

3.14 TRANSPORTATION

The regional transportation network in and around the Project Area is managed by several jurisdictions, including Harney County, individual communities within the County, and the State of Oregon. There is also an extensive network of private roads and public access roads on land administered by the Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS) that provide access to large parcels of rangeland in and around the Project Area. This section describes the existing transportation network and how the proposed Project would affect that network during the short-term construction phase and during long-term operation.

3.14.1 Methodology

This section was prepared using information from a variety of federal, state, and local planning documents sources, including the:

- Oregon Department of Transportation website.
- Harney County Transportation System Plan.
- Three River Resource Management Plan.
- Andrews Management Unit Resource Management Plan.
- Steens Mountain Cooperative Management and Protection Area Resource Management Plan including the Steens Mountain Transportation Plan (Appendix M).
- Steens Mountain Travel Management Plan.
- Malheur National Wildlife Refuge Master Plan.

Additional policy and procedural guidance was obtained from the following sources:

- Federal Land Policy and Management Act of 1976, as amended.
- BLM Land Use Planning Handbook (H-1601-1).
- BLM National Environmental Policy Act Handbook (H-1790-1).

The information from these sources was used to assess the existing transportation conditions within the Project Area and to assess the short-term and long-term effects of the Proposed Action, action alternatives, and the No Action Alternative upon transportation within the Project Area. Where appropriate, mitigation measures were identified to reduce or avoid anticipated adverse effects.

The analysis incorporated comments from the public scoping process that was conducted from July to September 2009 and the DEIS comment period from July through September 2010. Comments from agency representatives, local organizations, and private citizens requested that the following issues relevant to transportation be addressed in the EIS:

- Assessment of whether the money Harney County would receive from the Project would be sufficient to offset the cost to repair county roads potentially damaged by heavy equipment during construction.
- Potential environmental effects of construction and maintenance of access roads and the passage of construction and maintenance vehicles.
- Inventory of existing road networks and evaluation of the potential change in road miles and density due to the Project.

3.14.2 Affected Environment

For the purposes of this analysis, the Project Area was defined to include the area within the 150-foot wide transmission line ROW and all areas affected by the construction and operation of access roads, interconnection stations, substations, turbine towers, power collection systems, and other permanent and temporary Project features, including temporary laydown areas and tensioning sites. However, the Project Area would be located in a broader geographic region that is served by a network of state highways, county roads, private roads, and BLM and USFWS service roads. Each component of the regional transportation network is described below.

3.14.2.1 State Highways

The state highway system forms the primary roadway network within the Project Area (Figure 3.14-1). In Harney County, the state highway system serves statewide, regional, and local traffic demands. The main routes in Harney County include US Highway 20 (Central Oregon Highway) and US Highway 395 (John Day-Burns and Lakeview-Burns Highways). US Highway 395 runs north-south connecting Lakeview (in Lake County) with John Day (in Grant County). Oregon State Highway 78 (Steens Highway) begins in Burns and continues southeast to US Highway 95 in Malheur County. Oregon State Highway 205 (Frenchglen Highway) begins outside of Burns and continues about 20 mile south of Frenchglen where it transitions to a county road (Catlow Valley Road) that continues south to the Nevada border.

US Highway 20

Highway 20 is the main east-west highway through central Oregon and is designated a highway of statewide importance. It begins in Newport, on the Oregon coast and continues through the cities of Corvallis, Albany, Lebanon, Bend, Burns, and Nyssa before continuing into Idaho. Throughout Harney County, Highway 20 is primarily a two-lane roadway with a speed limit of 55 mph, except in the cities of Burns and Hines where the roadway varies between two and five lanes and the speed varies between 25 and 45 mph. The highway has three westbound and three eastbound passing lanes in the county. Roadway shoulders on both sides of the highway are typically 4 to 6 feet wide and partially paved; however, some sections of the highway have shoulders in excess of 6 feet in width. Pavement conditions on Highway 20 range from “fair” for the segment between Hines and Riley, to “poor” and “very poor” for segments west of Riley (note: ODOT maps may not have been updated to reflect paving conducted in 2009) (ODOT 2008a).

Traffic operations along the rural highway sections of Highway 20 are characterized by relatively free flow conditions with some stops at signalized intersections within the community of Burns. In 2008, average annual daily traffic (AADT) volumes for all vehicles along Highway 20 were approximately 1,400 AADT west of Riley and approximately 1,700 AADT east of Riley. The section of Highway 20 that passes through Burns and Hines carried the greatest volumes of traffic in Harney County with volumes as high as 7,600 AADT in Burns. East of the junction with Highway 395, traffic levels declined to 1,400 AADT and to 1,100 AADT at the Harney-Malheur County Line. (ODOT 2008b)

In 2008, the accident rates (i.e., crashes per million vehicle miles) for the rural segments of Highway 20 in Harney County west of Burns ranged from 0.56 to 0.62, and were about the same as the 0.57 statewide average for highways in rural Oregon. The accident rates for segments of Highway 20 east of Hines ranged from 0.50 to 0.60. The accident rates for the urban segments of Highway 20 through Burns and Hines ranged from 0.62 to 2.74. The 2.74 rate reflects the 10 crashes that occurred on the 1.4-mile segment between the western city limits of Burns and the junction at Highway 78. This rate was substantially higher than the 1.09 statewide average for highways in rural cities (ODOT 2008c).

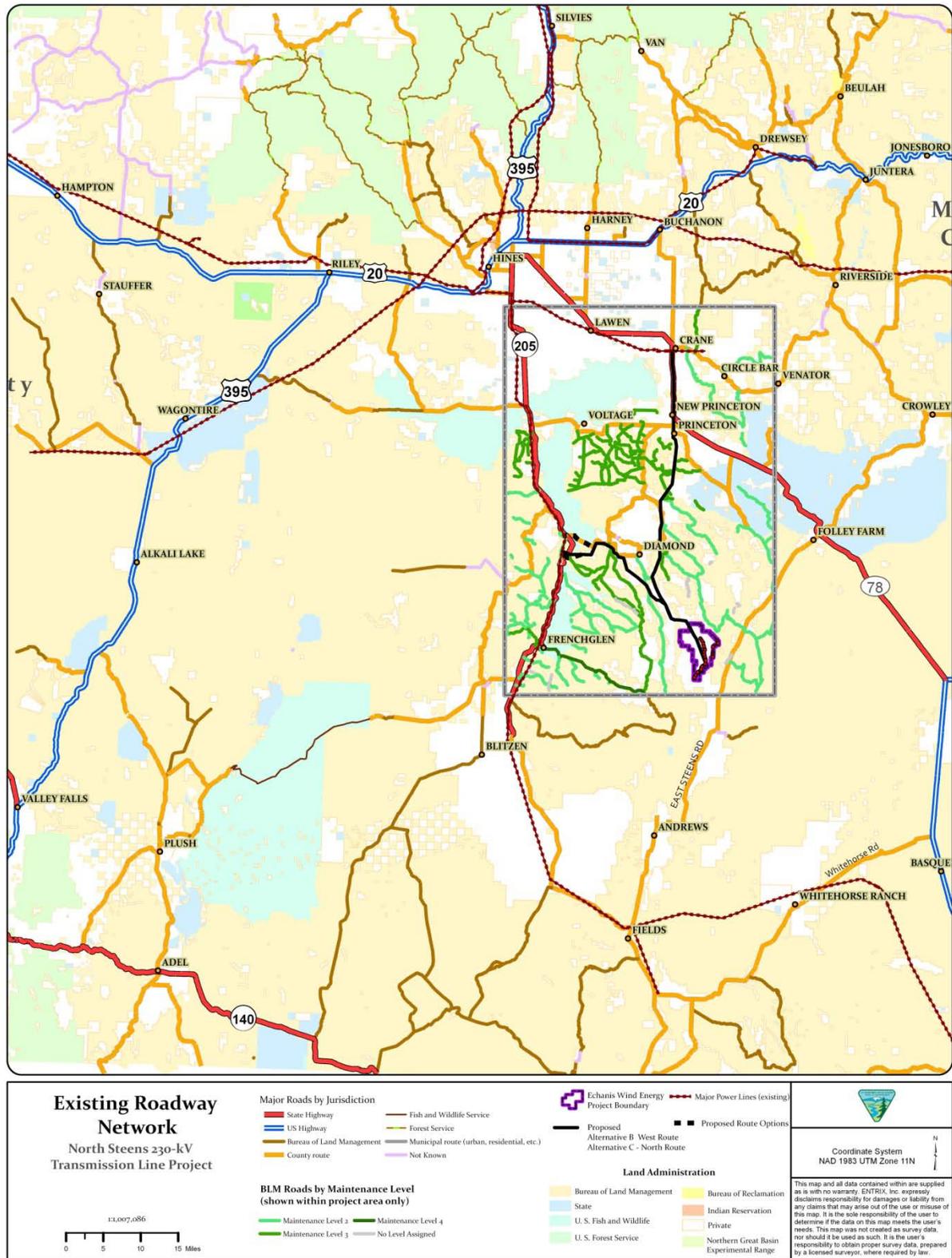


Figure 3.14-1 State Highway System Forms the Primary Roadway Network within the Project Area.

US Highway 395

Highway 395 runs north-south through eastern Oregon from California to Washington, and north and south of its junctions with Highway 20 it is designated a highway of statewide importance. The highway is a two-lane roadway with a speed limit of 55 mph. Roadway shoulders on both sides of the highway are typically 4 to 6 feet wide and partially paved. Pavement conditions on Highway 395 between Highway 20 and Alkali Lake are rated “fair” and “poor” from Alkali Lake to the county line (ODOT 2008a).

Traffic operations along the rural highway sections of Highway 395 are characterized by a relatively free flow of traffic with some stops at signalized or stop sign controlled intersections. Traffic volumes on Highway 395 in 2008 were 270 AADT at the Lake-Harney County Line and 470 AADT south of the Highway 20 junction. North of Highway 20, traffic volumes were 490 AADT and declined to 310 AADT at the Harney-Grant County Line (ODOT 2008b).

In 2008, the only recorded accident rate for the rural segment of Highway 395 in Harney County south of Highway 20 was 2.42 (two crashes) on the segment of the highway between the Harney County line and the Malheur National Forest. This accident rate was substantially higher than the 0.57 statewide average for highways in rural Oregon. The accident rates for segments of Highway 395 north of Highway 20 ranged from 0.54 to 0.97 (ODOT 2008c).

State Highway 78

Highway 78 is a highway of regional importance. Beginning within the Burns city limits, it extends southeast through Lawen, Crane, and Princeton, and continues across the Harney/Malheur County line. It is a two-lane roadway with a speed limit of 55 mph, except within the Burns city limits where the speed varies between 25 and 40 mph. The route is comprised of numerous curves and moderate grade changes resulting in localized speed reductions ranging from 35 to 45 mph. Extended segments of roadway shoulders on both sides of the highway vary in width from 2 to 4 and 4 to 6 feet and are typically partially paved. A few short shoulder segments are less than 2 feet wide. Pavement ratings on Highway 78 range from “good” to “very good” between Hines and the Malheur County line (ODOT 2008a).

Traffic operations of mainstream traffic along the rural highway sections of Highway 78 are characterized by a relatively free flow of traffic. Traffic volumes on Highway 78 in 2008 were highest in Burns, east of the Highway 20 junction, where traffic volumes were 3,400 AADT. At Airport Road, traffic volumes declined to 720 AADT, 500 AADT at Lawen, and 330 AADT at Lave Beds Road. Volumes declined to 230 AADT at the Harney/Malheur County line (ODOT 2008b).

In 2008, accident rates for the rural segments of Highway 78 in Harney County between Burns and the county line ranged from 0.48 to 2.14, the later rate being substantially higher than the statewide average for highways in rural Oregon (0.57). The highest accident rate (four crashes) was recorded on the 23-mile segment of Highway 78 between Princeton and the Malheur County line (ODOT 2008c).

State Highway 205

Highway 205 is designated as a highway of district importance and as a scenic byway (High Desert Discovery Scenic Byway). Beginning at the Highway 78 junction, the highway extends south through the Malheur National Wildlife Refuge (MNWR) and Frenchglen, ending its highway designation at Roaring Springs Ranch Headquarters. The roadway continues as a county road from Roaring Springs to the Nevada border. It is a two-lane roadway with a speed limit of 55 mph. Extended segments of roadway shoulders on both sides of the highway vary in width from 2 to 4 and 4 to 6 feet and are typically partially paved. Pavement conditions are considered “good” along all portions of Highway 205 (ODOT 2008a).

Traffic operations along the rural highway sections of Highway 205 are characterized by a relatively free flow of traffic. Traffic volumes on Highway 205 vary as the road runs south from its origin at the Highway 78

junction, where in 2008 traffic volumes were as high as 450 AADT about 2 miles south of Burns. Volumes decrease to 170 AADT south of Narrows, 120 AADT south of Frenchglen, and 70 AADT at Catlow Valley Road (ODOT 2008b).

In 2008, accident rates for the rural segments of Highway 205 ranged from 1.80 to 3.41, all rates being substantially higher than the statewide average for highways in rural Oregon (0.57). The highest accident rate (four crashes) was recorded on the 18-mile segment of Highway 205 between the Narrows and Diamond-Grain Camp Road (aka: South Diamond Lane) (ODOT 2008c).

3.14.2.2 County Roads

Although the state highway system forms the backbone of the roadway system in Harney County, county roads are an important part of the circulation system (Figure 3.14-1). Harney County has 107 roads under its jurisdiction covering more than 706 miles. Of these 706 roadway miles, approximately 30 percent are paved, another 40 percent are gravel, and the remaining 30 percent are dirt roads. In addition to providing alternate or more direct routes than the state highways, county roads serve rural areas, connecting them with each other, state highways, and cities.

The Harney County Road Department has developed an independent roadway classification system for all roads under county jurisdiction. All roadways under county jurisdiction are classified into three categories: major collectors, minor collectors, and local streets. Of the 107 county roads, 27 are classified as major collectors (covering 308.7 miles), 19 as minor collectors (213.39 miles) and the remaining 61 as local streets (184.08 miles). The classification of these roadways is based upon the intended function and observed traffic volumes, as described here:

- Major Collectors – The primary function of a major collector is to tie minor collectors and local roads to nearby highways or arterial roadways. Major collector roads are usually unpaved in the rural areas and partially to fully-paved in the urban areas of the county, with traffic volumes reaching up to 400 vehicles per day.
- Minor Collectors – County roads classified as minor collectors are shorter roads that branch off from a highway, arterial, or major collector. They are mostly unpaved with very little traffic, generally between 50 and 100 vehicles per day.
- Local Roads – Local county roads are short distance roads that may serve as a short logging road or a driveway to one or a few homes. They are unpaved and carry very low traffic volumes, generally less than 50 vehicles per day.

Most county roads are two lanes wide. Paved roads are generally 24 feet wide with 2-foot gravel shoulders on both sides. Gravel roads are generally 24 feet wide with no shoulders and dirt roads are generally 20 feet wide with no shoulders. The majority of Harney County roads exist in a 60-foot right-of-way, although in some cases it is wider. The county maintains paved roads on a regular basis by “chip sealing” road surfaces on an as needed basis. The Harney County Road Department routinely “blades” its gravel and dirt roads throughout the spring, summer, and autumn to provide for safe and efficient use of the roadways.

The major county roads in the Project Area include:

- South Diamond Lane (aka: Diamond-Grain Camp Road/County Road No. 409) is a major collector that travels through and along the MNWR between Highway 205 and the community of Diamond. The two-lane paved roadway is one of two major collectors connecting the agricultural areas, scattered residences, and community of Diamond with Highway 205.
- Lava Beds Road is a second paved, two-lane, major collector serving Diamond Valley. It provides a direct connection between South Diamond Lane and Highway 78.

- Happy Valley Road is a graveled surface two-lane minor collector that connects agricultural areas and scattered residences in Diamond Valley with South Diamond Lane and Lava Beds Road.
- Anderson Valley Road is graveled surface minor collector used primarily to access agricultural fields and grazing areas south of Princeton.
- East Steens Road is a two-lane paved and graveled surface major collector that extends for 63 miles in a northeast to southwest direction between Highway 78 and Catlow Valley Road along the eastern foot of Steens Mountain. The northern 11 miles and the southern 5 miles are paved.

3.14.2.3 Roads on BLM- and USFWS-Administered Lands

The BLM has jurisdiction over 3,380 miles of roads within Harney County. All of the BLM roads are gravel or native material. The primary function of these roads is to provide access for ranching and recreational users to all of the different parts of BLM lands. Traffic volumes of BLM roads are intermittent and can range from 0 to 100 vehicles per day.

BLM roads are categorized into five “maintenance levels.” ~~based upon their function, physical condition, and use. These levels are identified as follows:~~

~~Maintenance Level 1 is assigned to roads that receive no scheduled maintenance, but are still open to vehicular traffic.~~

- ~~• Maintenance Level 2 is assigned to roads classified as resource roads that receive maintenance every eight to 10 years. Emphasis is normally given to maintaining drainage facilities and runoff patterns. These roads provide access to open BLM lands and traffic is normally minor.~~
- ~~• Maintenance Level 3 is assigned to roads classified as local roads that receive maintenance every three to five years. The majority of the BLM roads within Harney County are Maintenance Level 3.~~
- ~~• Maintenance Level 4 is assigned to roads classified as local roads that receive maintenance every three years.~~
- ~~• Maintenance Level 5 is assigned to roads classified as collector roads that are maintained each year. These roads receive the highest use and have a gravel surface.~~

Maintenance is defined in BLM Manual H-9113-2 as the upkeeping of the Bureau's road system, including surface, shoulders, parking and side areas, structures, and such traffic control devices as are necessary for the safe and efficient utilization of the road system. Follow guidance in Manual Section 9104 for the establishment of a maintenance program.

- A. Data Source. Use data collected as part of the road inventory for completing maintenance planning.
- B. Maintenance Levels. Based upon functional classification (see Manual Section 9113.16) and resource management needs, each road will be assigned a maintenance level. Maintenance levels may vary from year to year as identified resource management needs change.
- 1. Level 1. This level is basic custodial care as required to protect the road investment and/or adjacent lands and resource values. Normally, these roads are blocked and not open for traffic or are open only to restricted traffic. Include primitive roads (way) here.
 - a. Roads typical of this level. Roads that have served or were constructed as fire trails, access to discontinued-use administrative areas, logging spurs on completed sales, occasionally discontinued access to energy/mineral exploration and development areas, and primitive roads (way) receiving no maintenance.

- b. Maintenance standard. Maintain culverts, waterbars, and other drainage facilities. Slides, fallen trees, and brush would be left unless they affected roadbed drainage. Closure and traffic restrictive devices would be maintained. Primitive roads (way) would receive no maintenance.
- 2. Level 2. This level is used on roads where management requires a road be opened seasonally for limited passage of traffic. Traffic is generally administrative with some minor specialized use, or moderate seasonal use.
 - a. Roads typical of this level. Roads serving firewood permits, environmental study areas, hunter access, and OVR areas.
 - b. Maintenance standard. Minimum maintenance, including brush and obstruction removal, maintenance of drainage facilities, and minimum maintenance of road prism.
- 3. Level 3. This level is for roads which are seasonal in nature or occasionally open year around. Traffic volumes approach an Average Daily Traffic (ADT) of 15 vehicles. These roads may require a seasonally adjusted level of maintenance. (see Manual Section 9113.17.)
 - a. Roads typical of this level. Low standard, low volume, single lane, natural earth surface (dirt) roads, typical of a resource road, serving low-use recreation areas, minor timber-sale areas, or other resource uses.
 - b. Maintenance standard. Maintain as needed. Keep drainage functional and maintain roadway prism. Maintain sight distance and provide concern for driver safety and convenience.
- 4. Level 4. This level is used on roads which are generally kept open year around or a high-use seasonal road, and have a high concern for driver safety and convenience.
 - a. Roads typical of this level. Medium volume, double-lane roads consisting of a high standard natural earth surface (dirt) road, aggregate surface road, or occasionally a bituminous surface road. Typical of this road would be a local road that serves as an artery to other road networks; serves medium to high-use recreation areas and resource development areas, such as energy and timber production.
 - b. Maintenance standard. The roadway is maintained on a scheduled basis. May have a preventive maintenance program established. A greater concern for driver safety and convenience. Problems are repaired as soon as discovered.
- 5. Level 5. This level of maintenance is for those collector aggregate or bituminous surface roads with an ADT range from 15 to 100 per day and design speeds of 55 mph. Safety and comfort are important considerations.
 - a. Road typical of this level, Collector roads serving as arteries and access to major recreation complexes, where the safety and comfort of the using public is a prime consideration. These roads would also include those resource production roads where heavy traffic is the norm.
 - b. Maintenance standard. In addition to a scheduled maintenance program, these roads have a preventive maintenance program established to maintain the integrity of the system.

Figure 3.16-1 shows the primary BLM roads located within the Project Area. Most of these roads function to provide access for ranching and recreational users and are designated Maintenance Level 2 or 3. The portion of the road that provides access to Otley Brothers Ranch over BLM land is designated Maintenance Level 4 and is typically maintained by the landowner. The Steens Loop Road is Maintenance Class 5 with a gravel surface.

Several roads on the MNWR are also available for public use, including Center Patrol Road, the Field Station Road, Buena Vista Lane, Krumbo Lane, and P Lane. These roads are used by USFWS staff and Malheur Refuge visitors to access bird watching and wildlife viewing areas. All other roads on MNWR are closed to the public.

3.14.3 Environmental Effects and Mitigation

During construction, heavy and light vehicles would access the alternative transmission line corridors and the Echanis Wind Energy Project site. Equipment and Project components would be transported to work sites using state highways, county roads, BLM and USFWS roads, and private access roads. Workers would travel to and from construction sites using personal vehicles. During on-going operation, these highways and roads would be used by workers to access the transmission line corridor and the Echanis Project site to conduct periodic inspections and routine maintenance and repair.

The potential effects upon transportation during the short-term construction phase and the long-term operational phase of the Project are described below. It should be noted that a variety of Project design features and best management practices to reduce the effects upon transportation, from both the Echanis Project and the transmission line alternatives, would be implemented as part of the Proposed Action. These measures are not repeated in the mitigation sections below, but are described in Section 2 and are listed in Appendix A (A.3.9).

3.14.3.1 Alternative A – No Action

Under the No Action Alternative, no new transmission lines, substations, interconnection stations, or related facilities would be constructed. Improvements to existing access roads would not be needed and no new access roads would be constructed. No workers, equipment, or Project components would be transported on state highways, county roads, BLM roads, or private roads and traffic disruptions, temporary road closures, and detours related to Project construction would not occur.

3.14.3.2 Echanis Project Effects Common to All Action Alternatives

PERMANENT EFFECTS

An existing access road that currently serves the Otley Brothers ranch would be extended to connect the Echanis Project site to South Diamond Lane. The completed access road would be 18.95 miles long and would cross approximately 14.73 miles of the Andrews RA and 4.22 miles of the Three Rivers RA, including approximately 7.12 miles on private lands within the Steens Mountain CMPA. Approximately 17.47 miles of the access road would be on private property and 1.48 miles would be on public land administered by the BLM. No portion of the access road would be located on public land within the CMPA. Approximately 17.11 miles of additional service roads (i.e., string roads) would be constructed within the Echanis Project site to provide access between the operations and maintenance (O&M) building, turbine strings, substation, and other Project-related facilities.

Ongoing operation of the Echanis Project would generate a small number of trips each day, from workers commuting to and from the site and periodic delivery of supplies and replacement parts. Even though the facility would be operated using an automated control system, six to eight technicians would travel to and from the site each day. It is the intent of the applicant to transport O&M personnel from the Burns area to the Project site by van each work day (5 days per week) in order to minimize the number of vehicle trips into the site and reduce the carbon footprint of the Project. This plan will result in one (1) round trip by vehicle into and from the project site each work day thereby allowing vehicles used for on-site O&M activities to remain on site. Periodic supply deliveries are planned to occur on a four (4) round trip per month basis between the Burns area and the project site. This will result in 4.3 x 5 or 21.5 trips per month for O&M personnel and 4 trips per month for supply vehicles resulting in a total of 25.5 trips per month or an average 0.84 trips per day (25.5/30.4). Employee parking would be accommodated on site. Given the existing low traffic volumes on Highways 205 and 78, South Diamond Lane, and Lava Beds Road, the daily commute patterns of construction workers and the periodic delivery of supplies and materials would have no noticeable effect on traffic volumes on state highways or county roads.

TEMPORARY EFFECTS

Temporary effects would include use of the state highway and county road network by workers traveling to and from the Project site, and by trucks hauling a variety of construction equipment and Project components to the Project site. Depending upon the point of origin, workers traveling to the site and trucks hauling construction equipment and Project components to the site would use Highways 20, 205, or 78. Vehicles using Highway 20 would travel through the cities of Burns and Hines and travel south on Highway 205 to South Diamond Lane. Vehicles would then travel South Diamond Lane and Ham Brown Lane to the main access road to the Echanis Project site. Vehicles using Highway 78 would travel to Princeton and use Lava Beds Road, South Diamond Lane, and Ham Brown Lane to reach the access road to the Echanis Project site.

The Applicant expects to hire approximately 100 employees for nine months to construct the Echanis Project. During this time workers would travel to and from the site each day using private vehicles. Each workday there would be an increase in traffic in and around the Project Area from the presence of construction workers and the delivery of Project components and supplies. A maximum of approximately 36 workers would be on the site at one time. Workers would be either local residents or residents from other areas traveling to the site from temporary housing located in the Burns/Hines area.

Increased traffic volumes would be expected during the morning and evening commute times on Highways 205 and 78, South Diamond Lane, and Lava Beds Road. Lava Beds Road would provide connections to and from Highway 78. The daily commute patterns of construction workers could have a noticeable effect upon turning movements and delay at the unsignalized intersections of Highway 205/South Diamond Lane, Lava Beds Road/Highway 78, and South Diamond Lane/Lava Beds Road during the morning and evening hours. Parking for construction workers would be provided in designated areas on private property. Parking would not be permitted along state highways or county roads.

Specialized trucks would be used to transport the large components that make up each wind turbine to the Echanis Project site. These trucks are capable of carrying loads up to 17.5 feet high (measured from the ground to the highest point of the load), 14.5 feet wide, and 150 feet long. Oversize loads would be necessary to transport the tower sections, nacelles, turbines, and turbine blades to the site. Some trucks transporting construction equipment and materials would have a gross vehicle weight over 105,500 pounds. Permits and special provisions could be required to transport the 145-foot long turbine blades to the Project site. The construction contractor would be responsible for securing all necessary approvals from the Oregon Department of Transportation (ODOT) and Harney County for use of state highways and county roads for oversize loads.

During peak activity, up to 36 truck trips per day would access the Echanis Project site using state highways and county roads. Trucks delivering Project components would likely travel on Highway 20 through the cities of Burns and Hines to access Highway 205. From Burns, trucks would travel south on Highway 205 approximately 43 miles to the intersection with South Diamond Lane. Trucks would then travel on South Diamond Lane and Ham Brown Lane to the entrance to the main access road to the Echanis Project site.

Minor road improvements could be required at several locations to accommodate the required turning radius of the specialized trucks, including the turnoff from Highway 205 to South Diamond Lane, a sharp right angle turn on South Diamond Lane, and the turn onto Ham Brown Lane. In addition, the Applicant would, in cooperation with Harney County, revise the approaches to, and remove the overburden layer from, the existing bridge on South Diamond Lane over the Donner und Blitzen River to remove the current load limits on the bridge. During bridge replacement, traffic would either be allowed to pass through the construction area using a single lane or drivers would be directed to alternate routes.

The specialized trucks used to transport large components to the Echanis Project site would not likely cause damage to the paved surfaces of state highways or county roads. Prior to the start of construction, the Applicant would obtain an assessment of road conditions in the Project Area from the Harney County Road

Department. Following construction, a similar evaluation would be conducted to determine if any notable changes had occurred during construction. If damage were to occur, the Applicant or the Applicant’s contractor would be responsible for repairing any damage. If necessary, portions of damaged roads would be completely reconstructed. Reconstructed roadways would meet Harney County Road standards. If roadway repairs or reconstruction was required, some short-term traffic delays or detours around areas of construction would be required.

During the nine- to 12-month construction period, workers and trucks carrying oversize loads would share the road network with the general public. Because of the existing low volumes of traffic on Highway 205 and South Diamond Lane, the slight increase in worker related traffic would not likely increase the risk of traffic accidents. However, during peak activity, up to five specialized trucks per hour would be turning off of Highway 205 and traveling on South Diamond Lane to the main access road to the Echanis Project site. Large trucks with oversize loads traveling at relatively low speed on a two-lane rural road could increase the risk of traffic accidents. Before beginning construction, the contractor would also develop and implement a construction-phase traffic management plan in cooperation with all affected local jurisdictions.

MITIGATION

The following Project design features (PDFs) and best management practices (BMPs) that were taken into account in the effects analysis in this section would reduce short term transportation effects (see Section 2 and Appendix A1.1, A.1.2, and A.3.9):

- Pilot cars would be used in front and behind all trucks transporting oversized loads to enhance safety and reduce accident risk.
- Flaggers would be stationed at appropriate locations to stop traffic or direct vehicles around trucks maneuvering through tight turns.
- Roads damaged by oversize trucks or construction equipment would be repaired or reconstructed, as required.

3.14.3.3 Alternative B – West Route (Proposed Action)

PERMANENT EFFECTS

Improvements to existing access roads, new access roads, and overland access roads (approximately 2.00, 0.19, and 25.68 miles, respectively) would be required for vehicle and equipment access to the transmission line corridor during initial construction, and for inspections, maintenance, and repair of poles, insulators, and conductors during long-term operation (Table 3.14-1). Existing unpaved access roads would be widened and new access roads would be constructed across BLM- and USFWS-administered lands (1.41 and 0.59 miles, respectively). Overland access roads would be located on private land (17.53 miles), BLM-administered land 7.43 miles), and a small amount of land administered by the USFWS (0.72 mile). Overland access routes would have a single 8-foot wide travel lane and would traverse the landscape over open ground; no roadbed improvements would be required. While approximately 5.90 miles of overland roads would be located on private land within the Steens Mountain CMPA, none of the overland roads would cross Federal land within the CMPA.

Table 3.14-1 Access Road Requirements for Alternative B – West Route

	Private Land	BLM-Administered Land	USFWS-Administered Land	Total
Improvements to Existing Access Roads	0	1.41	0.59	<u>2.00</u>
New Access Roads	0	0.19	0	<u>0.19</u>
Overland Access Roads	17.53	7.43	0.72	<u>25.68</u>

Table 3.14-1 Access Road Requirements for Alternative B – West Route

	Private Land	BLM-Administered Land	USFWS-Administered Land	Total
Total	17.53	9.03	1.31	<u>27.87</u>

TEMPORARY EFFECTS

Temporary effects would occur to transportation with the use of state highways and county roads by construction workers and by trucks hauling equipment and Project components to the Project site. Depending upon the point of origin, construction workers and trucks transporting project-related materials and components would use the same state highways and county roads used by workers constructing the Echanis project. These would include Highways 20, 78, and 205. Vehicles using Highway 205 would travel through the cities of Burns and Hines and travel south to South Diamond Lane, which would then be used to access the Project Area. Vehicles using Highway 78 would travel to Princeton and access the Project Area using Lava Beds Road. Project-related access roads would provide direct connections from South Diamond Lane and Highway 205 to areas of transmission line construction.

Construction of the access roads, installation of the transmission line, and construction of the interconnection station would last approximately five months. During this time workers would travel to and from the Project site each workday using private vehicles. During the construction phase there would be an increase in traffic on local roads in and around the Project Area due to workers traveling to and from areas of construction and from trucks delivering construction materials, components, and supplies. During peak activity, 30 to 40 workers would be present at any one time within the Project Area. The daily commute patterns of construction workers could have a noticeable effect upon turning movements and delay at the unsignalized intersections of Highway 205/South Diamond Lane and Lava Beds Road/Highway 78 during the morning and evening hours. Construction worker parking would be provided at the temporary laydown areas, tensioning sites, and other prearranged areas on private property. Parking would not be permitted along state highways or county roads.

During the construction period, equipment and Project components would be transported to laydown areas and tensioning sites using semi-trailer trucks. The number of truck trips per day would vary during the construction period with most trips occurring during the initial delivery of equipment, components, and supplies. During peak activity as many as 24 truck trips per day (three truck trips per hour) would travel to and from the Project Area. Trucks would use Highway 205 and South Diamond Lane to travel to and from most access roads, laydown areas, and tensioning sites. Disruption of existing traffic patterns would be limited to construction traffic entering and leaving state highways and county roads.

The construction contractor would be responsible for securing all necessary approvals from the ODOT and Harney County for access to state highways and county roads, including access points for Project access roads. The Applicant or the Applicant’s contractor would be responsible for any damage to state or county roads shown to have resulted from use by Project construction vehicles. No equipment or machinery would be parked or stored on any county road except while in use and only during daylight hours. Some minor road repair work could be necessary to repair sections of road damaged by heavy equipment and construction related traffic.

Temporary traffic delays could occur during installation of the transmission line along two short segments of South Diamond Lane where the transmission line would either parallel or cross the existing road. Delays on Highway 205 would be minimized by installing temporary guard structures adjacent to the roadway when construction crews string conductor wires across the highway. Before beginning construction, the contractor would develop and implement a construction-phase traffic management plan in cooperation with all affected local jurisdictions. The contractor would also coordinate with the USFWS to ensure that work along South Diamond Lane did not interfere with ingress and egress to MNWR via Center Patrol Road.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-kV

The upgrade of the initial single-circuit transmission line to a double-circuit 230-kV transmission line would require a second construction phase at a future date, when additional capacity was required on the transmission line. The second construction phase would not require any additional access roads, or new permanent features outside of areas previously affected by installation of the initial line. Transportation related effects from installation of the second circuit would be temporary and comparable to those described above, including the effects associated with construction workers traveling to and from work areas and trucks transporting project-related materials to temporary laydown areas and pulling/tensioning sites. Because the duration of construction for the future upgrade would be less than the initial construction, the magnitude of the possible effects would be less; although traffic disruptions and delays would still occur.

MITIGATION

The following Project design features (PDFs) and best management practices (BMPs) that were taken into account in the effects analysis in this section would reduce short term transportation effects (see Section 2 and Appendix A1.1, A.1.2, and A.3.9):

- Flaggers would be stationed at appropriate locations and at appropriate times during construction to direct traffic and reduce accident risks.
- Roads damaged by oversize trucks or construction equipment would be repaired or reconstructed, as required.

South Diamond Lane Route Option

PERMANENT EFFECTS

The South Diamond Lane Route Option would also require improvements to existing access roads, new access roads, and overland access roads (approximately 2.00, 0.19, and 21.28 miles, respectively) (Table 3.14-2). Existing unpaved access roads would be widened and new access roads would be constructed across BLM- and USFWS-administered lands (1.41 and 0.59 miles, respectively). Overland access roads would be located on private land (16.65 miles), BLM-administered land (3.91 miles), and a small amount of land administered by the USFWS (0.72 mile). Overland access roads would require no roadbed improvements. While approximately 5.90 miles of overland roads would be located on private land within the Steens Mountain CMPA, none of the overland roads would cross Federal land within the CMPA.

Table 3.14-2 Access Road Requirements for the South Diamond Lane Route Option

	Private Land	BLM-Administered Land	USFWS-Administered Land	Total
Improvements to Existing Access Roads	0	1.41	0.59	<u>2.00</u>
New Access Roads	0	0.19	0	<u>0.19</u>
Overland Access Roads	16.65	3.91	0.72	<u>21.28</u>
Total	16.65	5.51	1.31	<u>23.47</u>

TEMPORARY EFFECTS

Potential temporary transportation effects from the South Diamond Lane Route Option would be the same as the effects described for Alternative B, above. However, if transmission line construction along South Diamond Lane required the temporary closure of one of the travel lanes, vehicles could experience delays (less than one minute) while flaggers directed traffic through the one remaining open lane. Shoulder parking would not be permitted in areas of active construction along South Diamond Lane. Before beginning construction, the contractor would develop and implement a construction-phase traffic management plan in cooperation with all affected local jurisdictions. The contractor would also coordinate with the USFWS to

ensure that work along South Diamond Lane did not interfere with ingress and egress to the Malheur Refuge via Center Patrol Road.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-kV

The upgrade of the initial single-circuit transmission line to a double-circuit 230-kV transmission line would not require any additional access roads, or new permanent features outside of areas previously affected by installation of the initial line. Transportation related effects from installation of the second circuit would be temporary and comparable to those described above, including the effects associated with construction workers traveling to and from work areas and trucks transporting project-related materials to temporary laydown areas and pulling/tensioning sites. Because the duration of construction for the future upgrade would be less than the initial construction, the magnitude of possible effects would be less; although traffic disruptions and delays would still occur.

MITIGATION

The same mitigation measures described above for Alternative B West Route would apply to the South Diamond Lane Route Option.

Hog Wallow Route Option

PERMANENT EFFECTS

The Hog Wallow Route Option would also require improvements to existing access roads, new access roads, and overland access roads (approximately 2.00, 0.19, and 25.99 miles, respectively) (Table 3.14-3). Existing unpaved access roads would be widened and new access roads would be constructed across BLM- and USFWS-administered lands (1.41 and 0.59 miles, respectively). Overland access roads would be located on private land (17.55 miles), BLM-administered land (7.21 miles), and land administered by the USFWS (1.23 miles). As with Alternative B and the South Diamond Lane Route Option, overland access roads would require no roadbed improvements. While approximately 5.90 miles of overland roads would be located on private land within the Steens Mountain CMPA, none of the overland roads would cross Federal land within the CMPA.

Table 3.14-3 Access Road Requirements for the Hog Wallow Route Option

	Private Land	BLM-Administered Land	USFWS-Administered Land	Total
Improvements to Existing Access Roads (mi)	0	1.41	0.59	<u>2.00</u>
New Access Roads (mi)	0	0.19	0	<u>0.19</u>
Overland Access Roads (mi)	17.55	7.21	1.23	<u>25.99</u>
Total	17.55	8.81	1.82	<u>28.18</u>

TEMPORARY EFFECTS

Potential temporary transportation effects from the Hog Wallow Route Option would be the same as those described for Alternative B, except that the location where the transmission line would cross Highway 205 would be approximately 0.5 mile south of where Alternative B would cross the highway. Before beginning construction, the contractor would develop and implement a construction-phase traffic management plan in cooperation with all affected local jurisdictions.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-kV

The upgrade of the initial single-circuit transmission line to a double-circuit 230-kV transmission line would not require any additional access roads, or new permanent features outside of areas previously affected by installation of the initial line. Transportation related effects from installation of the second circuit would be temporary and comparable to those described above, including the effects associated with construction

workers traveling to and from work areas and trucks transporting Project-related materials to temporary laydown areas and pulling/tensioning sites. Because the duration of construction for the future upgrade would be less than the initial construction, the magnitude of possible effects would be less; although traffic disruptions and delays would still occur.

MITIGATION

The same mitigation measures described above for Alternative B West Route would apply to the Hog Wallow Route Option.

115-kV Transmission Line Option

The 115-kV Transmission Line Option would be a reduced capacity design configuration constructed along the same transmission line alignments described above for Alternative B West Route and the South Diamond Lane and Hog Wallow Route Options. The 115-kV Transmission Line Option would include a single three-phase (i.e., three conductors) 115-kV circuit. The alignment of the transmission line, pole heights and spacing, ROW width, construction methods, interconnection points, and access requirements would be the same as described for Alternative B, and the two route options, described above.

PERMANENT AND TEMPORARY EFFECTS

The 115-kV Transmission Line Option would have the same types of permanent effects upon transportation as described for Alternative B, the South Diamond Lane Route Option, and the Hog Wallow Route Option. This alternative would require the same improvements to existing access roads, new access roads, and overland access roads as described above. However, the duration of temporary effects, including worker commute trips and truck hauling activities, would be substantially less because there would be only one construction phase. Long-term operation and maintenance requirements (inspection and repair) for the 115-kV Option would be the same as those described for Alternative B and the two route options above.

MITIGATION

The same mitigation described for Alternative B, the South Diamond Lane Route Option, and the Hog Wallow Route Option would be implemented for the 115-kV Transmission Line Option.

3.14.3.4 Alternative C – North Route (Preferred Alternative)

PERMANENT EFFECTS

New access roads and overland access roads (approximately 5.03 and 25.05 miles, respectively) would be required for vehicle and equipment access to the transmission line corridor during initial construction, and for inspections, maintenance, and repair of poles, insulators, and conductors during long-term operation (Table 3.14-4). New access roads would be constructed across private lands and BLM-administered lands (0.48 and 4.55 miles, respectively). Overland access roads would be located on both private land (17.68 miles) and BLM-administered land (7.37 miles). Overland access routes would have a single 8-foot wide travel lane and would traverse the landscape over open ground; no roadbed improvements would be required. Of this total, approximately 5.90 miles of overland roads would be located on private land within the Steens Mountain CMPA; however none of the overland roads would cross Federal land within the CMPA.

Table 3.14-4 Access Road Requirements for Alternative C – North Route

	Private Land	BLM-Administered Land	<u>Total</u>
New Access Roads (mi)	0.48	4.55	<u>5.03</u>
Overland Access Roads (mi)	17.68	7.37	<u>25.05</u>
Total	18.16	11.92	<u>30.08</u>

TEMPORARY EFFECTS

Temporary transportation effects would occur from the use of the state highways and county roads by construction workers and by trucks hauling equipment and Project components to the Project site. Depending upon the point of origin, construction workers and trucks transporting project-related materials and components would use the same state highways and county roads used by workers constructing the Echanis Project and the other transmission line route alternatives, including Highways 20, 78, and 205. Vehicles using Highway 205 would travel through the cities of Burns and Hines and travel south to South Diamond Lane, which would then be used to access the Project Area. Vehicles using Highway 78 would travel to Princeton and access the Project Area using Lava Beds Road. Project-related access roads would provide direct connections from South Diamond Lane and Highway 205 to areas of transmission line construction.

Construction of the access roads, installation of the transmission line, and construction of the interconnection station would last approximately six months. During this time workers would travel to and from the Project site each workday using private vehicles. During the construction phase, there would be an increase in traffic on local roads in and around the Project Area from workers traveling to and from areas of construction and from trucks delivering construction materials, components, and supplies. During peak activity, 30 to 40 workers would be present at one time within the Project Area. During construction of the portion of the transmission line located south of Princeton, the daily commute patterns of construction workers could have a noticeable effect upon turning movements and delay at the unsignalized intersections of Highway 205/South Diamond Lane and Lava Beds Road/Highway 78 during the morning and evening hours. During construction of the portion of the transmission line located north of Princeton, these intersections would no longer be affected because construction workers would be accessing areas of construction directly off of Highway 78. Construction worker parking would be provided at the temporary laydown areas, tensioning sites, and other prearranged areas on private property. Parking would not be permitted along state highways or county roads.

During the construction period, equipment and Project components would be transported to laydown areas and tensioning sites using semi-trailer trucks. The number of truck trips would vary with most trips occurring during the initial delivery of equipment, components, and supplies. During peak activity, as many as 24 truck trips per day (three truck trips per hour) would travel to and from the Project Area. Trucks would use Highways 205 and 78, South Diamond Lane, Happy Valley Road, and Lava Beds Road to travel to and from most access roads, laydown areas, and tensioning sites. Temporary traffic delays (less than one minute) could occur during installation of the transmission line along short segments of Happy Valley Road where the transmission line would either parallel or cross the existing road. Disruption of existing traffic patterns would be limited primarily to construction traffic entering and leaving state highways and county roads.

The construction contractor would be responsible for securing all necessary approvals from the ODOT and Harney County for access to state highways and county roads, including access points for Project access roads. The Applicant or the Applicant's contractor would be responsible for any damage to state or county roads shown to have resulted from use by Project construction vehicles. No equipment or machinery would be parked or stored on any county road except while in use and only during daylight hours. Some minor road repair work could be required to repair sections of road damaged by heavy equipment and construction related traffic.

FUTURE CONSTRUCTION PHASE – UPGRADE TO 230-kV

As described for the other transmission line alternatives, the upgrade of the initial single-circuit transmission line to a double-circuit 230-kV transmission line would not require any additional access roads, or new permanent features outside of areas previously affected by installation of the initial line. Transportation related effects from installation of the second circuit would be temporary and comparable to those described above, including the effects associated with construction workers traveling to and from work areas and trucks transporting project-related materials to temporary laydown areas and pulling/tensioning sites. Because the duration of construction for the future upgrade would be less than the initial construction, the magnitude of possible effects would be less; although traffic disruptions and delays would still occur.

MITIGATION

The following Project design features (PDFs) and best management practices (BMPs) that were taken into account in the effects analysis in this section would reduce short term transportation effects (see Section 2 and Appendix A1.1, A.1.2, and A.3.9):

- Flaggers would be stationed at appropriate locations at appropriate times during construction to direct traffic and reduce accident risks.
- Roads damaged by oversize trucks or construction equipment would be repaired or reconstructed, as required.

115-kV Transmission Line Option

The 115-kV Transmission Line Option would be a reduced capacity design configuration constructed along the same transmission line alignment as described above for Alternative C – North Route. The 115-kV Transmission Line Option would include a single three-phase (i.e., three conductors) 115-kV circuit. The alignment of the transmission line, pole heights and spacing, ROW width, construction methods, interconnection points, and access requirements would be the same as described for Alternative C.

PERMANENT AND TEMPORARY EFFECTS

The 115-kV Transmission Line Option would have the same types of permanent effects upon transportation as described for Alternative C. This alternative would have the same improvements to existing access roads, new access roads, and overland access roads as described above. However, the duration of temporary effects, including worker commute trips and truck hauling activities, would be substantially less because there would be only one construction phase. Long-term operation and maintenance requirements (inspection and repair) for the 115-kV Option would be the same as described for Alternative C.

MITIGATION

The same mitigation described for Alternative C North Route would be implemented for the 115-kV Transmission Line Option.

3.14.3.5 Residual Effects after Mitigation

Residual effects related to the Proposed Action that would occur during construction would include traffic delays in some areas.

3.14.3.6 Summary Comparison of Alternatives

Tables 3.14-5 and 3.14-6 summarize the effects of the Echanis Wind Energy Project and each transmission line alternative and route option upon transportation. The primary permanent effect to transportation would be the development, use, and maintenance of the system of access roads needed for the Echanis site and each transmission line alternative. The table shows the miles of new access road (including overland roads) that would be located on private land and land administered by the BLM and USFWS.

The primary temporary effect to transportation, from the combined effect of the Echanis Wind Energy Project and each transmission line route alternative, would be related to the number of truck using state highways and county roads to deliver Project components and construction supplies. Assuming construction activities occurred simultaneously, up to 60 truck trips per day would occur on Highway 205 and South Diamond Lane. Some of these truck trips would occur on Highway 78, Happy Valley Road, and Lava Beds Road during work on the northern half of Alternative C.

Table 3.14-5 Comparison of Effects to Transportation

Component	Alternative A - No Action	Echanis Wind Energy Project	Alternative B			Alternative C – North Route (Preferred Alternative)
			West Route (Proposed Action)	S. Diamond Lane Route Option	Hog Wallow Route Option	
Access Roads on Private Land (mi)	0	17.47	17.53	16.65	17.55	18.16
Access Roads on BLM-Administered Land (mi)	0	1.48	9.03	5.51	8.81	11.92
Access Roads on USFWS-Administered Land (mi)	0	0	1.31	1.31	1.82	0
Access Roads on Private Land within the CMPA (mi)	0	7.12	5.90	5.90	5.90	5.90
Number of truck trips per day during peak activity	0	36	24	24	24	24

Table 3.14-6 Summary of Effects – Transportation

Alternative A.– No Action	Alternative B			Alternative C – North Route (Preferred Alternative)	
	Echanis Wind Energy Project	West Route (Proposed Action)	South Diamond Lane Route Option		Hog Wallow Route Option
<p>Under the No Action Alternative, no new transmission lines, substations, interconnection stations, or related facilities would be constructed.</p> <p>Improvements to existing access roads would not be needed and no new access roads would be constructed.</p> <p>No workers, equipment, or Project components would be transported on state highways, county roads, BLM roads, or private roads and traffic disruptions, temporary road closures, and detours related to Project construction would not occur.</p>	<p>The 18.95 mile long main access road to the Echanis site would cross approximately 14.73 miles of the Andrews RA and 4.22 miles of the Three Rivers RA; including approximately 7.12 miles on private lands within the Steens Mountain CMPA.</p> <p>Approximately 17.47 miles of the access road would be on private property and 1.48 miles would be on public land administered by the BLM.</p> <p>Each workday there would be an increase in traffic in and around the Project Area due to the presence of construction workers and the delivery of project components and supplies.</p> <p>Specialized trucks would be used to transport the large components that make up each wind turbine to the project site. During peak activity, up to 36 truck trips per day would access the Project site using state highways and county roads, including Highway 20, Highway 205, and South Diamond Lane.</p> <p>The project proponent would make improvements to the existing bridge on South Diamond Lane over the Donner und Blitzen River to remove the current load limits.</p> <p>During peak activity, up to five specialized trucks per hour would traveling at relatively low speed on South Diamond Lane could increase the risk of traffic accidents.</p>	<p>Approximately 2.19 miles of existing unpaved access roads would be widened and 0.19 miles of new access roads would be constructed across BLM and USFWS administered lands.</p> <p>Approximately 25.68 miles of overland access roads would be located on private land, BLM administered land, and a small amount of land administered by the USFWS.</p> <p>Approximately 5.90 miles of new overland roads on private land would be located within the Steens Mountain CMPA.</p> <p>Temporary effects on transportation would be associated with use of the state highways and county roads by construction workers and by trucks hauling equipment and project components would be similar to those described for Echanis.</p> <p>During peak activity as many as 24 truck trips per day (three truck trips per hour) would travel to and from the Project Area.</p> <p>Temporary traffic delays could be expected during installation of the transmission line along two short segments of South Diamond Lane where the transmission line would either parallel or cross the existing road.</p>	<p>Approximately 2.00 miles of improvements to existing access roads and 0.19 miles of new access roads would be constructed.</p> <p>Approximately 21.29 miles of overland access roads would be located on private land, BLM-administered land, and a small amount of land administered by the USFWS. Overland access roads would require no roadbed improvements.</p> <p>Approximately 5.90 miles of new overland roads on private land would be located within the Steens mountain CMPA.</p> <p>Temporary effects would be similar to the effects described for Alternative B – West Route.</p>	<p>Approximately 2.00 miles of improvements to existing access roads and 0.19 miles of new access roads would be constructed.</p> <p>Approximately 25.99 miles of overland access roads would be located on private land, BLM-administered land, and a small amount of land administered by the USFWS.</p> <p>Approximately 5.90 miles of new overland roads on private land, would be located within the Steens Mountain CMPA.</p> <p>Temporary effects would be the similar to those described for Alternative B – West Route.</p>	<p>Approximately 5.03 miles of new access roads would be constructed across private lands and BLM-administered lands.</p> <p>Approximately 25.05 miles of overland access roads would be located on both private land and BLM-administered land.</p> <p>Approximately 5.90 miles of new overland roads on private land would be located within the Steens Mountain CMPA.</p> <p>During construction, there would be an increase in traffic on local roads in and around the Project Area due to workers traveling to and from areas of construction and from trucks delivering construction materials, components, and supplies.</p> <p>Temporary traffic delays (less than one minute) could be expected during installation of the transmission line along short segments of Happy Valley Road where the transmission line would either parallel or cross the existing road.</p>