

Appendix 7. Calculation of Developed Land Area

i. Purpose

This document describes methods for calculating existing (baseline) levels of developed land area and percentages in Oregon Priority Areas for Conservation (PACs). Methods were adapted from those described in the *Final Greater Sage-Grouse Monitoring Framework* (BLM and USFS 2014) and the *BLM Proposed Greater Sage-Grouse Resource Management Plan and Final Environmental Impact Assessment for the Oregon Sub-Region, Appendix I* (2015).

ii. Background

The United States Fish and Wildlife Service (USFWS) identified 13 threats that have contributed to the destruction and degradation of sage-grouse habitat within its range (USFWS 2010, 2013). Human-caused threats to sage-grouse included urbanization, vegetation treatments, energy development, mining, transportation infrastructure, power line infrastructure, and vertical structures such as communications towers.

To address human threats using a regulatory framework that offers fairness, predictability, and certainty for all involved parties, Oregon modified its administrative rules governing land-use permitting (OAR 660-023-0115); these changes were approved by the Land Conservation and Development Commission in July 2015. The rulemaking process relied on a consensus approach within a Rulemaking Advisory Committee consisting of stakeholders from local and State agencies; tribal governments; and conservation, agriculture, energy, and other interests. The Rulemaking Advisory Committee developed language for the proposed rule and identified a preferred methodology for identifying and calculating existing (baseline) developed land area and percentages from a finite set of methods. The new LCDC rules (OAR 660-023-0115) are described in Section IV and contained in Appendix 17.

Oregon will assess acreages and percentages of developed land for each of the State's PACs, both in total and by county, to facilitate coordination at the local level. Baseline development levels will be calculated using spatial data that represents the large-scale development land uses defined in the new LCDC rules (OAR 660-023-0115). Large-scale development uses are

either over 50 feet in height, have a direct impact in excess of five acres, generate more than 50 vehicle trips per day, or create noise levels of at least 70 dB at zero meters for sustained periods of time. Uses that constitute large-scale development also require review by county decision makers and are listed in one of the following categories identified in the table attached to OAR 660-033-0120.

The land-use categories are: commercial uses; mineral, aggregate, oil, and gas uses; transportation uses; utility/solid waste disposal facilities; and public/quasi-public uses and parks.

iii. Methods

Oregon will acquire geospatial datasets consistent with, but not identical to, those identified in the BLM Direct Area of Influence definitions (Table 1).¹ The datasets consisting of point and line features (e.g., wells and power lines) will be buffered according to the BLM Direct Area of Influence recommendations in Table 1 for each development type and subtype. Areas of overlap among direct areas of influence will be processed (dissolved) to remove any double counting of land area. For example, if more than one project is located entirely within the direct impact zone of a second, larger-impact project, only the larger direct impact zone will be counted. Because overlapping developed land areas will be processed to ensure that land area will not be double counted, the sum of individual development type and subtype footprints may differ from the total developed land area values. Ownership and areas where development is prohibited will not be accounted for in these calculations.

The following formulas will be used to calculate the baseline amount of total developed land area percentages:

In Oregon PACs:

- Baseline total developed land area percentage per PAC = total developed land area² divided by the total area of each respective PAC times 100%.

In Oregon PACs within counties:

- Baseline total developed land area percentage per PAC = total developed land area¹ divided by the total area of each respective PAC within each county times 100%.

iv. Metering of Development

In addition to the baseline for the overall development threshold above, development permitting will be allowed, using a metering approach in Oregon PACs with less than 3% developed land area. The metering approach provides a maximum of 1% development in Oregon PACs for a 10-year period, beginning with the effective date of the new LCDC rules (OAR 660-023-0115) and repeating for each successive 10-year period.

¹ The State is in the process of determining the specific datasets to include but has already considered and tested a variety of datasets, ranging from broad-scale land-cover/land-use data to fine-scale, locally available datasets.

² See Table 1

v. Data and Methods Refinement

The new administrative rule allows counties to establish more refined, project-specific data to replace the baseline figures, under the condition that the methodology is the same. The State of Oregon and local agencies are coordinating with BLM to establish these datasets.

vi. Central Registry and Reporting

The Department of Land Conservation and Development (DLCD) will work with the affected sage-grouse counties, the Oregon Department of Fish and Wildlife, BLM, and the U.S. Fish and Wildlife Service to maintain a central registry to track baseline and all new development in PACs. The DLCD will report the amount of new direct impacts in each PAC annually to the Land Conservation and Development Commission, in coordination with all affected counties, using the formulas above.

Table 1. BLM recommendations for determining the direct impacts of development types and subtypes, referred to by BLM as degradation types and subcategories. BLM included this table as Table 6 in the *Final Greater Sage-Grouse Monitoring Framework (2014)* to describe geospatial data sources and standards for examining habitat degradation (development) at the broad spatial scale. The “Area Source” column found in the original BLM documentation has been removed to simplify the table.

Degradation Type	Subcategory	Data Source	Direct Area of Influence
Energy (oil & gas)	Wells	IHS; BLM (AFMSS)	5.0ac (2.0ha)
	Power Plants	Platts (power plants)	5.0ac (2.0ha)
Energy (coal)	Mines	BLM; USFS; Office of Surface Mining Reclamation and Enforcement; USGS Mineral Resources Data System	Polygon area (digitized)
	Power Plants	Platts (power plants)	Polygon area (digitized)
Energy (wind)	Wind Turbines	Federal Aviation Administration	3.0ac (1.2ha)
	Power Plants	Platts (power plants)	3.0ac (1.2ha)
Energy (solar)	Fields/Power Plants	Platts (power plants)	7.3ac (3.0ha)/MW
Energy (geothermal)	Wells	IHS	3.0ac (1.2ha)
	Power Plants	Platts (power plants)	Polygon area (digitized)
Mining	Locatable Developments	InfoMine	Polygon area (digitized)
Infrastructure (roads)	Surface Streets (minor roads)	Esri StreetMap Premium	40.7ft (12.4m)
	Major Roads	Esri StreetMap Premium	84.0ft (25.6m)
	Interstate Highways	Esri StreetMap Premium	240.2ft (73.2m)
Infrastructure (railroads)	Active Lines	Federal Railroad Administration	30.8ft (9.4m)
Infrastructure (power lines)	1-199 kV Lines	Platts (transmission lines)	100ft (30.5m)
	200-399 kV Lines	Platts (transmission lines)	150ft (45.7m)
	400-699 kV Lines	Platts (transmission lines)	200ft (61.0m)
	700+ kV Lines	Platts (transmission lines)	250ft (76.2m)
Infrastructure (communication)	Towers	Federal Communications Commission	2.5ac (1.0ha)

vii. Literature Cited

Bureau of Land Management (BLM). 2015. Oregon greater sage-grouse proposed Resource Management Plan amendment and Final Environmental Impact Statement. U.S. Department of the Interior, Portland, Oregon, USA.

Bureau of Land Management and Forest Service (2014). The Greater Sage-Grouse Monitoring Framework. U.S. Department of the Interior and U.S. Department of Agriculture.

U.S. Fish and Wildlife Service (USFWS). 2010. Endangered and threatened wildlife and plants; 12-month findings for petitions to list the greater sage-grouse (*Centrocercus urophasianus*) as threatened or endangered. Federal Register 75, 13910-14014, U.S. Department of the Interior, Washington, D.C., USA.

U.S. Fish and Wildlife Service (USFWS). 2013. Greater sage-grouse (*Centrocercus urophasianus*) conservation objectives: final report. U.S. Fish and Wildlife Service, U.S. Department of the Interior, Denver, Colorado, USA.