

EXHIBIT L – Application for Site Certificate

PROTECTED AREAS

OAR 345-021-0010(1)(1)

REVIEWER CHECKLIST

(L) Exhibit L. Information about the proposed facility’s impact on protected areas, providing evidence to support a finding by the Council as required by OAR 345-022-0040, including:

Rule Sections	Section	✓
(A) A list of the protected areas within the analysis area showing the distance and direction from the proposed facility and the basis for protection by reference to a specific subsection under OAR 345-022-0040(1).	L.2	
(B) A map showing the location of the proposed facility in relation to the protected areas listed in OAR 345-022-0040 located within the analysis area.	L.3	
(C) A description of significant potential impacts of the proposed facility, if any, on the protected areas including, but not limited to, potential impacts such as: (i) Noise resulting from facility construction or operation; (ii) Increased traffic resulting from facility construction or operation; (iii) Water use during facility construction or operation; (iv) Wastewater disposal resulting from facility construction or operation; (v) Visual impacts of facility structures or plumes. (vi) Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.	L.4	

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L.1 INTRODUCTION

Obsidian Solar Center LLC (Applicant) proposes to construct the Obsidian Solar Center (Facility) in Lake County, Oregon, with an alternating current generating capacity of up to 400 megawatts. Please refer to Exhibit B for Facility layout information and Exhibit C for Facility location information.

Exhibit L addresses the potential impacts of the proposed Facility on protected areas within the analysis area, which the Project Order defines as the area within the site boundary (as defined in Exhibit B) and 20 miles from the site boundary. This exhibit provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(I): *Information about the proposed facility's impact on protected areas, providing evidence to support a finding by the Council as required by OAR 345-022-0040.*

As described in Exhibit B, this Application for Site Certificate analyzes the potential impacts from two design scenarios: a stand-alone photovoltaic (PV) solar power generation build-out, and a PV solar power generation plus battery storage build-out. This exhibit analyzes the PV plus storage design scenario (with battery enclosures dispersed across the Facility site), which will likely have a greater potential impact on protected areas than stand-alone PV, due to the larger footprint and inclusion of numerous battery storage enclosures.

Executive Summary

The analysis provided in this exhibit describes how the design, construction, and operation of the Facility, taking into account mitigation, are not likely to result in significant adverse impacts on protected areas. Using the criteria included in OAR 345-022-0040(1), seven protected areas were identified in the analysis area, the closest of which is the Devil's Garden Lava Bed Area of Critical Environmental Concern (ACEC), located approximately 4 miles from the closest portion of the Facility site boundary. As described below, the impacts on protected areas within the analysis area will be less than significant.

Applicant does not propose any specific conditions of approval pertaining to protected areas for the Site Certificate.

L.2 LIST OF PROTECTED AREAS

OAR 345-021-0010(1)(I)(A) *A list of the protected areas within the analysis area showing the distance and direction from the proposed facility and the basis for protection by reference to a specific subsection under OAR 345-022-0040(1).*

Response: Table L-1 lists all the areas that qualify as protected areas within the 20-mile analysis area per OAR 345-022-0040(1). Applicant used the following resources to identify the protected areas in Table L-1:

- Bureau of Land Management (BLM; 2000, 2003a, 2003b, n.d.[a], n.d.[b], n.d.[c], n.d.[d])
- National Park Service. (n.d.)
- Oregon Department of Fish and Wildlife (2016, n.d.)
- Oregon Legislature (2017)
- Oregon Parks and Recreation Department (n.d.)
- Oregon State University, Department of Animal and Rangeland Sciences (OSU n.d.)
- Oregon State University, Register of Natural Heritage Resources (OSU 2015)
- Oregon Wild (n.d.[a], n.d.[b])
- U.S. Forest Service (n.d. [a], n.d.[b], 2013)
- U.S. Fish and Wildlife Service (n.d., 2015)
- Wilderness Connect (n.d.)

Table L-1 Protected Areas within the Analysis Area

Name	Distance and Direction from Site Boundary ^(a)	Managing Agency	Basis for Protection under OAR-354-022-0040 (subsection)
Devil’s Garden Lava Bed Area of Critical Environmental Concern	4.0 miles north	BLM	(o) BLM Area of Critical Environmental Concern
Connley Hills Area of Critical Environmental Concern/Research Natural Area	5.3 miles southwest	BLM	(o) BLM Area of Critical Environmental Concern and Research Natural Area
Table Rock Area of Critical Environmental Concern/Research Natural Area	6.9 miles south	BLM	(o) Area of Critical Environmental Concern
Fort Rock State Natural Area	9.2 miles northwest	OPRD	(i) State Natural Heritage Areas
Black Hills Area of Critical Environmental Concern/Research Natural Area	9.7 miles southeast	BLM	(o) BLM Area of Critical Environmental Concern and Research Natural Area
Lost Forest/Sand Dunes/Fossil Lake Area of Critical Environmental Concern	14.4 miles east	BLM	(o) Area of Critical Environmental Concern

Table L-1 Protected Areas within the Analysis Area

Name	Distance and Direction from Site Boundary ^(a)	Managing Agency	Basis for Protection under OAR-354-022-0040 (subsection)
Summer Lake Wildlife Area	19.0 miles south	ODFW	(p) State wildlife areas

Notes:

(a) Approximate distance from the closest point of the site boundary to the closest point of the protected area.

Key:

BLM = Bureau of Land Management

OAR = Oregon Administrative Rules

ODFW = Oregon Department of Fish and Wildlife

OPRD = Oregon Parks and Recreation Department

L.3 LOCATIONS OF PROTECTED AREAS

OAR 345-021-0010(1)(I)(B) *A map showing the location of the proposed facility in relation to the protected areas listed in OAR 345-022-0040 located within the analysis area.*

Response: Figure L-1 depicts the protected areas within the analysis area.

L.4 POTENTIAL IMPACTS

OAR 345-021-0010(1)(I)(C) *A description of significant potential impacts of the proposed facility, if any, on the protected areas including, but not limited to, potential impacts such as: (i) Noise resulting from facility construction or operation; (ii) Increased traffic resulting from facility construction or operation; (iii) Water use during facility construction or operation; (iv) Wastewater disposal resulting from facility construction or operation; (v) Visual impacts of facility structures or plumes; (vi) Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.*

Response: The subsections below describe the anticipated impacts due to noise, traffic, water use and wastewater disposal from Facility construction and operation; visual impacts due to Facility structures and/or plumes; and visual impacts due to Facility emissions.

L.4.1 Potential Noise Impacts

(i) Noise resulting from facility construction or operation;

During Construction

Noise produced during the construction of the Facility will be temporary and short term, and limited to relatively small portions of the Facility site at any given time, as construction will

primarily be concentrated on 60-acre areas at a time. Noise produced during operation will primarily originate from transformers and inverters; however, these noise levels will be very low, as further described below.

During Operation

The closest protected area to the Facility is the Devil's Garden Lava Bed ACEC, which is approximately 4.0 miles to the north of the closest portion of the site boundary. Other protected areas are 5.3 miles to over 19 miles from the site boundary. Given the relatively large distance to the nearest protected area (i.e., 4 miles), the sound levels at protected areas in the analysis area during operation of the Facility should be low or negligible. The noise levels are expected to be comparable to the existing noise levels in those areas. Therefore, there will be no significant impacts on protected areas in the analysis area from operation of the Facility. While construction noise is exempt from Oregon Department of Environmental Quality rules, noise from construction is also not expected to result in a significant adverse impact on protected areas, which are all 4 miles away, or farther, under the protected areas standard. Refer to Exhibit X for more information regarding expected noise levels.

L.4.2 Potential Traffic Impacts

(ii) Increased traffic resulting from facility construction or operation;

During Construction

Traffic in the analysis area will temporarily increase during construction of the Facility due to materials deliveries and personnel accessing the Facility site. During average, non-peak construction periods, the site is expected to employ between 60 and 120 workers daily. During peak construction periods, the site is expected to employ an average of up to 150 workers daily. Peak construction is expected to occur during year two of construction. Based on a carpool factor of 1.25 persons per vehicle, approximately 96 two-way (or 192 one-way) passenger vehicle trips will be made to the site per day during non-peak construction periods. During peak construction periods, when up to 150 workers per are expected, approximately 120 two-way (or 240 one-way) vehicle trips will be made to the site per day. In addition, 20 to 40 truckloads per day are expected for delivery of materials, such as PV solar panels, racks, and posts for panels. Based on a 10-hour work day, this will result in an average of two to four deliveries per hour, or an average of 60 one-way delivery truck trips (30 in and 30 out of the Facility) per day. Expected Facility access routes are identified in Exhibit U, Appendix U-1.

The primary transportation routes to the Facility site during construction will be from areas to the west of the Facility site, using US-97 and State Route-31 (SR-31) to reach the Christmas Valley area, and then a network of two-lane county roads to reach parts of the Facility site, including Fort Rock Road (County Road 5-10), Christmas Valley Road (County Highway 5-14), and County Road 5-12. It is possible that some commuters to the Facility will use other routes to

access the Facility, such as the portion of County Highway 5-14 heading south toward Silver Lake and Summer Lake, but the numbers are expected to very low.

There is potential for increases in traffic on nearby roads to result in direct impacts on protected areas, including impacts from traffic-related noise or visual impacts. However, the closest protected area to an identified Facility access route is the Fort Rock State Natural Area, which is 1.0 mile north of Fort Rock Road. All other protected areas are at least 1.7 miles or farther from the closest identified Facility access route. At these distances, the potential noise or visual impacts from the anticipated increases in traffic will not result in significant direct adverse impacts on protected areas in the analysis area.

Indirect impacts on protected areas could potentially occur as impacts on visitor access to these sites due to increases in traffic. Most traffic by potential visitors to the identified protected areas will use US-97, SR-31, Fort Rock Road, Christmas Valley Road, and portions of County Road 5-12 before diverting to smaller roads that will not be used by Facility personnel. As described in the Traffic Safety Assessment (Exhibit U, Appendix U-1), the anticipated increases in traffic levels associated with both the construction and operation of the Facility are within the capacities of the aforementioned roadways, which will be used to access the Facility site. In addition, the expected traffic increases will largely be temporary, i.e., during the construction phase, as the expected traffic during Facility operation will be very low. Therefore, significant impacts to existing traffic levels on these routes—including to visitor access to the protected areas—are not likely.

Fort Rock State Natural Area is the closest protected area to an identified Facility access route, at 1.0 mile north of Fort Rock Road. Visitors to this protected area and Facility personnel will both use SR-31 and Fort Rock Road. As stated above (and in Exhibit U), the expected increases in traffic are well within the operating capacities of these roads. Therefore, significant adverse impacts on visitor access to this protected area are not likely.

Devil's Garden Lava Bed ACEC is the second closest protected area to an identified Facility access route, at 1.7 miles north of County Road 5-12 (one of the access routes to Facility Area A). The main attraction within Devil's Garden Lava Bed ACEC is Derrick Cave, which is located over 10 miles north of County Road 5-12 (refer to Section L.4.5.1 for a description of Derrick Cave). There is no indication that Devil's Garden Lava Bed ACEC, nor Derrick Cave, are heavily visited destinations. Visitors to this protected area and Facility personnel will use SR-31, Fort Rock Road, and County Road 5-12. As stated above, the expected increases in traffic are well within the operating capacities of these roads. Therefore, significant adverse impacts on visitor access to this protected area are not likely.

Table Rock ACEC/Research Natural Area (RNA) is the third closest protected area to an identified Facility access route, at 2.5 miles south of Christmas Valley Road. Paved County Highway 5-14 borders the western boundary of Table Rock, and Shotgun Pass Lane diverts from

County Highway 5-14 to the east, providing access into Table Rock ACEC/RNA. County Highway 5-14 is not an identified Facility access route. It is possible that recreationalists traveling from the north to Table Rock may use some of the same roads as construction personnel, such as SR-31 and Fort Rock Road, but there is no indication that Table Rock is a heavily visited destination. Therefore, significant adverse impacts on visitor access to this protected area are not likely.

Connley Hills ACEC/RNA is the fourth closest protected area to an identified Facility access route, at 2.9 miles west of Fort Rock Road. Based on Google Earth imagery, it appears that from Fort Rock Road, the Connley Hills ACEC/RNA may be accessible using smaller, unpaved roads, including segments of County Road 5-13, 5-10C, or 5-10D (GoogleEarth 2014). Visitors to this ACEC/RNA and Facility personnel will use Fort Rock Road; however, Facility personnel will not use these segments of County Road 5-13, 5-10C, or 5-10D. As stated above, the expected increases in traffic on Fort Rock Road is well within the operating capacities of this road. Therefore, significant adverse impacts on visitor access to this protected area are not likely. All other protected areas in the analysis area are at least 6.2 miles away (i.e., Black Hills ACEC/RNA), or farther, from identified Facility access routes. As with the other protected areas, except for the Fort Rock State Natural Area, there is no indication that these protected areas are heavily visited destinations. Visitors to these protected areas and Facility personnel may use some of the same roads, including SR-31, Fort Rock Road, and Christmas Valley Road. As stated above, the expected increases in traffic on these roads are well within the capacity of the roads that will be used by both the visitors to this protected area and by Facility personnel. Therefore, significant adverse impacts on visitor access to these protected areas are not likely.

In summary, there will be no significant adverse impacts on protected areas as a result of increased traffic to the Facility during construction.

During Operation

During operation, 6 to 10 full-time employees will be employed for operation and maintenance of the Facility, which will result in 6 to 10 daily two-way trips to the Facility. In addition, truck deliveries will occur infrequently (i.e., only as needed) during operation for delivery of equipment or materials. These small increases in traffic are not expected to result in substantial direct adverse impacts on this protected area, such as potential noise or visual impacts. The additional vehicle trips due to operation employees accessing the Facility and infrequent truck deliveries will be minimal, and they are not expected to affect visitor access to the protected areas. Therefore, Applicant does not expect significant adverse impacts on visitor access to this protected area as a result of operations and maintenance.

L.4.3 Potential Impacts from Water Use

(iii) Water use during facility construction or operation;

There is no indication that any of the protected areas rely on water supply that could be affected by the Facility. The nearest protected area (Devil’s Garden Lava Bed ACEC) is 4.0 miles from the site boundary, and the remaining protected areas are 5.3 miles to over 19 miles away. The primary sources of water will be one or two wells dug on site, which together will provide up to 5,000 gallons of water per day. If more water is needed, Applicant will purchase it from a private or municipal source that has the necessary permits. Refer to Exhibit O for more details on available water sources and volumes.

During Construction

During construction, Applicant estimates that 17,234,000 gallons (or 52.89 acre-feet) of water will be used over a two-year construction period, under annual average conditions, or 34,300,000 gallons (or 105.26 acre-feet) under the worst-case conditions. These estimates are based on up to 250 construction workdays per year, with about 34,300 gallons of water per day being used under average work conditions, and 68,600 gallons per day being used under worst-case conditions. These estimates also account for water needed for dust abatement activities on up to 115 “non-construction days” per year, on which 5,000 gallons per day will be used under average conditions, and 10,000 gallons per day will be used under worst-case conditions.

Applicant’s use of water during construction will be primarily for dust control, for fire suppression, and, to a lesser extent, for washing of equipment and vehicles (i.e., washing concrete trucks after delivery of concrete). Water will primarily be purchased from private sources, or from a municipality, both of which already have the permits and water rights to the sources of water. In addition, Applicant plans to dig up to two wells on-site, which will each provide up to 5,000 gallons of water per day. Water needed in excess of this amount will be obtained from existing municipal sources. Because water will be sourced from on-site permit-exempt wells and existing municipal sources, water use during construction will not result in significant adverse impacts on any protected areas within the analysis area.

During Operation

During operation, Applicant expects to use approximately 405,000 gallons of water per year for solar panel washing. Applicant will either use a portable toilet and hand wash station service from a local licensed vendor or install an on-site septic system up to two operations and maintenance buildings for bathroom facilities. If Applicant opts to install the on-site septic system, sewage flow will be less than 2,500 gallons per day (i.e., enough to support a workforce of up to 20 personnel for 350 days per year), resulting in up to 875,000 gallons of additional water use per year. The primary source of water for operation will be the on-site wells with a 5,000-gallon daily withdrawal limit. Water needed in excess of this amount will be obtained from existing municipal sources. Because water will be sourced from on-site permit-exempt

wells or existing municipal sources, water use during operation will not have significant adverse impacts on any protected areas within the analysis area.

L.4.4 Potential Impacts from Wastewater Disposal

(iv) Wastewater disposal resulting from facility construction or operation;

During Construction

During construction, water will primarily be used for dust abatement activities. Water used for dust abatement will be sprayed onto the ground and be allowed to infiltrate the soil or evaporate. Watering crews will be instructed to spray water in a manner that does not result in pooling or channelizing (as described in the Erosion and Sediment Control Plan, associated with the National Pollutant Discharge Elimination System 1200-C Permit application; refer to Exhibit I, Appendix I-1). Water used during construction is not expected to produce significant runoff. The topography in the immediate vicinity of the Facility is relatively flat, and there are no significant channels within or leading away from the Facility site (refer to Exhibit J for waters delineations). Considering that the identified nearest protected area is 4 miles from the site boundary, and the other protected areas are 5.3 to 19 miles away, there will be no significant adverse impacts on protected areas due to wastewater disposal during construction. In addition, erosion control best management practices will be implemented during construction of the Facility to limit potential impacts due to erosion, sedimentation, and stormwater runoff. The required permits will be acquired before construction activities commence, including the National Pollution Discharge Elimination System Permit 1200-C Construction Stormwater Permit for stormwater from construction, which will include an Erosion and Sediment Control Plan with measures to reduce erosion. Because wastewater will not be disposed of in or near protected areas, or in a manner that could lead to drainage into protected areas, the Facility will not have impacts on protected areas due to wastewater disposal during construction.

During Operation

During operation, water will primarily be used for solar panel washing. Panel washing water will be allowed to fall to the ground and infiltrate the soil or evaporate. Given the relative flatness of the Facility site and soil conditions, water from panel washing is not anticipated to produce runoff. Considering the nearest protected area is 4.0 miles from the Facility site boundary, adverse impacts on protected areas due to water use during operation should be minimal. The required permits will be acquired before panel washing activities commence, including the General Water Pollution Control Facilities Permit 1700-B for washwater disposal from panels during operation. Therefore, because wastewater will not be disposed of in or near protected areas, or in a manner that could lead to drainage into protected areas, the Facility will not have impacts on protected areas due to wastewater disposal during operation.

Applicant will either use a portable toilet and hand wash station service from a local licensed vendor or install an on-site septic system at the operations and maintenance building for bathroom facilities. If Applicant opts to install the on-site septic system, sewage flow will be less than 2,500 gallons per day, or 875,000 gallons year (enough to support a workforce of up to 20 personnel for 350 days per year), which will be contained on-site. The nearest protected area is 4 miles away, and a potential on-site septic system will be very unlikely to result in impacts on any protected areas. Because sewage during construction will either be handled by a sanitation service, or will be contained in an on-site septic system, there will be no impacts on protected areas from water use related to sewage produced during operation of the Facility.

L.4.5 Potential Visual Impacts from Facility Structures or Plumes

(v) Visual impacts of facility structures or plumes.

Methodology

For this exhibit, Applicant-defined visual impact levels to assess significant potential impacts on views from protected areas, unless otherwise indicated, are as follows:

- **High Impacts:** Typically occur where the Facility components will be dominant or readily apparent from viewing locations frequented by casual users of the resource (i.e., an observer who is not tasked with or trained in observing changes in the landscape—a common citizen). High impacts also may occur in high-quality, diverse, and rare or unique and natural landscapes.
- **Medium Impacts:** Occur where the Facility components will be co-dominant with existing landscape features and moderately apparent from viewing locations frequented by the casual observer. An example of a medium impact will be one in which existing nearby features exhibit form, line, color, and texture similar to the Facility.
- **Low Impacts:** Occur where the Facility components will be subordinate in the landscape and not readily apparent from viewing locations frequented by the casual observer. The subordinate appearance of the Facility may be due to other nearby features appearing more dominant or due to the Facility features resulting in weak contrast and blending in with their surroundings or being largely or fully screened from view. Low impacts will typically result in minimal change to the landscape character.

Medium-high and medium-low impacts will be intermediary between the respective impact levels described above.

Analysis

The only potential plumes associated with the Facility may result from potential fugitive dust during the construction phase. Applicant will reduce or avoid fugitive dust during construction by implementing dust abatement measures during construction, including applying water to

disturbed areas with exposed soils, enforcing speed limits within the site boundary, leaving vegetation root structures in place, and avoiding work during high wind conditions. Therefore, Applicant expects that potential visual impacts on protected areas due to plumes will be low and not rise to the level of significant.

The dimensions of major Facility components considered in the visual analysis include the following:

- Solar PV modules: high edge 7 feet above the ground at full tilt on the tracking axes with modules installed in blocks of approximately 22 acres each.
- Inverter Stations: 8 feet wide by 30 feet long and 5 feet tall. Up to 180 inverters and transformers may be constructed, depending on final designs.
- The 115/500-kilovolt (kV) step-up substation: approximately 3 acres in size and 10 feet in height (with lightning protection of up to 40 feet tall).
- Collector Substation(s): up to four collector substations, each approximately 1 acre in size, and 10 feet in height (with lightning protection of up to 40 feet tall).
- Battery storage enclosures will consist of steel-framed structures that are 50 feet wide by 67 feet long, and up to 30 feet tall. Up to approximately 134 battery storage structures may be constructed, depending on final designs.
- One 115 (kV generation tie (gen-tie) transmission lines, approximately 2 miles long and constructed using steel monopoles approximately 70 feet tall and spaced approximately 300 feet apart.

Based on the PV solar power generation plus battery storage build-out scenario, and the distances of the protected areas from the Facility site boundary, the solar PV modules and the battery storage structures have the most likelihood of being visible from protected areas within the analysis area. Facility components like the 115/500-kV step-up substation, collector substations, and operations and maintenance building(s) will only be present in small numbers (up to four each). Once constructed, the Facility will be located amongst dispersed agricultural buildings, crop circles, and other utility infrastructure. The proposed 115 kV gen-tie transmission line will be subordinate in appearance to the three existing collocated 500 kV transmission lines that bisect the valley and the proposed Facility.

To assess potential visual impacts on protected areas from Facility components, Applicant completed a viewshed analysis (refer to Figure L-2) for the 7-foot-tall solar modules and 30-foot-tall battery storage enclosures, which are the most likely structures that will be visible within the Facility site boundary. The subsections below discuss potential visual impacts by each protected area. Based on the viewshed analysis, portions of all protected areas listed in Table L-1 are within the line-of-sight of the Facility, with the exception of the two that are farthest away: Lost Forest/Sand Dunes/Fossil Lake ACEC and Summer Lake Wildlife Area. For the other protected areas, only some portions (approximately 40 to 50 percent or less) are in the line-of-site of the

Facility. However, the visual impacts on these protected areas will not rise to the level of significant, as is further discussed in the subsections below.

The viewsheds were calculated using the Esri ArcDesktop 10.5.1 geoprocessing tool, 'Visibility.' The Visibility tool uses a digital elevation raster to determine the surface locations that are potentially visible from an aggregated set of "observer points" placed in key parts of a project. For the Facility, it was determined that the solar modules (7 feet tall) and battery storage structures (30 feet tall) in Area A will have the most potential to be observed from distances of several miles or more, due to their forms and abundance on the Facility. Area D will contain a substation (approximately 10-foot tall structures, with thin 40-foot tall lightning protection rods), but no solar modules or battery storage structures; however, to be conservative, the same Facility component types and heights were used in the viewshed analysis for Area D (i.e., 7-foot tall and 30-foot tall structures). As described in Exhibit R, it is unlikely that the proposed 115 kV transmission line will attract the attention of casual observers away from any of the protected areas, which are a minimum of 4 miles away. Therefore, the transmission line was not included in the viewshed analysis. Observer points were created in Areas A and D by manually placing points on or within the site boundary to reflect a representative sample of the Facility. Observer points were placed on all corners/vertices of the site boundary, as well as at the highest point near the centroid of Area A and Area D. As a result, 23 observer points were placed in Area A and 4 in Area C. The input elevation raster was a 10-meter resolution digital elevation model (USGS 2016). The 'Frequency' analysis type was used, which outputs the number of times each cell location in the input surface raster could be seen by the input observation locations. The 'observer offset' parameter (i.e., height above the ground of each observer point) was set to 7 feet and to 30 feet to represent facility structures taller than either 7 or 30 feet from the base elevation identified in the digital elevation model. The viewsheds for each 'observer offset' are shown together in Figure L-2. All other parameters in the Visibility tool were kept at their default value. Note that the viewshed analysis was based only on terrain and observer point heights, and did not take into account features such as trees and structures in the lines-of-sight that may screen views. Therefore, the line-of-sight determinations (i.e., the viewshed analysis) are likely to be slightly less than indicated in Figure L-2 (or Figure R-2).

L.4.5.1 Devil's Garden Lava Bed Area of Critical Environmental Concern

The Devil's Garden Lava Bed ACEC is an area with extremely rugged terrain covered by geologically recent lava flows. It is located 4.0 miles to the north of the Facility site boundary (refer to Figure L-1). The Devil's Garden Lava Bed is a historic basaltic lava field of the Newberry volcano (USGS n.d.). One of the main attractions at Devil's Garden Lava Bed is Derrick Cave, which is located in the northeast portion of the lava bed. There are a number of other lava tube caves within the ACEC but Derrick Cave is the largest and most well-known. The large size of the ACEC, diverse vegetation within the ACEC, and the rugged topography of the ACEC attract visitors to the area (BLM n.d.[b]).

Based on the viewshed analysis (refer to Figure L-2), only about 10 percent of the Facility structures will be in the line-of-sight of the Devil's Garden Lava Bed ACEC. There is varying topography within this ACEC, which will, for the most part, shield the casual observer from views of the Facility, except for areas in the southern portion of the ACEC, or from higher elevation points within the ACEC. However, at distances of 4 miles or greater, the Facility will likely only appear as a dark line on the horizon. The main attraction of the area is the Derrick Cave, which is located over 12 miles north of the site boundary, and will not be in the line-of-sight of the Facility (refer to Figure L-2). This protected area is designated for its natural resource values, including lava tubes, cinder and spatter cones, and botany, and not for its scenic values (BLM 2003b). Nonetheless, Applicant does not expect that the Facility will have significant adverse impacts on the views of these resources. In addition, there is no indication that the BLM designated this area as protected based on scenic value. Therefore, Applicant does not expect significant adverse visual impacts on this protected area from Facility structures or plumes.

L.4.5.2 Connley Hills Area of Critical Environmental Concern/Research Natural Area

The Connley Hills ACEC/RNA is accessible for day use by the public (BLM 2003a). It is located approximately 5.3 miles from the Facility site boundary (refer to Figure L-1). The BLM established this ACEC/RNA due to its outstanding archaeological value, and important botanical and ecological values, specifically, as an important representation of four distinct native ecosystems, including plant communities dominated by mixtures of western juniper (*Juniperus occidentalis*), big sagebrush (*Artemisia tridentata*), bluebunch wheatgrass (*Agropyron spicatum*), and Idaho fescue (*Festuca idahoensis*) (BLM 2000).

Due to the slight increase in elevation from the Facility to the Connley Hills ACEC/RNA, the lack of intervening topography, and the distance between the Facility site boundary and Connley Hills (5.3 miles), the 7-foot-tall and 30-foot-tall Facility structures are likely only to be visible from the eastern portions of the Connley Hills ACEC/RNA. This is confirmed in the viewshed analysis, which shows that only some northern and eastern part of the ACEC/RNA are in the line-of-sight of the Facility (refer to Figure L-2). Although this ACEC/RNA includes a

topographic and vegetation change from the desert terrain in Fort Rock Basin, this protected area does not contain significant scenic value because there are visually similar mountain ranges in the area (BLM 2000). In addition, the most likely viewing directions from the Connley Hills are to the south and west, which offer views of unaltered landscapes where residential and commercial development are limited. Views toward the Facility from Connley Hills ACEC/RNA (i.e., to the northeast) include crop circles and scattered farm residences in the direct vicinity of the Facility, and the developments of the town of Christmas Valley farther to the east. Although the main substation (Area D) and the gen-tie transmission line are 5.3 miles from this ACEC/RNA, the solar arrays and potential battery enclosures of Area A will be 7.2 miles away. Visual impacts on the Connley Hills ACEC/RNA should be medium-low because, although Facility structures will be co-dominant with the existing landscape features, they will not be very apparent from this protected area considering it is located a minimum of 5.3 miles from the Facility site boundary (Area D), but 7.2 miles from Area A. Potential visibility of the Facility will not have any impact on the protected values of this ACEC/RNA, i.e., the significant prehistoric archaeological sites and the four important ecosystems. Therefore, the Facility will not have significant visual impacts on this protected area.

L.4.5.3 Table Rock Area of Critical Environmental Concern/Research Natural Area

Table Rock was designated as an ACEC due to its cultural, botanical, and scenic values. It is located 6.9 miles to the south of the Facility site boundary. This ACEC includes old growth western juniper and two BLM-designated sensitive species (Cusick's buckwheat [*Eriogonum cusickii*] and snow-line cymopterus [*Cymopterus nivalis*]) (BLM 2000). Elevation increases approximately 1,500 feet from the Facility to the summit of Table Rock.

Given its elevation above the surrounding area, the summit of Table Rock is a dominant feature that is visible from most parts of the Christmas Valley area. Based on the viewshed analysis (refer to Figure L-2), Facility components are in the line-of-sight of areas in the northern and eastern portions of the Table Rock ACEC/RNA, including from the summit of Table Rock, and the Facility may be visible from some or all of these locations. Per the BLM (2000), Table Rock possesses regional important scenic value due to its location and visibility from the adjacent portions of the Christmas Valley National Backcountry Byway and the Oregon Outback National Scenic Byway, which pass to the southeast and south of the ACEC/RNA, respectively (refer to Figure L-1). The primary scenic views of the Table Rock ACEC/RNA are the views towards Table Rock from the adjacent portions of the byways (BLM 2000).

From this portion of the Christmas Valley National Backcountry Byway, the view of the Table Rock ACEC/RNA is toward the west and northwest, and not in the northerly direction of the Facility. From this portion of the Oregon Outback National Scenic Byway, the view of this ACEC/RNA will be to the north, which is in the same direction as the Facility; however, any view of the Facility is blocked by Table Rock and other nearby hills. The Facility is not within the line-of-sight from the byways toward Table Rock ACEC/RNA. Therefore, there will be no

visual impacts on views from the byways of this protected area from Facility structures or plumes, based on the views from the adjacent portions of these byways.

However, Table Rock is also designated as a traditional cultural place, and the Facility could potentially have visual impacts on some culturally sensitive locations within the ACEC/RNA. To assess these potential impacts, the BLM's Visual Resource Management (VRM) system (BLM 1986, 2010) was used. This system includes contrast and distance as key considerations in analyzing the visual impacts of proposed projects. Contrast is assessed by comparing changes in form, line, color, and texture produced by a proposed project relative to the existing landscape. Distance is considered important in assessing contrast because contrast generally decreases with viewing distance. The BLM recognizes three primary distance zones: foreground/midground (0 to 3-5 miles¹), background (3-5 miles to 15 miles), and seldom seen (greater than 15 miles or hidden from view).

As indicated on Figure L-2, the Facility would be visible from portions of the Table Rock ACEC/RNA. The solar arrays could be noticeable from these areas as a large rectilinear form punctuated by numerous rectilinear battery storage units that would contrast somewhat in form, line, color, and texture with the surrounding agricultural and natural landscape. The viewshed from the ACEC/RNA facing north includes primarily agricultural lands (e.g., active irrigation circles) with some shrubland areas and scattered development (residences, farm structures, and large transmission lines) for approximately 0-10 miles, and natural landscapes (e.g., hills with juniper woodlands) beyond that. The gen-tie transmission line structures would only be slightly noticeable as a line of regularly-spaced vertical elements in the mostly agricultural landscape. However, because the Facility would be located within the background distance zone, according to the BLM (1986, 2010) VRM system, it would appear co-dominant with or subordinate within the broader landscape, and its contrast would result in only medium-low to low visual impacts. In addition, the gen-tie transmission line (70-foot-tall poles) would be subordinate in appearance to the three existing, taller (approximately 90-foot-tall towers) collocated 500-kV transmission lines that cross the valley and the proposed Facility. Therefore, visual impacts of Facility structures or plumes on areas of frequent use within the ACEC/RNA (e.g., caves, burial sites, rock cairns, hunting and occupation sites, summit) would be medium-low to low for views from the Table Rock ACEC/RNA due to the Facility's distance from the ACEC/RNA and its medium-low to low contrast.

L.4.5.4 Fort Rock State Natural Area

The Fort Rock State Natural Area is located 9.2 miles from the Facility site boundary and is primarily visited for views of the volcanic tuff ring and for short hikes (Oregon Parks and

¹ The midground ends and the background starts between 3 and 5 miles away, depending on site-specific conditions.

Recreation Department n.d.). It includes a parking lot and visitor area on the southeast side of the tuff ring, with information kiosks and picnic areas, and a short trail inside the bottom of the volcanic tuff ring. Additionally, there is a steep hiking trail to the rim of the tuff ring, which offers views of the region. Based on the viewshed analysis (refer to Figure L-2), the Facility components will be in the line-of-sight of portions of this protected area. However, the Facility is likely only to be visible from the southeastern portion of the Fort Rock State Natural Area, including from the rim trail and potentially from lower areas in the southeastern portion of the protected area. Because this protected area is visited primarily for its visual value, and because there are hiking trails present within and to the top of the tuff ring, this analysis considers both the views toward and views from this protected area.

The most likely scenic views of the volcanic tuff ring are in directions oriented away from the Facility site. Specifically, the most likely viewing areas are looking west, north, and east from hiking trails within the bottom of the tuff ring; looking northwest from the parking lot and visitor area or the nearby section of the Christmas Valley National Backcountry Byway; and looking north from the nearby portions of the Oregon Outback National Scenic Byway to the south. All of these views are oriented away from the direction of the Facility (refer to Exhibit R, Figure R-1, for depictions of these byways). There will be no visual impacts on views of this protected area from Facility structures or plumes.

Although the main substation (Area D) and the gen-tie transmission line will be 9.2 miles southeast of this protected area, the solar array and potential battery storage enclosures will be almost 12 miles away (Area A). At these relatively large distances, the Facility will likely appear as just a dark line on the horizon, if it is apparent at all. From the top of the tuff ring, the views to the southwest, northwest, and northeast offer scenic views of the surrounding mountains, hills, lava beds, and cinder cones. Although there is little intervening topography between Fort Rock State Natural Area and the Facility site, the most common land uses on the intervening lands include agriculture (irrigated alfalfa) and developments associated with agriculture operations (large barns) and residences (farm houses). The Facility will also likely appear codominant to the residential and business structures in the nearby community of Fort Rock, as these are located in approximately the same direction as the Facility, but area much closer. Even from the higher elevation of the top of the tuff ring (approximately 300 feet above the surrounding areas), with the Facility components a minimum distance of 9.2 miles away (or almost 12 miles to the solar arrays and potential battery storage enclosures, the Facility will appear co-dominant to other features in the agricultural landscape, and will likely only appear as a small, dark gray area in the distance. Visual impacts from the Facility on views from this protected area will be low. Therefore, the Facility will not have significant adverse visual impacts on this protected area from Facility structures or plumes.

L.4.5.5 Black Hills Area of Critical Environmental Concern/Research Natural Area

This ACEC/RNA is located 9.7 miles from the Facility site boundary (refer to Figure L-1). Per the BLM, this site includes low-lying hills and offers day-use hiking and wildlife viewing (BLM 2000, 2003a, n.d.[a]). This area was designated as an ACEC based on its botanical values, ecologically diverse western juniper community, presence of ash plant communities, and the presence of two BLM-designated sensitive plants within the ACEC (Cusick's buckwheat and snow-line cymopterus; BLM 2000).

Based on the viewshed analysis (refer to Figure L-2), the Facility components will be in the line-of-site of approximately 50 percent of this ACEC/RNA. However, the Facility is unlikely to be very dominant or apparent in the view of the landscape due to the distance (almost 10 miles) of this protected area from the site boundary. At this distance, Facility components will likely be co-dominant with existing landscape features, including scattered ranches and the developments in the town of Christmas Valley, and will be moderately apparent. Therefore, visual impacts on this protected area will be medium-low. In addition, the BLM did not designate this area as protected based on scenic value but rather because of its botanical value (BLM 2000). Due to the distance to the Facility, the Facility will likely appear only as a dark thick line near the horizon and will likely not be noticeable. Therefore, Applicant does not expect significant adverse visual impacts on this protected area from Facility structures or plumes.

L.4.5.6 Lost Forest/Sand Dunes/Fossil Lake Area of Critical Environmental Concern

This ACEC is the largest inland shifting sand dune system in the Pacific Northwest. This area is located 14.4 miles from the Facility site boundary and is a popular site for off-highway vehicle enthusiasts. The BLM designated this an ACEC for its dunes, botanical values, and prehistoric archaeological value, but not for its scenic value (BLM 2003b).

Based on the viewshed analysis (refer to Figure L-2), Facility structures will not be in the line-of-sight from this protected area, and will therefore not be visible from this protected area. Therefore, there will be no visual impacts on this protected area from Facility structures or plumes.

L.4.5.7 Summer Lake Wildlife Area

Summer Lake Wildlife Area was established to protect and improve waterfowl habitat and to provide the public with a hunting area. Today, this destination is popular for wildlife viewing and hunting. The Summer Lake Wildlife Area consists of almost 19,000 acres (ODFW n.d.). This protected area is located 19 miles to the south of the Facility site boundary.

Based on the viewshed analysis (refer to Figure L-2), Facility structures will not be in the line-of-site from this protected area, and will therefore not be visible from this protected area. Therefore, there will be no visual impacts on this protected area from Facility structures or plumes.

L.4.6 Potential Visual Impacts from Air Emissions, including on Class 1 Areas

(vi) Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.

The Facility is not located in a Class I area pursuant to OAR 340-204-0050. The primary air emissions associated with construction of the Facility include emissions from vehicles driving to and from the Facility daily. Applicant expects an average of 120 workers will drive to the Facility daily, and up to 150 workers during peak periods. Additional sources of air emissions include fugitive dust during construction of the Facility. However, the nearest protected area is 4 miles from the Facility site, and the remaining protected areas are 5.3 to 19 miles away. At these relatively large distances, the potential visual impacts on protected areas due to air emission is likely to be very small. Applicant will reduce or avoid fugitive dust during construction by implementing dust abatement measures during construction, including applying water to disturbed areas, enforcing speed limits within the Facility site boundary, leaving vegetation root structures in place, and avoiding work during high wind conditions.

During operation, air emissions will be limited to daily light vehicle traffic by 6 to 10 maintenance staff traveling to and from the Facility.

Therefore, there will be no significant visual impacts on protected areas, including Class I areas, due to air emissions during construction and operation of the Facility.

L.5 REFERENCES

BLM (Bureau of Land Management). 1986. Visual Resource Contrast Rating. BLM Manual Handbook 8431-1, Release 8-30. U.S. Department of the Interior, Washington, D.C., Jan. https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_H8431.pdf. Accessed January 14, 2019.

_____. 2000. Areas of Critical Environmental Concern Nomination Analysis Report for the Lakeview Resource Area, Resource Management Plan. https://www.blm.gov/or/districts/lakeview/plans/files/ACEC_nomination.pdf. Accessed July 3, 2018.

_____. 2003a. Lakeview Resources Management Plan and Record of Decision. November 2003. https://www.blm.gov/or/districts/lakeview/plans/files/Lakeview_RMP_Text_Appendices.pdf. Accessed March 2018.

- _____. 2003b. Lakeview Resources Management Plan Environmental Impact Statement. January 2003.
https://www.blm.gov/or/plans/files/LakeviewRMP/lkvwfoplans/Final_2003RMP/Volume_1_Main_Text/VOL_1_ChapterTwo.pdf Accessed August 7, 2018.
- _____. 2010. Visual Resource Inventory. BLM Manual Handbook H-8410-1. U.S. Department of the Interior, Washington, D.C., Jan. [Accessed January 14, 2019.](https://www.blm.gov/sites/blm.gov/files/program_recreation_visual%20resource%20management_quick%20link_%20BLM%20Handbook%20H-8410-1%2C%20Visual%20Resource%20Inventory.pdf)
https://www.blm.gov/sites/blm.gov/files/program_recreation_visual%20resource%20management_quick%20link_%20BLM%20Handbook%20H-8410-1%2C%20Visual%20Resource%20Inventory.pdf
- _____. n.d.(a). Black Hills ACEC Informational web page.
<https://www.blm.gov/visit/black-hills-acec>. Accessed May 4, 2018.
- _____. n.d.(b). Devil’s Garden Lava Bed Area of Critical Environmental Concern informational web page. <https://www.blm.gov/programs/national-conservation-lands/oregon-washington/devils-garden-lava-bed-wsa>. Accessed May 4, 2018.
- _____. n.d.(c). Lost Forest/Dunes/Fossil Area of Critical Environmental Concern information web page. <https://www.blm.gov/visit/lost-forest-dunes-fossil-acec>. Accessed July 4, 2018.
- _____. n.d.(d). Christmas Valley Sand Dunes Area of Critical Environmental Concern informational pamphlet.
<https://www.blm.gov/or/resources/recreation/files/brochures/Sand%20Dunes.pdf>.
Accessed July 3, 2018.
- Esri. 2019. “World Imagery” [basemap]. Scale Not Given.
<https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9>. Accessed October 10, 2019.
- GoogleEarth. 2014. Fort Rock, Oregon area. 43°16’37.62”N, 120°53’54.13”W.
<http://www.earth.google.com>. Accessed July 5, 2018.
- National Park Service. n.d. Oregon Parks. <https://www.nps.gov/state/or/index.htm>. Accessed March 7, 2018.
- Oregon Department of Fish and Wildlife. n.d. Summer Lake Wildlife Area Visitors’ Guide informational webpage. <https://myodfw.com/summer-lake-wildlife-area-visitors-guide>. Accessed July 5, 2018.
- _____. 2016. The ODFW’s Visitor’s Guide: Fish Hatcheries and Wildlife Management Areas. Last Updated November 28, 2016.
<http://www.dfw.state.or.us/resources/visitors/index.asp#east>. Accessed March 8, 2018.

Oregon Legislature. 2017. Chapter 390 State and Local Parks; Recreation Programs; Scenic Waterways; Recreation Trails.
https://www.oregonlegislature.gov/bills_laws/ors/ors390.html. Accessed April 6, 2018.

Oregon Parks and Recreation Department. n.d. Informational webpage for the Fort Rock State Natural Area.
https://oregonstateparks.org/index.cfm?do=parkPage.dsp_parkPage&parkId=31.
Accessed April 6, 2018.

_____. 2015. Oregon Natural Areas Plan.
http://inr.oregonstate.edu/sites/inr.oregonstate.edu/files/2015_or_natural_areas_plan.pdf.
Accessed July 5, 2018.

OSU (Oregon State University). n.d. Department of Animal and Rangeland Sciences, Research.
<https://agsci.oregonstate.edu/departement-animal-and-rangeland-sciences/research>.
Accessed April 5, 2018.

_____. 2015. Oregon Biodiversity Information Center, Register of Natural Heritage Resources.
<http://inr.oregonstate.edu/orbic/natural-areas-program/register-natural-heritage-resources>. Accessed April 6, 2018.

Oregon Wild. n.d.(a). Wilderness Across Oregon.
<http://www.oregonwild.org/wilderness/wilderness-across-oregon>. Accessed March 8, 2018.

_____. n.d.(b). Oregon Proposed Wilderness Map.
http://www.oregonwild.org/sites/default/files/pdf-files/Oregon_Proposed_Wilderness.pdf. Accessed March 8, 2018.

U.S. Forest Service. n.d.(a). Pacific Northwest Region. Regional Recreation Map.
<https://www.fs.usda.gov/main/r6/recreation>. Accessed April 5, 2018.

_____. n.d.(b). Interactive Visitor Map. <https://www.fs.fed.us/ivm/index.html>. Accessed April 4, 2018.

_____. 2013. Other Congressionally Designated Areas.
<https://www.fs.fed.us/recreation/programs/cda/special-areas.shtml>. Accessed April 5, 2018.

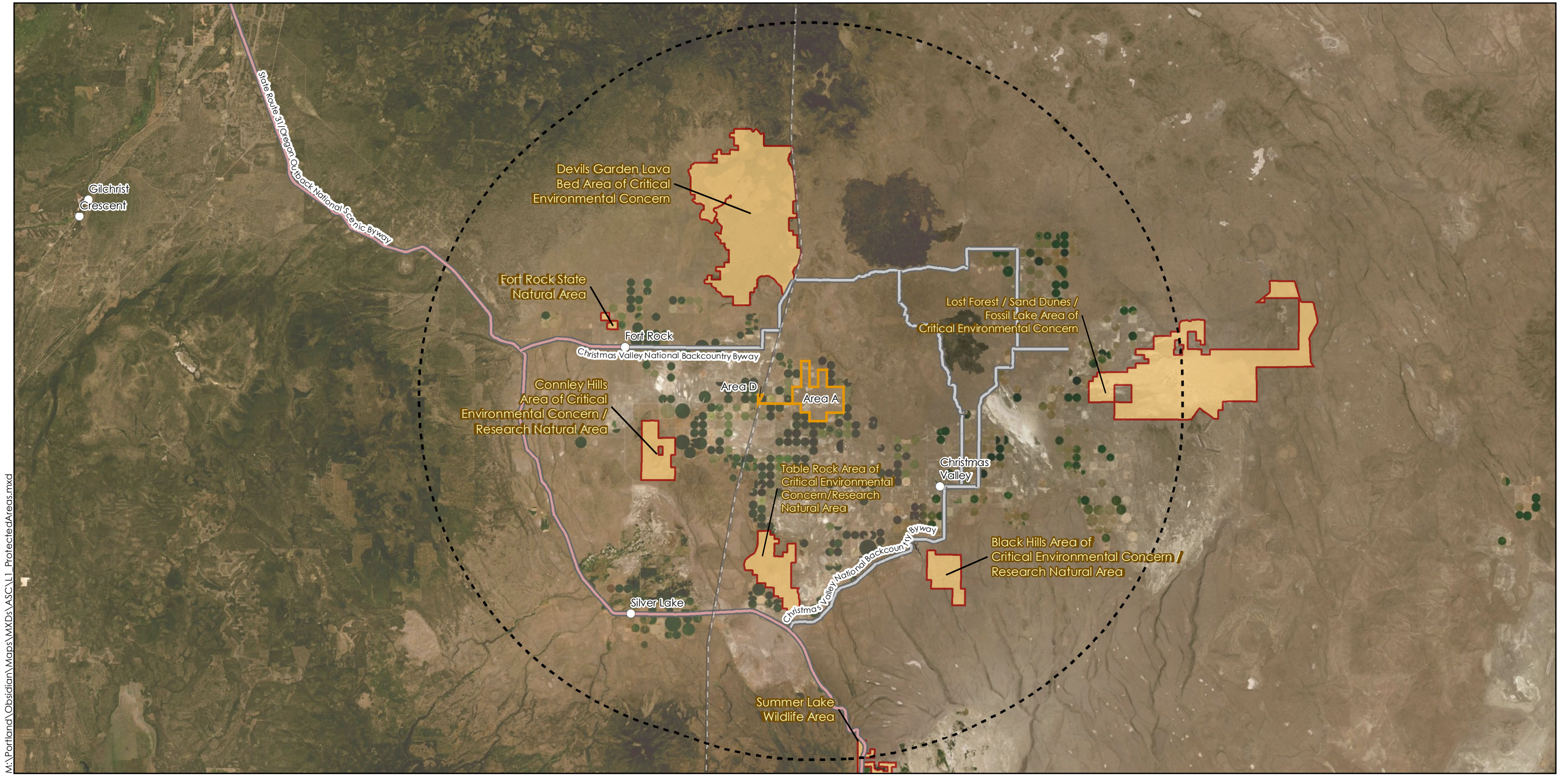
USGS (U.S. Geological Survey). 2016. Gap Analysis Program. Protected Areas Database of the United States (PAD-US), version 1.4 Combined Feature Class.
<https://gapanalysis.usgs.gov/padus/data/>. Accessed September 4, 2018.

_____. n.d. Volcano Hazards Program: Devils Garden Lava Field summary web page.
https://volcanoes.usgs.gov/volcanoes/devils_garden/. Accessed May 4, 2018.

U.S. Fish and Wildlife Service. n.d. Oregon. National Wildlife Refuge System.
<https://www.fws.gov/refuges/refugeLocatorMaps/Oregon.html>. Accessed April 4, 2018.

_____. 2015. Fish and Aquatic Conservation.
https://www.fws.gov/fisheries/facilities/Pacific_region.html. Accessed April 4, 2018.

Wilderness Connect. n.d. Oregon. <https://www.wilderness.net/NWPS/stateView?state=OR>.
Accessed March 8, 2018.



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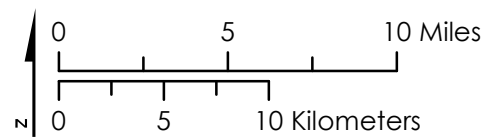
- Site Boundary
- 20-mile Analysis Area
- Protected Area
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)
- Town

Figure L-1
Protected Areas within the Analysis Area

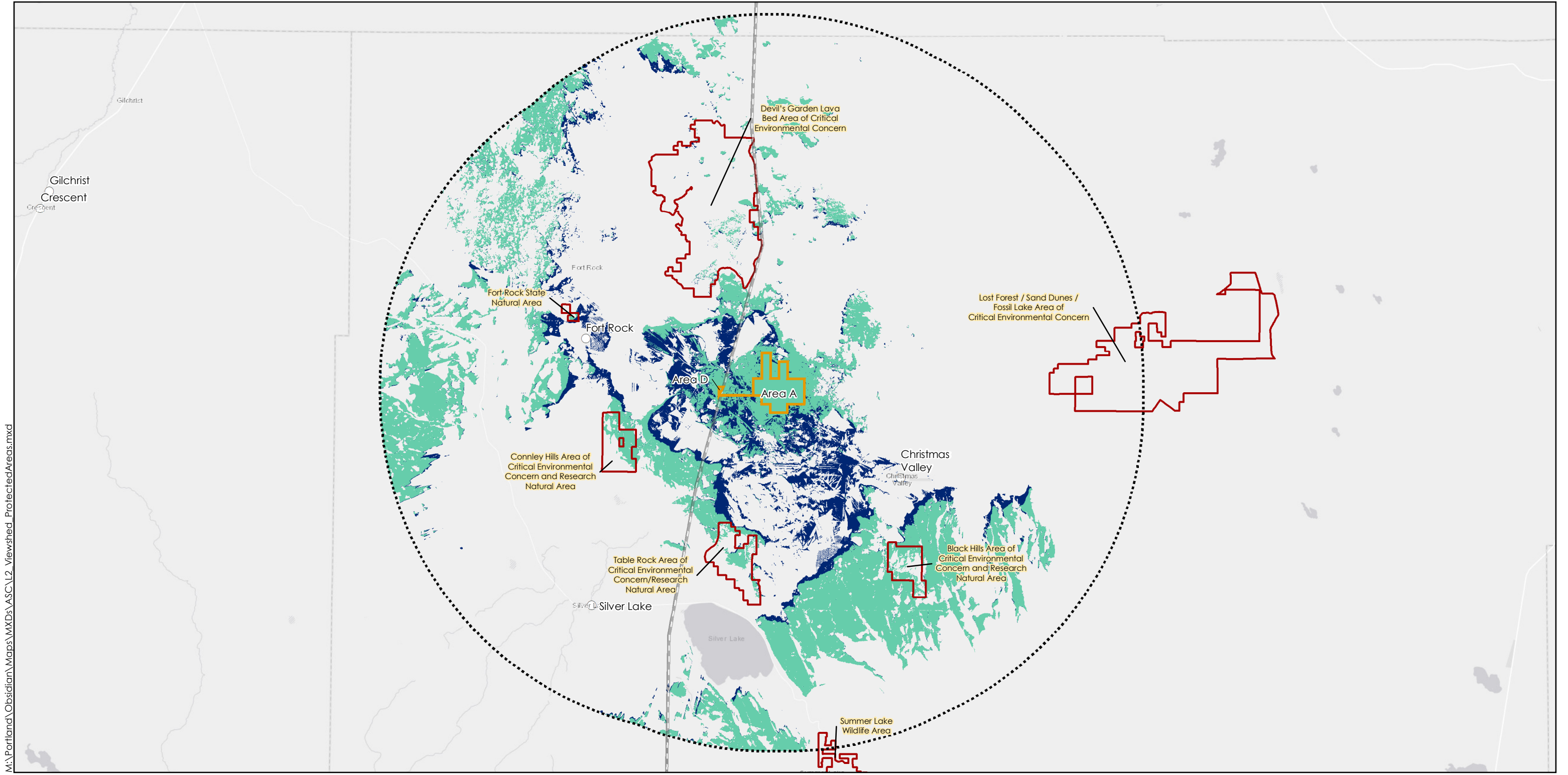
Obsidian Solar Center

October 2019

Obsidian Solar Center LLC



Sources: Esri 2019; USGS 2016



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- 7-foot and Taller Facility Structures Visible from this location
- 30-foot and Taller Facility Structures Visible from this location
- Site Boundary
- 20-Mile Analysis Area
- Protected Area
- Waterbody
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)
- Town

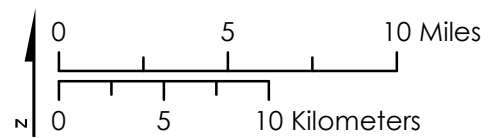


Figure L-2
Viewshed Analysis

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Sources: Esri 2019; USGS 2016