FTA

FEDERAL TRANSIT ADMINISTRATION

U.S. Department of Transportation
Federal Transit Administration

REPORT SUMMARY

Southeastern Pennsylvania Transportation Authority (SEPTA) Pilot Project

A Vulnerability and Risk Assessment of SEPTA's Regional Rail

Agency Overview

The Southeastern Pennsylvania Transportation Authority (SEPTA) serves Bucks, Chester, Delaware, and Montgomery counties in Pennsylvania and is the sixth largest transit system in the country. Through the climate adaptation pilot project, SEPTA analyzed the vulnerability of the regional rail system, focusing on the Manayunk/Norristown (M/N) line. The M/N line has experienced repeated service disruptions because of extreme weather in the past, including severe flooding, track washouts, and heat-related issues. Given this existing vulnerability, this study sought to identify how weather-related risks on the M/N line may evolve in the future given projected climate change and to determine strategies SEPTA could take to make the line more resilient to extreme weather.

Goals and Objectives

The ultimate objective of this study was to identify concrete ways that SEPTA could adapt its operations, maintenance practices, and capital planning to become more resilient to extreme weather. Prerequisites for this objective were to understand how SEPTA is already vulnerable under current climate conditions, the implications of current vulnerabilities in terms of relevant metrics to SEPTA (such as costs and delays), and how current vulnerabilities are likely to change in the future, given projected climate change.

Key Pilot Project Findings

Adaptation strategies were identified to minimize SEPTA's current and projected vulnerabilities to extreme weather and climate change now and in the future.

This study identified dozens of potential adaptation strategies, including 29 recommended strategies. These recommended strategies were selected from the bigger set of strategies as ones that would address SEPTA's greatest vulnerabilities and carry benefits regardless of future climate conditions. Such strategies include:

- Tracking vulnerability in the transit asset management program.
- Continuing to improve rider communication.
- Creating and tracking performance indicators of resilience.

These strategies were designed to minimize SEPTA's current and projected vulnerabilities. The study found that the M/N line is currently most vulnerable to track washouts from heavy rain and tropical storms, along with delays from snow storms. The study also found, however, that the M/N line may become increasingly vulnerable to heat-related problems as extreme heat becomes more common. Heavy rain events, which can flood the M/N line and wash out the track, also are projected to become more common.

In light of these vulnerabilities, the study team conducted a series of interviews with SEPTA staff to discuss what specifically makes the M/N line vulnerable to extreme weather conditions and brainstorm adaptation strategies to make the line more resilient. The final outcome was a set of 29 recommended adaptation strategies to make the line more resilient.

Next Steps

The results of this study will be used to inform SEPTA's planning as it relates to extreme weather and climate change. SEPTA is already implementing many of the recommended strategies to better maintain service during and after extreme weather events such as heat waves, floods, snow storms, or tropical storms. The study's stakeholder-driven approach also had the benefit of collecting institutional knowledge about SEPTA's existing vulnerabilities and initiating conversations among SEPTA staff about how to make the system more resilient.

About FTA's Climate Change Adaptation Pilot Program

FTA provided just over $1 million in research funding for seven pilot projects (nine agencies) to conduct climate change adaptation assessments from 2011–2013. The main objective of the pilot projects is to advance the state of practice for adapting transit systems to the impacts of climate change. The selected projects assessed the vulnerability of transit agency assets and services to climate change hazards and developed initial adaptation strategies. The findings from the pilot projects can be applied to various size transit agencies nationwide in order to make systems more resilient and adaptable to future climatic hazards.

Project Information

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This research project was conducted by ICF International, SEPTA, and the Delaware Valley Regional Planning Commission. For more information, contact Kimberly Gayle, Director, FTA Office of Policy Review and Development, at (202) 366-1429, kimberly.gayle@dot.gov. All research reports can be found at **www.fta.dot.gov/research**.