FHWA-HEP-16-092

South Coast Rail Project NEPA Analysis

Summary

The Massachusetts Department of Transportation (MassDOT) South Coast Rail Project aims to restore 52 miles of commuter rail service between Boston and the Massachusetts South Coast in order to enhance public transit systems. Figure 1 shows the project area with existing stations, new stations, new layovers, and reconstructed stations marked along the corridor. In the 2013 Final Environmental Impact Statement (FEIS) for the project, the U.S. Army Corps of Engineers (USACE) and MassDOT analyzed the project for climate change impacts related to sea level rise. The FEIS also included climate change as part of the cumulative impacts analysis in terms of potential climate change effects on biodiversity and threatened and endangered species. The analyses found no significant climate change impacts on the project or in the cumulative impacts analysis.

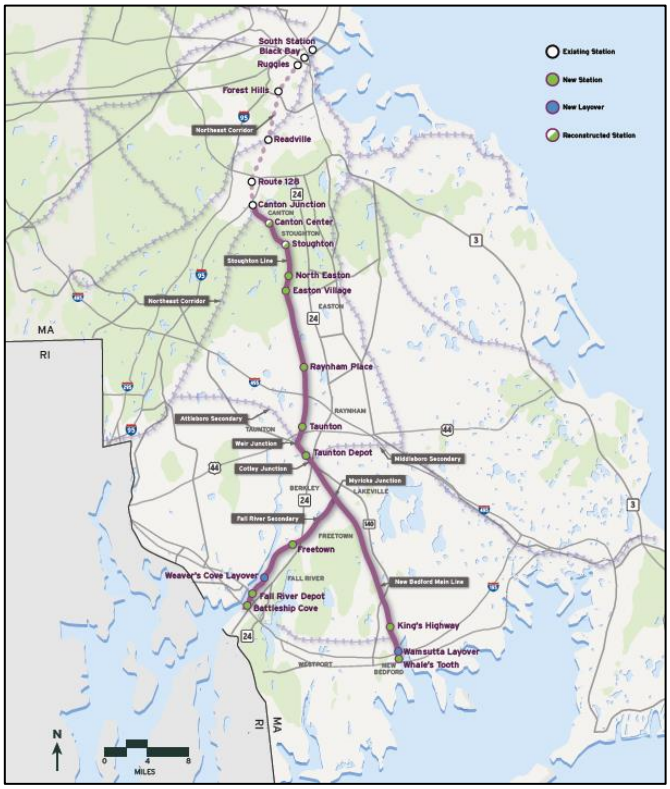

Figure 1. South Coast Rail Corridor Map. Source: MassDOT

Project Overview

Southeastern Massachusetts has been the fastest growing region in the Commonwealth, but poor transportation access to the Boston employment market has constrained economic growth in the towns of Fall River and New Bedford. MassDOT has proposed the South Coast Rail Project to enhance public transit connections between New Bedford/Fall River and Boston and between South Coast cities. The South Coast Rail Project is intended to generate new economic

Figure 2. Taunton River Bridge that carries trains over the Taunton River. Source: South Coast Rail Flickr Album

development while preserving environmental resources. Economic development would result from improved access from New Bedford and Fall River to labor markets in Boston and reverse commute access from areas such as Taunton to New Bedford and Fall River.

The project proposes the restoration of 52 miles of commuter rail service between Boston and the Massachusetts South Coast. Figure 2 shows a bridge over the Taunton River that is part of the existing commuter rail. The FEIS included analysis of three alternatives: the No-Build (Enhanced Bus) Alternative, the Stoughton Alternative (electric and diesel variants), and the Whittenton Alternative (electric and diesel variants).

Considering Climate Change within the NEPA Process

Project Scope

The FEIS climate change analysis included an evaluation of sea level rise impacts on all project elements, including stations and layover facilities. Separately, the FEIS evaluated climate change impacts on biodiversity and threatened and endangered species as part of the cumulative impacts analysis.

Approach

Climate Change Impacts on Project

In accordance with requirements from the Massachusetts Secretary of Energy and Environmental Affairs, the FEIS considers a sea level rise-related margin of safety for proposed stations partially located within the coastal zone. MassDOT and USACE assessed project elements to determine if they would be subject to inundation from future sea level rise. The expected useful life of the project elements ranges from 25 years for locomotives to 80 years for structures. Future impacts have been evaluated to 2035, the horizon year of the project. The analysis relied on sea level rise projections from the Massachusetts Climate Change Adaptation Report prepared by the Commonwealth's Executive Office of Energy and Environmental Affairs. That report considered the potential changes in sea level based on several "generally accepted climate models and their predictions representing a range of model inputs." The projections, used in the FEIS, are for 0.6 to 1.6 feet of sea level rise by 2050 and 1.9 to 6.6 feet by 2100.

Cumulative Impacts Analysis

The cumulative impacts analysis assessed cumulative impacts of the proposed project on biodiversity in 2035 from land conversion, habitat degradation, and climate change. The analyses considered reasonably foreseeable indirect effects, including induced growth that would result from the build alternatives. The analysis compared two scenarios of growth in the region: (1) growth under business-as-usual conditions, and (2) growth directed into Priority Development areas based on municipality planning efforts.

The analysis included climate change in both of these scenarios, and drew from studies that suggest climate change could affect the distribution of plant species, animal habitats, and ecosystem types. Salt marshes, cold-water fisheries, and vernal pools are the most vulnerable elements of the South Coast area. The projected impacts of climate change were included alongside other trends and current or

future actions affecting biodiversity, including land conversion and additional habitat degradation, in the comparison of the project alternatives' impacts on biodiversity. The cumulative impacts analysis similarly incorporated climate change into assessment of threatened and endangered species. For example, climate change could contribute to declines in Eastern box turtle and vernal pool species populations.

Findings

Climate Change Impacts on Project

The sea level rise assessment findings are in the FEIS Coastal Zone section. The assessment found no expected direct impacts of climate change on the project. The majority of the non-tidal river and stream crossings are not adjacent to the shoreline and are not expected to be subject to inundation due to a sea level rise of up to approximately 1.6 feet by 2050. The Weaver's Cove East Layover Facility would be located approximately 20 feet above the current shoreline and is not expected to experience inundation even under the highest predicted sea level rise of 6.6 feet by 2100.

Cumulative Impacts Analysis

The cumulative biodiversity impacts in 2035 from climate change and other factors would result in little land conversion and habitat loss and create some areas of degraded habitat under both growth scenarios. The FIES also found the cumulative impacts to threatened and endangered species to be a net benefit, as the South Coast Rail Project would include mitigation of effects to species.

Links to Further Resources

Massachusetts Department of Transportation (MassDOT). South Coast Rail Project Overview.
http://www.massdot.state.ma.us/southcoastrail/Home.aspx

MassDOT. South Coast Rail Project Final Environmental Impact Statement.
http://www.nae.usace.army.mil/Missions/Projects-Topics/South-Coast-Rail/

Massachusetts Executive Office of Energy and Environmental Affairs and the Adaptation Advisory Committee. Massachusetts Climate Change Adaptation Report. September 2011.
http://www.mass.gov/eea/docs/eea/energy/cca/eea-climate-adaptation-report.pdf

Union of Concerned Scientists. UCS Publications. Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions. Synthesis report of the Northeast Climate Impacts Assessment (NECIA).
http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/pdf/confronting-climate-change-in-the-u-s-northeast.pdf

Bertin, R.I. 2008. Plant phenology and distribution in relation to recent climate change.
http://www.bioone.org/doi/pdf/10.3159/07-RP-035R.1

Brooks, R.T. 2004. Weather-related Effects on Woodland Vernal Pool Hydrology and Hydroperiod.
http://www.fs.fed.us/ne/newtown_square/publications/other_publishers/OCR/ne_2004brooks01.pdf

MassDOT. South Coast Rail Flickr Album.
https://www.flickr.com/photos/massdot/sets/72157651250525442/