



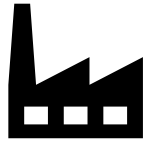
# Climate Change Resiliency & Chemical Safety

---

Kari Sasportas, MSW, MPH, REHS/RS  
Outreach & Chemical Policy Analyst  
Massachusetts Office of Technical Assistance

May 8, 2024

# MA Toxics Use Reduction Act (TURA) of 1989



## Who reports?

Massachusetts manufacturers who:

- Operate under certain Standard Industrial Classification (SIC) codes
- Have >10 employees
- Manufacture or process  $\geq 25,000$ lbs (or otherwise use  $\geq 10,000$ lbs) of listed substances

Covers a little over 400 MA facilities



## What TURA requires

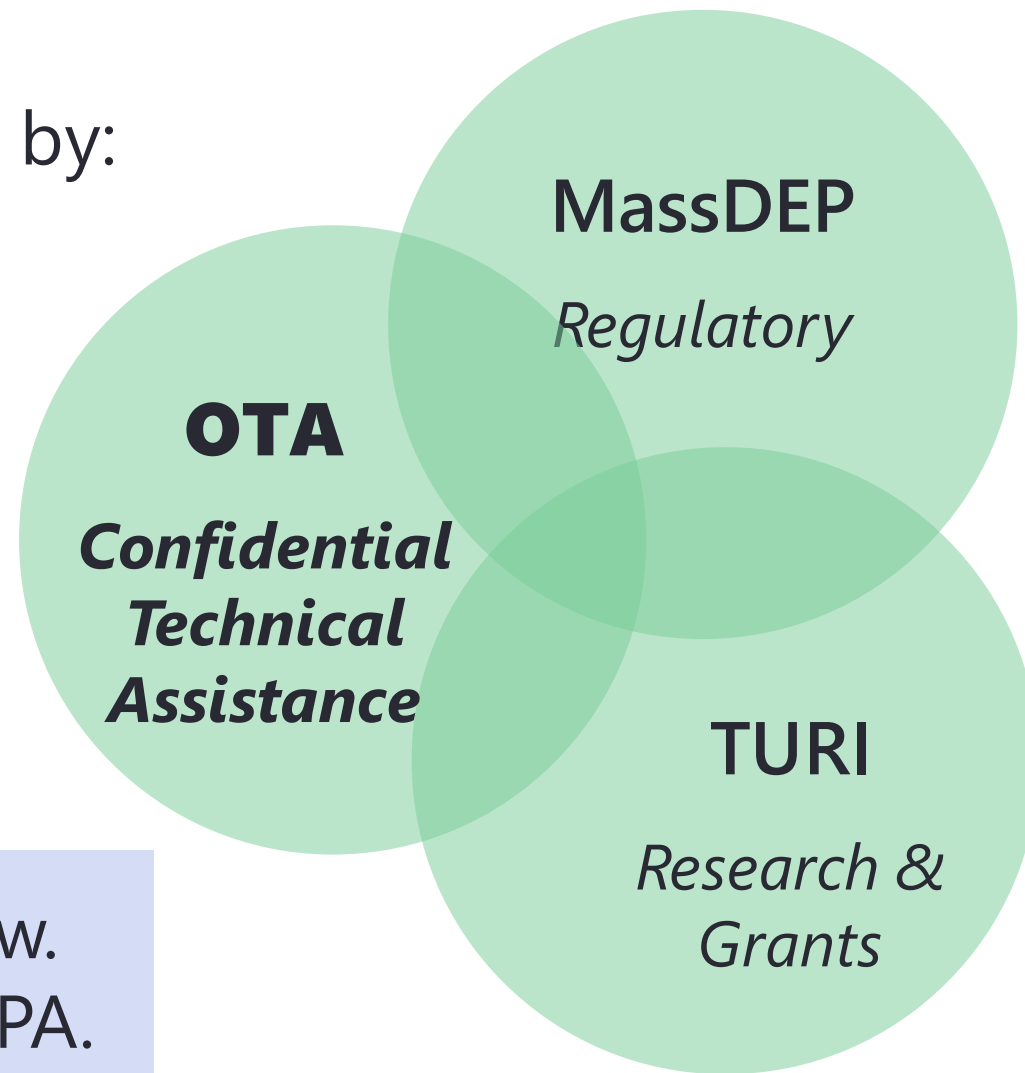
- Report to the state
- Pay a fee
- Create a Toxics Use Reduction Plan every two years

TURA does not prohibit companies from using listed chemicals.

# TURA Program Implementation

The TURA Program is co-implemented by:

- The Massachusetts Department of Environmental Protection
- The Massachusetts Office of Technical Assistance
- The Toxics Use Reduction Institute at UMass Lowell



TURA is a state law, not a federal law.  
OTA, DEP, and TURI are not part of EPA.

# Office of Technical Assistance (OTA)

- **Non-regulatory** agency
- Provides **free, confidential** technical and compliance assistance to MA businesses that use toxic substances
- Gives **concrete recommendations** for toxics reduction and resource conservation

OTA has conducted 3,500 site visits at 1,500 facilities, reducing **millions of pounds** of toxic chemicals and **millions of dollars** in operating costs.

# Extreme weather and industrial accidents

- Arkema Chemical Plant
- Hurricane caused loss of power and refrigeration, leading to explosion
  - Risk to workers
  - Risk to neighbors
  - Injured first responders



# PREVENTING "DOUBLE DISASTERS"

How the U.S. Environmental Protection Agency  
can protect the public from hazardous  
chemical releases worsened  
by natural disasters

JULY 2021

A joint policy brief of the  
Center for Progressive Reform, Earthjustice,  
and the Union of Concerned Scientists

## GAO Highlights

Highlights of GAO-22-104494, a report to  
congressional requestors

### Why GAO Did This Study

Over 11,000 RMP facilities across the nation have extremely hazardous chemicals in amounts that could harm people, property, or the environment if accidentally released. Risks to these facilities include those posed by natural hazards, which may damage the facilities and potentially release the chemicals into surrounding communities. Climate change may make some natural hazards more frequent or intense, according to the Fourth National Climate Assessment.

GAO was asked to review climate change risks at RMP facilities. This report examines, among other things, (1) what available federal data indicate about RMP facilities in areas with natural hazards that may be exacerbated by climate change; and (2) challenges RMP facilities face in managing risks from natural hazards and climate change, and opportunities for EPA to address these challenges. GAO analyzed federal data on RMP facilities and four natural hazards that may be exacerbated by climate change, reviewed agency documents, and interviewed agency officials and stakeholders, such as industry representatives.

### What GAO Recommends

GAO is making six recommendations, including that EPA issue regulations, guidance, or both to clarify requirements and provide direction to facilities on incorporating natural hazards and climate change into risk management programs. EPA agreed with our recommendations.

February 2022

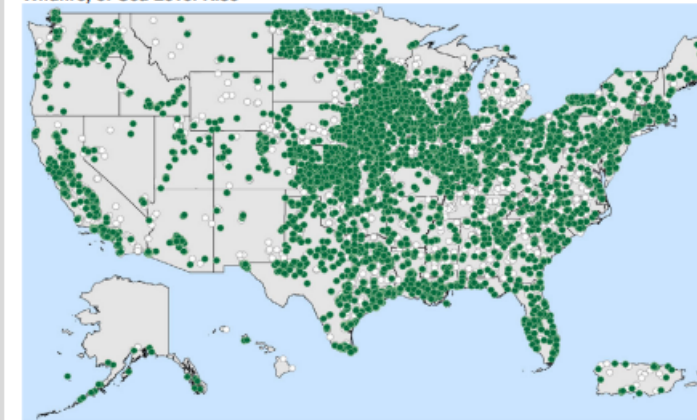
## CHEMICAL ACCIDENT PREVENTION

### EPA Should Ensure Regulated Facilities Consider Risks from Climate Change

#### What GAO Found

The Environmental Protection Agency's Risk Management Plan (RMP) Rule requires certain facilities that make, use, handle, or store hazardous substances (chemicals) to develop and implement a risk management program to detect and prevent or minimize the consequences of an accidental release. These facilities, known as RMP facilities, include chemical manufacturers and water treatment plants. Federal data on flooding, storm surge, wildfire, and sea level rise—natural hazards that may be exacerbated by climate change—indicate that over 3,200 of the 10,420 facilities we analyzed, or about 31 percent, are located in areas with these natural hazards (see figure). View the full results of GAO's analysis [here](#).

#### RMP Facilities Located in Areas That May Be Impacted by Flooding, Storm Surge, Wildfire, or Sea Level Rise



Risk Management Plan (RMP) facilities that GAO analyzed (10,420)

● Located in an area with one or more of these natural hazards (3,219)

○ Located in an area without one or more of these natural hazards or where hazards are unknown (7,201)

Sources: GAO analysis of Environmental Protection Agency, Federal Emergency Management Agency, National Oceanic and Atmospheric Administration, and U.S. Forest Service data; U.S. Census Bureau (map); | GAO-22-104494

Notes: This map does not include one RMP facility in each of Guam and the U.S. Virgin Islands. Storm surge data are not available for the West Coast and Pacific islands other than Hawaii, and sea level rise data are not available for Alaska.

RMP facilities face several challenges, including insufficient information and direction, in managing risks from natural hazards and climate change, according to some EPA officials and stakeholders. By issuing regulations, guidance, or both to clarify requirements and provide direction on how to incorporate these risks into risk management programs, EPA can better ensure that facilities are

# Regulatory Framework: Emergency Preparedness

## Federal: Emergency Planning & Community Right to Know Act (EPCRA)

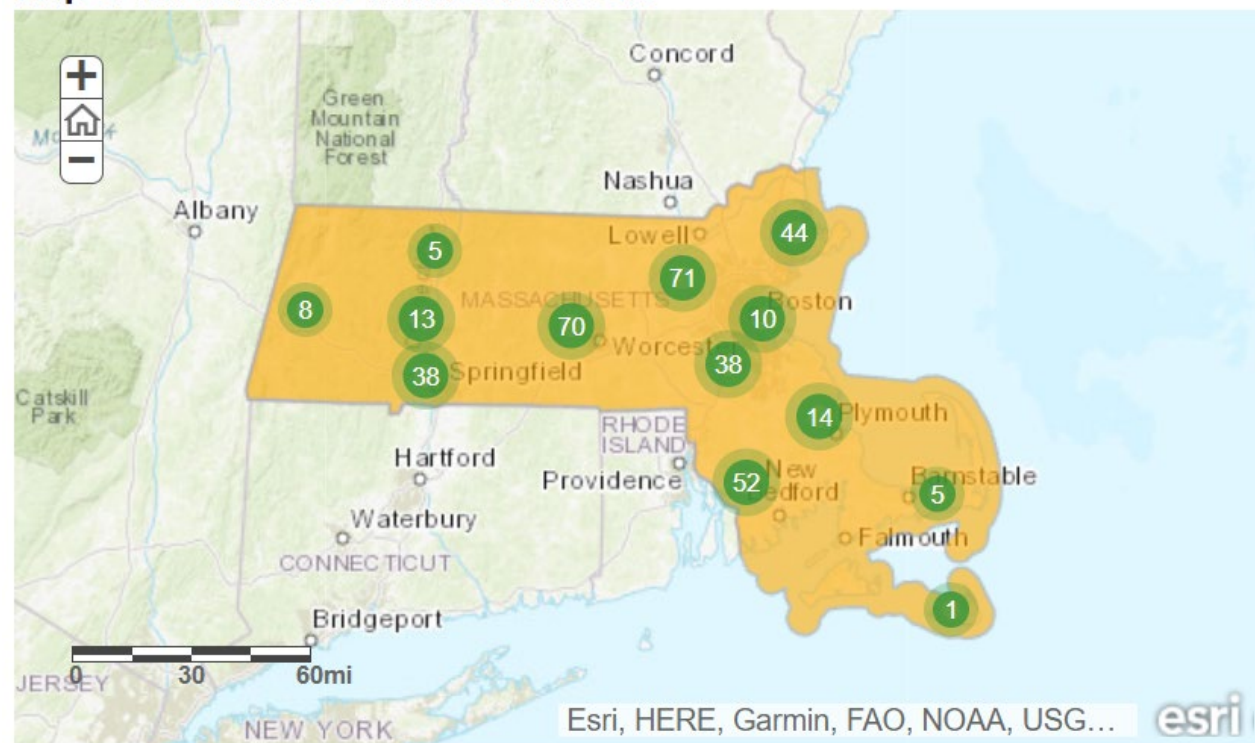
**Tier II** – Handling and storage of hazardous chemicals

- Reporting to R/LEPC, local fire department and SERC

**TRI** – Emissions of listed toxic chemicals at threshold levels

- EPA TRI Explorer – online data

Map of TRI Facilities in Massachusetts



[EPATRI Explorer](#)

# Regulatory Framework: Emergency Preparedness

## Federal

- Resource Conservation & Recovery Act (RCRA)
- Spill Prevention Control & Countermeasure Rule (SPCC) & Facility Response Plan (FRP) – Clean Water Act (CWA) Oil Pollution Prevention Regulation
- Chemical Facility Anti-Terrorism Standard (CFATS)
- Clean Air Act (CAA) Risk Management Plan (RMP)
- OSHA Process Safety Management Standard

## State

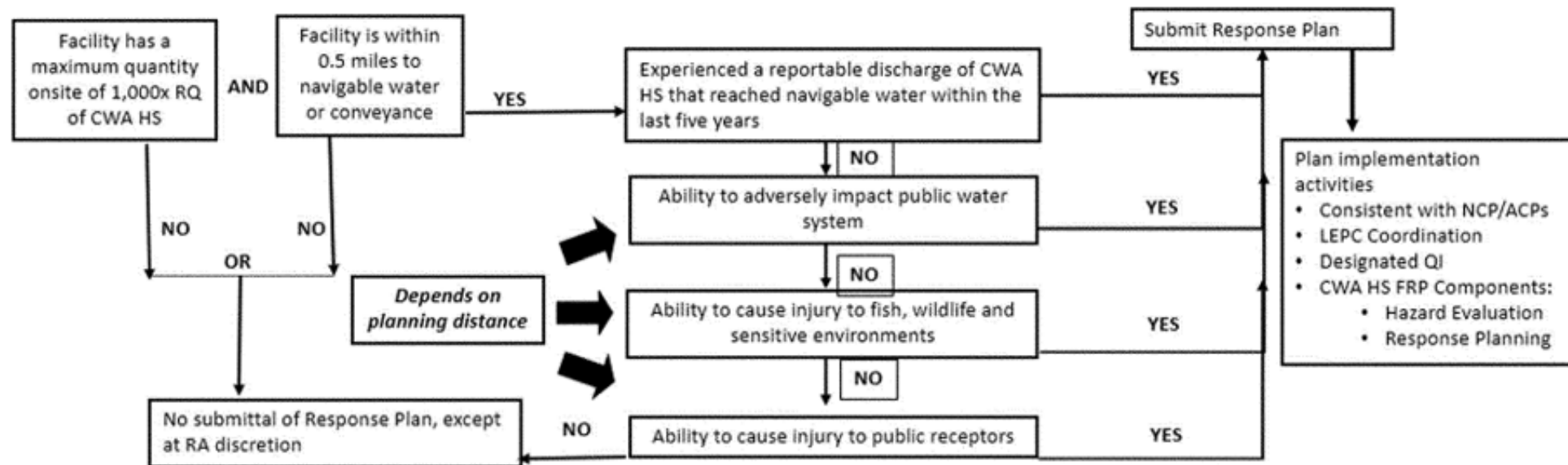
- Massachusetts Hazardous Materials Processing regulation

# NEW: EPA Risk Management Plan – SCCAP Rule

- Safer Communities by Chemical Accident Prevention Final Rule (SCCAP) strengthens RMP
- RMP covers about 12,000 facilities nationwide that use Extremely Hazardous Substances above threshold and are required to develop a Risk Management Plan to prevent accidental air releases of these chemicals that are toxic and flammable

# NEW: EPA Clean Water Act (CWA) Hazardous Substances Facility Response Plans (FRP)

- New planning requirements under the CWA requires certain facilities to develop FRPs for worst-case discharges foreseeable due to frequency and severity of extreme weather due to climate change
- Applies only to certain facilities



## Floods

- Chemical releases and spills
- Emergency shutdowns

## Extreme Heat

- Explosion risks
- Drought (cooling; fire suppression)

## Climate Change & Chemical Releases

## Extreme Cold

- Power outages
- HVAC failure
- Frozen pipes

## Storms

- Power outages
- HVAC failure
- Infrastructure failure

# Evaluating Chemical Safety and Climate Risks



## Chemical Properties

Toxicity  
Flammability  
Combustibility



## Weather Risks

Flood  
Hurricane  
Freezing  
Heat



## Chemical Storage

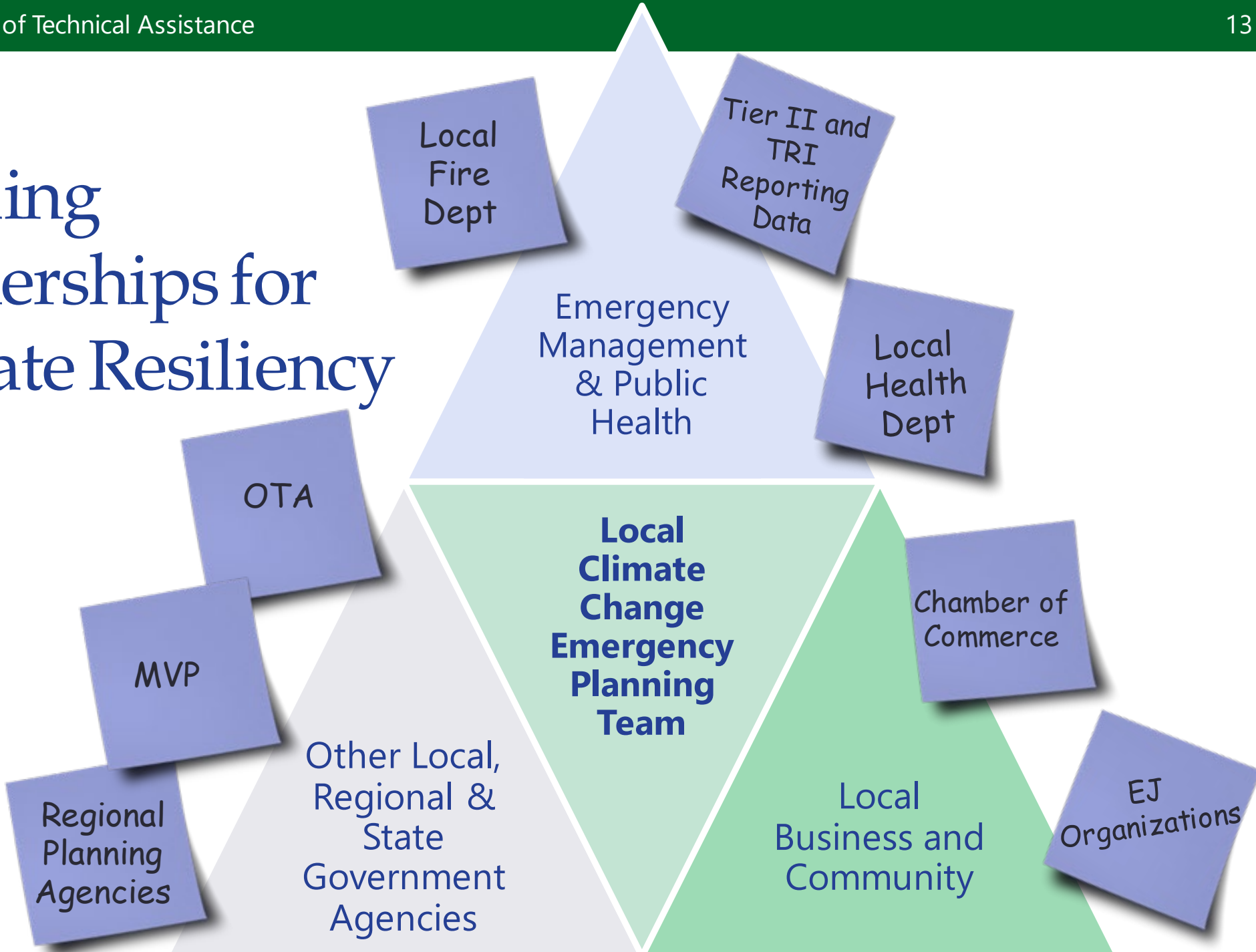
Secondary containment  
Compatibility



## Toxics Use Reduction

Substitution  
Inventory reduction  
Engineering

# Building Partnerships for Climate Resiliency



# Chemical Safety & Climate Resiliency Survey

- WPI interns worked with OTA to survey TURA filers
- 362 TURA filers were reached by email with survey link
- Survey closed September 30, 2022
- 56 responses received



## Chemical Safety and Climate Change Resiliency



### An Interactive Qualifying Project Report

Submitted to the Faculty of  
WORCESTER POLYTECHNIC INSTITUTE  
in partial fulfillment of the requirements for the Degree of Bachelor of Science

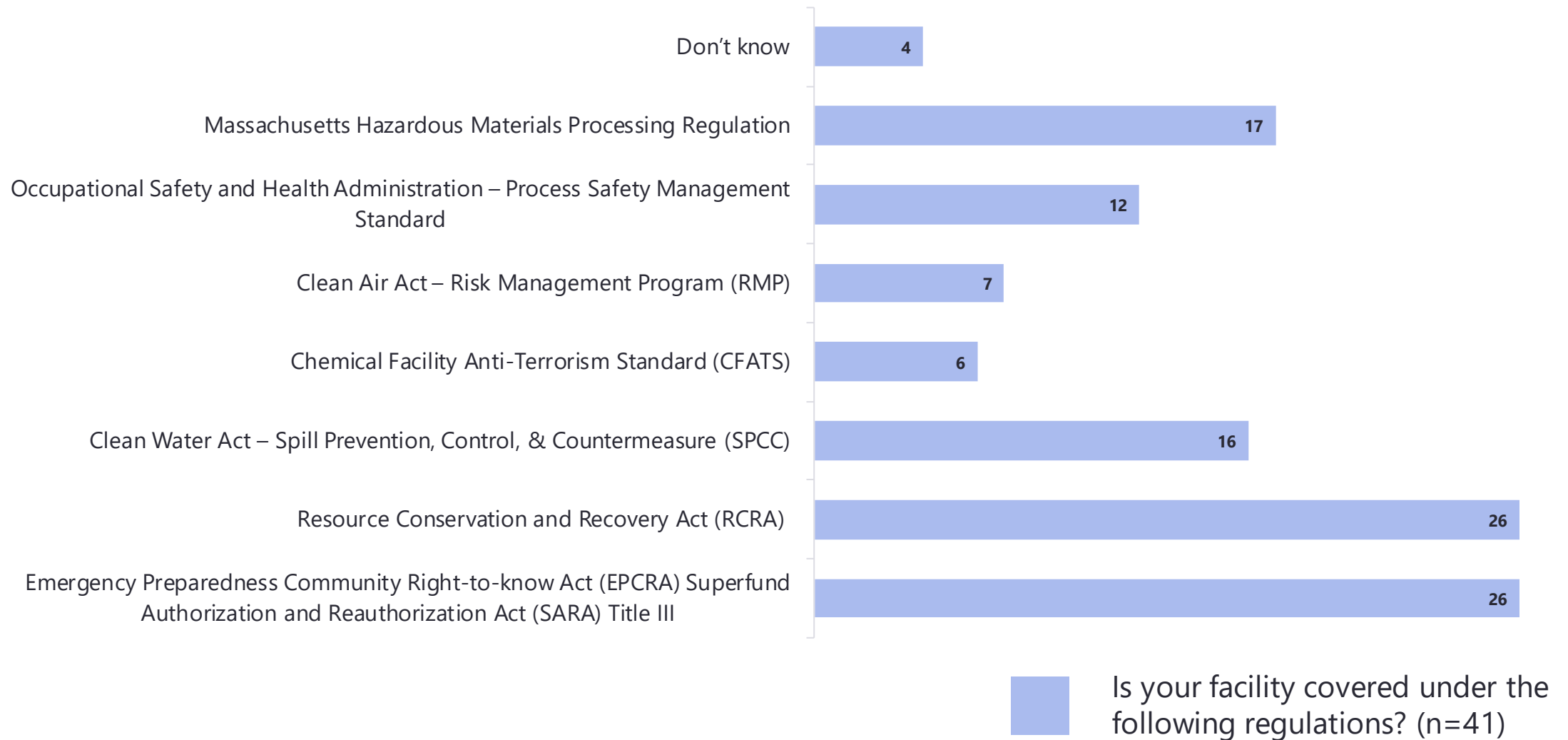
Submitted by:  
Joel Brunzell  
Wassim Faker  
Alex Marrinan  
Jada Smith

Date Submitted:  
October 13, 2022

Sponsoring Agency:  
Massachusetts Office of Technical Assistance & Technology

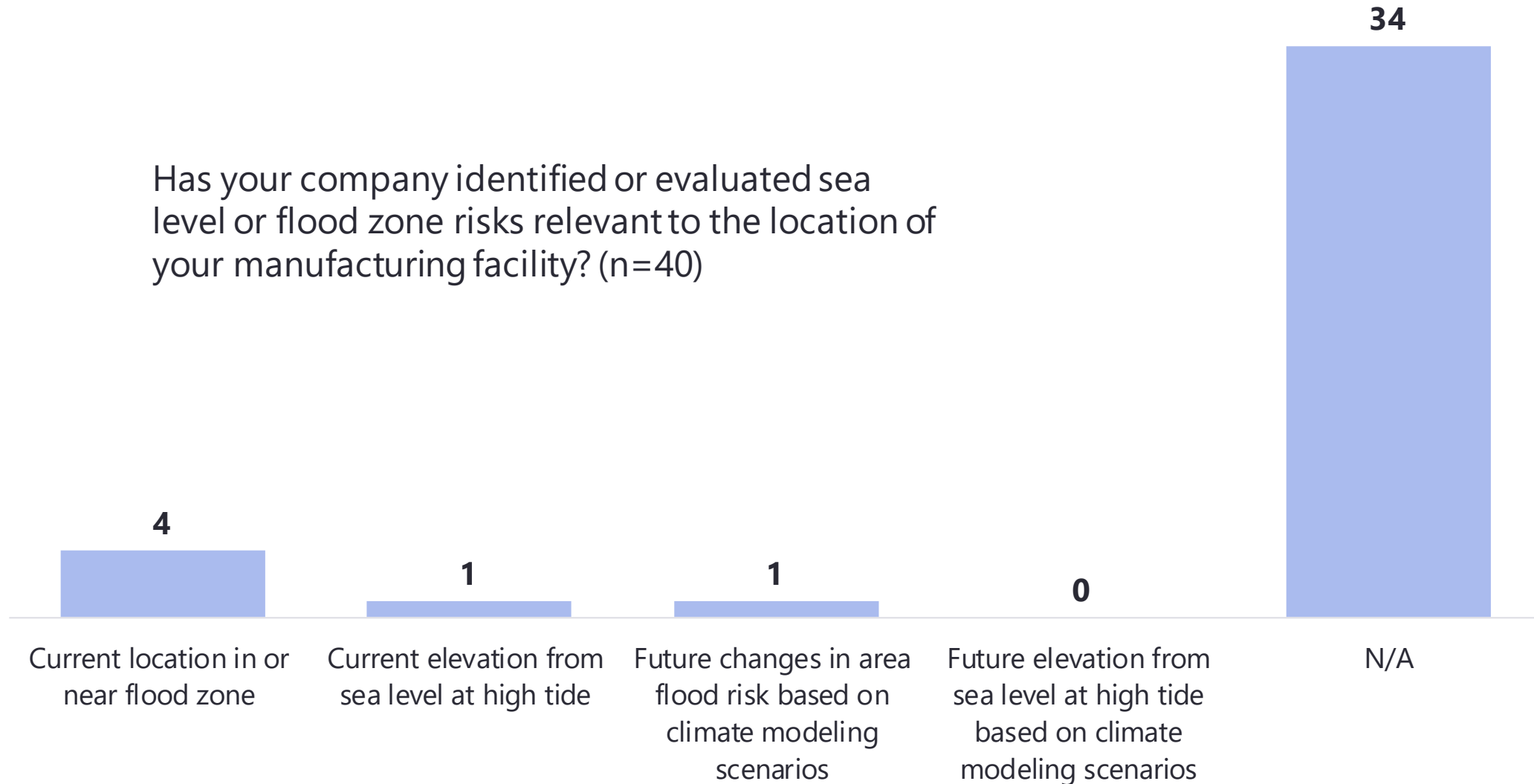
Project Faculty Advisors:  
Blake Currier  
Corey Dehner

# Chemical Safety & Climate Resiliency: Results

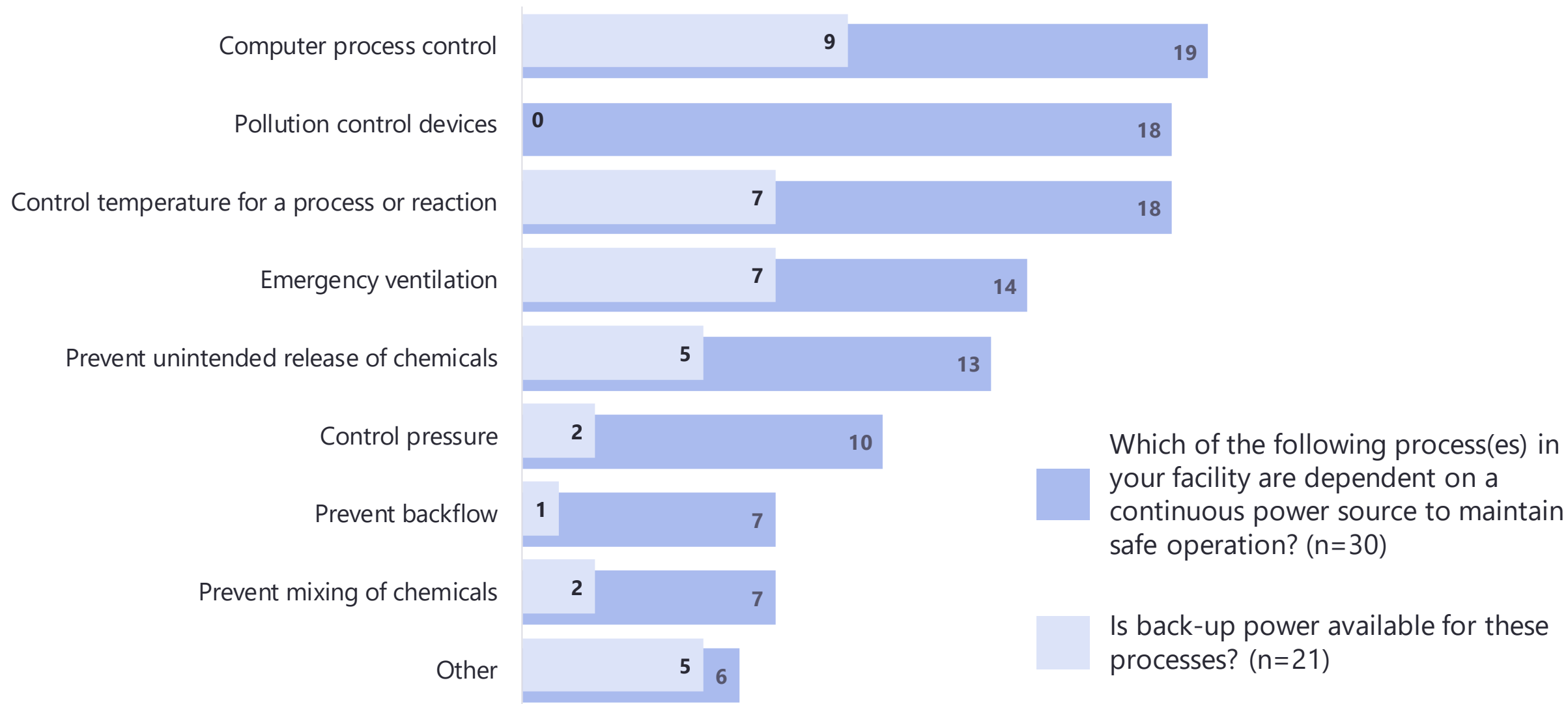


# Chemical Safety & Climate Resiliency: Results

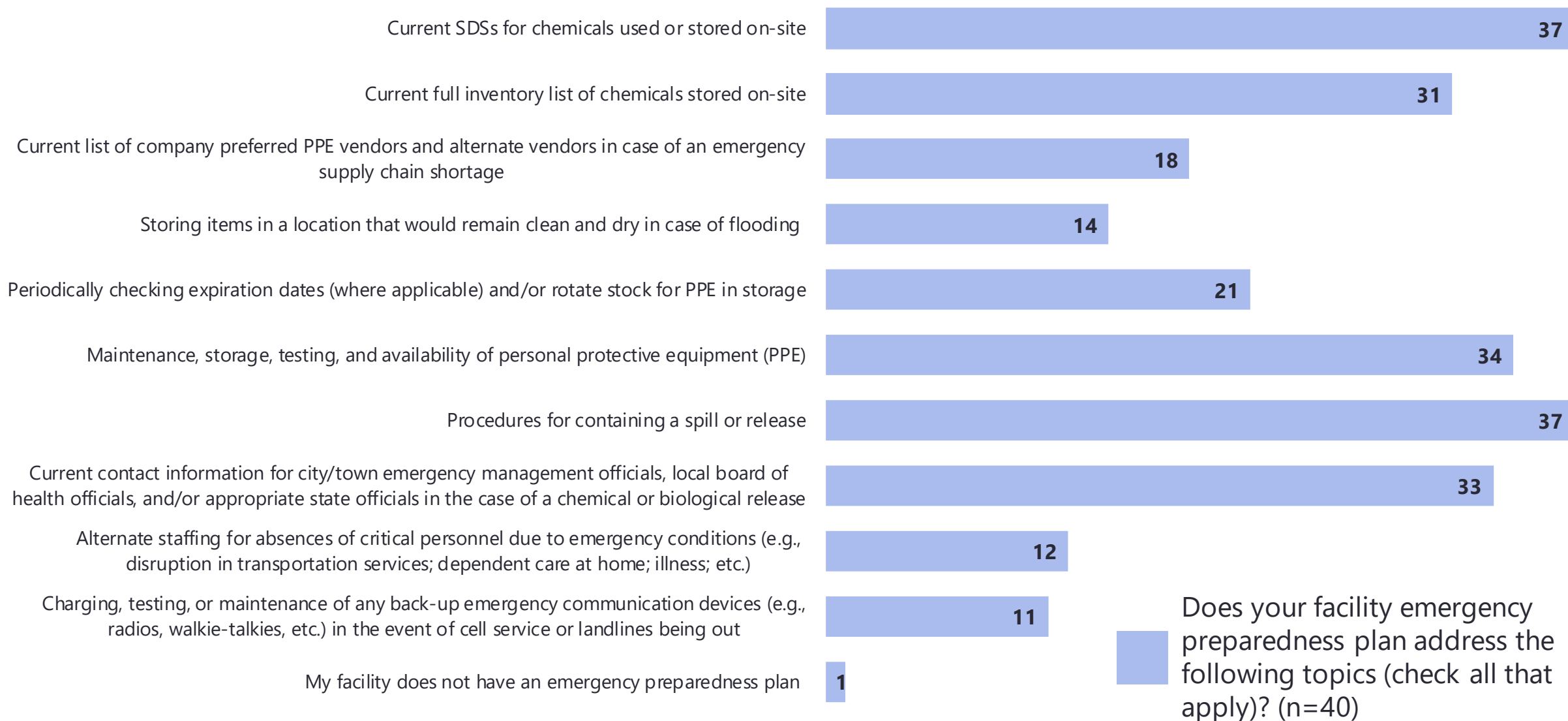
Has your company identified or evaluated sea level or flood zone risks relevant to the location of your manufacturing facility? (n=40)



# Chemical Safety & Climate Resiliency: Results



# Chemical Safety & Climate Resiliency: Results



# Facility Emergency Checklist & Plans

- Cover page with summary information
  - Facility emergency contacts & special hazards
  - Y/N questions: Explosion risk; Respiratory hazards to workers or responders; OK to shut off power, gas, and/or water during an event
- Planning inventory (chemicals of concern, CAS#, volume, storage location, containment & safety precautions)
- Process control & shut off locations (e.g., gas, water, electric)
- Community notifications & sensitive populations (e.g., hospitals, daycares, schools, municipal buildings, EJ neighborhoods)

# Facility Emergency Plan Cover Page

**Facility Emergency Contacts:** (List 2 contacts per shift)

| Name: | Cell Telephone No. | Home Telephone No. | Email Address | Home Address |
|-------|--------------------|--------------------|---------------|--------------|
|       |                    |                    |               |              |
|       |                    |                    |               |              |
|       |                    |                    |               |              |
|       |                    |                    |               |              |

Does an explosion risk exist at the facility? Yes \_\_\_\_\_ No \_\_\_\_\_

Could the facility release a respiratory hazard that could threaten site workers, emergency responders or neighbors?

Yes \_\_\_\_\_ No \_\_\_\_\_

Is it okay to shut the power off during an event? Yes \_\_\_\_ No \_\_\_\_

Is it okay to shut the water off during an event? Yes \_\_\_\_ No \_\_\_\_

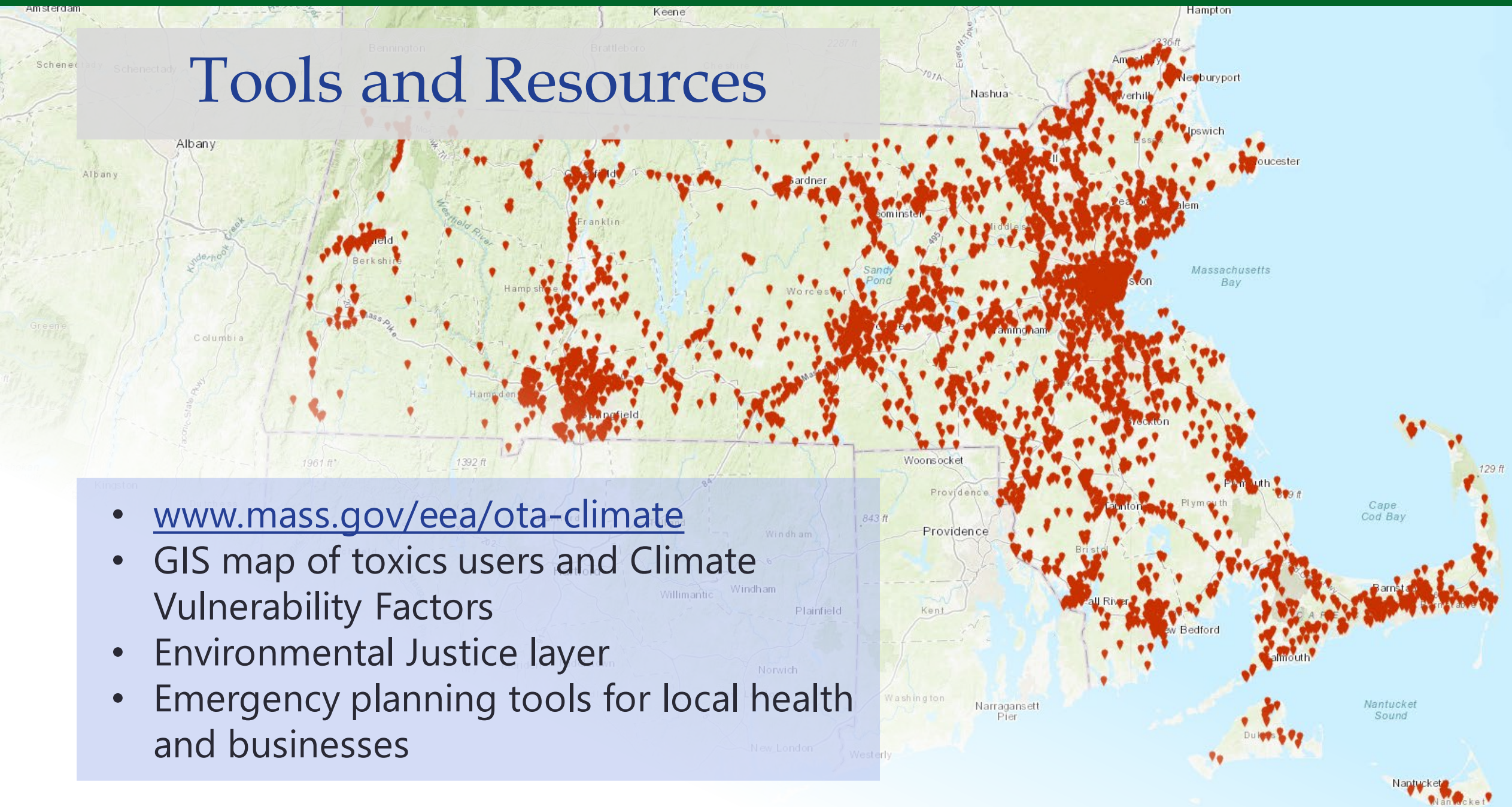
Is it okay to shut the gas off during an event? Yes \_\_\_\_ No \_\_\_\_

Can a run-away chemical reaction/process occur? Yes \_\_\_\_ No \_\_\_\_

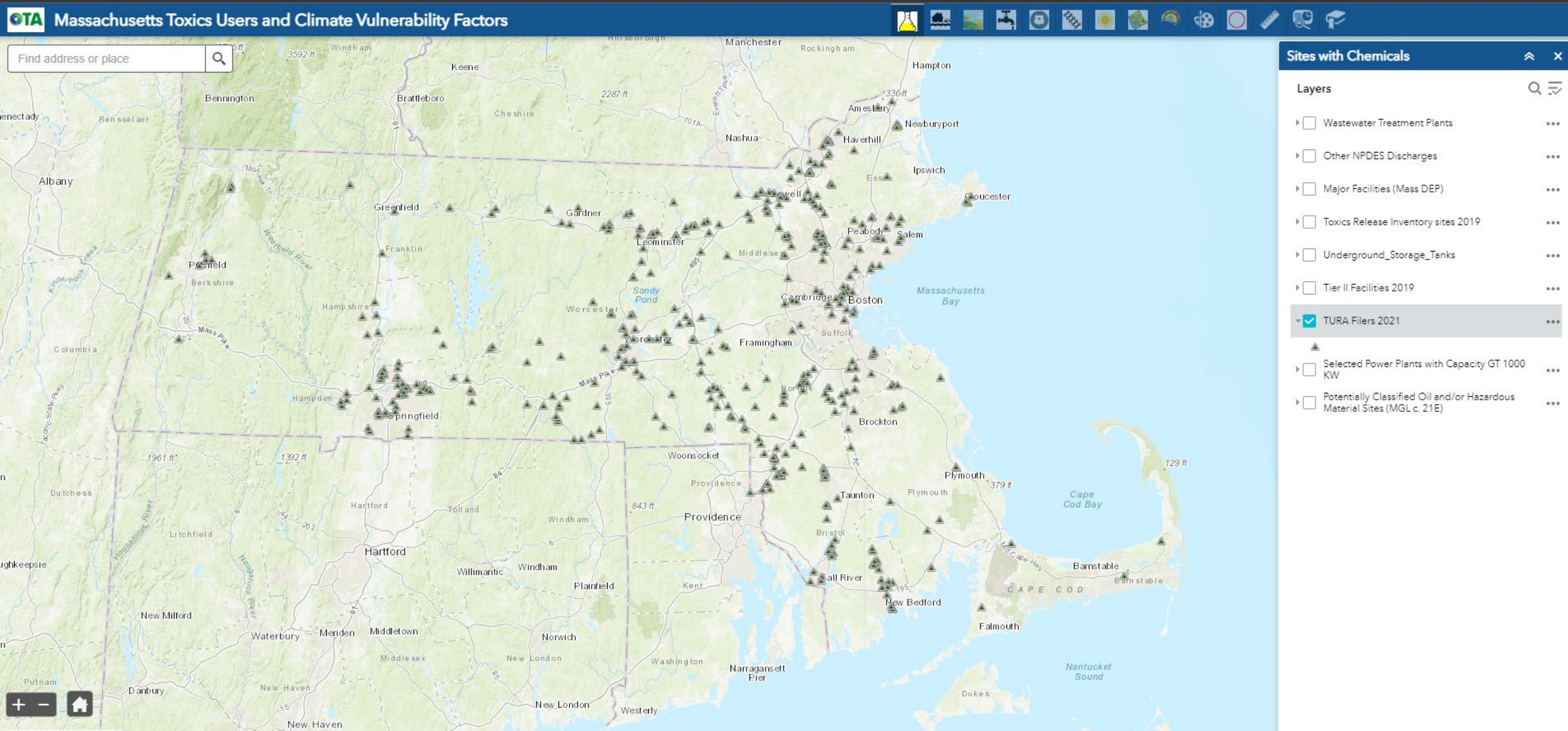
Describe issues/concerns for any yes answers:

# Tools and Resources

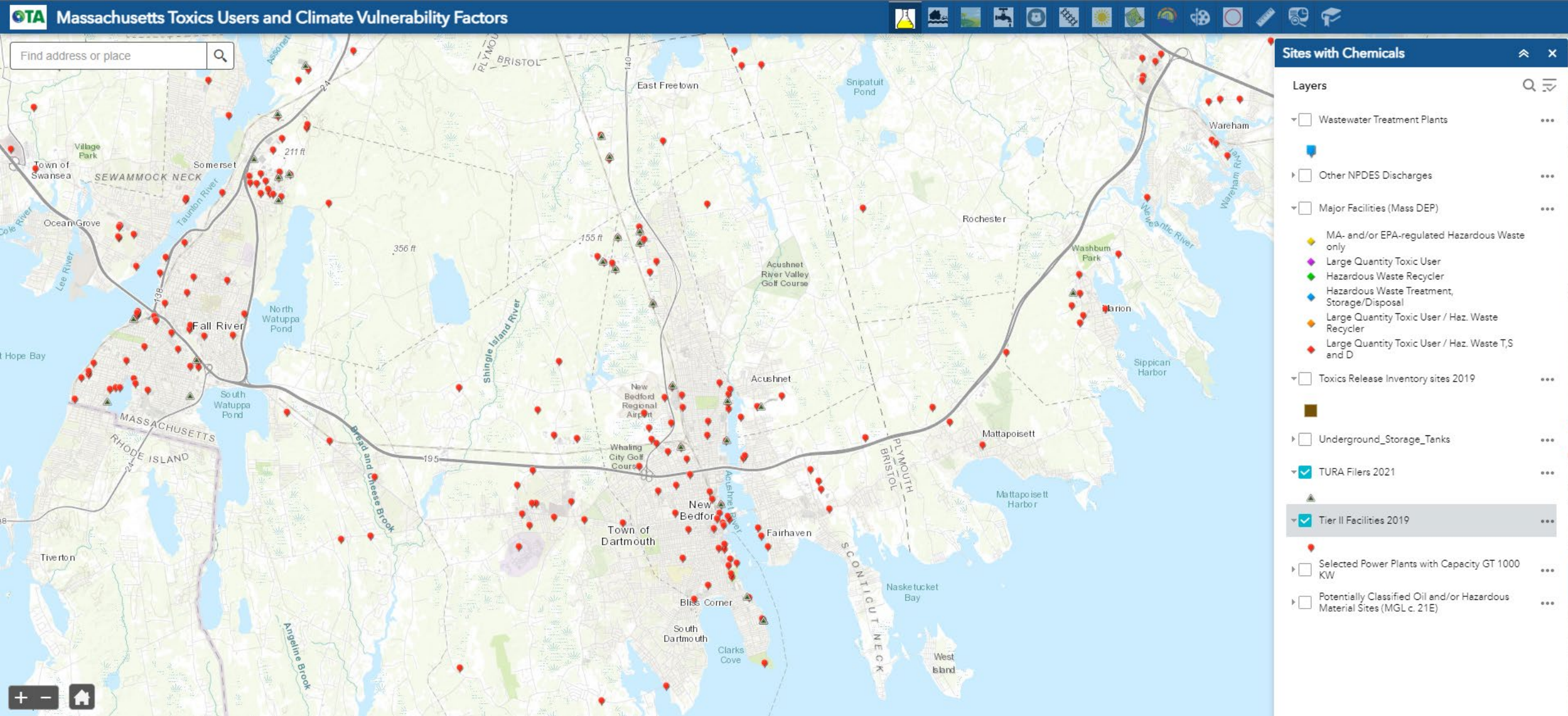
- [www.mass.gov/eea/ota-climate](http://www.mass.gov/eea/ota-climate)
- GIS map of toxics users and Climate Vulnerability Factors
- Environmental Justice layer
- Emergency planning tools for local health and businesses



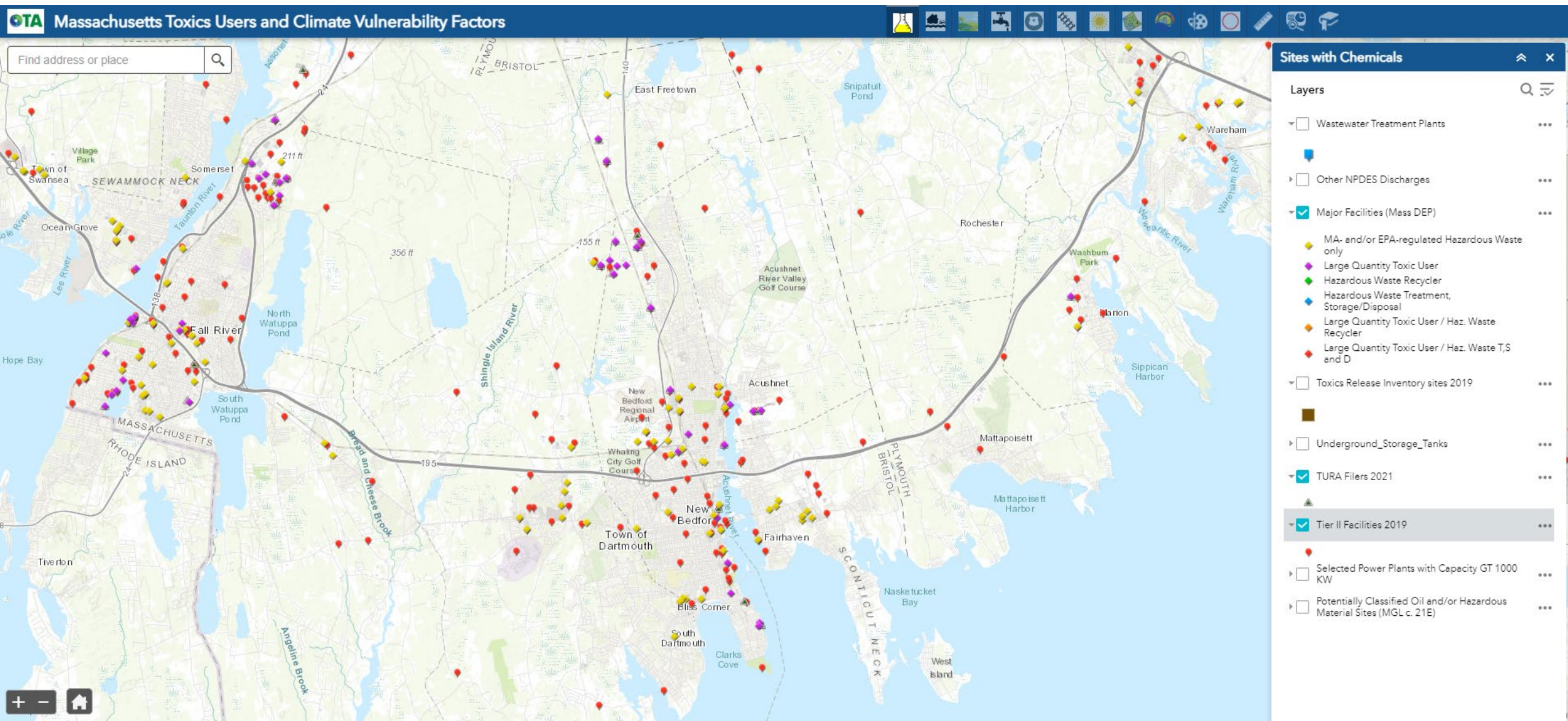
# Using OTA's Mapping Tool: TURA Filers



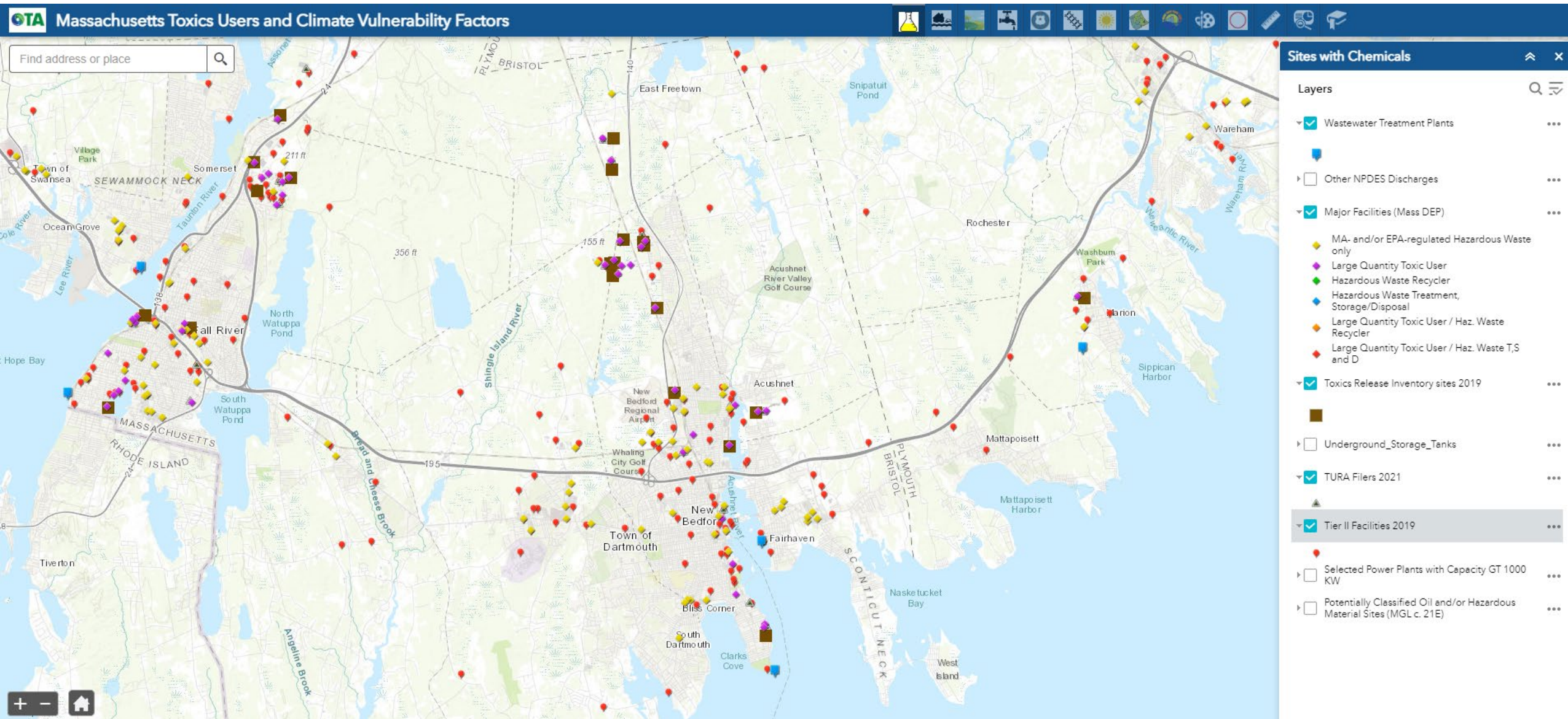
# Using OTA's Mapping Tool: Tier II and TURA



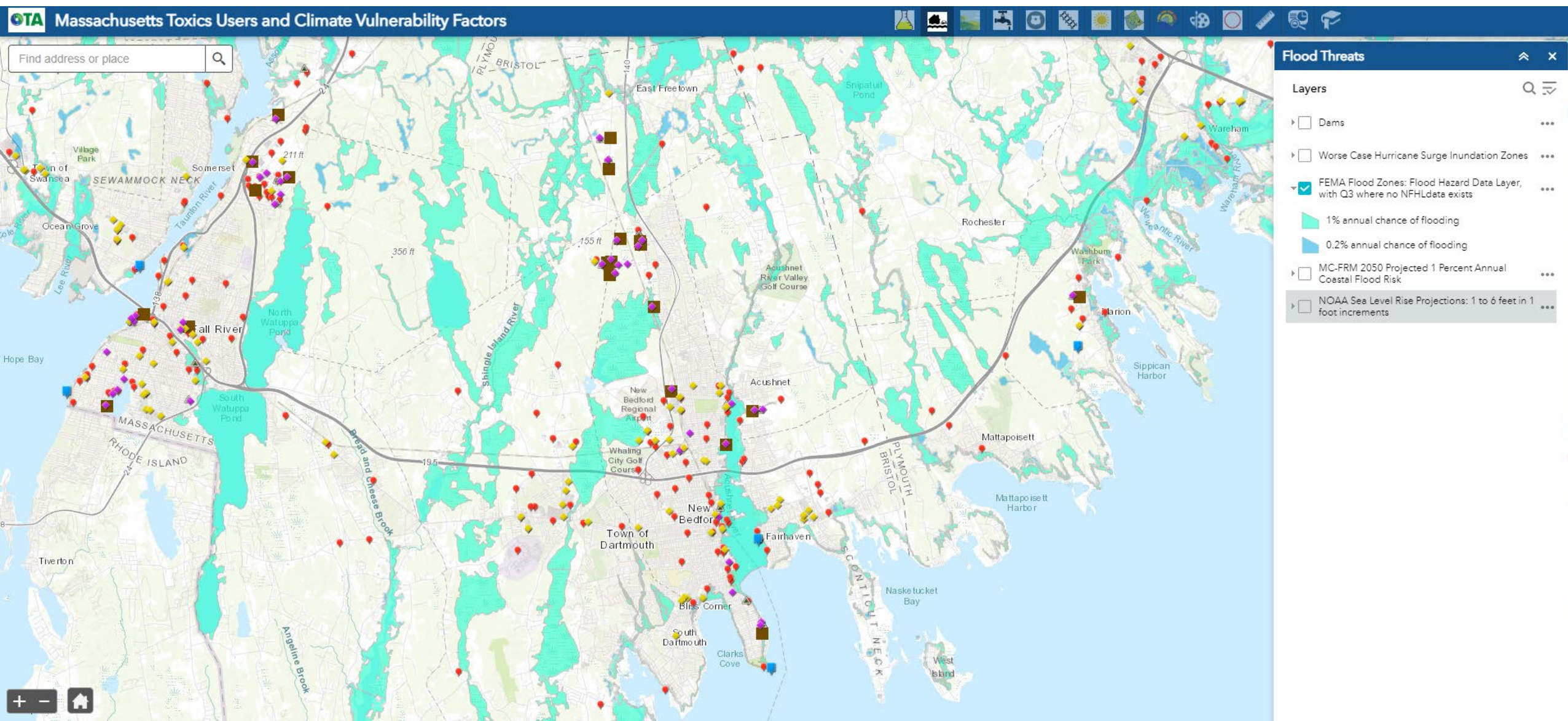
# Using OTA's Mapping Tool: MassDEP Major Facilities



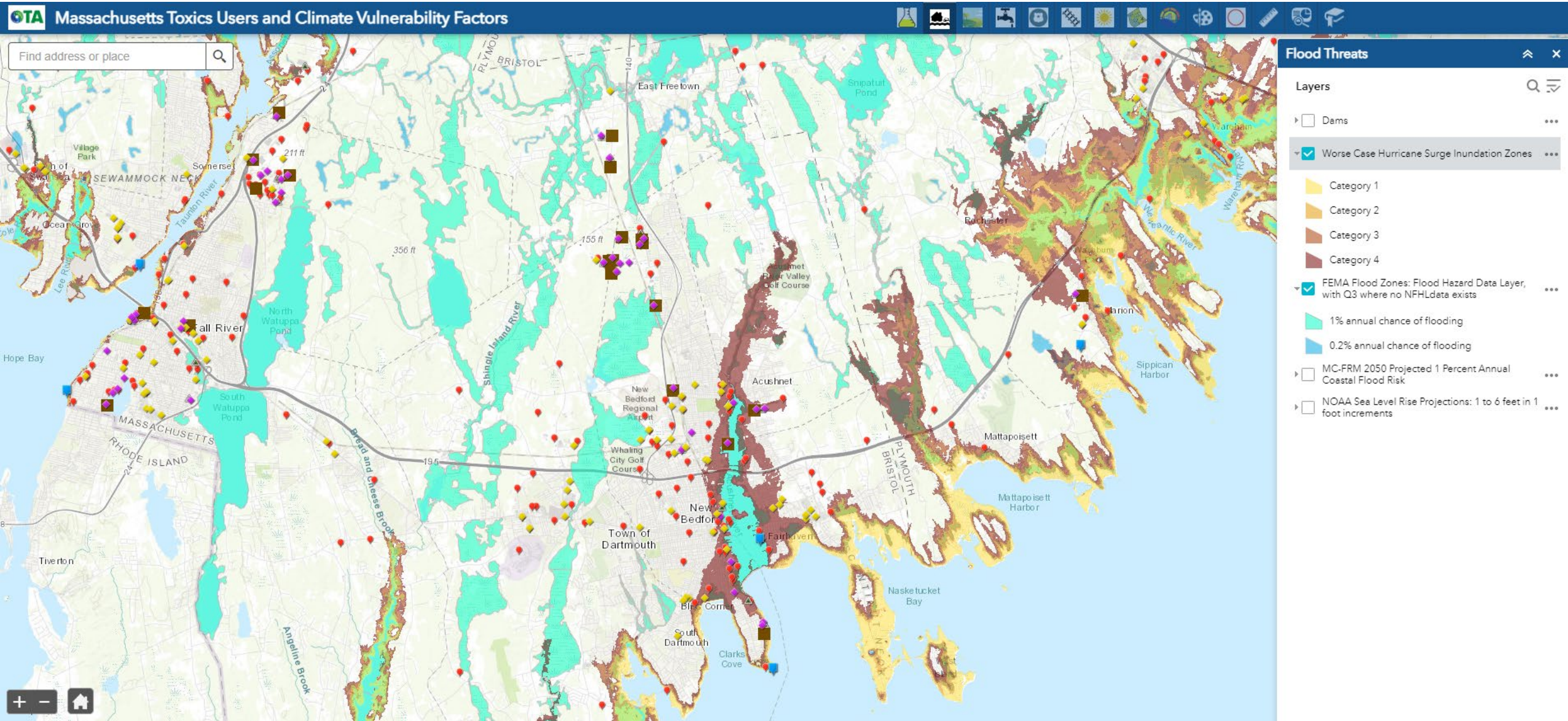
# Using OTA's Mapping Tool: TRI, WWTPs



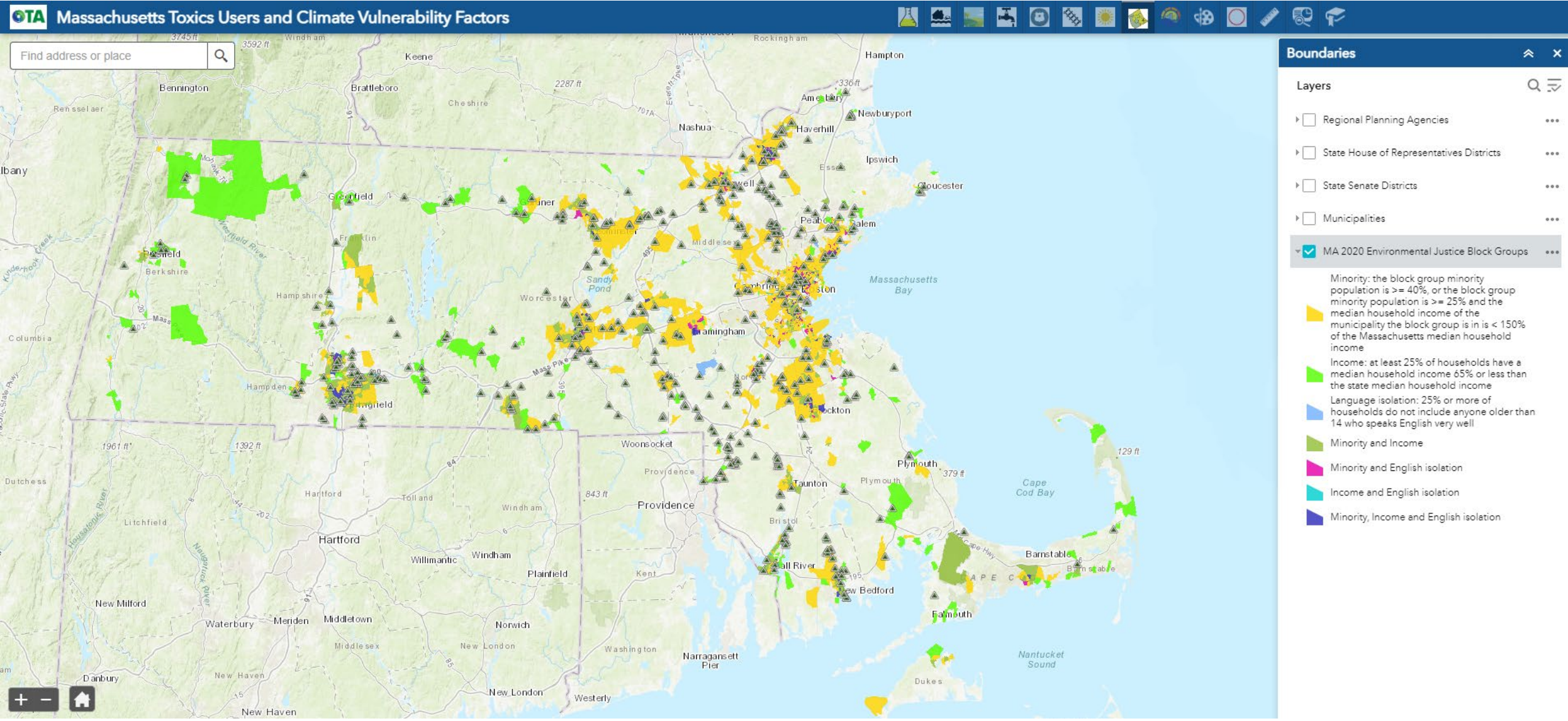
# Using OTA's Mapping Tool: FEMA Flood Layer



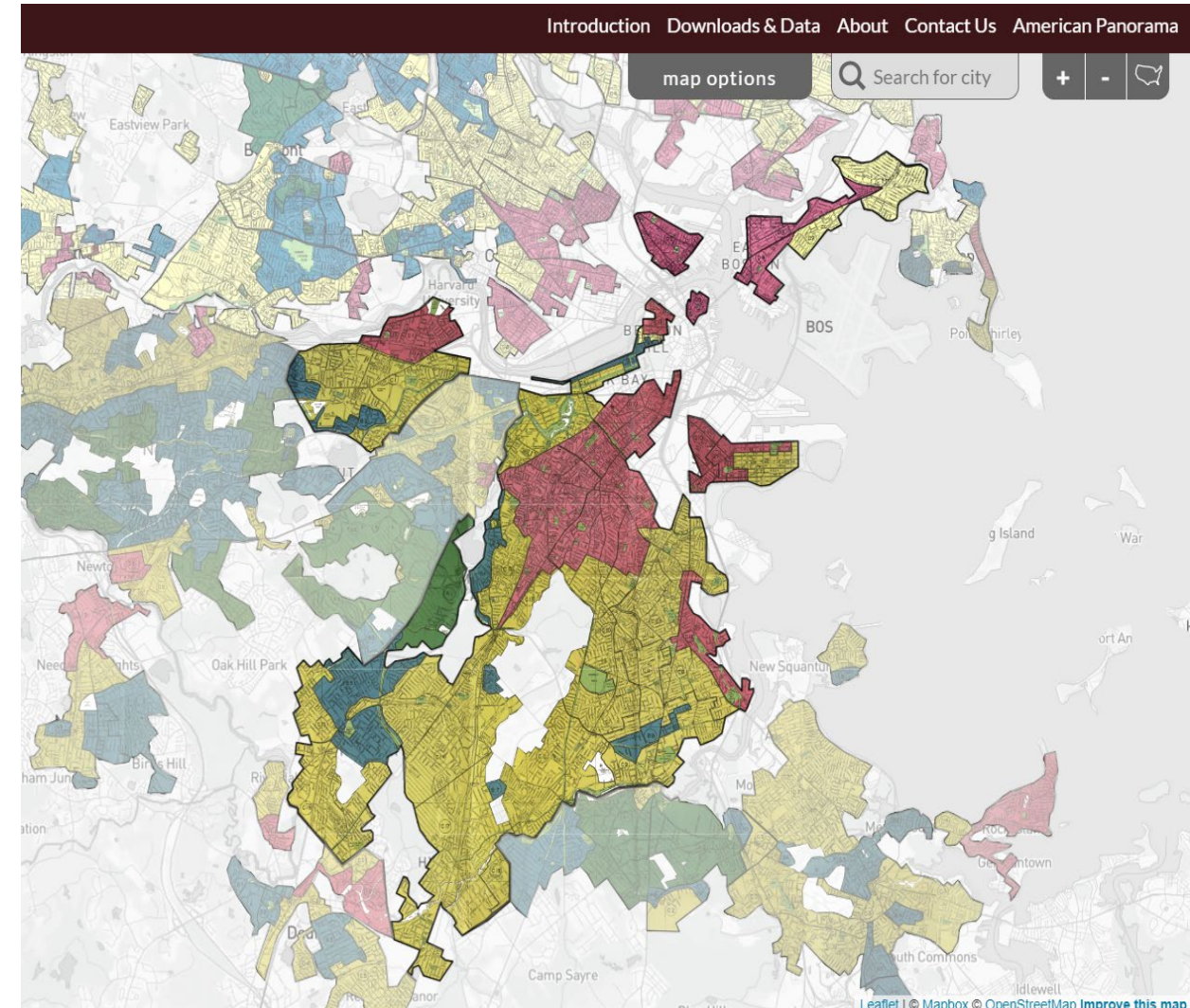
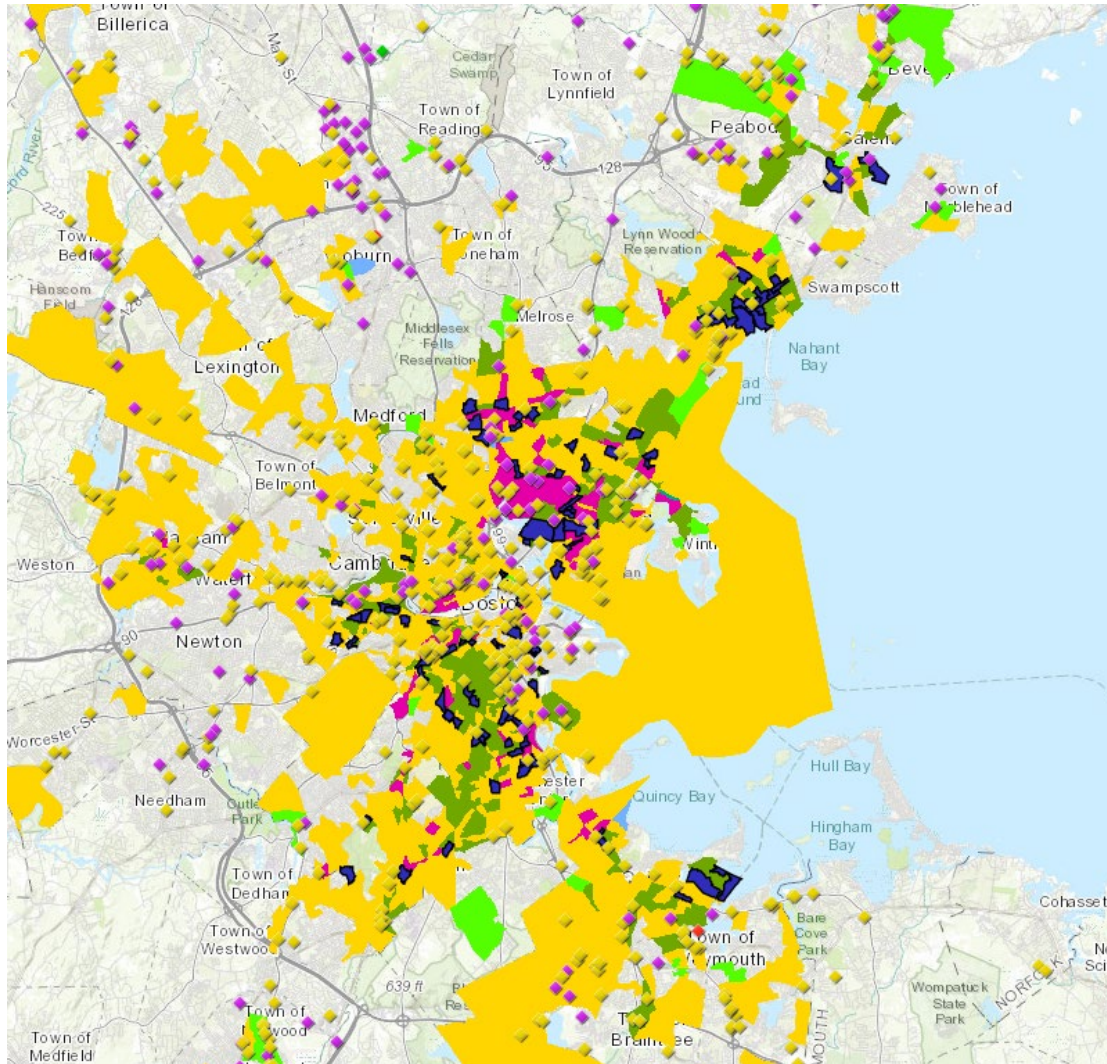
# Using OTA's Mapping Tool: Hurricane Surge



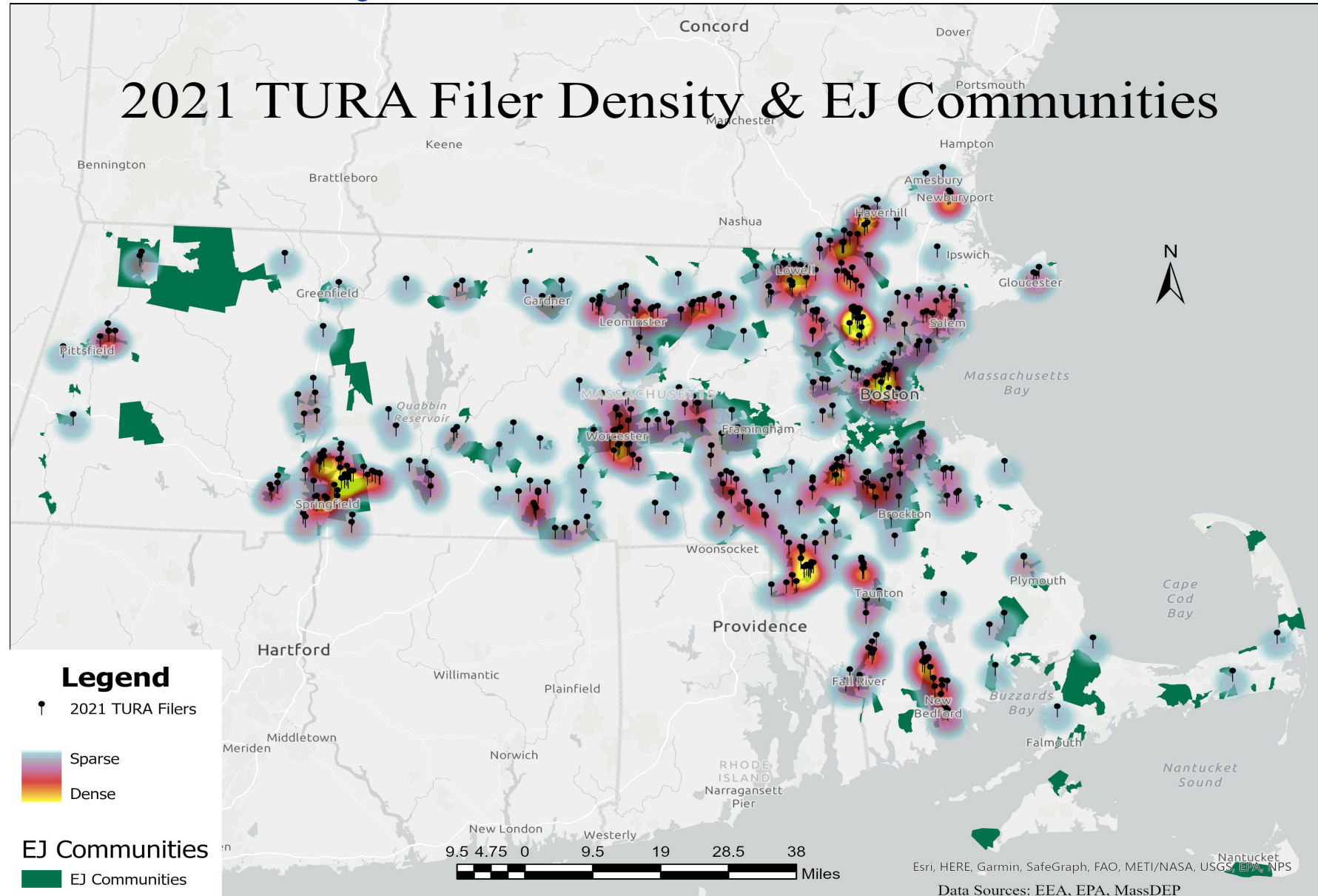
# Using OTA's Mapping Tool: Environmental Justice



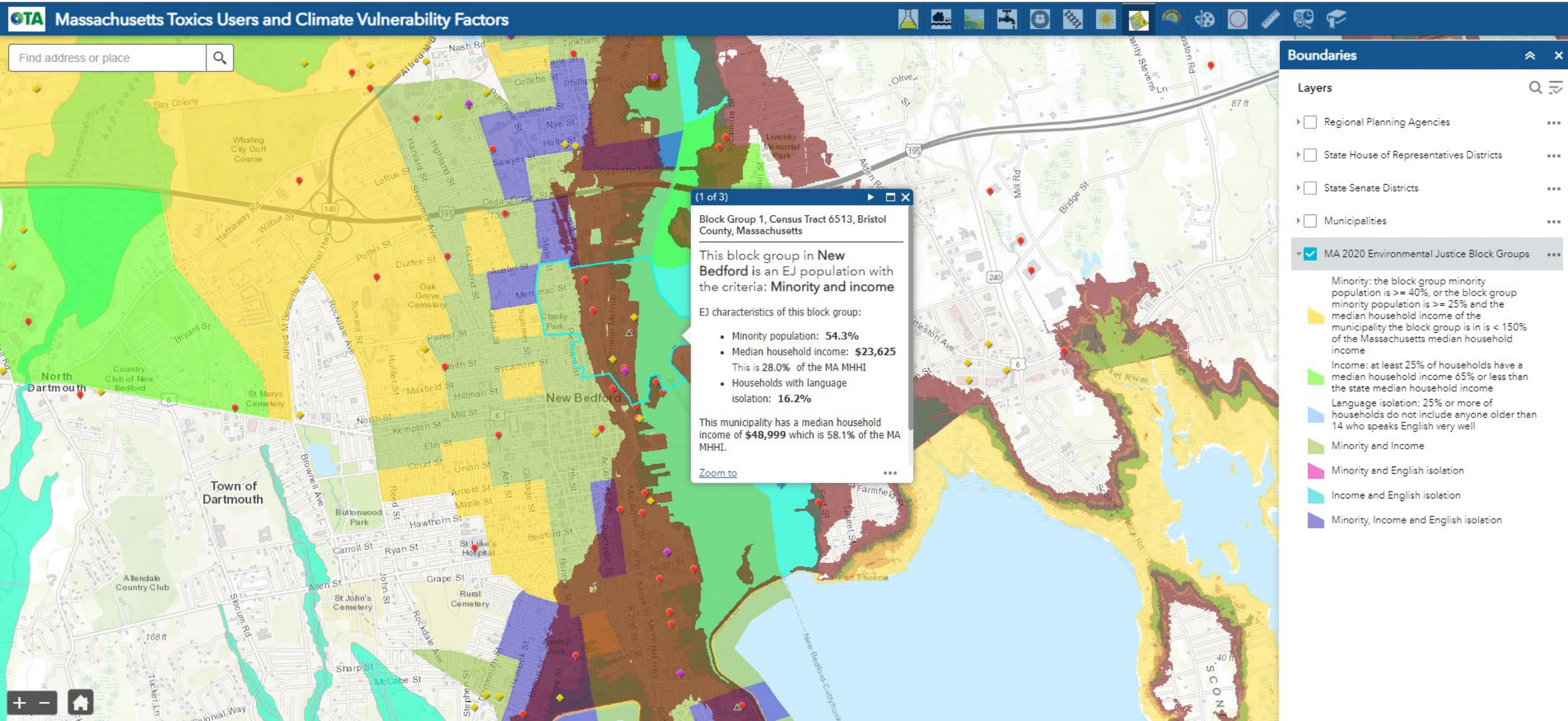
# Current EJ Populations vs. Historic Red-lining Map



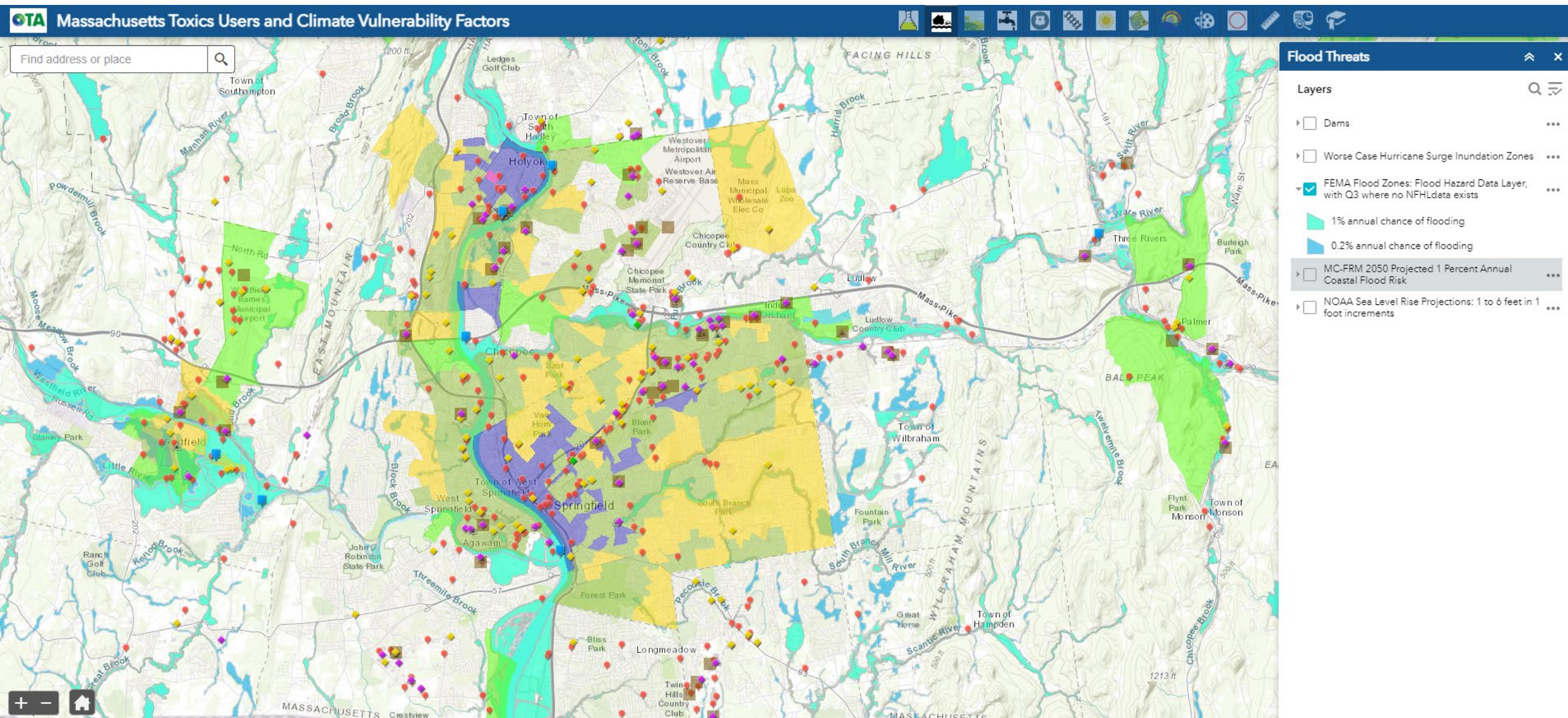
# TURA Filer Density and Environmental Justice



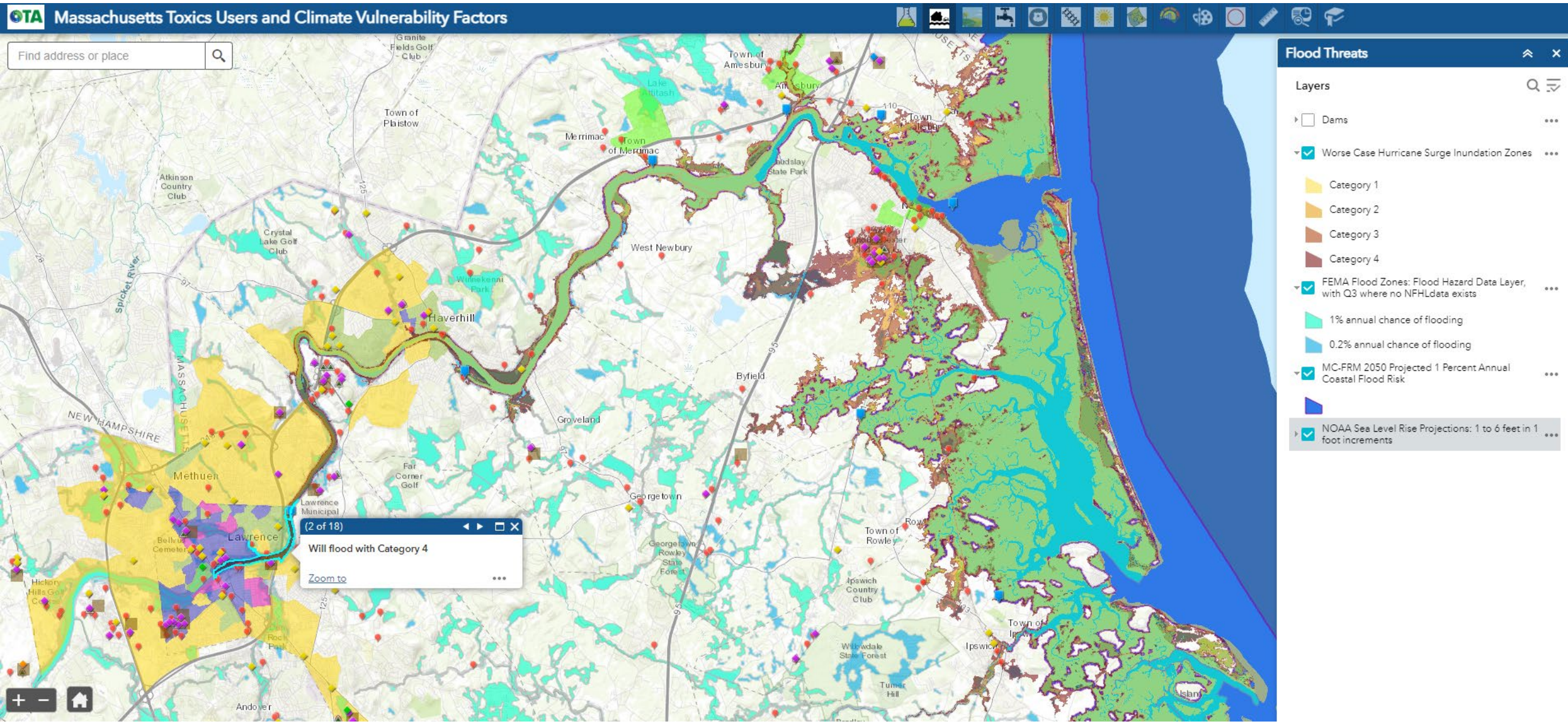
# Using OTA's Mapping Tool: Environmental Justice



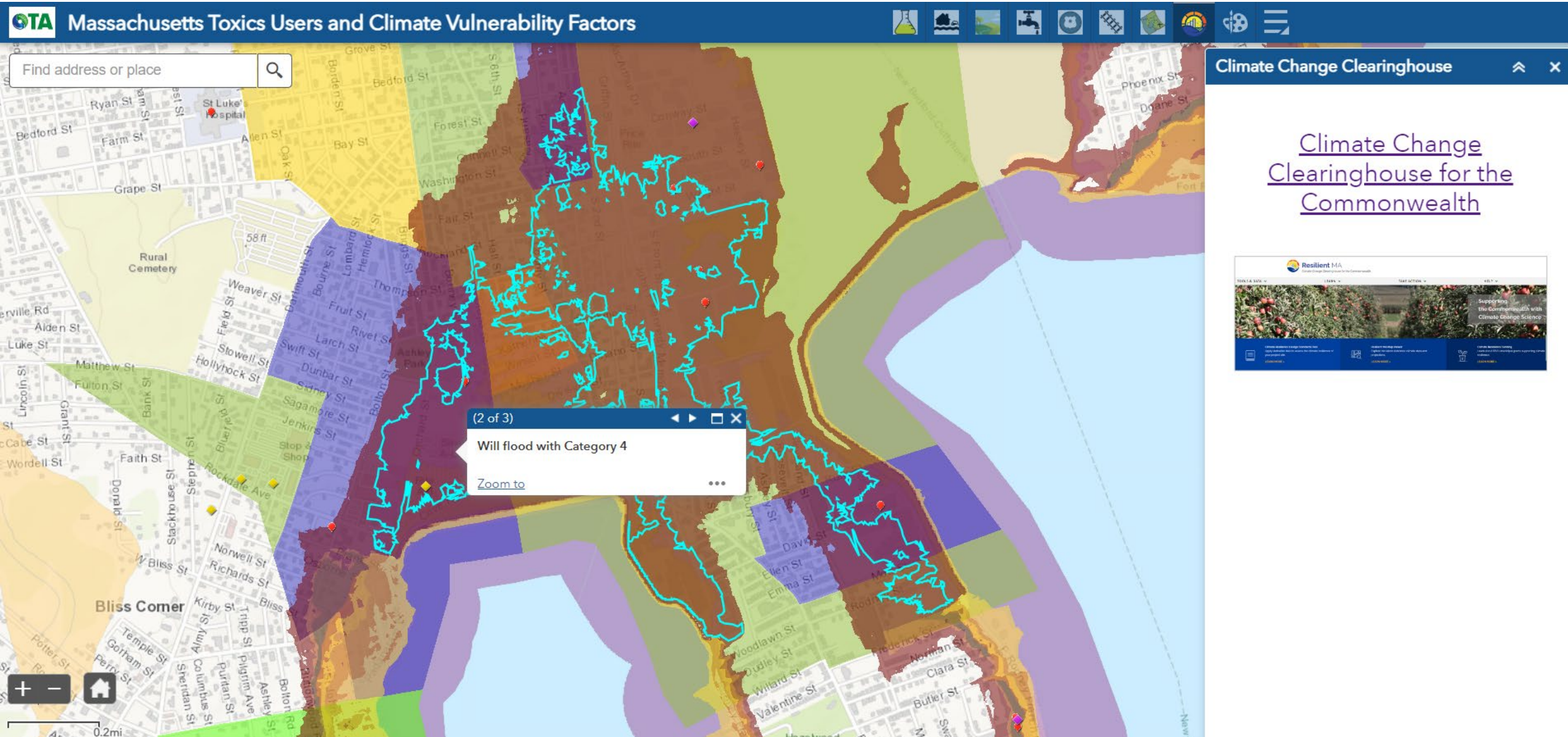
# Springfield, Holyoke, Chicopee: Inland Flooding & EJ



# Merrimack River: Inland Flooding & EJ

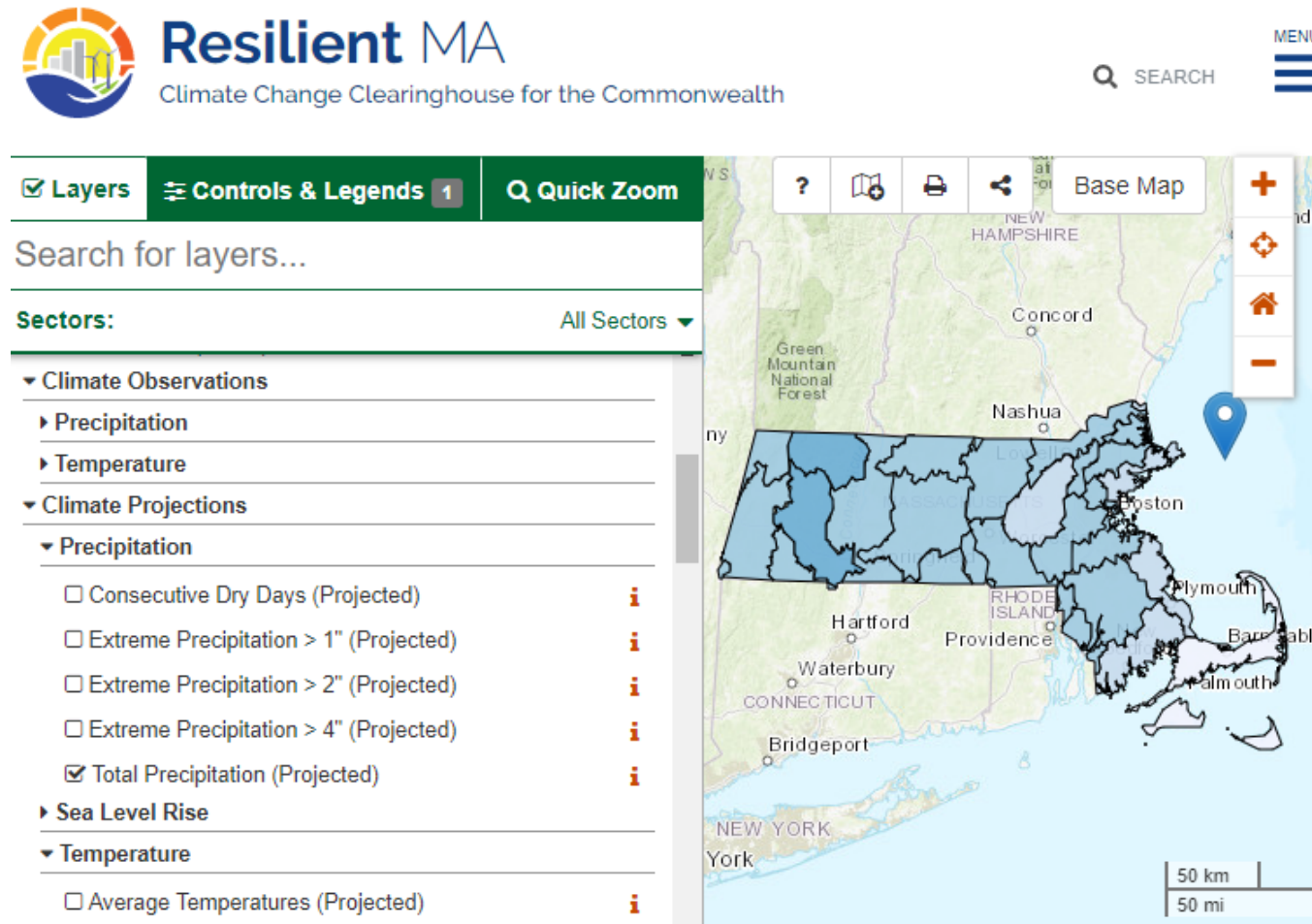


# Using OTA's Mapping Tool: Link to Resilient MA



# Climate Projections

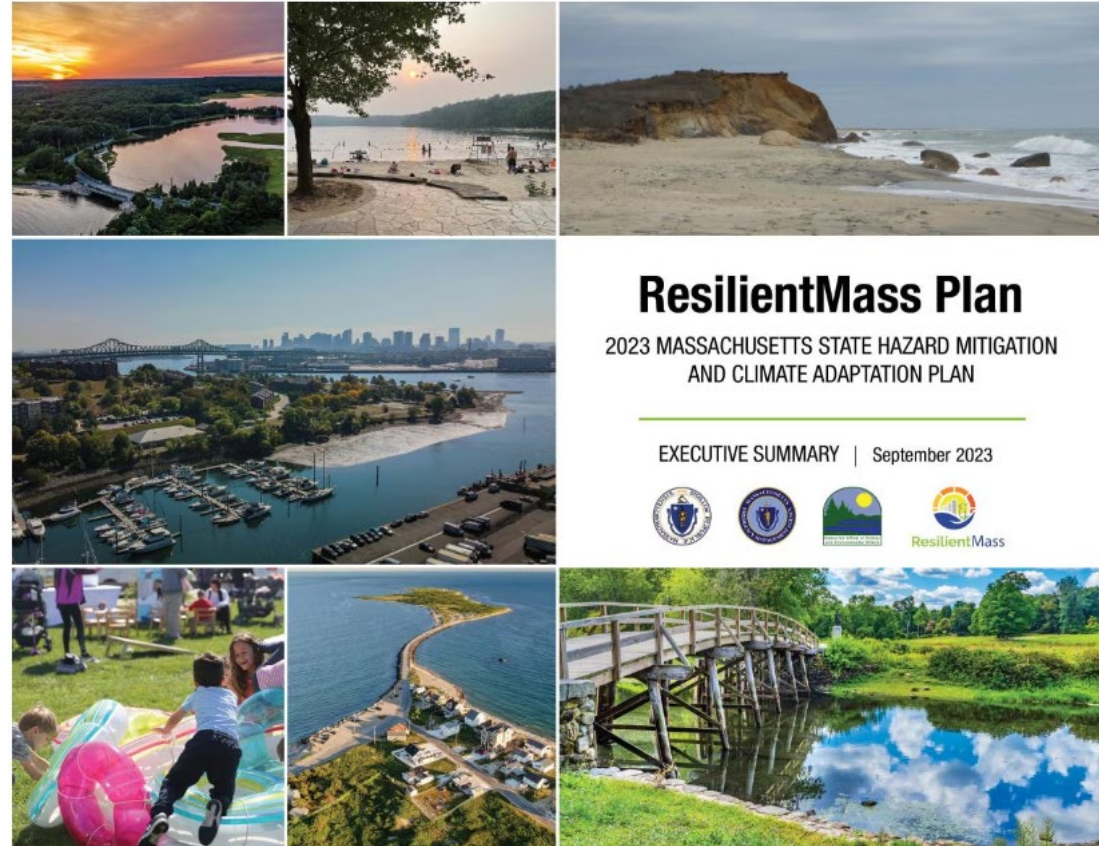
- Existing data, e.g., FEMA flood maps, based on historical patterns
- Future projections for precipitation, sea level rise, and temperature based on modeling of GHG emission scenarios (RCP 4.5 & 8.5)



<https://resilientma.mass.gov/map/>

# Resilient MA Plan

- 2023 State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)
- 5 Priority Impacts
- New EEA Office of Climate Science

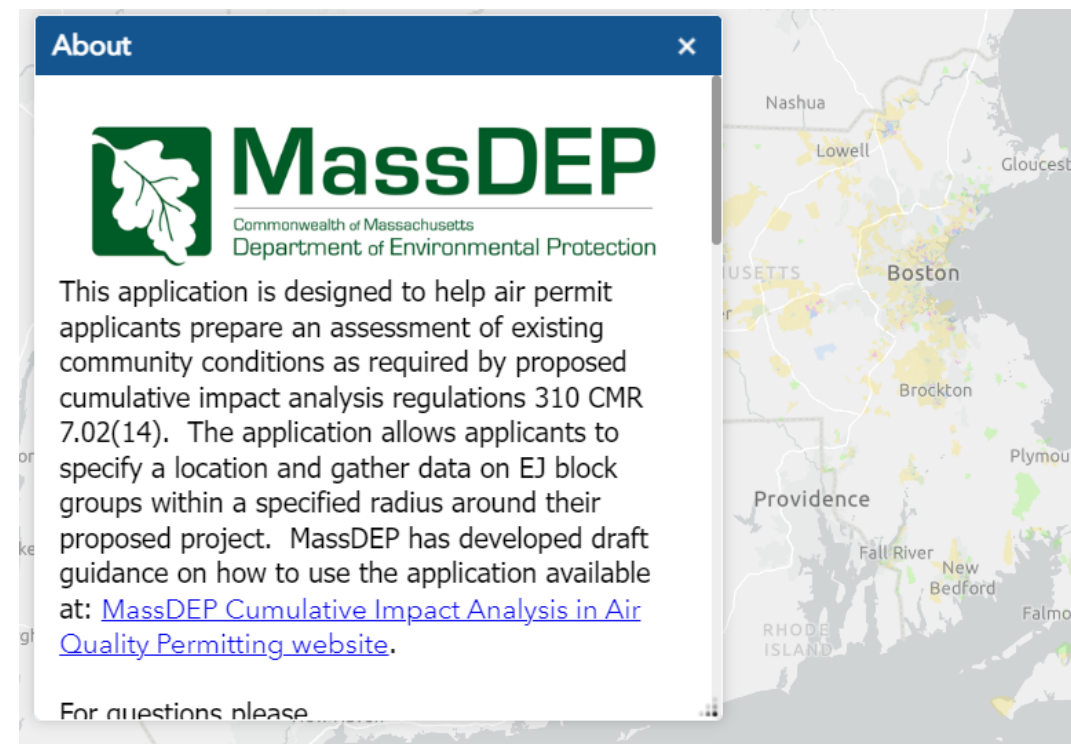


<https://www.mass.gov/info-details/2023-resilientmass-plan>

# Additional Mapping Tools

## Massachusetts

- [MassDEP Cumulative Impact Analysis](#)

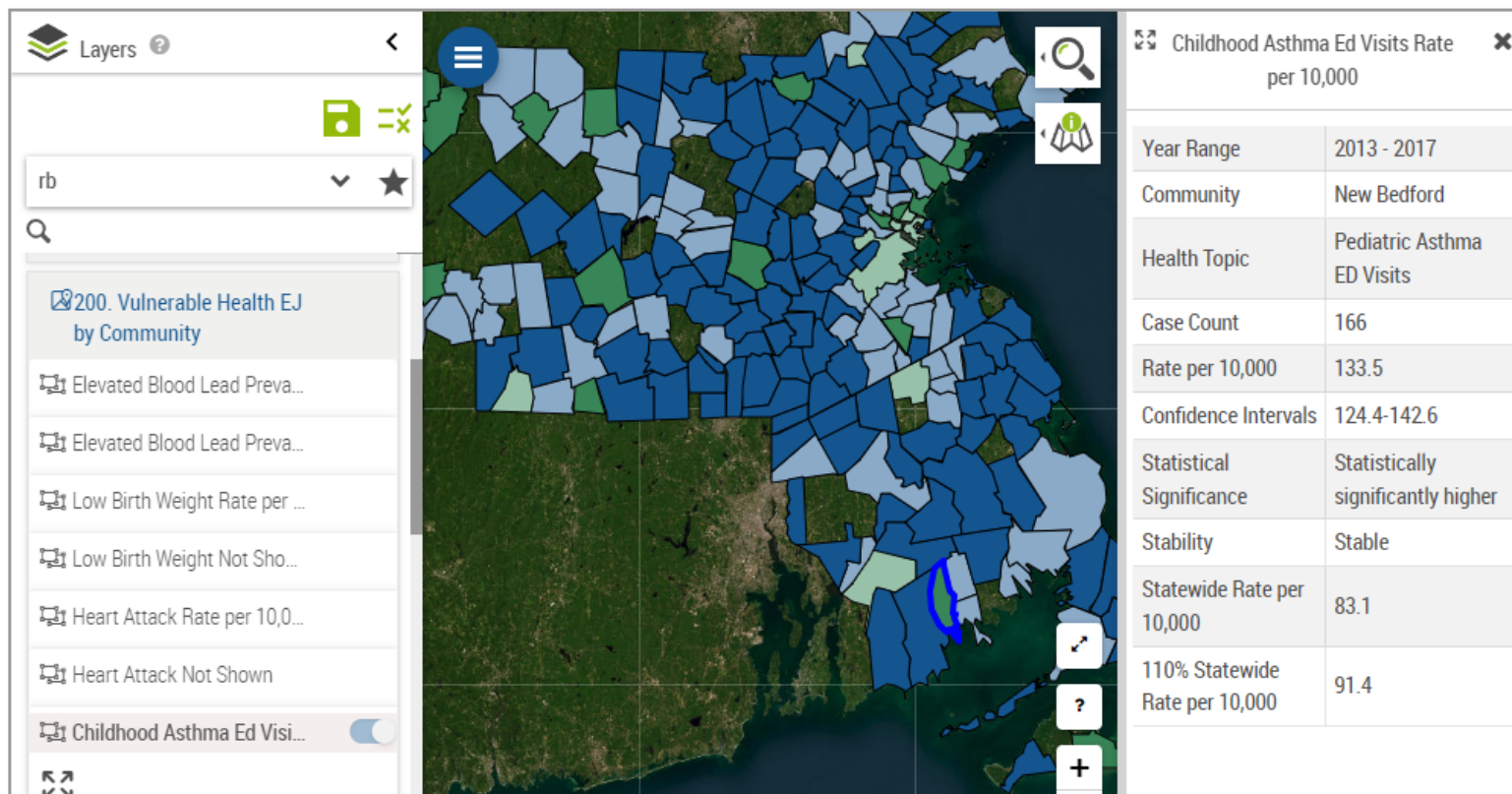


## MA DPH Environmental Justice Tool

[Map How-to](#)[Buffer Selection  
Tutorial](#)[Map Glossary](#)POWERED BY  
MASSACHUSETTS  
TRACKING

## Custom Mapping

The "Vulnerable Health EJ by Census Tract" data layers are in the process of being updated to 2020 Census Tract boundaries. The "Vulnerable Health EJ by Census Tract" data layers currently displayed, are mapped to 2010 Census Tract boundaries. If you have any questions, please email us at [DPH-MA-EPHT@mass.gov](mailto:DPH-MA-EPHT@mass.gov).



# Additional Mapping Tools

- [Massachusetts Department of Public Health Environmental Justice Mapping Tool](#)

# Contact Us

Kari Sasportas, MSW, MPH, REHS/RS

*Outreach & Chemical Policy Analyst*

[kari.sasportas@mass.gov](mailto:kari.sasportas@mass.gov)

Website: [mass.gov/ota](https://mass.gov/ota)

 : [linkedin.com/company/mass-ota](https://linkedin.com/company/mass-ota)

Sign up for our  
newsletter:

