

# Exhibit Q

## Threatened and Endangered Species

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**Bakeoven Solar Project  
November 2019**

**Prepared for**



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**Prepared by**



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## Acronyms and Abbreviations

Applicant	Bakeoven Solar, LLC
Facility	Bakeoven Solar Project
OAR	Oregon Administrative Rules
ODA	Oregon Department of Agriculture
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes

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## 1.0 Introduction

Bakeoven Solar, LLC (Applicant) proposes to construct and operate a solar energy generation facility and related or supporting facilities in Wasco County, Oregon. This Exhibit Q was prepared to meet the submittal requirements in Oregon Administrative Rules (OAR) 345-021-0010(1)(q).

## 2.0 Analysis Area

The analysis area for threatened and endangered species is the proposed site boundary plus a 5-mile buffer, as defined by OAR 345-001-0010(59)(a). The proposed site boundary is defined in detail in Exhibits B and C. The threatened and endangered species analysis area is shown on Figure Q-1. A portion of the proposed site boundary is designated as the proposed micrositing corridor, where solar arrays and all other related and supporting facilities may be located.

## 3.0 Identification of Species

*OAR 345-021-0010(1)(q) Information about threatened and endangered plant and animal species that may be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0070. The applicant shall include:*

*(A) Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2) and ORS 564.105(2) that may be affected by the proposed facility.*

The Applicant identified threatened and endangered plant and animal species that might be affected by the Bakeoven Solar Project (Facility) through a literature review, data queries, and familiarity with the region, along with input and resources identified by the Oregon Department of Fish and Wildlife during consultation (see Exhibit P). Information and data gathered during the desktop review were then used to inform field surveys. The Applicant conducted the desktop review within the analysis area and performed field surveys primarily within the proposed micrositing corridor, as described below.

### 3.1 Desktop Review

Prior to conducting field surveys, the Applicant conducted a desktop review to identify federal and state endangered, threatened, proposed, and candidate species with the potential to occur in the analysis area (Exhibit P, Attachment P-1; OCS 2016, ODFW 2016, ODFW 2017, ORBIC 2016, ORBIC 2018, USFWS 2008, USFWS 2018a, USFWS 2018b, USFWS 2018c, USFWS 2018d). The Applicant reviewed habitat and range information for special-status wildlife species known to occur in Wasco County and the Columbia Plateau to develop the list of species that had the potential to occur within

the analysis area. Species were eliminated from consideration if their habitat was absent from the proposed site boundary, or their range did not overlap with the proposed site boundary, but were included if they have the potential for vagrancy at the Facility. The Applicant also reviewed special-status species information recorded during previous surveys at adjacent projects (LotusWorks 2009; ABR Inc. 2011; NWC 2011; WEST 2013).

The Applicant identified target rare plants species with the potential to occur within the analysis area based on known occurrences recorded by herbaria and other sources (Burke Museum of Natural History and Culture 2018; ODA 2018; OFP 2017a, 2017b, 2017c; ORBIC 2016; USFWS 2015). The Applicant identified all vascular plants listed as endangered or threatened by the U.S. Fish and Wildlife Service under the federal Endangered Species Act, as well as the candidates for listing, and plants listed as endangered, threatened, or candidates for listing by the Oregon Department of Agriculture (ODA) under the Oregon Endangered Species Act.

In addition to reviewing publicly available sources, the Applicant submitted a request to the Oregon Biodiversity Information Center (ORBIC) to obtain site-specific records of special-status species occurrences and sensitive habitats within 10 miles of the Facility (ORBIC 2018). This exercise identified six state threatened, endangered, and candidate species (one mammal and five plants) with the potential for occurrence within the analysis area (Table Q-1).



**Table Q-1. State-Listed and Candidate Species with the Potential to Occur in the Analysis Area**

Common Name	Scientific Name (Synonym)	Federal Status <sup>1/</sup>	State Status <sup>2/</sup>	Occurrence within Analysis Area	Potential Habitat within the Proposed Site Boundary
<b>Mammals</b>					
Wolverine	<i>Gulo gulo</i>	PT	T	None per ORBIC (2018).	No. Habitat consists of high elevation open forests, which do not occur within the proposed site boundary. Potential to occur as transient only. Initially considered due to occurrence in Wasco County per ORBIC (2016).
<b>Plants</b>					
Tygh Valley milk-vetch	<i>Astragalus tyghensis</i>		T	Yes. ORBIC (2018) records west of the Deschutes River.	Limited. Suitable habitat (dry, rocky soils with thin, sandy surface soil, in bunchgrass grasslands, mounded prairies, or open juniper habitat) infrequently located in the transmission line corridor. However, this habitat has been recently disturbed by the 2018 Boxcar Fire.
Henderson's ricegrass	<i>Achnatherum hendersonii</i>	SOC	C	None per ORBIC (2018).	Limited. Habitat (scabland lithosols) infrequently located in the transmission line corridor within the proposed site boundary, more available within the analysis area. This habitat has been recently disturbed by the 2018 Boxcar Fire.
Hepatic monkeyflower	<i>Erythranthe jungermannioides</i>		C	None per ORBIC (2018).	Limited. Suitable habitat (moist crevices and seeps in basalt cliff faces) limited to a small area along the transmission corridor, more available within the analysis area.
Sessile mousetail	<i>Myosurus sessilis</i>	SOC	C	Yes. ORBIC (2018) records west of the Deschutes River.	Limited. Suitable habitat present within the analysis area (vernal pools), but limited within the proposed site boundary.
Dwarf evening primrose	<i>Eremothera (Camissonia) pygmaea</i>	SOC	C	None per ORBIC (2018).	Limited. Suitable habitat present within the analysis area (dry plains and slopes with unstable soils or on gravel in steep talus, dry washes, banks and roadcuts) but limited within the proposed site boundary.
Sources: Burke Museum of Natural History and Culture 2018; OCS 2016; ODA 2018; ODFW 2016, 2017; ORBIC 2016, 2018; OFP 2017a, 2017b, 2017c; USFWS 2008, 2015, 2018a, 2018b, 2018c, 2018d; Wildlife Explorer 2019.					
1/ PT = Proposed Threatened, SOC = Species of Concern.					
2/ T = Threatened, C = Candidate for Listing.					

Seven listed or candidate species known to occur in Wasco County were eliminated from consideration due to lack of habitat presence and range overlap with the analysis area. This included the northern spotted owl (*Strix occidentalis caurina*; federal and state threatened), the Oregon spotted frog (*Rana pretiosa*; federal threatened, state sensitive), and five plant species: the gorge fleabane (*erigeron oregonus*; state candidate, federal species of concern), the Barrett's beardtongue (*penstemon barrettiae*; state candidate, federal species of concern), the white fairypoppy (*meconella oregana*; state candidate, federal species of concern), the Suksdorf's deserparsley (*lomatium suksdorfii*; state candidate, federal species of concern), and the northern wormwood (*artemisia campestris* var. *wormskioldii*; state endangered, federal candidate).

Northern spotted owl habitat consists of large areas of old growth forest, which does not occur in the analysis area (Gutiérrez et al. 1995). Oregon spotted frog habitat consists of permanent ponds, marshes, and meandering streams through meadows, plus springs and other sites with low, continuous water flow; however, the species is currently only found above 4,000 feet elevation in Oregon, elevations which are not found within the analysis area (OCS 2016). Gorge fleabane, Barrett's beardtongue, white fairypoppy, Suksdorf's deserparsley, and northern wormwood are all limited to the Columbia River Gorge or northern Wasco County, which is outside the analysis area (OFP 2017a, 2017b). The ORBIC (2018) data query did not return any occurrences of these seven species within the analysis area.

An additional four listed fish and wildlife species were identified during the desktop review as having potential to occur within the analysis area; however, these species are federally, but not state listed, and thus are not discussed in detail in this exhibit. These species include the Canada lynx (*Lynx canadensis*; federally threatened, no state status), the gray wolf (*Canis lupus*; federally endangered, state delisted), steelhead (*Oncorhynchus mykiss*; Middle Columbia River Evolutionarily Significant Unit/Species Management Unit, summer run; federally threatened, state sensitive-critical), and bull trout (*Salvelinus confluentus*; Columbia Basin Distinct Population Segment, Deschutes Species Management Unit; federally threatened, no state status in the Columbia Plateau).

Canada lynx habitat consists of dense thickets of conifers broken up by small patches of herbaceous vegetation at high elevations, which does not occur within the analysis area; however, there is some potential for Canada lynxes to occur within the analysis area as a transient due to the wide-ranging nature of this species (Wildlife Explorer 2019). Gray wolves are known to occur in Wasco County and are wide ranging habitat generalists, and thus have potential to occur within the analysis area (ODFW 2019). Gray wolves were recently proposed for delisting by the U.S. Fish and Wildlife Service as populations have met recovery goals (84 Federal Register 9648). The ORBIC (2018) data query did not return any occurrences of these two mammals within the analysis area. The two federally listed fish species are known to occur within the analysis area (ORBIC 2018). Bull trout occur in the Deschutes River, which crosses the western portion of the analysis area; however, the proposed micro-siting corridor does not overlap with the Deschutes River. Steelhead occur in the Deschutes River, Buck Hollow Creek, and some of its tributaries, as well as Bakeoven Creek and some of its tributaries; however, none of these streams occur within the proposed micro-siting corridor. Therefore, no federally listed fish species will be affected by the Facility.

Of the six state-threatened, endangered, and candidate species identified as having potential to occur within the analysis area, ORBIC records indicate the occurrence of two—Tygh Valley milk-vetch (*Astragalus tyghensis*) and sessile mousetail (*Myosurus sessilis*)—within the analysis area, but outside the proposed site boundary.

### **3.1.1 Wildlife**

Table Q-1 identifies one state listed wildlife species with the potential to occur within the analysis area: the wolverine (*Gulo gulo*; state threatened, federal proposed threatened). Although the wolverine has some potential to occur as a transient within the analysis area, habitat for this species is lacking (high elevation open forests; Wildlife Explorer 2019), and there are no known occurrences within the analysis area (ORBIC 2018). As a result, the wolverine is not addressed further in this exhibit.

### **3.1.2 Plants**

Table Q-1 identifies five state listed and candidate plant species with the potential to occur within the analysis area: Tygh Valley milk-vetch (state threatened, no federal status), Henderson's ricegrass (*Achnatherum hendersonii*; state candidate, federal species of concern), hepatic monkeyflower (*Erythranthe jungermannioides*; state candidate), sessile mousetail (state candidate, federal species of concern), and dwarf evening primrose (*Camissonia pygmaea*; state candidate, federal species of concern). Habitat for these species is present within the analysis area and these plant species were targeted during field investigation.

## **3.2 Field Surveys**

The Applicant has conducted biological and botanical surveys in the vicinity of the Facility since 2010. Surveys conducted prior to 2018 were primarily focused on the wind energy project previously proposed for the same general area as the currently proposed solar energy facility. Exhibit P provides a summary of field surveys conducted within the analysis area. Only field surveys conducted in 2018 for the solar Facility are detailed in this exhibit.

### **3.2.1 Wildlife**

The Applicant conducted surveys for special status species as described in Exhibit P. No surveys were conducted specifically for state listed or candidate wildlife species, as none are expected to occur within the proposed micrositeing corridor. No field studies were conducted for fish because construction and operation of the Facility will involve no temporary or permanent impacts to intermittent or perennial fish-bearing streams. Moreover, there is no historical evidence of the occurrence of any state or federal listed, candidate, or proposed fish species within the proposed micrositeing corridor (ORBIC 2018).

No threatened or endangered wildlife were observed at the Facility during general wildlife surveys conducted in 2018, or in previous years.

### 3.2.2 Plants

The Applicant conducted botanical field surveys within the proposed micrositeing corridor in June and July of 2018. Survey methods for the 2018 surveys are described in detail in Attachment P-1. A small area (294 acres) was added to the proposed micrositeing corridor after 2018 field surveys were completed; these areas received a desktop review in December 2018 (Attachment P-1). Field surveys in 2018 also included additional corridors not under consideration in this Application for Site Certificate. Figure P-2 shows the extent of surveys within the proposed micrositeing corridor in 2018.

While botanical surveys were in progress, a wildfire broke out in the vicinity of the Facility (Figure P-2). The Boxcar Fire was reported on June 21, 2018, and burned a large portion of the proposed site boundary south of Bakeoven Road, including most of the proposed transmission line corridor and a small area along the west side of the solar siting area. Burned areas were not considered suitable habitat for target plant species due to the highly disturbed condition of the land following the fire. As a result, areas within the Boxcar Fire boundary received a limited survey effort, consistent with the intuitive meander survey methods employed (Attachment P-1). The majority of the 294 acres added to the proposed micrositeing corridor following field surveys in 2018 experienced a high intensity burn during the Boxcar Fire, and thus is unlikely to support target plant species.

No threatened or endangered plants were observed at the Facility during botanical surveys conducted in 2018 or in previous years. A hybrid species of the target species *Myosurus sessilis* and *Myosurus minimus* was found in vernal pools within the analysis area, but this plant does not have a special status in Oregon (Attachment P-1).

## 4.0 Occurrence and Potential Adverse Effects

*OR 345-021-0010(1)(q)(B) For each species identified under (A), a description of the nature, extent, locations and timing of its occurrence in the analysis area and how the facility might adversely affect it.*

### 4.1 Wildlife

No state listed or candidate fish or wildlife species are known or expected to occur within the analysis area; therefore, no adverse effects to state listed or candidate wildlife species are expected due to the construction and operation of the Facility.

### 4.2 Plants

Based on desktop analysis, five state listed and candidate vascular plant species have the potential occur within the analysis area. None of these species were found to occur within the proposed micrositeing corridor during surveys, and the construction and operation of the Facility are not expected to result in adverse effects to these species, as described below.

#### **4.2.1 *Tygh Valley Milk-Vetch***

Tygh Valley milk-vetch is listed by ODA as a threatened species and has no federal status. Found in dry, rocky soils with thin, sandy surface soil, in bunchgrass grasslands, mounded prairies, or open juniper habitat, this species' range includes the analysis area (ODA n.d.). Several records were found in the ORBIC database within the analysis area, west of the Deschutes River. However, this species was not observed during surveys. Therefore, the construction and operation of the Facility are not expected to adversely affect this species.

#### **4.2.2 *Henderson's Ricegrass***

Henderson's ricegrass is listed by ODA as a candidate species and is a federal species of concern. Found in lithosol areas of scabland habitats, this species' range may include the analysis area (Dewey 2013). However, no records were found in the ORBIC database within 5 miles of the proposed site boundary. This species was not observed during surveys, and the construction and operation of the Facility are not expected to adversely affect this species.

#### **4.2.3 *Hepatic Monkeyflower***

Hepatic monkeyflower is listed by ODA as a candidate species and has no federal status. Found in moist crevices and seeps in basalt cliff faces, this species' range may include the analysis area (WNHP n.d.). However, no records were found in the ORBIC database within 5 miles of the proposed site boundary. This species was not observed during surveys, and the construction and operation of the Facility are not expected to adversely affect this species.

#### **4.2.4 *Sessile Mousetail***

Sessile mousetail is listed by ODA as a candidate species and is a federal species of concern. Found in moist areas associated with drying vernal pools and alkali flats, this species' range includes the analysis area (Hitchcock 1973; WNHP n.d.). Two records were found in the ORBIC database within 5 miles of the proposed site boundary, west of the Deschutes River. This species was not observed during surveys, and the construction and operation of the Facility are not expected to adversely affect this species.

#### **4.2.5 *Dwarf Evening-Primrose***

Dwarf evening-primrose is listed by ODA as a candidate species and is a federal species of concern. Found on rocky slopes, sandy banks, roadcuts, and in dry, gravelly washes, this species' range may include the analysis area (OFP 2017b). However, no records were found in the ORBIC database within 5 miles of the proposed site boundary. This species was not observed during surveys, and the construction and operation of the Facility are not expected to adversely affect this species.

## 5.0 Avoidance and Mitigation

*OAR 345-021-0010(1)(q)(C) For each species identified under (A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact.*

No state listed or candidate species are expected to occur within the proposed micrositing corridor; therefore, the Applicant does not propose avoidance and mitigation measures for threatened and endangered species.

## 6.0 Protection and Conservation Program Compliance/Impacts

*OAR 345-021-0010(1)(q)(D) For each plant species identified under (A), a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3).*

There are no species with the potential to occur within the analysis area for which ODA has adopted a protection and conservation program. As a result, the Facility is not likely to impact any of ODA's recovery efforts, nor is the Facility likely to cause a significant reduction in the likelihood of survival or recovery of plants with a protection or conservation program under Oregon Revised Statutes (ORS) 564.105(3).

## 7.0 Potential Impacts to Plants, Including Mitigation Measures

*OAR 345-021-0010(1)(q)(E) For each plant species identified under paragraph (A), if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.*

No state listed or candidate plant species were observed within the proposed micrositing corridor during targeted surveys for these species. Because these species are not present within the proposed micrositing corridor, construction, operation, and maintenance of the Facility are not expected to result in a significant reduction in the likelihood of survival or recovery of the state threatened Tygh Valley milk-vetch, or the state candidates Henderson's ricegrass, hepatic monkeyflower, dwarf evening-primrose, and sessile mousetail.

## 8.0 Potential Impacts to Animals, Including Mitigation Measures

*OAR 345-021-0010(1)(q)(F) For each animal species identified under (A), a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.*

No state listed or candidate animal species are expected to occur within the proposed micrositing corridor. Construction, operation, and maintenance of the Facility are not expected to result in adverse impacts to state listed animal species. No mitigation measures for threatened and endangered species are planned or required.

## 9.0 Monitoring

*OAR 345-021-0010(1)(q)(G) The applicant's proposed monitoring program, if any, for impacts to threatened and endangered species.*

No state listed or candidate species are found within the proposed micrositing corridor. Construction, operation, and maintenance of the Facility are expected to entail no adverse impacts to state listed species. No monitoring program for threatened and endangered species is planned or required.

## 10.0 Submittal Requirements and Approval Standards

### 10.1 Submittal Requirements

**Table Q-2. Submittal Requirements Matrix**

Requirement	Location
OAR 345-021-0010(1)(q) Information about threatened and endangered plant and animal species that may be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0070. The applicant shall include:	-
(A) Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2), 564.105(2) or 16 USC 1533 that may be affected by the proposed facility.	Section 3.0
(B) For each species identified under (A), a description of the nature, extent, locations and timing of its occurrence in the Analysis Area and how the facility might adversely affect it.	Section 4.0
(C) For each species identified under (A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact.	Section 5.0

Requirement	Location
(D) For each plant species identified under (A), a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3).	Section 6.0
(E) For each plant species identified under paragraph (A), if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.	Section 7.0
(F) For each animal species identified under (A), a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.	Section 8.0
(G) The applicant's proposed monitoring program, if any, for impacts to threatened and endangered species.	Section 9.0

## 10.2 Approval Standards

Table Q-3. Approval Standard

Requirement	Location
<b>OAR 345-022-0070 Threatened and Endangered Species</b>	-
To issue a site certificate, the Council, after consultation with appropriate state agencies, must find that:	-
(1) For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction and operation of the proposed facility, taking into account mitigation:	-
(a) Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3); or	Section 6.0
(b) If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and	Section 7.0
(2) For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction and operation of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.	Section 8.0



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# Figures

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# Bakeoven Solar Project

## Figure Q-1 Threatened and Endangered Species Analysis Area

WASCO COUNTY, OREGON

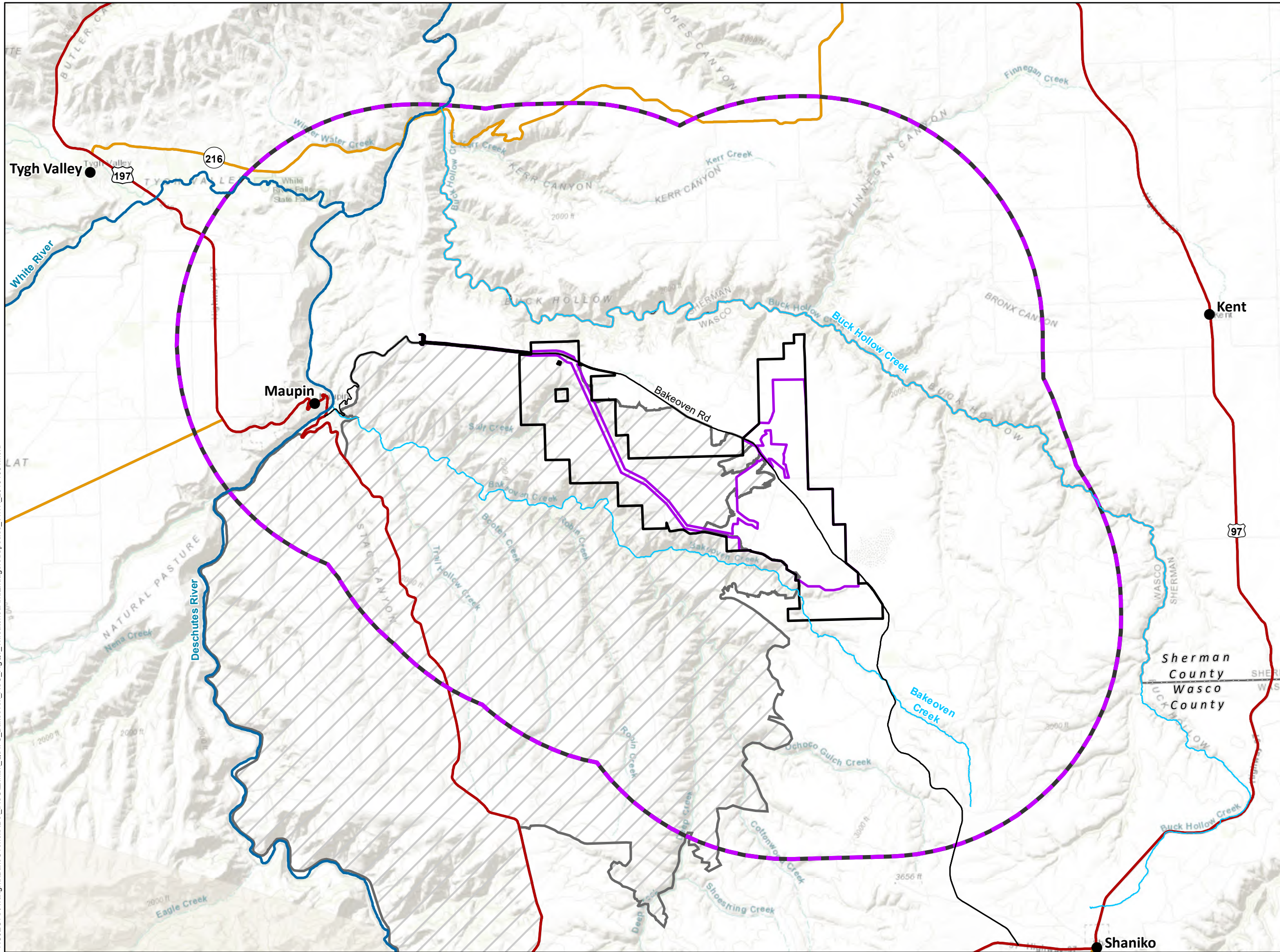
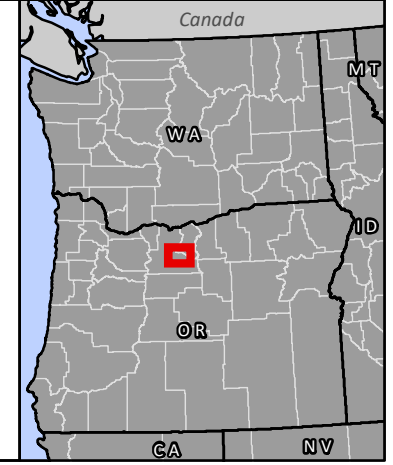
-  Proposed Site Boundary
-  Proposed Micrositing Corridor
-  Analysis Area (5-mile Buffer)
-  Boxcar Fire Boundary
-  River
-  Creek
- Basemap Features**
-  City/Town
-  US Highway
-  State Highway
-  Local Road
-  County Boundary



**Data Sources**

Avangrid-Project Infrastructure;  
USDA-Aerial Imagery; Census Bureau-Tiger Roads

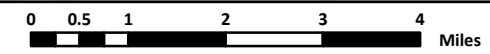
**Reference Map**



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1:125,000 WGS 1984 UTM Zone 10N



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