
Chapter 6

Definition of Alternatives

The scope of work for the project, outlines five specific alternatives that will be evaluated as part of the study. A brief description of these alternatives and their potential benefits are discussed below.

- **Track Geometry Improvements** - The following track geometry components will be evaluated to determine how their constraints impact on running time on the branch from **South Norwalk to Danbury**, and from **Danbury to New Milford**.
 - Grades
 - Curvatures
 - Super elevations
 - Clearances
 - Grade Crossings

Based on the evaluation, three programs of improvements will be developed for both South Norwalk to Danbury, and Danbury to New Milford, with cost estimates that would result in reductions in running times of 5, 10, and 15 minutes. If any of these levels cannot be met, then a program that produces the maximum number of reasonably achievable reductions will be developed.

- **Double Tracking** - The feasibility and cost of double tracking the branch from South Norwalk to Danbury, and from Danbury to New Milford, to allow for simultaneous bi-directional service and other potential service improvements, will be evaluated. As part of this evaluation, the following areas will be addressed:
 - ROW Width
 - Above and below grade structures
 - Wetlands
 - Cuts
 - Fills
 - Signal and communication systems
 - Utilities
 - Cross-overs
 - Grade crossings

A total of four cost estimates will be developed. The first cost estimate assumes that the existing track geometry is maintained with a second track paralleling the existing track. The remaining three cost estimates assume the track geometry improvements developed above with the addition of the second track.

- **Passing Sidings as Alternative to Double Tracking** – The feasibility and cost of passing sidings as an alternative to double tracking, to allow for bi-directional service during peak periods, as well as other potential service improvements, will be evaluated for the Danbury Branch, and the **potential extension to New Milford**. The alternative will determine the optimum number and locations of sidings necessary under each level of track geometry improvements developed above. A total of two passing sidings alternatives will be developed, one which is based on 12 car length sidings, and the second which would utilize a siding or sidings of sufficient length to allow trains to pass on the move (essentially a partial double tracking alternative). As part of the alternative, the initiations of a passing siding versus a double tracking alternative will be defined.
- **Innovative Technologies** – The applicability and cost of innovative technologies that could result in increased speed/reduced running time on the Branch will be evaluated. Technologies to be investigated will include:
 - Vehicle design (e.g. tilt technology used in Amtrak’s Acela)
 - Track infrastructure
 - Grade crossing protection

The evaluation will utilize information from the FRA’s Office of Research and development, a literature search, and direct contact with at least five domestic and two overseas operators of rail passenger service which are recognized as technology innovators.

- **Electrification** – The impact of electrification on the branch (as configured in the above alternatives) will be determined in terms of capital costs and the effect on running time.
- **Ridership Forecasting** - Ridership forecasts will be developed for the branch utilizing the Statewide Travel Model.

The overall study may also present a **Baseline Alternative** that assumes no major improvements other than regular maintenance, or those already planned prior to the initiation of this study. The Baseline Alternative or No Build Alternative would include plans already underway in the state Transportation Improvement Program (TIP), such as the plan to install a new signalling system along the branch, as well as other ongoing maintenance of way as required to maintain the current level of service. No additional equipment or service extensions would be undertaken. Discussion of such an alternative is outside the scope of the present work assignment.