

Chapter 2

Proposed Action and Alternatives

2.1 INTRODUCTION

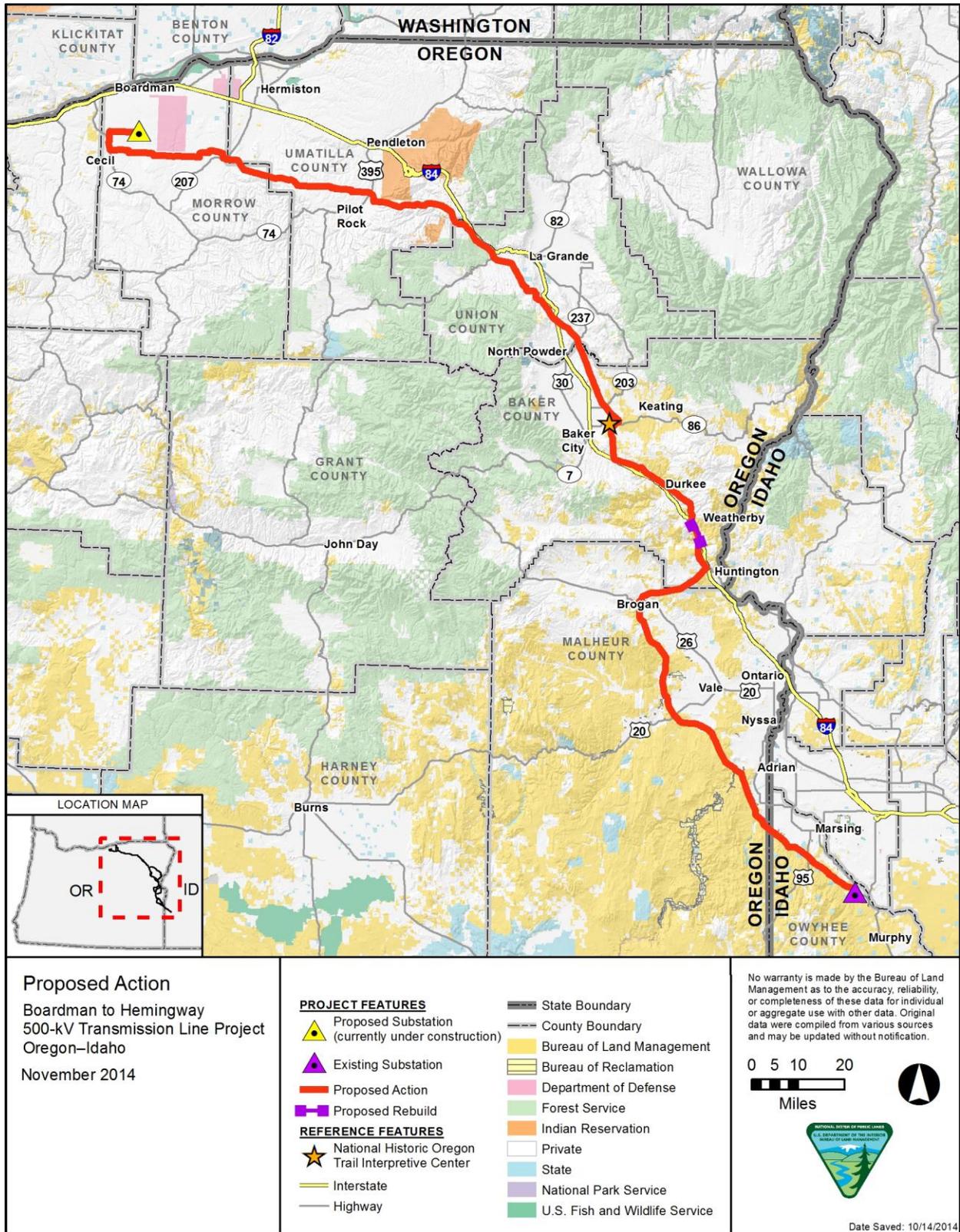
This chapter describes the Proposed Action to construct, operate, and maintain a 500-kV transmission line and ancillary facilities within a 250-foot right-of-way; the range of reasonable alternatives that has been identified for detailed analysis, as required by Section 102(2)(E) of the National Environmental Policy Act (NEPA) (40 CFR 1502.14); and alternatives considered but eliminated from detailed analysis (40 CFR 1502.14(a)). This chapter also describes project system components and compares the key features of the Proposed Action and alternatives in detail.

Alternatives to the proposed B2H Project were developed by using information from several sources, including NEPA project scoping conducted in 2008 and 2010 and comments received during the Community Advisory Process (CAP) conducted by IPC in 2009 and 2010. Alternatives to the Proposed Action were also proposed by IPC. In addition to developing and evaluating alternatives for analysis, the BLM also analyzed the No Action Alternative, which is the continuation of current management of the federal lands. The No Action Alternative provides a useful baseline for comparing the environmental effects associated with the project alternatives.

2.2 PROPOSED ACTION

The Proposed Action would include an approximately 305-mile-long 500-kV alternating-current transmission line that would cross federal, state, and private lands in five counties in Oregon and one county in Idaho, and relocation of approximately 4.5 miles of existing 138-kV transmission line to a proposed double-circuit rebuild of the 138/69-kV transmission line in the existing 69-kV right-of-way in the vicinity of Weatherby, Oregon. The Proposed Action would also include a geotechnical investigation within the project right-of-way in advance of final project design and engineering. Ancillary facilities would include access roads, internal communications sites, pulling yards, fly yards (helicopter landing areas), and staging areas. Figure 2-1 is an overview map of the project area showing the Proposed Action transmission line. Appendix O of IPC's November 2011 *Revised Plan of Development* (POD) (2011a) contains detailed route maps showing the Proposed Action (in red) and the IPC-proposed alternatives (in green). Table 2-1 lists the approximate mileage of the Proposed Action transmission line by county and land status.

The Proposed Action would begin at the existing Grassland Substation near Boardman, Oregon, and terminate at the existing Hemingway Substation near Melba, Idaho.



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Figure 2-1. Proposed Action

1 **Table 2-1. Proposed Action Mileage by County and Land Status**

County	USFS Land	Bureau of Reclamation Land	BLM Land	State Land	Private Land	Total
Morrow (Oregon)	—	—	—	—	45.8	45.8
Umatilla (Oregon)	—	—	—	—	49.5	49.5
Union (Oregon)	5.9	—	1.0	—	32.6	39.5
Baker (Oregon)	—	—	17.7	2.9	53.8	74.4
Malheur (Oregon)	—	1.1	50.4	—	20.6	72.1
Owyhee (Idaho)	—	—	19.2	2.8	1.7	23.7
Total Route Miles	5.9	1.1	88.3	5.7	204.0	305.0

2 *Table Source: Revised POD (IPC 2011a).*

3 **2.2.1 MORROW COUNTY**

4 The Grassland Substation area is located west of the Boardman Generating Plant and south of the city
 5 of Boardman in northern Morrow County. The Proposed Action exits the existing Grassland Substation
 6 to the west, generally paralleling the south side of the existing Boardman to Slatt 500-kV line for about
 7 6.5 miles. About 250 feet west from the Grassland substation the Proposed Action crosses an
 8 unnamed road and then angles southwest at milepost (MP 0.4). At about MP 1.0 the Proposed Action
 9 angles west and continues for about 5.5 miles parallel and offset to the south of the Boardman to Slatt
 10 500-kV line, crossing several unnamed roads. The route then angles south at about MP 6.5 and
 11 crosses an unnamed road at MP 7.0. The Proposed Action continues south for 1.9 miles where it
 12 crosses State Highway 74 at MP 8.4 before angling southwest to cross Ewing Road at about MP 8.9. It
 13 continues along the western edge of the Willow Creek valley, following the now-abandoned Union
 14 Pacific Railroad (about MP 8.9-MP 10.5). Approximately 1.0 mile north of Cecil, the Proposed Action
 15 angles southeast, crossing State Highway 74 at MP 10.8 and then heading east, south of the
 16 Boardman Conservation Area.

17 The Proposed Action proceeds east across Schoolhouse Canyon at about MP 11.6 and Immigrant
 18 Lane at about MP 13.6 before angling due south at approximately MP 14.6. At about MP 15.1, the route
 19 again angles and proceeds east, south of Lone Butte, crossing the Oregon National Historic Trail (NHT)
 20 at MP 15.4 and Fourmile Canyon at about MP 15.9. At MP 20.2 the Proposed Action angles southeast
 21 for 0.6 mile before turning due east again. The route continues east for approximately 10.0 miles from
 22 MP 20.8—parallel and offset approximately 1.0 mile from the southern boundary of the Boardman
 23 Conservation Area, the Naval Weapons Systems Training Facility Boardman, and Immigrant Lane.
 24 After crossing the Lone-Boardman Road at MP 21.7, the Proposed Action crosses Wells Spring Road at
 25 approximately MP 24.2, followed by Juniper Canyon and Juniper Canyon Road at about MP 25.5, an
 26 existing Bonneville Power Administration (BPA) 115-kV transmission line at approximately MP 25.7,
 27 and an unnamed road at MP 26.2.

28 The route continues due east and crosses Grieb-Wood Road twice, at about MP 26.9 and MP 27.1,
 29 before crossing an existing TransCanada gas pipeline and Bombing Range Road at MP 28.7. At

1 MP 30.8, the route turns due north for about 0.8 mile before angling northeast to parallel the south side
2 of Alpine Lane from about MP 31.8 to MP 33.0. The route then crosses Alpine Lane and Sand Hollow
3 and angles southeast at MP 33.7 to MP 36.2. At MP 36.2 the route turns due south, crossing to the
4 south side of State Highway 207 at approximately MP 36.8 before turning due east.

5 The route then parallels the south side of State Highway 207 for approximately 1.0 mile to MP 38.0. At
6 this point the route angles southeast for 0.3 miles, passing south of Butter Creek Junction and angling
7 northeast at MP 38.3 across Butter Creek, the Morrow/Umatilla County line, and Butter Creek Road
8 (CO 1400 Rd) (MPs 38.3–38.7). At MP 40.8, approximately 2.5 miles northeast of Pine City, the route
9 turns southeast, leaving Umatilla County (about MP 41.5) and heading back into Morrow County.

10 At about MP 43.2, the Proposed Action angles southeasterly, staying to the north of Mule Hollow and
11 crossing National Forest Development Road 827 at approximately MP 45.1. At MP 48.8, the route
12 leaves Morrow County and enters Umatilla County.

13 **2.2.2 UMATILLA COUNTY**

14 The portion of the Proposed Action within Umatilla County is approximately 49.5 miles long and crosses
15 all privately owned lands. The Proposed Action initially crosses into Umatilla County from Morrow
16 County at MP 38.5, crosses Butter Creek Road at MP 38.7, turns southeast at MP 38.8, angles east at
17 MP 39.6, and angles southeasterly to about MP 40.8. At MP 41.5, the Proposed Action then crosses
18 back into Morrow County for 7.3 miles before again entering Umatilla County at MP 48.8.

19 After reentering Umatilla County, the Proposed Action continues east and then south, following the path
20 of an unnamed road along the northern rim of Slusher Canyon, south of Spikes Gulch (MP 50.2–MP
21 55.6). From MP 55.6, it proceeds nearly due east and crosses Alkali Canyon Road at about MP 56.6,
22 County Road 1361 at MP 58.8, Alkali Canyon at MP 60.1, one unnamed road at MP 60.6 and one at
23 MP 61.4, and Blanchet Lane at MP 61.9. At about MP 62.7, the Proposed Action angles southeast and
24 east, crossing Coombs Canyon at about MP 64.1 before paralleling County Road 1382 to MP 65.0 and
25 Winget Road to MP 67.6.

26 The Proposed Action angles south for about 0.4 mile and then turns east, crossing Mill Road at
27 MP 69.6 and continuing to MP 71.8, where it turns slightly southeast about 2.5 miles northeast of Pilot
28 Rock. The route proceeds southeast across the Union Pacific Railroad and Birch Creek at MP 71.9,
29 Stewart Creek at MP 72.0, and U.S. Highway 395 at MP 72.1. The route continues southeast crossing
30 School House Road at MP 72.7 and then angles south to MP 74.3. The Proposed Action then turns
31 east, crossing Shaw Road and Little McKay Creek at MP 74.9. South of the Umatilla Indian
32 Reservation, the route proceeds east, angling southeast at MP 77.0 into steep terrain. The route
33 passes south of McDonald Canyon at MP 78.7 and then continues southeast to MP 80.2, where it
34 angles northeast along a ridgeline and across Timene Canyon (MP 81.3).

35 Passing approximately 1.0 mile south of the community of McKay, the Proposed Action crosses McKay
36 Creek and McKay Creek Road at about MP 83.0 before following the ridgeline along the north side of
37 Lawler Canyon easterly up to the mountain summit at MP 84.9. The route continues east, descending
38 the mountain and crossing Little Rail Creek at MP 85.3 before it angles northeast at about MP 85.7,

1 north of Green Spring Draw. At about MP 86.4, the route turns due east, parallel and offset to the south
2 of Ross Road for the next 0.3 miles, before crossing Rail Creek and an unnamed road at approximately
3 MP 87.3. The route angles to the southeast at MP 88.0 and then passes to the north of Red Spring
4 Canyon before angling farther southeast at MP 89.8.

5 Approximately 2.5 miles southwest of the community of Meacham, the route passes between scattered
6 parcels of land owned by the Confederated Tribes of the Umatilla Indian Reservation, angling across
7 Little Beaver Creek at MP 90.4 and Beaver Creek at MP 91.7. At MP 92.2 the route turns south,
8 crossing an unnamed road at MP 93.5 and National Forest Road 382 at MP 94.4 before proceeding
9 southeast across two unnamed roads to MP 95.3, where the route crosses into Union County.

10 **2.2.3 UNION COUNTY**

11 The Proposed Action traverses Union County for 39.4 miles, crossing 5.9 miles of the Wallowa-
12 Whitman National Forest, 1.0 mile of lands managed by the BLM Vale District, and 32.6 miles of
13 privately owned lands.

14 After entering Union County at about MP 95.3, the route continues southeast and east for 1.1 miles,
15 across Railroad Canyon, an existing Union Pacific Railroad line, Old Emigrant Hill Scenic Frontage
16 Road, and Summit Road before passing to the north of the Blue Mountain Forest State Scenic Corridor
17 and turning southeast at MP 96.4. At this location the Proposed Action proceeds southwest of an
18 existing BPA 230-kV transmission line. Approximately 1.7 miles farther, the route diverges from the
19 existing transmission line and continues southeast along the east side of Railroad Canyon. Between
20 MP 101.5 and MP 101.8, the route traverses Railroad Canyon, which is also designated as a Blue
21 Mountain Forest State Scenic Corridor parcel. Proceeding southeast, the Proposed Action crosses an
22 unnamed road at MP 101.9 and National Forest Road 21 (MP 102.6) and the existing BPA 230-kV
23 transmission line (MP 102.9) mentioned earlier. At MP 105.2 the route angles to the southeast,
24 crossing the existing BPA 230-kV transmission line a second time at MP 105.8. Between MP 96.4 and
25 MP 106.4, the route is approximately 0.25 miles to 1.1 miles southwest of Interstate 84 (I-84) with a 5.5-
26 mile stretch located within the designated utility corridor of the Wallowa-Whitman National Forest.

27 At MP 106.4, approximately 0.6 mile southwest of Hilgard Junction State Park, the Proposed Action
28 proceeds southeast for approximately 4.1 miles, parallel to the south side and offset 2,000 to 2,700 feet
29 from the existing BPA 230-kV transmission line. While generally parallel to the existing 230-kV line, the
30 route crosses the Grande Ronde River and State Highway 244 at about MP 106.7, approximately
31 1.2 miles south of this highway's intersection with I-84. The route angles to the east at MP 107.5,
32 crossing Mill Canyon Road at MP 107.9 and then Glass Hill Road and Rock Creek at about MP 109.0,
33 an existing Northwest Pipeline at MP 109.1, and Sheep Creek at MP 109.8.

34 At approximately MP 110.6, the route angles to the southeast, paralleling the west side of a ridgeline for
35 the next 5.3 miles and crossing the Northwest Pipeline a second time at MP 111.3. At MP 115.8 the
36 route turns eastward and angles up the western slope of Glass Hill toward the summit (MP 117.1). At
37 MP 117.7, the Proposed Action begins its southeasterly descent down the eastern slope of Glass Hill,
38 crossing several switchbacks and severe terrain as it angles southeasterly toward Ladd Canyon and I-

1 84. Ladd Canyon Road and Ladd Creek are crossed at approximately MP 121.1. The route continues
2 southeasterly for approximately the next 4.6 miles across the foothills of Baldy Mountain, staying to the
3 west of the existing Idaho Power 230-kV line and crossing Clover Creek at MP 124.8 and MP 125.5.

4 Between MP 125.9 and MP 127.4, the route traverses southeasterly across the northern end of the
5 Clover Creek Valley—crossing Clover Creek (MP 126.1 and 126.9); the Northwest pipeline (MP 126.7);
6 Ladd Canyon-North Powder Road (MP 127.0), I-84 (MP 127.1); and Heber Road, which is also the
7 Oregon NHT, at about MP 127.4. The route proceeds southeast along the northeast side of Clover
8 Creek Valley, generally parallel to the existing IPC 230-kV line and offset to the southwest by
9 approximately 1,600 to 3,200 feet. At MP 130.5, the route crosses Jimmy Creek Road, and at
10 approximately MP 131.8, it crosses Jimmy Creek Reservoir.

11 The route continues southeast, maintaining an offset of at least 1,500 feet to the west of the existing
12 IPC 230-kV line, crossing State Highway 237 at about MP 133.3. Approximately 1.3 miles farther
13 southeast, it crosses the Union Pacific Railroad, the Powder River, and the Union County/Baker County
14 line into Baker County at MP 134.6.

15 **2.2.4 BAKER COUNTY**

16 The Proposed Action crosses Baker County for 69.1 miles. Approximately 17.7 miles cross BLM-
17 managed lands in the Vale District, about 2.9 miles cross state and local government property, and
18 48.5 miles cross private property.

19 Once across the Powder River, the Proposed Action continues southeast and generally offset about
20 1,500 feet west of the existing IPC 230-kV line for about 13.1 miles to MP 147.8. In this portion of the
21 county the terrain is hilly, and the route passes along the west side of Riverdale Hill, across Thief Valley
22 Lane (MP 137.8), Gentry Creek (MP 139.7), and over Bidwell Road (MP 142.0) before passing across
23 the east side of Magpie Peak. At MP 146.7, the route crosses Bidwell Road and continues southeast
24 for the next 1.1 miles along the east side of Schetky Road.

25 From MP 147.8 the route angles to the southeast, crossing the existing IPC 230-kV line at MP 148.6,
26 State Highway 203 at about MP 149.3, and another existing IPC 230-kV transmission line at MP 149.9.
27 At about MP 153.3 the route turns south and passes between mountain peaks. The route then angles
28 southwest at MP 153.6, crossing State Highway 86 (MP 154.8), Ruckles Creek Road (about MP 155.0),
29 and the Oregon NHT (MP 155.4) before angling south at the ridgeline of the Prospects at MP 156.1. At
30 the closest point, the Proposed Action is about 1.1 miles southeast of the National Historic Oregon Trail
31 Interpretive Center (NHOTIC) and 0.4 mile from the Flagstaff Area of Critical Environmental Concern
32 boundary that includes the Center. From MP 156.1, the route proceeds directly south for approximately
33 6.4 miles to MP 162.5, where it crosses an existing 69/138-kV transmission corridor just northeast of I-
34 84 and about 7.5 miles southeast of Baker City.

35 The Proposed Action remains in the same general corridor with the existing IPC 138-kV and 69-kV
36 facilities on the northeast side of I-84 for about 2.3 miles. It then crosses the 69-kV line at MP 164.8
37 and parallels the south side of the 138-kV line for about the next 2.3 miles (MP 165.0–MP 167.3),
38 passing to the north and east of Pleasant Valley. The route then crosses the existing 138-kV

1 transmission line at MP 167.4 before proceeding east across the Oregon NHT at MP 168.0. Angling to
2 the southeast at MP 168.5, the route crosses Straw Ranch Creek (MP 169.6) before paralleling the
3 north side of the existing IPC 138-kV line at MP 170.0 for the next 3.6 miles. The Proposed Action then
4 passes to the north and east of the community of Durkee, crossing the Union Pacific Railroad twice
5 (MP 174.1 and MP 174.7), Hindman Road (174.7), Lawrence (Pritchard) Creek (MP 174.8), and Iron
6 Mountain Road (176.0) before passing southwest of Iron Mountain. The route continues southeast
7 across Durkee Creek, Vandecar Road, Manning Creek Road, and Manning Creek before angling
8 across the North Fork Swayze Creek (MP 181.6) to MP 181.7, where the route turns and proceeds
9 south.

10 The route continues south, crossing the Middle Fork Swayze Creek (MP 182.0), the Oregon NHT at
11 MP 182.4, and Swayze Creek at MP 182.6. Passing east of Gold Hill and angling south across Plano
12 Road and Pearce Gulch, the route turns southwest meeting with an existing IPC 69-kV line and coming
13 within 0.1 mile of the east side of I-84, the Union Pacific Railroad, and the Burnt River. The route turns
14 southeast staying east of I-84, the existing 69-kV line, the Burnt River, and the Union Pacific Railroad
15 and crosses the Oregon NHT a second and third time at MP 186.4 and MP 186.8 while passing east of
16 the community of Weatherby.

17 From MP 186.6 south to MP 191.1, the proposed 500-kV transmission line would be constructed
18 approximately along the same centerline as the existing IPC 138-kV transmission line. Following the
19 existing path of the 138-kV line, the Proposed Action crosses I-84, the Burnt River, and the Union
20 Pacific Railroad at MP 187.9 before passing along the east side of Weatherby Mountain, staying west
21 of Caribou Bar, and crossing Dixie Creek and Rye Valley Lane at MP 190.9. Between MP 186.7 and
22 MP 191.5, the existing 138-kV line, along with the existing IPC 69-kV line, would be rebuilt as a double-
23 circuit 69/138-kV line within the existing 69-kV right-of-way. The double-circuit 138/69-kV line rebuild
24 would span 4.5 miles, proceeding south from Weatherby along the eastern side of I-84 until about MP
25 4.4, where it would cross I-84, the Burnt River, and the Union Pacific Railroad. The rebuild would
26 continue south, across Rye Valley Lane, until MP 5.0, where the double-circuit section would end. At
27 the southern end of the rebuild, there would be a 0.3-mile segment of new 138-kV line built to tie the
28 138-kV part of the double-circuit line back into the existing 138-kV line.

29 At the southern end of the Weatherby Mountains, the Proposed Action continues south, passing east of
30 Table Rock and staying west of the existing 138-kV line. At MP 193.9, the route crosses Goodman
31 Creek and at MP 194.2 angles southeast, offset approximately 400 feet to the west of the existing 138-
32 kV line. The route crosses Cavanaugh Creek at MP 196.3 and proceeds southeast to MP 197,
33 approximately 1.7 miles northwest of Huntington. At this point the Proposed Action leaves the 138-kV
34 corridor and proceeds southwest, passing northwest of Lost Tom Mountain and crossing Malheur Line
35 Lane and Durbin Creek at about MP 199.0. The route passes southeast of Limestone Butte and
36 northwest of Little Valley and continues southwest across Birch Creek (MP 202.9) before entering
37 Malheur County at about MP 203.9.

1 **2.2.5 MALHEUR COUNTY**

2 The Proposed Action traverses 72.1 miles across northeastern Malheur County. Approximately
3 20.6 miles of the route cross privately owned lands, 50.4 miles cross BLM-managed lands, and
4 1.1 miles cross lands managed by the Bureau of Reclamation.

5 Entering Malheur County at MP 203.9, the Proposed Action route crosses to the north of Matthew
6 Gulch. Continuing southwest, the route crosses Phipps Creek at MP 205.4, an unnamed road at MP
7 205.6, and West Fork Phipps Creek at about MP 206.4 before proceeding across Becker Creek at
8 about MP 210.4. Approximately 2.7 miles north of the community of Brogan, between MP 210.8 and
9 MP 211.4, the route traverses a steep canyon, crossing Willow Creek Road and Willow Creek before
10 angling across one unnamed road at MP 212.3 and one at MP 212.8. Heading south, the route crosses
11 an existing IPC 69-kV transmission line at MP 214.0 and then angles across U.S. Highway 26 and
12 Canyon Creek at about MP 214.3. At MP 214.6 the route turns southeast before turning due south at
13 MP 215.0, approximately 3.6 miles west of Brogan. Proceeding south to MP 217.7, the route crosses
14 Pole Creek at MP 215.8, Black Creek at MP 216.2, and South Fork Black Creek at MP 217.0.

15 At MP 217.7, the Proposed Action angles southeast across Snake Creek (MP 218.3), Gum Creek Road
16 (MP 218.4), and Gum Creek (218.6) to MP 218.8, where it turns and heads south. Passing east of the
17 Cottonwood Mountains, the route traverses several creeks before angling southeast at MP 222.7 and
18 crosses Turner Creek Road and Turner Creek at MP 224.0. At MP 224.5, the route crosses North Fork
19 Little Willow Creek and then South Fork Little Willow Creek before passing to the southwest of Morrison
20 Reservoir and across Mud Creek at MP 226.4 and Bully Creek Road at MP 226.7. The route then
21 crosses Kern Creek at MP 227.5 and proceeds due south at MP 228.2, passing between Sugarloaf
22 Butte and Hope Butte.

23 Passing west of the Bully Creek Reservoir, the route crosses Bully Creek Road at MP 232.2 and
24 Cottonwood Creek at MP 232.3, approximately 1.2 miles northwest of its confluence with Bully Creek.
25 At MP 233.8 the route turns southeast across Bully Creek and proceeds south to MP 236.8, where it
26 angles easterly across the Vale Oregon Canal. At about MP 237.1 the route angles to the southeast,
27 crossing the Union Pacific Railroad at MP 237.4 and the Malheur River and Malheur Canyon at about
28 MP 237.5. Approximately 4.3 miles farther south at MP 241.8, the proposed route crosses U.S.
29 Highway 20 near Vines Hill before angling east at MP 243.5.

30 For the next 3.2 miles the Proposed Action continues easterly across Malheur County, crossing Sand
31 Hollow, Negro Rock Creek Road, and Negro Rock Canyon (MP 245.7). At MP 246.7, the route turns
32 southeast, crossing several unnamed roads and then crossing Cow Hollow and Twin Spring Road at
33 about MP 250.7. Passing west of Leaky Reservoir and east of Chalk Reservoir, the route crosses Chalk
34 Butte (Shell Rock) Road several times until its final crossing of this road at MP 254.7. At about MP
35 256.9, the route crosses Mitchell Butte Road and Rock Spring Canyon and proceeds south to MP 257.7
36 where the route then angles southeasterly around the north end of Deer Butte. The Proposed Action
37 crosses the North Canal at approximately MP 259.8 before turning south at MP 260.2 and crossing
38 Owyhee Lake Road at MP 260.3 followed by the Owyhee River at MP 260.4.

1 At MP 260.5, the route turns southeast and proceeds across Kingman Aqueduct and an unnamed road
2 before turning south at MP 262.1. At MP 262.7 the route crosses an existing 69-kV transmission line
3 and an unnamed road before passing east of Four Points Reservoir and over Snively Gulch Road (MP
4 263.0). Proceeding southeast, the route passes east of Blackjack Butte, across Owyhee Tunnel Road
5 (MP 266.0), over Alkali Creek (MP 266.9), Coyote Gulch Siphon (MP 268.8), North Alkali Creek (MP
6 270.1), and Succor Creek Road (270.4). At MP 270.8 the route angles south, crossing the existing
7 Summer Lake to Midpoint 500-kV transmission line at MP 271.4 before turning southeast at MP 271.6.
8 The route crosses Succor Creek (MP 272.3), several unnamed roads, and the South Canal several
9 times before proceeding to the Oregon/Idaho state line at about MP 276.0.

10 **2.2.6 OUYHEE COUNTY**

11 The Proposed Action spans approximately 23.7 miles across Owyhee County, Idaho. The route
12 crosses 19.2 miles of BLM-managed lands, 2.8 miles of state and municipal lands, and 1.7 miles of
13 privately owned lands.

14 The Proposed Action enters Owyhee County approximately 1.5 miles south of Graveyard Point and
15 1.8 miles southwest of Rattlesnake Butte and continues southeast for 5.9 miles to MP 281.8. In this
16 portion of the county, the route passes along the northeast side of the Owyhee Mountains and crosses
17 Sage Creek (MP 277.4) and Sands Basin Road (MP 279.3 and MP 280.7) before passing southwest of
18 Flat Top Butte and across Poison Creek Grade Road (MP 281.4) and Poison Creek (MP 281.6). At MP
19 281.8 the route turns and proceeds east, passing south of the South Canal at MP 283.0.

20 At MP 283.2 the route angles southeast generally parallel and offset to the southwest of the Summer
21 Lake to Midpoint 500-kV line. It then crosses Jump Creek Road (MP 283.3), Jump Creek (MP 283.4),
22 and South Jump Creek Road at about MP 283.6. The Proposed Action route crosses U.S. Highway 95
23 at MP 287.0 and then passes south of Elephant Butte, over Sommer Camp Road at MP 288.0, and
24 across Squaw Creek at MP 288.8. At MP 291.1, the route crosses Coyote Grade Road, angles across
25 the north end of Rats Nest Gulch and Opalene Gulch, and crosses Hardtrigger Creek at MP 294.7.

26 At MP 297.0 the route angles east, crossing the existing Summer Lake to Midpoint 500-kV line at
27 MP 297.6 before turning southeast at about MP 298.7. The route then crosses Wilson Creek Road at
28 MP 299.1 and Reynolds Creek at MP 299.4, turns southwest, and enters the Hemingway Substation
29 from the north at approximately MP 299.7.

30 **2.2.7 RIGHT-OF-WAY ACQUISITION**

31 The Proposed Action and alternatives, as well as ancillary facilities, would need new rights-of-way
32 through a combination of right-of-way grants and use authorizations and easements between IPC and
33 various federal, state, and local governments; other companies (e.g., utilities and railroads); and private
34 landowners. In the early stages of the proposed project, landowners would be contacted to obtain right-
35 of-entry for surveys and for geotechnical drilling at selected locations. Each landowner along the final
36 centerline route would be contacted to explain the project and to secure right-of-entry and access to the
37 right-of-way. Rights-of-way for transmission line facilities on private lands would be obtained as

1 perpetual easements. Land for substation or communication sites would be obtained in fee simple title
2 where located on private land.

3 At the time the November 2011 Revised POD and SF 299 was submitted, the Western Electricity
4 Coordinating Council (WECC) and North American Electric Reliability Corporation had established
5 reliability criteria for high-voltage transmission lines. To achieve the reliability and capacity needed to
6 serve present and future loads within IPC's service areas, the WECC criteria required a minimum
7 separation by at least "the longest span length of the two transmission circuits at the point of separation
8 or 500 feet, whichever is greater, between the transmission circuits" (TPL-[001-004]-WECC-1-CR,
9 April 18, 2008).¹ For the purposes of making its right-of-way application, IPC assumed the separation
10 between the transmission lines would be approximately 1,500 feet. Land between rights-of-way that are
11 separated to meet reliability criteria would not be encumbered with an easement but could be
12 practically limited in land uses due to the proximity of two or more large transmission lines.

13 **2.2.8 PROJECT FACILITIES**

14 For the purposes of this EIS, the term "B2H Project" is used to collectively describe the Proposed
15 Action and all the alternatives. For example, regardless of the alternative chosen or the structure type
16 or configuration chosen, the construction, operation, and maintenance of the B2H Project would be
17 conducted in a similar manner.

18 **2.2.8.1 TRANSMISSION LINE COMPONENTS**

19 The transmission line system components include the transmission line towers, nonspecular (diffused
20 reflection) conductors, and other hardware. Three types of tower structures would be used on the B2H
21 Project: steel lattice towers and H-frame structures for 500-kV circuits and monopoles for 138/69-kV
22 circuits. Table 2-2 summarizes the features of these structures, including typical height, typical
23 distances between structures, and footprint requirements for construction and operation by structure.

24 The majority of the proposed transmission line circuits would be supported by single-circuit steel lattice
25 towers. Steel lattice towers would be fabricated with galvanized steel members treated to produce a
26 dulled galvanized finish. The average distance between 500-kV towers would be 1,200 to 1,300 feet.
27 Structure heights would vary, depending on terrain and the requirement to maintain minimum conductor
28 clearances from ground. Minimum conductor clearances from the ground may vary due to specific
29 agency or landowner requirements that may be different than engineering clearances. The 500-kV
30 single-circuit towers would vary in height from 110 to 195 feet. Figure 2-2 illustrates the typical tangent
31 lattice tower structure configuration. Tangent towers are the structures typically used on relatively
32 straight portions of the transmission line

¹ The rating criteria was changed to a minimum of separation distance of 250 feet from the nearest 230-kV or higher voltage transmission line (TPL-001-WECC-CRT-2, April 1, 2012). B2H line separation is consistent with the 2012 WECC (Western Electricity Coordinating Council) guidance.

1 **Table 2-2. Project Structure Types**

Structure Type	Typical Height (feet)	No. of Structures	Average Distance Between Structures (feet)	Construction Footprint Requirements per Structure	Operations Footprint Requirement per Structure
500-kV single-circuit lattice structure	110–195	1,228	1,200–1,300	250 feet x 250 feet = 1.43 acre	50 feet x 50 feet = 0.06 acre
500-kV single-circuit H-frame structure	100–165	75	900–1,300	250 feet x 250 feet = 1.43 acre	50 feet x 50 feet = 0.06 acre
138/69-kV double-circuit monopole structure	55–100	72	350	100 feet x 100 feet = 0.23 acre	50 feet x 50 feet = 0.06 acre

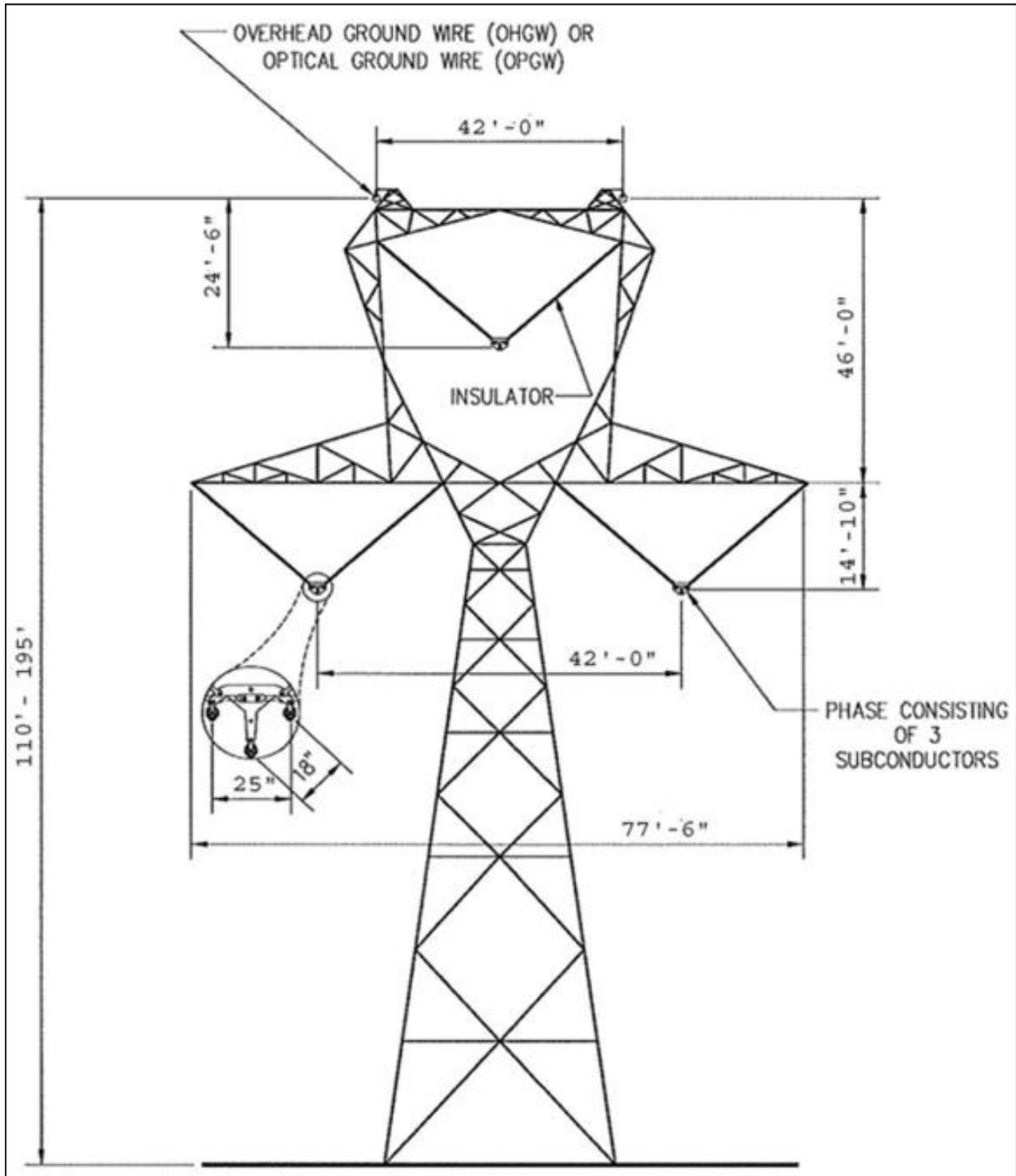
2 *Table Source:* Revised POD (IPC 2011a: Appendix B).

3 *Table Note:* Structure characteristics presented in this table are reasonable estimates derived from preliminary engineering.

4 In some instances, single-circuit tubular steel H-frame structures would be used where impacts on
 5 sensitive environmental resources require mitigation or where land use requires shorter structure
 6 heights. The 500-kV H-frame structures would be fabricated with self-weathering tubular steel. The
 7 average distance between 500-kV H-frames would be 900 to 1,300 feet. Structure heights would vary
 8 depending on terrain and the requirement to maintain minimum conductor clearances from ground. The
 9 500-kV H-frame structures would vary in height from 100 to 165 feet. Figure 2-3 shows a typical single-
 10 circuit tubular steel pole H-frame structure.

11 Monopole structures would be fabricated with self-weathering steel treated to produce a rustlike finish.
 12 The average distance between 138/69-kV towers would be 350 feet. Structure heights would vary
 13 depending on terrain and the requirement to maintain minimum conductor clearances from ground. The
 14 138/69-kV double-circuit towers would vary in height from 55 to 100 feet. Figure 2-4 illustrates a typical
 15 138/69-kV double-circuit monopole structure with a 12.5-kV underbuild distribution line. This type of
 16 structure is proposed for the rebuild in the Weatherby, Oregon, area. Figure 2-5 illustrates the right-of-
 17 way design configurations for the proposed tower structures.

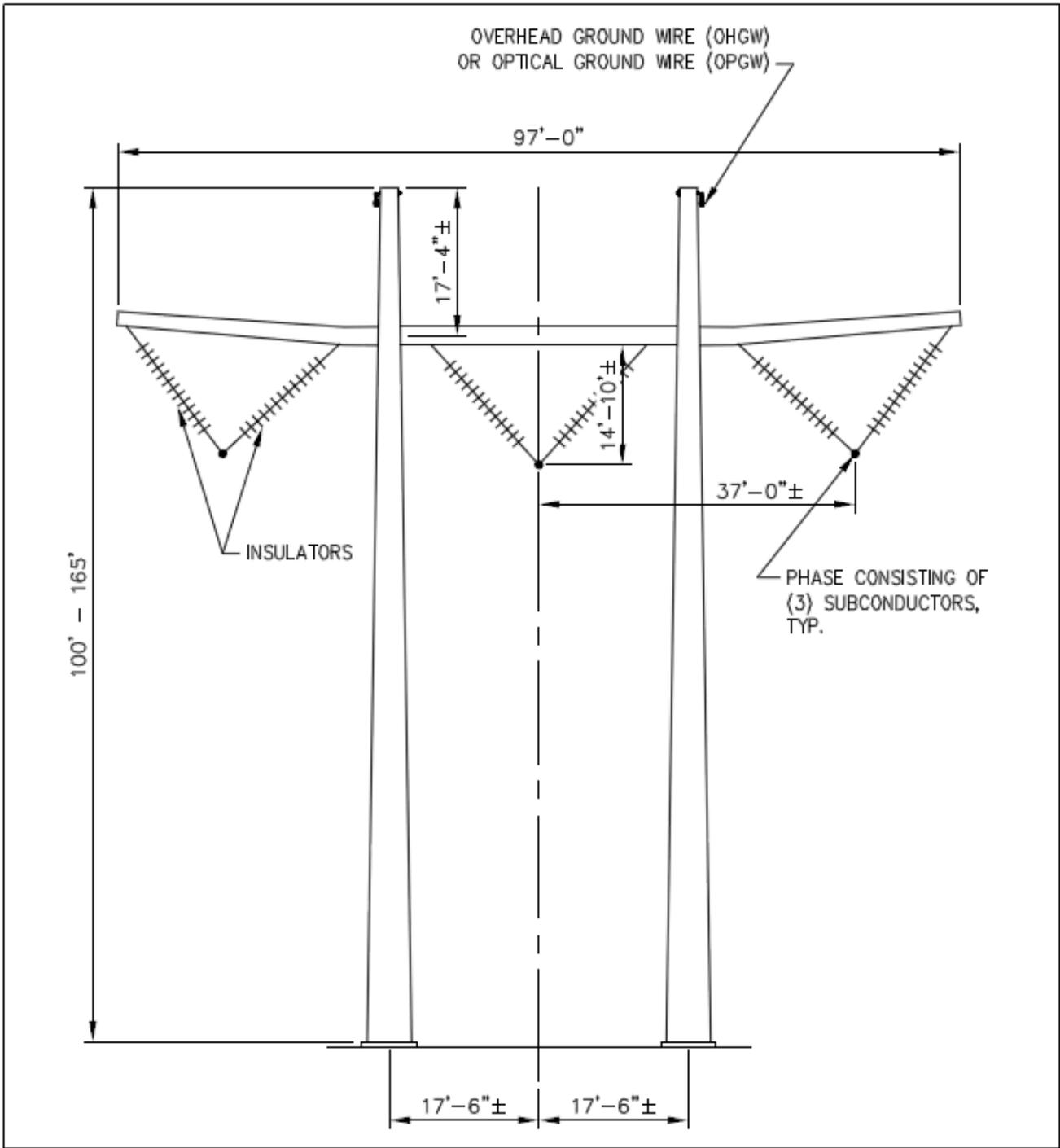
18 Phase-to-phase (conductor to conductor) and phase-to-ground (conductor to ground) clearance
 19 parameters are determined in accordance with IPC’s standards and with the American National
 20 Standards Institute’s National Electrical Safety Code, ANSI C2 (IEEE 2011). These documents provide
 21 minimum distances between the conductors and ground, crossing points of other lines and the
 22 transmission support structure, and other conductors and also provide minimum working clearances for
 23 personnel during energized operation and maintenance activities. Typically, the clearance of
 24 conductors aboveground is 37 feet for a 500-kV line, but where the line crosses land used for
 25 agricultural purposes, a minimum clearance of 40 feet would be used to accommodate large
 26 equipment. For the 138/69-kV double-circuit section, the 12.5-kV underbuild distribution conductor
 27 clearance would be 22 feet aboveground. During detailed design, clearances may be increased to
 28 account for localized conditions or specific agency or entity requirements.



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Figure 2-2. Proposed 500-kV Single-Circuit Steel Lattice Structure

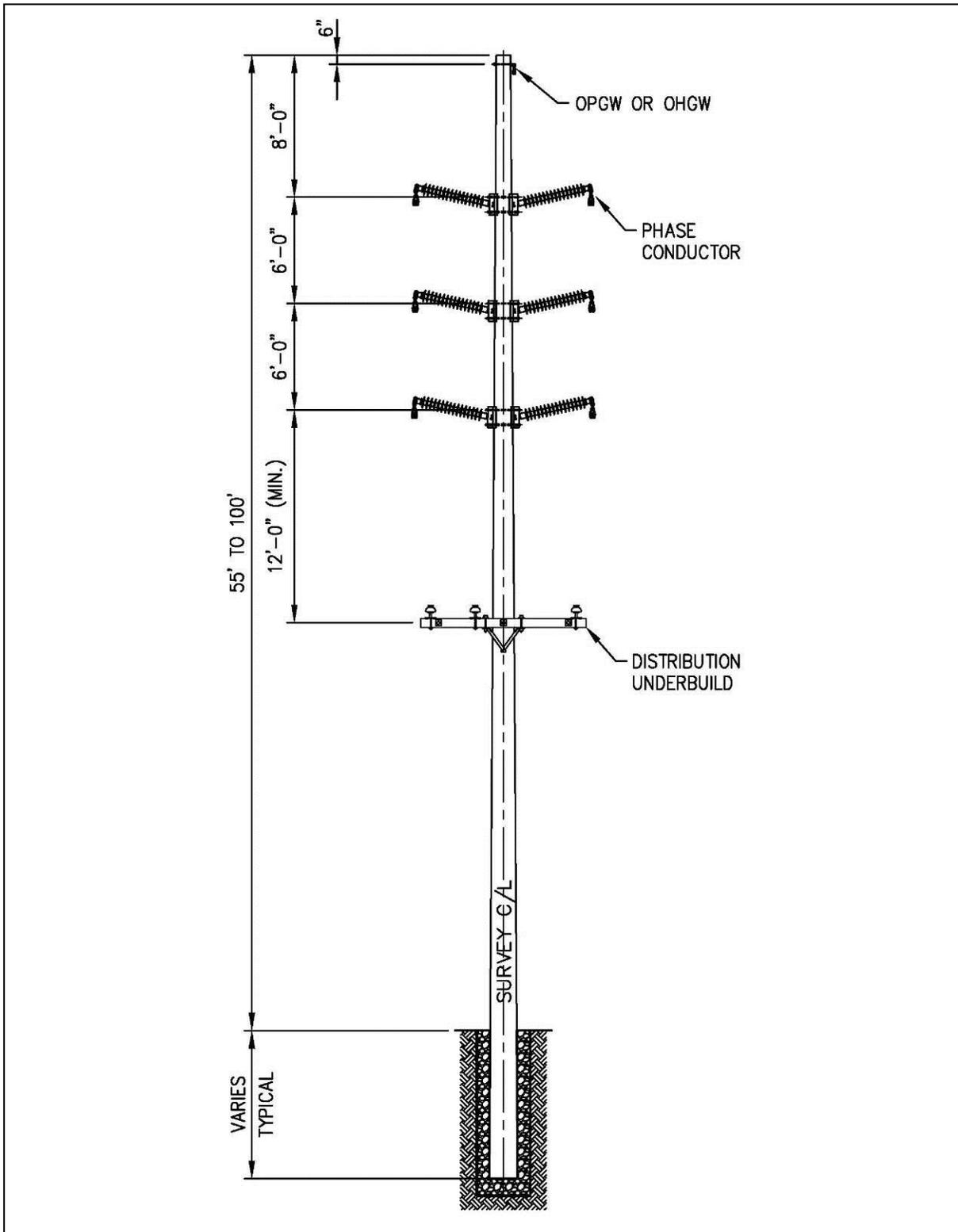
Figure Source: Revised POD (IPC 2011a).



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Figure 2-3. Proposed 500-kV Single-Circuit Tubular Steel Pole H-Frame Structure

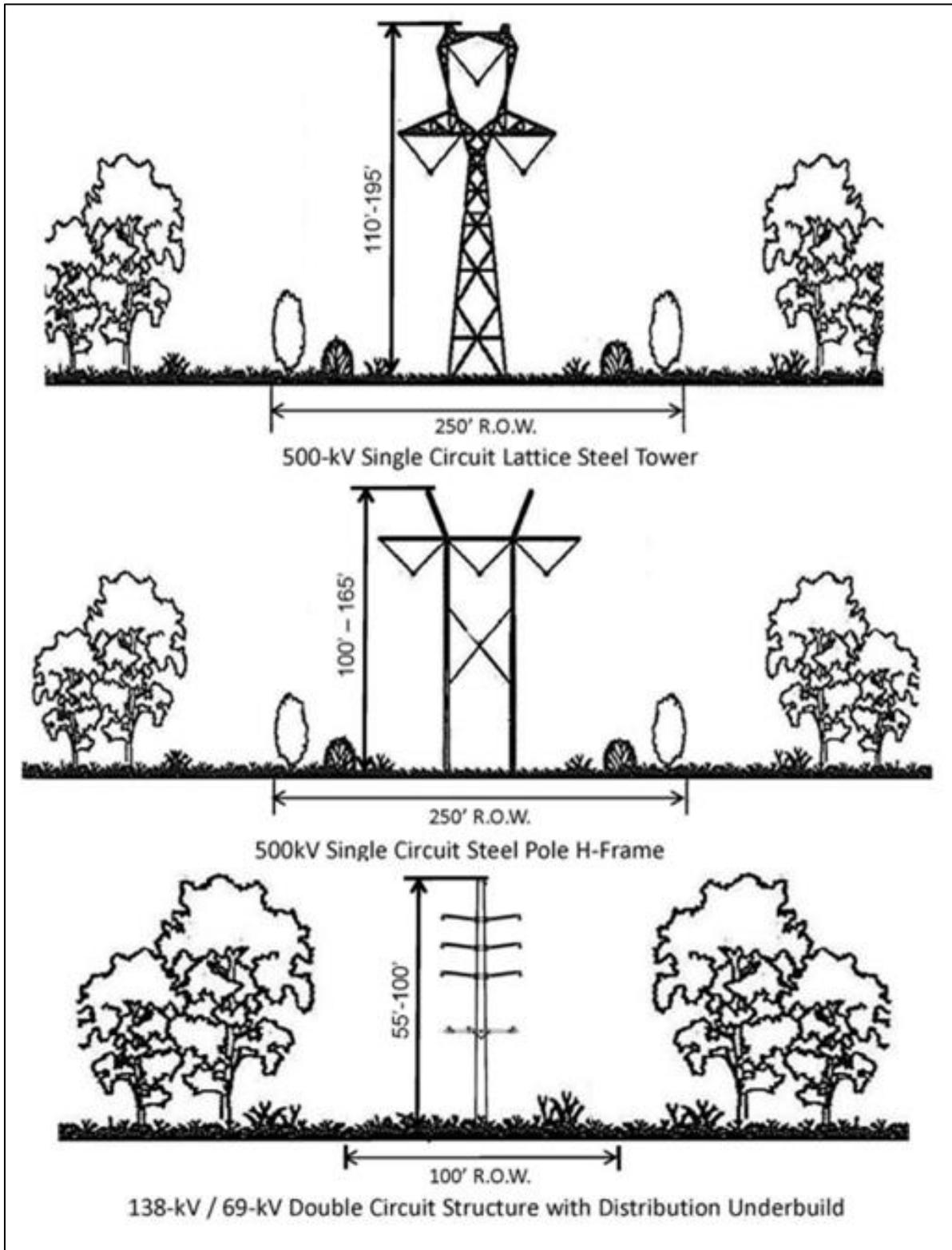
Figure Source: Revised POD (IPC 2011a).



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Figure 2-4. Proposed 138/69-kV Double-Circuit Monopole Structure with 12.5-kV Distribution Underbuild

Figure Source: Revised POD (IPC 2011a).



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Figure 2-5. Proposed Right-of-Way Designs

Figure Source: Revised POD (IPC 2011a).

1 STRUCTURE FOUNDATIONS

2 The 500-kV single-circuit steel lattice structures each require four foundations with one on each of the
3 four corners of the lattice towers. The foundation dimensions depend on structure loading conditions
4 and the type of soil or rock present at each specific site; these dimensions would be determined during
5 final design. Typically, the foundations for the single-circuit tangent lattice towers would be composed
6 of steel-reinforced concrete drilled piers with a typical diameter of 4 feet and a depth of approximately
7 15 feet.

8 For the 500-kV H-frame structures each structure will require two foundations, one for each pole that
9 composes the H-frame structure. For angle and dead-end structures, the H-frames would be replaced
10 with three poles, each with its own foundation. They would be steel-reinforced drilled piers with a typical
11 diameter of 6 feet and a depth of approximately 25 feet.

12 The 138/69-kV monopole structures would be a combination of direct-embedded steel poles and self-
13 supported poles on drilled pier foundations. Tangent structures, which are towers typically used on
14 relatively straight portions of the transmission line, would be directly embedded in a single drilled
15 boring, typically 5 feet in diameter and 15 feet deep. Angle and dead-end structures, which are more
16 heavily constructed towers, would be on steel-reinforced drilled pier foundations with a typical diameter
17 of 5 feet and a depth of approximately 20 feet. Table 2-3 lists the typical foundation requirements for
18 the proposed structure types.

19 **Table 2-3. Foundation Excavation Dimensions**

Proposed Structure	No. of Structures	Holes per Structure	Depth (feet)	Diameter (feet)	Concrete (cubic yards)
500-kV single circuit—light tangent lattice tower	964	4	15	4	28
500-kV single circuit—heavy tangent lattice tower	82	4	18	5	52
500-kV single circuit—small angle lattice tower	12	4	16	6	68
500-kV single circuit—medium angle lattice tower	27	4	21	6.5	104
500-kV single circuit—medium dead-end lattice tower [1]	103	4	28	7	160
500-kV single circuit—heavy dead-end lattice tower	40	4	30	7	172
500-kV single circuit—tangent H-frame structure	61	2	25	6	53
500-kV single circuit—angle H-frame structure	8	3	30	7	129
500-kV single circuit—dead-end H-frame structure	6	3	40	8	224
138/69-kV double circuit—monopole tangent structure	37	1	15	5	N/A
138/69-kV double circuit—monopole angle structure	5	1	20	5	15
138/69-kV double circuit—monopole dead-end structure	30	1	25	6	27

20 *Table Source:* Revised POD (IPC 2011a: Appendix B).

21 *Table Note:* [1] “Dead-end structure” typically refers to a structure that is placed at a point where the transmission line turns
22 direction.

1 **CONDUCTORS**

2 The proposed conductor for the 500-kV lattice structure lines is 1,272 kcmil 45/7 ACSR “Bittern.”² Each
3 phase of a 500-kV three-phase circuit will be composed of three subconductors in a triple bundle
4 configuration.³ The individual 1,272 kcmil conductors will be bundled in a triangular configuration with
5 spacing of 25 inches between horizontal subconductors and 18 inches of diagonal separation between
6 the top two conductors and the lower conductor (see Table 2-2). The triple-bundled configuration is
7 proposed to provide adequate current carrying capacity and to provide for a reduction in audible noise
8 and radio interference compared with a single large-diameter conductor. Each 500-kV subconductor
9 will have a 45/7 aluminum/steel stranding, with an overall conductor diameter of 1.345 inches and a
10 weight of 1.432 pounds per foot, and a nonspecular (dull) finish.

11 The proposed conductor for the 138/69-kV monopole structure lines is 397 kcmil 26/7 ACSR “Ibis”
12 (138 kV, one conductor per phase), 4/0 6/1 ACSR “Penguin” (69 kV, one conductor per phase), No. 4
13 Copper Conductor (12.5-kV distribution, one conductor per phase plus neutral wire), and a 3/8-inch
14 EHS 7-strand shield wire. Conductors will be aligned with typical vertical spacing of 8 feet between
15 shield wire and 69- or 138-kV phase wires, 6 feet between phase wires, and a minimum of 12 feet
16 between 138- or 69-kV phase wires and distribution wires.

17 For phases that have a multiple-conductor bundle, the bundle spacing will be maintained through the
18 use of conductor spacers at intermediate points along the conductor bundle between each structure.
19 The spacers serve a dual purpose: in addition to maintaining the correct bundle configuration and
20 spacing, the spacers are also designed to damp out wind-induced vibration in the conductors. The
21 number of spacers required in each span between towers will be determined during the final design of
22 the transmission line.

23 **INSULATORS**

24 The typical insulator assemblies for 500-kV steel lattice tangent structures and H-frame structures will
25 consist of two insulators hung in a V-shaped configuration. Insulator assemblies for 138/69-kV tangent
26 structures will consist of supported insulators which extend horizontally away from the monopole.
27 Insulators are used to suspend each conductor bundle (phase) from the structure, maintaining the
28 appropriate electrical clearance between the conductors, the ground, and the structure. The V-shaped
29 configuration of the 500-kV insulators also restrains the conductor so that it will not swing into the
30 structure in high winds. Dead-end insulator assemblies for the transmission lines will consist of
31 insulators hung from either a tower dead-end arm or a dead-end pole in an I-shaped configuration.
32 Insulators will be composed of grey porcelain or green-tinted toughened glass.

² A circular mil (cmil), defined as the area of a circle with a diameter of one thousandth (0.001) of an inch, is a quantity of measure for conductor wire size. Kcmil (1,000 cmils) is the equivalent cross-sectional area in thousands of circular mils. ACSR (aluminum conductor steel-reinforced) refers to the conductor material composition (aluminum/steel). The preceding numbers indicate the number of strands of each material type present in the conductor (i.e., 45/7 ACSR stranding has 45 aluminum strands wound around 7 steel strands).

³ For alternating-current transmission lines, a circuit consists of three phases. A phase may consist of one conductor or multiple conductors (i.e., subconductors) bundled together.

1 **GROUNDING SYSTEM**

2 Alternating-current transmission lines have the potential to induce currents on adjacent metallic
3 structures such as transmission lines, railroads, pipelines, fences, or structures that are parallel to,
4 cross, or are adjacent to the transmission line. Induced currents on these facilities will occur to some
5 degree during steady-state operating conditions and during a fault condition on the transmission line.
6 The magnitude of the effects of the induced currents on adjacent facilities is highly dependent on the
7 magnitude of the current flows in the transmission line, the proximity of the adjacent facility to the line,
8 and the distance (length) for which the two facilities parallel one another in proximity.

9 The methods and equipment needed to mitigate these conditions will be determined through electrical
10 studies of the specific situation. As standard practice, electrical equipment and fencing at the substation
11 will be grounded. All fences, metal gates, pipelines, metal buildings, and other metal structures
12 adjacent to the right-of-way that cross or are within the transmission line right-of-way will be grounded
13 as determined necessary. If applicable, grounding of metallic objects outside of the right-of-way may
14 also occur, depending on the distance from the transmission line as determined through the electrical
15 studies. These actions take care of the majority of induced current effects on metallic facilities adjacent
16 to the line by shunting the induced currents to ground through ground rods, ground mats, and other
17 grounding systems, thus reducing the potential for electric shock. In the case of a longer parallel facility,
18 such as a pipeline parallel to the project over many miles, additional electrical studies will be
19 undertaken to identify any additional mitigation measures (more than the standard grounding practices)
20 that will need to be implemented to prevent damaging currents from flowing onto the parallel facility,
21 and to prevent electrical shock to a person that may come in contact with the parallel facility.

22 **2.2.8.2 PROJECT TERMINATION**

23 For the proposed B2H Project to connect to the existing distribution grid, both ends of the line must
24 terminate at a substation. At the substation the 500-kV line is “stepped down” to a lower voltage for
25 distribution.

26 The northern terminus of the Proposed Action is the Grassland Substation currently under construction
27 by Portland General Electric. The Grassland Substation is located on private lands west of the
28 Boardman Generating Plant in Morrow County, Oregon, as shown in Figure 2-1. The substation will
29 include three fully equipped bays, one of which is being constructed to accommodate connection of a
30 transmission line to the Boardman to Slatt transmission line. No additional ground disturbance outside
31 the current substation boundaries would be required, and no new access roads would be necessary for
32 access to the Grassland Substation location.

33 The southern terminus of the Proposed Action would be the existing Hemingway Substation located
34 approximately 30 miles southwest of Boise, Idaho, just off Highway 78. Currently, the Hemingway
35 Substation serves as a hub for IPC’s Treasure Valley load. The Hemingway Substation has been
36 designed to accommodate the B2H Project and future transmission projects. No additional ground
37 disturbance outside the current substation boundaries would be required, and no new access roads
38 would be necessary for access to the Hemingway Substation location. The B2H Project bay would

1 contain high-voltage circuit breakers and switches, bus supports, and control equipment similar to that
 2 described for the Grassland Substation.

3 **2.2.8.3 ANCILLARY FACILITIES**

4 In addition to the transmission line and substations, the proposed B2H Project would require additional
 5 system components, including a communications system, access roads, staging areas, and concrete
 6 batch plants. The project would also require a geotechnical investigation within the right-of-way to
 7 prepare final design and engineering plans for the project.

8 **COMMUNICATIONS SYSTEM**

9 To control the transmission line and manage the flow of electricity, a sophisticated internal
 10 communications system would be required. A major factor of the communications system is a fiber-
 11 optic line contained within one of the overhead grounding wires carried along the length of the
 12 transmission line. As the data signal is passed through the optical fiber cable, the signal degrades with
 13 distance. Consequently, signal communication sites (regeneration sites) are required to amplify the
 14 signals if the distance between substations or communications sites exceeds approximately 40 miles.
 15 As summarized in Table 2-4, a total of eight internal communications sites would be required.
 16 Communication site spacing is approximately 40 miles, depending on access and proximity to local
 17 electric distribution lines. The typical site will be 100 feet by 100 feet, with a fenced area of 75 feet by
 18 75 feet. A prefabricated concrete communications shelter with dimensions of approximately 12 feet by
 19 32 feet by 12 feet tall will be placed on the site. Communications sites would be located on private and
 20 public lands.

21 Communications sites would consist of a communications shelter (building) and an emergency
 22 generator with a liquid petroleum gas fuel tank and impermeable liner, a fenced yard, an access road,
 23 and distribution power supply from the local distribution system. Two diverse cable routes (aerial and/or
 24 buried) from the transmission right-of-way to the equipment shelter would be required. Figure 2-6
 25 illustrates the plan arrangement of a typical communications site.

26 **Table 2-4. Proposed Communications Site Locations**

County	No. of Sites	Total Construction Acres	Total Operations Acres	Ownership
Morrow (Oregon)	1	0.2	0.1	Private
Umatilla (Oregon)	1	0.2	0.1	Private
Union (Oregon)	1	0.2	0.1	BLM
Baker (Oregon)	2	0.5	0.3	Private, BLM
Malheur (Oregon)	3	0.7	0.4	2 BLM, 1 private
Owyhee (Idaho)	0	0	0	—

27 *Table Source:* Revised POD (IPC 2011a: Appendix B).

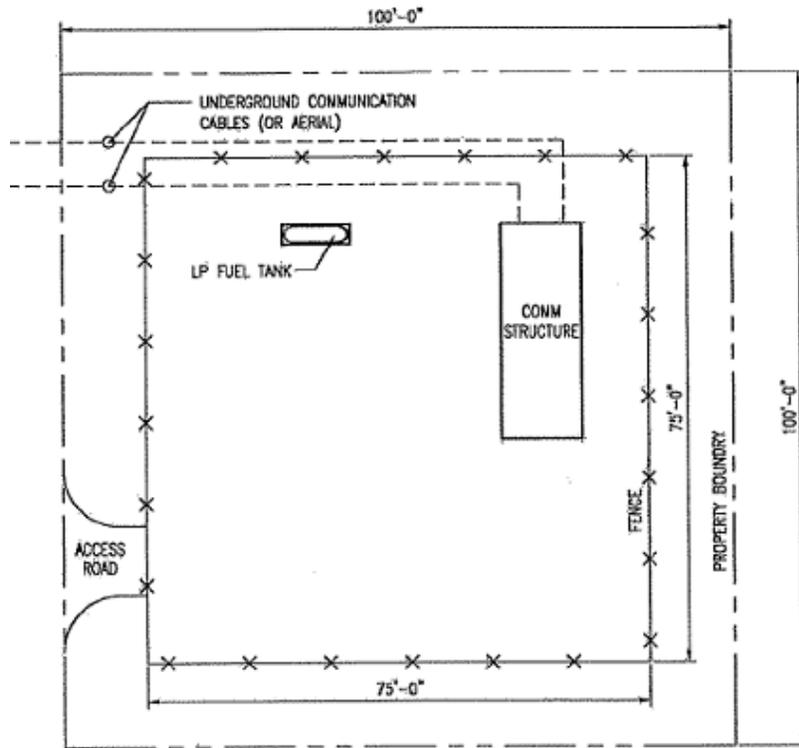


Figure 2-6. Plan View of Typical Communications Site

Figure Source: Revised POD (IPC 2011a).

PROJECT ACCESS ROADS

The B2H Project would require vehicular access to each structure for the life of the project. Transmission line right-of-way access would be a combination of new access roads, improvements to existing roads, as-is use of existing roads and unimproved, overland travel routes in flat and moderate terrain where safe, practical, and authorized. The right-of-way access roads may consist of existing or new roads with minor grading or clearing, two-track roads created by construction vehicles driving directly over low-growth vegetation and brush, or any combination along the route. Wherever possible, existing roads would be used and new access roads would be constructed within the proposed transmission line right-of-way. Access roads constructed in the proposed transmission line right-of-way are included in the calculations provided in Table 2-9 (see Section 2.2.8.4). In other cases, new access spur roads would be required between the proposed transmission line and existing roads outside the right-of-way, particularly in steep terrain where new bladed roads would often follow the contours to minimize grades. Construction of roads would comply with BLM, USFS, and IPC road construction guidelines.

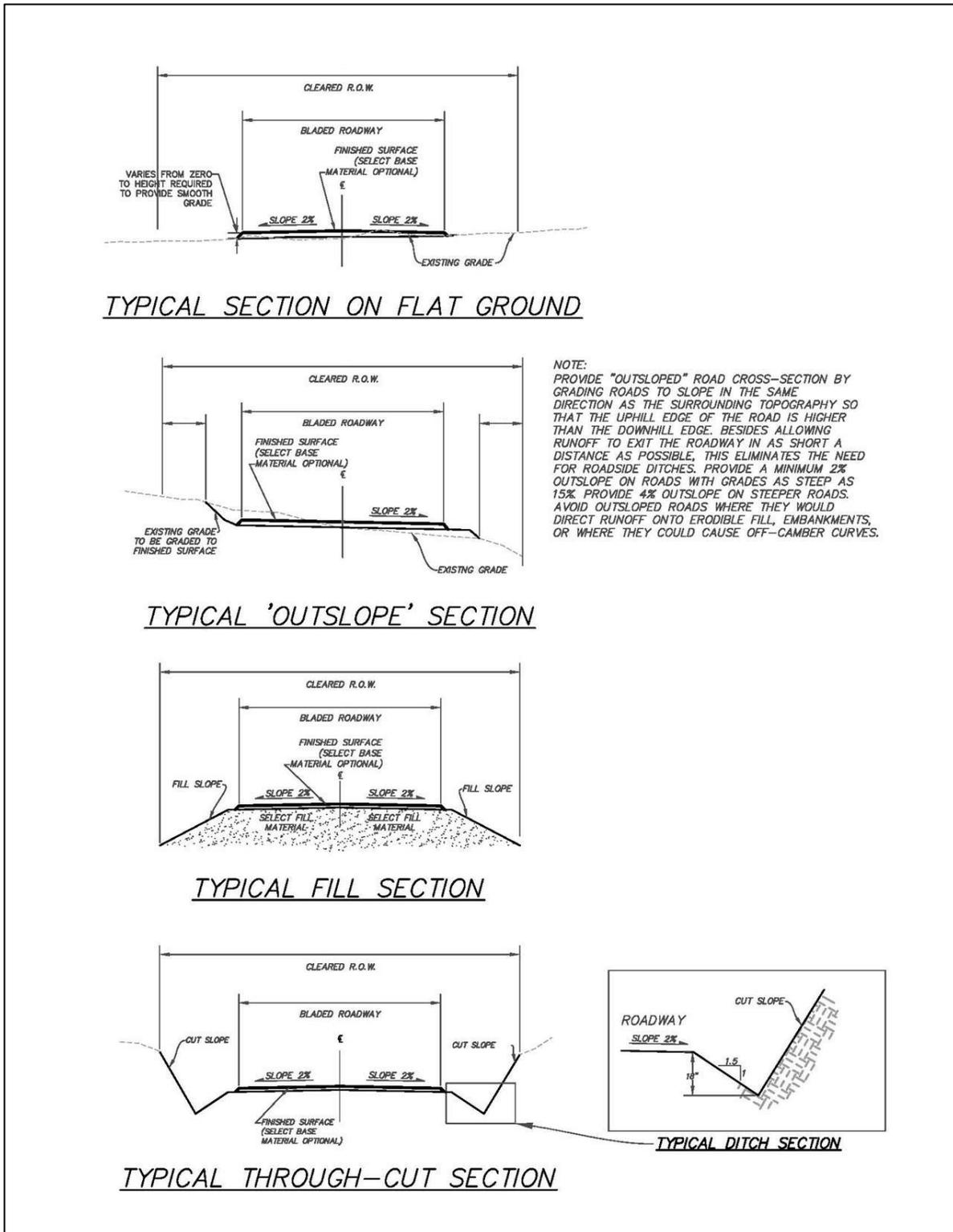
Depending on agency or landowner preference, gates may be installed at fence crossings and other locations, as requested, to restrict unauthorized vehicular access to the right-of-way. Roads not retained for operations would be seeded with an appropriate seed mixture and allowed to revegetate. For normal maintenance activities, an 8-foot-wide portion of the road would be used, and vehicles would drive over the vegetation. For nonroutine maintenance requiring access by larger vehicles, the

1 full width of the access road may be used. Access roads would be maintained, as necessary, but not be
2 routinely graded. Vegetation (e.g., taller shrubs and trees) that may interfere with the safe operation of
3 equipment would be managed on a cyclical basis. Typically, access to the transmission line right-of-
4 way and tower sites would require a 14-foot-wide travel way for straight sections of road and a 16- to
5 20-foot-wide travel way at corners to facilitate safe movement of equipment and vehicles including
6 turnouts. In steep, rugged terrain, 8-foot-wide all-terrain-vehicle trails may be established to facilitate
7 permanent access for off-road 4-wheel maintenance utility vehicles.

8 After project construction, existing and new permanent access roads would be used by maintenance
9 crews and vehicles for inspection and maintenance activities typically on a semi-annual basis. New
10 roads created to access tower sites would be revegetated but would not be restored to original contours
11 if future access is needed to a tower location or for emergencies or periodic inspection and
12 maintenance activities. Figure 2-7 shows cross sections of typical access roads for different types of
13 terrain. Existing roads would be used wherever practical. While many new access roads would be
14 within the transmission line right-of-way, some new access roads would be outside the transmission
15 line right-of-way to best follow the terrain. With few exceptions, all access roads would be considered
16 permanent, although most would only be used on occasion to conduct semi-annual line inspections and
17 perform required maintenance. Temporary roads used for pulling and tensioning of conductors and
18 other construction activities and structure construction pads would be restored, and the road would be
19 reclaimed.

20 For the purposes of calculating ground disturbance and operational needs, typical access roads are
21 classified into five categories—four classes for permanent roads and one for temporary roads. To
22 accommodate construction and maintenance equipment, a 14-foot-wide travel surface would be
23 required, with a 16- to 20-foot-wide travel surface on curves. The areas of disturbance in rolling or hilly
24 terrain would be larger to allow for necessary grading. Table 2-5 describes the five categories of typical
25 access roads.

26 Table 2-6 lists the estimated miles of new and improved access roads for the Proposed Action outside
27 the transmission line right-of-way by county. This table will be revised to show proposed locations of
28 access roads once they are fully engineered during the design phase of the project.



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Figure 2-7. Cross Sections of Typical Access Roads for Differing Terrains

Figure Source: Revised POD (IPC 2011a).

1

Table 2-5. Typical Access Roads

Road Category	Construction Use	Routine Operations Use	Nonroutine/Emergency Operations Use
I—Existing roads requiring no improvement	No change	No change	No change
II—Existing roads requiring improvement	Machinery would be used as needed to ensure safe operation and access of vehicles, thus providing surfaced and unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections around the corners.	For routine activities, an 8-foot-wide portion of the authorized road would be used and vehicles would drive over the vegetation and brush where safe and practicable. Vegetation, such as taller shrubs and trees that may interfere with the safe operation of vehicles, would be removed on a cyclical basis. Roads would be maintained but not routinely bladed.	For nonroutine maintenance requiring access by larger vehicles, the full 14-foot width of the access road may be used.
III—New roads and routes	<p>New roads: New surfaced and unsurfaced 14-foot-wide straight sections of road and 16- to 20-foot-wide sections on curves. Bladed roads may be constructed to access structures in steep or uneven terrain with side slopes greater than 8%.</p> <p>Overland travel routes (with and without vegetation trimming): Overland travel routes would be direct vehicle travel over low-growth vegetation or may require minor trimming of larger vegetation or other obstructions as needed to ensure safe operation and access of vehicles.</p>	<p>New roads: For routine activities, an 8-foot-wide portion of the road would be used. Roads would be maintained but not routinely bladed.</p> <p>Overland travel routes (with and without vegetation trimming): Vehicles would drive over the vegetation where safe and practicable. Vegetation such as taller shrubs and trees that may interfere with the safe operation of vehicles would be trimmed on a cyclical basis.</p>	<p>New roads: For nonroutine maintenance requiring access by larger vehicles, the full 14-foot width of the access road may be used.</p>
IV—All-terrain-vehicle access to helicopter sites	Unsurfaced 8-foot-wide travel ways and 8- to 10-foot-wide travel ways at corners.	For routine activities, an 8-foot-wide travel way would be used and vehicles would drive over the vegetation where safe and practicable. Vegetation, such as taller shrubs and trees that may interfere with the safe operation of vehicles, would be removed as necessary.	None
V—Temporary roads for access to laydown and fly yards and for construction, pulling, and tensioning	14-foot-wide straight sections of road and 16- to 20-foot-wide sections on curves.	None—contours would be restored, and the road would be ripped and seeded. Topsoil would be recovered and placed on top of restored contours.	None

2 Table Source: Revised POD (IPC 2011a).

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**Table 2-6. Miles of New and Improved Access Roads
outside the 250-Foot Transmission Line Right-of-Way for the Proposed Action**

County	New Access Roads (miles)	Existing Access Roads to be Improved (miles)	Total Miles
Morrow, Oregon	7.3	2.2	9.5
Umatilla, Oregon	21.4	15.6	37.0
Union, Oregon	9.1	28.1	37.2
Baker, Oregon	38.1	44.8	82.9
Malheur, Oregon	33.1	50.9	84.0
Owyhee, Idaho	5.2	23.5	28.7
Total	114.2	165.1	279.3

3 *WATERBODY CROSSINGS WITH ACCESS ROADS*

4 Access roads would be designed and constructed to minimize disruption of natural drainage patterns
 5 including perennial, intermittent, and ephemeral streams. To estimate the impact on stream crossings,
 6 stream crossing types were assessed based on preliminary engineering plans. Maps showing the
 7 proposed stream crossings by the transmission line and access roads are presented in Appendix B.5.
 8 The maps show the locations of proposed stream crossings, the proposed crossing type and the type of
 9 waterbody crossed for the Proposed Action and alternatives. The maps do not show drive-through
 10 crossings that do not require grading and stabilization. As the engineering plans are advanced for new
 11 access roads, site-specific crossings would be designed. On all federally managed lands, IPC would
 12 consult with the managing agency regarding relevant standards and guidelines pertaining to road-
 13 crossing methods at waterbodies and would be designed to meet a minimum of a 100-year flood event.
 14 Consultation would include site assessment, design, installation, and maintenance. These same
 15 standards and guidelines would apply to private and state lands. New crossings of canals, ditches, and
 16 perennial streams would be avoided to the extent practical by using existing crossings, but some new
 17 crossings are anticipated. The performance of stream crossings would be monitored for the life of the
 18 access road and would be maintained or repaired as necessary to protect water quality.

19 Four types of waterbody crossings could potentially be used as part of the proposed B2H Project:

20 **Type 1—drive-through with or without minor grading and/or minimal fill to match**
 21 **existing stream profile**

- 22
 - Crossing of a seasonally dry channel. Not shown on the Appendix B.5 maps.

23 **Type 2—hardened drive-through ford**

- 24
 - Crossing of a channel that includes grading and stabilization. Stream banks and approaches
 25 would be graded to improve vehicle passage and would be stabilized with rock, geotextile fabric,
 26 or other erosion-control devices. The streambed would in some areas be reinforced with coarse
 27 rock material, where approved by the land-management agency, to support vehicle loads,
 28 prevent erosion and minimize sedimentation into the waterway. The rock would be installed in

1 the streambed such that it would not raise the level of the streambed, thus allowing continued
2 movement of water, fish, and debris. Fords may be constructed in small, shallow streams (less
3 than 2-foot stream depth and 20-foot active stream width) and rocky substrates. Fords may also
4 be appropriate on wider streams that have a poorly defined channel which often changes
5 course from excessive bedload. A ford crossing results in an average disturbance profile of 25
6 feet wide (along the waterbody) and 50 feet long (along the roadway) for 1,000 square feet, or
7 0.02 acre at each crossing. Disturbance amount is estimated based on the need to move
8 equipment into the riparian area to build the 14-foot-wide travelway, as well as to protect the
9 area from erosion by adding armoring.

10 **Type 3—culvert**

- 11 • Crossing of a stream or seasonal drainage that includes installation of a culvert and a stable
12 road surface established over the culvert for vehicle passage. Culverts would be designed and
13 installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and
14 aquatic biologist where required by the land-management agency, would recommend
15 placement locations; culvert gradient, height, and sizing; and proper construction methods.
16 These installation and design standards would apply to private and state lands. Culvert design
17 would consider bedload and debris size and volume. The disturbance footprint for culvert
18 installation is estimated to be 50 feet wide (along the waterbody) and 150 feet long (along the
19 road) for 7,500 square feet, or 0.17 acre at each crossing. Ground-disturbing activities would
20 comply with agency-approved best management practices. Construction would occur during
21 periods of low flow. The use of equipment in streams would be minimized. All culverts would be
22 designed and installed to meet desired riparian conditions, as identified in applicable land use
23 management plans. Culvert slope would not exceed stream gradient. Typically, culverts would
24 be partially buried in the streambed to maintain streambed material in the culvert. Sandbags or
25 other nonerosive material would be placed around the culverts to prevent scour or water flow
26 around the culvert. Adjacent sediment-control structures such as silt fences, check dams, rock
27 armoring, or riprap may be necessary to prevent erosion or sedimentation. Stream banks and
28 approaches may be stabilized with rock or other erosion control devices.

29 **Type 4—channel-spanning structures including fish passage**

- 30 • Crossing of a waterbody identified as containing a sensitive fish species that includes
31 installation of a large diameter culvert, arch culvert or shot span bridge and a stable road
32 surface established over the structure for vehicle passage. Channel spanning structures would
33 be designed and installed under the guidance of a qualified engineer who, in collaboration with
34 a hydrologist and aquatic biologist would recommend placement locations; structure gradient,
35 height, and sizing; and proper construction methods. The typical disturbance footprint for
36 channel spanning structures averages 60 feet wide (along the waterbody) and 150 feet long
37 (along the road) for 9,000 square feet, or 0.2 acre at each crossing.

38 *WETLANDS CROSSINGS WITH ACCESS ROADS*

39 During construction and for routine and emergency operations, access across wetlands to individual
40 structure locations may be necessary. Selection of final wetland crossing techniques would be based
41 on final access road alignment and wetland characteristics. Techniques that would be considered
42 include the following:

Constructing at-grade roads with geotextiles and road materials for water through-flow

- This type of road would be below water during certain times of the year, which would make locating the roads difficult, and the depth of the water over the drivable surface may make travel over the submerged road surface impractical or not feasible.

Limiting structure access across wetlands to dry or frozen conditions, along with the use of low-ground-pressure tires or specialized tracked vehicles

- Construction of ice roads in wetlands involves using lightweight equipment such as snowmobiles to tamp down existing snow cover and vegetation to allow penetration of frost into the wetland soils. This operation would be followed by packing with heavier tracked equipment such as Bombardiers or wide-tracked dozers. The window of weather cold enough to allow for this technique is short, thereby restricting operations and maintenance activities to the winter season only.

Installing temporary matting materials to allow access for heavy vehicles and equipment

- The mats typically come in the form of heavy timbers bolted together or interlocking pierced-steel planks. Mats spread the concentrated axle loads from equipment over a much larger surface area, thereby reducing the bearing pressure on fragile soils. However, mats are less effective when standing water is present.

Constructing raised fill embankments for permanent above-grade access roads in wetlands such that the travel surface is higher in elevation than the ordinary high-water level

- The construction of above-grade access roads would accommodate the types of equipment described above and would be the most flexible for construction. All waterbody and wetland disturbances would be completed under the terms of a U.S. Army Corps of Engineers Clean Water Act Section 404 permit, the National Pollutant Discharge Elimination System Construction Stormwater Permit (Clean Water Act 402), and State 401 water quality certification requirements that govern activities within any waters of the United States. In Idaho, there is an additional requirement for a stream channel alteration permit.

Using helicopters for construction access to avoid wetlands

- Transmission tower structures proposed for the B2H Project could be erected by helicopter, if needed. However, in each case, ground-based vehicles would still be needed and therefore would not eliminate the need for an access road to each structure to complete construction or to perform inspections and live-line maintenance activities. In sensitive resource areas, the agencies may require no access roads, access roads that are overland drive and crush only, or limited in the amount of improvement that will be allowed.

2.2.8.4 PROJECT CONSTRUCTION**ENVIRONMENTAL COMPLIANCE**

The BLM requires a POD for implementation and maintenance of the project. The construction, operation, and maintenance activities are described in the POD. The POD provides direction to IPC's construction personnel, construction contractors and crews, compliance inspection contractor,

1 environmental monitors, and agency personnel regarding specifications of construction. The POD also
 2 provides direction to the agencies and IPC’s personnel for operation and maintenance of the project.

3 The POD consists of background information, description of activities implementation plans, and
 4 detailed mapping to facilitate execution of environmental protection and mitigation measures.
 5 Background information includes the project description; explanation of IPC’s and agencies’ roles and
 6 responsibilities; description of construction, operation, and maintenance activities; specification of land
 7 use and access; design features; and other measures for environmental protection.

8 The POD submitted in November 2011 contains 12 framework plans that include proposed design
 9 features and mitigation measures to reduce or avoid environmental impacts (IPC 2011a). These
 10 framework plans are briefly described in Table 2-7, and the design features are listed in Appendix C of
 11 this Draft EIS. The design features and mitigation measures will be incorporated into the Construction
 12 POD and individual framework plans, attached to the Record of Decision (ROD), and incorporated as
 13 conditions of approval of the right-of-way grant and special-use authorization. IPC would be responsible
 14 for ensuring that its contractors and employees implement the design features, mitigation measures,
 15 and framework plans. The federal agencies with jurisdictional responsibilities would monitor for
 16 implementation of the design features, mitigation measures, and framework plans. For this monitoring,
 17 the agencies would use a compliance inspection contractor to ensure that the measures prescribed in
 18 the EIS and Construction POD are implemented and are achieving the desired resource protection
 19 results.

20 **Table 2-7. Framework Plan Descriptions**

Framework Plan	Description
<i>Framework Blasting Plan</i>	Includes types of explosives and storage and security, as well as general use of explosives including the procedures and safety measures for blasting activities
<i>Framework Reclamation Plan</i>	Includes site-specific construction mitigation, reclamation, and revegetation measures for each land management area crossed by the right-of-way within BLM-managed, National Forest System lands, and other federal lands. It would combine IPC’s environmental protection measures with site-specific mitigation developed in consultation with the BLM, USFS, and other federal agencies. Some measures would apply project wide, while others would be designed for specific areas. These measures would also apply to state and private land.
<i>Framework Plant and Wildlife Conservation Measures Plan</i>	Presents the measures proposed by IPC for avoidance and minimization of impacts on special status plant and wildlife species as related to construction activities for the B2H Project and would outline specific conservation measures to be implemented if state or federally listed species, BLM sensitive species, or USFS special status species or their habitats are identified within or adjacent to the project right-of-way.

Framework Plan	Description
<i>Framework Agricultural Protection Plan</i>	Includes measures intended to mitigate or provide compensation for agricultural impacts that may occur due to construction of the B2H Project. The measures are intended to be implemented on partially or wholly owned private agricultural land unless directed otherwise by the landowner. Agricultural land will be defined to include that which is annual cultivated or rotated cropland; land in perennial field crops, orchards, or vineyards; land used for small fruit, nursery crops, greenhouses, or Christmas trees; improved pasture; hayfields; and land in the Conservation Reserve Program.
<i>Framework Fire Prevention and Suppression Plan</i>	Includes measures to be taken by IPC and its contractors to ensure that fire prevention and suppression are carried out in accordance with federal, state, and local regulations. The plan would address the specific requirements of the USFS and BLM handbooks, and provide environmental protection measures for fire management on privately owned lands. Measures would be identified in this plan that apply to work within the project area defined as the right-of-way, access roads, all work and storage areas (whether temporary or permanent), and other areas used during construction and operation of the project.
<i>Framework Operations, Maintenance, and Emergency Response Plan</i>	Includes measures to be employed while conducting routine, corrective, and emergency operations and maintenance activities. Measures identified would be in compliance with applicable state and federal laws and policies; would ensure consistency across and within federal jurisdictions; and would allow for IPC to access the transmission line and ancillary facilities in a timely, cost-effective, and safe manner. These measures would also apply to state and private land. At the end of the useful life of the B2H Project, if the facility is no longer required, the transmission line would be removed from service. Before removal, a decommissioning and restoration plan covering planned activities would be prepared for review and approval.
<i>Framework Traffic and Transportation Management Plan</i>	Includes measures that require compliance with federal policies and standards relative to planning, siting, improvement, maintenance, and operation of roads for the project. These measures would also apply to state and private land.
<i>Framework Stormwater Pollution Prevention Plan</i>	Includes measures for temporary and permanent erosion and sediment control that would be used during construction, operation, and maintenance of the transmission line and ancillary facilities.
<i>Framework Spill Prevention, Containment, and Countermeasures Plan</i>	Includes measures for spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response and incident reporting, and training requirements.

Framework Plan	Description
<i>Cultural Resources Protection and Management Measures</i>	Includes the procedures undertaken to inventory, evaluate, and protect cultural resources. It describes the treatment of any eligible or listed resource that cannot be avoided, and procedures for handling inadvertent discoveries during construction, operation, and maintenance.
<i>Visual Resources Protection Plan</i>	Includes measures for minimizing visual impacts and address specific BLM and USFS Visual Resource Management program requirements, and other applicable standards. These measures would also apply to state and private land.
<i>Biological Resources Habitat Protection and Monitoring Plan</i>	Includes specific conservation measures to be implemented in the event state or federally listed species, BLM sensitive species, or USFS sensitive species are identified along the B2H Project route during surveys. Measures identified in the plan would be specific to the protection of these species and take priority over measures identified in other plans.
<i>Waters and Wetlands Protection Plan</i>	Includes measures to protect wetlands and other waters (streams, ponds, lakes, etc.) within the B2H Project boundaries and to meet U.S. Army Corps of Engineers and Oregon Department of State Lands requirements for compensatory mitigation.

1 *Table Source:* Revised POD (IPC 2011a).

2 For some resources such as biological and cultural resources, pedestrian surveys using agency-
 3 approved protocols would be required prior to construction. The surveys would be based on the final
 4 design of the B2H Project. The survey results would be used by the agencies to refine the mitigation
 5 requirements and further inform the Construction POD.

6 The Construction POD would be developed by the Applicant in collaboration with the Agency
 7 Interdisciplinary Team and cooperating agencies consisting of federal, state, and county agencies
 8 having jurisdictional or regulatory responsibilities and/or specialized knowledge for the project. Although
 9 the federal agencies do not have authority over state or private land, the federal agencies have an
 10 obligation to disclose in the EIS the consequences of their decisions on nonfederal land. It is
 11 anticipated that the provisions of the POD would be applied consistently to state, private, and federal
 12 land, unless otherwise indicated by the state and by private landowners and documentation of the state
 13 or landowner decision(s) is provided to the compliance inspection contractor. Participation in the
 14 development of the POD by state and county cooperating agencies would give them the opportunity to
 15 concur with and adopt the terms and conditions of the POD to facilitate state and county licensing or
 16 permitting. The federal agencies have an obligation to enforce the requirements of the National Historic
 17 Preservation Act and the Endangered Species Act to protect important historic properties and
 18 threatened and endangered species, respectively, regardless of land jurisdiction or ownership.

19 For this project, a POD that is based on information and data carried forward from the EIS would be
 20 required as a condition of signing the ROD. This POD would be incorporated by reference into the ROD
 21 issued based on the analysis in this EIS.

1 When resource pedestrian surveys have been completed and the resulting reports have been approved
2 by the agency (or agencies) responsible for overseeing the surveys, refinements to environmental
3 protection measures in the POD would be incorporated and the agencies would be asked to review the
4 refined POD, referred to as the Construction POD. The approved Construction POD would be required
5 as a condition of granting any federal land-use authorization and would be incorporated by reference
6 into any federal right-of-way grants, special-use authorization, license agreement, etc. Thereby, the
7 applicant agrees to be bound by all terms and conditions, stipulations, and mitigation prescribed in such
8 documents. Notice to proceed with construction could then be issued. Any change to the POD after
9 issuance of the notice to proceed would require NEPA review through a variance of or amendment to
10 the POD.

11 **STAGING AREAS**

12 Staging areas are temporary disturbances or temporary land uses for storing construction materials,
13 assembling tower structures, conductor pulling yards, helicopter landing areas (called “fly yards”),
14 vehicle washing yards, and other construction support activities. Additionally, fueling trucks,
15 maintenance trucks, and operations crews would be based in the fly yards. Temporary staging areas on
16 federal lands would be incorporated into a right-of-way grant. Temporary uses on nonfederal lands
17 would be subject to landowner approval. The locations for both access roads and staging areas would
18 be refined during the detailed project design phase and addressed in the Final POD. Staging areas
19 would be located approximately every 25 miles along the route. Staging areas would be about 20 acres
20 each for 500-kV construction and 10 acres each for 138/69-kV construction. In some areas, the staging
21 area may need to be scraped by a bulldozer and a temporary layer of rock laid to provide an all-
22 weather surface. Unless otherwise directed by the landowner, the rock will be removed from the staging
23 area upon completion of construction and the area will be restored.

24 Fly yards would be located approximately every 10 miles along the route where helicopter construction
25 is planned. Fly yards would be approximately 10 to 15 acres. Preliminary design has provided indicative
26 locations for roads and staging areas along the entire Proposed Action.

27 **CONCRETE BATCH PLANTS**

28 Due to the remote nature of much of the proposed B2H Project, concrete used to install structure
29 foundations would be dispensed from portable concrete batch plants located at the staging areas when
30 local commercial concrete plants are not available. Each batch plant would occupy 3 to 5 acres within
31 the staging areas which would be located approximately every 25 miles along the route. Depending on
32 their location, concrete batch plants could trigger local conditional use permits. Concrete would be
33 delivered to structure sites in concrete trucks with a hauling capacity of up to 10 cubic yards. In the
34 more developed areas of the B2H Project, the contractor could use local concrete providers to deliver
35 concrete to the structure sites, if feasible.

36 **GEOTECHNICAL INVESTIGATIONS**

37 Geotechnical investigations will be conducted within the transmission line right-of-way. The purpose of
38 the geotechnical investigation would be to collect information regarding subsurface stability, which

1 would be used in the final design of each transmission tower structure and foundation to ensure the
2 system is designed and constructed to be safe, reliable, and cost efficient.

3 The geotechnical investigations would consist of boring and sampling soils to a typical depth of 50 to 60
4 feet below the ground surface; however, some borehole depths may exceed 60 feet depending on local
5 soil conditions. The boreholes would have a diameter of approximately 8 inches and typically would be
6 backfilled with boring cuttings from the borehole and on-site soils. About 70 boreholes would be spaced
7 approximately 4 miles apart. Geotechnical investigations will use access roads and overland access
8 routes as identified in the POD.

9 Helicopter-transported drill rigs may be used for geotechnical exploration in areas where existing roads
10 do not provide adequate access or where overland travel is prohibited. Geophysical exploration
11 techniques may be employed in areas where drilling is impractical to assist in subsurface
12 characterization. Geophysical exploration techniques use surface vibration and instrumentation to
13 identify subsurface soil and rock layers.

14 IPC has conducted a preliminary geotechnical desktop study. In the final geotechnical investigation
15 program for the transmission line, areas of concern identified in the preliminary geotechnical desktop
16 study would be field-reviewed to determine validity of the data sources used in the study's report.
17 Borings would be planned according to IPC geotechnical investigation standards, with additional boring
18 locations dictated by geotechnical desktop study. Certain boring locations may be eliminated if it is
19 determined that soil conditions would not vary or borings from adjacent transmission lines could be
20 used for design. Geotechnical investigation for the proposed B2H Project is anticipated to consist of site
21 examinations, geotechnical drilling, select geophysical surveys, and laboratory testing.

22 IPC would prepare a more detailed summary of the anticipated boring program that would include
23 the following:

- 24 • Land ownership
- 25 • Site substantiated access information
- 26 • Anticipated drill rig type and drilling method
- 27 • Anticipated soil types and subsurface lithology
- 28 • Anticipated access requirements

29 *GEOTECHNICAL DRILLING ACTIVITIES*

30 Drilling equipment is commonly mounted on road-legal 2-wheel-drive and 4-wheel-drive trucks, tracked
31 vehicles, oversized-tire all-terrain vehicles, or platform rigs. The type of drilling rig used is dependent on
32 the access difficulties to the boring location and the sampling methods required. Platform rigs can be
33 transported in pieces to the site via helicopter. Other vehicles and equipment normally mobilized to
34 each boring location include a water truck and/or support vehicle, large air compressor, geologist's
35 pickup truck or utility vehicle, and possibly another support truck. In some areas, earthwork equipment
36 would be required to assist with access to the boring location or tracked support vehicles including the

1 water truck would be required. Table 2-8 is a summary of the geotechnical drilling activities, methods,
 2 and equipment that could be used during the geotechnical investigations.

3 **Table 2-8. Summary of Geotechnical Drilling Types, Methods, and Equipment**

Drilling Type	Drilling Method	Support Equipment
Hollow Stem Auger	Dry (mechanical)	Drill rig, vehicle for rods & equipment, track-mounted water truck, crew vehicle
Mud Rotary	Wet (pumped water)	Drill rig, vehicle for rods & equipment, water truck, crew vehicle
Air Rotary	Dry (compressed air; air hammer)	Drill rig, vehicle for rods & equipment, towed air compressor, crew vehicle
Sonic	Dry (sonic vibrations)	Drill rig (larger than others), vehicle for rods & equipment, crew vehicle
Under-Reamer (ODEX System)	Dry (compressed air; air hammer)	Vehicle for rods and casing, air compressor, crew vehicle
Cone Penetration Test	Dry	Truck or track-mounted all terrain rig, support truck for equipment, crew vehicle

4 **LAND REQUIREMENTS AND CONSTRUCTION DISTURBANCE**

5 IPC proposes to acquire a permanent 250-foot-wide right-of-way for the 500-kV single-circuit sections
 6 of the proposed B2H Project and a 100-foot-wide right-of-way for the 138/69-kV portions of the project
 7 (see Figure 2-5). The right-of-way widths are based on maintaining sufficient clearance during a high-
 8 wind event when the conductors could be blown toward the right-of-way edge and on providing
 9 sufficient space within the right-of-way to perform transmission line maintenance. For the purposes of
 10 assessing impacts, it is assumed that all areas within the right-of-way could be disturbed during
 11 construction.

12 During construction a temporary easement (for private lands) or short-term right-of-way would be
 13 required from landowners and land-management agencies for temporary disturbance. Temporary
 14 disturbances, such as material laydown yards, helicopter fly yards, and concrete batch plants, only
 15 occur during construction. The land area needed for operations would be smaller than the area needed
 16 during construction, because permanent disturbances for the proposed transmission line would be
 17 limited to tower pads, communications sites, and access roads. Table 2-9 shows the approximate land
 18 areas needed for construction (temporary disturbances) and operations (permanent disturbances) of
 19 the proposed B2H Project as described in the Revised POD (IPC 2011a). These areas are typical, and
 20 the actual land areas needed for construction and operation of the B2H Project would be determined
 21 during final engineering. Design features, best management practices, and mitigation measures would
 22 be included in the final POD and attached to the ROD and if appropriate, included in any subsequent
 23 right-of-way grant or special-use authorizations issued for the project.

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2**Table 2-9. Approximate Land Area Needed for Construction and Operations of the Proposed Action by County**

Project Component	Construction Acres Needed	Operations Acres Needed
Morrow County		
Transmission line right-of-way [1]	1,388	1,388
Staging areas (outside right-of-way)	40	0
Fly yards (outside right-of-way)	15	0
Wire-pulling/splicing sites (outside right-of-way)	105	0
Access roads (outside right-of-way)	19	9
Optical ground wire (OPGW) communications sites (1 total)	0.2	0.1
Morrow County Total	1,567	1,397
Umatilla County		
Transmission line right-of-way [1]	1,498	1,498
Staging areas (outside right-of-way)	41	0
Fly yards (outside right-of-way)	45	0
Wire-pulling/splicing sites (outside right-of-way)	141	0
Access roads (outside right-of-way)	72	36
OPGW communications sites (1 total)	0.2	0.1
Umatilla County Total	1,797	1,534
Union County		
Transmission line right-of-way [1]	1,195	1,195
Staging areas (outside right-of-way)	41	0
Fly yards (outside right-of-way)	104	0
Wire-pulling/splicing sites (outside right-of-way)	38	0
Access roads (outside right-of-way)	72	36
OPGW communications sites (1 total)	0.2	0.1
Union County Total	1,450	1,231
Baker County		
Transmission line right-of-way [1]	2,157	2,157
Staging areas (outside right-of-way)	44	0
Fly yards (outside right-of-way)	116	0
Wire-pulling/splicing sites (outside right-of-way)	112	0
Access roads (outside right-of-way)	162	81
OPGW communications sites (2 total)	0.4	0.2
Baker County Total	2,591	2,238

Project Component	Construction Acres Needed	Operations Acres Needed
Malheur County		
Transmission line right-of-way [1]	2,184	2,184
Staging areas (outside right-of-way)	64	0
Fly yards (outside right-of-way)	134	0
Wire-pulling/splicing sites (outside right-of-way)	120	0
Access roads (outside right-of-way)	163	82
OPGW communications sites (3 total)	0.6	0.3
Malheur County Total	2,666	2,266
Owyhee County		
Transmission line right-of-way [1]	721	721
Staging areas (outside right-of-way)	43	0
Fly yards (outside right-of-way)	60	0
Wire-pulling/splicing sites (outside right-of-way)	42	0
Access roads (outside right-of-way)	56	28
Owyhee County Total	922	749
Project Total	10,993	9,415

1 *Table Source:* Revised POD (IPC 2011a).

2 *Table Note:* [1] Transmission line right-of-way includes project components located within the 250-foot right-of-way such as
 3 access roads, communication sites, and tower locations, etc.

4 **CONSTRUCTION SCHEDULE AND SEASONS**

5 IPC would be ready to mobilize upon project approval. Final engineering surveys would determine the
 6 exact locations of towers, access roads, and other project features before the start of construction, and
 7 would be included in a final Construction POD. IPC plans to hire contractors to complete construction
 8 work in accordance with agency requirements, and industry performance standards. The overall
 9 construction period would be approximately 3 years from receipt of a Notice to Proceed, depending on
 10 a number of factors such as weather, seasonal restrictions, and availability of labor and materials.
 11 Design features to address wet and winter conditions will be applied in the POD. The project would be
 12 built in two sections or “spreads”; both spreads would be under construction at the same time.

13 Although the construction rate of progress would be reduced in the winter, IPC has planned an
 14 aggressive schedule, and it is anticipated that construction would continue through the winter months in
 15 the lower-elevation areas, as weather permits. In the higher-elevation areas, winter storms and snow
 16 would limit access to the right-of-way, for example, in the Blue Mountains. In these areas, it is expected
 17 that construction would be suspended on some portions of the right-of-way during the peak winter
 18 months and construction resources would be either demobilized or shifted to other areas of
 19 construction.

1 Environmental issues such as seasonal range use, nesting, soil and water conditions and others may
2 also affect construction scheduling. Seasonal restrictions on construction activity would be implemented
3 unless specific exemptions are granted, in accordance with agency policy and management plans, to
4 avoid and minimize effects on wildlife. The potential seasonal restrictions and buffers vary by species
5 and are described in Appendix C of this Draft EIS and the wildlife, fish, and vegetation subsections of
6 Chapter 3. As required, biological surveys for sensitive species would be conducted before construction
7 activities commence. Data gathered through these surveys would be used to determine the site-specific
8 buffers and seasonal restrictions to implement.

9 **CONSTRUCTION ACTIVITIES**

10 *RIGHT-OF-WAY AND SITE PREPARATION*

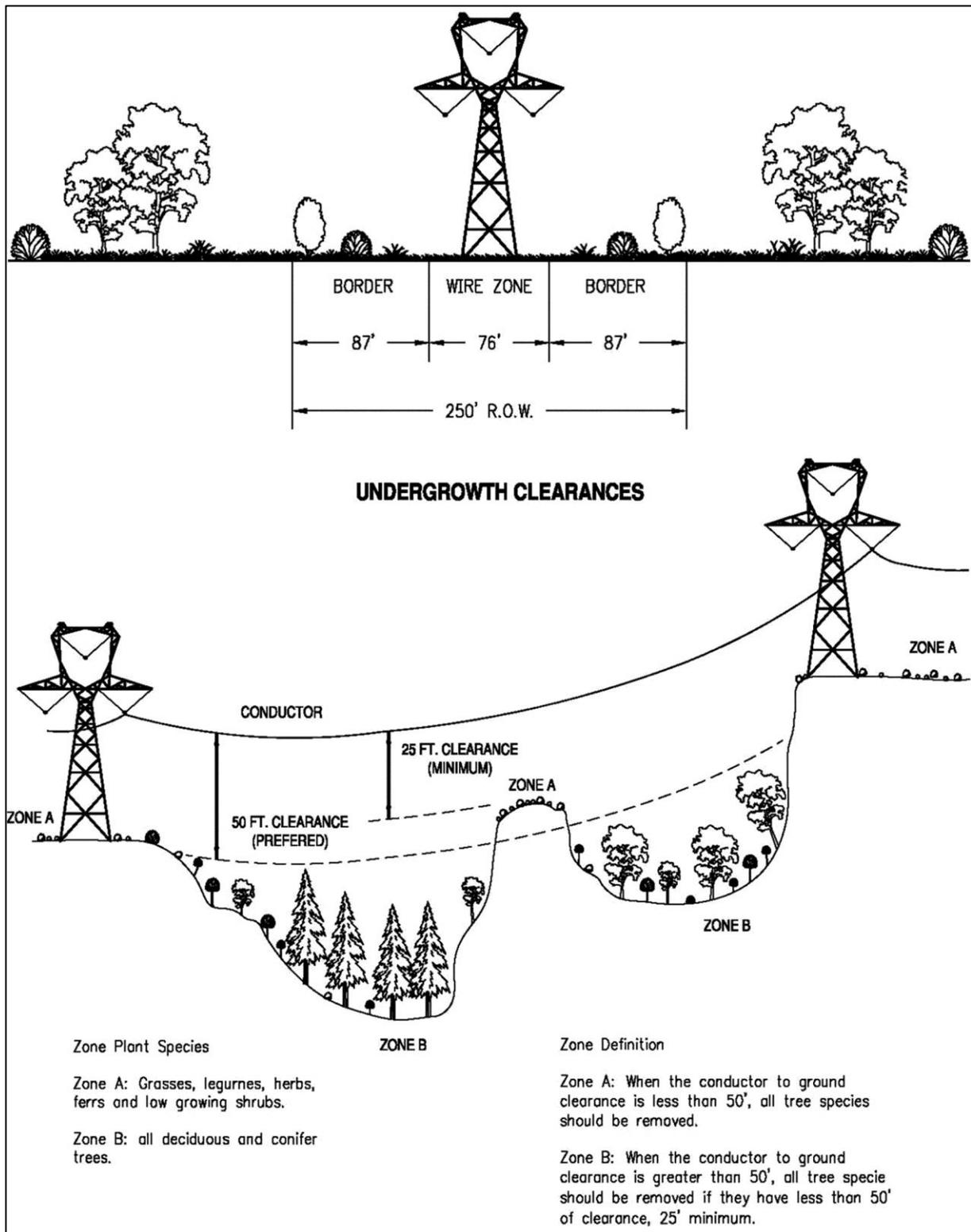
11 Within the right-of-way, vegetation would be removed to ensure adequate ground clearances. Individual
12 trees and snags (hazard trees) that pose power-outage or fire risks to conductors or structures would
13 also be removed. Felled trees and snags would be left in place as sources of large woody debris.
14 Felled green trees would be limbed to reduce fire hazards (Figure 2-8).

15 Individual structure sites will be cleared to install the transmission line support structures and facilitate
16 access for future transmission line and structure maintenance. Clearing individual structure sites will be
17 done using a bulldozer to blade the required area. At each single-circuit 500-kV structure location, an
18 area approximately 250 feet by 250 feet will be needed for construction laydown, tower assembly, and
19 erection at each tower site. This area will provide a safe working space for placing equipment, vehicles,
20 and materials. The work area will be cleared of vegetation only to the extent necessary. For 138/69-kV
21 structures the site prep area will be approximately 100 feet by 100 feet. After line construction, areas
22 not needed for normal transmission line maintenance, including fire and personnel safety clearance
23 areas, will be graded to blend as nearly as possible with the natural contours, and then revegetated as
24 required.

25 Additional equipment may be required if solid rock is encountered at a structure location. Rock-hauling,
26 hammering, or blasting may be required to remove the rock. Excess rock that is too large in size or
27 volume to be spread at the individual structure sites will be hauled away and disposed of at approved
28 landfills or at a location specified by the landowner. Table 2-3 provides the dimensions of each of the
29 foundation holes required for each structure.

30 *TRANSMISSION LINE CONSTRUCTION*

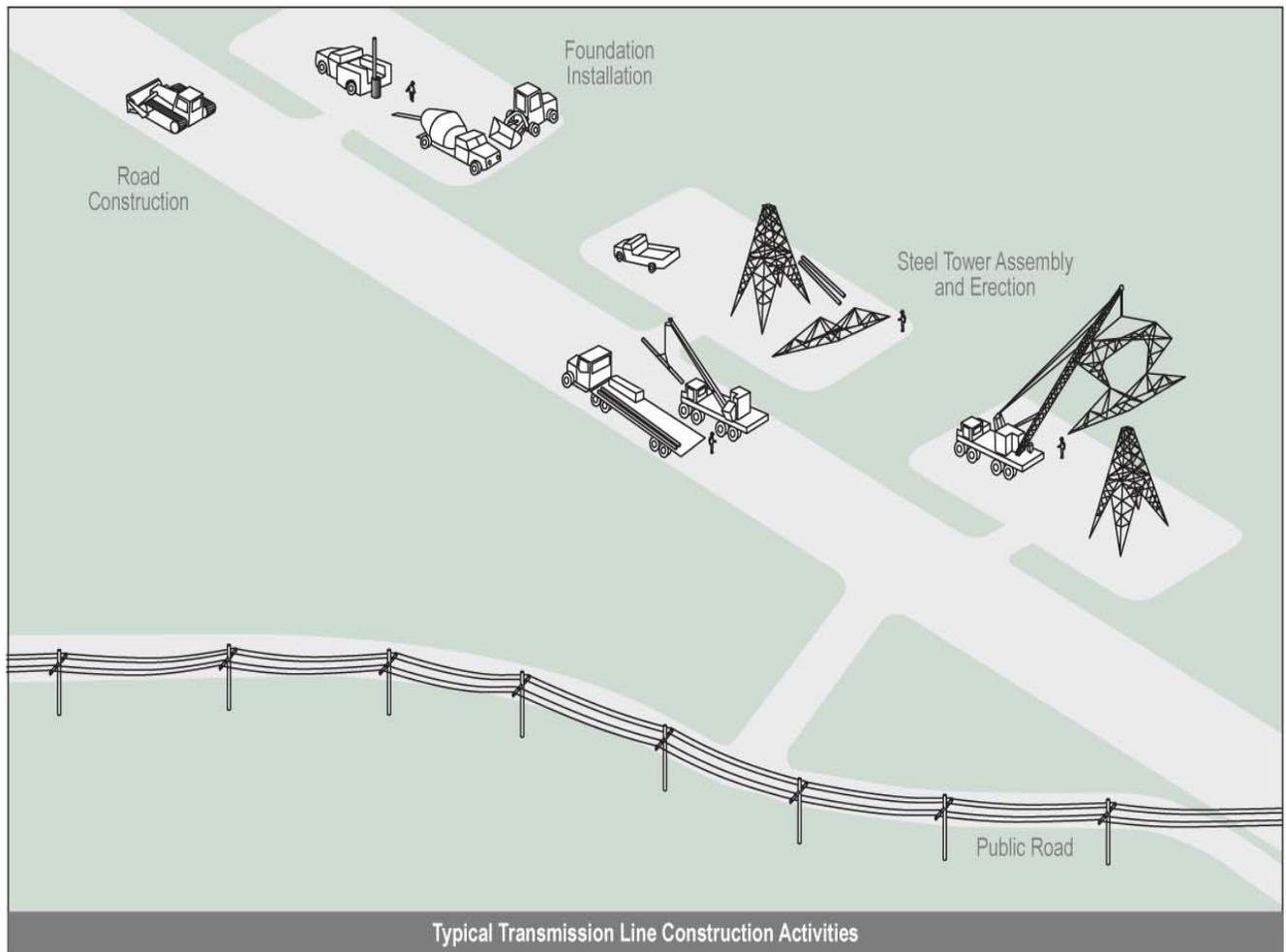
31 The following sections describe the proposed transmission line construction activities and procedures
32 for the approximately 305 miles of lines and associated support structures, including the proposed
33 rebuild/relocation. Figure 2-9 illustrates typical transmission line construction activities. Various
34 construction activities would occur during the construction process, with several construction crews
35 operating simultaneously at different locations.



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Figure 2-8. Right-of-Way Vegetation Removal and Management

Figure Source: Revised POD (IPC 2011a).



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Figure 2-9. Typical Transmission Line Construction Activities

Figure Source: Revised POD (IPC 2011a).

The installation of transmission tower structures would require preparation of each site where a tower structure would be installed, including vegetation removal and grading to obtain a relatively flat surface for the operation of large cranes, which are generally used to install tower structures. The use of helicopters for aerial construction may be required depending on overland access to the construction locations, construction schedule, and/or construction economics (IPC 2011a).

Foundations would be installed—one foundation for each of the four legs of the lattice tower structures, two or three foundations for the tubular H-frame structures, and one foundation for monopole structures. Medium- and large-angle H-frames and dead-ends would require three-pole structures. Table 2-3 details foundation dimensions and the amount of concrete needed for each structure type.

If shallow bedrock is encountered blasting could be required. The construction contractor would be required to prepare a Blasting Plan that details blasting procedures, locations, the amount and type of explosives, and safety procedures. After foundations are installed, and the concrete has had time to cure, the structures would be brought in by either truck or helicopter.

1 The tower structures would be assembled on site or in temporary staging areas (laydown yards) and
2 then would be brought to the site to be erected. If ground transportation were used, cranes would be
3 used to lift and install the structures.

4 If helicopters are used, the tower structures would be assembled at fly yards. After assembly at the fly
5 yard, the tower sections would be airlifted to the structure location where the sections would be bolted
6 together permanently. The fly yards would be approximately 10 to 15 acres and sited at locations within
7 4 to 8 minutes of fly time to structure locations.

8 After assembly and placement of the structures, the conductors and the overhead ground wires would
9 be strung from tower to tower. Figure 2-10 shows typical conductor installation. Helicopters are used to
10 assist in the wire installation process but may not be necessary if access roads are available along the
11 right-of-way from tower to tower allowing specialized wire stringing vehicles in the area. The first step to
12 wire stringing would be to install insulators and stringing sheaves. Once in place, the initial stringing
13 operation begins with the pulling of a lightweight “sock” line through the sheaves. A specialized
14 stringing vehicle is used to pull the lines. Following the initial pulling of the wire through the sheaves,
15 the wire is then tensioned to the correct sag between support structures. Pulling and tensioning sites for
16 the 500-kV construction would be spaced approximately 1.5 to 2 miles apart along the right-of-way and
17 each would require approximately 5 acres. The 138/69-kV pulling and tensioning sites would be spaced
18 approximately every 1 to 2 miles along the transmission line corridor and would require approximately
19 1.2 acres.

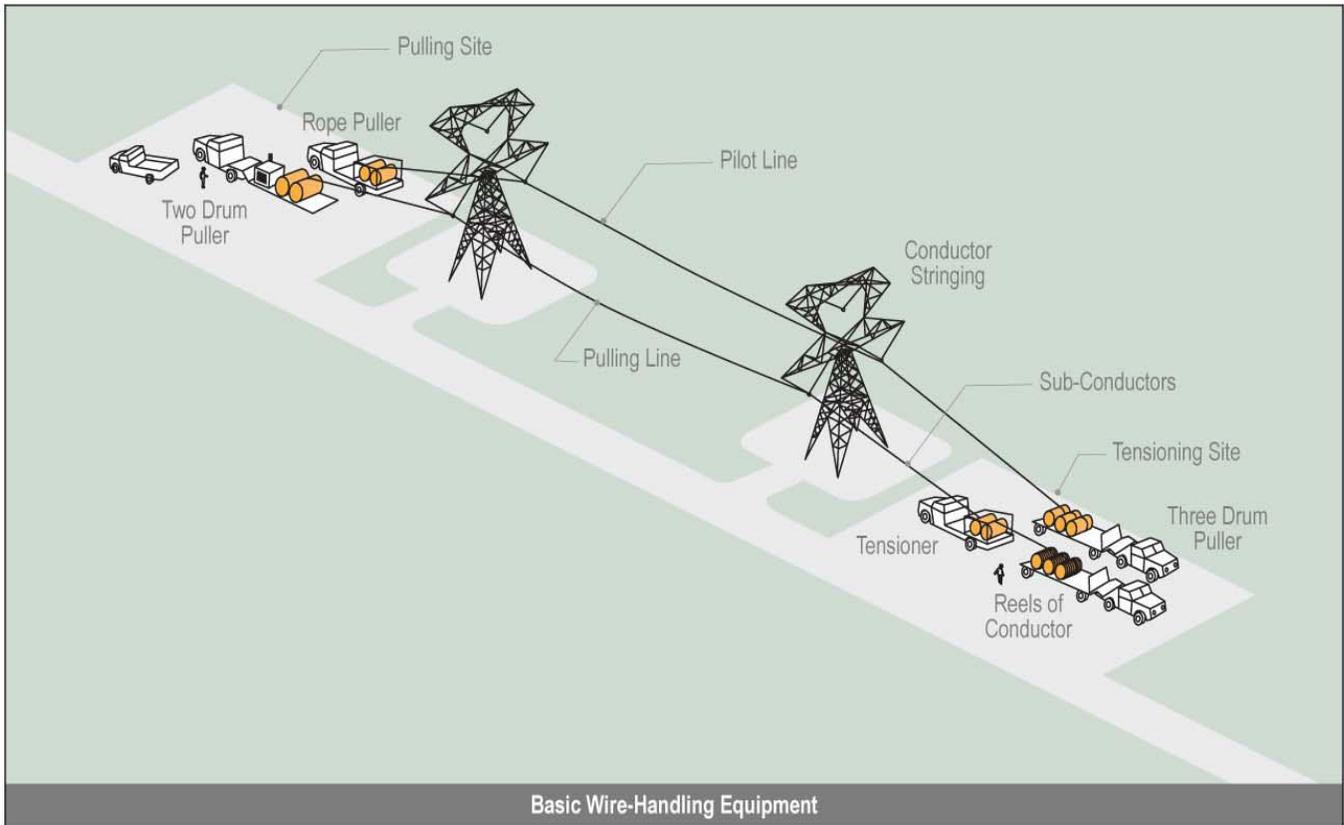
20 *CONSTRUCTION ACCESS ROADS*

21 Construction of the proposed B2H Project transmission lines would require vehicle, truck, and crane
22 access to each new structure site for construction crews, materials, and equipment. Similarly,
23 construction of other project components, such as staging areas and substation sites, would require
24 vehicle access. Temporary construction roads not required for future maintenance access would be
25 restored consistent with agency requirements after completion of project construction. For example,
26 access roads to staging areas would not be required once the staging area is restored.

27 *COMMUNICATIONS SYSTEM*

28 The fiber-optic cable of the communications system would be constructed at the same time that the
29 conductors are strung. Communications site construction would begin with grading the selected area,
30 removing vegetation, and installing a layer of crushed rock. A prefabricated concrete communications
31 shelter approximately 12 feet by 32 feet by 9 feet tall would be constructed on the site. An emergency
32 generator with a liquid petroleum gas fuel tank with an impermeable liner would also be installed at the
33 site inside the fenced area. Two cable routes (aerial and/or buried) from the transmission right-of-way
34 to the equipment shelter would be installed (IPC 2011a).

35 Access roads to communications stations would be constructed using a bulldozer or grader, followed by
36 a roller to compact and smooth the ground. Front-end loaders would be used to move the soil locally or
37 off site. Typically, gravel would be applied to the prepared base layer (IPC 2011a).



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Figure 2-10. Typical Conductor Installation

Figure Source: Revised POD (IPC 2011a).

CONSTRUCTION WORKFORCE AND EQUIPMENT

The proposed B2H Project would be constructed primarily by contract personnel, with IPC responsible for project administration and inspection. The construction workforce would consist of laborers, craftspeople, supervisory personnel, support personnel, and construction management personnel who would perform the construction tasks. The B2H Project is proposed to be constructed in two geographic segments, within which a complete construction sequence would be conducted. The boundaries of the construction segments have not been finalized, but the northern construction segment would likely include Morrow, Umatilla, and Union Counties and part of Baker County, and the southern construction segment would likely occur partially in Baker, Malheur, and Owyhee Counties. Both construction segments are planned to occur simultaneously and are anticipated to take approximately 3 years to complete. The projected number of construction workers and anticipated changes to the population of the project area are summarized by construction segments in Table 2-10.

1 **Table 2-10. Projected Number of Workers and Population Change during Peak Construction**

Workers	Construction Segment 1	Construction Segment 2
Permanent workers likely to commute to job site daily	61	63
Temporary workers likely to move to B2H Project area alone	164	169
Temporary workers likely to move to B2H Project area with family	18	19
Total	243	251

2 *Table Source: Revised POD (IPC 2011a).*

3 **2.2.8.5 OPERATIONS AND MAINTENANCE**

4 **LAND REQUIREMENTS FOR OPERATIONS**

5 During operations, the B2H Project’s land requirements would be restricted to the right-of-way,
 6 substations, communications facilities, and roads authorized by the right-of-way grant and special-use
 7 authorization. Approval for access across federal lands to the right-of-way would be contained in the
 8 right-of-way grant and special-use authorization. Access to the right-of-way across nonfederal land
 9 would be in accordance with the land rights obtained by IPC as part of the easement acquisition
 10 process. As the details of the B2H Project design are engineered, the locations and areas of land
 11 needed for B2H Project operations may be revised, and would be specified in the Construction POD.
 12 Table 2-9 compares the approximate land areas that would be needed for construction and operations
 13 of the Proposed Action throughout the life of the B2H Project.

14 **ROUTINE SYSTEM INSPECTION, MAINTENANCE, AND REPAIR**

15 IPC proposes B2H Project-specific operations and maintenance policies and procedures that are
 16 designed to meet the requirements of North American Electric Reliability Corporation, WECC, the state
 17 public utility commissions of Oregon and Idaho, and to comply with applicable codes and standards for
 18 maintaining the reliability of the electrical system. Operations and maintenance activities would include
 19 transmission line patrols, climbing inspections, tower and wire maintenance, insulator washing as
 20 needed, vegetation management, and access roads repair. Periodic inspection and maintenance is
 21 also a key part of operating and maintaining the electrical system.

22 After the transmission line has been energized, land uses that are compatible with safety regulations
 23 would be permitted in and adjacent to the right-of-way. Existing land uses such as agriculture and
 24 grazing would generally be permitted within the right-of-way. Incompatible land uses within the right-of-
 25 way include construction of inhabited dwellings and any use requiring changes in surface elevation that
 26 could affect electrical clearances of existing or planned facilities.

27 **TRANSMISSION LINE MAINTENANCE**

28 Regular ground and aerial inspections would be performed in accordance with the IPC’s established
 29 policies and procedures for transmission line inspection and maintenance. Transmission lines and
 30 substations would be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and

1 other mechanical problems. The need for vegetation management would also be determined during
2 inspection patrols.

3 Inspection of the entire transmission line system would be conducted semi-annually. Detailed ground
4 inspections using trucks or all-terrain vehicles would take place on an annual basis using service roads
5 to each structure.

6 Planned maintenance activities include routine patrols, inspections, scheduled maintenance, and
7 scheduled emergency maintenance. Examples of unplanned maintenance activities include emergency
8 maintenance in cases where public safety and property are threatened.

9 Examples of routine maintenance include the following:

- 10 • Inspections from a helicopter
- 11 • Inspections from ground patrols
- 12 • Climbing structures to inspect hardware or make repairs
- 13 • Structure or conductor maintenance from a bucket truck
- 14 • Cathodic protection surveys
- 15 • Vegetation clearing to trim or remove shrubs and trees over 12 feet
- 16 • Removal of individual trees (hazard trees) that pose a risk to conductors or structures
- 17 • Routine road maintenance such as grading to improve surface condition and drainage, or
18 removing rocks and debris
- 19 • Installation of bird protection devices, bird perch discouragers, and relocation or removal of
20 bird nests.

21 Emergency maintenance and repair could arise from the following examples:

- 22 • Lightning strike or wildfire
- 23 • Damage to structures from high winds, ice, or other weather-related conditions
- 24 • Line or system outages
- 25 • Breaking or eminent failure of crossarms or insulators
- 26 • Vandalism to structures or conductors

27 Routine maintenance activities are ordinary maintenance tasks that have historically been performed
28 and are carried out on a routine basis. The work performed is typically repair or replacement of
29 individual components and does not result in new ground disturbance. These maintenance activities
30 are typically performed by relatively small crews using a minimum of equipment and are usually
31 conducted within a period from a few hours up to a few days. Work requires access to the damaged
32 portion of the line. Equipment required for this work may include 4-wheel-drive trucks, flatbed trucks,
33 bucket trucks (low reach), boom trucks (high reach), or manlifts. This work is scheduled and is typically
34 in response to issues found during inspections. Typical items that may require periodic replacement on

1 transmission line towers include insulators, hardware or tower members. It is expected that these
2 replacements will be required infrequently.

3 **ACCESS ROAD AND WORK AREA REPAIR**

4 Right-of-way repairs include grading or repair of existing maintenance access roads and work areas,
5 and spot repair of sites subject to flooding or scouring. Required equipment may include a grader,
6 backhoe, four-wheel-drive pickup truck, and a cat-loader or bulldozer. The cat-loader has steel tracks,
7 whereas the grader, backhoe, and truck typically have rubber tires. Repairs to the right-of-way would be
8 scheduled as a result of line inspections in response to an emergency situation.

9 **VEGETATION MANAGEMENT**

10 Work areas adjacent to electrical transmission structures and along the right-of-way would be
11 maintained for vehicle and equipment access. Shrubs and other obstructions would be removed near
12 structures to facilitate inspection and maintenance of equipment and to ensure system reliability. At a
13 minimum, trees and brush would be cleared within a 25-foot radius of the base or foundation of all
14 electrical transmission structures and to accommodate equipment pads to conduct live line
15 maintenance operations.

16 Vegetation management practices along the right-of-way will be in accordance with the IPC clearing
17 specifications and vegetation management plans which will be consistent with the North American
18 Electric Reliability Corporation's Vegetation Management Standards (FAC-003-2, 2009). The rights-of-
19 way for the project are dominated by agricultural and shrub-steppe vegetation communities except for
20 the 5 miles across the Wallowa-Whitman National Forest Land and Resource Management Plan
21 corridor. Interference with conductors is not anticipated. However, if vegetation management is
22 required, IPC will generally schedule it according to maintenance cycles (e.g., 5- or 10-year cycles).

23 A wire-border zone method is used to control vegetation. This method results in two zones of clearing
24 and revegetation. The wire zone is the linear area along the right-of-way under the wires and extending
25 10 feet outside of the outermost phase conductor. After initial clearing, vegetation in the wire zone
26 would be maintained to consist of native grasses, legumes, herbs, ferns, and other low-growing shrubs
27 that remain under 5 feet tall at maturity. The border zone is the linear area along each side of the right-
28 of-way extending from the wire zone to the edge of the right-of-way. Vegetation in the border zone
29 would be maintained to consist of tall shrubs or short trees (up to 25 feet high at maturity), grasses, and
30 forbs. These cover plants benefit the right-of-way by competing with and excluding undesirable plants.
31 The width of the wire and border zones for the various transmission lines are depicted in Figure 2-8.
32 During operations, vegetation growth will be monitored and managed to maintain the wire-border zone
33 objectives. IPC's approach is to remove all tree species within the right-of-way where the conductor
34 ground clearance is less than 50 feet, leaving grasses, legumes, herbs, ferns, and low-growing shrubs
35 within the right-of-way. When conductor ground clearance is greater than 50 feet, for example a canyon
36 or ravine crossing with high ground clearance at mid-span, trees and shrubs will be left in place as long
37 as the conductor clearance to the vegetation tops is 50 feet or more (see Figure 2-8).

1 Vegetation would be removed using mechanical equipment such as chain saws, weed trimmers, rakes,
2 shovels, mowers, and brush hooks. Clearing efforts in heavy growth areas would use equipment such
3 as a Hydro-Ax or similar. The duration of activities, the size of crew and required equipment depends
4 on the amount and size of the vegetation to be trimmed or removed.

5 In selected areas, herbicides may be used to control noxious weeds and to meet vegetation
6 management objectives. Herbicide applications would be performed in accordance with federal, state,
7 and local regulations, and in compliance with managing land agency requirements.

8 **NOXIOUS WEED CONTROL**

9 The States of Idaho and Oregon list activities that are capable of disseminating noxious weeds and the
10 requirements to control the spread of listed noxious weeds. Equipment and supplies necessary for line
11 construction and future operation and maintenance activities, and the activities themselves, are
12 possible agents for the spread of noxious weeds. Under the requirements of a right-of-way grant or
13 special-use authorization, IPC would be responsible for control of noxious weed species that result or
14 will result from the construction, operation, and maintenance of the improvements authorized under the
15 grant. Therefore, a noxious weed control strategy to reduce the opportunity for weeds to invade new
16 areas and to minimize the spread of weeds within the project area would be addressed in Appendix G
17 of the POD, Framework Reclamation Plan, which complies with Oregon, Idaho, BLM, and USFS
18 noxious weed requirements. Noxious weed control is discussed in Chapter 3.

19 The responsible party would clean all equipment that may operate off-road or disturb the ground before
20 beginning construction or operation and maintenance activities within a predetermined project area.
21 This process would clean tracks and other parts of the equipment that could trap soil and debris and
22 would reduce the potential for introduction or spread of undesirable exotic vegetation. Preferably, the
23 cleaning would occur at an IPC operation center, commercial car wash, or similar facility. Vehicles
24 traveling only on established paved roads would not require cleaning.

25 **COMMUNICATION SITE MAINTENANCE**

26 Maintenance activities for communication sites include equipment testing, equipment monitoring and
27 repair, and emergency and routine procedures for service continuity and preventive maintenance.
28 Communication sites would be visited every 2 to 3 months by one individual in a light truck to inspect
29 the facilities. Annual maintenance would be performed by a two man crew in a light truck over a 2- to 5-
30 day period.

31 **2.2.8.6 DECOMMISSIONING**

32 Typically, transmission lines that have been regularly maintained continue to provide service longer
33 than the projected service life of at least 50 years. At the end of the service life of the B2H Project,
34 assuming that it is not upgraded or otherwise kept in service, the structures and conductors would be
35 removed. In the event the B2H Project is decommissioned, a reclamation plan would need to be filed
36 2 years before the termination of the right-of-way and approved by the agencies. A reclamation bond

1 and supplemental NEPA review would be required at that time. For that reason, decommissioning of
2 the B2H project is not analyzed in this Draft EIS.

3 **2.2.9 DESIGN FEATURES**

4 Design features developed to avoid and minimize impacts on resources during project construction,
5 operation, and maintenance are described in Appendix C of this Draft EIS and in each of the resource
6 subsections of Chapter 3. These design features include project-specific measures, as well as IPC- and
7 agency measures, procedures, and best management practices that would be applied during design
8 and engineering, construction, or operation and maintenance. The design features have been compiled
9 from several sources, including the interagency operating procedures from the West-Wide Energy
10 Corridor Programmatic EIS (DOE and BLM 2008) and RODs (BLM 2009; USFS 2009); best
11 management practices from agency resource management plans (RMPs) and policy manuals; and
12 environmental protection measures proposed by IPC.

13 Approved design features would be applied project-wide, regardless of landownership or land
14 management jurisdiction, to ensure continuity of resource protection. The BLM and USFS do not have
15 jurisdiction on nonfederal lands to enforce these design features. However, if design features are not
16 fully implemented on all land ownerships, the BLM may suspend or terminate the right-of-way grant. If
17 design features are not approved by the private landowners, BLM will document the change by use of a
18 variance to track in the administrative record accordingly.

19 Project design features are described in Appendix C for the following:

- 20 • Storm water pollution prevention
- 21 • Spill prevention
- 22 • Restoration and reclamation
- 23 • Transportation
- 24 • Cultural
- 25 • Paleontology
- 26 • Blasting
- 27 • Agriculture
- 28 • Fire
- 29 • Air quality
- 30 • Noise
- 31 • Operation and maintenance
- 32 • Wildlife
- 33 • Migratory birds
- 34 • Special status plants
- 35 • Visual

1 Appendix C describes the design feature, identifies when the design feature would be applied (i.e.,
2 design and engineering, construction, or operation and maintenance), and the resource impacts
3 targeted. The impact analysis presented in Chapter 3 is based on the application of these design
4 features. The Appendix C design features would be adopted as conditions of approval before any
5 action is authorized by the ROD and right-of-way grant and special-use authorization.

6 **2.2.10 MITIGATION**

7 In addition to requiring best management practices and design features to avoid and reduce project
8 effects, the BLM as the lead agency may require mitigation measures and conservation actions in order
9 to achieve land use plan goals and objectives. The sequence of mitigation action will be the mitigation
10 hierarchy—avoid, minimize, rectify, reduce or eliminate over time, compensate—as identified by the
11 White House Council on Environmental Quality (CEQ) (40 CFR 1508.20), BLM’s Manual Section 1794
12 (Draft Regional Mitigation) and Washington Office Instruction Memorandum 2013-142, and future
13 updates of the policy and design features. Compensatory mitigation requirements would be identified in
14 the alternatives in the Final EIS for those implementation-level activities whose impacts cannot be
15 adequately avoided, minimized, rectified, reduced, or eliminated over time (i.e., residual impacts).

16 For the B2H Project, the priority is to mitigate impacts at the site of the activity following the parameters
17 outlined in the Draft Framework for Development of Compensatory Mitigation Plans for Biological
18 Resources (Appendix D) and in conformance with the land use plan goals and objectives. Impacts will
19 be mitigated through impact avoidance, minimization, rectification, and reduction over time of the
20 impact and will include measures described in laws, regulations, policies, and the land use plans. When
21 these types of mitigation measures are not sufficient to minimize anticipated direct, indirect and
22 cumulative impacts and substantial or significant residual impacts remain, additional measures to
23 reduce these residual impacts on meet applicable land use plan goals and objectives will be required
24 (compensatory mitigation).

25 The B2H Project would apply the mitigation hierarchy and identify or incorporate by reference
26 applicable land use plan mitigation measures for the following:

27 **Avoiding impacts**

- 28 • Identification of avoidance areas and/or measures (e.g. right-of-way avoidance areas, No
29 Surface Occupancy areas) already included in laws, regulations, and/or governmental decision
30 documents (e.g. RMPs, state, tribal, or county plans that govern site or permit authorizations).
- 31 • Identification of additional avoidance measures for the BLM to consider (e.g. additional
32 avoidance best management practices).

33 **Minimizing impacts**

- 34 • Identification of minimization measures (e.g. surface use controls, conservation measures, best
35 management practices) already included in BLM decision documents (e.g. RMPs, USFWS
36 biological opinions, other project decision documents and right of way authorizations).
- 37 • Identification of additional minimization measures for the BLM to consider (e.g., IPC-committed
38 design features).

1 Rectifying impacts

- 2 • Identification of measures for the BLM to consider including repairing, rehabilitating, or restoring
3 affected landscapes.

4 Reducing or eliminating impacts

- 5 • Identification of measures for the BLM to consider for reducing or eliminating the impact over
6 time by preservation and maintenance operations during the life of the action.

7 Compensating impacts

- 8 • Identification of measures for the BLM to consider for compensating for the impact by replacing
9 or providing substitute resources or environments.

10 When applying mitigation at any level of the mitigation hierarchy, there will be requirements for
11 monitoring the effectiveness of the mitigation as well as the durability of the mitigation. This monitoring
12 is necessary, especially in relation to durability for compensatory mitigation to identify when it may be
13 appropriate to consider applying adaptive management concepts to ensure continued durability for the
14 life of the project.

15 Two important concepts related to durability are ecological durability and protective durability.
16 Ecological durability is the length of time the benefits from mitigation measures persist on and influence
17 the landscape and meet or exceed the length of time that projected impacts will affect resources.
18 Protective durability reflects ecological values in compensatory mitigation project areas that are
19 unaffected by future and conflicting land-uses or disturbances.

20 The ecological durability of compensatory mitigation is greatest if the projects are large enough or
21 properly located so that they will, either in themselves or in conjunction with other projects, adjacent
22 landscape conditions, or climate change predictions, provide the targeted conservation benefits.
23 Ecological durability may be compromised when the benefits of a compensatory mitigation project do
24 not persist for the full duration of the impact intended to be offset. Damage to functioning compensatory
25 mitigation measures may be caused by natural disturbances (such as wildfire) or anthropogenic
26 disturbances (such as other authorized development), which shorten the intended duration of
27 applicable mitigation.

28 The BLM will require that mitigation measures have a degree of protective durability and financial
29 protections as described in the Draft Framework for Development of Compensatory Mitigation Plans
30 (Appendix D). The BLM will expressly condition its approval of the project on IPC's commitment to
31 perform or cover the costs of any required mitigation, both onsite and outside the area of impact.

32 Other examples of compensatory mitigation that could offset the residual impacts of a project include,
33 but are not limited to, restoration of terrestrial, aquatic, wetland, and riparian resources, and
34 conservation easements to provide long-term protection. Additionally, in accordance with BLM Manual
35 6280, *Management of National Scenic and Historic Trails and Trails under Study or Recommended as*
36 *Suitable for Congressional Designation*, compensatory funds could be used to purchase non-BLM

1 parcels in the management corridor of trails, among other potential compensatory mitigation actions
2 (e.g., restoration projects).

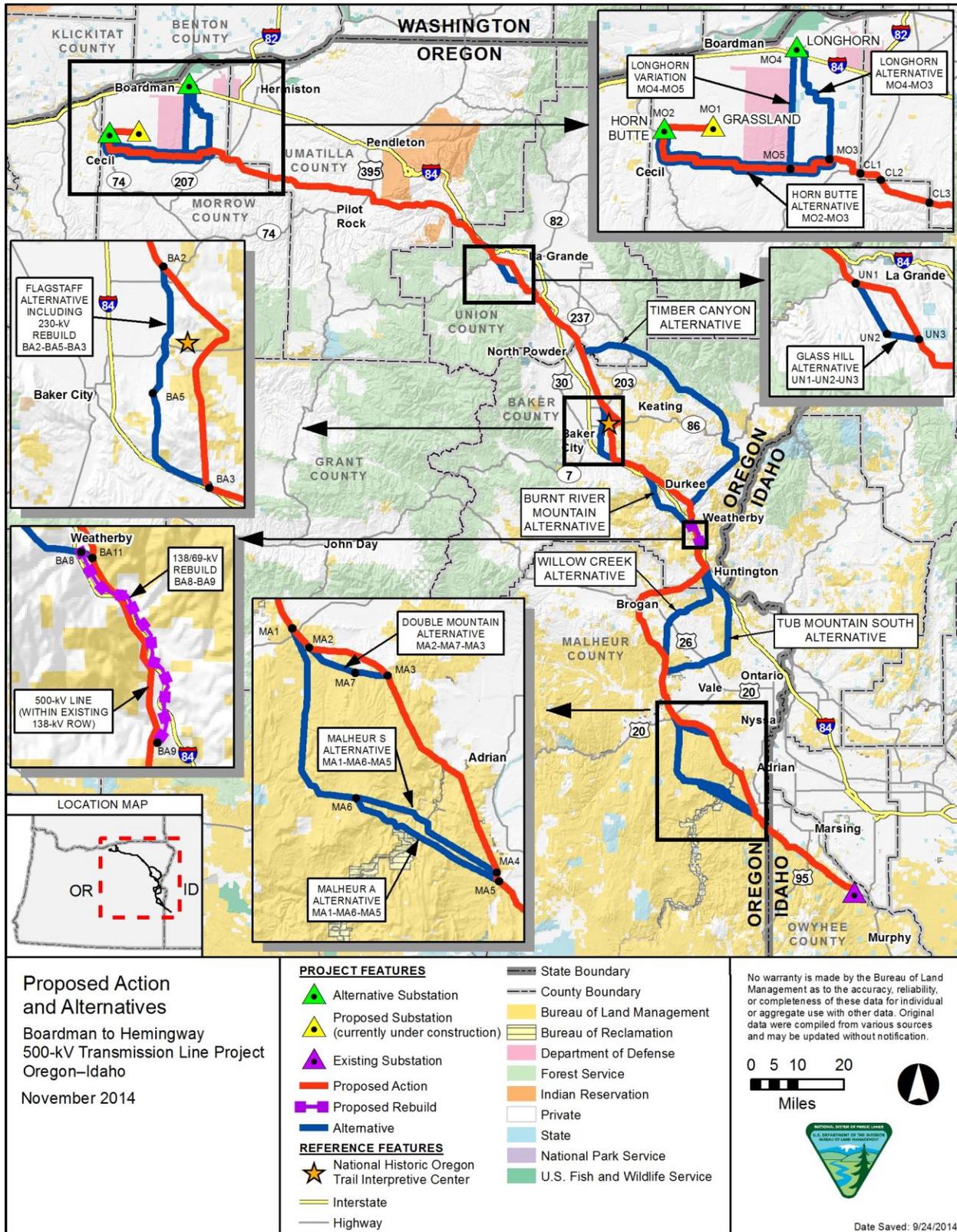
3 **2.3 ALTERNATIVES DEVELOPMENT**

4 NEPA and its implementing regulations require the BLM and USFS to develop a range of reasonable
5 alternatives to the proposed B2H Project to address “. . . unresolved conflicts concerning alternative
6 uses of available resources” (NEPA Section 102(2)(E)). The Council on Environmental Quality *Forty*
7 *Most Asked Questions Concerning CEQ’s NEPA Regulations* provide that “reasonable alternatives
8 include those that are practical or feasible from the technical and economic standpoint and using
9 common sense, rather than simply desirable from the standpoint of the applicant” (1981:Question 2a).

10 The BLM and USFS developed alternatives to the proposed B2H Project to address resource issues
11 (Figure 2-11). The process and rationale for developing these alternatives for detailed analysis is
12 presented in this section. This section also describes alternatives that were identified and considered
13 but were eliminated from detailed analysis, along with the BLM and USFS rationale for not considering
14 them further.

15 Alternatives to the Proposed Action were developed to address unresolved issues. Factors that were
16 considered in the development of alternatives to the Proposed Action included the following:

- 17 • Wildlife
 - 18 • Greater Sage-Grouse
 - 19 • Big-game winter range
 - 20 • Raptors
 - 21 • Special status species
- 22 • Cultural resources
 - 23 • Historic trails (includes Oregon NHT)
- 24 • Land use
 - 25 • Agriculture
 - 26 • Military uses
 - 27 • Areas of critical environmental concern values
 - 28 • Lands with wilderness characteristics
 - 29 • Wild and scenic suitable rivers
- 30 • Use of corridors
 - 31 • Designated corridors, including West-Wide Energy, BLM, and USFS corridors
 - 32 • Proximity to existing linear infrastructure



1

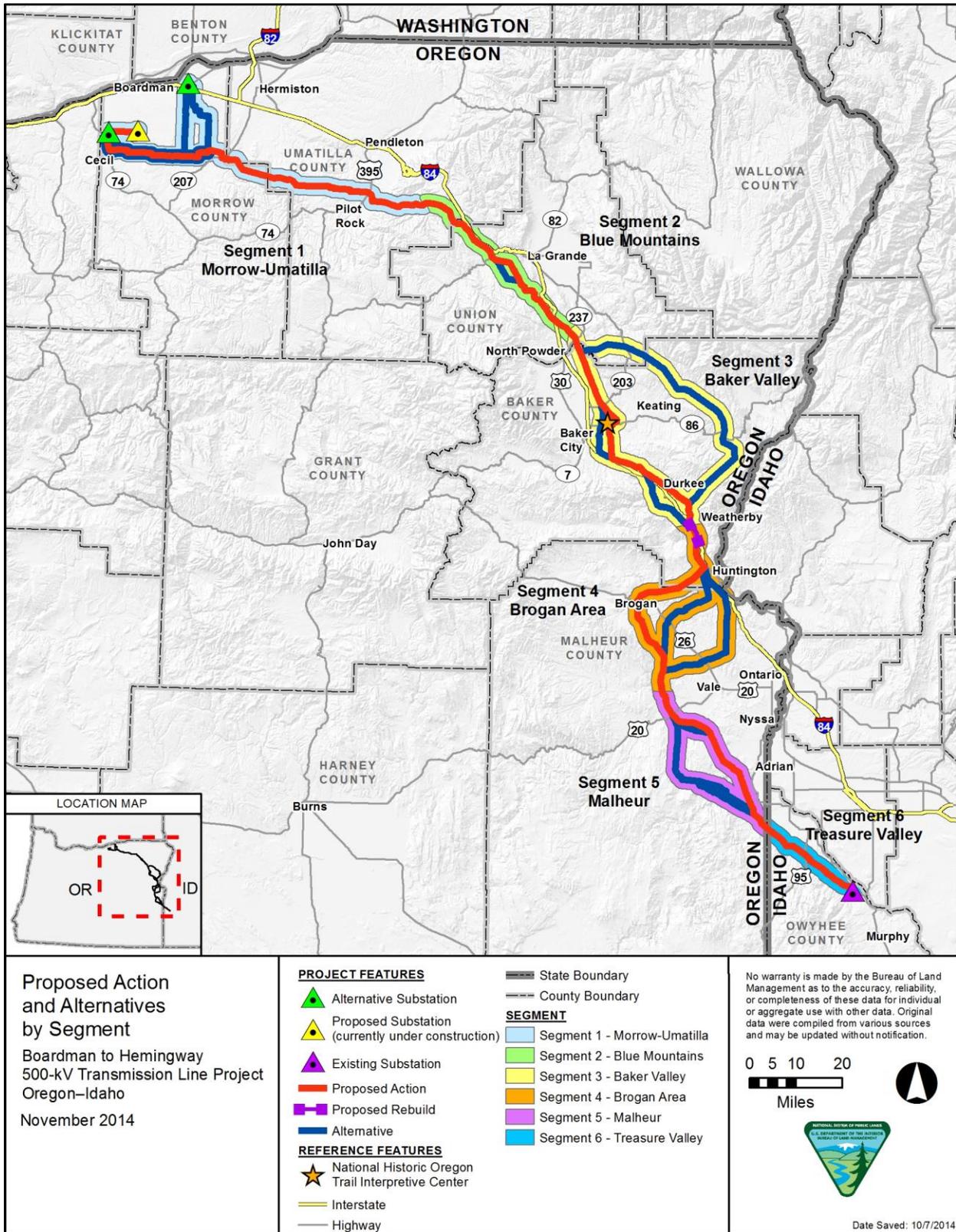
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Figure 2-11. Proposed Action and Alternatives

1 The B2H Project is described in six segments broadly based on similar geography, natural features,
2 drainages, resources, and land uses. The segments are described in more detail in Chapter 3. An
3 overview map of the project segments is shown in Figure 2-12. The project segments, from north to
4 south are:

- 5 • Segment 1—Morrow-Umatilla
- 6 • Segment 2—Blue Mountains
- 7 • Segment 3—Baker Valley
- 8 • Segment 4—Brogan Area
- 9 • Segment 5—Malheur
- 10 • Segment 6—Treasure Valley

11 The alternatives maps do not show the entire length of the project segment, but focus on the areas
12 within the segments where the alternatives are located. Points along the transmission line route are
13 numbered on the alternatives maps using the nomenclature “MO” for Morrow County, “BA” for Baker
14 County, “CL” for county line, and “MA” for Malheur County. In the Baker Valley Segment, five
15 combinations of alternative routes are possible. No alternatives to the Proposed Action were defined in
16 the Treasure Valley Segment because the Proposed Action would be located within or parallel to the
17 WECC corridor and does not present any unresolved resource issues. The effects discussions in
18 Chapter 3 include comparisons of effects among the Proposed Action and alternatives.



1

2

Figure 2-12. Proposed Action and Alternatives by Segment

1 **2.3.1 SEGMENT 1—MORROW-UMATILLA**

2 The Morrow-Umatilla segment (Figure 2-14) includes the Horn Butte and Longhorn Alternatives and the
3 Longhorn Variation.

4 **2.3.1.1 HORN BUTTE ALTERNATIVE**

5 The Horn Butte Alternative would include a new Horn Butte Substation (point MO2), built by IPC,
6 adjacent to Portland General Electric's existing 500-kV Boardman to Slatt transmission line
7 approximately 6.5 miles west of the Grassland Substation (point MO1 in Figure 2-14). The transmission
8 line from the Horn Butte Substation would follow the same alignment as the Proposed Action but would
9 be approximately 6.5 miles shorter than the Proposed Action. The Horn Butte Substation would be
10 located on private land about 1 mile northeast of State Highway 74, and the substation yard would
11 cover approximately 6 acres. The yard would be graded and fenced by IPC with three fully equipped
12 bays to allow for interconnection of the B2H Project and the Boardman to Slatt lines. The undeveloped
13 area within the substation yard would allow future users to tie into the B2H or Boardman to Slatt line.

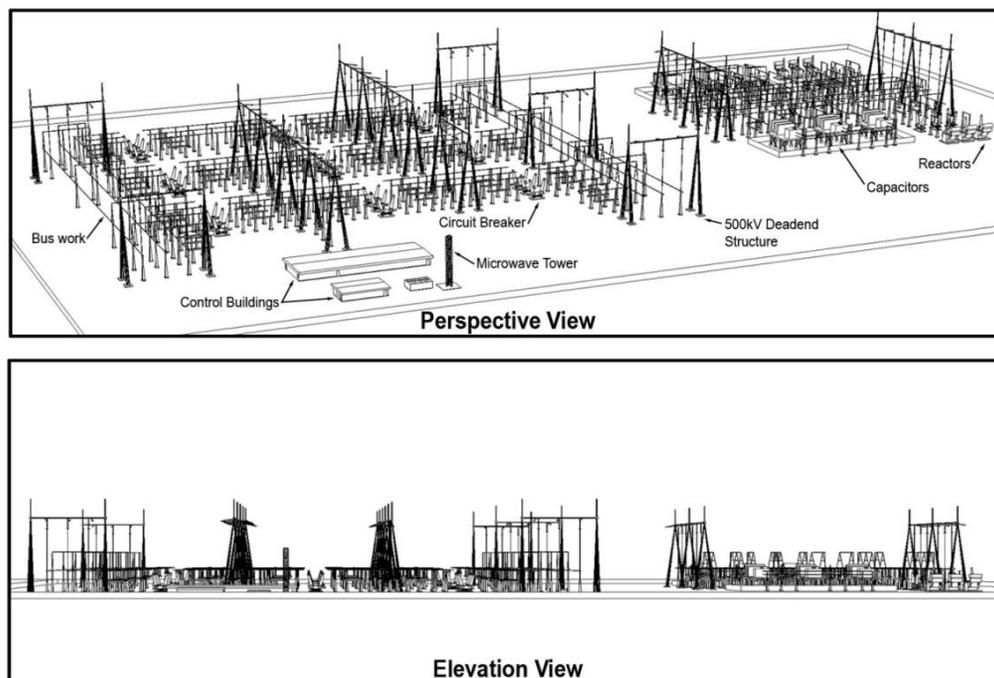
14 **GEOTECHNICAL INVESTIGATION**

15 Geotechnical evaluations would be conducted at the site to quantify subsurface conditions and
16 engineering properties of fill and placement of required fill material. The geotechnical investigation
17 program would consist of drilling approximately 12 borings to an approximate depth of 30 feet
18 (depending on anticipated cuts and fills) using hollow stem auger, air-rotary, and/or ODEX drilling
19 methods which are described in Section 2.2.8.4. If bedrock is encountered, coring will be advanced 5 to
20 15 feet into competent rock. Typically, soil borings are taken at the approximate locations of large
21 structures and equipment such as transmission line dead ends and transformers. The soil borings are
22 used to determine the engineering properties of the soil. Borings would be taken with truck- or track-
23 mounted equipment. The borings are typically 4 inches in diameter and range from 15 to over 60 feet
24 deep. After soil sampling, the borings are backfilled with excavated material.

25 **SUBSTATION CONSTRUCTION**

26 A substation "bay" is the physical portion of a substation within the substation fenced area where high-
27 voltage circuit breakers and associated steel transmission line termination equipment (for example,
28 structures, high-voltage switches, bus supports, and controls) that are needed to specifically support
29 the termination of the line in the station are installed. The tallest structures in the Horn Butte Substation
30 would be the 500-kV dead-end structures, from 125 to 135 feet tall, and/or a microwave antenna tower,
31 which would be in the range of 100 feet or more, depending on the height needed to maintain line of
32 sight to the nearest microwave relay site. A control house would be constructed to accommodate the
33 necessary system communications and control equipment. Typically, the control building would be
34 constructed of concrete block, pre-engineered metal sheathed, or composite-surfaced materials.
35 Special control buildings may be developed within the substation development to house other control
36 and protection equipment. The specific types of communication and control equipment would be
37 determined during final design. Fiber-optic signal regeneration equipment would be installed.

- 1 Figure 2-13 illustrates the appearance of a typical 500-kV substation with multiple line connections.
 2 Figure 2-14 shows the Grassland Substation area map.
- 3 The site would be supplied by distribution power brought in from the nearby existing system and would
 4 therefore require a new all-weather access road. Typically, station service power would be provided
 5 from a local electric distribution line, located in proximity to the substation. The voltage of the
 6 distribution supply line is typically 34.5-kV or lower and carried on wood poles. Both the access road
 7 and electric distribution line would be approximately 4,000 feet in length. The location and routing of the
 8 distribution lines to the new substation would be determined during the final design process. A
 9 permanent all-weather access road would be required to provide access for personnel, material
 10 deliveries, vehicles, trucks, heavy equipment, low-boy tractor trailer rigs (used for moving large
 11 transformers), and ongoing maintenance activities. The proposed access road would be a well-
 12 compacted, graded gravel road approximately 20 feet in width with a minimum 110-foot turning radius
 13 to accommodate the delivery of large transformers to the site.



14
 15 **Figure 2-13. Typical 500-kV Substation**

16 *Figure Source: Revised POD (IPC 2011a).*

- 17 The substation area and up to 10 feet outside the fence would be cleared of vegetation. Vegetation
 18 clearing is required for personnel safety due to grounding concerns related to lower clearances to
 19 energized conductors within the substation fence. After clearing the vegetation, a 4- to 6-inch layer of
 20 crushed rock would be applied. Where possible, the substation would be graded to use existing
 21 drainage patterns. In some cases, drainage structures, such as ditches, culverts, and sumps would be
 22 installed.

1 During construction, material storage yards could be located outside the substation fence. These
2 storage yards could be part of the substation property or on property properly leased by the contractor.
3 Following construction, all debris and unused materials would be removed and the staging/storage
4 yards returned to preconstruction conditions.

5 A 7-foot-high security fence would be installed around the entire perimeter of the substation to protect
6 sensitive equipment and prevent contact with energized conductors. The fence will be constructed of
7 chain link with steel posts. One foot of barbed wire or similar material would be installed on top of the
8 chain link fence yielding a total fence height of 8 feet. Locked gates would be installed at appropriate
9 locations for authorized vehicle and personnel access.

10 Foundations for supporting structures are either spread footings or drilled piers. Spread footings would
11 be constructed by excavating the foundation area, placing forms and reinforced-steel and anchor bolts,
12 and pouring concrete into the forms. After the foundation is poured, the forms are removed and the
13 surface of the foundation dressed. Drilled pier foundations are placed in a hole typically made by a
14 truck-mounted auger. Reinforced-steel and anchor bolts are placed into the hole using a truck-mounted
15 crane. The portion of the foundation aboveground will be formed. The portion belowground uses the
16 augered hole as the form. After the foundation is poured, the forms are removed, the excavation
17 backfilled, and the surface of the foundation dressed.

18 Equipment foundations for circuit breakers and transformers would be slab-on-grade type. These
19 foundations are placed by excavating the foundation area; placing forms, reinforced steel, and anchor
20 bolts (if required); and placing concrete into the forms. After the foundations have been poured, the
21 forms will be removed, and the surface of the foundation dressed. Reinforced steel and anchor bolts
22 will be transported to each site by truck. Excavated material will be spread at the site or disposed of in
23 accordance with local ordinances. Structures and equipment will be attached to the foundations by
24 means of threaded anchor bolts embedded in the concrete. Some equipment such as transformers and
25 reactors may not require anchor bolts.

26 Some types of electrical equipment, such as transformers and some types of reactors and circuit
27 breakers are filled with an insulating mineral oil. Containment structures are required to prevent
28 equipment oil from getting into the ground or waterbodies in the event of a rupture or leak. These
29 structures take many forms depending on site requirements, environmental conditions, and regulatory
30 restrictions. The simplest type of oil containment is a pit, of a calculated capacity, under the oil-filled
31 equipment that has an oil-impervious liner. The pit is filled with rock to grade level. In case of an oil leak
32 or rupture, the oil captured in the containment pit is pumped into tanks or barrels and transported to a
33 disposal facility. A spill prevention, countermeasure, and containment plan would be implemented to
34 comply with regulations.

35 Supporting steel structures are erected on concrete foundations. These are set with a truck-mounted
36 crane and attached to the foundation anchor bolts by means of a steel base plate. These structures will
37 be used to support the energized conductors and certain types of equipment. This equipment is lifted
38 onto the structure by means of a truck-mounted crane and bolted to the structures; electrical
39 connections are then made. Some equipment, such as transformers, reactors, and circuit breakers, are

1 mounted directly to the foundations without supporting structures. These are set in place by means of a
2 truck-mounted crane. Some of this equipment requires assembly and testing on the pad.

3 Following construction, waste and scrap material will be removed from the site and deposited in local
4 permitted landfills in accordance with local ordinances. Ruts and holes outside the substation fence
5 caused by construction activities would be regraded. Revegetation and restoration would be conducted
6 as required.

7 **2.3.1.2 LONGHORN ALTERNATIVE**

8 The Longhorn Alternative would be an 18.4-mile-long line located predominantly on private land in
9 Morrow County (points MO4 to MO3 in Figure 2-14) , except where the alignment crosses a canal and
10 land owned by the Bureau of Reclamation for approximately 0.02 miles (107 feet). The Longhorn
11 Alternative transmission line would cross 2.9 miles of a Department of the Navy Approach Zone
12 Easement on private property adjacent to the Naval Weapons Systems Training Facility Boardman.
13 The terms of the approach zone easement limit structure heights within the easement to a maximum of
14 35 feet above grade; this height limitation may affect the design of structures in the easement area,
15 unless IPC can reach agreement with the Department of the Navy for taller structures.

16 IPC identified BPA's proposed Longhorn Substation as a potential alternative northern terminus of the
17 B2H Project for analysis in this EIS. The Longhorn Substation would be located on BPA-owned land
18 just west of the Port of Morrow due north of the Boardman Bombing Range road, about 0.25 to 0.5 mile
19 north of I-84 (point MO4 in Figure 2-14). The substation would be adjacent to an existing transmission
20 corridor composed of one 500-kV line and two 230-kV lines. BPA would provide 2 acres within the
21 proposed Longhorn Substation site for the B2H Project to terminate. B2H Project facilities at this
22 substation would include a line bay in the substation and two breakers.

23 The Plan of Development presumes that the Longhorn Substation would be constructed prior to
24 interconnection of B2H. BPA has not made a decision to construct the substation, therefore has not yet
25 finalized plans or a schedule for construction.

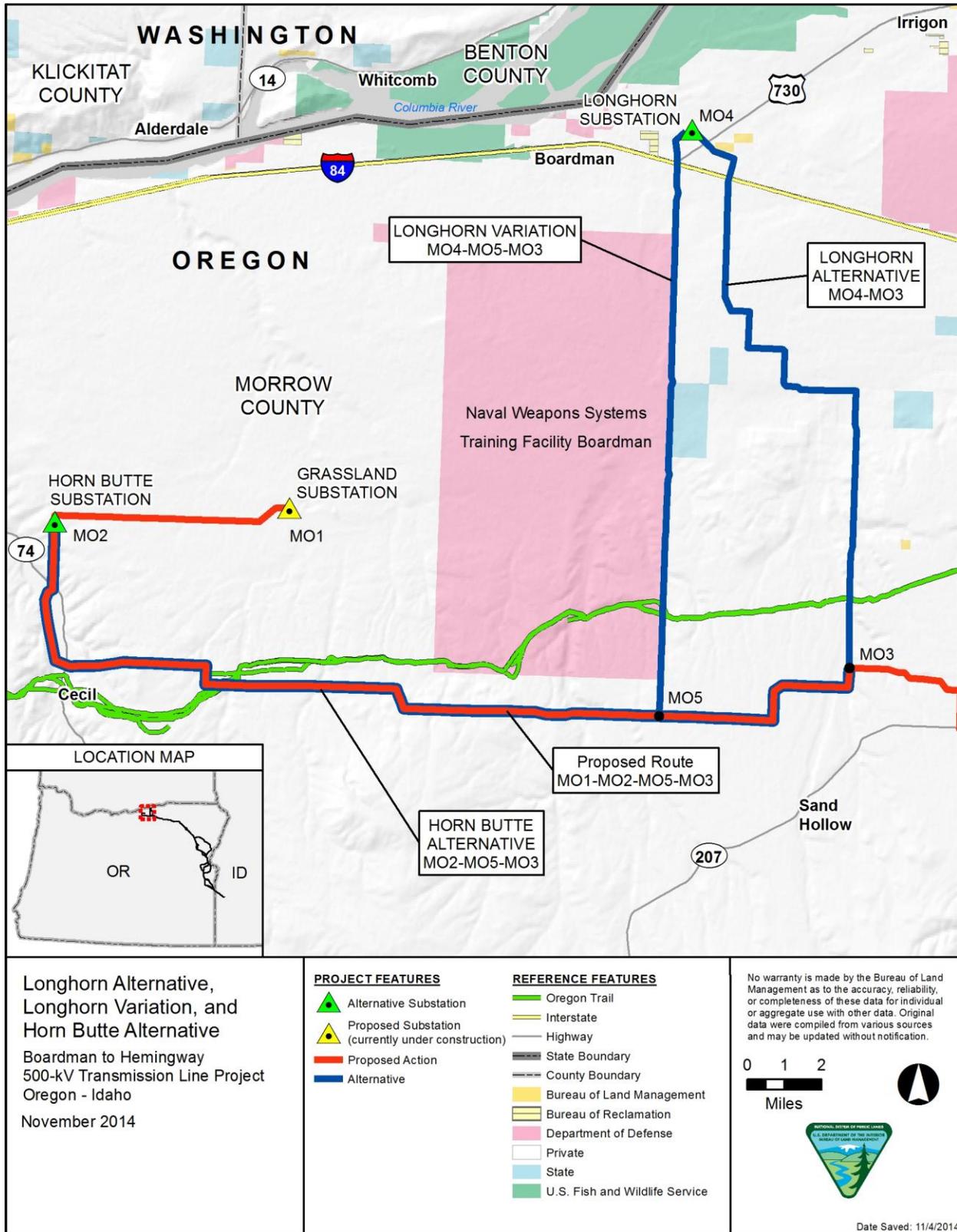
26 **2.3.1.3 LONGHORN VARIATION**

27 The Longhorn Variation was developed to address concerns raised by the Navy with the Longhorn
28 Alternative about encroachment on military airspace, to minimize effects on irrigated agriculture in the
29 area, and to align with an existing transmission corridor. The Longhorn Variation, although closer to the
30 Naval Weapons Systems Training Facility Boardman, would align with an existing transmission line.
31 While the centerline of the Longhorn Variation would not extend onto training facility, the right-of-way
32 would. The Longhorn Variation (points MO4 to MO5 to MO3) is a 22.6-mile-long line located
33 predominantly on private land in Morrow County on the east boundary of the Naval Weapons Training
34 Facility on Bombing Range Road (Figure 2-14). The alignment crosses land owned by the State of
35 Oregon for approximately 2 miles and the canal and land owned by the Bureau of Reclamation for
36 approximately 0.02 miles (107 feet). The Longhorn Variation exits the planned Longhorn Substation to
37 the southwest, where it immediately crosses over the Union Pacific Railroad. At MP 0.5, the Longhorn
38 Variation turns due south where at MP 1.9 it crosses I-84. The route continues south, paralleling the

1 east side of Bombing Range Road at a distance of approximately 125 feet. At MP 1.5, the route begins
2 to parallel a 138-kV transmission line located to the east of Bombing Range Road.

3 The Longhorn Variation and the existing 138-kV transmission line would be separated by 125 feet. At
4 MP 3.0, the route begins to parallel the Naval Weapons System Training Facility located to the west. At
5 MP 12, the alignment crosses over Bombing Range Road as the road turns east. At MP 15, the route
6 reaches the southern edge of the training facility. At this same point, the existing BPA 69-kV
7 transmission line turns west, paralleling the southern edge of the training facility. The Longhorn
8 Variation route continues south over pastureland and dry-land wheat fields until MP 16, where it joins
9 with the IPC Proposed Action at MP 27.5 (point MO5 in Figure 2-14), and then continues along the
10 Proposed Action route to MP 34.1 (point MO3 in Figure 2-14).

11 The Longhorn Variation would contain two structure types. From the Longhorn Substation to MP 3.0,
12 the line would use 170-foot-tall self-supported steel lattice towers with a dulled galvanized steel finish.
13 Typical span length would be 1,000 to 1,400 feet. At MP 3.0, where the Longhorn Variation is adjacent
14 to the Naval Weapons System Training Facility, structures would consist of 98-foot-tall self-supported
15 tubular steel H-frame structures with a weathering steel finish. Typical span length would be 500 to 700
16 feet. At MP 15, the structure type would switch back to 170-foot-tall steel lattice towers.



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Figure 2-14. Longhorn Alternative, Longhorn Variation, and Horn Butte Alternative

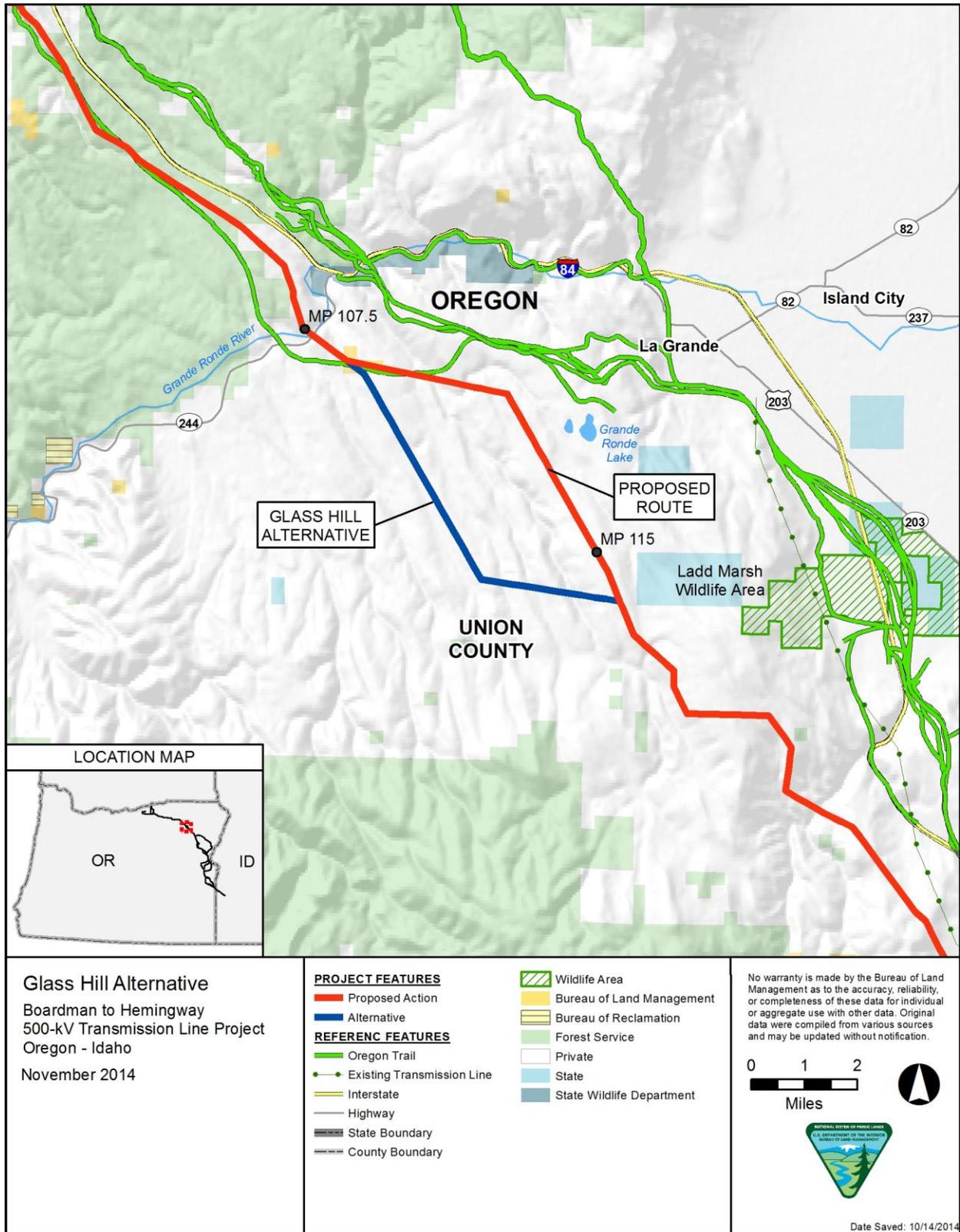
1 **2.3.2 SEGMENT 2—BLUE MOUNTAINS**

2 The Blue Mountains segment (Figure 2-15) includes the Glass Hill Alternative.

3 **2.3.2.1 GLASS HILL ALTERNATIVE**

4 The Glass Hill Alternative is an approximately 7.5-mile-long transmission line segment located west of
5 the Proposed Action on private land and BLM land in Union County near La Grande. This alternative
6 would depart the Proposed Action at MP 107.5 and rejoin it at about MP 115 (Figure 2-15).

7 The Glass Hill Alternative was developed to address concerns about the Proposed Action’s proximity to
8 the Ladd Marsh Wildlife Management Area and concerns about the visibility of the transmission line
9 from La Grande in Union County.



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Figure 2-15. Glass Hill Alternative

1 **2.3.3 SEGMENT 3—BAKER VALLEY**

2 The Baker Valley segment includes the Timber Canyon Alternative, Flagstaff Alternative and Burnt
3 River Mountain Alternative.

4 **2.3.3.1 TIMBER CANYON ALTERNATIVE**

5 The Timber Canyon Alternative was developed to address effects on Greater Sage-Grouse habitat and
6 visual impacts on the NHOTIC, Oregon NHT segments, and concerns about visibility of the
7 transmission line from Baker Valley. The Timber Canyon Alternative is shown in Figure 2-16 as the blue
8 route from points BA1 to BA4. This alternative would depart the Proposed Action route near North
9 Powder and head east, turning southeast near the community of Medical Springs and rejoining the
10 Proposed Action southeast of the town of Durkee. The Timber Canyon Alternative is 61.6 miles long, of
11 which 13.8 miles are located in Union County and 47.8 miles in Baker County. It would traverse 19.6
12 miles of the Wallowa-Whitman National Forest, 5.7 miles of BLM-managed land (Vale District), and
13 36.3 miles of privately owned land. The segment through the Wallowa-Whitman National Forest would
14 cross primarily forested land with some rangeland.

15 The alignment of the Timber Canyon Alternative is designed to avoid Greater Sage-Grouse habitat in
16 the Baker Valley (2011a). This alternative is designed to stay north, east, and south of Greater Sage-
17 Grouse habitat. The Timber Canyon Alternative is 15.3 miles longer than the Proposed Action.

18 **2.3.3.2 FLAGSTAFF ALTERNATIVE**

19 Like the Timber Canyon Alternative, the Flagstaff Alternative was developed to address effects on
20 Greater Sage-Grouse habitat and visual impacts on the NHOTIC and Oregon NHT segments. The
21 Flagstaff Alternative (points BA2–BA6–BA7–BA5–BA3), is 14.1 miles long and is located west of the
22 NHOTIC (Figure 2-16). The Flagstaff Alternative (points BA2 to BA3) would cross 0.3 mile of BLM-
23 managed land (BLM Vale District) and 13.8 miles of privately owned land. This alternative would
24 necessitate the relocation of a 0.9-mile segment of the existing 230-kV IPC transmission line to a
25 minimum of 250 feet to the east to allow for placement of the 500-kV towers. The relocation would allow
26 for co-location of the 230-kV and 500-kV transmission lines along the 0.9-mile segment of the Flagstaff
27 Alternative. The 230-kV relocation would be on privately owned land. The Flagstaff Alternative is 1.2
28 miles longer than the Proposed Action.

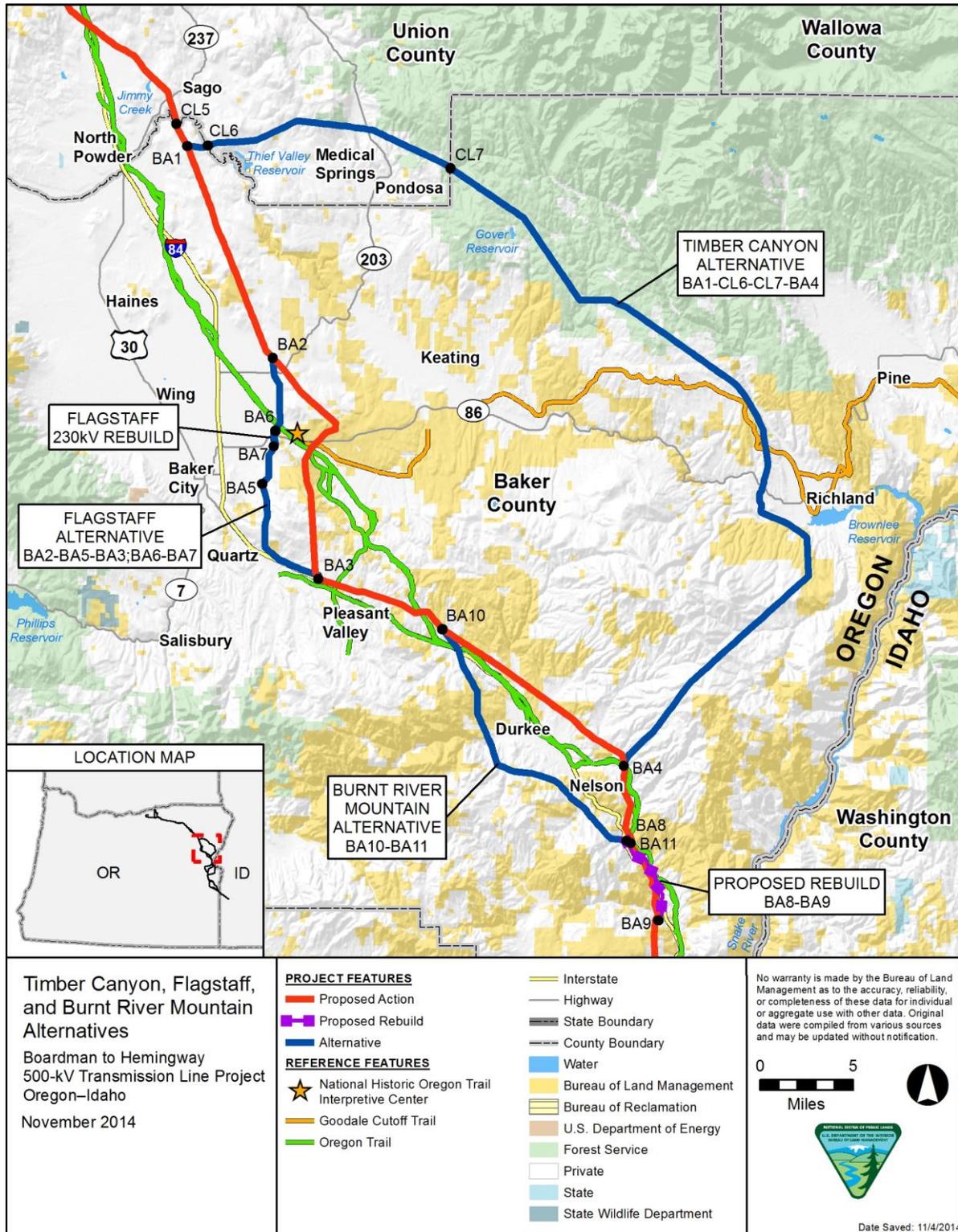
29 The Flagstaff Alternative segment between points BA2 and BA7 would pass through approximately
30 1 mile of Greater Sage-Grouse preliminary priority habitat and PGH habitat, but would mostly parallel
31 an existing transmission line at distances from 1,000 feet to approximately 0.5 mile.

32 The Flagstaff Alternative segment from points BA7 to BA5 to BA3 would be outside (west of) Greater
33 Sage-Grouse habitat and would generally parallel the existing 230-kV transmission line. This segment
34 would also situate the transmission line to the west to avoid impacts on nearby eagle nests. This
35 alternative would also include a design feature that new towers would be located using the same
36 spacing as the existing 105-foot-tall 230-kV towers. However, the 145-foot-tall H-frame towers would be
37 taller than the existing 230-kV H frame towers.

1 Land use in the Flagstaff Alternative from State Highway 203 to State Highway 86 includes 1.4 miles of
2 irrigated agricultural land and 2.2 miles of rangeland. The alternative would pass within 0.2 mile of a
3 segment of the Oregon Trail Area of Critical Environmental Concern and within about 1 mile of the
4 NHOTIC.

5 **2.3.3.3 BURNT RIVER MOUNTAIN ALTERNATIVE**

6 The Burnt River Mountain Alternative was developed to avoid Greater Sage-Grouse habitat and Golden
7 Eagle nests in the vicinity of Durkee, Oregon, along the Proposed Action between approximately MPs
8 171 and 188 (Figure 2-16). The Burnt River Mountain Alternative is 16.8 miles long, with 4.6 miles
9 located on BLM-managed land and 12.2 miles on privately owned land.



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Figure 2-16. Timber Canyon, Flagstaff, and Burnt River Mountain Alternatives

1 **2.3.4 SEGMENT 4—BROGAN AREA**

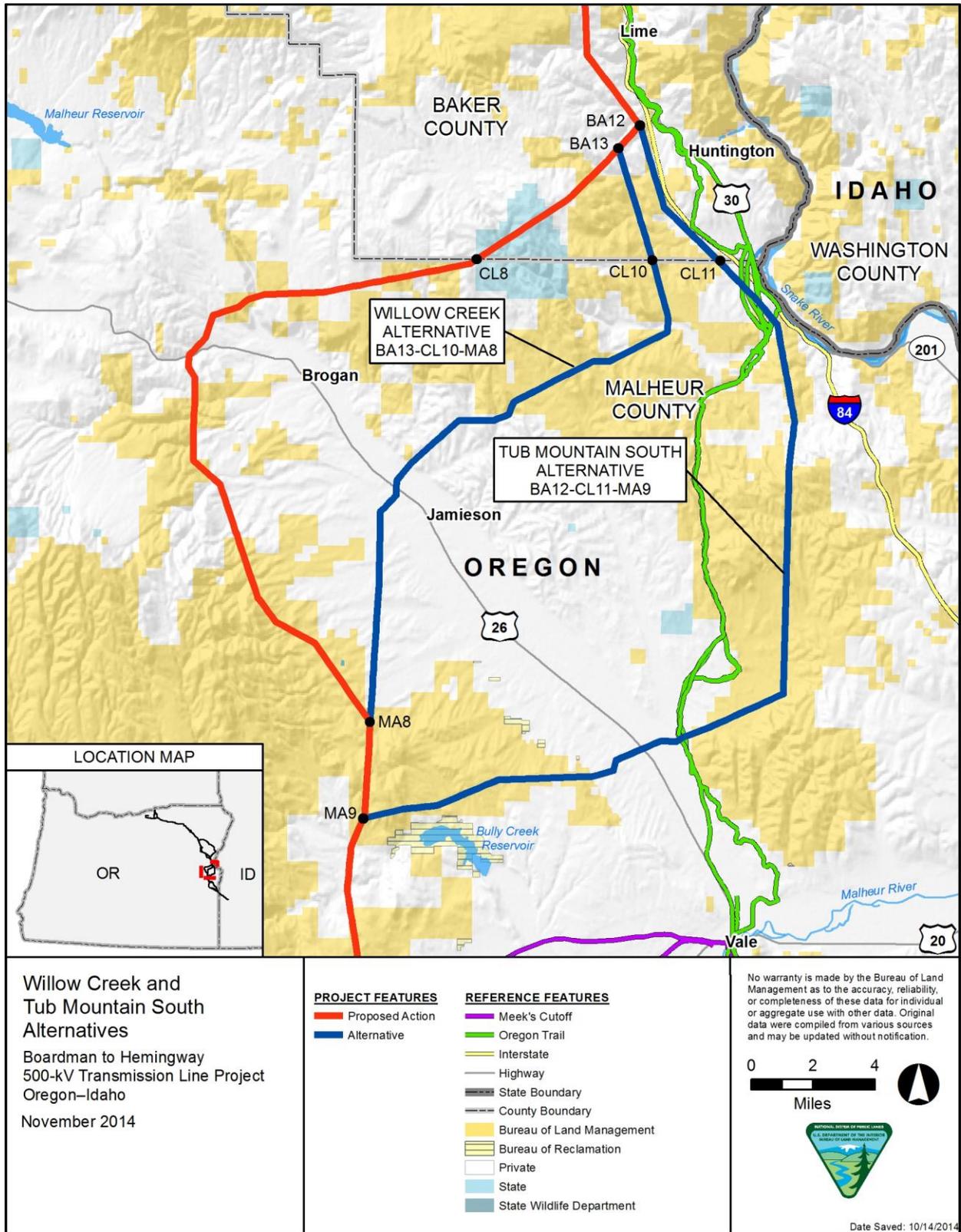
2 The Brogan Area Segment (Figure 2-17) includes the Willow Creek Alternative and the Tub Mountain
3 South Alternative.

4 **2.3.4.1 WILLOW CREEK ALTERNATIVE**

5 The Willow Creek Alternative was developed to avoid Greater Sage-Grouse habitat and several
6 identified Greater Sage-Grouse leks. The Willow Creek Alternative is approximately 24.6 miles long,
7 with approximately 11 miles located on BLM-managed lands and approximately 14 miles located on
8 private land. This alternative would depart the Proposed Action at point BA13, 2.5 miles west of
9 Huntington, Oregon, continue through point CL12, and would rejoin the Proposed Action at point MA8,
10 about 4 miles north of the Bully Creek Reservoir (Figure 2-17). The Willow Creek Alternative is
11 approximately 4.4 miles shorter than the Proposed Action.

12 **2.3.4.2 TUB MOUNTAIN SOUTH ALTERNATIVE**

13 The Tub Mountain South Alternative is 34.7 miles long, with 25.6 miles located on BLM-managed land
14 and 9.1 miles located on privately owned land. The Tub Mountain Alternative was developed to avoid
15 Greater Sage-Grouse preliminary priority habitat and preliminary general habitat habitat in the Brogan,
16 Oregon. The alternative would depart the Proposed Action at point BA12, continue through point CL11,
17 and then turn west to reconnect with the Proposed Action at point MA9 (Figure 2-17). The Tub
18 Mountain South Alternative would cross land where sagebrush has been historically burned by fires.



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Figure 2-17. Willow Creek and Tub Mountain South Alternatives

1 **2.3.5 SEGMENT 5—MALHEUR**

2 The Malheur Segment (Figure 2-18), includes the Double Mountain Alternative, Malheur A Alternative,
3 and Malheur S Alternative.

4 **2.3.5.1 DOUBLE MOUNTAIN ALTERNATIVE**

5 The Double Mountain Alternative was developed to avoid farmland and maximize the use of public land
6 in Malheur County. The Double Mountain Alternative is 7.4 miles long and is located entirely on BLM-
7 managed land (points MA2 to MA3 in Figure 2-18). Although the alternative would cross BLM lands
8 with wilderness characteristics, it would avoid private range and farmland to the northeast. This
9 alternative would cross 6.2 fewer miles of private land than the Proposed Action, which is an important
10 public concern in Malheur County (IPC 2012).

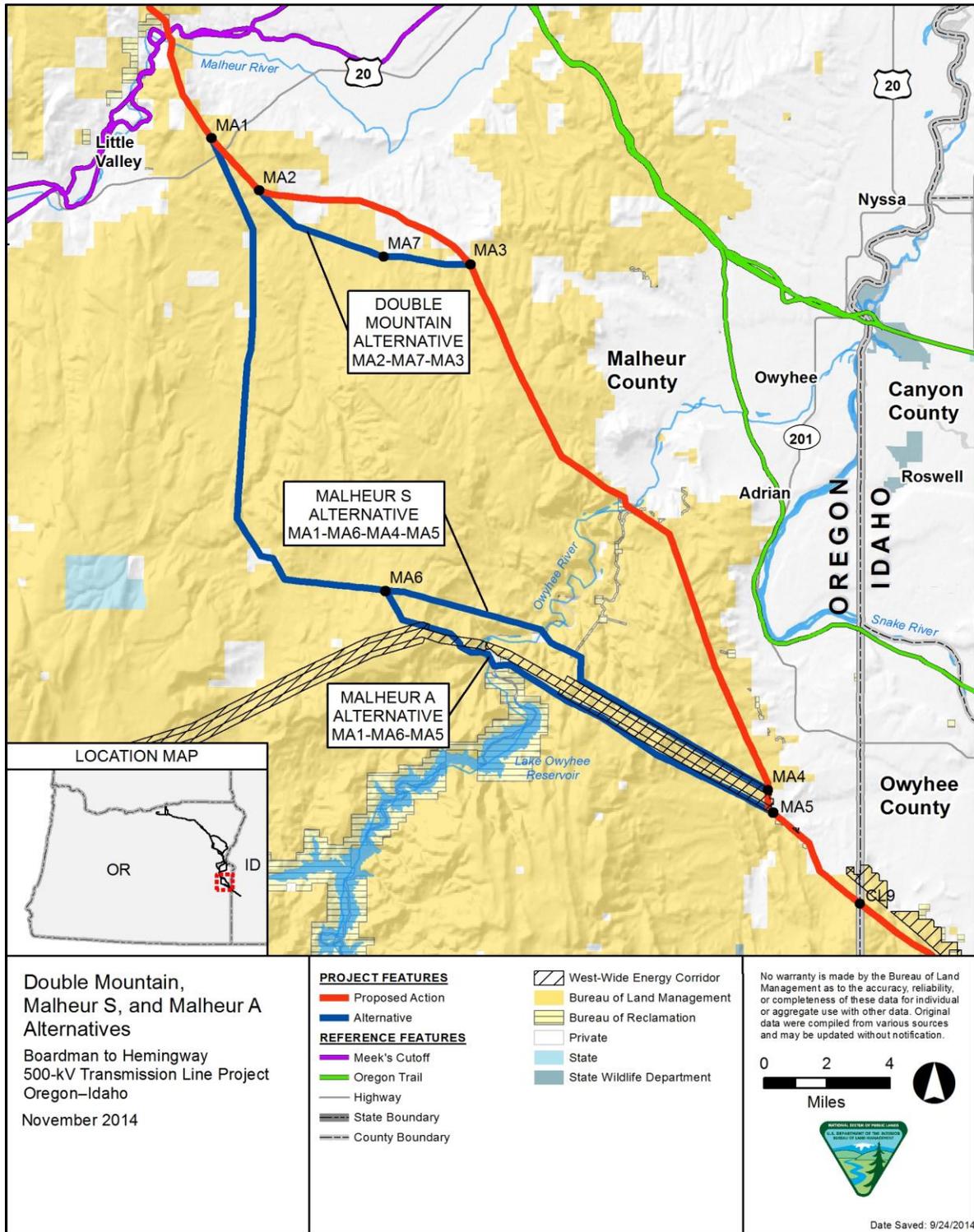
11 **2.3.5.2 MALHEUR S ALTERNATIVE**

12 The Malheur S Alternative was developed to avoid privately owned farmland to the northwest near
13 MP 250 and to avoid lands with wilderness characteristics. The Malheur S Alternative is 33.6 miles long
14 and is located southwest of the Proposed Action in Malheur County, almost entirely on BLM-managed
15 land (Figure 2-18). The Malheur S Alternative would depart from the Proposed Action at point MA1 and
16 would rejoin the Proposed Action at point MA4 (Figure 2-18). The alternative crosses the Owyhee River
17 to the north of the existing PacifiCorp Summer Lake to Midpoint 500-kV transmission line. The
18 alternative would cross 32.5 miles of land managed by the BLM, 0.1 mile of land managed by Bureau of
19 Reclamation, and 1.1 miles of privately owned land.

20 At MP 25.3, the Malheur S Alternative would turn south to enter the West-Wide Energy corridor with the
21 existing PacifiCorp 500-kV transmission line. Entering the West-Wide Energy corridor at MP 25.8, this
22 alternative would parallel or be within a West-Wide Energy corridor for approximately 8 miles. From MP
23 25.9 to MP 29.6, the Malheur S Alternative would parallel the northeast side of the West-Wide Energy
24 corridor, and from MP 29.6 to its intersection with the Proposed Action, it would be located within the
25 West-Wide Energy corridor.

26 **2.3.5.3 MALHEUR A ALTERNATIVE**

27 The Malheur A Alternative (Figure 2-18) was developed to be within or closely paralleling the West-
28 Wide Energy corridor in the vicinity of the Owyhee Dam. The Malheur A Alternative would depart from
29 the Proposed Action at approximately MA1 and would follow the Malheur S Alternative to a point
30 approximately 2 miles northwest of the existing Pacificorp 500-kV transmission line. The Malheur A
31 Alternative would then depart from the Malheur S Alternative (MA6 in Figure 2-18) and head south-
32 southeast to intercept the existing 500-kV line, which is located in West-Wide Energy Corridor 11-228.
33 The Malheur A Alternative would follow the West-Wide Energy corridor to the southwest, paralleling the
34 existing PacifiCorp transmission line, to rejoin the Proposed Action (point MA5
35 on Figure 2-18).



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Figure 2-18. Double Mountain, Malheur S, and Malheur A Alternatives

1 The Malheur A Alternative is 33.2 miles long and would be located almost entirely on BLM-managed
2 land, with 0.4 mile located on land managed by Bureau of Reclamation and 1.5 miles located on
3 privately owned land. The vast majority of this alternative would traverse severe terrain, rangeland, and
4 sagebrush with little existing development. The Malheur A Alternative would avoid lands with
5 wilderness characteristics.

6 **2.3.6 No Action Alternative**

7 The Council on Environmental Quality regulations require that EISs describe a “no action” alternative to
8 a proposed action (40 CFR 1502.14(d)). The No Action Alternative describes the reasonably
9 foreseeable outcome that would result from denying IPC’s requests for a right-of-way grant and special-
10 use authorization to construct the proposed B2H Project. If no action is taken, the BLM would not grant
11 a right-of-way and the USFS would not authorize a special-use permit for the project to cross federal
12 lands and the transmission line and ancillary facilities would not be constructed on federal lands.

13 The No Action Alternative is intended to describe the existing and future state of the environment in the
14 absence of the Proposed Action. It provides a baseline for comparing environmental effects and
15 demonstrates the consequences of not granting the right-of-way and authorizing special use.

16 **2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED** 17 **FROM DETAILED ANALYSIS**

18 Section 6.6.3 of BLM NEPA Handbook H-1790-1 (2008) provides that a suggested alternative to a
19 proposed action may be considered but eliminated from detailed analysis if:

- 20 • It is ineffective (it would not respond to BLM’s purpose and need).
- 21 • It is technically or economically infeasible.
- 22 • It is inconsistent with the basic policy objectives for the management of the area (such as not
23 conforming to BLM’s RMPs or the USFS Land and Resource Management Plan).
- 24 • Its implementation is remote or speculative.
- 25 • It is substantially similar in design to an alternative that is analyzed.
- 26 • It would have substantially similar effects on an alternative that is analyzed.

27 The alternatives and modifications to the Proposed Action, features and technologies described here
28 were not carried forward for detailed analysis in the EIS. The process for eliminating alternatives from
29 detailed analysis complies with 40 CFR 1502.14(a) of the Council on Environmental Quality regulations.
30 A description of each alternative considered but eliminated from detailed analysis, along with the
31 rationale for elimination, is provided below.

1 **2.4.1 ALTERNATIVE TRANSMISSION LINE ROUTING OPTIONS**

2 **2.4.1.1 LOCATE THE LINE PRIMARILY ON PUBLIC AND STATE LANDS**

3 A number of comments received during 2008 scoping and the IPC-sponsored CAP suggested that the
4 proposed transmission line be located primarily on public and state lands in order to avoid impacts on
5 private lands, particularly farmlands. During the CAP, a number of participants identified routes to the
6 west of the initially proposed alignment as a way to place the transmission line more on public and state
7 lands and away from active agricultural operations. The CAP Western Route was developed by IPC as
8 a refinement of several alignments proposed in the southwest region of the CAP study area, primarily to
9 reduce the amount of private land affected in favor of placing the B2H Project on more public and state
10 lands. The BLM evaluated the CAP Western Route as a primarily public land route alternative.

11 The CAP Western Route would exit the existing Grassland Substation to the south, head west for about
12 6 miles, and then turn south crossing the western part of Morrow County, continuing southwest across
13 Grant, Harney, Malheur, and Owyhee Counties to the Hemingway Substation. The Western Route
14 would cross about 117 miles of terrain identified by IPC as technically infeasible due to construction
15 constraints. Compared to the Proposed Action, the CAP Western Route would require the most new
16 right-of-way corridor, use the least amount of existing utility corridor, cross 30 more special status
17 streams, require over 1,750 acres of forest clearing, and cross about 45 miles through the Malheur and
18 Umatilla National Forests (IPC 2010a). By comparison, the Proposed Action would follow designated
19 corridors through forested areas with minimal forest clearing. The CAP Western Route would be
20 inconsistent with BLM's policy of using existing corridors (FLPMA, Section 503). This route was
21 considered but eliminated from further consideration because it is technically infeasible.

22 **2.4.1.2 LOCATE THE TRANSMISSION LINE IN THE** 23 **I-84 HIGHWAY CORRIDOR**

24 The I-84 corridor was considered and analyzed during the CAP siting study and was also considered
25 during development of the agency alternative. Portions of the Proposed Action and alternatives do
26 follow the I-84 corridor. However, in some portions of the highway corridor there exist technical
27 constraints that prevented the line from co-locating with I-84 for its entire length. Constraints include
28 urban areas, Indian reservation lands, airport clear zones, residences, industrial zones, and irrigated
29 agricultural lands (IPC 2010a). Using the I-84 corridor for the length of the B2H Project was considered
30 technically infeasible. In addition, the alternative is substantially similar in design to an alternative that
31 was identified.

32 **2.4.2 ALTERNATIVE TRANSMISSION TECHNOLOGY OPTIONS**

33 **2.4.2.1 INSTALL DOUBLE-CIRCUIT NEW TRANSMISSION LINES ON** 34 **EXISTING TOWERS IN THE STUDY AREA**

35 One of IPC's objectives in proposing the B2H Project is to improve system reliability between the
36 Boardman and Southeastern Idaho areas. System reliability is generally improved by adding redundant
37 transmission lines so that if one line is damaged or otherwise not in service, the other one can continue

1 to provide service. However, locating the proposed B2H 500-kV line closer than 250 feet to other high-
2 voltage lines would create “Adjacent Transmission Circuits” (WECC 2012). Adding Adjacent
3 Transmission Circuits does not improve a system’s reliability rating because a single event could
4 disrupt service on both transmission lines. This alternative was considered but eliminated from detailed
5 analysis because it is ineffective in responding to the agencies’ need to respond to the SF 299
6 application and because it is ineffective in meeting IPC’s purposes for proposing the B2H Project.

7 **2.4.2.2 USE HIGH-VOLTAGE DIRECT CURRENT RATHER THAN** 8 **ALTERNATING CURRENT**

9 The B2H Project alternating-current system will allow for power in the northwest to be efficiently
10 transported to southwestern Idaho in times of high demand and, conversely, will allow southwestern
11 Idaho to send excess power to the northwest grid—two of IPC’s key purposes for building the B2H
12 Project. The use of direct current transmission would not provide the regional transmission connectivity
13 IPC needs. This alternative was considered but eliminated from detailed analysis because it is
14 ineffective in meeting IPC’s purposes for proposing the B2H Project.

15 **2.4.2.3 BURY THE TRANSMISSION LINE**

16 Construction costs for underground high-voltage transmission lines can be nearly 15 times the cost per
17 mile for an aboveground line of the same capacity (BPA 2011, [http://www.bpa.gov/Projects/Projects/I-
18 5/Pages/Draft-EIS.aspx](http://www.bpa.gov/Projects/Projects/I-5/Pages/Draft-EIS.aspx)). Constructing underground lines also requires substantially more site
19 disturbance than installing towers. In addition, there are operational, system loss, performance,
20 reliability concerns, and impacts on land use (BPA 2011). With only a few underground installations of
21 high-voltage transmission lines throughout the world, system specific analysis would be required to
22 accurately quantify operational concerns and system losses. In addition, burying high-voltage
23 transmission lines has not been proven to maintain high reliability standards. While concerns will
24 depend on site-specific conditions, burying transmission lines may be incompatible with some uses
25 such as agriculture, forestry, and future development activities.

26 Burying segments of the transmission line is a possible mitigation measure. However, no segments of
27 the transmission line have been identified where burying would be feasible.

28 Underground cable system installation has historically been justifiable in terms of cost and reliability
29 only in urban or metropolitan areas, and for limited distances. Because of the high cost of an
30 underground line compared to overhead 500-kV lines, unproven technology over long distances for
31 500-kV, reliability and reactive compensation issues for long installations, and increased land
32 disturbance, the alternative of placing the 500-kV line underground is considered technically infeasible
33 for the B2H Project. This alternative was eliminated from detailed analysis because it is technically and
34 economically infeasible.

2.4.3 ALTERNATIVES TO TRANSMISSION LINE CONSTRUCTION

2.4.3.1 LOCATE ENERGY PRODUCTION AT THE POINT OF DEMAND TO AVOID THE NEED FOR TRANSMISSION

The B2H Project is not designed to transmit electrical power from any identified power source or to any identified load center. The purpose of the project is to increase transmission capacity connecting the Pacific Northwest to the Intermountain Region of southern Idaho and to alleviate existing transmission constraints to ensure sufficient capacity to meet projected increased system loads. This alternative was considered but eliminated from detailed analysis because it is ineffective in responding to the agencies' need to respond to the SF 299 application and because it is ineffective in meeting IPC's purposes for proposing the B2H Project.

2.4.3.2 EMPLOY ENERGY CONSERVATION AND DEMAND-SIDE MANAGEMENT TO REDUCE ENERGY DEMAND

Conservation and demand-side management consist of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. IPC already encourages conservation by offering energy efficiency incentives to customers, sharing conservation tips and tools, and by providing energy efficiency education. IPC is required by both federal and state laws to plan for and meet load and transmission requirements. IPC proposed the B2H Project to meet the system improvement commitments of its approved 2013 *Integrated Resource Plan*. This alternative was considered but eliminated from detailed analysis because it is ineffective in responding to the agencies' need to respond to the SF 299 application and because it does not meet IPC's purposes for proposing the B2H Project.

2.5 SUMMARY COMPARISON OF ALTERNATIVES

This section summarizes the alternatives comparison process and results, including determination of the Environmentally Preferred Alternative and the selection of the Agency Preferred Alternative. The comparison process resulted in the determination of the Environmentally Preferred Alternative (Section 2.5.1) and informed the Authorized Officer in selecting the Agency Preferred Alternative (Section 2.5.2). In this Draft EIS, the environmentally preferred and agency preferred alternatives are the same.

Table 2-12 provides a detailed comparative analysis of the resources for each alternative. For each resource, the table identifies key resource elements and associated impacts. A determination of potential significant impacts remaining after mitigation and cumulative effects (if present) are also identified. The basis for the information summarized for each resource in Table 2-12 is contained in Chapter 3.

1 **2.5.1 ENVIRONMENTALLY PREFERRED ALTERNATIVE**

2 In an EIS, the alternative or alternatives that are considered to be environmentally preferred are
3 identified. In this Draft EIS, the environmentally preferred alternative is the alternative that results in the
4 lowest impact on the natural, human, and cultural environment and best protects, preserves, and
5 enhances historic, cultural, and natural resources.

6 Key resource criteria were identified and quantified to compare relative impacts between alternatives in
7 an area:

- 8 • Cultural resources (historic trails, visual impacts on historic properties, prehistoric
9 archaeological sites);
- 10 • Fish (fish presence, stream crossings);
- 11 • Vegetation (native vegetation, forest and riparian habitats);
- 12 • Visual resources (overall visibility from key observation points, BLM and USFS visual
13 management objectives and criteria)
- 14 • Wildlife (Greater Sage-Grouse, big-game winter range, raptors, special status species, and
15 sensitive species).

16 Resource specialists used their on-the-ground knowledge, special expertise, available resource reports,
17 and GIS data to compare the anticipated effects of each alternative on these resources and make their
18 recommendations. The process was applied to each of the following segments:

- 19 • Segment 1—Morrow-Umatilla
20 (Proposed Action, Horn Butte and Longhorn Alternatives, and Longhorn Variation)
- 21 • Segment 2—Blue Mountains
22 (Proposed Action and Glass Hill Alternative)
- 23 • Segment 3—Baker Valley
24 (Proposed Action and Flagstaff, Burnt River Mountain, and Timber Canyon Alternatives)
- 25 • Segment 4—Brogan
26 (Proposed Action and Willow Creek, and Tub Mountain South Alternatives)
- 27 • Segment 5—Malheur
28 (Proposed Action and Double Mountain, Malheur A, and Malheur S Alternatives)
- 29 • Segment 6—Treasure Valley
30 (Proposed Action)

31 Table 2-11 identifies the alternatives and combinations of alternatives in each segment that exhibit the
32 least environmental impact, based on the effects analysis presented in Chapter 3. Figure 2-19 shows
33 the Agency Preferred Alternative alignment, which is the same as the Environmentally Preferred
34 Alternative alignment, for the proposed B2H Project.

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Table 2-11. Environmentally Preferred Alternative by Segment

Alternatives	Environmentally Preferred Alternative
Segment 1—Morrow-Umatilla (Proposed Action, Horn Butte, Longhorn Alternatives, and Longhorn Variation)	Longhorn Variation
Segment 2—Blue Mountains (Proposed Action and Glass Hill Alternative)	Proposed Action
Segment 3—Baker Valley (Proposed Action, Flagstaff, Burnt River Mountain, and Timber Canyon Alternatives)	Flagstaff and Burnt River Mountain Alternatives
Segment 4—Brogan Area (Proposed Action, Willow Creek, and Tub Mountain South Alternatives)	Tub Mountain South Alternative
Segment 5—Malheur Proposed Action, Double Mountain, Malheur S, and Malheur A Alternatives)	Proposed Action
Segment 6—Treasure Valley	Proposed Action

2 **2.5.2 AGENCY PREFERRED ALTERNATIVE**

3 The Agency Preferred Alternative is the alternative which the BLM, in coordination with the cooperating
 4 agencies, believe would fulfill its statutory mission and responsibilities, giving consideration to
 5 economic, environmental, technical, and other considerations. U.S. Department of the Interior
 6 regulations at 43 CFR 46.20(d) allow the responsible official to render a decision on the proposed
 7 action, as long as it is within the range of the alternatives discussed in the relevant environmental
 8 document. In this Draft EIS, the Agency Preferred Alternative is the same as the Environmentally
 9 Preferred Alternative. Figure 2-19 shows the Agency Preferred Alternative alignment for the proposed
 10 B2H Project.

11 In addition to the environmental criteria for the Environmentally Preferred Alternative, the
 12 interdisciplinary team identified the following criteria for consideration in identifying the recommended
 13 Agency Preferred Alternative:

- 14 • Land Use
 - 15 • Areas of critical environmental concern values
 - 16 • Lands with wilderness characteristics
 - 17 • Wild and scenic suitable rivers
- 18 • Agriculture
- 19 • Use of corridors
 - 20 • Designated corridors, including West-Wide Energy, BLM Vale District, and USFS corridors
 - 21 • Proximity to existing roads, including I-84
 - 22 • Parallel to and in proximity of existing transmission lines

- 1 • Socioeconomics
- 2 • Technical and other considerations
- 3 • Military operations
- 4 • Constructability
- 5 • RMP and USFS plan conformance

6 The Environmentally and Agency Preferred Alternative is described below.

7 In the Morrow-Umatilla County Segment, the Longhorn Variation is the Environmentally and Agency
8 Preferred Alternative. The Longhorn Variation is 16 miles and the Proposed Action is 34.1 miles. When
9 compared to the Proposed Action, the Longhorn Variation would result in less impact and disturbance
10 to vegetation, streams, and irrigated agriculture. The Longhorn Variation would disturb an acre of
11 riparian habitat during construction and operation, have 13 stream crossings, and disturb 21 acres of
12 irrigated agriculture during construction and 2 acres during operation. By comparison, the Proposed
13 Action would disturb 13 acres of riparian habitat during construction and 2 acres during operation, have
14 103 stream crossings, and disturb 90 acres of irrigated agriculture during construction and 12 acres
15 during operation. Agency considerations include local agricultural land use and military operations at
16 the Naval Weapons Systems Training Facility Boardman. The Longhorn Variation would have fewer
17 impacts on agricultural operations than either the Proposed Action or the Horn Butte or Longhorn
18 Alternatives. The U.S. Navy prefers the Proposed Action or Horn Butte Alternative because those
19 would have less effect on military operations, but it sees the Longhorn Variation as preferable to the
20 Longhorn Alternative.

21 In the Blue Mountains Segment, the Proposed Action is the Environmentally and Agency Preferred
22 Alternative primarily because the Proposed Action would disturb fewer acres of winter range and cause
23 less vegetation disturbance. When compared to the Glass Hill Alternative, the Proposed Action would
24 disturb 19 fewer acres of winter range during construction and 13 fewer acres during operation. Agency
25 considerations include the closer alignment of the Proposed Action to an existing transmission line for 3
26 of the 7.5 miles and avoidance of effects on a relatively undisturbed landscape.

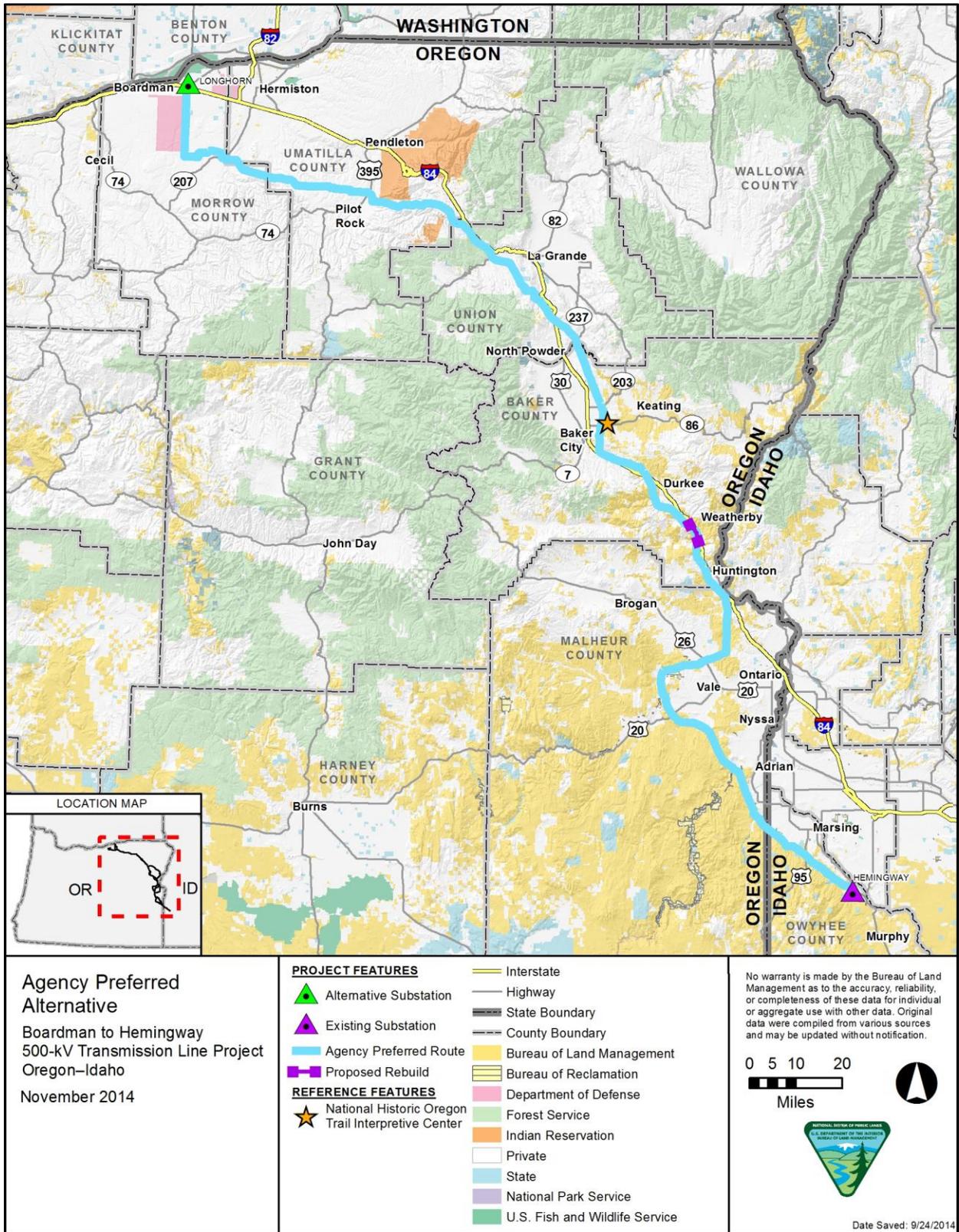
27 In the Baker Valley Segment, the Proposed Action, Flagstaff Alternative, and Burnt River Mountain
28 Alternative are the Environmentally and Agency Preferred Alternatives primarily because these
29 alternatives would have less impact on Greater Sage-Grouse habitat. When compared with the
30 Proposed Action, the Flagstaff and Burnt River Mountain Alternatives would disturb 381 fewer acres of
31 Greater Sage-Grouse preliminary priority habitat during construction and 87 fewer acres during
32 operation. These alternatives would also disturb 68 fewer acres of Greater Sage-Grouse preliminary
33 general habitat during construction and 11 fewer acres during operation. The longer Timber Canyon
34 Alternative would have greater impacts on fish, vegetation, and wildlife resources than the Proposed
35 Action. Agency considerations include the need for designation of a new utility corridor for the Timber
36 Canyon Alternative, and closer alignment of the Flagstaff Alternative with existing transmission lines
37 and other rights-of-way than the Proposed Action.

1 In the Brogan Area Segment, the Tub Mountain South Alternative is the Environmentally and Agency
2 Preferred Alternative. When compared with the Proposed Action, the Tub Mountain South Alternative
3 would disturb 223 fewer acres of winter range during construction and 62 fewer acres during operation.
4 In addition, the Tub Mountain South Alternative would disturb 354 fewer acres of Greater Sage-Grouse
5 preliminary priority habitat during construction and 97 fewer acres during operation and 179 fewer acres
6 of Greater Sage-Grouse preliminary general habitat during construction and 35 fewer acres during
7 operation. Agency considerations include the location of a private airstrip for agricultural use near the
8 Willow Creek Alternative and alignment of the Tub Mountain South Alternative with the West-Wide
9 Energy corridor and other utility rights-of-way.

10 In the Malheur Segment, the Proposed Action is the Environmentally Preferred and Agency Preferred
11 Alternative due to fewer effects on Greater Sage-Grouse, fish, vegetation, and cultural resources than
12 the Malheur A or S Alternatives. The agency considerations include the presence of a Wild and Scenic
13 River and the Below the Dam Area of Critical Environmental Concern that would not be affected by the
14 Proposed Action. For the Double Mountain Alternative, the agency consideration is it would cross lands
15 that have been inventoried and possess wilderness characteristics.

16 In the Treasure Valley Segment, the Proposed Action is the Environmentally and Agency Preferred
17 Alternative.

18 After consideration of the agency criteria, the interdisciplinary team recommended that the Agency
19 Preferred Alternative should be the same as the Environmentally Preferred Alternative. The
20 interdisciplinary team recommendation was presented to the BLM Washington Office, the BLM Oregon
21 State Office, the BLM Idaho State Office, and the BLM Authorized Officer in June of 2014. The
22 Authorized Officer approved the recommendation. The Agency Preferred Alternative is shown in
23 Figure 2-19.



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Figure 2-19. Agency Preferred Alternative

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Table 2-12. Summary of Effects by Alternative

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Proposed Action (305 miles)</p>	<p>Washington ground squirrel – long-term high impacts. Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Comparisons between the Proposed Action and each alternative are shown below. Proposed Action would be visible along 166 miles of the 212 miles of the Oregon NHT within the analysis area. Seven high or moderate magnitudes of impact on historic and cultural resources. Thirteen high or moderate magnitudes of impact on historic and cultural setting. Short- and long-term moderate impacts.</p>	<p>Approximately 17% of scenic quality A landscapes would be impacted and 6% would be impacted to the degree that the scenic quality rating would drop to a scenic quality B landscape. Approximately 77% of scenic quality B landscapes would be impacted and 34% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 55% of scenic quality C landscapes would be impacted. From 59 of 71 stationary platforms and 7 of the 24 linear platforms, the Proposed Action would either not be visible or would have low contrast. From 10 of 71 stationary platforms and 8 of the 24 linear platforms, the Proposed Action would be visually prominent and create moderate contrast. From 2 of 71 stationary platforms (Lower Owyhee Interpretive Site and Squaw Creek Canyon Entrance), the Proposed Action would be visually dominant and create high contrast. From 9 of the 24 linear platforms (Goodale’s Cutoff Study Trail, Hells Canyon Scenic Byway, Meek Cutoff Study Trail, Mitchell Butte Road, Snake River-Mormon Basin Back Country Byway, SR 244, US 20, US 395, and the Oregon NHT), the Proposed Action would be visually dominant and create high contrast. Proposed Action would not meet USFS VQO Retention (36 acres); Partial Retention (134 acres); and Modification (14 acres). Proposed Action would not meet BLM VRM Class III (70 acres).</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term moderate to high impacts. Forests – long-term moderate to high impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – short-term low impacts. Special status species – long-term low to high impacts. Noxious weeds – short-term high impacts; long-term low impacts. Ethnobotanical resources – long-term low impacts (Project wide).</p>	<p>Listed and candidate species – short-term low to high impacts; long-term low impacts. Special status species – short-term low to moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. 47% of Proposed Action is within a designated corridor (West-Wide Energy corridor, BLM, or USFS) or parallel to existing utility infrastructure.</p>	<p>Eight Areas of Critical Environmental Concern; Three Wild and Scenic designated and eligible rivers; Lands with wilderness characteristics. Construction and operations effects—indirect and low.</p>	<p>79% of the Oregon NHT, 75% of the Goodale’s Cutoff Study Trail and 90% of the Meek Cutoff Study Trail within the analysis area would have views of project components. Proposed Action would cross Oregon NHT 11 times, Goodale’s Cutoff Study Trail 2 times, and Meek Cutoff Study Trail 1 time. High and moderate magnitudes of impact on visual resources from 28 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. 33 impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
Segment 1—Morrow-Umatilla								
Proposed Action section equivalent to Horn Butte and Longhorn Alternatives and Longhorn Variation (34.1 miles, no federal lands)	Washington ground squirrel – long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.	Alternative would be visible along 27 miles of the 37 miles of the Oregon NHT within analysis area. From the Oregon NHT, the alternative would be visually dominant and create high contrast. Short- and long-term moderate impacts.	Approximately 96% of scenic quality C landscapes would be impacted. From 3 of 8 stationary platforms and the Blue Mountain Scenic Byway, alternative would be visually prominent and create moderate contrast. There are no federal lands that would be disturbed, therefore compliance with VRM and VQO would not apply.	Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none present. Special status species – long-term high impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.	Listed and candidate species – short-term low to moderate impacts; long-term low impacts. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.	Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.	No special designations.	74% of the Oregon NHT within the analysis area would have views of project components. Equivalent section of the Proposed Action would not be visible from the Lewis and Clark NHT. Equivalent section of the Proposed Action would cross Oregon NHT 1 time.
Horn Butte Alternative (27.4 miles, no federal lands)	Washington ground squirrel – long-term high impacts. Special status species – Long-term moderate impacts Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.	Alternative would be visible along 27 miles of the 37 miles of the Oregon NHT within analysis area. From the Oregon NHT, alternative would be visually dominant and create high contrast. Old railroad bed and associated features and artifacts—two sites that are likely eligible. Short- and long-term moderate impacts.	Approximately 97% of scenic quality C landscapes would be impacted. From 3 of 7 stationary platforms and I-84, alternative would be visually prominent and create moderate contrast. There are no federal lands that would be disturbed, therefore compliance with VRM and VQO would not apply.	Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none present. Special status species – long-term high impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.	Listed and candidate species – short-term low to moderate impacts; long-term low impacts. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.	Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.	No special designations.	74% of the Oregon NHT within the analysis area would have views of project components. Alternative would cross Oregon NHT 1 time.

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Longhorn Alternative (18.4 miles, Reclamation property interests affected)</p>	<p>Washington ground squirrel – long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible along 10 miles of the 13 miles of the Oregon NHT within analysis area. From the Oregon NHT, alternative would be visually dominant and create high contrast. Short- and long-term moderate impacts.</p>	<p>Approximately 92% of scenic quality C landscapes would be impacted. From the 2 stationary platforms within the analysis area, alternative would either not be visible or would have low contrast. From I-84, alternative would be visually prominent and create moderate contrast. Alternative would not be visible from the Lewis and Clark Trail Scenic Byway (Washington). There are no BLM or USFS-administered lands that would be disturbed, therefore compliance with VRM and VQO would not apply.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none present. Special status species – long-term high impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – short-term low to moderate impacts; long-term low impacts. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.</p>	<p>No special designations.</p>	<p>90% of the Oregon NHT and 75% of the Lewis and Clark NHT within the analysis area would have views of project components. Alternative would cross Oregon NHT 1 time and would not cross the Lewis and Clark NHT.</p>
<p>Longhorn Variation (16 miles, U.S. Navy, Reclamation property interests affected)</p>	<p>Washington ground squirrel – long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible along 14 miles of the 16 miles of the Oregon NHT within analysis area. From the Oregon NHT, alternative would be visually dominant and create high contrast. Short- and long-term moderate impacts.</p>	<p>Approximately 92% of scenic quality C landscapes would be impacted. From 1 of 4 stationary platforms and I-84, alternative would be visually prominent and create moderate contrast. From 1 (Boardman Research Natural Area— Bombing Range Road) of 4 stationary platforms, alternative would be visually dominant and create high contrast. Alternative would not be visible from the Lewis and Clark Trail Scenic Byway (Washington). There are no BLM or USFS-administered lands that would be disturbed, therefore compliance with VRM and VQO would not apply.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none present. Special status species – long-term high impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – short-term low to moderate impacts; long-term low impacts. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Follows existing utility right of way for approximately 14.5 miles.</p>	<p>No special designations.</p>	<p>88% of the Oregon NHT and 64% of the Lewis and Clark NHT within the analysis area would have views of project components. Variation would cross Oregon NHT 1 time and would not cross the Lewis and Clark NHT.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
Segment 2—Blue Mountains								
Proposed Action section equivalent to Glass Hill Alternative (7.5 miles, 0.7 miles on BLM lands, 6.8 miles on private lands).	Greater Sage-Grouse - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts Construction impacts—moderate.	Alternative would be visible along 5 miles of the 21 miles of the Oregon NHT within analysis area. No high or moderate magnitudes of impact on historic and cultural resources. No high or moderate magnitudes of impact on historic and cultural setting. Short- and long-term low impacts.	Approximately 1% of scenic quality A landscapes would be impacted. Approximately 100% of scenic quality B landscapes would be impacted. From 1 of 7 stationary platforms and I-84, alternative would be visually prominent and create moderate contrast. From the Grand Tour Route, Hells Canyon Scenic Byway, the Oregon NHT, and 3 other linear platforms, alternative would either not be visible or would create low contrast. Equivalent section of the Proposed Action would meet VRM class objectives.	Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term moderate impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – Howell's spectacular thelypody – short-term low impacts. Special status species – long-term low impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.	Listed and candidate species – short-term high; long-term low impacts. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.	Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Parallels an existing 230 kV transmission line for approximately 3 miles.	Passes within 1/4 mile of Rebarrow Forest.	26% of the Oregon NHT within the analysis area would have views of project components. Equivalent section of the Proposed Action would not cross Oregon NHT. High and moderate magnitudes of impact on visual resources from 0.8 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. Five impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.
Glass Hill Alternative (7.5 miles, 0.4 miles on BLM lands, 7.1 miles on private lands)	Greater Sage-Grouse - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts Construction impacts—moderate.	No high or moderate magnitudes of impact on historic and cultural resources. No high or moderate magnitudes of impact on historic and cultural setting. Short- and long-term low impacts.	Approximately 1% of scenic quality A landscapes would be impacted. Approximately 20% of scenic quality B landscapes would be impacted. From the 6 stationary platforms, SR 244, and I-84, alternative would either not be visible or would create low contrast. BLM VRM compliance on BLM-administered lands were not determined because of absence of identified sensitive platforms. Alternative would meet VRM class objectives.	Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term moderate impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – Howell's spectacular thelypody – short-term low impacts. Special status species – long-term low impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.	Listed and candidate species – short-term high; long-term low impacts. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.	Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.	Passes within 1/4 mile of Rebarrow Forest.	21% of the Oregon NHT within the analysis area would have views of project components. Alternative would not cross Oregon NHT. High and moderate magnitudes of impact on visual resources from 0.8 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. One impact "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
Segment 3—Baker Valley								
<p>Proposed Action section equivalent to Timber Canyon Alternative (46.4 miles; 12.4 miles on BLM lands, 34.0 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts (916 acres of PPH affected). Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts—moderate.</p>	<p>Alternative would be visible along 46 miles of the 58 miles of the Oregon NHT within analysis area. Seven high or moderate magnitudes of impact on historic and cultural resources. Twelve high or moderate magnitudes of impact on historic and cultural setting.</p>	<p>Approximately 96% of scenic quality B landscapes would be impacted and 72% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 89% of scenic quality C landscapes would be impacted. From the 15 of the 16 stationary platforms, I-84, Grande Tour Route, Powder River Wild and Scenic River Corridor, SR 203 and the Powder River ACEC, the alternative would either not be visible or would create low contrast. From 1 of the 16 stationary platforms (NHOTIC Entrance SR 86), Alder Creek Road, Manning Creek Road, and Oregon Trail ACEC, alternative would be visually prominent and create moderate contrast. From the Snake River—Mormon Basin Back Country Byway, Goodale’s Cutoff Study Trail, Hells Canyon Scenic Byway, and the Oregon NHT, alternative would be visually dominant and create high contrast. Alternative would not meet BLM VRM compliance for Class III VRM (63 acres).</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term moderate impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Follows existing 230 kV and 138 kV transmission lines for approximately 24 miles; follows I84 and alignment of WWE corridor for approximately 16 miles.</p>	<p>Oregon Trail ACEC and NHOTIC would be indirectly affected (visual impacts).</p>	<p>80% of the Oregon NHT and 75% of the Goodale’s Cutoff Study Trail within the analysis area would have views of project components. Equivalent section for the Proposed Action would cross Oregon NHT and Goodale’s Cutoff Study Trail 2 times. High and moderate magnitudes of impact on visual resources from 22.5 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. 25 impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Timber Canyon Alternative (61.6 miles; 5.7 miles on BLM lands, 19.6 miles on USFS lands, 36.3 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts (no PPH affected). Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts Construction impacts—moderate.</p>	<p>Alternative would be visible along 12 miles of the 26 miles of the Oregon NHT within analysis area. No high or moderate magnitudes of impact on historic and cultural resources. Short- and long-term low impacts.</p>	<p>Approximately 100% of scenic quality A landscapes would be impacted. Approximately 82% of scenic quality B landscapes would be impacted and 5% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 0% of scenic quality C landscapes would be impacted. From the 6 stationary platforms, I-84, and the Powder River ACEC, the alternative would either not be visible or would create low contrast. From 6` of the 15 linear platforms, alternative would be visually prominent and create moderate contrast. From 8 of the 11 linear platforms alternative would be visually dominant and create high contrast. Alternative would meet VRM class objectives.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term moderate impacts. Timber Canyon Alternative has 720 more acres of disturbed forest than other alternatives. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none known. Special status species – long-term low impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – short-term high; long-term low impacts. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – Short-term low to moderate impacts; long-term low impacts.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.</p>	<p>Would avoid special designation areas.</p>	<p>47% of the Oregon NHT and 73% of the Goodale’s Cutoff Study Trail within the analysis area would have views of project components. Alternative would not cross Oregon NHT and would not cross Goodale’s Cutoff Study Trail. High and moderate magnitudes of impact on visual resources from 2.1 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. No impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Proposed Action section equivalent to Flagstaff Alternative (14.2 miles; 5.5 miles on BLM lands, 8.7 miles on private lands).</p>	<p>Greater Sage-Grouse - long-term high impacts (577 acres of PPH affected). Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts Construction impacts—moderate.</p>	<p>Proposed Action would be visible along 18 miles of the 21 miles of the Oregon NHT within analysis area. From the Oregon NHT, Proposed Action would be visually dominant and create high contrast. Five high or moderate magnitudes of impact on historic and cultural resources. Six high or moderate magnitudes of impact on historic and cultural setting.</p>	<p>Approximately 100% of scenic quality B landscapes would be impacted and 94% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 22% of scenic quality C landscapes would be impacted. From 9 out of the 11 stationary platforms, Alder Creek Road, I-84, Powder River ACEC, and SR 203, the alternative would either not be visible or would create negligible or low contrast. From 2 out of the 11 stationary platforms, the Snake River—Mormon Basin Back Country Byway, Goodale’s Cutoff Study Trail, Oregon NHT, Hells Canyon Scenic Byway, and the Oregon Trail ACEC, the alternative would be visually prominent and create moderate contrast. Alternative would not meet BLM VRM Class III (20 acres).</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none known. Special status species – long-term low impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – none present. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Follows existing 230 kV transmission line for 15 miles.</p>	<p>Oregon Trail ACEC and NHOTIC would be indirectly affected (visual impacts).</p>	<p>87% of the Oregon NHT and 75% of the Goodale’s Cutoff Study Trail within the analysis area would have views of project components. Equivalent section of the Proposed Action would cross Oregon NHT 1 time and would cross Goodale’s Cutoff Study Trail 2 times. High and moderate magnitudes of impact on visual resources from 17.2 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. Fourteen impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Flagstaff Alternative (15.0 miles; 0.3 miles on BLM lands, 14.7 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts (577 acres of PPH affected). Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts—moderate.</p>	<p>Alternative would be visible along 10 miles of the 20 miles of the Oregon NHT within analysis area. Five high or moderate magnitudes of impact on historic and cultural resources. Six high or moderate magnitudes of impact on historic and cultural setting.</p>	<p>Approximately 20% of scenic quality B landscapes would be impacted. Approximately 13% of scenic quality C landscapes would be impacted. From 10 out of the 11 stationary platforms, Alder Creek Road, Elkhorn, Hells Canyon, Journey Through Time, Scenic Byways, Goodale’s Cutoff Study Trail, Oregon NHT, Snake River-Mormon Basin Back Country Byway, Oregon Trail and Powder River ACECs, I-84, and SR-203, the alternative would either not be visible or would create negligible low contrast. From 1 out of the 11 stationary platforms (5-32 Oregon Trail Kiwaynis Club Memorial), the alternative would be visually prominent and create moderate contrast. BLM VRM compliance were not determined because of absence of identified sensitive platforms on BLM administered lands within the analysis area.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none known. Special status species – long-term low impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – none present. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.</p>	<p>Oregon Trail ACEC and NHOTIC would be indirectly affected (visual impacts).</p>	<p>47% of the Oregon NHT and 22% of the Goodale’s Cutoff Study Trail within the analysis area would have views of project components. Alternative would cross Oregon NHT 1 time and would not cross the Goodale’s Cutoff Study Trail. High and moderate magnitudes of impact on visual resources from 1.4 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. Four impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Proposed Action section equivalent to Burnt River Mountain Alternative (16.8 miles; 6.3 miles on BLM lands, 10.5 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts Construction impacts—moderate.</p>	<p>Alternative would be visible along 20 miles of the 31 miles of the Oregon NHT within analysis area. Prehistoric and historic sites present in the vicinity. Three high or moderate magnitudes of impact on historic and cultural resources. Six high or moderate magnitudes of impact on historic and cultural setting. Moderate short-term impacts; low long-term impacts.</p>	<p>Approximately 100% of scenic quality B landscapes would be impacted and 34% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 100% of scenic quality C landscapes would be impacted. From the 15 of the 16 stationary platforms, I-84, Grande Tour Route, Powder River Wild and Scenic River Corridor, SR 203 and the Powder River ACEC, the alternative would either not be visible or would create low contrast. From 1` of the 16 stationary platforms (NHOTIC Entrance SR 86), Alder Creek Road, Manning Creek Road, and Oregon Trail ACEC, alternative would be visually prominent and create moderate contrast. From the Snake River—Mormon Basin Back Country Byway, Goodale's Cutoff Study Trail, Hells Canyon Scenic Byway, and the Oregon NHT, alternative would be visually dominant and create high contrast. Equivalent section of the Proposed Action would meet VRM Class III and IV.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Follows existing 138 kV transmission line for approximately 10 miles.</p>	<p>Would avoid special designation areas.</p>	<p>65% of the Oregon NHT within the analysis area would have views of project components. Equivalent section of the Proposed Action would cross Oregon NHT 2 times. Proposed Action equivalent sections would not be visible from the Meek Cutoff Study Trail. High and moderate magnitudes of impact on visual resources from 5.2 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. Twelve impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Burnt River Mountain Alternative (16.8 miles; 4.6 miles on BLM lands, 12.2 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts (655 acres of PPH affected). Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts Construction impacts—moderate.</p>	<p>Alternative would be visible along 22 miles of the 31 miles of the Oregon NHT within analysis area. Rattlesnake Spring Oregon Trail Landmark, prehistoric sites in vicinity. No high or moderate magnitudes of impact on historic and cultural resources. Six high or moderate magnitudes of impact on historic and cultural setting.</p>	<p>Approximately 22% of scenic quality B landscapes would be impacted and 12% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 79% of scenic quality C landscapes would be impacted. From the 3 of the 4 stationary platforms, Manning Creek Road, and Snake River—Mormon Basin Back Country Byway, the alternative would either not be visible or would create low contrast. From I-84, the alternative would be visually prominent and create moderate contrast. From 1 stationary KOP (Oregon Trail Crossing-Weatherby), Oregon Trail ACEC, and the Oregon NHT, alternative would be visually dominant and create high contrast. Alternative would meet VRM Class III.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term low to moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term moderate impacts; long-term low to moderate impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term moderate impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Follows existing 69 kV transmission line for approximately 5 miles.</p>	<p>Would avoid special designation areas.</p>	<p>71% of the Oregon NHT and 50% of the Meek Cutoff Study Trail within analysis area would have views of project components. Alternative would cross Oregon NHT 2 times and would not cross the Meek Cutoff Study Trail. High and moderate magnitudes of impact on visual resources from 2.0 miles of Oregon NHT segments on BLM-administered lands associated with perceived scale and degree of contrast. Nine impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
Segment 4—Brogan Area								
<p>Proposed Action section equivalent to Willow Creek and Tub Mountain South Alternatives (34.4 miles; 19.4 miles on BLM lands, 12.0 miles on private lands, 3.0 miles on state lands)</p>	<p>Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible along 5 miles of the 13 miles of the Oregon NHT within analysis area for Willow Creek equivalent section of the Proposed Action and 8 miles of 14 miles for the Tub Mountain South equivalent section. No high or moderate magnitudes of impact on historic and cultural resources. No high or moderate magnitudes of impact on historic and cultural setting. Short- and long-term low impacts.</p>	<p>Approximately 89% (Willow Creek) and 85% (Tub Mountain) of scenic quality B landscapes would be impacted and 49% (Willow Creek) and 47% (Tub Mountain) would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 83% (Willow Creek) and 85% (Tub Mountain) of scenic quality C landscapes would be impacted. From the 3 stationary platforms, I-84, Snake River-Mormon Basin Back Country Byway, and the Oregon NHT the alternative would either not be visible or would create low contrast. From US 26, the alternative would be visually prominent and create moderate contrast. Equivalent section of the Proposed Action would meet VRM Class IV.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term high impacts; long-term moderate to high impacts. Listed species – none known. Special status species – long-term moderate impacts. Noxious weeds – short-term high impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.</p>	<p>Would avoid special designation areas.</p>	<p>38% of the Oregon NHT within the Proposed Action analysis area would have views of project components for Willow Creek equivalent section of the Proposed Action and 55% for the Tub Mountain South equivalent section. Proposed Action equivalent section of the Tub Mountain South Alternative would not be visible from the Goodale's Cutoff or Meek Cutoff Study Trails. Equivalent section of the Proposed Action would not cross Oregon NHT. No high or moderate magnitudes of impact on visual resources to Oregon NHT trail segments on BLM-administered lands. No impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Willow Creek Alternative (28.8 miles; 14.5 miles on BLM lands, 14.3 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible along 9 miles of the 20 miles of the Oregon NHT within analysis area. Two high or moderate magnitudes of impact on historic and cultural resources. Two high or moderate magnitudes of impact on historic and cultural setting.</p>	<p>Approximately 98% of scenic quality B landscapes would be impacted and 34% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 99% of scenic quality C landscapes would be impacted. From the 3 stationary platforms, I-84, Snake River-Mormon Basin Back Country Byway, and Oregon NHT, the alternative would either not be visible or would create low contrast. From US 26, the alternative would be visually prominent and create moderate contrast. BLM VRM compliance were not determined because of absence of identified sensitive platforms on BLM-administered lands within the analysis area.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term high impacts; long-term moderate to high impacts. Listed species – none known. Special status species – long-term moderate impacts. Noxious weeds – short-term high impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.</p>	<p>Would avoid special designation areas.</p>	<p>45% of the Oregon NHT and 65% of the Goodale’s Cutoff Study Trail within analysis area would have views of project components. Alternative would not cross Oregon NHT or the Goodale’s Cutoff Study Trail. No high or moderate magnitudes of impact on visual resources to Oregon NHT trail segments on BLM-administered lands. Four impacts "adverse to the nature and purpose and primary uses" of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Tub Mountain South Alternative (34.7 miles; 25.6 miles on BLM lands, 9.1 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible along 28 miles of the 38 miles of the Oregon NHT within analysis area. Eight high or moderate magnitudes of impact on historic and cultural resources. Two high or moderate magnitudes of impact on historic and cultural setting.</p>	<p>Approximately 93% of scenic quality B landscapes would be impacted and 6% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 100% of scenic quality C landscapes would be impacted. From the 11 stationary platforms and Snake River—Mormon Basin Back Country Byway, the alternative would either not be visible or would create low contrast. From I-84, Goodale’s Cutoff Study Trail,, US 26, and the Oregon Trail—Tub Mountain ACEC, the alternative would be visually prominent and create moderate contrast. From the Oregon Trail—Birch Creek ACEC and the Oregon NHT, alternative would be visually dominant and create high contrast. Alternative would not meet BLM VRM Class III (112 acres).</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas – short-term high impacts; long-term moderate to high impacts. Listed species – none known. Special status species – long-term moderate impacts. Noxious weeds – short-term high impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way Follows WWE corridor for approximately 8 miles.</p>	<p>Would parallel Oregon Trail ACEC for approximately 9 miles.</p>	<p>75% of the Oregon NHT and 27% of Goodale’s Cutoff Study Trail within analysis area would have views of project components. Alternative would cross Oregon NHT 2 times and would not cross Goodale’s Cutoff Study Trail. Alternative would not be visible from the Meek Cutoff Study Trail. High and moderate magnitudes of impact on visual resources from 4.2 miles of trail segments on BLM-administered lands associated with perceived scale and degree of contrast. Thirteen impacts “adverse to the nature and purpose and primary uses” of the Oregon NHT on BLM-administered lands.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
Segment 5—Malheur								
Proposed Action compared to Double Mountain Alternative (7.4 miles; 1.2 miles on BLM lands, 6.2 miles on private lands)	Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term moderate impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.	Would potentially affect fewer cultural sites than the Double Mountain Alternative. Short- and long-term low impacts.	Approximately 0% of scenic quality B landscapes would be impacted. Approximately 18% of scenic quality C landscapes would be impacted. From 1 of 3 stationary platforms (Broken Rim Wilderness Inventory Unit- Hoo Doo Road North) and US 20, the alternative would either not be visible or would create low contrast. From 2 of 3 stationary platforms, the alternative would be visually prominent and create moderate contrast. Alternative would meet BLM VRM Class IV.	Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas long-term moderate to high impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term high impacts; long-term low impacts.	Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.	Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.	None.	Equivalent section of the Proposed Action would not be visible from the Oregon NHT.
Double Mountain Alternative (7.4 miles, all on BLM lands)	Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term moderate impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.	Would potentially affect more cultural sites than Proposed Action. Short- and long-term low impacts.	Approximately 0% of scenic quality B landscapes would be impacted. Approximately 88% of scenic quality C landscapes would be impacted. From 1 of 3 stationary platforms (Broken Rim Wilderness Inventory Unit- Hoo Doo Road North) and US 20, the alternative would either not be visible or would create low contrast. From 2 of 3 stationary platforms, the alternative would be visually prominent and create moderate contrast. Alternative would meet BLM VRM Class IV.	Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas long-term moderate to high impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term high impacts; long-term low impacts.	Listed and candidate species – none present. Special status species – none present. Protected fish habitat – none present.	Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way.	Crosses 4.6 miles of inventory unit with wilderness characteristics.	Alternative would not be visible from Oregon NHT.

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Proposed Action section comparable to Malheur S and Malheur A Alternatives (30.5 miles; 23.7 miles on BLM lands, 0.4 miles on Reclamation lands, 6.4 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term moderate impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible along 10 miles of the 12 miles of the Oregon NHT within analysis area. Would affect fewer cultural sites than the alternatives, new survey shows many new sites. All routes will impact cultural. Short- and long-term low impacts.</p>	<p>Approximately 0% of scenic quality A landscapes would be impacted. Approximately 65% of scenic quality B landscapes would be impacted and 5% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 36% of scenic quality C landscapes would be impacted. From 9 of the 12 stationary platforms, Meek’s Cutoff Study Trail, and the Oregon NHT, the alternative would either not be visible or would create low contrast. From 3 of the 12 stationary platforms, Owyhee River Canyon Entry Road, and Owyhee Below Dam ACEC, the alternative would be visually prominent and create moderate contrast. From Mitchell Butte Road and US 20, the alternative would be visually dominant and create high contrast. Alternative would meet BLM VRM Classes III and IV.</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas long-term moderate to high impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term high impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Follows Vale District utility corridor for approximately 13 miles.</p>	<p>Passes within 1/4 mile of Owyhee Below the Dam ACEC.</p>	<p>86% of the Oregon NHT and 33% of the Meek Cutoff Study Trail within analysis area would have views of project components. Equivalent section of the Proposed Action would not cross Oregon NHT or the Meek Cutoff Study Trail.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Malheur S Alternative (33.7 miles; 32.5 miles on BLM lands, 0.1 miles on Reclamation lands, 1.1 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term moderate impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible along 2 miles of the 3 miles of the Oregon NHT within analysis area. Would potentially affect more cultural sites than Proposed Action; Owyhee Dam National Register listed, setting already compromised. Short- and long-term low impacts.</p>	<p>Approximately 6% of scenic quality A landscapes would be impacted. Approximately 82% of scenic quality B landscapes would be impacted and 37% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 96% of scenic quality C landscapes would be impacted. From 10 of the 17 stationary platforms, Meek Cutoff Study Trail, Mitchell Butte Road, Owyhee Views ACEC, Wild Horse Basin WSA (OR-034-118), Class I VRM surrounding Owyhee Lake, and the Oregon NHT, the alternative would either not be visible or would create low contrast. From 4 of the 17 stationary platforms, Owyhee River Canyon Entry Road, US 20, and Owyhee Below Dam ACEC, the alternative would be visually prominent and create moderate contrast. From 3 of the 17 stationary platforms (Sourdough Mountain Wilderness Inventory Unit-Twin Springs Road, Double Mountain Wilderness Inventory Unit—Negro Rock Creek South, and Burnt Mountain Wilderness Inventory Unit), alternative would be visually dominant and create high contrast. Alternative would not meet BLM VRM Class II (23 acres).</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas long-term moderate to high impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term high impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way. Follows Vale District utility corridor and existing transmission line for approximately 7 miles.</p>	<p>Passes through approximately 1.5 miles of the Owyhee Below the Dam ACEC; Crosses wild and scenic suitable river segment.</p>	<p>68% of the Oregon NHT and 44% of the Meek Cutoff Study Trail within analysis area would have views of project components. Alternative would not cross Oregon NHT or the Meek Cutoff Study Trail.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
<p>Malheur A Alternative (33.2 miles, 31.2 miles on BLM lands, 0.5 miles on Reclamation lands, 1.5 miles on private lands)</p>	<p>Greater Sage-Grouse - long-term high impacts. Columbia spotted frog - long-term moderate impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.</p>	<p>Alternative would be visible for less than 0.2 miles of the 3 miles of the Oregon NHT within analysis area. Would affect more cultural sites than Proposed Action; Owyhee Dam National Register listed, setting already compromised, All routes will impact cultural. Short- and long-term low impacts.</p>	<p>Approximately 0% of scenic quality A landscapes would be impacted. Approximately 47% of scenic quality B landscapes would be impacted and 36% would be impacted to the degree that the scenic quality rating would drop to a scenic quality C landscape. Approximately 57% of scenic quality C landscapes would be impacted. From 9 of the 16 stationary platforms, Meek’s Cutoff Study Trail, Mitchell Butte Road, Owyhee Views ACEC, Wild Horse Basin WSA (OR-034-118), Class I VRM surrounding Owyhee Lake, Owyhee Views ACEC, and the Oregon NHT, the alternative would either not be visible or would create low contrast. From 3 of the 16 stationary platforms, Owyhee River Canyon Entry Road, and US 20, the alternative would be visually prominent and create moderate contrast. From 4 of the 16 stationary platforms (Sourdough Mountain Wilderness Inventory Unit-Twin Springs Road, Double Mountain Wilderness Inventory Unit—Negro Rock Creek South, Burnt Mountain Wilderness Inventory Unit, Lower Owyhee River Site H2), and Owyhee Below Dam ACEC, the alternative would be visually dominant and create high contrast. Alternative would not meet BLM VRM Class II (79 acres).</p>	<p>Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – long-term low impacts. Wetlands and riparian areas long-term moderate to high impacts. Listed species – none known. Special status species – long-term high impacts. Noxious weeds – short-term high impacts; long-term low impacts.</p>	<p>Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.</p>	<p>Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. No designated corridors or parallel rights-of-way. Follows Vale District utility corridor and existing transmission line for approximately 13 miles.</p>	<p>Passes through approximately 2.3 miles of the Owyhee Below the Dam ACEC; Crosses wild and scenic suitable river segment.</p>	<p>6% of the Oregon NHT and 44% of the Meek Cutoff Study Trail within analysis area would have views of project components. Alternative would not cross Oregon NHT or the Meek Cutoff Study Trail.</p>

Alternative	Wildlife Resources	Cultural and Historical Resources	Visual Resources	Vegetation Resources	Fish Resources	Land Use, Agriculture, Corridors	Special Management Considerations	National Historic Trails and Study Trails
Segment 6—Treasure Valley								
Proposed Action (23.7 miles; 19.2 miles on BLM lands, 2.8 miles on state and municipal lands, 1.7 miles on private lands)	Greater Sage-Grouse - long-term high impacts. Special status species – Long-term moderate impacts. Migratory birds and raptors – long-term moderate impacts. Big game – long-term moderate impacts.	Alternative would be visible for less than 14 miles of the 19 miles of the Oregon NHT within analysis area. Short- and long-term low impacts.	Impacts to the visual resources associated with the Proposed Action in Segment 6 are included in the overall impact analysis for the Proposed Action.	Grasslands – short-term low impacts. Shrublands – long-term moderate impacts. Forests – none present. Wetlands and riparian areas long-term moderate impacts. Listed species – none known. Special status species – none known. Noxious weeds – short-term high impacts; long-term low impacts.	Listed and candidate species – none present. Special status species – short-term moderate impacts; long-term low impacts. Protected fish habitat – none present.	Land use – Moderate short term impacts, low long-term impacts. Agriculture - Moderate short term impacts, low long-term impacts. Follows WWE corridor for 23.7 miles.	Would avoid special designation areas.	74% of the Oregon NHT within analysis area in Segment 6 would have views of project components. Proposed Action would not cross Oregon NHT in Segment 6.

1 Table Abbreviations: ACEC = area of critical environmental concern; NHT = national historic trail; PPH = preliminary priority habitat; VRM = Visual Resource Management.