



Oregon

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Date: August 23, 2018

To: Oregon Energy Facility Siting Council (EFSC or “the Council”) Appointed Solar PV Rulemaking Advisory Committee (RAC)

From: Luke May, Siting Analyst
Max Woods, Senior Energy Policy Advisor
Todd Cornett, ODOE Assistant Director

Subject: RAC Meeting #1 Staff Report

Agenda

Thursday, August 30, 2018

10:00 a.m. to 2:00 p.m.

Meitner Conference Room, Oregon Department of Energy

550 Marion St. NE

Salem, OR 97301

<u>Start:</u>	<u>End:</u>	<u>Topic:</u>
10:00 a.m.	10:05 a.m.	Introductions and Format
10:05 a.m.	10:15 a.m.	Scope of Rulemaking (3 Questions)
10:15 a.m.	10:20 a.m.	Purpose of Meeting
10:20 a.m.	11:05 a.m.	Background Information
11:05 a.m.	11:25 a.m.	Question #1 – Whether Rulemaking is Needed
11:25 a.m.	1:20 p.m.	Question #2 – Potential Objective Criteria - Includes break to get lunch (provided) and working lunch
1:20 p.m.	1:40 p.m.	Question #3 – Potential Solar PV Specific Standards
1:40 p.m.	1:55 p.m.	Public Comment
1:55 p.m.	2:00 p.m.	Wrap Up and Next Meeting

To participate by teleconference, please call toll-free:

1-877-873-8017 and enter participant code 799345.

Please Note that the URL in this Staff Report is different from the URL distributed to the RAC

To register for the meeting’s webinar:

<https://connect9.uc.att.com/service32/meet/?ExEventID=8799345>

Overview

At the June 29, 2018 EFSC meeting, the Council voted to direct Oregon Department of Energy staff to begin the solar PV rulemaking project. Council also appointed a RAC. The RAC membership is included as Attachment A to this staff report. You are receiving this staff report because you or your organization was appointed by EFSC to be on the RAC. We thank you for your participation. This staff report is intended to provide a summary of the issues to be addressed in the rulemaking project, an agenda for the first RAC meeting, and background information that will be referenced throughout the rulemaking project.

Staff proposes to hold three RAC meetings, with the possibility of additional meetings as deemed necessary after assessing input from RAC members. The first meeting is at the Oregon Department of Energy office in Salem. Staff tentatively proposes its second meeting in Prineville (time and place TBD), a third meeting in Boardman (time and place TBD), and a fourth meeting (if necessary, time and place TBD). All meetings will include a telephone and webinar option for remote access.

Scope of Rulemaking Project (3 questions)

As directed by EFSC, the purpose of this rulemaking project is related to three questions:

- 1) Whether multiple non-EFSC jurisdictional solar PV facilities could aggregate in a manner that is functionally equivalent to an EFSC jurisdictional solar PV facility?
- 2) If numerous non-EFSC jurisdictional solar PV facilities may aggregate in a manner that is functionally equivalent to an EFSC jurisdictional facility; should new rules identify objective criteria to determine whether multiple non-EFSC jurisdictional solar PV facilities will be classified as a “single energy facility”?
- 3) Whether standards should apply specifically to solar PV facilities?

Background on the Issue

There are several related issues and topics that the Department believes could be examined to help inform this rulemaking project. The following documents are included as attachments and will be referenced in the first RAC meeting. Additional information regarding these attachments is included below in this report:

- **Attachment A**- RAC Member List
- **Attachment B** - “15 Questions” for wind facilities
- **Attachment C** - ONDA Petition to EFSC for Rulemaking (2008)
- **Attachment D** - LCDC: Solar PV Siting Rule on EFU Land, OAR 660-033-0130(38) Subsection (e) - “Photovoltaic solar power generation facility” definition
 - Tract Criterion
 - 1,320 Ft. Criterion
- **Attachment E** - EFSC Energy Generation Rules – OAR 345-001-0200 through 0220

Purpose of Rulemaking:

i. Summary of the Issue

EFSC's statutory authority directs the Council to perform duties described in ORS 469.320, which mandates that a facility shall not be constructed or expanded unless a site certificate has been issued. EFSC jurisdiction for solar PV energy facilities is based on the acreage used by the energy facility, as described at ORS 469.300(11)(a)(D):

A solar photovoltaic power generation facility using more than:

- 100 acres located on high-value farmland as defined in ORS 195.300;
- 100 acres located on land that is predominantly cultivated or that, if not cultivated, is predominantly composed of soils that are in capability classes I to IV, as specified by the National Cooperative Soil Survey operated by the Natural Resources Conservation Service of the United States Department of Agriculture; or
- 320 acres located on any other land.

Solar PV facilities below these thresholds are reviewed and permitted by local governments, either counties or cities. Non-EFSC jurisdiction solar facilities sited in proximity to one another raises the issue of whether the Council's statutory authority may be triggered.

Counties have raised concerns relating to potential impacts of solar facilities. As of August 2018, Yamhill County restricted the siting of solar facilities on "high value farmland."¹ The Yamhill County Staff Report indicates that "many neighboring property owners ... as well as organizations have contacted the County with concerns about allowing these facilities on properties that are actively being farmed, particularly those farms with higher quality soils." ODOE understands that Marion County is considering addressing similar concerns.

EFSC rules as listed in OAR Chapter 345 Division 22 require an analysis of the impacts of a proposed facility against multiple Council standards, including soil (OAR 345-022-0022), land use (OAR 345-022-0030), fish and wildlife habitat (OAR 345-022-0060), threatened and endangered species (OAR 345-022-0070), and other issues. As such, the determination of whether numerous small-scale energy facilities are tantamount to one energy facility is important to ensure that EFSC and ODOE uphold its statutory mandate, including an evaluation of a facility's potential impacts and implementation of mitigation, as appropriate, in accordance with EFSC standards and rules.

¹ http://www.co.yamhill.or.us/sites/default/files/G-01-17.pkt_.pdf

ii. Council’s Statutory Duties and the Definition of Energy “Facility”

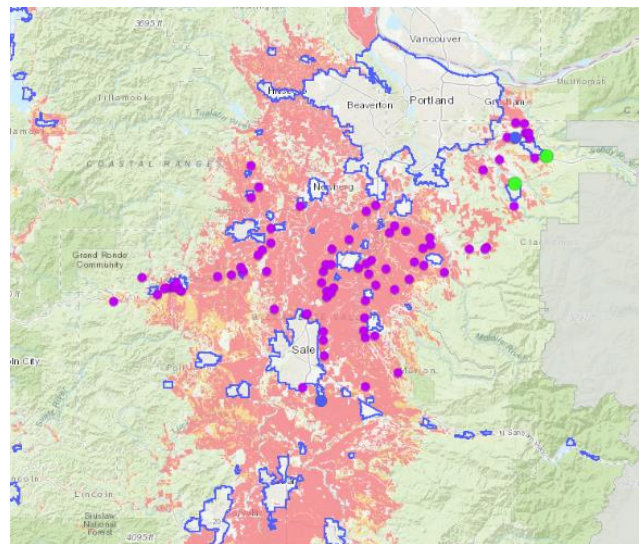
As noted above, the Council is statutorily tasked with reviewing proposed energy facilities, and issuing site certificates for those facilities that meet all applicable Council standards. ORS 469.310 states that the:

“[s]iting, construction and operation of energy facilities shall be accomplished in a manner consistent with protection of the public health and safety and in compliance with the energy policy and air, water, solid waste, land use and other environmental protection policies of this state. It is, therefore, the purpose of ORS 469.300 to 469.563, 469.590 to 469.619, 469.930 and 469.992 to exercise the jurisdiction of the State of Oregon to the maximum extent permitted by the United States Constitution ...”

EFSC has established standards that govern the siting of jurisdictional energy facilities. These standards are included within OAR Chapter 345 Division 22, which implements the policy directive of ORS 469.310. As such, it is the Council’s statutory duty to ensure that EFSC jurisdictional energy facilities are sited and developed in compliance with the EFSC standards and other applicable state and local rules.

ORS 469.320 provides that no “facility” may be constructed or amended without the issuance of a site certificate, with limited exceptions. The statutory language is clear that the Council’s duties, as relating to site certificates, relate to a singular energy “facility,” and as noted above, ORS 469.300(11)(a) includes the statutory definitions for EFSC jurisdictional energy facilities.

Multiple small scale solar PV facilities, which are less than the EFSC jurisdictional threshold and are constructed in proximity to one another, raises the issue as to whether multiple facilities are tantamount to a single energy facility. The Department has noted an increase in the local approval of small solar PV facilities around Oregon. The image to the right shows solar facilities which occupy fewer than 12 acres in the Willamette Valley.²



²County decisions and applications on photovoltaic solar power generating facilities. Provided by DLCD based on information received from counties.

Background Information:

i. Council’s “15 questions”

The Council has previously discussed the application of “15 Questions” to ascertain whether multiple non EFSC-jurisdiction wind power facilities should be classified as a single energy facility. The 15 Questions are included as an Attachment B to this Staff Report; the questions relate generally to project proximity, ownership, infrastructure, operation, financing, and business contracting. The 15 Questions are for information gathering purposes, are not legally binding, nor are they EFSC policy. Furthermore, there is no “threshold” minimum number of questions that must be answered in the affirmative to effectively establish a single energy facility.

This rulemaking, in part, will examine the value of the “15 Questions,” as a potential tool to determine whether multiple small-scale solar facilities should be considered to be one single energy facility.

ii. Petition of the Oregon Natural Desert Association (ONDA) for Rulemaking

Attached to this Staff Report is the 2008 Oregon Natural Desert Association (ONDA) Petition for Rulemaking. This Petition is contextually relevant to the current rulemaking because the Petition was filed under similar circumstances related to wind energy facility development. Namely, the Petition discussed concerns relating to the siting of numerous non-EFSC wind facilities in proximity to one another. The ONDA recommended that the Council adopt a condensed version of the “15 questions,” and also recommended that a facility should be classified as a “single” energy facility under ORS 469.300(11)(J) if three of the these questions were answered in the affirmative.

The basis for ONDA’s request concern, and its relevance to the current solar PV rulemaking, is described below (see Page 5 of the ONDA petition, included as Attachment C to this staff report:

“When a large project is segmented into smaller projects to avoid EFSC jurisdiction, the impacts of the smaller projects together are equivalent to a single project covering the same area, but the application requirements and permitting standards might be vastly different for local government permitting of the multiple smaller projects compared to EFSC review if the project were forthrightly represented as a single facility. For example, if the county lacks ODFW’s expertise and mandate for protecting Oregon’s wildlife, this might lead to neglect for accumulating impacts incurred from development and a potential loss of important species. It is the State’s responsibility to support and oversee county and local governance. In the case of wind, solar and geothermal development, the State needs to step in to ensure development is responsible and that local

governments issuing conditional use permits are doing so within their limits and responsibilities.”

Thus, the ONDA previously raised the issue as to the ambiguity of defining a “single” energy facility and this question is still applicable in the context of solar facilities.

iii. LCDC Rules Relating to Solar PV Facilities

The Council’s Land Use standard, OAR 345-022-0030(3), requires the Council to evaluate a proposed facility in the context of a local government’s “applicable substantive criteria.” The Department of Land Conservation and Development (LCDC) regulations, as applied to Exclusive Farm Use zones, relating to “photovoltaic power generation” facilities within OAR 660-033-0130(38) are either adopted by Counties as part of their own land use and development ordinances or must be applied directly. EFSC analyzes this LCDC rule within its land use analysis of site certificate proposals or amendments for solar PV facilities.

LCDC is undergoing a rulemaking project scheduled to commence in September 2018 that will include an evaluation of its solar PV rules for EFU zones at OAR 660-033-0130(38). The Department is timing its rulemaking session to coincide with the LCDC rulemaking. DLCD is a member of the EFSC RAC, and the Department is a member of the LCDC RAC.

Note that Subsection (e) of OAR 660-033-0130(38), below, sets forth a jurisdictional threshold in Exclusive Farm Use areas as relating to goal exceptions applied to solar PV facilities:

“...For purposes of applying the acreage standards of this section, a photovoltaic solar power generation facility includes all existing and proposed facilities on a **single tract (emphasis added)**, as well as any existing and proposed facilities determined to be under common ownership on lands with fewer than **1320 feet (emphasis added)** of separation from the tract on which the new facility is proposed to be sited. Projects connected to the same parent company or individuals shall be considered to be in common ownership, regardless of the operating business structure...”

This LCDC rule is not related to EFSC jurisdiction, but it does provide context for how LCDC and DLCD administer Goal 3 (farmland protection) and will be discussed during the EFSC rulemaking project.

Although this LCDC rule does not relate to EFSC jurisdiction of energy facilities, the rule attempts to address a similar issue presented within this rulemaking. As such, collaboration with DLCD will aid in the Department’s current rulemaking discussion.

iv. Energy Generation Areas

The issue as to whether multiple small scale energy facilities may present cumulative impacts has been previously considered by EFSC, specifically in the context of wind, solar, and

geothermal energy facilities. OAR 345-001-0200 and 345-001-0210 establishes the creation and effect of “energy generation areas.” OAR 345-001-0200 provides Council the authority to define the boundaries of an energy generation area, which requires a finding of a geographic area “within which the effects of development of two or more small generating plans... are likely to accumulate so the small generating plans have effects of a magnitude similar to a single generating plant with an average electric generating capacity of 35 megawatts or more.”

If an entity wishes to construct a “small generating plant,”³ in an established energy generation area, then it must submit an exemption to the Department of Energy. If the expansion of a small generating plant would create an electric power generating plant with an average electric generating capacity of 35 megawatts or more, then the rules require the entity to obtain either a site certificate or an amendment to an existing site certificate.

The energy generation areas rules are triggered for a proposed facility within the energy generation area if it is:

- between 3 and 35 MW average generating capacity; and
- connected to a common switching station or maintained or operated in common; and
- are in common project ownership

The energy generation rules have been used in one instance. In 1999 the Council designated Umatilla County as an energy generation area for wind facilities. In 2009 the Umatilla Board of County Commissioners successfully petitioned the removal of the Umatilla County Energy Generation Area from rule. It is unclear whether any “small generating plants” were reviewed as part of the energy generation area requirement. The energy generation area concept will be discussed during the current rulemaking project, but the Council has not directed the Department to consider establishing an energy generation area at this time.

Special Concerns Relating to Solar PV Facilities – Potential for Specific Standards

The “third” question posed by EFSC as part of this rulemaking project is to explore the potential development and adoption of specific standards or rules related to solar PV facilities. As part of preparation for the first RAC meeting, the Department researched four potential issues related to solar PV facilities. The summary of this research is presented below. The Department is not proposing specific rules related to these topic areas at this time; rather, the Department presents findings for RAC discussion.

Toxicity and Safe Disposal

Summary:

Literature suggests that the risks to human health from solar PV panels is extremely low and that panels are only dangerous if toxic constituents are ingested or inhaled. The risk to ingest or

³ Note that OAR 345-001-0210 defines “small generating plant”

inhale constituents is very low because these solids are normally contained within “encapsulated” layers. Regardless, a solar PV panel may still be classified as “hazardous” waste due to the levels of toxic constituents contained within the panels. If a panel is considered “hazardous,” then hazardous waste regulations dictate the special handling, transportation, and disposal of panels.

Some states, as well as the EU, have considered the logistical challenges and waste concerns relating to an increase in waste generated from solar PV installations. The proper disposal of solar PV panels is not settled policy because panels must currently be assessed on a “model by model” basis as to determine whether the specific panel is considered “hazardous” under EPA leachate classifications. Currently, there are no specific Federal laws relating to solar PV; however, solar PV panels are managed under the Resource Conservation and Recovery Act (RCRA), which regulates both hazardous and non-hazardous solid waste. RCRA separates hazardous waste into “characteristic” waste and “listed” waste. Solar PV panels are not “listed,” therefore, they must be evaluated under the characteristic hazardous waste method. EPA Method 1311 measures whether the leachate from waste contains substances above regulated levels. States may require additional procedures; California maintains additional leaching procedures and threshold limit concentrations. The Oregon DEQ regulates hazardous materials under OAR Chapter 340, Title 100, which expressly adopts relevant provisions of the Code of Federal Regulations. The Department has contacted Oregon DEQ for further discussion as to potential concerns relating to the safe disposal of solar PV panels.

Washington:

Washington Revised Statute 70.355.0101(3) requires the Department of Ecology “to develop guidance for a photovoltaic module stewardship and takeback program to guide manufacturers in preparing and implementing a self-directed program to ensure the convenient, safe, and environmentally sound takeback and recycling of photovoltaic modules and their components and materials.” The requirements imposed by statute are effective January 1, 2020. A stewardship plan requires the manufacturer to: finance a takeback and recycling system; accept all panels sold into the state after 2017; describe a program to minimize the release of hazardous substances; and establish recycling performance goals (at least 85% of panels by weight must be recycled). Washington is currently following an “interim enforcement policy,” which classifies solar PV as electrical waste. This classification places solar PV panels within the same category as a cathode ray tube television, computer monitor, and other electronic equipment.

California:

California recently passed Senate Bill 489, which is codified in the Health and Safety Code, Division 20, Chapter 6.5, Article 17, Section 25259 “Photovoltaic Modules.” The statute allows the California Department of Toxic Substances Control to designate end-of-life photovoltaic modules as universal waste. Note that “universal” waste is a subset of the “hazardous” waste category.

The Assembly Committee on Environmental Safety and Toxic Materials noted that the purpose of BS 489 is to allow “for a universal waste designation for hazardous waste PV modules, which will provide flexibility for companies or third-parties to develop more effective and cost efficient methods of handling PV modules within a take-back and recycle program. Universal waste designation relieves the burden of meeting some of the state’s rigorous hazardous waste laws and allows the waste to be streamlined in existing systems for proper management similar to electronic devices, batteries, or CRVs [cathode ray tubes].” This statement suggests that California is also moving towards a recycling and takeback program, similar to Washington.

European Union:

Currently, the EU regulates the disposal of electrical and electronic equipment under the Waste from Electrical and Electronic Equipment Directive (WEEE, 2012/19/EU). The WEEE dictates that “producers” are liable, through financial guarantees, to cover the cost of collection and recycling as relating to private home solar PV panels. Producers are also required to provide information to waste companies relating to collection, storage, dismantling, and treatment. The ultimate policy goal of the WEEE is the 85% recovery and 80% recycling, by weight, of panels by 2018. Under the WEEE, Potentially harmful substances, including lead, cadmium, mercury, would be removed and contained during treatment. Rare materials, such as silver, tellurium, and indium may be recovered and made available for future use. Silicon and glass would be recycled.

Toxicity and Safe Disposal – next steps

The Department seeks comments from stakeholders relating to the safe disposal of solar PV panels; the Department is also interested in gaining knowledge relating to current PV disposal methods and processes, and whether there are suggestions that could result in streamlining disposal efforts. The Department’s goal is to ensure that solar PV panels are disposed of in a manner that protects public health and the environment. The existing EFSC waste minimization standard may be sufficient to addresses issues related to solar module disposal as related to EFSC jurisdiction.

Glare and Glint

Glint is considered to be a brief flash, while glare is considered to be an extended flash of light. The FAA states that “flash blindness” may occur for a period of 4-12 seconds when 7-11 W/m² (650-1,100 lumens) reaches the eye. The FAA indicates that 1000 W/m² is often assumed to be the amount of light interacting with a panel; panels reflect “as little as” 2% of incoming sunlight depending on the angle of the sun and assuming anti-reflective coatings.” Therefore, an average solar PV panel may reflect approximately 20 W/m². However, the FAA Solar Guide notes that although the amount of light reflected from a surface is important, “the nature of the reflected light is even more important when assessing the potential for flash blindness.” Light reflection is either “diffuse” or “specular.” Specular reflection is concentrated reflection arising from smooth surfaces; diffuse reflection is less concentrated and arises from rough surfaces, such as pavement. Water reflects 2% of light but may cause glare due to specular reflection; however, vegetation may reflect up to 50% of light but does not present a glare risk because its reflection is diffuse. The angle of the sun, which varies by time of year, may also

affect glare. The FAA indicates that the distance required to avoid flash blindness is “directly proportional to the size of the array” but that “further research” is still required. Other literature suggests that the impacts relating to glare is not a concern to the public; the “Solar and Glare” factsheet, developed by Meister Consultants Group,⁴ states that it is a “common misconception... that they [PV panels] inherently cause or create ‘too much glare’”

The FAA requires the use of software, Solar Glare Hazard Analysis Tool (SGHAT), to procure an impact analysis to demonstrate that glare or glint will not affect traffic control towers or flight approach paths. Furthermore, some local jurisdictions, including local jurisdictions in North Carolina mandate conditions relating to glare. These include but are not limited to: the use of glare-resistant panels; confirmation from an engineer that a facility will not “offend” a residence or traffic; and the use of the SGHAT to demonstrate no impact to local airports.

At least one model ordinance advises against glare regulation. The Delaware Valley Regional Planning Commission (DVRPC) model solar ordinance advises against regulating glare because causation is difficult to prove, and because “modern” solar PV panels only reflect 2% of light, and are equipped with anti-reflective coatings. A New York Model Solar level law, set forth by NYSERDA, merely suggests that “all solar panels shall have anti-reflective coating(s).”

Glare and Glint – next steps

The Department notes that public complaints have arisen relating to glare on highways, a recent example includes concerns arising from an existing solar PV facility sited near Pendleton. The Department welcomes comments that will allow it to assess the scope of concern relating to glare, and is interested in discussing processes that could minimize glare to public highways.

Wildlife and Wildlife Habitat

The Department notes that solar PV facilities may impact wildlife directly, such as fatalities, and indirectly, such as through habitat displacement.

Some impacts to wildlife may be avoided through careful siting, and minimized via best management practices. However, some direct impact and loss to wildlife is unavoidable, particularly when facilities are constructed in relatively undisturbed habitats. During the construction of solar PV facilities, land is usually cleared of vegetation, and in some cases, is graded to minimize slope. Trenching also occurs within the site boundary to run electrical wiring, and the boundary of the facility is fenced. The use of machinery for clearing, grading, and trenching can crush or trample wildlife (primarily rodents, nesting birds, reptiles, and amphibians). During operation, mortality can occur when wildlife (primarily birds) collide with facility features such as PV panels and transmission lines, and when wildlife become entangled in fencing or collide with vehicles on facility service roads (primarily deer, elk, and pronghorn).

⁴ The factsheet notes that the material is “based upon work supported by the U.S. Department of Energy under Award Number DE-EE0003525” and was prepared as an account of work sponsored by an agency of the United States Government.”

The body of knowledge relating wildlife mortality with solar PV facility operation is still limited. Wildlife fatality monitoring at solar facilities in Oregon has yet to be reported. Because solar PV is still a relatively new land use in the western United States, the wildlife fatality monitoring reports from operational solar PV facilities have only recently begun to emerge. A handful of publicly-available monitoring reports from solar PV facilities in California are documenting avian collisions with solar PV panels and associated transmission lines. Whether documented losses of individuals are significant at the population level deserves further investigation. Walston et al. conducted a comparative analysis of solar facilities in southern California and found that fatality rates at existing PV facilities were measurably lower than fatality rates at wind facilities. However, this study did not contain wildlife fatality reports included for solar PV facilities in Oregon.

Observations at solar PV facilities in California have led to hypotheses that solar PV arrays may create a “lake effect,” whereby nocturnal migratory waterfowl mistake reflective surfaces as water bodies, and attempt to land. Whether this behavior results in significant mortalities has yet to be determined, but studies in California are addressing this concern.

While wildlife collision rates with solar PV facility components is unclear, the removal of habitat may be empirically examined. Because solar PV facilities are fenced and vegetation is often removed, lands occupied by solar PV facilities are not available to most wildlife, with the exception of some smaller fauna (birds, rodents, and reptiles) that may recolonize post-construction. Those individuals displaced by the solar PV facility may adapt to available habitat elsewhere, or they may succumb to competition, starvation, or predation. Additionally, wildlife displaced by solar PV development may transition towards adjacent agricultural lands to meet foraging and cover needs, which often creates human-wildlife conflicts as wildlife damage to crops intensifies.

The Oregon Department of Fish and Wildlife has indicated that the most important impact to wildlife from solar PV is the loss of habitat connectivity for wide-ranging species. Wildlife, including deer and elk, cover hundreds of square miles over a given year. Connected habitats can support population viability for rare species such as pygmy rabbits, Washington ground squirrels, and sage-grouse, which require connected natural areas for dispersal of young and the establishment of new colonies. Connectivity allows for dispersal of wildlife, helps maintain genetic diversity, and is a frequently proposed strategy to aid wildlife in adapting to changing climates.

The EFSC Site Certificate process currently addresses wildlife habitat loss through its Fish and Wildlife Habitat Standard, OAR 345-022-0060, and the Threatened and Endangered Species Standard, OAR 345-022-0070. These siting standards effectively identify, avoid, minimize, and mitigate the potential impacts to wildlife and wildlife habitats through siting design as well as implementation of the ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0000 through -0025). A concern, cited by ODFW, is that these standards do not consider cumulative effects. Currently the EFSC siting standards do not address the cumulative effect of solar PV development on wildlife habitat connectivity and migration corridors within the context of

other nearby solar PV facilities or other surrounding land uses. A potential standard specific to solar PV could attempt to address the cumulative effect of habitat loss and fragmentation, given that solar PV creates more of a barrier to wildlife use and movement than other types of energy development (such as wind, natural gas pipelines, and transmission lines). ODFW will be presenting on this topic at the first RAC meeting.

The Council's Fish and Wildlife Habitat standard requires that EFSC jurisdictional energy facilities comply with the ODFW Fish and Wildlife Habitat Mitigation Policy, which includes requirements to mitigate a facility's impacts to wildlife habitat, including compensatory mitigation if necessary. However, non EFSC-jurisdictional facilities may or may not implement similar requirements.

Heat island effect

The Department notes that concerns have been raised as to whether a solar facility could increase the ambient temperature to adjacent areas, which could result in impacts to farming operations if such farming operations are temperature dependent. Specifically, there is a concern that a solar heat island could affect alfalfa production.

A study published in *Scientific Reports* titled "*The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures*" is widely cited, and appears to be the only study that empirically examined the heat island effect arising from solar PV modules in a desert environment. This study demonstrated that temperatures in the immediate vicinity of a solar facility were 3-4 degrees Celsius warmer, at night, than nearby unaffected desert lands. The study states that "the results ... demonstrate that the PVHI [photovoltaic heat island] effect is real and can significantly increase temperatures over PV power plant installations relative to nearby wildlands." The sites were located in Arizona, and were all within 1 km of one another. Whether solar facilities would result in less of a temperature difference in Oregon is unknown. It is believed that the effect of heat island would dissipate at 100 feet. Other studies suggest that solar facilities may reduce a heat island effect, however; such literature is limited to built urban environments.

While the Department is unaware of any specific temperature regulations, Currituck County in North Carolina has imposed a condition related to avoiding heat transference to adjacent lands in a recent solar facility project. (See: PB 16-04 Ecoplexus Goose Creek project in the source list)

Heat Island – next steps

The Department notes that public concern has arisen relating to a heat island effect and potential concerns to alfalfa farming. The Department welcomes comments that will allow it to assess the scope of concern relating to farming operations, and welcomes suggestions to mitigate potential harm.

Toxicity and Safe Disposal Sources

- California Department of Toxic Substances Control: Photovoltaic Modules- Universal Waste Management Regulations webpage. Available at <https://www.dtsc.ca.gov/HazardousWaste/PVRegs.cfm>
- California Legislative Counsel's Digest https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB489
- California Senate Committee on Environmental Quality Analysis. Available at https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201520160SB489
- California Assembly Environmental Safety and Toxic Materials 06/26/15. Available at https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201520160SB489
- EPA Hazardous Waste information. Available at <https://www.epa.gov/hw/defining-hazardous-waste-listed-characteristic-and-mixed-radiological-wastes#PandU>
- First Solar. *CdTE module technology – performance, life cycle, health and safety impact assessment* (2015).
- Fthenakis, V.M., *Practical Handbook of Photovoltaics: Fundamentals and Applications. Overview of Potential Hazards* (2003).
- International Renewable Energy Agency, *End-of-Life Management: Solar Photovoltaic Panels* (2016).
- International Energy Agency. *Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems* (2015).
- Sinhga et. al. *Evaluation of Potential Health and Environmental Impacts from End-of-Life Disposal of Photovoltaics*, Photovoltaics (2014)
- Washington Statutes (Revised Code) Section 70.355
- Washington Department of Ecology: Interim Enforcement Policy, *Conditional Exclusion for Electronic Wastes*. Available at <https://fortress.wa.gov/ecy/publications/documents/0204017.pdf>

Glare and Glint Sources

- Currituck County, North Carolina. Public Hearing and Action: PB 16-04 Ecoplexus (Goose Creek). Planning & Community Development, Staff Report. Available at https://currituckcountync.igm2.com/Citizens/Detail_LegiFile.aspx?Frame=&MeetingID=1358&MediaPosition=&ID=1474&CssClass=
- Delaware Valley Regional Planning Commission, Renewable Energy Ordinance Framework: Solar PV (2015) at p 19. Available at https://www.dvrpc.org/EnergyClimate/ModelOrdinance/Solar/pdf/2016_DVRPC_Solar_REOF_Reformatted_Final.pdf
- Lovelady, Adam. Planning and Zoning for Solar in North Carolina (2014). Available at <https://sogpubs.unc.edu/electronicversions/pdfs/pandzsolar2014.pdf>

- FAA Solar Guide. Available at https://www.faa.gov/airports/environmental/policy_guidance/media/airport-solar-guide-print.pdf
- Federal Register, Vol. 78, No. 205, p 63276 (10/23/2013). Available at <https://www.gpo.gov/fdsys/pkg/FR-2013-10-23/pdf/2013-24729.pdf>
- Solar and Glare Factsheet. Available at https://icma.org/sites/default/files/306952_Solar%20PV%20and%20Glare.pdf

Heat Island Effect Sources

- Barron-Gafford, Greg; et al. Scientific Reports. *The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures* (2016).
- Coakley, J.A., Oregon State University, *Reflectance and Albedo, Surface*, p. 1920 (2003). Available at http://curry.eas.gatech.edu/Courses/6140/ency/Chapter9/Ency_Atmos/Reflectance_Albedo_Surface.pdf
- Fraunhofer ISE, *Recent Facts about Photovoltaics in Germany*. Available at <https://www.ise.fraunhofer.de/en/publications/studies/recent-facts-about-pv-ingermany.html>
- Large Solar Power Plants Increase Local Temperatures. Solar Novus. Available at http://www.solarnovus.com/photovoltaic-heat-island-effect-large-solar-power-plants-increase-local-temperatures_N10518.html
- Masson, V et. al. *Frontiers in Environmental Science. Solar panels reduce both global warming and urban heat island* (2014). Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5062079/>

Wildlife Sources

- American Bird Conservancy, *Position Paper: Solar Energy*. Available at <https://abcbirds.org/wp-content/uploads/2015/05/PP-Solar-Energy.pdf>
- Beier, P. and R. F. Noss. 1998. Do Habitat Corridors Provide Connectivity? *Conservation Biology* 12:1241–1252.
- Hanski, I. 1998. Metapopulation dynamics. *Nature* 396:41–49.
- Heller, N. E. and E. S. Zavaleta. 2009. Biodiversity management in the face of climate change: A review of 22 years of recommendations. *Biological Conservation* 142:14–32.
- Hilty, J. A., W. Z. Lidicker Jr, and A. Merenlender. 2012. *Corridor ecology: the science and practice of linking landscapes for biodiversity conservation*. Island Press.
- Ironwood Consulting, Inc. 2014. 2014 fourth quarter and final report biological resources monitoring at First Solar Desert Sunlight Solar Project, Riverside County. BLM Case File # CACA-48649. Prepared for Bureau of Land Management.
- Kagan, R.A., T.C. Viner, P.W. Trail, and E.O. Espinoza. 2014. Avian mortality at solar energy facilities in southern California: a preliminary analysis. National Fish and Wildlife Forensics Laboratory, April.
- US Department of Energy. *A Review of Avian Monitoring and Mitigation Information at Existing Utility-Scale Solar Facilities* (April 2015).

- Watts, A. G., P. Schlichting, S. Billerman, B. Jesmer, S. Micheletti, M.-J. Fortin, C. Funk, P. Hapeman, E. L. Muths, and M. A. Murphy. 2015. How spatio-temporal habitat connectivity affects amphibian genetic structure. *Frontiers in Genetics* 6.
- Walston, Jr., L.J, K.E. Rollins, K.P. Smith, K.E. LaGory, K. Sinclair, C. Tuchi, T. Wendelin, and H. Souder. 2015. A review of avian monitoring and mitigation information at existing utility-scale solar facilities. Prepared for US Department of Energy, Sunshot Initiative and Office of Energy Efficiency and Renewable Energy, April.
- Walston, Jr., L.J, K.E. Rollins, K.E. LaGory, K.P. Smith, and S.A. Meyers. A preliminary assessment of avian mortality at utility-scale solar energy facilities in the United States. *Renewable Energy* 92:405-414.

ATTACHMENT A - RAC MEMBER LIST

Appointed at the June 29, 2018 EFSC Meeting

Oregon EFSC Rulemaking: Solar PV Facilities

Rulemaking Advisory Committee (RAC)

Council Appointed Entities/Persons for Participation on a RAC for this Rulemaking Project.

Members of the Public Community	
1	Willamette Valley Agricultural Landowner(s) - Placeholder
NGO/Non-Profit	
2	Friends of the Grande Ronde Valley
3	Oregon Solar Energy Industry Association (OSEIA)
4	Oregon Farm Bureau
5	Oregon Natural Desert Association (ONDA)
6	Oregon Winegrowers Association
7	Renewable NW
8	1,000 Friends of Oregon
Certificate Holders (Existing and Potential)	
9	Avangrid Renewables
10	Cypress Creek Renewables
11	Obsidian Renewables
12	Portland General Electric
Local/State/Regional Government	
13	Crook County
14	Gilliam County
15	Lake County
16	Marion County
17	Morrow County
18	Association of Oregon Counties
19	Oregon Department of Fish and Wildlife (ODFW)
20	Oregon Department of Agriculture (ODA)
21	Oregon Department of Land Conservation and Development (DLCD)
22	Oregon Soil and Water Conservation Commission
Tribal Government	
23	Confederated Tribes of the Warm Springs
24	Confederated Tribes of the Umatilla Indian Reservation (CTUIR)
25	Confederated Tribes of the Grand Ronde
Consumer Owned Utilities (COUs)	
26	Northern Wasco Public Utility District (PUD)

ATTACHMENT B – “15 Questions” for Wind Facilities

15 Questions for determining when energy projects are separate projects.

1. What company is the legal owner of the proposed project? Is that company related to the owner of the nearby wind energy project? For example, are the companies related through a parent corporation?
2. How close are the two projects geographically?
3. Is any part of the site of the proposed project included within the site of another wind project?
4. Would the proposed project share any transmission infrastructure with the nearby wind project? For the purpose of this question, “transmission infrastructure” means related or supporting collector lines or other transmission lines or equipment associated with a wind project to the point of connection with the regional transmission system (the “grid”).
5. Would the proposed project share any related or supporting facilities with the nearby wind energy project (for example, access roads, substations, O&M structures, perimeter fencing, water supply or discharge lines, storage areas, parking areas, etc.)?
6. Would the proposed project be operated from a separate control room? Would the control equipment (central computers) for the proposed project be located in the same building as the control equipment for the nearby wind energy project?
7. Would power output dispatching decisions for the proposed project be made independent of such decisions for the nearby wind energy project? Would these decisions be made by separate personnel?

8. Would operational decisions (such as maintenance, routine inspections, fire protection agreements with local authorities, weed control, etc.) for the proposed project be made independent of such operational decision for the nearby wind energy project? Would separate personnel be responsible for making those decisions?
9. Would the proposed project have separate operations or maintenance staff or would operations and maintenance staff be shared with the nearby wind energy project?
10. Would the power output from the proposed project be sold into the same market as the power output from the nearby wind energy project? In what way would the markets differ?
11. Would the marketing of the power output from the proposed project be done independent of marketing for the nearby wind energy project?
12. Would contracts for the sale of the power output from the proposed project be separate from the contracts for sale of power output from the nearby wind energy project? Would there be any aggregated sales of power output from the proposed project with power output from the nearby project?
13. Would the financing for the proposed project be separate from the financing for the nearby project?
14. Would contracts for transmission of the output from the proposed project be separate from contracts for transmission of the output from the nearby wind energy project?
15. What other information would support a conclusion that the proposed project would be a separate wind energy project and not an expansion of a nearby wind energy project? In what other ways would the projects be operated or otherwise treated as separate projects?

Attachment C- ONDA Petition to EFSC for Rulemaking (2008)

(Petition for Rulemaking Filed in 2008)

**BEFORE THE ENERGY FACILITY SITING COUNCIL,
OREGON DEPARTMENT OF ENERGY,
STATE OF OREGON
PETITION OF OREGON NATURAL DESERT ASSOCIATION, AUDUBON SOCIETY OF PORTLAND,
AND DEFENDER OF WILDLIFE FOR RULEMAKING PURSUANT TO OAR 137-001-0070**

Pursuant to OAR 137-001-0070, the Oregon Natural Desert Association, Audubon Society of Portland, and Defenders of Wildlife (collectively —Petitioners) hereby petition the Energy Facility Siting Council (EFSC) and the Oregon Department of Energy (ODOE) to amend existing regulations. The proposed regulatory amendment would clarify what constitutes a single energy facility for application of the EFSC jurisdictional threshold criteria in OAR Chapter 345 and ORS 469.300.

OAR 137-001-0070(1) Name and address of Petitioners and others interested in the rule

Brent Fenty Bob Sallinger Bruce Taylor
Executive Director Conservation Director Oregon Biodiversity Director
Oregon Natural Desert Association Audubon Society of Portland Defenders of Wildlife
33 NW Irving Avenue 5151 NW Cornell Road 1880 Willamette Falls Drive
Bend, OR 97701 Portland, OR 92710 Suite 200
West Linn, OR 97068

Names and addresses of persons known to the Petitioners to be interested in the rule:

Robert Freimark Brian Pasko
Senior Policy Analyst State Director
The Wilderness Society Oregon Chapter of the Sierra Club
720 Third Avenue, Suite 1800 1821 SE Ankeny St.
Seattle, WA 98104 Portland, OR 97214

Doug Heiken Mark Salvo
Conservation and Restoration Coordinator Director, Sagebrush Sea Campaign
Oregon Wild WildEarth Guardians c/o
PO Box 11648 2224 W. Palomino Drive
Eugene, OR 97440 Chandler, AZ 85224

Randy Rasmussen Andy Kerr
Senior Policy Manager Czar
American Hiking Society The Larch Company
946 NW Circle Blvd. #145 313 10th Street NE
Corvallis, OR 97330 Washington, DC 20002

Maeve Sowles David Harrison
President President
Lane County Audubon Society Salem Audubon Society
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Eugene, OR 97405 Salem, OR 97301

Ann Vileisis Dave Willis
President Chairman
Kalmiopsis Audubon Society Soda Mountain Wilderness Council
P.O. Box 1265 P.O. Box 512
Port Orford, OR 97465 Ashland, OR 97520

Pepper Trail Darrel Samuels
Conservation Chair President
Rogue Valley Audubon Society Klamath Basin Audubon Society
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Will Wright Stan Vejtasa
President Conservation Chair
Audubon Society of Corvallis Umpqua Valley Audubon Society
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Greg Dyson Noah Greenwald
Executive Director Endangered Species Program Director
Hells Canyon Preservation Council Center for Biological Diversity
P.O. Box 2768 PO Box 11374
La Grande, OR 97850 Portland, OR 97211

Joe Serres Eric Clough
President President
Friends of Living Oregon Waters Cape Arago Audubon Society
(FLOW) P.O. Box 381
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Grants Pass, OR 97528

Nathan Baker
Staff Attorney
Friends of the Columbia Gorge
522 SW Fifth Avenue, Suite 720 Portland, OR 97204

OAR 137-001-0070(1)(a) The rule Petitioners request the agency to adopt, amend or repeal
Facilities which require site certificates from EFSC are defined in OAR Chapter 345 Division 1. The requirement that a facility obtain a site certificate is found in ORS 469.320 and OAR 345-021-0000. The proposed amendment would amend two sections of OAR Chapter 345. OAR Chapter 345 Division 1 Section 0010, Definitions, would be amended to add a definition of Single energy facility at 345-001-0010(52), to read:

Single energy facility means a generating plant or the combination of multiple existing or proposed generating plants, despite the number of applications, owners or construction phases, if three or more of the following apply:

- (A) The generating plants are located on one or more adjacent parcels of land or parcels;
- (B) The generating plants share supporting facilities such as operation centers, operation and maintenance facilities, service and storage facilities, other related or supporting facilities, access roads, substations (except those owned by third party utility companies and not constructed specifically to serve the generating plant), transmission lines (except those owned by third party utility companies and not constructed specifically to serve the generating plant), water or discharge lines perimeter fencing, storage or parking areas; perimeter fencing, storage or parking areas;
- (C) The generating plants have been recognized as a single facility by a federal, state, county, city or local authority including, but not limited to siting council, state or local boards or commissions;
- (D) The generating plants have obtained or made application for siting or land use approval and other applicable permits, licenses or site certificates as a single facility, on a single application, or on applications that are substantially identical except for the site descriptions;
- (E) When the generating plants are designed to generate energy, the construction of the generating plants are performed under the same contract with a general contractor licensed under ORS 701 or multiple contracts entered into within two years of each other with one or more general contractors licensed under ORS 701. If a facility is composed of generating plants that will be completed in phases over time, the applicant must demonstrate that each of the phases of the facility would independently qualify as a single energy facility and that each phase of the facility are not interdependent in purpose or the manner in which they will be owned, financed, constructed, operated, or maintained or the facilities or phases of the facility will be considered as a single energy facility for the purposes of these rules.
- (F) The generating plant owners obtain or share one or more sources of financing, revenue, grants and other financial resources for the development, construction, operation and maintenance of the generating plants and associated equipment;
- (G) The generating plant owners share project expenses, personnel, capital investments including generating equipment, or other resources related to the generating plants, demonstrated by an agreement, anticipated agreement, or ownership or personnel common to the owners regardless of the owners' form or forms of business entity;
- (H) The generating equipment for the generating plant and the related generating plant was purchased by the same person or persons who own or operate the generating plant or have taken action under any of the above factors;

(ORS 183.390 & OAR 137-001-0007, Petition for Rulemaking Filed in 2008)

- (I) The generating plants are connected to the grid through a single connection or multiple connections when there is a shared net metering, power purchase or other applicable transmission agreement; or
- (J) Other factors or considerations which demonstrate that each generating plant is not a separate and distinct facility based on its construction, operation, maintenance and output. Current section OAR 345-001-0000(52) would be renumbered to OAR 345-001-0000(53) and all remaining subsections of OAR Chapter 345 Division 001 Section 0000 would be renumbered accordingly.

In addition, a new section OAR 345-021-0000(3) would be added by the proposed amendment, reading:

(3) Any person who has submitted an application for a county or municipal conditional use permit for an electric power generating plant with an average electric generating capacity of less than 35 megawatts from geothermal, solar or wind energy must submit to the Council information demonstrating that the proposed plant is separate and distinct from existing or proposed facilities and that it is not a —single energy facility|| as defined in 345-001-0010(52). The burden of proof shall be on the person to show that the proposed electric power generating plant is not a single energy facility.

Current section OAR 345-021-0000(3) would be renumbered to OAR 345-021-0000(4) and all remaining subsections of OAR Chapter 345 Division 021 Section 0000 would be renumbered accordingly.

OAR 137-001-0070(1)(b) Reasons for the request

Petitioners request that ODOE and EFSC amend existing regulations and adopt rules clarifying the statutory ambiguity regarding EFSC jurisdiction over segmented energy generation projects to limit the impacts and accumulating effects from multiple sites which are, for all practical purposes, and in terms of their effects, a single facility. According to ORS 469.300(11)(a)(J), one of the categories of energy facility for which a proponent must obtain site certification from EFSC is:

An electric power generating plant with an average electric generating capacity of 35 megawatts or more if the power is produced from geothermal, solar or wind energy at a single energy facility or within a single energy generation area.

A facility subject to site certification under ORS 469.320 is an energy facility together with any related or supporting facilities. ORS 469.300(14). However, the statutory term energy facility in ORS 469.300 is ambiguous because the term does not contain a definition of single energy facility, which is used in ORS 469.300(11)(a)(J) to define the threshold for EFSC jurisdiction over geothermal, solar and wind energy projects. The definition in ORS 469.300(11)(a)(J) thus defines one category of energy facility|| in terms of the generating capacity that is produced at a single energy facility, without providing legislative guidance on what constitutes a single facility. ODOE and EFSC must clarify this ambiguity to vindicate the legislature’s intent that EFSC have

broad jurisdiction over energy development projects that have significant impacts based on their mere size.

Projects with an average generating capacity of less than 35 megawatts (equivalent to a peak generating capacity of 105 megawatts) only require local land use permitting and thereby avoid EFSC jurisdiction and oversight by the State of Oregon. Currently, developers may segment a large development—what would be considered a single facility under the new temporary rules governing the Oregon Business Energy Tax Credit (BETC) by artificially separating development into allegedly separate sites. This loophole within EFSC permitting requires an immediate and permanent fix so that such artificially segmented projects can be evaluated by EFSC and subject to Oregon Department of Fish & Wildlife (ODFW) siting recommendations and mitigation requirements on the same footing as projects for which the proponents forthrightly present the full scope of the project to EFSC for review. Closing this loophole also will ensure that all developers of large-scale industrial energy generation projects are treated equally under Oregon permitting laws and will foreclose an unfair advantage sought by any developer who attempts to creatively segment a project to avoid EFSC jurisdiction.

EFSC provides unique regulatory oversight where accumulating effects from industrial-scale energy development might occur due the size or location of the project. EFSC members not only have valuable expertise and a history of effectively regulating and permitting wind development in Oregon, but they also draw on the expertise of ODFW and other State agencies such as ODOE and the Oregon Department of Environmental Quality. Amending the regulatory definition of facility to ensure a permitting process that objectively evaluates whether allegedly separate projects are in fact one facility will guarantee that Oregon stays at the forefront of responsible energy development and EFSC jurisdiction is not illicitly avoided in favor of local permitting.

When a large project is segmented into smaller projects to avoid EFSC jurisdiction, the impacts of the smaller projects together are equivalent to a single project covering the same area, but the application requirements and permitting standards might be vastly different for local government permitting of the multiple smaller projects compared to EFSC review if the project were forthrightly represented as a single facility. For example, if the county does not follow ODFW guidelines and mitigation standards, or if the county lacks ODFW's expertise and mandate for protecting Oregon's wildlife, this might lead to neglect for accumulating impacts incurred from development and a potential loss of important species. It is the State's responsibility to support and oversee county and local governance. In the case of wind, solar and geothermal development, the State needs to step in to ensure development is responsible and that local governments issuing conditional use permits are doing so within their limits and responsibilities.

ODFW expertise and recommendations regarding wind development are especially important in Oregon's high desert where large contiguous areas of sagebrush make up crucial habitat for imperiled sagebrush obligates such as the Greater sage-grouse. According to the US Geological

Survey, Oregon is one of 14 states where fragmentation and loss of sagebrush habitat are the primary threats to Greater sage-grouse. The population in 2008 of Greater sage-grouse in the state is around 22,000, which is approximately one-eighth of the estimated historical population. A recent study shows that the population is estimated to be at an all-time low in the state making this an issue of great importance and priority for Oregon's policy makers. The proposed Echanis, East Ridge, and West Ridge generation sites in Harney County (see attached map)—a cluster of development proposed by Columbia Energy Partners and in the heart of core sage-grouse habitat on North Steens Mountain—illustrate the need for a clearer definition of what constitutes a single energy facility for purposes of EFSC jurisdiction. The concentration of over 200 wind turbines, proposed for three adjoining sites, by a single developer, with common infrastructure, and which would use a single transmission line to export the generated power from the mountain, compel the conclusion the legislature intended that these sites be treated as a single 312 megawatt facility subject to EFSC site certification, rather than three separate adjacent projects just under 105 megawatts each.

Petitioners' request for a regulatory amendment clarifying EFSC's jurisdiction is essential in the face of rapidly increasing wind, geothermal and solar energy development throughout Oregon. Without explicit language in OAR Chapter 345 Division 1, artificial segmentation of large industrial energy projects is likely to continue and possibly increase as Oregon's renewable energy resources are developed. Clarification of the statutory ambiguity regarding the scope of EFSC's jurisdiction to foreclose this practice will allow the State to exercise the legislatively-intended oversight over large-scale energy developments while protecting the natural resources and scenic places all Oregonians enjoy.

The proposed amendment to OAR Chapter 345 Division 21 ensures that all persons who have submitted applications for county or municipal conditional use permits for electric power generating plants are required to present proof to EFSC that their proposed plant is separate and distinct from other facilities and are not required to obtain a site certificate from EFSC.

OAR 137-001-0070(1)(c) Propositions of law to be asserted

Not applicable, except to the extent that Petitioner asserts that the definition of energy facility in ORS 349.30(11)(a)(J) is ambiguous.

OAR 137-001-0070(2)(a) Options for achieving the existing rule's substantive goals while reducing the negative economic impact on businesses

The substantive goal of the existing rule is to require EFSC site certification for facilities that are sufficiently large to meet the state certification threshold established by the legislature. There will be no negative economic impact on businesses by clarifying what constitutes a single energy facility subject to the ORS Chapter 469 site certification requirement, and such clarification will further the substantive goal of that chapter and of OAR Chapter 345.

OAR 137-001-0070(2)(b) The continued need for the existing rule

The existing rule defines EFSC's jurisdiction to certify construction of energy facilities in Oregon and therefore continues to be necessary to satisfy ORS Chapter 469. The proposed amendment clarifies what constitutes a single facility subject to EFSC jurisdiction.

OAR 137-001-0070(2)(c) The complexity of the existing rule

The existing rule is simple but ambiguous, adopting the statutory energy generation capacity threshold in ORS Chapter 469. The rule defining a facility does not address situations in which contemporaneous development of multiple sites or expansion of existing sites should be considered a single energy facility of sufficient capacity to be subject to the EFSC site certification requirement.

The current rule provides, in OAR 345-001-0000(20), that Facility as defined in ORS 469.300 or a small generating plant for which an applicant must have a site certificate according to OAR 345-001-0210 together with any related or supporting facilities.

ORS 469.300(14) in turn defines Facility to mean an energy facility together with any related or supporting facilities, and ORS 469.300(11) defines Energy facility means any of the following (excluding hydroelectric facilities under ORS 469.300(11)(b)):

- (A) An electric power generating plant with a nominal electric generating capacity of 25 megawatts or more, including but not limited to:
 - (i) Thermal power; or
 - (ii) Combustion turbine power plant.
- (B) A nuclear installation as defined in this section.
- (C) A high voltage transmission line of more than 10 miles in length with a capacity of 230,000 volts or more to be constructed in more than one city or county in this state, but excluding:
 - (i) Lines proposed for construction entirely within 500 feet of an existing corridor occupied by high voltage transmission lines with a capacity of 230,000 volts or more; and
 - (ii) Lines of 57,000 volts or more that are rebuilt and upgraded to 230,000 volts along the same right of way.
- (D) A solar collecting facility using more than 100 acres of land.
- (E) A pipeline that is:
 - (i) At least six inches in diameter, and five or more miles in length, used for the transportation of crude petroleum or a derivative thereof, liquefied natural gas, a geothermal energy form in a liquid state or other fossil energy resource, excluding a pipeline conveying natural or synthetic gas;
 - (ii) At least 16 inches in diameter, and five or more miles in length, used for the transportation of natural or synthetic gas, but excluding:
 - (I) A pipeline proposed for construction of which less than five miles of the pipeline is more than 50 feet from a public road, as defined in ORS 368.001; or
 - (II) A parallel or upgraded pipeline up to 24 inches in diameter that is constructed within the same right of way as an existing 16-inch or larger pipeline that has a site certificate, if all studies and necessary mitigation conducted for the existing site certificate meet or are updated to meet current site certificate standards; or

(ORS 183.390 & OAR 137-001-0007, Petition for Rulemaking Filed in 2008)

- (iii) At least 16 inches in diameter and five or more miles in length used to carry a geothermal energy form in a gaseous state but excluding a pipeline used to distribute heat within a geothermal heating district established under ORS chapter 523.
- (F) A synthetic fuel plant which converts a natural resource including, but not limited to, coal or oil to a gas, liquid or solid product intended to be used as a fuel and capable of being burned to produce the equivalent of two billion Btu of heat a day.
- (G) A plant which converts biomass to a gas, liquid or solid product, or combination of such products, intended to be used as a fuel and if any one of such products is capable of being burned to produce the equivalent of six billion Btu of heat a day.
- (H) A storage facility for liquefied natural gas constructed after September 29, 1991, that is designed to hold at least 70,000 gallons.
- (I) A surface facility related to an underground gas storage reservoir that, at design injection or withdrawal rates, will receive or deliver more than 50 million cubic feet of natural or synthetic gas per day, or require more than 4,000 horsepower of natural gas compression to operate, but excluding:
 - (i) The underground storage reservoir;
 - (ii) The injection, withdrawal or monitoring wells and individual wellhead equipment; and
 - (iii) An underground gas storage reservoir into which gas is injected solely for testing or reservoir maintenance purposes or to facilitate the secondary recovery of oil or other hydrocarbons.
- (J) An electric power generating plant with an average electric generating capacity of 35 megawatts or more if the power is produced from geothermal, solar or wind energy at a single energy facility or within a single energy generation area.

OAR 137-001-0070(2)(d) The extent to which the existing rule overlaps, duplicates, or conflicts with other state or federal rules and with local government regulations

The existing rule establishes exclusive jurisdiction in EFSC for energy facilities defined in ORS 469.300 and concurrent jurisdiction with local governments for electric power generating plants with an average electric generating capacity of less than 35 megawatts from wind energy (OAR 345-021-0000(2)). The existing rule does not conflict or duplicate other state, federal or local government regulation.

OAR 137-001-0070(2)(e) The degree to which technology, economic conditions, or other factors have changed in the subject area affected by the existing rule, since the agency adopted the rule

The primary factor that has changed in the area of energy facility site certification is the trend of developers subdividing projects into multiple sites to either claim excessive tax credits through the Business Energy Tax Credit (BETC) program or to attempt to avoid obtaining site certificates from EFSC. Recent revisions to the BETC program have highlighted the need to tighten the State's definition of what constitutes a single facility to prevent evasion of the legislature's intent in promulgating statutes governing energy development funding and siting. In addition, the Association of Oregon Counties finalized a Wind Energy Task Force Report and Recommendations in early January 2010 which contained very weak recommendations for

uniform siting guidelines for wind energy projects with average generating capacity of 35 megawatts or less. Rather than the expected model ordinance, the resulting recommendations are simply features counties should (may) consider when customizing their own review process and requirements. The complete absence of any recommended substantive criteria for wildlife and other resource protection in this Report and Recommendation makes it particularly critical that EFSC provide a mechanism for asserting jurisdiction over large, artificially subdivided projects.

**ATTACHMENT D – LCDC: Solar PV Siting Rule on EFU
Land**

Oregon Land Conservation & Development (LCDC)

OAR 660-033-0130

(38) A proposal to site a photovoltaic solar power generation facility shall be subject to the following definitions and provisions:

(a) “Arable land” means land in a tract that is predominantly cultivated or, if not currently cultivated, predominantly comprised of arable soils.

(b) “Arable soils” means soils that are suitable for cultivation as determined by the governing body or its designate based on substantial evidence in the record of a local land use application, but “arable soils” does not include high-value farmland soils described at ORS 195.300(10) unless otherwise stated.

(c) “Nonarable land” means land in a tract that is predominantly not cultivated and predominantly comprised of nonarable soils.

(d) “Nonarable soils” means soils that are not suitable for cultivation. Soils with an NRCS agricultural capability class V–VIII and no history of irrigation shall be considered nonarable in all cases. The governing body or its designate may determine other soils, including soils with a past history of irrigation, to be nonarable based on substantial evidence in the record of a local land use application.

(e) “Photovoltaic solar power generation facility” includes, but is not limited to, an assembly of equipment that converts sunlight into electricity and then stores, transfers, or both, that electricity. This includes photovoltaic modules, mounting and solar tracking equipment, foundations, inverters, wiring, storage devices and other components. Photovoltaic solar power generation facilities also include electrical cable collection systems connecting the photovoltaic solar generation facility to a transmission line, all necessary grid integration equipment, new or expanded private roads constructed to serve the photovoltaic solar power generation facility, office, operation and maintenance buildings, staging areas and all other necessary appurtenances. For purposes of applying the acreage standards of this section, a photovoltaic solar power generation facility includes all existing and proposed facilities on a single tract, as well as any existing and proposed facilities determined to be under common ownership on lands with fewer than 1320 feet of separation from the tract on which the new facility is proposed to be sited. Projects connected to the same parent company or individuals shall be considered to be in common ownership, regardless of the operating business structure. A photovoltaic solar power generation facility does not include a net metering project established consistent with ORS 757.300 and OAR chapter 860, division 39 or a Feed-in-Tariff project established consistent with ORS 757.365 and OAR chapter 860, division 84.

(f) For high-value farmland described at ORS 195.300(10), a photovoltaic solar power generation facility shall not preclude more than 12 acres from use as a commercial agricultural enterprise unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4 or the requirements of paragraph (G) are met. The governing body or its designate must find that:

(A) The proposed photovoltaic solar power generation facility will not create unnecessary negative impacts on agricultural operations conducted on any portion of the subject property not occupied by project components. Negative impacts could include, but are not limited to, the unnecessary construction of roads dividing a field or multiple fields in such a way that creates small or isolated pieces

Oregon Land Conservation & Development (LCDC)

OAR 660-033-0130

of property that are more difficult to farm, and placing photovoltaic solar power generation facility project components on lands in a manner that could disrupt common and accepted farming practices;

(B) The presence of a photovoltaic solar power generation facility will not result in unnecessary soil erosion or loss that could limit agricultural productivity on the subject property. This provision may be satisfied by the submittal and county approval of a soil and erosion control plan prepared by an adequately qualified individual, showing how unnecessary soil erosion will be avoided or remedied and how topsoil will be stripped, stockpiled and clearly marked. The approved plan shall be attached to the decision as a condition of approval;

(C) Construction or maintenance activities will not result in unnecessary soil compaction that reduces the productivity of soil for crop production. This provision may be satisfied by the submittal and county approval of a plan prepared by an adequately qualified individual, showing how unnecessary soil compaction will be avoided or remedied in a timely manner through deep soil decompaction or other appropriate practices. The approved plan shall be attached to the decision as a condition of approval;

(D) Construction or maintenance activities will not result in the unabated introduction or spread of noxious weeds and other undesirable weed species. This provision may be satisfied by the submittal and county approval of a weed control plan prepared by an adequately qualified individual that includes a long-term maintenance agreement. The approved plan shall be attached to the decision as a condition of approval;

(E) The project is not located on high-value farmland soils unless it can be demonstrated that:

(i) Non high-value farmland soils are not available on the subject tract;

(ii) Siting the project on non high-value farmland soils present on the subject tract would significantly reduce the project's ability to operate successfully; or

(iii) The proposed site is better suited to allow continuation of an existing commercial farm or ranching operation on the subject tract than other possible sites also located on the subject tract, including those comprised of non high-value farmland soils; and

(F) A study area consisting of lands zoned for exclusive farm use located within one mile measured from the center of the proposed project shall be established and:

(i) If fewer than 48 acres of photovoltaic solar power generation facilities have been constructed or received land use approvals and obtained building permits within the study area, no further action is necessary.

(ii) When at least 48 acres of photovoltaic solar power generation have been constructed or received land use approvals and obtained building permits, either as a single project or as multiple facilities within the study area, the local government or its designate must find that the photovoltaic solar energy generation facility will not materially alter the stability of the overall land use pattern of the area. The stability of the land use pattern will be materially altered if the overall effect of existing and potential

Oregon Land Conservation & Development (LCDC)

OAR 660-033-0130

photovoltaic solar energy generation facilities will make it more difficult for the existing farms and ranches in the area to continue operation due to diminished opportunities to expand, purchase or lease farmland or acquire water rights, or will reduce the number of tracts or acreage in farm use in a manner that will destabilize the overall character of the study area.

(G) A photovoltaic solar power generation facility may be sited on more than 12 acres of high-value farmland described in ORS 195.300(10)(f)(C) without taking an exception pursuant to ORS 197.732 and OAR chapter 660, division 4, provided the land:

(i) Is not located within the boundaries of an irrigation district;

(ii) Is not at the time of the facility's establishment, and was not at any time during the 20 years immediately preceding the facility's establishment, the place of use of a water right permit, certificate, decree, transfer order or ground water registration authorizing the use of water for the purpose of irrigation;

(iii) Is located within the service area of an electric utility described in ORS 469A.052(2);

(iv) Does not exceed the acreage the electric utility reasonably anticipates to be necessary to achieve the applicable renewable portfolio standard described in ORS 469A.052(3); and

(v) Does not qualify as high-value farmland under any other provision of law.

(g) For arable lands, a photovoltaic solar power generation facility shall not preclude more than 20 acres from use as a commercial agricultural enterprise unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4. The governing body or its designate must find that:

(A) The project is not located on high-value farmland soils or arable soils unless it can be demonstrated that:

(i) Nonarable soils are not available on the subject tract;

(ii) Siting the project on nonarable soils present on the subject tract would significantly reduce the project's ability to operate successfully; or

(iii) The proposed site is better suited to allow continuation of an existing commercial farm or ranching operation on the subject tract than other possible sites also located on the subject tract, including those comprised of nonarable soils;

(B) No more than 12 acres of the project will be sited on high-value farmland soils described at ORS 195.300(10) unless an exception is taken pursuant to 197.732 and OAR chapter 660, division 4;

(C) A study area consisting of lands zoned for exclusive farm use located within one mile measured from the center of the proposed project shall be established and:

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(i) If fewer than 80 acres of photovoltaic solar power generation facilities have been constructed or received land use approvals and obtained building permits within the study area no further action is necessary.

(ii) When at least 80 acres of photovoltaic solar power generation have been constructed or received land use approvals and obtained building permits, either as a single project or as multiple facilities, within the study area the local government or its designate must find that the photovoltaic solar energy generation facility will not materially alter the stability of the overall land use pattern of the area. The stability of the land use pattern will be materially altered if the overall effect of existing and potential photovoltaic solar energy generation facilities will make it more difficult for the existing farms and ranches in the area to continue operation due to diminished opportunities to expand, purchase or lease farmland, acquire water rights or diminish the number of tracts or acreage in farm use in a manner that will destabilize the overall character of the study area; and

(D) The requirements of OAR 660-033-0130(38)(f)(A), (B), (C) and (D) are satisfied.

(h) For nonarable lands, a photovoltaic solar power generation facility shall not preclude more than 320 acres from use as a commercial agricultural enterprise unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4. The governing body or its designate must find that:

(A) The project is not located on high-value farmland soils or arable soils unless it can be demonstrated that:

(i) Siting the project on nonarable soils present on the subject tract would significantly reduce the project's ability to operate successfully; or

(ii) The proposed site is better suited to allow continuation of an existing commercial farm or ranching operation on the subject tract as compared to other possible sites also located on the subject tract, including sites that are comprised of nonarable soils;

(B) No more than 12 acres of the project will be sited on high-value farmland soils described at ORS 195.300(10);

(C) No more than 20 acres of the project will be sited on arable soils unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4;

(D) The requirements of OAR 660-033-0130(38)(f)(D) are satisfied;

(E) If a photovoltaic solar power generation facility is proposed to be developed on lands that contain a Goal 5 resource protected under the county's comprehensive plan, and the plan does not address conflicts between energy facility development and the resource, the applicant and the county, together with any state or federal agency responsible for protecting the resource or habitat supporting the resource, will cooperatively develop a specific resource management plan to mitigate potential development conflicts. If there is no program present to protect the listed Goal 5 resource(s) present in the local comprehensive plan or implementing ordinances and the applicant and the appropriate

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resource management agency(ies) cannot successfully agree on a cooperative resource management plan, the county is responsible for determining appropriate mitigation measures; and

(F) If a proposed photovoltaic solar power generation facility is located on lands where, after site specific consultation with an Oregon Department of Fish and Wildlife biologist, it is determined that the potential exists for adverse effects to state or federal special status species (threatened, endangered, candidate, or sensitive) or habitat or to big game winter range or migration corridors, golden eagle or prairie falcon nest sites or pigeon springs, the applicant shall conduct a site-specific assessment of the subject property in consultation with all appropriate state, federal, and tribal wildlife management agencies. A professional biologist shall conduct the site-specific assessment by using methodologies accepted by the appropriate wildlife management agency and shall determine whether adverse effects to special status species or wildlife habitats are anticipated. Based on the results of the biologist's report, the site shall be designed to avoid adverse effects to state or federal special status species or to wildlife habitats as described above. If the applicant's site-specific assessment shows that adverse effects cannot be avoided, the applicant and the appropriate wildlife management agency will cooperatively develop an agreement for project-specific mitigation to offset the potential adverse effects of the facility. Where the applicant and the resource management agency cannot agree on what mitigation will be carried out, the county is responsible for determining appropriate mitigation, if any, required for the facility.

(G) The provisions of paragraph (F) are repealed on January 1, 2022.

(i) The county governing body or its designate shall require as a condition of approval for a photovoltaic solar power generation facility, that the project owner sign and record in the deed records for the county a document binding the project owner and the project owner's successors in interest, prohibiting them from pursuing a claim for relief or cause of action alleging injury from farming or forest practices as defined in ORS 30.930(2) and (4).

(j) Nothing in this section shall prevent a county from requiring a bond or other security from a developer or otherwise imposing on a developer the responsibility for retiring the photovoltaic solar power generation facility.

(k) If ORS 469.300(11)(a)(D) is amended, the commission may re-evaluate the acreage thresholds identified in subsections (f), (g) and (h) of this section.

ATTACHMENT E – EFSC Energy Generation Rules

**DIVISION 1
GENERAL PROVISIONS**

ENERGY GENERATION AREAS

345-001-0200

Creation of an Energy Generation Area

(1) The Council shall define the boundaries of an energy generation area by rule when:

(a) The Council finds that a geographical area exists within which the effects of development of two or more small generating plants, as defined in OAR 345-001-0210, are likely to accumulate so the small generating plants have effects of a magnitude similar to a single generating plant with an average electric generating capacity of 35 megawatts or more;

(b) The Council finds that creation of an energy generation area is in the public interest; and

(c) The Council finds that energy resource, environmental, social, economic, public health or safety justification exists to create the energy generation area.

(2) In defining the boundaries of an energy generation area, the Council shall consider:

(a) The location of geothermal, solar or wind resources;

(b) The effect of energy facility development on wildlife or wildlife habitat;

(c) Natural geographical features; and

(d) Political and treaty boundaries.

345-001-0210

Effect of an Energy Generation Area

(1) For the purpose of this rule:

(a) "Energy resource" means geothermal, solar or wind power;

(b) "Small generating plant" means one or more electric power generating devices that:

(A) Have a combined nominal electric generating capacity of more than 3 megawatts and a combined average electric generating capacity of less than 35 megawatts;

(B) Are connected to a common switching station or are constructed maintained or operated as a contiguous group of devices; and

(C) Are owned by a single person or entity or subsidiaries of a single entity;

(c) "Accumulated effects" means the effects of a proposed small generating plant or proposed expansion to a small generating plant combined with the

effects of all existing small generating plants using the same energy resource within the energy generation area. "Accumulated effects" includes the effects of all related or supporting facilities;

(d) Expansion of a small generating plant includes any enlargement of the site and any increase in the small generating plant's nominal electric generating capacity;

(e) Construction of a small generating plant includes the creation of a small generating plant by constructing one or more new electric power generating devices or otherwise adding to the nominal electric generating capacity of one or more existing electric power generating devices that have a combined nominal electric generating capacity of 3 megawatts or less.

(2) For the designated energy resource within an energy generation area created under OAR 345-001-0200:

(a) Except as described in subsection (b), any person who intends to construct or expand a small generating plant shall submit a request for exemption to the Office of Energy, as described in OAR 345-015-0360(6);

(b) If the expansion of a small generating plant would create an electric power generating plant with an average electric generating capacity of 35 megawatts or more, a person shall not expand the small generating plant unless the Council has granted a site certificate or an amendment to an existing site certificate.

(3) Upon consideration of a request for exemption described in section (2), if the Council finds that the accumulated effects have a magnitude similar to a single generating plant with an average electric generating capacity of 35 megawatts or more, a person shall not construct or expand the small generating plant as proposed unless the Council has granted a site certificate or an amendment to an existing site certificate. In making a finding about accumulated effects, the Council shall consider factors including, but not limited to, the following:

(a) The nominal electric generating capacity of the proposed small generating plant or proposed expansion to a small generating plant;

(b) The location of the proposed small generating plant or proposed expansion to a small generating plant relative to existing small generating plants and energy facilities using the same energy resource;

(c) Significant potential adverse environmental impacts of the proposed small generating plant or proposed expansion to a small generating plant, including the impacts of related or supporting facilities;

(d) Significant adverse environmental impacts of all existing small generating plants using the same energy resource within the energy generation area, including the impacts of all related or supporting facilities;

(e) The contribution of the proposed small generating plant or proposed expansion to a small generating plant toward maintaining reliable energy delivery to an area in the state; and

(f) Significant public benefits of the proposed small generating plant or proposed expansion to a small generating plant.

345-001-0220

Energy Generation Areas

The Council may designate geothermal, solar or wind energy generation areas by rule.