

*San Juan Basin Energy Connect  
Macro Corridor Study  
Executive Summary  
May 2009*

Tri-State Generation and Transmission Association (Tri-State) is proposing to install and operate a 230 kilovolt transmission line from the Farmington area in San Juan County, New Mexico, to the Ignacio area in La Plata County, Colorado. Identification of preliminary alternative corridors included reviewing existing resource data, identifying routing opportunities and constraints, and consulting with local jurisdictions and public agencies. This study identified 36 preliminary corridor segments that begin and end at logical termini and that would generally provide optional paths from Farmington to Ignacio.

Data regarding water resources, cultural resources, land ownership, and other variables for the project area were collected from several sources such as federal, state, and county agencies, and compiled into a standard Geographic Information Systems (GIS) format. The data were used to identify criteria that would be used to map opportunities and constraints for locating the transmission line within the study area. The degree of opportunity and constraint is based on the location and character of the resource. Constraints include: certain land uses and jurisdictions, and sensitive natural, cultural or hydrological resources. Constraints are either avoidances or exclusions. Avoidance areas include sensitive areas that will be avoided or mitigation measures would be implemented to minimize impacts to these areas. Exclusion areas include those locations with the highest level of sensitivity or that are completely incompatible with transmission line construction or operation. In some cases, portions of exclusion areas may be crossed by the identified corridors, but further study will be completed to assist in avoidance of the most sensitive areas. Opportunities include areas compatible with locating a transmission line, including areas alongside existing linear features such as transmission lines, pipelines, and transportation corridors.

Potential linear corridors one mile in width were initially identified to provide flexibility when further route definition occurs during subsequent project siting activities. This approach allows for general discussion and further investigation of issues and resource concerns within the identified corridors. As specific routes are identified, site-specific inventories, clearances, mitigation, and impacts assessment can be developed and discussed to meet the requirements of the many land management agencies and other landowners involved in a linear project of this scale.

## LAND USE AND JURISDICTION

The potential corridors are located in New Mexico and Colorado and comprise private, public, and tribal lands. To the extent feasible, corridors were located outside of municipal boundaries and avoided areas such as state parks, national parks, national landmarks, national monuments, and conservation areas. Residences were buffered by a 100-foot exclusion zone, and preferably by 500 feet if possible. Airports were buffered by 10,000 feet and 5,000 feet for public and private airports, respectively. Other infrastructure such as oil and gas facilities and communication towers were also considered and protected. Schools, parks, and recreation areas were excluded by 100 feet and treated as avoidance areas with a 0.25-mile buffer. Public lands managed by the BLM that are designated Areas of Critical Environmental Concern (ACECs) were considered exclusion areas, except near existing transmission lines.

## EXISTING TRANSPORTATION AND UTILITY CORRIDORS

Existing linear facilities and rights-of-way (ROWs) such as transmission lines, pipelines, and roads that can provide easy access and fewer environmental impacts were carefully considered. Primary north-south highways include Colorado State Highways 172 and 140, New Mexico State Highways 511 and 170, and U.S. Route 550. East-west highways include U.S. Route 160, U.S. Route 64, and New Mexico State Highways 173, 574, and 516. No scenic byways are in the project area. There are several existing transmission lines and pipelines that provided opportunities for corridor identification.

## WATER RESOURCES

Water resources within the transmission line project area include rivers, tributaries, and reservoirs. Three main north-south-flowing rivers include the Los Pinos, the Animas, and the La Plata rivers, with smaller tributaries such as the Florida River and Rock Creek. Two large reservoirs are Navajo Reservoir and the Farmington Lake/Beeline Reservoir. Other smaller reservoirs include Pastorius Reservoir, Mormon Reservoir, Young's Lake, and Andrew's Lake. Generally, surface water can be avoided by careful pole placement. However, lakes and perennial streams were given a 100-foot exclusion buffer and were avoided within 660 feet (0.125 mile) to the extent feasible.

## BIOLOGICAL RESOURCES

The project area contains several vegetation communities including: grasslands, sagebrush, low-elevation shrubland, low-elevation rock and sand (badlands), piñon-juniper woodlands, wetland/riparian zones, aspen forest, oak shrublands, ponderosa pine forests, and mesic mixed conifer, as well as agricultural and urban land development. Plant species listed as threatened by the U.S. Fish and Wildlife Service (USFWS) that may occur in the project area include Knowlton's cactus, Mancos milkvetch, Mesa Verde cactus, rhizome fleabane, sleeping Ute milkvetch, and the candidate Pagosa skyrocket. Mapped potential habitats for

Knowlton's cactus, Mancos milkvetch, and Mesa Verde cactus were excluded. BLM sensitive species that may occur in the project area include Aztec gilia and Brack's hardwall cactus.

The project area includes habitat for a variety of raptors, big game, reptiles, and fish. The habitats for these terrestrial and aquatic species are managed by a variety of agencies and management tools. Elk and mule deer production areas are designated as avoidance areas or protected by timing limitations. Known peregrine nest sites in Mancos Canyon are mapped as exclusion areas. Threatened, endangered, or candidate species protected under the Endangered Species Act (ESA) include the Mexican spotted owl, southwestern willow flycatcher, yellow-billed cuckoo, black-footed ferret, Canada lynx, razorback sucker, Colorado pike minnow, and Uncompahgre fritillary butterfly. Habitat data for all of these species are not available; however, through proper consultation with the USFWS, all work will be in compliance with the ESA. Once route selection is narrowed down, raptor surveys will be completed and buffers around nests for BLM sensitive species (prairie falcon and golden eagle) will be excluded or appropriate mitigation implemented. Habitat for Colorado State species of concern (bald eagle and Colorado river otter) was also avoided to the extent possible.

#### GEOLOGICAL RESOURCES

The project area is 89% sedimentary rock; the remaining 10.9% is composed of alluvial gravels of the quaternary period. The primary salable mineral resources are sand and gravel along the alluvial deposits: there are 58 borrow sites. Leasable minerals include coal in the Animas, Fruitland and Menefee formations, and oil and gas occur throughout the project area with an abundance of coal bed methane in the Fruitland coal formation. There are 3,604 oil and gas wells in the Colorado portion of the project area and 8,244 in the New Mexico portion. There are subsidence issues in the coal mine lease area. Topography was considered in corridor identification and slopes greater than 25% were avoided.

#### CULTURAL RESOURCES

There are 10 prohibitive cultural resource areas identified by agencies in the project area; these areas include traditional cultural places (TCPs). There are 20 sites listed on the National Register of Historic Places within the project area, mostly within the city limits of Aztec, New Mexico. Less than 10% of the project area has been intensively surveyed for cultural resources (most previous surveys were probably related to activities focused on permits for mineral development of other linear ROWs). Areas within 100 feet of historic districts and regions were designated as exclusion areas during routing; areas within 660 feet (0.125 mile) of historic sites will be avoided to the extent feasible.

[View Complete Macro Corridor Study](#)