

# **MCP Regulatory Approach to Climate Impacts at Disposal Sites**

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# MCP Regulatory Approach to Climate Impacts at Disposal Sites

## Overview

- Focus in context of “Climate Change”
- 2019 Draft MCP Amendments
- Key Questions/Issues to Resolve
- Tools & Resources
- Next Steps

# **“CLIMATE CHANGE”**

## **Terms & Components**

**Green**

**Sustainable**

**Resilient**

**Green House Gases**

**Global Warming**

**Clean Energy**

**vulnerability**

**Precipitation**

**Sea Level**

**Temperature**

**Extreme Weather**

**Climate Forecasting/Modelling**

A diagram illustrating the two main strategies for addressing climate change. On the left, the words "CLIMATE CHANGE" are written in large, bold, green capital letters inside a light green oval. Two black arrows originate from the right side of this oval. The top arrow points towards the word "REDUCE" in bold green capital letters, with "(GHG emissions)" in black text below it. The bottom arrow points towards the word "ADAPT" in bold green capital letters, which is set against a yellow rectangular background, with "(Resilience/Vulnerability)" in black text below it.

**CLIMATE  
CHANGE**

**REDUCE**  
(GHG emissions)

**ADAPT**  
(Resilience/Vulnerability)

# “Climate Change” to MCP Resilience Regulation

**2008:**      **Global Warming Solutions Act**  
*(emission reduction targets)*

**2016:**      **Executive Order No. 569**  
*(“**assess vulnerability...increase resilience**”)*

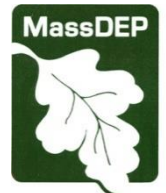
**2017:**      **Municipal Vulnerability  
Preparedness (MVP) Program**  
*(financial/technical support for cities and towns)*

**2018:**      **State Hazard Mitigation and  
Climate Adaption Plan (SHMCAP)**  
*(EOEEA regulation revisions, 21E-specific assessments)*



**\$ 2.4 Billion  
Env Bond**

**2019:**      **Draft MCP Amendments**



# 2019 DRAFT MCP Climate Change Amendments Goal

**To direct persons conducting cleanups to:**

- (1) identify and assess foreseeable climate impacts that may affect the permanency and protectiveness of the cleanup at vulnerable sites; and
  - (2) take reasonable measures to reduce vulnerabilities.
- Definition of Conceptual Site Model (CSM)
  - Response Action Performance Standard (RAPS)
  - Definition of Foreseeable Period of Time for a Permanent Solution

# 2019 DRAFT MCP Amendments

## 40.0006: Terminology, Definitions and Acronyms

**Conceptual Site Model or CSM** means a site-specific description of how contaminants entered the environment, how contaminants have been and may be transported within the environment, and routes of exposure to human and environmental receptors that provides a dynamic framework for assessing **current and foreseeable future** site characteristics and risk, identifying and addressing data gaps and managing uncertainty, eliminating or controlling contaminant sources, developing and conducting response action strategies, and evaluating whether those strategies have been effective in achieving desired endpoints. At sites at which NAPL is or may be present, this includes the body of fundamental scientific principles describing the behavior of fluid flow in porous media necessary to assess NAPL in subsurface strata.

# 2019 DRAFT MCP Amendments

## 40.0191: Response Action Performance Standard (RAPS)

- (1) The Response Action Performance Standard (RAPS) is the level of diligence reasonably necessary to obtain the quantity and quality of information adequate to assess a site and evaluate remedial action alternatives, and to design and implement specific remedial actions at a disposal site to achieve a level of No Significant Risk for any foreseeable period of time, **as defined at 310 CMR 40.1005**, and, where feasible, to reduce to the extent possible the level of oil and/or hazardous materials in the environment to background levels.
- (2) RAPS shall be employed during the performance of all response actions conducted pursuant to 310 CMR 40.0000, and shall include, without limitation, the following:
  - (a) consideration of relevant policies and guidelines issued by the Department, **EOEEA** and EPA;
  - (b) use of accurate and up-to-date methods, **models**, standards and practices, equipment and technologies which are appropriate, available and generally accepted by the professional and trade communities conducting response actions in accordance with M.G.L. c. 21E and 310 CMR 40.0000 under similar circumstances; and



# 2019 DRAFT MCP Amendments

## **40.1005: Defining "Foreseeable Period of Time" for Purposes of a Permanent Solution**

(1) A Permanent Solution shall ensure a level of control of each identified substance of concern at a site or in the surrounding environment such that no such substance of concern shall present a significant risk of harm to health, safety, public welfare or the environment during any foreseeable period of time,

**considering existing site conditions and reasonably foreseeable future changes in site conditions, including anticipated impacts associated with climate change.**

# Key Questions/Issues to Resolve

- What timeframe applies to “reasonably foreseeable future”?
- How do you assess 21E site “Vulnerability”?
- Which climate forecasts and/or models should be used?

# Vulnerability

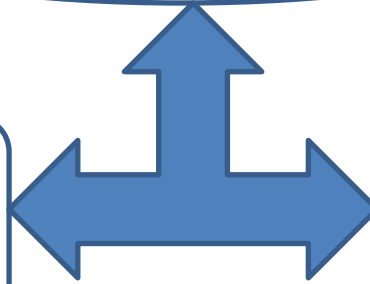
## Exposure

Climate forecasts/models

- Precipitation
- Sea level
- Temperature
- Extreme weather

## Sensitivity

Site Characteristics





# “EXPOSURE”

☒ Layers ☒ Controls & Legends 2 ☒ Quick Zoom

Search for layers...

## Sectors:

All Sectors ▼

### ▼ Climate Projections

#### ▼ Precipitation

- ☐ Consecutive Dry Days (Projected) i
- ☐ Extreme Precipitation > 1" (Projected) i
- ☐ Extreme Precipitation > 2" (Projected) i
- ☐ Extreme Precipitation > 4" (Projected) i
- ☒ Total Precipitation (Projected) i

#### ▼ Sea Level Rise

- ☐ Sea Level Rise i
- ☐ Sea Level Rise & Coastal Flooding (NOAA) i

#### ► Temperature

### ▼ Coastal Vulnerability

- ☐ Barrier Beaches i
- ☒ Hurricane Surge Inundation Zones i
- ☐ Marine Beaches i

### ▼ Demographics

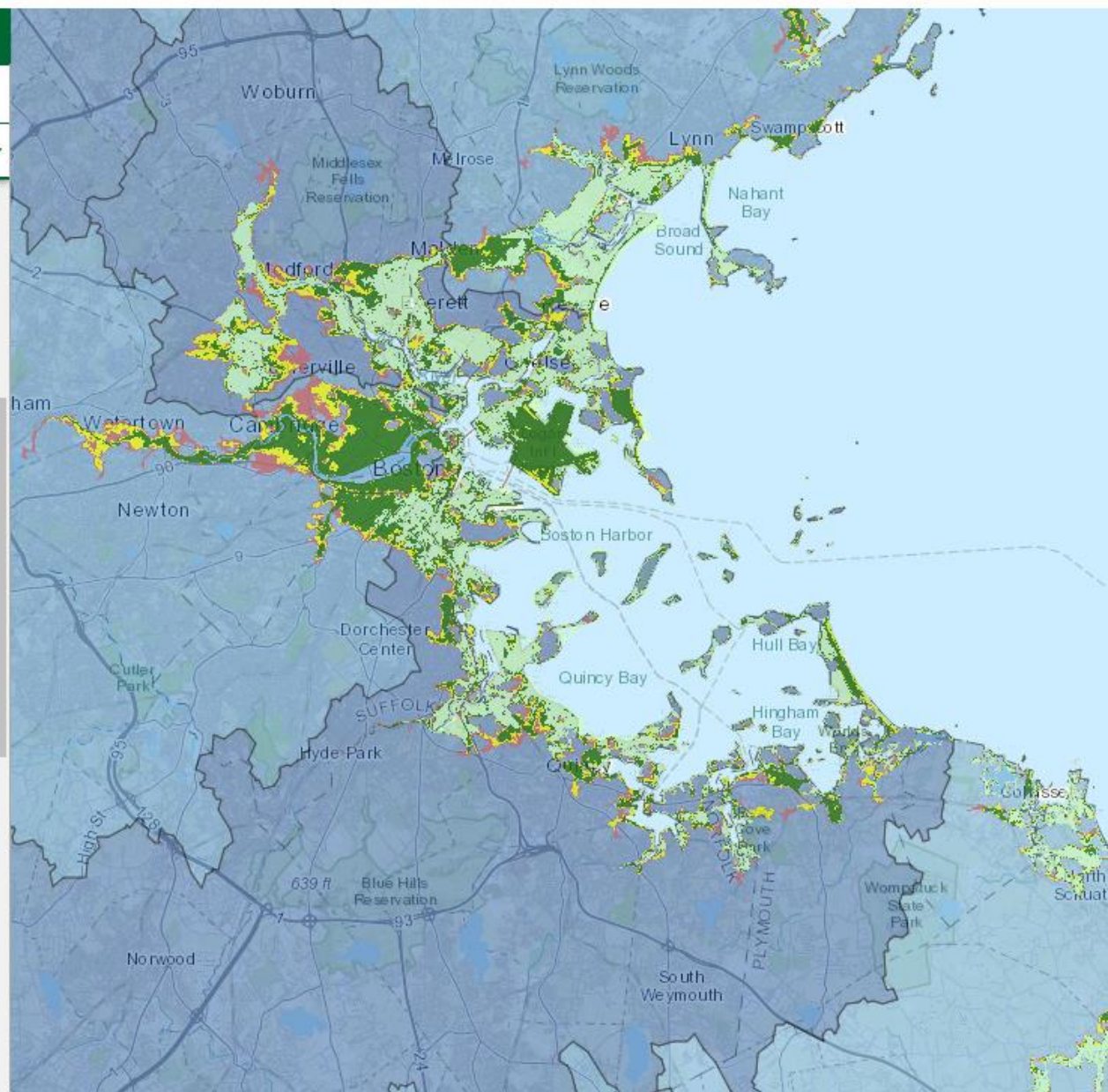
- ☐ Environmental Justice Populations i

### ▼ Energy

- ☐ Electricity Providers i
- ☐ Natural Gas Providers i
- ☐ Power Plants i
- ☐ Transmission Lines i
- ☐ Wind Power Density at 50m i

### ▼ Land Cover

- ☐ Impervious Surfaces 2016 i



# Vulnerability

## Exposure

### Climate forecasts/models

- Precipitation
- Sea level
- Temperature
- Extreme weather

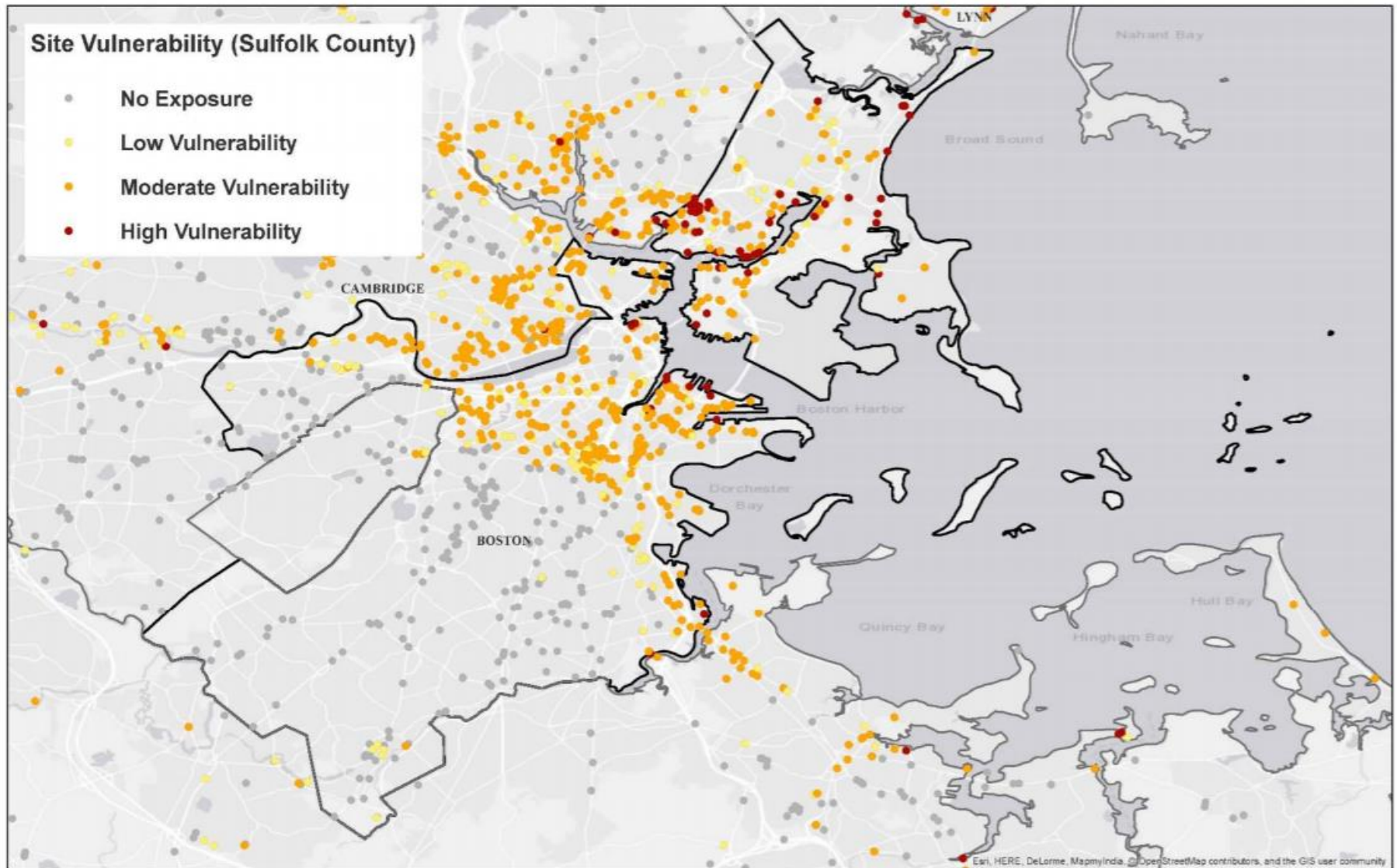
## Sensitivity

### Site Characteristics

- Location
- Demographics
- Equipment/structures
- Regulatory status
- Contaminant type, fate & transport



# 21E Site “Vulnerability”



# Tools & Resources

## Climate Forecasts, Models & Vulnerability Assessments

**ResilientMA.org –**

[State Climate Change Clearinghouse](#)

- Provides “best science and data on expected climate changes, information on community resiliency, and links to important grant programs and technical assistance. The site also catalogs specific vulnerabilities, risks and strategies concerning agriculture, forestry, local government, education, energy, recreation, and transportation”.
- Multi-model climate forecasts developed by Northeast Climate Adaptation Science Center – UMass Amherst (NECASC)
- Currently no 21E sites “layer”
- Links to [SHMCAP](#), [MVP](#) and [Interactive Map](#)

**MA Office of Technical Assistance and Technology (OTA)**

[Mapping Toxics in Communities and Assessing Climate Vulnerability](#)

- Provides maps with various “sensitivity” layers

# Tools & Resources

## Climate Forecasts, Models & Vulnerability Assessments

### **MassDOT-FHWA (WoodsHole, UMassB, UNH) -**

[Pilot Project Report](#): Climate Change and Extreme Weather Vulnerability Assessments And Adaptation Options for the Central Artery, 2015

- Probabilistic Hydrodynamic Modeling (ADCIRC, SWAN)

### **Sustainable Remediation Forum (SURF)(EcoAdapt, BU, MassDEP) -**

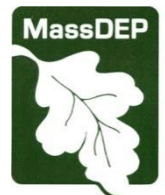
[Massachusetts Climate Change and Hazardous Waste Site Screening](#), 2019

- “Exposure” models for floods, hurricanes, SLR (FEMA, NOAA)
- Incorporated environmental, demographic and 21E site-specific “Sensitivity” parameters (e.g., Open, Active, AEPMM, IH, CEP, AUL)

### **Interstate Technology & Regulatory Council (ITRC) –**

[Sustainable and Resilient Remediation \(SRR\) Team](#)

- Guidance document coming late 2020
- Resilience BMPs





# Tools & Resources

## Climate Forecasts, Models & Vulnerability Assessments

### USEPA –

[Superfund Climate Resilience webpage](#)

- Vulnerability Assessment
- Resilience Measures
- Adaptive Capacity

### First Street Foundation –

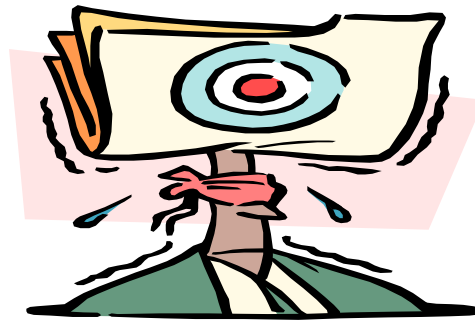
[Defining America's Flood Risk](#)

- Collaboration of 80 of the world's leading hydrologists, researchers and data scientists
- Property-by-property flood forecast maps for whole country (LISFLOOD-FP, GeoCLAW, ADCIRC-SWAN)

# Next Steps

- Finalize MCP Amendments
- LSPA Technical Practices Climate Change Sub-Committee
- Engage with Northeast Climate Adaptation Science Center – UMass Amherst
- ITRC SRR Team and draft guidance
- MassDEP Q&A/guidance

# MCP Regulatory Approach to Climate Impacts at Disposal Sites Questions?



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