

FrontRunner Forward Technical Memorandum

To: Utah Transit Authority

From: Lance Meister, Cross-Spectrum Acoustics, Inc.

Date: June 20, 2025

Reviewed and approved by FTA:
September 23, 2025

Subject: South of Draper Double Track Project Noise and Vibration Assessment for Design Change

Summary

The purpose of this memorandum is to summarize the noise and vibration impact assessment resulting from the design change to the South of Draper Double Track Project. The original project proposed extending double track approximately 2.8 miles south of the Draper Station. The recent project scope change includes adding a new infill station (Bluffdale Station) to the FrontRunner system (approximately UTA milepost S 19) in the City of Bluffdale (see Figure 1).

The results of the noise and vibration assessment (May 2024) indicated that there would be no noise or vibration impacts associated with the original South of Draper Double Track Project.

The proposed infill station would include a new platform, an overhead pedestrian bridge, bus bays, and parking areas. The previous double-track alignment that was evaluated would be shifted further west to accommodate the station platform.

The results of the updated assessment indicate that there would be no noise or vibration impacts. The tracks at the proposed Bluffdale Station would be wider than the standard track separation, and closer to the residences to the west of the station, but the noise and vibration levels would remain below the thresholds for impact.

Figure 1. South of Draper Double Track Project



Federal Transit Administration Noise and Vibration Impact Criteria

The Federal Transit Administration (FTA) noise and vibration criteria for transit projects are detailed in the FTA's noise and vibration manual.¹

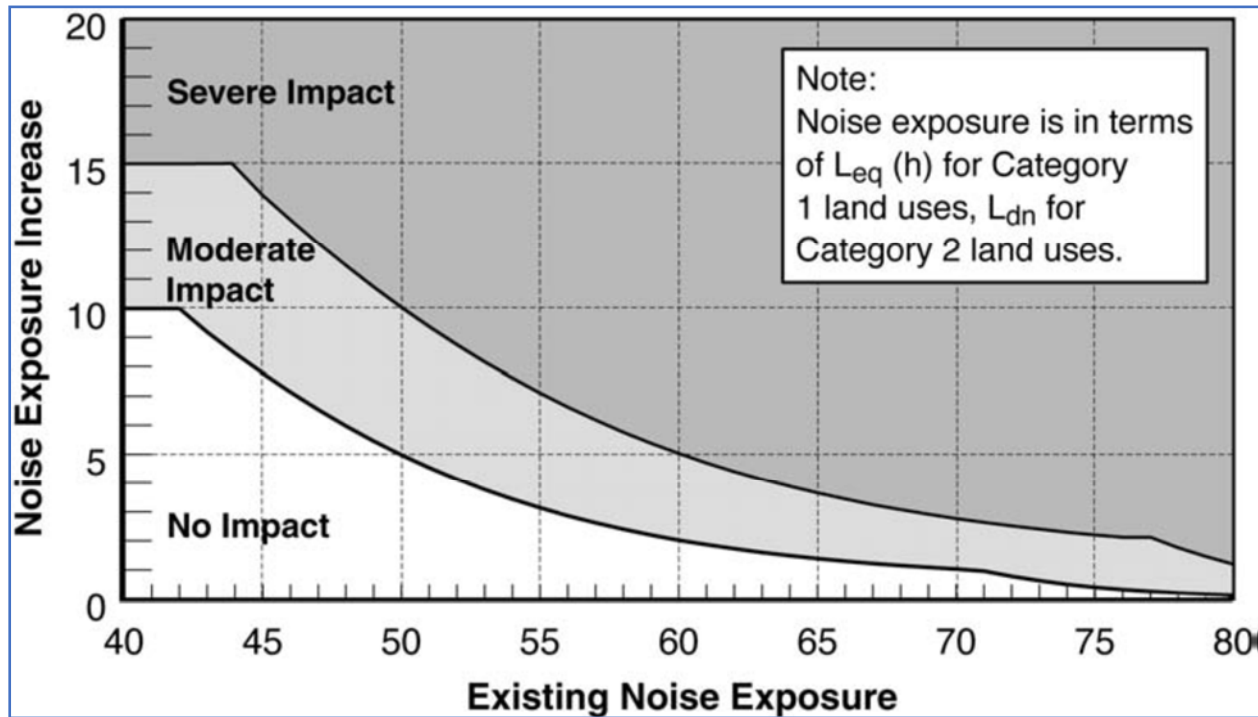
The FTA noise criteria are based on the land use category of the sensitive receptor. The descriptors and criteria for assessing noise impact vary according to land use categories adjacent to the project. For Category 2, land uses where people live and sleep (e.g., residential neighborhoods, hospitals, and hotels), the Day-Night Average Sound Level (Ldn) is the assessment parameter. For other land use types (Category 1 or 3) where there are noise-sensitive uses (e.g., outdoor concert areas, schools, and libraries), the equivalent continuous sound level (Leq) for an hour of noise sensitivity that coincides with train activity is the assessment parameter.

The noise impact criteria are defined by the two curves in Figure 2, which compare the change in noise due to the project to the existing noise before the introduction of the project. These criteria are used in projects where there is not a new project, but where there can be changes in noise, such as with the introduction of a second track. The FTA noise impact criteria include three levels of impact, as shown in Figure 2. The three levels of impact include:

- **No Impact:** In this range, the project is considered to have no impact since, on average, the introduction of the project will result in an insignificant increase in the number of people highly annoyed by the new project noise.
- **Moderate Impact:** Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.
- **Severe Impact:** Project-generated noise in this range is likely to cause a high level of community annoyance. Noise mitigation should be applied for severe impacts where feasible.

¹ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123, September 2018.

Figure 2. FTA Cumulative Noise Impact Criteria



SOURCE: FTA 2018

The FTA vibration criteria for new projects without existing vibration sources are based on the vibration level and number of project operations, and not on the increase in vibration levels. As the number of operations increase, the vibration impact threshold becomes more stringent. In a project location with existing vibration from trains (which is the case for this Project), the criterion is based on a change in vibration relative to the existing. For locations with more than 12 operations per day (such as the FrontRunner corridor), vibration impact occurs when the increase in vibration is at least 3 vibration decibels (VdB) over the existing vibration levels.

Noise and Vibration Assessment Methodology

The noise and vibration impact assessment methodology is the same as that described in the original South of Draper Double Track Project technical memorandum, which follows the FTA's noise and vibration manual. A detailed noise assessment and a general vibration assessment were conducted for the project.

Affected Environment

The land use adjacent to the proposed infill station includes residential uses on the west side of the tracks and commercial uses and open spaces on the east side of the tracks. The modeled existing noise levels range from 61-71 decibel A-weighted (dBA) Ldn, depending on the distance from the tracks to the receiver, and the number of rows of intervening buildings. The existing noise is dominated by the Union Pacific (UP) freight train operations.

Impact Assessment

The South of Draper Double Track Project design change would include a new Bluffdale Station and a widening of the tracks at the station relative to standard track separation. In this location, the residences to the west of the design change would anticipate an increase of 0.1 to 0.2 decibel (dB) in noise level, which is below the moderate impact threshold.

Additionally, in this area, a receiver would need to be located within 95 feet of the existing UTA FrontRunner track for the change in vibration level to be greater than 3 VdB, which is the threshold for vibration impact. The closest receivers are 124 feet from the existing UTA track; therefore, no vibration impact is anticipated due to the proposed infill station.

Mitigation

Because there are no impacts identified for either noise or vibration, no mitigation would be required.