



# San Juan County Four Corners Freight Rail Project Feasibility Study

Project Summary

*San Juan County, New Mexico*  
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**Exhibit 1, Conceptual Route Options**

# Project Summary

The Four Corners region, located at the convergence of Colorado, New Mexico, Utah, and Arizona, has not been connected to the national freight railroad system for fifty years since the railroad to Farmington was abandoned. Today, long-distance freight shipments to or from the Four Corners region travel by truck between the Four Corners area and the nearest railroad transloading facilities nearly 100 miles south, in Gallup, New Mexico, along the BNSF Railway's Transcontinental route. Other truck shipments travel nearly 200 miles to rail transloading facilities in the Albuquerque area.

Key partnerships between San Juan County and the Navajo Nation enabled this study. The two entities signed a memorandum of understanding (MOU) in February 2020 to establish a framework for cooperation with respect to proposed railway, community, and business development in the Four Corners region. San Juan County was the recipient of a 2019 US Department of Transportation (USDOT) BUILD grant to support this feasibility study for a proposed new rail line between San Juan County and the BNSF national freight network.

Several independent third-party analyses that have been completed over the past 50 years have concluded that there are products in the Four Corners Region in sufficient quantities that can obtain market share in regional, national or international markets to make freight rail service feasible. This study updates the previous efforts; incorporates recent engineering and cost information; and reexamines demand for rail service in the Four Corners region.

This study concluded that a railroad to the Four Corners region is feasible and that, with public support for construction, there is sufficient demand to make the railroad economically feasible.

This study concluded that a railroad linking the Four Corners region with the national rail network is technically and economically feasible.

A railroad connecting the Four Corners region to the national rail network reduces the amount of truck traffic on US 491, US 550, and other local and regional roads, which decreases the potential for accidents and possible injuries and fatalities. This reduction in heavy truck traffic also reduces the wear and tear on the roads, reducing roadway maintenance requirements and enhancing the state of good repair of the roadway network. As a result, this new connection to the BNSF freight rail network improves the efficiency of the overall freight transportation system in the Four Corners region.

## Project Study Approach

This study examined both the engineering and economic feasibility of several proposed rail route concepts to the Four Corners region. The engineering assessment examined several potential routes between the Four Corners region and BNSF Railway, developed railroad operating and service plans, developed estimates of capital and operating costs, and developed estimates of demand for freight rail transportation.

# Public Engagement

The Study engaged stakeholders including San Juan County, the Navajo Nation, New Mexico Department of Transportation, communities in the Navajo Nation, as well as potential users of the rail line to get feedback as initial concepts were developed. Early in the project, the project team established a dedicated website which can be found at the following link: [Four Corners Freight](http://www.4CornersFreightRail.com) (full URL: [www.4CornersFreightRail.com](http://www.4CornersFreightRail.com)). A series of public meetings were held at Crownpoint, Newcomb, Shiprock, and Farmington, with the first two meetings in September 2022 and two more in June 2023, as initial concepts were developed and a series of three meetings held in August 2024 as the initial concepts were being finalized. All meetings were publicized in advance on the project website and via advertisements in local newspapers, on local radio stations, with posters distributed to key stakeholders, and via San Juan County's Facebook page. All advertisements were provided in both English and Navajo. After the meetings, in 2022 and 2023, stakeholder feedback was received and incorporated into the initial concepts presented in this summary, though, at this early stage, it was not possible to address all comments. The comments ranged from opposition to the project in general, to concern about impacts associated with potential rail routes, to general support for the project. Additional public engagement will occur in planned future phases of the study. The presentation materials for each meeting, as well as summaries of both the meetings and public comments were posted to the project website. Future phases of the project will provide the opportunity for additional stakeholder and public engagement, and further opportunities for the project team to incorporate comments.

# Freight Demand

The study determined that multiple types of freight that could benefit from rail transportation to or from the Four Corners region. Examples of these commodities included:

- Agricultural commodities, such as fertilizer moving to the Four Corners region or grains being shipped out of the region;
- Energy-related commodities, such as coal and fly ash shipped out of the region and steel pipe and sand being shipped into the region; and
- General freight, such as lumber and steel beams for construction.

The study also provided an initial estimate of the volumes of the commodities that might be moved by the railroad.

Some of these commodities are already moving to or from the Four Corners region by truck. However, a railroad would offer more transportation options and lower transportation costs to shippers, and also potentially lower roadway maintenance costs for agencies charged with maintaining the region's roadway network, such as the County, New Mexico Department of Transportation, and the Navajo Nation Division of Transportation. It is possible, though, that the existence of a railroad creates new opportunities for other types of commercial activity, and so there may be additional commodities that would move by rail.

The freight demand forecast resulting in a range of scenarios, depending upon the amount of each commodity transported. The freight demand forecast informed the conceptual operating plan, which indicated a train

frequency ranging from one train per weekday for the low volume scenario to as many as three trains per weekday for the high volume scenario.

## Alternatives Analysis and Project Development

This study developed multiple conceptual route options to connect the Four Corners region to the national rail network and screened-out or modified several based on technical feasibility considerations. The five options that went through the conceptual design and evaluation process are illustrated in **Exhibit 1**. It should be noted that railroads generally need broader curves and shallower grades than roadways, and these criteria informed the development of the various route options.

The proposed railroad needs to connect the Four Corners region with the BNSF Railway main line, which generally parallels Interstate 40. Thus, these two endpoints define the northern and southern boundaries of the study.

The northern terminus for the study was chosen near the Navajo Agricultural Products Industry (NAPI) headquarters, near Farmington, along State Route 371. All railroad route options were assumed to reach that terminal. Because businesses in the San Juan River valley area are widely dispersed, it would be uneconomical to provide a rail spur to each business, so a truck-to-rail transload would be necessary under any circumstances. Since NAPI is expected to generate a large proportion of the rail traffic, it made sense to locate the railroad terminal and truck-to-rail transload facility there. This location also provides easy road access to Farmington, without the expense and complexity of extending a railroad down the mesa into the San Juan River valley, a nearly 800 foot elevation drop that would otherwise require approximately 7 to 8 additional miles of relatively complex and expensive railroad.

In addition to the proposed transload facilities, the study also identified the northern terminal as the likely location for rail equipment maintenance facilities and associated maintenance staff; the base for infrastructure maintenance crews who would maintain the track, bridges, and grade crossings; and the base for dispatching and office support staff.

On the south end of the project area, one of the key constraints is the ridgeline and mountains that extend generally west to east just north of Interstate 40 and the BNSF Railway main line. The two main north-south roads in the area, State Route 491 and State Route 371, cross this ridge in the most advantageous locations, just north of Gallup and just north of Thoreau, respectively. The route options for the proposed railroad evaluated these crossing locations. The route options also considered using the existing Lee Ranch railroad spur, just north of Prewitt, that crosses a low point of the ridge.

Ultimately, crossing the ridge north of Thoreau appeared to be significantly more complex, from a construction perspective and would result in either a steeply graded railroad or lengthy tunneling (or both) due to the large amount of elevation gain and fall, and so this location was removed from further consideration. Right of way constraints associated with the “checkerboard” or “allotment” area near Thoreau (discussed below) also played a role in that decision.

The five route options considered included three options crossing the ridge near Gallup, using the BNSF Railway Defiance Spur as a starting point and two options crossing the ridge north of Prewitt, using the BNSF Lee Ranch

Subdivision as a starting point. At either potential starting point, yard facilities may also be needed at or near the BNSF connection to facilitate interchange of railcars between the proposed railroad and BNSF Railway.

The naming convention for the options was based on their connection point with the national freight rail network (such as the BNSF Defiance Spur) and a main feature (such as a parallel highway), if existing, along the route. The five design options carried forward in this analysis are named as follows, starting with the westernmost of the routes and ending with the easternmost of the routes:

- Defiance via Highway 491
- Defiance via Indian Creek
- Defiance via 371
- El Segundo
- Star Lake

The study approach considered both representative alignments and corridors for each route option. For the purposes of this study, a representative alignment is considered to be a technically feasible series of curves and tangents that connects the desired endpoints. A corridor is considered to be a wider area (in this case, an area approximately ten miles wide) centered on the initial representative alignment within which the alignment could be shifted, subject to geometric constraints.

The purpose of the representative alignments was to verify that each route option included one technically feasible alignment. Indeed, during the conceptual study, several representative alignments options were determined to be infeasible due to conflicts with multiple allotments, proximity to communities, or unfavorable construction conditions. However, it is important to note that the five representative alignments presented in this study are not final and could be modified in future phases of the study in response to environmental considerations, construction considerations, and stakeholder input. The wider corridors provide, in effect, a guide for where the representative alignments might be adjusted in future phases of the study. For example, a representative alignment might be shifted within a given corridor in order to avoid or minimize impacts to environmental resources, grazing areas, homesites, or challenging construction conditions. The wider corridors indicate the likely maximum extend of those shifts.

The representative alignments were developed for each option using commercially available aerial imagery and elevation contours which, in turn, identified the location of a possible corridor for each route option. The embankment for the actual railroad, if built, would only be approximately 50 to 200 feet wide, significantly narrower than the wider, initial corridors, which extend approximately 5 miles to each side of the alignment.

These representative alignments helped to establish a basis for the environmental analysis, conceptual capital cost estimates, railroad operating plans, and operating cost estimates for each route option.

The conceptual level capital costs (before contingencies) ranged from \$1.3 billion for the El Segundo route option, \$1.4 billion for the Defiance via Highway 491 route option, \$1.5 billion for the Defiance via Highway 371 route option, \$1.6 billion for the Star Lake route option, to \$2.0 billion for the Defiance via Indian Creek route option.

## Environmental Analysis

This study used desktop-level analysis tools and engaged in significant stakeholder outreach and communication to identify areas of social and environmental concern during the environmental baseline analysis screening process. Based on the representative alignments and corridors, natural resources such as waters or wetlands areas, farmlands, and parks were identified and inventoried along the route options, along with tribal lands and potential Section 106 properties.

Large portions of each of the route options are on Tribal land, and thus government-to-government consultation would be required as part of any environmental review process.

At the desktop level, it appears that there are no resources present that would prevent project options from being constructed, so long as the appropriate permits were obtained. However, additional research, including field research, would need to be conducted to assess the impacts of the specific alignments, particularly wildlife and cultural resources. There is the potential that US Fish and Wildlife Service threatened species, as well as state-listed threatened species may occur in the project area.

Similarly, there are known cultural resources along each route and cultural resource surveys would need to be performed to assess the potential impacts, and to identify potentially unknown cultural resource sites.

Because the New Mexico Cultural Resources Information System does not include information on Tribal lands, the Navajo Nation would need to grant permission for access and participate in developing the area of potential effect and the survey protocols.

## Findings and Economic Feasibility Analysis

This study examined the financial characteristics of the construction and operation of the proposed railway, resulting in a benefit-cost analysis (BCA), a financial analysis, and an economic impact analysis. Note that each of these analyses are sensitive to initial construction costs, and thus these ratios could change as construction costs are refined in future phases.

The BCA focused on the economic benefits and costs in order to determine whether the project would create socioeconomic benefits that exceed its costs. To perform this analysis, benefits of the proposed railway were estimated using methodologies consistent with industry practice for this type of project, guidance from the US Department of Transportation (USDOT), estimated demand volumes and shipping distances, and published relevant information and statistics. The analysis provided a benefit-cost ratio (BCR), which represents the sum of the economic benefits divided by the sum of the economic costs. The BCR for the Defiance via Indian Creek and Star Lake route options was 0.8 and 0.9, respectively, indicating that, at this conceptual level, the costs for those route options slightly exceeded the benefits. The BCRs for the Defiance via Highway 491, Defiance via Highway 371, and El Segundo route options all exceeded 1.0, indicating that the benefits exceeded the costs for these route options.

The financial analysis considered the flow of all project-related costs and revenues over the project life to determine the net fiscal impact. Project costs included the same components as those considered in the benefit-



cost analysis: capital development and construction costs and annual operations and maintenance costs (including labor costs for train crews, equipment maintenance, fuel costs, and track maintenance). Revenues were estimated based on typical industry operating ratios and costs estimated for this project. To focus the analysis on the outcomes more specific to the rail service operator, the analysis assumed that all capital costs would be funded from public funds, a combination of federal and non-federal sources. The financial analysis indicated that operating revenues would exceed operating costs for all route options.

The economic impact analysis component of this study assessed generation of economic activity as measured in terms of jobs and other related economic metrics. The activity considered in this analysis covers project development and construction and then its operations. The economic impact analysis indicated that the development and construction phases of the project can create over 2,000 construction-related job-years (total of direct, indirect, and induced jobs) in San Juan County alone; over 10,000 direct, indirect, and induced job-years when considering the State of New Mexico as a whole; and nearly 17,000 direct, indirect, and induced job-years when considering the Four Corners states (Arizona, Colorado, Utah, and New Mexico).

The economic and financial analyses were a synthesis of the previous alternatives analysis and project development efforts, combining data from the freight demand forecast and alternatives analysis (including engineering, operations, and cost estimating efforts) to assess the feasibility of the project in economic and financial terms. The findings of this study are that the conceptual route options are technically feasible, and that several of the route options generate favorable economic and financial results.



EXHIBIT 1 - CONCEPTUAL ROUTE OPTIONS

