



MBTA Winter Operations

Winter Resiliency Overview

August 2015

Background



- During early 2015 powerful winter storms resulted in significant snow accumulations (100+ inches) and bitter cold that severely disrupted MBTA operations
- System ultimately restored through unprecedented recovery effort consisting of MBTA departments, contractors, state agencies, and other organizations

Assessment



- Multiple assessments conducted to assess cause of Winter 2015 challenges, including:
 - Governor Baker's Special Panel Report
 - "To prevent another widespread system failure, the Governor directs the MBTA to revisit its full preparedness process and planning, and the MBTA adopts an Incident Command System."
 - APTA Peer Review of MBTA Extreme Weather Emergency
 - Strengthen planning with more emphasis on severe events
 - Improve communication and situational awareness between field personnel and operations centers
 - Broader, more flexible snow fighting equipment fleet
 - Enhanced coordination with local and regional emergency plans

Implementation



- MBTA undertaking significant operational and infrastructure improvements:
 - **WINTER INFRASTRUCTURE & VEHICLE RESILIENCY PROGRAM**
 - Total program budget of \$82.7m
 - **WINTER OPERATIONS IMPROVEMENT PLAN**
 - Specific MBTA operational, preparedness, and coordination improvements
 - Builds on existing strengths and adds/enhances technology, training, coordination, contractor support, planning, and management

Infrastructure Resiliency



- Orange Line
 - Third rail heater replacement
- Red Line
 - Third rail and third rail heater replacements
- ROW Snow fencing
- Facility structural hardening

Vehicle Maintenance



- **Heavy Rail**
 - Anti-icing deployment
 - Increased stock of traction motors
 - Additional snow plows for revenue fleet
- **Light Rail**
 - Replaced air valves on Type 7 cars to reduce contact with snow and ice buildup
 - New drawbar head covers to improve coupling in severe weather
 - Increased stock and installed new motor control units to improve performance

Vehicle Maintenance



- **Bus**
 - Increased stock of critical maintenance components
 - Revised vehicle staging to facilitate snow removal from facilities
- **Non-Revenue Vehicles and Equipment**
 - Augmented fleet
 - Off-season repairs and upgrades
 - Rail-borne plow equipment
 - Two additional fuel trucks

Commuter Rail

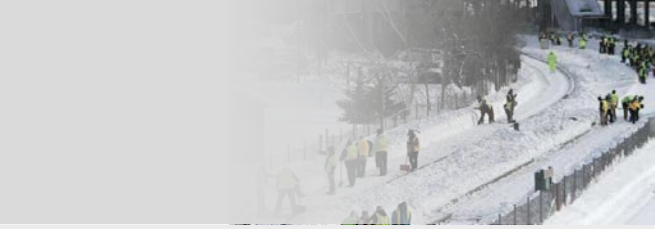


- Snow Fighting Equipment
 - Knox Kershaw Snowfighters
 - Front End Loaders
 - Speed Swings
 - Kubotas
 - Scheduled delivery 11/12 2015
- Snow Clearing Priorities
 - Mainline
 - Facilities
 - Stations/Platforms



Commuter Rail

- Infrastructure: Switch Heater Rehabilitation Program
- Operations: Reduced Snow Schedule (multiple levels based on weather severity)



Winter Operations Improvement

1. Incident Command System Training
2. New Snow & Ice Operations Plan
3. Storm Desk
4. Snow & Ice Management System (SIMS)
5. ROW-Based Weather Station Sensors
6. Snow & Ice Vendor Contract
7. State and Municipal Snow & Ice Coordination
8. Winter Drill & Exercise Program



ICS Training

- In addition to previous ICS training for managers, additional training to be provided Fall 2015:
 - Ongoing MBTA Security Awareness & Emergency Preparedness training is providing basic ICS and emergency response training to all Operations employees (3400 trained to date)
 - All Operations Managers to also receive ICS 100, 200, 700 training
 - Specific training regarding Emergency Operations Center (EOC) and MBTA Storm Desk to be provided beginning in September



Snow & Ice Operations Plan



- New 2015/16 MBTA Snow & Ice Operations Plan in development, completed by October
- Will include:
 - General “Snow & Ice Operations Plan” updated annually
 - Event-specific Storm Operating Action Plan with names, locations, contractors, and other response-specific detail
- Will include incident classification based on storm severity and weather forecasts (Levels 1-5)
- Enhanced Emergency Operations Center overseen by designated senior director responsible for all aspects of preparing for and responding to emergencies

MBTA Storm Desk



- New dedicated MBTA Storm Desk is sole reporting/dispatching center for snow & ice ops
- Commands and controls internal and external snow & ice resources across T
- Trained field supervisors report conditions back to the desk in real time
- Desk will issue new "Situation Updates" at regular intervals to internal and external stakeholders

SYSTEM STATUS REPORT

AS OF 9:00 AM, TUESDAY, APRIL 28, 2015

OVERVIEW

SITUATION

- The MBTA Snow & Ice Desk is activated
- The MBTA is currently addressing the impacts of a winter storm that has dumped 8" of snow across most of the system.
- Currently, 143 pieces of snow removal equipment are deployed to MBTA stations, properties, and facilities.
- MBTA service is running normally with moderate delays; no lines or stations are closed.

WEATHER	Riverside	JFK/UMass	Braintree	Ashmont	Forest Hills	Oak Grove	Airport
Air Temperature	57°	55°	54°	54°	55°	54°	54°
Precipitation	None	None	Rain	None	None	Rain	None
Rain Acc (24 Hr)	0"	0"	2"	0"	0"	2"	0"
Snow Acc (Now)	0"	0"	0"	0"	0"	0"	0"
Wind Speed	30MPH NW	33MPH NW	31MPH NW	29MPH NW	33MPH NW	31MPH NW	29MPH NW
Rail Temperature	50°	49°	51°	48°	49°	51°	48°
Rail Condition	Dry	Dry	Wet	Dry	Dry	Wet	Dry

IMPACT SUMMARY

	Red	Orange	Blue	Green	Silver	Bus	C Ferry	C Rail	Ride
LINE	Red	Orange	Blue	Green	Silver	Bus	C Ferry	C Rail	Ride
SERVICE	Red	Orange	Blue	Green	Silver	Bus	C Ferry	C Rail	Ride
STATIONS	Red	Orange	Blue	Green	Silver	Bus	C Ferry	C Rail	Ride
FACILITIES	Red	Orange	Blue	Green	Silver	Bus	C Ferry	C Rail	Ride
FLEET	Red	Orange	Blue	Green	Silver	Bus	C Ferry	C Rail	Ride

RED LINE

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SERVICE

SEGMENT	Northbound	Southbound (Braintree)
% Trips Last 2 Hrs	102%	96%
Status	Normal	10-15 minute delays due to mechanical issue

STATIONS

LOCATION	Avonlea	Davis	Porter	Harvard	Central	Kendall	Charles/MGH	Park Street	Downtown Crossing	South Station	Broadway
AGENCY											
OTHER											
ACTIVITY											
EVENT											

Harvard closed due to flooding in mezzanine area.
 Medical emergency on platform at Broadway
 TPD investigating criminal activity at Fields Corner and Shawmut
 Wollaston closed due to flooding.

ES

Cabot	Caddigan
N/A	Access from XYZ Street temporarily blocked by parade

Growing issues with traction motor snowingestion

ICTURE

Crossovers	Lead-In Tracks
Junction out of service for repairs; expected restoration within 8 hours	N/A
3 rd Rail	Heaters
N/A	Junction out of service for repairs; expected restoration

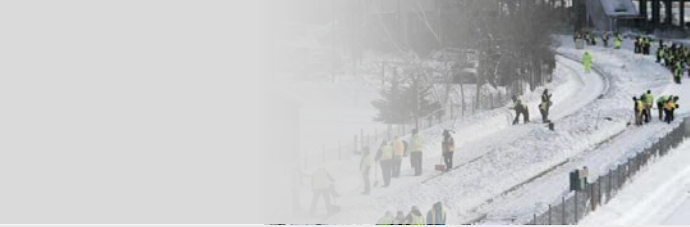
SIMS



- MBTA working with IT and Highway Division to adapt existing Highway “Snow and Ice Management System” software platform to MBTA’s needs
- Will enable centralized (Storm Desk) inventorying, dispatching, tracking, and reporting of snow and ice ops
- Expected benefits will include:
 - Effectively deploy resources to high priority areas
 - Improve contractor oversight, documentation, utilization
 - Increase situational awareness, accountability, responsiveness
- Completion in September; Testing/Training in October; Deployment in November

Rail Weather Sensors

- MBTA deploying six new ROW weather sensors at strategic locations that will provide real time and future temperature, humidity, precipitation, and wind info/forecasts
- Sensors currently in use by Highway Division, several rail systems throughout North America and Europe
- Installed, tested, and operational by November



Snow & Ice Vendor Contract



- MBTA is developing a specification for contracted vendor snow and ice services
- Contract will be modeled on MassDOT Highway Division's existing contract
- Will allow MBTA to have immediate on-site and on-call support services for both ROW-based and roadway-based snow clearing equipment

State & Local Coordination



- MBTA coordinates closely with other state agencies and local municipalities, mainly via ESF1 (Transportation) Desk
 - MBTA represented at MEMA State EOC by ESF1 Transportation Desk, which coordinates closely with MassDOT Highway, DCR, MSP, and other agencies
- Opportunities being explored:
 - Coordinating snow plowing/removal with City of Boston
 - Establishing formal MoU for inmate shoveling assistance program with DOC



Winter Drill & Exercise Program



- MBTA developing a drill and exercise program to test winter preparedness planning, including:
 - Field testing ROW snow clearing equipment
 - Testing of SIMS to ensure functionality and reliability
- Dedicated tabletop/functional exercises in October, focus on storm response and recovery:
 - Involve all MBTA stakeholder departments and Keolis
 - Include multiple challenging winter scenarios
 - Exercise deployment of vehicles and personnel into field

Customer Communications



How we communicate with our customers (Internal breakdown)



Customer Communications



- **Last year's customer communications challenges**
 - **Call center:** call volume, staffing shortage, service timing from OCC
 - **In-station:** staffing shortage (regular/volunteer), providing service diversion info to customers and volunteers (especially at station lobby level)
 - **Service info timing between areas and to customers:** delayed T-alerts (Commuter Rail and core), delayed info to Call Center
 - **Customer communications coordination between areas**
- **Customer Communications Improvements Winter 2015/2016**
 - **Call Center:** contract with vendor for overflow support (in negotiation/by 9/18), develop capacity to operate remote call center (testing now), call center staffers in OCC (as of first storm or by 12/7), install self-service menu by mode (by 10/15)
 - **In-Station:** recruit/train 100 in-station emergency volunteers (by Oct. 30)
 - **Customer Communications coordination:** elevate to top priority in each area, with assigned senior staffer a member of the Emergency Customer Communications Team. Team part of daily emergency ops team.
 - **Public awareness campaign:** inform customers of winter readiness and where to get info during weather-related emergency (by Oct. 30)