2.0 Project Description and Alternatives

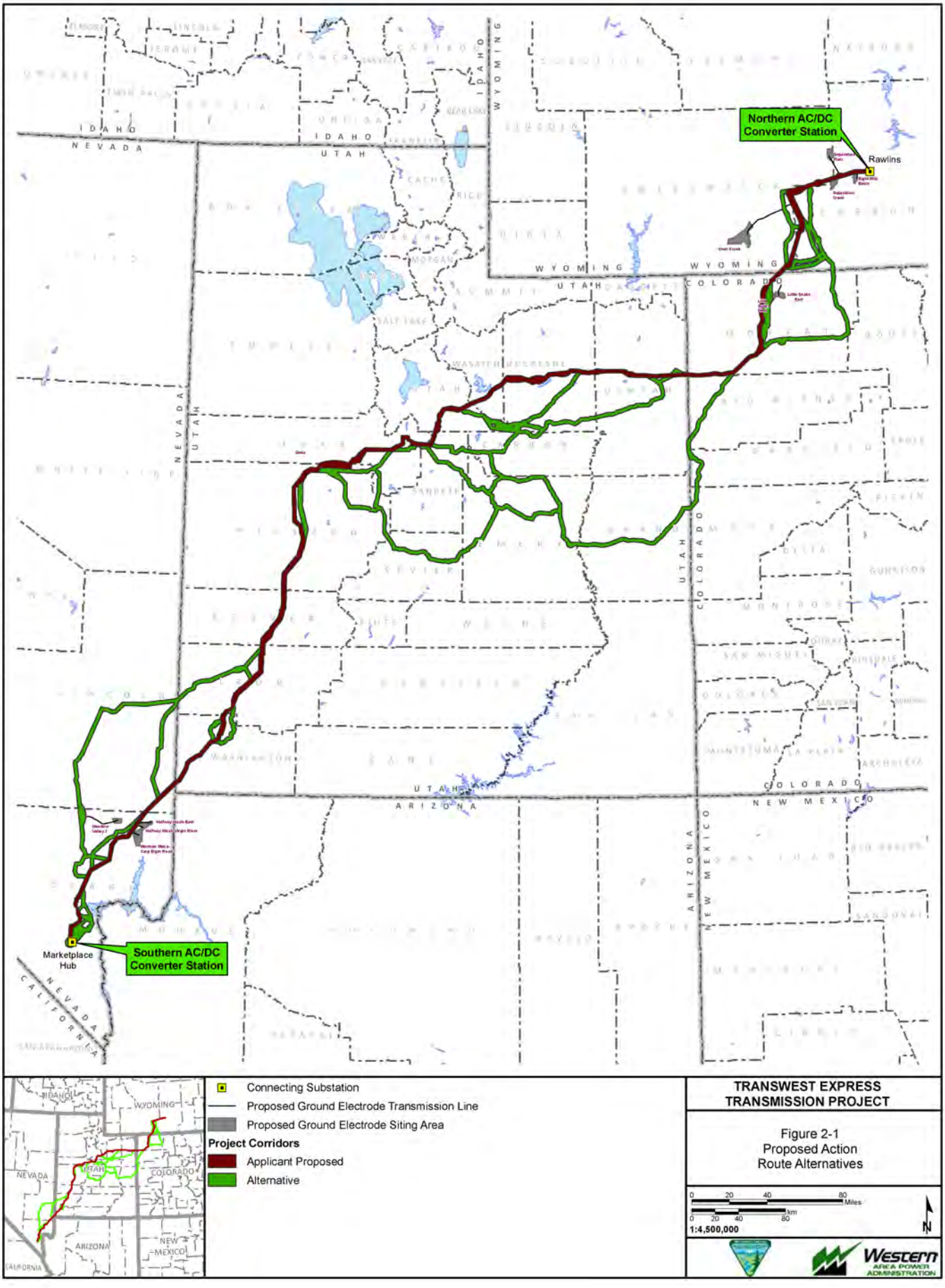
2.1 Project Overview

2.1.1 Proposed Action

The proposed action would consist of the following facilities and improvements:

- A 600-kV DC transmission line, approximately 725 miles in length, extending across public (state and federal) and private lands in Wyoming, Colorado, Utah, and Nevada. The transmission line ROW would be approximately 250 feet wide. Alternative transmission line routes have been developed to analyze the range in resource impacts. **Figure 2-1** depicts these routes that range up to 904 miles in length.
- Two terminal stations would be located on private or public lands at either end of the transmission line, near Sinclair, Wyoming, and at the Marketplace Hub in the Eldorado Valley near Boulder City, Nevada. Terminal facilities would include converter stations and related substation facilities necessary for interconnections to existing and planned regional AC transmission systems.
  - Facilities within the Northern Terminal Station would be situated on approximately 235 acres and include an AC/DC converter station to convert alternating electrical current to direct current, thereby allowing power from the AC system to be transmitted on the Project transmission system.
  - Facilities within the Southern Terminal Station would be situated on approximately 205 acres and include an AC/DC converter station to convert direct current to alternating current, allowing power transmitted on the Project transmission system to enter the regional grid serving California, Nevada, and Arizona. The Project also would be capable of transmitting power in a south-to-north direction, although the primary purpose of the line would be for north-to-south power transfers.
- Access routes, including improvements to existing roads, new overland access and new unpaved roads to access the proposed Project facilities and work areas during the construction, operation, and maintenance phases.
- Ancillary facilities including:
  - Communications systems: a network of 12 to 15 fiber optic communication and regeneration sites, typically within the 250-foot-wide transmission line ROW, and microwave facilities at each terminal.
  - Two ground electrode facilities, each sited on approximately 160 acres with 20 to 90 acres of ground disturbance during operation, to be located on private or public lands in either Wyoming or Colorado, and Utah or Nevada. A low voltage electrical line would connect the ground electrode facilities to the terminals. A ground electrode is required to maintain an electrical circuit through the ground to maintain system operations following emergency events resulting in unexpected loss of one of the two poles (or circuits) of the Project terminal or converter station equipment. One ground electrode facility would be located within 100 miles of each of the Northern and Southern terminals.

The proposed Project has the capability to transmit power generated by existing and/or reasonably foreseeable renewable or non-renewable sources in Wyoming. These include a variety of proposed wind projects, which are analyzed in detail in separate NEPA analyses and whose cumulative impacts, if applicable, are disclosed in Chapter 5.0 of this EIS. It is important to note that none of these projects are exclusively dependent upon this proposed transmission line, nor is this transmission line dependent exclusively on any of those projects.


X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\DesignOptions\Fig_2_1_ProposedActionRouteAlternatives.mxd
Northern AC/DC Converter Station
Rawlins
Southern AC/DC Converter Station
Marketplace Hub
IDAHO
NEVADA
UTAH
WYOMING
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
Connecting Substation
Proposed Ground Electrode Transmission Line
Proposed Ground Electrode Siting Area
Project Corridors
Applicant Proposed
Alternative
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 2-1
Proposed Action
Route Alternatives
0 20 40 80 Miles
0 20 40 80 km
1:4,500,000
N
Western AREA POWER ADMINISTRATION

2.1.2 Design Options

Design options would meet the Project's stated objectives only if transmission capacity becomes available to transmit the energy delivered from Sinclair, Wyoming, to Delta, Utah, by the Project on to Southern California via the existing IPP 2,400-MW, 500-kV DC Southern Transmission Systems (STS). Because capacity is not currently available on the STS, the design options currently do not meet the Project's interests and objectives. Implementation of the design options would only be considered under the conditions that sufficient capacity, approximately 1,500 MW, became commercially available to transmit energy delivered by the project to California; and that the Project was able to establish commercial interconnection agreements with the utility owning and operating the IPP transmission line (currently Los Angeles Department of Water and Power [LADWP]).

If implemented, these design options would consider the same alternative transmission line routes as the proposed action; however, each would require development of different terminal locations, electrode bed system locations, tower types, and ancillary facilities as summarized below.

2.1.2.1 Design Option 2 – DC from Wyoming to IPP; AC from IPP to Marketplace Hub

Under this design option, this project would deliver energy to the IPP near Delta, Utah, then complete delivery of energy to markets in the Desert Southwest region through both the 1,500-MW, 500-kV transmission line proposed as part of this project and through the existing STS between Delta, Utah, and Adelanto, California.

Design Option 2 would entail construction of a 3,000-MW, 600-kV DC transmission line approximately 442 miles in length, from the Northern Terminal in Sinclair, Wyoming, to a new DC/AC converter station near the existing IPP substation near Delta, Utah. From the new DC/AC converter station in Utah, a single circuit 1,500-MW, 500-kV AC transmission line approximately 348 miles in length would be constructed to one of the existing substations in the Eldorado Valley, south of Boulder City, Nevada (Marketplace Hub).

Compared to the proposed action, Design Option 2 would:

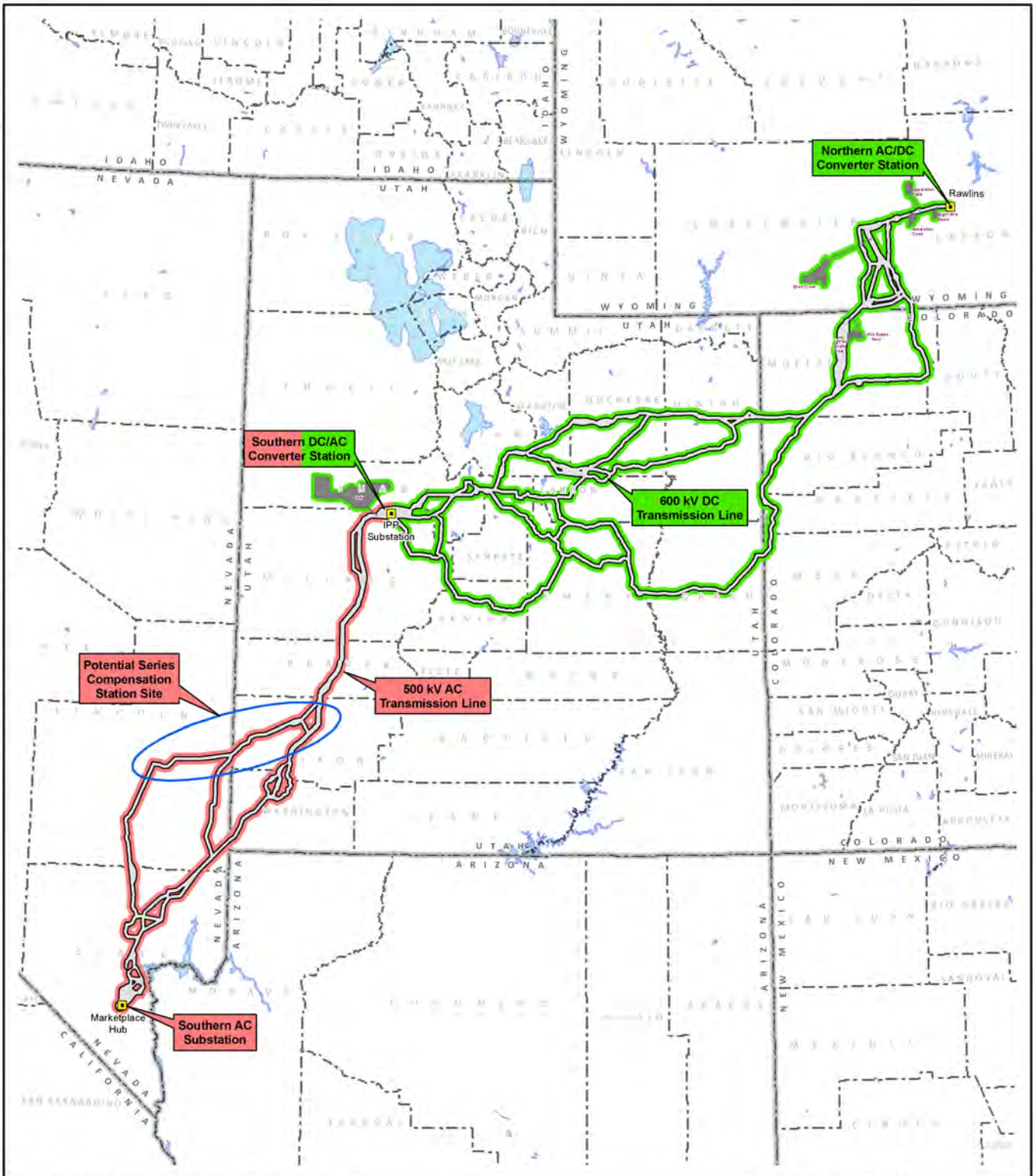
- Replace the 600-kV DC transmission line with a single circuit 500-kV AC line from near IPP in Millard County, Utah, to one of the existing Marketplace Hub substations in Clark County, Nevada;
- Eliminate the Southern Terminal and ground electrode system in Clark County, Nevada, and replace these facilities with similar facilities near IPP in Millard County, Utah;
- Require additional new facilities, including a double circuit 345-kV transmission line (less than 5 miles in length and similar configuration as those described for the 600-kV DC transmission line) for interconnection at IPP and a 500-kV series compensation station (similar to a 500-kV substation) located near the halfway point in the southern 500-kV AC line.

Figure 2-2 depicts the configuration of Design Option 2.

2.1.2.2 Design Option 3 – Phased Build Out

This design option would utilize a two-phase approach. The phased approach is more costly than building out the full system as a single non-phased project and would only be required if the demand for Wyoming resources in the Desert Southwest proves to be slower in development than expected.

Phase one would entail construction of a 3,000-MW, 600-kV DC transmission line approximately 442 miles in length between the location of the proposed Northern Terminal in Sinclair, Wyoming, to the IPP substation near Delta, Utah. This portion of transmission line would require an AC configuration (three conductors and structures to support them), because this phase initially would be operated as a 1,500-MW, 500-kV AC transmission system.



Project Corridor Alternative
Connecting Substation
Potential Overhead Electrical Line
Potential Ground Electrode Siting Area
600 kV DC
500 kV DC

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-2
Design Option 2
DC from Wyoming to IPP,
AC from IPP to Marketplace Hub

0 20 40 80 Miles
0 20 40 80 km
1:4,750,000
N

Western AREA POWER ADMINISTRATION

Exported On: 6/7/2013

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\DesignOptions\Fig_2_2_00_DesignOption2_20130225RL.mxd

Phase two would occur at some point in the future when market demands warrant converting the line's operation from 1,500 MW to 3,000 MW. This phase would involve constructing the remaining portion of the 3,000-MW, 600-kV DC line from IPP to the Southern Terminal, south of Boulder City, Nevada, construction of the Northern and Southern terminals and ground electrode systems, and converting operations to a DC system. The subsequent conversion from 500-kV AC to 600-kV DC would not require physical changes to the structure or wire system constructed in phase one; one of the three conductor bundle sets would be de-energized and left in place.

Compared to the proposed action, Design Option 3 would:

- Construct a 600-kV DC transmission line from Sinclair, Wyoming, to IPP near Delta, Utah, with an AC configuration (three conductors and structures to support them) for AC operation until phase two completion.
- Construct a 500-/345-kV substation near the IPP in Millard County, Utah, for AC operation until phase two completion.
- Require additional new facilities including a double circuit 345-kV transmission line (less than 5 miles in length for interconnection at IPP) and a 500-kV series compensation station located near the halfway point in the northern 500-kV AC line for operation until phase two completion.
- Delay construction of southern 600-kV DC transmission line from IPP to Marketplace Hub, the Northern and Southern terminals and ground electrode systems.

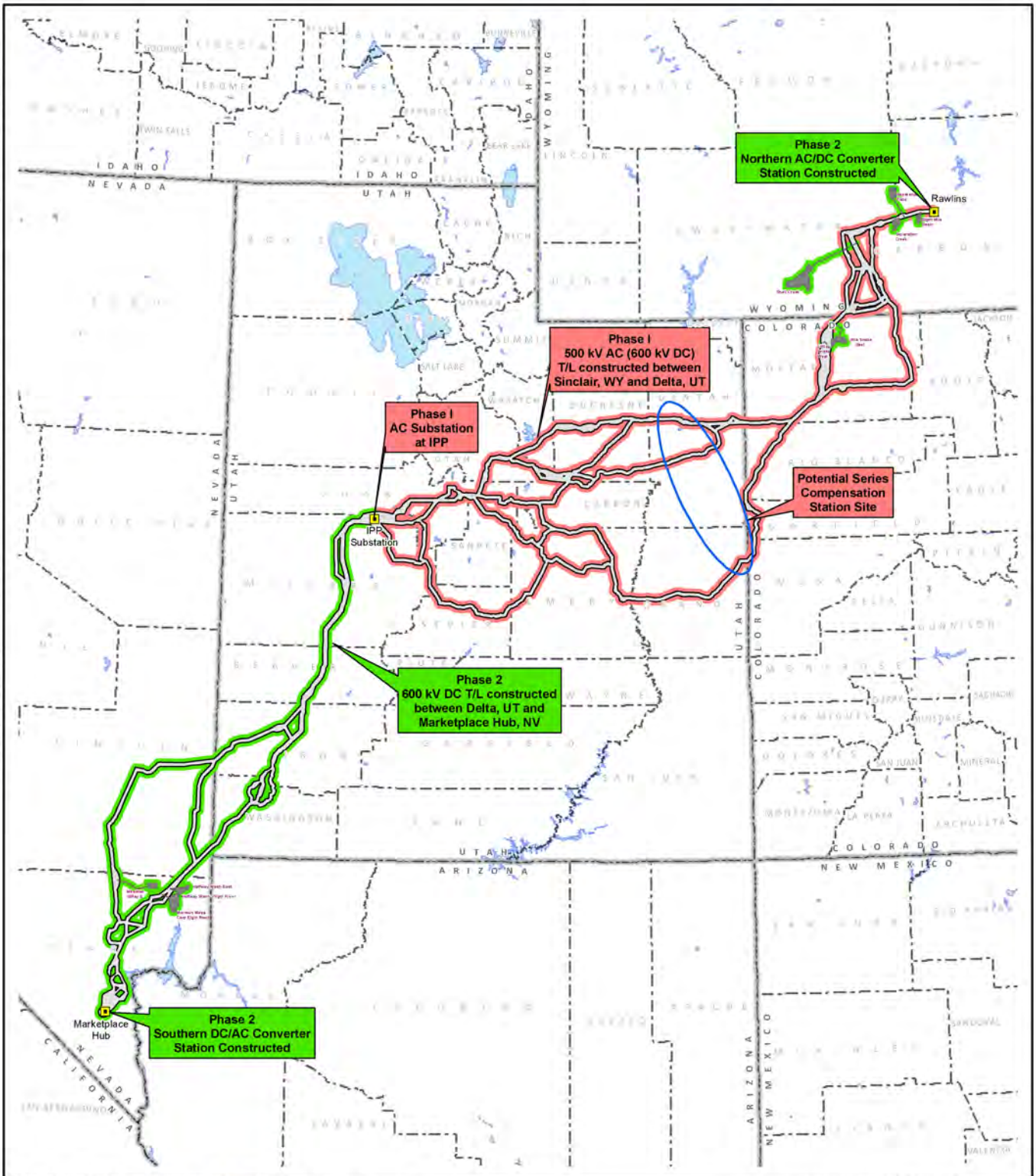
Figure 2-3 depicts the configuration of Design Option 3.

2.2 TransWest Express Transmission Project Planning

System planning studies have been underway since 2005 to assist in identifying a range of alternatives for the Project. The Project was included in a Regional Planning Project Review (RPPR) conducted in accordance with WECC Planning Procedures (TWE 2008). Findings included in the RPPR Conceptual Technical Report concluded that this Project would help to serve the needs of the broad region of Utah, Arizona, Nevada, and southern California in a cost-effective manner while minimizing potential environmental impacts. Studies carried out by the Northern Tier Transmission Group (NTTG) (a subregional transmission group of WECC) and WestConnect supported the development of lines from southern Wyoming to the desert southwest (NTTG 2007; WestConnect 2008). Three important criterion evaluated by TransWest in planning and developing the proposed route for the Project were: 1) capacity of the facility; 2) reliability standards; and 3) the use of designated corridors.

Capacity. The Project would provide the transmission infrastructure necessary to reliably and cost-effectively provide up to 3,000 MW of electric power capacity from Wyoming to the desert southwest (TWE 2010). The 3,000-MW capacity would be sufficient to support the reasonably foreseeable renewable generation sources anticipated in south-central Wyoming as well as other existing sources. At 3,000 MW, the Project would be one of the largest transmission elements within the WECC system and could facilitate achieving renewable energy goals and Renewable Portfolio Standards in the southwest.

Reliability. Transmission systems in the U.S. are planned, operated, and maintained to meet reliability standards and guidelines of the NERC. Additionally, transmission owners and operators are governed by WECC reliability standards that may be in addition to, or more stringent than those required by NERC. The WECC reliability standards affect the Project ROW requirements as well as separation distance requirements from other high voltage lines. See the PDTR (**Appendix D**) for additional information on reliability standards and other required criteria.



Project Corridor Alternative
Connecting Substation
Potential Overhead Electrical Line
Potential Ground Electrode Siting Area
Phase I
Phase II

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-3
Design Option 3
Phased Build-Out

0 20 40 80 Miles
0 20 40 80 km
1:4,750,000
N

Western AREA POWER ADMINISTRATION

Exported On: 6/7/2013

X:\0Projects\112907_003_Transwest_Express\Figures\Document Figures\2013_DEIS_v3\DesignOptions\Fig_2_3_00_DesignOption3_20130225RL.mxd

Reliability standards that limit the operational capacity of any single transmission system element are based on a complex contingency analysis that considers the impact to system operations following various events (i.e., equipment failures, line outages). TransWest has developed minimum line separation requirements based on voltages of other parallel lines and average span distances of the proposed Project transmission line. Application of the NERC and WECC reliability standards and preliminary transmission system contingency analyses indicate that the proposed Project transmission line should be optimally no closer than 1,500 feet from parallel transmission lines rated at 345 kV and higher, and no closer than 250 feet from lines that are operated at less than 345 kV. TransWest has developed a Transmission Line Co-location Framework that provides additional information on the co-location of the Project within corridors with existing transmission lines. The framework was designed to provide flexibility to co-locate transmission lines closer as needed to mitigate resource impacts. See the PDTR (**Appendix D**) for additional information on this framework.

Use of Designated Corridors. Proposed and alternative Project corridors follow designated energy corridors on public lands to the greatest extent practicable, including those collectively recommended by the DOE in November 2008 as WWECs pursuant to Section 368 of the Energy Policy Act of 2005; corridors identified by the BLM and the USFS in their respective land management plans; and corridors designated within state and county plans. The ROD to designate the WWECs served to amend the federal land management plans to incorporate the corridors. The decision also adopts Interagency Operating Procedures for the administration of energy transport development within the corridors. These agency-designated utility corridors and the Project proposed and alternative corridors are depicted in **Figure 2-4** through **Figure 2-7**. Generally, the designated corridors encompass existing transmission lines and other existing and planned linear facilities. The designated corridors represent opportunities for siting transmission lines, particularly when a linear ROW has been permitted or constructed through an environmentally sensitive area. In this situation, the existing ROW would be treated as a corridor that provides an opportunity to minimize additional environmental impacts.

Environmental organizations filed a complaint in federal court challenging the designation of multiple corridors identified in the WWEC programmatic EIS, including several corridors along the proposed Project and alternatives considered in this EIS. The WWEC programmatic EIS “corridors of concern” identified by the plaintiffs that overlap with the proposed Project route and alternatives are depicted in **Figure 2-4** through **Figure 2-7**. The complaint was dismissed as a result of a settlement agreement between the plaintiffs and the federal defendants dated July 11, 2012.

2.3 Alternative Corridor Development and Selection Process

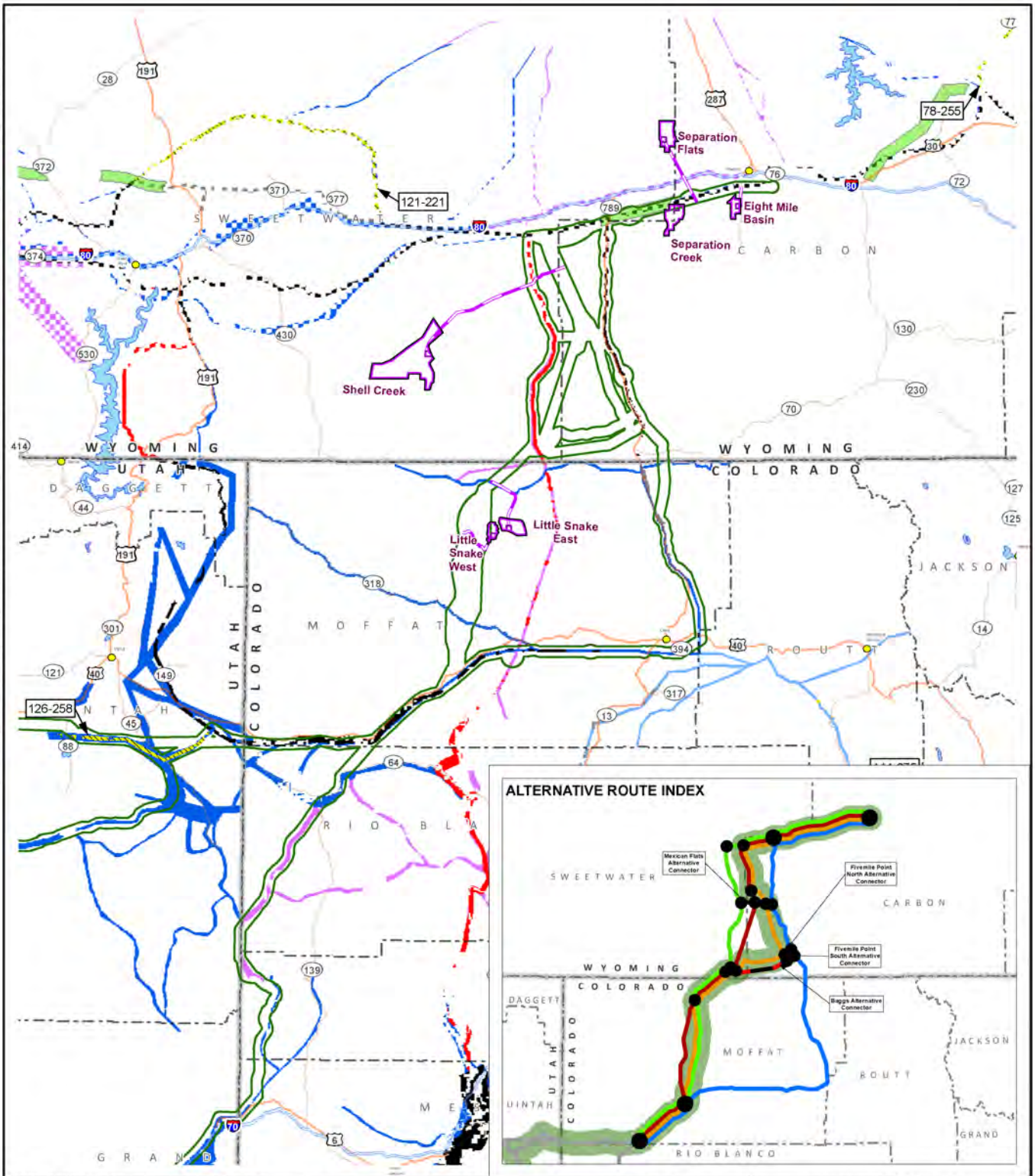
2.3.1 TransWest Proposed Action and Alternative Corridors

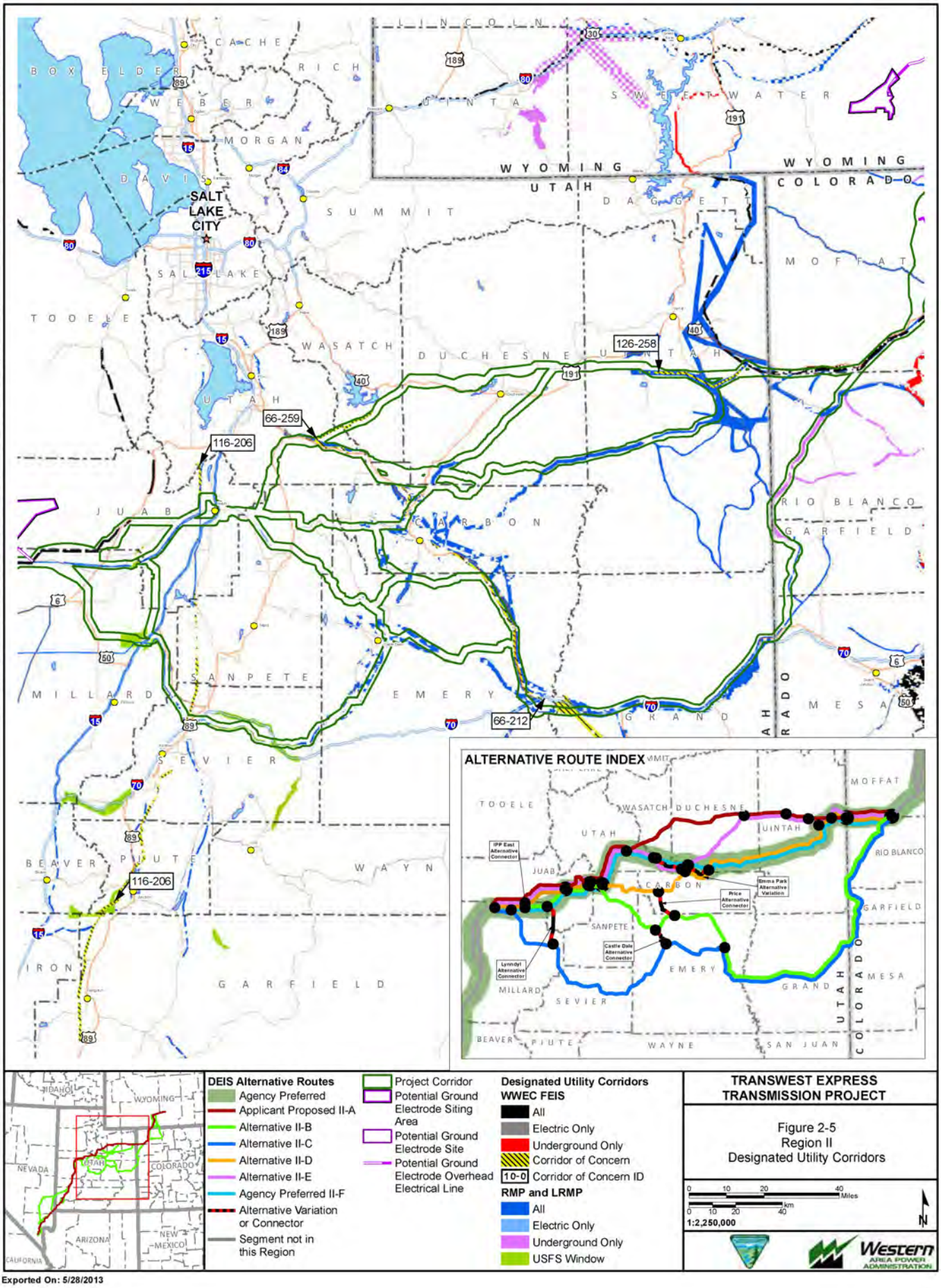
In developing a proposed route to facilitate the transmission of power to markets in the desert southwest, multiple regional corridor studies were conducted. These studies focused on corridors up to 4 miles wide that had been identified as desirable by electrical system planners. During this process, environmental data and federal land management plans were reviewed, federal agency communication and consultation was undertaken to refine the corridor segments, and reference lines (see Section 2.5, Alternative Transmission Line Routes and Ancillary Facilities) were developed based on environmental and engineering constraints and constructability review. The Project history and process used in evaluating alternatives while developing the applicant’s proposed route is documented in the PDTR (**Appendix D**).

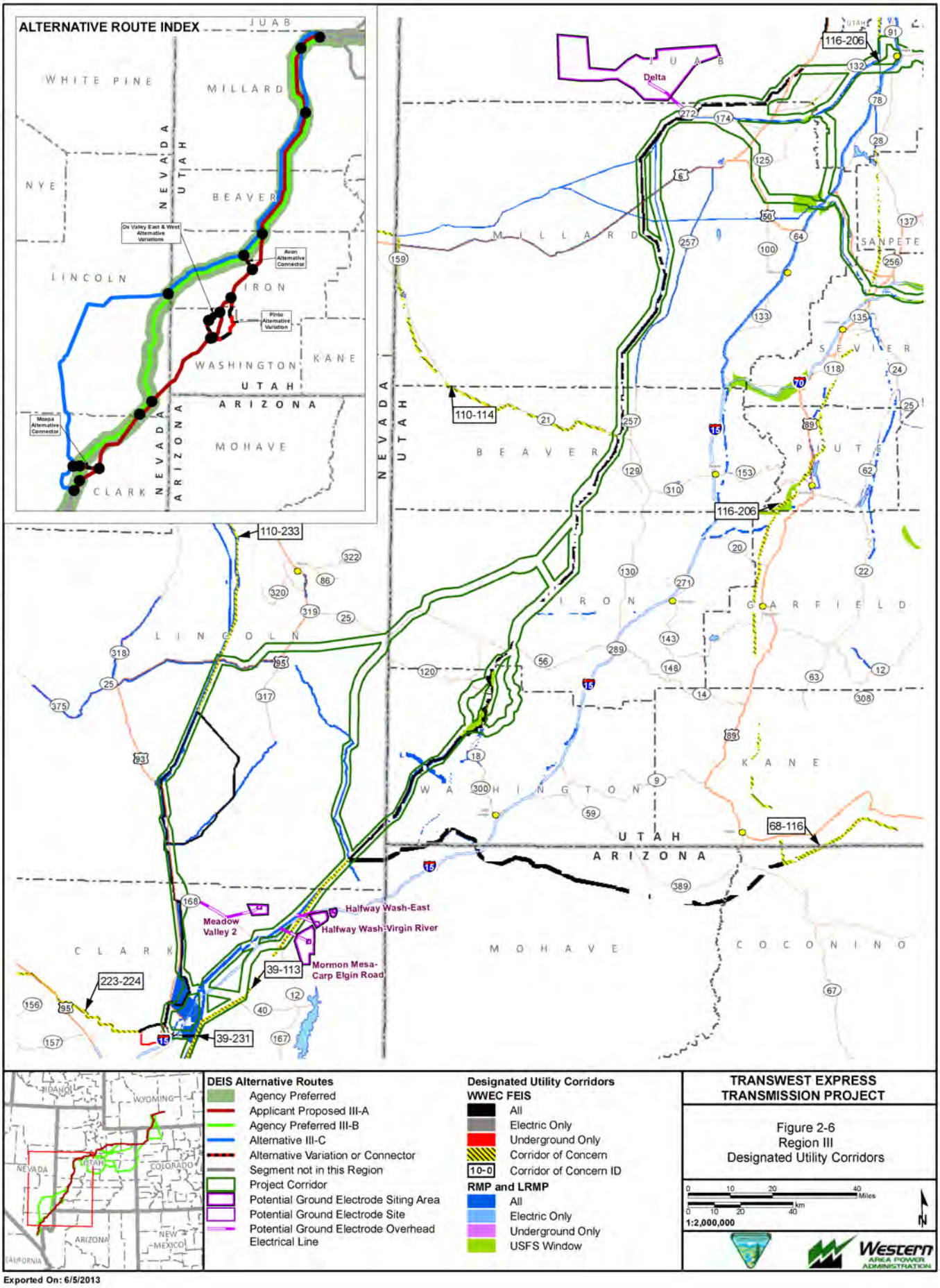
In SF 299 ROW filings with the BLM, TransWest provided maps illustrating a proposed Project corridor from Project origin to terminus as well as corridors identified through the TransWest regional siting studies. The lead agencies reviewed all potential corridors, solicited additional agency-developed alternative corridors, and screened the corridors included in the January 2010 Amended SF 299 as well as the corridors updated in the July 2010 Preliminary POD.

2.3.2 Pre-Scoping Corridor Screening

The lead agencies conducted a corridor refinement process to identify potentially feasible corridors to be analyzed in the EIS, eliminating corridors that were duplicative or presented extensive resource constraints.

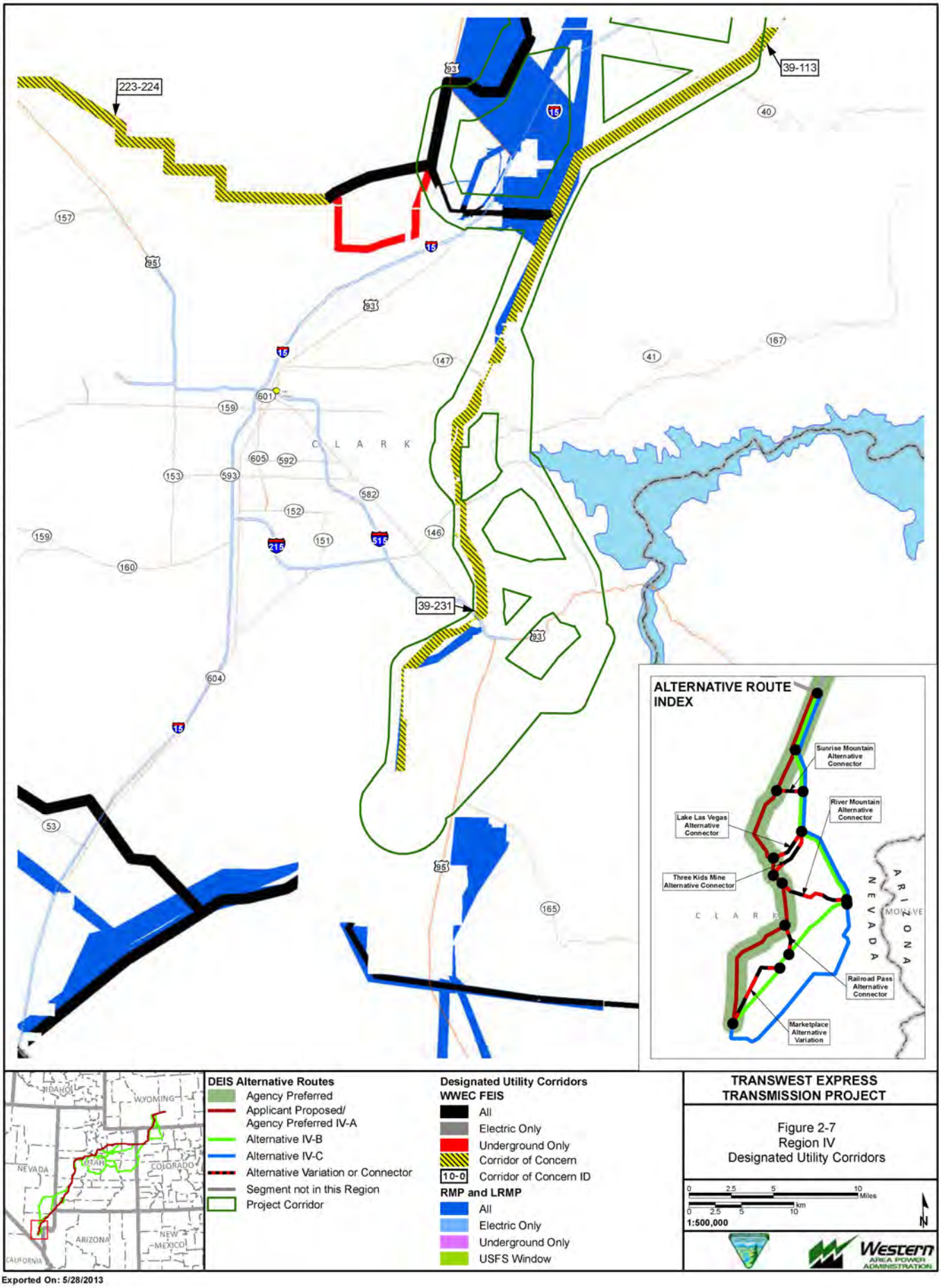

78-255
Separation Flats
Eight Mile Basin
Separation Creek
121-221
Shell Creek
Little Snake West
Little Snake East
126-258
SWEETWATER
CARBON
WYOMING
UTAH
COLORADO
MOFFAT
JACKSON
ROUTT
RIO BLANCO
GRAND
UINTAH
DAGGETT
ALTERNATIVE ROUTE INDEX
Mexican Flats Alternative Connector
Fivemile Point North Alternative Connector
Fivemile Point South Alternative Connector
Baggs Alternative Connector
DEIS Alternative Routes
Agency Preferred
Applicant Proposed I-A
Alternative I-B
Alternative I-C
Agency Preferred I-D
Alternative Variation or Connector
Segment not in this Region
Project Corridor
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
Wyoming Governor's Sage-grouse Corridor
Designated Utility Corridors
WWEC FEIS
All
Electric Only
Underground Only
Corridor of Concern
10-0 Corridor of Concern ID
RMP and LRMP
All
Electric Only
Underground Only
USFS Window
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 2-4
Region I
Designated Utility Corridors
0 5 10 20 Miles
0 5 10 20 km
1:1,750,000
N
Western AREA POWER ADMINISTRATION
Exported On: 6/5/2013
X:\0Projects\112907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\JurisdictionFig_2_04_00_SRI_UtilityCorridors_20130225.mxd


X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\JurisdictionFig_2_05_00_SRII_UtilityCorridors_20130225.mxd
SALT LAKE CITY
WYOMING
COLORADO
UTAH
126-258
66-259
116-206
66-212
116-206
ALTERNATIVE ROUTE INDEX
DEIS Alternative Routes
Agency Preferred
Applicant Proposed II-A
Alternative II-B
Alternative II-C
Alternative II-D
Alternative II-E
Agency Preferred II-F
Alternative Variation or Connector
Segment not in this Region
Project Corridor
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
Designated Utility Corridors
WWEC FEIS
All
Electric Only
Underground Only
Corridor of Concern
10-0 Corridor of Concern ID
RMP and LRMP
All
Electric Only
Underground Only
USFS Window
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 2-5
Region II
Designated Utility Corridors
1:2,250,000
Western AREA POWER ADMINISTRATION
Exported On: 5/28/2013



K:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\JurisdictionFig_2_06_00_SRIII_UtilityCorridors_20130225.mxd

Exported On: 6/5/2013


223-224
39-113
39-231
CLARK
ALTERNATIVE ROUTE INDEX
Sunrise Mountain Alternative Connector
River Mountain Alternative Connector
Lake Las Vegas Alternative Connector
Three Kids Mine Alternative Connector
Railroad Pass Alternative Connector
Marketplace Alternative Variation
NEVADA
ARIZONA
MOHAVE
IDAHO
WYOMING
UTAH
COLORADO
NEVADA
ARIZONA
NEW MEXICO
CALIFORNIA
DEIS Alternative Routes
Agency Preferred
Applicant Proposed/ Agency Preferred IV-A
Alternative IV-B
Alternative IV-C
Alternative Variation or Connector
Segment not in this Region
Project Corridor
Designated Utility Corridors
WWEC FEIS
All
Electric Only
Underground Only
Corridor of Concern
10-0 Corridor of Concern ID
RMP and LRMP
All
Electric Only
Underground Only
USFS Window
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 2-7
Region IV
Designated Utility Corridors
0 2.5 5 10 Miles
0 2.5 5 10 km
1:500,000
N
Western AREA POWER ADMINISTRATION
Exported On: 5/28/2013
X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\JurisdictionFig_2_07_00_SRIV_UtilityCorridors_20130225.mxd

This review used available data from government and other sources, aerial photography, and input from land management agencies received during pre-scoping meetings. A description of the methods and the results of this process are presented in the TransWest Express Transmission Project Corridor Screening Report (**Appendix B**).

The following criteria were used to retain alternatives for detailed analysis in the EIS:

- Does the alternative result in measurably diminished adverse environmental effects (fewer detrimental effects, less severe effects, or shorter-term effects) than the applicant's proposed corridor for any resource?
- Does the alternative address resource conflicts?
- Is the alternative technically and economically feasible?

Comparative reviews of alternative corridors also were conducted to arrive at a reasonable range of alternative corridor segments to carry into public scoping. The screening review considered the identified environmental constraints, agency input, length within existing utility corridors, and overall length. The rationale for not advancing a particular corridor segment forward for further analysis was based on the criteria listed above. In some instances, corridor segments were added or modified to address identified environmental concerns or changes in Project design.

The results of the pre-scoping review were shared with lead agency Interdisciplinary (ID) teams, and cooperating agencies in the form of maps and supporting rationale for alternative corridor selection. After receiving and addressing input from reviewers, a range of alternative corridors were presented to the public during the public scoping period (January through April 2011). These alternative corridors are illustrated on maps in **Appendix B**.

2.3.3 Formulation of EIS Transmission Line Alternatives

Numerous comments on the alternatives were received during public scoping. These comments were recorded and evaluated in the public scoping summary report (BLM and Western 2011). The evaluation of scoping comments identified several issues that helped to inform the lead agencies' identification of those alternative corridors to retain for further analysis. In addition, corridor alternative variations and alternative connectors were added to address specific regional or local concerns or to provide additional routing flexibility in constrained areas.

Due to the length of the transmission line, the alternative transmission routes were split into four distinct regions for the purpose of presenting clear impact comparisons between alternative segments:

- Region I: Sinclair, Wyoming, to northwest Colorado near Rangely, Colorado;
- Region II: Northwest Colorado to IPP near Delta, Utah;
- Region III: IPP to North Las Vegas, Nevada; and
- Region IV: North Las Vegas to Marketplace Hub near Boulder City, Nevada.

Region boundaries were largely based on areas where the alternative reference line routes converge (i.e., have common nodes or intersection points). The regions were developed so that the alternatives within each region could be selected independently of the alternatives selected in the other regions. Alternative variations and alternative connectors within each region were added for analysis in response to public and agency input on specific issues. Because these variations and connectors are linked with specific alternatives within a region and analyzed with their respective alternative, they are not considered or analyzed as independent alternatives.

In late October 2011, after completing adjustments to the alternatives based on input received during public scoping, the lead agencies presented the EIS alternatives to be retained for detailed analysis to the ID teams and the cooperating agencies. TransWest reviewed the alternatives proposed for inclusion in the EIS analysis and provided revised reference lines, accounting for utility separation criteria and, to the extent practicable, identified resource constraints. This process of alternatives adjustments was repeated in May of 2012, in response to the review of the Preliminary Draft EIS by the ID teams and cooperating agencies. At this time, the BLM also began to develop the agency preferred alternative.

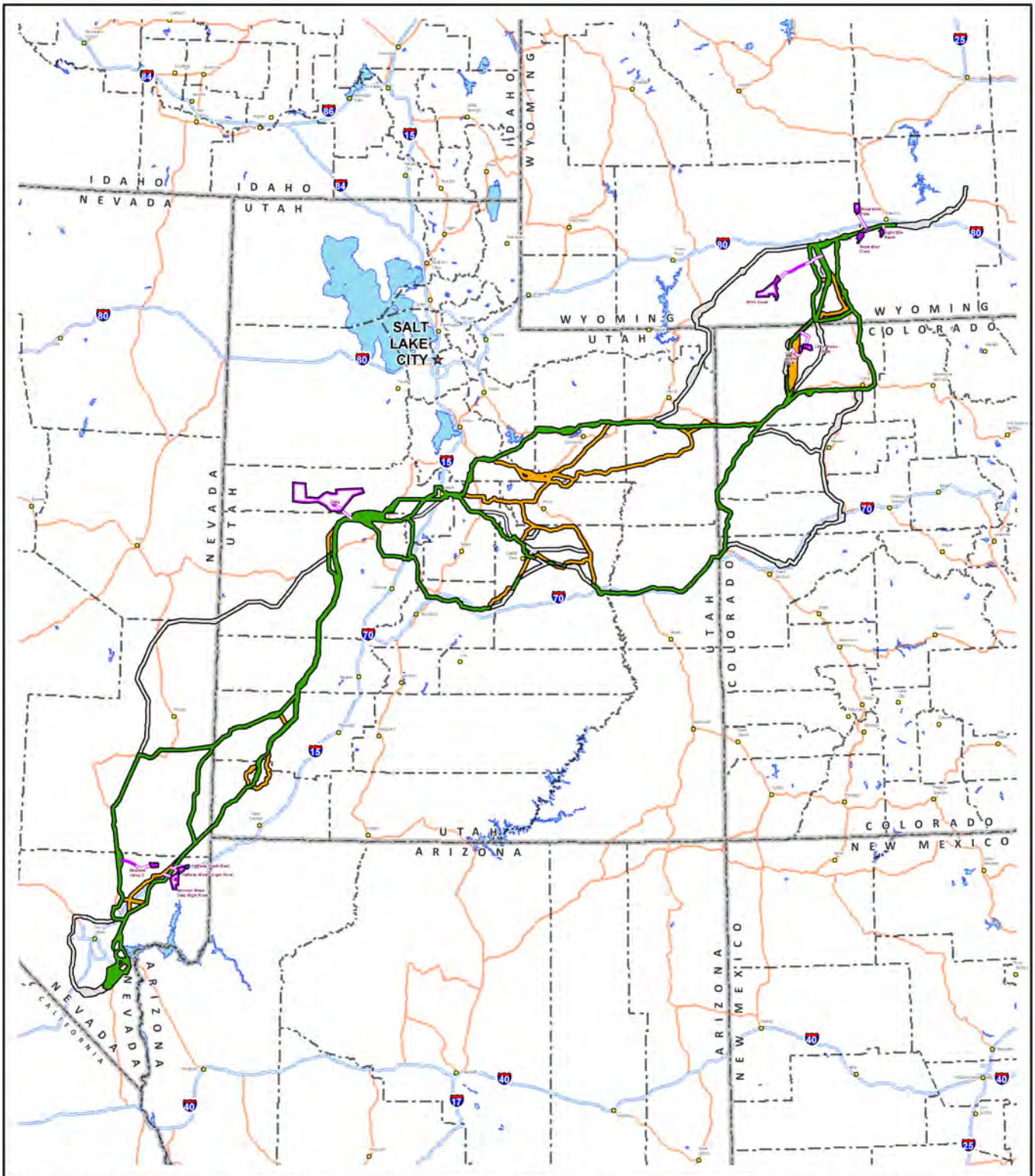
Figure 2-8 provides the corridors retained for further analysis. The corridors not recommended for further analysis also are shown.

The TransWest proposed action was analyzed as presented by TransWest, including modifications by TransWest in southern Wyoming, adjacent northern Colorado, west-central Utah between Nephi and Delta, and west of Delta (see **Appendix B**). The following factors influenced the selection of corridor alternatives to be carried forward in the analysis:

- The TransWest-proposed corridor crosses the Sunrise Mountain ISA. In recognition of the siting issues surrounding the narrow existing utility corridor, corridor alternatives have been developed for analysis on Lake Mead NRA land administered by the NPS.
- The TransWest-proposed corridor includes potential alignments that would cross IRAs in the Uinta, Manti-La Sal, and Dixie national forests. In recognition of these potential crossings, corridor alternatives have been developed that avoid those areas.

The following alternative corridors were added for analysis based on input received from public scoping, the ID teams, and cooperating agencies:

- Five alternative segments were added between I-80 and the Wyoming-Colorado state line to decrease impacts to visual and other resources in the area (recommendation of the BLM Rawlins FO).
- One alternative segment was added between the Wyoming-Colorado state line and U.S. Highway 40 to decrease impacts to visual, land use, and other resources in the area (recommendation of the BLM Little Snake FO).
- Six alternative segments were added in Utah through Uintah, Duchesne, Carbon, Utah, Wasatch, and Sanpete counties to decrease impacts to NHTs, land use, and other resources in the area (recommendation of the USFS).
- Seven alternative segments were added in Utah through Duchesne, Carbon, Utah, and Wasatch counties in consideration of greater sage-grouse planning efforts while also considering the decreased impacts in the point listed above (recommendation of the BLM Utah State Office).
- Eight alternative segments were added (and four segments removed) near Castle Dale, Utah, to avoid a NHT (recommendation of the BLM Price FO).
- A segment was added west of Delta, Utah, to avoid cultural and other resources in the Sevier River area (recommendation from the BLM Fillmore FO).
- An alternative segment was added in Iron County, Utah, to avoid greater sage-grouse habitat in the Escalante Desert area (recommendation of the BLM Cedar City FO).
- Four alternative segments were added near Central, Utah, to avoid or decrease multiple resource impacts (recommendation of the USFS and public scoping comments).
- An alternative segment was added within an existing transmission line utility corridor and co-located with existing utilities across the Moapa Indian Reservation to avoid the proliferation of utility corridors (recommendation from the BLM Southern Nevada District, and public scoping comments from the Logandale area).



Corridors - Scoping vs. DEIS

- Scoping Corridor - Carried Forward to DEIS
- Corridor Not in Scoping - Added to DEIS
- Corridor - Not Carried Forward in DEIS
- Potential Ground Electrode Siting Area
- Potential Ground Electrode Site
- Potential Ground Electrode Overhead Electrical Line

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-8
Corridors Carried Forward to the DEIS

0 20 40 80 Miles
0 20 40 80 km
1:5,000,000

N

Western AREA POWER ADMINISTRATION

Exported On: 6/5/2013

X:\0Projects\112907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\JurisdictionFig_2_08_00_CorridorsCarriedForward_20130225.mxd

2.4 Elements Common to All Action Alternatives

Regardless of the transmission route or design option selected, there are specific Project requirements, constraints, and elements that apply to all action alternatives. These elements include federal environmental protection requirements and plan amendments, applicant design features and committed measures, and facilities associated with the Northern and Southern terminals.

2.4.1 Federal Requirements

In accordance with laws governing the management and use of federal lands and interstate commerce, federal agencies are empowered to grant long-term utility uses on federal lands subject to compensation, environmental stipulations, and renewal at the end of the term specified. To reach decisions to grant utility uses, involved agencies evaluate Project conformance with agency plans and policies to ensure proponent commitments and agency BMPs are sufficient to adequately protect the natural and human environment. After consideration of any residual environmental impacts, these factors help the agencies determine if the Project is in the public interest. A plan conformance review for all alternatives, the need for plan amendments, and a list of conceptual plan amendments are contained in Chapter 4.0 of this EIS.

The performance standards contained in the WWEC programmatic EIS provide a framework for the environmental protection measures that would be implemented by the lead and cooperating agencies on federal lands under their jurisdiction. Implementation of these standards was a required step in evaluating effects on resources in the impact analysis. In addition to these broad-based practices, additional local plan decisions and guidelines are included to supplement the WWEC measures. A summary of the WWEC measures and other relevant agency BMPs are included in **Appendix C**.

2.4.2 Applicant Project Description and Design Features

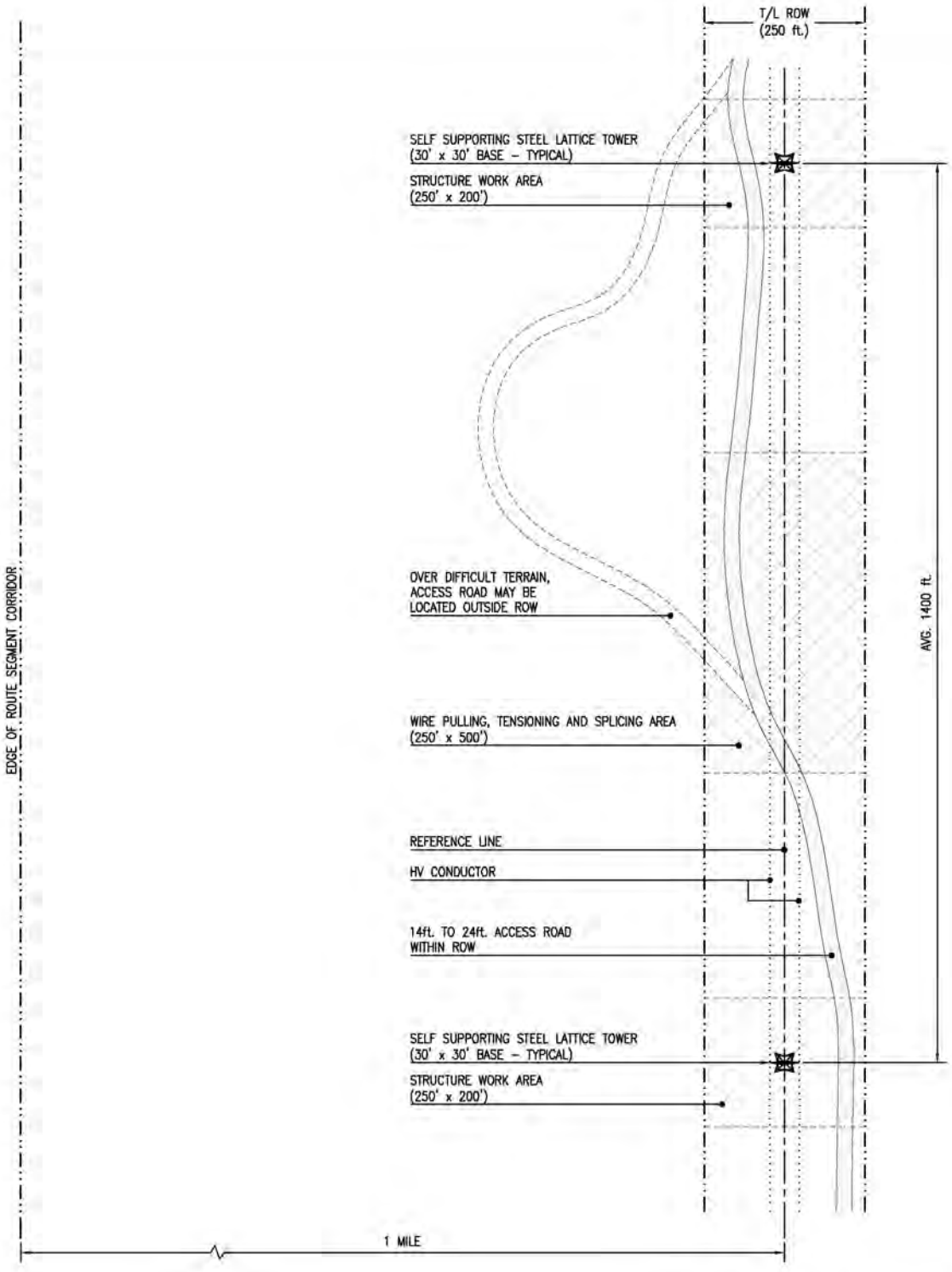
2.4.2.1 Project Description

The EIS description of alternatives and ancillary facilities was developed from the Project Preliminary POD (TWE 2010) and from the PDTR (**Appendix D**). **Figure 2-9** depicts a typical transmission line construction ROW and temporary work areas; **Figure 2-10** depicts the three types of transmission line structures under consideration. Typical tower erection and conductor stringing construction is depicted in **Figure 2-11**. All of the details on proposed Project facilities, construction methods, Project operation, and maintenance practices, including vegetation management, are provided in **Appendix D**. **Table C-3** (**Appendix C**) provides the TransWest committed environmental protection measures (i.e., design features), which are part of the proposed Project.

During the construction of the transmission line, areas for access roads, tower construction sites, communication sites, line stringing and tensioning sites, and other temporary work areas (e.g., staging areas, concrete batch plants, storage yards, helicopter fly yards) would be disturbed. The majority of the disturbance areas would be within the 250-foot-wide transmission line ROW; all disturbance areas would be located within the 2-mile transmission line corridor.

During the operation and maintenance of the transmission line, tower location sites and communication sites would remain disturbed in place and all would be located within the 2-mile transmission line corridor. Access roads also would be located within the 2-mile transmission line corridor, to the extent practicable.

The Project terminals and ground electrode system sites are detailed in Section 2.4.3, Facilities Common to All Action Alternatives, and the alternative routes of the transmission line are detailed in Section 2.5, Alternative Transmission Line Routes and Ancillary Facilities.

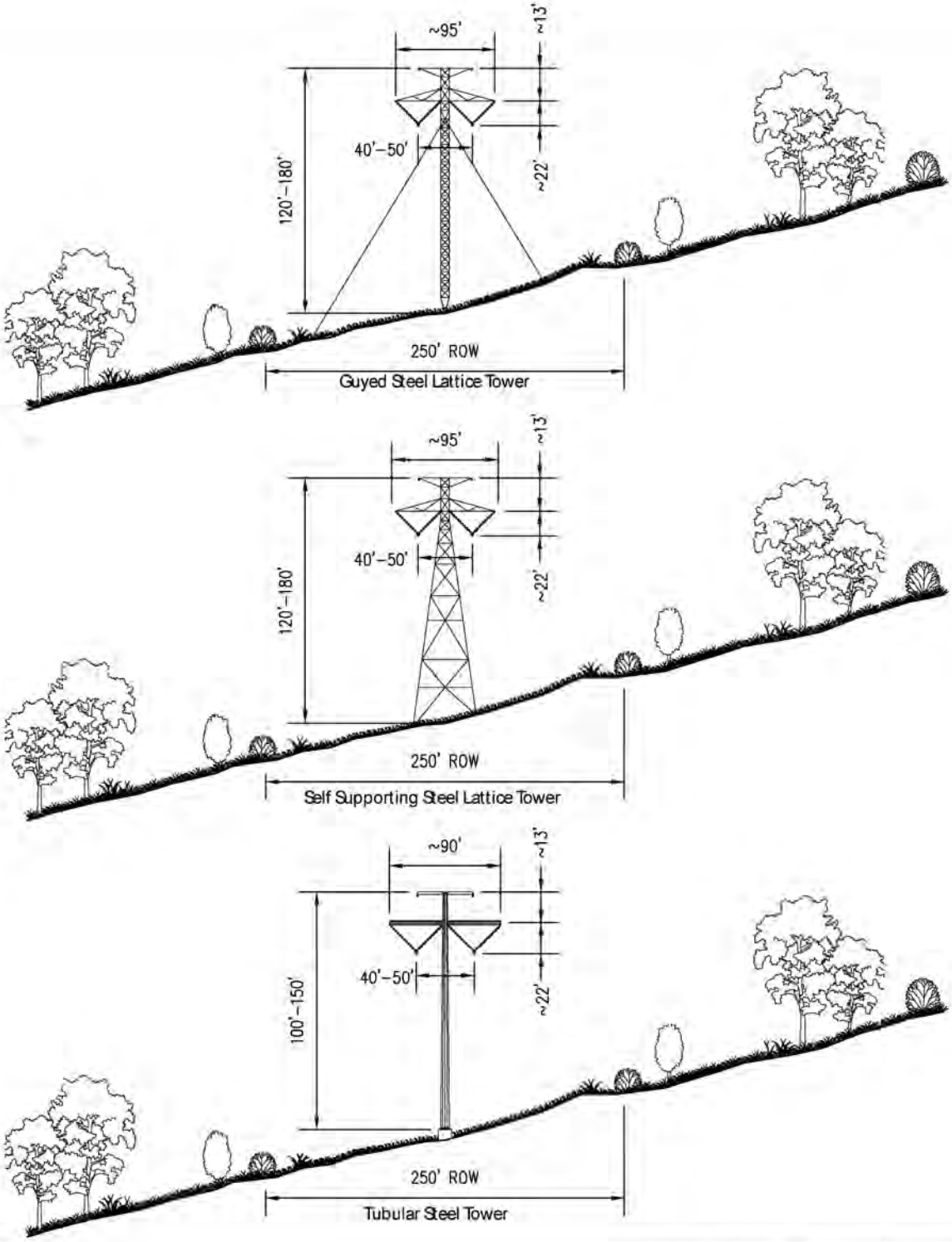


TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-9

Typical Transmission ROW
and
Temporary Work Areas

Source: TWE 2011



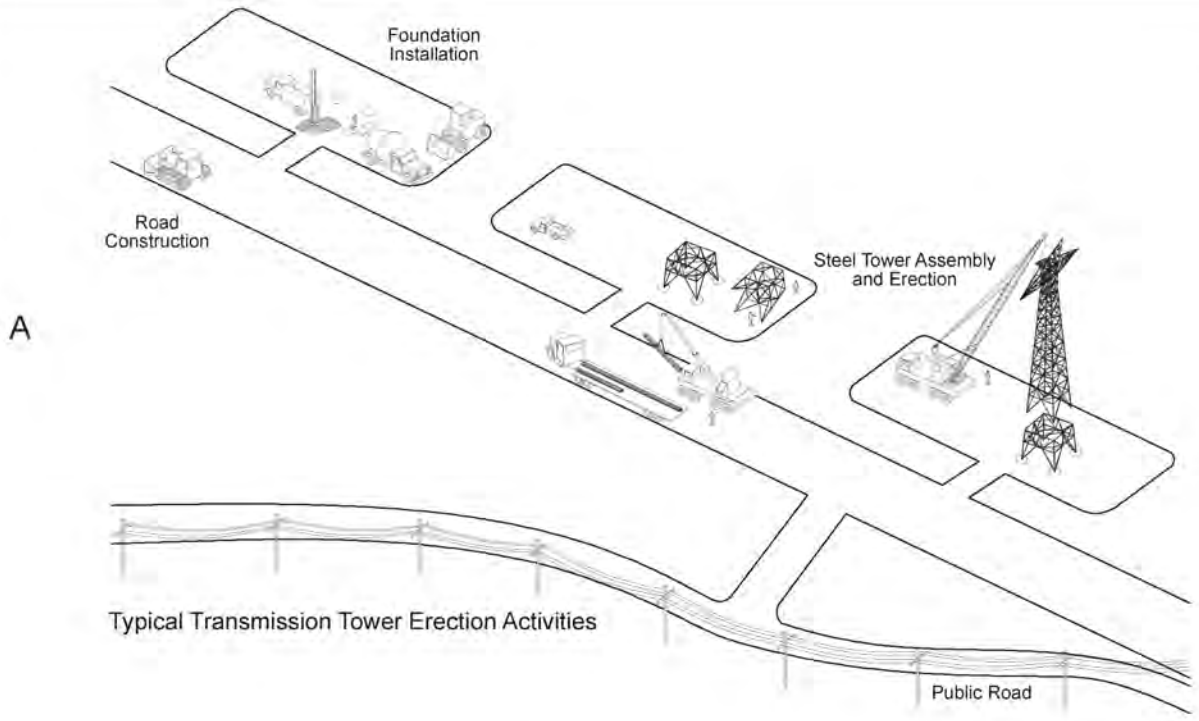
Transwest Express Transmission Project

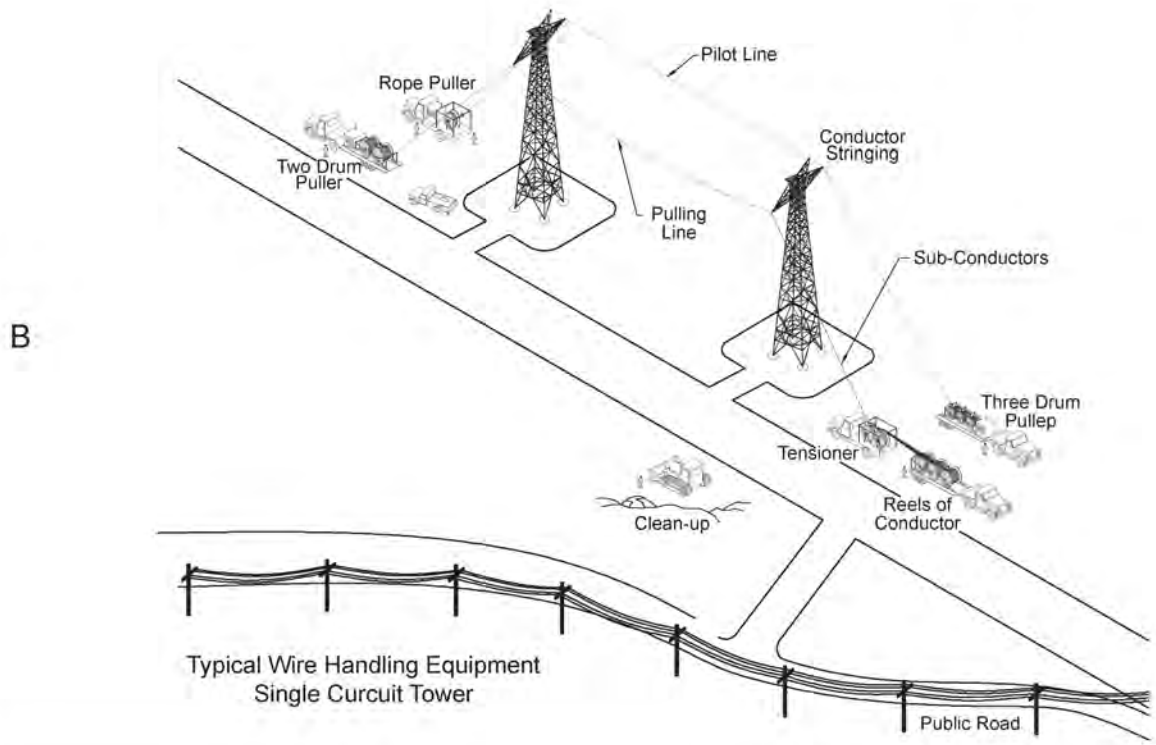
Figure 2-10

Potential Transmission Line Structure Types

Source: TWE 2011

12/22/11





Transwest Express Transmission Project

Figure 2-11

Typical Tower Erection and Conductor Stringing Construction

Source: TWE 2011

12/22/11

2.4.2.2 Project Design Features, Best Management Practices, and Required Stipulations

Project design features, BMPs, and required stipulations are requirements for the construction, operation, maintenance, and decommissioning of the transmission line, regardless of which alternative is chosen in the ROD. These actions were all developed or mandated to avoid, minimize, or reduce impacts to resources, and they are required for implementation of the Project on BLM and USFS lands.

Design features are environmental protection measures that TransWest voluntarily has proposed to minimize and/or avoid resource impacts regardless of land jurisdiction. TransWest has committed to review and augment the list of applicant-committed design features as needed to minimize impacts to the extent possible, as well as to ensure conformance with all pertinent RMPs and LRMPs. A description of the current applicant-committed design features organized by major resource topics and project phase is found in **Appendix C**.

BMPs from the BLM FO RMPs and standards and guidelines from the USFS LRMPs are general requirements that minimize environmental impacts by ensuring compliance with laws, agency policies, and regulatory requirements. BMPs required by land use plans are not included in **Appendix C** as the list is extensive and many of those requirements are addressed by the applicant-committed design features presented in **Appendix C**. Further information regarding these BMPs can be found in the respective RMPs and LRMPs listed in **Tables 1-3** and **1-4**.

Required stipulations are resource- or area-specific conditions related to surface disturbing activities required for any permitted project on BLM or USFS lands. BLM and USFS stipulations are specific to each forest and BLM FO. Stipulations are described in **Appendix C**, and locations along the Project alternatives identified as no surface use areas are depicted in **Figures 2-12** through **2-15**. Details regarding the effectiveness of these stipulations in addressing resource impacts can be found in the respective Final EIS analyses for the RMPs and the LRMPs listed in **Tables 1-3** and **1-4**. Specific disclosure of the effects of these stipulations on impacts of this Project is provided by resource area in Chapter 3.0 of this EIS.

2.4.3 Facilities Common to All Action Alternatives

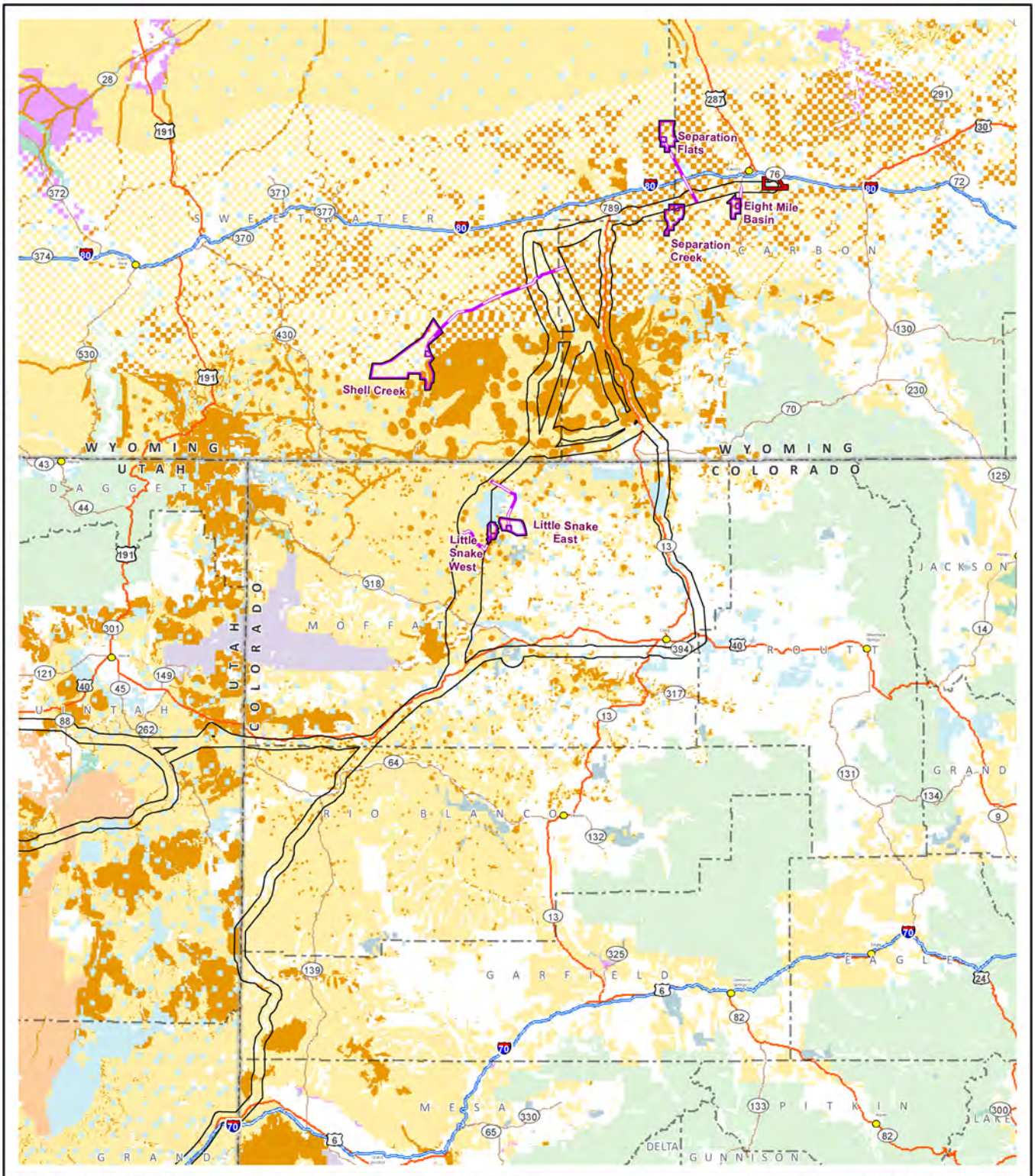
Several facilities would be required regardless of the action alternative selected. Terminals and ground electrode sites would be located at both the northern and southern ends of the Project. The following sections provide a summary of these facilities. A detailed description of these facilities is provided in the PDTR (**Appendix D**).

2.4.3.1 Northern and Southern Terminals

Northern and Southern terminals would be required for all transmission line action alternatives. The Northern Terminal would be located approximately 3 miles southwest of Sinclair, Wyoming; the Southern Terminal would be located at the Marketplace Hub in the Eldorado Valley, approximately 15 miles southwest of the metropolitan area of Boulder City, Nevada. Design Option 2 would require that the Southern Terminal be relocated to the IPP in Millard County near Delta, Utah. Design Option 3 would require an AC substation be constructed at the IPP site.

The terminal stations would include an AC/DC converter station and adjacent AC substation. The AC/DC converter station would include a 600-kV DC switchyard; AC/DC conversion equipment; transformers; and multiple equipment, control, maintenance, and administrative buildings.

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Restrictions\NSU\Fig_02_12_NSU_SRL_COR.mxd



NSU Restriction

Land Jurisdiction

- Bureau of Land Management
- Bureau of Reclamation
- Tribal/BIA
- DOD/USACE
- Department of Energy
- US Fish & Wildlife
- US Forest Service
- National Park Service
- State Land
- Private

- Project Corridor
- Terminal Siting Area
- Potential Ground Electrode Siting Area
- Potential Ground Electrode Site
- Potential Ground Electrode Overhead Electrical Line

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-12
Wyoming and Colorado (Region I)
No Surface Use

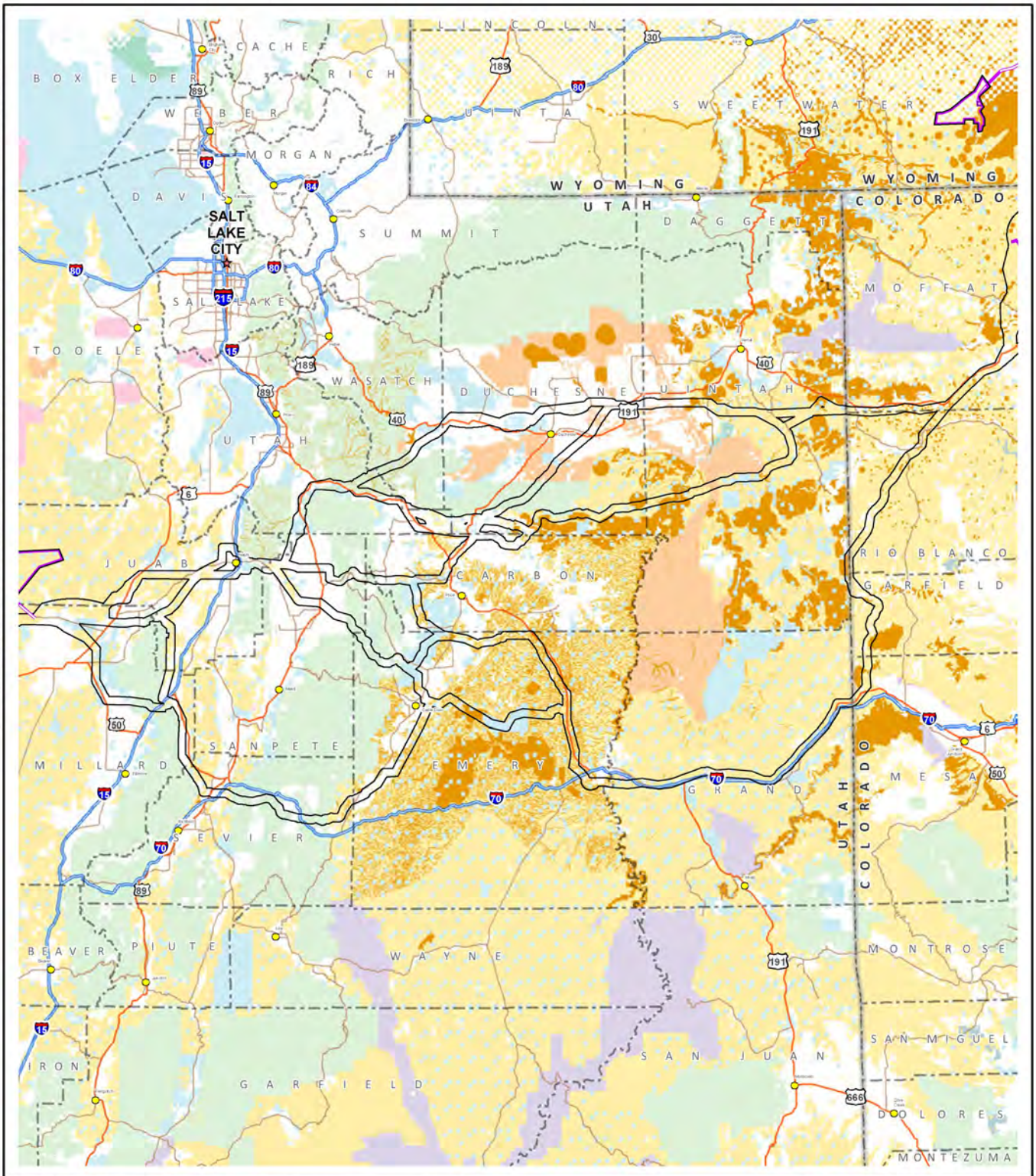
0 5 10 20 Miles
0 5 10 20 km
1:1,750,000

N

Western AREA POWER ADMINISTRATION

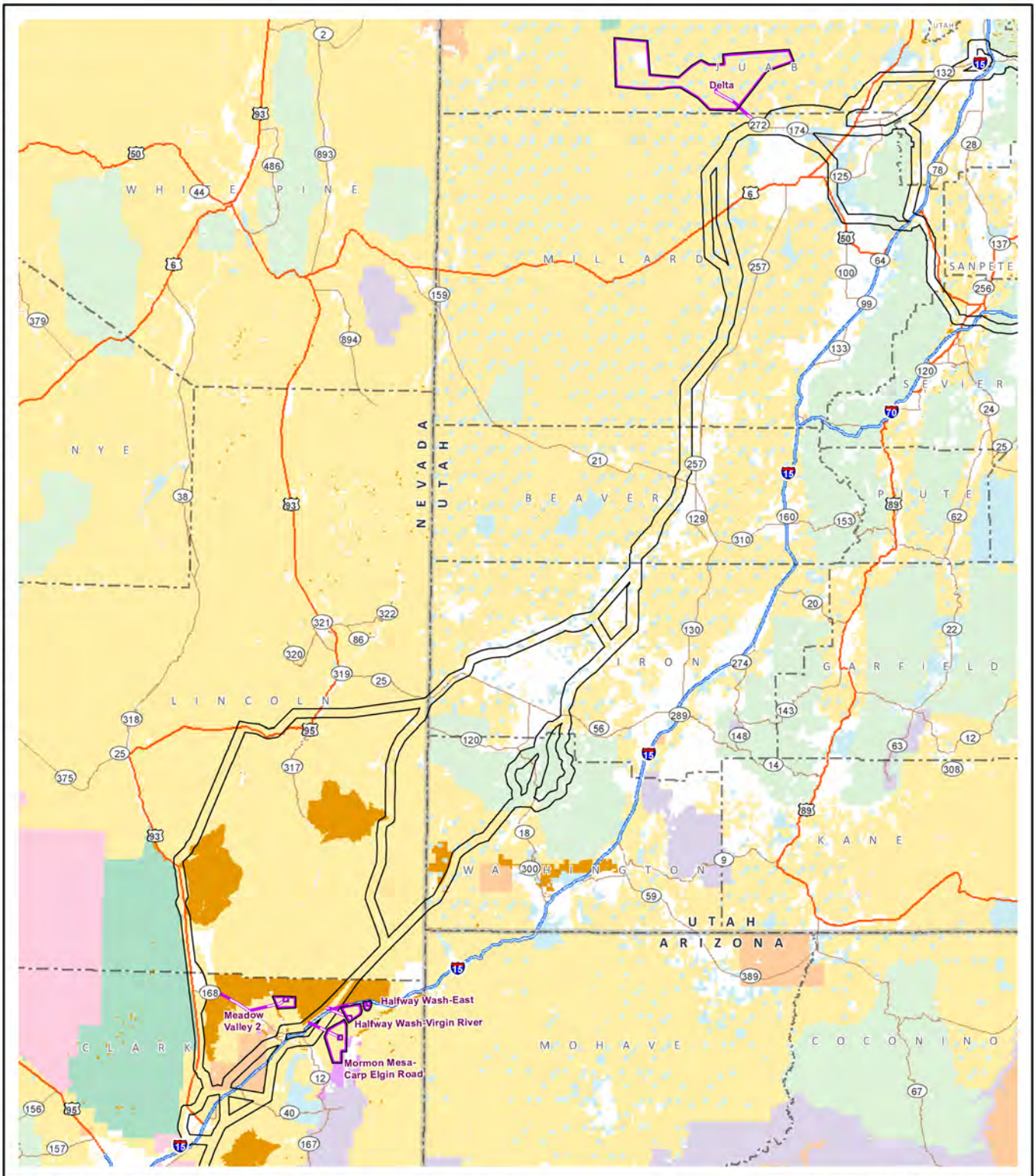
Exported On: 6/5/2013

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Restrictions\NSU\Fig_02_13_NSU_SRII_COR.mxd



Exported On: 4/2/2013

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Restrictions\NSU\Fig_02_14_NSU_SRIII_COR.mxd



NSU Restriction

Land Jurisdiction

- Bureau of Land Management
- Bureau of Reclamation
- Tribal/BIA
- DOD/USACE
- Department of Energy
- US Fish & Wildlife
- US Forest Service
- National Park Service
- State Land
- Private

- Project Corridor
- Potential Ground Electrode Siting Area
- Potential Ground Electrode Site
- Potential Ground Electrode Overhead Electrical Line

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-14
Western Utah and Nevada (Region III)
No Surface Use

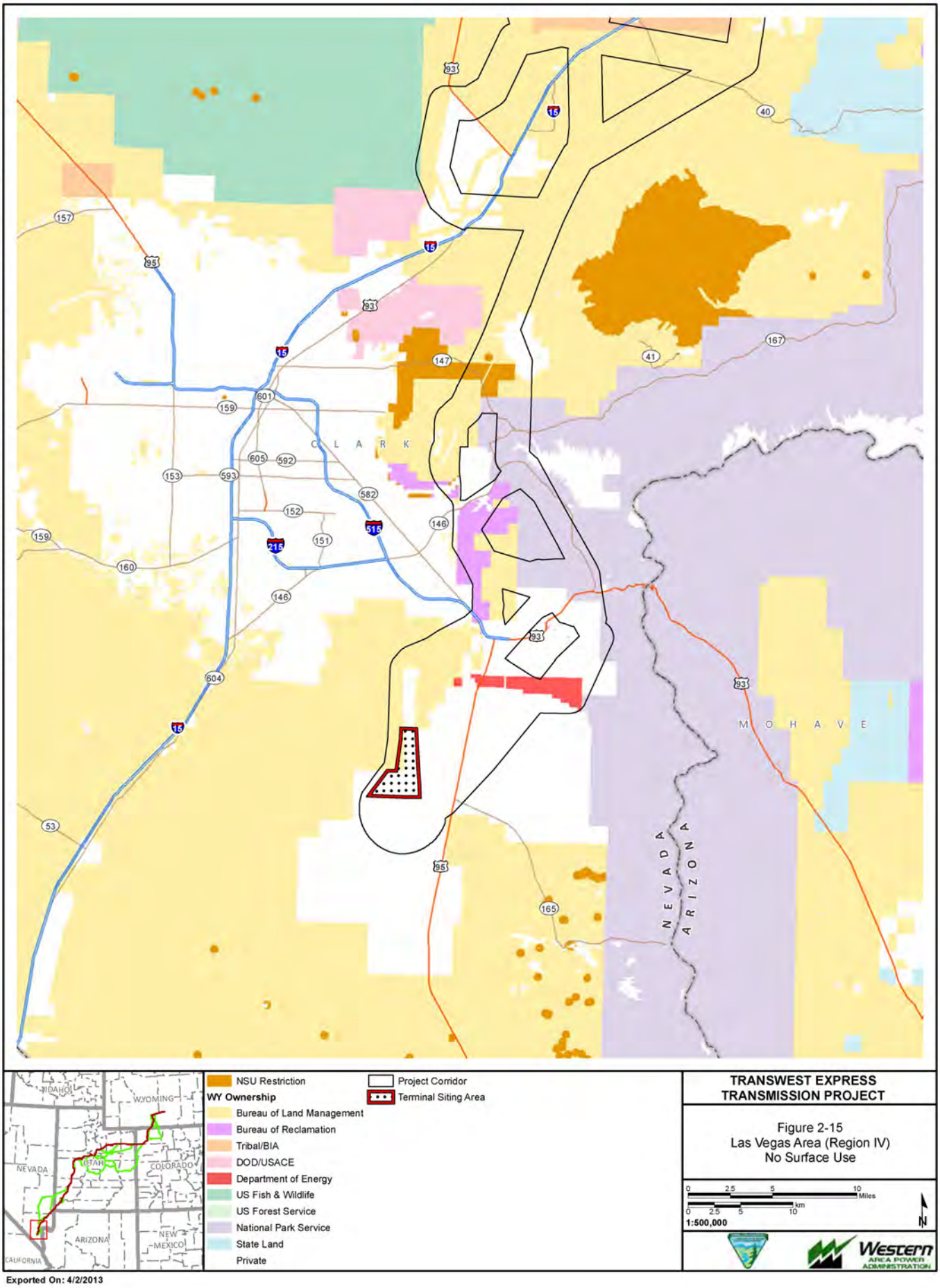
0 10 20 40 Miles
0 10 20 40 km
1:2,000,000

N

Western AREA POWER ADMINISTRATION

Exported On: 6/5/2013

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Restrictions\NSU\Fig_02_15_NSU_SRIV_COR.mxd



Exported On: 4/2/2013

Two buildings would house the AC/DC conversion equipment, each approximately 200 feet long by 80 feet wide and 60 to 80 feet high. Smaller buildings would house the control room, control and protection equipment, auxiliary equipment, and cooling equipment. The AC substation at the Northern Terminal would be a 500-/230-kV substation, and the AC substation at the Southern Terminal would be a 500-kV substation. The AC substations would include a switchyard, transformers, control equipment, and control buildings. Connections to the existing transmission infrastructure also would be constructed. **Table 2-1** summarizes the general terminal facility lengths and areas of disturbance.

Table 2-1 Terminal Facility Lengths and Areas of Disturbance

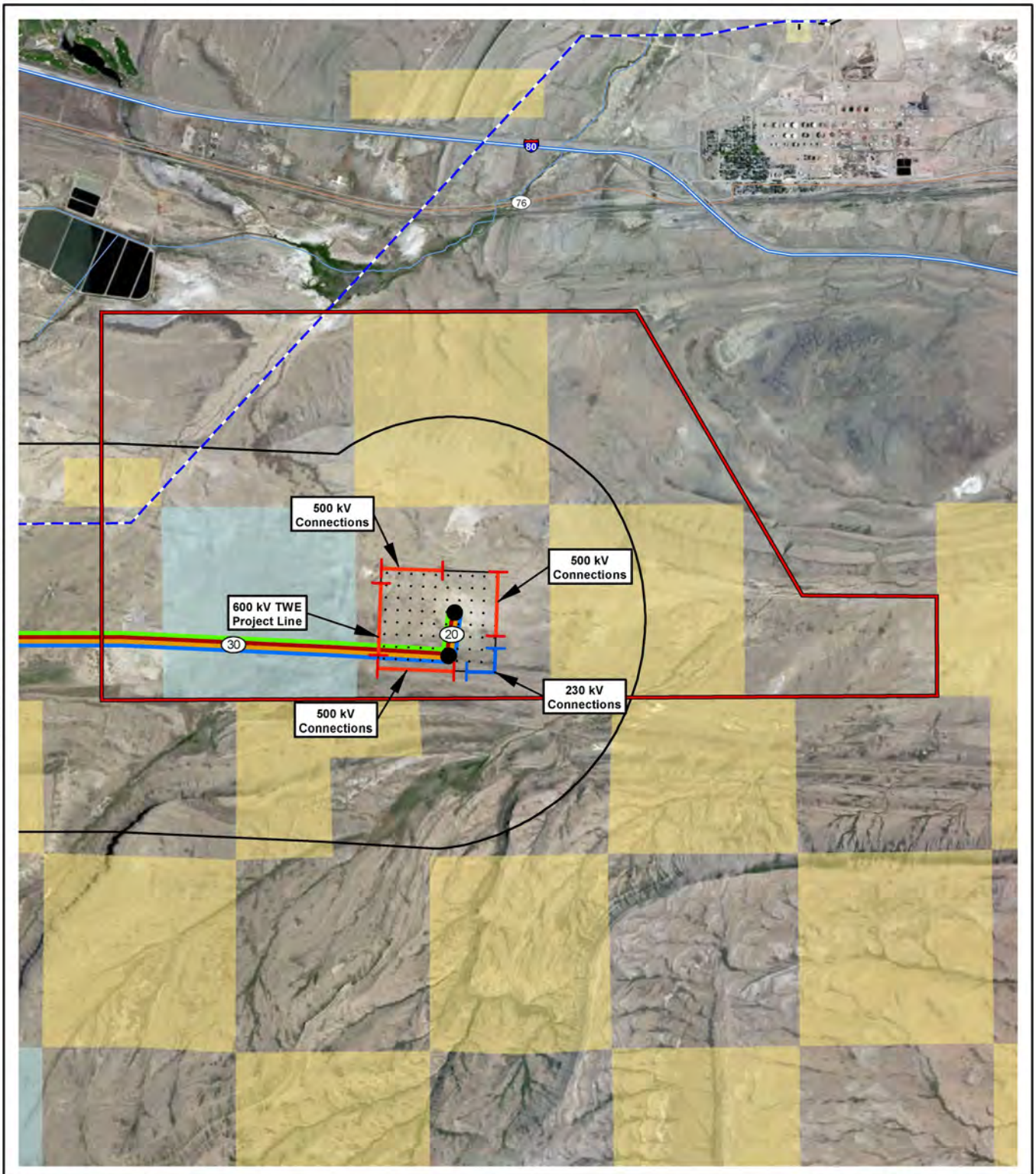
	Length (miles)		Construction Disturbance (acres)				Operation Disturbance (acres)			
Terminal	Inter-connection T-Lines	Access Roads	Converter, Substation, Switchyard	Inter-connection T-Lines	Access Roads	Total	Converter, Substation, Switchyard	Inter-connection T-Lines	Access Roads	Total
Northern	13	17	198	264	43	504	190	1	43	234
Southern and Southern Alternative	5	26	148	204	60	412	140	3	60	203
Southern near IPP (Design Option 2)	5	7	98	56	28	181	90	<1	28	118
Substation near IPP (Design Option 3)	5	7	83	56	23	161	75	<1	23	98
Series Compensation Station (Design Options)	N/A	N/A	18	N/A	5	23	10	N/A	5	15

Northern Terminal

The Northern Terminal facilities would be located on private lands in Carbon County, Wyoming, approximately 3 miles southwest of the town of Sinclair, Wyoming (**Figure 2-16**). The Northern Terminal would connect to the existing Platte – Point of Rocks 230-kV line located within 1 mile of the terminal. If needed, the Northern Terminal also could connect to the Energy Gateway West and Energy Gateway South 500-kV transmission lines currently proposed by PacifiCorp. TransWest requested an interconnection with both projects from PacifiCorp in 2009. Based on the current alternative routes being analyzed in the respective NEPA processes for the Energy Gateway West and Energy Gateway South projects, it is reasonably foreseeable that the interconnections between these two projects and the proposed Project would be at the Northern Terminal. The Northern Terminal would require the following components:

- An AC/DC converter station (a 600-kV DC switchyard and a converter building containing electronics and control equipment) approximately 30 acres in size.
- A 500-/230-kV AC substation approximately 135 acres in size.
- A 230-kV AC substation approximately 25 acres in size.
- An electrical connection from the AC/DC converter station to the 600-kV DC transmission line connecting to the Southern Terminal. All facilities for this connection are incorporated into the 600-kV DC transmission line.
- Two electrical connections from each (four connections total) of the proposed single circuit Energy Gateway West and Energy Gateway South 500-kV transmission lines (if approved) to the 500-/230-kV substation. These connections would connect the Northern Terminal to both the Aeolus and Anticline substations via the Energy Gateway West and Energy Gateway South 500-kV transmission lines (if approved). These two connections may require 500-kV transmission facilities, approximately 4 miles total or less in length, to connect the 500-/230-kV substation to the route of the Energy Gateway South 500-kV transmission line (if approved).

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Terminals\Fig_2_16_00_NorthernTerminal_20130225.mxd



Project Corridor
Node
DEIS Alternative Routes
Applicant Proposed I-A
Alternative I-B
Alternative I-C
Agency Preferred I-D
Alternative Variation or Connector
Segment not in this Region
Terminal Siting Area

Proposed Terminal Site with Connection Types
Bureau of Land Management
State Land
Existing Transmission
345kV
500kV +/- DC
500kV
230 to 287kV
138 to 161kV
115kV
Below 100kV
Unknown Voltage

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-16
Northern Terminal Site

0 1,000 2,000 4,000 Feet
0 200 400 800 Meters
1:48,000
N

Western AREA POWER ADMINISTRATION

- Two electrical interconnections to the existing Platte – Point of Rocks 230-kV line, which would be rerouted into and out of the 230-kV substation. This 230-kV connection is assumed to require approximately 4 miles or less of double circuit 230-kV transmission line.
- Up to six electrical interconnections from proposed and planned generation facilities by 230-kV transmission lines.

The three major components of the Northern Terminal (AC/DC converter station, 500-/230-kV AC substation, and 230-kV AC substation) would be co-located and contiguous. Although these three components would be stand-alone facilities and could be located on separate parcels connected together by short transmission lines, it is common practice and preferable for the AC/DC converter station and 500-/230-kV AC substation(s) to be adjacent to each other. It also is preferable to locate the 230-kV AC substation next to the 500-kV AC substation. However, depending on the availability of space and other constraints in this area, these stand-alone facilities could be separated by a distance of up to 2 miles.

Southern Terminal

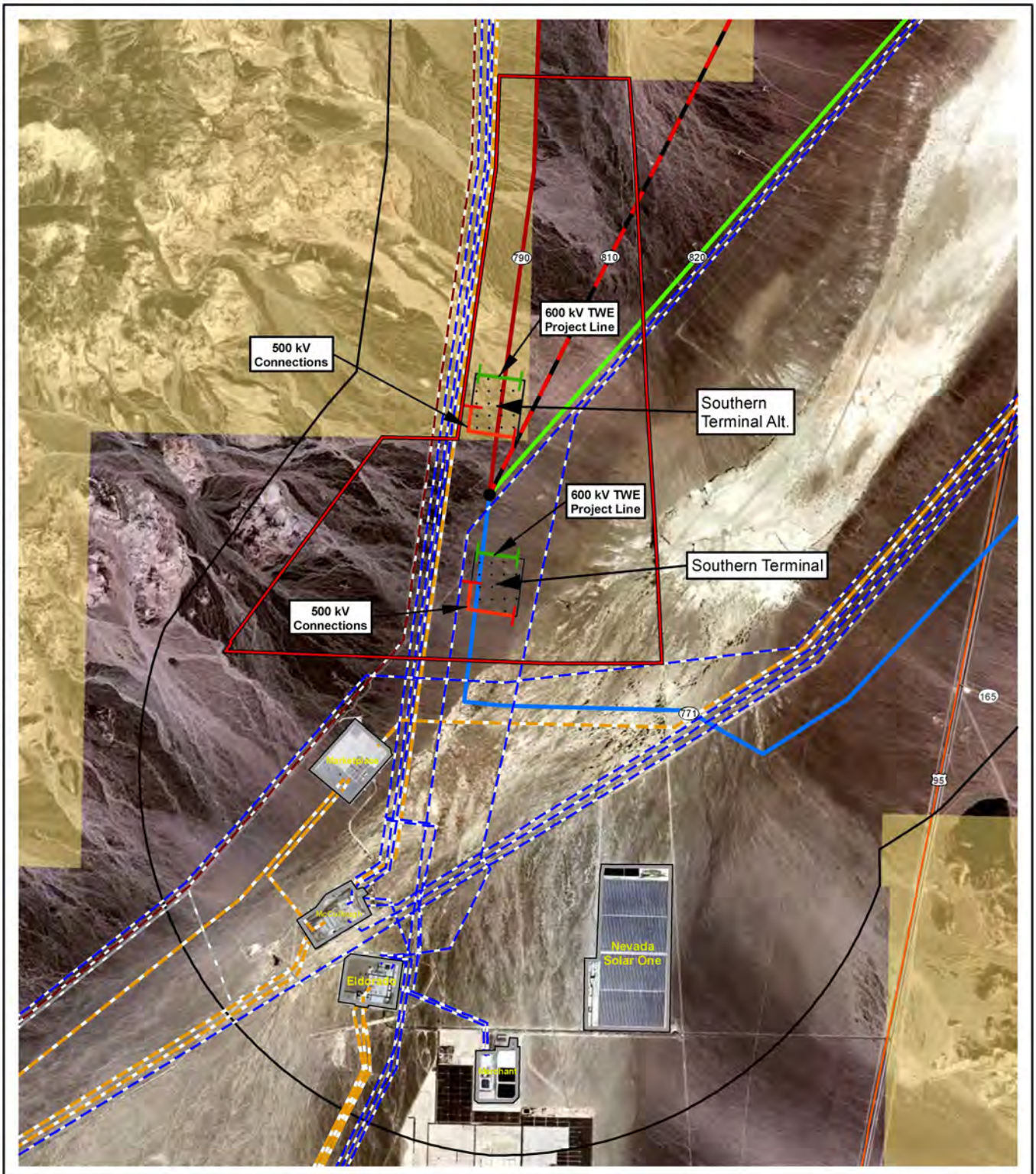
The Southern Terminal facilities would be located in the Eldorado Valley on private or public land, approximately 15 miles south of Boulder City, in Clark County, Nevada (**Figure 2-17**). Two alternative sites are being analyzed for the Southern Terminal in the Eldorado Valley; either would contain the same facilities. The Southern Terminal would connect to all four of the existing 500-kV substations (Eldorado, Marketplace, Mead, and McCullough) located at the Marketplace Hub.

The Southern Terminal would require the following components:

- An AC/DC converter station (a 600-kV DC switchyard and a converter building containing power electronics and control equipment) approximately 30 acres in size.
- A 500-kV AC substation approximately 110 acres in size.
- An electrical connection from the AC/DC converter station to the 600-kV DC transmission line. All facilities for this connection would be incorporated into the 600-kV DC transmission line.
- Two electrical connections from the existing Mead – Marketplace 500-kV transmission line to the new 500-kV AC Substation. These connections would connect the Southern Terminal to both the Mead and Marketplace substations via the existing Mead – Marketplace 500-kV transmission line. These two connections may require 500-kV transmission facilities, assumed to total 4 miles or less in length, to connect the new 500-kV AC substation to the existing Mead – Marketplace 500-kV transmission line.
- Construction of 500-kV transmission line from the new 500-kV AC substation to each of the Eldorado and McCullough substations. These single circuit 500-kV transmission lines are each estimated to be 5 miles or less in length.
- Although not anticipated at this time, one or more of the existing 138-/230-kV lines within the Proposed Terminal Siting Area may need to be re-routed/re-configured to accommodate the Southern Terminal due to congestion within the area. If necessary, this reroute or reconfiguration of 138-/230-kV transmission line facilities is not anticipated to impact more than a total of 3 miles of existing lines.

The two major components of the Southern Terminal (AC/DC converter station and the 500-kV AC substation) would be co-located and contiguous. Although these two components would be stand-alone facilities and could be located on separate parcels connected together by short transmission lines, it is common practice and preferable for the AC/DC converter station and 500-kV AC substation to be adjacent to each other.

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Terminals\Fig_2_17_00_SouthernTerminal_20130225.mxd



Project Corridor
Node
DEIS Alternative Routes
Applicant Proposed/ Agency Preferred IV-A
Alternative IV-B
Alternative IV-C
Alternative Variation or Connector
Segment not in this Region
Terminal Siting Area

Proposed Terminal Site with Connection Types
Other Facilities
Bureau of Land Management
Existing Transmission
345kV
500kV +/- DC
500kV
230 to 287kV
138 to 161kV
115kV
Below 100kV
Unknown Voltage

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-17
Southern Terminal Site

0 1,000 2,000 4,000 Feet
0 200 400 800 Meters
1:64,000

N

Western AREA POWER ADMINISTRATION

Exported On: 4/18/2013

If Design Option 2 were implemented, the Northern Terminal would be constructed as in the proposed action. The Southern Terminal would be constructed near IPP instead of in Nevada (**Figure 2-2** and **Figure 2-18**). Facilities would be similar to those described above, and are as follows;

- An AC/DC converter station and an adjacent 500-/345-kV AC substation near the IPP in Millard County, Utah; and
- A double circuit 345-kV AC line (approximately 5 miles) between the new 500-/345-kV AC substation near IPP to the existing IPP 345-kV AC substation adjacent to the existing IPP AC/DC converter station.

If Design Option 3 were implemented, a substation would be constructed near IPP under phase one, and the Southern Terminal would be constructed in Nevada under phase two (**Figure 2-3** and **Figure 2-19**). The Northern Terminal would be constructed under phase two and configured as in the proposed action. Facilities would be similar to those described above, and are as follows;

- A 500-/345-kV AC substation near the IPP in Millard County, Utah; and
- A double circuit 345-kV AC line (approximately 5 miles) between the new 500-/345-kV AC substation near IPP to the existing IPP 345-kV AC substation adjacent to the existing IPP AC/DC converter station.

2.4.3.2 Ground Electrode Systems

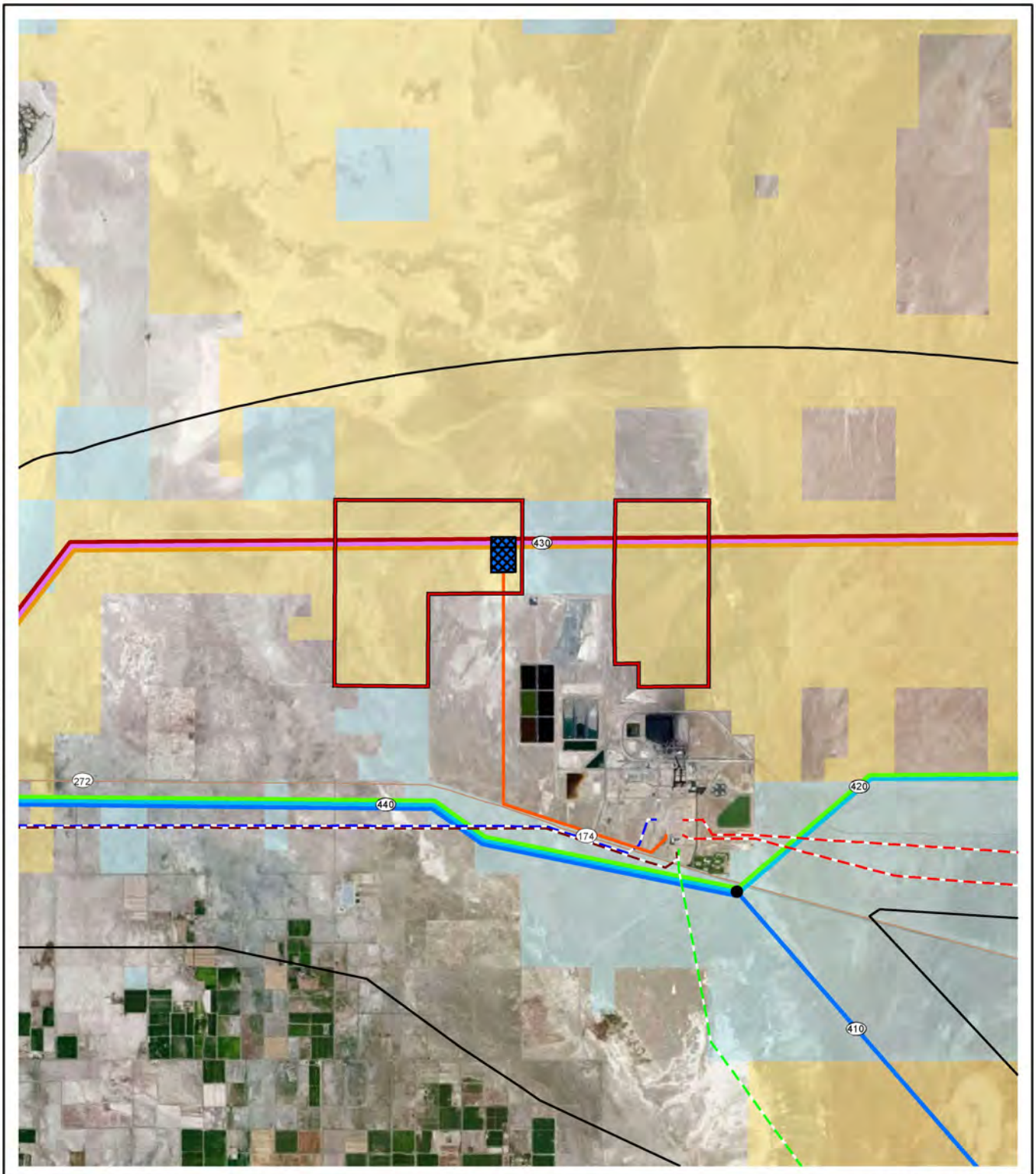
One ground electrode facility consisting of a small above-ground building and surrounding underground electrode bed wells (see **Figure 2-20** and additional description in **Appendix D**) would be required within approximately 100 miles of each of the Northern and Southern terminals. This would establish and maintain electrical current continuity during normal operations and during any unexpected outage of one of the two poles (or circuits) of the 600-kV DC terminal or converter station equipment. The specific location of the ground electrode systems would be identified during final engineering and design; however, general siting areas and conceptual alternative site locations have been identified in Regions I and III and have been analyzed in this EIS. Additionally, the lower voltage connector lines from the 600-kV DC transmission line to each of the conceptual ground electrode sites have been analyzed. The alternative route selected would influence which set of ground electrode location alternatives could be considered for use; therefore, the alternative ground electrode facilities are discussed in the following regional descriptions and depicted in the regional alternative figures.

2.5 Alternative Transmission Line Routes and Ancillary Facilities

The Project has been split into four distinct regions, each of which would require independent alternatives decisions regarding transmission line routing based on region-specific topographical or resource constraints. The alternative transmission line routes are depicted by region in **Figure 2-21** through **Figure 2-24**. The alternatives within each of these regions can be combined to define a distinct end-to-end route from Wyoming to Nevada.

Each alternative route is further defined by a reference line. Transmission reference lines for each route have been considered as buildable locations within each corridor and represent the location of the transmission line centered within a nominal 250-foot-wide transmission line ROW. As representations of the likely location of the transmission line, reference lines provide a basis for quantifying and comparing the range and degree of impacts associated with the various alternatives. The impacts consider topographical constraints, existing transmission lines, and resource constraints within the 2-mile transmission line corridor. Ongoing refinements are being considered during the NEPA process, and are referred to as micro-siting options to the reference line. These micro-siting options represent adjustments that remain within the Project 2-mile transmission line corridor in areas requested by the agencies to minimize resource or siting constraints. Final transmission line

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Terminals\Fig_2_18_00_SouthernTerminal_DO2_20130225RL.mxd



Project Corridor
Node

DEIS Alternative Routes
- Applicant Proposed II-A
- Alternative II-B
- Alternative II-C
- Alternative II-D
- Alternative II-E
- Agency Preferred II-F
- Alternative Variation or Connector
- Segment not in this Region

- Terminal Siting Area
- Proposed Terminal Site
- 345kV Connection
- State Land
- Bureau of Land Management

Existing Transmission
- 345kV
- 500kV +/- DC
- 500kV
- 230 to 287kV
- 138 to 161kV
- 115kV
- Below 100kV
- Unknown Voltage

TRANSWEST EXPRESS TRANSMISSION PROJECT

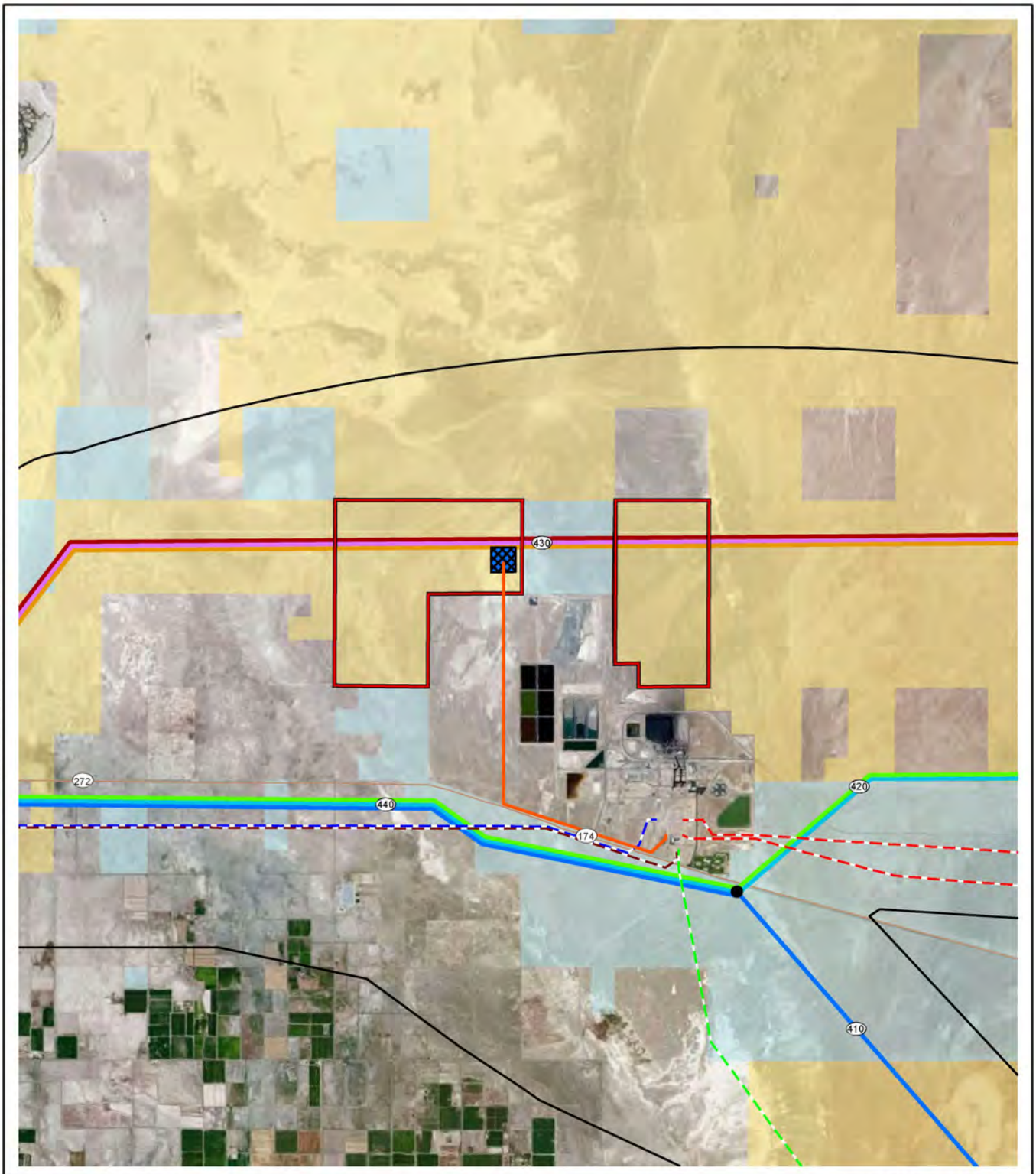
Figure 2-18
Design Option 2
Southern Terminal Area

0 0.5 1 2 Miles
0 0.5 1 2 km
1:100,000
N

Western AREA POWER ADMINISTRATION

Exported On: 5/6/2013

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Terminals\Fig_2_19_00_SubstationPhaseI_DO3_20130225RL.mxd



Project Corridor
Node

DEIS Alternative Routes
- Applicant Proposed II-A
- Alternative II-B
- Alternative II-C
- Alternative II-D
- Alternative II-E
- Agency Preferred II-F
- Alternative Variation or Connector
- Segment not in this Region

Substation Siting Area
Proposed Substation Site
345kV Connection
State Land
Bureau of Land Management

Existing Transmission
- 345kV
- 500kV +/- DC
- 500kV
- 230 to 287kV
- 138 to 161kV
- 115kV
- Below 100kV
- Unknown Voltage

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-19
Design Option 3
Phase 1 Substation Area

0 0.5 1 2 Miles
0 0.5 1 2 km
1:100,000
N

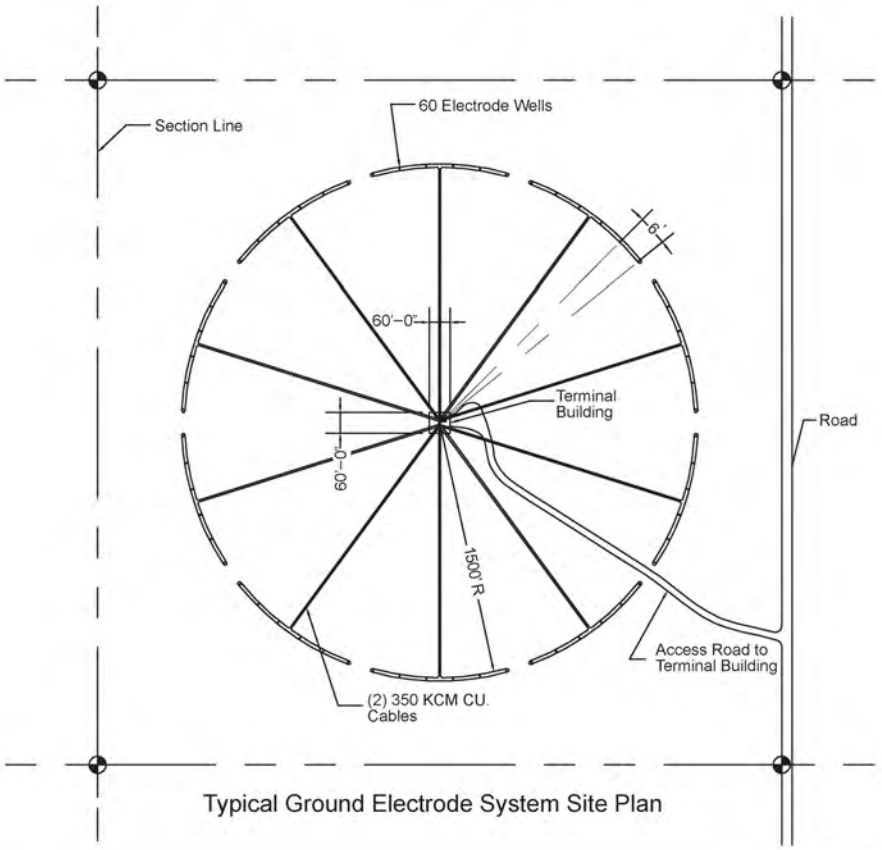
Western AREA POWER ADMINISTRATION

Exported On: 5/6/2013

A

Typical Above Ground Installation at the Ground Electrode Facility

B



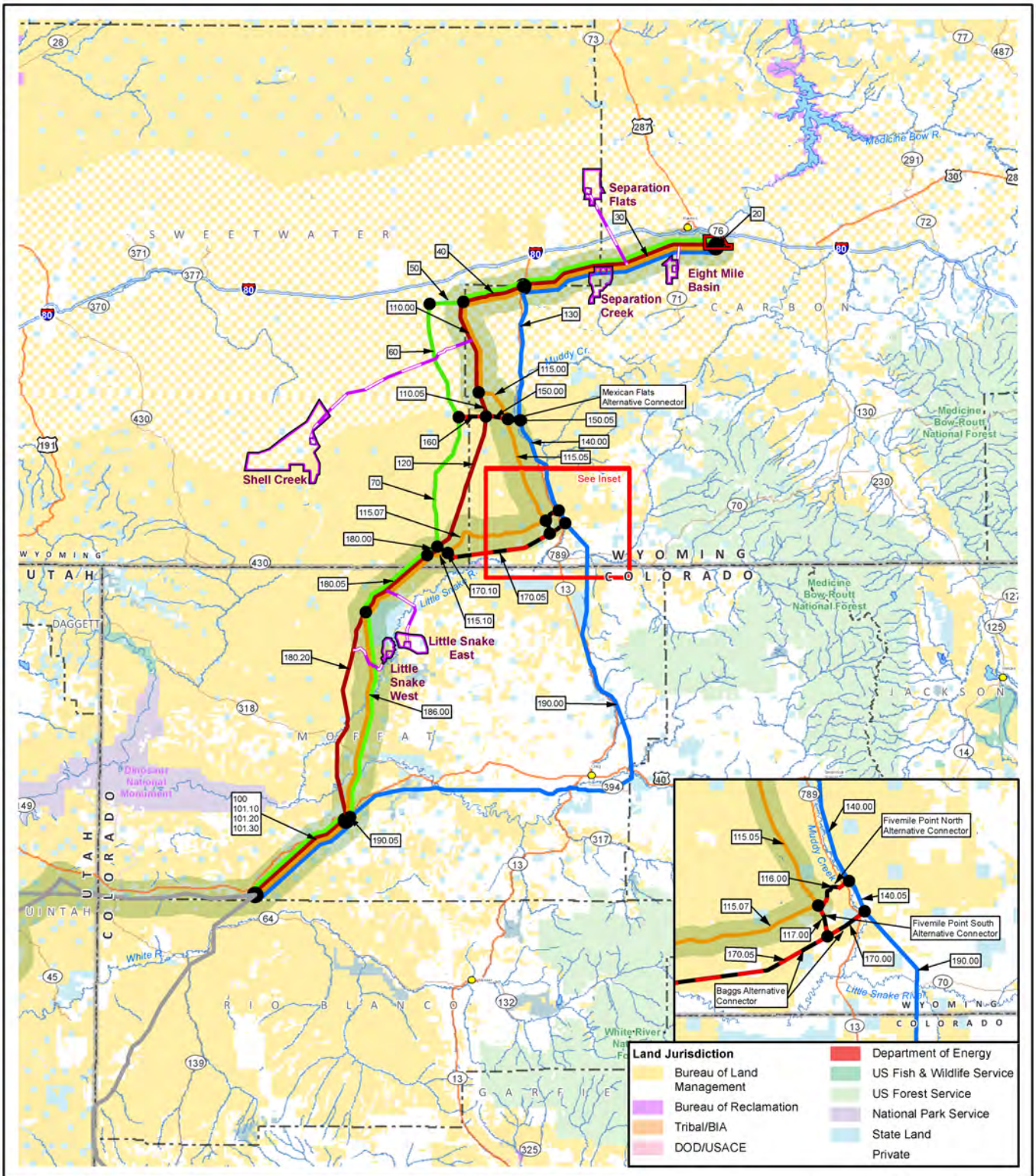
Typical Ground Electrode System Site Plan

Transwest Express Transmission Project

Figure 2-20
Typical Ground Electrode System Above Ground Installation and Site Plan

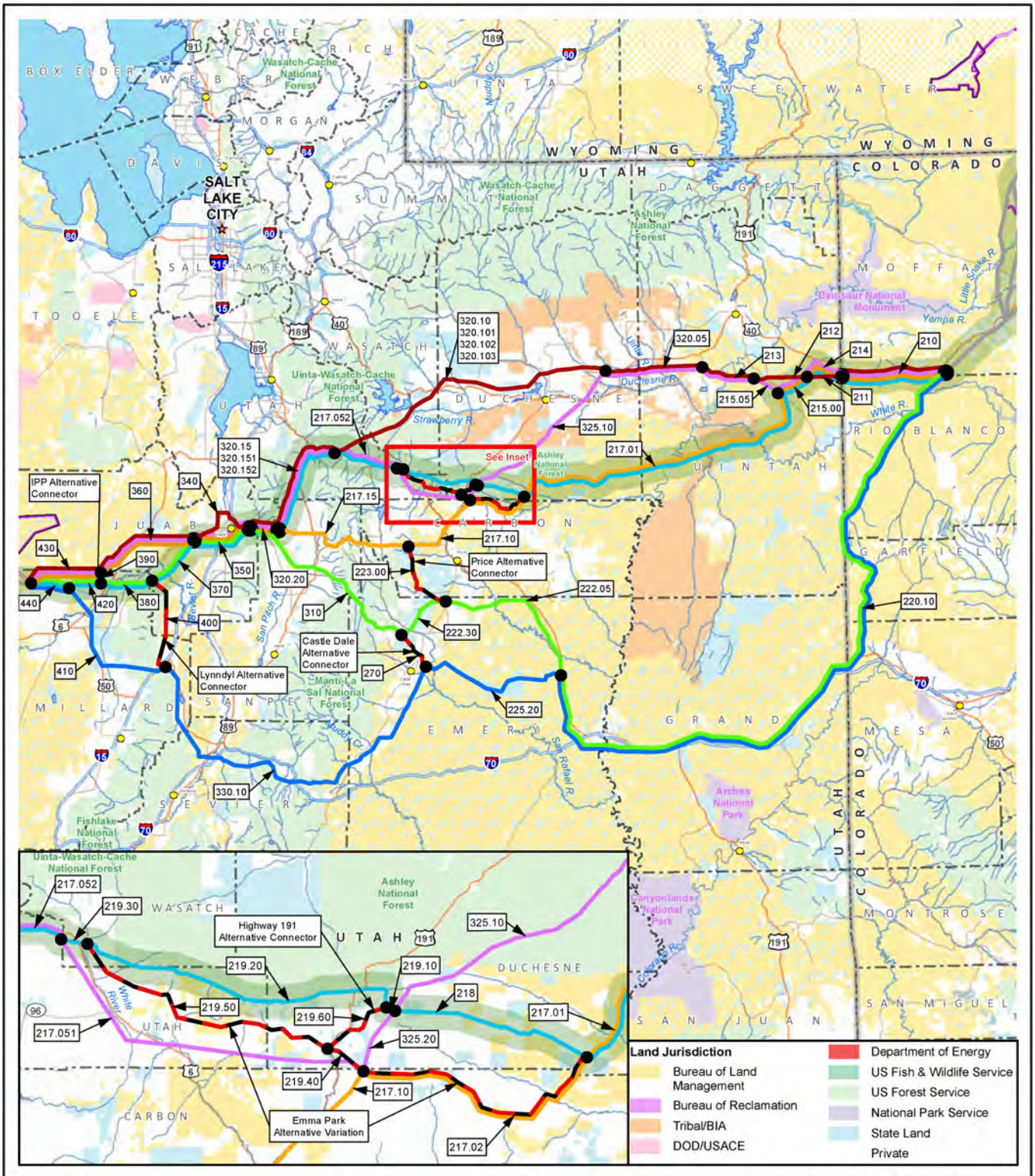
Source: TWE 2011

12/22/11



X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Jurisdiction\Fig_2_21_00_SRI_Jurisdiction_20130225.mxd

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Jurisdiction\Fig_2_22_00_SRII_Jurisdiction_20130225.mxd



DEIS Alternative Routes
- Agency Preferred
- Applicant Proposed II-A
- Alternative II-B
- Alternative II-C
- Alternative II-D
- Alternative II-E
- Agency Preferred II-F
- Alternative Variation or Connector
- Segment not in this Region

- Node
- 100 Segment ID
- Potential Ground Electrode Siting Area
- Potential Ground Electrode Site
- Potential Ground Electrode Overhead Electrical Line

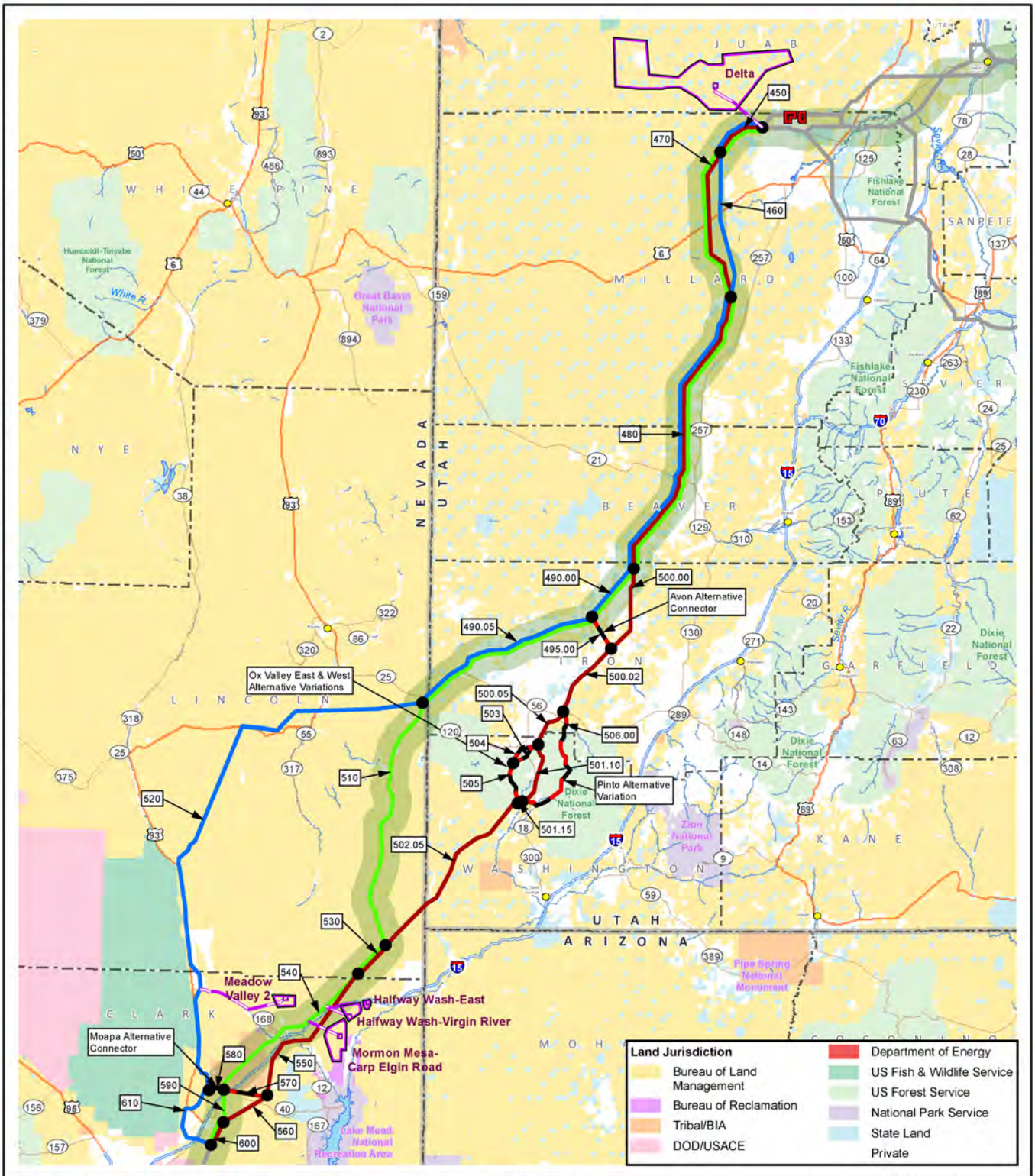
TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-22
Region II Alternatives

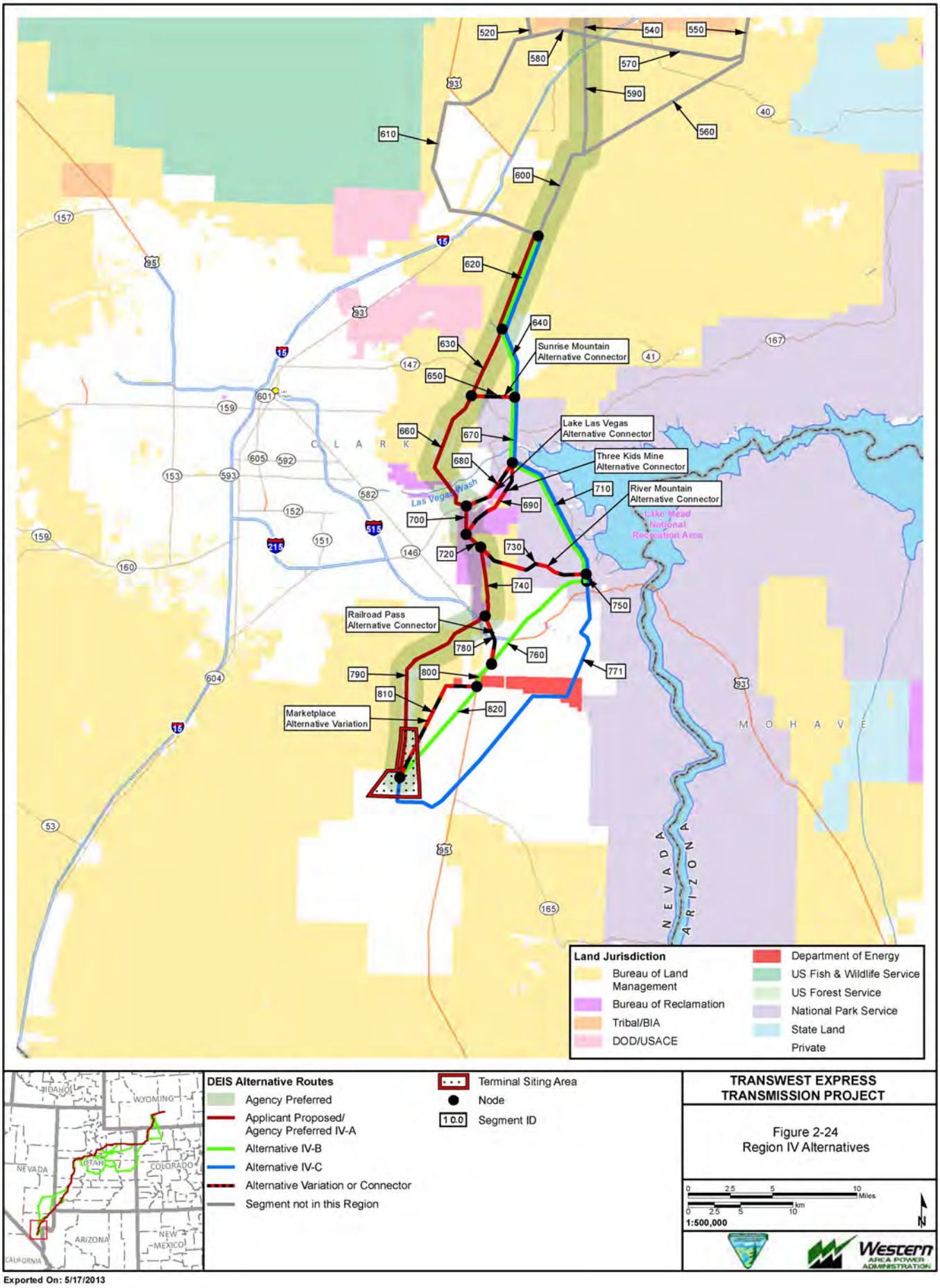
0 10 20 40 Miles
0 10 20 40 km
1:2,250,000
N

Western AREA POWER ADMINISTRATION

Exported On: 5/17/2013



Exported On: 6/5/2013


520
540
550
580
570
590
560
610
600
620
640
630
650
Sunrise Mountain Alternative Connector
660
670
Lake Las Vegas Alternative Connector
680
Three Kids Mine Alternative Connector
710
River Mountain Alternative Connector
690
700
720
730
740
750
Railroad Pass Alternative Connector
780
760
771
790
800
810
820
Marketplace Alternative Variation
CLARK
MOHAVE
Las Vegas Wash
Lake Mead National Recreation Area
NEVADA
ARIZONA
Land Jurisdiction
Bureau of Land Management
Bureau of Reclamation
Tribal/BIA
DOD/USACE
Department of Energy
US Fish & Wildlife Service
US Forest Service
National Park Service
State Land
Private
DEIS Alternative Routes
Agency Preferred
Applicant Proposed/ Agency Preferred IV-A
Alternative IV-B
Alternative IV-C
Alternative Variation or Connector
Segment not in this Region
Terminal Siting Area
Node
100 Segment ID
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 2-24
Region IV Alternatives
0 2.5 5 10 Miles
0 2.5 5 10 km
1:500,000
N
Western AREA POWER ADMINISTRATION
Exported On: 5/17/2013
X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\JurisdictionFig_2_24_00_SRIV_Jurisdiction_20130225.mxd

alignments and 250-foot-wide transmission line ROW locations would be determined during final engineering and design and may vary from the reference lines presented in this document. However, any alignment changes must remain within the 2-mile transmission line corridor and comply with all avoidance, minimization, and mitigation requirements described in this EIS, pertinent BLM RMPs, and USFS LRMPs.

To facilitate alternatives discussion and impacts disclosure in this EIS, segments were defined between nodes or points where reference lines diverge and/or converge within a region. Each of these segments was given a unique identification number as listed in **Table 2-2**. The identification numbers generally were assigned beginning in the northeast and moving to the southwest. These segments were grouped within the regions to create alternative comparisons from the beginning point in each region to the ending point in the same region. Because there are locations in each region where multiple alternatives overlap, some segments are analyzed multiple times as part of each alternative (e.g., segments 20, 30, and 40 in Region I). Summaries of alternative transmission line routes, associated access road lengths, and disturbance areas are included in the regional descriptions below.

Table 2-2 Reference Line Segments Comprising Alternative Routes by Region

Region	Applicant Proposed Alternative A Segment IDs	Alternative B Segment IDs	Alternative C Segment IDs	Alternative D Segment IDs	Alternative E Segment IDs	Alternative F Segment IDs
I	I-A 20, 30, 40, 110.00, 110.05, 120, 180.00, 180.05, 180.20, 100	I-B 20, 30, 40, 50, 60, 70, 180.00, 180.05, 186, 190.05, 100	I-C 20, 30, 130, 140.00, 140.05, 190.00, 190.05, 100	I-D *Agency Preferred Alternative* 20, 30, 40, 110.00, 115.00, 115.05, 115.07, 115.10, 180.05, 186, 190.05, 100	Not Applicable in Region I	Not Applicable in Region I
II	II-A 210, 211, 212, 213, 320.05, 320.10, 320.15, 320.20, 340, 360, 430	II-B 220.10, 222.05, 222.3, 310, 350, 370, 380, 420, 440	II-C 220.10, 225.2, 330.10, 410, 440	II-D 210, 214, 215.00, 217.01, 217.02, 217.10, 217.15, 320.20, 350, 360, 430	II-E 210, 214, 215.00, 215.05, 213, 320.05, 325.1, 325.2, 217.051, 217.052, 320.15, 320.20, 350, 360, 430	II-F *Agency Preferred Alternative* 210, 214, 215.00, 217.01, 217.052, 218.00, 219.10, 219.20, 219.30, 320.15, 320.20, 350, 370, 380, 420, 440
III	III-A 450, 470, 480, 500.00, 500.02, 500.05, 501.10, 501.15, 502.05, 530, 550, 560, 600	III-B *Agency Preferred Alternative* 450, 460, 480, 490.00, 490.05, 510, 530, 540, 590, 600	III-C 450, 460, 480, 490.00, 490.05, 520, 610	Not Applicable in Region III	Not Applicable in Region III	Not Applicable in Region III
IV	IV-A *Agency Preferred Alternative* 620, 630, 660, 700, 720, 740, 790	IV-B 620, 640, 670, 710, 750, 760, 800, 820,	IV-C 620, 640, 670, 710, 750, 771	Not Applicable in Region IV	Not Applicable in Region IV	Not Applicable in Region IV

Also, individual impact descriptions or comparisons of shorter sections have been considered in locations where alternative variation possibilities are shorter in length than the entire region or where segments act as

alternative connectors. **Table 2-3** lists the alternative variations and micro-siting options that have been considered by region. Alternative variation impacts are described and directly compared to alternative routes that begin and end in the same locations as the variation. The segments that make up the alternative variation and those used to directly compare the variation to an alternative route are included in **Table 2-3**. **Table 2-4** lists the alternative connectors that have been considered by region. The direct comparison of impacts from alternative connectors in relation to segments of the alternative routes is not as simple. The ability to combine connectors with different segment routes allows for a large number of distinct alternative routes.

Table 2-3 Alternative Variations and Micro-siting Options Considered by Region

Region	Alternative Variation or Micro-siting Option		Comparison	Alternative(s) Necessary for Variation	
	Name	Segment IDs	Segment IDs	Beginning	Ending
I	Tuttle Easement Micro-siting Option 1	101.1	100.00, 186.00	I-D	I-D
I	Tuttle Easement Micro-siting Option 2	101.2	100.00, 186.00	I-D	I-D
I	Tuttle Easement Micro-siting Option 3	101.3	100.00, 186.00	I-D	I-D
II	Emma Park Alternative Variation	217.02, 219.40, 219.50	218.00, 219.10, 219.20, 219.30	II-F	II-F
II	Strawberry IRA 1 Micro-siting Option 1	320.101	320.10	II-A	II-A
II	Strawberry IRA 2 Micro-siting Option 2	320.102	320.10	II-A	II-A
II	Strawberry IRA 3 Micro-siting Option 3	320.103	320.10	II-A, II-E, II-F	II-A, II-E, II-F
II	Cedar Knoll IRA 1 Micro-siting Option 1	320.151	320.15	II-A, II-E, II-F	II-A, II-E, II-F
II	Cedar Knoll IRA 2 Micro-siting Option 2	320.152	320.15	II-A, II-E, II-F	II-A, II-E, II-F
III	Ox Valley East Alternative Variation	503, 505	501.10, 501.15	III-A	III-A
III	Ox Valley West Alternative Variation	504, 505	501.10, 501.15	III-A	III-A
III	Pinto Alternative Variation	506.00	500.05, 501.10	III-A	III-A
IV	Marketplace Alternative Variation	810	820	IV-B	IV-A, IV-B

Table 2-4 Alternative Connectors Considered by Region

Region	Alternative Connector		Alternative(s) Necessary for Connector	
	Name	Segment IDs	Beginning	Ending
I	Mexican Flats Alternative Connector	150.00, 150.05, 160	I-All	I-All
I	Baggs Alternative Connector	170.00, 170.05	I-C	I-A, I-B
I	Fivemile Point North Alternative Connector	116	I-D	I-C
I	Fivemile Point South Alternative Connector	117	I-D	Baggs Alternative Connector
II	Highway 191 Alternative Connector	219.60	II-F	Emma Park Alternative Variation
II	Castle Dale Alternative Connector	270	II-C	II-B
II	Price Alternative Connector	223.00	II-B	II-D
II	Lynndyl Alternative Connector	400	II-C	II-B
II	IPP East Alternative Connector	390	II-B, II-C	II-B, II-C
III	Avon Alternative Connector	495.00	III-B, III-C	III-A
III	Moapa Alternative Connector	570, 580	III-All	III-All

Table 2-4 Alternative Connectors Considered by Region

Region	Alternative Connector		Alternative(s) Necessary for Connector	
	Name	Segment IDs	Beginning	Ending
IV	Sunrise Mountain Alternative Connector	650	IV-B, IV-C	IV-A
IV	Lake Las Vegas Alternative Connector	680	IV-B, IV-C	IV-A
IV	Three Kids Mine Alternative Connector	690	IV-B, IV-C	IV-A
IV	River Mountains Alternative Connector	730	IV-B, IV-C	IV-A
IV	Railroad Pass Alternative Connector	780	IV-B	IV-A, IV-B

Note: The impacts of using connectors will be described; however, the impacts of the alternatives they connect are disclosed in the alternatives' respective discussions.

An analysis of all distinct alternative and connector potential route combinations would result in the detailed analysis of several route combinations with virtually identical impacts. Accordingly, Chapter 3.0 discloses the impacts of connectors independently, allowing the reader to determine potential additive impacts of the connectors across alternative combinations.

2.5.1 Alternative Transmission Line Routes and Ancillary Facilities by Region

The length and surface disturbance from the applicant-proposed and other alternatives are described in this section. This includes transmission line alternative routes, variations, connectors, and ground electrode systems. Facilities considered part of the construction disturbance for each alternative include access roads, structure erection sites, communication sites, line stringing and tensioning sites (both transmission and communication), and other temporary work areas (i.e., staging areas, concrete batch plants, storage yards, helicopter fly yards). Facilities considered part of operation and maintenance disturbance include access roads, structure foundation sites, and communication sites. These construction and operation areas generally would experience sub-grade disturbance to provide clear, flat work spaces. All construction disturbance not included in operation disturbance (e.g., stringing and tensioning sites, work areas, decrease in structures and communication sites) would be reclaimed after construction was completed. Areas within the ROW that are not included in the disturbance area for construction or operation facilities may experience vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction. As such, these areas are reported as additional ROW vegetation clearing. Ground electrode systems would be necessary in Regions I and III. **Appendix D** contains additional information on the above facilities and their associated disturbances.

2.5.1.1 Region I: Sinclair, Wyoming to Northwest Colorado near Rangely, Colorado

Region I alternatives are depicted on **Figure 2-21**. Alternative I-D is the agency preferred alternative in Region I. The length of alternative routes and associated access roads in Region I are summarized in **Table 2-5** and the disturbance associated with construction and operation of each is summarized in **Table 2-6**. If Design Option 3 were implemented, the transmission lines in this region would be constructed with an AC configuration (three conductors and structures to support them) for AC operation during phase one of Project implementation (see **Figure 2-3**).

Table 2-5 Length of Alternative Routes and Associated Access Roads in Region I

Regional Alternative	Length (Miles)			
	I-A	I-B	I-C	I-D
600kV T-Line	155	159	186	171
Access Roads	227	223	269	242

Table 2-6 Transmission Line Alternative Route Areas of Disturbance in Region I

Facilities	Construction Disturbance (acres)				Operation Disturbance (acres)			
	Alt. I-A	Alt. I-B	Alt. I-C	Alt. I-D	Alt. I-A	Alt. I-B	Alt. I-C	Alt. I-D
Access Roads	512	481	601	515	512	481	601	515
Structures and Communication Sites	718	734	863	793	14	14	17	16
Stringing and Tensioning Sites	456	487	600	587	0	0	0	0
Work Areas[1]	371	381	447	411	0	0	0	0
Facilities Total	**2,057**	**2,083**	**2,511**	**2,306**	**526**	**495**	**618**	**531**
Additional ROW-vegetation clearing[2]	3,242	3,304	3,848	3,500	0	0	0	0

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Alternative I-A (Applicant Proposed)

TransWest's proposed reference line would begin in Sinclair, Wyoming, and would travel west just south of the I-80 corridor to Wamsutter. At Wamsutter, it would turn south and generally follow the Carbon-Sweetwater county line along a corridor preferred by the Wyoming Governor's Office and Carbon and Sweetwater counties. It then would continue south-southwest across the Wyoming-Colorado state line and south along a corridor preferred by Moffat County where it would intersect with U.S. Highway 40 just west of Maybell, Colorado. The reference line generally would parallel U.S. Highway 40, turning west toward the Colorado-Utah border.

Alternative I-B

Alternative I-B was the TransWest original proposed action. It was subsequently withdrawn and replaced by a revised ROW application reflecting their current proposed action. It was retained as Alternative I-B because it would follow an existing utility corridor, thereby reducing the proliferation of new corridors. The alternative would be the same as Alternative I-A to Wamsutter, and then differ as Alternative I-B would continue west for several miles before turning south along the WWEC. Alternative I-B would follow the WWEC to near the Colorado state line, where it would converge with Alternative I-A for approximately 15 miles, then diverge to the south and parallel Alternative I-A to the east with an offset of approximately 5 miles. It then would intersect with U.S. Highway 40 and follow Alternative I-A to the end of Region I.

Alternative I-C

This alternative was developed to reduce the overall proliferation of utility corridors and associated impacts by following existing designated utility corridors. Alternative I-C would begin by following Alternative I-A to near Creston, Wyoming, where Alternative I-C would turn south and parallel Wyoming State Highway 789 toward Baggs, Wyoming. From there, Alternative I-C would continue south, deviating from Highway 789 to the east and passing east of Baggs. After crossing into Colorado, this alternative would parallel Colorado State Highway 13 into Craig, Colorado. Alternative I-C would pass east and south of Craig, turning to the west after crossing U.S. Highway 40, generally paralleling the highway and joining with Alternative I-A to the end of Region I.

Alternative I-D (Agency Preferred)

Alternative I-D was developed to reduce multiple resource concerns, including impacts to visual resources and greater sage-grouse. It would follow the route of Alternative I-A, going west from Sinclair, Wyoming (Carbon County, Wyoming), basically paralleling I-80 in the designated WWEC, until turning south near Wamsutter. It would follow Alternative I-A south for approximately 15 miles. Alternative I-D then would diverge to the east, where it generally would parallel Highway 789 at an offset distance of 2 to 5 miles to the west. Before reaching

the Baggs area, Alternative I-D would turn west and follow the Shell Creek Stock Trail road for approximately 20 miles, where it would cross into Sweetwater County and again join Alternative I-A while turning south into Colorado (Moffat County).

Tuttle Easement Micro-siting Options 1, 2, and 3

Three micro-siting options have been developed to address specific resource concerns in Region I (**Figure 2-25**). The Tuttle Easement micro-siting options 1, 2, and 3 address concerns related to the Tuttle Ranch Conservation Easement (see Section 3.14, Land Use). Tuttle Easement Micro-siting Option 1 would follow two existing transmission lines through the area (including the Tuttle Ranch Conservation Easement lands) with a 250-foot offset. Tuttle Easement Micro-siting Option 2 would avoid the Tuttle Ranch Conservation Easement and pass between where the easement and the NPS Dinosaur National Monument's Deerlodge Road intersects with U.S. Highway 40. Tuttle Easement Micro-siting Option 3 also would avoid the easement, but cross the NPS Deerlodge Road west of U.S. Highway 40. These micro-siting options are compared with the portion of Alternative I-D they might replace, but could be utilized with each of the alternatives in Region I. Because they are near each other and share a 2-mile transmission line corridor, resource impacts generally are similar to the other alternatives.

Region I Alternative Connectors

The Region I alternative connectors were developed to provide the flexibility to combine alternative segments to address resource conflicts. They are described below and depicted in **Figure 2-21**. The length of the alternative connectors and associated access roads along with construction and operation disturbance areas are summarized in **Table 2-7**.

Table 2-7 Alternative Connectors Areas of Disturbance in Region I

	Length (miles)		Construction Disturbance (acres)						Operation Disturbance (acres)		
Facilities	600-kV T-Line	Access Roads	Access Roads	Structures & Communication Sites	Stringing & Tensioning Sites	Work Areas[1]	Facilities Total	Additional ROW-Vegetation Clearing[2]	Access Roads	Structures & Communication Sites	Facilities Total
Mexican Flats	10	13	25	48	32	24	**129**	206	25	1	**26**
Baggs	22	31	68	104	68	54	**294**	464	68	2	**70**
Fivemile Point North	3	4	8	15	52	7	**82**	20	8	<1	**8**
Fivemile Point South	2	3	6	10	10	5	**31**	42	6	<1	**6**

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Mexican Flats Alternative Connector (All Alternatives)

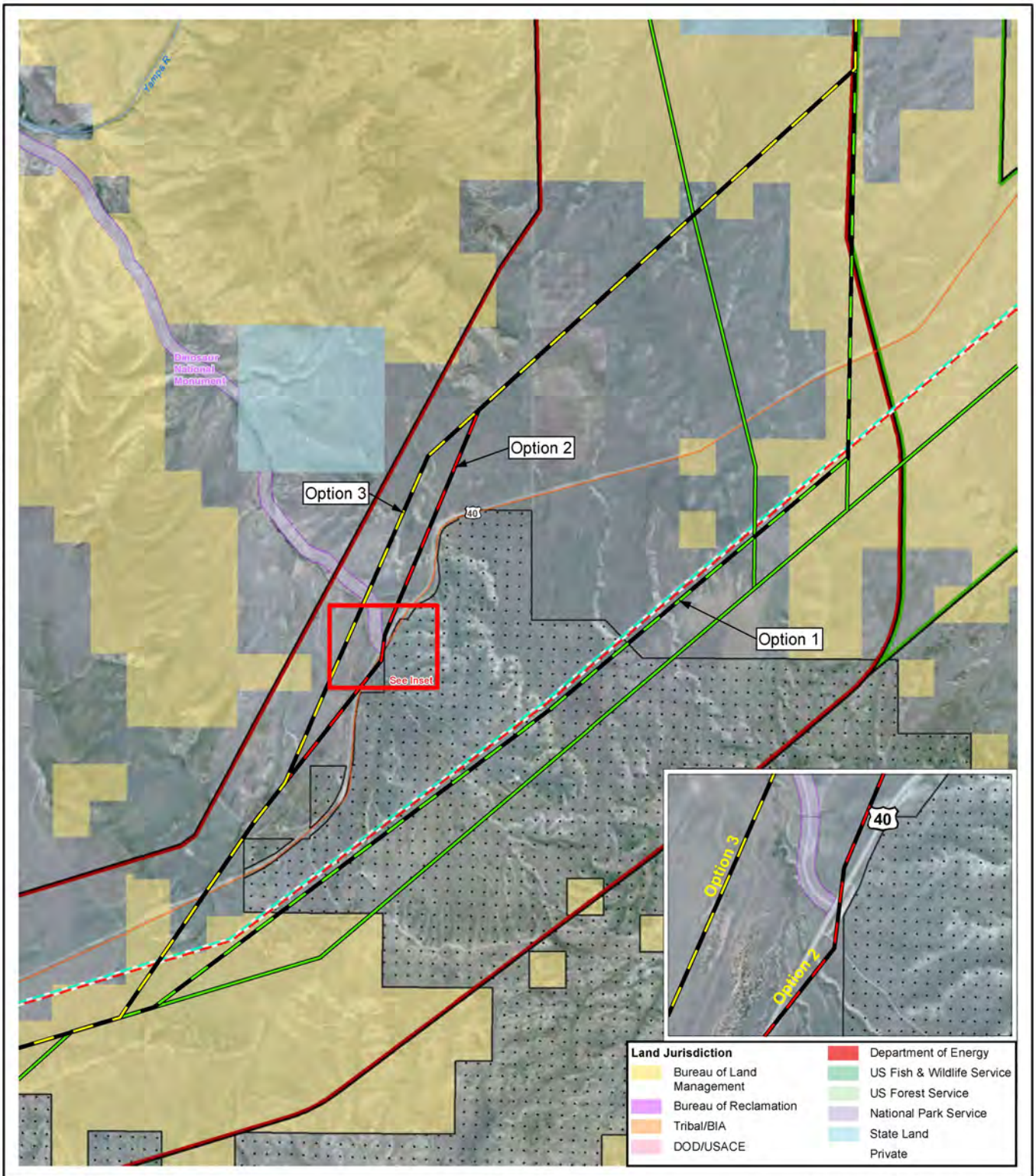
The Mexican Flats Alternative Connector could be used to join all Region I alternatives to any of the other alternatives. The connector would be located in an area where the three alternatives are closest to one another, just south of the BLM-private checkerboard ownership pattern in Wyoming.

Baggs Alternative Connector (Alternative I-C only)

The Baggs Alternative Connector would connect Alternative I-C with Alternatives I-A and I-B between Baggs and the general location where Alternatives I-A and I-B cross the Wyoming-Colorado state line.

Fivemile Point North Alternative Connector (Alternatives I-C or I-D)

The Fivemile Point North Alternative Connector would connect Alternative I-D with Alternative I-C near Baggs.


Yampa R.
Dinosaur National Monument
Option 2
Option 3
Option 1
40
See Inset
Option 3
Option 2
40
Land Jurisdiction
Bureau of Land Management
Bureau of Reclamation
Tribal/BIA
DOD/USACE
Department of Energy
US Fish & Wildlife Service
US Forest Service
National Park Service
State Land
Private
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
Reference Line
Tuttle Easement Micro-siting Option 1
Tuttle Easement Micro-siting Option 2
Tuttle Easement Micro-siting Option 3
Project Corridor
Applicant Proposed
Alternative
Tuttle Conservation Easement
Existing Transmission
345kV
138 to 161kV
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 2-25
Tuttle Easement Micro-siting
Options 1, 2, and 3
0 1,000 2,000 4,000 Feet
0 200 400 800 Meters
1:63,360
N
Western AREA POWER ADMINISTRATION
Exported On: 5/2/2013
X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\MicroSitings\Fig_2_25_00_TuttleEase_MO_20130225.mxd

Fivemile Point South Alternative Connector (Alternative I-D or Baggs Alternative Connector)

The Fivemile Point South Alternative Connector would connect Alternative I-D with the Baggs Alternative Connector near Baggs.

Region I Ground Electrode System Alternative Facilities

The ground electrode system alternative locations in Region I are depicted in **Figure 2-21**, and the lengths and disturbance areas are summarized in **Table 2-8**. These alternative locations are dependent on the alternative route selected, as noted in **Table 2-8** with the alternatives listed in parentheses.

Table 2-8 Ground Electrode System Alternative Facility Lengths and Areas of Disturbance in Region I

Northern Ground Electrode System Site Alternatives[1]	Length (miles)		Construction Disturbance (acres)				Operation Disturbance (acres)			
	34.5 kV AC Overhead Line	Access Road	Ground Electrode Sites	Over-head Lines	Access Roads	Total	Ground Electrode Sites	Over-head Lines	Access Roads	Total
Separation Flat (All Alternatives)	13	17	65	30	34	128	6	<1	34	39
Shell Creek (Alternatives I-A and I-D)	33	43	65	75	83	223	6	<1	83	89
Little Snake East (Alternatives I-A, I-B, and I-D)	9	12	65	20	24	108	6	<1	24	29
Little Snake West (Alternative I-A)	10	14	65	25	31	121	6	<1	31	37
Shell Creek (Alternative I-B)	26	34	65	59	65	189	6	<1	65	71
Little Snake West (Alternatives I-B and I-D)	5	7	65	12	15	93	6	<1	15	21
Separation Creek (All Alternatives)	14	20	65	30	43	138	6	<1	43	48
Eight Mile Basin (All Alternatives)	4	6	65	9	12	86	6	<1	12	18

[1] Note in parentheses indicates which alternatives in Region I would be necessary to utilize the ground electrode system site.

2.5.1.2 Region II: Northwest Colorado to IPP near Delta, Utah

Region II alternative reference lines are depicted in **Figure 2-22**. Alternative II-F is the agency preferred alternative in Region II. The length of alternative routes and associated access roads in Region II are summarized in **Table 2-9** and disturbance associated with construction and operation of each is summarized in **Table 2-10**. If Design Option 3 were implemented, the transmission lines in this region would be constructed with an AC configuration (three conductors and structures to support them) for AC operation during phase one Project implementation (see **Figure 2-3**).

Table 2-9 Length of Alternative Routes and Associated Access Roads in Region II

Facilities	Length (miles)					
	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
600-kV T-Line	257	345	364	262	266	267
Access Roads	463	580	556	474	471	526

Table 2-10 Transmission Line Alternative Route Areas of Disturbance in Region II

Facilities	Construction Disturbance (acres)						Operation Disturbance (acres)					
	Alt. II-A	Alt. II-B	Alt. II-C	Alt. II-D	Alt. II-E	Alt. II-F	Alt. II-A	Alt. II-B	Alt. II-C	Alt. II-D	Alt. II-E	Alt. II-F
Access Roads	1,154	1,404	1,274	1,198	1,170	1,366	1,154	1,404	1,274	1,198	1,170	1,366
Structures & Communication Sites	1,189	1,596	1,686	1,207	1,232	1,236	24	32	34	25	25	26
Stringing & Tensioning Sites	783	1,174	1,230	1,022	894	1,033	0	0	0	0	0	0
Work Areas[1]	617	828	874	628	639	641	0	0	0	0	0	0
Facilities Total	**3,743**	**5,002**	**5,064**	**4,055**	**3,935**	**4,276**	**1,178**	**1,436**	**1,308**	**1,223**	**1,195**	**1,392**
Additional ROW – vegetation clearing[2]	5,392	7,103	7,487	5,267	5,499	5,393	0	0	0	0	0	0

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Alternative II-A (Applicant Proposed)

The TransWest proposed reference line would continue into Utah in a westerly direction, then deviate south from Highway 40 toward Roosevelt, Utah. From Roosevelt, it would pass north of Duchesne, again paralleling Highway 40 for several miles, then turn southwest toward Nephi, near U.S. Highways 6 and 89. The reference line would pass through Salt Creek Canyon then north around Nephi. It would continue west and then turn southwest following a path north of and adjacent to IPP. Portions of this corridor have been identified as preferred in a joint resolution by representatives of Juab and Millard counties.

Strawberry IRA Micro-siting Options 1, 2, and 3

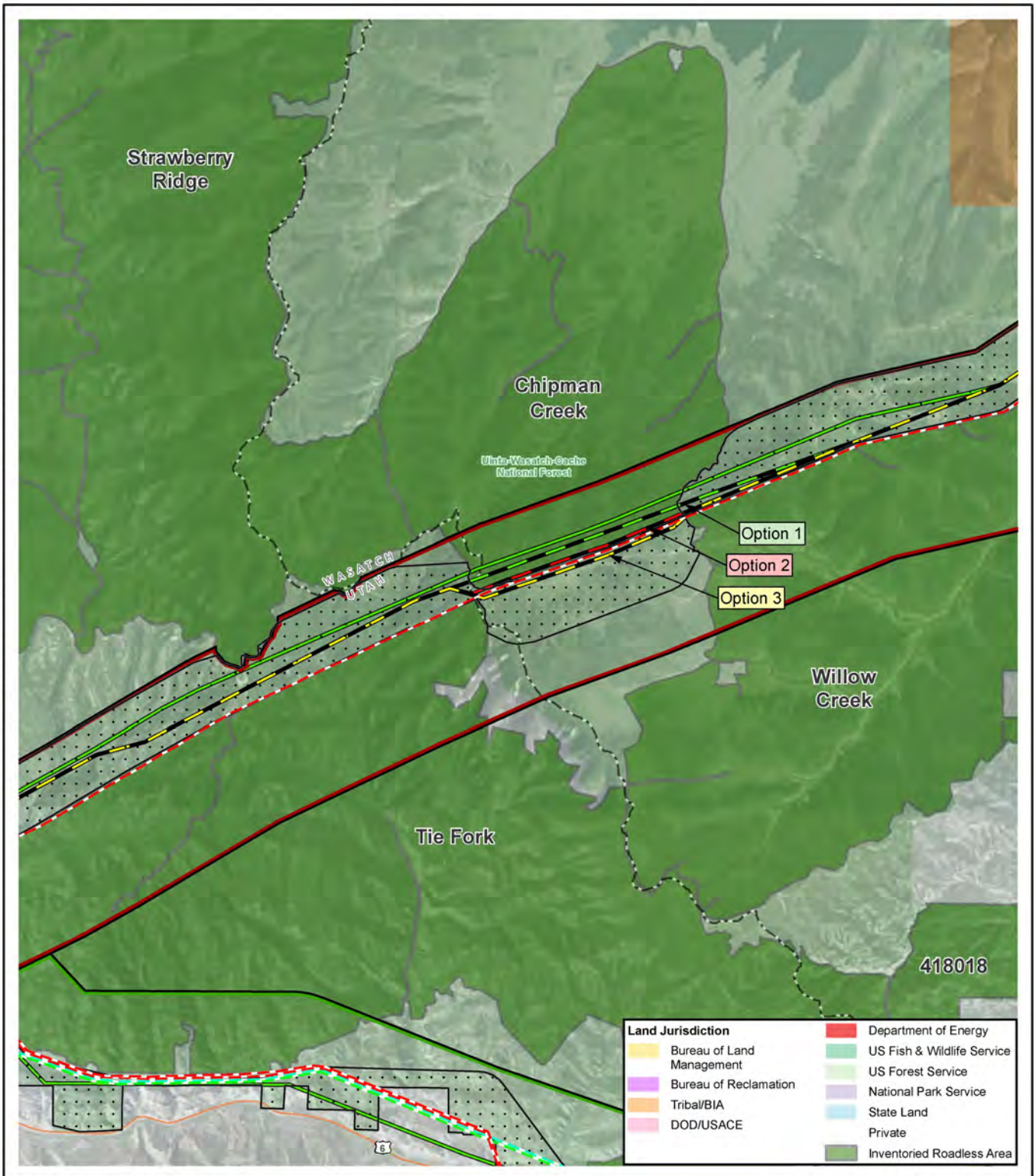
The Strawberry IRA micro-siting options have been developed to address concerns with construction in Uinta National Forest IRAs at a location the designated WWEC offsets from a continual corridor (**Figure 2-26**). Strawberry IRA Micro-siting Option 1 would be sited closer to the existing transmission line than Alternative II-A and still well within the IRA. Strawberry IRA Micro-siting Option 2 would be located with a 250-foot offset from the existing transmission line and within but on the edge of the IRA. Strawberry IRA Micro-siting Option 3 would cross the existing transmission line twice, remaining in the designated WWEC and avoiding the USFS IRA. These micro-siting options are compared with the portion of Alternative II-A they might replace.

The Cedar Knoll IRA micro-siting options could be utilized under Alternative II-A as well. See Alternative II-F for a description of these options.

Alternative II-B

Alternative II-B was developed to address impacts to private lands and to generally follow established utility corridors. These corridors are designated for underground utilities only and use of the corridor for the transmission line would require a plan amendment. The route would travel southwest in Colorado from the beginning of Region II, cross the Yampa River, and pass east of Rangely, Colorado. It would continue southwest where it would cross the Colorado-Utah state line and turn generally south, crossing back into Colorado in the Baxter Pass area. At that location, it would intersect the Interstate 70 (I-70) corridor, turning in a southwesterly and westerly direction, paralleling I-70. After passing south of Green River, Utah, Alternative II-B would diverge from I-70 and turn to the north along U.S. Highway 191. This highway generally would be followed until just south of the Emery-Carbon county line, where Alternative II-B would turn west and

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\MicroSitings\Fig_2_26_00_StrawberryIRA_MO_20130225.mxd



Reference Line
Strawberry IRA Micro-siting Option 1
Strawberry IRA Micro-siting Option 2
Strawberry IRA Micro-siting Option 3

Project Corridor
Applicant Proposed
Alternative

Existing Transmission
345kV
WWEC Corridor

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 2-26
Strawberry IRA Micro-siting
Options 1, 2, and 3

0 0.5 1 2 Miles
0 0.5 1 2 km
1:100,000
N

Western AREA POWER ADMINISTRATION

Exported On: 5/2/2013

pass near the county line for approximately 25 miles. It generally would turn south, passing west of Huntington, Utah, before turning northwest passing northeast of Mount Pleasant, Utah. From there, it would pass through Salt Creek Canyon to Nephi, and then south around Nephi. It then would turn southwest and west adjacent to IPP, following a path south of Alternative II-A.

Alternative II-C

Alternative II-C also would decrease impacts to private lands and generally would follow established utility corridors as well as avoid USFS IRAs. Alternative II-C would follow Alternative II-B through Colorado, along I-70 into Utah, and north at Highway 191. Approximately 15 miles north on Highway 191, Alternative II-C would diverge from Alternative II-B and turn in a general westerly direction toward Castle Dale. Approximately 3 miles east of Castle Dale, this alternative would turn south and roughly parallel Utah State Highway 10 at a distance of approximately 3 miles to the east. The alternative would cross Highway 10 near the Emery-Sevier county line and turn west, again generally following the I-70 corridor into the Salina, Utah, area. Alternative II-C would pass south of Salina, turn north, and parallel U.S. Highway 50 toward Scipio, Utah. The alternative would turn west and pass Scipio on the south, then turn north, passing east of Delta, Utah, continuing into IPP.

Alternative II-D

This alternative was developed to avoid USFS IRAs and to provide additional northern route options to avoid impacts to historic trails and areas designated for special resource management along the southern routes (Alternatives II-B and II-C). It would begin along the same route as Alternative II-A. However, as it would enter Utah, it would diverge briefly to follow a designated utility corridor, causing it to zigzag once across Alternative II-A. It then would diverge to the south of the designated utility corridor and turn west-southwest. Alternative II-D would cross into Carbon County northwest of Price, and then turn southwest in the Emma Park area along Highway 191. It would follow this highway west of Helper, and then turn west toward Salt Creek Canyon where it would join and follow Alternatives II-B and II-E, then join and follow Alternative II-A into IPP.

Alternative II-E

Alternative II-E also was developed to provide additional northern route options to address the previously-mentioned resource impacts from the southern routes. This alternative would follow Alternative II-D into Utah and along the designated utility corridor, zigzagging across Alternative II-A. It then would rejoin Alternative II-A to continue east through Duchesne, Utah. Approximately 10 miles east of Duchesne, Alternative II-E would turn southwest and generally parallel Highway 191, offset by 1 to 6 miles. At the Utah-Carbon county line, this alternative would turn west through the Emma Park area, then northwest along U.S. Highway 6 until it would rejoin with Alternative II-A, following its siting to Salt Creek Canyon. At this canyon, Alternative II-E would begin to follow the alignment of Alternative II-B south of Nephi, then join and follow Alternative II-A adjacent and into IPP.

Micro-siting options have been developed in specific areas of this alternative to minimize impacts to USFS IRAs. See Alternative II-F for a description of these options.

Alternative II-F (Agency Preferred)

This alternative combines portions of other alternatives in the region and contains unique segments in the Emma Park area that together would minimize impacts to USFS IRAs, Tribal and private lands, greater sage-grouse habitat, and avoid impacts to NHTs. It would begin in southwest Moffat County (Colorado) by following Alternative II-A in designated WWEC and BLM utility corridors. As it enters Utah (Uintah County), it would separate from Alternative II-A to the northwest and follow the designated utility corridors, which then turn southwest and cross Alternative II-A. It then would diverge to the south off of the designated WWEC (still following the BLM-designated corridor) and turn west-southwest, crossing the Uintah and Ouray Indian Reservation. It then would cross into Duchesne County, where it would turn west-southwest out of the BLM utility corridor and generally follow the southern county line, crossing into Carbon County northwest of Price where it would turn west-northwest and follow Highway 6 to Thistle (Utah County) through a portion of designated WWEC and BLM utility corridors. It then would turn south, following Highway 89 for about 10 miles

before cutting south-southwest (Sanpete County) to Highway 132. At this highway, it would turn west into Nephi (Juab County) and follow a path south around the community, then turn southwest following a BLM-designated utility corridor that turns west into IPP north of Delta (Millard County), which is the end of the Project's Region II.

Cedar Knoll IRA Micro-sting Options 1 and 2

The Cedar Knoll IRA micro-siting options have been developed to address concerns with construction in USFS IRAs along the edges of the Manti-LaSal National Forest (**Figure 2-27**).Cedar Knoll IRA Micro-siting Option 1 would be co-located with a 250-foot offset from an existing transmission line, would avoid the Coal Hollow IRA, and would span a short corner of the Cedar Knoll IRA. Cedar Knoll IRA Micro-siting Option 2 also would be co-located with a 250-foot offset from an existing transmission line, would avoid the Coal Hollow IRA, and also would avoid the Cedar Knoll IRA by crossing the existing transmission line twice. These micro-siting options are compared with the portion of Alternative II-F they might replace, and also could be utilized with Alternatives II-A and II-E with the same results.

Region II Alternative Variation

Emma Park Alternative Variation

The Emma Park Alternative Variation would address potential impacts to the scenic and recreation issues along the Reservation Ridge Scenic Backway, while also considering BLM policy (IM 2012-043) regarding greater sage-grouse. This variation is compared to the portion of Alternative II-F it might replace in the Emma Park area north of Price, Utah (**Figure 2-22**), and the length and associated construction and operation disturbance are summarized in **Table 2-11**. It would deviate from Alternative II-F (and follow Alternative II-D) just north of the Duchesne-Carbon county line, then deviate from Alternative II-D at the intersection of Alternatives II-D and II-E where the Emma Park Alternative Variation would cross Emma Park and rejoin with Alternative II-F just east of Soldier Summit, Utah.

Table 2-11 Alternative Variation and Comparison Areas of Disturbance in Region II

	Length (miles)		Construction Disturbance (acres)						Operation Disturbance (acres)		
Facilities	600-kV T-Line	Access Road	Access Roads	Structures & Comm Sites	Stringing & Tensioning Sites	Work Areas	Facilities Total	Additional ROW-veg clearing	Access Roads	Structures & Comm Sites	Facilities Total
Emma Park	35	78	218	163	179	85	645	669	218	3	221
Alternative II-F Comparable	32	82	237	149	203	77	666	577	237	3	240

Region II Alternative Connectors

The alternative connectors analyzed in Region II are described below and depicted in **Figure 2-22**. The length of the alternative connectors and associated access roads along with construction and operation disturbance areas are summarized in **Table 2-12**.

Highway 191 Alternative Connector (Alternative II-F and Emma Park Alternative Variation)

The Highway 191 Alternative Connector would connect Alternative II-F with the Emma Park Alternative Variation in a way that may consider a balance of resource concerns (i.e., biological, scenic, recreation, management areas).

Castle Dale Alternative Connector (Alternatives II-B and II-C)

The Castle Dale Alternative Connector would connect Alternative II-C near Castle Dale with Alternative II-B near Huntington. This connector also could be utilized to pass from Alternative II-B to Alternative II-C.

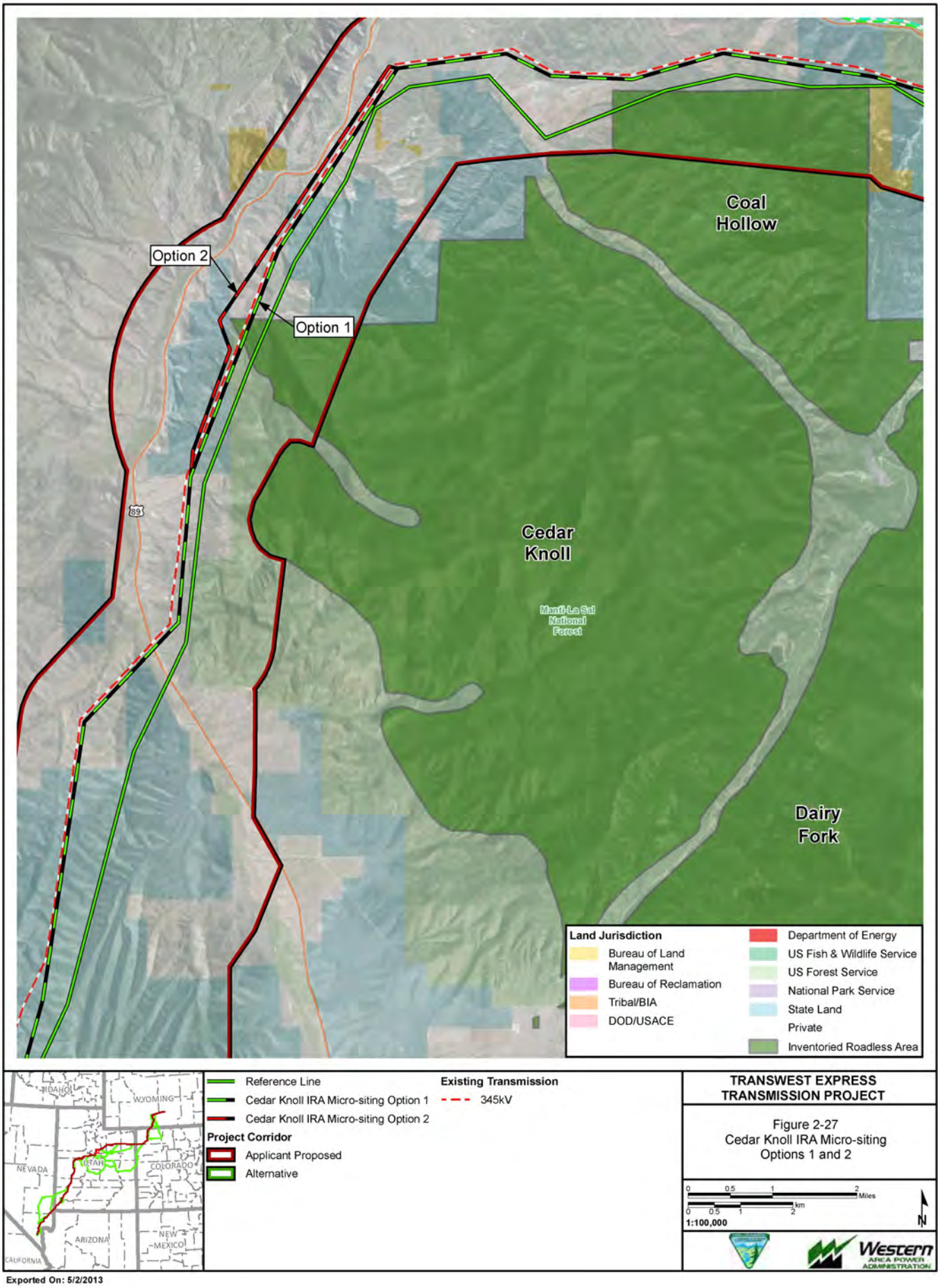

X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\MicroSitings\Fig_2_27_00_CedarKnollIRA_MO_20130225.mxd
Option 2
Option 1
Coal Hollow
Cedar Knoll
Manti-La Sal National Forest
Dairy Fork
89
Land Jurisdiction
Bureau of Land Management
Bureau of Reclamation
Tribal/BIA
DOD/USACE
Department of Energy
US Fish & Wildlife Service
US Forest Service
National Park Service
State Land
Private
Inventoried Roadless Area
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
Reference Line
Cedar Knoll IRA Micro-siting Option 1
Cedar Knoll IRA Micro-siting Option 2
Project Corridor
Applicant Proposed
Alternative
Existing Transmission
345kV
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 2-27
Cedar Knoll IRA Micro-siting
Options 1 and 2
0 0.5 1 2 Miles
0 0.5 1 2 km
1:100,000
N
Western AREA POWER ADMINISTRATION
Exported On: 5/2/2013

Table 2-12 Alternative Connectors Areas of Disturbance in Region II

Facilities	Length (miles)		Construction Disturbance (acres)						Operation Disturbance (acres)		
	600-kV T-Line	Access Road	Access Road	Structures & Comm Sites	Stringing & Tensioning	Work Areas[1]	Facilities Total	Additional ROW – Vegetation Clearing[2]	Access Road	Structures & Comm Sites	Facilities Total
Highway 191	5	13	37	22	49	11	**119**	61	37	1	**38**
Castle Dale	11	20	49	54	46	27	**176**	225	49	1	**50**
Price	18	31	79	85	72	44	**280**	369	79	2	**81**
Lynndyl	24	34	70	111	66	58	**305**	511	70	2	**72**
IPP East	3	3	7	12	11	6	**36**	50	7	0	**7**

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Price Alternative Connector (Alternatives II-B and II-D)

The Price Alternative Connector would connect Alternative II-B north of Huntington along the Emery-Carbon county line with Alternative II-D west of Price. This connector potentially also could be utilized to pass from Alternative II-D to Alternative II-B.

Lynndyl Alternative Connector (Alternatives II-B and II-C)

The Lynndyl Alternative Connector would deviate from Alternative II-C just south of Scipio, turning north and joining with Alternative II-B between Nephi and IPP.

IPP East Alternative Connector (Alternatives II-A and II-B)

The IPP East Alternative Connector would connect Alternative II-A to Alternative II-B, allowing either of these to cross to the other and approach IPP from either the north or the south.

2.5.1.3 Region III: IPP to North Las Vegas, Nevada

Region III alternative reference lines are depicted in **Figure 2-23**. Alternative III-B is the agency preferred alternative in Region III. The length of alternative routes and associated access roads in Region III are summarized in **Table 2-13** and disturbance associated with construction and operation of each is summarized in **Table 2-14**. If Design Option 2 were implemented, the transmission lines in this region would be constructed and operated as an AC transmission line (three conductors and structures to support them) in this region (see **Figure 2-2**).

Table 2-13 Length of Alternative Routes and Associated Access Roads in Region III

Facilities	Length (miles)		
	Alternative III-A	Alternative III-B	Alternative III-C
600-kV T-Line	275	284	308
Access Roads	423	401	433

Table 2-14 Transmission Line Alternative Route Areas of Disturbance in Region III

Facilities	Construction Disturbance (acres)			Operation Disturbance (acres)		
	III-A	III-B	III-C	III-A	III-B	III-C
Access Roads	971	850	926	971	850	926
Structures & Comm Sites	1,269	1,313	1,424	25	25	27
Stringing & Tensioning Sites	740	747	836	0	0	0
Work Areas[1]	661	683	740	0	0	0
Facilities Total	**3,641**	**3,593**	**3,926**	**996**	**875**	**953**
Additional ROW-veg clearing[2]	5,852	6,056	6,589	0	0	0

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Alternative III-A (Applicant Proposed)

The TransWest proposed reference line would leave IPP to the west and turn south toward Milford, Utah, following the WWEC. For the remainder of Utah, the reference line roughly would parallel Interstate 15 (I-15) approximately 20 miles west of the highway. The reference line would pass west of Milford, then generally trend south-southwest, passing east of Enterprise, Utah, and directly west of Central, Utah; exiting Utah just north of the southwest corner of the state. In Nevada, the line would cross I-15 west of Mesquite, Nevada, and remain on the south side of I-15 until reaching the North Las Vegas area northeast of Nellis Air Force Base.

Alternative III-A could incorporate the Mormon Mesa-Carp Elgin Road (Proposed Site), the Halfway Wash East (Alternative 1), Halfway Wash-Virgin River (Alternative 2), or Meadow Valley 2 (Alternative 3) locations for the ground electrode system.

Alternative III-B (Agency Preferred)

Alternative III-B was developed to decrease resource impacts in southwestern Utah (including potential impacts to the Mountain Meadows NHL and Site and IRAs in the Dixie National Forest). It would begin following Alternative III-A through Millard and Beaver counties. Near the Beaver-Iron county line, it would diverge toward the west. Alternative III-B would follow a west-southwest course, crossing into Lincoln County, Nevada, near Uvada, Utah, where it would turn to a general southerly direction, rejoining Alternative III-A to the northwest of Mesquite. It then would diverge to the west from Alternative III-A approximately 16 miles west of Mesquite, cross into Clark County, pass southeast of Moapa, Nevada, pass through the designated utility corridor on the Moapa Reservation, and rejoin Alternative III-A approximately 4 miles north of the end of Region III.

Alternative III-B could incorporate the Mormon Mesa-Carp Elgin Road (Proposed Site), the Halfway Wash East (Alternative 1), Halfway Wash-Virgin River (Alternative 2), or Meadow Valley 2 (Alternative 3) locations for the ground electrode system.

Alternative III-C

Alternative III-C also was developed to address the same resource impacts as Alternative III-B and to take advantage of an existing corridor with existing transmission line development, thereby potentially consolidating cumulative transmission line impacts. This alternative would follow Alternatives III-A and III-B before diverging from them shortly after traveling west out of IPP, where it would follow the existing IPP power line to the south for approximately 30 miles and then rejoin Alternative III-B to the Utah-Nevada state line. After passing into

Nevada at Uvada, Alternative III-C would turn west away from Alternative III-B, passing north of Caliente, Nevada; turning south approximately 15 miles west of Caliente. This alternative would follow that southern course, intersecting with U.S. Highway 93 and paralleling the highway for all but the last 15 miles into North Las Vegas. Alternative III-C would rejoin Alternative III-A northeast of Nellis Air Force Base at the end of Region III.

Alternative III-C could incorporate the Mormon Mesa-Carp Elgin Road (Proposed Site), the Halfway Wash East (Alternative 1), Halfway Wash-Virgin River (Alternative 2), or Meadow Valley 2 (Alternative 3) locations for the ground electrode system.

Region III Alternative Variations

The alternative variations analyzed in Region III are described below and depicted in **Figure 2-23**. The length of the alternative variations, associated access roads, and construction and operation disturbance areas along with those same statistics for the comparable portion of alternative routes are summarized in **Table 2-15**.

Table 2-15 Alternative Variation and Comparison Areas of Disturbance in Region III

Facilities	Length (miles)		Construction Disturbance (acres)						Operation Disturbance (acres)		
	600-kV T-Line	Access Road	Access Roads	Structures & Comm Sites	Stringing & Tensioning Sites	Work Areas[1]	Facilities Total	Additional ROW-veg clearing[2]	Access Roads	Structures & Comm Sites	Facilities Total
Ox Valley East	16	35	98	74	66	38	**276**	315	98	2	**100**
Alternative III-A Comparable	*15*	*34*	*94*	*67*	*57*	*34*	***252***	*285*	*94*	*1*	***95***
Ox Valley West	17	35	98	75	56	39	**268**	333	98	2	**100**
Alternative III-A Comparable	*15*	*34*	*94*	*67*	*57*	*34*	***252***	*285*	*94*	*1*	***95***
Pinto	29	46	108	136	134	71	**449**	572	108	3	**111**
Alternative III-A Comparable	*24*	*47*	*122*	*109*	*93*	*56*	***381***	*469*	*122*	*2*	***125***

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.
[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Ox Valley East Alternative Variation (Alternative III-A)

The Ox Valley East Alternative Variation was developed to address potential impacts to the Mountain Meadows NHL resulting from Alternative III-A. It would deviate from Alternative III-A toward the west near Enterprise, Utah, then run south through Ox Valley, rejoining Alternative III-A just south of Central, Utah.

Ox Valley West Alternative Variation (Alternative III-A)

The Ox Valley West Alternative Variation also was developed to address potential impacts to the Mountain Meadows NHL. It would begin and end with the Ox Valley East route, but follow a route further west near Enterprise.

Pinto Alternative Variation (Alternative III-A)

The Pinto Alternative Variation also addresses potential impacts to the Mountain Meadows NHL, as well as USFS IRAs. This variation would deviate from Alternative III-A to the east where the routes cross Utah State Highway 56 west of Cedar City. This variation generally would travel south, near the Pinto Canyon Road and rejoin Alternative III-A just north of the Ox Valley variations near Central.

Region III Alternative Connectors

The alternative connectors analyzed in Region III are described below and depicted in **Figure 2-23**. The length of the alternative connectors and associated access roads along with construction and operation disturbance areas are summarized in **Table 2-16**.

Table 2-16 Alternative Connector Area of Disturbance in Region III

	Length (miles)		Construction Disturbance (acres)						Operation Disturbance (acres)		
Facilities	600-kV T-Line	Access Road	Access Roads	Structures & Comm Sites	Stringing & Tensioning Sites	Work Areas[1]	Facilities Total	Additional ROW-veg clearing[2]	Access Roads	Structures & Comm Sites	Facilities Total
Avon	8	10	20	37	28	19	**104**	164	20	1	**21**
Moapa	13	17	33	61	43	31	**168**	264	33	1	**34**

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Avon Alternative Connector (Alternatives III-A, III-B, and III-C)

The Avon Alternative Connector would connect Alternatives III-B and III-C with Alternative III-A just south of the area where these routes diverge near Latimer. This connector also could be potentially utilized to pass from Alternative III-A to Alternatives III-B or III-C. The Avon connector was added to avoid potential impacts to greater sage-grouse

Moapa Alternative Connector (Alternatives III-A, III-B, and III-C)

The Moapa Alternative Connector would be located near Dry Lake, Nevada, and act as a connector between Alternatives III-A, III-B, and III-C.

Region III Ground Electrode System Alternative Facilities

The ground electrode system alternative locations in Region III are depicted in **Figure 2-23** and the lengths and disturbance areas are summarized in **Table 2-17**.

Table 2-17 Ground Electrode System Alternative Facility Lengths and Areas of Disturbance in Region III

	Length (miles)		Construction Disturbance (acres)				Operation Disturbance (acres)			
Southern Ground Electrode System Site Alternatives	34.5-kV AC Overhead Line	Access Road	Ground Electrode Sites	Over-head Lines	Access Roads	Total	Ground Electrode Sites	Over-head Lines	Access Roads	Total
Mormon Mesa-Carp Elgin Rd (Alternative III-A)	6	7	65	12	14	**91**	6	<1	14	**19**
Halfway Wash - Virgin River (Alternative III-A)	4	5	65	9	10	**84**	6	<1	10	**16**
Halfway Wash East (Alternative III-A)	8	10	65	18	20	**104**	6	<1	20	**26**
Mormon Mesa-Carp Elgin Rd (Alternative III-B)	8	10	65	18	20	**103**	6	<1	20	**26**
Halfway Wash - Virgin River (Alternative III-B)	6	7	65	13	14	**93**	6	<1	14	**20**
Halfway Wash East (Alternative III-B)	8	10	65	18	19	**102**	6	<1	19	**25**
Meadow Valley 2 (Alternative III-C)	22	29	65	49	60	**174**	6	<1	60	**66**
Delta (Design Option 2)	19	23	65	51	44	**160**	6	<1	44	**50**

2.5.1.4 Region IV: North Las Vegas to Marketplace Hub near Boulder City, Nevada

Region IV alternative reference lines are depicted in **Figure 2-24**. Alternative IV-A is the agency preferred alternative in Region IV. The length of alternative routes and associated access roads in Region IV are summarized in **Table 2-18**, and disturbance associated with construction and operation of each is summarized in **Table 2-19**. If Design Option 2 were implemented, the transmission line in this region would be constructed and operated as an AC transmission line (three conductors and structures to support them) (see **Figure 2-2**).

Table 2-18 Length of Alternative Routes and Associated Access Roads in Region IV

Facilities	Length (Miles)		
	IV-A	IV-B	IV-C
600kV T-Line	37	39	44
Access Roads	60	71	74

Table 2-19 Transmission Line Alternative Route Areas of Disturbance in Region IV

Facilities	Construction Disturbance (acres)			Operation Disturbance (acres)		
	IV-A	IV-B	IV-C	IV-A	IV-B	IV-C
Access Roads	144	176	177	144	176	177
Structures & Communication Sites	176	184	209	4	4	5
Stringing & Tensioning Sites	156	119	170	0	0	0
Work Areas[1]	90	94	107	0	0	0
Facilities Total	**566**	**573**	**663**	**148**	**180**	**182**
Additional ROW-veg clearing[2]	738	818	893	0	0	0

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Alternative IV-A (Applicant Proposed and Agency Preferred)

The TransWest proposed action would follow a designated WWEC, pass North Las Vegas to the east, and cross the congressionally designated Sunrise Mountain ISA. Crossing the ISA may entail congressional legislation modifying the designation (see Section 3.15, Special Designations, for details). It would run between Whitney, Nevada, and the Lake Las Vegas development skirting the edge of Henderson, Nevada. It would then turn in a general southwest direction to the Marketplace endpoint.

Alternative IV-B

Alternative IV-B was developed to provide an alternative that does not require crossing the Sunrise Mountain ISA. It would follow the proposed alternative for approximately 7 miles, diverge to the southeast as it passed directly east of Nellis Air Force Base and travel south through the Lake Mead NRA, passing between the Lake Las Vegas development and Lake Mead. Along the south edge of Lake Las Vegas, it would turn southwest, north of Boulder City, Nevada, then turn west and join with Alternative IV-A west of Henderson to the Marketplace endpoint.

Alternative IV-C

Alternative IV-C also would provide an alternative that would not cross Sunrise Mountain ISA. In addition, it would decrease impacts to populated areas. This alternative would follow Alternative IV-B through the Lake Mead NRA and between the Lake Las Vegas development and Lake Mead to north of Boulder City. It would then continue south before it turned southwest around the southeast edge of Boulder City, and into the Marketplace endpoint.

Region IV Alternative Variation

Marketplace Variation (Alternative IV-B)

The alternative variation analyzed in Region IV is described below and depicted in **Figure 2-24**. The length of the alternative variation, associated access roads, and construction and operation disturbance areas along with those same statistics for a comparable portion of an alternative route are summarized in **Table 2-20**.

Table 2-20 Alternative Variation and Comparison Areas of Disturbance in Region IV

	Length (miles)		Construction Disturbance (acres)						Operation Disturbance (acres)		
Facilities	600-kV T-Line	Access Road	Access Roads	Structures & Comm Sites	Stringing & Tensioning Sites	Work Areas[1]	Facilities Total	Additional ROW-veg clearing[2]	Access Roads	Structures & Comm Sites	Facilities Total
Marketplace	8	10	20	37	33	19	**109**	155	20	1	**21**
Alternative IV-B Comparable	*7*	*9*	*18*	*33*	*14*	*17*	***82***	*154*	*18*	*1*	***19***

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

The Marketplace Alternative Variation would decrease impacts to private lands. It would diverge from Alternative IV-B toward the west near Boulder City, Nevada, and reconnect with the Alternatives IV-A and IV-B near the proposed Southern Terminal.

Region IV Alternative Connectors

The alternative connectors analyzed in Region IV are described below and depicted in **Figure 2-24**. The length of the alternative connectors and associated access roads along with construction and operation disturbance areas are summarized in **Table 2-21**.

Table 2-21 Alternative Connectors Areas of Disturbance in Region IV

	Length (miles)		Construction Disturbance (acres)						Operation Disturbance (acres)		
Facilities	600-kV T-Line	Access Road	Access Roads	Structures & Comm Sites	Stringing & Tensioning Sites	Work Areas[1]	Facilities Total	Additional ROW-veg clearing[2]	Access Roads	Structures & Comm Sites	Facilities Total
Sunrise Mountain	3	4	8	13	11	6	**38**	50	8	<1	**8**
Lake Las Vegas	4	7	19	18	8	9	**54**	86	19	<1	**19**
Three Kids Mine	5	12	33	25	22	13	**93**	106	33	1	**34**
River Mountain	7	19	56	32	37	17	**142**	132	56	1	**57**
Railroad Pass	3	6	14	14	23	7	**58**	48	14	<1	**14**

[1] Work areas include staging areas, concrete batch plants, storage yards, and helicopter fly yards.

[2] Additional ROW-vegetation clearing is the remainder of the area within the ROW that is not included in construction or operation facilities disturbance that may experience some degree of vegetation clearing (e.g., mowing, woody vegetation clearing, overland travel) during construction.

Sunrise Mountain Alternative Connector (Alternatives IV-A, IV-B, and IV-C)

The Sunrise Mountain Alternative Connector would pass between Alternative IV-B (and IV-C) and Alternative IV-A on the northern border of the Lake Mead NRA.

Lake Las Vegas Alternative Connector (Alternatives IV-A, IV-B, and IV-C)

The Lake Las Vegas Alternative Connector would connect Alternative IV-B (and IV-C) and Alternative IV-A just south of each alternative's crossing of Las Vegas Wash, and would be located south of Lake Las Vegas along Lake Mead Boulevard.

Three Kids Mine Alternative Connector (Alternatives IV-A, IV-B, and IV-C)

The Three Kids Mine Alternative Connector would connect Alternative IV-B (and IV-C) and Alternative IV-A just south of the Lake Las Vegas Alternative Connector, and would be located south of the Three Kids Mine.

River Mountains Alternative Connector (Alternatives IV-A, IV-B, and IV-C)

The River Mountains Alternative Connector variation would connect Alternative IV-B (and IV-C) and Alternative IV-A from the point where Alternatives IV-B and IV-C would deviate north of Boulder City, to the point where Alternative IV-A would turn southwest toward the Marketplace endpoint.

Railroad Pass Alternative Connector (Alternatives IV-A and IV-B)

The Railroad Pass Alternative Connector would connect Alternative IV-A with Alternative IV-B from the point where Alternative IV-A would turn southwest on the west side of Boulder City to a point directly south on Alternative IV-B.

2.6 No Action Alternative

Under the No Action Alternative, the BLM or USFS would not issue ROW grants or special use permits and the Project would not be constructed.

Under the No Action Alternative, Western would not provide funding to the Project.

2.7 Alternatives Considered but Eliminated From Detailed Analysis

Figure 2-5 depicts the corridors considered during the scoping period, those that were added as a result of scoping comments, and those that have been eliminated from further consideration in the EIS. The alternative corridor segments listed in **Table 2-22** were considered through the public scoping period, but have subsequently been eliminated from detailed analysis in this EIS by the lead agencies for the reasons noted. Evaluations of segments that were eliminated from further analysis and more detailed rationales for their removal are provided in **Appendix B**.

Table 2-22 Alternatives Considered but Eliminated From Detailed Analysis

Rationale for Elimination From Detailed Analysis
Western Wyoming: Rock Springs (Region I)
Provides no benefits beyond those provided by the existing range of alternatives; equal or greater impacts to alternatives being retained for detailed analysis: • Land Use: Crossing of ROW exclusion area (Red Creek ACEC). Not compliant with Wyoming Governor's EO 2011-5. • Visual Resources: Visibility from Dinosaur National Monument and Flaming Gorge National Scenic Byway. Crossed Green River in segment eligible for Wild-and-Scenic status.

Table 2-22 Alternatives Considered but Eliminated From Detailed Analysis

Rationale for Elimination From Detailed Analysis
Wyoming-Colorado: Craig, Meeker, Rifle, Parachute, Grand Junction, and connector to the west (Region I)
Provides no benefits beyond those provided by the existing range of alternatives; equal or greater impacts to alternatives being retained for detailed analysis: • Land commitment: Greater length, use of private lands. • Visual Resources: Overall visibility to the public in the Grand Valley. • Siting: Located near other transmission lines for entire length, requiring construction across steep side slope terrain in narrow valleys.
Emery County, Utah: multiple corridors near the San Rafael Swell (Region II)
Provides no benefits beyond those provided by the existing range of alternatives; equal or greater impacts to alternatives being retained for detailed analysis: • Cultural Resources: Old Spanish NHT impacts. • Visual Resources: Scenic quality and setting changes to historic sites.
Emery, Sanpete, and Juab counties Utah: two USFWS proposed re-routes (Region II)
Provides no benefits beyond those provided by the existing range of alternatives; equal or greater impacts to alternatives being retained for detailed analysis (**Figure 2-20**): • Land Use: Eastern reroute bisects IRAs for approximately 15 miles and western reroute deviates from designated utility corridor and crosses private lands, including center-pivot irrigated agricultural lands. • Visual Resources: Eastern reroute passes through relatively undisturbed areas noted for scenic quality. • Biological Resources: Stated intent was to avoid mapped greater sage-grouse habitat; however existing alternatives to the south avoid said habitat.
Far west corridor between Delta, Utah, and U.S. Highway 93 crossing, Nevada (Region III)
Provides no benefits beyond those provided by the existing range of alternatives; equal or greater impacts to alternatives being retained for detailed analysis: • Land commitment: Greater length relative to other corridors near I-15. • Visual Resources: Large section in western Utah where no other transmission lines or other utilities currently exist. • Visual Resources: Visibility from the Great Basin National Park.
West side of Las Vegas (Region IV)
Provides no benefits beyond those provided by the existing range of alternatives; equal or greater impacts to alternatives being retained for detailed analysis: • Land Use: No available buffer to avoid both residential lands and Red Rocks National Conservation Area (NCA).

During scoping, numerous questions were raised regarding the ability to route all or portions of the transmission line underground. Underground cable systems have been considered and evaluated for the Project. To date, underground cable technology is not commercially available at the very high voltage and capacity levels (i.e., 600-kV and 3,000-MW) required to meet the proponent's objectives. The technology is not presently available, nor is it reasonably foreseeable that it would become available within the time frame for the construction of the Project. While there are theoretical and laboratory experiments in place that could conceivably be applied to the voltage and capacity levels of the proposed Project, there are no AC or DC underground installations worldwide above 500 kV or 2,000 MW either in-service or planned to be in-service in the next decade (TWE 2011). Therefore, undergrounding all or portions of the Project was not considered a viable alternative and has been eliminated from further analysis (**Appendix D**).

2.8 Comparison of Alternatives

2.8.1 Agency Preferred Alternative

The alternative preferred by the BLM within each project region was identified with input from USFS and other cooperating agencies using criteria linked to CEQ criteria for determining significant impacts. These criteria were broadened and refined based on input from the Project's cooperating agencies regarding other key resource concerns as follows:

1. Maximizes the use of appropriate (e.g., non-underground-only) existing designated utility corridors by locating within or paralleling areas of existing utility ROWs.
2. Minimizes the need for plan amendments through conformance to land use plans.
3. Avoids or minimizes resource impacts that are regulated by law (ESA, CWA, Clean Air Act [CAA], NHPA, Wilderness, WSAs, ISAs, IRAs, etc.), after consideration of project design features and agency BMPs. This includes impacts to greater sage-grouse.
4. Avoids or minimizes proximity to private residences and residential areas, thereby addressing concerns with public health and safety, aesthetics, visual effects, and others.
5. Avoids or minimizes resource impacts that demonstrate potentially unavoidable adverse impacts (residual impacts) after consideration of project design features and agency BMPs, even though they may not be specifically regulated by law.
6. Minimizes use of private lands, assuming natural resource impacts are more or less similar.
7. If multiple alternatives meet the preceding criteria, the agency preferred alternative would be the alternative that minimizes construction, operation, and maintenance expense and/or time.

Although these criteria have guided the agency preferred alternative selection process, trade-offs between items on the list occur. Parameters were established to define priorities to determine which alternatives best fulfill the criteria. These parameters are listed below and reflected in the summary tables that follow with the corresponding number/letter.

1. Existing designated utility corridors
    a. Distance within designated utility corridor (by BLM, USFS, and total)
2. Land use plan conformance
    a. Location and reason for plan amendment (by BLM, USFS, and total)
3. Resource impacts regulated by law
    a. Greater sage-grouse: amount of core habitat crossed and active leks within 4 miles
    b. Special status raptors: number of nests within 1 mile
    c. Canada Lynx: amount of habitat crossed
    d. USFWS critical desert tortoise: amount of habitat crossed
    e. Utah prairie dog: amount of habitat crossed
4. Public health and safety concerns
    a. Number of residences within 500 feet
    b. Adjacent communities within project corridor

5. Resource impacts not regulated by law
    a. Wildlife: amount of habitat crossed (by BLM, USFS, and total)
    b. Number of raptor nests within 1 mile
    c. Listing of areas of visual and recreation importance: adjacent areas of higher viewer sensitivity and large undeveloped landscapes crossed
    d. Historic Trails: count crossed and amount within 2 miles of trails
    e. LWCs and IRAs: amount crossed and context of crossing
    f. Greenfield construction: amount crossed
6. Minimal use of private lands
    a. Jurisdiction: amount crossed (by BLM, USFS, private)
7. Expense
    a. Total miles: more miles equate to more expense
    b. Miles of helicopter only construction areas crossed (based on ground constraints)

2.8.2 Summary of Impacts by Region and Alternative

A summary of impacts to the Project's action alternatives as described in Chapter 3.0 is provided by Project region in **Tables 2-23** through **2-26**. The alternative segments comprising the agency preferred alternative are highlighted in gray to facilitate comparison with the other action alternative segments. **Table 2-27** compares the applicant proposed route with the agency preferred route on a Project-wide basis (sum of impact parameters across the four Project regions).

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Region I					
Climate and Air					
	Fugitive Dust Emissions (particulate matter[PM] with an aerodynamic diameter of 10 microns or less [PM_{10}])	119.2 tons	121.2 tons	143.1 tons	130.6 tons
Geology					
	Geologic Hazards Risk	No faults, low landslide, low subsidence.	Same as Alternative I-A	Same as Alternative I-A except for historic coal mining areas posing increased risk of subsidence.	Same as Alternative I-A
	Mineral Resource Access	7 oil and gas fields crossed.	12 oil and gas fields crossed.	8 oil and gas fields crossed. No potential coal lease tracts are crossed.	7 oil and gas fields crossed.
	Paleontological Resources Loss	92 miles Potential Fossil Yield Classification (PFYC) Class 5.	111 miles PFYC Class 5.	74 miles PFYC Class 5.	123 miles PFYC Class 5.
Soils					
	Soils – Wind Erodible	231 acres	239 acres	270 acres	238 acres
	Soils – Water Erodible	259 acres	271 acres	301 acres	269 acres
	Soils – Compaction Prone	579 acres	525 acres	947 acres	706 acres
	Soils – limited revegetation potential (LRP)	741 acres	786 acres	558 acres	913 acres
	Soils – Prime Farmland	129 acres	136 acres	293 acres	136 acres
Water					
	Erosion and Sedimentation Direct Effects from Crossings	Two perennial stream crossings	Two perennial stream crossings	19 perennial stream crossings	Four perennial stream crossings
	Impaired Stream Effects from Crossings	Two impaired streams crossed	Two impaired stream crossed	Three impaired stream crossed (seven crossings)	Two impaired stream crossed
	Effects to Water Users from Construction Water Use	116 acre-feet required	119 acre-feet required	139 acre-feet required	128 acre-feet required
	Maximum Road Density Change in Watershed (Hydrographic Unit Code [HUC]10, 300-foot or 100-foot perennial buffer area)	0.10 mile/$mile^2$ (multiple watersheds)	0.10 mile/$mile^2$ (Wolf Creek Watershed)	0.40 mile/$mile^2$ (300 foot: Fourmile Creek Watershed)	0.10 mile/$mile^2$ (multiple watersheds)

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Vegetation					
	Vegetation clearing of woody vegetation over 6 feet in height	1 acre of conifer forest, 43 acres of pinyon-juniper, 28 acres of woody riparian and wetlands	1 acres of conifer forest, 45 acres of pinyon-juniper, and 29 acres of woody riparian and wetlands	1 acre of conifer forest, 46 acres of pinyon-juniper, and 23 acres of woody riparian and wetlands	1 acre of conifer forest, 45 acres of pinyon-juniper, and 24 acres of woody riparian and wetlands
Vegetation (Continued)	Wetlands and Riparian Areas impacted by Facilities Construction (acres)	21 acres of greasewood flat, 23 acres of herbaceous wetlands, 16 acres of woody riparian and wetlands	78 acres of greasewood flat, 15 acres of herbaceous wetlands and 17 acres of woody riparian and wetlands	31 acres of greasewood flat, 7 acres of herbaceous wetlands and 19 acres of woody riparian and wetlands	41 acres of greasewood flat, 29 acres of herbaceous wetlands and 15 acres of woody riparian and wetlands
	Wetlands and Riparian Areas impacted by Operations (acres)	6 acres of greasewood flat, 5 acres of herbaceous wetlands, 4 acres of woody riparian and wetlands	17 acres of greasewood flat, 3 acres of herbaceous wetlands and 4 acres of woody riparian and wetlands	8 acres of greasewood flat, 2 acres of herbaceous wetlands, and 5 acres of woody riparian and wetlands	9 acres of greasewood flat, 6 acres of herbaceous wetlands and 3 acres of woody riparian and wetlands
	USFS Management Indicator Species (MIS) Species	Alternative does not cross USFS lands	Alternative does not cross USFS lands	Alternative does not cross USFS lands	Alternative does not cross USFS lands
Special Status Plants					
	Number of USFWS species with known occurrences impacted	0	0	0	0
	Number of USFWS species with potential habitat impacted	1	1	1	1
	Number of BLM sensitive species with known occurrences impacted	3	3	3	3
	Number of BLM sensitive species with potential habitat impacted	22	22	20	22
Wildlife					
(5.a)	Pronghorn crucial winter range (acres) construction/operation	292/80	285/72	767/172	440/102
	Mule deer crucial winter range (acres) construction/operation	319/88	280/69	1,162/280	450/99
	Elk crucial winter range (acres) construction/operation	309/83	401/101	1,342/347	401/101

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Wildlife (Continued)	Small game, nongame habitat (acres) construction/operation	5,159/512	5,252/482	6,188/599	5,644/516
	Waterfowl habitat (acres) construction/operation	110/9	90/8	59/7	120/10
(5.b)	Number of raptor nests within 1 mile of the reference line	60	96	149	94
	Number of Important Bird Areas (IBAs) crossed by the 2-mile transmission line corridor	9,708	Powder Rim (9,456 acres)	Muddy Creek Wetlands (2,023 acres)	Powder Rim (11,988 acres) Muddy Creek Wetlands (3,131 acres)
Special Status Wildlife					
	Impacted potential black-footed ferret habitat (acres) construction/operation	150/42	232/55	79/22	180/46
(3.a)	Impacted greater sage-grouse habitat (acres) construction/operation	1,034/280	991/251	1,611/415	991/251
(3.a)	Total number of occupied leks within 4 miles of reference line	41	40	59	47
	Impacted western yellow-billed cuckoo potential habitat (acres) construction/operation	43/4	46/4	41/5	39/3
(3.b)	Number of special status raptor nests within 1 mile of reference line	187	225	330	208
Aquatic Biological Resources					
	Effects on aquatic habitat and species from potential direct and indirect disturbance or water quality changes	2 perennial streams crossed by the 250-foot-wide transmission line ROW; 2 game fish streams crossed by the 250-foot-wide transmission line ROW	2 perennial streams crossed by 250-foot-wide transmission line ROW; 2 game fish streams crossed by the 250-foot-wide transmission line ROW	18 perennial streams crossed by 250-foot-wide transmission line ROW; 6 game fish streams crossed by the 250-foot-wide transmission line ROW	2 perennial streams crossed by 250-foot-wide transmission line ROW; 2 game fish streams crossed by the 250-foot-wide transmission line ROW
	Potential aquatic habitat alteration or loss ($feet^2$)	0	0	3,600	0
	Potential amphibian mortalities from vehicle traffic	155 ROW miles	159 ROW miles	186 ROW miles	171 ROW miles

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Special Status Aquatic Resources					
	Effects on habitat and special status species from potential direct disturbance or water quality changes	2 perennial streams with special status aquatic species crossed by 250-foot ROW	2 perennial streams with special status aquatic species crossed by 250-foot ROW	7 perennial streams with special status aquatic species crossed by 250-foot ROW	2 perennial streams with special status aquatic species crossed by 250-foot ROW
		2 streams with federally listed or petitioned aquatic species	2 streams with federally listed or petitioned aquatic species	1 stream with federally listed or petitioned aquatic species	2 streams with federally listed or petitioned aquatic species
	Number of special status aquatic species with potential habitat alteration or loss	0	0	5	0
	Number of watersheds supporting special status aquatic species with increased road densities	2	2	7	2
	Potential direct disturbance on critical habitat for federally listed species	1 acre	1 acre	3 acres	1 acre
Cultural Resources					
	NRHP-listed Sites	0	0	0	0
	NRHP-eligible Sites	19	19	24	19
	Unevaluated Sites	9	8	14	11
	Potential traditional cultural properties (TCPs)	0	1	0	1
	Trail Crossings	Cherokee Trail (1) (contributing)	Cherokee Trail (1) (contributing)	Cherokee Trail (1) (contributing)	Cherokee Trail (3) (non-contributing)
		Overland Trail (1) (contributing)	Overland Trail (1) (contributing)	Overland Trail (1) (contributing)	Overland Trail (1) (contributing)
		Rawlins to Baggs Road (1) (unknown if contributing)	Rawlins to Baggs Road (1) (unknown if contributing)	Rawlins to Baggs Road (3) (1 contributing, 2 unknown)	Rawlins to Baggs Road (1) (unknown if contributing)
	Average Inventory Coverage	14%	9%	9%	35%
	Site Density (sites per 100 acres inventoried)	3	5	4	4.7
	Overall Trail/Road Visibility (within 5-mile viewshed)	92 miles (including the Lincoln Highway)	83 miles (including the Lincoln Highway)	99 miles (including the Lincoln Highway)	101 miles (including the Lincoln Highway)

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Visual Resources					
	High Sensitivity Viewers (miles)				
	0–0.5 miles	13	13	73	20
	0.5–2.5 miles	73	64	87	105
	2.5–5 miles	48	57	24	41
	>5 miles	20	25	1	6
	Moderate Sensitivity Viewers (miles)				
	0–0.5 miles	10	15	67	13
	0.5–2.5 miles	53	54	96	68
	2.5–5 miles	44	51	23	62
	>5 miles	47	39	--	29
	Scenic Quality (miles)				
	A	<1	1	<1	1
	B	61	60	94	76
	C	93	98	91	95
	BLM Visual Resource Inventory (VRI) Classifications (miles)				
	Class II	28	40	28	32
	Class III	41	22	60	39
	Class IV	85	97	97	101
	BLM Visual Resource Management (VRM) Classifications (miles)				
	Class II	--	--	--	--
	Class III	72	88	38	85
	Class IV	43	25	45	44
	USFS Scenic Integrity Objective (SIO)/Visual Quality Objective (VQO) Classifications (miles)				
	High Retention	--	--	--	--
	Moderate Partial Retention	--	--	--	--
	Low Modification	--	--	--	--

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Visual Resources	Residual Impacts Landscape Scenery (miles)				
(Continued)	High	58	57	52	59
(5.c)	Moderate	53	51	59	62
	Low	44	51	75	51
	Residual Impacts High Sensitivity Viewers (miles)				
	High	7	7	28	10
(5.c)	Moderate	96	93	117	120
	Low	51	60	41	42
	Residual Impacts Moderate Sensitivity Viewers (miles)				
	High	8	12	31	11
	Moderate	38	38	81	38
	Low	109	109	74	122
	BLM VRM USFS SIO/VQO Compliance/Consistency (miles) Before Mitigation				
	Compliant	110	105	82	115
	Non-compliant	5	8	<1	14
	NA	40	46	104	43
	BLM VRM USFS SIO/VQO Compliance/Consistency (miles) After Mitigation				
	Compliant	110	105	82	115
	Non-compliant	5	8	<1	14
	NA	40	46	104	43
Recreation					
	Recreation Area/Site in Region I	250-foot ROW Acres (% of total area)	250-foot ROW Acres (% of total area)	250-foot ROW Acres (% of total area)	250-foot ROW Acres (% of total area)
		2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)
	Rawlins FO				
	BLM dispersed undesignated	1,764 (0.05%)	1,847 (0.08%)	1,350 (0.04%)	2,297 (0.06%)
	recreation areas	78,251 (2.2%)	76,336 (2.2%)	58,224 (1.7%)	94,929 (2.7%)

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Recreation (Continued)	Continental Divide National Scenic Trail (CDNST) Special Recreation Management Area (SRMA)	1 mile/5 acres (0.8%)	1 mile/5 acres (0.8%)	1 mile/5 acres (0.8%)	1 mile/5 acres (0.8%)
		191 (31.8%)	191 (31.8%)	191 (31.8%)	191 (31.8%)
	Adobe Town Dispersed Recreation Use Area (DRUA)	N/A	101 (0.4%)	N/A	N/A
			4,420 (1.8%)		
	Little Snake FO				
	BLM dispersed undesignated recreation areas	1,328 (0.1%)	1,217 (0.09%)	770 (0.06%)	1,217 (0.09%)
		51,779 (4.1%)	63,149 (5.0%)	28,639 (2.3%)	63,149 (5.0%)
	South Sand Wash SRMA	N/A	N/A	N/A	N/A
	Juniper Mountain SRMA	N/A	N/A	40 (2.2%)	N/A
				1,437 (80.7%)	
	Serviceberry SRMA	N/A	N/A	0	N/A
				1,462 (11.8%)	
	Little Yampa Canyon SRMA	N/A	N/A	0	N/A
				<1 (0%)	
	BLM White River FO				
	Dispersed, undesignated recreation areas	373 (0.03%)	373 (0.03%)	373 (0.03%)	373 (0.03%)
		13,799 (0.9%)	13,799 (0.9%)	13,799 (0.9%)	13,799 (0.9%)
	Other Federal Recreation Areas				
	Dinosaur National Monument	N/A	N/A	N/A	0
					16 (<0.01%)
	State Recreation Areas				
	Wyoming				
	Red Rim-Daley Wildlife Habitat Management Area (WHMA)	58 (0.2%)	58 (0.2%)	58 (0.2%)	58 (0.2%)
		2,847 (11.3%)	2,847 (11.3%)	2,847 (11.3%)	2,847 (11.3%)
	Upper Muddy Creek Watershed/Grizzly WHMA	N/A	N/A	19 (0.3%)	N/A
				1,015 (1.7%)	

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Recreation	Colorado				
(Continued)	Yampa River State Wildlife Area	N/A	N/A	0	N/A
	(SWA)			199 (23.1%)	
	Bitter Brush SWA	N/A	N/A	107 (1.3%)	N/A
				4,921 (61.1%)	
	Raftopolous Hunting Lease	0	N/A	N/A	N/A
		617 (5.4%)			
	Yampa River State Park	1 river crossing; 1 access point	1 river crossing; 0 access points	3 river crossings; 4 access points	1 river crossing 0 access points
	Local Recreation Areas				
	Juniper Hot Springs	N/A	N/A	0	N/A
				Entire Site	
Land Use and Planning					
(6.a)	Federal and State lands and	155 miles total: 74% located on BLM lands; 1% on state lands.	159 miles total: 71% locate don BLM lands; 3% on state lands.	186 miles total: 44 % located on BLM -managed lands; 9% on state lands	171 miles total: 74% located on BLM -managed lands; 3% on state lands.
(1.a)	Use of Designated Utility Corridors	7 miles in BLM RMP utility corridors and 4 miles in WWEC.	18 miles in BLM RMP utility corridors and 37 miles in WWEC.	60 miles in BLM RMP utility corridors and 38 miles in WWEC.	7 miles in BLM RMP utility corridors and 54 miles in WWEC.
	Avoidance/Exclusion areas crossed by reference line	Designated avoidance areas are crossed by the reference line for 1 mile in the Rawlins FO around the Overland Trail and Cherokee Trail areas. No exclusion areas	Same as Alternative I-A.	Designated avoidance areas are crossed by the reference line for 1 mile in the Rawlins FO around the Overland Trail and Cherokee Trail areas and 1 mile of Juniper Mountain.	Designated avoidance areas are crossed by the reference line for 3 miles in the Rawlins FO around the Overland Trail and Cherokee Trail areas.
(6.a)	Private Lands and Zoning	38 miles (25%) located on private land.	41 miles (26%) located on private land. 47 commercial/industrial structures and three outbuildings within 500 feet of the proposed reference line.	86 miles (47%) located on private land. 9 residences and 24 commercial structures within 500 feet of the proposed reference line.	39 miles (23%) would be located on private land. 34 commercial/industrial structures within 500 feet of the proposed reference line.

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Land Use and Planning (Continued)		45 commercial/industrial structures within 500 feet of the proposed reference line.	No communities within the 2-mile transmission line corridor.	1 community within the 2-mile transmission line corridor, no identified incompatible land uses within those communities.	No communities within the 2-mile transmission line corridor.
		No communities within the 2-mile transmission line corridor.			
(5.f)	Greenfield	93 miles (60%)	91 miles (57%)	88 miles (47%)	109 miles (64%)
	Agriculture	19 acres of initial clearing, 14 acres of construction disturbance, and four acres of permanent removal of croplands.	27 acres of initial clearing, 18 acres of construction disturbance, and 5 acres of permanent removal of croplands.	357 acres of initial clearing, 255 acres of construction disturbance, and 68 acres of permanent removal of croplands.	27 acres of initial clearing, 18 acres of construction disturbance, and five acres of permanent removal of croplands.
	Livestock Grazing	Construction impacts 5,159 acres (258 animal unit months [AUMs]); Operation impacts 501 acres (25 AUMs)	Construction impacts 5,268 acres (263 AUMs); Operation impacts 477 acres (24 AUMs)	Construction impacts 4,949 acres (247 AUMs); Operation impacts 452 acres (23 AUMs)	Construction impacts 5,655 acres (263 AUMs); Operation impacts 505 acres (25 AUMs)
Special Designation Areas					
	Rawlins FO	Approximately 0.2 mile of reference line (5 acres of 250-foot-wide transmission line ROW) would be located within the CDNST SRMA. This is less than 1 percent of the SRMA. The 2-mile transmission line corridor encompasses 181 acres of the CDNST SRMA, 68 percent of the SRMA.	Same as Alternative I-A	Same as Alternative I-A	Same as Alternative I-A
	NPS	16 acres of entrance road to Dinosaur National Monument within 2-mile corridor; presence of construction equipment, personnel, or traffic could reduce the quality of site visitation during construction.	Same as Alternative I-A	Same as Alternative I-A	Same as Alternative I-A

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Special Designation Areas (Continued)		1 segment of the CDNST would be crossed. 4 acres within the 250-foot ROW and 179 acres with the 2-mile corridor. Impacts to the trail itself would be minimized by the placement of the transmission line ROW within a designated overhead utility corridor; towers would be placed to avoid surface disturbance near the actual trail.	Same as Alternative I-A	Same as Alternative I-A	Same as Alternative I-A
(5.d)	NHTs	1 contributing segment of the Overland Trail Crossed. Visible along 9 miles of trail, 5 of which are contributing.	1 contributing segment of the Overland Trail Crossed. Visible along 10 miles of trail, 4 of which are contributing.	1 contributing segment of the Overland Trail Crossed. Visible along 7 miles of trail, 6 of which are contributing.	1 contributing segment of the Overland Trail Crossed. Visible along 9 miles of trail, 4 of which are contributing.
		1 contributing segment of the Cherokee Trail Crossed. Visible along 24 miles of trail, 10 of which are contributing.	1 contributing segment of the Cherokee Trail Crossed. Visible along 9 miles of trail, 4 of which are contributing	1 contributing segment of the Cherokee Trail Crossed. Visible along 11 miles of trail, 4 of which are contributing	1 contributing segment of the Cherokee Trail Crossed. Visible along 28 miles of trail, 10 of which are contributing
Transportation					
	Total Miles of New Permanent Access Roads	227 miles	223 miles	269 miles	242 miles
	(Beneficial effect is highest for the highest number of miles)				
	Total Miles of Steep and Mountainous Terrain	66	39	67	41
	Road Crossings	4	4	5	4
	Railroad Crossings	0	0	3	0
	Center Line Passing Through Public Land (miles)	117	118	100	133

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Transportation (Continued)	Center Line Passing Through Private Land (miles)	38	41	86	39
	Number of Airports within 5 Miles	2	2	6	2
	Military Operations Areas (MOAs) within 20 Miles	0	0	0	0
	MOAs with 250-foot-wide Transmission Line ROW Overlap	0	0	0	0
Socioeconomics					
	Short-term Socioeconomic effects	Temporary increases in local employment, demand on temporary housing, and public facilities and services.	Comparable to Alternative I-A.	Comparable to Alternative I-A.	Comparable to Alternative I-A.
		Temporary increases in sales, use and lodging taxes.	Slightly higher economic effects due to increased length and cost of power line.	Up to 20% higher economic effects due to increased length and cost of power line.	Up to 15% higher economic effects due to increased length and cost of power line.
		Effects concentrated in the Rawlins area, due to development of the northern terminal, ground electrode and the transmission line. Effects associated with terminal would be of longer duration	Essentially the same as Alternative I-A	Effects more focused in Colorado (Craig area) and some impact shifting in Wyoming (from Wamsutter to Baggs and Dixon) than under Alternative I-A	Comparable to Alternative I-A, with some shifts in Wyoming, from Wamsutter to Baggs and Dixon.
		Effects to agriculture primarily associated with limited temporary reductions of grazing on public lands.	Comparable to Alternative I-A	Less effect on livestock grazing on public lands, higher potential effects on irrigated farming and ranching.	Comparable to Alternative I-A
	Long-term socioeconomic effects	Little long-term effects on employment, population, housing need or public services.	Essentially the same as Alternative I-A	Essentially the same as Alternative I-A, with some geographic redistribution between Colorado and Wyoming.	Essentially the same as Alternative I-A

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Socioeconomics (Continued)		Substantial ad valorem taxes paid; primarily to Carbon County and Carbon County School District #1 (WY), with lesser revenues to Sweetwater (WY), Moffat County (CO), and other taxing jurisdictions.	Essentially the same as Alternative I-A	Essentially the same as Alternative I-A	Essentially the same as Alternative I-A
		Limited effects on property values, social values, and limited conflicts with outdoor recreation. Limited private land and existing energy resource development in proximity to much of the ROW.	Comparable to Alternative I-A	Higher potential social effects due to proximity to private lands and visibility from highways.	Comparable to Alternative I-A
		Federal government and other lessors gain ROW rental/lease income.	Essentially the same as Alternative I-A	Slightly higher than Alt. I-A due to increased length of the ROW.	Slightly higher than Alt. I-A due to increased length of the ROW.
		No Environmental Justice concerns, although facilities are located near the Wyoming State Penitentiary.	Same as Alternative I-A	Same as Alternative I-A	Same as Alternative I-A
Health and Safety					
	Serious injuries to workers and the public at-large	Workers during construction and operation may be injured by heavy equipment, working at heights, working in the vicinity of high voltage equipment, as well as from typical hazards found on a construction site. The workers and the public may be injured by fire as well as downed power lines.	Same as Alternative I-A	Same as Alternative I-A	Same as Alternative I-A

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Health and Safety (Continued)	Adverse health impacts from electric and magnetic fields (EMF), stray voltage, and induced voltage associated with transmission lines.	Three outbuildings and 11 commercial/industrial structures would be within 200 feet of the reference line, resulting in potential impacts from EMF, stray voltage, and induced voltage.	Seven outbuildings and 9 commercial/industrial structures would be within 200 feet of the reference line, resulting in the potential for slightly greater impacts from EMF, stray voltage, and induced current than Alternative I-A.	Eleven outbuildings and 24 commercial/ industrial structures would be within 200 feet of the reference line, resulting in the potential for greater impacts from EMF, stray voltage, and induced current than Alternative I-A.	Three outbuildings and 39 commercial/industrial structures would be within 200 feet of the reference line, resulting in the potential for greater impacts from EMF, stray voltage, and induced current than Alternative I-A.
(4.a) (4.b)	Noise impacts to nearby communities and residences	There would be no communities within the 2-mile transmission line corridor and no residential structures within 500 or 200 feet of the reference line, resulting in negligible impacts from noise with this alternative.	There would be no communities within the 2-mile transmission line corridor and no residential structures within 500 or 200 feet of the reference line, resulting in impacts from noise that are similar to Alternative I-A.	There would be one community within the 2-mile transmission line corridor and nine residential structures within 500 feet of the reference line, resulting in impacts from noise that are greater than Alternative I-A.	There would be no communities within the 2-mile transmission line corridor and no residential structures within 500 or 200 feet of the reference line, resulting in impacts from noise that are similar to Alternative I-A.
Wild Horses					
	Temporary and permanent loss of forage areas	407 acres of 250-foot-wide transmission line ROW within the Adobe Town Herd Management Area (HMA) (0.1% of the HMA). 174 acres of temporary disturbance, 47 acres permanent. 244 acres of 250-foot-wide transmission line ROW within the Sand Wash Basin HMA (0.1% of the HMA). 110 acres of temporary disturbance, 30 acres permanent.	499 acres of 250-foot-wide transmission line ROW within the Adobe Town HMA (0.1% of the HMA). 218 acres of temporary disturbance, 48 acres permanent. No acres of 250-foot-wide transmission line ROW within the Sand Wash Basin HMA. 2 acres of temporary disturbance, 1 acre permanent.	N/A	36 acres of 250-foot-wide transmission line ROW within the Adobe Town HMA (<0.1% of the HMA). 26 acres of temporary disturbance, 5 acres permanent. No acres of 250-foot-wide transmission line ROW within the Sand Wash Basin HMA. 2 acres of temporary disturbance, 1 acre permanent.

Table 2-23 Summary of Impacts for Region I

Resource	Resource Topic	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Wild Horses (Continued)	Temporary construction noise and human activity	17,248 acres of 2-mile transmission line corridor within the Adobe Town HMA (3.6% of HMA). 8,163 acres of 2-mile transmission line corridor within the Sand Wash Basin HMA (5.2% of the HMA).	20,948 acres of 2-mile transmission line corridor within the Adobe Town HMA (4.4% of HMA). 695 acres of 2-mile transmission line corridor within the Sand Wash Basin HMA (0.4% of the HMA).	N/A	4,038 acres of 2-mile transmission line corridor within the Adobe Town HMA (0.9% of HMA). 695 acres of 2-mile transmission line corridor within the Sand Wash Basin HMA (0.4% of the HMA).
	Presence of transmission line within HMAs/herd areas (HAs) restrict helicopter use during wild horse gathers	13 miles of transmission line within the Adobe Town HMA. 8 miles of transmission line within the Sand Wash Basin HMA.	17 miles of transmission line within the Adobe Town HMA. No miles of transmission line within the Sand Wash Basin HMA.	N/A	One mile of transmission line within the Adobe Town HMA. No miles of transmission line within the Sand Wash Basin HMA.
Lands with Wilderness Characteristics (LWC)					
(5.e)	Number of LWC Units Affected	8	9	2	8
(5.e)	Number (acres) of LWC Units Eliminated	1 (5,356)	2 (11,699)	0	2 (11,699)
(5.e)	Number (acres) of LWC Units Remaining	7 (46,188)	7 (50,202)	2 (20,412)	6 (44,108)
(5.e)	Number (acres) of Unit Portions Eliminated	7 (6,693)	8 (8,211)	2 (3,676)	7 (8,200)
Plan Amendments					
(2.a)	Location, length, and reason for plan amendment	RFO (58 miles)—expand existing and designate new utility corridor LSFO (42 miles)—new utility corridor	RFO (61 miles)—expand existing and convert/expand underground-only ROW LSFO (37 miles)—new utility corridor	RFO (27 miles)—expand existing utility corridors	RFO (76 miles)—expand existing and designate new utility corridor LSFO (37 miles)—new utility corridor

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Region II							
Climate and Air Quality							
	Fugitive Dust Emissions (PM_{10})	205.6 tons	272.4 tons	282.4 tons	210.2 tons	212.9 tons	211.0 tons
Geology							
	Geologic Hazards Risk	Three active faults crossed. Moderate risk for ground motion. Moderate to high risk for landslide impacts. Low to moderate risk for ground subsidence.	Four active faults crossed. Same as Alternative II-A, except increased risk for subsidence due to active and historic underground coal mining.	Five active faults crossed. Same as Alternative II-A.	Two active faults crossed. Moderate risk for ground motion. Moderate to high risk for landslide impacts. Increased risk for subsidence due to historic coal mining.	Two active faults crossed. Moderate risk for ground motion. Moderate to high risk for landslide impacts.	Same as Alternative II-D.
		6 oil and gas fields crossed. Encroaches on propose coal mine permit area, Deserado Mine.	15 oil and gas fields crossed. Approximately 15.0 miles of active coal mine permit areas.	15 oil and gas fields crossed. Approximately 3.0 miles of active coal mine permit areas.	5 oil and gas fields crossed. Approximately 5 miles of active coal mine permit areas.	5 oil and gas fields crossed. Encroaches on proposed coal mine permit area, Deserado Mine.	7 oil and gas fields crossed. Encroaches on proposed coal mine permit area, Deserado Mine.
	Paleontological Resources Loss	120 miles PFYC Class 5.	74 miles PFYC Class 5.	77 miles PFYC Class 5.	129 miles PFYC Class 5.	113 miles PFYC Class 5.	156 miles PFYC Class 5.
Soils							
	Soils – Wind Erodible	247 acres	152 acres	167 acres	280 acres	247 acres	210 acres
	Soils – Water Erodible	194 acres	580 acres	612 acres	252 acres	246 acres	257 acres
	Soils – Compaction Prone	1,214 acres	2,013 acres	1,929 acres	1,317 acres	1,137 acres	1,361 acres
	Soils – LRP	1,092 acres	1,921 acres	2,351 acres	1,018 acres	1,045 acres	1,247 acres
	Soils – Prime Farmland	347 acres	413 acres	484 acres	279 acres	278 acres	178 acres
Water							
	Erosion and Sedimentation Direct Effects from Crossings	19 perennial stream crossings	26 perennial stream crossings	24 perennial stream crossings	17 perennial stream crossings	40 perennial stream crossings	27 perennial stream crossings
	Impaired Stream Effects from Crossings	Four impaired streams crossed	Three impaired stream crossed (39 crossings)	Five impaired streams crossed (41 crossings)	One impaired stream crossed	Five impaired streams crossed (23 crossings)	Three impaired streams crossed (7 crossings)

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Water (Continued)	Effects to Water Users from Construction Water Use	192 acre-feet required	258 acre-feet required	272 acre-feet required	195 acre-feet required	199 acre-feet required	199 acre-feet required
	Maximum Road Density Change in Watershed (HUC10, 300-foot or 100-foot perennial buffer area)	0.5 mile/mile^2 (300 feet: Currant Creek Watershed) (0.27 mile/mile^2 (100 feet: Soldier Creek Watershed)	1.33 mile/mile^2 (100 feet: West Salt Creek Watershed)	1.33 mile/mile^2 (100 feet: West Salt Creek Watershed)	0.67 mile/mile^2 (300 feet: Coyote Wash Watershed)	3.74 mile/mile^2 (300 feet: Antelope Creek Watershed)	0.67mile/mile^2 (300 feet: Coyote Wash Watershed)
Vegetation							
	Vegetation clearing of woody vegetation over 6 feet in height	165 acres of aspen forest and woodland, 68 acres of conifer forest, 29 acres of deciduous forest, 732 acres of pinyon-juniper, and 53 acres of woody riparian and wetlands	149 acres of aspen forest and woodland, 150 acres of conifer forest, 956 acres of pinyon-juniper, and 36 acres of woody riparian and wetlands	49 acres of aspen forest and woodland, 34 acres of conifer forest, 1,026 acres of pinyon-juniper, and 30 acres of woody riparian and wetlands	270 acres of aspen forest and woodland, 124 acres of conifer forest, 727 acres of pinyon-juniper, and 15 acres of woody riparian and wetlands	65 acres of aspen forest and woodland, 82 acres of conifer forest, 4 acres of deciduous forest, 894 acres of pinyon-juniper, and 34 acres of woody riparian and wetlands	162 acres of aspen forest and woodland, 191 acres of conifer forest, 4 acres of deciduous forest, 865 acres of pinyon-juniper, and 15 acres of woody riparian and wetlands
	Wetlands and Riparian Areas impacted by Facilities Construction (acres)	152 acres of greasewood flat, 12 acres of herbaceous wetlands, and 38 acres of woody riparian and wetlands	506 acres of greasewood flat, 8 acres of herbaceous wetlands and 27 acres of woody riparian and wetlands	538 acres of greasewood flat, 6 acres of herbaceous wetlands and 26 acres of woody riparian and wetlands	215 acres of greasewood flat, 15 acres of herbaceous wetlands and 12 acres of woody riparian and wetlands	176 acres of greasewood flat, 35 acres of herbaceous wetlands, and 28 acres of woody riparian and wetlands	212 acres of greasewood flat, 16 acres of herbaceous wetlands, and 16 acres of woody riparian and wetlands
	Wetlands and Riparian Areas impacted by Operations (acres)	36 acres of greasewood flat, 3 acres of herbaceous wetlands, and 11 acres of woody riparian and wetlands	119 acres of greasewood flat, 2 acres of herbaceous wetlands and 7 acres of woody riparian and wetlands	129 acres of greasewood flat, 2 acres of herbaceous wetlands and 8 acres of woody riparian and wetlands	53 acres of greasewood flat, 4 acres of herbaceous wetlands and 4 acres of woody riparian and wetlands	41 acres of greasewood flat, 8 acres of herbaceous wetlands and 9 acres of woody riparian and wetlands	54 acres of greasewood flat, 1 acre of herbaceous wetlands, and 7 acres of woody riparian and wetlands
	USFS MIS Species	Alternative does not cross USFS Fishlake National Forest	Based on elevation, there is no potential habitat for this species within the USFS Fishlake National Forest.	Potential habitat would be possible based on substrate, elevation, and vegetation parameters. The population has historically been found to be stable and viable across the USFS Fishlake National Forest.	Alternative does not cross USFS Fishlake National Forest.	Alternative does not cross USFS Fishlake National Forest.	Based on elevation, there is no potential habitat for this species within the USFS Fishlake National Forest.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Status Plants							
	Number of USFWS species with known occurrences impacted	2	1	2	3	4	5
	Number of USFWS species with potential habitat impacted	6	8	9	6	5	8
	Number of BLM sensitive species with known occurrences impacted	6	12	17	9	11	10
	Number of BLM sensitive species with potential habitat impacted	29	36	43	32	32	34
	Number of USFS sensitive species with known occurrences impacted	0	1	2	2	2	2
	Number of USFS sensitive species with potential habitat impacted	3	7	7	7	6	9
Wildlife							
(5.a)	Pronghorn crucial winter range (acres) Construction/operation	731/219	1,274/303	1,086/264	1,275/354	768/192	1,047/284
	Mule deer crucial winter range (acres) construction/operation	1,041/362	836/275	943/254	823/265	1,072/371	803/282
	Elk crucial winter range (acres) construction/operation	1,102/408	927/283	979/273	808/279	1,565/591	937/573
	Moose occupied habitat (acres) construction/operation	222/72	311/125	0/0	790/256	432/143	710/255

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Wildlife (Continued)	Rocky Mountain or desert bighorn sheep (acres) construction/operation	RMBS 14/6	DBS 23/5	DBS 26/6	RMBS 151/45	RMBS 3/2	RMBS 147/41
	Small game, nongame habitat (acres) construction/operation	8,613/1,110	11,436/1,350	12,093/1,252	8,876/1,166	8,846/1,125	9,169/1,327
	Waterfowl habitat (acres) construction/operation	131/17	94/11	96/12	64/9	157/18	54/10
(5.b)	Number of raptor nests within 1 mile of the reference line	99	107	99	139	101	117
	Number of IBAs crossed by the 2-mile transmission line corridor	Upper Strawberry Watershed (UT12) (1,399 acres)	0	0	0	0	0
	Number of MIS species whose habitat is crossed by alternative[2]	1	9	8	2	3	10
Special Status Wildlife							
	Impacted black-footed ferret habitat (acres) construction/operation	217/53	67/15	122/27	201/51	254/63	201/51
(3.a)	Impacted greater sage-grouse habitat (acres) construction/operation	2,664/747	750/248	195/49	2,385/659	2,924/744	1,432/388
	Number of occupied leks within 4 miles of reference line	7	0	0	10	10	15
	Impacted western yellow-billed cuckoo potential habitat (acres) construction/operation	90/12	63/7	56/8	26/4	62/9	32/7

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Status Wildlife (Continued) (3.c)	Impacted Canada lynx potential habitat (acres) construction/operation	120/20	287/54	63/9	243/43	158/26	418/91
(3.e)	Impacted Utah prairie dog potential habitat (acres) construction/operation	0/0	Same as Alternative II-A	179/33	Same as Alternative II-A	Same as Alternative II-A	Same as Alternative II-A
(3.b)	Number of special status raptor nests within 1 mile of the reference line[2]	129	154	124	250	156	200
Aquatic Biological Resources							
	Effects on aquatic habitat and species from potential direct and indirect disturbance or water quality changes	26 perennial streams crossed by 250-foot-wide transmission line ROW; 14 game fish streams crossed by the 250-foot-wide ROW	27 perennial streams crossed by 250-foot-wide transmission line ROW; 11 game fish streams crossed by the 250-foot-wide transmission line ROW	29 perennial streams crossed by 250-foot-wide transmission line ROW; 13 game fish streams crossed by the 250-foot-wide transmission line ROW	26 perennial streams crossed by 250-foot-wide transmission line ROW; 17 game fish streams crossed by the 250-foot-wide transmission line ROW	39 perennial streams crossed by 250-foot-wide transmission line ROW; 13 game fish streams crossed by the 250-foot-wide transmission line ROW	30 perennial streams crossed by 250-foot-wide transmission line ROW; 12 game fish streams crossed by the 250-foot-wide transmission line ROW
	Potential aquatic habitat alteration or loss (feet[2])	10,000	19,600	22,000	7,200	17,600	7,200
	Potential amphibian mortalities from vehicle traffic	257 ROW miles	345 ROW miles	365 ROW miles	262 ROW miles	266 ROW miles	267 ROW miles
Special Status Aquatic Resources							
	Effects on habitat and special status species from potential direct disturbance or water quality changes	12 perennial streams with special status aquatic species crossed by 250-foot ROW	8 perennial streams with special status aquatic species crossed by 250-foot ROW	11 perennial streams with special status aquatic species crossed by 250-foot ROW	7 perennial streams with special status aquatic species crossed by 250-foot ROW	13 perennial streams with special status aquatic species crossed by 250-foot ROW	11 perennial streams with special status aquatic species crossed by 250-foot ROW
		1 stream with federally listed or petitioned aquatic species	2 streams with federally listed or petitioned aquatic species	2 streams with federally listed or petitioned aquatic species	2 streams with federally listed or petitioned aquatic species	1 stream with federally listed or petitioned aquatic species	2 streams with federally listed or petitioned aquatic species

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
SS Aquatic Resources (Continued)	Number of special status aquatic species with potential habitat alteration or loss	12	7	5	5	7	5
	Number of watersheds supporting special status aquatic species with increased road densities	13	9	10	8	12	11
	Potential direct disturbance on critical habitat for federally listed species[1]	4 acres	7 acres	7 acres	7 acres	4 acres	7 acres
Cultural Resources							
	NRHP-listed Sites	0	1	1	0	0	0
	NRHP-eligible Sites	13	48	45	26	17	20
	Unevaluated Sites	0	17	24	3	0	3
	Potential TCPs	1	8	10	4	1	4
	Trail Crossings	Old Spanish Trail (0)	Old Spanish Trail (4) (1 NHT II, 1 NHT III, 2 NHT V)	Old Spanish Trail (9) (1 NHT II, 1 NHT III, 3 NHT IV, 4 not categorized)	Old Spanish Trail (0)	Old Spanish Trail (0)	Old Spanish Trail (0)
	Average Inventory Coverage	20%	19%	23%	19%	18%	22.4%
	Site Density (sites per 100 acres inventoried)	0.12	0.25	0.5	0.1	0.67	0.09
	Overall Trail Visibility (within 5-mile viewshed)	0 miles	58 miles	107 miles	0 miles	0 miles	0 miles
Visual Resources							
	High Sensitivity Viewers						
	0–0.5 miles	78	94	90	50	84	74
	0.5–2.5 miles	127	196	214	116	125	128
	2.5–5 miles	35	38	48	50	35	31
	>5 miles	18	15	10	45	22	34

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Visual	Moderate Sensitivity Viewers						
Resources	0–0.5 miles	72	169	206	72	71	88
(Continued)	0.5–2.5 miles	132	145	141	104	118	103
	2.5–5 miles	44	29	15	47	50	33
	>5 miles	9	--	--	39	27	42
	Scenic Quality (miles)						
	A	<1	1	2	25	10	44
	B	139	131	124	98	135	102
	C	118	213	237	139	121	119
	BLM VRI Classifications (miles)						
	Class II	9	19	22	40	31	66
	Class III	33	49	64	62	45	23
	Class IV	111	243	242	138	113	138
	BLM VRM Classifications (miles)						
	Class II	--	5	5	2	--	2
	Class III	48	135	159	50	44	39
	Class IV	51	66	55	94	56	83
	USFS SIO/VQO Classifications (miles)						
	High Retention	<1	3	9	<1	<1	4
	Moderate Partial Retention	21	18	20	8	23	14
	Low Modification	--	--	--	--	--	--
	Residual Impacts Landscape Scenery (miles)						
	High	97	96	84	103	108	127
(5.c)	Moderate	78	133	143	98	98	68
	Low	82	115	137	61	60	70
	Residual Impacts High Sensitivity Viewers (miles)						
	High	61	42	3	46	67	71
(5.c)	Moderate	117	234	247	142	138	123
	Low	80	66	81	73	62	73

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Visual	Residual Impacts Moderate Sensitivity Viewers (miles)						
Resources	High	55	83	111	49	49	61
(Continued)	Moderate	93	182	184	101	100	105
	Low	109	78	68	111	117	101
	BLM VRM USFS SIO/VQO Compliance/Consistency (miles) Before Mitigation						
	Compliant	116	176	182	143	122	130
	Non-compliant	4	51	66	11	2	12
	NA	137	118	117	108	143	125
	BLM VRM USFS SIO/VQO Compliance/Consistency (miles) After Mitigation						
	Compliant	117	214	217	146	122	133
	Non-compliant	3	13	31	8	1	8
	NA	137	118	117	108	143	25
Recreation							
	Recreation Area/Site in Region II	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)
		2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)
	BLM White River FO						
	Dispersed, undesignated	587 (0.04%)	1,389 (<0.1%)	1,389 (<0.1%)	587 (0.04%)	587 (0.04%)	587 (0.04%)
	recreation areas	22,827 (1.6%)	57,802 (4.0%)	57,802 (4.0%)	22,908 (1.6%)	22,908 (1.6%)	22,908 (1.6%)
	BLM Grand Junction FO						
	Dispersed, undesignated	N/A	600 (0.05%)	600 (0.05%)	N/A	N/A	N/A
	recreation areas		32,592 (2.5%)	32,592 (2.5%)			
	BLM Moab FO						
	Dispersed, undesignated	N/A	1,806 (0.2%)	1,806 (0.2%)	N/A	N/A	N/A
	recreation areas		69,181 (5.8%)	69,181 (5.8%)			
	Labyrinth Canyon/Gemini	N/A	75 (0.02%)	75 (0.02%)	N/A	N/A	N/A
	Bridges SRMA		4,087 (1.4%)	4,087 (1.4%)			
	Utah Rims SRMA	N/A	0	0	N/A	N/A	N/A
			925 (6.0%)	925 (6.0%)			

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation	BLM Vernal FO						
(Continued)	Dispersed, undesignated	1,113 (0.07%)	168 (0.01%)	168 (0.01%)	2,337 (0.2%)	1,133 (0.07%)	2,494 (0.2%)
	recreation areas	38,850 (2.5%)	5,151 (0.3%)	5,151 (0.3%)	89,284 (5.7%)	42,226 (2.7%)	92,872 (6%)
	Fantasy Canyon SRMA	N/A	N/A	N/A	0	N/A	0
					54 (78.3%)		54 (78.3%)
	Nine Mile Canyon SRMA	N/A	N/A	N/A	0	N/A	0
					1,456 (3.3%)		1,453 (3.3%)
	BLM Price FO						
	Dispersed, undesignated	N/A	1,684 (0.1%)	1,709 (0.1%)	186 (0.01%)	5 (0%)	N/A
	recreation areas		68,221 (5%)	68,157 (5%)	10,385 (0.8%)	66 (0.03%)	
	Labyrinth Canyon SRMA	N/A	3 (0.02%)	3 (0.02%)	N/A	N/A	N/A
			154 (0.4%)	154 (0.4%)			
	San Rafael Swell SRMA	N/A	N/A	180 (0.02%)	N/A	N/A	N/A
				10,589 (1.1%)			
	BLM Richfield FO						
	Dispersed, undesignated recreation areas	38 (0%)	140 (0.01%)	436 (0.03%)	41 (0%)	38 (0%)	38 (0%)
		1,378 (0.1%)	5,821 (0.5%)	16,284 (1.3%)	1,574 (0.1%)	1,378 (0.1%)	1,378 (0.1%)
	BLM Salt Lake FO						
	Dispersed, undesignated recreation areas	3 (0%)	N/A	N/A	N/A	5 (0%)	108 (0%)
		323 (0.02%)				1,675 (0.05%)	2,489 (0.08%)
	BLM Fillmore FO						
	Dispersed, undesignated recreation areas	1,257 (0.03%)	504 (0.01%)	523 (0.01%)	1,261 (0.03%)	1,261 (0.03%)	524 (0.01%)
		49,166 (1.1%)	21,815 (0.5%)	18,657 (0.4%)	48,833 (1.1%)	48,833 (1.1%)	22,245 (0.5%)
	Little Sahara Recreation	183 (0.3%)	N/A	N/A	183 (0.3%)	183 (0.3%)	N/A
	Area (RA)	5,974 (10%)			5,974 (10%)	5,974 (10%)	

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation	USFS Recreation Areas						
(Continued)	Recreation Area	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)
	ROS	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)
	Ashley National Forest						
	Rural	N/A	N/A	N/A	N/A	N/A	N/A
	Roaded Modified	N/A	N/A	N/A	N/A	N/A	N/A
	Roaded Natural	N/A	N/A	N/A	10 (<0.01%)	300 (0.07%)	40 (<0.01%)
					884 (0.2%)	7,863 (1.7%)	2,118 (0.5%)
	Semi-Primitive Motorized	N/A	N/A	N/A	1 (0%)	0	1 (0%)
					2,629 (0.9%)	1,822 (0.6%)	2,629 (0.9%)
	SPM Within IRA	N/A	N/A	N/A	*0*	*0*	*1*
					2,263 (0.9%)	*1,822 (0.6%)*	*2,623 (0.9%)*
	Remainder in SPM ROS	N/A	N/A	N/A	*0*	*0*	*0*
					6 (<0.01%)	*0*	*6*
	Semi-Primitive Non-	*N/A*	*N/A*	*N/A*	0	0	0 (<0.01%)
	motorized				630 (0.2%)	5,802 (1.6%)	*649 (0.2%)*
	SPNM Within IRA	*N/A*	*N/A*	*N/A*	*0*	*0*	*0*
					630 (0.2%)	*5,784 (1.5%)*	*649 (0.2%)*
	Remainder in SPNM ROS	*N/A*	*N/A*	*N/A*	*N/A*	*0*	N/A
						18 (<0.01%)	
	Primitive	N/A	N/A	N/A	N/A	N/A	N/A
	Unknown/Private	N/A	N/A	N/A	N/A	N/A	N/A
	Total	NA	NA	NA	11	300	41
					4,143	15,487	5,396
	Uinta National Forest						
	Rural	0	N/A	N/A	N/A	N/A	N/A
		23 (1.4%)					

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation (Continued)	Roaded Modified	160 (0.2%)	N/A	N/A	0	242 (0.3%)	242 (0.3%)
		4,475 (5.3%)			31 (0.04%)	4,929 (5.8%)	4,929 (5.8%)
	Roaded Natural	286 (0.1%)	N/A	N/A	0	0	31 (0.01%)
		7,904 (2.9%)			17 (0.01%)	648 (0.2%)	1,104 (0.4%)
	Semi-Primitive Motorized	97 (<0.1%)	N/A	N/A	N/A	0	17 (<0.01%)
		11,800 (3.3%)				4,752 (1.3%)	4,988 (1.4%)
	SPM Within IRA	*0*	*N/A*	*N/A*	*N/A*	*0*	*17 (<0.01%)*
		10,102 (2.8%)				*3,581 (1%)*	*3,816 (1.1%)*
	Remainder in SPM ROS	*97 (<0.1%)*	*N/A*	*N/A*	*N/A*	*0*	*0*
		1,698 (0.5%)				*1,172 (0.3%)*	*1,172 (0.3%)*
	Semi-Primitive Non-motorized	N/A	N/A	N/A	N/A	N/A	N/A
	Primitive	<1	N/A	N/A	N/A	N/A	N/A
	Unknown/Private	2 (<0.01%)	N/A	N/A	N/A	0	0
		11 (<0.01%)				20 (<0.02%)	20 (<0.02%)
	Total	545	NA	NA	0	242	290
		24,213			48	10,349	11,021
	Manti-La Sal National Forest						
	Rural	N/A	N/A	N/A	0	N/A	N/A
					16 (2.0%)		
	Roaded Modified	N/A	N/A	N/A	N/A	N/A	N/A
	Roaded Natural	26 (0.01%)	392 (<0.1%)	N/A	173 (0.03%)	31 (0.01%)	31 (0.01%)
		685 (0.1%)	14,379 (2.9%)		7,183 (1.4%)	1,266 (0.3%)	1,266 (0.3%)
	Semi-Primitive Motorized	52 (0.01%)	144 (0.02%)	N/A	77 (0.01%)	52 (0.01%)	52 (0.01%)
		3,592 (0.5%)	7,555 (1.0%)		3,729 (0.5%)	3,592 (0.5%)	3,592 (0.5%)
	SPM Within IRA	*26 (<0.01%)*	*<1 (<0.01%)*	*N/A*	*0*	*26 (<0.01%)*	*26 (<0.01%)*
		2,156 (0.3%)	*3,121 (0.4%)*		*574 (0.1%)*	*2,156 (0.3%)*	*2,156 (0.3%)*
	Remainder in SPM ROS	*26 (<0.01%)*	*144 (0.02%)*	*N/A*	*77 (0.1%)*	*27 (<0.01%)*	*26 (<0.01%)*
		1,436 (0.2%)	*4,439 (0.6%)*		*3,153 (0.4%)*	*1,436 (0.2%)*	*1,436 (0.2%)*

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation (Continued)	Semi-Primitive Non-motorized	N/A	0	N/A	0	N/A	N/A
			10 (0.01%)		10 (0.01%)		
	SPNM Within IRA	*N/A*	*0*	*N/A*	*N/A*	*N/A*	*N/A*
			10 (0.01%)				
	Remainder in SPNM ROS	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Primitive	N/A	N/A	N/A	N/A	N/A	N/A
	Unknown/Private	N/A	N/A	N/A	<1 (0.01%)	N/A	N/A
					119 (0.2%)		
	Total	78	536	NA	250	83	83
		4,277	21,944		11,055	4,858	4,858
	Fishlake National Forest						
	Rural	N/A	N/A	N/A	N/A	N/A	N/A
	Roaded Modified	N/A	N/A	N/A	N/A	N/A	N/A
	Roaded Natural	N/A	116 (0.02%)	476 (0.1%)	N/A	N/A	116 (0.2%)
			2,595 (0.5%)	21,822 (4.2%)			2,595 (0.5%)
	Semi-Primitive Motorized	N/A	0	394 (0.04%)	N/A	N/A	0
			1,534 (0.1%)	18,887 (1.8%)			1,534 (0.1%)
	Within IRA	*N/A*	*0*	*0*	*N/A*	*N/A*	*0*
			0	*1,151 (0.1%)*			*0*
	Remainder in SPM ROS	*N/A*	*0*	*400 (0.4%)*	*N/A*	*N/A*	*0*
			1,534 (0.1%)	*17,736 (1.7%)*			*1,534 (0.1%)*
	Semi-Primitive Non-motorized	N/A	N/A	0	*N/A*	*N/A*	*N/A*
				111 (0.06%)			
	SPNM Within IRA	N/A	N/A	0	*N/A*	*N/A*	*N/A*
				89 (0.05%)			
	Remainder in SPNM ROS	N/A	N/A	22 (0.01%)	*N/A*	*N/A*	*N/A*
	Primitive	N/A	N/A	N/A	N/A	N/A	N/A
	Unknown/Private	N/A	N/A	<1 (0.01%)	N/A	N/A	N/A
				5 (0.02%)			

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation	Other Federal Recreation Areas						
(Continued)	Dinosaur National	0	N/A	N/A	0	0	0
	Monument	3 (<0.01%)			3 (<0.01%)	3 (<0.01%)	3 (<0.01%)
	Total	NA	116	876	NA	NA	116
			4,129	40,825			4,129
	State Recreation Areas						
	Recreation Area	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)	250-foot-wide ROW Acres (% of total area)
		2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)	2-mile Corridor Acres (% of total area)
	Emery Farm Castle Dale	N/A	N/A	0	N/A	N/A	N/A
	WMA			<1 (1%)			
	Currant Creek/Wildcat WMA	152 (0.73%)	N/A	N/A	N/A	N/A	N/A
		2,284 (10.7%)					
	Nephi WMA-Nephi Unit	0	N/A	N/A	N/A	N/A	N/A
		152 (100%)					
	Fillmore WMA	N/A	N/A	0	N/A	N/A	N/A
				221 (1.7%)			
	Gordon Creek WMA	N/A	N/A	N/A	155 (0.7%)	N/A	N/A
					5,315 (23.4%)		
	Indian Canyon WMA-	N/A	N/A	N/A	N/A	46 (0.6%)	N/A
	Cottonwood Canyon Unit					1,668 (22%)	
	North Nebo WMA/Fountain	N/A	41 (1.8%)	N/A	N/A	N/A	N/A
	Green		1,347 (58%)				
	North Nebo WMA—Spencer	111 (1.7%)	N/A	N/A	N/A	111 (1.7%)	111 (1.7%)
	Fork Unit	6,265 (96.4%)				6,265 (96.4%)	6,265 (96.4%)
	Northwest Manti WMA—	71 (1.9%)	N/A	N/A	N/A	71 (1.9%)	71 (1.9%)
	Birdseye Lake Fork Unit	2,695 (71.9%)				2,695 (71.9%)	2,695 (71.9%)
	Northwest Manti WMA —	53 (1.1%)	N/A	N/A	N/A	52 (1.1%)	52 (1%)
	Dairy Fork Unit	663 (13.3%)				1,600 (32.2%)	1,600 (32.2%)

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation (Continued)	Northwest Manti WMA— Hilltop Conservation Easement	N/A	N/A	N/A	17 (1.6%) 696 (64.8%)	N/A	N/A
	Northwest Manti WMA— Lasson Draw	0 (0%) 16 (0.7%)	N/A	N/A	N/A	0 (0%) 16 (0.7%)	0 16 (0.7%)
	Northwest Manti WMA— Starvation Unit					24 (0.4%) 976 (16.9%)	24 (0.4%) 976 (16.9)
	Strawberry River WMA	5 (0.2%) 454 (14.8%)	N/A	N/A	N/A	N/A	N/A
	South Nebo WMA — Triangle Ranch Unit	29 (1%) 1,855 (37.7%)	42 (0.9%) 2,734 (55.6%)	N/A	61 (1.2%) 3,584 (72.9%)	61 (1.2%) 3,584 (72.9%)	61 (1.2%) 3,589 (72.9%)
	Tabby Mountain WMA— Rabbit Gulch Unit	111 (1.2%) 8,088 (89.4%)	N/A	N/A	N/A	N/A	N/A
	Tabby Mountain WMA— Tabby Mountain Unit	53 (0.1%) 839 (2%)	N/A	N/A	N/A	N/A	N/A
	Starvation State Park	0 acres 459 acres (6%)	N/A	N/A	N/A	N/A	N/A
	CWMUs:						
	Double R Ranch	41/2,465 (39%)	N/A	N/A	N/A	N/A	N/A
	Crab Creek	0/211 (2%)	N/A	N/A	N/A	0/211 (2%)	0/211 (2%)
	Bear Mountain	N/A	82/4,515 (56%)	N/A	N/A	N/A	N/A
	Castle Valley Outdoors	N/A	N/A	178/6,067 (57%)	N/A	N/A	N/A
	Johnson Mountain Ranch	N/A	N/A	61/2,317 (17%)	N/A	N/A	N/A
	Oak Ranch	N/A	N/A	0/192 (4%)	N/A	N/A	N/A
	Old Woman Plateau	N/A	N/A	8/123 (2%)	N/A	N/A	N/A
	Round Valley	N/A	N/A	152/4,683 (59%)	N/A	N/A	N/A
	Minnie Maud Ridge	N/A	N/A	N/A	355/10,025 (63%)	26/1,096 (7%)	0/130 (4%)
	Emma Park	N/A	N/A	N/A	0/227 (1%)	232/7,267 (32%)	95/2,684 (12%)
	Antelope Creek	N/A	N/A	N/A	N/A	129/5,817 (18%)	N/A
	Scofield Canyons	N/A	N/A	N/A	N/A	0/556 (4%)	0/556 (4%)

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation (Continued)	Soldier Summit	N/A	N/A	N/A	N/A	263/9,969 (38%)	193/5,477 (21%)
	Local Recreation Areas						
	Big Mountain Campground	0	N/A	N/A	0	0	0
		15 (100%)			15 (100%)	15 (100%)	15 (100%)
	Bottle Hollow Reservoir	0	N/A	N/A	N/A	0	N/A
		101 (24%)				101 (24%)	
	Brough Reservoir	0	N/A	N/A	N/A	N/A	N/A
		<1					
	Cedar Ridges Golf Course	N/A	0	0	N/A	N/A	N/A
			Entire site	Entire site			
	Bear Creek Campground	N/A	0	N/A	N/A	N/A	N/A
			18 (100%)				
	Camp Timberlane	N/A	N/A	N/A	N/A	37 (5.1%)	31 (4.3%)
						381 (53%)	337 (47%)
	Scenic Byways and Backways						
	Recreation Area	250-foot-wide ROW (crossings)	250-foot-wide ROW (crossings)	250-foot-wide ROW (crossings)	250-foot-wide ROW (crossings)	250-foot-wide ROW (crossings)	250-foot-wide ROW (crossings)
		2-mile Corridor (miles)	2-mile Corridor (miles)	2-mile Corridor (miles)	2-mile Corridor (miles)	2-mile Corridor (miles)	2-mile Corridor (miles)
	Dinosaur Diamond	2 crossings	3 crossings	3 crossings	2 crossings	4 crossings	2 crossings
	Prehistoric Byway	5 miles	88 miles	76 miles	13 miles**	10 miles**	5 miles
	White River/Strawberry	1 crossing	N/A	N/A	N/A	N/A	N/A
	Road Scenic Backway	3 miles					
	Nebo Loop Scenic Byway	0 crossings	N/A	N/A	0 crossings	0 crossings	0 crossings
		<1 mile			<1 mile	<1 mile	<1 mile
	Energy Loop: Huntington/	N/A	1 crossing	N/A	7 crossings	1 crossing	N/A
	Eccles Canyons National Scenic Byway		4 miles		17 miles	<2 miles	
	Skyline Drive Scenic	N/A	1 crossing	N/A	1 crossing	0 crossings	0 crossings
	Backway		3 miles		4 miles	<1 mile	<1 mile
	Wedge Overlook/Buckhorn	N/A	N/A	5 crossings	N/A	N/A	N/A

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Recreation	Drive Scenic Backway			9 miles			
(Continued)	Gooseberry/Fremont Road	N/A	N/A	1 crossing	N/A	N/A	N/A
	Scenic Backway			2 miles			
	Indian Canyon Scenic	N/A	N/A	N/A	1 crossing	1 crossing	1 crossing
	Byway				7 miles**	<2 miles**	3 miles**
	Nine Mile Canyon Scenic	N/A	N/A	N/A	1 crossing	N/A	1 crossing
	Backway				2 miles		2 miles
	Reservation Ridge Scenic	N/A	N/A	N/A	N/A	N/A	6 crossings
	Backway						13 miles
	** Indian Canyon Scenic Byway shares the same route with Dinosaur Diamond Prehistoric Byway in this portion of the Byway; therefore, the acreage identified under the Indian Canyon route is also included in the Dinosaur Diamond route.						
Land Use and Planning							
(1.a) (6.a)	Federal and State lands and Use of Designated Utility Corridors	257 miles total: 47% located on BLM or USFS-managed lands; 11% located on state lands. 39 miles in BLM RMP corridors, and 56 miles in WWEC.	345 miles total; 67% located on BLM or USFS-managed lands; 11% located on state lands. 130 miles in BLM RMP corridors, and 38 miles in WWEC.	365 miles total: 68% located on BLM or USFS-managed lands; 11% located on state lands. 122 miles in BLM RMP corridors, and 17 miles in WWEC.	262 miles total: 59% located on BLM or USFS-managed lands, 1% on tribal lands and 13% on state lands.	266 mile total: 46% located on BLM or USFS-managed lands; 11 on state lands and 3% on tribal lands.	267 miles total; 53% on BLM/USFS lands; 16% state lands and 1% on Tribal lands
		26 miles RMP corridor; 56 miles WWEC.	142 miles RMP corridor; 34 miles WWEC.	149 miles RMP corridor; 16 miles WWEC	73 miles in BLM RMP corridors, and 49 miles in WWEC.	39 miles in BLM RMP corridors, and 66 miles in WWEC.	69 miles RMP corridor; 30 miles WWEC.
	Avoidance/Exclusion areas crossed by reference line	ROW would cross the Sand Wash/Sink Draw CWMU, a ROW exclusion area. 7 miles of exclusion areas.	Designated avoidance areas crossed for <1 miles; designated exclusion areas crossed for 1 mile (Demaree WSA)	Same as Alternative II-B	6 miles; would cross the Gordon Creek WMA, an exclusion area for overhead power lines.	None	11 miles; no exclusion area

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Land Use (Continued) (6.a)	Private Lands and Zoning	109 miles (42 %) located on private land.	76 miles (22%) located on private land. 5 residences and 19 commercial building within 500 feet of the reference line.	77 miles (21%) located on private land. 4 residences and 14 commercial building within 500 feet of the reference line.	71 miles (27%) located on private lands. 6 residences and 1 commercial building within 500 feet of the reference line.	106 miles (40%) located on private lands	79 miles (30%) on private land
		9 communities within the 2 mile transmission line corridor; no identified incompatible land uses within these communities. 11 parks (9 wildlife management areas and one state park and one BLM recreation area), one cemetery, one school, and one church within the 2 mile transmission line corridor; 53 residences and 31 commercial building within 500 feet of the reference line.	11 communities within the 2 mile transmission line corridor; no identified incompatible land uses within these communities. Two wildlife management areas and two cemeteries within the 2-mile transmission line corridor.	11 communities within the 2 mile transmission line corridor; no identified incompatible land uses within these communities. Two wildlife management areas and 1 cemetery within the 2-mile transmission line corridor.	10 communities within the 2 mile transmission line corridor; no identified incompatible land uses within these communities. 3 wildlife management areas, two cemeteries, one church, and two schools within the 2-mile transmission line corridor; one WMA is a ROW exclusion area for overhead power lines.	15 communities within the 2-mile transmission line corridor in region, no identified incompatible land uses within these communities. One local park, seven WMAs, three cemeteries, one school, and two churches within the 2-mile transmission line corridor; 35 residences and 20 commercial building within 500 feet of the reference line.	10 communities within 2 miles; 13 residences within 500 feet.
	Agriculture	452 acres of initial clearing, 328 acres of construction disturbance, and 93 acres of permanent removal of croplands. Three center pivots crossed by the 250-foot-wide ROW.	169 acres of initial clearing, 139 acres of construction disturbance, and 51 acres of permanent removal of croplands.	238 acres of initial clearing, 177 acres of construction disturbance, and 50 acres of permanent removal of croplands. Five center pivots crossed by the 250-foot-wide ROW.	82 acres of initial clearing, 72 acres of construction disturbance, and 29 acres of permanent removal of croplands.	285 acres of initial clearing, 216 acres of construction disturbance, and 66 acres of permanent removal of croplands. Two center pivots crossed by the 250-foot-wide ROW.	104 acres of clearing; 82 acres of construction disturbance; 32 acres of permanent removal.
	Livestock Grazing	Construction impacts 1,728 acres (86 AUMs); Operation impacts 449 acres (25 AUMs)	Construction impacts 4,018 acres (201 AUMs); Operation impacts 1,103 acres (55 AUMs)	Construction impacts 4,229 acres (211 AUMs); Operation impacts 1,086 acres (54 AUMs)	Construction impacts 2,922 acres (146 AUMs); Operation impacts 819 acres (41 AUMs)	Construction impacts 1,804 acres (90 AUMs); Operation impacts 493 acres (25 AUMs)	Construction impacts 2,800 acres (140 AUMs); Operation impacts 834 acres (42 AUMs)

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Land Use (Continued) (6.a)	USFS land Management	Within the Uinta NF, the reference line, the 250-foot-wide ROW, and the 2-mile transmission corridor would pass through areas managed for aquatic and terrestrial resources (9 miles), dispersed recreation (5 miles) areas; forested area vegetation (2 miles); non forested ecosystems (3miles) and utility corridor/ communication sites(less than 1 mile). With the exception of portions of the Strawberry Management Area within 300 yards of greater sage-grouse foraging areas, development of a transmission line would in generally be compatible with area management. Application of mitigation LU-1 would eliminate impacts to this management area. Within the Manti-La Sal NF, the reference line, the 250-foot-wide ROW, and the 2-mile transmission corridor would fall within areas managed for General Big Game Winter Range (2 miles) , and Key Big Game Winter Range (less than 1	Within the Manti-La Sal NF, the reference line, the 250-foot-wide ROW, and the 2-mile transmission corridor would pass through areas managed for general big game winter range (1 mile), mineral development (1 mile), forage production areas (16 miles), and designated utilities corridors and developed recreation site management areas (less than one mile). Development of a transmission line would be fully compatible within areas managed as utility corridors, and generally compatible with management goals for minerals management, range forage production areas, and motorized recreation areas, provided that access to resources is not restricted. Compatibility with Big Game Winter Range would be the same as under Alternative II-A.	Within the Fishlake NF, the reference line, the 250-foot-wide ROW, and the 2-mile transmission corridor would pass through areas managed for management indicator species (MIS; 13 miles); livestock grazing (10 miles); improved watershed condition (4 miles), big game winter range (2 miles), and rural and roaded-natural recreation opportunities (2 miles). Development of a transmission line would be generally compatible with management goals for these areas, provided that access to resources not restricted, and vegetation densities are maintained and short-term or temporary roads are obliterated within one season of use in MIS and big game winter range MAs. Construction activities would have temporary impacts to the recreation opportunities in some areas of the 2b Roaded Natural Recreation management areas through visual and noise	Within the Manti-La Sal NF, the 250-foot-wide ROW, and the 2-mile transmission corridor would pass through Developed Recreation Sites (specifically, the Flat Canyon and Gooseberry Campgrounds); Special Land Designation (the Mammoth Guard Station); Research, Protection, and Interpretation of Lands and Resource; and Undeveloped Motorized Recreation Sites management areas. Construction of a transmission line would not be compatible with the management goals of developed recreation management areas, which restrict non-recreation noise to 30 decibels or less. Construction of a transmission line would generally be compatible with the other management areas, provided it does not inhibit attainment of objectives for the area.	Within the Manti-La Sal, impacts to management units and consistency with applicable standards and guidelines would be the similar to Alternative II-A, but would slightly more Manti-La Sal NF acreage within the general big game winter range and range forage production areas within the 2-mile transmission line corridor. Within the Uinta NFs, impacts to management units and consistency with applicable standards and guidelines would be the similar to Alternative II-A, but would include slightly less mileage within areas managed for aquatic/terrestrial resources and dispersed recreation. Within the Ashley NF, the reference line, the 250-foot-wide ROW, and the 2-mile transmission corridor would pass through approximately nine miles of areas with a low management emphasis (N)	Approximately 15 miles of the 250-foot-wide transmission line ROW would be within national forest system lands with special management prescriptions within the Fishlake, Uinta, and Manti-La Sal NFs. Consistency with applicable standards and guidelines within the Uinta and Manti-La Sal NFs would be the same as under Alternative ll-D. Consistency with applicable standards and guidelines within the Fishlake NF would be the same as under Alternative ll-B. Consistency with applicable standards and guidelines within the Ashley NF would be similar that described under Alternative II-D and II-E.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
		mile). Development of a transmission line would generally be compatible with area management, provided vegetation densities are maintained and short term or temporary roads are reclaimed, construction occurs outside of the critical season, and there is no long term degradation of habitat..	Construction of a transmission line would not be compatible with the management goals of developed recreation management areas (specifically the Indian Creek Campground), which restrict non-recreation noise to 30 decibels or less. Within the Fishlake NF, 4 miles of the reference line, the 250-foot-wide ROW, and the 2-mile transmission corridor would be within areas managed for livestock grazing. Development of a transmission line would generally be compatible with Standard and Guidelines for this area.	disturbances, traffic delays, or trail access restrictions. The 2-mile transmission line corridor would also encompass acreage within Semi-Primitive Non-Motorized Recreation Fish Habitat Improvement management areas. Development of access roads or other construction support areas would generally be compatible with Standard and Guidelines for these areas provided that riparian areas are avoided and roads are closed to motorized public access.	Within the Ashley NF, portions of the 2-mile transmission line corridor (and a very small portion of the 250- foot-wide transmission line ROW) would fall within areas managed for livestock grazing and wildlife habitat. Development of a transmission line would be compatible with the management goals, provided that key stress seasons are avoided, short term or temporary roads are reclaimed and riparian areas are protected within wildlife habitat areas.	and one mile of area managed for dispersed roaded recreation (F). Development of a transmission line within these areas would generally be compatible with management goals.	
(5.f)	Greenfield	32 miles (12%)	156 miles (45%)	156 miles (43%)	151 miles (58%)	45 miles (17%)	121 miles (45%)

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas							
	White River FO	No impacts	0 miles and >1 acre of ROW within Oil Spring Mountain WSA/ACEC, located within a designated underground utility corridor outside the WSA/ACEC but extending partially within the WSA. 7% of the WSA/ACEC (1,241 acres) within 2-mile corridor. Impacts to ACEC's R&I values (spruce-fir and biologically diverse plant communities, BLM sensitive species, and remnant vegetation associations) from habitat removal. Development of transmission line, roads or use of motorized vehicles would not be compatible with WSA designation. Visual impacts to the WSA from operation of the line; temporary impacts to wilderness quality in the areas closest to the ROW from noise and activity.	Impacts to Oil Spring Mountain WSA same as under Alternative II-B.	No impacts	No impacts	No impacts

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued)			0 mile ROW within the White River ACEC; 143 acres (15% of ACEC) within 2-mile corridor. The ACEC is a ROW avoidance area; road construction would have potential to impact the riparian areas and bald eagle roost R&I values. Construction would be contingent upon avoidance of cottonwood communities, maintenance of utility as bald eagle habitat and properly functioning riparian community.	Impacts to White River Riparian ACEC same as under Alternative II-B.			
	Grand Junction FO	No impacts	1 mile and 15 acres of ROW within Demaree WSA; 9% of WSA (1,812 acres) within 2-mile corridor, Development of transmission line, roads or use of motorized vehicles would not be compatible with area management; wilderness quality in the areas closest to the ROW could be temporarily reduced during construction from noise and activity.	Impacts to Demaree WSA same as same as under Alternative II-B.	No impacts	No impacts	No impacts

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued)			0 mile ROW within the Badger Wash ACEC; 310 acres (20% of ACEC) within 2-mile corridor. This area is not within a designated utility corridor. Surface disturbance would impact sensitive plant communities and hydrologic research R&I values in these areas.	Same as Alternative II-B.			
			0 mile ROW and 2% of McInnis Canyon NCA (1,925 acres) within 2 mile corridor, entirely within designated utility corridor. Road development of roads consistent with area management, subject to agency constraints and BMPs.	Impacts Badger Wash ACEC same as under Alternative II-B.			
				Impacts to McInnis Canyon NCA same as under Alternative II-B.			

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued)	Vernal FO	No impacts	No impacts	No impacts	1 mile ROW crossing Green River WSR-suitable area. 1,447 acres (12% of suitable area) within 2 mile corridor Crossing is within designated corridor but would not be in conformance with VRM II area or consistent with criteria for 'scenic" designation.	No Impacts	Impacts would be the same as those for Alternative II-D.
					1 mile of ROW within Lower Green River ACEC, a ROW avoidance area. 1,239 acres (15% of ACEC) within 2-mile corridor .Impacts from surface disturbance and vegetation removal would affect special status species habitat and scenic R&I values. Would not be in conformance with VRM management in VRM II area.		Impacts would be the same as those for Alternative II-D.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued)					489 acres of Lear Canyon ACEC (35% of the ACEC) within 2-mile corridor. The ACEC is a ROW avoidance area for protection of surface disturbance from road construction would affect R&I values of relict vegetation and conflict with management that closes the ACEC to motorized travel.		Impacts would be the same as those for Alternative II-D.
					1,453 acres of Nine Mile Canyon ACEC (2% of the ACEC) within 2-mile corridor, above the rim of the canyon but with potential for impacts to the R&I cultural resources and special status species values.		Impacts would be the same as those for Alternative II-D.
	Price FO	No impacts	No impacts	0 miles ROW within the San Rafael Canyon ACEC; 8% of the ACEC (1,192 acres) within the 2-mile corridor. The ACEC is a ROW avoidance area; development of roads would reduce the scenic qualities for which the ACEC was designated.	No impacts	No impacts	No impacts

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued)				0 miles ROW within the Rock Art ACEC; 123 acres of the Dry Wash unit would be within the 2-mile corridor. The ACEC is a ROW avoidance area; the 2-mile corridor would not be located within a designated utility corridor. Development of roads would not be in conformance with area management objectives and could result in destruction of cultural resources as well as increased vandalism due to increased access.			
(5.e)	Uinta National Forest	2 miles of ROW within Chipman Creek IRA. Route located on IRAs' edge (paralleling existing transmission line), leaving most of the IRA unfragmented; however proposed route would widen the existing designated corridor between six, mostly unfragmented, IRAs. All ROW areas within IRA within roaded natural and roaded modified ROS. Impacts to IRA during operations from vegetation maintenance within ROW.	No impacts	No impacts	0 miles of ROW; 2-mile transmission line corridor would encompass portions of 2 IRAs. TWE would eliminate roads in these areas.	0 miles of ROW; 2-mile transmission line corridor would encompass portions of five IRAs. TWE would eliminate roads in these areas.	0 miles of ROW; 2-mile transmission line corridor would encompass portions of 6 IRAs. TWE would eliminate roads in those areas.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued)		The 2-mile transmission line would cross 7 additional IRAs (11,747 acres); TWE would eliminate roads in these areas.					
(5.e)	Manti-La Sal National Forest	1 mile of 250-foot ROW within the Coal Hollow IRA and 1 mile of ROW within Cedar Knoll IRA. Route located on IRAs' edge (paralleling existing transmission line), leaving most of the IRAs unfragmented. 25 acres of ROW within semi-primitive motorized ROS; TWE commitment to use of 100 foot ROW would reduce surface disturbance impacts. Impacts to IRAs during operations from vegetation maintenance within ROW.	0 miles of ROW.	No impacts	0 miles of ROW; 2-mile transmission line corridor would encompass portions of 3 IRAs. TWE would eliminate roads in these areas.	2 miles of ROW within 3 IRAs. Impacts same as under Alternative II-A.	Impacts would be the same as those for Alternative II-E.
		The 2-mile transmission line would cross one additional IRAs (2,437 acres); TWE would eliminate roads in these areas.	The 2-mile transmission line corridor would encompass portions of three IRAs; TWE would eliminate roads in these areas.				
(5.e)	Fishlake National Forest		0 miles of ROW. The 2-mile transmission line corridor would encompass portions of one IRA; TWE would eliminate roads in these areas.	0 miles of ROW. The 2-mile transmission line corridor would encompass 1,257 acres IRA.	No impacts	No impacts	Impacts would be the same as those for Alternative II-B.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued) (5.e)	Ashley National Forest	No impacts	No impacts	No impacts	1 mile and 11 acres of ROW along southern edge of IRA 401009, leaving the majority of the IRA unfragmented. One acre within Semi-Primitive Motorized ROS; TWE commitment to use of 100 foot ROW would reduce or eliminate surface disturbance impacts in this portion of the ROW. TWE would eliminate roads in IRAs.	3 miles of ROW within IRA 401010. Would parallel an existing transmission line and road, widening the disturbance area that bisects one large, mostly unfragmented, habitat area. Separation distances from existing transmission line could result in ROW being located on steeper side slopes, resulting in additional erosion and sedimentation to Sowers Creek, an impaired stream. TWE commitment to use of 100 foot ROW would reduce surface disturbance impacts. Impacts to IRAs during operations from vegetation maintenance within ROW. TWE would eliminate roads in IRAs. Acreage fully within roaded natural ROS areas. The 2-mile transmission line would cross 1 additional IRA.	1 mile and 11 acres of ROW along southern edge of IRA 401009, leaving the majority of the IRA unfragmented. The 2-mile transmission line would cross 3 additional IRAs.
	Other Federally managed areas	No impacts	No impacts	No impacts	3 acres Dinosaur NM within 2-mile corridor.	Impacts to Dinosaur NM same as Alternative II-D.	Impacts would be the same as those for Alternative II-D.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Special Designation Areas (Continued) (5.d)	NHTs	No Impacts	4 segments of the Old Spanish NHT crossed; 1 segment NHT II, 1 segment NHT III, 2 segments NHT V. Visible along 58 miles of trail, of which 7 miles are NHT II, 6 miles are NHT III, 27 miles are NHT IV, and 18 miles are NHT V	9 segments of the Old Spanish NHT crossed; 1 segment NHT II, 1 segment NHT III, 3 segments NHT V, 4 segments not categorized. Visible along 107 miles of trail, of which 17 miles are NHT II, 8 miles are NHT III, 31 miles are NHT IV, and 27 miles are NHT V; and 24 miles are not categorized	No Impacts	No Impacts	No Impacts
Transportation							
	Total Miles of New Permanent Access Roads	464	580	557	480	479	514
	Total Miles of Steep and Mountainous Terrain	239	270	192	281	259	313
	Road Crossings	21	16	19	16	17	16
	Number of Railroad Crossings	4	21	10	8	8	11
	Center Line Passing Through Public Land (miles)	148	270	287	191	160	182
	Center Line Passing Through Private Land (miles)	109	76	77	71	106	89
	Number of Airports within 5 miles	6	9	7	2	3	3
	Military Operations Areas (MOAs) within 20 Miles	1 – Hill AFB Sevier	1– Hill AFB Sevier Utah Launch Complex	1– Hill AFB Sevier Utah Launch Complex	1 – Hill AFB Sevier	1 – Hill AFB Sevier	1 – Hill AFB Sevier
	Military Operations Areas (MOAs) with 250-foot-Wide Transmission ROW Overlap	1 – Hill AFB Sevier	2 - Utah Launch Complex Hill AFB Sevier	2 - Utah Launch Complex Hill AFB Sevier	1 – Hill AFB Sevier	1 – Hill AFB Sevier	1 – Hill AFB Sevier

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Socioeconomics							
	Short-term socioeconomic effects	Temporary effects similar in nature to those associated with transmission line construction for Alternative I-A; mostly transient as construction progresses along the corridor. No effects related to terminal construction, unlike for Alternative I-A.	Total economic effects up to 30% higher than those in Alternative II-A due to the increased length and cost of the power line.	Total economic effects up to 30% higher than those in Alternative II-A due to the increased length and cost of the power line.	Similar to Alt. II-A, but would affect different communities in central Utah.	Similar to Alt. II-A, but would affect different communities in central Utah.	Similar to Alt. II-A, but would affect different communities in central Utah.
		Temporary increases in sales, use and lodging taxes, but lower tax revenues than for Alternative I-A because no terminal located in Region II.	Higher than in Alternative II-A, with relatively more effect in Colorado.	Higher than in Alternative II-A, with relatively more effect in Colorado.	Comparable to Alternative II-A.	Slightly higher than Alternative II-A	Slightly higher than Alternative II-A
		Temporary housing availability may be limited in northeastern Utah due to competing demands. Some areas in central with limited supply.	Temporary housing availability limited in northeastern and central Utah.	Temporary housing availability limited in northeastern and central Utah. Commuting may be easier due to highway access.	Comparable to Alternative II-A.	Comparable to Alternative II-A.	Comparable to Alternative II-A.
		Potential effects to agriculture could include temporary reductions of grazing on public lands and very minor effects on private farm lands.	More effects on livestock grazing and lesser effects on private farm lands.	More effects on livestock grazing and lesser effects on private farm lands.	More effects on livestock grazing (but less than II-B and II-C) and lesser effects on private farm lands (but more than II-B and II-C).	More effects on livestock grazing (but less than II-B and II-C) and lesser effects on private farm lands (but more than II-B and II-C).	
	Long-term socioeconomic effects	Long-term effects similar to those for Alternative I-A.	Generally the same as, but higher tax revenues than Alternative II-A.	Generally the same as, but higher tax revenues than Alternative II-A.	Comparable to Alternative II-A.	Comparable to Alternative II-A.	Comparable to Alternative II-A.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Socio-economics (Continued)		Substantial ad valorem taxes paid, but no taxes on terminals or ground electrodes.	Relatively more revenue would accrue to Colorado jurisdictions than under Alternative II-A.	Relatively more revenue would accrue to Colorado jurisdictions than under Alternative II-A.	Comparable to Alternative II-A.	Comparable to Alternative II-A.	Comparable to Alternative II-A.
		Tax and business revenues accrue primarily in Utah.	Relatively more revenue would accrue to Colorado jurisdictions than under Alternative II-A.	Relatively more revenue would accrue to Colorado jurisdictions than under Alternative II-A.	Comparable to Alternative II-A.	Comparable to Alternative II-A.	Comparable to Alternative II-A.
		Federal government and other lessors receive rental/ lease income on ROW.	Higher than Alternative II-A due to increased length of the ROW.	Higher than Alternative II-A due to increased length of the ROW.	Essentially the same as Alternative II-A.	Essentially the same as Alternative II-A.	Essentially the same as Alternative II-A.
		Alternative crosses area near the Uintah & Ouray Reservation, but would not result in effects warranting detailed consideration under Environmental Justice.	Avoids the Uintah and Ouray Reservation. No effects warranting further consideration under Environmental Justice.	Avoids the Uintah and Ouray Reservation. No effects warranting further consideration under Environmental Justice.	Avoids much of the Uintah and Ouray Reservation. No effects warranting further consideration under Environmental Justice.	Essentially the same as Alternative II-A.	Avoids much of the Uintah and Ouray Reservation. No effects warranting further consideration under Environmental Justice.
Health and Safety							
	Serious injuries to workers and the public at-large	Workers during construction and operation may be injured by heavy equipment, working at heights, working in the vicinity of high voltage equipment, as well as from typical hazards found on a construction site. Sand dunes within this alternative also may affect the safety of workers and the public during construction and operation. The workers and the public may be injured by fire as well as downed power lines.	Same as Alternative II-A except that safety issues related to sand dunes would not result from this alternative.	Same as Alternative II-A except that safety issues related to sand dunes would not result from this alternative.	Same as Alternative II-A.	Same as Alternative II-A.	Same as Alternative II-A.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Health and Safety (Continued)	Adverse health impacts from EMF, stray voltage, and induced voltage associated with transmission lines.	One outbuilding, four commercial/industrial structures, and four residential structures would be within 200 feet of the reference line, resulting in potential impacts from EMF, stray voltage, and induced voltage.	One outbuilding, five commercial/industrial structures, and three residential structures would be within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be similar to slightly less than Alternative II-A.	Three outbuildings, four commercial/industrial structures, and one residential structure would be within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be slightly less than Alternative II-A.	There would be no structures within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be less than Alternative II-A.	One outbuildings and five residential structures would be within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be similar to slightly less than Alternative II-A.	Four outbuildings would be located within 200 feet of the reference line, resulting in potential for impacts from EMF, stray voltage, and induced current that would be less than Alternative II-A.
(4.a) (4.b)	Noise impacts to nearby communities and residences.	There would be 9 communities within the 2-mile transmission line corridor; 53 residential structures within 500 feet of the reference line, and four residential structures within 200 feet of the reference line, resulting in potential impacts from noise with this alternative.	There would be 11 communities within the 2-mile transmission line corridor; five residential structures within 500 feet of the reference line, and three residential structures 200 feet of the reference line, resulting in impacts from noise that would be less than Alternative II-A.	There would be 11 communities within the 2-mile transmission line corridor; four residential structures within 500 feet of the reference line, and one residential structure 200 feet of the reference line, resulting in impacts from noise that would be similar to less than Alternative II-A.	There would be 1 communities within the 2-mile transmission line corridor; six residential structures within 500 feet of the reference line resulting in impacts from noise that would be less than Alternative II-A.	There would be 16 communities within the 2-mile transmission line corridor; 35 residential structures within 500 feet of the reference line, and five residential structures 200 feet of the reference line, resulting in impacts from noise that would be similar to less than Alternative II-A.	There would be 10 communities within the 2-mile transmission line corridor and 13 residential structures within 500 feet of the reference line, resulting in impacts from noise that would be less than Alternative II-A.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Wild Horses							
	Temporary and permanent loss of forage areas	N/A	31 acres of 250-foot-wide ROW within the Piceance-East Douglas Creek HMA (<0.02% of the HMA). <1 acres of temporary and permanent disturbance. 218 acres of 250-foot-wide ROW within the North Douglas HA (0.3% of the HMA). 91 acres of temporary disturbance, 23 acre permanent. 390 acres of 250-foot-wide ROW within the West Douglas HA (<0.3% of the HMA). 192 acres of temporary disturbance, 49 acre permanent.	Same as Alternative II-B.	No acres of 250-foot-wide ROW within the Hill Creek HMA. One acre of temporary disturbance, no permanent disturbance.	N/A	Same as Alternative II-D.
	Temporary construction noise and human activity	N/A	1,049 acres of 2-mile transmission line corridor within the Piceance-East Douglas Creek HMA (0.6% of HMA). 5,902 acres of 2-mile transmission line corridor within the North Douglas HA (7.7% of HA). 13,966 acres of 2-mile transmission line corridor within the West Douglas HA (11% of HA).	Same as Alternative II-B.	123 acres of 2-mile transmission line corridor within the Hill Creek HMA (0.1% of HMA).	N/A	Same as Alternative II-D.

Table 2-24 Summary of Impacts for Region II

Resource	Resource Topic	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Wild Horses (Continued)	Presence of transmission line within HMAs / HAs restrict helicopter use during wild horse gathers	N/A	One mile of transmission line within the Piceance-East Douglas Creek HMA. 7 miles of transmission line within the within the North Douglas HA 13 miles of transmission line within the within the West Douglas HA	Same as Alternative II-B.	No miles of transmission line within the Hill Creek HMA.	N/A	Same as Alternative II-D.
Lands with Wilderness Characteristics							
(5.e)	Number of LWC Units Affected	2	8	8	4	2	5
(5.e)	Number (acres) of LWC Units Eliminated	0	1 (5,304)	1 (5,304)	0	0	0
(5.e)	Number (acres) of LWC Units Remaining	3 (39,962)	8 (180,209)	8 (121,843)	5 (224,448)	3 (39,962)	6 (234,250)
(5.e)	Number (acres) of Unit Portions Eliminated	2 (323)	12 (2,841)	11 (7,550)	9 (857)	2 (323)	12 (1,286)
Plan Amendments							
(2.a)	Location, length, and reason for plan amendment	VFO (19 miles)—New utility corridor	WRFO (38 miles)—Convert/expand underground only corridor VFO (6 miles)—New utility corridor PFO (14 miles)—Designate new utility corridor	WRFO (38 miles)—Convert/expand underground only corridor VFO (6 miles)—New utility corridor PFO (10 miles)—Designate new utility corridor Fishlake National Forest (22 miles) — Expand existing corridor	VFO (17 miles)—New utility corridor	VFO (6 miles)—New utility corridor	VFO (22 miles)—New utility corridor SLFO (3 miles)—New utility corridor

[1] Number does not include MIS that are otherwise classified as special status.

[2] Number includes nests for which the species is not known.

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Region III				
Climate and Air				
	Fugitive Dust Emissions (PM_{10})	119.4 tons	117.1 tons	128.7 tons
Geology				
	Geologic Hazards Risk	Two active faults, slight landslide, slight subsidence. Low risk for ground motion.	One active fault, slight landslide, moderate subsidence. Low risk for ground motion.	One active fault, slight landslide, moderate subsidence. Moderate risk of ground motion.
	Mineral Resource Access	No oil and gas or coal mining. Potential conflict with active mining areas near Milford, Utah.	Same as Alternative III-A.	Same as Alternative III-A.
	Paleontological Resources Loss	4 miles PFYC Class 5.	1 mile PFYC Class 5.	1 mile PFYC Class 5.
Soils				
	Soils – Wind Erodible	114 acres	140 acres	105 acres
	Soils – Water Erodible	77 acres	36 acres	62 acres
	Soils-Compaction Prone	864 acres	1,106 acres	1,039 acres
	Soils-LRP	1,586 acres	1,453 acres	1,579 acres
	Soils- Prime Farmland	132 acres	113 acres	286 acres
Water				
	Erosion and Sedimentation Direct Effects from Crossings	Three perennial stream crossings	Five perennial stream crossings	No perennial stream crossings
	Impaired Stream Effects from Crossings	Two impaired stream crossed	One impaired stream crossed	No impaired streams crossed
	Effects to Water Users from Construction Water Use	206 acre-feet required	212 acre-feet required	230 acre-feet required
	Maximum Road Density Change in Watershed (HUC10, 300-foot, or 100-foot perennial buffer area)	1.61 mile/mile^2 (100 feet: the Big Wash-Beaver River Watershed)	1.61mile/mile^2 (100 feet: the Big Wash-Beaver Watershed)	1.61 mile/mile^2 (100 feet: the Big Wash-Beaver River Watershed)
Vegetation				
	Vegetation clearing of woody vegetation over 6 feet in height	276 acres of pinyon-juniper, and 12 acres of woody riparian and wetlands	331 acres of pinyon-juniper and 53 acres of woody riparian and wetlands	337 acres of pinyon-juniper and 12 acres of woody riparian and wetlands

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Vegetation (Continued)	Wetlands and Riparian Areas impacted by Facilities Construction (acres)	210 acres of greasewood flats, 46 acres of herbaceous wetlands, 41 acres of riparian, and 9 acres of woody riparian and wetlands	229 acres of greasewood flat, 55 acres of herbaceous wetlands, 50 acres of riparian, and 28 acres of woody riparian and wetlands	287 acres of greasewood flat, 75 acres of herbaceous wetlands, 11 acres of riparian, and 7 acres of woody riparian and wetlands
	Wetlands and Riparian Areas impacted by Operations (acres)	48 acres of greasewood flats, 10 acres of herbaceous wetlands, 13 acres of riparian, and 3 acres of woody riparian and wetlands	51 acres of greasewood flat, 12 acres of herbaceous wetlands, 11 acres of riparian, and 6 acres of woody riparian and wetlands	70 acres of greasewood flat, 19 acres of herbaceous wetlands, 3 acres of riparian, and 2 acres of woody riparian and wetlands
	USFS MIS Species	NA	NA	NA
Special Status Plants				
	Number of USFWS species with known occurrences impacted	1	1	1
	Number of USFWS species with potential habitat impacted	3	2	2
	Number of BLM Sensitive species with known occurrences impacted	9	9	7
	Number of BLM Sensitive species with potential habitat impacted	31	38	38
	Number of USFS Sensitive species with known occurrences impacted	1	0	0
	Number of USFS Sensitive species with potential habitat impacted	2	0	0
	Number of Nevada state listed species with known occurrences impacted	3	3	1
	Number of Nevada state listed species with potential habitat impacted	4	6	6
Wildlife				
(5.a)	Pronghorn crucial winter range (acres) construction/operation	1,627/378	1,897/433	1,868/439
	Mule deer crucial winter range (acres) construction/operation	185/51	0/0	0/0

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Wildlife (Continued)	Desert bighorn sheep occupied range – Nevada (acres)	106/33	140/40	106/30
	Small game, nongame habitat (acres) construction/operation	9,320/979	9,502/862	10,318/940
	Waterfowl habitat (acres) construction/operation	249/26	360/30	239/23
(5.b)	Number of raptor nests within 1 mile of the reference line	254	129	199
	IBAs crossed by the 2-mile transmission line corridor	0	Same as Alternative III-A	Pahranagat Valley Complex (188 acres)
	Number of MIS species whose habitat is crossed by alternative[2]	2	Same as Alternative III-A	Same as Alternative III-A
Special Status Wildlife				
(3.d)	Impacted desert tortoise potential habitat (acres) construction/operation	993/299	1,081/279	985/242
(3.a)	Impacted greater sage-grouse habitat (acres) construction/operation	346/73	0/0	Same as Alternative III-B
	Number of active leks within 4 miles of reference line in Utah	1	0	0
(3.e)	Impacted Utah prairie dog potential habitat (acres) construction/operation	77/31	86/36	101/44
	Impacted California condor potential habitat (acres) construction/operation	4,810/525	4,308/401	4,624/426
	Impacted Yuma clapper rail potential habitat (acres) construction/operation	22/3	81/6	19/2
	Impacted western yellow-billed cuckoo potential habitat (acres) construction/operation	22/3	81/6	19/2
	Impacted southwestern willow flycatcher potential habitat (acres) construction/operation	22/3	81/6	19/2

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Special Status Wildlife (Continued) (3.b)	Number of special status raptor nests within 1 mile of the reference line[1]	208	119	125
Aquatic Biological Resources				
	Effects on aquatic habitat and species from potential direct and indirect disturbance or water quality changes	4 perennial streams crossed by 250-foot-wide ROW; no game fish streams crossed by the 250-foot-wide ROW	3 perennial streams crossed by 250-foot-wide ROW; 2 game fish streams crossed by the 250-foot-wide ROW	1 perennial stream crossed by 250-foot-wide ROW; 1 game fish stream crossed by the 250-foot-wide ROW
	Potential aquatic habitat alteration or loss (feet^2)	1,600	1,200	400
	Potential amphibian mortalities from vehicle traffic	275 ROW miles	282 ROW miles	309 ROW miles
Special Status Aquatic Resources				
	Effects on habitat and special status species from potential direct disturbance or water quality changes	4 perennial streams with special status aquatic species crossed by 250-foot ROW	3 perennial streams with special status aquatic species crossed by 250-foot ROW	1 perennial stream with special status aquatic species crossed by 250-foot ROW
		One stream with one species under review for federal listing	One stream with one species under review for federal listing	No streams with federally listed or petitioned aquatic species
	Number of special status aquatic species with potential habitat alteration or loss	9	4	3
	Number of watersheds supporting special status aquatic species with increased road densities	1	2	0
	Potential direct disturbance on critical habitat for federally listed species	None	None	None
Cultural Resources				
	NRHP-listed Sites	0	1	1
	NRHP-eligible Sites	23	15	29
	Unevaluated Sites	11	14	11
	Potential TCPs	3	11	5
	Trail Crossings	Old Spanish Trail (3) (1 NHT-I, 2 not categorized)	Old Spanish Trail (0)	Old Spanish Trail (0)

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Cultural Resources (Continued)	Mountain Meadows NHL and Site (distance from alternative)	0.1 mile	31 miles	28 miles
	Average Inventory Coverage	20%	23%	20%
	Site Density (sites per 100 acres inventoried)	0.022	1.7	0.01
	Overall Trail Visibility (within 5-mile viewshed)	23 miles	6.2 miles	0 miles
Visual Resources				
	High Sensitivity Viewers			
	0–0.5 miles	32	22	51
	0.5–2.5 miles	82	99	106
	2.5–5 miles	69	105	83
	>5 miles	93	58	68
	Moderate Sensitivity Viewers			
	0–0.5 miles	52	84	110
	0.5–2.5 miles	93	92	81
	2.5–5 miles	72	48	72
	>5 miles	59	61	46
	Scenic Quality (miles)			
	A	1	13	11
	B	100	85	96
	C	174	187	202
	BLM VRI Classifications (miles)			
	Class II	17	26	28
	Class III	90	75	66
	Class IV	150	169	209
	BLM VRM Classifications (miles)			
	Class II	3	3	--
	Class III	73	64	92
	Class IV	132	144	146

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Visual Resources	USFS SIO/VQO Classifications (miles)			
(Continued)	High Retention	1	--	--
	Moderate Partial Retention	16	--	--
	Low Modification	--	--	--
	Residual Impacts Landscape Scenery (miles)			
	High	60	59	82
(5.c)	Moderate	60	100	111
	Low	155	126	116
	Residual Impacts High Sensitivity Viewers (miles)			
	High	23	14	42
(5.c)	Moderate	70	116	131
	Low	182	154	135
	Residual Impacts Moderate Sensitivity Viewers (miles)			
	High	25	55	89
	Moderate	73	67	64
	Low	178	163	155
	BLM VRM USFS SIO/VQO Compliance/Consistency (miles) Before Mitigation			
	Compliant	219	210	229
	Non-compliant	7	1	8
	NA	50	73	71
	BLM VRM USFS SIO/VQO Compliance/Consistency (miles) After Mitigation			
	Compliant	220	210	229
	Non-compliant	6	1	8
	NA	50	73	71
Recreation				
	Recreation Area/Site in Region III	250-foot-wide ROW Acres (% of Total Area)	250-foot-wide ROW Acres (% of Total Area)	250-foot-wide ROW Acres (% of Total Area)
		2-mile Corridor Acres (% of Total Area)	2-mile Corridor Acres (% of Total Area)	2-mile Corridor Acres (% of Total Area)

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Recreation	BLM Fillmore FO			
(Continued)	Dispersed, undesignated recreation	2,126 (0.05%)	2,096 (0.05%)	2,091 (0.05%)
	areas	96,673 (2.2%)	101,464 (2.3%)	101,450 (2.3%)
	BLM Cedar City FO			
	Dispersed, undesignated recreation	1,256 (0.06%)	1,122 (0.05%)	1,122 (0.05%)
	areas	57,249 (2.7%)	53,732 (2.6%)	53,616 (2.5%)
	BLM St. George FO			
	Dispersed, undesignated recreation	747 (0.2%)	N/A	N/A
	areas	32,409 (6.4%)		
	BLM Caliente FO			
	Dispersed, undesignated recreation	651 (0.02%)	2,032 (0.06%)	2,739 (0.08%)
	areas	25,917 (0.7%)	81,729 (2.3%)	114,595 (3.2%)
	Chief Mountain SRMA	N/A	N/A	488 (0.4%)
				18,618 (2%)
	North Delamar SRMA	N/A	N/A	0
				<1
	BLM Las Vegas FO			
	Dispersed, undesignated recreation	1,518 (0.08%)	1,123 (0.06%)	1,237 (0.07%)
	areas	57,488 (3.1%)	38,488 (2.1%)	44,147 (2.4%)
	Muddy Mountains SRMA	72 (0.1%)	N/A	N/A
		4,202 (3.4%)		
	Nellis Dunes SRMA	N/A	N/A	0
				142 (1%)
	Dixie National Forest			
	Rural	N/A	N/A	N/A
	Roaded Modified	N/A	N/A	N/A
	Roaded Natural	184 (0.3%)	N/A	N/A
		4,396 (8.0%)		

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Recreation (Continued)	Semi-Primitive Motorized	332 (0.3%)	N/A	N/A
		9,076 (7.8%)		
	SPM Within IRA	*19 (0.02%)*	*N/A*	*N/A*
		3,826 (3.3%)		
	Remainder in SPM ROS	*313 (0.3%)*	*N/A*	*N/A*
		5,250 (4.5%)		
	Semi-primitive Non-Motorized	15 (<0.01%)	N/A	N/A
		10,331 (4.6%)		
	SPNM Within IRA	*5 (<0.01%)*	*N/A*	*N/A*
		9,717 (4.3%)		
	Remainder in SPNM ROS	*10 (<0.01%)*	*N/A*	*N/A*
		614 (0.3%)		
	Private/Other	1 (<0.01%)	N/A	N/A
		20 (<0.01%)		
	Total	531 acres	N/A	N/A
		23,803 acres		
	State Recreation Areas			
	Zane CWMU	N/A	195/5,468 (55%)	195/5,468 (55%)
	Scenic Byways and Backways			
	Rainbow Canyon Backcountry Byway	N/A	2 crossings	1 crossing
			5 miles	5 miles
	Highway 93 Scenic Byway	N/A	N/A	2 crossings
				15 miles
	Bitter Springs Backcountry Byway	1 crossing	N/A	N/A
		2 miles		
	Local Recreation Areas			
	Newcastle Reservoir	0	N/A	N/A
		40 (26%)		

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Recreation (Continued)	Scenic Byways and Backways	None	2 crossings of the Rainbow Canyon Backcountry Byway; 5 miles within the 2-mile corridor.	1 crossing of the Rainbow Canyon Backcountry Byway; 5 miles within the 2-mile corridor.
				1 crossing of the Highway 93 Scenic Byway; 15 miles within the 2-mile corridor.
Land Use and Planning				
(1.a) (6.a)	Federal, State and Tribal lands and Use of Designated Utility Corridors	275 miles total: 81% located on BLM or USFS-managed lands; 5% would be located on state lands. 64% of the route would be within a designated RMP or WWEC (65 miles and 146 miles, respectively).	282 miles total: 75% located on BLM- managed lands; 3% on state lands and 5% be on tribal lands.	309 miles total; 77% located on BLM-managed lands; 3% located on state lands. 64 miles in BLM RMP corridors and 45 miles in WWEC.
			101 miles in BLM RMP corridors and 47 miles in WWEC.	
	Avoidance/Exclusion areas crossed by reference line	None	None	1 mile within avoidance area (Coyote Springs Valley ACEC) and 9 miles within Kane Springs ACEC.
(6.a)	Private Lands and Zoning	38 miles (14%) located on private lands; 9 residences, 7 commercial/industrial structures, one agricultural structure, and 11 outbuildings within 500 feet of the proposed reference line.	48 miles (17%) located on private land. 2 residences, and 6commercial/ industrial structure within 500 feet of reference line. There would be 8 communities and one park and one school within the 2-mile transmission line corridor. There are no identified incompatible designated land uses within the communities.	61 miles (20%) located on private land.
		There would be one community within the 2-mile transmission line corridor; no identified incompatible designated land uses within the community. One cemetery within the 2-mile transmission line corridor.		2 residences, 7 commercial/industrial structures within 500 feet of the reference line.
				There would be 9 communities and 1 park and 1 school within the 2-mile transmission line corridor. There are no identified incompatible designated land uses within the communities.
	Agriculture	No impacts	14 acres of initial clearing, nine acres of construction disturbance, and two acres of permanent removal of croplands.	Four acres of initial clearing, three acres of construction disturbance, and less than one acre of permanent removal of croplands.

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Land Use (Continued)	Livestock Grazing	Construction impacts 9,304 acres (465 AUMs); Operation impacts 966 acres (48 AUMs)	Construction impacts 8,522 acres (426 AUMs); Operation impacts 791 acres (40 AUMs)	Construction impacts 9,438 acres (472 AUMs); Operation impacts 857 acres (43 AUMs)
	USFS land Management	16 miles of ROW within Dixie NF areas specifically managed for roaded natural recreation, big-game winter range, and livestock grazing. A portion would also cross areas without special management prescriptions. Development of a transmission line would generally be compatible with the management prescriptions for these areas; however, timing restrictions would applied within big-game winter range management areas for protection of wildlife resources and temporary roads would be need to reclaimed within one season after intended use.	No impacts	No impacts
(5.f)	Greenfield	73 miles (26%)	140 miles (49%)	96 miles (31%)
Special Designation Areas				
	St. George FO	9 miles of ROW within Beaver Dam Slope ACEC; 25 % of the ACEC (12,347 acres) within the 2-mile corridor, and partially outside of the designated utility corridor. 4,253 acres within ACEC ROW avoidance areas and an additional 2,520 acres in ROW avoidance areas common to both the ACEC and the Beaver Dam Wash NCA. Development of a transmission line or associated roads would not be in conformance with area management outside designated corridors, including a specification of 40 acres of surface disturbance life of project. Impacts to desert tortoise and desert tortoise (and other special status species) habitat during construction from surface disturbance and construction activity.	No impacts	No impacts

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Special Designations (Continued)		4 miles of ROW within Beaver Dam Wash NCA.12% of the NCA (7,571 acres) within the 2-mile corridor, and partially outside of the designated utility corridor; 1,452 acres would be located in NCA-only ROW avoidance areas in addition to shared NCA/ACEC ROW avoidance areas .Impacts to desert tortoise similar to those identified under Beaver Dam Slope ACEC.		
	Caliente FO	10 miles of ROW within Mormon Mesa ACEC; almost all within designated utility corridor.	Impacts to Mormon Mesa ACEC same as Alternative III-A except that 9 miles of ROW within the ACEC.	10 miles of ROW within Kane Springs ACEC; 9.1 miles would be outside of the designated utility corridor. The ACEC is a ROW exclusion area for protection of desert tortoise.
		28 percent of the ACEC (10,615 acres) within 2-mile corridor; 6,555 acres of which in ROW exclusion areas. Development of a transmission line or associated roads would not be in conformance with area management; impacts to desert tortoise R&I values as described above.		28% of the ACEC (6,340 acres) within 2-mile corridor; 5,298 acres in ROW avoidance areas, with corresponding impacts to desert tortoise habitat.
			6% (545 acres) of the Clover Wilderness Area (WA) within 2 -mile corridor. This is a ROW exclusion area; development of roads or use of motorized vehicles would not be compatible with area management; wilderness quality in the areas closest to the 250-foot-wide transmission line ROW could be temporarily reduced during construction from noise and activity.	

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Special Designations (Continued)				2,697 acres of the 2-mile within the Delamar Mountain Wilderness; 346 acres within the Arrow Canyon Wilderness, both of which are ROW exclusion areas. Development of roads or use of motorized vehicles would not be compatible with area management; wilderness quality in the areas closest to the 250-foot-wide transmission line ROW could be temporarily reduced during construction from noise and activity.
	Las Vegas FO	8 miles of ROW within Mormon Mesa ACEC; all within designated utility corridor. 4% of the ACEC (6,550 acres) within 2-mile corridor; 4,555 acres in ROW exclusion areas. Development of a transmission line or associated roads would not be in conformance with area management; impacts to desert tortoise R&I values as described above. One crossing of Muddy River WSR.	Impacts to Mormon Mesa ACEC same as Alternative III-A except 15 miles would cross the Vegas FO ACEC and 8% of ACEC (12,580 acres) within 2-mile corridor, 6,663 acres of which would be within ROW avoidance areas. One crossing of Muddy River and Meadow Valley Wash WSRs.	19 miles of ROW within Coyote Springs Valley ACEC; one mile of which is outside the designated corridor. The ACEC is a ROW avoidance area for protection of desert tortoise. 32% of the ACEC (24,237 acres) within 2-mile corridor; 5,928 acres in ROW avoidance areas, with corresponding impacts to desert tortoise habitat.
(5.e)	Dixie NF	2 miles of ROW within Atchinson IRA. Route partially within a designated WWEC and located on the IRAs' edge leaving most of the IRA unfragmented. Within the IRA, the ROW would be in some areas designated as semi-primitive motorized and non-motorized ROS; use of 100 foot ROW would reduce surface disturbance impacts. Impacts to IRAs during operations from vegetation maintenance within ROW.	No impacts	No impact
(5.e)		The 2-mile transmission line corridor for Alternative III-A would encompass portions of four additional IRAs; TWE would eliminate roads in these areas.		

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Special Designations (Continued)	USFWS Desert National Wildlife Refuge (NWR)	No impacts	No impacts	1 mile of ROW within Desert NWR; almost all within designated utility corridor. 1% of the Refuge (16,524 acres) within 2-mile corridor. Surface disturbance, noise and activity that would impact Refuge values (protection, enhancement, and maintenance of desert bighorn sheep) in this area. 170 acres of the Pahranagat NWR also would be within 2-mile corridor. Road construction in this area would remove habitat for migratory birds.
(5.d)	NHTs	3 segments of the Old Spanish NHT crossed; 1 NHT-1, 2 unrated. Visible along 10 miles of the trail ,of which - 8 miles are NHT-I, 1.9 miles are NHT-II, and 0.1 mile of NHT-IV.	No segments of the Old Spanish NHT crossed. Visible along 6.2 miles of the trail, of which 5 miles are NHT-I, 1 mile are NHT-II, and 0.1 mile is NHT-IV.	No Impacts
Transportation				
	Total Miles of New Permanent Access Roads	423	401	433
	Total Miles of Steep and Mountainous Terrain	185	79	99
	Road Crossings	12	8	10
	Railroad Crossings	4	10	11
	Center Line Passing Through Public Land (miles)	237	234	247
	Center Line Passing Through Private Land (miles)	38	48	61
	Number of Airports within 5 miles	1	2	2
	MOAs within 20 Miles	4	4	4
		Hill AFB Sevier MOA; Wendover MOA	Hill AFB Sevier (MOA); Wendover MOA	Hill AFB Sevier MOA; Wendover MOA
		Nellis AFB Desert MOA; Nellis Desert MOA	Nellis AFB Desert MOA; Nellis Desert MOA	Nellis AFB Desert MOA; Nellis Desert MOA

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Transportation (Continued)	MOAs with 250-foot-Wide Transmission ROW Overlap	Hill AFB Sevier B MOA	Hill AFB Sevier B MOA	Hill AFB Sevier B MOA
		(Most Overlap)	(Conflict)	(Conflict)
			Nellis AFB Desert MOA	Nellis AFB Desert MOA
			(Conflict)	(Most Conflict)
Socioeconomics				
	Short-term Socioeconomic effects	Temporary employment, population and tax effects similar to those for Alternative II-A.	Essentially the same as those in Alternative III-A.	Similar to, but up to 10% higher than those in Alt. III-A.
		Effects distributed between Utah and Nevada.	Distribution of effects more focused in Nevada than under Alt. III-A.	Distribution of effects more focused in Nevada than under Alt. III-A.
		Substantial tax revenues, but magnitude will reflect lack of a terminal in Region III.	Essentially the same as those in Alternative III-A.	Similar to, but up to 10% higher than those in Alt. III-A.
		Temporary housing availability limited in western Utah.	Temporary housing availability limited in western Utah and outlying areas of Nevada.	Temporary housing availability limited in western Utah and outlying areas of Nevada.
	Long-term socioeconomic effects	Long-term economic effects similar to those for Alternative I-A.	Generally the same as, but slightly higher tax revenues than Alternative III-A.	Generally the same as, but slightly higher tax revenues than Alternative III-A.
		Project generates ad valorem/property taxes on improvements in the region. A terminal is not planned under III-A, but could be under design options	Distribution of fiscal benefits more focused in Nevada than under Alt. III-A.	Distribution of fiscal benefits more focused in Nevada than under Alt. III-A.
		Most of this corridor passes through undeveloped rural area, therefor limited potential for adverse effects to property value, on social values or outdoor recreation. Relatively higher, but still limited potential for effects to outdoor recreation on Dixie NF.	Similar to effects from Alternative III-A, but avoids the Dixie NF.	Similar to effects from Alternative III-A, but avoids the Dixie NF.
		Federal government and other lessors receive rental/ lease income on ROW.	Same as Alternative III-A	Same as Alternative III-A
		Project development and operations would not result in effects warranting further consideration under Environmental Justice.	A segment of this alternative passes through the Moapa Reservation, in an area with substantial industrial development in place. Location would require agreement with the Moapa Tribe. No further consideration warranted under Environmental Justice.	Same as Alternative III-A

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Health and Safety				
	Serious injuries to workers and the public at-large	Workers during construction and operation may be injured by heavy equipment, working at heights, working in the vicinity of high voltage equipment, as well as from typical hazards found on a construction site. The workers and the public may be injured by fire as well as downed power lines.	Same as Alternative III-A	Same as Alternative III-A
	Adverse health impacts from EMF, stray voltage, and induced voltage associated with transmission lines	Four outbuildings, three commercial/industrial structures, and two residential structures would be within 200 feet of the reference line, resulting in potential impacts from EMF, stray voltage, and induced voltage.	Four outbuildings, three commercial/industrial structures, and one residential structure would be within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be slightly less than Alternative III-A.	Four outbuildings, four commercial/industrial structures, and one residential structure would be within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be similar to slightly less than Alternative III-A.
(4.a) (4.b)	Noise impacts to nearby communities and residences	There would be two communities within the 2-mile transmission line corridor; seven residential structures within 500 feet of the reference line, and two residential structures within 200 feet of the reference line, resulting in potential impacts from noise with this alternative.	There would be eight communities within the 2-mile transmission line corridor; two residential structures within 500 feet of the reference line, and one residential structure 200 feet of the reference line, resulting in impacts from noise that would be greater than Alternative III-A.	There would be nine communities within the 2-mile transmission line corridor; two residential structures within 500 feet of the reference line, and one residential structure within 200 feet of the reference line, resulting in impacts from noise that would be greater than Alternative III-A.
Wild Horses				
	Temporary and permanent loss of forage areas	69 acres of 250-foot-wide ROW within the Chloride Canyon HMA (<0.03% of the HMA). 100 acres of temporary disturbance, 24 acres permanent.	No acres of 250-foot-wide ROW within the Eagle HMA. Less than 1 acre of temporary permanent/ disturbance. No acres of 250-foot-wide ROW within the North Hills HMA. 11 acres of temporary disturbance, 3 acre permanent.	Same as Alternative II-B.
	Temporary construction noise and human activity	2.909 acres of 2-mile transmission line corridor within the Chloride Canyon HMA (1.4% of HMA).	56 acres of 2-mile transmission line corridor within the Eagle HMA (0.01% of HMA). 2,795 acres of 2-mile transmission line corridor within the North Hills HMA (5.6% of HMA).	Same as Alternative II-B.
	Presence of transmission line within HMAs / HAs restrict helicopter use during wild horse gathers	2 miles of transmission line within the Chloride Canyon HMA.	No miles of transmission line within the Eagle or North Hills HMA.	Same as Alternative II-B.

Table 2-25 Summary of Impacts for Region III

Resource	Resource Topic	Alternative III-A	Alternative III-B	Alternative III-C
Lands with Wilderness Characteristics				
(5.e)	Number of LWC Units Affected	2	6	9
(5.e)	Number (acres) of LWC Units Eliminated	0	1 (9,108)	0
(5.e)	Number (acres) of LWC Units Remaining	3 (54,147)	7 (187,931)	12 (237,291)
(5.e)	Number (acres) of Unit Portions Eliminated	2 (510)	13 (4,518)	12 (3,364)
Plan Amendments				
(2.a)	Location, length, and reason for plan amendment	None	None	CFO (9 miles)—ROW exclusion area exception

[1] Number includes nest for which the species is not known.

[2] Number does not include MIS that are classified as special status.

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Region IV				
Climate and Air				
	Fugitive Dust Emissions (PM_{10})	44.4 tons	47.2 tons	49.4 tons
Geology				
	Geologic Hazards Risk	Near active Black Hills fault, ground motion potential, low landslide, low subsidence.	Same as Alternative IV-A	Same as Alternative IV-A
	Mineral Resource Access	No oil and gas or coal mining. No potential mineral conflicts.	No oil and gas or coal mining. Potential conflicts with gypsum mining.	
	Paleontological Resources Loss	0 miles PFYC Class 5.	0 miles PFYC Class 5.	0 miles PFYC Class 5.
Soils				
	Soils – Wind Erodible	`	66 acres	109 acres
	Soils – Water Erodible	16 acres	1 acre	1 acre
	Soils-Compaction Prone	0 acres	3 acres	2 acres
	Soils-LRP	191 acres	191 acres	166 acres
	Soils- Prime Farmland	0 acres	0 acres	0 acres
Water				
	Erosion and Sedimentation Direct Effects from Crossings	One perennial stream crossings	Three perennial stream crossings	Two perennial stream crossings
	Impaired Stream Effects from Crossings	One impaired stream crossed	One impaired stream crossed	One impaired stream crossed
	Effects to Water Users from Construction Water Use	28 acre-feet required	29 acre-feet required	33 acre-feet required
	Maximum Road Density Change in Watershed (HUC10, 300-foot, or 100-foot perennial buffer area)	0.16 mile/mile^2 (100 feet: Duck Creek-Las Vegas Wash Watershed)	0.18 mile/mile^2 (Government Wash-Colorado River Watershed)	0.18 mile/mile^2 (Government Wash-Colorado River Watershed)
Vegetation				
	Vegetation clearing of woody vegetation over 6 feet in height	<1 acre of the woody riparian and wetlands	7 acres of the woody riparian and wetlands	7 acres of the woody riparian and wetlands
	Wetlands and Riparian Areas impacted by Facilities Construction (acres)	5 acres of riparian, and < 1 acre of woody riparian and wetlands	1 acre of herbaceous wetlands, 1 acre of riparian, and 5 acres of woody riparian and wetlands	1 acre of herbaceous wetlands, 1 acre of riparian, and 5 acres of woody riparian and wetlands
	Wetlands and Riparian Areas impacted by Operations (acres)	<1 acre of herbaceous wetlands and 1 acre of riparian	<1 acre of herbaceous wetlands, <1 acre of riparian, and 2 acres of woody riparian and wetlands	< 1 acre each of herbaceous wetlands and riparian and 2 acres of woody riparian and wetlands
	USFS MIS Species	NA	NA	NA

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Special Status Plants				
	Number of USFWS species with known occurrences impacted	0	0	0
	Number of USFWS species with potential habitat impacted	1	1	1
	Number of BLM Sensitive species with known occurrences impacted	4	3	2
	Number of BLM Sensitive species with potential habitat impacted	19	18	16
	Number of USFS Sensitive species with known occurrences impacted	0	0	0
	Number of USFS Sensitive species with potential habitat impacted	0	0	0
	Number of Lake Mead NRA Sensitive species with known occurrences impacted	0	2	2
	Number of Lake Mead NRA Sensitive species with potential habitat impacted	0	2	2
	Number of Nevada state listed species with known occurrences impacted	1	1	1
	Number of Nevada state listed species with potential habitat impacted	5	5	5
Wildlife				
(5.a)	Desert bighorn sheep occupied range – Nevada (acres)	122/39	69/31	39/19
	Small game, nongame habitat (acres) construction/operation	900/98	897/121	924/122
	Waterfowl habitat (acres) construction/operation	13/1	21/7	Same as Alternative IV-B
(5.b)	Number of raptor nests within 1 mile of the reference line	0	0	0
	IBAs crossed by the 2-mile transmission line corridor (acres)	0	Lake Mead NRA (643 acres)	Lake Mead NRA (643 acres)

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
SSS Wildlife				
(3.d)	Impacted desert tortoise potential habitat (acres) construction/operation	566/148	553/171	645/172
	Impacted Yuma clapper rail habitat (acres) construction/operation	1/<1	12/2	Same as Alternative IV-B
	Impacted western yellow-billed cuckoo habitat (acres) construction/operation	1/<1	12/2	Same as Alternative IV-B
	Impacted southwestern willow flycatcher habitat (acres) construction/operation	1/<1	12/2	Same as Alternative IV-B
(3.b)	Number of special status raptor nests within 1 mile of the reference line	1	1	1
Aquatic Biological Resources				
	Effects on aquatic habitat and species from potential direct and indirect disturbance or water quality changes	1 perennial streams crossed by 250-foot-wide ROW; 1 game fish stream crossed by 250-foot-wide ROW	4 perennial streams crossed by 250-foot ROW; 1 game fish stream crossed by 250-foot-wide ROW	3 perennial streams crossed by 250-foot ROW; 1 game fish stream crossed by 250-foot-wide ROW
	Potential aquatic habitat alteration or loss (feet^2)	400	1,600	1,200
	Potential amphibian mortalities from vehicle traffic	39 ROW miles	41 ROW miles	43 ROW miles
Special Status Aquatic Resources				
	Effects on habitat and special status species from direct disturbance or water quality changes	1 perennial streams with special status aquatic species crossed by 250-foot ROW	No perennial streams with special status aquatic species crossed by 250-foot ROW	No perennial streams with special status aquatic species crossed by 250-foot ROW
		1 stream with federally listed or petitioned aquatic species	1 stream with federally listed or petitioned aquatic species	1 stream with federally listed or petitioned aquatic species
	Number of special status aquatic species with potential habitat alteration or loss	0	0	0
	Number of watersheds supporting special status aquatic species with increased road densities	1	0	0
	Potential direct disturbance on critical habitat for federally listed species	None	None	None

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Cultural Resources				
	NRHP-listed Sites	2	0	0
	NRHP-Eligible Sites	6	12	17
	Unevaluated Sites	4	6	7
	Potential TCPs	8	7	7
	Trail Crossings	Old Spanish Trail (0)	Old Spanish Trail (0)	Old Spanish Trail (0)
	Average Inventory Coverage	39%	34%	32%
	Site Density (sites per 100 acres inventoried)	0.007	0.005	0.005
	Overall Trail Visibility (within 5-mile viewshed)	0 miles	0 miles	0 miles
Visual Resources				
	High Sensitivity Viewers			
	0–0.5 miles	25	17	14
	0.5–2.5 miles	8	15	17
	2.5–5 miles	7	7	9
	>5 miles	--	--	5
	Moderate Sensitivity Viewers			
	0–0.5 miles	7	20	16
	0.5–2.5 miles	23	17	26
	2.5–5 miles	8	2	3
	>5 miles	--	--	--
	Scenic Quality (miles)			
	A	3	7	8
	B	17	2	2
	C	17	30	35
	BLM VRI Classifications (miles)			
	Class II	14	2	2
	Class III	8	6	6
	Class IV	4	--	--

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Visual	BLM VRM Classifications (miles)			
Resources	Class II	--	--	--
(Continued)	Class III	22	8	8
	Class IV	3	--	--
	USFS SIO/VQO Classifications (miles)			
	High Retention	--	--	--
	Moderate Partial Retention	--	--	--
	Low Modification	--	--	--
	Residual Impacts Landscape Scenery (miles)			
	High	6	6	6
(5.c)	Moderate	3	9	10
	Low	29	24	29
	Residual Impacts High Sensitivity Viewers (miles)			
	High	6	8	8
(5.c)	Moderate	17	13	10
	Low	15	18	27
	Residual Impacts Moderate Sensitivity Viewers (miles)			
	High	--	7	7
	Moderate	12	18	14
	Low	25	14	24
	BLM VRM USFS SIO/VQO Compliance/Consistency (miles) Before Mitigation			
	Compliant	20	8	8
	Non-compliant	5	--	--
	NA	12	31	37
	BLM VRM USFS SIO/VQO Compliance/Consistency (Miles) After Mitigation			
	Compliant	20	8	8
	Non-compliant	5	--	--
	NA	12	31	37

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Recreation				
	Recreation Area/Site in Region IV	250-foot-wide ROW Acres (% of Total Area)	250-foot-wide ROW Acres (% of Total Area)	250-foot-wide ROW Acres (% of Total Area)
		2-mile Corridor Acres (% of Total Area)	2-mile Corridor Acres (% of Total Area)	2-mile Corridor Acres (% of Total Area)
	BLM Las Vegas FO			
	Dispersed, undesignated recreation areas	213 (0.01%)	190 (0.01%)	190 (0.01%)
		6,990 (0.4%)	6,765 (0.4%)	6,765 (0.4%)
	Nellis Dunes SRMA	0	0	0
		183 (1.2%)	183 (1.2%)	183 (1.2%)
	Sunrise Mountain SRMA	330 (0.9%)	43 (0.1%)	43 (0.1%)
		11,155 (29.7%)	1,825 (4.9%)	1,825 (4.9%)
	Las Vegas Valley SRMA	296 (0.2%)	12 (<0.01%)	N/A
		8,209 (4.2%)	535 (0.3%)	
	Nelson/Eldorado SRMA	151 (0.2%)	107 (0.1%)	0
		7,871 (8.6%)	3,498 (3.8%)	29 (<0.1%)
	Other Federally Managed Recreation Areas			
	Sloan Canyon NCA	0	NA	N/A
		2,684 (6.0%)		
	Lake Mead NRA (NPS)	0	427 (0.03%)	414 (0.03%)
		25 (<0.01%)	12,871 (<1%)	14,482 (<1%)
	Local Recreation Areas			
	Clark County Wetlands Park	18 (0.6%)	N/A	N/A
		376 (13%)		
	Cascata Golf Course	N/A	0	N/A
			229 (53%)	
	Bootleg Canyon	N/A	66 (2.9%)	N/A
			1,627 (70%)	
	River Mountains Loop Trail	4 crossings	8 crossings	6 crossings
		8 miles	11 miles	11 miles

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Land Use and Planning				
(1.a) (6.a)	Federal, State and Tribal lands and Use of Designated Utility Corridors	39 miles total: 81% located on federally managed lands.	41 miles total: 56% located on federally managed lands.	43 miles total: 55% located on federally managed lands.
		6 miles of BLM RMP corridors and 16 miles of designated WWEC.	5 miles in BLM RMP corridors and 6 miles in WWEC.	5 miles in BLM RMP corridors and 6 miles in WWEC.
	Avoidance/Exclusion areas crossed by reference line	11 miles designated avoidance areas in the Rainbow Gardens and River Mountains ACEC. 1 mile in the Sunrise Mountain ISA exclusion area.	2 miles avoidance areas in the Rainbow Gardens ACEC; no exclusion areas.	2 miles avoidance areas in the Rainbow Gardens ACEC; no exclusion areas.
(6.a)	Private Lands and Zoning	8 miles (19 %) located on private land. 11 residential structures and 3 commercial/ industrial structures within 500 feet of the proposed reference line. Two communities within the 2-mile transmission line corridor.	18 miles (44%) would be located on private land. 9 residential structures and 2 commercial/industrial structures within 500 feet of reference line. One community within the 2-mile transmission line corridor.	19 miles (45%) would be located on private land. 9 residential structures and 1 commercial/industrial structures within 500 feet of the proposed reference line. There would be 1 community within the 2-mile transmission line corridor.
	Agriculture	None	None	None
	Livestock Grazing	None	None	None
(5.f)	Greenfield	0 miles (0%)	12 miles (31%)	12 miles (27%)
Special Designation Areas				
	Las Vegas FO	250-foot ROW would cross one ISA and 2 ACECs.	250-foot ROW would cross one ACEC; 2 mile corridor would encompass portions of one ISA and 2 ACECs. Impacts to Lake Mead NRA discussed under Recreation.	250-foot ROW would cross one ACEC; 2 mile corridor would encompass portions of one WA, one ISA, one ACEC and NRA.
		One mile of the 250-foot-wide transmission line ROW would fall within the Sunrise Mountain ISA but outside of the designated utility corridor.	3 miles of the ROW within Rainbow Gardens ACEC and 6.9% of ACEC (2,590 acre) within 2-mile corridor. Impacts similar to Alternative IV-A.	Impacts to Rainbow Garden ACEC same as under Alternative IV-B.

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Special Designation Areas (Continued)		This is not compatible with special designation area (SDA) management, as the ISA is a ROW exclusion area. The BLM has recommended the release of the IRA from wilderness consideration primarily because of a lack of wilderness character. Therefore, construction of the TWE power line is not likely to appreciably change the wilderness character of the ISA.		
			5.2% the Sunrise Mountain ISA (532 acres) within 2-mile corridor; impacts similar to Alternative IV-A.	5.8 percent of the Black Mountain WA (1,005 acres) within 2-mile corridor. Development of road or use of motorized vehicles would not be compatible with area management and wilderness quality in the areas closest to the 250-foot-wide transmission line ROW could be temporarily reduced during construction from noise and activity.
		11 miles of ROW within the Rainbow Gardens ACEC, 9 miles of which would be outside of designated corridors and within ROW avoidance area. 28 % of the ACEC (10,563 acres) within 2-mile corridor, with corresponding impacts to geological, scenic, cultural, or sensitive plant R&I values from construction and operation.		
			73 acres of the 2-mile transmission line corridor would be located within River Mountain ACEC, with corresponding impacts as discussed under Alternative IV-A.	'Impacts to Sunrise Mountain ISA same as under Alternative IV-B.

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Special Designation Areas (Continued)		5 miles of ROW within the River Mountain ACEC, fully within designated utility corridor. 56% of the ACEC (3,127 acres) within 2-mile transmission line corridor and ROW avoidance area, with corresponding impacts to bighorn sheep habitat and scenic viewshed R&I values.	14 miles of ROW within Lake Mead NRA; 427 acres within 2-mile transmission line corridor. NPS has indicated that construction and operation of this alternative is incompatible with NRA management.	14 miles of ROW within Lake Mead NRA; 414 acres within 2-mile transmission line corridor. NPS has indicated that construction and operation of this alternative is incompatible with NRA management.
Transportation				
	Total Miles of New Permanent Access Roads	63	73	73
	Total Miles of Steep and Mountainous Terrain	25	37	32
	Road Crossings	5	7	6
	Railroad Crossings	2	2	1
	Center Line Passing Through Public Land (miles)	32	23	24
	Center Line Passing Through Private Land (miles)	8	18	19
	Number of Airports within 5 Miles	4	2	2
	MOAs within 20 Miles	Nellis AFB	Nellis AFB	Nellis AFB
	MOAs with 250-foot-Wide Transmission ROW Overlap	0	0	0
Socioeconomics				
	Short-term socioeconomic effects	Temporary economic effects, i.e., construction jobs and sales and use tax revenues, would be similar to those for Alternative I-A, but concentrated in the Las Vegas Valley and with little temporary worker or population influx.	Essentially the same as those in Alternative IV-A.	Essentially the same as those in Alternative IV-A.
		Tax revenues generated would reflect the additional capital investment associated with a terminal in Region IV.	Essentially the same as those in Alternative IV-A.	Essentially the same as those in Alternative IV-A.
		Adequate temporary housing available to meet demands.	Essentially the same as those in Alternative IV-A.	Essentially the same as those in Alternative IV-A.
	Long-term socioeconomic effects	Long-term economic effects similar to those for Alternative I-A.	Essentially the same as those in Alternative IV-A.	Essentially the same as those in Alternative IV-A.
		Negligible, if any, effect on livestock grazing and agricultural production.	Same as Alternative IV-A	Same as Alternative IV-A

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Socioeconomics (Continued)		Project generates ad valorem/property taxes on improvements in the region. Tax revenues boosted by location of the southern terminal in this region. Location of terminal could be altered under design options.	Same as Alternative IV-A	Same as Alternative IV-A
		Limited effects on outdoor recreation due to location in developed metropolitan area. Potential minor effects due to location in urbanized area, including near existing and future residential development.	Higher potential for dissatisfaction and conflict with outdoor recreation due to location within Lake Mead NRA, but lower potential effects on property values because more removed from residential and commercial development.	Higher potential for dissatisfaction and conflict with outdoor recreation due to location within Lake Mead NRA, but lower potential effects on property values because more removed from residential and commercial development.
		Federal government receives rental/ lease income on ROW.	Essentially the same as Alternative IV-A.	Essentially the same as Alternative IV-A.
		Project development and operations would not result in effects warranting detailed consideration under Environmental Justice.	Same as Alternative IV-A	Same as Alternative IV-A
Health and Safety				
	Serious injuries to workers and the public at-large	Workers during construction and operation may be injured by heavy equipment, working at heights, working in the vicinity of high voltage equipment, as well as from typical hazards found on a construction site. The workers and the public may be injured by fire as well as downed power lines.	Same as Alternative IV-A.	Same as Alternative IV-A.
	Adverse health impacts from EMF, stray voltage, and induced voltage associated with transmission lines	Two commercial/industrial structures would be within 200 feet of the reference line, resulting in potential impacts from EMF, stray voltage, and induced voltage.	There would be no structures within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be less than Alternative IV-A.	There would be no structures within 200 feet of the reference line, resulting in the potential for impacts from EMF, stray voltage, and induced current that would be less than Alternative IV-A.

Table 2-26 Summary of Impacts for Region IV

Resource	Resource Topic	Alternative IV-A	Alternative IV-B	Alternative IV-C
Health and Safety (Continued) (4.a) (4.b)	Noise impacts to nearby communities and residences	There would be two communities within the 2-mile transmission line corridor; 11 residential structures within 500 feet of the reference line, and no residential structures within 200 feet of the reference line, resulting in potential impacts from noise with this alternative.	There would be one community within the 2-mile transmission line corridor; nine residential structures within 500 feet of the reference line, and no residential structure 200 feet of the reference line, resulting in impacts from noise that would be slightly less than Alternative IV-A.	There would be one community within the 2-mile transmission line corridor; nine residential structures within 500 feet of the reference line, and no residential structure 200 feet of the reference line, resulting in impacts from noise that would be slightly less than Alternative IV-A.
	Impacts from associated accidental release of hazardous materials.			
Wild Horses				
	Impacts to HMAs or HAs.	No wild horse HMAs and HAs in Region IV.	No wild horse HMAs and HAs in Region IV.	No wild horse HMAs and HAs in Region IV.
Lands with Wilderness Characteristics				
(5.e)	LWC	No LWC units affected in Region IV.	No LWC units affected in Region IV.	No LWC units affected in Region IV.
Plan Amendments				
(2.a)	Location, length, and reason for plan amendment	LVFO (1 mile)—ISA corridor exception	None	None

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Climate and Air				
	Fugitive Dust Emissions	(PM_{10})	489 tons	503 tons
Geology				
	Geologic Hazards Risk		Six active faults crossed. Moderate risk for ground motion. Moderate to high risk for landslide impacts. Low to moderate risk for ground subsidence.	Four active faults crossed. Moderate risk for ground motion. Moderate to high risk for landslide impacts. Increased risk for subsidence due to historic coal mining.
	Mineral Resource Access		Thirteen oil and gas fields crossed. Encroaches on propose coal mine permit area, Deserado Mine. Potential conflict with active mining areas near Milford, Utah.	Fourteen oil and gas fields crossed. Encroaches on proposed coal mine permit area, Deserado Mine. Potential conflict with active mining areas near Milford, Utah.
	Paleontological Resources Loss	(miles of PFYC 5)	216	157
Soils				
	Wind Erodible	(acres)	593	589
	Water Erodible	(acres)	546	578
	Compaction Prone	(acres)	2,657	3,173
	Limited Revegetation Potential	(acres)	3,610	3,804
	Prime Farmland	(acres)	608	427
Water				
	Erosion and Sedimentation Direct Effects from Crossings	(perennial stream crossings)	25	37
	Impaired Stream Effects from Crossings	(impaired streams crossed)	9	4
	Effects to Water Users from Construction Water Use	(acre-feet)	542	567
	Maximum Road Density Change in Watershed	(mi/mi2 in HUC10, 300-foot or 100-foot perennial buffer area)	1.61 (100 feet: The Big Wash-Beaver River Watershed)	1.61 (100 feet: The Big Wash-Beaver River Watershed)

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Vegetation				
	ROW Clearing-woody vegetation >6 feet height	aspen forest and woodland (acres)	165	162
		conifer forest (acres)	69	192
		deciduous forest (acres)	29	4
		pinyon-juniper (acres)	1,051	1,241
		woody riparian and wetlands (acres)	93	92
	Wetlands and Riparian Areas - Construction	greasewood flat (acres)	362	481
		herbaceous wetland (acres)	81	100
		riparian (acres)	46	55
		woody riparian and wetlands (acres)	63	59
	Wetlands and Riparian Areas - Operation	greasewood flat (acres)	90	114
		herbaceous wetland (acres)	18	19
		riparian (acres)	14	12
		woody riparian and wetlands (acres)	18	16
		USFS MIS Species	Alternative does not cross USFS Fishlake National Forest	Based on elevation, there is no potential habitat for this species within the USFS Fishlake National Forest.
Special Status Plant				
	USFWS species -known occurrence	(count)	3	6
	USFWS species -potential habitat	(count)	11	12
	BLM sensitive species -known occurrence	(count)	22	26

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Special Status Plant (Continued)	BLM sensitive species -potential habitat	(count)	101	113
	USFS sensitive species -known occurrence	(count)	1	2
	USFS sensitive species -potential habitat	(count)	5	9
	Lake Mead NRA Sensitive species -known occurrence	(count)	0	0
	Lake Mead NRA Sensitive species -potential habitat	(count)	0	0
	Nevada state listed species - known occurrence	(count)	4	4
	Nevada state listed species - potential habitat	(count)	9	11
Wildlife				
(5.a)	Pronghorn crucial winter range	construction (acres)	2,650	3,384
		operation (acres)	677	819
	Mule deer crucial winter range	construction (acres)	1,545	1,253
		operation (acres)	963	381
	Elk crucial winter range	construction (acres)	1,411	1,338
		operation (acres)	491	674
	Moose occupied habitat	construction (acres)	222	710
		operation (acres)	72	255
	Rocky Mountain or desert bighorn sheep	construction (acres)	106	140
		operation (acres)	39	81
	Small game, nongame habitat	construction (acres)	23,092	24,315
		operation (acres)	2,601	2,705

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Wildlife (Continued)	Waterfowl habitat	construction (acres)	490	534
		operation (acres)	52	50
(5.b)	Number of raptor nests within 1 mile of the reference line	(count)	413	340
	IBAs crossed by the 2-mile transmission line corridor	(count)	Powder Rim (9,708 acres); Upper Strawberry Watershed (UT12) (1,399 acres)	Powder Rim (11,988 acres); Muddy Creek Wetlands (3,131 acres)
	Number of MIS species whose habitat is crossed by alternative	(count)	3	12
Special Status Wildlife				
(3.a)	Impacted greater sage-grouse habitat	construction (acres)	4,044	2,423
		operation (acres)	1,100	639
(3.a)	Occupied greater sage-grouse leks within 4 miles of reference line	construction (acres)	49	62
		operation (acres)	0	0
	Impacted potential black-footed ferret habitat	construction (acres)	368	381
		operation (acres)	95	97
	Impacted western yellow-billed cuckoo potential habitat	construction (acres)	156	153
		operation (acres)	19	16
	Impacted Canada lynx potential habitat	construction (acres)	120	418
		operation (acres)	20	91
	Impacted Utah prairie dog potential habitat	construction (acres)	77	86
		operation (acres)	31	36
	Impacted California condor potential habitat	construction (acres)	4,810	4,308
		operation (acres)	525	401
	Impacted Yuma clapper rail potential habitat	construction (acres)	23	82
		operation (acres)	3	6

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Special Status Wildlife (Continued) (3.b)	Impacted southwestern willow flycatcher potential habitat	construction (acres)	23	82
		operation (acres)	3	6
	Special status raptor nests within 1 mile of the reference line	(count)	525	528
	Impacted desert tortoise potential habitat	construction (acres)	1,559	1,647
		operation (acres)	447	427
Aquatic Biological Resources				
	Effects on aquatic habitat and species from potential direct and indirect disturbance or water quality changes	perennial streams crossed by 250-foot-ROW	33	36
		game fish streams crossed by 250-foot-ROW	17	17
	Potential aquatic habitat alteration or loss	(feet^2)	12,000	8,800
	Potential for amphibian mortalities from vehicle traffic	(miles)	726	759
Special Status Aquatic Resources				
	Effects on habitat and special status species from potential direct disturbance or water quality changes	SSAS streams crossed by 250-foot-ROW	19	17
		Federally listed or petitioned aquatic species streams crossed	5	6
	Special status aquatic species with potential habitat alteration or loss	(count)	21	9
	Watersheds supporting special status aquatic species with increased road densities	(count)	17	16
	Potential direct disturbance on critical habitat for federally listed species	(acres)	5	8

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Cultural Resources				
	NRHP-listed Sites	(count)	2	3
	NRHP-eligible Sites	(count)	61	60
	Unevaluated Sites	(count)	24	32
	Potential TCPs	(count)	12	24
	Average Inventory Coverage	(percent)	23%	30%
	Site Density (sites per 100 acres inventoried)		0.79	1.62
	Overall Trail/Road Visibility within 5-mile viewshed	(miles)	115	107
Visual Resources				
(5.c)	Residual Impacts Landscape Scenery	High (miles)	221	251
		Moderate (miles)	194	233
		Low (miles)	310	276
	Residual Impacts High Sensitivity Viewers	High (miles)	97	101
		Moderate (miles)	300	376
		Low (miles)	328	284
	Residual Impacts Moderate Sensitivity Viewers	High (miles)	88	127
		Moderate (miles)	216	222
		Low (miles)	421	411
	BLM VRM USFS SIO/VQO Compliance/Consistency-After Mitigation	Compliant (miles)	467	478
		Non-compliant (miles)	19	28
		N/A (miles)	239	153

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Recreation				
	State/Federal Parks crossed by 2-mile corridor	(count)	4	4
	SRMAs crossed by 2-mile corridor	(count)	7	7
	Dispersed, undesignated within 2-mile corridor	(acres)	430,908	468,404
Land Use and Planning				
(6.a)	Land Jurisdiction	Federal (percent)	68	68
		State (percent)	6	8
		Tribal (percent)	0	2
		Private (percent)	25	23
(1.a)	Use of Designated Utility Corridors	(miles of BLM/USFS)	103	144
		(miles of WWEC)	227	126
(5.f)	Greenfield	(percent)	27	49
Special Designation Areas				
(5.d)	National Historic and Scenic Trails	CDNST	1 segment crossed. 4 acres within the 250-foot ROW and 179 acres with the 2-mile corridor. Impacts to the trail itself would be minimized by the placement of the transmission line ROW within a designated overhead utility corridor; towers would be placed to avoid surface disturbance near the actual trail.	1 segment crossed. 4 acres within the 250-foot ROW and 179 acres with the 2-mile corridor. Impacts to the trail itself would be minimized by the placement of the transmission line ROW within a designated overhead utility corridor; towers would be placed to avoid surface disturbance near the actual trail.
		Overland Trail NHT	1 contributing segment crossed. Visible along 9 miles of trail, 5 of which are contributing.	1 contributing segment crossed. Visible along 9 miles of trail, 4 of which are contributing.
		Cherokee Trail NHT	1 contributing segment crossed. Visible along 24 miles of trail, 10 of which are contributing.	1 contributing segment crossed. Visible along 28 miles of trail, 10 of which are contributing

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Special Designation Areas (Continued)		Old Spanish Trail NHT	3 segments of the Old Spanish NHT crossed; 1 NHT-1, 2 unrated. Visible along 10 miles of the trail ,of which - 8 miles are NHT-I, 1.9 miles are NHT-II, and 0.1 mile of NHT-IV.	No segments of the Old Spanish NHT crossed. Visible along 6.2 miles of the trail, of which 5 miles are NHT-I, 1 mile are NHT-II, and 0.1 mile is NHT-IV.
	WSR-suitable river reach	(count)	1	3
	ACEC within 2-mile corridor	(count)	4	6
		(acres)	27,018	23,534
	IRA within 2-mile corridor	(count)	16	14
		(acres)	29,502	11,775
Transportation				
	Total Miles of New Permanent Access Roads	(miles)	950	978
	Total Miles of Steep and Mountainous Terrain	(miles)	515	458
	Road Crossings	(count)	42	33
	Railroad Crossings	(count)	10	23
	Reference Line Passing Through Public Land (miles)	(miles)	534	581
	Reference Line Passing Through Private Land (miles)	(miles)	193	184
	Number of Airports within 5 Miles	(count)	13	11
	Military Operations Areas (MOAs) within 20 Miles	(count)	2	2
	MOAs crossed by 250-foot-wide Transmission ROW		Hill AFB Sevier B MOA	Hill AFB Sevier B MOA; Nellis AFB

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Socioeconomics				
	Short-term Socioeconomic effects		Temporary increases in local employment, demand on temporary housing, and public facilities and services. Temporary effects similar in nature to those associated with transmission line construction for Alternative I-A; mostly transient as construction progresses along the corridor. No effects related to terminal construction, unlike for Alternative I-A. Alternative III-A Temporary economic effects, i.e., construction jobs and sales and use tax revenues, would be similar to those for Alternative I-A, but concentrated in the Las Vegas Valley and with little temporary worker or population influx.	Temporary increases in local employment, demand on temporary housing, and public facilities and services. Temporary effects similar in nature to those associated with transmission line construction for Alternative I-A; mostly transient as construction progresses along the corridor. No effects related to terminal construction, unlike for Alternative I-A. Alternative III-B Temporary economic effects, i.e., construction jobs and sales and use tax revenues, would be similar to those for Alternative I-A, but concentrated in the Las Vegas Valley and with little temporary worker or population influx.
	Long-term socioeconomic effects		Little long-term effects on employment, population, housing need or public services.	Little long-term effects on employment, population, housing need or public services.
			Substantial ad valorem taxes paid; primarily to counties and other taxing jurisdictions.	Substantial ad valorem taxes paid; primarily to counties and other taxing jurisdictions.
			Limited effects on property values, social values, and limited conflicts with outdoor recreation. Limited private land and existing energy resource development in proximity to much of the ROW.	Limited effects on property values, social values, and limited conflicts with outdoor recreation. Limited private land and existing energy resource development in proximity to much of the ROW.
			Federal government and other lessors gain ROW rental/lease income.	Federal government and other lessors gain ROW rental/lease income.

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Health and Safety				
	Serious injuries to workers and the public at-large		Workers during construction and operation may be injured by heavy equipment, working at heights, working in the vicinity of high voltage equipment, as well as from typical hazards found on a construction site. The workers and the public may be injured by fire as well as downed power lines.	Workers during construction and operation may be injured by heavy equipment, working at heights, working in the vicinity of high voltage equipment, as well as from typical hazards found on a construction site. The workers and the public may be injured by fire as well as downed power lines.
	Adverse health impacts from EMF, stray voltage, and induced voltage associated with transmission lines (Structures within 500 feet)	Residential	71	26
		Commercial/Industrial	86	48
		Agricultural	1	0
		Outbuilding	24	18
(4.b)	Noise impacts to nearby communities and residences	Communities within 2-mile corridor	13	20
Wild Horses				
	Presence of transmission line within HMAs	(miles)	23	1
Lands with Wilderness Characteristics				
(5.e)	LWC Units Affected	(count)	11	18
	LWC Units Eliminated	(count)	0	2
		(acres)	0	15,451
	LWC Units Remaining	(count)	13	19
		(acres)	140,047	464,753
	Unit Portions Eliminated	(count)	11	32
		(acres)	7,413	14,004

Table 2-27 Comparison of Applicant Proposed and Agency Preferred Alternatives Across Entire Project

	Topic	Detail (units)	Applicant Proposed	Agency Preferred
Plan Amendments				
(2.a)	Location, length, and reason for plan amendment		RFO (58 miles)—Expand existing and designate new utility corridor LSFO (42 miles)—New utility corridor VFO (19 miles)—New utility corridor LVFO (1 mile)—ISA corridor exception	RFO (76 miles)—Expand existing and designate new utility corridor LSFO (37 miles)—New utility corridor VFO (22 miles)—New utility corridor SLFO (3 miles)—New utility corridor LVFO (1 mile)—ISA corridor exception