PROTECTING CRITICAL
INFRASTRUCTURE: RESILIENCY
PLANNING AND INVESTMENTS IN
BOSTON PART II

The Massport Experience

November 1, 2019



Property of Massachusetts Port Authority

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Introduction

- Massport is an independent authority governed by a board of directors, appointed by the state's governor
- Massport owns three lines of business:







- Logan Airport
- Hanscom Field
- Worcester Airport

- Conley Terminal
- Flynn Cruiseport Boston
- Seafood Landlord
- Boston Autoport

- South Boston
- East Boston
- Charlestown



Massport's Resiliency Timeline

2013
Logan selected by
FAA to participate
in Sustainability
Master Plan Pilot
Program. Began
developing
Sustainability
Management Plan
for Logan

2014
Completed
Disaster and
Infrastructure
Resiliency
Planning
(DIRP) Study

Nov. 2014
Released:
Floodproofing
Design Guideline

Sept. 2015
Conducted Flood
Operations Plan Tabletop
Exercise;
Test deployment of
temporary flood barriers
at critical Massport
facilities

April 2016
Released Logan
Annual
Sustainability
Report

Early 2014
Modified
Department of
Homeland
Security Hazard
Identification and
Risk Assessment
(THIRA) Model

Aug. 2014
Launched
resiliency
portal on
public
website

April 2015
Revised
Floodproofing Design
Guide;
Released Logan
Sustainability
Management Plan
Highlights and
Technical Reports

Oct.-Nov. 2015
Released Flood
Operations Plans for
Logan and Maritime
Facilities

August 2017-Incorporated resiliency evaluations into the safety unit's Annual Chemical Storage Inventory Assessments Sept-Oct 2017: Conducted a series of workshops with key stakeholders to review and improve Flood Operations Plans for Logan and Maritime facilities

2018/2019

Jan 2018: Expanded the Storm water Pollution & Prevention Program (SWPPP) to incorporate resiliency best practices

March 2018: First "real-life" emergency deployment of flood barriers at Maritime properties in preparation for Nor'easter

June 2018: Developed Resiliency Web App

June 2018: Conducted test deployment of temporary flood barriers at one Logan Airport critical asset

Oct 2018: Completed Logan storm water flood risk study.

Aug 2019: First major update to aviation and maritime flood operations plans



Disaster Infrastructure Resiliency Plan

Goals of the project:

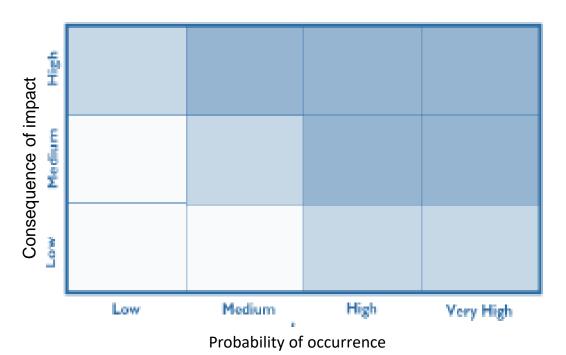
- Understand Massport's vulnerability to climate impacts
- Develop short-term and long-term resiliency strategies

Project approach:

1- Climate projections



2- Vulnerability and risk assessment



3- Adaptation planning & design

Adaptation strategies



Risk-Based Prioritization of Assets

Probability of Flooding

Determined based on Inundation Model results
Flooded in more storm scenarios → higher probability, higher priority

Consequence of Flooding

Criticality Score

Based on role in disaster preparedness, response, recovery

X Occupancy Category

Based on ASCE/SEI 24-05 Standard for Flood Resistant Design and Construction

Higher consequence → higher priority

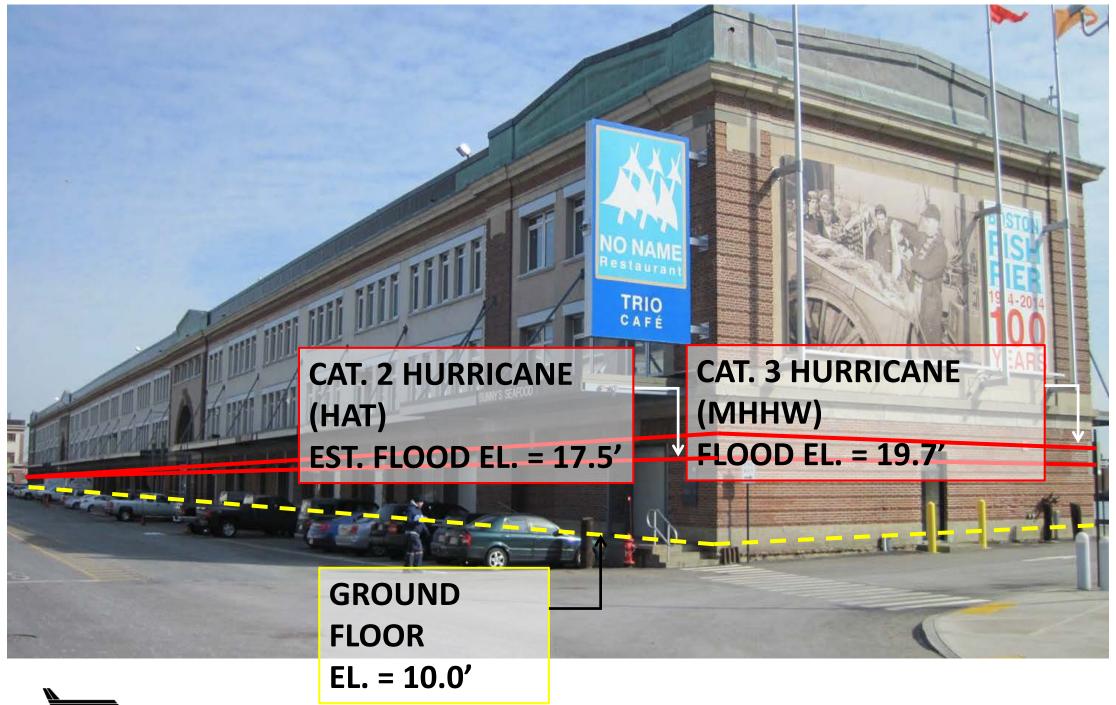
Depth of Flooding

Further distinguish among assets with same Probability and Consequence

Higher depth → higher priority



Flood Scenario Elevations – Fish Pier East



Flood Barriers









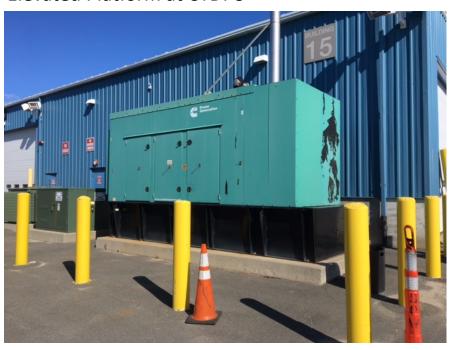


Elevated Platforms

Generator Combo Unit



Elevated Platform at CTDFC



State Police Generator





Annual Training/Test Temporary Flood Barriers

Temporary Flood Barriers deployed May 2019

Logan Airport – 4 facilities

Conley Terminal - 2 facilities

Fish Pier – 3 Facilities

Initially deployed in September 2015







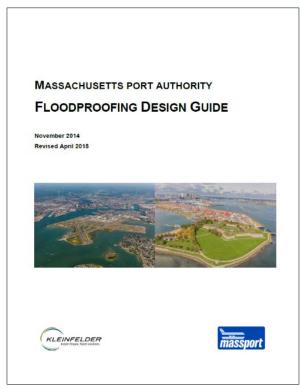
Implemented Operational Plans and Guidelines

Flood Operations Plans:

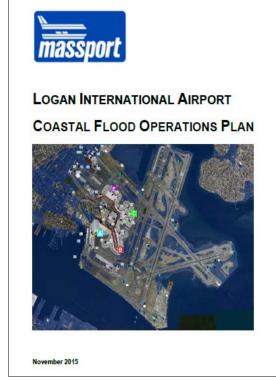
- Specific to Logan and Maritime sites
- Identifies detailed actions, timelines and responsible parties
- Created through collaborative process with MPA stakeholders
- Tabletop exercise to engage functions

Flood-proofing Design Guide:

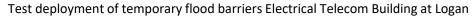
- Design Flood Elevations for construction
 - Different heights for new & existing facilities
- Floodproofing Strategies
 - Wet & dry floodproofing
- Performance standards









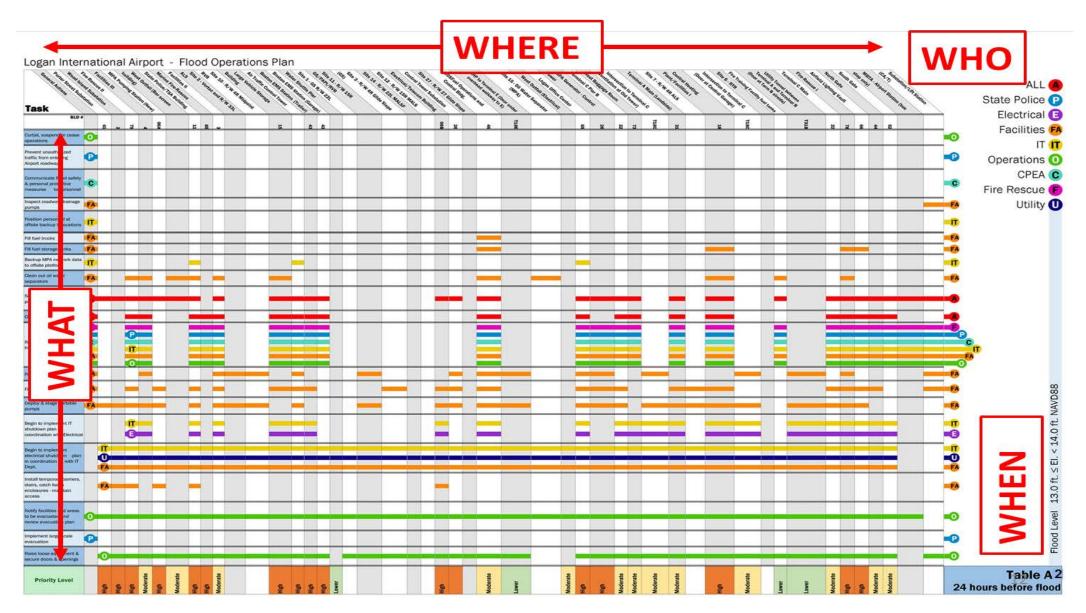




Conley Terminal test deployment



Flooding Actions and Timelines





Application

- 1. Facilitate management oversight of flooding or heavy precipitation events impacting Massport infrastructure
- 2.Inform decision-making during a flood event where Massport flood operations plans may or have been activated;
- 3.Enable real-time field updates via mobile devices of:
 - i. flood water encroachment
 - ii. barrier and resource deployments
 - iii. equipment status or activity milestones
 - iv. site inspections

