



CLIMATE READY BOSTON

Results from Boston Research Advisory Group (BRAG)

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WHAT'S IN
STORE FOR
BOSTON'S
CLIMATE?

CLIMATE RISK FACTORS



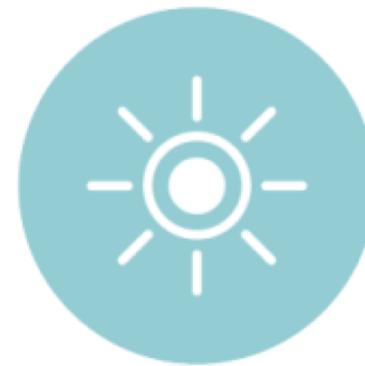
Sea Level Rise



Coastal Storms

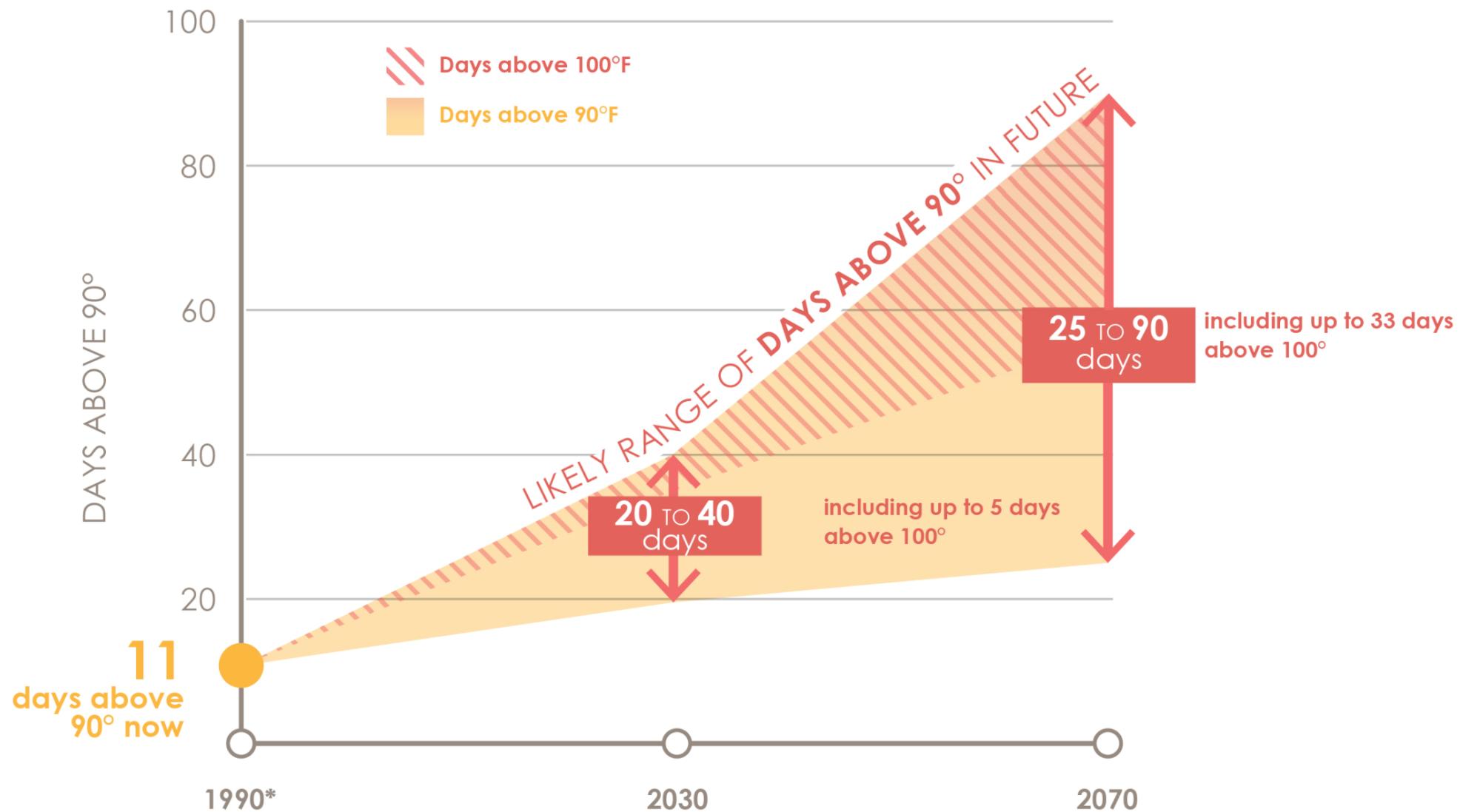


Extreme
Precipitation



Extreme
Temperatures

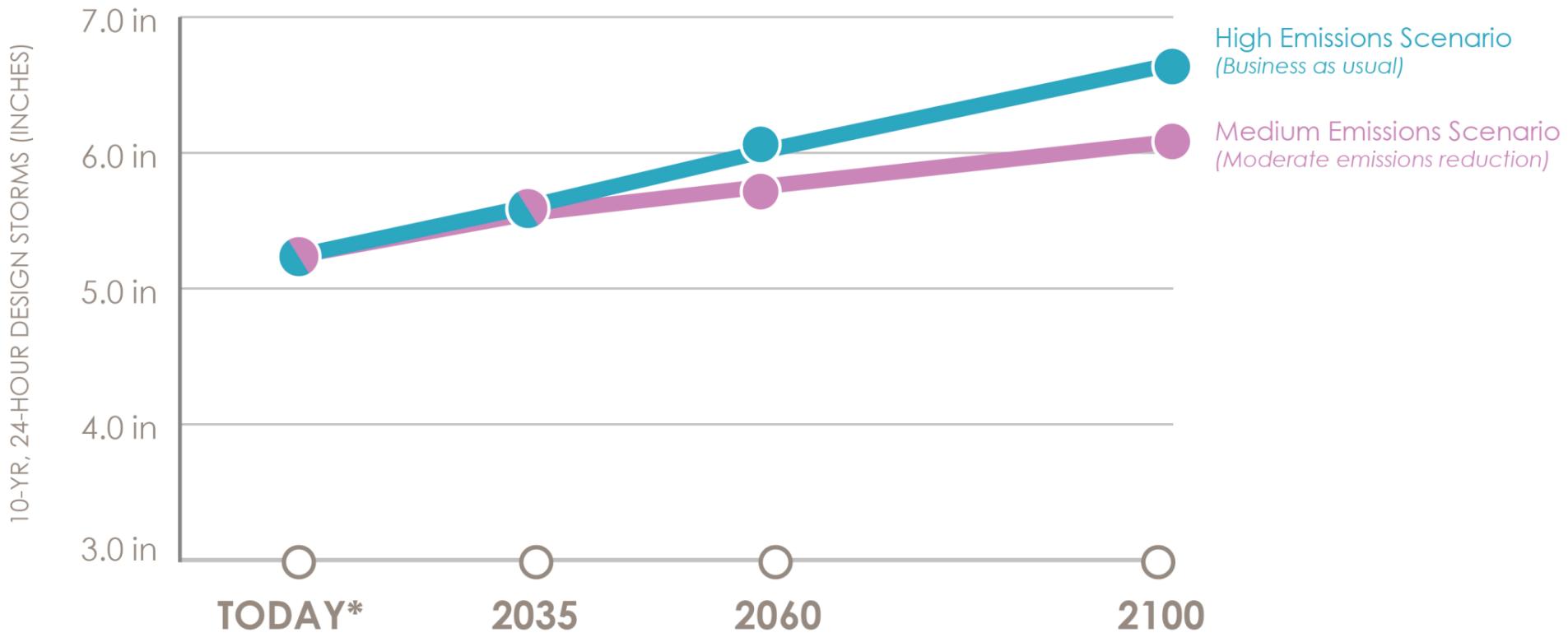
THE NUMBER OF VERY HOT DAYS WILL INCREASE



* Baseline represents historical average from 1971-2000

Upper values from high emissions scenario. Lower values from low emissions scenario.

RAINFALL FROM STORMS WILL INCREASE

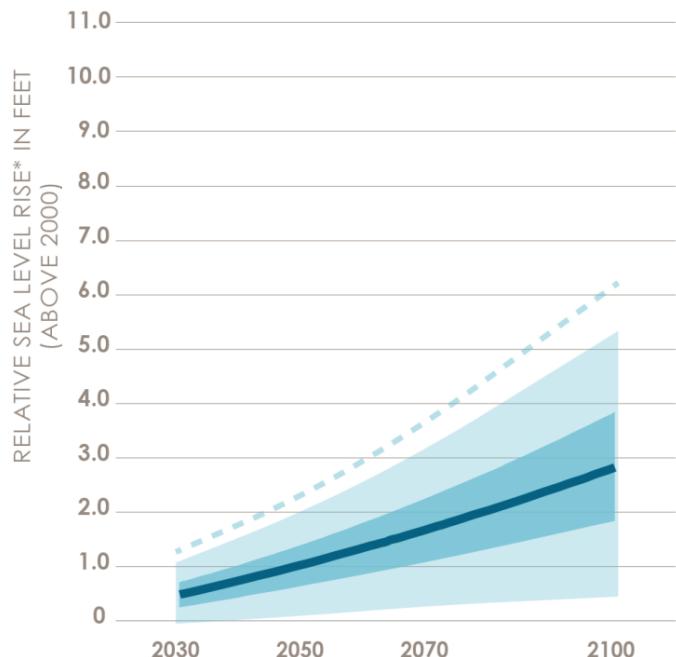


* "Today" baseline represents historical average from 1948-2012
Confidence intervals are not available for these projections but are likely large,
so these numbers should be considered as the middle of a large range

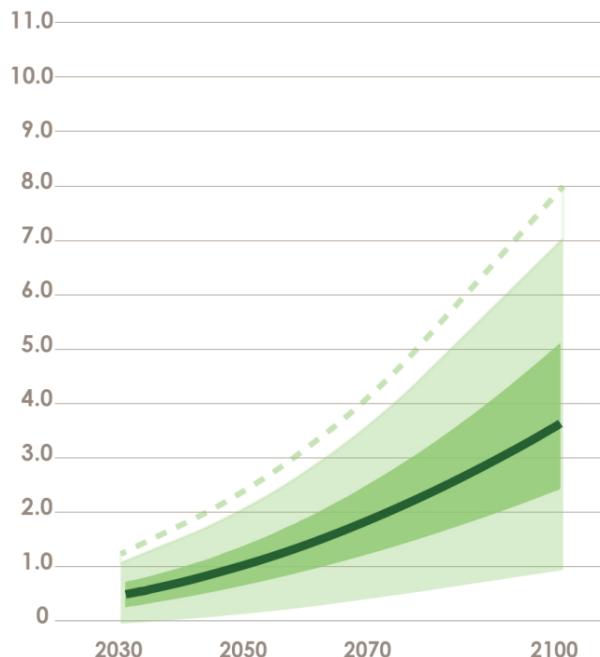
Data Source:
Boston Water & Sewer Commission

GREENHOUSE GAS EMISSIONS REDUCTIONS IMPACT FUTURE SEA LEVELS IN BOSTON

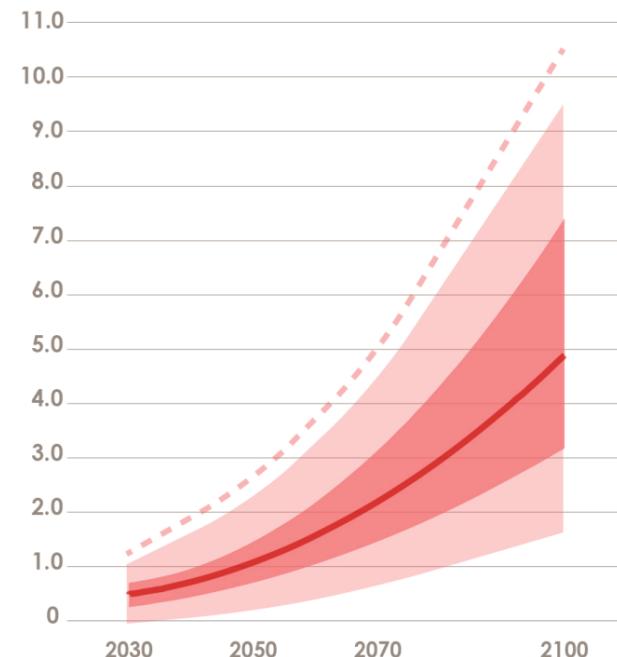
LOW EMISSIONS SCENARIO (MAJOR EMISSIONS REDUCTION)



MEDIUM EMISSIONS SCENARIO (MODERATE EMISSIONS REDUCTION)



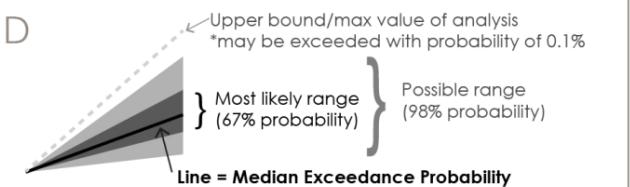
HIGH EMISSIONS SCENARIO (BUSINESS AS USUAL)



* Relative sea level rise is the change in sea level resulting from a combination of increases in ocean height and decreases in land surface elevation ("subsidence").

Data Source: BRAG Report

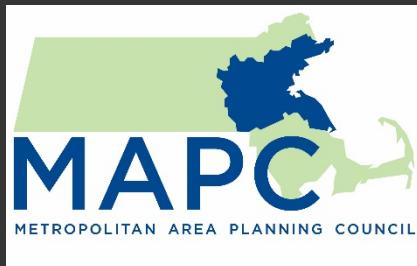
LEGEND



UMASS BOSTON + MAPC +UHI

The Greater Boston Research Advisory Group (G-BRAG)

Oct 1, 2018 through Dec 31, 2021



Overview

- Using best published information and scientific expertise, update and expand the climate change projections of the 2016 BRAG report to the entire Metropolitan Area Planning Council (MAPC) region – the 101 cities and towns within the Greater Boston Area
- Produce one to two Special Reports on topics of interest to the region
- Managed by the School for the Environment at UMass Boston (E Douglas and P Kirshen, Joint Principal Investigators), Engagement by Urban Harbors Institute with Engagement Assistance from the MAPC



Greater Boston Voices

Climate Change Concerns

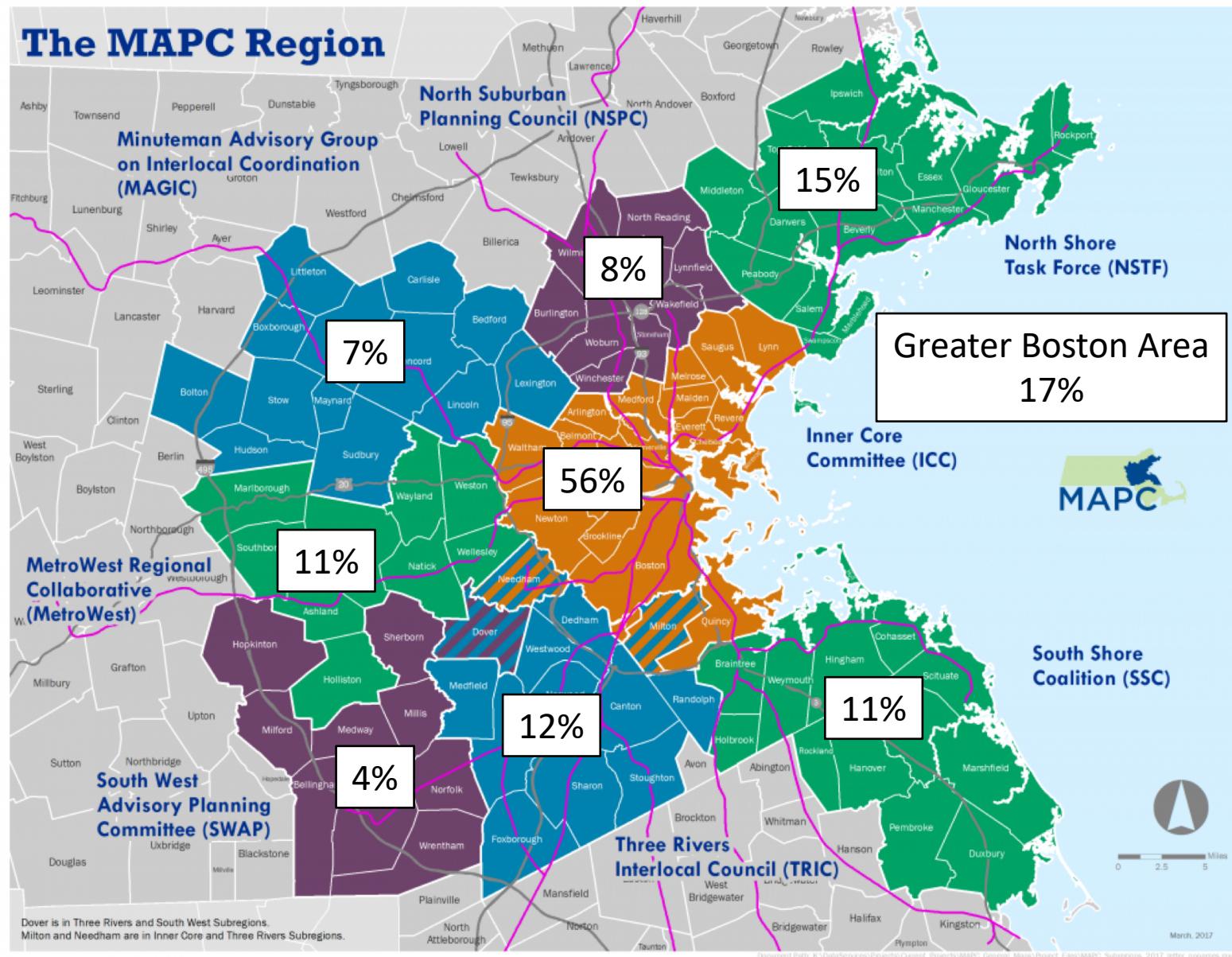
METHODS

Purpose: To determine what climate change information is most useful to communities when planning and preparing for climate change

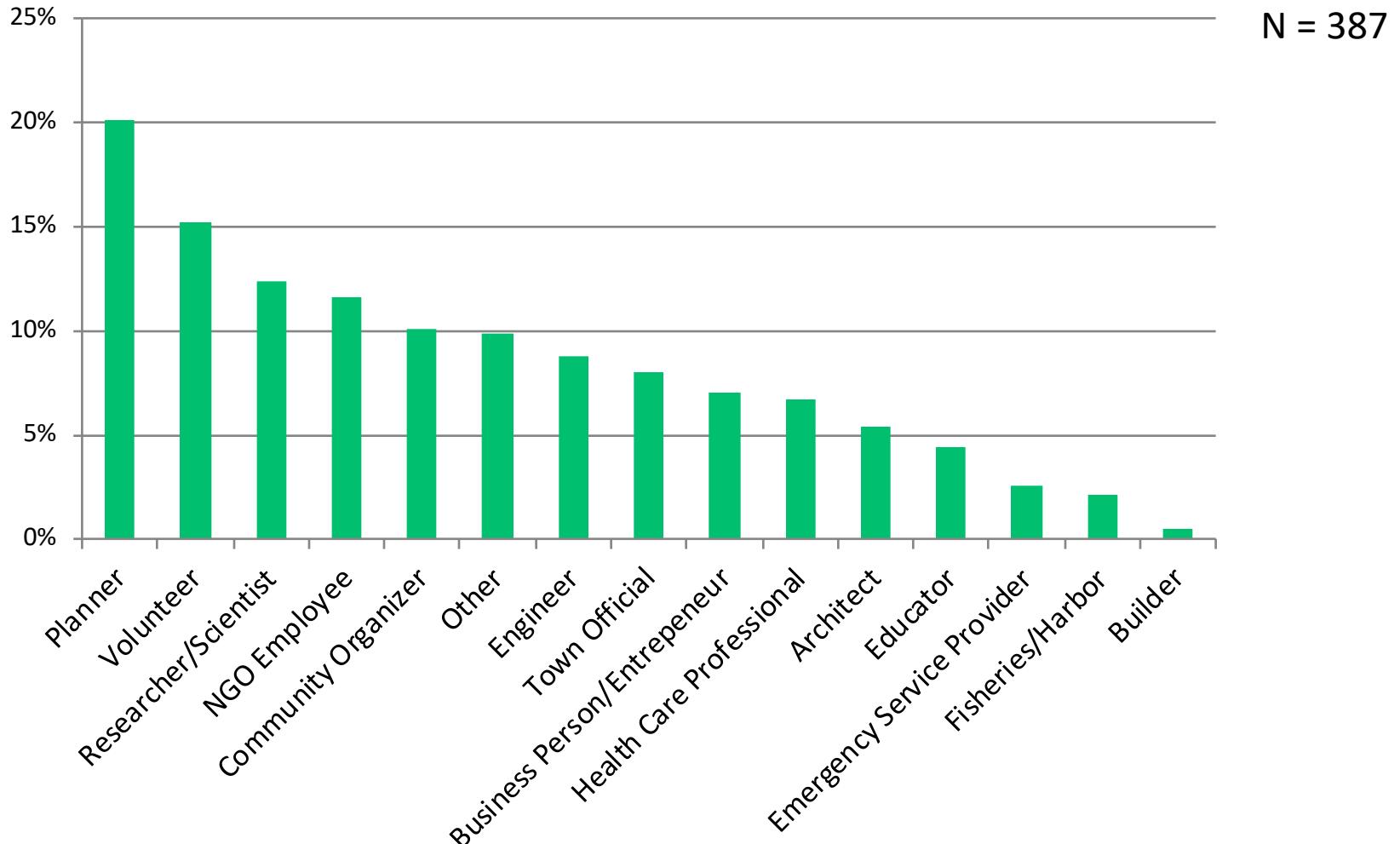


METHODS: Survey

N = 396



METHODS: Survey – Profession of Survey Respondent



Results



Results: Survey of Professionals

Do you think climate change is currently impacting, or will impact in the future, the Massachusetts city(ies)/town(s) where you work?

98% yes



What climate change risk factors concern Greater Boston communities?

Risk Factor: type of climate or weather event causing an impact. Examples include temperature, sea level rise, and extreme precipitation.

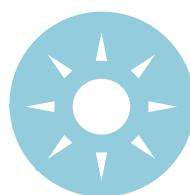
Results: Summary

SEA LEVEL RISE COASTAL STORMS



Sea Level Rise
Coastal Erosion
Flooding
Storm Surge
Saltwater
Intrusions
Groundwater
Wind

TEMPERATURE HUMIDITY



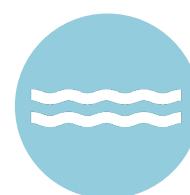
Extreme Cold
Extreme Heat
Extreme/Subtle
Temp. Changes
Seasonal Changes

PRECIPITATION INLAND STORMS



Flooding
Stormwater
Groundwater
Drought
Erosion
Wind
Snow, Rain,
Hail, Ice

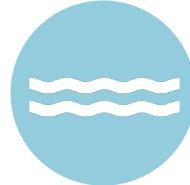
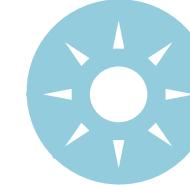
MARINE TEMPERATURE & ENVIRONMENT



Temperature
Circulation
Marine
chemistry
Habitats
Marine life
Coastal
businesses

IMPACTS

precipitation inland storms



Transportation



Property



Utilities



Stormwater



Natural
Resources



Emergency
Response



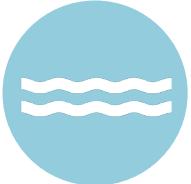
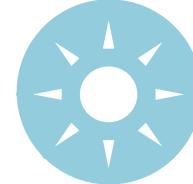
Economy/
Society



Governance/
Management

RESULTS

precipitation inland storms



Risk Factor

- Flooding
- Stormwater
- Water Quality
- Groundwater
- Drought
- Precipitation
- Erosion
- Well Data
- Snow
- Water Resources
- Aquifer Levels

Impact

- Transportation
- Property
- Utilities
- Stormwater
- Natural Resources
- Emergency Response/Public Safety/ Public Health
- Economy/Society
- Governance/Management

Design Value

- 100 year flood level
- River flooding
- Number of storms
- Stormwater drainage rates
- Change in groundwater levels
- Duration of drought
- Shoreline composition
- Number of days of Precipitation
- Consecutive days of precipitation
- Aquifer volume
- Well Data

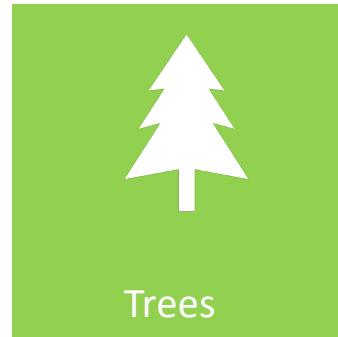
SPECIAL REPORTS



Groundwater



Stormwater and
Regional Flooding



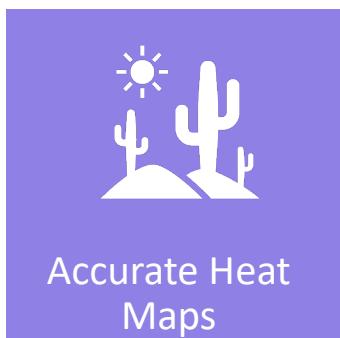
Trees



Disease
Outbreak



Glaciers And Ice
Melt



Accurate Heat
Maps



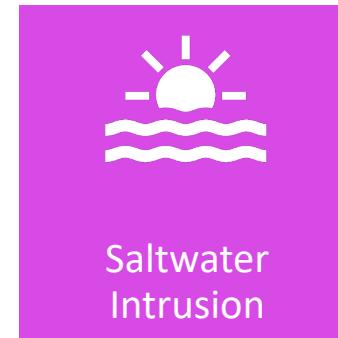
Local Agriculture



Marine Resources/
Ocean Acidification



Feasibility Of
Managed
Retreat



Saltwater
Intrusion



Housing
Market/Property
Values



Shoreline
Management



Climate Change
Mitigation



Contaminated
Sites Risk



Native and
Invasive Species

GBRAG Special Report #1:

Groundwater



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