

THE OPPORTUNITY PROJECT

2022 PROBLEM STATEMENT

Integrating Data to Improve Public Transportation's Resilience to Climate Change

Department of Transportation (DOT)

THE CHALLENGE – Create digital tools to help public transit agencies as well as state, regional, and local stakeholders identify transit infrastructure that is vulnerable to extreme weather events and/or can serve as community resources in emergencies.

EXECUTIVE CHAMPIONS –

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THE PROBLEM – Public transportation provides 10 billion trips each year in the United States, improves mobility, and enhances quality of life for millions of Americans. Transit helps commuters get to work, customers reach businesses, and rural residents access services, while providing essential mobility for people who cannot drive or do not have access to a personal vehicle.

However, public transportation infrastructure is increasingly vulnerable to the effects of climate change. Impacts will vary, but all regions and public transportation systems, large and small, will be affected. Intense rainfall has already flooded subway tunnels and low-lying facilities, bus lots, and rights-of-way. Heat waves will continue to stress materials, buckle rails, and jeopardize customer and worker safety and comfort. In the longer term, rising sea-levels, compounded by worsening storm surges, will threaten assets in many coastal areas.

Climate impacts on transit assets will make it difficult to keep public transportation systems in good repair and provide reliable and safe service, which may then impact ridership. Individuals with disabilities, older adults, and low-income individuals—groups who disproportionately depend on public transportation— will suffer from disruptions and degradation in service, which will have downstream consequences on their ability to earn income, receive services, and participate in social and civic life.

At the same time, transit can strengthen community resiliency. Transit evacuates people who are in harm's way and provides mobility to people displaced by disasters. Buses have served as cooling shelters in heatwaves and some vehicles can even generate power in emergencies. During the COVID-19 pandemic, transit provided internet access and meal delivery, shuttled tests to clinics, gave people free rides to vaccine locations, and served as mobile vaccine clinics.

THE OPPORTUNITY – Incorporating climate change adaptive strategies into rehabilitation projects to bring transit assets up to a state of good repair saves money in terms of avoided damages and will cost less than retrofitting in the future. And if emergency planners and community organizations are aware of

transit resources in advance of an emergency, they will be able to take fuller advantage of transit to provide assistance in times of need.

Local governments and transit customers need tools that help them use high quality data from all levels of government to map, visualize, and communicate the risks that transit facilities face from weather emergencies and the opportunities for transit to respond to emergencies. Individuals and families would benefit from information on how extreme weather events may impact their travel on transit, including changes to travel times and access to destinations should some facilities and infrastructure become unavailable in an emergency. This project also offers an opportunity for website developers, local stakeholders, and the public to explore ways that transit infrastructure can boost community resiliency in emergencies.

VISION FOR SPRINT OUTCOMES – Transit agencies and local stakeholders will be able to better identify the risks of extreme weather events to transit routes and facilities along with the availability of transit resources to support emergency preparedness, response, and recovery. This will help communities better understand their transit systems’ assets and vulnerabilities, make more strategic use of resources, and accelerate their pace of climate resilience and emergency preparedness planning. It will also help members of the public understand how emergencies may impact their personal mobility and access to essential services under different weather scenarios.

TARGET END USERS – Members of the public; transit agencies; local, regional, and state decision makers; climate adaptation/resilience and emergency preparedness professionals who provide local decision makers with expert guidance

RELATED DATA SETS

- ↳ [Location of transit facilities \(including street address and lon/lat coordinates\)](#), the National Transit Database
- ↳ Location of transit bus stops and routes, the [National Transit Map](#)
- ↳ [Global Historical Climatology Network Data](#), National Oceanic and Atmospheric Administration (NOAA)
- ↳ [Sea Level Trends](#) and [Patterns & Projections](#), National Oceanic and Atmospheric Administration (NOAA)
- ↳ [Drought.gov](#) Data & Maps
- ↳ [River and Stream Flow Data](#), U.S. Geological Survey (USGS)
- ↳ [Sea Level Rise Inundation Maps](#), National Oceanic and Atmospheric Administration (NOAA)
- ↳ [Risk Maps and Floodplains](#), Federal Emergency Management Agency (FEMA)
- ↳ [National Risk Index](#), Federal Emergency Management Agency (FEMA)
- ↳ [Census Tract Maps](#), U.S. Census Bureau
- ↳ [Social Vulnerability Index](#), Centers for Disease Control and Prevention (CDC)
- ↳ [Community Resilience Estimates](#), U.S. Census Bureau
- ↳ [Climate Data on Extremes](#), Climdex

LEAD POINT OF CONTACTS

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