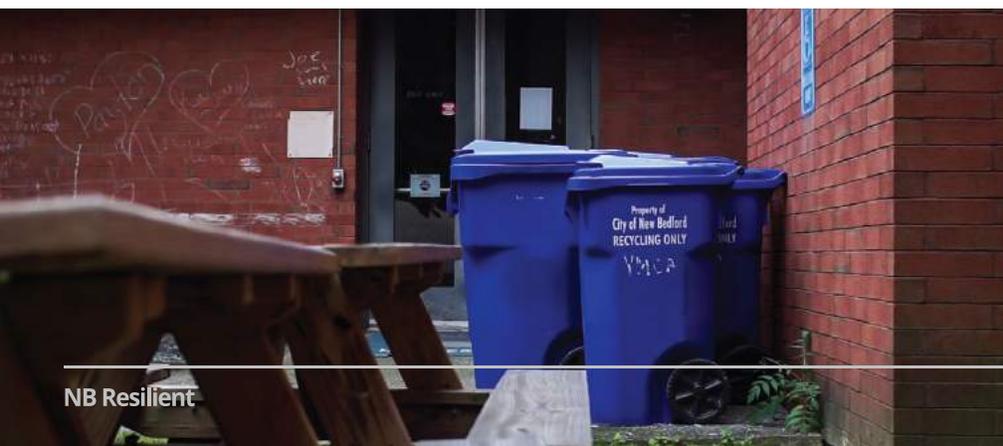


INFRASTRUCTURE, UTILITIES & WASTE ACTIONS SNAPSHOT



ACTIONS	Community Character	Empowerment	Equity	GHG Reduction	Resilience
1 Promote green infrastructure in projects throughout the city	●	●	●	●	●
2 Implement an organics (food waste, yard waste) collection that includes commercial, single-family, and multi-family properties	●	●	●	●	●
3 Implement the Integrated Capital Improvements Plan	●	●	●	●	●
4  Adopt an action plan to ensure the continued protection of New Bedford's water supply	●	●	●	●	●
5 Develop a City WiFi Network	●	●	●	●	●
6  Implement and expand reduce, reuse, recycle programs	●	●	●	●	●
7 Ensure redundancy of critical infrastructure (EMS/police/OPI/etc.), community facilities and utilities	●	●	●	●	●

● POSITIVE CONTRIBUTION ● NEUTRAL CONTRIBUTION ● NEGATIVE CONTRIBUTION





INFRASTRUCTURE, UTILITIES & WASTE BLUEPRINT

ACTION 1

Promote green infrastructure in projects throughout the city

This action would promote green infrastructure projects in parks and streets, as well as on residential and commercial properties.



CHAMPION(S)

Department of
Public Infrastructure

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Continue developing planning/code requirements and design guidelines for green infrastructure and enforce or promote stormwater rules and regulations	Department of City Planning Code Enforcement Division	3-9 months	\$\$
2 Identify priority areas for green infrastructure projects	Department of City Planning	3-9 months	\$\$
3 Develop green infrastructure in city public projects	Department of Facilities & Fleet Management Parks, Recreation, and Beaches Department	1-3 years	\$\$\$\$
4 Promote green infrastructure on private property	Conservation Commission	1-3 years	\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Philadelphia, PA – Green City, Clean Waters^{4,6}

The program has established 837.7 Greened Acres, exceeding the five-year regulatory target and reducing pollution from stormwater runoff and combined sewer overflows by more than 1.5 billion gallons annually. This was achieved through the creation of 441 green stormwater infrastructure sites throughout the city.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
GI Quantitative Site Data Stormwater in and out flow, storage, bypass flow, soil moisture, infiltration rate, precipitation, temperature, relative humidity, wind speed/direction, pollutant loading, and volume reduction	New Sites	
GI Qualitative Site Data Site/visit inspections, maintenance logs, photos, seasonal functioning, and resident/owner issues tracking	New Sites	
OUTCOMES		
# new green infrastructure projects installed and mapped	New Map	
Increased rain barrel rebate and new rebate uptake		
Runoff volume annual reduction tracking (function of permitting)		



INFRASTRUCTURE, UTILITIES & WASTE BLUEPRINT

ACTION 2

Implement an organics (food waste, yard waste) collection program that includes commercial, single-family, and multi-family properties

This action would reduce food waste by reallocating surplus food and facilitating the collection of food and yard waste for commercial, single-family, and multi-family properties.



CHAMPION(S)

Department of
Facilities and Fleet
Management

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Consult State and City goals and programs to assess rules, regulations and resources	City Solicitor's Office/Law Department MA Department of Environmental Protection	3-6 months	\$
2 Develop pilot programs	Solid Waste & Recycling Department Private waste haulers	1 year	\$\$\$
3 Build awareness with existing staff, the community, and waste management partners. Communicate the potential benefits of reducing food waste and how to participate	NB Refuse Management District Health Department	6-12 months	\$
4 Implement pilot programs	Department of Public Infrastructure Waste haulers	1-3 years	\$\$\$\$
5 Implement the program city-wide and pursue regional opportunities	Department of Public Infrastructure Community stakeholders	2-4 years	\$\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

San Francisco, CA – Mandatory Recycling and Composting^{4.7, 4.8}

Since 2009, and with amendments strengthening the Ordinance in 2019, everyone in San Francisco is required to keep their recyclables, compostables, and trash separate. Since 2012, San Francisco has diverted more than 80 percent of all discarded waste from landfills. San Francisco's exceptional organics recycling is an essential component of its comprehensive, globally recognized zero-waste program. The city's advanced waste legislation, financial incentives, three-bin system, and extensive multilingual outreach to residents and businesses have all helped San Francisco achieve its high diversion rate.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Total tons of organics delivered to waste-to-energy and composting facilities		
20% reduction of organics as a percentage of solid waste		
Household composting activity estimates		
OUTCOMES		
Expanded waste-to-energy capacity and composting production		
# annual tonnage of waste converted to KW or other unit of energy		
Engagement and activity summary for food reallocation efforts		



INFRASTRUCTURE, UTILITIES & WASTE BLUEPRINT

ACTION 3

Implement the Integrated Capital Improvements Plan

This action would improve wastewater, flood control, and stormwater systems by repairing and upgrading infrastructure and community about proper system use, water quality and water conservation.



CHAMPION(S)

Department of
Public Infrastructure

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Implement the Long Term CSO Control and Integrated Capital Improvements Plan to improve the performance and reliability of the collection system, pumping stations, water pollution control facility, hurricane protection barrier, and more	DPI Engineering Division Army Corps of Engineers US Environmental Protection Agency (EPA)	20+ years	\$\$\$\$
2 Launch an educational program on the value of water conservation and where our water goes	Department of Environmental Stewardship Mayor's Office	3-6 months	\$\$
3 Continue to construct resilient infrastructure	DPI Engineering Division NB Port Authority	20+ years	\$\$\$\$
4 Continue to reduce combined sewer overflows	DPI Engineering Division	20+ years	\$\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Miami-Dade County, FL - Water & Sewer Department^{4,9}

The County's facilities include nine water treatment and three wastewater treatment plants. About 308 million gallons of wastewater are collected, treated, and disposed of daily. About 13 million gallons are reused daily, and the remainder is released through one of 21 deep injection wells or an ocean outfall. To help ensure a sustainable water supply, The Department has implemented a 20-year Water Use Efficiency Program. Water demand has dropped 32 million gallons per day compared with a decade ago. The Department is also undertaking the comprehensive rehabilitation of its wastewater treatment plants as part of its \$1.6 billion



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
20% reduction in wet weather flows to system	30 mgd inflow and 14 mgd infiltration	2017
Reduction in average annual CSO volume	183	2016
OUTCOMES		
Reduction in urban flooding events	2 year event	2016
Additional reductions in shellfishing bed and beach closures		



INFRASTRUCTURE, UTILITIES & WASTE BLUEPRINT



ACTION 4

Adopt an action plan to ensure the continued protection of New Bedford's water supply

This action would improve drinking water systems by repairing and upgrading infrastructure, protecting source waters, and educating the community about water availability.



CHAMPION(S)

Department of Public Infrastructure

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Complete a critical infrastructure plan for drinking water that includes maintenance and upgrades around Assawompset Pond Complex	MA Department of Environmental Protection Engineering Division	2 years	\$\$\$\$
2 Launch an educational program on the value of water conservation and protecting drinking water quality	Department of Environmental Stewardship Library Department	1 year	\$\$\$
3 Maximize operational control of land in New Bedford's water supply, the Taunton River Watershed	Community Preservation Act Committee Towns of Freetown, Lakeville, and Rochester	Ongoing	\$\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Charlotte-Mecklenburg County, NC - Mountain Island Lake^{4,10, 4.11}

In 1997, the Mountain Island Lake Initiative set a goal to protect both 80% of the lakeshore and 80% of its tributaries. In 1999, Charlotte-Mecklenburg County passed a land-banking bond of which \$15M were directed to preserve land within the watershed. Over the next few years, the City of Gastonia, the City of Charlotte, and the North Carolina Clean Water Management Trust Fund also contributed funds. In just 5 years of focused protection efforts, 74% of the lakeshore and 20% of the tributaries were protected. The Catawba Lands Conservancy continues to accumulate protected land and surpassed 16,500 acres in 2019.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Reduce water use to 45 GPCD ^{4,12}	50 GPCD	2018
OUTCOMES		
Creation of a jurisdiction-wide management plan for drinking water supply		
# acres purchased in water supply watershed or creation of additional land use protections that protect water supplies ^{4,13}	3,100 acres	2018



Natural Resources

VISION

NEW BEDFORD'S natural environment is robust, healthy, accessible to residents, enhances the community's quality of life and supports local ecosystems.

GOALS

- Reduce air, water, soil, noise and light pollution.
- Take an integrated water resource management approach that considers the needs of the natural water ecosystem, human water use, and potential droughts and flooding.
- Add more tree canopy coverage equitably across the City.
- Protect wildlife and their habitat by using native or sustainable species in landscaping throughout the city.

CLIMATE CHANGE WILL IMPACT NEW BEDFORD'S WILDLIFE, OPEN SPACES, AIR & WATER



Straining habitats and risking of extinction



Forcing animals and plants to migrate to new places

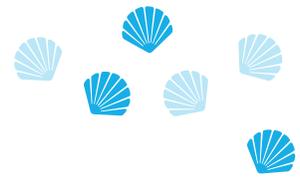


Threatening water quantity and quality



Worsening air pollution

50%



of the Atlantic sea scallop population could disappear over the next 30 to 80 years due to **ocean acidification**. Impacting \$500 million worth of scallops harvested each year.

ocean acidification

noun • When the ocean absorbs CO₂, a chemical reaction occurs that reduces the seawater's pH or makes it acidic, which breaks down shellfish shells.

WE NEED TO MAINTAIN OUR COMMUNITY'S CONNECTION TO THE SEA AND NATURE

Trees cool our city

We can take steps now to bolster the resiliency of our ecosystems to the disruptions of climate change.

Healthy soil improves resilience to extreme weather

Plants reduce CO₂ in the atmosphere

Green space soaks up flood waters



15 neighborhood parks ^{5.2}



12+ miles of trails and bikeways ^{5.3}



26 acres of beaches ^{5.4}



275 picnic areas ^{5.5}



53 playgrounds and tot lots ^{5.6}

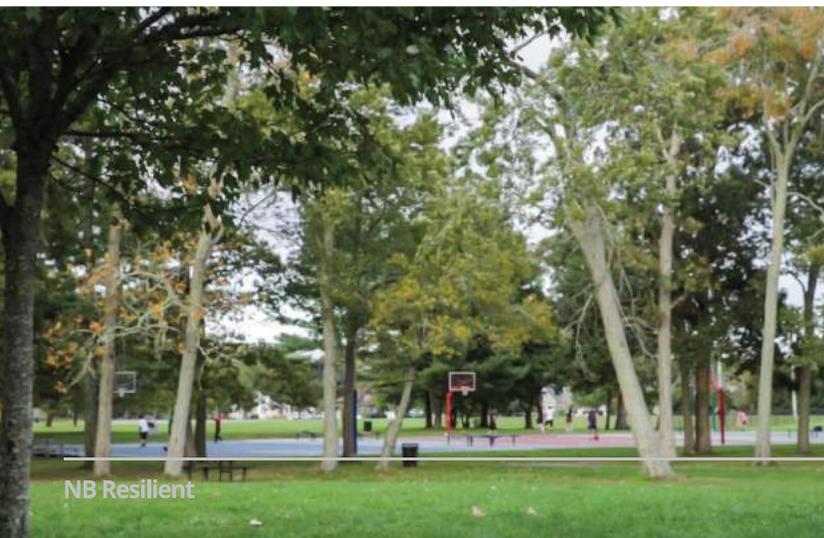


NATURAL RESOURCES

ACTIONS SNAPSHOT

ACTIONS	Community Character	Empowerment	Equity	GHG Reduction	Resilience
 1 Research and find opportunities to install alternatives to impervious surfaces and hardscapes in the city	●	●	●	●	●
2 Develop and implement an Urban Reforestation Plan	●	●	●	●	●
 3 Develop a Watershed Protection Plan	●	●	●	●	●
4 Adopt a city-wide policy to use only native plant species, with a focus on pollinator plantings	●	●	●	●	●
5 Improve access to and education of the city's natural resources	●	●	●	●	●
 6 Support the sustainable remediation of natural resources	●	●	●	●	●

● POSITIVE CONTRIBUTION ● NEUTRAL CONTRIBUTION ● NEGATIVE CONTRIBUTION



NB Resilient





NATURAL RESOURCES BLUEPRINT

ACTION 1

Research and find opportunities to install alternatives to impervious surfaces and hardscapes in the City

This action would research alternatives to impervious surfaces and hardscapes in the City including replacing existing hardscapes and new applications. This is a primary strategy to reduce stormwater runoff and to mitigate urban heat island effect.



CHAMPION(S)

Department of
Public Infrastructure

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Gather information on current pervious and impervious surfaces in the city through GIS mapping and site visits	Department of City Planning Conservation Commission	1 year	\$
2 Look for opportunities to couple reduction in impervious surfaces with green infrastructure/stormwater management projects	MA Department of Transportation Parks, Recreation, and Beaches Department	1 year	\$\$\$
3 Research alternatives to hardscapes in the City and update publicly-owned parking lots to reflect research	UMASS Dartmouth	1-2 years	\$\$
4 Evaluate the feasibility of new bylaws addressing impervious surfaces for Conservation Commission and Planning Board	Conservation Commission City Council Department of City Planning	6-9 months	\$\$
5 Incentivize green roof systems for commercial projects	Code Enforcement Division City Council Department of City Planning	1-2 years	\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Chicago, IL – Green Alley Program^{5.7, 5.8}

The program began in 2001, and through 2017, more than 300 Green Alleys have been installed, incorporating a variety of characteristics: Permeable pavements, Catch basins, High-albedo pavement, Recycled materials, Proper grading and pitch, and Dark sky-compliant light fixtures. The City also created the Green Alley Handbook to promote best practices on private property.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
# of sites and square footage converted from impervious to pervious surfaces	New Data	
Stormwater and water quality and quantity statistics		
OUTCOMES		
Map of impervious cover projects	New Map	
% decrease in impervious surface area		



NATURAL RESOURCES BLUEPRINT

ACTION 2

Develop and implement an Urban Reforestation Plan

This action would implement an Urban Reforestation Plan to increase tree canopy coverage, reduce the urban heat island effect, and improve stormwater management.



CHAMPION(S)

- Department of Public Infrastructure
- Parks, Recreation, and Beaches Department

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Complete GIS mapping of city trees with information on each tree, benefits of species, etc.	Department of City Planning	Ongoing	\$\$
2 Utilize and promote best practices in Urban Forestry	MA Arborists Association Out on a Limb	1-4 years	\$
3 Review Safe Routes to Schools and Safe Routes to Parks Programs for opportunities to plan reforestation along these routes	NB Public Schools Mass in Motion New Bedford	6 months	\$
4 Continue the Greening the Gateway Cities Program and Complete Streets Prioritization Plan	MA Department of Conservation and Recreation Department of City Planning	1-2 years	\$
5 Educate the public on the benefits associated with urban tree health through existing programs	Friends of Park Groups Mayor's Office	1 year	\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Washington, DC - Urban Forestry Division^{5,9}

In July 2011, the Sustainable D.C. initiative outlined a series of sustainability goals including an urban tree canopy goal of 40% by 2032. Today, the City touts an online public tree map and inventory, live statistics on tree maintenance and scheduled plantings, and a robust collection of community partners. The primary steward of Washington DC's public trees, the District Department of Transportation's Urban Forestry Division, has a goal of planting every available street tree space, and maintains a mapping application to visualize progress toward the goal.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Achieve an Urban Tree Canopy (UTC) of 42.5%. ^{5,10}	32.8%	2014
OUTCOMES		
Plant 5,000 targeted trees by 2030.		
Complete GIS tree mapping.		



NATURAL RESOURCES BLUEPRINT

ACTION 3

Develop a Watershed Protection Plan

This action would create a Watershed Protection Plan that ensures New Bedford's water resources and biological communities are functioning, healthy, and able to provide a wide range of benefits to people and wildlife.



CHAMPION(S)

Office of Environmental
Stewardship

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Review complementary efforts and plans that protect Buzzard Bay and identify appropriate actions to include in a Watershed Protection Plan	Conservation Commission Buzzards Bay Project	3 months	\$
2 Create a draft Watershed Protection Plan	Department of City Planning Department of Public Infrastructure	1 year	\$
3 Engage community partners, academic institutions, and local government representatives to seek feedback on plan elements	Groundwork SouthCoast UMass Dartmouth	6-12 months	\$
4 Finalize and publish the Watershed Protection Plan	Conservation Commission City Council	1-2 years	\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Cannon Township, MI - Bear Creek Watershed Protection Overlay District^{5,11}

In the early 1990s, the citizens of Cannon Township, just north of Grand Rapids, Michigan realized that development pressures were threatening the Bear Creek Watershed. In addition to a stormwater ordinance and a site ranking system for new development, the township created the Bear Creek Watershed Protection Overlay District. The overlay district requires vegetation throughout the stream corridors and septic system setbacks from streams and tributaries. Bear Creek, Stout Creek, Armstrong Creek and their tributaries are protected within 100 feet on each side.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
100% of the actions in the final Watershed Protection Plan are completed.		
All waterways within the watershed meet or exceed state and federal standards 90% of the time.		
OUTCOMES		
List of organizations and individuals engaged during draft phase.		
Improved habitat for terrestrial and aquatic species.		

Public Health & Safety



VISION

NEW BEDFORD'S residents have equitable access to a clean environment and essential goods and services; feel safe in their neighborhood; and are prepared for the impacts of climate change.

GOALS

- Ensure vulnerable communities are engaged in decision-making and prepared for climate impacts.
- Prepare and support New Bedford residents to be self-sufficient for at least 72 hours after an extreme event.
- Improve accessibility to goods and services, such as fresh and healthy food and low-cost medical care.
- Build an effective emergency communication strategy across city departments and enhance public participation, availability of information, and quality of public services.

PUBLIC HEALTH & SAFETY ARE AT RISK FROM OUR LOCAL CLIMATE CHANGE PREDICTIONS

We're projected to see a rise in heat related illnesses, severe weather damage, food-borne illnesses, infectious diseases-like Lyme disease

We could see impacts to the



AIR WE BREATHE



WATER WE DRINK



FOOD WE EAT



FABRIC OF OUR COMMUNITY

chronic stressors

noun • are the day-to-day challenges that take a toll on our community, like poverty, the need for a living wage and access to transportation.



Chronic stressors can be amplified by shocks in our community

shock

noun • is a significant event that disrupts the day to day, like extreme weather events. It often amplifies chronic stressors.

AREAS WHERE WE CAN BUILD OUR RESILIENCE & ADDRESS NEW BEDFORD'S CHRONIC STRESSORS

A person's vulnerability is increased when they experience: Preexisting health conditions, isolation, lower socioeconomic status, unhealthy housing conditions, substance abuse, and exposure to high levels of environmental contaminants.

● NB
● MA



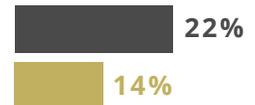
ASTHMA EMERGENCY DEPARTMENT VISITS

per 10,000 people

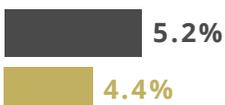


LOW ACCESS TO A GROCERY STORE

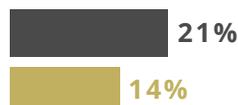
& are low income



PEOPLE OVER 65 living alone



POOR/FAIR HEALTH reported by adults in 2013



BLOOD LEAD LEVELS per 1,000 children



UNABLE TO SEE DOCTOR because of cost





PUBLIC HEALTH & SAFETY

ACTIONS SNAPSHOT



ACTIONS	Community Character	Empowerment	Equity	GHG Reduction	Resilience
 1 Improve access to local, healthy and affordable food	●	●	●	●	●
 2 Expand access to primary and preventative health care	●	●	●	●	●
3 Improve and increase communication capabilities	●	●	●	●	●
4 Conduct a thorough vulnerable populations assessment	●	●	●	●	●
5 Identify cooling stations throughout the City	●	●	●	●	●
6 Create Resilience Hubs throughout the City	●	●	●	●	●
7 Expand the lead abatement program	●	●	●	●	●
8 Enhance the Evacuation and Sheltering Plan (MVP Plan)	●	●	●	●	●
9 Assess needs for elder care improvements and accessibility	●	●	●	●	●

● POSITIVE CONTRIBUTION
 ● NEUTRAL CONTRIBUTION
 ● NEGATIVE CONTRIBUTION





PUBLIC HEALTH & SAFETY BLUEPRINT



ACTION 1

Improve access to local, healthy and affordable food

This action would work with existing community partners to increase access to healthy food through programming and outreach.



CHAMPION(S)

Health Department

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Create a plan, build support, and lay the policy and infrastructure groundwork for a regional food hub—an incubator for local food-related businesses and farmers to grow more food and expand their operations	Coastal Foodshed	2 years	\$\$\$
2 Expand cooking and nutrition classes available to New Bedford residents	Community Centers	1-2 years	\$\$
3 Expand community garden programs and evaluate potential changes to zoning to allow for commercial urban agriculture	Southeastern Massachusetts Agricultural Partnership	1-2 years	\$\$
4 Promote the maintenance and programming of existing public orchards (e.g., Hazelwood, and Brooklawn Parks) and plan, plant, and monitor other orchard locations	Department of Public Infrastructure Parks, Recreation and Beaches Department	6 months - 6 years	\$\$
5 Evaluate current food programming in schools and create a plan that incorporates nutrition, cooking, and gardening programs, healthy foods in cafeterias, and access to food during the summer and weekends for low-income students	New Bedford Public Schools	1 year	\$\$
6 Evaluate the current capacity of food pantries and create a plan for their expansion	Food pantries	1-2 years	\$
7 Assess the need and create a plan for installing energy backup systems at food pantries and grocery stores to ensure safe food storage in the event of long-term power outages	Food pantries Grocery stores Energy Office	1-2 years	\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Appalachian Harvest Food Hub^{6,7}

The hub, run by the nonprofit Appalachian Sustainable Development, has almost two decades of experience providing technical assistance and training to local farmers and aggregating and distributing locally grown produce along the eastern seaboard.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Number of community gardens ^{6,8}	27	2016
Direct sales of food grown by Bristol County producers ^{6,9}	\$4.5 million	2012
OUTCOMES		
Percentage of Bristol County residents who are food insecure ^{6,10}	12.3%	2012
Percentage of adults who are obese in Bristol County ^{6,11}	28.6%	2015



PUBLIC HEALTH & SAFETY BLUEPRINT



ACTION 2

Expand access to primary and preventative health care

This action would increase access to primary and preventative healthcare including mental health services.



CHAMPION(S)

Health Department

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Create recruitment and retention strategies to attract and maintain primary care providers in New Bedford, including those who are skilled in mental health	SouthCoast Chamber of Commerce Southcoast Health	1 year	\$\$\$
2 Research the potential of creating more satellite locations in neighborhoods and use this information to increase medical facilities that house primary care and dental providers	SouthCoast Chamber of Commerce Southcoast Health	6-8 months	\$\$\$
3 Advocate for integrating trauma-informed education modules (i.e., training for teachers and staff to be prepared to recognize and respond to students impacted by trauma) into all New Bedford schools to address root causes of mental illness	New Bedford Public Schools	2-3 years	\$\$
4 Create recruitment and retention strategies to attract and maintain non-opioid alternative pain management providers	SouthCoast Chamber of Commerce Southcoast Health	2-3 years	\$\$
5 Create a plan to increase emergency management coordination among City departments, community groups, institutional facilities, and residents	Parks, Recreation and Beaches Department	1-2 years	\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

MA League of Community Health Centers' Clinical Recruitment and Retention Program^{6.12}

The program is a national model involving workforce development programs to recruit and retain primary care providers.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Percentage of adults who reported to be physically active in the last 30 days ^{6.13}	61.5%	2013
Percentage of residents who had a check up in the last year ^{6.14}	86.7%	2013
Percentage of residents who had a dental visit in the last year ^{6.15}	65.4%	2012
OUTCOMES		
Number of residents with diabetes ^{6.16}	11.4%	2018
Number of adults reporting greater than 15 days per year with poor mental health ^{6.17}	17%	2013
Number of opioid-related overdose deaths ^{6.18}	54	2018



PUBLIC HEALTH & SAFETY BLUEPRINT



ACTION 3

Improve and increase communications and capabilities

This action would establish communications protocols for emergency events and conduct outreach with the public on their use.



CHAMPION(S)

Department of
Emergency Management

PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Create a promotional plan to increase the number of people signed up for the new CodeRed emergency alert system	Neighborhood Associations Health Department	3-6 months	\$
2 Identify alternative methods to distribute emergency information and updates to those without access to smartphones, including through the faith community, local radio stations, schools, nursing homes, and public housing facilities	Council on Aging Neighborhood Associations	3-6 months	\$
3 Create a "Neighborhood Liaisons" program to identify leaders from each neighborhood to set up alert systems and share resources	Health Department Neighborhood Associations	1 year	\$\$
4 Create an online emergency preparedness and response shared resource center	Management Information Systems Department	1-2 years	\$\$
5 Create a plan to increase emergency management coordination among City departments, community groups, institutional facilities, and residents	Health Department Neighborhood Associations	1-2 years	\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

Neighborhood Liaisons Program in Redwood City, CA^{6.19}

Redwood City supports residents in building community in their neighborhoods, including related to emergency preparedness. Liaisons participate in a leadership training, implement projects, and act as a bridge between the neighborhood and the City.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Number of residents signed up for CodeRed alert system	N/A (New Initiative)	2019
Number of visitors to the new online resource center per year	N/A (New Initiative)	
OUTCOMES		
Increased safety and security at the local level		

Transportation & Land Use



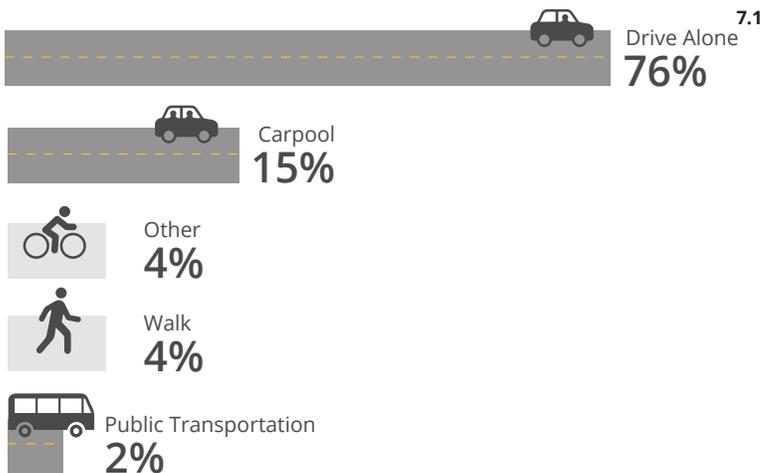
VISION

NEW BEDFORD'S historic character is preserved while updating the transportation & land use network to reflect the needs for equitable accessibility to multiple modes of transportation, affordable housing, and active living spaces that foster community cohesion and economic development.

GOALS

- Improve, enhance, and connect the city's multimodal transportation opportunities.
- Increase the use of pedestrian, bicycle, and transit as mode choice for local mobility.
- Update zoning and building regulations to support climate readiness for existing and new developments.
- Provide safe and affordable housing for all residents throughout the city that reflect the historical and cultural character of each area.

CHANGING HOW WE COMMUTE STARTS WITH MAKING ALTERNATIVE OPTIONS MORE ATTRACTIVE AND VIABLE



A CONNECTED AND WELL-DESIGNED TRANSPORTATION & LAND USE NETWORK HELPS US PREPARE FOR AND REDUCE THE INTENSITY OF CLIMATE CHANGE

POTENTIAL IMPACTS

Damage to homes and transportation networks. Increase costs to families who already need affordable transportation and housing options

GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions (GHGs) are emitted when we drive and use energy in homes and businesses. Less GHGs are emitted when we use principles from transit oriented development or more accessible bike routes and transit, increased walkability, dense neighborhoods, and energy efficient buildings



TRANSPORTATION & LAND USE ACTIONS SNAPSHOT

ACTIONS	Community Character	Empowerment	Equity	GHG Reduction	Resilience
1 Allocate resources to a multi-modal master plan that improves safety and access to non-motorized transportation and connections to public transit	●	●	●	●	●
2 Promote sustainable land development and redevelopment	●	●	●	●	●
3 Maintain focus on municipal transportation emissions	●	●	●	●	●
4  Continue efforts initiated by the Complete Streets and Safe Routes to School programs	●	●	●	●	●
5  Develop a housing plan that addresses housing stock location, safety, occupancy, energy efficiency and affordability	●	●	●	●	●
6 Create a comprehensive, multi-lingual, multi-faceted education campaign around alternative modes of transportation	●	●	●	●	●
7 Minimize anti-idling for vehicles and boats	●	●	●	●	●
8 Evaluate more co-housing and home-sharing options	●	●	●	●	●

● POSITIVE CONTRIBUTION ● NEUTRAL CONTRIBUTION ● NEGATIVE CONTRIBUTION





TRANSPORTATION & LAND USE BLUEPRINT



ACTION 1

Allocate resources to a multi-modal master plan that improves safety and access to non-motorized transportation and connections to public transit

This action will lay the groundwork for creating broad access to public transportation by improving safety of non-motorized transportation and increasing the ease of public transportation connections.



CHAMPION(S)

- Department of City Planning
- Office of Housing & Community Development

PLANNING CONSIDERATIONS

	IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1	Convene a Multi-Modal Action Plan Task Force who meet regularly to discuss plans and projects related to bicycle, bus, and pedestrian planning efforts	Department of Public Infrastructure Parks, Recreation and Beaches Department Mass in Motion	6 months	\$
2	Develop a vision and a set of goals around improving safety and access to non-motorized transportation and connections to public transit	Multi-Modal Action Plan Task Force Department of Public Infrastructure	6 months	\$
3	Launch a survey and public engagement process to assess residents' knowledge about and priorities for alternative transportation options	Consultant team SRPEDD	6 months	\$
4	Incorporate into the City's 5-year Open Space and Recreation Plan	Southeastern Regional Transit Authority South Coast and New Bedford bike committees	1-2 years	\$\$
5	Combine the launch of the action plan with an educational campaign, including bus and bike share promotion, bike safety workshops, and smartphone applications	Southeastern Regional Transit Authority	1 year	\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE

SRPEDD 2020 Regional Plan^{7.4}

The Southeastern Regional Planning and Economic Development District is working on a 2020 Regional Transportation Plan addressing everything from bus service to bicycles that will serve as a good model for a more localized transportation plan.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Miles of trails and bikeways ^{7.5}		
OUTCOMES		
Percentage of residents who drive alone to work ^{7.6}	76%	2018
Annual bus ridership ^{7.7}	1.36 million trips	2018
Walk Score ^{®7.8}	66 (out of 100)	2019



TRANSPORTATION & LAND USE BLUEPRINT



ACTION 2

Promote sustainable land development and redevelopment

This action will examine current zoning and building codes and find opportunities to promote sustainable land development and the incorporation of additional resilience measures.



CHAMPION(S)

- Department of City Planning
- Office of Housing & Community Development

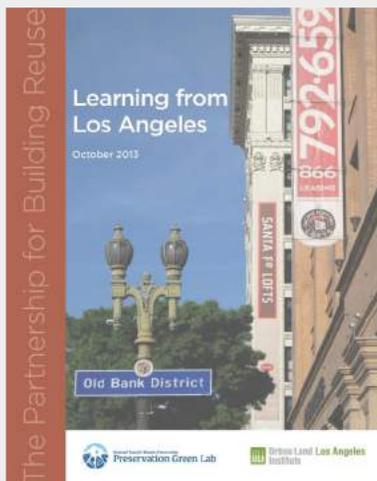
PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Continue current efforts to revisit zoning codes to find opportunities for innovative sustainable land use options	NB Port Authority Historical Commission	2-3 years	\$\$
2 Encourage sustainable building development by: <ul style="list-style-type: none"> • Providing permitting incentives for energy efficient buildings • Adopting the State standard under EO 484 to require new buildings under site plan review to be LEED Silver certifiable • Ensuring projects are "net zero ready", to the extent possible 	Energy Office Inspectional Services Department of City Planning	1-2 years	\$
3 Incentivize green infrastructure with tax breaks to businesses that have adopted MA Department of Environmental Protection Best Management Practices	NB Economic Development Council Department of Public Infrastructure City Council	1 year	\$\$\$
4 Create low-interest loans to promote business endeavors in low-income communities (e.g. -break on capital gains tax through "Opportunity Zones")	NB Economic Development Council	1 year	\$\$\$\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE



Los Angeles' Adaptive Reuse Ordinance^{7,9}

This ordinance has helped encourage the reuse of historic buildings downtown, with some 14,000 residential units created in converted buildings between 1999 and 2013. The National Trust's Preservation Green Lab and the Urban Green Lab institute are collaborating to help other cities learn from LA's reuse practices.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Number of green buildings ^{7,10}	18	2018
OUTCOMES		
Energy cost savings for building owners		



TRANSPORTATION & LAND USE BLUEPRINT

ACTION 3

Maintain focus on municipal transportation emissions

This action will push forward the goal of greening the municipal fleet and reducing emissions by 50% by 2030.



CHAMPION(S)

Department of Facilities and Fleet Management

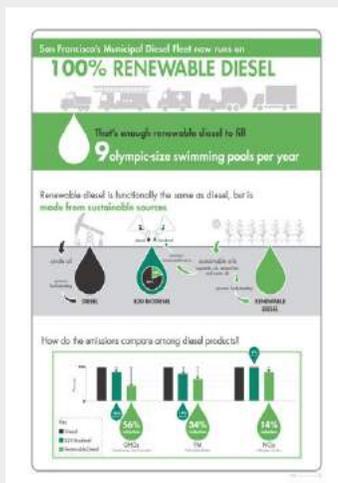
PLANNING CONSIDERATIONS

IMPLEMENTATION STEPS	KEY PARTNERS	TIMEFRAME	COST*
1 Research clean fuel options that the City can transition to, considering environmental factors and economic feasibility	NB Port Authority Historical Commission	6 months	\$
2 Upgrade grid infrastructure to support the expansion of municipal electric vehicles	Energy Office Department of City Planning	5-10 years	\$\$\$\$
3 Transition municipal fleet to clean fuel/electric vehicles	Energy Office Department of Public Infrastructure	5-10 years	\$\$\$\$
4 Support, lead by example, and enforce anti-idling laws	Police Department	Ongoing	\$

*Cost: \$ = <\$20,000; \$\$ = \$20,001 - \$100,000; \$\$\$ = \$100,001 - \$250,000; \$\$\$\$ = > \$250,001



BEST PRACTICE EXAMPLE



San Francisco Municipal Renewable Initiative^{7,11}

As of December 2015, San Francisco's entire municipal fleet runs on renewable diesel, which is made from more sustainable sources than traditional diesel or biodiesel. As a drop-in fuel substitute for traditional diesel, switching to renewable diesel is a uncomplicated transition.



MEASURING SUCCESS

	BASELINE DATA	BASELINE YEAR
OUTPUTS		
Electric vehicles in the municipal fleet ^{7,12}	23	2018
OUTCOMES		
GHG emissions from transportation ^{7,13}	250,288 MTCO ₂ e	2017

BE PART OF THE SOLUTION

Our ability to reach a sustainable, resilient future is in all of our hands. The City has helped lead the way by driving this planning process. Now we need everyone's help to take action and keep us moving forward. Here are some easy things you can do today!



CLIMATE & ENERGY

- Turn off lights and electronics not in use – or even better, unplug them. Some electronics continue to use power, even when turned off.
- Switch your lightbulbs to more energy efficient LED lights.
- Turn your heat down and A/C up by two degrees, especially if you are not home or away on a trip.
- Reduce your water heater temperature to 130° F to save energy and money on heating water.
- Schedule a free Home Energy Assessment through MassSave to learn of opportunities for energy efficiency and weatherization.
- Apply for MassSave rebates to save on energy efficiency upgrades to your home.
- Seal air leaks and properly insulate windows to save up to 20% on heating and cooling bills, while also increasing the comfort of your home.



INFRASTRUCTURE, UTILITIES & WASTE

- Replace your shingles with a “cool roof” that is lighter in color, reflecting away light in the summer time and reducing your cooling needs.
- Take advantage of rebates offered by MassSave and weatherize your home to protect the interior from the elements (as well as reducing your energy bills!)
- Volunteer with Operation Clean Sweep to help keep our city free of litter.
- Bring your own reusable produce and tote bags when grocery shopping to avoid using single-use plastics.
- Purchase reusable goods like water bottles, cutlery, to-go containers, and straws to avoid using single-use plastics.
- Make sure to wash and wipe dry your recyclable goods to lower contamination in recycling streams.
- Minimize your food waste by first eating what you already have in your fridge. Meal planning and making grocery lists can also reduce your food waste.



ECONOMY & JOBS

- Shop at small, locally owned businesses. Buy locally-caught seafood.
- Support businesses that have transparent and sustainable practices.
- Mentor a young person to support them in their studies and careers.
- Encourage the young people in your life to gain job experience and skills development through the MassHire Greater New Bedford Career Center.
- Access entrepreneurship resources through the New Bedford Economic Development Council, EforAll South Coast and the SouthCoast Chamber to learn how to start or grow a small business.
- Invest in New Bedford.





NATURAL RESOURCES

- Plant a rain garden with native plants to absorb storm water.
- Purchase a discounted rain barrel through the New Bedford Rain Barrel Program and harvest rain water for use on plants, lawns, and gardens.
- Trade your shower heads and faucets for low-flow, water-efficient options.
- Avoid using fertilizers and pesticides to prevent harmful runoff from ending up in our waterways after storms.
- Support your local community gardens – or even better, start your own.
- Ditch your grass lawn and plant native pollinators that support our wildlife and don't require mowing.
- Plant native trees on your property and preserve the trees you already have.
- Eat more plants, which have proven to be less carbon and resource intensive than eating animal products. A great way to start is with “Meatless Mondays” or one meat-free meal a day.
- Do not dump anything in the storm drains - these drains lead to our waterways.
- Pick up litter.



PUBLIC HEALTH & SAFETY

- Shop at Coastal Foodshed farmers markets for fresh, healthy food.
- Put together an emergency preparedness kit for your household by visiting Ready.Gov.
- Download the CodeRed app to make sure you get alerts and updates during times of emergency.
- Check in on the people in your life, especially the elderly and those experiencing mental health problems.
- Stay active: pick up a sport, get into jogging or biking, attend exercise classes.
- Practice mindfulness by doing yoga, going for a walk or even just taking deep breaths—all of which have been linked to improved mental and physical health.
- Store your prescription drugs in a safe location, preventing them from falling into the wrong hands.



TRANSPORTATION & LAND USE

- Utilize bikeshare programs when traveling short distances.
- Opt to walk, bike or take the bus to work, if possible. Otherwise carpool!
- Drive an electric, hybrid or low-emission vehicle.
- Turn off your car if you are idling for more than 30 seconds.
- The best way to warm up your car in the winter is by driving it. No more than 30 seconds of idling is needed.
- Keep your personal vehicle well-tuned and tires inflated properly, saving up to 20% in gasoline use.

**CORE VALUE
EVALUATION MATRIX**



POSITIVE CONTRIBUTION



NEUTRAL CONTRIBUTION



NEGATIVE CONTRIBUTION

Community Character

**Social Capital,
Interconnectednes**

Strategy directly leads to enhanced social capital and interconnectedness of neighborhoods and the organizations within them.

Strategy does not directly build or reduce social capital and interconnectedness of neighborhoods and the organizations within them.

Strategy reduces the social capital and interconnectedness of neighborhoods and the organizations within them.

**Historic & Cultural
Character**

Strategy enhances or protects the City's historic and cultural character.

Strategy maintains the City's historic and cultural character.

Strategy weakens the City's historic and cultural character.

**Regional
Collaboration**

Strategy includes new or enhances existing opportunities for regional collaboration, partnerships, and programs.

Strategy maintains existing regional collaboration, partnerships, and programs.

Strategy could hinder regional collaboration, partnerships, and programs.

**Build Trust &
Cooperation**

Strategy helps build trust, goodwill, and cooperation between and among neighborhoods and/or other cities and towns in the region.

Strategy maintains existing levels of trust, goodwill, and cooperation between and among neighborhoods and/or other cities and towns in the region.

Strategy negatively affects trust, goodwill, and cooperation between and among neighborhoods and/or other cities and towns in the region.

**Build Capacity of
Vulnerable
Populations**

Strategy builds capacity of vulnerable populations (i.e., seniors, low-income) to adapt to and/or address issues in their community. (e.g., climate change, health, crime)

Strategy neither helps nor hinders capacity building of vulnerable populations.

Strategy negatively affects capacity building of vulnerable populations.

**Engage
Nontraditional
Stakeholders**

Strategy engages nontraditional stakeholders in decision making.

Strategy does not engage or disenfranchise nontraditional stakeholders in decision making.

Strategy serves to further disenfranchise non-traditional stakeholders by not involving them in decision making.

**Engage, Educate,
Inform & Increase
Transparency**

Strategy directly engages, educates, informs, and/or increases transparency.

Strategy indirectly educates, informs, and/or increases transparency.

Strategy does not educate, inform, and/or increase transparency.

**Workforce
Training**

The strategy prepares the workforce through job-related skills training, particularly for growing and/or targeted industries.

The strategy does not create nor strengthen job related skills training.

The strategy reduces or eliminates resources for job-related skills training.

Empowerment

**CORE VALUE
EVALUATION MATRIX**


POSITIVE CONTRIBUTION


NEUTRAL CONTRIBUTION


NEGATIVE CONTRIBUTION

	POSITIVE CONTRIBUTION	NEUTRAL CONTRIBUTION	NEGATIVE CONTRIBUTION	
Equity	Opportunities & Living Conditions for Vulnerable Populations	Strategy enhances economic opportunities or improves the living conditions of vulnerable populations. (e.g. low-income, elderly, or children).	Strategy does not help or harm economic opportunity or the living conditions of low-income and minority populations in New Bedford.	Strategy reduces economic opportunity or the living conditions of low-income and minority populations in New Bedford.
	Reduce Disparities in Accessing Community Resources	Strategy helps reduce disparities in accessing community assets, including addressing language barriers and physical/cognitive access to resources (i.e. parks, schools, & gov't programs)	Strategy does not create new disparities in accessing community assets.	Strategy creates new or enhances existing disparities in accessing community assets.
	Support Local Employment Diversity	Strategy supports local employment diversity (e.g., jobs suitable to a range of education levels) and/or encourages area employers to hire a diverse workforce.	The strategy neither encourages nor discourages local job diversity or the hiring of a diverse workforce.	Strategy reduces local job diversity and/or discourages the hiring of a diverse workforce.
GHG Reduction	Reduce GHG Emissions	Strategy will or is likely to reduce GHG emissions.	Strategy will neither reduce or generate new GHG emissions OR GHG emissions reduction potential is indirect, minimal, or nonquantifiable.	Strategy will likely increase GHG emissions.
	Decrease Vulnerability to Flooding & Extreme Heat	Strategy helps decrease vulnerability to flooding for all members of the community or limits the impacts of extreme heat on vulnerable populations (e.g. low-income, elderly, or children).	Strategy neither increases or decreases vulnerability to flooding or the impacts of extreme heat on vulnerable populations.	Strategy increases vulnerability to flooding or the impacts of extreme heat on vulnerable populations.
Resilience	Protect Health, Safety & Welfare For All	Strategy helps protect the current and future health, safety, and general welfare of all New Bedford residents.	Strategy helps protect the current health, safety, and general welfare of a majority of New Bedford residents.	Strategy could harm the current and future health, safety, and general welfare of all or a majority of New Bedford residents.
	Prepare Infrastructure & Development for Flooding & Extreme Heat	Strategy ensures new and existing infrastructure or development is prepared for flooding and extreme heat.	Strategy neither increases or decreases the preparedness of existing or future infrastructure or development to flooding and extreme heat.	Strategy reduces the preparedness of existing or future infrastructure or development to flooding and extreme heat.
	Protect & Enhance Natural Resources	Strategy helps to protect and/or enhance the City's natural resources (including aquifers and marine habitat).	Strategy neither protects or enhances the City's natural resources.	Strategy negatively impacts the City's natural resources.
	Support a Resilient Economy through Diversification & Entrepreneurs	The strategy strengthens the resilience of the local economy through helping to diversify the economy and/or support entrepreneurial activity or self employment.	The strategy does not necessarily help to diversify or enhance the resilience of the local economy, OR the potential impact is indirect or minimal.	The strategy potentially hurts the diversification or resilience of the local economy.

TERMINOLOGY

ACTION: A specific action our community will take to reach our goals in each of the plan element areas.

ADAPTATION: How we prepare our community for the impacts of climate change. This includes actions like having an emergency plan in place, ensuring buildings are more flood resistant, and planting trees to absorb excess heat during the summer. Even if we stopped emitting GHGs today, we would still experience changes to our climate based on our past emissions, so we will need to pursue mitigation and adaptation actions together.

CARBON NEUTRAL: Having net zero carbon dioxide emissions, either through balancing carbon emissions with carbon offsets, or by entirely eliminating carbon emissions.

CLIMATE: The weather conditions prevailing in an area in general or over a long period, from months to thousands of years.

CHRONIC STRESSORS: A challenge faced on a day-to-day basis. Chronic stressors can include financial stressors (e.g., low wages), social stressors (e.g., isolation), health stressors (e.g., chronic illness), or environmental stressors (e.g., low water quality).

CROSS-CUTTING THEMES: NB Resilient's four themes that represent the City's values, drove the decision making during the planning process, and were used to evaluate the identified actions to ensure they truly align with the community's needs.

CSO: Combined sewer overflows are channels designed to collect rainwater runoff and sewage in the same pipe. During periods of heavy rainfall the volume of wastewater in a CSO can exceed the capacity of the system and overflow discharges into waterbodies.

DPI: Department of Public Infrastructure.

FOCUS AREAS: The plan's six identified sectors that will be impacted by climate change, and the groups into which the actions are sorted.

GOAL: A high-level statement associated with a specific plan element to guide the desired results of our actions.

GPCD: Gallons per capita per day is a common unit used to measure water consumption and indicates the average amount of water used per person per day.

GREEN INFRASTRUCTURE: An approach to water management that protects, restores, or mimics the natural water cycle.

GREENHOUSE GAS EMISSIONS: Greenhouse gases (GHG) are essential to life on Earth as they provide a "blanket" in our atmosphere that traps heat and regulates the Earth's temperature. GHGs are released naturally in our environment for this reason. However, when we burn fossil fuels to power our homes, businesses, and automobiles, and place material in our landfill to decompose, we increase the level of greenhouse gases. This increase has created a much thicker "blanket" and higher global temperatures that have led to disruptions in the Earth's climate.

TERMINOLOGY

MASS DCR: Massachusetts Department of Conservation and Recreation.

MASS DEP: Massachusetts Department of Environmental Protection.

MASS DOT: Massachusetts Department of Transportation.

MITIGATION: The steps we take to reduce our contribution of GHGs into the atmosphere. This includes switching from fossil fuels to renewable sources, taking steps to reduce our energy use (e.g., upgrading to energy efficient appliances or taking the bus instead of driving our cars), and reducing the amount of waste we send to the landfill.

MVP: Massachusetts's Municipal Vulnerability Preparedness grant program provides support for cities and towns in Massachusetts to begin the process of planning for climate change resiliency and implementing priority projects.

MTCO₂E: Metric tons of carbon dioxide equivalent is a common unit used to measure greenhouse gases based on how each gas's heat trapping capacity relates to CO₂.
Resilience: The ability of our residents, businesses, and municipal operations to prepare, mitigate, adapt, and endure shocks and chronic stressors. The resilience of our community depends on both our mitigation and adaptation actions.

SHOCKS: A significant event that disrupts the day to day and requires action.

SLR: Sea level rise caused by melting ice caps and the thermal expansion of warming ocean waters.

SRPEDD: Southeastern Regional Planning and Economic Development District.

STEERING COMMITTEE: The diverse group of representatives from City departments and community organizations that supported and guided the creation of the NB Resilient plan.

SVI: A Social Vulnerability Index identifies communities that are especially at risk from a hazard or may need extra support recovering from a disaster.

VISION: The statement that lays out the aspired reality based on the goals of the plan.

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