# Siting Renewable Energy in Oregon

## Voluntary Guidelines Developed Through Outreach and Engagement

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OREGON NATURAL DESERT ASSOCIATION

RENEWABLE NORTHWEST

NRDC

DEFENDERS OF WILDLIFE

# Acknowledgements


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## Steering Committee

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# Stakeholder and Tribal Outreach

The Project Team reached out to all the organizations, businesses, agencies and tribes listed below to offer various opportunities to participate in the development of this report. The entities marked with an asterisk (*) are known to have engaged in some way, at some point, during the effort, either through attendance at an online or in-person meeting or through written comments. Some additional parties may have attended online meetings anonymously.

The project team is grateful to all those who provided input. It is important to note that the asterisks below denote engagement in the process only, and do not imply support for the final report.

## Academia

- Oregon State University

## Agriculture

- American Farmland Trust *
- Oregon Winegrowers Association
- Oregon Farm Bureau
- Oregon Agricultural Trust (OAT) *
- Oregon Cattlemen's Association
- Oregon Aglink

## Counties and Local Government
### (Commissioners and/or Planning Directors)

- Lake County *
- Klamath County *
- Gilliam County *
- Morrow County *
- Multnomah County
- Crook County *
- Harney County *
- Deschutes County *
- Jefferson County
- Malheur County
- Polk County
- Douglas County
- Association of Oregon Counties (AOC)
- Association of Oregon County Planning Directors (AOCPD) *
- Community Renewable Energy Association (CREA) *
- Portland Clean Energy Community Benefits Fund (PCEF)

## Environmental/Community/ Conservation NGOs

- Oregon Citizens Utility Board
- High Desert Partnership *
- Oregon Rural Action *
- Lake County Resource Initiative (LCRI) *
- Verde *
- Oregon Coast Energy Alliance Network (OCEAN)
- PECI
- 1000 Friends of Oregon *
- Theodore Roosevelt Conservation Partnership (TRCP) *
- Oregon Hunters Association (OHA) *
- Rogue Climate *
- Sustainable Northwest *
- Greater Hells Canyon Council *
- Portland Audubon *
- Oregon Wild *
- Northwest Energy Coalition
- The Nature Conservancy *
- Klamath-Siskiyou Wildlands Center
- Spark Northwest
- Climate Solutions *
- Oregon Environmental Council
- Friends of Columbia Gorge *
- Environment Oregon
- Energy Foundation
- Green Energy Institute (Lewis & Clark Law School)

## Federal Government

- Bonneville Power Administration (BPA) *
- Department of Defense (Navy) *
- Bureau of Land Management (BLM)
- U.S. Fish and Wildlife Service (USFWS) *

## Renewable Energy Industry

- Sunstone Energy *
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- Ball Janik LLP
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## State Government

- Oregon Governor's Office
- Oregon Department of Agriculture
- Oregon Department of Land Conservation and Development *
- Oregon Department of Energy *
- Oregon Department of Fish and Wildlife *
- Oregon Public Utility Commission

## Tribes and Tribal Organizations

- Cow Creek Band of Umpqua Tribe of Indians
- Confederated Tribes of Warm Springs
- Coquille Indian Tribe *
- Confederated Tribes of the Umatilla Indian Reservation *
- Confederated Tribes of Siletz Indians
- Klamath Tribes - Tribal Climate Change Project
- Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians
- Confederated Tribes of Grand Ronde
- Burns Paiute Tribe *
- Columbia River Inter-Tribal Fish Commission (CRITFC) *

## Utilities and Electric Co-ops

- Harney Electric Cooperative *
- Oregon Rural Electric Cooperative Association (ORECA)
- Oregon Municipal Electric Utility Association *
- Idaho Power Company
- Portland General Electric *
- Pacific Power (PacificCorp)

# Abbreviations

| | |
|---|---|
| **BLM** | Bureau of Land Management |
| **CRITFC** | Columbia River Intertribal Fish Commission |
| **DLA** | Designated leasing area |
| **DLCD** | Oregon Department of Land Conservation and Development |
| **EFSC** | State Energy Facility Siting Council |
| **EPA** | Environmental Protection Agency |
| **FWS** | U.S. Fish and Wildlife Service |
| **GW** | Gigawatts |
| **HB** | House Bill |
| **IPBES** | Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **ITC** | Investment tax credit |
| **MDIFW** | Maine Department of Inland Fisheries and Wildlife |
| **MW** | Megawatts |
| **NEPA** | National Environmental Policy Act |
| **NPCC** | National Policy Consensus Center |
| **NYSDAM** | New York State Department of Agriculture and Markets |
| **OAR** | Oregon Administrative Rule |
| **ODFW** | Oregon Department of Fish and Wildlife |
| **ODOE** | Oregon Department of Energy |
| **ORBIC** | Oregon Biodiversity Information Center |
| **ORS** | Oregon Revised Statute |
| **ORESA** | Oregon Renewable Energy Siting Assessment |
| **OSSC** | Oregon Smart Siting Collaboration |
| **OSSIA** | Oregon Solar + Storage Industries Association |
| **PEIS** | Programmatic Environmental Impact Statement |
| **PILT** | Payment in Lieu of Taxes |
| **PTC** | Production tax credit |
| **PV** | Photovoltaic |
| **RCRA** | Resource Conservation and Recovery Act |
| **REIMA** | Renewable Energy Industry and Market Assessment |
| **SDGFP** | South Dakota Department of Game, Fish and Parks |
| **SIP** | Strategic Investment Program |
| **SEZ** | Solar Energy Zone |
| **WEGs** | Wind Energy Guidelines |
| **WGFD** | Wyoming Game and Fish Department |

# Contents


A farm in Wasco County with a view of Mount Hood.

# Executive Summary

Like much of the world, Oregon is already experiencing the impacts of climate change. In 2021, the Oregon state legislature passed House Bill 2021 (HB 2021) mandating that 100% of Oregon's electricity come from non-emitting sources by 2040. Expansion of renewable energy generation is critical to meet this goal and combat climate change but also has the potential to conflict with sensitive species and habitats, agricultural land and other important resources. As Oregon accelerates renewable energy development, carefully siting projects can help to minimize impacts to valued resources and to rural communities.

The Oregon Smart Siting Collaboration (OSSC), a partnership of Defenders of Wildlife, the Natural Resources Defense Council, Oregon Natural Desert Association and Renewable Northwest, was initiated to develop voluntary renewable energy siting guidelines to help expedite renewable energy development while improving community engagement and conserving Oregon's natural and cultural resources.

OSSC sought input from tribes, clean energy advocates, non-governmental environmental organizations, environmental justice groups, renewable energy developers, state agencies, utilities, local government officials, community organizations, representatives of agriculture and industry, and academic researchers. Through this

process, OSSC identified four major topics to address: values and principles, community engagement, site characteristics and development incentives.

Working with a small group of stakeholders, OSSC established a foundation of shared values and principles for renewable energy siting. The results, presented in this report, highlight the desire to increase renewable energy development in Oregon while minimizing impacts to natural, agricultural, recreational and cultural resources. The values and principles also emphasize the importance of community collaboration throughout the planning process.

To develop community engagement guidelines and better understand the priorities of communities that typically host renewable energy facilities, OSSC conducted listening sessions in rural counties in Eastern Oregon. Four common themes arose from these listening sessions. First, communities expressed their desire for renewable energy projects to generate local economic benefits. Second, it is important to the communities that developers engage with them early and often during the planning process. Third, communities have strong land use values that they want developers to understand and accommodate. Finally, communities want renewable energy projects to promote local energy independence and resilience.


Solar panels under construction.

Renewable energy siting guidelines must also consider the landscape characteristics that make sites better or less well suited to development. Based on the inputs received from stakeholders, the OSSC team identified favorable site characteristics: high wind or solar resource potential; access to existing transmission infrastructure; low conflict with biodiversity, agricultural production, cultural resources and historic values or recreational and scenic values; low conflict with military operations; and compatibility with tribal sovereignty. Previously disturbed or unproductive lands often have many of these site characteristics. OSSC compiled siting guidelines from other states and regions that address each of the characteristics and may serve as examples for Oregon, along with data and mapping resources available in Oregon that may be useful early in the planning process to identify suitable sites.

While voluntary guidelines can offer a roadmap for responsible renewable energy siting, they may not be effective without a mechanism to encourage participation such as incentive programs. This report discusses three types of incentives for consideration in Oregon: monetary, permitting and performance. Monetary incentives include grants or tax credits, such as the currently available federal investment and production tax credits for renewable energy. Permitting incentives result from state or federal agencies giving expedited review or prioritization of approval to projects that follow siting guidelines. Performance incentives would operate by creating metrics to demonstrate to major power consumers, investors or other influential players in the energy marketplace that project siting meets certain environmental and social standards.

There is no approach to renewable energy siting that can optimize all of Oregon's land use values. Therefore, meeting Oregon's climate change commitments will likely require tradeoffs, with the best solutions balancing the state's various priorities. This goal of this report is to provide guidance to renewable energy developers, communities, advocacy organizations and others to help make the renewable energy siting process easier, less contentious and more broadly beneficial. Because the issues surrounding renewable energy in Oregon are complex and rapidly evolving, an effective approach to siting will require multiple complementary efforts. Further study and outreach focused on expanding and deepening collaboration are needed to give more voices a part in shaping Oregon's renewable energy future.

# Introduction

As Oregon experiences increasingly destructive wildfires and weather events linked to a changing climate, many in the state have identified the need to expand carbon-free sources of electricity to limit the magnitude of climate change and prevent its worst impacts. In the 2021 legislative session, Oregon passed and enacted House Bill 2021 (HB2021), which mandates that 100% of the electricity used by Oregonians be generated from non-emitting sources by 2040, with benchmarks of an 80% reduction in carbon emissions by 2030 and a 90% reduction by 2035. Achieving these goals will require replacing all existing generation from coal and natural gas and meeting increasing demand for electricity resulting from the electrification of transportation and buildings. While Oregon benefits from a legacy of generating carbon-free electricity from hydroelectric dams, shifting patterns of precipitation and the importance of maintaining culturally and ecologically important fish populations mean that Oregon's electricity generation must diversify beyond the hydroelectric system. To meet its clean energy mandates and promote a secure and resilient energy future, Oregon will need to develop wind, solar and other renewable energy resources.



Left, solar panels at the Baldock Solar Highway Project in Clackamas County. Right, wind turbines in Sherman County.

Expediting renewable energy development while also preserving the state's natural resources, honoring its conservation legacy and respecting agriculture and other important land uses will require careful planning. Oregon's land use system is based on a set of Statewide Land Use Goals (Oregon Department of Land Conservation and Development [DLCD] 2019a) that prioritize protection and conservation of existing resources and activities. These goals inform state policies and related rules and regulations that shape the permitting process for renewable energy and transmission projects, which is often lengthy and frequently results in litigation. While the curtailment of climate change will surely benefit the species, ecosystems and other natural resources of Oregon, it is unknown at what level these resources under state regulation will be impacted by renewable energy development. The transition to renewable energy also has potential to impact local communities, both in terms of the benefits that communities may receive and the changes that may occur to local landscapes and livelihoods.

The complex and nuanced landscape of Oregon with respect to permitting, land use goals, clean-energy mandates, natural resources and community values necessitates the thoughtful siting of renewable energy development. It is important for those involved in the siting process to avoid land use conflicts so we can advance renewable energy projects at the pace needed to meet Oregon's clean-energy goals. Conservation of land is a high priority for Oregonians, and smart siting of renewable energy facilities is a form of conservation. Proactive planning for renewable energy development can help avoid, minimize and mitigate impacts to natural and cultural resources and land use values that are fundamental to Oregon, while also ensuring that the promise of benefits is realized in host communities.


Wind turbine landscape in Oregon.

# Project Overview

The Oregon Smart Siting Collaboration (OSSC) consists of four project partners: Defenders of Wildlife, the Natural Resources Defense Council, Oregon Natural Desert Association and Renewable Northwest. The OSSC was formed with the objective of producing a report that outlines the issues and interests central to renewable energy siting in Oregon and offers voluntary guidelines promoting the responsible development of renewable energy facilities. The OSSC guidelines are nonbinding and only intended as considerations for developers and local decision-makers to help expedite renewable energy development while improving community engagement and conserving Oregon's natural and cultural resources.

The OSSC project was always intended to be guided by, and developed in collaboration with, diverse voices, perspectives and interests. At the outset of the project in 2020, OSSC engaged the National Policy Consensus Center (NPCC) at Portland State University to facilitate a series of conversations with Oregon stakeholders and tribes. Stakeholders identified included clean energy advocates, environmental non-governmental organizations, environmental justice groups, renewable energy developers, state agencies, utilities, local government officials, community organizations, representatives of agriculture and industry, and academic researchers. Outreach to nine Oregon tribes also took place. OSSC conducted assessment interviews with these stakeholders and tribes to gain baseline information about their knowledge and perceptions of low-impact, low-conflict renewable energy development in Oregon. These interviews also sought to identify stakeholder perspectives on key challenges and opportunities for responsible renewable energy development. Nearly all participants expressed the view that voluntary guidelines would be useful.

Following the assessment interviews, a steering com-

mittee was formed with approximately 20 members drawn from each of the stakeholder sectors to provide a range of perspectives over the course of the project. In the fall of 2021, OSSC convened a series of three preliminary scoping meetings with the steering committee. The purpose of these meetings was to introduce the project, review voluntary approaches to renewable energy siting used in other states or regions, and consider which approaches may or may not be appropriate for Oregon. The result was a high-level outline of concepts for voluntary guidelines to be discussed by the broader stakeholder group. Following consultation with the steering committee, the OSSC identified four topics for these guidelines: Oregonians' Values and Priorities; Community Engagement; Siting Priorities and Development Area Characteristics; and Development Incentives. Each of these topics is addressed in a section of this report.

Beginning in January of 2022 and continuing through early spring, OSSC conducted a series of online outreach meetings to engage stakeholders and seek input for the development of voluntary guidelines. Through that effort OSSC reached out to approximately 120 individuals at more than 90 different Oregon tribes, agencies, counties, businesses, and civic organizations—including community organizations and organizations representing conservation, natural resources, agriculture, environmental justice and other interests. There were four online forum sessions, followed by additional online outreach, steering committee meetings and a presentation to the Association of Oregon County Planning Directors. All these outreach efforts invited continued and deeper engagement by any person or organization interested in having a hands-on role in developing the substance of a draft set of guidelines. Recognizing that some stakeholders might prefer to provide written input instead of participating in online discussions, OSSC also developed and circulated a written questionnaire seeking in-depth responses about guideline content.

Another key component of the OSSC project was in-person community outreach to learn about local conditions and concerns regarding renewable energy siting. In the summer of 2022, listening sessions were organized and conducted in several counties in eastern Oregon with small focus groups. The need for these listening sessions was highlighted during the preliminary scoping meeting held with the steering committee. The methods and results of the listening sessions are described in detail later in this report.

## Other Resources and Initiatives

We recognize that there is other work happening on the important issue of renewable energy siting. Our aim was not to duplicate other efforts but to complement them. For instance, the Oregon Renewable Energy Siting Assessment (ORESA), released in June 2022 by Oregon Department of Energy (ODOE) and partners, complements the work of the OSSC by providing a way to explore renewable energy in Oregon through a robust mapping and reporting tool. This tool can be used to browse "spatial data, create site-specific reports to support early notification, and review additional information such as regulatory process maps, assessments, and tools that are not reflected in the spatial data" (ODOE 2022). The tool identifies the applicable agencies and points of contact for specific data layers. Like the ORESA report, the OSSC report is not a regulatory or decision-making tool. It is also not a mapping tool but an informative discussion of best practices and voluntary guidelines for responsible siting of renewable energy projects in Oregon.

# The Oregon Setting

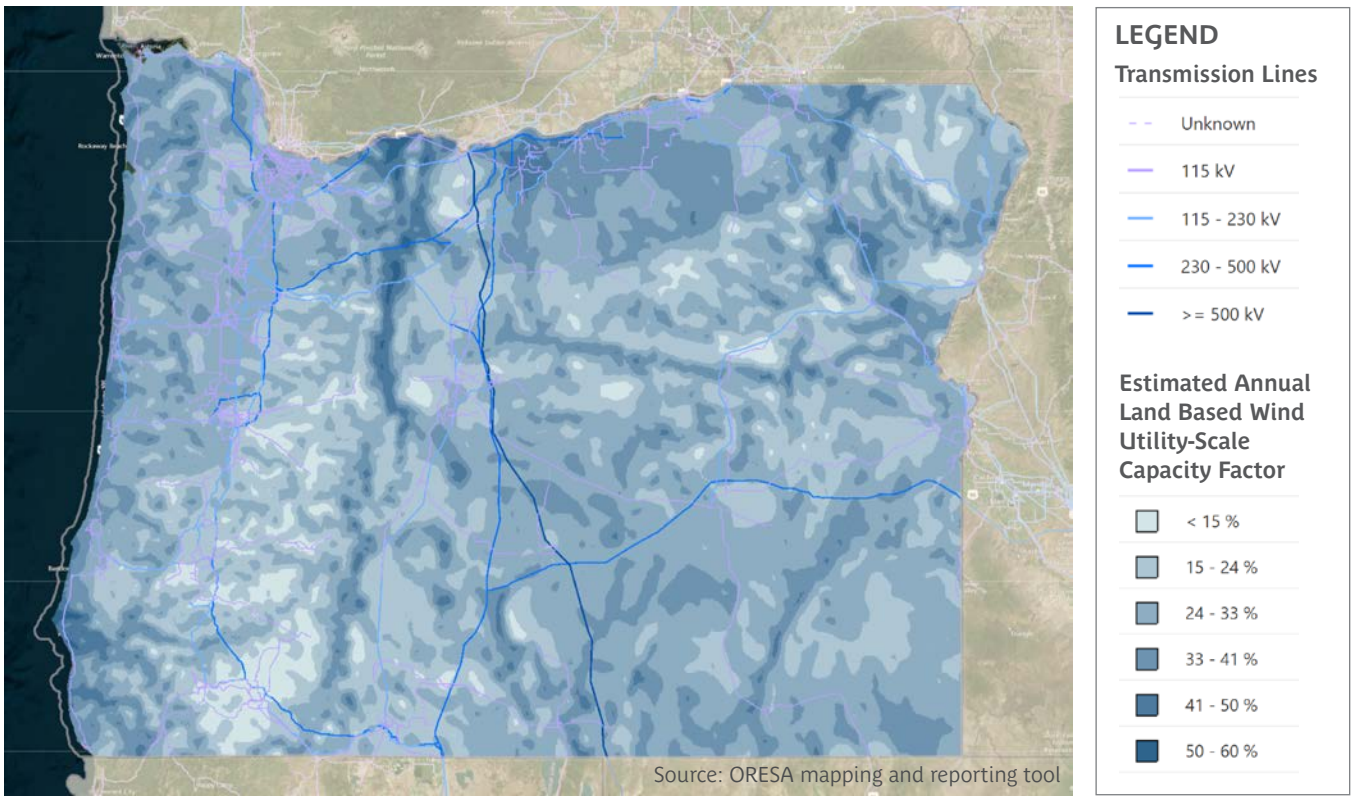
Any attempt to develop guidelines for renewable energy siting in Oregon must begin with an understanding of the relevant conditions in the state. These include the availability of renewable energy resources, the history of renewable energy development, valued natural and cultural resources and land uses, land use planning policies, processes that drive renewable energy siting decisions and the involvement of the public in these processes. Together, these conditions create a unique Oregon setting that shapes the opportunities and challenges related to renewable energy development.

## Renewable Energy Potential

Oregon has long been at the forefront of renewable energy development, starting in the 1930s with the construction of dams on the Columbia River for hydroelectric generation. Hydropower accounted for 50% of electricity generated in the state in 2020 (U.S. Energy Information Administration 2022a). Onshore wind energy production began in 2001 (ODOE 2023) and has expanded rapidly, with facilities located mostly in eastern Oregon near the Columbia River Gorge. Wind energy accounts for approximately 14% of the electricity generated in the state. Utility-scale solar generation, representing approximately 2% of the electricity created in Oregon in 2020, has lagged behind wind but is growing steadily.

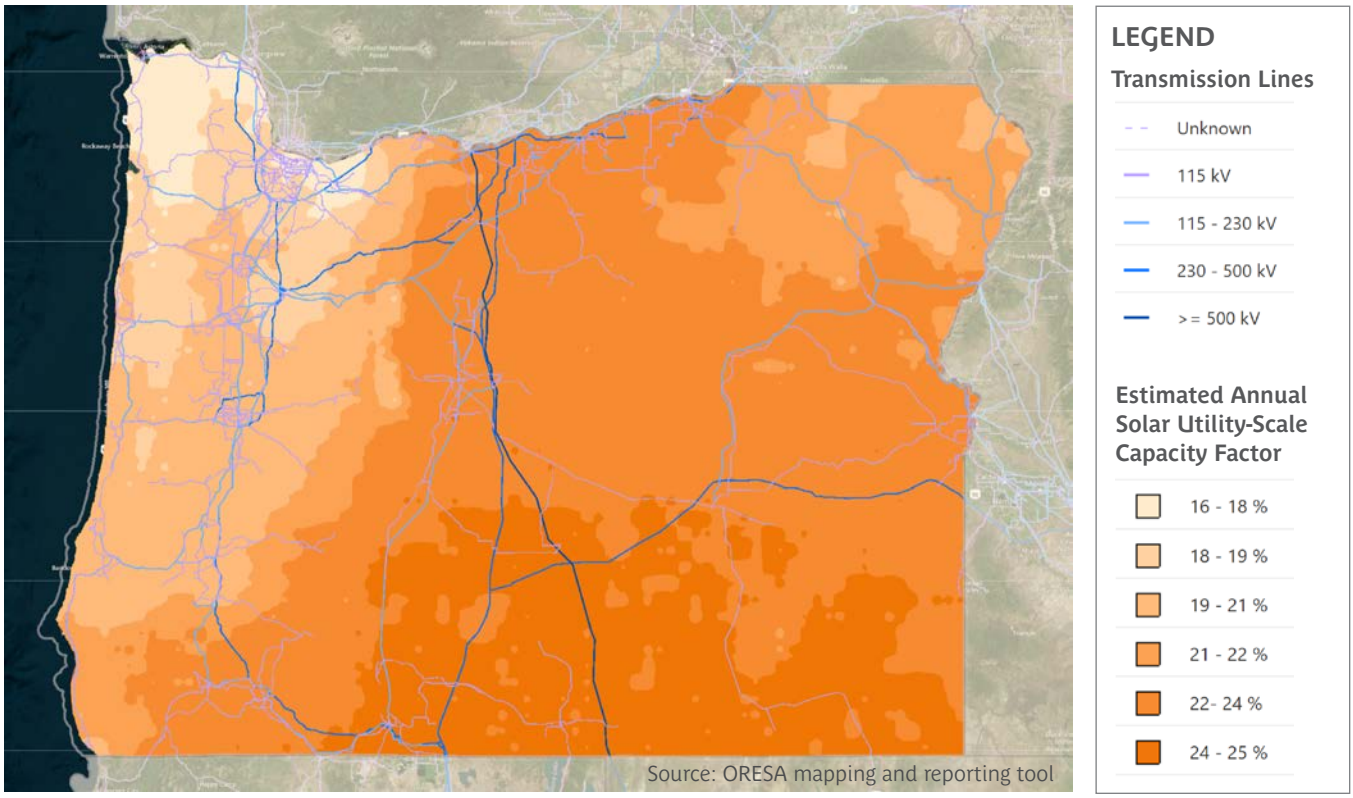
The ORESA project produced a mapping tool (https://tools.oregonexplorer.info/OE_HtmlViewer/Index.html?viewer=renewable) to illustrate the opportunities and constraints for renewable energy development in Oregon (ODOE 2022). The map highlights areas of significant resource potential for onshore wind (particularly on the Columbia Plateau in the north-central part of the state and in the high deserts of the southeast; Figure 1)

**Figure 1. Wind energy potential in Oregon**




Values are reported in terms of estimated annual capacity factor, a measure of wind resource quality. Capacity factor indicates the amount of energy produced in a typical year, as a fraction of maximum possible energy, if the facility were producing at full nameplate capacity, for 100% of the hours of the year.

## Figure 2. Solar energy potential in Oregon




Values are reported in terms of estimated annual capacity factor, a measure of solar resource quality. Capacity factor indicates the amount of energy produced in a typical year, as a fraction of maximum possible energy, if the facility were producing at full nameplate capacity, for 100% of the hours of the year.

and solar (in most areas east of the Cascades; Figure 2). The map also indicates the potential for offshore wind (particularly on the southern coast) and for geothermal energy (mostly on the eastern slopes of the Cascades). The ORESA project includes a Renewable Energy Industry and Market Assessment (REIMA), which used a geospatial analysis to evaluate the technical potential for renewable energy generation by incorporating siting-level screening factors such as land ownership and terrain. The REIMA analysis found that "after accounting for technology/economic feasibility, administrative, military, environmental and land use factors, the geospatial analysis estimated a combined available capacity of over 1,500 gigawatts of solar PV [photovoltaic], onshore wind, offshore wind, and geothermal resource spread throughout the state." The ORESA report concluded that Oregon's clean energy goals can be met by utilizing the renewable energy resources available in the state.

However, Oregon's renewable energy potential is constrained by the limited existing transmission infrastructure in the state and the rest of the Northwest, which for the most part is already utilized at full capacity. As more renewable energy is added to the power supply, the existing transmission system will be increasingly strained. It will become more challenging to move electricity from areas of generation to areas of demand. Using tools like the ORESA map, renewable energy developers have thoroughly searched the Oregon landscape for sites that are suitable in terms of both resource potential and access to infrastructure. Most such sites are already developed or proposed for development. In many undeveloped areas with high resource potential, otherwise viable projects are unable to be completed due to a lack of transmission capacity. Existing transmission infrastructure is inadequate to achieve the swift progress needed to meet Oregon's ambitious clean energy goals.

## Natural Resources and Land Use Values

Oregon contains a tremendous diversity of landscapes and ecoregions, from the wet, temperate forests of the Coast Range to the alpine slopes of the Cascades and the expansive grasslands and sagebrush steppe of the eastern part of the state. These landscapes support impressive biodiversity, including wildlife like elk, pronghorn, bald and golden eagles, greater sage-grouse and various species of salmon and trout. The state also has a long and proud history of communities and livelihoods grounded in the use of land and natural resources, including timber harvesting, farming and ranching. Oregon's strong legacy of conservation and protection of resources for the benefit of future generations is reflected in the state's land use protections. These include the land use planning goals adopted by the DLCD, especially Goal 3, which requires that farmlands be identified and preserved for agricultural use; Goal 4, which protects working forest lands; and Goal 5, which outlines protections for a range of natural resources including wildlife habitat.


Aerial view of Oregon farmland.

Development of renewable energy often requires the use of substantial areas of land, which creates the possibility of conflict with landowners, communities and interest groups that may prioritize other land use values. State-based environmental organizations may support renewable energy in general but oppose projects in certain locations due to concerns about impacts to wildlife or other sensitive natural resources. Rural communities and others with an interest in agriculture may oppose renewable energy development that would convert land with agricultural potential. The military, which has facilities and training spaces throughout the state, may oppose renewable energy development in some areas based on concerns that it could conflict with their operations. Oregon's Indigenous tribes may be interested in developing renewable energy on their tribal lands to gain economic benefits but may also object to projects they perceive as threatening their sovereignty or cultural resources. Communities and individuals throughout the state have a wide range of opinions related to the siting of renewable energy. Oregon recognizes the important role that the public must play in land use decision making, demonstrated by the fact that citizen involvement is enshrined in Oregon's land use system as Goal 1 of the land use planning goals.

## Renewable Energy Permitting Processes

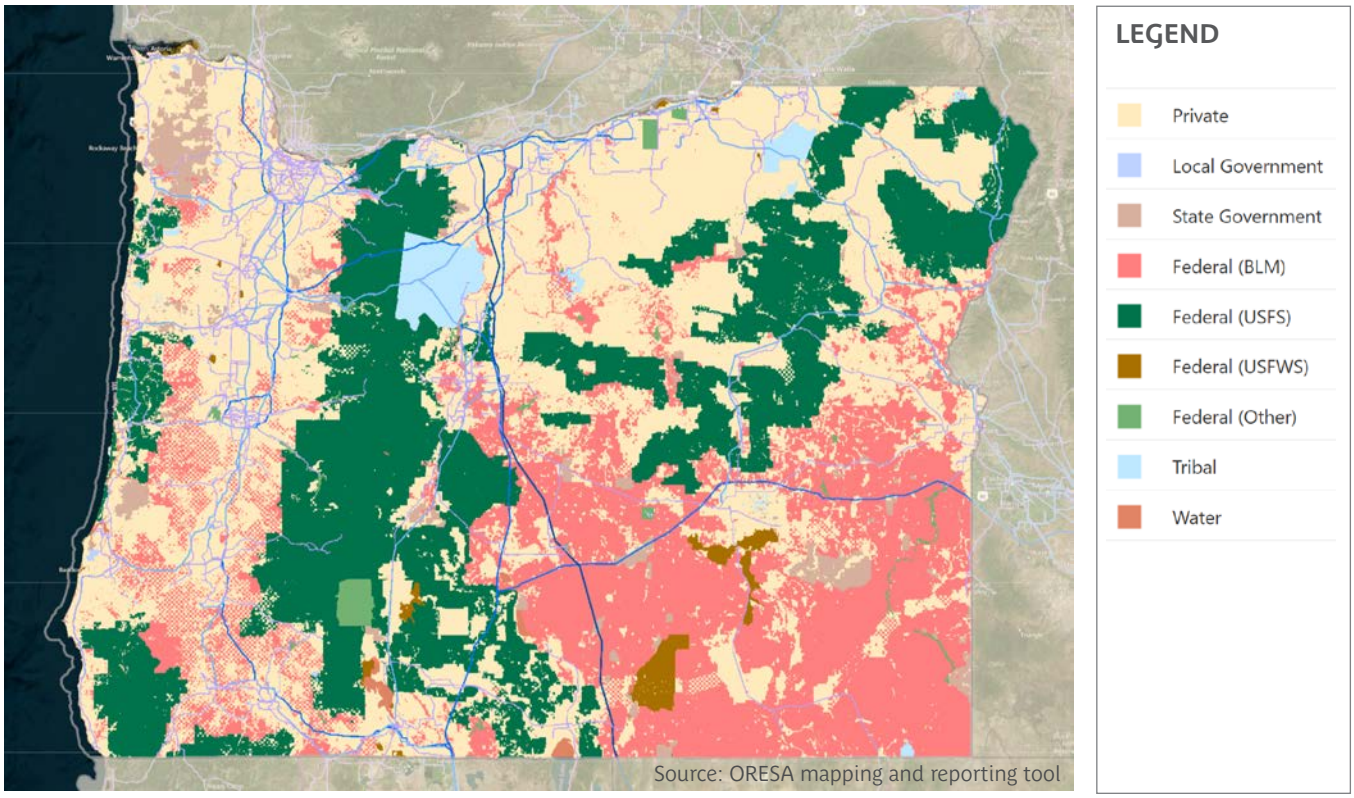
Proposed renewable energy projects are subject to permitting by state and local regulators. Large facilities must be certified at the state level by the Energy Facility Siting Council (EFSC). The EFSC review is a consolidated, "standards-based" process in which ODOE is the lead agency (ODOE 2020). As defined in Oregon Revised Statute (ORS) 469.300, the EFSC jurisdictional threshold for wind energy facilities is an average generating capacity of 50 megawatts (Oregon Secretary of State 2022a). The threshold for solar facilities is an occupied area of 160 acres of high value farmland; or 1,280 acres of land that is predominantly cultivated or composed of

soils in capability classes I through IV according to the National Cooperative Soil Survey; or 1,920 acres of other types of land (Oregon Secretary of State 2022a). Smaller facilities sized below the EFSC thresholds are reviewed and approved by the county or city in which they would be located. The vast majority of renewable energy projects developed in Oregon to date have been approved at the local level.

For a project to be approved under either the state or local permitting pathway, it must be found to be consistent with both Oregon's state land use planning goals and the development standards and other criteria enacted by the local jurisdiction. Applicants may elect for the land use determination to be made by EFSC even if the project does not exceed EFSC's jurisdictional thresholds (ODOE 2020). If EFSC is responsible for the land use determination, the local jurisdiction is designated as a "special advisory group" that advises EFSC about the applicable local land use criteria that EFSC must apply in its review (ODOE 2020). The local review process is governed by the local jurisdiction's zoning ordinance and requires compliance with local comprehensive plans, state statute and agency regulations. An applicant seeking local approval is required to obtain all other necessary permits and approvals outside of the land use review process. Both EFSC and local governing bodies are required to consult with interested state and federal agencies and local tribes when evaluating a proposed project. Under both the state and local permitting pathways, an application is subject to public notice, public comment and a public hearing before a decision is made.

In addition to state or local review, a proposed facility would also be subject to federal review if sited on federal land (Figure 3). Opportunities for siting facilities on federal land are constrained by federal land use restrictions in certain jurisdictions (e.g., national parks and monuments, designated wilderness and federally protected habitat) and subject to land management planning processes elsewhere (e.g., Bureau of Land Management [BLM] Resource Management Plans and U.S. Forest Service Land Management Plans). Any renewable energy projects proposed on federal land would be required to seek permitting from the applicable federal agency and would be subject to the typically lengthy and expensive National Environmental Policy Act (NEPA) review process.

**Figure 3.** Land management in Oregon




Source: ORESA mapping and reporting tool


Aerial view of the Baldock Solar Highway solar panel array in Clackamas County.

## Practical Constraints on Renewable Energy Site Selection

Renewable energy developers must take a variety of actions in parallel with the permitting process that play a key role in determining where facilities are sited. Before seeking approval from regulators, developers conduct an exploratory site selection process in which they assess the energy market, the quality of renewable energy resources, slope and other terrain factors, and the feasibility of transmission and interconnection. Also assessed is a range of resource designations such as protected habitats or archeological, historical, or cultural sites, as well as current land uses and applicable regulatory requirements. Once a promising site is identified, a developer will seek to establish site control by leasing or purchasing the property or reaching a development agreement with the landowner. At the same time, a developer will submit a request to the utility for interconnection, which may require multiple rounds of engineering studies (Porter et al. 2009). They will also try to secure an offtaker for the electricity to be produced, either by engaging in the competitive Request for Proposals (RFP) process that a utility uses to choose projects for their portfolio or by seeking direct offtake customers. Each of these steps is complex and lengthy and involves financial and legal risk. A developer must navigate them all for a project to be built and supply energy to Oregon's power grid. As a consequence, there are many more projects in interconnection request queues than there are projects with interconnection agreements, many more RFP bidders than there are selected bids, and many more permit applications than there are approved projects.

## Processes for Community Engagement in Renewable Energy Planning

Both the EFSC and county-level approval pathways for renewable energy projects provide opportunities for local consultation and citizen engagement, as is required by Oregon's land use system. At the start of the EFSC review process, when a project proponent has filed a Notice of Intent to submit an application for a site certificate, ODOE will advertise a public comment period to solicit input from affected landowners and other community members. Once the application has been submitted, ODOE will hold a public information meeting to provide details about the project and the evaluation process. After EFSC issues a draft proposed order regarding whether the project meets EFSC standards, a public hearing is conducted at which members of the public may testify about their concerns related to the project. In the local review pathway, the local planning department generally must also evaluate a project through a public hearing process. This process is similar to the one for EFSC jurisdiction and involves a public comment period, publicly available application materials, a public hearing and opportunities for any participating person or party to appeal decisions made by the reviewing body.

In addition to participating in the review process, local communities can influence the siting of renewable energy projects by maintaining a local comprehensive plan. Whether reviewed by EFSC or a local jurisdiction, proposed projects must comply with the applicable comprehensive plan to be approved. It is therefore important for each plan to fully and accurately reflect the land use values and priorities of the community it

represents. Formerly, counties were required to periodically evaluate their comprehensive plans for consistency with the statewide planning goals. This typically involved robust community engagement and resulted in updates that captured changes in community values. However, in 2007 the state eliminated the counties' obligation to conduct periodic reviews and removed funding that had supported the process. Counties may now lack the capacity to keep their comprehensive plans up to date, which can leave key issues or rising topics unaddressed during the review of proposed projects.

Transmission lines along Lolo Pass in Clackamas County.

## Economic Benefits of Renewable Energy Development

The development of a renewable energy facility can benefit the host community through increased economic activity and the creation of local jobs during construction and operation. Developers may also offer direct benefits to communities by supporting local businesses and making donations to hospitals, scholarship funds, and other recipients. In addition, communities can derive benefits from facilities in their jurisdiction by collecting property taxes, which are used to fund services including education, fire protection and police. Property taxes typically apply only to renewable energy projects that are privately owned and produce electricity for offsite use. The amount of tax is determined by the assessed value of the renewable energy facility. State programs allow counties to incentivize renewable energy development by offering property tax abatement while still collecting revenue. Under the Strategic Investment Program (SIP), projects in rural areas with a capital cost of at least $25 million can pay a community service fee equal to 25% of their property tax obligation, up to $2.5 million. Similarly, the Payment in Lieu of Taxes program (PILT) allows counties to agree with renewable energy developers to receive a flat fee of $7,000 per megawatt (MW) based on nameplate capacity (Blumenstein and Schlusser 2019).

In the 2017-2018 tax year, Oregon counties received almost $32 million in direct payments from renewable energy facilities. The payments were concentrated in areas that host large-scale wind energy development, with five counties receiving approximately 95% of the revenue (Blumenstein and Schlusser 2019). Sherman County alone garnered $12.6 million in 2017-2018 and has used the funds to improve schools, build a new courthouse and maintain roads. Sherman County also pays its residents a dividend of $590 per year to share surplus revenue earned from the wind facilities (Hawley 2022).

Local budgeting determines how tax revenue is allocated in a county. Oregon law requires most local governments to prepare an annual or biennial budget. Like the approval pathways for proposed renewable energy projects, the local budget process is designed to encourage citizen involvement. Draft budget documents can be reviewed by the public, and budget policy decisions are made in open meetings at which citizens can ask questions and give testimony. The local budget process gives communities an opportunity to use the revenues received from renewable energy development in ways that reflect their values and priorities.

# Statement of Values and Principles

The OSSC assembled a small workgroup of diverse stakeholders, including Oregon Solar + Storage Industries Association (OSSIA), 1000 Friends of Oregon, Community Renewable Energy Association and Oregon Natural Desert Association to identify a set of shared values and principles to form the basis of voluntary renewable energy guidelines. The workgroup represented a breadth of experience in planning and development and drew from successful, participatory siting practices in Oregon and elsewhere. The group was careful to differentiate values and principles from recommendations that are more appropriately considered elsewhere in this report. The resultant list of values and principles are supported in Oregon's policy mandates and recognize the state's unique ecological, social, cultural, political and economic setting.


Wind turbines.

1. Oregon has adopted a mandate of meeting 100% of its electricity needs with clean, renewable energy sources by 2040. Achieving this goal is critical to combating climate change, which is an existential threat to ecosystem services, agriculture, fish and wildlife habitat and livability in Oregon. It is imperative that we work to decarbonize Oregon's power grid as quickly as possible to mitigate climate change impacts.
2. It is essential that stakeholders work collaboratively to organize and implement a shared vision for achieving Oregon's renewable energy goal.
3. There is enormous potential for renewable energy development in Oregon that may be developed while avoiding, minimizing and mitigating impacts to natural, agricultural, recreational and cultural resources and other values.
4. Proactive, informed, and inclusive public planning, with strong local government and landowner participation, may help avoid and minimize the impacts of renewable energy development and most effectively achieve renewable energy goals.
5. Effective renewable energy policy and planning provides sufficient areas for renewable energy facilities as well as the necessary transmission and other infrastructure required to support development.
6. Trusted datasets and sources, including local experience and expertise, are valuable when considering the benefits and challenges of a potential project site.
7. Incentive structures are a useful tool for encouraging the siting of renewable energy projects in low-conflict areas. Such incentives could include monetary incentives, expedited permitting, or processes that would confer reputational benefit to developers by acknowledging responsible siting decisions.


Field of grain at Oregon farm.

# Community Outreach

Following stakeholder engagement, the project team conducted in-person community outreach to learn about local conditions and perceptions regarding renewable energy siting. Listening sessions were conducted in several counties in rural Eastern Oregon with small focus groups of approximately 12 people each. The locations for listening sessions were selected based on the prevalence of renewable energy development in an area and the community's experience with the siting process. The project partners worked with local organizations to create invite lists. Questions pertaining to participants' experience with renewable energy in their respective counties were provided ahead of time. The listening sessions participants led the conversations and were prompted with the open-ended questions as needed. Additional small meetings and one-on-one follow-up conversations provided more detail. Although the takeaways from the listening sessions are not representative of all of Oregon, or even fully representative of the counties that were visited, the perceptions we heard reveal important themes to consider when siting renewable energy projects in Oregon.

The listening sessions provided in-depth information about how different communities perceive the renewable energy siting process and the compatibility of renewable energy with rural landscapes. Participants also emphasized that it is important to them for developers to work collaboratively with community members before the start of the siting process and throughout the life of a project. Communities want more in-person opportunities to communicate with developers about the land use values specific to local areas, which may include values pertaining to agriculture, wildlife concerns or mitigation strategies. It was noted that greater attention to the needs and priorities of communities could help overcome some of the challenges of renewable energy siting in Oregon.

Participants recognized the economic value that renewable energy projects provide to their communities

through revenue from property taxes, SIP and PILT programs, and other sources. However, they expressed a desire for additional community benefits that respond to local needs and values. It was also noted that the communities where electricity is generated from renewable energy may require additional resources to foster their own energy resilience and independence. Despite broad agreement that benefits are important, inherent differences in values within a community may lead to divergent ideas about what constitutes a benefit. For example, a particular landowner may want a renewable energy project to incorporate expensive vegetative screening and pollinator habitat, while other community members would prefer to maximize revenue from the project to support local schools. There is potential for conflict in this scenario, as less money would be available for the school system if the expensive screening is adopted.

## Tribal Engagement

As sovereign nations with a government-to-government relationship with the U.S., tribes have a distinct and important role to play in renewable energy siting. It is therefore imperative that policymakers engage with tribes in all siting processes, and for project sponsors to consult with tribes when reservations, ceded territories or traditional use areas overlay the project site. Developers can work with local decision-makers to conduct tribal outreach and engagement and ensure that permitting agencies have consulted with potentially affected tribes and reviewed tribal priorities. Because all tribes are unique, it is not appropriate to generalize about their interests and priorities with respect to renewable energy. Although multiple tribes were contacted throughout the course of the OSSC project, insufficient feedback was received to address any tribe's specific perspective. We recommend these resources for further guidance:

- Index of Native American Resources on the Internet: http://www.hanksville.org/NAresources/
- Oregon State University Tribal Resources: https://dce.oregonstate.edu/nal/resources
- Columbia River Inter-Tribal Fish Commission Energy Vision: https://critfc.org/energy-vision/

## Common Themes

While Oregon counties differ markedly in landscape, resources and people—as one listening session participant noted, "If you've been to one county in Oregon, you've been to one county in Oregon"—four common underlying themes arose from the listening sessions.

These themes, which are discussed in detail in this section, include:

- **Community Focus:** Communities appreciate benefits from renewable energy projects that are responsive to local inputs and meet local needs.
- **Community Engagement:** Communities encourage developers to collaborate with them early in the planning process to ensure the community is informed and involved in any important decisions.
- **Land Use Values:** Communities value their land in ways they want those involved in the siting of renewable energy projects in their communities to understand.
- **Energy Independence and Local Resource Capacity:** Communities want more resources to support increased local resilience.

### 1. Community Focus

#### Local Benefits

The communities visited by the project team overwhelmingly voiced a desire for renewable energy projects to offer benefits to their communities. There is general interest in providing energy for Oregonians, but communities want to see more local benefits when renewable energy infrastructure is placed on highly valued lands. Because of the way electricity moves in the grid, energy generated in rural counties flows to end users in areas of high demand, typically in cities. While most community members expressed support for renewables, many perceive it as a sacrifice to give up land to produce electricity that will likely be used elsewhere. Some participants noted that many locally produced goods (such as those from agriculture, ranching or manufacturing) are exported in return for payment, and expressed the opinion that electricity should be no different. Participants want to see more investment in their communities and suggest-

ed that fair compensation for siting renewable energy projects is one way to achieve that investment. The type of compensation valued by communities likely varies among counties.

In addition to the tax revenue counties receive from renewable energy facilities, communities want to see local benefits that are specific to their particular needs. Some of their requests are for communities to be more empowered in the planning process, for developers to open local offices, and for jobs to be created locally. Other areas of interest include local use of energy produced locally,[1] lower electricity costs, funding for energy efficiency upgrades, and more incentives that support the use of electricity in place of fossil fuels.

Most attendees at sessions liked the idea of giving farmers the opportunity to host renewable energy facilities on their land and thereby diversify their income through lease payments received from developers. However, they want to ensure that farmers receive the greatest possible value for any land taken out of agricultural production. Some participants called for a more organized pivot to renewable energy in response to the water shortages that they are experiencing now and expect to worsen in the near future. Many parts of rural Oregon used to have a thriving economy and workforce based on the timber industry. The timber industry and the employment opportunities associated with it have since greatly diminished. Listening session attendees noted that solar development has not brought many long-term jobs to their area, and that there is currently a lack of skilled workers in their counties. They expressed support for projects that would create good local jobs and lead to development of a skilled workforce.

### Local Voices

Some listening session participants observed a disconnect between parts of the siting and development process and community values. To counteract this perceived disconnect, some suggested creating an alternative process that includes more community input. There was a perception among some session participants that land use rules and regulations "come from Salem" and do not sufficiently consider the values of rural Oregon, with some pointing to discussions around wildlife and habitat mitigation as an example. Some individuals indicated that the mitigation required for renewable energy development is often at odds with what counties would prefer and expressed a desire to be more involved in the process of creating mitigation strategies and informing mitigation options.[2] Some participants advocated for adopting Home Rule authority over siting in their respective jurisdictions.[3] Home Rule is the "ability for cities to create their own governments and adopt their own laws without the state's approval" (League of Oregon Cities 2020).

## 2. Community Engagement

Early in the siting process and continuing throughout the life of a project, collaboration with local community members is essential. Participants expressed that insufficient engagement with local communities can be a significant factor leading to local opposition to renewable energy development. Participants from each county visited mentioned the substantial differences among Oregon counties and urged that the unique characteristics of a county should be understood before the start of the siting process. Collaboration is important to keep communities informed and to keep developers aware of key community issues and beliefs that may shape perceptions of their project and other renewable energy projects that may be proposed in the surrounding area.

The call for more early collaboration is largely a response to the current land use process and its requirements for community engagement. Some listening session participants believe that the current process does not solicit meaningful engagement until later stages, when important decisions about siting have already been made. They feel that by the time they are able to engage, projects are "locked in" and cannot be steered to serve their needs. Accordingly, they want developers to consult with county planners before they have com-

1 Once electricity is added to the transmission system (grid) by a generator, it flows through the grid based on where demand is located. It is not possible for the grid to restrict the flow of electricity to the vicinity of the generator (U.S. Energy Information Administration 2022b).

2 Oregon Department of Fish and Wildlife requirements and recommendations play a large role in shaping mitigation strategies (Oregon Secretary of State 2022a). Their recommendations may at times be at odds with a county's preferences.

3 Because Home Rule is available to cities and not counties, utility scale projects in rural areas would not be subject to Home Rule authority.


Sheep grazing beneath solar panels at Oregon State University.

mitted to a site or other details of a project.[4]

Participants also noted that they want developers to provide more education to members of the public who are interested in learning about a project. Some noted that there is widespread misinformation in their community concerning renewable energy. They highlighted the need for education about the opportunities available to the community, which would foster an understanding of how the community can benefit from a project and generate more local support. To be effective, this education needs to occur early in the planning process and be provided by a trusted source with credibility in the community, possibly a project manager who has worked on the project from its inception and been meaningfully involved in community outreach. It was also suggested that there should be a long-term educational program to teach children about renewable energy and energy infrastructure, so they will grow up knowledgeable about these subjects that will be increasingly intertwined with the impacts of climate change and water shortages in Eastern Oregon.

## 3. Land Use Values

Most renewable energy projects have been, and will likely continue to be, developed in counties in Eastern Oregon due to the greater potential for sun and wind in that part of the state. A large portion of Eastern Oregon land is zoned for agricultural use. Conserving farmland is therefore a high priority for communities in Eastern Oregon. However, the definition of High Value Farmland is problematic for some. Participants noted that High Value Farmland may be determined based on statutory definitions of soil classes and other factors. If one soil class is found to be predominant across a tract, the whole

4 Revealing a project's location and other details early in the planning process puts a developer at risk of legal action from individuals or groups that would oppose the project and may also put them at a competitive disadvantage with respect to other renewable energy companies. In addition, many potential sites are considered but never pursued.


Tractor at an Oregon farm.

farm is assigned to that soil class. Participants argued that this classification scheme can leave some valuable agricultural land unprotected while excluding less productive agricultural land from renewable energy development.

Counties in Eastern Oregon often contain a high proportion of public land, in some cases totaling more than 75% of the county. The limited private land is therefore highly valued. Participants indicated that the extensive amount of public land in their counties creates complicated dynamics within the community, making approaches to mitigation especially important. Some participants stated that they want mitigation to benefit their county, rather than "lock up" land that could be used for grazing. There is concern that current mitigation protocols for grazing only pertain to wildlife and not agricultural uses, and therefore do not always work in the community's best interests. Solar energy was perceived as the most flexible renewable energy source and potentially the best option for some counties in southeastern Oregon, but its typically larger footprint relative to wind makes mitigation for wildlife a more complex challenge to solve.

There are many factors to be considered when identifying lands that should be prioritized for development versus lands with a high potential for impacts and conflict that should be avoided. Participants expressed a general opinion that renewable energy developers should avoid irrigated farmland and be mindful of water use implications. They agreed that it is important for developers to avoid wildlife concerns as much as possible and understand the ecology and species that exist in the project area. Viewsheds and the openness of the landscape are deeply valued by rural communities. Participants suggested that, to the extent feasible, projects should be built where they do not conflict with these landscape qualities.

## 4. Energy Independence and Local Resource Capacity

Participants in listening sessions indicated that their communities generally agree about the need to move away from fossil fuels and are supportive of renewable energy. However, a potentially higher priority for them is making their communities energy independent and sustainable. Some of the communities we visited currently rely on electricity that travels a great distance on limited transmission lines, making them vulnerable to fire and other events that may disrupt transmission. While they are open to local generation of electricity, they also expressed interest in local battery storage that would make their communities more resilient in the event of blackouts and emergencies.[5] In addition, while there are already protocols requiring developers to plan for decommissioning of renewable energy facilities, counties would like more information to better understand decisions around decommissioning, as well as the cumulative effects of long-term renewable energy facilities on their land.

Some participants voiced that they need additional resources to learn about renewable energy and increase their energy resilience. There is interest in additional guidance for the proper siting of facilities, as some consider the current rules to be inadequate. They want to gain a better understanding of what renewable energy opportunities are available and how they can be explored and developed. To explore these opportunities, they would appreciate informational sessions or help creating suitability maps before developers pursue the siting of facilities in their communities.

5 Current regulations limit the ability of local renewable energy resources to serve local need. Developers are not compensated for providing local energy storage under the current regulatory framework.

# Siting Priorities and Development Area Characteristics

The growing impacts of climate change—in the form of extreme temperatures, floods, drought and wildfires—point to the need for rapid deployment of carbon-free, renewable electricity generation. Some of this capacity could be provided by solar installations on existing buildings, but the state is not expected to meet its energy goals without utility-scale facilities. Likewise, construction of new transmission infrastructure will be needed to meet the anticipated demand for renewable energy.

## General Principles to Guide Siting

Siting has been and will likely continue to be a challenge for renewable energy resources because of the relatively large footprint that is often required by generating facilities and transmission infrastructure. Overcoming siting challenges is a critical prerequisite for Oregon meeting its climate goals. However, as described in previous sections of this report, Oregonians also place tremendous value on the agricultural, scenic, recreation, habitat and cultural resources of Oregon's lands and waters. Many states and regions have struggled similarly to strike a balance between promoting a clean energy future and protecting key resources, and many have responded by articulating principles and guidance for the development of renewable energy. This section describes several of the landscape characteristics that are important to Oregon stakeholders and offers examples of processes for determining whether a proposed renewable energy site is consistent with those characteristics. The examples are drawn from processes that are already in place both in Oregon and around the country and reflect the key elements of effective siting that we heard during our outreach and listening sessions.

## Site Characteristics, Considerations and Processes That May Identify and Reduce Conflicts

Siting constraints are real but need not be insurmountable. According to the 2021 Solar Futures Study (U.S. Department of Energy Office of Energy Efficiency and Renewable Energy 2021): "Although land acquisition poses challenges, land availability does not constrain solar deployment in the decarbonization scenarios. In 2050, ground-based solar technologies require a **maximum land area equivalent to 0.5% of the contiguous U.S. surface area**. This requirement could be met in numerous ways including use of disturbed lands. **The maximum solar land area required is equivalent to less than 10% of potentially suitable disturbed lands**, thus avoiding conflicts with high-value lands in current use" (emphasis added). Early attention to good planning, use of previously disturbed lands and appropriate consultation with relevant agencies, tribes, stakeholders and knowledgeable individuals can potentially reduce siting challenges. This list of site characteristics draws from multiple other guidance documents, few of which are comprehensive in the suite of characteristics they describe. It is important to note that the examples of siting approaches from outside Oregon are specific to the states where they were created and may not be wholly applicable to the unique conditions of Oregon.

### Site Characteristic 1: High Wind or Solar Resource Potential

Resource potential is the critical driver of energy production potential. Oregon has relatively high solar resource potential compared to many states, with most of the state receiving annual average daily solar direct normal irradiance of at least 3.7 kilowatts per hour/meter$^2$/year (Sengupta et al. 2018). Wind resource potential varies

considerably across the state and is correlated approximately with elevation. Annual average wind speed in most areas is within the range of 4-7 meters/second. Wind potential is typically higher offshore than onshore.

Detailed maps of solar and wind potential in Oregon are included in the ORESA Mapping and Reporting tool, available at: https://tools.oregonexplorer.info/OE_HtmlViewer/Index.html?viewer=renewable

## Site Characteristic 2: Access to Existing Transmission and Distribution Networks with Available Capacity and Interconnection

The REIMA portion of the ORESA process found that access to available transmission with injection capacity is a significant challenge for renewable energy development: "Transmission access will be key to the future of renewable energy development in the state. Many areas of Oregon with high renewable energy potential have limited transmission capacity—there is less transmission infrastructure to access Oregon's best solar resources in central and southeastern Oregon, and where more significant transmission infrastructure does exist, such as along the Columbia Gorge, there is limited available capacity for new additions of generation. Without additional transmission infrastructure, Oregon will face challenges accessing its renewable energy potential" (ODOE 2022a). Three of the four large-scale solar projects that are currently operating in Oregon are located near Prineville, which is also home to several large technology data centers (Rogoway 2018). As major consumers of electricity, these entities provide a ready offtaker with substantial infrastructure capacity, circumventing the issue of transmission availability.

Maps of existing transmission lines and substations are available at: https://tools.oregonexplorer.info/OE_HtmlViewer/Index.html?viewer=renewable


Pronghorn buck at Hart Mountain National Antelope Refuge in southeast Oregon.

## Site Characteristic 3: Areas with Low Biodiversity Conflicts

Climate change is one of the top threats to biodiversity worldwide and its impacts are accelerating, although other threats like habitat loss, pollution and over-exploitation remain important and must not be ignored (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services [IPBES] 2019). Expanding the production and use of renewable energy is one of our most important tools to combat climate change (Intergovernmental Panel on Climate Change [IPCC] 2022), but it too can have local, regional or population-level impacts on wildlife and habitat. One example of this in the Northwest is the detrimental effect of hydropower on salmon populations (NWPCC n.d.).

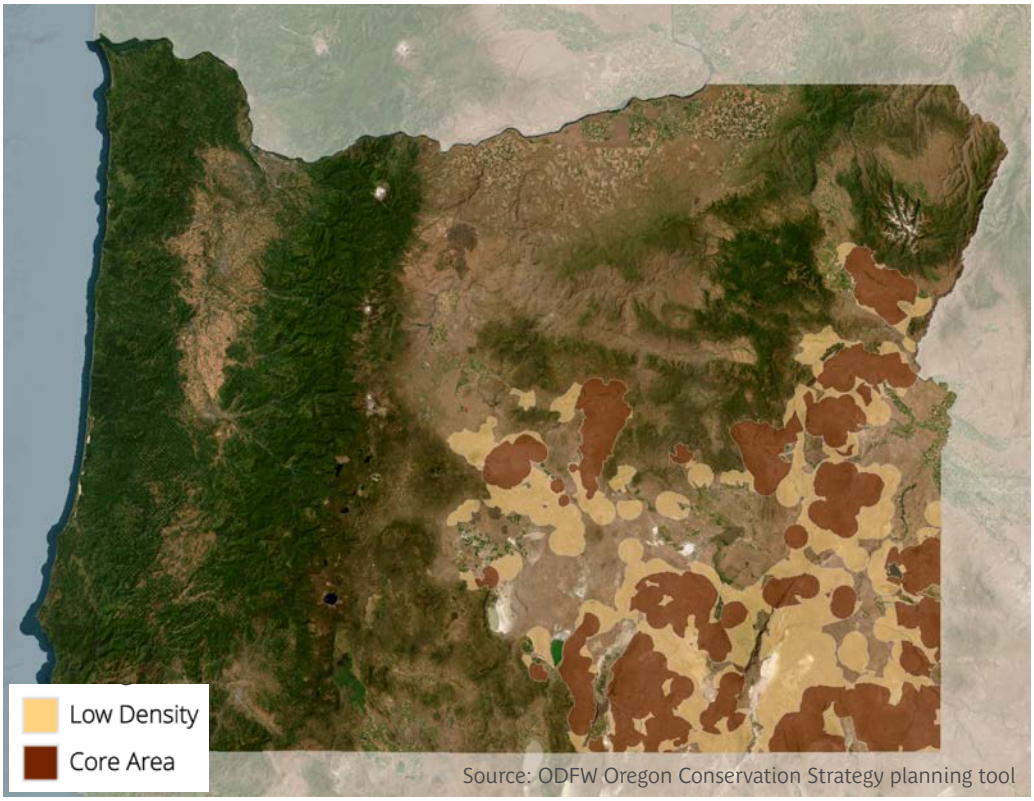
Concerns about wildlife impacts from wind turbines date nearly to the first large-scale wind power installations in the 1980s. The facility at Altamont Pass, California, was found to kill a surprising number of eagles and other raptors due to a combination of siting, land management and an early turbine design with lattice supports that encouraged perching near the rotor-swept area (Smallwood and Thelander 2005). Wind power has also been linked to potential direct impacts to other bird species and bats and to habitat effects for species like sage-grouse. However, a large body of information and practice has emerged to help understand, avoid and minimize both collision risk and habitat impacts (see https://rewi.org/results-catalog/). Concerns have been raised about the effects of solar power development on birds (Walston et al. 2016), migrating ungulates (Sawyer et

al. 2022) and other species. The first-ever joint report of the global scientific consortia working on climate change (IPCC) and on biodiversity loss (IPBES), warned that solutions to climate change, including renewable energy development, "can pose serious threats to biodiversity" and that "to be holistically effective, renewable energy development will benefit from consideration of a circular economy and, ultimately, biodiversity" (Pörtner et al. 2021, Finding 20).

Siting in areas with low biodiversity value would avoid these negative impacts as well as reduce time and cost to the developers. In a study of the sources of opposition to renewable energy projects, Susskind and colleagues (2022) found that environmental conflicts played a role in 60% of the case studies that they investigated. Specific biodiversity concerns that they highlighted include impacts to eagles, sage-grouse and other bird species, bats, mammal migrations, sensitive aquatic habitats and ecosystem services. A study in California compared large-scale solar development on eight parcels with low biodiversity value and eight parcels with high biodiversity value. The authors found that developments in low-biodiversity areas were permitted much more quickly (13 months on average) than those in areas of high biodiversity value (35 months on average). Furthermore, costs associated with mitigation, reclamation and species management averaged $0.14/watt or $9,000/acre less expensive on low-biodiversity-value lands than on high-biodiversity-value lands (Dashiell et al. 2019).

The EFSC standards that govern utility-scale renewable energy siting in Oregon require that proposed projects avoid, minimize or mitigate impacts to species listed as threatened or endangered and to high value habitats identified by the Oregon Department of Fish and Wildlife (ODFW). The ORESA map depicts some of these high value habitats, including wetlands and deer and elk winter range. In addition to the listed species and habitats that must be considered by EFSC, ODFW has produced the Oregon Conservation Strategy, which identifies "strategy habitats" and "strategy species" as key conservation targets (ODFW 2016). The strategy habitats include sagebrush ecosystems, grasslands, and several forest and woodland types including oak and aspen woodlands, ponderosa pine forests and late successional conifer forest. The 294 strategy species[6] were determined to be "Species of Greatest Conservation Need" on the basis of small or declining populations, at-risk status or other management concerns. Greater sage-grouse (Figure 4), northern spotted owl and Columbian white-tailed deer are a few examples of such species. The Conservation Strategy habitats and species can be viewed in an online map here: https://compass.dfw.state.or.us/visualize.

**Figure 4. ODFW greater sage-grouse core habitat areas**




The Oregon Biodi-

6 The strategy species include 17 amphibians, 58 birds, 29 mammals, five reptiles, 60 fish, 62 invertebrates, and 63 plants and algae.

versity Information Center (ORBIC)—part of the Institute for Natural Resources, a cooperative venture of Oregon's public universities—catalogs the recorded locations of rare plants and wildlife and maintains lists of all species in the state ranked by rarity and risk of extirpation. In addition to these lists, ORBIC provides an online wildlife viewer (**https://oe.oregonexplorer.info/Wildlife/WildlifeViewer**) that can be used to generate statewide maps of modeled habitat for any wildlife species, as well as lists of all species present in a given county, ecoregion, basin or watershed. ORBIC also manages the Oregon Explorer map viewer (**https://tools.oregonexplorer.info**), an interactive map with various natural resource layers including a detailed depiction of all habitat types in the state.

There are many examples of processes, guidelines and datasets for determining the habitat and biodiversity value of a site and for avoiding sites where large effects may occur. Different sets of existing guidelines have taken various approaches to identifying and reducing environmental impacts. The following examples illustrate some of these approaches, with each generally focused on different aspects of environmental impact.


Sage-grouse in snow.

## Habitat Avoidance Approaches

Several guidance documents outline habitat types that are of concern for a particular state or region and recommend avoiding development in those key habitats. For instance, the Maine Department of Inland Fisheries and Wildlife's (MDIFW) *Solar Energy Project Resource Guidance and Recommendations* (MDIFW 2020) recommends avoiding the habitats of rare, threatened and endangered species identified by the Maine Endangered Species Act. Other areas to be avoided are Significant Wildlife Habitats and Protected Natural Resources identified by state law. Significant Wildlife Habitats include deer wintering areas, seabird nesting islands, salmon areas, vernal pools, and waterfowl/waterbird habitat. Protected Natural Resources include coastal dunes, rivers, wetlands and fragile mountain areas.

Scenic Hudson's *Guide to Siting Renewable Energy in the Hudson Valley* (Friedrichsen 2018) also recommends avoiding certain types of resources: "wildlife and other critical habitat, including intact and connected wildlife corridors and migratory bird flyways; streams and stream corridors; wetlands and wetland buffer areas; river corridors and floodplains; ridgelines, steep slopes and other sensitive geological and hydrogeological formations; and valuable contiguous forests, such as those that serve as critical wildlife habitat and migration corridors, serve as carbon sinks or provide climate change resiliency."

The Wyoming Game and Fish Department's (WGFD) *Guidelines for Wind and Solar Energy Development* (WGFD 2021) emphasizes assessing habitat value and avoiding the highest value areas, selecting previously disturbed sites and communicating with the WGFD: "The selection of a project location and siting of infrastructure within the project area are the most critical choices in avoiding impacts to fish and wildlife from renewable energy development. Proponents should avoid high-value or sensitive fisheries and wildlife resources and large areas of unfragmented habitat, which can be identified through coordination with the Department and using geospatial data provided on the Department's website." While acknowledging that resource considerations may vary by region and renewable energy technology, the guidelines provide a framework for avoiding impacts to aquatic resources, federally threatened and endangered species, greater sage-grouse and several other bird species, bats, big game, and special fish and wildlife habitat features such as rock outcroppings, cliffs, caves, unique vegetation communities, riparian areas, springs, wetlands, water, nearby fish spawning locations, migration stopover habitat and food resources.

In Oregon, the EFSC siting standards require avoidance, minimization and mitigation of impacts to high value habitats, in accordance with the ODFW Habitat Mitigation Policy, which is broadly applicable to development activities (Oregon Secretary of State 2022b).

Use of the previously described Oregon natural resources mapping tools early in the planning process may facilitate selection of less biologically sensitive areas and minimize the need for potentially expensive mitigation. The tools may also be used to identify and avoid habitats outside the scope of the EFSC requirements, such as strategy habitats and areas occupied by strategy species, a voluntary approach that would highlight a proposed project's commitment to avoiding biodiversity conflicts.

### Tiered Approach: *U.S. Fish and Wildlife Service (FWS) Land-Based Wind Energy Guidelines* (FWS 2012) and the Oregon Columbia Plateau Guidelines (2008)

The voluntary Wind Energy Guidelines (WEGs) were developed following a several-year process in which a Federal Advisory Committee was convened by FWS that included conservation organizations, clean energy advocates, federal and state agencies, a tribal representative, wind industry representatives and academia. The WEGs are intended to help wind developers assess, avoid, minimize and compensate for impacts to species of concern, including migratory birds, bats, eagle and grouse species, and federally or state protected species. Although the WEGs are voluntary, FWS takes adherence to their methodology and communication protocol into account in the event of a violation of federal wildlife laws.

The tiered approach of the WEGs is intended to work in parallel with the site selection and evaluation process, wherein the developer assesses wind energy potential, transmission infrastructure, realty concerns and potential conflicts. The WEGs are specifically geared toward wildlife concerns and do not evaluate other sources of potential conflicts such as prime farmland, cultural resources or visual impacts. However, the preconstruction evaluation process encompassed by Tiers 1 through 3 (described below) could be adapted as a framework to gather increasingly specific information about these type of resource concerns as well.

Tier 1, the preliminary site evaluation, uses publicly available information and databases to identify places where wind energy development "poses significant risks to species of concern" or to screen a landscape or one or more potential sites to gain preliminary information about risks to wildlife and habitat. In the years since the publication of the WEGs, the amount and quality of publicly available information that a developer can draw on has increased significantly. The ORESA Mapping and Reporting Tool is an excellent example of the type of information that could inform a Tier 1 assessment for wildlife and other resources. It could be applied to either wind or solar energy. However, given the possibility that sensitive information about species, cultural resources or other potential sources of conflict might not be publicly available, communication with appropriate federal, state and tribal entities can help ensure that a full suite of information is considered.

Tier 2 is the site characterization, applicable when the developer is considering one or a few specific sites. It entails one or more site visits at appropriate times of the year to determine if known species of concern or their habitats are present on the site or if the site contains areas that are sensitive or precluded from development. This tier represents a more formal ground-truthing of site conditions. In some cases, Tier 2 information may clearly indicate that a site is of sufficiently low risk that the developer can proceed to permitting and development or of such high risk that the site should be abandoned. If uncertainty remains, the developer can move to Tier 3, which entails more detailed field surveys to characterize risk and identify potential mitigation options.

Another resource that offers a form of tiered approach that predates the WEGs is the 2008 Oregon *Columbia Plateau Ecoregion Siting and Permitting Guidelines*. This document, which has informed the siting practices of the ODFW and EFSC and was one of the resources consulted in the development of the WEGs, describes a siting process that includes 1) Macrositing, an early assessment that involves a literature review and initial scoping with agencies; 2) Pre-project Assessment that is analogous to Tier 2 and 3 of the WEGs; and 3) Micrositing after project approval to minimize impacts to wildlife and habitats.

### Prioritization Approach: Bureau of Land Management's Designated Leasing Areas

The BLM has developed a system to prioritize the processing of renewable energy applications in the lands it manages based on site characteristics. Top priority is given to lease applications submitted for areas identified in a BLM Resource Management Plan as designated leasing areas (DLAs), in accordance with 43 CFR [Code

of Federal Regulations] 2809. These DLAs include 19 Solar Energy Zones (SEZs) that were designated across six southwestern states in the Western Solar Plan (BLM n.d.). Oregon was not covered by the Western Solar Plan when it was finalized in 2012, and no SEZs or other DLAs are located in the state. However, at the time of the publication of this document in March 2023, BLM was preparing to undertake a new solar Programmatic Environmental Assessment (PEIS) that could result in an expansion of the plan area to include all 11 western states. In that event, BLM might choose to designate one or more SEZs in the 15.7 million acres of land managed by the agency in Oregon.

For lands outside of DLAs, BLM operates a three-tier system governed by 43 CFR 2804.35, finalized in December 2016. Lands designated as "high priority" for leasing generally avoid conflicts with wildlife and habitat (see examples of suitable sites below). Medium-priority applications may be located on lands that contain some sensitive resources. Per the prioritization checklist, the presence of "sensitive habitat areas, including important species use areas, riparian areas, or areas of importance for Federal or State sensitive species" is sufficient to merit a decrease in priority to "medium." Low-priority applications are those that may not be feasible to authorize, and therefore may not even be processed, because of the presence of one or more significant conflicts, including "designated critical habitat for federally threatened or endangered species, if project development may result in the destruction or adverse modification of that critical habitat."

In addition, some BLM districts also have local considerations that can change a project's priority. Local considerations in the Southern Nevada district, for instance, include sensitive wildlife or plant species (particularly desert tortoise), noxious weeds, documented archeological or Native American sites within a kilometer of the project area, the level or recreational activity and grazing allotments.

## Site Characteristic 4: Areas That Do Not Conflict with Agricultural Production

It is preferable, and in some cases required by law, for renewable energy facilities to be sited in a way that reduces conflicts with agricultural production. This is particularly relevant to utility-scale solar, transmission and storage facilities, given their larger footprint relative to wind turbines. Working farmland, which is important to local and regional economies and food security, is increasingly under threat of conversion to residential development and other land uses (Freedgood et al. 2020). Multiple organizations have released guidance to help direct solar

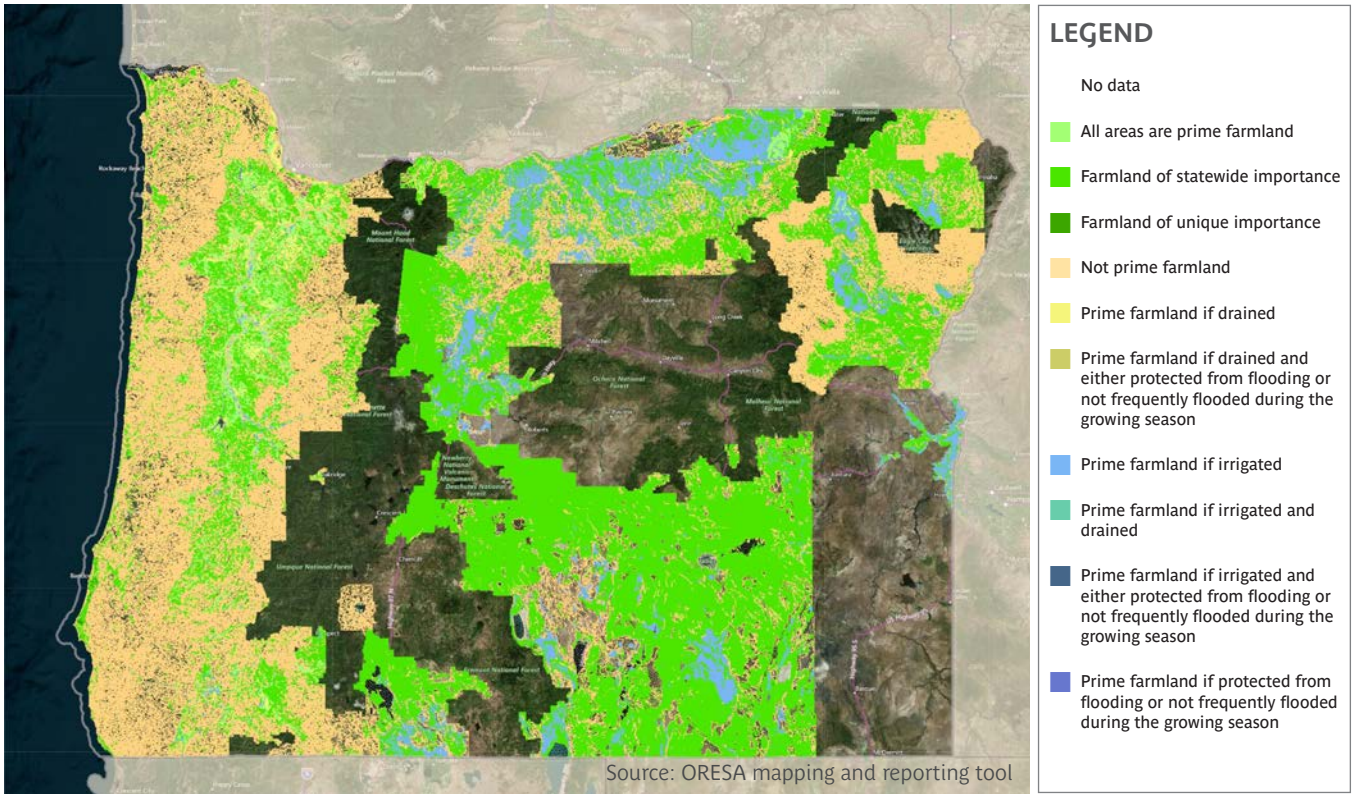

Aerial view of wind turbines in Oregon.

development to areas where impacts to agricultural production would be minimized and suggest how solar facilities can improve farm profitability and reduce the likelihood of conversion to urban sprawl. Several sets of guidelines emphasize the importance of avoiding highly productive farmlands in favor of land that is less valuable for agriculture, as well as incentivizing dual-use (or agrivoltaic) solar installations that are compatible with agricultural production. Two such examples include the American Farmland Trust's *Solar Leasing Guide for the Pacific Northwest* (American Farmland Trust 2022) and the New York State Department of Agriculture and Markets' *Guidelines for Solar Energy Projects* (NYSDAM 2019).

Oregon currently has extensive rules limiting solar development on high-value agricultural soils (Figure 5). Land use planning Goal 3 states that "Agricultural lands shall be preserved and maintained for farm use, consistent with existing and future needs" (DLCD 2019a). Permitting of development on agricultural land is governed by Oregon Administrative Rule (OAR) 660-033-0130, which was amended in 2019 to state that "a photovoltaic solar power generation facility shall not use, occupy, or cover more than 12 acres" of high-value farmland (DLCD 2019b). Additionally, high-value farmland may not be used for more than 20 acres of dual-use (or agrivoltaic) systems, in which solar facilities and agricultural production are sited together. The definition of high-value farmland is found in ORS 215.710 (Oregon State Legislature 2021). It generally encompasses all Class I and II soils, as well as other soil classes in certain regions. This results in a large percentage of agricultural lands being considered high-value farmland, presenting barriers for development on lands that might have lower agricultural potential than is suggested by the "high-value" designation due to factors including water availability.

There are locales that take a more granular approach to siting regulations that is intended to allow development on marginally productive soils to meet renewable energy

## Figure 5. Farmland soil classes in Oregon




This dataset is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey.


Historic homestead on Hart Mountain National Antelope Refuge.

goals while also preserving truly valuable farmland. For example, NYSDAM (2019) produced a hierarchy of agricultural land types ranked from most to least important for avoidance of solar development: 1) active rotational farmland (most important); 2) permanent hay land; 3) improved pasture; 4) unimproved pasture; 5) other support lands; 6) fallow/inactive farmland (least important). Each of these six categories is further divided based on soil type: 1) prime farmland soils; 2) prime farmland soils (if drained); 3) soils of statewide importance.

Dual-use systems may have potential to avoid conflicts between solar and farm use. Some types of grazing operations, such as free-range poultry and sheep, are potentially compatible with solar. Solar panels also create a microclimate that stays cooler during the day because of their shade, but also stays warmer at night (Marrou et al. 2013). In some places, this effect might create favorable conditions for growing shade-tolerant and cool-season crops, such as leafy greens and may increase yields of some crops during hot and dry conditions (Weselek et al. 2021). Because the agrivoltaic industry is nascent in the U.S. there are many outstanding questions about the scale at which it can operate, the compatible types of crops or livestock, and other issues of facility design and land management. Oregon State University is an emerging leader in research on this topic, so locally relevant information should increase in the coming years. Some of the results from Europe, where agrivoltaic production is more widespread, may be of particular interest to Oregon: solar panels have been located above vineyards in France, resulting in reduced need for irrigation, fewer grapes lost during heat waves and improved wine grape quality (Rollet 2020).

## Site Characteristic 5: Areas That Minimize Conflicts with Communities, Cultural Resources and Historic Values

Iowa state code requires renewable energy projects over 25 MW to include "a forecast of the impact on cultural resources including known archaeological, historical and architectural properties, which are on, or eligible for, the

National Register of Historic Places" and "a forecast of the impact on landmarks of historic, religious, archaeological, scenic, natural or other cultural significance" (Iowa Code 199—24.4(3)(g-h)). The Iowa Environmental Council has published *Successful County Wind Siting Practices in Iowa* which recommends minimizing noise conflicts, perceived visual flicker and safety concerns by establishing "setbacks from residential dwellings of between 1,000 feet and 1,250 feet at the most. Setbacks for property lines and other rights of way should be approximately 1.1 times the turbine height, or about 600 feet" (Iowa Environmental Council 2019).

The *Siting Guidelines for Wind Power Projects in South Dakota* (South Dakota Department of Game, Fish and Parks [SDGFP], n.d.) recommends working with the South Dakota State Historical Society, tribal representatives and other experts to "identify and avoid potentially sensitive cultural, historical, or pre-historical resources," via site surveys and project design, noting that the location of some sensitive resources may be confidential.

BLM's prioritization scheme (BLM, n.d.) assigns the second-lowest priority to proposed projects located in "areas where project development may adversely affect resources and properties listed nationally such as the National Register of Historic Places, National Natural Landmarks, or National Historic Landmarks." The National Renewable Energy Lab's *Implementing Solar PV Projects on Historic Buildings and in Historic Districts* (Kandt et al. 2011) includes the principles of minimizing visual and aesthetic effects from solar panels and associated infrastructure in historic districts and on and near historic buildings.

In Oregon, preservation of historic values is incorporated into land use planning Goal 5 (DLCD 2019a). During the renewable energy site approval process, EFSC applies a standard for Historic, Cultural, and Archaeological Resources (OAR 345-022-0090) (Oregon Secretary of State 2022c). If the EFSC review finds that a proposed project may affect such resources, it may be necessary to obtain a permit from the State Historic Preservation Office. Facilities permitted at the county level must also avoid impacts to historic, cultural and archeological resources (ORS 215.446(3)(b)). Oregon is home to nearly 2,100 places listed on the National Register of Historic Places (National Park Service n.d.), but the vast majority of these are within cities and towns that govern solar installations under their zoning codes. For instance, Portland, which has nearly 600 register entries, automatically allows solar installations on rear-facing roofs in historic districts (Historic Laurelhurst n.d.). The ORESA map tool includes a layer for National Historic Landmarks and the National Register of Historic Places.

## Site Characteristic 6: Areas with Low Recreational and Scenic Value

In Oregon, protection of scenic resources falls under state land use Goal 5, while Goal 8 addresses the need to preserve opportunities for outdoor recreation. EFSC applies siting standards to evaluate potential impacts to significant scenic resources (OAR 345-022-0080) and to important recreational opportunities (OAR 345-022-0100) (Oregon Secretary of State 2022c). Many land ownerships have guidelines in place to protect the recreational and aesthetic value of their lands. The U.S. Forest Service, for instance, incorporates recreational values, wilderness characteristics and "scenery management" into forest planning (36 CFR Part 219), with potential implications for projects. The Forest Service also manages the federally designated Columbia Gorge National Scenic Area. The Federal Highway Administration has designated 10 National Scenic Byways in Oregon (Federal Highway Administration n.d.).

BLM's prioritization scheme (BLM n.d.) assigns high priority to proposed projects located on "lands currently designated as Visual Resource Management Class IV," the class with the least visual resource sensitivity. Projects are assigned medium priority if located on "lands currently designated as Visual Resource Management Class III" and low priority if located on "lands currently designated as Visual Resource Management Class I or Class II" and "lands near or adjacent to Wild, Scenic, and Recreational Rivers and river segments determined suitable for Wild or Scenic River status, if project development may have significant adverse effects on sensitive viewsheds, resources, and values." In Oregon, most of the BLM lands with Visual Resource classes I and II are concentrated in the southeast corner of the state or are near national parks, monuments or wildlife refuges. The ORESA map includes a layer for these areas.

With respect to recreation, BLM's prioritization

scheme (BLM 2022) states that medium-priority applications may include lands that contain "BLM special management areas that provide for limited development, including recreation sites and facilities" and "areas where a project may adversely affect conservation lands, including lands with wilderness characteristics that have been identified in an updated wilderness characteristics inventory." In addition to those potentially affecting Wild and Scenic and Recreational Rivers, low-priority applications include those on "lands near or adjacent to lands designated by Congress, the President, or the Secretary for the protection of sensitive viewsheds, resources,


Sunset landscape at Hells Canyon.

and values (e.g., units of the National Park System, Fish and Wildlife Service Refuge System, some National Forest System units, and the BLM National Landscape Conservation System), which may be adversely affected by development."

Several states and regions have published further guidance on renewable energy and scenic resources. South Dakota's *Siting Guidelines* (SDGFP n.d.) recommend that developers "consider visual impacts" using simulations, listen to stakeholders, minimize road construction and avoid siting in "designated scenic byways and popular landscapes." Scenic Hudson's *Guide to Siting Renewable Energy in the Hudson Valley* (Friedrichsen 2018) recommends protecting scenic views when installing renewable energy: "Visual impacts are likely to occur for most large-scale wind projects. The single most effective means for reducing or avoiding these impacts is to site these facilities away from highly valued landscapes and designated visual resource areas to preserve existing visual integrity and scenic vistas." The guidelines also recommend that solar facilities be kept "out of sight from public roads, parks, historic sites and other sensitive viewing areas," to "avoid or minimize their impacts on scenic resources—including open spaces, distant views, distinct natural features, and cultural and historic resources," through attention to siting (such as avoiding areas that are visible from a distance), use of vegetative screening and careful placement of transmission lines. The guidance also recommends avoiding "preserved open space—including parks, preserves, and recreational lands—where the development would be incompatible with the property's conservation purposes, a conservation easement or other existing legal restrictions."

## Site Characteristic 7: Areas That Do Not Overlap With Military Operations

A key element of the ORESA process was the *U.S. Military Mission and Renewable Energy Coordination in Oregon* report (ODOE 2021), which documents the potential conflicts of wind and solar development with both surface and air military operations. These conflicts may include radar and communications interference, low-elevation aviation hazards, glint and glare (although modern solar panel design has substantially reduced this problem) and transmission issues. The report recommends best practices to reduce conflicts with military operations and places a strong emphasis on early consultation, stating that "developers should meet with the appropriate local military representative to discuss the possibility of learning more about the installation's mission and operations, identify areas of mutual interest, foster a viable early notification process, and discuss if there is need for a Compatible Use Plan."

A detailed map of military training areas, airspace corridors, and other operational areas is available at: https://tools.oregonexplorer.info/OE_HtmlViewer/Index.html?viewer=renewable. There is also a federal clearinghouse for energy siting compatibility at: https://www.acq.osd.mil/dodsc/index.html

## Site Characteristic 8: Areas that Do Not Impinge on Tribal Sovereignty

When a developer submits a Notice of Intent to EFSC identifying a proposed renewable energy facility, EFSC rules (345-020-0011) require that the contents include evidence of consultation with the Legislative Commission on Indian Services to determine possible effects on tribal historic and cultural resources (Oregon Secretary of State 2022d). Potentially affected tribes are asked to evaluate proposed facilities and provide comments during the EFSC review process (ODOE 2020).

The most extensive locally relevant recommendations for tribal engagement were published by the Columbia River Intertribal Fish Commission (CRITFC) in *Energy Vision for the Columbia Basin* (CRITFC 2022). This document states: "CRITFC and its member tribes envision a future where the Columbia Basin electric power system supports healthy and harvestable fish and wildlife populations, protects tribal treaty and cultural resources, and provides clean, reliable, and affordable electricity." It provides 43 recommendations, with highlights that include:

- "Harness Renewable Resources. Renewable resources in combination with storage and electric load management can create an environment that is better for fish, wildlife, and other tribal resources.
- Strategically Site Renewable Resources. Develop a regional plan for where renewable resources should be developed, and where they should not, and to provide expeditious siting with clear and uniform standards across all political subdivisions."

## Examples of Sites Consistent with These Characteristics

Many of the existing guidelines for low-impact renewable energy development emphasize the use of previously disturbed sites and locations proximate to existing infrastructure. In addition to rooftops and parking lots, these include places where soil and habitat have been previously altered and where soil quality is not appropriate for agriculture. Similarly, lands impacted by surface mining, industrial use and other types of brownfields may hold significant potential for renewable energy development.

The Environmental Protection Agency (EPA) *RE-Powering America's Land Initiative* (**https://www.epa.gov/re-powering**) encourages communities to consider renewable energy development on currently or formerly contaminated lands, landfills and mine sites, and other underutilized parcels. It includes a mapping tool and decision tree to help determine site feasibility. The EPA's database for Oregon includes 16 sites in the Abandoned Mine Land program, 42 Resource Conservation and Recovery Act (RCRA) and Superfund sites, 545 brownfields and nearly 5,500 sites designated by the Oregon Department of Environmental Quality. The total estimated amount of energy that could be produced on Oregon sites based on acreage and energy potential data is over 42 gigawatts (GW) from solar or 9 GW from wind. One significant constraint is that many of the potential sites are either located far from existing transmission lines or the nearest transmission infrastructure has limited capacity. Restricting the database to only those sites with available transmission within two miles still yields potential generation of 7 GW from solar or 908 MW from wind.

Another category of land use potentially compatible with the site characteristics is the unirrigated "corners" of fields irrigated by a center-pivot irrigation system. A study by the National Renewable Energy Laboratory for the state of Colorado found that the state has capacity for 223,418 acres of installed PV panels in non-irrigated corners, with a potential annual yield of 56,821 GW hours of electricity (Roberts 2021). Oregon has roughly half as much acreage as Colorado in large, irrigated plots. A useful analysis of pivot corner solar capacity in Oregon would consider soil type constraints and whether such areas are viable for development or are too patchily distributed to feasibly link to transmission and distribution infrastructure. Finally, the use of floating photovoltaic generators (or "floatovoltaics") installed on irrigation canals, quarry ponds and other water bodies is another idea worthy of investigation. Much remains to be learned about its potential, technical feasibility, and effects on water resources and aquatic ecosystems (Almeida et al. 2022).

# Renewable Energy Development Incentives

While a set of voluntary siting guidelines developed with broad stakeholder input can offer a roadmap for how to responsibly site renewable energy development, the questions of how and why such guidelines should be followed remain open. One possible answer is to make development incentives available for projects that integrate voluntary siting guidelines into the project design process. Such incentives could make siting renewable energy projects in low-impact areas easier or less costly. Availability of incentives will hinge on factors including support from state lawmakers, the authority and budgets of state agencies and/or the latitude state agencies have when undertaking renewable energy project review and permitting.

## Types of Incentives

For the purposes of this section, we propose that project proponents, state regulators, legislators and interested stakeholders consider three types of incentives that could be made preferentially available to projects utilizing these siting guidelines: monetary, permitting and performance. Each category is briefly defined below.

**Monetary incentives**: These include the common types of monetary supports or subsidies currently available to developers directly from governments, such as the federal investment tax credit (ITC) and the federal production tax credit (PTC).

**Permitting incentives**: These include measures developed by the legislature and/or state regulators that give preferential treatment to permit applications in the form of expedited review or prioritization for approval.

**Performance incentives**: Performance incentives are akin to sustainability certification efforts, which typically aim to demonstrate that a product's production honored a set of environmental and social standards. In the renewable energy field, performance incentives would function by creating metrics to highlight for investors and power purchasers certain elements of project design that show a project has been designed to minimize conflict and environmental impacts or otherwise indicate a project's overall desirability and sustainability.

By offering benefits to developers, rather than imposing restrictions and costs as is often the case with regulations, incentives may encourage developers to engage more proactively in low-impact planning. In addition to guiding the siting of projects to low-impact areas, incentives in the form of regulatory flexibility or monetary supports may have the additional benefit of accelerating the development of renewable energy overall. The Oregon legislature and regulatory agencies can enact effective monetary permitting incentives, and it may be possible to implement performance-based incentives more quickly since they would not necessarily require government action. Pursuing incentives outside of government may also prove less contentious with developers, communities and other renewable energy stakeholders.

## Outreach to Developers

The OSSC partners conducted outreach to developers and experts with deep experience siting renewable energy projects in Oregon to gauge their perceptions of and interest in different types of incentives. Those who provided feedback generally emphasized the regulatory burden faced by projects in the state, particularly with respect to protections for agricultural land and mitigation for wildlife impacts. There is strong interest in permitting incentives that expedite the permitting process or allow more flexibility for meeting mitigation requirements in areas identified as preferred for renewable energy development. Developing any permitting incentive with guardrails to ensure adherence to robust siting and community engagement principles and requirements could alleviate that opposition.

Given the strict regulatory environment, developers expressed skepticism that monetary incentives would effectively spur renewable energy development. However,

some noted that tax credits could be used to encourage the colocation of wind and solar development or that subsidies could offset the higher material costs of dual-use (agrivoltaic) solar. The consensus was that advancing either monetary or permitting incentives would require an act of the legislature or modifications to state land use laws. There was interest in performance incentives, partly because they could be implemented without government intervention. Some respondents suggested a performance incentive could be achieved if large corporate power consumers adopted a "standard of excellence" with low-impact criteria that renewable energy producers must meet. Others noted that environmental advocacy organizations could affect a performance incentive by providing letters of support during the permitting process for projects that meet pre-defined siting standards.

## Incentives Potentially Available in Oregon

### 1. Monetary

**Existing:** The Inflation Reduction Act has extended and modified existing clean energy tax credits like the Renewable Energy Production Tax Credit (which becomes the Clean Energy Production Tax Credit in 2025) and the Energy Investment Tax Credit (which becomes the Clean Energy Investment Tax Credit in 2025). For projects meeting the requirements of each credit, these are available in Oregon.

**Potential:** Via legislation, Oregon could offer state tax credits, loan guarantees and other financial incentives to complement available federal incentives and lower the costs of developing renewable energy projects in the state. Oregon could look to the example of other states, such as New Mexico, which offered a now-sunset production tax credit for utility-scale renewable energy facilities (7-2A-19 NMSA 1978) modeled on the federal system.

### 2. Permitting

**Existing:** None.

**Potential:** Permitting on federal lands could provide a model either for state lands and/or federal lands located in Oregon. For example, under the Western Solar Plan (BLM, n.d.), the BLM identified SEZs in six western states where "area[s are] well suited for utility-scale production of solar energy, [and] where the BLM will prioritize solar energy and associated transmission infrastructure." Projects proposed within SEZs receive priority review by the agency. The BLM has also implemented a screening checklist to prioritize proposed solar and wind projects located outside of SEZs based on a series of site characteristics.

Similar options for permitting incentives could be pursued in Oregon. For federal lands, the state could request that BLM analyze lands for possible designation as SEZs within Oregon's borders. This would be facilitated by the inclusion of Oregon in an updated Western Solar Plan. For lands subject to state regulation and permitting, developers and advocacy organizations could work with regulators to amend current state requirements to prioritize or expedite permitting of projects that, for example, demonstrate adherence to voluntary siting guidelines intended to minimize environmental, social or economic conflicts.

### 3. Performance

**Existing:** None.

**Potential:** With the passage of HB 2021, Oregon utilities must produce biennial reports that "assess the community benefits and impacts of the electric company." If performance incentives were to be established, the metrics behind those incentives could be used to comply with this reporting requirement and enhance a project's competitiveness both in terms of pre-construction financing and post-construction energy sales. A performance-based incentive scheme could further be used by utilities to help demonstrate adherence to social, environmental and economic indicators that demonstrate the sustainability and overall desirability of the projects within the utility's portfolio. As suggested by developers during outreach for this project, major purchasers of electricity could be encouraged to establish their own set of standards that hold power producers accountable for low-impact siting and design. Influential advocacy organizations could also incentivize renewable energy developers to meet their own siting standards by offering to voice support for their applications during the permitting process.


Sagebrush and mountain landscape at Cline Buttes Recreation Area.

# Conclusions

Oregon has recognized the importance of combating climate change and has committed to ambitious goals for reducing carbon emissions by moving away from emitting electricity resources. Oregon stakeholders and communities understand that a significant expansion of renewable energy generation in the state will be required to meet these goals. This expansion will require the use of land that is currently valued for other uses, including wildlife habitat, agriculture, recreation and scenic and historical qualities. It is important to understand that the development of renewable energy facilities has potential to conflict with these other land uses. Therefore, meeting Oregon's climate change commitments will likely require tradeoffs. There are no solutions that can optimize all of Oregon's land use values in all areas. The best solutions will be those that thoughtfully balance the priorities of the state and its residents. Doing so requires that we first define the values and principles that underlie those priorities. It is also necessary to understand the specific characteristics of the lands we value. Most of all—in accordance with Goal 1 of the land use planning goals—it is essential to listen to the concerns of Oregon's communities, tribes and stakeholders and to engage them early in the planning process for all proposed renewable energy development.

Through the OSSC project, we have attempted to understand the values, site characteristics and engagement processes and develop the voluntary guidelines presented in the next section that we believe can lead to well-balanced renewable energy siting decisions. We acknowledge that the issues surrounding renewable energy in Oregon are complex, nuanced and rapidly evolving. Neither this report nor any other individual effort can be expected to encompass all aspects of responsible renewable energy siting. We see our project as complementary to other ongoing and future efforts, such as those that would produce data and mapping tools and those that would advocate for new legislation or regulatory change. Although concerted progress is necessary to confront the urgent threats of climate change, we understand that the "Oregon way" of citizen engagement and deliberative decision-making should not be rushed. Careful planning now will pay dividends over the long term.

We hope that this report will be embraced by renewable energy developers, communities, advocates for clean energy and natural and productive landscapes, and other interested parties. We hope that these audiences will find this material useful, and that it will play a role in making the renewable energy siting process easier, less contentious and more broadly beneficial. Of course, our effort has only scratched the surface and there is much work to be done. Further study is needed. Next steps should include outreach to more communities—especially more tribes—than we were able to accomplish over the course of this project. The focus should remain on expanding and deepening collaboration to give more voices a part in shaping Oregon's renewable energy future.

# Voluntary Guidelines

Through careful consideration of the perspectives of various Oregon stakeholders, OSSC has drafted the following set of voluntary guidelines that address renewable energy site selection, community engagement and community benefits. While we aspired to develop guidelines through consensus, we understand that the results may not satisfy the concerns of all stakeholders. As previously noted, the path forward for renewable energy in Oregon will likely not be based in unanimity. Rather than attempting to establish a binding set of rules agreed to by all, we offer these guidelines as best practices to be considered when planning renewable energy facilities. The guidelines were not conceived as a model for future regulation and should not be treated as such because they were not developed through an open public process. We acknowledge that each guideline may not be achievable in every situation. We also recognize that there is overlap between the guidelines and the existing requirements of Oregon's land use planning system, and that the current practices of developers are often consistent with many of the guidelines.

## Siting Guidelines

Reaching Oregon's clean energy targets will require a massive investment in renewable energy generation. At the same time, many of the sites with the best conditions and fewest obstacles to development have already been utilized. Other land use demands, including for wildlife habitat, agriculture and recreation, are not expected to abate. Finding new sites for renewable energy facilities will therefore require coordination, compromise, and a clear understanding of the costs and benefits for all affected parties.

Oregon state law already lays out a detailed process for approval of projects by EFSC and local jurisdictions. The following guidelines are not intended to replace that process nor to impose additional requirements or hurdles. Rather, they seek to help project proponents, decision-makers and interested parties understand some of the key siting concerns expressed by Oregon stakeholders. We hope that greater consideration of these concerns will complement existing protections and encourage siting of renewable energy projects in areas consistent with the characteristics described in this document.

## Guidelines for Developers

- Consider the eight site characteristics when evaluating potential sites for renewable energy generation. To the extent practicable, avoid siting projects in areas that:
  - Are high in biodiversity or may support sensitive species
  - Have a history of high levels of agricultural production
  - Contain important or significant cultural or historic resources or are within the viewsheds of important cultural or historic sites
  - Are highly valued for their scenic qualities or recreational opportunities
  - Are within defined areas important to military operations
  - Have potential to lead to conflicts with tribal sovereignty, values, and interests
- To the extent practicable, site renewable energy projects on previously disturbed or unproductive lands
- Seek out relevant available data and follow recommended survey protocols to better understand the characteristics of potential sites
- Engage early in the planning process with the relevant agencies, community representatives, and organizations to garner input on the characteristics of potential sites

- Implement avoidance, minimization and mitigation measures to reduce impacts and engage stakeholders when developing mitigation concepts

### Guidelines for Agencies

- Respond to developer and local government requests promptly and thoroughly to provide the data, additional contacts, assessment protocols, and other information that can help determine site characteristics
- Within existing regulations, allow flexibility for and consider granting exceptions to developers who have demonstrated a good faith effort to evaluate the eight site characteristics and have proposed sites that are consistent with them

### Guidelines for Communities

- Assess whether sites consistent with the eight characteristics are present in the community's jurisdiction and encourage developers to pursue projects at those sites

## Guidelines Related to Community Engagement and Benefits

OSSC partners propose the following guidelines based on input received through the community outreach process. These guidelines are intended to encourage best practices for developing renewable energy projects that benefit and earn the support of host communities, resulting in better overall outcomes. We present them with the understanding that they are not a comprehensive list of all potentially useful guidelines for community engagement and benefits. In addition, because all Oregon communities are unique, we acknowledge that each guideline may not apply to all communities in the state.

### Guidelines for Developers

- Collaborate with local communities early and often
  - Reach out to communities and county planners before committing to a preferred location or project design, to the extent allowed by concerns about project security or liability
  - Regularly provide information to, and solicit feedback from, local leaders and community members
  - Offer communities opportunity to provide input and help shape project siting and design
  - Consider local needs and interests – recognize that the concerns of different communities are unique
  - Open offices in areas where projects are located or proposed to serve as a local point of contact
  - Offer education to local communities about the potential benefits and costs of proposed projects
  - Be transparent about plans for decommissioning renewable energy facilities
- Integrate community benefits into project planning
  - Seek "win-win" scenarios with host communities
  - Prioritize local resilience by promoting transmission and distribution projects that will make the supply of electricity more reliable in the communities where it is generated
  - Recruit locally for jobs associated with renewable energy projects
  - Provide training to develop a skilled local workforce

### Guidelines for Communities

- Participate in the updating of local comprehensive plans to ensure they accurately reflect local values and priorities
- Understand existing programs for local benefits based on property taxes and other sources of revenue associated with renewable energy development and engage in the local budgeting process to ensure that those opportunities are fully utilized

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