

Tropical Storm Tracking for Asset Management: There's an App for That!

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Background/Objectives. As Tropical Storm Henri shifted direction to head towards New England late on a Thursday evening in August, the Massachusetts Bay Transportation Authority (MBTA) throttled into action to prepare for the storm. In less than 24 hours, a dynamic digital twin application was developed to track the storm's impacts to the Authority's assets, including their rapid transit subway system, surface light rail lines, bus maintenance facilities, and specific low-lying critical infrastructure most susceptible to inundation.

Approach/Activities. Using ArcGIS Online, this technology was developed and deployed within hours, configuring a creative solution utilizing standard industry data formats and template applications to translate data from a range of sources into actionable intelligence. This application, accessible from any browser, has a robust redundant system architecture with failover security. It monitors storm projections which includes the observed and forecast storm positions and tracks, stream gage elevations, predicted peak surge heights, and wind speeds, power outages overlaid with the MBTA's rapid transit and commuter rail lines/stations, maintenance facilities and lowest critical elevation points along the service area. This application allowed for swift, round-the-clock information to be added to inter-agency emergency updates.

Results/Lessons Learned. This application was used for MBTA's storm desk operations required a manually generated report to be created. Following tropical storm Henri, the MBTA utilized the app again for Tropical Storm Ida in September 2021. Since the initiation of the app, further development has led to an automated dashboard to replace manual reports.