

### 3.14 UTILITIES

This section describes the identification of major utilities in the project area and impacts to those utilities by the No-Action Alternative and the Preferred Alternative. An impact is recognized when the construction footprint of the project overlaps a major utility.

#### Summary of Results

The Preferred Alternative would have direct impacts on approximately:

- Ten major electrical transmission lines
- Thirty-two major natural gas lines
- Fifteen major petroleum lines
- Nine major water lines
- Seven major sanitary and storm sewer lines
- One hundred major telecommunication lines

Additionally, the CRMF would have direct impacts on:

- Two water mains
- Five storm sewers
- Two sanitary sewers
- One gas line
- Multiple fiber optic telecommunication and electric lines

There is no difference in impacts to utilities between the Smith Road Realignment Design Options 1 and 2, the 40th Avenue Design Options 1 and 2, or the New Castle Design Options 1 and 2. Design options would not change the direct impacts to utilities, only how mitigation is applied during final design and construction.

Utility impacts resulting from the Preferred Alternative would be temporary. During construction the affected utilities would be protected, interrupted, and/or relocated, as necessary. Upon completion of construction all major utilities would be returned to at least their current condition prior to construction (or its equivalent).

The Preferred Alternative would result in the addition of new stations in the project area. Both CCD and Aurora have, or are developing, station area plans to encourage TOD around the stations. This new development may increase the population density of the area. If this occurs, additional utility service could be required to support the new development.

The Preferred Alternative alignment would run adjacent to the newly constructed solar arrays near the DIA terminal. Impacts to the solar arrays and the associated underground utilities are avoided by extending the length of the Preferred Alternative structure over outbound Peña Boulevard. Impacts and mitigations to utilities are listed in Table 3.14-2.

#### 3.14.1 Affected Environment

Utilities located in the project area include electric, gas, water, sanitary/storm sewer, and communications. Only major crossings of utilities located within 300 feet of the Preferred Alternative alignment and within the station footprints were considered. These utilities are listed by facility type in Table 3.14-1.

**Table 3.14-1  
Major Utilities**

Utility Category	Facility Type
Electric	Electric transmission lines (as defined by Xcel Energy; generally 115 kV)
	Electric substations, transmission towers
Gas	High pressure natural gas lines, petroleum lines, and pump stations
Water	Conduit as defined by Denver Water
	Aurora water lines greater than 42 inches
	Pump stations
Sanitary/Storm Sewer	Greater than 60-inch sanitary sewer
	Brick/clay sanitary sewer
	Greater than 60-inch storm sewer
	Pump stations
Communications	Fiber optic lines
	Greater than 200 pair copper
	Communication towers

kV = kilovolts

### 3.14.2 Environmental Consequences

The impacts on major utilities from the No-Action Alternative and the Preferred Alternative are described in the following subsections.

#### 3.14.2.1 No-Action Alternative

The No-Action Alternative would result in no direct, indirect, or temporary construction impacts to major utilities.

#### 3.14.2.2 Preferred Alternative

The impacts to major utilities that would result from the Preferred Alternative would be temporary. During construction, the affected utilities would be protected, interrupted, and/or relocated as necessary; however, upon completion of construction, all major utilities would be returned to at least their current condition prior to construction (or its equivalent).

Between DUS and the 38th/Blake station, the Preferred Alternative would occupy a space adjacent to the existing UPRR ROW. In these locations underground utilities would be impacted. Between the 38th/Blake station and Airport Boulevard the Preferred Alternative would be generally located partially in UPRR ROW or along it (south of the UPRR tracks). In these areas, the casing (protective covering) holding the existing utilities may be extended to provide protection for the utilities in the area of the Preferred Alternative. Between Airport Boulevard and DIA, the utilities crossed by the Preferred Alternative may require encasement and may need to be lowered to avoid excavation impacts.

Direct impacts on utilities caused by the Preferred Alternative are discussed separately by utility type. Utility activities related to the Preferred Alternative would be in compliance with relevant

portions of the American Railway Engineering and Maintenance of Way Association (AREMA) *Manual for Railway Engineering* (2006) and the *RTD Commuter Rail Design Criteria* (2005b).

The Preferred Alternative alignment would run adjacent to the newly constructed solar arrays near the DIA terminal. Impacts to the solar arrays and associated underground utilities would be avoided by extending the length of the Preferred Alternative structure over outbound Peña Boulevard.

### Direct Impacts

The following criteria were used to evaluate utility impacts:

- All buried utilities must be a minimum of 60 inches below the proposed top of the rail elevation.
- All utilities must be a minimum of 20 feet from the centerline of the proposed track.
- The overhead catenary system will be approximately 30 feet above the finished grade.

At this time, the impacts described in the following text are approximate. The engineering phase of the project would identify impacts in more detail. This effort would include determining the extent of relocations or lowerings of all utilities, not just major utilities.

The Preferred Alternative would impact approximately ten electrical transmission lines. Eight of these transmission lines cross the alignment. The transmission lines impacted are:

- Four need to be raised where they cross the alignment.
- Two will need to be raised and will require tower relocations.
- Two will be protected in place during construction.
- Two will require parallel relocations.

Approximately 32 natural gas lines would be impacted by the Preferred Alternative:

- Nine crossings will be protected in place.
- Three parallel lines and five crossings require relocation.
- Fourteen crossings will need to be lowered.
- One proposed crossing might also need to be lowered.

The Preferred Alternative would impact approximately 15 major petroleum lines. Any petroleum transmission line is considered a major petroleum facility. Eight of these lines would cross the Preferred Alternative; seven might need to be lowered and one might need to be relocated. Five lines that parallel the Preferred Alternative alignment would need to be relocated. One parallel line would be abandoned and removed if encountered during construction.

Approximately nine major water lines would be located under the Preferred Alternative footprint. Of these, two parallel lines would require relocation and seven crossings would require lowering or protection in place. The Preferred Alternative alignment would also impact a pump house complex owned by Aurora. The facilities are believed to be abandoned; thus, the pipes and structures would be removed when encountered during construction.

Approximately seven major sanitary and storm sewer lines would be impacted by the Preferred Alternative. Of these, three parallel sewer lines would need to be relocated. One additional storm sewer is currently under construction and might need to be lowered where it would cross the Preferred Alternative. RTD will coordinate with CCD regarding the potential construction of an improved storm drain outfall from approximately 40th Street and 40th Avenue to the South Platte River. The design and construction of this storm sewer is independent of the Preferred Alternative, but as part of the larger Denver project, CCD and RTD could work together to

develop the design, negotiate the required railroad easement, and coordinate construction activities and/or contracts.

The Preferred Alternative would potentially impact approximately 100 major telecommunication lines. These facilities would either cross or parallel the Preferred Alternative alignment. Survey data would be obtained in preliminary engineering to determine the elevations of overhead and underground facilities crossing the alignment so more specific recommendations can be made regarding the treatment of these utilities. The parallel facilities would be relocated.

The Preferred Alternative would include the construction of an electric substation located east of Quebec Street and north of the alignment. This substation would provide power to operate the EMU system. Two smaller paralleling stations would be constructed along the Peña Transportation Corridor portion of the alignment to augment the catenary system. These substations would not result in additional demands on nearby power sources.

Smith Road Realignment Design Options 1 and 2 would not change impacts on major utilities, only how the impacts will be mitigated in final design and construction.

Lowering New Castle Street, as proposed in the Preferred Alternative, would not result in direct impacts to utilities similar to the New Castle Design Option 1; however, mitigation during final design and construction would vary slightly.

Lowering 40th Avenue in the 40th Avenue Design Option 2 would not change the direct impacts to utilities, but how the impacts will be mitigated in final design and construction.

Construction of the CRMF would result in several impacts to utilities, including the relocation of storm sewers, adjustment or relocation of water lines or sanitary sewer or water lines, adjustment or relocation of buried fiber optic, adjustment or relocation of a gas line, and new roadway/paved access or reduced cover on buried utilities.

### **Indirect Impacts**

The Preferred Alternative would result in new stations in the project area. Both CCD and Aurora have, or are developing, station area plans to encourage TOD around the stations. This new development may increase the population density in the area. If this occurs, additional utility service could be required to support the new development.

### **Temporary Construction Impacts**

During construction, temporary service interruptions may be necessary to safely accommodate construction activities, including utility relocation. The length and frequency of the service interruption would vary depending on the construction process, type and condition of equipment used, layout of the construction site, and specific utility owner shut-off restrictions.

### **3.14.3 Mitigation**

Detailed information regarding the location of major utilities will be clarified during the engineering phase of the project. It is anticipated that the utility impacts would be mitigated through avoidance, reinforcement and protection, or relocation.

Table 3.14-2 summarizes the impacts to utilities by the Preferred Alternative and mitigation measures.

**Table 3.14-2  
Utilities Impacts and Mitigation Related to the Preferred Alternative**

Impacts	Mitigation
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>• The Preferred Alternative would have direct utility impacts on the following:                             <ul style="list-style-type: none"> <li>• 10 major electrical transmission lines.</li> <li>• 32 major natural gas lines.</li> <li>• 15 major petroleum lines.</li> <li>• 9 major water lines.</li> <li>• 7 major sanitary and storm sewer lines.</li> <li>• 100 major telecommunication lines.</li> </ul> </li> <li>• CRMF would have direct impacts on the following:                             <ul style="list-style-type: none"> <li>• 2 water mains.</li> <li>• 5 storm sewers.</li> <li>• 2 sanitary sewers.</li> <li>• 1 gas line.</li> <li>• Multiple fiber optic telecommunication and electric lines.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• As appropriate for the impact, include the following mitigation:                             <ul style="list-style-type: none"> <li>• Avoid utilities during final design and construction.</li> <li>• Reinforce or protect utilities through casing pipes and other construction methods.</li> <li>• Use cathodic protection to mitigate corrosion or electrical grounding to mitigate effects of induced voltages caused by alternating current.</li> <li>• Relocate utilities in coordination with the utility owner or municipality.</li> </ul> </li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>• Possible densification of development around transit stations requiring additional utilities.</li> </ul>	<ul style="list-style-type: none"> <li>• No mitigation required.</li> </ul>
<p><b>Temporary Construction Impacts</b></p> <ul style="list-style-type: none"> <li>• Temporary interruptions in service.</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinate temporary interruptions in utility service with affected property owners and tenants.</li> <li>• See direct impacts; construction impacts to utilities are direct impacts.</li> </ul>

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