

Request for Amendment 5 for the Biglow Canyon Wind Farm

Exhibit I. Scenic Resources

**Submitted to
Oregon Energy Facility Siting Council**

Prepared for



Portland General Electric Company

Prepared by



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Table of Contents

1.0	Introduction	1
2.0	Analysis Area	2
3.0	Scenic Resources Inventory – OAR 345-022-0080(5)(a)(b)	2
3.1	Municipalities	6
3.1.1	City of Wasco	6
3.1.2	City of Rufus	6
3.1.3	City of Moro	6
3.2	Counties	6
3.2.1	Sherman County	6
3.2.2	Gilliam County	7
3.3	State	7
3.3.1	Oregon Department of Transportation	7
3.4	Tribal	8
3.5	Regional	8
3.6	Federal	8
3.6.1	Bureau of Land Management	8
3.6.2	National Park Service	9
4.0	Visual Impacts	10
4.1	Methodology – OAR 345-022-0080(5)(c)	11
4.1.1	Zone of Visual Influence Analysis	11
4.1.2	Glare Analysis	12
4.2	Visual Impacts – OAR 345-022-0080(5)(d)(e)	15
4.2.1	Scenic Resources	15
4.2.2	Glare Analysis Results	18
5.0	Avoidance and Mitigation Measures – OAR 345-022-0080(5)(f)	19
6.0	Monitoring – OAR 345-022-0080(5)(g)	20
7.0	References	20
8.0	Approval Standards and Submittal Requirements	22

List of Tables

Table I-1. Inventory of Scenic Resources in the Analysis Area..... 4

Table I-2. Viewshed Analysis Results for Cities Near the Facility15

Table I-3. Approval Standards and Submittal Requirements.....22

List of Figures

Figure I-1. Scenic Resources within the Analysis Area

Figure I-2. Zone of Visual Influence Map, Solar Array

Figure I-3. Zone of Visual Influence Map, Gen-tie Line

List of Attachments

Attachment I-1. Land Use Management Plan Excerpts

Attachment I-2. Glare Analysis Reports

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AC	Alternating current
ATCT	Air Traffic Control Tower
BCWF or Facility	Biglow Canyon Wind Farm
BESS	battery energy storage system
BIGL 2 or Project Developer	BIGL 2, LLC
BLM	Bureau of Land Management
Certificate Holder or PGE	Portland General Electric Company
Council or EFSC	Oregon Energy Facility Siting Council
FAA	Federal Aviation Administration
gen-tie	Generation tie
I-84	Interstate 84
kV	kilovolt
MW	megawatt
MWh	megawatt-hour
MUP	Management and Use Plan Update – Oregon National Historical Trail and Mormon Pioneer National Historical Trail
NPS	National Park Service
NTSA	National Trails System Act
O&M	Operations and maintenance
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Energy
ONHT	Oregon National Historical Trail
OP	Observation Point
OPRD	Oregon Department of Parks and Recreation
OR	Oregon Route
PV	photovoltaic
SGHAT	Solar Glare Hazard Analysis Tool
RFA	Request for Amendment
Site Certificate	Site Certificate on Amendment 4
Solar Facility	solar energy generation and battery storage components
US-97	U.S. Highway
VRM	Visual Resource Management
ZVI	zone of visual influence

1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) submits this Request for Amendment (RFA) 5 to the Site Certificate on Amendment 4, issued March 27, 2026 (Site Certificate) for the Biglow Canyon Wind Farm (BCWF or Facility) to add a second phase of solar photovoltaic (PV) energy generation and battery storage capacity to the BCWF following the solar power generation and battery storage capacity approved under RFA 4.

BCWF, owned and operated by PGE, is located within an approved site boundary comprising approximately 25,000 acres, approximately 2.5 miles northeast of the town of Wasco in Sherman County, Oregon (Background Exhibit Figure 1). The BCWF operates under the Site Certificate from the Oregon Energy Facility Siting Council (Council or EFSC) as administered by the Oregon Department of Energy (ODOE). BCWF currently consists of 217 operating wind turbines, with a maximum blade tip height of 445 feet, and a peak generating capacity of 450 megawatts (MW) (Wind Facility). RFA 4, approved March 27, 2026, added 125 MW alternating current (AC) generating capacity from PV solar arrays and 500 megawatt-hours (MWh) in battery storage capacity. The solar energy generation and battery storage components (Solar Facility) described in RFA 4 are currently under construction.

In RFA 5, PGE proposes to add up to 200 MW AC generating capacity from PV solar arrays and 1,000 MWh in battery storage capacity (RFA 5 Solar Facility) by expanding the overall BCWF site boundary by approximately 839 acres. The RFA 5 Solar Facility is located across approximately 622 acres of the existing BCWF site boundary and 839 acres of expanded site boundary, for a total of approximately 1,461 acres (together, RFA 5 Site Boundary; see Background Exhibit Figure 4).

The RFA 5 Site Boundary provides a conservative estimate of the maximum area needed for development and micrositing through final design and construction for the RFA 5 Solar Facility, rather than the anticipated disturbance footprint. Primary infrastructure includes solar arrays, inverters, battery energy storage system (BESS) facilities and their subcomponents (i.e., inverters), one collector substation, and medium-voltage collector lines (herein collectively referred to as “Solar Components”). Additionally, the Solar Components include operations and maintenance (O&M) structures, site access roads, internal roads, perimeter fencing, facility entry gates, and temporary laydown areas. The maximum generating capacity from the Solar Components will be 200 MW AC. Power generated from the Solar Components will be transferred to the grid via a 230-kilovolt (kV) generation tie (gen-tie) transmission line, approximately 2.7 miles long. The RFA 5 Solar Facility includes the Solar Components and the gen-tie transmission line.

PGE will own and operate the RFA 5 Solar Facility as a part of the BCWF, which, to date, has been developed by BIGL 2, LLC (BIGL 2, or Project Developer). BIGL 2, in its capacity as the Project Developer, supports PGE in this RFA 5 and may construct and temporarily operate the RFA 5 Solar Facility on behalf of PGE under a Build-Transfer Agreement.

The information contained herein supports demonstration of compliance with the Scenic Resources approval standard for Oregon Administrative Rules (OAR) 345-022-0080.

2.0 Analysis Area

Consistent with OAR 345-027-0360(3), ODOE concurred with the Certificate Holder's use of a defined portion of the approved BCWF site boundary and the proposed expanded site boundary (i.e., RFA 5 Site Boundary) to establish study area boundaries for RFA 5 under OAR 345-001-0010(35). The RFA 5 Site Boundary reflects the Solar Siting Area and Transmission Corridor, and all study areas within the meaning of ORS 345-001-0010(35) are measured from the RFA 5 Site Boundary. In accordance with OAR 345-001-0010(35)(b), the analysis area for scenic resources is the area within and extending 10 miles from the RFA 5 Site Boundary¹ (Figure I-1).

3.0 Scenic Resources Inventory – OAR 345-022-0080(5)(a)(b)

(5) To assist the Council in determining whether the standard outlined in (1) through (4) has been met, the Applicant must submit an analysis of potential visual impacts of the proposed facility, if any, on significant or important scenic resources within the analysis area, providing evidence to support a finding by the Council under OAR 345-022-0080, including:

(a) An inventory of scenic resources identified as significant or important in a land use management plan adopted by one or more local, tribal, state, regional, or federal government or agency applicable to lands within the analysis area for scenic resources. The applicant must provide a list of the land management plans reviewed in developing the inventory and a copy of the relevant portion of the plans;

(b) A map or maps showing the location of the scenic resources described under subsection (a), in relation to the site of the proposed facility;

This section inventories scenic resources identified as significant or important in local, state, Tribal, regional, and federal land use plans within the analysis area, as required to demonstrate compliance with the approval standard in OAR 345-022-0080. The 10-mile analysis area includes parts of three Oregon municipalities (Wasco, Rufus, and Moro), two Oregon counties (Sherman and Gilliam), and land administered by the Oregon Department of Transportation (ODOT), Oregon Parks and Recreation Department (OPRD), Bureau of Land Management (BLM), and National Park Service (NPS).

The Certificate Holder concludes that there are five significant or important scenic resources within the analysis area, as identified through review of applicable land use management plans (see Table

¹ ODOE concurred with excluding the remaining BCWF site boundary that does not overlap with the RFA 5 Site Boundary from analysis in RFA 5 because no changes are proposed to any BCWF components in the remaining BCWF site boundary as part of RFA 5.

I-1).^{2,3,4} There is one new jurisdiction (City of Moro, two associated land use management plans) located in the analysis area that was not previously evaluated as part of the Final Order on RFA 4.⁵ Some plans have been updated since the Final Order on RFA 4 was issued; however, none of the plan amendments have changed, added, or removed scenic resources that were deemed as important or significant (see Table I-1). Accordingly, no new resources are identified or discussed as a result of the proposed amendments (including enlargement of the approved BCWF site boundary) to the Facility in RFA 5. No scenic resources are located within or cross the RFA 5 Site Boundary. The following sections describe the applicable jurisdictions, their applicable/most current land use plans, and the determination as to whether visual resources in the analysis area are designated as significant or important. These descriptions are summarized in Table I-1, and the locations of identified scenic resources are shown on Figure I-1. See Attachment I-1 for excerpts of land use management plans that discuss scenic resources located within the analysis area.

² As approved in Final Order on RFA 4 (p. 191 [March 2026]), land management plans and associated resources in Washington are omitted from the analysis because protection of Washington resources is not within the Council's jurisdiction.

³ Note that the Oregon Highway Plan (ODOT 2023), John Day Basin Record of Decision and Resource Management Plan (BLM 2015), various municipality and county development and zoning codes/regulations were preexisting and are not considered new plans/resources for the purposes of this analysis. None of the municipality or county development and zoning codes/regulations specify any scenic resources.

⁴ Note that although the Lower Deschutes River Canyon was not included as part of the RFA 4 analysis, it was previously evaluated and reviewed by the Council as described in the Final Order on RFA 3 (p. 26 [October 2008]) and previous amendments.

⁵ Final Order on Request for Amendment 4, p. 192-193 (March 2026).

Table I-1. Inventory of Scenic Resources in the Analysis Area

Jurisdiction	Plan Green shading indicates new plan since RFA 4	Scenic Resources Specified in Plan (Y/N)?	Important or Significant Scenic Resources Identified in Analysis Area (Y/N)?	Name of Scenic Resource(s) in Analysis Area	Distance to RFA 5 Site Boundary (miles)			Location of Scenic Resources Discussed in Plan
					RFA 5 Site Boundary	Solar Areas	Gen-tie Line	
Municipalities								
City of Wasco	City of Wasco Comprehensive Land Use Plan (City of Wasco 2007) City of Wasco Zoning Ordinance (City of Wasco 2023) <i>(updated since RFA 4; added development/zoning code [preexisting plan])</i>	Yes	Yes	John Day River Canyon ¹ Lower Deschutes River Canyon ¹	5.1 9.6	6.2 9.7	5.1 11.6	Physical Characteristics, pages 7-8 ²
City of Rufus	City of Rufus Comprehensive Land Use Plan (City of Rufus 2007) City of Rufus Zoning Ordinance (City of Rufus 2005) <i>(updated since RFA 4; added development/zoning code [preexisting plan])</i>	Yes	Yes	John Day River Canyon ¹ Lower Deschutes River Canyon ¹	5.1 9.6	6.2 9.7	5.1 11.6	Physical Characteristics, pages 7-8 ²
City of Moro	City of Moro Comprehensive Land Use Plan (City of Moro 2025a) City of Moro Zoning Ordinance (City of Moro 2025b) <i>(new since RFA 4)</i>	No	No	N/A	N/A	N/A	N/A	N/A
Counties								
Sherman County	Comprehensive Land Use Plan (Sherman County 2007) Zoning Ordinance (Sherman County 2017) <i>(updated since RFA 4; added development/zoning code [preexisting plan])</i>	Yes	Yes	John Day River Canyon ¹ Lower Deschutes River Canyon ¹ Interstate 84 Journey Through Time Scenic Byway (i.e., US-97) Oregon Route 206	5.1 9.6 5.9 2.5 2.8	6.2 9.7 6.2 2.5 2.8	5.1 11.6 5.9 4.6 4.4	Physical Characteristics-Section XI, page 18 ²
Gilliam County	Gilliam County Comprehensive Plan (Gilliam County 2022) Zoning and Land Development Ordinance (Gilliam County 2021) <i>(updated since RFA 4; added development/zoning code [preexisting plan])</i>	Yes	Yes	John Day River Canyon ¹	5.1	6.2	5.1	Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces, page 18-23; ² Section 4.100, pages 4-59 – 4-61 ²
State								
ODOT	Oregon Highway Plan (ODOT 2023) <i>(updated since RFA 4; preexisting plan)</i>	Yes	Yes	Journey Through Time Scenic Byway (i.e., US-97)	2.5	2.5	4.6	Policy 1D, Scenic Byways; Goal 5: Policy 5B: Scenic Resources ²

Jurisdiction	Plan <small>Green shading indicates new plan since RFA 4</small>	Scenic Resources Specified in Plan (Y/N)?	Important or Significant Scenic Resources Identified in Analysis Area (Y/N)?	Name of Scenic Resource(s) in Analysis Area	Distance to RFA 5 Site Boundary (miles)			Location of Scenic Resources Discussed in Plan
					RFA 5 Site Boundary	Solar Areas	Gen-tie Line	
	Journey Through Time Tour Management Plan (Michael Wetter & Associates 1996) <i>(no updates since RFA 4)</i>	Yes	Yes	Journey Through Time Scenic Byway (i.e., US-97)	2.5	2.5	4.6	Vision, Goals, Objectives, Enhancement and Management Strategies, Mountain Views, page 14 ²
Tribal								
None Applicable	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Regional								
None Applicable	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Federal								
BLM	Two Rivers Resource Management Plan, Record of Decision, Rangeland Program Summary (BLM 1986a) <i>(no updates since RFA 4)</i>	Yes	Yes	John Day River Canyon ¹ Lower Deschutes River Canyon ¹	5.1 9.6	6.2 9.7	5.1 11.6	Chapter 2 Two Rivers Resource Management Plan Decisions, Visual Resources and Special Management Areas, pages 26-27 and 32 ²
	John Day Basin Record of Decision and Resource Management Plan (BLM 2015) <i>(updated since RFA 4; preexisting plan, replaces previous plan)</i>	Yes	Yes	John Day River Canyon ¹	5.1	6.2	5.1	Chapter 2, Visual Resources; Management Guidance for Applicable Geographic Units ²
NPS	Management and Use Plan Update – Oregon National Historic Trail and Mormon Pioneer National Historic Trail (NPS 1999) <i>(no updates since RFA 4)</i>	No	No	N/A	N/A	N/A	N/A	N/A
1. Includes both the federal Wild and Scenic River/State Scenic Waterway designations. 2. Excerpt from the land use management plan provided in Attachment I-1; note that excerpts are provided for any plan that is not only applicable to the analysis area but also contain a scenic resource within the analysis area.								

3.1 Municipalities

3.1.1 *City of Wasco*

The City of Wasco Comprehensive Land Use Plan (City of Wasco 2007) states that the Deschutes and John Day Rivers are both designated scenic waterways but does not contain any specific scenic resource goals or policies (see Figure I-1). The City of Wasco Zoning Ordinance (City of Wasco 2023) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the information provided through the relevant land use management plans, the Certificate Holder concludes that the City of Wasco identifies the John Day River Canyon and Lower Deschutes River Canyon as significant or important scenic resources for inclusion in this Exhibit.

3.1.2 *City of Rufus*

The City of Rufus Comprehensive Land Use Plan (City of Rufus 2007) states that the Deschutes and John Day Rivers are both designated scenic waterways but does not contain any specific scenic resource goals or policies (see Figure I-1). The City of Rufus Zoning Ordinance (City of Rufus 2005) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the information provided through the relevant land use management plans, the Certificate Holder concludes that the City of Rufus identifies the John Day River Canyon and Lower Deschutes River Canyon as significant or important scenic resources for inclusion in this Exhibit.

3.1.3 *City of Moro*

The City of Moro Comprehensive Land Use Plan (City of Moro 2025a) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Similarly, the City of Moro Zoning Ordinance (City of Moro 2025b) has design provisions related to fencing, maintaining clear-vision areas, etc., but otherwise does not list policies relating to preservation of specific scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the content of the relevant land use management plans, the Certificate Holder concludes that no features within the City of Moro have been identified as important or significant scenic resources and no such features are addressed in this Exhibit.

3.2 Counties

3.2.1 *Sherman County*

The Sherman County Comprehensive Land Use Plan (Sherman County 2007) addresses statewide planning goals, including those relating to open spaces, scenic sites/areas, and natural resources (Goal 5). Section XI, Physical Characteristics, includes Finding XI, which states that the John Day

River Canyon and the Lower Deschutes River Canyon are “all-important features” of the County's landscape. In addition, the Plan lists ODOT-designated Scenic Highways, including segments of Interstate 84 (I-84), U.S. Highway 97 (US-97), Oregon Route (OR) 206 and OR-216. Of these resources, the Lower Deschutes River Canyon, John Day River Canyon (both evaluated as a protected areas and/or recreations areas in Exhibits E and K), and portions of the defined scenic segments of I-84, US-97/ Journey Through Time State Scenic Byway,⁶ and OR-206 are within the analysis area (see Figure I-1). The Zoning Ordinance includes provisions to minimize impacts to scenic qualities, but does not specify scenic resources (Sherman County 2017). Therefore, based on the information provided through the relevant land use management plans, the Certificate Holder concludes that Sherman County identifies the Lower Deschutes River Canyon, John Day River Canyon (both of which are inclusive of both the federal and state designations), I-84, Journey Through Time Scenic Byway (i.e., US-97), and OR-206 as significant or important scenic resources for inclusion in this Exhibit.

3.2.2 Gilliam County

The Gilliam County Comprehensive Plan (Gilliam County 2022) was reviewed for designated scenic resources or sites. The Comprehensive Plan references both the federal John Day Wild and Scenic River as well as the John Day State Scenic Waterway (evaluated as protected areas in Exhibit E), and implements the following goal: “To conserve open space and protect natural and scenic resources.” Similarly, the Zoning and Land Development Ordinance (Gilliam County 2021) references the John Day State Scenic Waterway, but no other scenic resources or associated policies are listed; this Section of the Zoning and Land Development Ordinance is also only applicable to the SR Significant Resource Combining Zone. Therefore, based on the information provided through the relevant land use management plans, the Certificate Holder concludes that Gilliam County identifies the John Day River Canyon (inclusive of both the federal and state designations) as a significant or important scenic resource for inclusion in this Exhibit.

3.3 State

3.3.1 Oregon Department of Transportation

3.3.1.1 Oregon Highway Plan

The ODOT Oregon Highway Plan was adopted in 1999 and includes a comprehensive management approach for Oregon’s multimodal transportation system (ODOT 2023). Last updated in 2023, the Plan is also currently under review, with the next version set to be released in 2027. Through the Plan, the Oregon Transportation Commission has designated State Scenic Byways throughout the state for roads with exceptional scenic values (ODOT 2023). The Journey Through Time Scenic Byway is defined as one of the State Scenic Byways, which is inclusive of the portion of US-97 that

⁶ Note that the entire portion of US-97 within the analysis area is identified as the Journey Through Time State Scenic Byway, a State Scenic Byway managed by ODOT (see Section 3.3.1 for further discussion).

runs south from the Columbia River to southwest of Moro and is located within the analysis area (see Figure I-1; ODOT 2026). Therefore, based on the information provided through the Oregon Highway Plan, the Certificate Holder concludes that ODOT identifies the Journey Through Time Scenic Byway as a significant or important scenic resource for inclusion in this Exhibit.

3.3.1.2 Journey Through Time Tour Management Plan

Portions of multiple ODOT-managed roads occur within the analysis area; however, only US-97 has a specific land use management plan. The ODOT Oregon Scenic Byway Program assists in the designation, protection, and promotion of Oregon's scenic byways (ODOT 2026). Oregon's program pre-dates the federal Scenic Byways program, with concern for enhancing Oregon's natural beauty apparent dating back to 1913 with the formalization of a state highway system. Oregon scenic byways are maintained by Corridor Management Plans, as available. The only State Scenic Byway within the analysis area is the Journey Through Time Scenic Byway, which is managed by the Journey Through Time Tour Management Plan (Michael Wetter & Associates 1996; see Figure I-1). The Byway spans five Oregon counties and comprises portions of multiple interstates and state highways, including US-97 which is within the analysis area. Specific scenic resources identified along the scenic byway within the analysis area include unobstructed views of Mt. Jefferson, Mt. Hood, and Mt. Adams. Therefore, based on the information provided through the Journey Through Time Tour Management Plan, the Certificate Holder concludes that ODOT identifies the Journey Through Time Scenic Byway (i.e., US-97) as a significant or important scenic resource for inclusion in this Exhibit.

3.4 Tribal

There are no Tribal lands located within the analysis area; therefore, this Exhibit does not address any Tribal land management plans.

3.5 Regional

There are no regional land use management plans (outside of the federal/state/local plans that apply to “regions” of the applicable jurisdiction(s); e.g., the BLM Two Rivers Resource Management Plan that applies to the Central Oregon region of the Prineville District) applicable to the analysis area.

3.6 Federal

3.6.1 Bureau of Land Management

The only BLM parcels within the analysis area are associated with the Deschutes River and John Day River (see Figure I-1). These parcels contain scenic resources or have designated land use management plans. See below for further information.

3.6.1.1 Two Rivers Resource Management Plan

The Two Rivers Resource Management Plan, Record of Decision, Rangeland Program Summary (BLM 1986a) states under Chapter 2, Visual Resources that activities that would result in significant, long-term adverse effects on the visual resources of the John Day or Lower Deschutes River canyons in areas normally seen from these rivers would not be permitted; both river canyons are also designated Special Management Areas (BLM 1986a). The Deschutes River Canyon and John Day River Canyon are within the analysis area (see Figure I-1; both evaluated as protected areas and/or recreation areas in Exhibits E and K).

Additionally, Areas of High Visual Quality are identified along the Lower Deschutes River Canyon, as updated in the BLM National Data; however, none of these areas are located within the analysis area (BLM 2026a). Therefore, based on the information provided through the Two Rivers Resource Management Plan, the Certificate Holder concludes that BLM identifies the Lower Deschutes River Canyon and John Day River Canyon (both of which are inclusive of both the federal and state designations) as significant or important scenic resources for inclusion in this Exhibit.

3.6.1.2 John Day Basin Record of Decision and Resource Management Plan

The John Day Basin Record of Decision and Resource Management Plan (RMP; BLM 2015) applies to eight counties in central and eastern Oregon, including the area east of US-97 and the North Fork of the John Day River within the analysis area. The plan includes various objectives for visual resources, including protection for Visual Resource Management (VRM) lands; however, based on the latest BLM National Data, no VRM lands were found to be located along the John Day River or in the analysis area (BLM 2026a). The plan lists both the John Day Wild and Scenic River and John Day State Scenic Waterway as scenic areas (both evaluated as protected areas in Exhibit E), both of which are within the analysis area (see Figure I-1). Therefore, based on the information provided through the John Day Basin Record of Decision and RMP, the Certificate Holder concludes that BLM identifies the John Day River Canyon (inclusive of both the federal and state designations) as a significant or important scenic resource for inclusion in this Exhibit.

3.6.2 National Park Service

The analysis area includes a portion of the Oregon National Historic Trail (ONHT), which received federal designation as a “historic trail” under the National Trails System Act (NTSA) in 1978. The purpose of the historic trail designation on federal lands is to protect the historic route and any associated artifacts. Specifically, the purpose is described in Section 3(a)(3) of the NTSA as follows:

National historic trails shall have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment. Only those selected land and water based components of an historic trail which are on federally owned lands and which meet the national historic trail criteria established in this chapter are included as Federal protection components of a national historic trail....(p. 209, NPS 1999)

Thus, the NTSA and its related protections apply only to where the ONHT is on federal lands. In addition, the focus of the NTSA is on historic preservation, not the management of scenic resources.

The NTSA indicates that specific locations along a historic trail can be identified as “high-potential” sites or trail segments. High-potential sites and trail segments are described as those locations that provide an opportunity to interpret the historic significance of the trail during its major use. As identified in the Management and Use Plan Update – Oregon National Historic Trail and Mormon Pioneer National Historic Trail (MUP; NPS 1999), the portion of the ONHT within the analysis area includes two high-potential sites, McDonalds/John Day Crossing and Biggs Junction.

The MUP was developed to comply with the requirements of the NTSA and to manage preservation of the ONHT. The MUP explains that the purposes of the ONHT are “to identify, preserve, and interpret sites, route, and history of the Oregon Trail” and “to commemorate the westward movement of emigrants to the Oregon country as an important chapter of our national heritage.” Thus, the ONHT is managed for historical significance and not primarily as a scenic resource. The MUP’s focus on the historic significance of the ONHT and not management of scenic resources is consistent with the Council findings in Section III.J of the Final Order on RFA 3 of the Leaning Juniper IIB Wind Power Facility Site Certificate, dated July 2025.⁷ The scenic value connected with the ONHT is focused on the view of visible trail remnants and ruts, along with the immediate surroundings; scenic quality may be considered when the BLM/NPS is determining whether a site is a high-potential site, but that in itself does not designate the resource to have important or significant scenic qualities, descriptions, or management criteria. Therefore, the high-potential sites/segments of the ONHT identified in the MUP are significant or important historic resources, but are not specifically identified as scenic resources (NPS 1999). Note that they are further evaluated in Exhibit J as important cultural resources.

Although the ONHT high-potential sites and segment are important historic resources, they are not considered nor managed as significant or important scenic resources.

4.0 Visual Impacts

The inclusion of the additional solar modules and associated infrastructure at the RFA 5 Solar Facility would result in a change to the existing viewshed, but this change would not result in a significant visual impact on any of the surrounding scenic resources due to overall height of infrastructure, distance to the RFA 5 Solar Facility, topographical screening, low impact to users, no specified management of scenic or visual qualities beyond the boundaries of each scenic resource, and presence of similar structures within the existing viewshed. To reduce visual impacts to scenic resources, Site Certificate Conditions GEN-WF-03 and GEN-LU-12 would continue to be implemented, which require the usage of low-reflective, neutral finishes on the O&M building, BESS, and substation and enforces signage restrictions. The BESS and substation would be designed and

⁷ Final Order on Request for Amendment 3 of the Leaning Juniper IIB Wind Power Facility Site Certificate, July 2025, pp. 85-86.

constructed to be consistent with the character of buildings in the surrounding area and painted in a neutral color, per Site Certificate Conditions GEN-WF-04 and GEN-LU-12. Exterior nighttime lighting would continue to be restricted to security lighting at the O&M building and substation, and as necessary for repairs and emergencies, according to Site Certificate Conditions GEN-WF-05 and GEN-LU-12. Additionally, all lighting shall be limited in intensity, shielded, and directed downward to prevent the lighting from projecting onto adjacent properties and roadways (Site Certificate Conditions GEN-WF-05 and GEN-LU-12).

4.1 Methodology – OAR 345-022-0080(5)(c)

(c) A description of the methodology the applicant used to identify and assess potential visual impacts to the scenic resources identified in subsection (a);

The potential for visual impacts from the RFA 5 Solar Facility is primarily related to the components that would be the most prominent in size and scale. The two most prominent components in terms of height off the ground and overall surface area include the solar areas and the 230-kV gen-tie line. Thus, these two components were the main focus of the visual impact assessment.

4.1.1 Zone of Visual Influence Analysis

A zone of visual influence (ZVI) analysis, also known as a viewshed analysis, was performed using Esri geographic information system software and a bare-earth 10-meter digital elevation model to identify those areas from which the solar areas and the gen-tie line might be visible (Figures I-2 and I-3). The ZVI analysis assumed a maximum height of 15 feet for the solar modules and maximum height of 140 feet for the gen-tie line. All other components proposed with RFA 5 were deemed less visually impactful (due to height, being dispersed throughout the RFA 5 Site Boundary, or adjacent to taller infrastructure, etc.) and addressed by the assessment of the solar areas and gen-tie line. A typical viewing height of 1.8 meters (6 feet) was assumed.

Visibility of the two components was defined by visible or not visible, indicated by color coding (see Figures I-2 and I-3), and by proximity, i.e., foreground (less than 0.5 mile), middleground (0.5 to 5 miles), or background distances (more than 5 miles). The concept of distance zones can be used as a frame of reference to describe the characteristics of the visible landscape and the effects on scenery from human development and activities. Viewer distance and visual acuity are key factors in studying and determining visual effects, with perceived contrast and visual effects generally diminishing as distance between the viewer and the affected area increases. Distance zones (foreground, middleground, and background) provide a frame of reference for classifying the degree to which details of the viewed RFA 5 Solar Facility would affect visual resources. The zones are defined by their distance from the RFA 5 Site Boundary. These zones establish a reference for evaluating how project details influence visual resources. They are defined by their distance from the RFA 5 Solar Facility as follows (BLM 1986b):

- **Foreground/Middleground.** This distance zone (between 0 and 5 miles) is considered to be the range from which RFA 5 component details would be visually clear (foreground) and

where viewers still have the potential to distinguish individual forms, and texture and color are still identifiable, but become muted and less detailed (middleground).

- **Background.** Within this distance zone (between 5 miles and 15 miles), texture has disappeared, and color has flattened, making objects appear “washed out;” however, landform ridgelines are still distinguishable.
- **Seldom Seen.** This distance zone (beyond 15 miles) includes lands visible beyond the background distance or lands hidden from view from key locations.

Viewers are likely to perceive landscape features with greater clarity in foreground views, with clarity gradually diminishing toward the distant middleground. Within the background distance zone, forms, lines, and textures begin to blend into the surrounding landscape and colors generally appear more muted. Features located within the seldom-seen distance zone would be barely detectable.

It should be noted that this bare-earth modeling approach (based only on the effects of terrain on visibility) results in a highly conservative assessment of potential visibility for several reasons. First, a bare-earth analysis does not take into account the effects of vegetation or buildings, which would in practice block or screen views in some places. Finally, the model does not account for distance, lighting, weather, and atmospheric attenuation factors that diminish visibility under actual field conditions. The solar modules would be the most visible components within the solar areas (see RFA 5 Background Information Exhibit for full description). The visibility of the solar modules within the solar areas would depend primarily on topographic or other view obstructions and the distance from the viewer to the solar areas. With a maximum height of 15 feet to the top edge of the solar module when fully tilted, the modules would not be visible from sites lower in elevation than the area on which the solar modules are constructed. From sites that are similar in elevation to the solar modules, viewers would see only a line on the horizon and not individual solar panels, unless within the foreground distance zone. Depending on the viewing distance, viewers at sites higher in elevation may have views of the modules, especially if the view direction is toward the angle at which the module is tilted toward the sun. To the extent practicable, reflectivity of solar modules would be minimized. Antireflective coating would be used to reduce glare, and the surface of the modules would have high transmittance to increase the amount of light reaching the photovoltaic cells. With these methods, the modules would be less reflective than a natural water body or a coated glass surface that is not antireflective.

Where visible, the gen-tie line would be subordinate to the visual character of the existing views, generally appearing as being absorbed into the broader landscape.

4.1.2 Glare Analysis

A glare analysis was performed using the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT), a modeling/compliance analysis tool now licensed for public use within the ForgeSolar GlareGauge cloud software application. The SGHAT is considered to be an industry best practice for analysis of glare and glint related to solar energy generating facilities. It is a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The

validated tool provides a quantified assessment of when and where glare would occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g., anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare would occur throughout the year, with color indicating the potential ocular hazard. Note, however, that technology advancements continue to occur to address issues such as reflectivity. The model, therefore, presents a conservative assessment based upon simplifying assumptions inherent in the model as well as industry improvements since the most recent update of such assumptions.

Based on the predicted retinal irradiance (intensity) and subtended angle (size/distance) of the glare source to receptor, the GlareGauge categorizes potential glare where it is predicted by the model to occur in accordance with three tiers of severity (ocular hazards) that are shown by different colors in the model output:

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn);
- Yellow glare: glare predicted with a potential for temporary after-image; and
- Green glare: glare predicted with a low potential for temporary after-image.

These categories of glare are calculated using a typical observer's blink response time, ocular transmission coefficient (the amount of radiation absorbed in the eye prior to reaching the retina), pupil diameter, and eye focal length (the distance between where rays intersect in the eye and the retina). As a point of comparison, direct viewing of the sun without a filter is considered to be on the border between yellow glare and red glare, while typical camera flashes are considered to be lower tier yellow glare (approximately three orders of magnitude less than direct viewing of the sun). Upon exposure to yellow glare, the observer may experience a temporary spot in their vision temporarily lasting after the exposure. Upon exposure to green glare, the observer may experience a bright reflection but typically no spot lasting after exposure.

The SGHAT was used to evaluate the potential for glint and glare when driving along 1) proximal segment of Emigrant Springs Lane, Herin Lane, OR-206, I-97, Klondike Road, Medler Lane, N Klondike Road, Oehman Road, Old Wasco-Heppner Highway, and Webfoot Road; 2) 27 nearby locations selected to represent observer views at neighboring properties; and 3) the two 2-mile final approach paths for the Wasco State Airport (35S) located approximately 0.8 mile to the southwest from the southern limit of the RFA 5 Site Boundary. The analysis reports are included as Attachment I-2.

The analyses reviewed six PV array areas (PV arrays 1 to 6) that were modeled to represent the proposed panel layout. The panels to be used at the RFA 5 Solar Facility are smooth glass surface material with an anti-reflection coating, which is noted in the glare analysis. Three analyses were performed to simulate single-axis tracking panels with a 60-degree tilt. The analyses were conducted for a panel height of 8 feet above ground surface (centroid/axis height) with applicable panel specifications. Backtracking was simulated with a resting angle of 5 degrees. Backtracking is the programmed strategy that rotates the modules away from the sun to reduce shading to other

panels. This typically is put into effect when the sun's position lies outside the range of rotation defined by the maximum tracking angle (60 degrees) of the PV panels, or when substantial shading occurs. The resting angle is the programmed-in tilt that the panels stay at while the sun's position is outside the defined tracking angle. The analysis includes calculations to predict potential glare minutes at the following specified receptors:

- Viewing height of observer in standard first-floor building at 6 feet above ground surface and standard vehicle at 3.5 feet above ground surface (Analysis 1);
- Viewing height of observer in a standard second-floor building at 16 feet above ground surface and a typical semi-tractor-trailer truck at 7.5 feet above ground surface (Analysis 2); and
- The 2-mile final approach paths for Wasco State Airport, Runways 07 and 25 (Analysis 3).

On May 11, 2021, 14 Code of Federal Regulations Part 77 was updated with final Federal Aviation Administration (FAA) policy (86 *Federal Register* 25801), designed to ensure that solar projects on airport property do not produce hazardous glare. The updated policy includes narrative stating:

Initially, FAA believed that solar energy systems could introduce a novel glint and glare effect to pilots on final approach. FAA has subsequently concluded that in most cases, the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass façade buildings, parking lots, and similar features. However, FAA has continued to receive reports of potential glint and glare from on-airport solar energy systems on personnel working in Air Traffic Control Tower (ATCT) cabs. Therefore, FAA has determined the scope of agency policy should be focused on the impact of on-airport solar energy systems to federally-obligated towered airports, specifically the airport's ATCT cab. (FAA 2021)

Therefore, the FAA has developed the following criteria for analysis of solar energy projects located near jurisdictional airports:

- No potential for glint or glare in the existing or planned ATCT cab for federally obligated airports.
- Glare with a "low potential for after-image" along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan is allowed. The final approach path is defined as 2 miles from 50 feet above the landing threshold using a standard 3-degree glidepath.

The GlareGauge model does not account for varying ambient conditions (i.e., cloudy days, precipitation), atmospheric attenuation, screening due to existing vegetation or structures unless specified through obstruction modeling, and screening due to existing topography not located within the defined array layouts. As such, the predicted results are considered conservative and likely significantly lower than predicted. In addition, proposed grading within the model PV array

areas was not accounted for at this stage. A leveled topography within the defined PV array areas could result in less predicted glare.

4.2 Visual Impacts – OAR 345-022-0080(5)(d)(e)

(d) Identification of potential visual impacts to the scenic resources identified in subsection (a), including, but not limited to:

(A) Loss of vegetation or alteration of the landscape as a result of construction or operation;

(B) Visual impacts of facility structures or plumes, including but not limited to, changes in landscape character or quality; and

(C) Loss of visibility due to air emissions or other pollution resulting from the construction or operation of the proposed facility;

(e) An assessment of the significance of the visual impacts described under subsection (d);

Table I-2 presents the results of the viewshed analysis for nearby cities within the analysis area. The RFA 5 Solar Facility would not generate any emissions plumes and thus would not cause any visual impacts from air emissions. Potential visual impacts due to dust created during construction of the RFA 5 Solar Facility would be largely prevented by following best management practices for dust control as detailed in Exhibits C and O2. Vegetation removal and site grading would be limited as practicable during construction (neither anticipated during operations), and any associated visual impacts would be addressed through the implementation of appropriate mitigation measures including revegetation (see Exhibit G). Visual impacts of the RFA 5 Solar Facility are primarily related to potential views of the solar arrays and gen-tie line.

Table I-2. Viewshed Analysis Results for Cities Near the Facility

Jurisdiction	Assessment Results
Wasco	No visibility
Rufus	No visibility
Moro	No visibility

Descriptions of the visual effects of the RFA 5 Solar Facility at the affected scenic resources are provided below. The Lower Deschutes River Canyon and I-84 would not have solar array or gen-tie line visibility within the analysis area.

4.2.1 Scenic Resources

4.2.1.1 Lower Deschutes River Canyon

Along the Lower Deschutes River Canyon, no visual impacts from the RFA 5 Solar Facility are anticipated. The viewshed analysis indicates no visibility of the solar arrays or gen-tie line at the Lower Deschutes River Canyon (Figures I-2 and I-3).

4.2.1.2 *John Day River Canyon*

The John Day River Canyon encompasses both the John Day Wild and Scenic River and John Day State Scenic Waterway. The John Day River Canyon is located approximately 5.1 miles east of the RFA 5 Site Boundary; over 18 miles of the 147-mile John Day River are within the analysis area. The portion of the Mainstem segment within the 10-mile analysis area, from approximately 9 miles south of I-84 to where the river meets the Columbia River, is included under the state and federal designations. This portion of the John Day River is part of the John Day River Canyon identified by the applicable federal management plan as well as by local plans as an important scenic resource where significant adverse visual impacts should be avoided (BLM 1986b, 2015; Gilliam County 2021, 2022; Sherman County 2007). The river corridor is popular for its diverse recreational opportunities including fishing, hunting, sightseeing, horseback riding, hiking, camping, rafting, and even skiing and snowmobiling (BLM 2026b).

The overall visual impact from the solar areas and gen-tie line on the John Day River Canyon would be negligible. The ZVI analysis demonstrates only intermittent visibility of the gen-tie line along a small portion of the John Day River Canyon within the analysis area from a background viewing distance; these views are confined to the upper ridges of the John Day River Canyon and the RFA 5 Solar Facility would not be visible from within the canyon, where most of the recreational opportunities are concentrated (see Figures I-2 and I-3). The viewshed analysis also indicates no visibility of the solar arrays due to terrain/geographical screening within the analysis area (Figures I-2 and I-3). Accordingly, no significant amounts of glare are predicted for this resource (see Section 4.2.2 for further discussion). Views of the gen-tie line would be similar to the other power lines in the area. Views of the gen-tie line are anticipated to be intermittent and subordinate to the existing landscape due to existing wind and utility infrastructure in the viewshed, and topographical screening limiting RFA 5 Solar Facility visibility. Thus, the solar areas and gen-tie line would not represent a new or unusual feature in the viewshed and would create—at most—weak additional contrast within the current visual context. Therefore, due to distant proximity, topographical screening, and existing views of other wind farms and utility infrastructure from the John Day River Canyon, visual impacts from the RFA 5 Solar Facility are anticipated to be negligible.

4.2.1.3 *Scenic Portions of Interstate 84*

Along the scenic-designated portions of I-84 (i.e., Mileposts 100-106 and 110-114), no visual impacts from the RFA 5 Solar Facility are anticipated. The viewshed analysis indicates no visibility of the solar arrays or gen-tie line along the scenic portions of I-84 (Figures I-2 and I-3).

4.2.1.4 *Journey Through Time Scenic Byway*

The 286-mile Journey Through Time Scenic Byway starts at Biggs Junction along US-97 through the analysis area to Shaniko, where it turns east and eventually travels to Baker City. The Byway is assumed to be a heavily used route in the north-central Oregon region and is located 2.5 miles southwest of the RFA 5 Site Boundary; approximately 20 miles of the Byway are within the analysis

area. There are no developed scenic overlooks or waysides along the Byway within the analysis area; nevertheless, sightseeing and road touring are considered to be the primary recreational uses along the Byway. The route within the analysis area passes through agricultural land, near Oregon Trail segments, and existing wind farms (Travel Oregon 2026). The Byway is identified by the applicable state management plans as well as by local plans as an important scenic resource where significant adverse visual impacts should be avoided (Michael Wetter & Associates 1996, ODOT 2023, Sherman County 2007).

The overall visual impact from the solar areas and gen-tie line on the Journey Through Time Scenic Byway would be negligible. The ZVI analysis demonstrates only intermittent visibility of the solar areas and gen-tie line along a small portion of the Byway within the analysis area from a middleground viewing distance (see Figures I-2 and I-3). No significant amounts of glare are predicted for this resource (see Section 4.2.2 for further discussion). The solar array would introduce dark colors, geometric shapes, and horizontal and vertical lines into the landscape setting. Views of the gen-tie line would be similar to the other power lines in the area. Views of both the solar areas and gen-tie line are anticipated to be intermittent and subordinate to the existing landscape due to existing wind and utility infrastructure in the viewshed, and topographical screening limiting RFA 5 Solar Facility visibility. Visual impacts from the RFA 5 Solar Facility would be transient in nature, experienced by drivers as they pass near the RFA 5 Solar Facility. Thus, the solar areas and gen-tie line would not represent a new or unusual feature in the viewshed and would create—at most—weak additional contrast within the current visual context. Therefore, due to the distant proximity, topographical screening, and existing views of other wind farms and utility infrastructure from the Journey Through Time Scenic Byway, visual impacts from the RFA 5 Solar Facility are anticipated to be negligible.

4.2.1.5 Scenic Portion of OR-206

The scenic-designated portion of OR-206 is located approximately 2.8 miles west of the RFA 5 Site Boundary; a majority of the 9.9-mile scenic-designated portion of OR-206 (i.e., Mileposts 5.0 to 14.91; Sherman County 2007) is within the analysis area. The portion of scenic OR-206 within the 10-mile analysis area, from west of Wasco to approximately where the road meets the Columbia River, is included under the local designations. These scenic portions of OR-206 are identified by applicable local management plans as an important scenic resource where significant adverse visual impacts should be avoided (Sherman County 2007). Recreational opportunities include sightseeing, traveling southeast from the Columbia River to the John Day River Canyon crossing (within the analysis area) with no associated viewpoints or facilities.

The overall visual impact from the solar areas and gen-tie line on the scenic portions of OR-206 would be negligible. The ZVI analysis demonstrates only intermittent visibility of the solar areas and gen-tie line along the scenic portions of OR-206 within the analysis area from a middleground viewing distance (see Figures I-2 and I-3). No significant amounts of glare are predicted for this resource (see Section 4.2.2 for further discussion). The solar array would introduce dark colors, geometric shapes, and horizontal and vertical lines into the landscape setting. Views of the gen-tie

line would be similar to the other power lines in the area. Views of both the solar areas and gen-tie line are anticipated to be intermittent and subordinate to the existing landscape due to existing wind and utility infrastructure in the viewshed, and topographical screening limiting RFA 5 Solar Facility visibility. Visual impacts from the RFA 5 Solar Facility would be transient in nature, experienced by drivers as they pass near the RFA 5 Solar Facility. Thus, the solar areas and gen-tie line would not represent a new or unusual feature in the viewshed and would create—at most—weak additional contrast within the current visual context. Therefore, due to the distant proximity, topographical screening, and existing views of other wind farms and utility infrastructure from the scenic portions of OR-206, visual impacts from the RFA 5 Solar Facility are anticipated to be negligible.

4.2.2 Glare Analysis Results

4.2.2.1 Revised Analysis 1 – First-Story Receptors

As part of Analysis 1, six PV array areas for 27 first-story receptors (Glare Analysis Observation Points [OP]-1 through OP-27) and 11 proximal route receptors were analyzed from the height of a driver in a standard commuter vehicle along segments of Emigrant Springs Lane, Herin Lane (two sections), OR-206, I-97, Klondike Road, Medler Lane, N Klondike Road, Oehman Road, Old Wasco-Heppner Highway, and Webfoot Road. The SGHAT GlareGauge modeled the results for the RFA 5 Solar Facility. The simulation predicted no glare to the modeled receptors.

4.2.2.2 Revised Analysis 2 – Second-Story Receptors

As part of Analysis 2, six PV array areas for 27 second-story receptors (OP-1 through OP-27) and 11 proximal route receptors were analyzed from the height of a driver in a typical tractor trailer along segments of Emigrant Springs Lane, Herin Lane (two sections), OR-206, I-97, Klondike Road, Medler Lane, N Klondike Road, Oehman Road, Old Wasco-Heppner Highway, and Webfoot Road. The SGHAT GlareGauge modeled the results for the RFA 5 Solar Facility. The simulation predicted no glare to the modeled receptors.

4.2.2.3 South Array Analysis 3 – Federal Aviation Administration Receptors

As part of Analysis 3, six PV Array Areas were analyzed for the two 2-mile final approach paths for the Wasco State Airport. Specifications for the runways were taken from the FAA Aeronautical Data resource database. A typical 30-degree maximum downward viewing angle and 50-degree maximum azimuthal viewing angle from the aircraft cockpit were included. SGHAT GlareGauge modeled the results for the RFA 5 Solar Facility. The simulation predicted minor amounts of green glare along a specific section of the flight path for Runway 25. Predicted glare for the flight path occurs from PV arrays 1 and 2, occurring in April to August with a duration of less than 10 minutes between the hours of 6:00 PM and 8:00 PM. The simulation predicted minor amounts of yellow glare along a specific section of the flight path for Runway 25. Predicted yellow glare occurs from

PV array 1, occurring in late April to mid-August with a duration of less than 12 minutes between the hours of 6:00 PM and 8:00 PM

A total of 12.7 hours of annual green glare and 13.8 hours of annual yellow glare were predicted in the model. Based on 12 hours of daylight, this equates to green glare and yellow glare approximately 0.3 percent of the time. This amount of green and yellow is considered insignificant. In addition, this is a conservative prediction as the GlareGauge model does not account for varying ambient conditions (i.e., cloudy days, precipitation), atmospheric attenuation, screening due to existing vegetation or structures unless specified through obstruction modeling, and screening due to existing topography not located within the defined array layouts. As such, the predicted results are considered conservative and likely significantly lower than predicted.

4.2.2.4 Summary of Glare Analysis Results

No glare was predicted for the modeled 27 OPs or road receptors in Analysis 1 or 2, but Analysis 3 predicted minor green and yellow glare for the two 2-mile final approach paths for the Wasco State Airport. No instances of red glare are predicted for any OP or route segments. A total of 12.7 annual hours of green glare and 13.8 annual hours of yellow glare were predicted from PV Arrays 1 and 2. Based on 12 hours of daylight, this equates to approximately 0.3 percent of the time. This amount of green and yellow glare is considered insignificant. In addition, this is a conservative prediction as the GlareGauge model does not account for varying ambient conditions (i.e., cloudy days, precipitation), atmospheric attenuation, screening due to existing vegetation or structures unless specified through obstruction modeling, and screening due to existing topography not located within the defined array layouts. As such, the predicted results are considered conservative and likely significantly lower than predicted. For mitigation, raising the resting angle of the select panels predicted to cause glare (PV arrays 1 and 2) from 5 to 10 degrees may result in lower to null glare results.

5.0 Avoidance and Mitigation Measures – OAR 345-022-0080(5)(f)

(f) A description of the measures the applicant proposes to avoid, reduce or otherwise mitigate any potential significant adverse visual impacts; and

The changes at the amended BCWF under RFA 5 would have no significant adverse impacts on identified scenic resources. Therefore, no additional measures would be necessary to avoid or minimize impacts.

6.0 Monitoring – OAR 345-022-0080(5)(g)

(g) The applicant's proposed monitoring program, if any, for impacts to scenic resources.

No significant adverse impacts would occur to identified scenic resources from the amended BCWF; therefore, the Certificate Holder does not propose a monitoring program.

7.0 References

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8.0 Approval Standards and Submittal Requirements

Table I-3. Approval Standards and Submittal Requirements

Requirements	Location
OAR 345-022-0080 Scenic Resources	
Approval Standards	
(1) To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse visual impacts to significant or important scenic resources.	Sections 3.0 through 6.0
(2) The Council may issue a site certificate for a special criteria facility under OAR 345-015-0310 without making the findings described in section (1). In issuing such a site certificate, the Council may impose conditions of approval to minimize the potential significant adverse visual impacts from the design, construction, and operation of the facility on significant or important scenic resources.	N/A
(3) A scenic resource is considered to be significant or important if it is identified as significant or important in a current land use management plan adopted by one or more local, tribal, state, regional, or federal government or agency.	Section 3.0
(4) The Council shall apply the version of this rule adopted under Administrative Order EFSC 1-2007, filed and effective May 15, 2007, to the review of any Application for Site Certificate or Request for Amendment that was determined to be complete under OAR 345-015-0190 or 345-027-0363 before the effective date of this rule. Nothing in this section waives the obligations of the certificate holder and Council to abide by local ordinances, state law, and other rules of the Council for the construction and operation of energy facilities in effect on the date the site certificate or amended site certificate is executed.	N/A
Submittal Requirements	
(5) To assist the Council in determining whether the standard outlined in (1) through (4) has been met, the Applicant must submit an analysis of potential visual impacts of the proposed facility, if any, on significant or important scenic resources within the analysis area, providing evidence to support a finding by the Council under OAR 345-022-0080, including:	-
(a) An inventory of scenic resources identified as significant or important in a land use management plan adopted by one or more local, tribal, state, regional, or federal government or agency applicable to lands within the analysis area for scenic resources. The applicant must provide a list of the land management plans reviewed in developing the inventory and a copy of the relevant portion of the plans;	Attachment I-1, Section 3.0
(b) A map or maps showing the location of the scenic resources described under subsection (a), in relation to the site of the proposed facility;	Figure I-1
(c) A description of the methodology the applicant used to identify and assess potential visual impacts to the scenic resources identified in subsection (a);	Section 4.1
(d) Identification of potential visual impacts to the scenic resources identified in subsection (a), including, but not limited to:	-
(A) Loss of vegetation or alteration of the landscape as a result of construction or operation;	Section 4.2, Figures I-2 and I-3

Requirements	Location
(B) Visual impacts of facility structures or plumes, including but not limited to, changes in landscape character or quality; and	Section 4.2, Figures I-2 and I-3
(C) Loss of visibility due to air emissions or other pollution resulting from the construction or operation of the proposed facility;	Section 4.2, Figures I-2 and I-3
(e) An assessment of the significance of the visual impacts described under subsection (d);	Section 4.2, Figures I-2 and I-3
(f) A description of the measures the applicant proposes to avoid, reduce or otherwise mitigate any potential significant adverse visual impacts; and	Section 5.0
(g) The applicant's proposed monitoring program, if any, for impacts to scenic resources.	Section 6.0

Figures

Biglow Canyon Wind Farm Request for Amendment #5

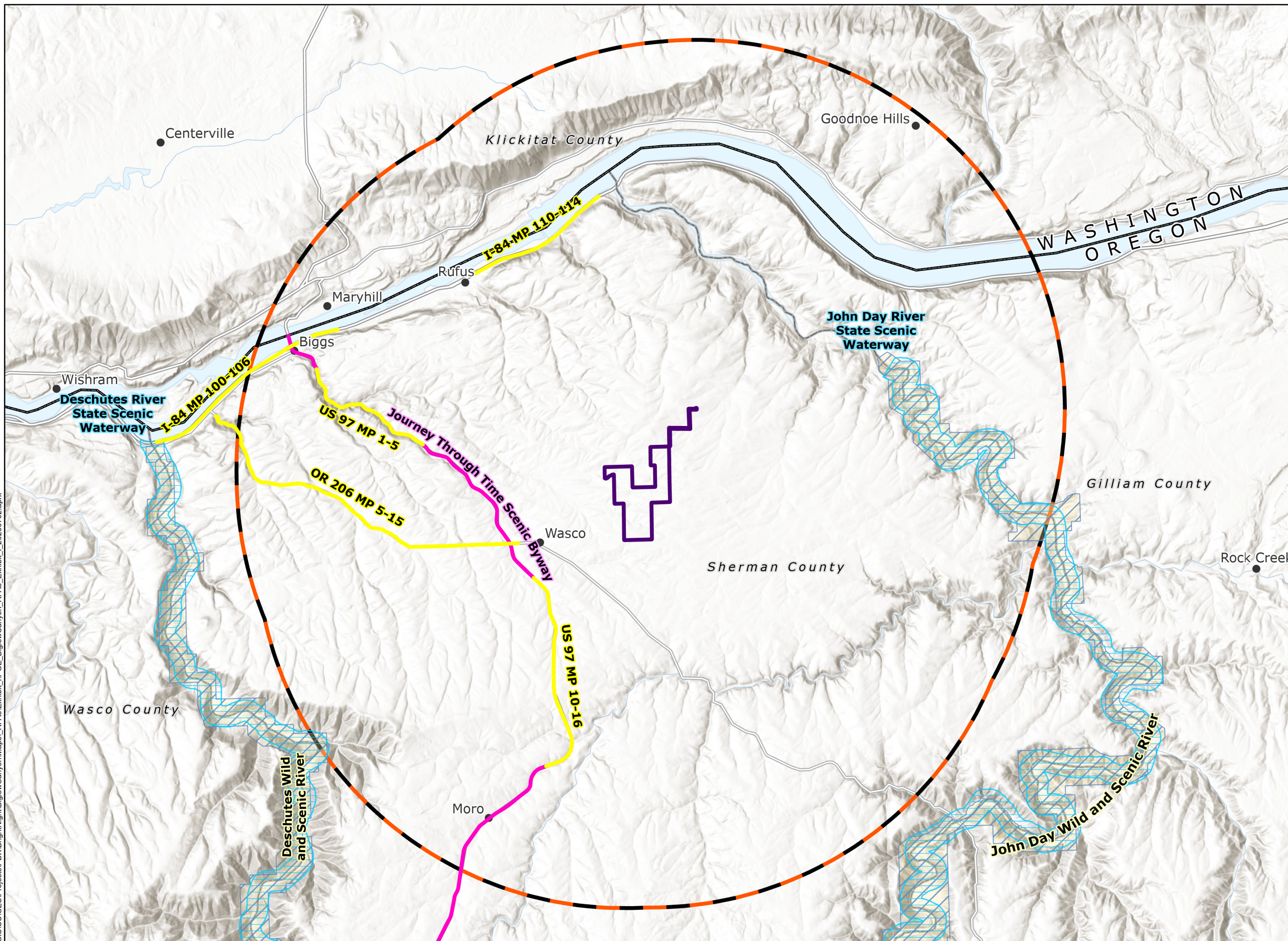
**Figure I-1
Scenic Resources within
the Analysis Area**

SHERMAN COUNTY, OR

- RFA5 Site Boundary
- Scenic Resources
- Analysis Area (10-mile buffer)
- State Boundary
- County Boundary
- City/Town
- Scenic Resources
 - OPRD State Scenic Waterway
 - BLM Wild, Scenic, or Recreational River
 - Scenic Byway (ODOT)
 - County Scenic Highway Segment



Reference Map



\\t:\local\GIS\US\CES\Projects\PD\BrightNight\BiglowCanyon\Maps_RFA5\Exhibit_1\PG_E_BiglowCanyon_RFA5_Exhibit_1_20260702.aprx



1:160,000

WGS 1984 UTM Zone 10N

0 2.5 5 10 15 Miles

NOT FOR CONSTRUCTION

**Biglow Canyon
Wind Farm Request
for Amendment #5**

**Figure I-2
Zone of Visual Influence
Map, Solar Array**

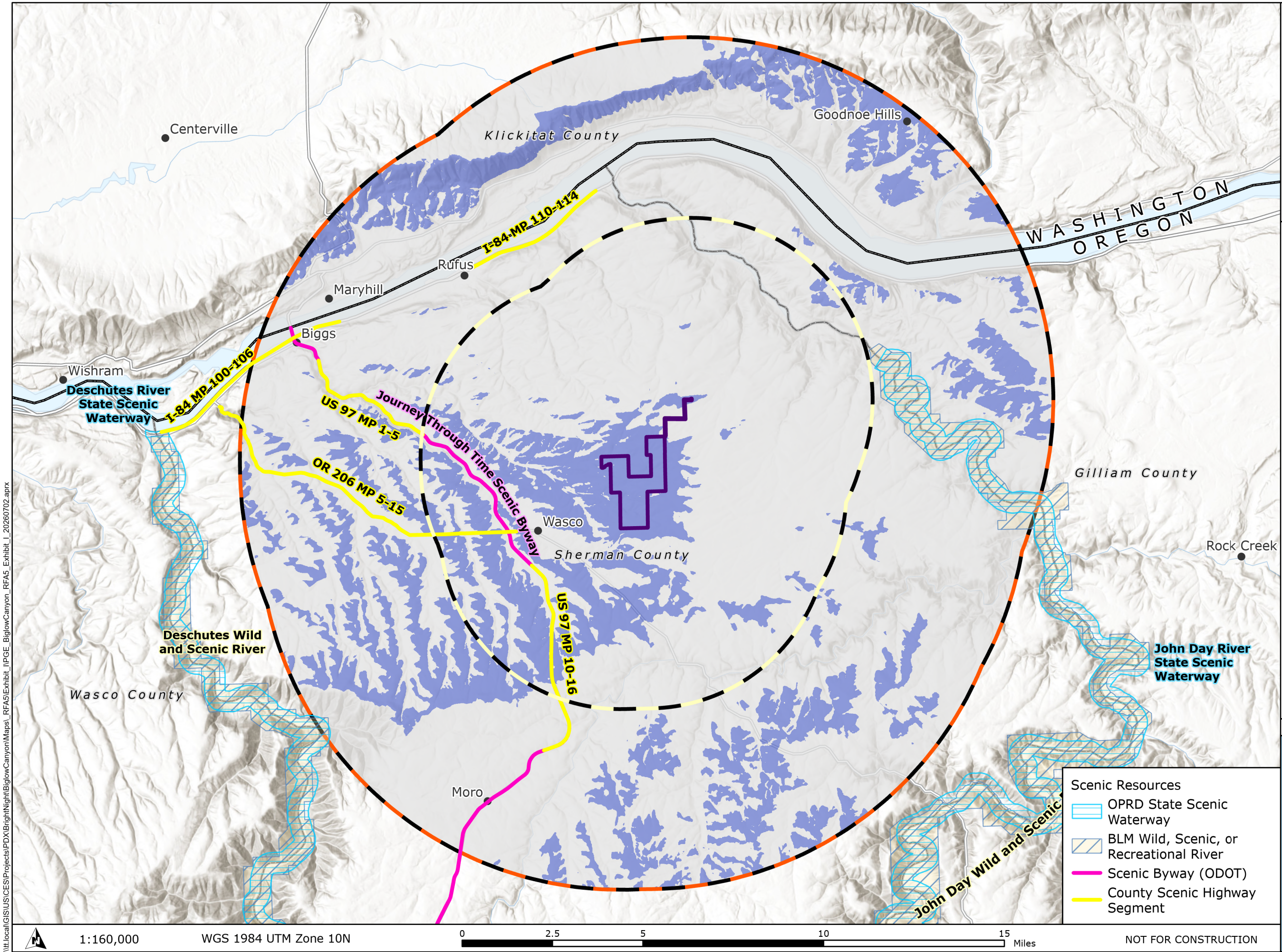
SHERMAN COUNTY, OR

- RFA5 Site Boundary
- Scenic Resources
- Analysis Area (10-mile buffer)
- 5-mile Buffer
- State Boundary
- County Boundary
- City/Town
- Solar Array Visibility***
 - Solar Array Not Visible
 - Solar Array Potentially Visible

*Potential solar array visibility calculated using a 10 meter bare-earth digital elevation model with panel heights of 15 feet (4.572 meters) and a viewing height of 6 feet (1.8 meters).



Reference Map



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1:160,000

WGS 1984 UTM Zone 10N

0 2.5 5 10 15 Miles

NOT FOR CONSTRUCTION

- Scenic Resources**
- OPRD State Scenic Waterway
 - BLM Wild, Scenic, or Recreational River
 - Scenic Byway (ODOT)
 - County Scenic Highway Segment

**Biglow Canyon
Wind Farm Request
for Amendment #5**

**Figure I-3
Zone of Visual Influence
Map, Gen-tie Line**

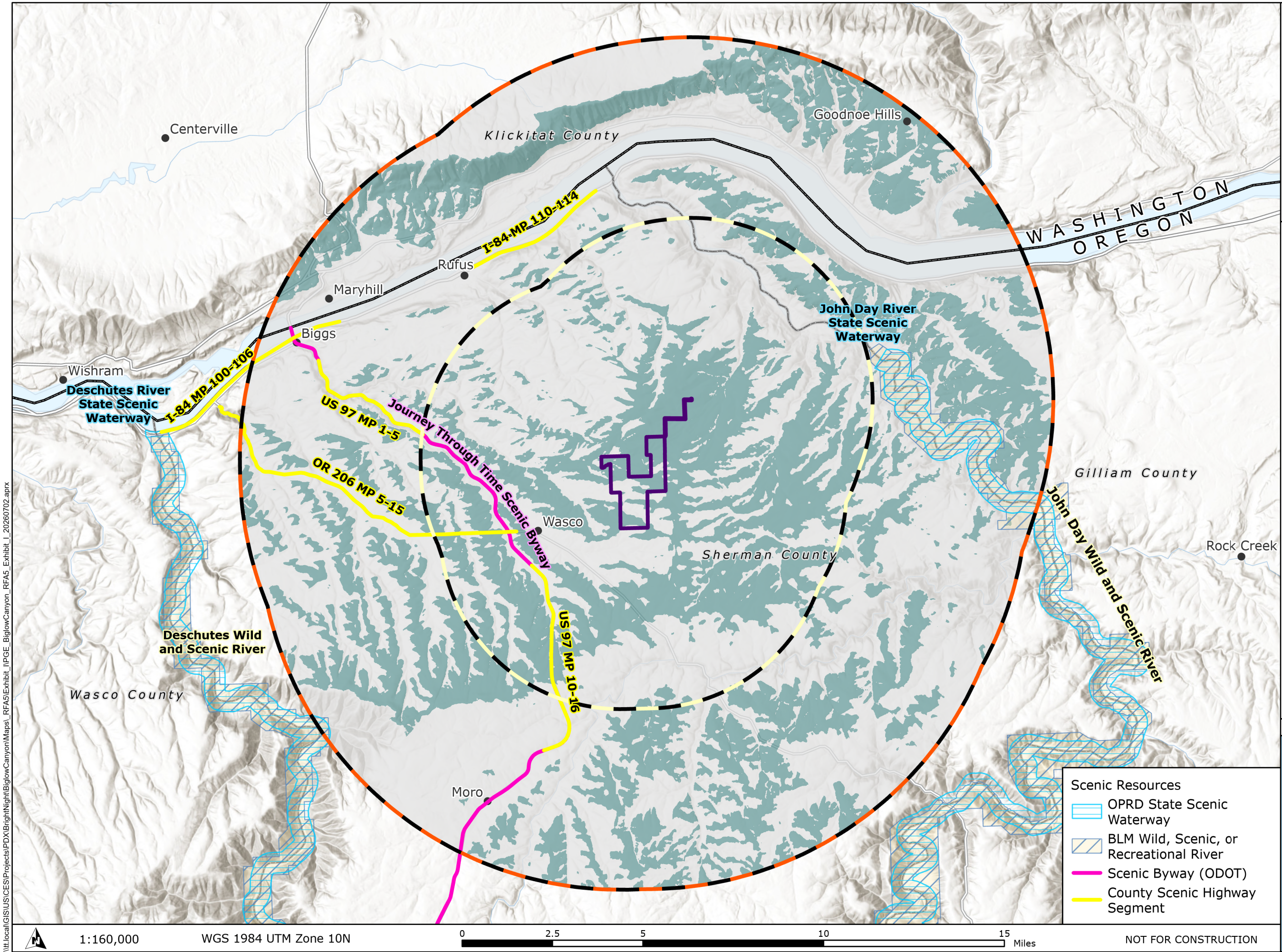
SHERMAN COUNTY, OR

- RFA5 Site Boundary
- Scenic Resources
- Analysis Area (10-mile buffer)
- 5-mile Buffer
- State Boundary
- County Boundary
- City/Town
- Gen-tie Visibility*
 - Gen-tie Line Not Visible
 - Gen-tie Line Potentially Visible

*Potential transmission line visibility calculated using a 10 meter bare-earth digital elevation model with gen-tie structure heights of 140 feet (42.672 meters) and a viewing height of 6 feet (1.8 meters).



Reference Map



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1:160,000

WGS 1984 UTM Zone 10N

0 2.5 5 10 15 Miles

NOT FOR CONSTRUCTION

- Scenic Resources**
- OPRD State Scenic Waterway
 - BLM Wild, Scenic, or Recreational River
 - Scenic Byway (ODOT)
 - County Scenic Highway Segment

Attachment I-1. Land Use Management Plan Excerpts

City of Wasco Updated Comprehensive Land Use Plan

CITY OF WASCO
UPDATED
COMPREHENSIVE LAND USE PLAN

THIS PLAN WAS UPDATED THROUGH THE AID
OF A TECHNICAL ASSISTANCE GRANT
FROM THE
DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT.

Prepared by
Dan Meader, Land Use Planner
TENNESON ENGINEERING CORPORATION

June 2007

ELECTED AND APPOINTED OFFICIALS

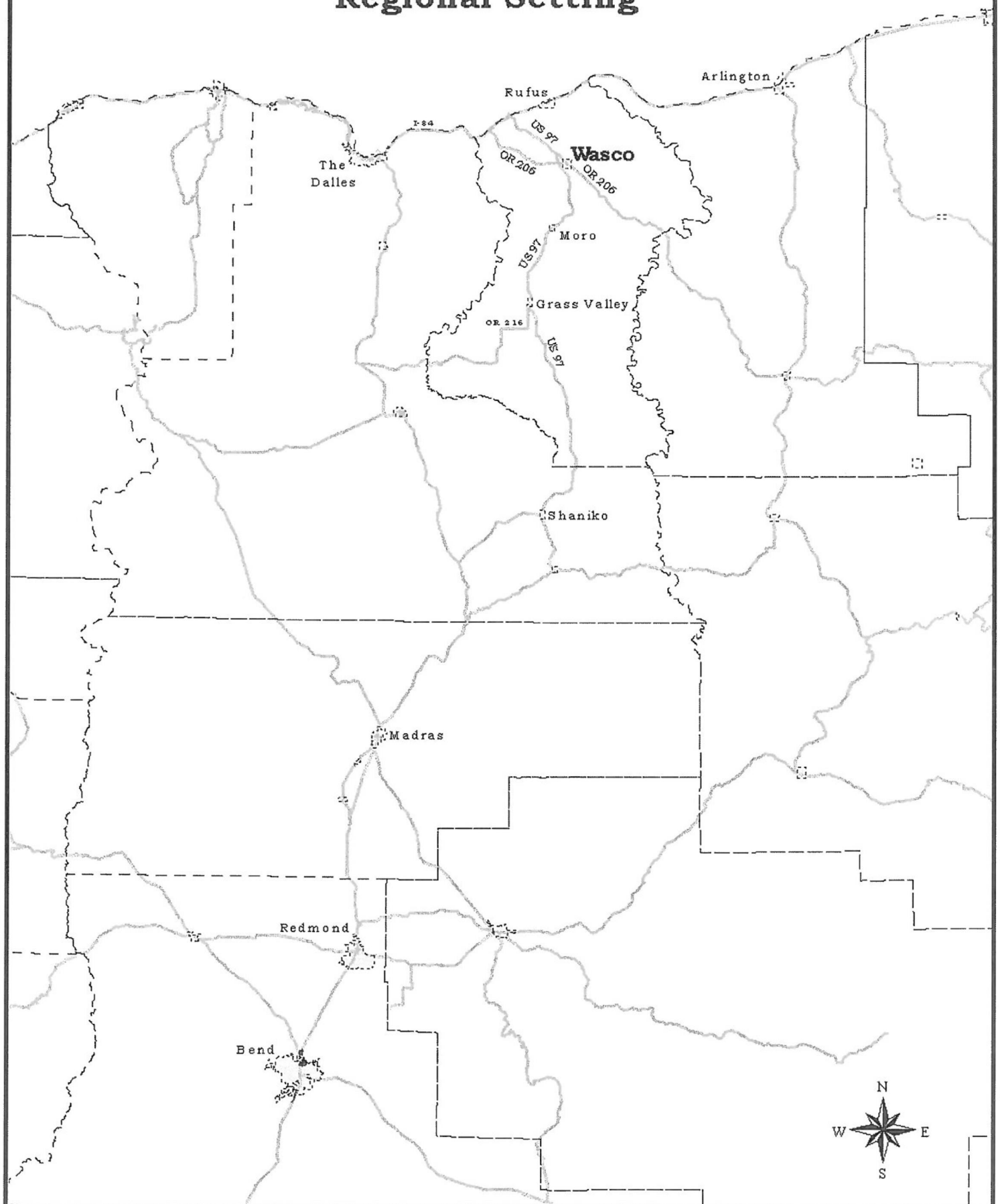
WASCO CITY COUNCIL MEMBERS

Karen Kellogg, Mayor
Ken DeGrange
Jim Manning
Eileen Wainwright
Jim Clifton
Fred Resen

CITY STAFF

Cassie Strege, City Clerk and Recorder
Terry Angle, City Engineer
Will Carey, Attorney
Dan Meader, Land Use Planner

Regional Setting



PHYSICAL CHARACTERISTICS

GENERAL PHYSICAL SETTING

The City of Wasco is located on U.S. Highway 97, nine miles south of the Columbia River and Interstate 84. The Town is incorporated as a square mile containing 640 acres amid the rolling hills on the plateau above the Columbia River. U.S. Highway 97 was relocated in the 1960s and there are now three exits off that highway into Wasco. The relocated highway allows north and south through-traffic to move freely without passing through the middle of the City as it had done historically.

Wasco is a low-density agricultural service center surrounded in almost every direction by expansive wheat farms. The town is positioned between two rivers classified under Oregon's Scenic Rivers System—the Deschutes River and the John Day River. Because of the natural setting of the City and its proximity to fine fishing, as well as the rural atmosphere, people from more urban areas are now being attracted to the City for retirement and recreational homesites.

TOPOGRAPHY AND DRAINAGE

Topographically, Wasco is located in a draw known as Spanish Hollow. Within the City Limits there is an elevation change of over 240 feet (see topography map). Urban development has occurred mostly at the bottom of the draw along the major transportation corridors, i.e., highways and railroads. City streets extend upward in the cardinal directions from the hollow bottom. The hollow passes through the City in a northwest/southeast direction. Vehicular traffic is only rarely disrupted when snow or ice forms on sloping streets. The topography has had only a moderate influence on existing land use patterns and will not be a significant factor in the future.

Some flooding may occur in localized areas along the hollow bottom during periods of rapid runoff
(see hazards map).

City of Rufus Updated Comprehensive Land Use Plan

CITY OF RUFUS

UPDATED

COMPREHENSIVE LAND USE PLAN

THIS PLAN WAS UPDATED THROUGH THE AID
OF A TECHNICAL ASSISTANCE GRANT
FROM THE
DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT.

Prepared by

Dan Meader, Land Use Planner
TENNESON ENGINEERING CORPORATION

June 2007

ELECTED AND APPOINTED OFFICIALS

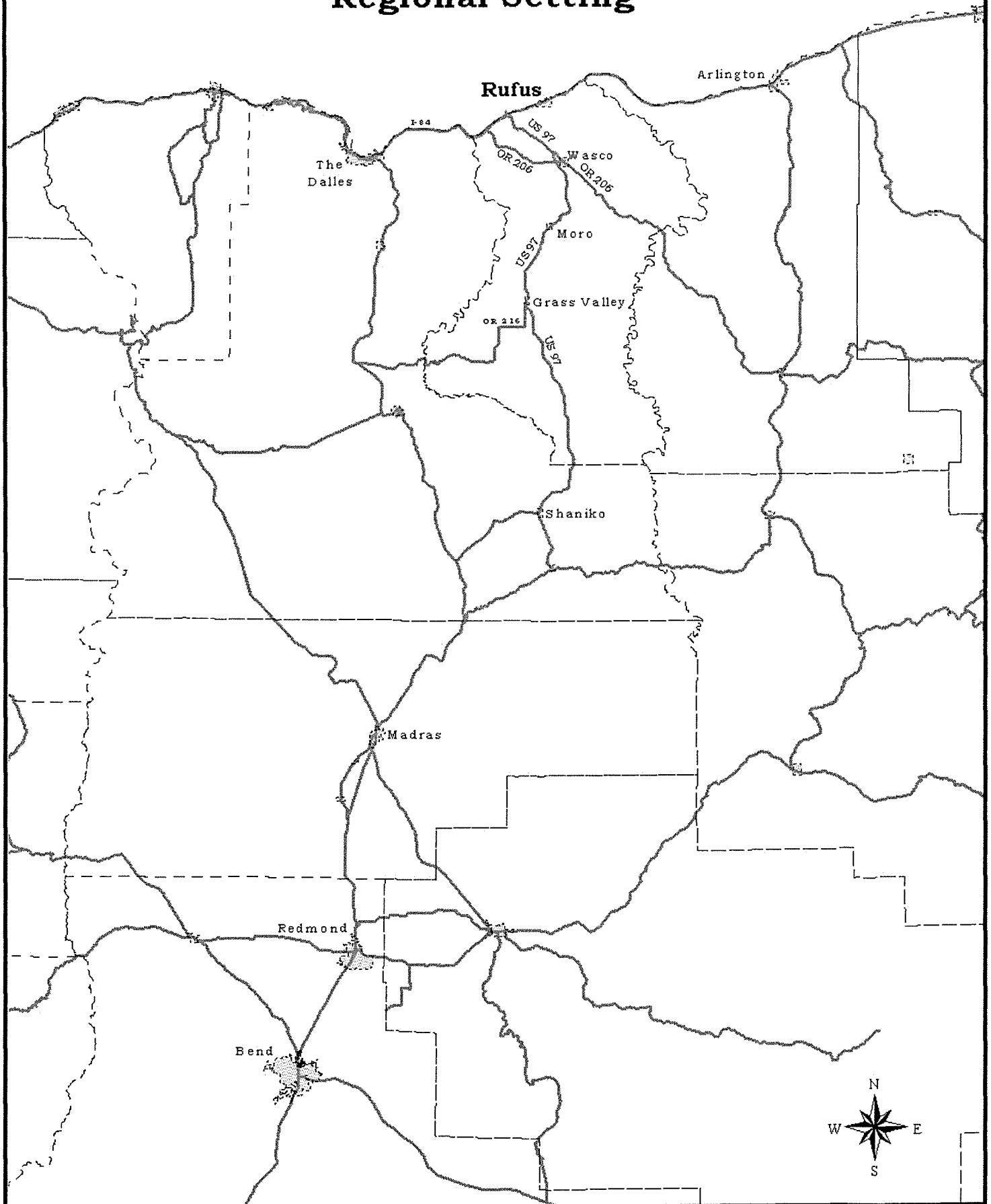
RUFUS CITY COUNCIL MEMBERS

Clifford Jett, Mayor
Sharon Nolan, President of Council
Richard Misener
William Beers
Dean Brege

CITY STAFF

Sabrina Absolon, City Recorder
Ron Jensen, Public Works
Sue Jackson, Community Center

Regional Setting



PHYSICAL CHARACTERISTICS

GENERAL PHYSICAL SETTING

The City of Rufus located in northern Sherman County, adjacent to the Columbia River and I-84. It is twenty miles north of Moro, the county seat, twenty-five miles east of The Dalles, and two miles downstream from the John Day Dam. At an elevation of 200 feet, Rufus sits in the Columbia Basin at the base of what becomes a high plateau.

Rufus is a low-density tourist and agricultural service center on the perimeter of an area of expansive wheat farms. It is positioned between two rivers classified under Oregon's Scenic Rivers System, the Deschutes and the John Day. Because of the natural setting of the city and proximity to fine trout fishing as well as the rural atmosphere, people from more urban areas are now attracted to the city for retirement and recreational homesites. Its location on a well-traveled highway connecting with the Sam Hill Bridge gives Rufus potential as a residential location for workers in Klickitat County in Washington.

Rufus is a member of the Mid-Columbia Economic Development District (MCEDD). The District is comprised of five counties: Hood River, Wasco, and Sherman Counties in Oregon and Klickitat and Skamania Counties in Washington (see location map). The District has three distinct geographical provinces of which the differences are abrupt and distinctive. The provinces are the Cascades, the High Plateaus and the Columbia River Gorge. The High Plateaus are sparsely populated and contain mostly wheat land; Rufus is located in the Gorge province bordering the High Plateaus. The Columbia River contains the transportation corridors and the bulk of the regional population.

TOPOGRAPHY AND DRAINAGE

The topography of Rufus is characteristic of this area of the Columbia River Gorge. Beginning at the riverbank there is a gradual increase in elevation from 180 feet to about the 300 to 400 foot level. From there elevation change is rapid, especially where thick talus has accumulated below the rim-rock cliffs. Two canyons, Scott and Gerking, make up the remainder of the major topographic features.

The elevation of the developed portion of the city is between 200 and 260 feet, and within the city limits there is an elevation change of more than 500 feet. The city limits delineate an area of approximately 745.9 acres.

Sherman County Comprehensive Land Use Plan

Finding XI. Rock outcroppings, trees, the John Day River Canyon and the Deschutes River Canyon are all-important features of the County's landscape. In addition, the Oregon State Department of Transportation has designated certain segments of I-84, U.S. 97, ORE 206 and ORE 216 as Scenic Highways.

Listed below are the segments so designated.

Route #	Hwy #	Milepost to Milepost	
I-84	2	99.85 (Sherman/Wasco)	106.46
		110.10	114.23 (Sherman/Gilliam)
OR 216	290	8.30 (Sherman/Wasco)	11.00
OR 206	300	5.00	14.91 (Sherman/Gilliam)
US 97	42	0.50	5.00
		10.00	16.00
		22.00	27.00
		30.00	48.81 (Sherman/Wasco)

Finding XII. A diversity of fish and wildlife habitat types are available within the County and are utilized by an even greater number of fish and wildlife species. Grain production and cattle grazing when properly managed are consistent with wildlife and fisheries habitat preservation. The riparian vegetation adjacent to seeps, springs, streams and rivers within the County constitute a particularly valuable resource. Riparian vegetation also conserves soil resources and improves water quality and quantity. At the present time, 118 wildlife vegetative planting and 147 guzzler sites are in varying degrees of repair. The Oregon Department of Fish and Wildlife has established wildlife refuges: one-quarter mile wide along the entire eastern boundary of the County; north of the Union Pacific right-of-way along the Columbia River to the State-line along the entire northern boundary of the County; and any sandbar or island within or along the Deschutes River

Gilliam County Comprehensive Land Use Plan

GOAL 5: NATURAL RESOURCES, SCENIC AND HISTORIC AREAS, AND OPEN SPACES

Goal: To conserve open space and protect natural and scenic resources.

Statewide planning Goal 5 requires the county to inventory the following resources:

1. Riparian corridors, including water and riparian areas and fish habitat;
2. Wetlands;
3. Wildlife Habitat (including bird sites);
4. Federal Wild and Scenic Rivers;
5. State Scenic Waterways;
6. Groundwater resources;
7. Approved Oregon Recreation Trails;
8. Natural Areas;
9. Wilderness Areas;
10. Mineral and Aggregate Resources;
11. Energy sources;
12. Cultural areas.

Counties are also encouraged to maintain current inventories of historic resources, open space, and scenic views and sites.

The policies adopted in this Comprehensive Plan focus on issues related to the conservation of open space and natural and scenic resources. They are intended to comply with statewide planning goals and guidelines concerning Open Spaces, Scenic and Historic Areas, and Natural Resources (Goal 5).

FINDINGS

1. Open space is characteristic of Gilliam County, and no effort exclusively directed toward acquisition of additional open space is necessary. As provided in this Comprehensive Plan, stream beds, drainage ways and proven landslide areas generally will be maintained in an open state as a matter of prudent development practice.
2. 1985 Atlas of Oregon Lakes: No Lakes are identified in Gilliam County
3. The rock outcroppings marking the rim and walls of steep canyon slopes are an important characteristic of the County's landscape.
4. The entire Columbia River waterfront, including related fish and wildlife habitat, is within the jurisdiction of the United States Army Corps of Engineers; the Corps has prepared and adopted a plan for the development of the river shore land, which plan encompasses

preservation of fish and wildlife habitat and the development of water-oriented park and recreation facilities.

5. In the matter of fishery resources, the Gilliam County area is reported (John Day River Basin Plan of 1986-SWR) as serving primarily as a migration corridor for anadromous fish using more upstream areas of the subject River Basin. The majority of habitat in the Gilliam County area is reported as only marginally productive for anadromous fish, with the most productive steelhead streams being Rock Creek and Thirty Mile Creek. Other fishery resources reported within the County include a small fall Chinook run and limited cold-water and warm-water resident fish populations. Rehabilitation work in potentially productive Rock Creek and Thirty Mile Creek and tributaries are noted as a need to improve fishery resources
6. The Oregon Department of Fish and Wildlife has recommended development of a number of access sites on the John Day River. The commission also has established two wildlife areas; one at the mouth of Willow Creek and the other consisting of that portion of the John Day River from the mouth of Thirty-Mile Creek to the Columbia River.
7. There are no inventoried wetlands within the County.
8. Hunting for deer and upland game birds area also noted as popular activities; relative thereto, the Oregon Department of Fish & Wildlife (ODFW) has identified areas for Big Game Winter Habitat and Upland – Waterfowl Habitat. Maps of these areas were set forth in the 1977 Plan.
9. Portions of the John Day River from the Wheeler County line to Tumwater Falls have been classified as Scenic or Natural River areas by the State of Oregon under provisions of ORS 390.805 through 390.925. Also, within this area of the John Day River, from the mouth up river for about 84 miles to Thirty Mile Creek, is the John Day State Wildlife Refuge which provides a resting area for ducks and geese and provides habitat for various raptor species and other wildlife. Land uses, including structures, are regulated within this area by the provisions of the Scenic Waterway designation. No additional regulations on behalf of the County are deemed necessary.
 - A) The State Scenic Waterway designation applicable to this area of the County was enacted by ORS 390.825 (6) and the authority for the regulation of uses within said area is vested with the State Department of Transportation by ORS 390.845. Pursuant to ORS 390.845, said state agency has adopted and enforces regulations governing all uses within said area; said regulations set forth in OAR Chapter 736, Division 40. Said regulations are intended fully to protect and enhance those values which caused such scenic waterway area to be so designated; i.e. esthetic, scenic, fish & wildlife, scientific and recreation features. The adequacy of such regulations to fully protect the subject resource is attested to in the 1979 Wild and Scenic River Report & Environmental Assessment for the subject area as conducted by the

National Park Service. In compliance with OAR 660-16-005 and 660-16-010, said NPS Report and Environmental Assessment is hereby adopted by reference as though set forth in full herein, and is concluded to fully comply the County's responsibilities relative to inventory requirements, Goal 5 process requirements, identification of conflicting uses, ESEE analysis requirements, and resource protection requirements. The NPS Report for the Natural & Scenic River areas complies with Goal 5 because no new structures or improvements which are visible from the river, other than those erected and made in connection with agricultural uses, or those needed for public recreation or resource protection will be permitted. Additional dwellings and commercial public service facilities, including resorts and motels, lodges and trailer parks, which are visible from the river, will not be permitted.

- B) Natural River Area. The segment of the scenic waterway beginning at the intersection of West to East Centerline of Section Five (5), Township Five South, Range Nineteen East of the Willamette meridian (T 5S, R 19E, W.M.), Sherman County, extended easterly from the center of said section to its intersection with the John Day River, near the mouth of Thirty mile Creek; thence downstream approximately 31 miles to the North Boundary of the Southwest Quarter (SW 14) for the Southeast Quarter (SE ¼) of Section Twenty-four (S 24), Township Two South, Range Eighteen East of the Willamette Meridian (T 2S, R 18E, W.M.), Sherman and Gilliam Counties, near East Ferry Canyon, is classified as a Natural River Area.

Within this area, no new structures or improvements, which are visible from the river, other than those, erected or made in connection with agricultural uses, or those needed for public recreation or resource protection will be permitted. Additional dwellings and commercial public service facilities, including resorts and motels, lodges and trailer parks which are visible from the river will not be permitted

- C) Scenic River Areas. The segments of the scenic waterway upstream and downstream from the designated Wild River Area are classified as Scenic River Areas.

Within these areas, no new structures or improvements which are visible from the river, other than those erected or made in connection with agricultural uses, or those needed for public recreation or resource protection will be permitted. Additional dwellings, other than those necessary to existing agricultural uses, and commercial public service facilities, including resorts and motels, lodges and trailer parks which are visible from the river, will not be permitted.

10. John Day River Basin Plan of 1995 (SWR): A review of this adopted document concurs that Gilliam County is not located within an area that is subject to a critical groundwater study or designation. Nor are there any storage facilities deemed feasible or any hydroelectric value.

11. There are no inventoried of approved Oregon Recreation Trails located in Gilliam County
12. Only three (3) natural resource sites are reported of any significance by the nature Conservancy under the Oregon Natural Heritage Program. These three (3) sites are listed below, but beyond the brief listing, no site-specific information is available, nor has the Nature Conservancy presented even a Site Report on said resources:
- A) Pullen Pasture-Vegetative Resources Only - Sec 28 of T5S, R24E – No acreage figure given.
 - B) Lone Rock Creek Area Natural Grasslands – Vegetative Resources Only – Sections 29, 30 & 32 of T4S, R23E and Sec 5 of T5S, R23E – No acreage figure given.
 - C) Horn Butte – Vegetative Resources Only – Sections 11 & 12 of T2N, R22E – No acreage figure given.
- There is insufficient information concerning the purported resources and resource site for the County to initiate any action concerning the afore-referenced sites. Without “any” specific information, the extent, condition, impacts and protection measures necessary are undeterminable. In accordance with the provisions of OAR 660-16-000 (5)(b), these resource sites will be addressed in the future as sufficient information for site identification becomes available.
13. Pursuant to the requirements of compliance with State Planning Goal 5, the County must complete an Economic, Social, Environment and Energy (ESEE) Analysis for all identified “Natural” Resources in the County. Said Analysis has been completed and is hereby adopted as though set forth in full herein. However, with the exception of the aggregate resource sites, riparian habitat areas, and historic resources, no such resources have been identified as needing County protection.
14. There are no inventoried Wilderness Areas within Gilliam County.
15. The County is not heavily mineralized and there is no record of production. Although there are references to limited deposits of volcanic ash, semiprecious gems, bauxite and coal, none are assigned any significance in value. Lastly, some exploratory oil and gas wells have been drilled in the vicinity of Condon, but no known findings are evident.
16. All active aggregate sources in the County are being inventoried and are identified by site location in the inventory set forth as an Attachment hereto. A comparison of the estimated total volume of aggregate from these sources to the estimated needs of committed or projected construction projects requiring such material clearly indicates that sufficient quantities are available to meet such needs.

17. It is the policy of Gilliam County to fully protect significant mineral and aggregate resource sites by determining the Economic, Social, Environmental and Energy (ESEE) consequences of not allowing conflicting uses to occur within the 1500-foot impact area.
18. Since the last update of the Comprehensive Plan in 2000, the county has seen a major change in the demand for wind energy projects. Since 2003, the county has approved several projects that are in operation and there are several more projects that have been approved by the County Planning Commission.
19. In the matter of Historic Resources, a comprehensive Countywide Historic Resource Inventory was completed in 1988. Existing identified resources are considered significant resources and should be subject to applicable protection measures. In 1988 a list of Historic Sites, Gilliam County was included in the comprehensive plan, the list contains 125 sites.

POLICIES

In consideration of the above Findings, the Gilliam County Court adopts the following policies:

1. Because of the limited resources identified as fishery resources in the County, specific protection of riparian habitat along those streams, which are identified as important for such habitat will be instituted.
2. The Department of Fish and Wildlife (ODFW) will be consulted when proposed land use actions may affect fish or wildlife habitats.
3. Land use categories, such as the Exclusive Farm Use (EFU) zone with its 160 acres minimum parcel size, which preserve the integrity of wildlife habitats will be established.
4. Gilliam County will publicize provisions of state law relative to Scenic Waterways, to render all possible assistance in enforcement of laws, rules, and regulations pertaining to State designated Scenic Waterways and to otherwise aid in the implementation of the declared policy of the State of Oregon with respect to such waterways. Conflicts between agricultural and recreational uses in this area should be resolved in favor of agriculture.
5. Gilliam County will notify and consult with appropriate state agencies during review of development proposals when such proposals might affect surface or ground water quality.
6. As funds are made available, Gilliam County will conduct a study of groundwater resources.
7. There are no state designated trails in the County at this time. However, if the State proposes any new trails, the County will cooperate in reviewing any new proposal.

8. At such time as additional and sufficient information is made available concerning the three (3) identified natural resource sites, the County shall complete the required ESEE Analysis and provide for any identified necessary protection measures as may be appropriate.
9. It shall be the County Policy that when new information is available on Natural Resource Sites, such information shall be reviewed to comply with Goal 5 in the County's subsequent periodic review.
10. In the past, extractive industrial activities of some magnitude have operated in the County, and although no such concerns are presently in operation, it is reasonable to expect that they, or others like them, will become active as heavy construction activity in the area commences. The policy of Gilliam County is to encourage development of the County's mineral resources, consistent with other objectives and policies of this Comprehensive Plan, and under conditions that will not result in permanent destruction of the natural beauty of the County's landscape. Basalt outcroppings characteristic of the area generally should be left in their natural state and only under particularly justifiable circumstances will County approval of mining of potentially scenic hillsides be given. The County's policy on mining of potentially scenic hillsides may require a search for suitable alternate sites for mining operations should any major construction project, not foreseen at this time, occur. Therefore, the County shall support, cooperate, and coordinate with any efforts by the Oregon Department of Geology and Mineral Industries (DOGMI) to carry out a Mineral & Aggregate Inventory of the County, and when such inventory is completed it shall be adopted as a component of this Plan and appropriate protection measures adopted to protect identified needed sites.
11. Because of the identification of limited mineral and aggregate resources in the County, appropriate protection measures for such identified resource sites shall be adopted to insure the continued availability of such sites for the purpose intended.
12. Gilliam County will continue to encourage the development of alternative sources of energy.
13. The areas in which most Indian petroglyphs and other evidence of Indian habitation are known to exist are not easily accessible to the general public. Even so, a number of these sites have been substantially destroyed due to intensive unsupervised visitation and not infrequently by deliberate exploitation and vandalism. Until such time as access to these valuable sites can be fully controlled and adequately supervised, the County suggests that landowners use whatever lawful means are necessary to discourage general visitation and that their location be not generally publicized. The County shall adopt specific zoning provisions designed to provide a level maximum level of protection for those limited natural and scenic resources identified within the County. Such provisions shall ensure a maximum level of review by the appropriate resource agencies and organizations for any development proposal identified as possible affecting an identified resource, and shall be applied as an overlay or combining zone with the primary applied Zone.

Gilliam County Zoning Ordinance

- f. In no instance shall the minimum lot size or dwelling density provisions of this section allow a smaller lot or parcel size or a greater dwelling density than allowed by the underlying primary zone.
- 5. **Sensitive Eagle and Heron Habitat.** Although there are not currently any such identified resource sites within the County outside the boundaries of the Scenic Waterway designation of the John Day River, at such time as such sites are identified and duly designated as such by the County as an amendment to the Goal 5 element of the Plan, the following provisions shall apply.
 - a. The proposed use shall not destroy or cause abandonment of the nesting or roosting trees or sites.
 - b. Within 600 feet of an eagle nest site or 300 feet of a heron rookery site, no tree removal, except where authorized by the Forest Practice Act and subsequent adopted Administrative Rules, or other conflicting use shall be allowed unless the Planning Director, after consultation with the Oregon Department of Fish and Wildlife, and in consideration of critical nesting periods, buffer areas and necessary trees for nesting the roosting, finds that the conflicting use will not destroy or reasonably cause the abandonment of the site.

E. LIST OF CONFLICTING USES AND ACTIVITIES

1. Mineral and Aggregate Resources

- a. Dwellings, except those in conjunction with mining operations.
- b. Parks, playgrounds, campgrounds, hunting and fishing preserves.
- c. Community and neighborhood centers and recreation facilities and establishments.
- d. Schools and day care or nurseries.
- e. Dude Ranch or resort facility.
- f. Commercial residential use.
- g. Tourist or travelers accommodations.
- h. Mobile home park or travel trailer parks.
- i. Vineyards
- j. Wineries
- k. Wind Turbines

2. **Natural Areas** (for natural areas identified as having only wildlife resource elements refer to that resource category)
3. **Big Game Habitat**
 - a. Residential dwellings to include those customarily provided in conjunction with farm or forest uses.
 - b. Campgrounds.
 - c. Highways and roads other than access roads.
 - d. Community centers.
 - e. Golf courses.
 - f. Schools.
4. **Wetlands.** Although there are not currently any such identified resource sites within the County outside the boundaries of the Scenic Waterway designation of the John Day River, at such time as such sites are identified and duly designated as such by the County as an amendment to the Goal 5 element of the Plan, the following shall apply in the initial identification of Conflicting Uses.
 - a. Ditching, draining or diking, usually but not necessarily in conjunction with farm use.
 - b. Fill for any purpose, usually but not necessarily in conjunction with building siting and roadway construction.
 - c. Water withdrawals or impoundments.
5. **Riparian Vegetation**
 - a. Forest products harvesting and associated activities such as road building and log storage.
 - b. Vegetative removal or land cleaning for any use.
6. **Sensitive Bird Habitat**
 - a. Tree removal for any purpose.
 - b. Residential dwellings, to include those customarily provided in conjunction with farm or forest use.
 - c. Solid waste disposal.
 - d. Commercial use in conjunction with farm or forest uses.

F. RESPONSIBLE RESOURCE AGENCY LIST

1. Energy resources:

- a. State Department of Energy.

2. Mineral and aggregate resources:

- a. County Road Department
- b. State Highway Department
- c. Department of Transportation
- d. Department of Geology and Mineral Industries

3. Archaeological resources:

- a. County Historical Society
- b. State Historic Preservation Office

4. Historic buildings and sites:

- a. County Historical Society
- b. State Historic Preservation Office

5. Parks and recreation scenic waterways:

- a. State Parks & Recreation
- b. State Department of Transportation

6. Geothermal resources:

- a. Department of Geology and Mineral Industries

G. HISTORIC BUILDINGS AND SITES

- 1. Alteration/Demolition Permits.** A permit is required for alteration or demolition of any structure listed in the County Comprehensive Plan inventory of significant historic resources.

- a. Alteration as governed by this section means any addition to, removal of, or change in the exterior part of a structure and shall include modification of the surface texture,

ODOT Oregon Highway Plan

SCENIC BYWAYS

Background

While every state highway has certain scenic attributes (see Policy 5B), the Oregon Transportation Commission has designated Scenic Byways throughout the state on federal, state, and local roads which have exceptional scenic value (see map, Figure 11). In 1998, the federal government designated two of these routes as All- American Roads and four as National Scenic Byways. The Oregon Transportation Commission may designate additional state byways. To protect the scenic assets of its Scenic Byways, ODOT will develop guidelines for aesthetic and design elements within the public right-of-way that are appropriate to Scenic Byways. The Scenic Byways Policy recognizes that safety and performance issues may cause the need for physical improvements to Scenic Byways, and seeks to balance these needs with the preservation of scenic values.

Policy 1D: Scenic Byways

It is the policy of the State of Oregon to preserve and enhance designated Scenic Byways, and to consider aesthetic and design elements along with safety and performance considerations on designated Byways.

Action 1D.1

Develop and apply guidelines for appropriate aesthetic and design elements within the public right-of-way on Scenic Byways. The purpose of these guidelines is to preserve and enhance the scenic value while accommodating critical safety and performance needs. The elements should include guidelines for turnouts, overlooks, signage, and visual treatment of the highway infrastructure.



The Historic Columbia River Highway is both a State Scenic Byway and an All American Road

Action 1D.2

With guidelines in place, develop management priorities for Scenic Byways in management plans and corridor plans.

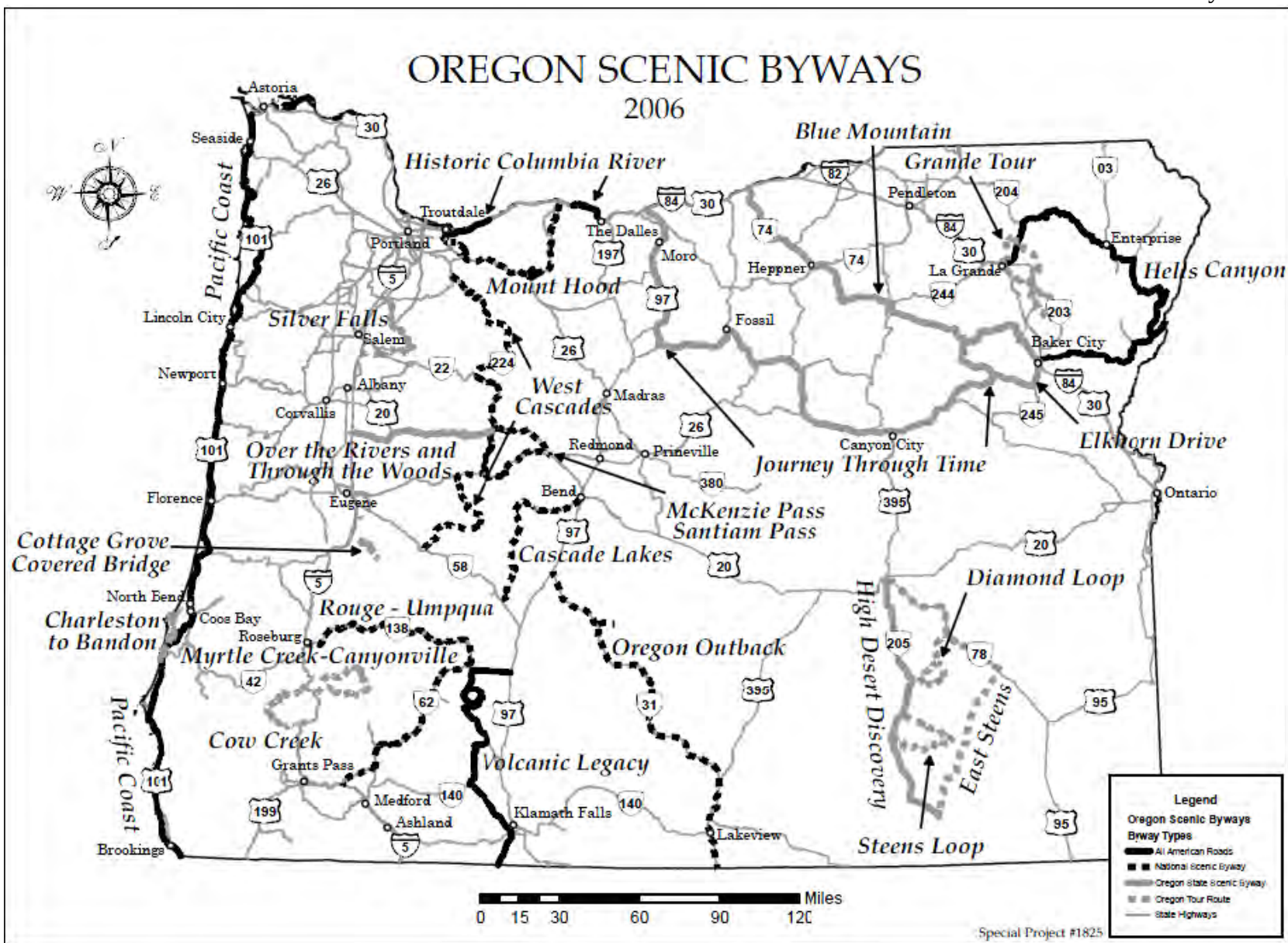


Figure 11: Designated Scenic Byways

Action 1D.3

Consider impacts to the scenic qualities of Scenic Byways when designing plans and projects.

Action 1D.4

Develop resource management plans and maps that describe ODOT's maintenance actions for roads which are designated Oregon Scenic Byways, including restricted activity zones, property to be used for disposal of slide debris and other material, and unsold state properties to be considered for ODOT retention. Identify scenic resources and existing vista opportunity locations on the maps. Include guidelines for maintenance activities where scenic resources are a factor. Ensure that ODOT highway maintenance activities are compatible with Scenic Byway management plans.

**LIFELINE ROUTES****Background**

Earthquakes, flooding, landslides, wild fires, and other natural and man-made disasters may destroy or block key access routes to emergency facilities and create episodic demand for highway routes into and out of a stricken area. ODOT's investment strategy should recognize the critical role that some highway facilities, particularly bridges, play in emergency response and evacuation. In some cases, the most cost-effective solution to maintaining security in these lifeline routes involves investment in roads or bridges owned by local jurisdictions. To the extent feasible, investments should be made without regard to roadway jurisdiction in order to provide the greatest degree of lifeline security for the available resources. ODOT will work with local governments to further define and map a network of lifeline routes. The lifeline network will focus on serving those communities which are particularly susceptible to isolation by virtue of their limited highway access.

Policy 1E: Lifeline Routes

It is the policy of the State of Oregon to provide a secure lifeline network of streets, highways, and bridges to facilitate emergency services response and to support rapid economic recovery after a disaster.

Action 1E.1

Define the criteria for lifeline routes to respond to short and long-term needs and, working with local jurisdictions, agencies, and emergency service providers, designate the lifeline network for the State of Oregon.



SCENIC RESOURCES

Background

The introduction to the Oregon Historic and Scenic Highway Program developed in 1985 is still true: “Oregonians have long recognized that preservation of the state’s historic and scenic resources plays a vital role in the enhancement of the state’s economic base, and in maintaining its citizens’ pride in and respect for its historic and natural resources. Oregon’s immense wealth of history and diverse scenery provide unlimited recreation potential for residents and visitors alike...” Even early efforts to develop a state transportation system foresaw the importance of preserving the state’s scenic and historic values. Construction of the Columbia River Highway in the Columbia Gorge in the 1910s “focused on the need to construct a scenic highway that would complement the beauty of the area.”

Since then, a number of state and federal efforts have directed ODOT to preserve or protect historic and scenic features of the state highway system. For example, the 1987 Oregon Legislature declared that it is the state’s policy to “preserve and restore the continuity and historic integrity of the remaining segments of the Historic Columbia River Highway.” This highway is included in the Columbia River Gorge National Scenic Area, and the Historic Columbia River Highway Master Plan guides its management. Federal, state and local policies and regulations also recognize the need to balance protection of scenic resources with economic development.

The Scenic Resources Policy is intended to guide project planning, development, construction and maintenance for state highways in a consistent manner with regard to scenic resources and aesthetics. This policy applies to all state highways, not only designated Scenic Byways.

Scenic resources, as addressed in this policy, include the combination of structural, historic, cultural, and natural features within highway rights-of-way. Where appropriate, ODOT may coordinate with other agencies and property owners to address scenic resources that lie beyond the rights-of-way. In addition to views from the highway, views of the highway from other areas should be considered, particularly on designated Scenic Byways.

Policy 5B: Scenic Resources

It is the policy of the State of Oregon that scenic resources management is an integral part of the process of creating and maintaining the state highway system. The State of Oregon will use best management practices to protect and enhance scenic resources in all phases of highway project planning, development, construction, and maintenance.

Action 5B.1

Coordinate scenic and cultural resources management with appropriate federal, state and local agencies, tribal governments and special interest groups.

Action 5B.2

Coordinate with federal and state agencies, tribal governments, local governments and property owners to encourage aesthetic considerations outside the state highway rights-of-way, such as land use controls for signs, urban design, rural development, utilities and vegetation.

Action 5B.3

Design transportation facilities that consider visual quality with functional requirements, including safety and other transportation needs.

Action 5B.4

Use best management practices to minimize impacts to scenic resources, and preserve and/or enhance visual quality within the state highway right-of-way when improving and maintaining the state highway system.

Action 5B.5

Identify criteria, and measure and evaluate scenic resources management performance on a regular basis.

Action 5B.6

Develop an inventory system that identifies scenic resources on unsold state lands that may be used for visual mitigation on designated Oregon Scenic Byways and Wild and Scenic Rivers adjacent to state highways.

Action 5B.7

Inventory and map historic resources within the state highway right-of-way including archaeological sites, trails, stone walls, buildings, bridges and other significant antiquities.

Action 5B.8

In project designs, include aesthetic elements that enhance the quality of system improvements. Examples of aesthetic elements include plantings and attractive finishes on poured concrete structures.

ODOT Journey Through Time Management Plan

Mountain Views

- ⇒ Resource: Mountain Views. Unsurpassed and unobstructed vistas of Mt. Jefferson, Mt. Hood and Mt. Adams.
- ⇒ Location: Highway 97.
- ⇒ Condition: Good.
- ⇒ Management: Private agricultural land adjacent to highway.
- ⇒ Enhancement: A pull-out with interpretive sign is needed.
- ⇒ Protection: Awareness among land owners.

This is part of the Buck Hollow Watershed Project area, which is a collaboration of area landowners, the Bureau of Land Management, and the Soil & Water Conservation Districts of Sherman and Wasco Counties. The North Central Regional Strategy tourism effort will work with this organization to identify ways to keep the key views open.

Shaniko (Pop.30)

- ⇒ Resource: Community.
- ⇒ Location: Highway 97.
- ⇒ Management: Municipality.
- ⇒ Condition:
- ⇒ Enhancement: Sewer system needed.
- ⇒ Protection: None needed.

Shaniko dates from 1900, when a spur of the Columbia Southern Railroad was extended south from the Columbia River Gorge to haul sheep and wool to market. The vast grasslands were home to thousands of cattle and sheep in the late 19th century. The boom gave Shaniko the title of "Wool Shipping Center of the World" for a brief decade. The usual assortment of frontier establishments were here: hotels, saloons, brothels and dry goods stores. Some of the last big battles between the cattlemen and the sheep ranchers were fought on the open range outside Shaniko.

The town takes its name from August Scherneckau, the operator of the store and stage stop. The town had nearly faded from existence until 1985, when Jean and Dorothy Farrell from Eugene purchased the hotel and restored it. The hotel, built in 1900, was known as "Southern Queen of the Highland Hostelrys." The dining room is a miniature museum of North Central Oregon with a beautiful backbar of an early saloon. In recent years Shaniko has been developing a "ghost town" theme and several Old West styled buildings have been relocated here or reconstructed.

⇒ Fossil (Pop. 470)

- ⇒ Resource: Community.
- ⇒ Location: Highway 19 and 218.
- ⇒ Management: Municipality.
- ⇒ Condition:
- ⇒ Enhancement:
- ⇒ Protection: None needed.

Two Rivers Resource Management Plan Record of Decision (1986)

Rockhounding

Collectible mineral resources with moderate or high value as shown on Map 8, will be available for rockhounding and recognized in land use decisions.

Special Management Areas

The thirteen special management areas identified on Map 9 will be managed as follows:

The Island in The Cove Palisades State Park

The 250 acres of public land will be designated and managed as an Area of Critical Environmental Concern; Research Natural Area. This includes 80 acres of USFS land which will require a cooperative management agreement,

The designation and management of this area will be designed to protect and preserve what is considered to be the best remaining example of the western juniper/big sagebrush/bluebunch wheatgrass plant association in the region. It is also

a raptor, deer, and waterfowl use area and contains outstanding scenic vistas of Lake Billy **chinook** and the Cascades.

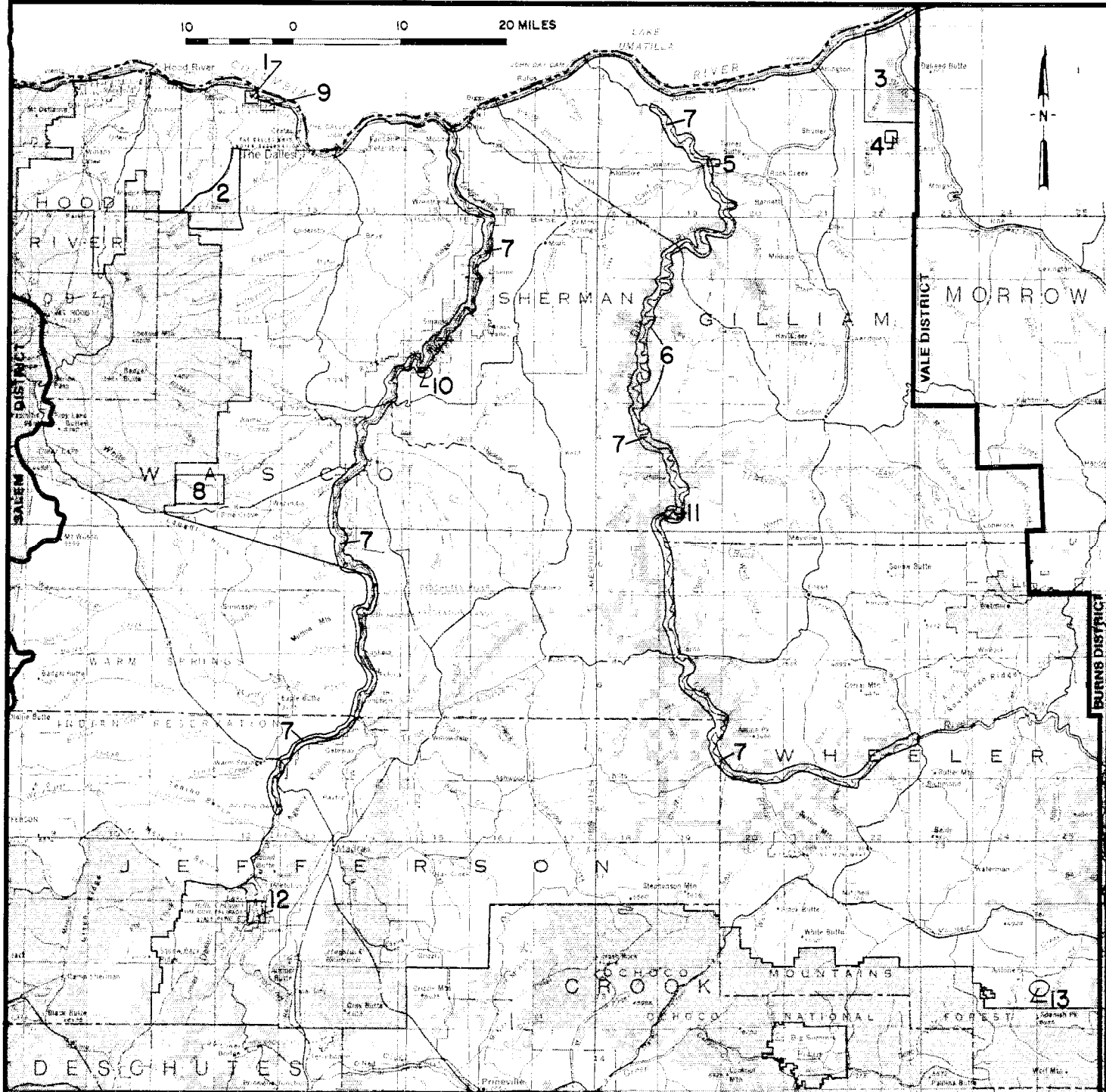
Specific management actions to be taken include closing the area to off road vehicle use, continuing to not lease the area for fluid mineral exploration and development, to not sell mineral material in the area (rock, sand or gravel), to continue to exclude livestock grazing, preclude the use of mechanized equipment in fire suppression and prohibit the collection of rocks, plants, plant parts and animals,

Deschutes and John Day River Canyons (Including the. Red Wall)

Areas of high visual and natural quality in the canyon areas (approximately 139,000 acres) will continue to be protected while allowing other compatible uses in the same area. A cooperative role with the State Parks and Recreation Division of the Oregon Department of Transportation in managing the public lands consistent with the intent of the Oregon Scenic Waterways Act will be continued,



The island in The Cove Palisades State Park



1. Governor Tom McCall Preserve at Rowena
2. The Dalles Watershed Area
3. Horn Butte (Curlew) Wildlife Area
4. Oregon Trail Historic Site at Fourmile Canyon
5. Oregon Trail Historic Site at McDonald Crossing
6. John Day River State Wildlife Refuge
7. Deschutes and John Day State Scenic Waterways
8. White River Wildlife Management Area
9. Botanical/Scenic Areas Within Columbia Gorge
10. Macks Canyon Archaeological and Recreation Area
11. Red Wall Scenic Area
12. The Island at The Cove Palisades State Park
13. Spanish Gulch Mining District

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

PRINEVILLE DISTRICT

1986

MAP 9

Special Management Areas

Utility and Transportation Corridors

All utility/transportation corridors identified by the Western Regional Corridor Study of May 1980, prepared by the Ad Hoc Western Utility Group and shown on Map 10 are currently occupied and will be designated without further review. Corridor widths vary, but are a minimum of 2,000 feet. No additional crossing sites on the BLM managed portions of the Deschutes and John Day rivers will be permitted. No facilities will be allowed parallel to the railroad right of way in the Deschutes Canyon. Applicants will be encouraged to locate new facilities (including communication sites) adjacent to existing facilities to the extent possible.

All rights of way applications will be reviewed using the criteria of following existing corridors wherever practical and avoiding proliferation of separate rights of way. Recommendations made to applicants and actions approved will be consistent with the objectives of the RMP. All designated areas of critical environmental concern and wilderness study areas will be considered right of way exclusion areas. Public lands will continue to be available for local rights of way, including multiple use and single use utility/transportation corridors following existing routes, communication sites, and roads. Issuance of leases and/or patents under the Recreation and Public Purposes Act and other permits or leases for development of public lands will also continue. Applications will be reviewed on an individual basis for conformance with the Two Rivers RMP to minimize conflicts with other resources or users.

Visual Resources

Before the BLM initiates or permits any major surface disturbing activities on public land, an analysis will be completed to determine adverse effects on visual qualities. Activities that will result in significant, long term adverse effects on the visual resources of the John Day or Deschutes River canyons in areas normally seen from these rivers will not be permitted.

Activities within other areas of high visual quality that may be seen might be permitted if they do not attract attention or leave long term visual changes on the land. Activities in other areas may change the landscape but will be designed to minimize any adverse effect on visual quality.

Wilderness

Areas under wilderness review will continue to be managed following the guidance of the Bureau's Interim Management Policy for Lands Under Wilderness Review. This policy will be in effect until

areas are released from interim management. Areas designated wilderness will be managed under the guidelines of BLM's Wilderness Management Policy.



Old railroad water tower at Harris Canyon

John Day Basin Record of Decision and Resource Management Plan (2015)

Guidelines

1. Existing guidance outside the scope of this plan includes the Federal Cave Resources Protection Act of 1988 (P.L. 100-691; 16 U.S.C. 4301), which directs federal agencies to inventory reported cave locations, prepare and maintain a list of significant caves, and protect cave resources determined to be significant. Procedures for determining the significance of caves are in 43 CFR Part 37. Significance is determined based on criteria for biotic, cultural, geologic, mineralogical, hydrologic, recreational, educational, or scientific values, features, or characteristics as defined in 36 CFR, Part 290.3 (c) and (d).
2. Conduct appropriate surveys to determine significance of all newly identified caves.

Visual Resources

Land Use Allocation

See Map 5.

Objective VR1

Maintain the scenic quality of river canyons, open space landscapes, cultural landscapes, and other areas having high quality visual resources. Manage visual resource values in accordance with Visual Resource Management (VRM) objectives:

- Preserve the existing character of VRM Class I landscapes (Wilderness and Wilderness Study Areas). This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and should not attract attention.
- Retain the existing character (low change) of VRM Class II landscapes (WSR segments, most non-designated segments of the river, and portions of some tributaries). Management activities in VRM Class II may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- Partially retain the existing character of VRM Class III landscapes (moderate level of change). VRM Class III allows management activities that may attract attention, but their results should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- VRM Class IV allows management activities that may require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, attempts should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the landscape.

Management Actions

1. Before initiating or permitting any major surface-disturbing activities on public land, the BLM will complete an analysis using the Visual Contrast Rating Process to determine adverse effects on visual qualities.
2. Do not permit activities that would result in significant, long-term, adverse effects on the visual resources of the John Day River Canyons in areas normally seen from these rivers.
3. All BLM resource uses, management activities, and other implementation decisions will meet VRM objectives and be consistent with VRM classifications. Use visual resource design techniques and Best Management Practices to mitigate short-term and long-term impacts within VRM Class objectives [43 U.S.C. 1701, Section 102 (a) (8)].
4. Generally maintain the existing “footprint” of cultural landscapes (facilities, projects, and improvements) [43 U.S.C. 4321, Section 101 (b)].

5. The existing level of road maintenance may be continued, but any road improvements or realignments will conform to the VRM classification.
6. Manage existing recreation developments in Wild and Scenic River segments with a VRM Class II designation as VRM Class III “islands.” New recreational development under this plan will be required to meet VRM Class III standards.
7. Manage land according to VRM classifications shown on Map 5 and in Table 1, with the following exception:

The area within a designated utility or transportation corridor (as identified in Objective LR2-Actions of this document) will be managed to VRM IV. Project design elements must minimize the long-term visual impacts to public land users. Manage for VRM Class I in the Spring Basin Wilderness Area, and the following Wilderness Study Areas (WSAs): Aldrich Mountain, Strawberry Mountain, North Pole Ridge, Thirtymile, Lower John Day, Sutton Mountain, and Pat’s Cabin.
8. Manage Fourmile Canyon tract as VRM Class II consistent with the provisions of the Oregon Trail Management Plan: Prineville District (1993).
9. Manage the North Fork John Day WSR; the North Fork John Day River, Armstrong Canyon, and Ferry Canyon ACECs; most of JV Ranch, and lands managed to protect wilderness characteristics as VRM Class II (see Map 5).
10. In the event the existing WSAs are released from Wilderness Study by Congress, the VRM classification associated with these lands will be changed from VRM Class I to Class II.

Special Management Designations

Wild and Scenic Rivers

Land Use Allocation

See Map 1.

Objective WSR1

Protect and enhance the free flowing nature and Outstandingly Remarkable Values (ORV) of designated Wild and Scenic Rivers (Map 1). Also protect and enhance values on rivers suitable for WSR designation, regardless of final outcome on designation.

- The National Wild and Scenic Rivers System was created by Congress in 1968 with the passage of the Wild and Scenic Rivers Act (PL 90-542). It requires WSRs be managed to “protect and enhance” the “outstandingly remarkable and significant values” that Congress lists. Congress also encourages managing agencies to assess the designated river segment to identify any additional outstandingly remarkable and/or significant values. While Congress gives ORVs a higher status than significant values, there is little management distinction between them on the river. Both are to be protected and enhanced.
- The designated WSR segments in the plan area include 148 miles of the John Day River (main stem, Tumwater Falls to Service Creek) and 47 miles of the South Fork John Day River (entire fork). The values on the main stem John Day River are: Scenery, Recreational Opportunities and Fish (Congressionally identified ORVs); Geological, Paleontological, Archaeological and Historical (Congressional significant values and BLM ORVs); Wildlife (BLM ORV); and Botanical and Ecological (BLM significant values). The identified values for the South Fork John Day River are: Scenery, Recreational Opportunities (Congressional ORVs); Fish, Wildlife and Botanical (BLM ORVs); Geological, Prehistoric and Traditional uses (BLM significant values). These two segments of river were added to the WSR system by the 1988 Oregon Omnibus Wild & Scenic Rivers Act, which amended the 1969 WSR Act.
- In 2005 the BLM contracted an inventory of potential WSR (in addition to those already designated) across the plan area (Final Report in Appendix I-1, JDB PRMP/FEIS), and determined that one river segment, 36.24 miles of the north fork of the John Day River, was eligible for WSR designation

(Documentation of WSR Eligibility, Appendix I-2, JDB PRMP/FEIS). This segment is 36.24 miles long, passing through 25.55 miles of public land, from River Mile 55 (Camas Creek) to River Mile 20.4 (roughly three miles northeast of Monument). The BLM completed a WSR Suitability Study (Appendix G) and has determined that the segment is suitable for inclusion in the National WSR System for the ORVs of Scenery, Recreational Opportunities and Fish. Suitability takes into account the characteristics of the river, other current and future uses and rights in the area, public interest, and administrative costs.

Management Actions

1. Direction in this RMP will serve as the river plans for the WSR segments of the main stem and South Fork of the John Day River (as listed above), and as the river plan for the “suitable” segment of the North Fork of the John Day River if it is so designated by Congress (see Map 1).
2. Manage 148 miles of the Lower John Day and 47 miles of the South Fork John Day WSRs according to management direction carried forward (actions below) from the 2001 John Day River Plan, which was developed with interagency partners.
3. Disseminate information through information boards at major access points, responses to written and telephone information requests, outfitter and guide meetings, and visitor contact with BLM employees and volunteers stationed in the office, on public lands, and on the river. Presentations to schools and interest groups will be conducted by request.
4. Continue to install information boards at public access points; make on-site contacts with visitors; and create new user brochures, detailed land ownership maps, and interpretive signs. The BLM will also increase cooperative efforts with state agencies, counties, local businesses, and others to provide river users with consistent information. Construct an information kiosk on the South Fork John Day Back Country Byway to educate the public about wildlife, riparian, wilderness, and weed management programs. Where trespass is a problem, install ownership identification markers between BLM, state, and private lands to clearly identify land ownership and reduce trespass potential.
5. Seek additional funding and improve coordination with state and local agencies by organizing a work group comprised of representatives of agencies providing law enforcement and emergency services along the John Day River. The BLM will encourage joint emergency training exercises for agencies, fire districts, outfitters, and private individuals.
6. Continue to use a Limits of Acceptable Change (LAC) study process to determine appropriate use levels in all areas where visitor use has potential to adversely impact the desired future condition of resource values, protect and enhance the Outstandingly Remarkable values, and/or the quality of visitor experience. Design implementation-level actions to be consistent with the findings of LAC studies.
7. Implement a limited entry permit system for all river segments where LAC studies indicate boater use needs to be controlled in order to meet desired future condition of resource values and/or the quality of visitor experience. One option for adjusting use levels is through a mandatory, limited-entry permit system, such as the one implemented in 2011 on Segments 2 and 3 of the John Day River:
 - a. Trip permits would be allocated through a first-come, first-serve common pool reservation system to all users in the same manner.
 - b. The applicable use fee would be due in advance to hold a reservation.
 - c. Any canceled trip permits would again become available for reservation.
8. Base management decisions on resource conditions, social preferences, and maintaining the desired future condition of these river segments. Resource indicators, standards, and management actions will be developed through an environmental assessment process (see Appendix B - Monitoring). Continue to monitor LAC in future years to track resource changes over time, provide feedback on the effectiveness of the management actions employed, alert managers to the need to consider further management actions. The Confederated Tribes of Warm Springs have indicated an interest in being involved in the LAC study. Other planning partners will also be invited to participate, as will private and commercial recreation users and other interested publics.
9. Existing state regulations will continue to prohibit the use of personal watercraft upstream of Tumwater Falls.

10. Existing state regulations will continue to seasonally close Segment 1 to motorized boating from May 1 to October 1.
11. Segment 3 will be closed to motorized boating between May 1 and October 1, except use of one small electric motor (40 pounds thrust or less) per boat will be permitted during this period.
12. Segments 2, 10 and 11 will be closed to motorized boating year-round.
13. To protect riparian resources, dispersed use will be managed in areas that can best sustain impacts of camping.
14. Future actions (not described in this document) designed to protect dispersed river campsites will be based on recommendations of a LAC study.
15. Identify preferred dispersed camping areas in Segments 10 and 11, and install signs and parking barriers to protect riparian vegetation.
16. Regulate vehicle traffic by installing signs and vehicle barriers, and provide an area suitable for camping on the west bank of the river near Clarno.
17. Actions to protect resources, such as campsite rehabilitation or closure, may be taken in any segment at any time, if necessary.
18. Prior to placement of vehicle barriers, the ODFW will be requested to provide input on appropriate locations.
19. Improve or upgrade existing facilities, where needed, or to replace those that are permanently closed (but do not develop additional recreation sites) to better meet the needs of the recreational user. Included in this direction:
 - a. *Segment 1:* The BLM will: (1) maintain Cottonwood and Rock Creek recreation sites, improve parking facilities, add a primitive boat ramp, and add a boater registration station at Rock Creek; (2) add picnic tables, plant shade trees, and provide water for a dump station at Cottonwood; and (3) re-establish a Cooperative Management Agreement (CMA) with the Sherman County Historical Society to manage and maintain the Oregon Trail interpretive site and John Day Crossing (west side), develop a small parking area, install access signing, and implement regular maintenance at this interpretive site.
 - b. The BLM will periodically evaluate use patterns along the South Fork and, if necessary to protect resources, develop a campground near Ellingson Mill including a vault toilet, tables, information board, signs, and parking barriers. Prior to developing a campground near Ellingson Mill, the appropriate level of NEPA analysis will be completed and necessary permits obtained.
20. Prior to implementing site-specific implementation actions, the BLM will coordinate with Oregon Parks and Recreation Department (OPRD) to ensure that proposed projects are consistent with State Scenic Waterway regulations, where applicable (see Appendix H). Further coordination with OPRD will take place prior to implementation of actions on state land (Clarno and Cottonwood). Coordination will also take place with ODFW, Division of State Lands, Army Corp of Engineers, Confederated Tribes of Warm Springs, affected counties, and others depending on permit requirements and interest.
21. Maintain public access at existing levels, except as noted below:
 - a. Grade, surface, or widen roads as needed, including the BLM road on the west bank from Clarno to Clarno Homestead, and the road to Priest Hole.
 - b. Improve ditches and culverts, and apply gravel to surface of the South Fork Road.
 - c. Seasonally close the BLM road north of Clarno Homestead during the first 10 days of pheasant season.
 - d. The BLM will coordinate with local governments and landowners to clarify legal public access to the Oregon Trail interpretive site (west side) and McDonald Crossing prior to developing parking areas and signing legal access routes to these sites.
22. Continue to consolidate public land ownership patterns through purchase or exchange, acquisition of easements, and through partnership agreements with willing landowners to resolve public access issues and provide access to high value recreation opportunities. Seek to acquire a river access point on public land at Twickenham from a willing seller, to replace the current private access.

23. The BLM will consult with the Oregon Department of Fish and Wildlife about road maintenance procedures and the placement of ditches and culverts along the South Fork Road, prior to beginning this work.
24. To protect and enhance river values and to provide safe reliable service to the outfitted public, the BLM established the following criteria for awarding commercial permits. When determining whether to accept new commercial permit applications, the BLM will continue to adhere to Bureau policy that considers the following:
 - a. Type of public service to be provided by the permittee or applicant, and consistency with management goals and objectives.
 - b. Ability of permittee/applicant to provide the service and make a business profit.
 - c. Safety of commercial customers.
 - d. The BLM workload in administering and monitoring permits.
25. Additional measures to be taken by the BLM in administering John Day River permits are listed below:
 - a. New and transfer applicants will pay a non-refundable application fee to cover the cost of verifying that application requirements are met.
 - b. The BLM will conduct independent random audits of permit records.
 - c. The BLM will issue new permits at the discretion of the Authorized Officer, if a needs assessment identifies a need for a particular service. Permits will be issued by competitive prospectus among those applicants meeting specific criteria identified by the needs assessment.
 - d. Permit transfers will be processed in accordance with BLM transfer policies.
26. Concession permits will be considered based on the results of a needs assessment.
27. Contact the Confederated Tribes of Warm Springs regarding their interest to provide input into the needs assessment process.
28. Implement and enforce “Rules of Conduct for Designated and Suitable River Corridors” (see Appendix I of this RMP).
29. The BLM developed water quality restoration plans consistent with the ACS objectives and actions identified in this RMP to guide restoration actions, meet BLM’s portion of the TMDLs, fit into a multi-jurisdictional water quality management plan, and restore water quality in the plan area. The water quality management plan will be used to direct priorities, to identify site specific projects, and is incorporated by reference as part of this River Plan.
30. WSR recommended flows are identified in Appendix E - Instream Flow Reservations.
31. Recommend for designation by Congress the 37-mile segment of the North Fork John Day River determined suitable as WSR with a Scenic classification and ORVs of fishery, scenery, and recreation. The suitability determination will apply to lands within 0.25 mile of both sides of the 37-mile segment.
 - a. Upon formal designation or release by Congress, review the management direction to ensure compatibility with future Congressional direction. If Congress releases the segment of river determined to be suitable and does not provide additional management direction, this segment and surrounding lands will continue to be managed consistent with direction in this Record of Decision and Approved Resource Management Plan for the John Day Basin, which was designed to address Congress’s management objectives identified in the Oregon Land Exchange Act of 2000.

Wilderness and Wilderness Study Areas

The BLM Manual 6340 (Management of Designated Wilderness Areas) provides national guidance on wilderness management. The BLM incorporated this guidance into the Spring Basin Interim Wilderness Management Plan (see Appendix J in this RMP). Managing Spring Basin Wilderness Area in accordance with the interim management plan in the short-term will assure that the area’s wilderness values are protected until a management plan can be completed for long-term protection.

Attachment I-2. Glare Analysis Reports

FORGESOLAR GLARE ANALYSIS

Project: **Biglow Canyon Solar**

Site configuration: **Revised Analysis 1 - 1st Story Receptors**

Calculated via ForgeSolar Radiometric Physics Engine v3.2.1

Created 16 Jul, 2026

Updated 16 Jul, 2026

Time-step 1 minute

Timezone offset UTC-8

Minimum sun altitude 0.0 deg

DNI peaks at 1,000.0 W/m²

Category 100 MW to 1 GW

Site ID 183358.21638

Ocular transmission coefficient 0.5

Pupil diameter 0.002 m

Eye focal length 0.017 m

Sun subtended angle 9.3 mrad

Min luminance threshold 0 cd/m²

Summary of Results No glare predicted

PV Array	Tilt °	Orient °	Annual Green Glare		Annual Yellow Glare		Energy kWh
			min	hr	min	hr	
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.591992	-120.650491	1559.43	8.00	1567.43
2	45.592017	-120.644261	1555.18	8.00	1563.18
3	45.592671	-120.644307	1572.09	8.00	1580.09
4	45.592677	-120.641485	1570.87	8.00	1578.87
5	45.592019	-120.641487	1558.49	8.00	1566.49
6	45.592016	-120.635640	1581.88	8.00	1589.88
7	45.593428	-120.635508	1543.81	8.00	1551.81
8	45.595119	-120.635430	1522.99	8.00	1530.99
9	45.595129	-120.635838	1521.84	8.00	1529.84
10	45.595761	-120.637062	1526.71	8.00	1534.71
11	45.596017	-120.637983	1518.91	8.00	1526.91
12	45.596190	-120.639025	1506.60	8.00	1514.60
13	45.596190	-120.641380	1507.33	8.00	1515.33
14	45.597196	-120.641398	1504.89	8.00	1512.89
15	45.597498	-120.641800	1507.42	8.00	1515.42
16	45.597492	-120.642569	1505.20	8.00	1513.20
17	45.596813	-120.643753	1513.10	8.00	1521.10
18	45.596841	-120.647500	1507.66	8.00	1515.66
19	45.597816	-120.647461	1474.47	8.00	1482.47
20	45.598789	-120.648609	1479.07	8.00	1487.07
21	45.598781	-120.649994	1481.41	8.00	1489.41
22	45.598171	-120.650453	1479.62	8.00	1487.62
23	45.595835	-120.650484	1501.72	8.00	1509.72
24	45.594042	-120.650561	1520.33	8.00	1528.33

Name: PV array 2

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

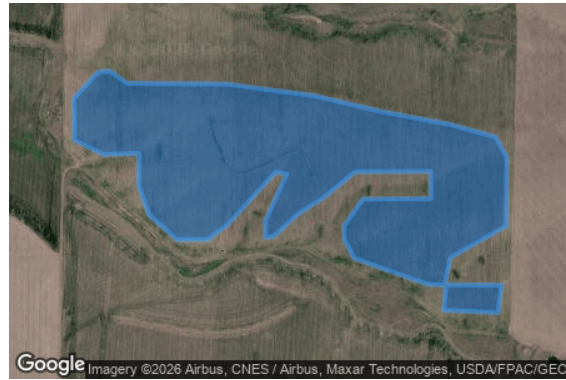
Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.597474	-120.637587	1508.42	8.00	1516.42
2	45.597414	-120.635720	1539.47	8.00	1547.47
3	45.598074	-120.635591	1546.40	8.00	1554.40
4	45.598089	-120.637544	1510.11	8.00	1518.11
5	45.598735	-120.637351	1525.79	8.00	1533.79
6	45.599501	-120.635422	1556.14	8.00	1564.14
7	45.601145	-120.635417	1574.08	8.00	1582.08
8	45.601628	-120.635807	1575.19	8.00	1583.19
9	45.601934	-120.637415	1565.67	8.00	1573.67
10	45.602240	-120.639758	1550.03	8.00	1558.03
11	45.602608	-120.641977	1534.67	8.00	1542.67
12	45.602896	-120.645086	1493.96	8.00	1501.96
13	45.602914	-120.648468	1452.26	8.00	1460.26
14	45.603207	-120.649055	1426.74	8.00	1434.74
15	45.603183	-120.649459	1421.22	8.00	1429.22
16	45.602554	-120.650289	1430.44	8.00	1438.44
17	45.601553	-120.650277	1441.96	8.00	1449.96
18	45.601205	-120.649283	1449.68	8.00	1457.68
19	45.601231	-120.648063	1461.45	8.00	1469.45
20	45.600427	-120.648058	1466.23	8.00	1474.23
21	45.599762	-120.647711	1455.05	8.00	1463.05
22	45.599163	-120.646742	1464.86	8.00	1472.86
23	45.599169	-120.645684	1467.10	8.00	1475.10
24	45.599518	-120.645014	1472.66	8.00	1480.66
25	45.600783	-120.643355	1496.17	8.00	1504.17
26	45.600734	-120.642982	1487.46	8.00	1495.46
27	45.599627	-120.643709	1471.13	8.00	1479.13
28	45.599216	-120.643713	1464.93	8.00	1472.93
29	45.599240	-120.643421	1470.45	8.00	1478.45
30	45.599771	-120.642605	1487.73	8.00	1495.73
31	45.600176	-120.641703	1502.24	8.00	1510.24
32	45.600789	-120.640622	1514.01	8.00	1522.01
33	45.600799	-120.638031	1536.46	8.00	1544.46
34	45.600152	-120.638021	1531.65	8.00	1539.65
35	45.600139	-120.640361	1502.83	8.00	1510.83
36	45.599503	-120.641005	1498.58	8.00	1506.58
37	45.599175	-120.640999	1496.04	8.00	1504.04
38	45.598721	-120.640662	1488.53	8.00	1496.53
39	45.598419	-120.639464	1502.56	8.00	1510.56
40	45.598100	-120.638156	1505.27	8.00	1513.27
41	45.598071	-120.637505	1510.20	8.00	1518.20

Name: PV array 3

Axis tracking: Single-axis rotation

Backtracking: Shade

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.603252	-120.649254	1426.64	8.00	1434.64
2	45.603267	-120.647925	1446.22	8.00	1454.22
3	45.603347	-120.644149	1486.07	8.00	1494.07
4	45.603026	-120.642808	1506.92	8.00	1514.92
5	45.602641	-120.639922	1528.83	8.00	1536.83
6	45.602661	-120.637806	1524.45	8.00	1532.45
7	45.603023	-120.635399	1511.37	8.00	1519.37
8	45.605187	-120.635337	1502.13	8.00	1510.13
9	45.606548	-120.635363	1545.67	8.00	1553.67
10	45.606414	-120.632806	1549.17	8.00	1557.17
11	45.606391	-120.631516	1560.66	8.00	1568.66
12	45.611757	-120.631565	1513.65	8.00	1521.65
13	45.611775	-120.635145	1501.47	8.00	1509.47
14	45.612113	-120.635187	1502.10	8.00	1510.10
15	45.612134	-120.638132	1519.75	8.00	1527.75
16	45.612114	-120.646280	1514.46	8.00	1522.46
17	45.612407	-120.646292	1512.78	8.00	1520.78
18	45.612387	-120.648660	1498.50	8.00	1506.50
19	45.611770	-120.648703	1498.50	8.00	1506.50
20	45.611740	-120.650605	1499.14	8.00	1507.14
21	45.611740	-120.653586	1490.90	8.00	1498.90
22	45.612094	-120.653624	1486.03	8.00	1494.03
23	45.612735	-120.654825	1463.50	8.00	1471.50
24	45.612719	-120.655328	1465.54	8.00	1473.54
25	45.611088	-120.655465	1476.80	8.00	1484.80
26	45.609595	-120.655453	1446.31	8.00	1454.31
27	45.609288	-120.654169	1425.83	8.00	1433.83
28	45.608562	-120.654180	1409.94	8.00	1417.94
29	45.606550	-120.654153	1430.65	8.00	1438.65
30	45.606397	-120.650761	1453.62	8.00	1461.62
31	45.605875	-120.650321	1483.50	8.00	1491.50
32	45.604261	-120.650331	1430.28	8.00	1438.28
33	45.604239	-120.649635	1428.94	8.00	1436.94
34	45.603968	-120.649315	1414.92	8.00	1422.92

Name: PV array 4

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.606400	-120.631508	1560.85	8.00	1568.85
2	45.606407	-120.624814	1565.44	8.00	1573.44
3	45.610819	-120.624874	1532.80	8.00	1540.80
4	45.611802	-120.626265	1531.68	8.00	1539.68
5	45.612136	-120.627362	1520.60	8.00	1528.60
6	45.613755	-120.628491	1487.50	8.00	1495.50
7	45.613948	-120.628536	1482.96	8.00	1490.96
8	45.613918	-120.627094	1530.05	8.00	1538.05
9	45.613427	-120.627071	1536.89	8.00	1544.89
10	45.612419	-120.625602	1531.99	8.00	1539.99
11	45.612424	-120.624844	1536.55	8.00	1544.55
12	45.619395	-120.624758	1532.61	8.00	1540.61
13	45.619371	-120.629805	1511.33	8.00	1519.33
14	45.618743	-120.630467	1529.76	8.00	1537.76
15	45.617685	-120.631105	1515.76	8.00	1523.76
16	45.617332	-120.632248	1524.37	8.00	1532.37
17	45.615980	-120.632249	1492.08	8.00	1500.08
18	45.615966	-120.631360	1505.69	8.00	1513.69
19	45.614904	-120.631419	1517.69	8.00	1525.69
20	45.613764	-120.631389	1502.16	8.00	1510.16
21	45.613717	-120.632324	1469.73	8.00	1477.73
22	45.612753	-120.632288	1482.25	8.00	1490.25
23	45.612753	-120.631407	1472.61	8.00	1480.61
24	45.611764	-120.631385	1483.32	8.00	1491.32

Name: PV array 5

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.613089	-120.655360	1449.18	8.00	1457.18
2	45.613093	-120.655032	1446.03	8.00	1454.03
3	45.613458	-120.653997	1427.04	8.00	1435.04
4	45.613440	-120.652234	1448.10	8.00	1456.10
5	45.613096	-120.652237	1447.28	8.00	1455.28
6	45.612791	-120.651826	1447.58	8.00	1455.58
7	45.612795	-120.650716	1456.33	8.00	1464.33
8	45.613112	-120.649949	1460.32	8.00	1468.32
9	45.613115	-120.646945	1468.72	8.00	1476.72
10	45.612800	-120.646592	1478.57	8.00	1486.57
11	45.612802	-120.645659	1483.52	8.00	1491.52
12	45.614822	-120.645644	1451.77	8.00	1459.77
13	45.616207	-120.645659	1463.19	8.00	1471.19
14	45.620308	-120.645604	1433.49	8.00	1441.49
15	45.620280	-120.649672	1425.23	8.00	1433.23
16	45.618551	-120.649711	1416.70	8.00	1424.70
17	45.618525	-120.652831	1397.02	8.00	1405.02
18	45.619919	-120.653002	1376.61	8.00	1384.61
19	45.619924	-120.652483	1401.20	8.00	1409.20
20	45.620267	-120.652493	1402.46	8.00	1410.46
21	45.620298	-120.655231	1409.28	8.00	1417.28
22	45.618931	-120.655276	1392.14	8.00	1400.14
23	45.618529	-120.655313	1392.05	8.00	1400.05
24	45.615838	-120.655334	1368.45	8.00	1376.45
25	45.615427	-120.655371	1417.97	8.00	1425.97

Name: PV array 6

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.625148	-120.634410	1514.28	8.00	1522.28
2	45.625168	-120.629927	1501.32	8.00	1509.32
3	45.626183	-120.629299	1533.33	8.00	1541.33
4	45.627814	-120.629299	1536.10	8.00	1544.10
5	45.627817	-120.632822	1499.59	8.00	1507.59
6	45.627507	-120.632797	1511.72	8.00	1519.72
7	45.627495	-120.634355	1500.79	8.00	1508.79

Route Receptors

Name: Emigrant Springs Ln

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.628064	-120.624308	1541.50	3.50	1545.00
2	45.628045	-120.622929	1540.10	3.50	1543.60
3	45.628004	-120.621191	1509.90	3.50	1513.40
4	45.627981	-120.620113	1489.20	3.50	1492.70
5	45.627941	-120.618214	1484.00	3.50	1487.50
6	45.627893	-120.615987	1466.30	3.50	1469.80
7	45.627841	-120.613552	1478.50	3.50	1482.00
8	45.627852	-120.613037	1478.80	3.50	1482.30
9	45.627826	-120.610135	1480.70	3.50	1484.20
10	45.627772	-120.607501	1466.60	3.50	1470.10
11	45.627720	-120.605382	1446.80	3.50	1450.30
12	45.627653	-120.602690	1415.20	3.50	1418.70
13	45.627565	-120.598500	1406.80	3.50	1410.30
14	45.627463	-120.594560	1408.30	3.50	1411.80
15	45.627372	-120.590566	1440.10	3.50	1443.60
16	45.627267	-120.585705	1426.10	3.50	1429.60
17	45.627177	-120.582168	1397.40	3.50	1400.90
18	45.627188	-120.578665	1371.00	3.50	1374.50
19	45.627220	-120.561601	1229.70	3.50	1233.20
20	45.627258	-120.551237	1281.40	3.50	1284.90
21	45.627204	-120.531722	1227.50	3.50	1231.00
22	45.627078	-120.523316	1179.90	3.50	1183.40
23	45.627085	-120.516182	1190.50	3.50	1194.00
24	45.627055	-120.511354	1187.30	3.50	1190.80
25	45.627055	-120.510592	1182.50	3.50	1186.00

Name: Herin Ln - 1
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.658436	-120.623865	1386.00	3.50	1389.50
2	45.658443	-120.622814	1388.50	3.50	1392.00
3	45.658394	-120.621473	1390.30	3.50	1393.80
4	45.658278	-120.620180	1402.70	3.50	1406.20
5	45.658031	-120.619338	1414.60	3.50	1418.10
6	45.657569	-120.617986	1428.00	3.50	1431.50
7	45.657123	-120.616715	1438.60	3.50	1442.10
8	45.656962	-120.616044	1445.20	3.50	1448.70
9	45.656913	-120.615712	1449.50	3.50	1453.00
10	45.656880	-120.614757	1458.20	3.50	1461.70
11	45.656822	-120.613051	1458.00	3.50	1461.50
12	45.656695	-120.612826	1458.40	3.50	1461.90
13	45.656444	-120.612707	1459.30	3.50	1462.80
14	45.655990	-120.612702	1465.20	3.50	1468.70
15	45.653803	-120.612783	1471.20	3.50	1474.70
16	45.650107	-120.612851	1463.70	3.50	1467.20
17	45.649822	-120.612723	1467.70	3.50	1471.20
18	45.649645	-120.612529	1467.40	3.50	1470.90
19	45.649578	-120.612256	1465.30	3.50	1468.80
20	45.649489	-120.609604	1441.70	3.50	1445.20
21	45.649406	-120.605018	1380.40	3.50	1383.90
22	45.649335	-120.600190	1317.70	3.50	1321.20
23	45.649103	-120.592288	1263.80	3.50	1267.30
24	45.649050	-120.590577	1233.30	3.50	1236.80
25	45.649043	-120.589187	1213.80	3.50	1217.30
26	45.649200	-120.588688	1205.70	3.50	1209.20
27	45.650634	-120.586455	1185.90	3.50	1189.40
28	45.652457	-120.584663	1154.50	3.50	1158.00
29	45.653023	-120.584154	1141.20	3.50	1144.70
30	45.653961	-120.583574	1128.90	3.50	1132.40

Name: Herin Ln - 2
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.653976	-120.583548	1128.20	3.50	1131.70
2	45.654253	-120.583312	1124.40	3.50	1127.90
3	45.654482	-120.582974	1116.20	3.50	1119.70
4	45.654954	-120.582587	1105.40	3.50	1108.90
5	45.655700	-120.581954	1086.30	3.50	1089.80
6	45.656117	-120.581552	1079.30	3.50	1082.80
7	45.656503	-120.580989	1063.30	3.50	1066.80
8	45.656776	-120.580624	1051.60	3.50	1055.10
9	45.657020	-120.580468	1046.20	3.50	1049.70
10	45.657313	-120.580383	1042.90	3.50	1046.40
11	45.657909	-120.579980	1035.90	3.50	1039.40
12	45.658299	-120.579583	1038.70	3.50	1042.20
13	45.658535	-120.579326	1040.50	3.50	1044.00
14	45.658805	-120.579130	1032.80	3.50	1036.30
15	45.659195	-120.578980	1021.00	3.50	1024.50
16	45.659487	-120.579023	1011.00	3.50	1014.50
17	45.660023	-120.579125	1004.50	3.50	1008.00
18	45.660368	-120.579372	997.30	3.50	1000.80
19	45.661157	-120.579484	983.70	3.50	987.20
20	45.661693	-120.579479	972.10	3.50	975.60
21	45.662192	-120.579506	961.10	3.50	964.60

Name: Hwy 206

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.546018	-120.625806	1460.10	3.50	1463.60
2	45.547416	-120.626600	1493.80	3.50	1497.30
3	45.548498	-120.627801	1510.40	3.50	1513.90
4	45.549279	-120.629024	1528.30	3.50	1531.80
5	45.552480	-120.635011	1606.60	3.50	1610.10
6	45.554118	-120.638058	1640.00	3.50	1643.50
7	45.555350	-120.640161	1652.20	3.50	1655.70
8	45.556777	-120.641835	1648.50	3.50	1652.00
9	45.562862	-120.648615	1631.50	3.50	1635.00
10	45.564815	-120.650933	1622.40	3.50	1625.90
11	45.567030	-120.654392	1588.70	3.50	1592.20
12	45.571506	-120.661688	1504.30	3.50	1507.80
13	45.577124	-120.670657	1401.10	3.50	1404.60
14	45.583417	-120.680871	1331.60	3.50	1335.10
15	45.584288	-120.682566	1324.20	3.50	1327.70
16	45.586570	-120.687888	1312.60	3.50	1316.10
17	45.588823	-120.693596	1297.50	3.50	1301.00
18	45.589694	-120.695849	1283.70	3.50	1287.20
19	45.590565	-120.697694	1271.60	3.50	1275.10

Name: I97

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.574282	-120.697086	1427.10	3.50	1430.60
2	45.581972	-120.707815	1382.10	3.50	1385.60
3	45.584630	-120.711591	1344.00	3.50	1347.50
4	45.585621	-120.712557	1331.20	3.50	1334.70
5	45.586162	-120.713029	1325.50	3.50	1329.00
6	45.587003	-120.713437	1312.10	3.50	1315.60
7	45.588294	-120.713716	1297.60	3.50	1301.10
8	45.589751	-120.714080	1281.90	3.50	1285.40
9	45.590862	-120.714424	1272.20	3.50	1275.70
10	45.592018	-120.715089	1267.60	3.50	1271.10
11	45.593204	-120.715969	1264.40	3.50	1267.90
12	45.594509	-120.717201	1253.00	3.50	1256.50
13	45.595935	-120.718703	1239.00	3.50	1242.50
14	45.598037	-120.720892	1231.30	3.50	1234.80
15	45.598623	-120.721342	1221.80	3.50	1225.30
16	45.599313	-120.721750	1208.80	3.50	1212.30
17	45.600217	-120.722052	1196.10	3.50	1199.60
18	45.601058	-120.722052	1184.30	3.50	1187.80
19	45.602409	-120.721945	1170.60	3.50	1174.10
20	45.604555	-120.721645	1147.60	3.50	1151.10
21	45.605591	-120.721795	1139.40	3.50	1142.90
22	45.606537	-120.722224	1134.20	3.50	1137.70
23	45.607528	-120.722975	1127.10	3.50	1130.60
24	45.608909	-120.724777	1116.50	3.50	1120.00
25	45.612151	-120.729498	1083.80	3.50	1087.30
26	45.612871	-120.730871	1076.20	3.50	1079.70
27	45.613457	-120.732459	1069.30	3.50	1072.80
28	45.614027	-120.733961	1063.00	3.50	1066.50
29	45.614688	-120.735206	1057.90	3.50	1061.40
30	45.615363	-120.735978	1051.50	3.50	1055.00

Name: Klondike Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



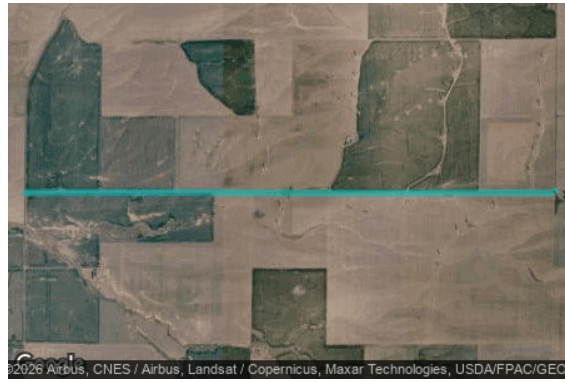
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.584323	-120.682296	1326.50	3.50	1330.00
2	45.584443	-120.681695	1330.60	3.50	1334.10
3	45.584398	-120.675472	1397.70	3.50	1401.20
4	45.584383	-120.664668	1434.00	3.50	1437.50
5	45.584353	-120.653587	1427.20	3.50	1430.70
6	45.584353	-120.644970	1531.00	3.50	1534.50
7	45.584338	-120.633806	1535.50	3.50	1539.00
8	45.584263	-120.621228	1559.70	3.50	1563.20
9	45.584158	-120.613439	1547.10	3.50	1550.60
10	45.583872	-120.602796	1521.80	3.50	1525.30
11	45.583932	-120.597432	1513.70	3.50	1517.20
12	45.583992	-120.582132	1450.80	3.50	1454.30
13	45.584068	-120.576344	1439.70	3.50	1443.20
14	45.584113	-120.569950	1452.00	3.50	1455.50
15	45.584068	-120.557118	1382.30	3.50	1385.80
16	45.583799	-120.534859	1381.20	3.50	1384.70
17	45.583717	-120.523039	1316.60	3.50	1320.10
18	45.583717	-120.520910	1304.00	3.50	1307.50

Name: Medler Ln

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



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Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.620780	-120.697244	1233.10	3.50	1236.60
2	45.620789	-120.690002	1288.50	3.50	1292.00
3	45.620797	-120.684799	1318.10	3.50	1321.60
4	45.620798	-120.678539	1315.90	3.50	1319.40
5	45.620806	-120.676363	1308.60	3.50	1312.10
6	45.620786	-120.669762	1370.20	3.50	1373.70
7	45.620736	-120.662578	1340.40	3.50	1343.90
8	45.620740	-120.655545	1381.80	3.50	1385.30
9	45.620748	-120.645646	1434.90	3.50	1438.40
10	45.620763	-120.638432	1442.40	3.50	1445.90
11	45.620763	-120.626023	1488.70	3.50	1492.20
12	45.620733	-120.625325	1493.00	3.50	1496.50
13	45.620785	-120.624875	1492.00	3.50	1495.50
14	45.620961	-120.624537	1490.40	3.50	1493.90

Name: N Klondike Rd

Path type: Two-way

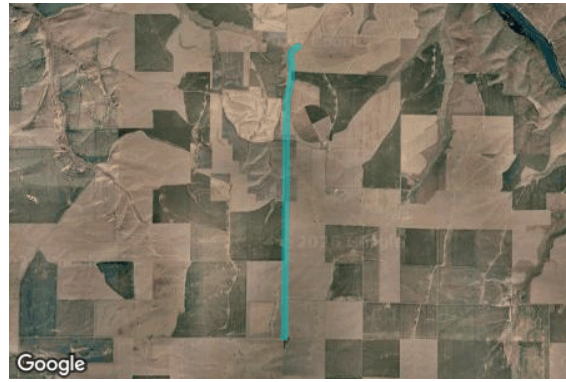
Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.584163	-120.613405	1547.00	3.50	1550.50
2	45.587263	-120.613393	1575.30	3.50	1578.80
3	45.591409	-120.613389	1562.60	3.50	1566.10
4	45.591800	-120.613271	1546.60	3.50	1550.10
5	45.592197	-120.613249	1552.20	3.50	1555.70
6	45.593140	-120.613195	1552.10	3.50	1555.60
7	45.595257	-120.613163	1551.90	3.50	1555.40
8	45.599148	-120.613170	1582.50	3.50	1586.00
9	45.606076	-120.613159	1539.50	3.50	1543.00
10	45.612918	-120.613143	1557.90	3.50	1561.40
11	45.620015	-120.613108	1561.40	3.50	1564.90
12	45.627848	-120.613076	1478.70	3.50	1482.20

Name: Oehman Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



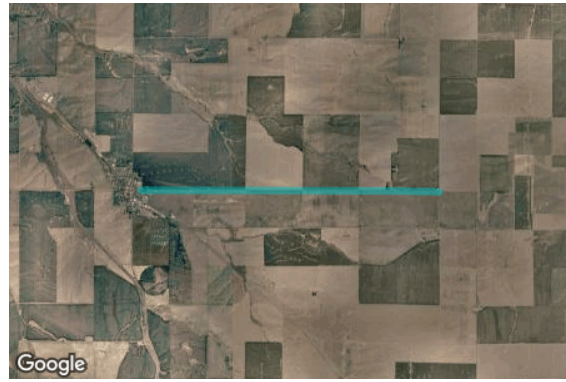
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.621007	-120.624496	1490.30	3.50	1493.80
2	45.621195	-120.624325	1492.30	3.50	1495.80
3	45.621562	-120.624314	1498.40	3.50	1501.90
4	45.624900	-120.624282	1514.10	3.50	1517.60
5	45.628062	-120.624321	1541.50	3.50	1545.00
6	45.630213	-120.624226	1504.00	3.50	1507.50
7	45.632395	-120.624172	1500.50	3.50	1504.00
8	45.636064	-120.624129	1462.20	3.50	1465.70
9	45.641060	-120.624078	1507.70	3.50	1511.20
10	45.646394	-120.624000	1512.20	3.50	1515.70
11	45.651890	-120.623940	1482.40	3.50	1485.90
12	45.658455	-120.623849	1385.80	3.50	1389.30
13	45.666166	-120.623727	1305.40	3.50	1308.90
14	45.666518	-120.623652	1303.00	3.50	1306.50
15	45.668559	-120.623008	1295.10	3.50	1298.60
16	45.670052	-120.622507	1288.40	3.50	1291.90
17	45.670479	-120.622443	1288.30	3.50	1291.80
18	45.671560	-120.622410	1287.80	3.50	1291.30
19	45.673173	-120.622357	1284.90	3.50	1288.40
20	45.674328	-120.622582	1293.20	3.50	1296.70
21	45.674792	-120.622571	1301.50	3.50	1305.00
22	45.675487	-120.622464	1321.40	3.50	1324.90
23	45.675989	-120.621971	1337.60	3.50	1341.10
24	45.676364	-120.621316	1353.10	3.50	1356.60
25	45.676589	-120.620629	1351.40	3.50	1354.90

Name: Old Wasco-Heppner Hwy

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.591737	-120.695232	1307.40	3.50	1310.90
2	45.591715	-120.686340	1425.00	3.50	1428.50
3	45.591698	-120.677285	1485.90	3.50	1489.40
4	45.591683	-120.664594	1475.50	3.50	1479.00
5	45.591645	-120.649788	1555.40	3.50	1558.90
6	45.591608	-120.635203	1581.70	3.50	1585.20
7	45.591608	-120.626383	1567.50	3.50	1571.00
8	45.591473	-120.615718	1574.30	3.50	1577.80
9	45.591408	-120.613407	1562.50	3.50	1566.00

Name: Webfoot Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.606047	-120.613135	1539.50	3.50	1543.00
2	45.606062	-120.611965	1536.80	3.50	1540.30
3	45.606043	-120.609766	1524.30	3.50	1527.80
4	45.606032	-120.606848	1523.10	3.50	1526.60
5	45.605998	-120.603238	1513.70	3.50	1517.20
6	45.605938	-120.601312	1506.30	3.50	1509.80
7	45.605902	-120.598984	1479.20	3.50	1482.70
8	45.605857	-120.597235	1467.80	3.50	1471.30
9	45.605796	-120.595051	1468.80	3.50	1472.30
10	45.605723	-120.592141	1458.20	3.50	1461.70
11	45.605678	-120.589904	1436.80	3.50	1440.30
12	45.605599	-120.586846	1418.50	3.50	1422.00
13	45.605565	-120.585038	1404.60	3.50	1408.10
14	45.605502	-120.582415	1382.80	3.50	1386.30
15	45.605509	-120.580248	1391.60	3.50	1395.10
16	45.605497	-120.577594	1393.30	3.50	1396.80

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	45.581671	-120.650971	1462.10	6.00
OP 2	2	45.591202	-120.693499	1345.50	6.00
OP 3	3	45.595312	-120.700334	1283.30	6.00
OP 4	4	45.605526	-120.665361	1365.50	6.00
OP 5	5	45.617148	-120.690993	1231.10	6.00
OP 6	6	45.625705	-120.652694	1408.60	6.00
OP 7	7	45.627981	-120.607648	1475.00	6.00
OP 8	8	45.657315	-120.612840	1458.70	6.00
OP 9	9	45.685485	-120.604651	997.80	6.00
OP 10	10	45.699712	-120.546563	983.00	6.00
OP 11	11	45.650975	-120.557140	1098.90	6.00
OP 12	12	45.633880	-120.525643	1191.60	6.00
OP 13	13	45.584821	-120.519879	1309.30	6.00
OP 14	14	45.647816	-120.590278	1236.50	6.00
OP 15	15	45.629485	-120.559316	1191.50	6.00
OP 16	16	45.622847	-120.562188	1256.80	6.00
OP 17	17	45.548417	-120.552628	1485.10	6.00
OP 18	18	45.549640	-120.592761	1590.70	6.00
OP 19	19	45.568232	-120.603758	1535.50	6.00
OP 20	20	45.583640	-120.614099	1557.40	6.00
OP 21	21	45.591961	-120.627507	1560.20	6.00
OP 22	22	45.594854	-120.696343	1326.72	6.00
OP 23	23	45.596352	-120.698156	1326.23	6.00
OP 24	24	45.590803	-120.693278	1346.68	6.00
OP 25	25	45.591645	-120.696465	1297.37	6.00
OP 26	26	45.595440	-120.697902	1308.19	6.00
OP 27	27	45.597680	-120.702494	1267.99	6.00

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt °	Orient °	Annual Green Glare		Annual Yellow Glare		Energy kWh
			min	hr	min	hr	
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 1 and Route: Emigrant Springs Ln

No glare found

PV array 1 and Route: Herin Ln - 1

No glare found

PV array 1 and Route: Herin Ln - 2

No glare found

PV array 1 and Route: Hwy 206

No glare found

PV array 1 and Route: I97

No glare found

PV array 1 and Route: Klondike Rd

No glare found

PV array 1 and Route: Medler Ln

No glare found

PV array 1 and Route: N Klondike Rd

No glare found

PV array 1 and Route: Oehman Rd

No glare found

PV array 1 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 1 and Route: Webfoot Rd

No glare found

PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV array 1 and OP 14

No glare found

PV array 1 and OP 15

No glare found

PV array 1 and OP 16

No glare found

PV array 1 and OP 17

No glare found

PV array 1 and OP 18

No glare found

PV array 1 and OP 19

No glare found

PV array 1 and OP 20

No glare found

PV array 1 and OP 21

No glare found

PV array 1 and OP 22

No glare found

PV array 1 and OP 23

No glare found

PV array 1 and OP 24

No glare found

PV array 1 and OP 25

No glare found

PV array 1 and OP 26

No glare found

PV array 1 and OP 27

No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 2 and Route: Emigrant Springs Ln

No glare found

PV array 2 and Route: Herin Ln - 1

No glare found

PV array 2 and Route: Herin Ln - 2

No glare found

PV array 2 and Route: Hwy 206

No glare found

PV array 2 and Route: I97

No glare found

PV array 2 and Route: Klondike Rd

No glare found

PV array 2 and Route: Medler Ln

No glare found

PV array 2 and Route: N Klondike Rd

No glare found

PV array 2 and Route: Oehman Rd

No glare found

PV array 2 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 2 and Route: Webfoot Rd

No glare found

PV array 2 and OP 1

No glare found

PV array 2 and OP 2

No glare found

PV array 2 and OP 3

No glare found

PV array 2 and OP 4

No glare found

PV array 2 and OP 5

No glare found

PV array 2 and OP 6

No glare found

PV array 2 and OP 7

No glare found

PV array 2 and OP 8

No glare found

PV array 2 and OP 9

No glare found

PV array 2 and OP 10

No glare found

PV array 2 and OP 11

No glare found

PV array 2 and OP 12

No glare found

PV array 2 and OP 13

No glare found

PV array 2 and OP 14

No glare found

PV array 2 and OP 15

No glare found

PV array 2 and OP 16

No glare found

PV array 2 and OP 17

No glare found

PV array 2 and OP 18

No glare found

PV array 2 and OP 19

No glare found

PV array 2 and OP 20

No glare found

PV array 2 and OP 21

No glare found

PV array 2 and OP 22

No glare found

PV array 2 and OP 23

No glare found

PV array 2 and OP 24

No glare found

PV array 2 and OP 25

No glare found

PV array 2 and OP 26

No glare found

PV array 2 and OP 27

No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 3 and Route: Emigrant Springs Ln

No glare found

PV array 3 and Route: Herin Ln - 1

No glare found

PV array 3 and Route: Herin Ln - 2

No glare found

PV array 3 and Route: Hwy 206

No glare found

PV array 3 and Route: I97

No glare found

PV array 3 and Route: Klondike Rd

No glare found

PV array 3 and Route: Medler Ln

No glare found

PV array 3 and Route: N Klondike Rd

No glare found

PV array 3 and Route: Oehman Rd

No glare found

PV array 3 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 3 and Route: Webfoot Rd

No glare found

PV array 3 and OP 1

No glare found

PV array 3 and OP 2

No glare found

PV array 3 and OP 3

No glare found

PV array 3 and OP 4

No glare found

PV array 3 and OP 5

No glare found

PV array 3 and OP 6

No glare found

PV array 3 and OP 7

No glare found

PV array 3 and OP 8

No glare found

PV array 3 and OP 9

No glare found

PV array 3 and OP 10

No glare found

PV array 3 and OP 11

No glare found

PV array 3 and OP 12

No glare found

PV array 3 and OP 13

No glare found

PV array 3 and OP 14

No glare found

PV array 3 and OP 15

No glare found

PV array 3 and OP 16

No glare found

PV array 3 and OP 17

No glare found

PV array 3 and OP 18

No glare found

PV array 3 and OP 19

No glare found

PV array 3 and OP 20

No glare found

PV array 3 and OP 21

No glare found

PV array 3 and OP 22

No glare found

PV array 3 and OP 23

No glare found

PV array 3 and OP 24

No glare found

PV array 3 and OP 25

No glare found

PV array 3 and OP 26

No glare found

PV array 3 and OP 27

No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 4 and Route: Emigrant Springs Ln

No glare found

PV array 4 and Route: Herin Ln - 1

No glare found

PV array 4 and Route: Herin Ln - 2

No glare found

PV array 4 and Route: Hwy 206

No glare found

PV array 4 and Route: I97

No glare found

PV array 4 and Route: Klondike Rd

No glare found

PV array 4 and Route: Medler Ln

No glare found

PV array 4 and Route: N Klondike Rd

No glare found

PV array 4 and Route: Oehman Rd

No glare found

PV array 4 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 4 and Route: Webfoot Rd

No glare found

PV array 4 and OP 1

No glare found

PV array 4 and OP 2

No glare found

PV array 4 and OP 3

No glare found

PV array 4 and OP 4

No glare found

PV array 4 and OP 5

No glare found

PV array 4 and OP 6

No glare found

PV array 4 and OP 7

No glare found

PV array 4 and OP 8

No glare found

PV array 4 and OP 9

No glare found

PV array 4 and OP 10

No glare found

PV array 4 and OP 11

No glare found

PV array 4 and OP 12

No glare found

PV array 4 and OP 13

No glare found

PV array 4 and OP 14

No glare found

PV array 4 and OP 15

No glare found

PV array 4 and OP 16

No glare found

PV array 4 and OP 17

No glare found

PV array 4 and OP 18

No glare found

PV array 4 and OP 19

No glare found

PV array 4 and OP 20

No glare found

PV array 4 and OP 21

No glare found

PV array 4 and OP 22

No glare found

PV array 4 and OP 23

No glare found

PV array 4 and OP 24

No glare found

PV array 4 and OP 25

No glare found

PV array 4 and OP 26

No glare found

PV array 4 and OP 27

No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 5 and Route: Emigrant Springs Ln

No glare found

PV array 5 and Route: Herin Ln - 1

No glare found

PV array 5 and Route: Herin Ln - 2

No glare found

PV array 5 and Route: Hwy 206

No glare found

PV array 5 and Route: I97

No glare found

PV array 5 and Route: Klondike Rd

No glare found

PV array 5 and Route: Medler Ln

No glare found

PV array 5 and Route: N Klondike Rd

No glare found

PV array 5 and Route: Oehman Rd

No glare found

PV array 5 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 5 and Route: Webfoot Rd

No glare found

PV array 5 and OP 1

No glare found

PV array 5 and OP 2

No glare found

PV array 5 and OP 3

No glare found

PV array 5 and OP 4

No glare found

PV array 5 and OP 5

No glare found

PV array 5 and OP 6

No glare found

PV array 5 and OP 7

No glare found

PV array 5 and OP 8

No glare found

PV array 5 and OP 9

No glare found

PV array 5 and OP 10

No glare found

PV array 5 and OP 11

No glare found

PV array 5 and OP 12

No glare found

PV array 5 and OP 13

No glare found

PV array 5 and OP 14

No glare found

PV array 5 and OP 15

No glare found

PV array 5 and OP 16

No glare found

PV array 5 and OP 17

No glare found

PV array 5 and OP 18

No glare found

PV array 5 and OP 19

No glare found

PV array 5 and OP 20

No glare found

PV array 5 and OP 21

No glare found

PV array 5 and OP 22

No glare found

PV array 5 and OP 23

No glare found

PV array 5 and OP 24

No glare found

PV array 5 and OP 25

No glare found

PV array 5 and OP 26

No glare found

PV array 5 and OP 27

No glare found

PV: PV array 6 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 6 and Route: Emigrant Springs Ln

No glare found

PV array 6 and Route: Herin Ln - 1

No glare found

PV array 6 and Route: Herin Ln - 2

No glare found

PV array 6 and Route: Hwy 206

No glare found

PV array 6 and Route: I97

No glare found

PV array 6 and Route: Klondike Rd

No glare found

PV array 6 and Route: Medler Ln

No glare found

PV array 6 and Route: N Klondike Rd

No glare found

PV array 6 and Route: Oehman Rd

No glare found

PV array 6 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 6 and Route: Webfoot Rd

No glare found

PV array 6 and OP 1

No glare found

PV array 6 and OP 2

No glare found

PV array 6 and OP 3

No glare found

PV array 6 and OP 4

No glare found

PV array 6 and OP 5

No glare found

PV array 6 and OP 6

No glare found

PV array 6 and OP 7

No glare found

PV array 6 and OP 8

No glare found

PV array 6 and OP 9

No glare found

PV array 6 and OP 10

No glare found

PV array 6 and OP 11

No glare found

PV array 6 and OP 12

No glare found

PV array 6 and OP 13

No glare found

PV array 6 and OP 14

No glare found

PV array 6 and OP 15

No glare found

PV array 6 and OP 16

No glare found

PV array 6 and OP 17

No glare found

PV array 6 and OP 18

No glare found

PV array 6 and OP 19

No glare found

PV array 6 and OP 20

No glare found

PV array 6 and OP 21

No glare found

PV array 6 and OP 22

No glare found

PV array 6 and OP 23

No glare found

PV array 6 and OP 24

No glare found

PV array 6 and OP 25

No glare found

PV array 6 and OP 26

No glare found

PV array 6 and OP 27

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.

Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.

The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.

The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)

The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.

The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.

The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.

Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.

Refer to the Help page at www.forgesolar.com/help/ for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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This analysis was conducted using the best available radiometric modeling at the time of generation. Future updates to the modeling methodology may yield different results.

FORGESOLAR GLARE ANALYSIS

Project: **Biglow Canyon Solar**

Site configuration: **Revised Analysis 2 - 2nd Story Receptors**

Calculated via ForgeSolar Radiometric Physics Engine v3.2.1

Created 16 Jul, 2026

Updated 16 Jul, 2026

Time-step 1 minute

Timezone offset UTC-8

Minimum sun altitude 0.0 deg

DNI peaks at 1,000.0 W/m²

Category 100 MW to 1 GW

Site ID 183367.21638

Ocular transmission coefficient 0.5

Pupil diameter 0.002 m

Eye focal length 0.017 m

Sun subtended angle 9.3 mrad

Min luminance threshold 0 cd/m²

Summary of Results No glare predicted

PV Array	Tilt °	Orient °	Annual Green Glare		Annual Yellow Glare		Energy kWh
			min	hr	min	hr	
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.591992	-120.650491	1559.43	8.00	1567.43
2	45.592017	-120.644261	1555.18	8.00	1563.18
3	45.592671	-120.644307	1572.09	8.00	1580.09
4	45.592677	-120.641485	1570.87	8.00	1578.87
5	45.592019	-120.641487	1558.49	8.00	1566.49
6	45.592016	-120.635640	1581.88	8.00	1589.88
7	45.593428	-120.635508	1543.81	8.00	1551.81
8	45.595119	-120.635430	1522.99	8.00	1530.99
9	45.595129	-120.635838	1521.84	8.00	1529.84
10	45.595761	-120.637062	1526.71	8.00	1534.71
11	45.596017	-120.637983	1518.91	8.00	1526.91
12	45.596190	-120.639025	1506.60	8.00	1514.60
13	45.596190	-120.641380	1507.33	8.00	1515.33
14	45.597196	-120.641398	1504.89	8.00	1512.89
15	45.597498	-120.641800	1507.42	8.00	1515.42
16	45.597492	-120.642569	1505.20	8.00	1513.20
17	45.596813	-120.643753	1513.10	8.00	1521.10
18	45.596841	-120.647500	1507.66	8.00	1515.66
19	45.597816	-120.647461	1474.47	8.00	1482.47
20	45.598789	-120.648609	1479.07	8.00	1487.07
21	45.598781	-120.649994	1481.41	8.00	1489.41
22	45.598171	-120.650453	1479.62	8.00	1487.62
23	45.595835	-120.650484	1501.72	8.00	1509.72
24	45.594042	-120.650561	1520.33	8.00	1528.33

Name: PV array 2

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

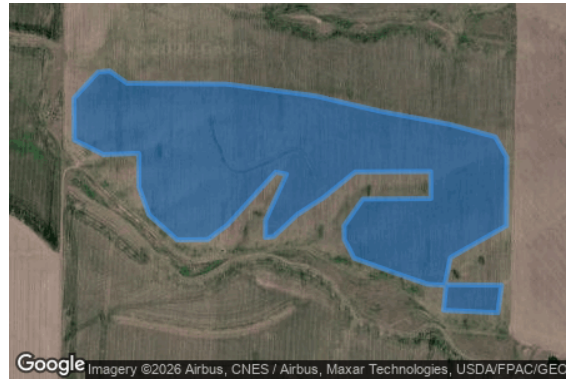
Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.597474	-120.637587	1508.42	8.00	1516.42
2	45.597414	-120.635720	1539.47	8.00	1547.47
3	45.598074	-120.635591	1546.40	8.00	1554.40
4	45.598089	-120.637544	1510.11	8.00	1518.11
5	45.598735	-120.637351	1525.79	8.00	1533.79
6	45.599501	-120.635422	1556.14	8.00	1564.14
7	45.601145	-120.635417	1574.08	8.00	1582.08
8	45.601628	-120.635807	1575.19	8.00	1583.19
9	45.601934	-120.637415	1565.67	8.00	1573.67
10	45.602240	-120.639758	1550.03	8.00	1558.03
11	45.602608	-120.641977	1534.67	8.00	1542.67
12	45.602896	-120.645086	1493.96	8.00	1501.96
13	45.602914	-120.648468	1452.26	8.00	1460.26
14	45.603207	-120.649055	1426.74	8.00	1434.74
15	45.603183	-120.649459	1421.22	8.00	1429.22
16	45.602554	-120.650289	1430.44	8.00	1438.44
17	45.601553	-120.650277	1441.96	8.00	1449.96
18	45.601205	-120.649283	1449.68	8.00	1457.68
19	45.601231	-120.648063	1461.45	8.00	1469.45
20	45.600427	-120.648058	1466.23	8.00	1474.23
21	45.599762	-120.647711	1455.05	8.00	1463.05
22	45.599163	-120.646742	1464.86	8.00	1472.86
23	45.599169	-120.645684	1467.10	8.00	1475.10
24	45.599518	-120.645014	1472.66	8.00	1480.66
25	45.600783	-120.643355	1496.17	8.00	1504.17
26	45.600734	-120.642982	1487.46	8.00	1495.46
27	45.599627	-120.643709	1471.13	8.00	1479.13
28	45.599216	-120.643713	1464.93	8.00	1472.93
29	45.599240	-120.643421	1470.45	8.00	1478.45
30	45.599771	-120.642605	1487.73	8.00	1495.73
31	45.600176	-120.641703	1502.24	8.00	1510.24
32	45.600789	-120.640622	1514.01	8.00	1522.01
33	45.600799	-120.638031	1536.46	8.00	1544.46
34	45.600152	-120.638021	1531.65	8.00	1539.65
35	45.600139	-120.640361	1502.83	8.00	1510.83
36	45.599503	-120.641005	1498.58	8.00	1506.58
37	45.599175	-120.640999	1496.04	8.00	1504.04
38	45.598721	-120.640662	1488.53	8.00	1496.53
39	45.598419	-120.639464	1502.56	8.00	1510.56
40	45.598100	-120.638156	1505.27	8.00	1513.27
41	45.598071	-120.637505	1510.20	8.00	1518.20

Name: PV array 3

Axis tracking: Single-axis rotation

Backtracking: Shade

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.603252	-120.649254	1426.64	8.00	1434.64
2	45.603267	-120.647925	1446.22	8.00	1454.22
3	45.603347	-120.644149	1486.07	8.00	1494.07
4	45.603026	-120.642808	1506.92	8.00	1514.92
5	45.602641	-120.639922	1528.83	8.00	1536.83
6	45.602661	-120.637806	1524.45	8.00	1532.45
7	45.603023	-120.635399	1511.37	8.00	1519.37
8	45.605187	-120.635337	1502.13	8.00	1510.13
9	45.606548	-120.635363	1545.67	8.00	1553.67
10	45.606414	-120.632806	1549.17	8.00	1557.17
11	45.606391	-120.631516	1560.66	8.00	1568.66
12	45.611757	-120.631565	1513.65	8.00	1521.65
13	45.611775	-120.635145	1501.47	8.00	1509.47
14	45.612113	-120.635187	1502.10	8.00	1510.10
15	45.612134	-120.638132	1519.75	8.00	1527.75
16	45.612114	-120.646280	1514.46	8.00	1522.46
17	45.612407	-120.646292	1512.78	8.00	1520.78
18	45.612387	-120.648660	1498.50	8.00	1506.50
19	45.611770	-120.648703	1498.50	8.00	1506.50
20	45.611740	-120.650605	1499.14	8.00	1507.14
21	45.611740	-120.653586	1490.90	8.00	1498.90
22	45.612094	-120.653624	1486.03	8.00	1494.03
23	45.612735	-120.654825	1463.50	8.00	1471.50
24	45.612719	-120.655328	1465.54	8.00	1473.54
25	45.611088	-120.655465	1476.80	8.00	1484.80
26	45.609595	-120.655453	1446.31	8.00	1454.31
27	45.609288	-120.654169	1425.83	8.00	1433.83
28	45.608562	-120.654180	1409.94	8.00	1417.94
29	45.606550	-120.654153	1430.65	8.00	1438.65
30	45.606397	-120.650761	1453.62	8.00	1461.62
31	45.605875	-120.650321	1483.50	8.00	1491.50
32	45.604261	-120.650331	1430.28	8.00	1438.28
33	45.604239	-120.649635	1428.94	8.00	1436.94
34	45.603968	-120.649315	1414.92	8.00	1422.92

Name: PV array 4

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.606400	-120.631508	1560.85	8.00	1568.85
2	45.606407	-120.624814	1565.44	8.00	1573.44
3	45.610819	-120.624874	1532.80	8.00	1540.80
4	45.611802	-120.626265	1531.68	8.00	1539.68
5	45.612136	-120.627362	1520.60	8.00	1528.60
6	45.613755	-120.628491	1487.50	8.00	1495.50
7	45.613948	-120.628536	1482.96	8.00	1490.96
8	45.613918	-120.627094	1530.05	8.00	1538.05
9	45.613427	-120.627071	1536.89	8.00	1544.89
10	45.612419	-120.625602	1531.99	8.00	1539.99
11	45.612424	-120.624844	1536.55	8.00	1544.55
12	45.619395	-120.624758	1532.61	8.00	1540.61
13	45.619371	-120.629805	1511.33	8.00	1519.33
14	45.618743	-120.630467	1529.76	8.00	1537.76
15	45.617685	-120.631105	1515.76	8.00	1523.76
16	45.617332	-120.632248	1524.37	8.00	1532.37
17	45.615980	-120.632249	1492.08	8.00	1500.08
18	45.615966	-120.631360	1505.69	8.00	1513.69
19	45.614904	-120.631419	1517.69	8.00	1525.69
20	45.613764	-120.631389	1502.16	8.00	1510.16
21	45.613717	-120.632324	1469.73	8.00	1477.73
22	45.612753	-120.632288	1482.25	8.00	1490.25
23	45.612753	-120.631407	1472.61	8.00	1480.61
24	45.611764	-120.631385	1483.32	8.00	1491.32

Name: PV array 5

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.613089	-120.655360	1449.18	8.00	1457.18
2	45.613093	-120.655032	1446.03	8.00	1454.03
3	45.613458	-120.653997	1427.04	8.00	1435.04
4	45.613440	-120.652234	1448.10	8.00	1456.10
5	45.613096	-120.652237	1447.28	8.00	1455.28
6	45.612791	-120.651826	1447.58	8.00	1455.58
7	45.612795	-120.650716	1456.33	8.00	1464.33
8	45.613112	-120.649949	1460.32	8.00	1468.32
9	45.613115	-120.646945	1468.72	8.00	1476.72
10	45.612800	-120.646592	1478.57	8.00	1486.57
11	45.612802	-120.645659	1483.52	8.00	1491.52
12	45.614822	-120.645644	1451.77	8.00	1459.77
13	45.616207	-120.645659	1463.19	8.00	1471.19
14	45.620308	-120.645604	1433.49	8.00	1441.49
15	45.620280	-120.649672	1425.23	8.00	1433.23
16	45.618551	-120.649711	1416.70	8.00	1424.70
17	45.618525	-120.652831	1397.02	8.00	1405.02
18	45.619919	-120.653002	1376.61	8.00	1384.61
19	45.619924	-120.652483	1401.20	8.00	1409.20
20	45.620267	-120.652493	1402.46	8.00	1410.46
21	45.620298	-120.655231	1409.28	8.00	1417.28
22	45.618931	-120.655276	1392.14	8.00	1400.14
23	45.618529	-120.655313	1392.05	8.00	1400.05
24	45.615838	-120.655334	1368.45	8.00	1376.45
25	45.615427	-120.655371	1417.97	8.00	1425.97

Name: PV array 6

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.625148	-120.634410	1514.28	8.00	1522.28
2	45.625168	-120.629927	1501.32	8.00	1509.32
3	45.626183	-120.629299	1533.33	8.00	1541.33
4	45.627814	-120.629299	1536.10	8.00	1544.10
5	45.627817	-120.632822	1499.59	8.00	1507.59
6	45.627507	-120.632797	1511.72	8.00	1519.72
7	45.627495	-120.634355	1500.79	8.00	1508.79

Route Receptors

Name: Emigrant Springs Ln

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.628064	-120.624308	1541.50	7.50	1549.00
2	45.628045	-120.622929	1540.10	7.50	1547.60
3	45.628004	-120.621191	1509.90	7.50	1517.40
4	45.627981	-120.620113	1489.20	7.50	1496.70
5	45.627941	-120.618214	1484.00	7.50	1491.50
6	45.627893	-120.615987	1466.30	7.50	1473.80
7	45.627841	-120.613552	1478.50	7.50	1486.00
8	45.627852	-120.613037	1478.80	7.50	1486.30
9	45.627826	-120.610135	1480.70	7.50	1488.20
10	45.627772	-120.607501	1466.60	7.50	1474.10
11	45.627720	-120.605382	1446.80	7.50	1454.30
12	45.627653	-120.602690	1415.20	7.50	1422.70
13	45.627565	-120.598500	1406.80	7.50	1414.30
14	45.627463	-120.594560	1408.30	7.50	1415.80
15	45.627372	-120.590566	1440.10	7.50	1447.60
16	45.627267	-120.585705	1426.10	7.50	1433.60
17	45.627177	-120.582168	1397.40	7.50	1404.90
18	45.627188	-120.578665	1371.00	7.50	1378.50
19	45.627220	-120.561601	1229.70	7.50	1237.20
20	45.627258	-120.551237	1281.40	7.50	1288.90
21	45.627204	-120.531722	1227.50	7.50	1235.00
22	45.627078	-120.523316	1179.90	7.50	1187.40
23	45.627085	-120.516182	1190.50	7.50	1198.00
24	45.627055	-120.511354	1187.30	7.50	1194.80
25	45.627055	-120.510592	1182.50	7.50	1190.00

Name: Herin Ln - 1
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



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Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.658436	-120.623865	1386.00	7.50	1393.50
2	45.658443	-120.622814	1388.50	7.50	1396.00
3	45.658394	-120.621473	1390.30	7.50	1397.80
4	45.658278	-120.620180	1402.70	7.50	1410.20
5	45.658031	-120.619338	1414.60	7.50	1422.10
6	45.657569	-120.617986	1428.00	7.50	1435.50
7	45.657123	-120.616715	1438.60	7.50	1446.10
8	45.656962	-120.616044	1445.20	7.50	1452.70
9	45.656913	-120.615712	1449.50	7.50	1457.00
10	45.656880	-120.614757	1458.20	7.50	1465.70
11	45.656822	-120.613051	1458.00	7.50	1465.50
12	45.656695	-120.612826	1458.40	7.50	1465.90
13	45.656444	-120.612707	1459.30	7.50	1466.80
14	45.655990	-120.612702	1465.20	7.50	1472.70
15	45.653803	-120.612783	1471.20	7.50	1478.70
16	45.650107	-120.612851	1463.70	7.50	1471.20
17	45.649822	-120.612723	1467.70	7.50	1475.20
18	45.649645	-120.612529	1467.40	7.50	1474.90
19	45.649578	-120.612256	1465.30	7.50	1472.80
20	45.649489	-120.609604	1441.70	7.50	1449.20
21	45.649406	-120.605018	1380.40	7.50	1387.90
22	45.649335	-120.600190	1317.70	7.50	1325.20
23	45.649103	-120.592288	1263.80	7.50	1271.30
24	45.649050	-120.590577	1233.30	7.50	1240.80
25	45.649043	-120.589187	1213.80	7.50	1221.30
26	45.649200	-120.588688	1205.70	7.50	1213.20
27	45.650634	-120.586455	1185.90	7.50	1193.40
28	45.652457	-120.584663	1154.50	7.50	1162.00
29	45.653023	-120.584154	1141.20	7.50	1148.70
30	45.653961	-120.583574	1128.90	7.50	1136.40

Name: Herin Ln - 2

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.653976	-120.583548	1128.20	7.50	1135.70
2	45.654253	-120.583312	1124.40	7.50	1131.90
3	45.654482	-120.582974	1116.20	7.50	1123.70
4	45.654954	-120.582587	1105.40	7.50	1112.90
5	45.655700	-120.581954	1086.30	7.50	1093.80
6	45.656117	-120.581552	1079.30	7.50	1086.80
7	45.656503	-120.580989	1063.30	7.50	1070.80
8	45.656776	-120.580624	1051.60	7.50	1059.10
9	45.657020	-120.580468	1046.20	7.50	1053.70
10	45.657313	-120.580383	1042.90	7.50	1050.40
11	45.657909	-120.579980	1035.90	7.50	1043.40
12	45.658299	-120.579583	1038.70	7.50	1046.20
13	45.658535	-120.579326	1040.50	7.50	1048.00
14	45.658805	-120.579130	1032.80	7.50	1040.30
15	45.659195	-120.578980	1021.00	7.50	1028.50
16	45.659487	-120.579023	1011.00	7.50	1018.50
17	45.660023	-120.579125	1004.50	7.50	1012.00
18	45.660368	-120.579372	997.30	7.50	1004.80
19	45.661157	-120.579484	983.70	7.50	991.20
20	45.661693	-120.579479	972.10	7.50	979.60
21	45.662192	-120.579506	961.10	7.50	968.60

Name: Hwy 206

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.546018	-120.625806	1460.10	7.50	1467.60
2	45.547416	-120.626600	1493.80	7.50	1501.30
3	45.548498	-120.627801	1510.40	7.50	1517.90
4	45.549279	-120.629024	1528.30	7.50	1535.80
5	45.552480	-120.635011	1606.60	7.50	1614.10
6	45.554118	-120.638058	1640.00	7.50	1647.50
7	45.555350	-120.640161	1652.20	7.50	1659.70
8	45.556777	-120.641835	1648.50	7.50	1656.00
9	45.562862	-120.648615	1631.50	7.50	1639.00
10	45.564815	-120.650933	1622.40	7.50	1629.90
11	45.567030	-120.654392	1588.70	7.50	1596.20
12	45.571506	-120.661688	1504.30	7.50	1511.80
13	45.577124	-120.670657	1401.10	7.50	1408.60
14	45.583417	-120.680871	1331.60	7.50	1339.10
15	45.584288	-120.682566	1324.20	7.50	1331.70
16	45.586570	-120.687888	1312.60	7.50	1320.10
17	45.588823	-120.693596	1297.50	7.50	1305.00
18	45.589694	-120.695849	1283.70	7.50	1291.20
19	45.590565	-120.697694	1271.60	7.50	1279.10

Name: I97

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.574282	-120.697086	1427.10	7.50	1434.60
2	45.581972	-120.707815	1382.10	7.50	1389.60
3	45.584630	-120.711591	1344.00	7.50	1351.50
4	45.585621	-120.712557	1331.20	7.50	1338.70
5	45.586162	-120.713029	1325.50	7.50	1333.00
6	45.587003	-120.713437	1312.10	7.50	1319.60
7	45.588294	-120.713716	1297.60	7.50	1305.10
8	45.589751	-120.714080	1281.90	7.50	1289.40
9	45.590862	-120.714424	1272.20	7.50	1279.70
10	45.592018	-120.715089	1267.60	7.50	1275.10
11	45.593204	-120.715969	1264.40	7.50	1271.90
12	45.594509	-120.717201	1253.00	7.50	1260.50
13	45.595935	-120.718703	1239.00	7.50	1246.50
14	45.598037	-120.720892	1231.30	7.50	1238.80
15	45.598623	-120.721342	1221.80	7.50	1229.30
16	45.599313	-120.721750	1208.80	7.50	1216.30
17	45.600217	-120.722052	1196.10	7.50	1203.60
18	45.601058	-120.722052	1184.30	7.50	1191.80
19	45.602409	-120.721945	1170.60	7.50	1178.10
20	45.604555	-120.721645	1147.60	7.50	1155.10
21	45.605591	-120.721795	1139.40	7.50	1146.90
22	45.606537	-120.722224	1134.20	7.50	1141.70
23	45.607528	-120.722975	1127.10	7.50	1134.60
24	45.608909	-120.724777	1116.50	7.50	1124.00
25	45.612151	-120.729498	1083.80	7.50	1091.30
26	45.612871	-120.730871	1076.20	7.50	1083.70
27	45.613457	-120.732459	1069.30	7.50	1076.80
28	45.614027	-120.733961	1063.00	7.50	1070.50
29	45.614688	-120.735206	1057.90	7.50	1065.40
30	45.615363	-120.735978	1051.50	7.50	1059.00

Name: Klondike Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



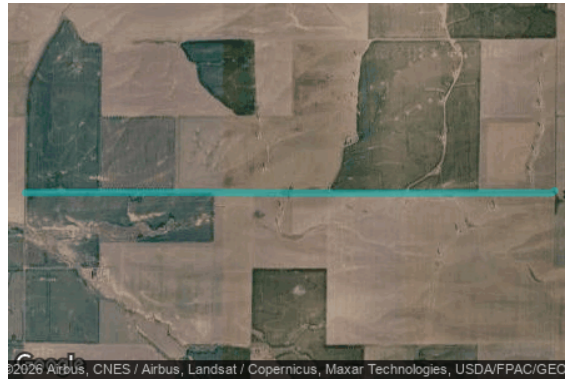
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.584323	-120.682296	1326.50	7.50	1334.00
2	45.584443	-120.681695	1330.60	7.50	1338.10
3	45.584398	-120.675472	1397.70	7.50	1405.20
4	45.584383	-120.664668	1434.00	7.50	1441.50
5	45.584353	-120.653587	1427.20	7.50	1434.70
6	45.584353	-120.644970	1531.00	7.50	1538.50
7	45.584338	-120.633806	1535.50	7.50	1543.00
8	45.584263	-120.621228	1559.70	7.50	1567.20
9	45.584158	-120.613439	1547.10	7.50	1554.60
10	45.583872	-120.602796	1521.80	7.50	1529.30
11	45.583932	-120.597432	1513.70	7.50	1521.20
12	45.583992	-120.582132	1450.80	7.50	1458.30
13	45.584068	-120.576344	1439.70	7.50	1447.20
14	45.584113	-120.569950	1452.00	7.50	1459.50
15	45.584068	-120.557118	1382.30	7.50	1389.80
16	45.583799	-120.534859	1381.20	7.50	1388.70
17	45.583717	-120.523039	1316.60	7.50	1324.10
18	45.583717	-120.520910	1304.00	7.50	1311.50

Name: Medler Ln

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



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Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.620780	-120.697244	1233.10	7.50	1240.60
2	45.620789	-120.690002	1288.50	7.50	1296.00
3	45.620797	-120.684799	1318.10	7.50	1325.60
4	45.620798	-120.678539	1315.90	7.50	1323.40
5	45.620806	-120.676363	1308.60	7.50	1316.10
6	45.620786	-120.669762	1370.20	7.50	1377.70
7	45.620736	-120.662578	1340.40	7.50	1347.90
8	45.620740	-120.655545	1381.80	7.50	1389.30
9	45.620748	-120.645646	1434.90	7.50	1442.40
10	45.620763	-120.638432	1442.40	7.50	1449.90
11	45.620763	-120.626023	1488.70	7.50	1496.20
12	45.620733	-120.625325	1493.00	7.50	1500.50
13	45.620785	-120.624875	1492.00	7.50	1499.50
14	45.620961	-120.624537	1490.40	7.50	1497.90

Name: N Klondike Rd

Path type: Two-way

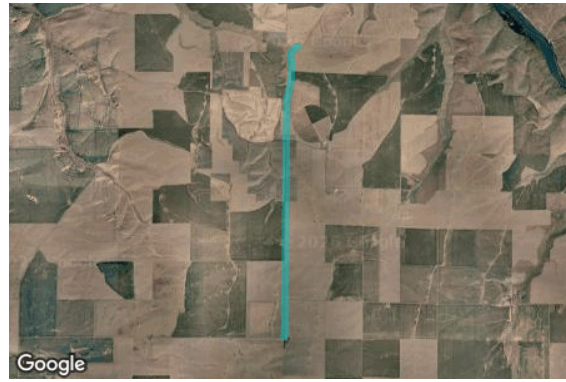
Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.584163	-120.613405	1547.00	7.50	1554.50
2	45.587263	-120.613393	1575.30	7.50	1582.80
3	45.591409	-120.613389	1562.60	7.50	1570.10
4	45.591800	-120.613271	1546.60	7.50	1554.10
5	45.592197	-120.613249	1552.20	7.50	1559.70
6	45.593140	-120.613195	1552.10	7.50	1559.60
7	45.595257	-120.613163	1551.90	7.50	1559.40
8	45.599148	-120.613170	1582.50	7.50	1590.00
9	45.606076	-120.613159	1539.50	7.50	1547.00
10	45.612918	-120.613143	1557.90	7.50	1565.40
11	45.620015	-120.613108	1561.40	7.50	1568.90
12	45.627848	-120.613076	1478.70	7.50	1486.20

Name: Oehman Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.621007	-120.624496	1490.30	7.50	1497.80
2	45.621195	-120.624325	1492.30	7.50	1499.80
3	45.621562	-120.624314	1498.40	7.50	1505.90
4	45.624900	-120.624282	1514.10	7.50	1521.60
5	45.628062	-120.624321	1541.50	7.50	1549.00
6	45.630213	-120.624226	1504.00	7.50	1511.50
7	45.632395	-120.624172	1500.50	7.50	1508.00
8	45.636064	-120.624129	1462.20	7.50	1469.70
9	45.641060	-120.624078	1507.70	7.50	1515.20
10	45.646394	-120.624000	1512.20	7.50	1519.70
11	45.651890	-120.623940	1482.40	7.50	1489.90
12	45.658455	-120.623849	1385.80	7.50	1393.30
13	45.666166	-120.623727	1305.40	7.50	1312.90
14	45.666518	-120.623652	1303.00	7.50	1310.50
15	45.668559	-120.623008	1295.10	7.50	1302.60
16	45.670052	-120.622507	1288.40	7.50	1295.90
17	45.670479	-120.622443	1288.30	7.50	1295.80
18	45.671560	-120.622410	1287.80	7.50	1295.30
19	45.673173	-120.622357	1284.90	7.50	1292.40
20	45.674328	-120.622582	1293.20	7.50	1300.70
21	45.674792	-120.622571	1301.50	7.50	1309.00
22	45.675487	-120.622464	1321.40	7.50	1328.90
23	45.675989	-120.621971	1337.60	7.50	1345.10
24	45.676364	-120.621316	1353.10	7.50	1360.60
25	45.676589	-120.620629	1351.40	7.50	1358.90

Name: Old Wasco-Heppner Hwy

Path type: Two-way

Azimuthal view angle: 50.0°

Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.591737	-120.695232	1307.40	7.50	1314.90
2	45.591715	-120.686340	1425.00	7.50	1432.50
3	45.591698	-120.677285	1485.90	7.50	1493.40
4	45.591683	-120.664594	1475.50	7.50	1483.00
5	45.591645	-120.649788	1555.40	7.50	1562.90
6	45.591608	-120.635203	1581.70	7.50	1589.20
7	45.591608	-120.626383	1567.50	7.50	1575.00
8	45.591473	-120.615718	1574.30	7.50	1581.80
9	45.591408	-120.613407	1562.50	7.50	1570.00

Name: Webfoot Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.606047	-120.613135	1539.50	7.50	1547.00
2	45.606062	-120.611965	1536.80	7.50	1544.30
3	45.606043	-120.609766	1524.30	7.50	1531.80
4	45.606032	-120.606848	1523.10	7.50	1530.60
5	45.605998	-120.603238	1513.70	7.50	1521.20
6	45.605938	-120.601312	1506.30	7.50	1513.80
7	45.605902	-120.598984	1479.20	7.50	1486.70
8	45.605857	-120.597235	1467.80	7.50	1475.30
9	45.605796	-120.595051	1468.80	7.50	1476.30
10	45.605723	-120.592141	1458.20	7.50	1465.70
11	45.605678	-120.589904	1436.80	7.50	1444.30
12	45.605599	-120.586846	1418.50	7.50	1426.00
13	45.605565	-120.585038	1404.60	7.50	1412.10
14	45.605502	-120.582415	1382.80	7.50	1390.30
15	45.605509	-120.580248	1391.60	7.50	1399.10
16	45.605497	-120.577594	1393.30	7.50	1400.80

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	45.581671	-120.650971	1462.10	16.00
OP 2	2	45.591202	-120.693499	1345.50	16.00
OP 3	3	45.595312	-120.700334	1283.30	16.00
OP 4	4	45.605526	-120.665361	1365.50	16.00
OP 5	5	45.617148	-120.690993	1231.10	16.00
OP 6	6	45.625705	-120.652694	1408.60	16.00
OP 7	7	45.627981	-120.607648	1475.00	16.00
OP 8	8	45.657315	-120.612840	1458.70	16.00
OP 9	9	45.685485	-120.604651	997.80	16.00
OP 10	10	45.699712	-120.546563	983.00	16.00
OP 11	11	45.650975	-120.557140	1098.90	16.00
OP 12	12	45.633880	-120.525643	1191.60	16.00
OP 13	13	45.584821	-120.519879	1309.30	16.00
OP 14	14	45.647816	-120.590278	1236.50	16.00
OP 15	15	45.629485	-120.559316	1191.50	16.00
OP 16	16	45.622847	-120.562188	1256.80	16.00
OP 17	17	45.548417	-120.552628	1485.10	16.00
OP 18	18	45.549640	-120.592761	1590.70	16.00
OP 19	19	45.568232	-120.603758	1535.50	16.00
OP 20	20	45.583640	-120.614099	1557.40	16.00
OP 21	21	45.591961	-120.627507	1560.20	16.00
OP 22	22	45.594854	-120.696343	1326.72	16.00
OP 23	23	45.596352	-120.698156	1326.23	16.00
OP 24	24	45.590803	-120.693278	1346.68	16.00
OP 25	25	45.591645	-120.696465	1297.37	16.00
OP 26	26	45.595440	-120.697902	1308.19	16.00
OP 27	27	45.597680	-120.702494	1267.99	16.00

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 1 and Route: Emigrant Springs Ln

No glare found

PV array 1 and Route: Herin Ln - 1

No glare found

PV array 1 and Route: Herin Ln - 2

No glare found

PV array 1 and Route: Hwy 206

No glare found

PV array 1 and Route: I97

No glare found

PV array 1 and Route: Klondike Rd

No glare found

PV array 1 and Route: Medler Ln

No glare found

PV array 1 and Route: N Klondike Rd

No glare found

PV array 1 and Route: Oehman Rd

No glare found

PV array 1 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 1 and Route: Webfoot Rd

No glare found

PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV array 1 and OP 14

No glare found

PV array 1 and OP 15

No glare found

PV array 1 and OP 16

No glare found

PV array 1 and OP 17

No glare found

PV array 1 and OP 18

No glare found

PV array 1 and OP 19

No glare found

PV array 1 and OP 20

No glare found

PV array 1 and OP 21

No glare found

PV array 1 and OP 22

No glare found

PV array 1 and OP 23

No glare found

PV array 1 and OP 24

No glare found

PV array 1 and OP 25

No glare found

PV array 1 and OP 26

No glare found

PV array 1 and OP 27

No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 2 and Route: Emigrant Springs Ln

No glare found

PV array 2 and Route: Herin Ln - 1

No glare found

PV array 2 and Route: Herin Ln - 2

No glare found

PV array 2 and Route: Hwy 206

No glare found

PV array 2 and Route: I97

No glare found

PV array 2 and Route: Klondike Rd

No glare found

PV array 2 and Route: Medler Ln

No glare found

PV array 2 and Route: N Klondike Rd

No glare found

PV array 2 and Route: Oehman Rd

No glare found

PV array 2 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 2 and Route: Webfoot Rd

No glare found

PV array 2 and OP 1

No glare found

PV array 2 and OP 2

No glare found

PV array 2 and OP 3

No glare found

PV array 2 and OP 4

No glare found

PV array 2 and OP 5

No glare found

PV array 2 and OP 6

No glare found

PV array 2 and OP 7

No glare found

PV array 2 and OP 8

No glare found

PV array 2 and OP 9

No glare found

PV array 2 and OP 10

No glare found

PV array 2 and OP 11

No glare found

PV array 2 and OP 12

No glare found

PV array 2 and OP 13

No glare found

PV array 2 and OP 14

No glare found

PV array 2 and OP 15

No glare found

PV array 2 and OP 16

No glare found

PV array 2 and OP 17

No glare found

PV array 2 and OP 18

No glare found

PV array 2 and OP 19

No glare found

PV array 2 and OP 20

No glare found

PV array 2 and OP 21

No glare found

PV array 2 and OP 22

No glare found

PV array 2 and OP 23

No glare found

PV array 2 and OP 24

No glare found

PV array 2 and OP 25

No glare found

PV array 2 and OP 26

No glare found

PV array 2 and OP 27

No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 3 and Route: Emigrant Springs Ln

No glare found

PV array 3 and Route: Herin Ln - 1

No glare found

PV array 3 and Route: Herin Ln - 2

No glare found

PV array 3 and Route: Hwy 206

No glare found

PV array 3 and Route: I97

No glare found

PV array 3 and Route: Klondike Rd

No glare found

PV array 3 and Route: Medler Ln

No glare found

PV array 3 and Route: N Klondike Rd

No glare found

PV array 3 and Route: Oehman Rd

No glare found

PV array 3 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 3 and Route: Webfoot Rd

No glare found

PV array 3 and OP 1

No glare found

PV array 3 and OP 2

No glare found

PV array 3 and OP 3

No glare found

PV array 3 and OP 4

No glare found

PV array 3 and OP 5

No glare found

PV array 3 and OP 6

No glare found

PV array 3 and OP 7

No glare found

PV array 3 and OP 8

No glare found

PV array 3 and OP 9

No glare found

PV array 3 and OP 10

No glare found

PV array 3 and OP 11

No glare found

PV array 3 and OP 12

No glare found

PV array 3 and OP 13

No glare found

PV array 3 and OP 14

No glare found

PV array 3 and OP 15

No glare found

PV array 3 and OP 16

No glare found

PV array 3 and OP 17

No glare found

PV array 3 and OP 18

No glare found

PV array 3 and OP 19

No glare found

PV array 3 and OP 20

No glare found

PV array 3 and OP 21

No glare found

PV array 3 and OP 22

No glare found

PV array 3 and OP 23

No glare found

PV array 3 and OP 24

No glare found

PV array 3 and OP 25

No glare found

PV array 3 and OP 26

No glare found

PV array 3 and OP 27

No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 4 and Route: Emigrant Springs Ln

No glare found

PV array 4 and Route: Herin Ln - 1

No glare found

PV array 4 and Route: Herin Ln - 2

No glare found

PV array 4 and Route: Hwy 206

No glare found

PV array 4 and Route: I97

No glare found

PV array 4 and Route: Klondike Rd

No glare found

PV array 4 and Route: Medler Ln

No glare found

PV array 4 and Route: N Klondike Rd

No glare found

PV array 4 and Route: Oehman Rd

No glare found

PV array 4 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 4 and Route: Webfoot Rd

No glare found

PV array 4 and OP 1

No glare found

PV array 4 and OP 2

No glare found

PV array 4 and OP 3

No glare found

PV array 4 and OP 4

No glare found

PV array 4 and OP 5

No glare found

PV array 4 and OP 6

No glare found

PV array 4 and OP 7

No glare found

PV array 4 and OP 8

No glare found

PV array 4 and OP 9

No glare found

PV array 4 and OP 10

No glare found

PV array 4 and OP 11

No glare found

PV array 4 and OP 12

No glare found

PV array 4 and OP 13

No glare found

PV array 4 and OP 14

No glare found

PV array 4 and OP 15

No glare found

PV array 4 and OP 16

No glare found

PV array 4 and OP 17

No glare found

PV array 4 and OP 18

No glare found

PV array 4 and OP 19

No glare found

PV array 4 and OP 20

No glare found

PV array 4 and OP 21

No glare found

PV array 4 and OP 22

No glare found

PV array 4 and OP 23

No glare found

PV array 4 and OP 24

No glare found

PV array 4 and OP 25

No glare found

PV array 4 and OP 26

No glare found

PV array 4 and OP 27

No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 5 and Route: Emigrant Springs Ln

No glare found

PV array 5 and Route: Herin Ln - 1

No glare found

PV array 5 and Route: Herin Ln - 2

No glare found

PV array 5 and Route: Hwy 206

No glare found

PV array 5 and Route: I97

No glare found

PV array 5 and Route: Klondike Rd

No glare found

PV array 5 and Route: Medler Ln

No glare found

PV array 5 and Route: N Klondike Rd

No glare found

PV array 5 and Route: Oehman Rd

No glare found

PV array 5 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 5 and Route: Webfoot Rd

No glare found

PV array 5 and OP 1

No glare found

PV array 5 and OP 2

No glare found

PV array 5 and OP 3

No glare found

PV array 5 and OP 4

No glare found

PV array 5 and OP 5

No glare found

PV array 5 and OP 6

No glare found

PV array 5 and OP 7

No glare found

PV array 5 and OP 8

No glare found

PV array 5 and OP 9

No glare found

PV array 5 and OP 10

No glare found

PV array 5 and OP 11

No glare found

PV array 5 and OP 12

No glare found

PV array 5 and OP 13

No glare found

PV array 5 and OP 14

No glare found

PV array 5 and OP 15

No glare found

PV array 5 and OP 16

No glare found

PV array 5 and OP 17

No glare found

PV array 5 and OP 18

No glare found

PV array 5 and OP 19

No glare found

PV array 5 and OP 20

No glare found

PV array 5 and OP 21

No glare found

PV array 5 and OP 22

No glare found

PV array 5 and OP 23

No glare found

PV array 5 and OP 24

No glare found

PV array 5 and OP 25

No glare found

PV array 5 and OP 26

No glare found

PV array 5 and OP 27

No glare found

PV: PV array 6 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Emigrant Springs Ln	0	0.0	0	0.0
Herin Ln - 1	0	0.0	0	0.0
Herin Ln - 2	0	0.0	0	0.0
Hwy 206	0	0.0	0	0.0
I97	0	0.0	0	0.0
Klondike Rd	0	0.0	0	0.0
Medler Ln	0	0.0	0	0.0
N Klondike Rd	0	0.0	0	0.0
Oehman Rd	0	0.0	0	0.0
Old Wasco-Heppner Hwy	0	0.0	0	0.0
Webfoot Rd	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

PV array 6 and Route: Emigrant Springs Ln

No glare found

PV array 6 and Route: Herin Ln - 1

No glare found

PV array 6 and Route: Herin Ln - 2

No glare found

PV array 6 and Route: Hwy 206

No glare found

PV array 6 and Route: I97

No glare found

PV array 6 and Route: Klondike Rd

No glare found

PV array 6 and Route: Medler Ln

No glare found

PV array 6 and Route: N Klondike Rd

No glare found

PV array 6 and Route: Oehman Rd

No glare found

PV array 6 and Route: Old Wasco-Heppner Hwy

No glare found

PV array 6 and Route: Webfoot Rd

No glare found

PV array 6 and OP 1

No glare found

PV array 6 and OP 2

No glare found

PV array 6 and OP 3

No glare found

PV array 6 and OP 4

No glare found

PV array 6 and OP 5

No glare found

PV array 6 and OP 6

No glare found

PV array 6 and OP 7

No glare found

PV array 6 and OP 8

No glare found

PV array 6 and OP 9

No glare found

PV array 6 and OP 10

No glare found

PV array 6 and OP 11

No glare found

PV array 6 and OP 12

No glare found

PV array 6 and OP 13

No glare found

PV array 6 and OP 14

No glare found

PV array 6 and OP 15

No glare found

PV array 6 and OP 16

No glare found

PV array 6 and OP 17

No glare found

PV array 6 and OP 18

No glare found

PV array 6 and OP 19

No glare found

PV array 6 and OP 20

No glare found

PV array 6 and OP 21

No glare found

PV array 6 and OP 22

No glare found

PV array 6 and OP 23

No glare found

PV array 6 and OP 24

No glare found

PV array 6 and OP 25

No glare found

PV array 6 and OP 26

No glare found

PV array 6 and OP 27

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.

Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.

The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.

The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)

The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.

The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.

The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.

Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.

Refer to the Help page at www.forgesolar.com/help/ for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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This analysis was conducted using the best available radiometric modeling at the time of generation. Future updates to the modeling methodology may yield different results.

FORGESOLAR GLARE ANALYSIS

Project: **Biglow Canyon Solar**

Site configuration: **Revised Analysis 3 - FAA Receptors**

Calculated via ForgeSolar Radiometric Physics Engine v3.2.1

Created 16 Jul, 2026

Updated 16 Jul, 2026

Time-step 1 minute

Timezone offset UTC-8

Minimum sun altitude 0.0 deg

DNI peaks at 1,000.0 W/m²

Category 100 MW to 1 GW

Site ID 183368.21638

Ocular transmission coefficient 0.5

Pupil diameter 0.002 m

Eye focal length 0.017 m

Sun subtended angle 9.3 mrad

Min luminance threshold 0 cd/m²



Summary of Results Glare with potential for temporary after-image predicted

PV Array	Tilt °	Orient °	Annual Green Glare		Annual Yellow Glare		Energy kWh
			min	hr	min	hr	
PV array 1	SA tracking	SA tracking	588	9.8	827	13.8	-
PV array 2	SA tracking	SA tracking	172	2.9	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 07	0	0.0	0	0.0
35S RWY 25	760	12.7	827	13.8

Component Data

PV Arrays

Name: PV array 1

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.591992	-120.650491	1559.43	8.00	1567.43
2	45.592017	-120.644261	1555.18	8.00	1563.18
3	45.592671	-120.644307	1572.09	8.00	1580.09
4	45.592677	-120.641485	1570.87	8.00	1578.87
5	45.592019	-120.641487	1558.49	8.00	1566.49
6	45.592016	-120.635640	1581.88	8.00	1589.88
7	45.593428	-120.635508	1543.81	8.00	1551.81
8	45.595119	-120.635430	1522.99	8.00	1530.99
9	45.595129	-120.635838	1521.84	8.00	1529.84
10	45.595761	-120.637062	1526.71	8.00	1534.71
11	45.596017	-120.637983	1518.91	8.00	1526.91
12	45.596190	-120.639025	1506.60	8.00	1514.60
13	45.596190	-120.641380	1507.33	8.00	1515.33
14	45.597196	-120.641398	1504.89	8.00	1512.89
15	45.597498	-120.641800	1507.42	8.00	1515.42
16	45.597492	-120.642569	1505.20	8.00	1513.20
17	45.596813	-120.643753	1513.10	8.00	1521.10
18	45.596841	-120.647500	1507.66	8.00	1515.66
19	45.597816	-120.647461	1474.47	8.00	1482.47
20	45.598789	-120.648609	1479.07	8.00	1487.07
21	45.598781	-120.649994	1481.41	8.00	1489.41
22	45.598171	-120.650453	1479.62	8.00	1487.62
23	45.595835	-120.650484	1501.72	8.00	1509.72
24	45.594042	-120.650561	1520.33	8.00	1528.33

Name: PV array 2

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

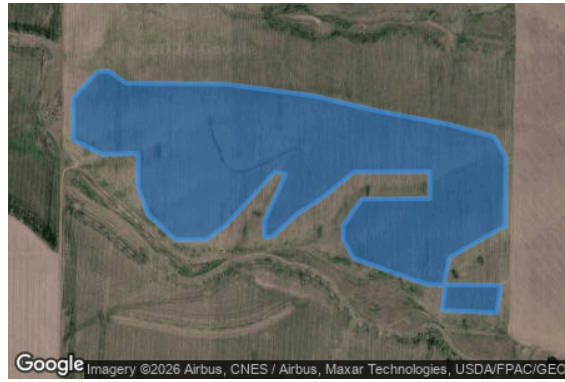
Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.597474	-120.637587	1508.42	8.00	1516.42
2	45.597414	-120.635720	1539.47	8.00	1547.47
3	45.598074	-120.635591	1546.40	8.00	1554.40
4	45.598089	-120.637544	1510.11	8.00	1518.11
5	45.598735	-120.637351	1525.79	8.00	1533.79
6	45.599501	-120.635422	1556.14	8.00	1564.14
7	45.601145	-120.635417	1574.08	8.00	1582.08
8	45.601628	-120.635807	1575.19	8.00	1583.19
9	45.601934	-120.637415	1565.67	8.00	1573.67
10	45.602240	-120.639758	1550.03	8.00	1558.03
11	45.602608	-120.641977	1534.67	8.00	1542.67
12	45.602896	-120.645086	1493.96	8.00	1501.96
13	45.602914	-120.648468	1452.26	8.00	1460.26
14	45.603207	-120.649055	1426.74	8.00	1434.74
15	45.603183	-120.649459	1421.22	8.00	1429.22
16	45.602554	-120.650289	1430.44	8.00	1438.44
17	45.601553	-120.650277	1441.96	8.00	1449.96
18	45.601205	-120.649283	1449.68	8.00	1457.68
19	45.601231	-120.648063	1461.45	8.00	1469.45
20	45.600427	-120.648058	1466.23	8.00	1474.23
21	45.599762	-120.647711	1455.05	8.00	1463.05
22	45.599163	-120.646742	1464.86	8.00	1472.86
23	45.599169	-120.645684	1467.10	8.00	1475.10
24	45.599518	-120.645014	1472.66	8.00	1480.66
25	45.600783	-120.643355	1496.17	8.00	1504.17
26	45.600734	-120.642982	1487.46	8.00	1495.46
27	45.599627	-120.643709	1471.13	8.00	1479.13
28	45.599216	-120.643713	1464.93	8.00	1472.93
29	45.599240	-120.643421	1470.45	8.00	1478.45
30	45.599771	-120.642605	1487.73	8.00	1495.73
31	45.600176	-120.641703	1502.24	8.00	1510.24
32	45.600789	-120.640622	1514.01	8.00	1522.01
33	45.600799	-120.638031	1536.46	8.00	1544.46
34	45.600152	-120.638021	1531.65	8.00	1539.65
35	45.600139	-120.640361	1502.83	8.00	1510.83
36	45.599503	-120.641005	1498.58	8.00	1506.58
37	45.599175	-120.640999	1496.04	8.00	1504.04
38	45.598721	-120.640662	1488.53	8.00	1496.53
39	45.598419	-120.639464	1502.56	8.00	1510.56
40	45.598100	-120.638156	1505.27	8.00	1513.27
41	45.598071	-120.637505	1510.20	8.00	1518.20

Name: PV array 3

Axis tracking: Single-axis rotation

Backtracking: Shade

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.603252	-120.649254	1426.64	8.00	1434.64
2	45.603267	-120.647925	1446.22	8.00	1454.22
3	45.603347	-120.644149	1486.07	8.00	1494.07
4	45.603026	-120.642808	1506.92	8.00	1514.92
5	45.602641	-120.639922	1528.83	8.00	1536.83
6	45.602661	-120.637806	1524.45	8.00	1532.45
7	45.603023	-120.635399	1511.37	8.00	1519.37
8	45.605187	-120.635337	1502.13	8.00	1510.13
9	45.606548	-120.635363	1545.67	8.00	1553.67
10	45.606414	-120.632806	1549.17	8.00	1557.17
11	45.606391	-120.631516	1560.66	8.00	1568.66
12	45.611757	-120.631565	1513.65	8.00	1521.65
13	45.611775	-120.635145	1501.47	8.00	1509.47
14	45.612113	-120.635187	1502.10	8.00	1510.10
15	45.612134	-120.638132	1519.75	8.00	1527.75
16	45.612114	-120.646280	1514.46	8.00	1522.46
17	45.612407	-120.646292	1512.78	8.00	1520.78
18	45.612387	-120.648660	1498.50	8.00	1506.50
19	45.611770	-120.648703	1498.50	8.00	1506.50
20	45.611740	-120.650605	1499.14	8.00	1507.14
21	45.611740	-120.653586	1490.90	8.00	1498.90
22	45.612094	-120.653624	1486.03	8.00	1494.03
23	45.612735	-120.654825	1463.50	8.00	1471.50
24	45.612719	-120.655328	1465.54	8.00	1473.54
25	45.611088	-120.655465	1476.80	8.00	1484.80
26	45.609595	-120.655453	1446.31	8.00	1454.31
27	45.609288	-120.654169	1425.83	8.00	1433.83
28	45.608562	-120.654180	1409.94	8.00	1417.94
29	45.606550	-120.654153	1430.65	8.00	1438.65
30	45.606397	-120.650761	1453.62	8.00	1461.62
31	45.605875	-120.650321	1483.50	8.00	1491.50
32	45.604261	-120.650331	1430.28	8.00	1438.28
33	45.604239	-120.649635	1428.94	8.00	1436.94
34	45.603968	-120.649315	1414.92	8.00	1422.92

Name: PV array 4

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.606400	-120.631508	1560.85	8.00	1568.85
2	45.606407	-120.624814	1565.44	8.00	1573.44
3	45.610819	-120.624874	1532.80	8.00	1540.80
4	45.611802	-120.626265	1531.68	8.00	1539.68
5	45.612136	-120.627362	1520.60	8.00	1528.60
6	45.613755	-120.628491	1487.50	8.00	1495.50
7	45.613948	-120.628536	1482.96	8.00	1490.96
8	45.613918	-120.627094	1530.05	8.00	1538.05
9	45.613427	-120.627071	1536.89	8.00	1544.89
10	45.612419	-120.625602	1531.99	8.00	1539.99
11	45.612424	-120.624844	1536.55	8.00	1544.55
12	45.619395	-120.624758	1532.61	8.00	1540.61
13	45.619371	-120.629805	1511.33	8.00	1519.33
14	45.618743	-120.630467	1529.76	8.00	1537.76
15	45.617685	-120.631105	1515.76	8.00	1523.76
16	45.617332	-120.632248	1524.37	8.00	1532.37
17	45.615980	-120.632249	1492.08	8.00	1500.08
18	45.615966	-120.631360	1505.69	8.00	1513.69
19	45.614904	-120.631419	1517.69	8.00	1525.69
20	45.613764	-120.631389	1502.16	8.00	1510.16
21	45.613717	-120.632324	1469.73	8.00	1477.73
22	45.612753	-120.632288	1482.25	8.00	1490.25
23	45.612753	-120.631407	1472.61	8.00	1480.61
24	45.611764	-120.631385	1483.32	8.00	1491.32

Name: PV array 5

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.613089	-120.655360	1449.18	8.00	1457.18
2	45.613093	-120.655032	1446.03	8.00	1454.03
3	45.613458	-120.653997	1427.04	8.00	1435.04
4	45.613440	-120.652234	1448.10	8.00	1456.10
5	45.613096	-120.652237	1447.28	8.00	1455.28
6	45.612791	-120.651826	1447.58	8.00	1455.58
7	45.612795	-120.650716	1456.33	8.00	1464.33
8	45.613112	-120.649949	1460.32	8.00	1468.32
9	45.613115	-120.646945	1468.72	8.00	1476.72
10	45.612800	-120.646592	1478.57	8.00	1486.57
11	45.612802	-120.645659	1483.52	8.00	1491.52
12	45.614822	-120.645644	1451.77	8.00	1459.77
13	45.616207	-120.645659	1463.19	8.00	1471.19
14	45.620308	-120.645604	1433.49	8.00	1441.49
15	45.620280	-120.649672	1425.23	8.00	1433.23
16	45.618551	-120.649711	1416.70	8.00	1424.70
17	45.618525	-120.652831	1397.02	8.00	1405.02
18	45.619919	-120.653002	1376.61	8.00	1384.61
19	45.619924	-120.652483	1401.20	8.00	1409.20
20	45.620267	-120.652493	1402.46	8.00	1410.46
21	45.620298	-120.655231	1409.28	8.00	1417.28
22	45.618931	-120.655276	1392.14	8.00	1400.14
23	45.618529	-120.655313	1392.05	8.00	1400.05
24	45.615838	-120.655334	1368.45	8.00	1376.45
25	45.615427	-120.655371	1417.97	8.00	1425.97

Name: PV array 6

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0°

Max tracking angle: 60.0°

Resting angle: 5.0°

Ground Coverage Ratio: 0.3

Rated power: -

Panel material: Smooth glass with AR coating (revised)



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	45.625148	-120.634410	1514.28	8.00	1522.28
2	45.625168	-120.629927	1501.32	8.00	1509.32
3	45.626183	-120.629299	1533.33	8.00	1541.33
4	45.627814	-120.629299	1536.10	8.00	1544.10
5	45.627817	-120.632822	1499.59	8.00	1507.59
6	45.627507	-120.632797	1511.72	8.00	1519.72
7	45.627495	-120.634355	1500.79	8.00	1508.79

Flight Path Receptors

Name: 35S RWY 07

Description:

Threshold height: 50 ft

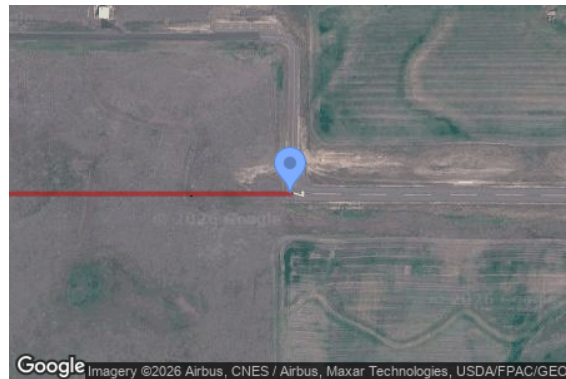
Direction: 90.0°

Glide slope: 3.0°

Pilot view restricted? Yes

Vertical view: 30.0°

Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	45.589249	-120.680629	1450.18	50.00	1500.18
Two-mile	45.589249	-120.721993	1349.09	704.52	2053.61

Name: 35S RWY 25
Description:
Threshold height: 50 ft
Direction: 270.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	45.589211	-120.667272	1501.38	50.00	1551.38
Two-mile	45.589211	-120.625908	1591.74	513.07	2104.81

Glare Analysis Results

Summary of Results Glare with potential for temporary after-image predicted

PV Array	Tilt °	Orient °	Annual Green Glare		Annual Yellow Glare		Energy kWh
			min	hr	min	hr	
PV array 1	SA tracking	SA tracking	588	9.8	827	13.8	-
PV array 2	SA tracking	SA tracking	172	2.9	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 07	0	0.0	0	0.0
35S RWY 25	760	12.7	827	13.8

PV: PV array 1 potential temporary after-image

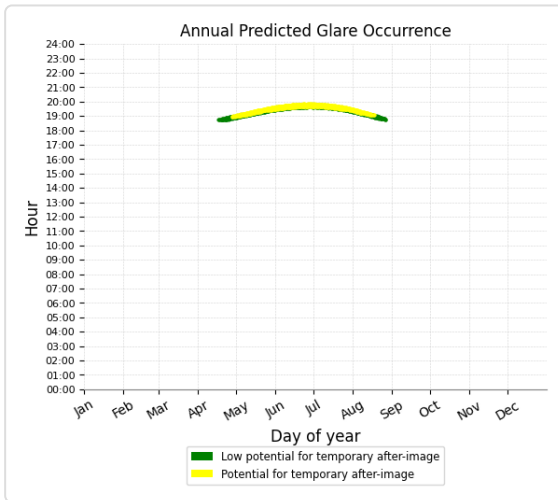
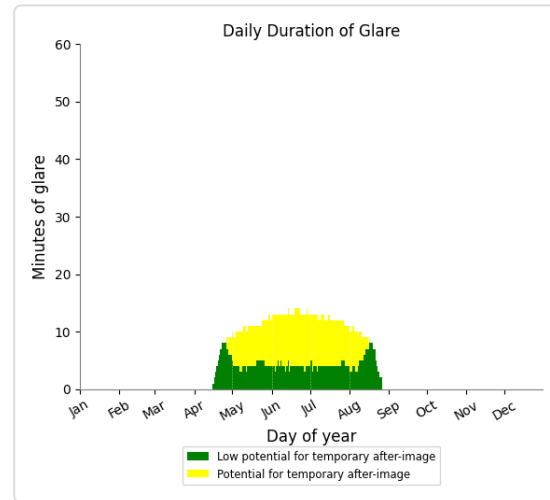
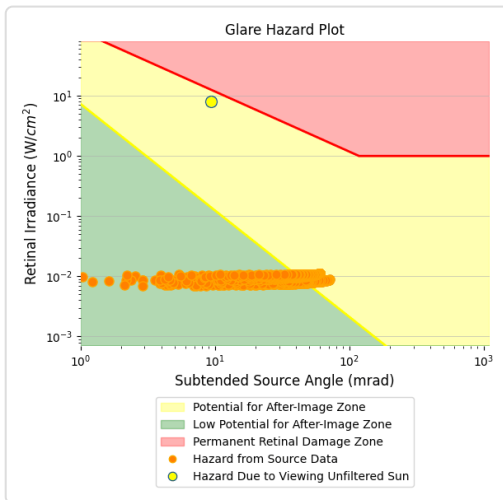
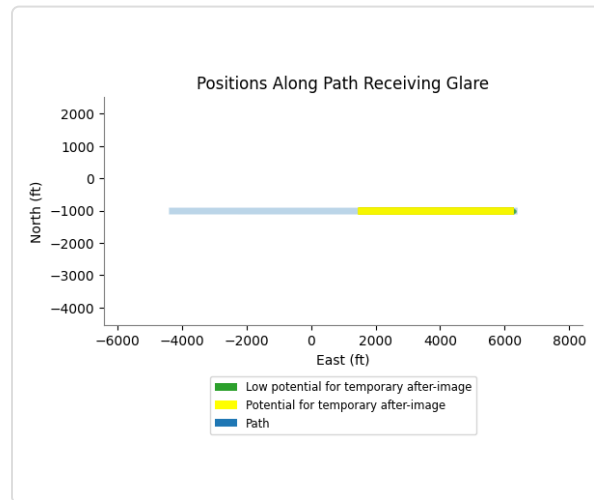
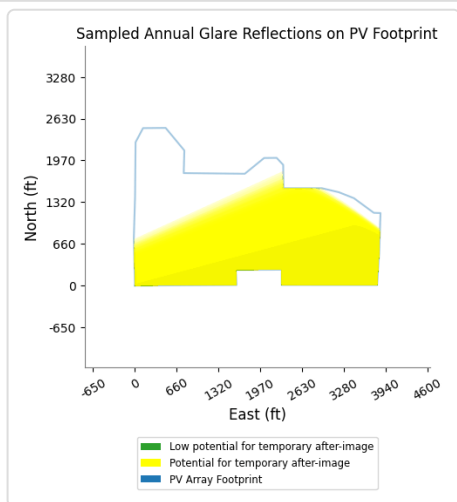
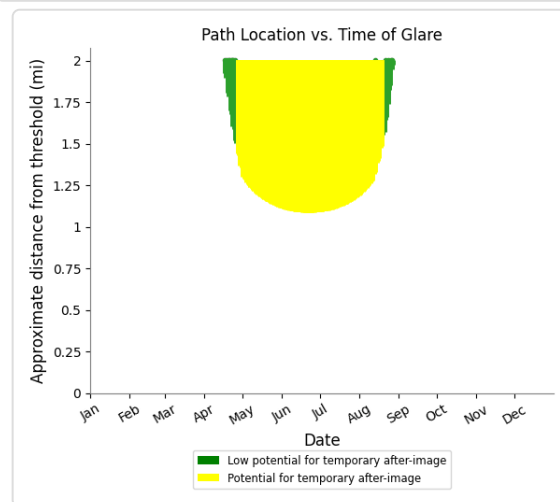
Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 25	588	9.8	827	13.8
35S RWY 07	0	0.0	0	0.0

PV array 1 and FP: 35S RWY 25

Yellow glare: 827 min.

Green glare: 588 min.



PV array 1 and FP: 35S RWY 07

No glare found

PV: PV array 2 low potential for temporary after image

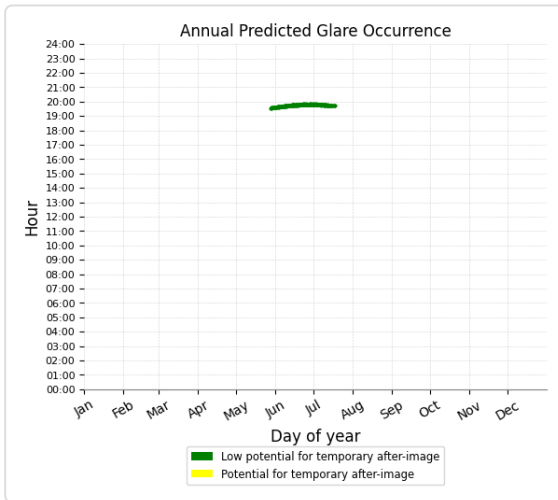
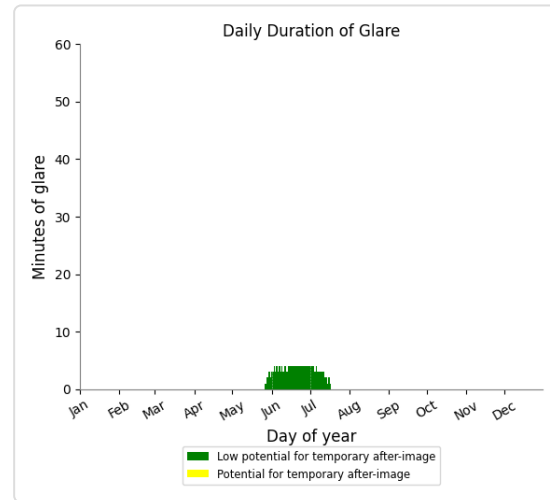
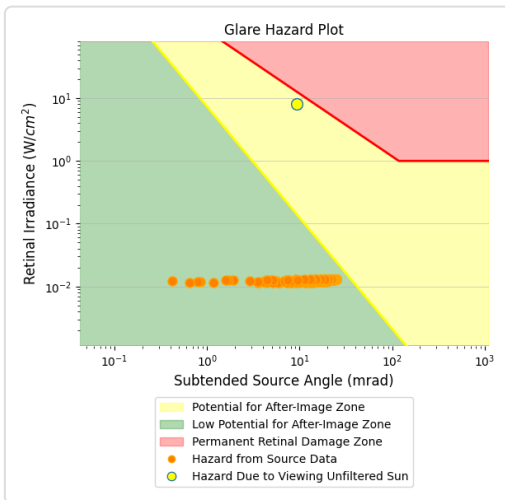
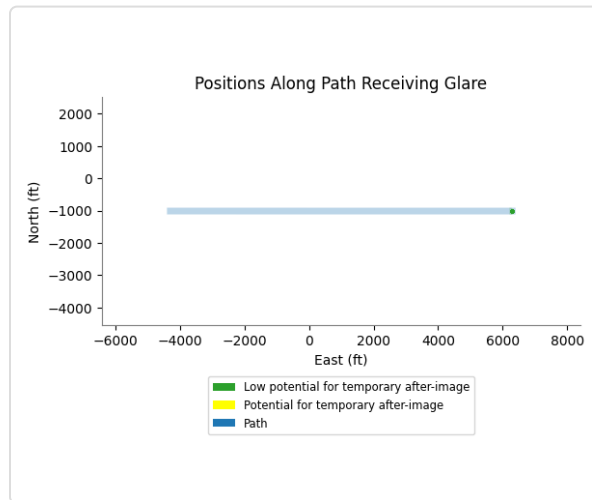
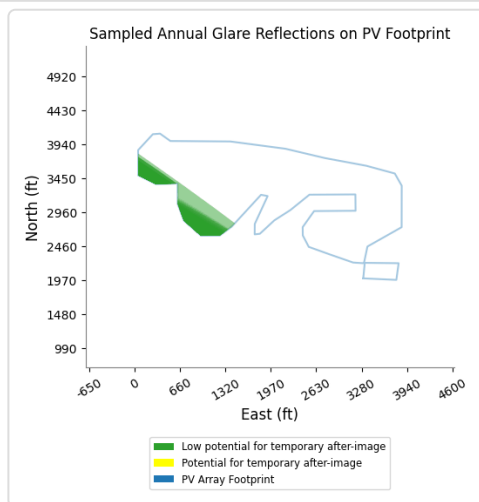
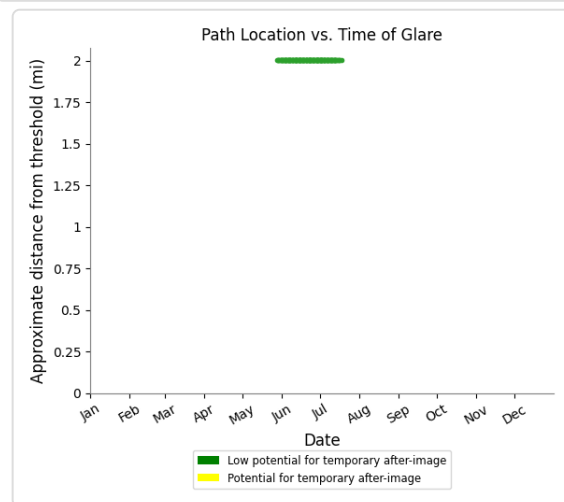
Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 25	172	2.9	0	0.0
35S RWY 07	0	0.0	0	0.0

PV array 2 and FP: 35S RWY 25

Yellow glare: none

Green glare: 172 min.



PV array 2 and FP: 35S RWY 07

No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 07	0	0.0	0	0.0
35S RWY 25	0	0.0	0	0.0

PV array 3 and FP: 35S RWY 07

No glare found

PV array 3 and FP: 35S RWY 25

No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 07	0	0.0	0	0.0
35S RWY 25	0	0.0	0	0.0

PV array 4 and FP: 35S RWY 07

No glare found

PV array 4 and FP: 35S RWY 25

No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 07	0	0.0	0	0.0
35S RWY 25	0	0.0	0	0.0

PV array 5 and FP: 35S RWY 07

No glare found

PV array 5 and FP: 35S RWY 25

No glare found

PV: PV array 6 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
35S RWY 07	0	0.0	0	0.0
35S RWY 25	0	0.0	0	0.0

PV array 6 and FP: 35S RWY 07

No glare found

PV array 6 and FP: 35S RWY 25

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.

Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.

The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.

The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)

The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.

The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.

The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.

Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.

Refer to the Help page at www.forgesolar.com/help/ for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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This analysis was conducted using the best available radiometric modeling at the time of generation. Future updates to the modeling methodology may yield different results.