

ATTACHMENT I: TRANSPORTATION MEMORANDUM



April 2, 2024

Tiffany Hennig and Jennifer Chester
Xcel Energy
1800 Larimer Street, Suite 400
Denver, CO 80202

Re: **Traffic Memorandum**, Colorado's Power Pathway, El Paso County, Colorado

Dear Ms. Hennig and Ms. Chester,

Public Service Company of Colorado, a Colorado corporation conducting business as Xcel Energy (Xcel Energy), proposes to construct, maintain, and operate Colorado's Power Pathway (Pathway) in eastern Colorado. Pathway includes installation of approximately 550 miles of 345-kilovolt double circuit transmission line in 12 counties; construction of four new electric substations; and expansion, equipment additions, or equipment upgrades at four existing electric substations. Pathway will be constructed in five segments. A portion of Segment 5 is proposed to be located in El Paso County, including 43 miles of proposed transmission line within El Paso County. No new substations or modifications to existing substations are currently planned within the county.

The purpose of this Traffic Memorandum is to analyze and document the traffic impacts of Pathway within the limits of El Paso County, Colorado (Figure 1). Tetra Tech prepared this Traffic Memorandum to analyze the peak construction traffic for Pathway in El Paso County. The proposed haul routes for the Pathway transmission line in El Paso County are shown on Figure 2. Where practical, existing public roads and private roads will be utilized during Pathway construction, maintenance, and operation. Some private roads may require improvements, and new access roads will need to be constructed to accommodate construction equipment and long-term maintenance of the transmission line. At this time, there are no locations where additional turn lanes or acceleration/deacceleration lanes are needed.

Where road improvements are needed, Xcel Energy will acquire any necessary grading, stormwater, and erosion control permits and will comply with permit requirements. Xcel Energy will also acquire access easements where necessary access routes traverse private property. Some access routes may remain post construction to maintain access to transmission lines for operation and maintenance activities.

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Construction Traffic Trip Generation

Construction Schedule and Activities

Xcel Energy is currently working on Pathway permitting activities and final design of the proposed Pathway facilities, including El Paso County's Areas and Activities of State Interest (1041) permit process. Segment 5 construction is anticipated to be completed within the year 2027.

The typical construction workday will see most workers arrive at the laydown yard between 6:00 a.m. and 8:00 a.m. and proceeding from there to the right-of-way (ROW), where active work is being performed. Deliveries will mainly occur between 6:00 a.m. to 4:00 p.m. Most workers will return to the laydown yard between 5:00 p.m. and 6:00 p.m. to depart for the evening.

Construction will generally include the following activities:

- Mobilization
- Site preparation—staging area setup
- Construction
 - Foundations
 - Transmission line structure delivery, erection, and installation
 - Stringing of conductor and static wire
- Testing and commissioning
- Energization
- Cleanup and demobilization.

Activities may vary based on construction phasing.

Haul Routes

Construction traffic will include a combination of construction equipment, material delivery vehicles, construction workers, and job site personnel. Access to the transmission line route will be along several roads and the transmission line ROW within El Paso County. These include two major roads, US Highway 24 (US-24) and State Route 94 (CO-94), as well as many smaller gravel roads, including Ramah Road, Harrisville Road, Corona Road, Holtwood Road, Big Springs Road, Judge Orr Road, Rush Road, Shear Road, and Whittemore Road. Construction-related traffic distribution is assumed to be approximately equal between US-24 and CO-94. See Figure 2 for a detailed map of haul routes.

Haul Route Road Classification

According to the definitions and maps provided in the El Paso County 2016 Major Transportation Corridors Plan Update¹ (El Paso County Transportation Plan), US-24 and CO-94 are considered Principal Arterials. Both are two-lane paved roads. All other roads used during construction are classified as Collectors, or are unclassified, with the exception of Judge Orr Road, which is classified as Minor Arterial. The El Paso County Transportation Plan also describes current traffic conditions for roads in the county. The two major roads that will be used during construction, US-24 and CO-94, are defined as “uncongested.” The average daily traffic (ADT) on US-24 ranges from 2,700 vehicles per day (vpd) near Ramah, Colorado to 7,500 vehicles per day entering Colorado Springs, Colorado. The ADT for CO-94 near the boundary of Colorado Springs is 8,000 vpd, reducing to 1,800 vpd near Rush, Colorado.

Construction Traffic Estimates

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition² does not contain values for the construction of a high voltage electric transmission line. Estimates for construction duration, number of workers and vehicles, quantity of materials and equipment, and number of deliveries required to construct Pathway in El Paso County were provided by Xcel Energy and are based on prior experience constructing transmission lines (see Table 1). Using these estimates, it is anticipated that peak construction traffic for a period of 3 months will be less than 136 vehicle trips per day, including passenger car trips and truck trips. Only 30 passenger car trips per day are anticipated, and it is conservatively assumed that these will occur during peak hours.

Table 1: Project Construction Vehicles by Task

Major Construction Tasks	Approximate Construction Duration (weeks)	Approximate Daily Passenger Car Trips	Approximate Daily Truck Trips by Vehicle Type	Approximate Total Daily Roundtrips
Foundation Installation	13 weeks	15-20	Flatbed trucks 5	70-105
(~4 per day)			Concrete trucks 40-60	
			Dump trucks 10-20	

¹ El Paso County. 2016. El Paso County 2016 Major Transportation Corridors Plan Update. <https://publicworks.elpasoco.com/wp-content/uploads/Documents/MTCP-Adopted-Report-12-6-2016.pdf>

² Institute of Transportation Engineers (ITE). 2017. Trip Generation Manual (10th ed.). Washington, D.C.

Major Construction Tasks	Approximate Construction Duration (weeks)	Approximate Daily Passenger Car Trips	Approximate Daily Truck Trips by Vehicle Type	Approximate Total Daily Roundtrips
Steel Pole Installation (~4 per day)	16 weeks	5-10	Semi-trucks 5-10	10-20
Conductor/Optical Ground Wire	14 weeks	15-20	Semi-trucks 15	36-46
			Crane 1	
			Aerial Lifts 5-10	
TOTAL	16 weeks	30	n/a	106

A commonly used measure of the performance of a roadway or intersection is level of service (LOS). Roadway LOS is measured on a scale from A to F, where A represents the best operations, with no congestion, and F represents poor operations, with severe congestion. The LOS is reported for the peak hour of a roadway and represents a morning or afternoon commuting rush hour. According to the El Paso County Transportation Plan, El Paso County’s goal is to maintain LOS D or better on each roadway segment. Since US-24 experiences about 2,700 vpd in the area where Pathway construction traffic will affect the roadway the most, the Highway Capacity Manual, 7th Edition³ guidelines estimate 270 of those vehicles will be peak-hour vehicles. Pathway construction traffic would equate to an 11% increase during peak hour and is unlikely to have a noticeable impact on traffic flow. Similarly, if all peak construction traffic uses CO-94 instead, with an ADT of 1,800 and an estimated peak hour count of 180 vehicles³, 30 construction traffic trips would be generated during the peak hour, equating to a 17% increase in vehicles. It is worth noting that these are worst case percentages. It is unlikely that all work personnel would be traveling to the same location every day because the construction of the transmission line would be spread out over 43 miles within the County. Instead, several work crews would be traveling to different work areas each day. This would cause the peak hour trips generated by construction to be spread out over several roads and intersections. The LOS for each of these roadways would

³ National Academies of Sciences, Engineering, and Medicine (U.S.). Transportation Research Board. (2022). Highway capacity manual: A Guide for Multimodal Mobility Analysis (7th ed.). Transportation Research Board.

remain unchanged from the current state of “uncongested,” which as defined by El Paso County, meaning they operate at LOS A or B.

The local county roads likely to be used by construction traffic have low ADT, ranging from 90 to 600 vpd. Very few businesses or residences are located in these areas. They are usually single properties spread out over a large distance. No housing developments were noted in the haul route area along county roads. One notable location where construction traffic would cross paths with significant county road traffic is the Miami-Yoder School, just south of Rush, Colorado. This would likely only occur during the morning peak hour, as afternoon school traffic will likely peak before the construction workday is finished. It is unlikely that construction traffic will noticeably impact school traffic. The continuity and adequacy of pedestrian and bicycle facilities was not considered due to the low ADT and rural nature of the roads in the project haul route.

Operational Traffic Trip Generation

Once Pathway has been constructed and placed in service, traffic impacts from operations are not expected. The electric transmission line does not require on-site support and will not generate trips in excess of those occasionally needed for maintenance or emergencies. In such a case, vehicle traffic could include pickup trucks, a bucket truck, or emergency services vehicles.

Based on the analysis conducted, Tetra Tech anticipates that Pathway construction traffic will be incorporated into the existing roadway network without noticeable impact. The results of our analysis are as follows:

- The added construction traffic will be less than the typical daily fluctuations in traffic volume and will represent no measurable impact to streets and intersections.
- It is anticipated that construction activities will neither block roadways nor impede daily traffic volume due to the location of Pathway and the proposed type of construction.
- Vehicles associated with maintaining the transmission line once it is built are generally pickup trucks, or an occasional bucket truck, and will have a negligible impact on transportation infrastructure. Such vehicles will likely access the transmission line on a monthly basis.

Turn Lanes, Access Modifications, and Sight Distance

Part of the consideration of project impacts includes determining if specific access locations show need for turn lanes and acceleration or deceleration lanes. Due to the rural nature of the project as well as the low volume of peak hour traffic being generated, no lane modifications should be necessary. The type of work being completed during construction will be spread out over several locations with small work crews, and during operations, trips generated along the haul route will be negligible. Stopping sight distance was considered extremely unlikely to be impacted for the same reasons stated previously with regards to lane modifications.

Roadway Signing and Striping

The roadways included in the project haul routes are frequently gravel roads with no striping and limited signage. Due to the low volume of traffic existing on these roadways and the small number of trips being generated by construction and operations, modifications to the roadway signage and striping is not necessary.

Conclusion

In conclusion, Tetra Tech does not recommend changes to the current roadway configurations. Tetra Tech further concludes that short-term construction impacts to local infrastructure will be minimal, and long-term operations impacts will be negligible. If you have any questions or require additional information, please do not hesitate to contact Perry Patton, Civil Engineer, at (303) 980-3549.

Sincerely,
TETRA TECH, INCORPORATED



Perry Patton, P.E.
Project Civil Engineer



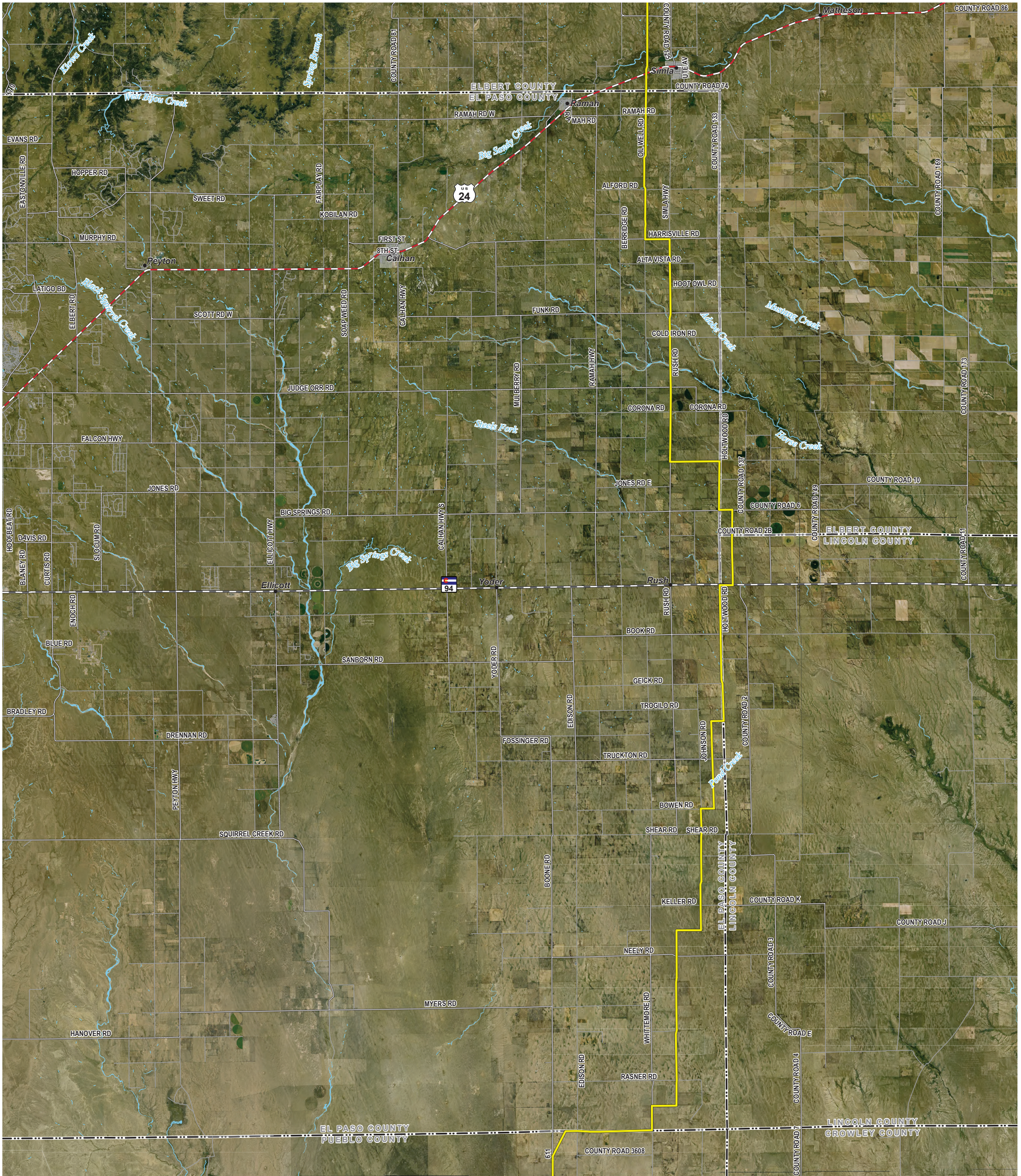
Em Johnson, E.I.T.
Senior Associate Civil Engineer

Attachments

- Figure 1—Vicinity Map
- Figure 2—Haul Route

FIGURES

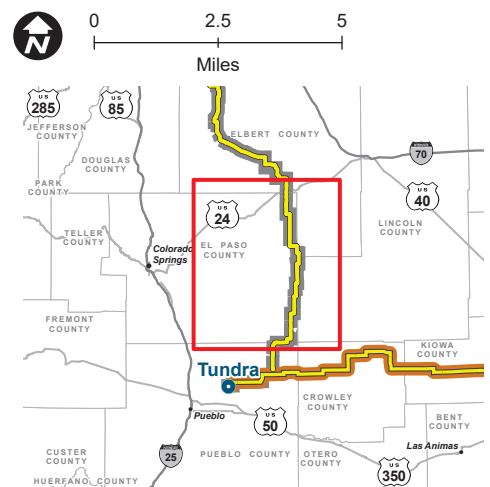
COLORADO'S POWER PATHWAY



- Legend**
- Proposed Transmission Route
 - Boundary**
(CDOT 2021, DOLA 2021)
 - Municipal Boundary
 - County
 - Transportation**
(CDOT 2021, BTS 2020)
 - U.S. Highway
 - State Highway
 - Local Road

Hydrology
(NHD 2020)

- Perennial Stream
- Intermittent Stream
- Waterbody



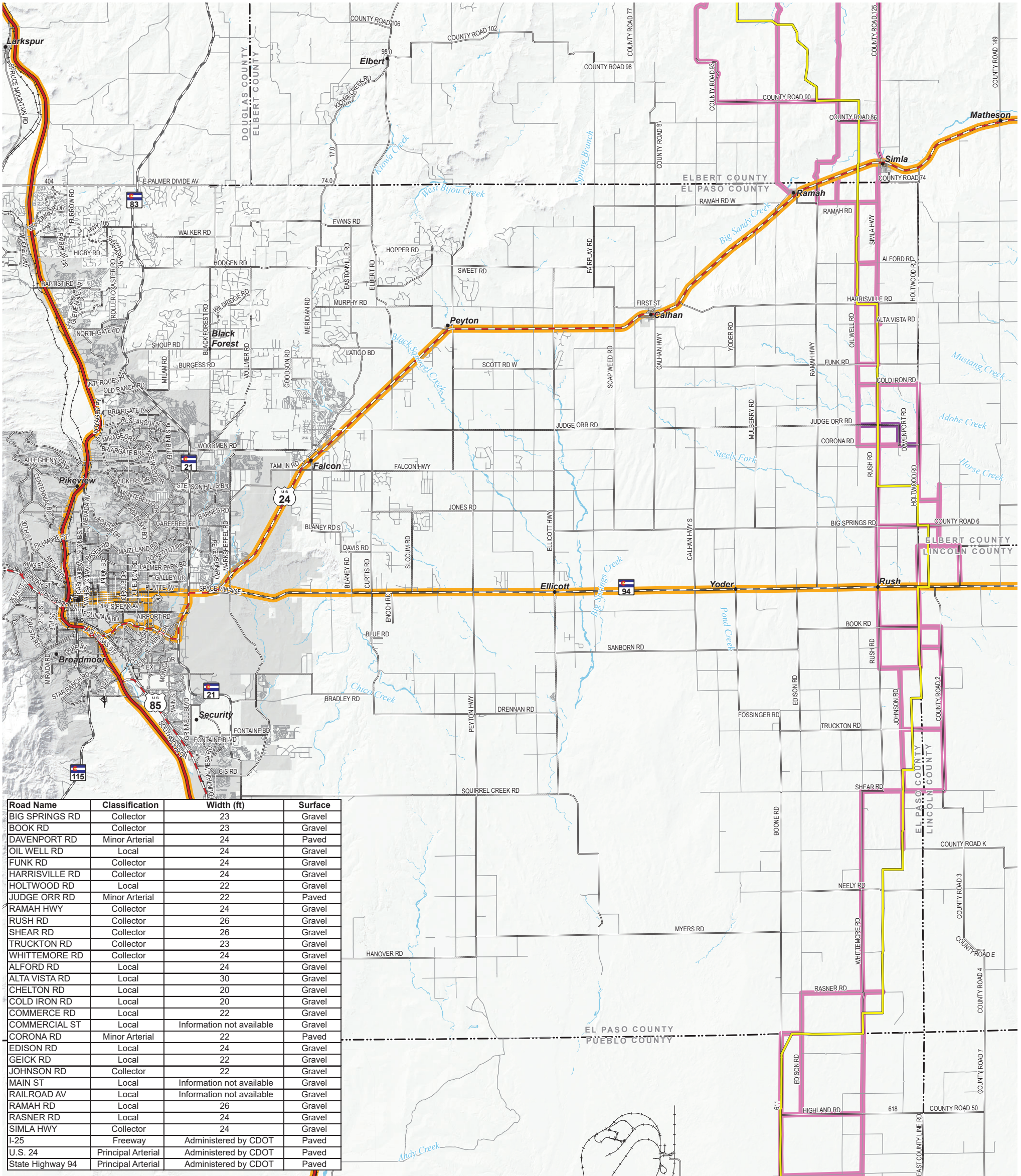
PRELIMINARY, SUBJECT TO CHANGE
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Revised: 2/22/2024 | NOT FOR CONSTRUCTION

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El Paso County Vicinity

COLORADO'S POWER PATHWAY



Legend

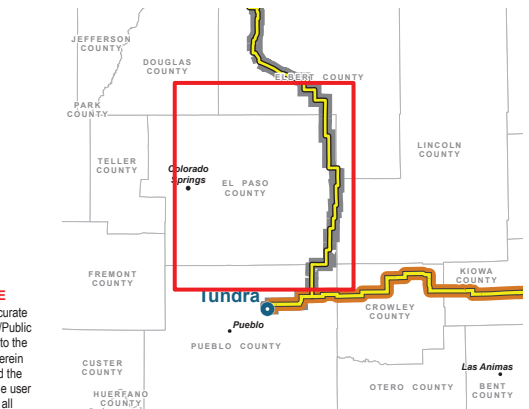
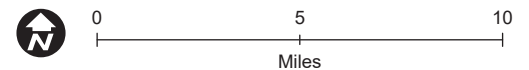
- Proposed Transmission Route
- Heavy Material Delivery Route - Paved*
- *Routes used to transport bulk equipment and materials to laydown yards
- General Construction Haul Route - Paved**
- General Construction Haul Route - Gravel**
- **Routes used to deliver materials (e.g., anchor bolts, poles, concrete) to individual work sites

Boundary

- Municipal Boundary
- County

Transportation

- U.S. Highway
- State Highway
- Local Road



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El Paso County Construction Access