OREGON FARM & FOREST LAND USE REPORT

2020 –2021

November 18, 2022

OREGON
Department of
Land Conservation
& Development

CONTENTS

APPENDICES

I. Introduction

For nearly half a century, Oregon has maintained strong policies to protect our agricultural and forested lands. In response to an unprecedented loss of arable lands between 1955 and 1965, the state legislature adopted governance in the early 1970's calling for the preservation of agricultural land in order to sustain the agricultural economy and forested land to ensure resources remain available for timber harvest, wildlife habitat, natural resource values, and recreation.

The main tool for carrying out these policies is the statewide land use planning program. Oregon's Land Conservation and Development Commission (LCDC) sets standards and criteria for protecting these limited resources. Counties then apply state requirements through local comprehensive plans and land-use ordinances. Under this system, all 36 counties in Oregon have adopted planning and zoning measures to protect agricultural and forest lands.

Strong farm and timber economies require a certain critical mass of contiguous working lands be maintained. When residential development or other non-resource uses encroach into these areas, a downward cycle of conversion leads to increased conflicts between farm and forest practices, and rural residents, as well as to increased risk for wildfire and pressures on wildlife.

Oregon provides persuasive evidence that comprehensive land use planning and zoning has been able to protect large areas of land from conversion to other uses, particularly sprawling residential subdivisions. The comparison to other parts of the country is stark, especially at the edges of urban areas. In most states low-density residential development continues to leap-frog across the landscape, forcing the premature conversion of farms and forestlands to other uses.

This report provides information on the background and structure of the Goal 3 (Agricultural Lands) and Goal 4 (Forest Lands) components of Oregon's land use program; reports data on applications approved and denied for certain land uses in exclusive farm use (EFU) and forest zones; and highlights challenges and emerging issues pertaining to the protection of agricultural and forest lands. Careful consideration of this information can provide insight into:

- How well Oregon's program is working relative to the original goals established for it,
- How new data and information could be used to enhance the program,
- How Oregon can respond to challenges facing the program, and
- How the program might be adapted to respond to emerging issues.

Reporting of County Land Use Decisions

Oregon Revised Statutes (ORS) 197.065 requires the Oregon Land Conservation and Development Commission (LCDC) to submit a report every two years to the Legislature "analyzing applications approved and denied" for certain land uses in exclusive farm use (EFU) and forest zones and "such other matters pertaining to protection of agricultural or forest land as the commission deems appropriate."

The Department of Land Conservation and Development (DLCD or department) receives county land use decisions in EFU, forest and mixed farm-forest zones. This report summarizes the information provided

by the counties for the two-year period from January 1, 2020 through December 31, 2021. Tables and graphs in this report include information on dwelling and land division approvals as well as other approved uses on farm and forest land. The body of the report includes statewide summaries of this information and the appendix includes detailed, county-level data tables for the biennium. In addition, the report provides information on the acreage rezoned out of farm and forest zones to urban and rural zones in this same time period. Additional graphs, tables, and maps provide historic data on development trends and land conversion of farm and forest land to other uses. Finally, this report also includes data on county land use decisions in farm and forest zones that are based on waivers to state and local land use regulations under Ballot Measures 37 and 49.

Use of this Report

The department uses the collected information to evaluate the extent and location of development, partitions, and zone changes on farm and forest lands. This information is used to continually assess the effectiveness of farm and forest programs in implementing Statewide Planning Goal 3 (Agricultural Lands) and Goal 4 (Forest Lands). The data may also be used by LCDC and the Legislature to shape statutory and rule changes to enhance or clarify protections for farm and forest lands.

II. Oregon's Agricultural Land Protection Program: Planning for the agricultural economy

As expressed in the statutory Agricultural Land Use Policy, the preservation of agricultural land is one of the primary objectives of Oregon's statewide planning program. Oregon has determined that it is in the state's interest to protect the finite land resource that is the foundation of one of its leading industries – agriculture. Agriculture is the second largest sector of Oregon's economy and contributes $12.12 billion in taxes, $29.71 billion in wages and more than 680,000 jobs (Oregon Department of Agriculture, 2021).

Oregon's agricultural lands protection program is based on statute and administrative rules as interpreted by the Land Use Board of Appeals (LUBA) and the courts. Statewide Planning Goal 3 (Agricultural Lands) requires counties to identify and inventory agricultural land, apply statutory EFU zones (ORS Chapter 215) to those lands, and review applications for farm and non-farm uses according to statute and administrative rule (OAR chapter 660, division 33). These provisions also incorporate statutory minimum lot sizes and standards for all land divisions.

Oregon's Agricultural Land Use Policy

Oregon's Agricultural Land Use Policy was first established by the Oregon Legislature in 1973 with the enactment of SB 101, the partner bill to the Land Conservation and Development Act (SB 100) and is codified at ORS 215.243. It pre-dates the adoption of Goal 3 and is included therein by reference.

There are four basic elements to the policy. This first two parts of the policy recognize the benefit of farmland preservation to the agricultural economy and its physical, social and aesthetic contributions to all people of the state in both urban and rural communities. The policy acknowledges agricultural land as a limited natural resource and as an asset to the public finding that private farmland has significant public value beyond the economic contribution of the agricultural sector and the security of food supply.

Some of those public values are less tangible, such as the contribution of the farm-scape to our sense of landscape identity - or the 'open air' and 'room to breathe' that attract recreationists to our countryside. Other public values are more concrete and have been the subject of growing public discourse such as the potential for carbon sequestration, particularly on managed rangeland.

ORS 215.243 Agricultural Land Use Policy

(1) Open land used for agricultural use is an efficient means of conserving natural resources that constitute an important physical, social, aesthetic and economic asset to all of the people of this state, whether living in rural, urban or metropolitan areas of the state.

(2) The preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state and for the assurance of adequate, healthful and nutritious food for the people of this state and nation.

(3) Expansion of urban development into rural areas is a matter of public concern because of the unnecessary increases in costs of community services, conflicts between farm and urban activities and the loss of open space and natural beauty around urban centers occurring as the result of such expansion.

(4) Exclusive farm use zoning as provided by law, substantially limits alternatives to the use of rural land and, with the importance of rural lands to the public, justifies incentives and privileges offered to encourage owners of rural lands to hold such lands in exclusive farm use zones.

While the first two policy statements clearly set forth the state's interest in the preservation of agricultural lands, the later statements establish that:

- Imposing limitations on uses allowed on agricultural lands is justified to prevent the conflicts and negative outcomes which are the typical topics of much of our land use reviews, and
- Certain incentives and privileges (i.e., special tax assessment) are justified because of those limitations placed upon the use of the land.

Farmland Taxation in Oregon

In Oregon, all land zoned exclusive farm use (EFU) automatically receives special tax assessment at its farm use value rather than at its true cash or "highest and best use" value, unless it is explicitly disqualified. The tax laws enabling this special assessment, establishing areas of eligibility and the criteria for eligibility, pre-date the Land Conservation and Development Act by over a decade. Between 1961 and 1973 the special farm assessment program evolved from a voluntary, incentive-based program available in a few areas of the state to a consistent, statewide program that requires the protection of agricultural land through zoning restrictions with

reciprocal tax benefits. EFU landowners receive financial compensation in the form of reduced property tax in exchange for the restrictive land use limitations imposed by the EFU zone. The structure that has been in place since 1973 is a compensatory tax program linked to the land use program.

Over the years there have been efforts to quantify the tax benefit owners of EFU land have received. A 2015 report by the American Land Institute estimates the program has resulted in a total $5.75 billion of compensation in the form of reduced property taxes in the forty-year period from 1974 to 2014. As discussed further below, when the program was established only six nonfarm uses were allowed in the EFU zone. Since the inception of the program the legislature has added additional allowed uses on farmland almost every legislative session. There are now more than 60 nonfarm uses allowed in the exclusive farm zone. As we consider how the program has evolved over the past 60 years and how successful we have been in achieving the farmland policy goals set by the legislature, it is also important to keep in mind the incentives and privileges the state has afforded owners of rural lands to hold such lands in restrictive exclusive farm use zones.

What and where are our Agricultural Lands?

Oregon boasts a diverse landscape supporting a variety of agricultural activities. As reported in the 2017 Census of Agriculture, more than 220 high-quality agricultural products are produced in the state. The top commodities produced reflect that diversity ranging from cattle and calves, hay, grass seed, milk, wheat, wine grapes, cherries, blueberries, hazelnuts, nursery products, onions, and Christmas trees. Important agri-clusters are located in all areas of our state.

Agricultural Lands Definition

1) Lands classified by the U.S. Natural Resources Conservation Service (NRCS) as predominantly Class I-IV soils in Western Oregon and I-VI soils in Eastern Oregon;

2) Land in other soil classes that is suitable for farm use as defined in ORS 215.203(2)(a), taking into consideration soil fertility; suitability for grazing; climatic conditions; existing and future availability of water for farm irrigation purposes; existing land use patterns; technological and energy inputs required; and accepted farming practices; and

3) Land that is necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands.

Land in capability classes other than I-IV/I-VI that is adjacent to or intermingled with lands in capability classes I-IV/I-VI within a farm unit, shall be inventoried as agricultural lands even though this land may not be cropped or grazed.

For land use purposes, the definition of “Agricultural Lands” subject to statewide planning Goal 3 is first based on Natural Resource Conservation Service (NRCS) soil capability ratings. Oregon’s program relies on objective, scientific field data in determining what is inventoried as agricultural lands rather than subjective and changeable trends in the agricultural economy or metrics of profitability which are dependent on the particular skills of individual operators and market conditions. Basing our definition of

agricultural lands on soils classifications acknowledges that long term resource decisions should not be based on short-term conditions, or to put it other words, individual circumstances such as profitability should not be the basis for long-term resource preservation decisions.

In recognition of the difference in our regional landscapes and unique needs of the variety of farm industries, the definition also encompasses other soil classes as needed based on fertility, climatic conditions, availability of water, land use patterns and farming practices. This allows for a broader definition of agricultural lands subject to Goal 3 in keeping with the individual characteristics, vision and needs of local communities.

Lastly, in keeping with the Agricultural Land Use Policy's focus on preserving fully functioning agricultural landscapes, the definition of Agricultural Lands is also meant to include lower capability lands that are interspersed within a cohesive working landscape.

By 1985, all 36 counties had completed their agricultural land inventories based on this definition and the procedures set forth in rule. Counties applied Exclusive Farm Use (EFU) zoning to all inventoried agricultural lands. At that time approximately 16.1 million acres were protected under the EFU zoning designation. Today, 99 percent of that land remains under the EFU zoning designation.

> "Man – despite his artistic pretensions, his sophistication, and his many accomplishments – owes his existence to a six-inch layer of topsoil and the fact that it rains."
>
> — Paul Harvey

Over the life of the land use program, the State Legislature has added several definitions to statute and rule influencing how agricultural lands are prioritized relative to other development opportunities. Newer definitions for priority – or "high-value" farmland are more inclusive and rely on more current data. As noted above, the foundation for farm land inventories was based on scientific data. Our evolving understanding of the importance of agricultural soils should be informed by technical experts and current data.

Further classification of designated agricultural lands is required to address criteria under certain land use reviews. Certain land use reviews may require evaluation of the land relative to one of several different definitions for high-value farmland[1], or to definitions for arable land, land suitable for the production of farm crops and livestock, or non-arable land. Land categorized under certain definitions may not be eligible for certain uses or may require additional standards be met. All of these exercises depend fundamentally on soil capability classifications published by NRCS.

The Oregon Legislature originally created the definition of high-value farmland at ORS 195.300(10) for use in review of Measure 49 claims and it was later referenced in a few other review types. The definition at 195.300(10) goes beyond the more basic soils capability definition in rule to include things like suitability for viticulture use; evaluation of access to irrigation water or drainage infrastructure, and a few other metrics in determining if the land should be considered particularly important for agriculture. This is an example of how the Goal 3 program has been updated, albeit in a limited way, to account for advances in data availability, external or environmental constraints on irrigation potential, and evolving social

[1] ORS 215.710, ORS 195.300, OAR 660-033-0020(8)

perceptions of value. The way in which we prioritize our agricultural lands for better protection is a topic that merits regular consideration.

Exclusive Farm Use Zones

Agricultural lands in Oregon are meant to be protected from conversion to rural or urban uses and other conflicting non-farm uses through the application of exclusive farm use (EFU) zoning. At present, about 16 million acres in Oregon are protected under EFU zoning. The Legislature first developed the statewide EFU zone in 1963 and the statutory zoning provisions are codified in ORS Chapter 215 as now interpreted and refined by LCDC rulemaking. Farm use is encouraged and protected by law within the EFU zone. In addition to farm use, the statutes allow for a variety of accessory farm uses and nonfarm uses provided they are compatible with agriculture. As discussed later in this report, large minimum lot sizes and dwelling approval standards limit the outright conversion of farmland to other uses.

Local jurisdictions do have some discretion in how state statute and rule are reflected in local zoning ordinance provisions, and local jurisdictions craft many of the standards and criteria associated with specific uses to recognize regional differences.

- Counties may not impose more restrictive standards on those uses allowed outright in statute, like farming itself or farm stands, and they cannot regulate farm or forest practices[2], such as herbicide application, on resource lands. However, for discretionary uses like campgrounds that require a demonstration of compatibility with surrounding farm and forest practices, counties may adopt more restrictive standards than those in statute.
- Some uses and standards are mandatory and some are optional, meaning that a county wanting to implement those optional use provisions must adopt them into ordinance.
- Certain uses, like guest ranches, are allowed in some areas of the state and not in others.
- Other uses (e.g. nonfarm dwellings) apply different standards and criteria depending on where in the state they will be located.

[2] *ORS 215.253, "Restrictive local ordinances affecting farm use zones prohibited; exception. (1) No state agency, city, county or political subdivision of this state may exercise any of its powers to enact local laws or ordinances or impose restrictions or regulations affecting any farm use land situated within an exclusive farm use zone established under ORS 215.203 or within an area designated as marginal land under ORS 197.247 (1991 Edition) in a manner that would restrict or regulate farm structures or that would restrict or regulate farming practices if conditions from such practices do not extend into an adopted urban growth boundary in such manner as to interfere with the lands within the urban growth boundary. "Farming practice" as used in this subsection shall have the meaning set out in ORS 30.930."*

This flexibility recognizes that municipal and county governments are in the best position to assess local conditions and needs within the regulatory framework established by the state. As a result, county farm use zoning ordinances vary widely across the state.

III. Land Use Approvals on Agricultural Land

The following section summarizes trends in permit approvals on farmland both for the past biennium and historically. The data presented is based on information reported by counties to DLCD through the Farm and Forest Decision Reporting database. A list of county farm and forest land decisions that were reported to DLCD is available on DLCD's website through the Farm Forest Online Reports interface. Members of the public may also obtain copies of county decisions by submitting a public records request.

Two key dates stand out in relation to the availability of historical data. LCDC had acknowledged the majority of local comprehensive plans and ordinances to be in compliance with statewide planning goals, thus making 1987 an appropriate base year from which to measure the success of the land use program. Major revisions to the Goal 3 and 4 programs were adopted in 1992 by LCDC and in 1993 by the legislature which allowed for the case-by-case identification of less productive resource lands and a variety of opportunities for the establishment of dwellings under various conditions summarized below. Therefore, historical data on dwellings approvals dates back to 1994 following implementation of these various opportunities.

ORS 215.700 Resource Land Dwelling Policy

The Legislative Assembly declares that land use regulations limit residential development on some less productive resource land acquired before the owners could reasonably be expected to know of the regulations. In order to assist these owners while protecting the state's more productive resource land from the detrimental effects of uses not related to agriculture and forestry, it is necessary to:

(1) Provide certain owners of less productive land an opportunity to build a dwelling on their land; and

(2) Limit the future division of and the siting of dwellings upon the state's more productive resource land.

Dwellings

The EFU zone allows for the development of a variety of dwelling types on agricultural land. These dwelling types generally fall into two broad categories – those permitted for farm owners and farm workers, or dwellings in conjunction with farm use, and those that are not associated with an active farm use on the property, or dwellings not in conjunction with farm use. The statutory policies related to housing on resource land included in ORS 215.262, 215.277 and 215.700 indicate that it was the intention of the legislature that farmworker housing be allowed consistent with the State's agricultural land use policy discussed above and that a limited number of dwellings be permitted on less productive resource land acquired before the land use program was implemented.

Primary Farm Dwellings:

Primary farm dwellings are dwellings that are permitted in conjunction with a working farm operation. There are several ways in which a farm operator may apply to place a primary farm dwelling on agricultural land. All of these tests require that the dwelling only be occupied by the farm operator and the operator's immediate family, and all of these tests require documentation that a commercial farm use is being conducted on the property. Farming of marijuana or a psilocybin-producing fungi crop cannot be considered as a qualifying farm use for the purpose of establishing primary or accessory farm dwellings.

Table 1, Primary farm dwelling approvals, statewide summary, 2020 - 2021

Primary Farm Dwelling Tests	Gist of Test*	2020	2021
Farm Income (High Value Farmland)	At least $80,000 in gross annual income from the sale of farm products in each of the last two years or three of the last five years, or in an average of three of the last five years.	16	16
Farm Income (Non-High Value Farmland)	At least $40,000 in gross annual income from the sale of farm products in each of the last two years or three of the last five years, or in an average of three of the last five years or the median amount of gross income earned by commercial farm operations in the 1992 census.	8	18
Large Tract Dwelling	On a parcel at least 160 or 320 acres in size depending upon where in the state the parcel is located.	20	35
Farm Capability	At least as large as the median size of commercial farm tracts capable of generating at least $10,000 in annual gross sales that are located within a study area. Must be reviewed by DLCD.	2	6
Commercial Dairy**	Owns a sufficient number of producing dairy animals capable of earning the gross annual income required from the high value or non-high value income test - whichever is applicable, from the sale of fluid milk.	**	**
Relocated Farm Operations**	An experienced farm operator who ran a qualifying operation at a different location may relocate to a parcel or tract that previously met the applicable requirements for the farm income test.	**	**
The basic essence of the test is described here. All referenced tests have additional, nuanced criteria.* * Reported under the high-value or non-high value tests above.*			

The income standards applicable to most of the farm dwelling tests were established in 1992 as clear and objective standards that would be easy for citizens to understand and for local jurisdictions to apply. These gross income requirements were not tied to any inflationary index and have not been revised since.

Although not required by rule or statute, some counties require covenants be recorded on the property limiting occupancy of the primary farm dwelling to a primary farm operator and the operator's immediate family in order to increase the likelihood of continued compliance with that requirement.

The total number of primary farm dwelling approvals statewide have declined since 1994 though over the past decade the annual number of approvals have remained fairly consistent, between 35 – 50 dwellings a year. 2021 saw an increase in primary farm dwelling approvals related to a high number of large tract farm dwellings approved in Jackson County and a large number of non-high value farm dwellings approved in Lake County. Table 1 above shows what option was used to approve primary farm dwellings over the past biennium. Appendix Tables 2 and 3 contain detailed information on primary farm dwelling approvals.

Accessory Farm Dwellings / Farmworker Housing:

There are two primary types of housing for agricultural workers: farm-based or on-farm housing, and community-based housing, which typically consists of apartments and houses located in urban or urbanized areas and established specifically for farmworkers.

When located in urban areas, housing for farmworkers is included in the definition for 'needed housing' at ORS 197.303. ORS 197.312 provides additional protections for the establishment of farmworker housing in certain residential and commercial zones. DLCD has not historically tracked farmworker housing development outside of lands zoned for resource use.

Table 2, Farm Accessory Dwelling Approvals, 1994-2021

Dwelling Type	Accessory Farm Dwelling Approvals	Accessory Farm Dwelling Units
153-Unit	1	153
16-Unit	1	16
20-Unit	1	20
10-Unit	1	10
8-Unit	1	8
6-Unit	1	6
4-Unit	5	20
5-Unit	2	10
3-Unit	9	27
duplex	27	50
single	937	937
Total	986 permits	1,257 units

When farmworker housing is located on a farm operation protected under exclusive farm use zoning, it is referred to as an 'accessory farm dwelling', that is a dwelling that is accessory to a primary farm use. Accessory farm dwellings can include a variety of housing types including large, multi-family developments.

Since 1994, 1,257 non-relative, farmworker housing units have been permitted on farm operations in EFU zones with an average of 45 farmworker housing units permitted on-farm annually. Approvals over the past biennium were below average. Three-quarters of the units permitted on-farm have been single-family dwellings. The remaining on-farm housing approvals range from duplexes to a large 153-unit facility permitted in 2016 in association with a cherry operation. Some accessory farm dwelling types may be required to be registered with OSHA and subject to health and safety regulations and some are not required to be registered. The historic trend in the mix of building types is reflected in the approvals issued over the past biennium with 71 percent of the approvals issued for single-family dwellings, one approval issued for a 10-unit facility in Yamhill County and the remainder of permits being issued for duplexes.

Accessory farm dwellings must be sited on a farm operation that earns the same gross income required for a primary farm dwelling ($80,000 or $40,000). In order to increase the likelihood of continued compliance with that requirement, some counties require covenants be recorded on the property limiting occupancy of the dwelling to a person who is principally engaged in farm use and whose assistance is required by the farm operator and their immediate family.

Table 3, Accessory farm dwelling approvals, statewide summary, 2020 - 2021

Accessory Farm Dwelling Tests	Summary of Test*	2020	2021
Accessory Farm Dwelling	Occupied by a person employed as a farm worker on the operation. Sited on a farm operation that earns the same gross income required for a primary farm dwelling ($80,000 or $40,000)	26	35
Relative Help	Occupied by a relative of the farm operator who whose assistance is required in the management of farm operations.	47	29

**The basic essence of the test is described here. All referenced tests have additional, more specific criteria.*

Relative Farm Help Dwellings:

Housing for relatives whose assistance is required to support farm operations is another type of dwelling permitted in conjunction with a commercial farm use. The number of dwellings approved for relatives whose assistance is needed on the farm has been fairly consistent over the past ten years, averaging 30 dwelling approvals a year. A concern with this dwelling type is that, once built, there is no requirement that it continue to be occupied by a relative or even that it will continue to be used in conjunction with farm use. Although not required by rule or statute, some counties require covenants be recorded on the property limiting occupancy of the dwelling to a relative of the primary farm operator whose assistance is needed in the day-to-day operation of the farm in order to increase the likelihood of continued compliance with that requirement. Twenty percent of relative help dwelling approvals have historically been issued in Douglas County – a trend which held true for the past biennium as well.

Dwellings Not in Conjunction with Farm Use:

In addition to dwellings permitted in conjunction with an active farm operation on a property, several opportunities also exist in EFU zones to establish dwellings for residential purposes that are not in conjunction with a farm operation. These include Lot of Record dwellings, nonfarm dwellings, replacement dwellings and temporary health hardship dwellings.

Table 4, Dwellings not in conjunction with farm use, statewide summary, 2020-2021

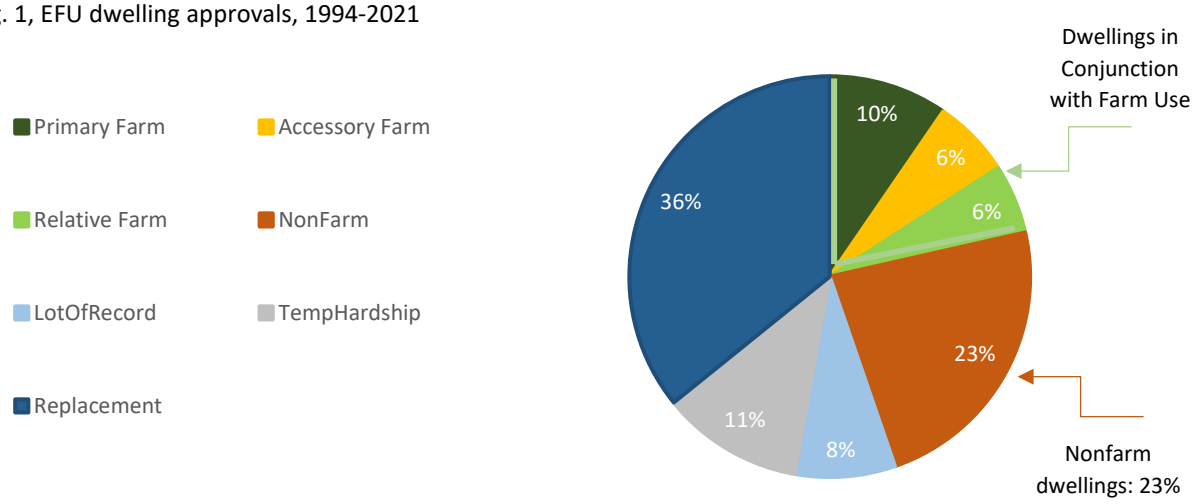
Dwellings Not in Conjunction with Farm Use	Summary of Opportunity*	2020	2021
Nonfarm Dwelling	Located on a parcel or portion of a parcel not suitable for resource use and when the dwelling will not materially alter the surrounding land use pattern or negatively impact surrounding farm and forest practices. That portion of the parcel found unsuitable for farm use may be partitioned.	92	115
Lot of Record Dwelling	Located on a parcel owned continuously since 1985 or inherited from someone who owned the parcel continuously since 1985.	26	38
Temporary Health Hardship Dwelling	Located on a parcel with an existing dwelling for a caregiver or person suffering a medical hardship.	48	77
Replacement Dwelling	Allows the replacement of a legally established dwelling.	240	232

**The basic essence of the test is described here. All referenced tests have additional, more specific criteria.*

Nonfarm Dwellings:

Nonfarm dwellings may be approved on parcels or portions of parcels that are determined to be unsuitable for farm use. That portion of the parcel found unsuitable for farm use may be partitioned from the remainder of the farm parcel. Nonfarm dwellings have engendered much debate due to the subjectivity and complexity of the test. The Oregon Court of Appeals observed in *Cherry Lane v. Jackson County*[3] that these types of nonfarm dwelling approvals should "be the exception and that approval for them be difficult to obtain". However, historically nonfarm dwellings represent just under a quarter of

Fig. 1, EFU dwelling approvals, 1994-2021



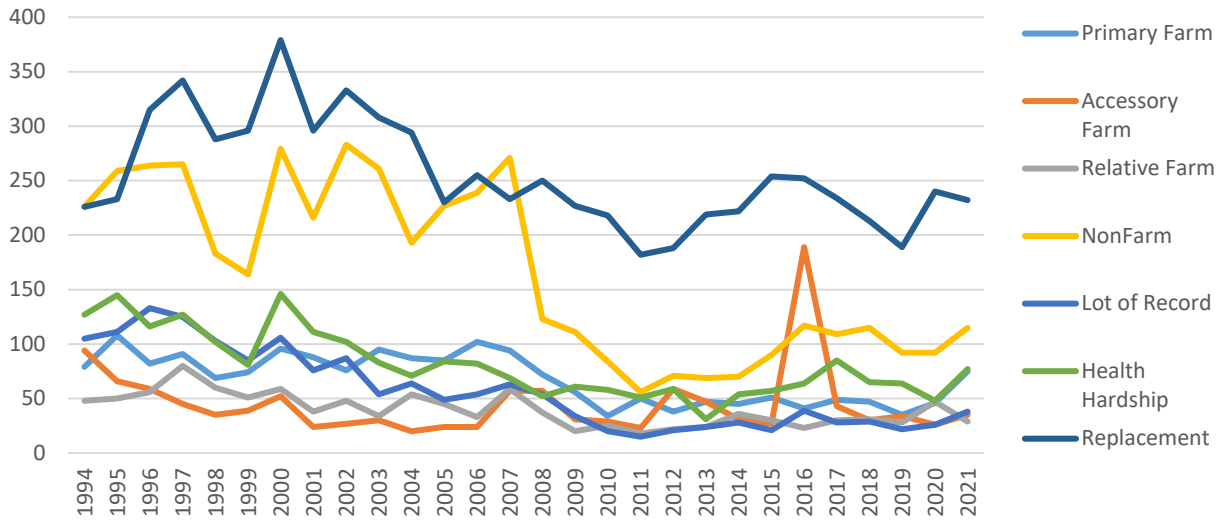
all dwellings approved on EFU zoned lands and more nonfarm dwellings have been approved than all types of dwellings in conjunction with farm use combined.

Except in the two "marginal lands" counties (Washington and Lane)[4], nonfarm dwelling reviews are quite involved, requiring a county to consider resource practices, prior development approvals, development and parcelization trends, and the cumulative impact of all possible new nonfarm dwellings and parcels in a 1,000 to 2,000-acre study area to determine if the proposed nonfarm dwelling may alter the stability of the prevailing land use pattern. A county must deny an application if the county determines that the potential dwelling will make it more difficult for the types of farms 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. A county must thus decide if this additional dwelling will destabilize the agricultural nature of the surrounding area. A particular challenge with this review is determining when the jurisdiction has encountered the proverbial "tipping point" for a given area – particularly when evaluating something as dynamic as the agricultural landscape.

[3] 84 Or. App. 196, 733 P.2d 488 (1987).
[4] The 1983 Marginal Lands Act allowed reduced regulation of certain "marginal" farmlands in return for greater protection to more productive lands. Lane and Washington Counties were the only two counties to adopt the marginal lands program before the statute was repealed in 1991 and those are the only two counties allowed to continue to operate under that program.

As shown in Figure 2, the number of nonfarm dwelling approvals declined after 2008, following general housing market trends, and started steadily increasing in 2011. Over the past five years the number of nonfarm dwelling approvals has been fairly consistent – averaging 105 dwelling approvals a year. That is roughly equivalent to the combined average of primary farm dwelling and accessory farm dwelling approvals over the same five-year period. Over the 2020-2021 biennium, 207 approvals for nonfarm dwellings were issued by counties resulting in the removal of 1,919 acres from special farm assessment (which is required for a parcel on which a County approves a non-farm dwelling). Appendix tables 4, 12 and 13 contain additional detailed information on nonfarm dwelling approvals over the past biennium and historically.

Fig. 2, Dwelling approvals on farmland by type, 1994-2021



In 2010, the Legislature passed House Bill 3647, which required DLCD review of soil assessments, or soils challenges, prepared by a private soil consultant. Soil assessments prepared by private consultants may be used to provide more detailed information than is shown on the USDA Natural Resources Conservation Service's soil mapping and are often used to support a nonfarm dwelling approval by re-classifying a portion of a property to a lower soils capability class. In the 2020-2021 biennium 12 percent of nonfarm dwelling reviews involved soils reports. DLCD's agricultural soils report review program is discussed in further detail below.

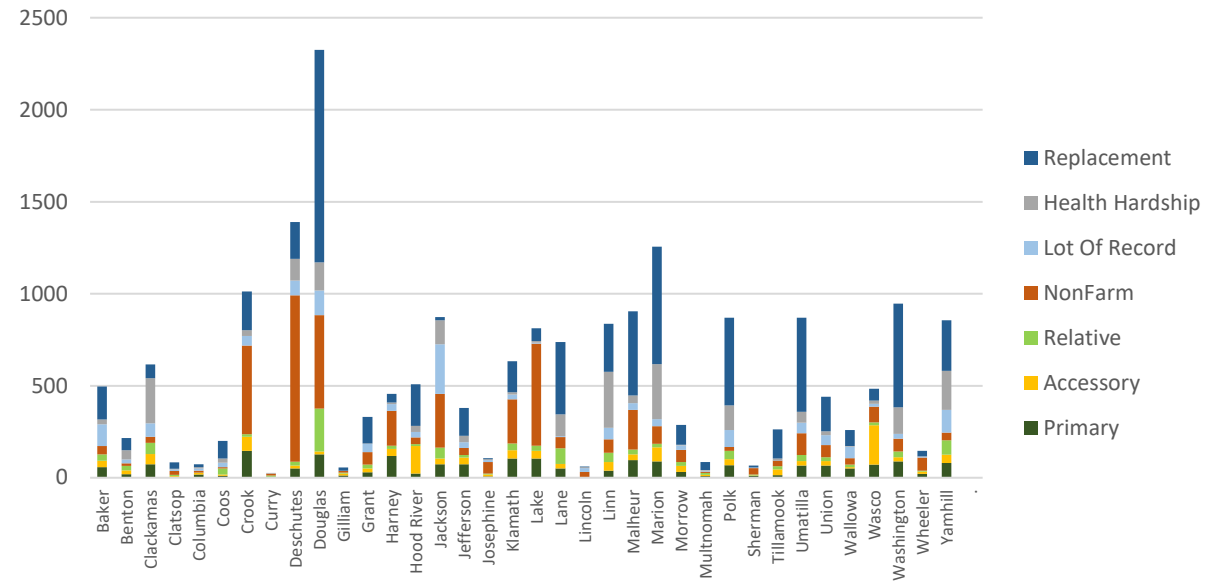
Lot of Record Dwellings:

Counties may approve lot of record dwellings on parcels that have been in the same ownership since 1985 and, with some exceptions, are not on high-value farmland. It was anticipated that lot of record approvals would decline over time as existing parcels are built out or conveyed to separate ownership. In 2020-2021, 68 lot of record dwellings were approved which is slightly higher than the average of 28 approvals per year over the last ten years. Appendix tables 1, 12 and 13 contain additional detailed information on lot of record dwelling approvals over the past biennium and historically.

Health Hardship Dwellings:

These are temporary dwelling approvals for relatives with a medical hardship and must be removed at the end of the hardship. A health hardship dwelling must be sited in conjunction with an existing dwelling and tied into an existing sanitation system. DLCD does not track the removal of these dwellings. In the 2020-2021 biennium, 125 health hardship dwellings were approved, which is consistent with the 10-year average of 60 health hardship dwelling permits/year. Appendix tables 1, 12 and 13 contain additional detailed information on health hardship dwelling approvals over the past biennium and historically.

Fig. 3, Total dwelling approvals on farmland, all counties, 1994-2021



Replacement Dwellings:

A replacement dwelling is a new home that replaces any older, legally established dwelling on a parcel, and thus may be classified as either a farm dwelling or a nonfarm dwelling. The legislature added new provisions to statute in 2013 and in 2019, which allow owners to obtain a replacement dwelling when the original dwelling no longer exists. This category accounts for over one-third of dwelling approvals in EFU zones. As illustrated in Figure 3 above, 16 percent of replacement dwelling approvals and 11 percent of non-farm dwelling approvals have historically been issued in Douglas County. The historical average for replacement dwelling approvals has remained fairly consistent over time at roughly 225 – 250 replacement dwelling approvals per year. Appendix tables 12 and 13 contain detailed information on the number of farm dwelling approvals over time.

Cumulative Dwelling Approvals:

Between 1994 and 2021, more than 19,900 dwellings of all types were approved on farmland across the state. Figure 2 illustrates the number of dwelling approvals each year since 1994 for the different dwelling types. Detailed information on EFU dwelling approvals over this timeframe are provided in Appendix tables 12 and 13. Since 1994, only twenty-two percent of dwelling approvals on land zoned EFU have been

approved in conjunction with farm use. Thirty-one percent have been nonfarm or Lot of Record dwelling approvals, thirty-six percent have been replacement dwellings - which may or may not be associated with a farm - and eleven percent have been temporary health hardship dwellings. **Since 1994, fewer dwellings associated with an operating farm have been approved on agricultural lands than other types of dwellings.**

Many counties temporarily closed and made significant changes to the way they interacted with the public and processed permit applications during the 2020-2021 COVID pandemic. It is worth noting that these measures do not appear to have had a measurable effect on the number of application approvals for dwellings. The annual average for the biennium for all types of approvals exceeded the historical 10-year annual average except for accessory farm dwellings.

Table 5, Annual average dwelling approvals on EFU

Dwelling Type	Primary Farm	Accessory Farm	Relative Farm	Non Farm	Lot of Record	Health Hardship	Replacement
Biennium compared to historic average	above	below	above	in line	above	In line	above
2020-2021 average	**60.5**	**30.5**	**38**	**103.5**	**32**	**62.5**	**236**
5-year average, 2017-2021	50.4	33.6	33	104.6	28.6	67.8	221.6
10-year average, 2012-2021	47.4	52.1	30	94	27.6	60.4	224.3

Nonresidential Uses

In addition to zone changes and UGB expansions which are discussed below, land zoned EFU, forest or mixed farm-forest is also converted to nonfarm and nonforest uses that are permitted by statute or is converted through development rights established by Measures 37 and 49.

The Legislature has recognized that some farm-related and non-farm uses are appropriate in EFU and mixed farm-forest zones. In 1963, the first statutory EFU zone included just six nonfarm uses. The legislature has added additional uses almost every session since the inception of the program. Today more than 60 uses other than farm use are allowed in an EFU zone. Nonfarm uses are subject to local land use approval and must demonstrate that they will not force a significant change in or significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest uses (ORS 215.296). Allowing some nonfarm uses and dwellings assumes that farm zones can accommodate a certain number of nonfarm uses or dwellings without affecting the overall agricultural stability of an area.

1,000 Friends of Oregon released a report in 2020, “Death by 1000 Cuts: A 10-Point Plan to Protect Oregon’s Farmland,” that contains a more detailed analysis of conflicts and impacts to agriculture from the accumulation of nonfarm uses within working agricultural areas. Potential impacts to the agricultural economy can occur in a variety of ways: from lost time resolving conflicts with residential neighbors due to issues like noise, odors, spraying and trespass and traffic, to more landscape-level impacts that occur when the number of farms decline beyond a certain point. A critical mass of farm operations is required in a given area to maintain social networks that provide mentorship, provide opportunities for knowledge

sharing, and maintain an informal economy (borrowing equipment or veterinary supplies). That critical mass of farmers is also required to financially support critical local service providers like diesel mechanics, feed stores and nearby facilities such as co-packing plants and meat processors.

As shown in Appendix table 5, the most commonly approved nonresidential nonfarm uses in 2020 and 2021 were home occupations (58 approvals), commercial activities in conjunction with farm use (37 approvals), commercial power generating facilities (37 approvals), wineries (21 approvals) and utility facilities (20 approvals). This is in line with historic trends, with **home occupations**, **commercial activities in conjunction with farm use** and **commercial power generating facilities** being the three most commonly permitted nonfarm uses in exclusive farm zones since 2008. These uses are addressed individually below.

Unlike dwelling approvals, the average number of permit approvals issued for nonfarm, non-residential uses in 2020 and 2021 was below both the 5-year and 10-year averages. However, there has been a wider margin of inter-annual variability with a low of 88 approvals in 2013 and a high of 264 approvals in 2018. Thus, it is difficult to conclude that the COVID pandemic had a significant impact on the number of approvals issued.

Table 6, annual average nonfarm, nonresidential approvals

Year	# NonFarm Use Approvals Issued
2008	172
2009	149
2010	145
2011	129
2012	116
2013	88
2014	126
2015	170
2016	151
2017	211
2018	264
2019	190
2020	143
2021	108
2020-2021 average	126
5-year average, 2017-2021	183
10-year average, 2012-2021	157

Home Occupations:

Home Occupations were established as a use in exclusive farm use (EFU) zones in 1977. In 1983 the authorization for Home Occupations was expanded to other zones and additional limitations were placed on the use. At that time, Home Occupations in EFU zones were only permitted within dwellings and buildings supporting accepted farm practices. Additionally, Home Occupation approvals were required to be reviewed annually by the issuing jurisdiction for continued compliance with the conditions of approval. In 1985, the authorizing language for Home Occupations in ORS 215.213 was changed to reference ORS 215.448, effectively broadening the types of structures associated with these uses. In 1995, the requirement for annual review for permit compliance was removed from ORS 215.448.

At the state level, Home Occupations are vaguely defined as a use that occurs in dwellings or other buildings normally associated with exclusive farm use zones and operated by a resident or employee of a resident of the property. Home Occupations are limited to employing five full-time or part-time persons. Counties may choose to adopt more restrictive standards for this use.

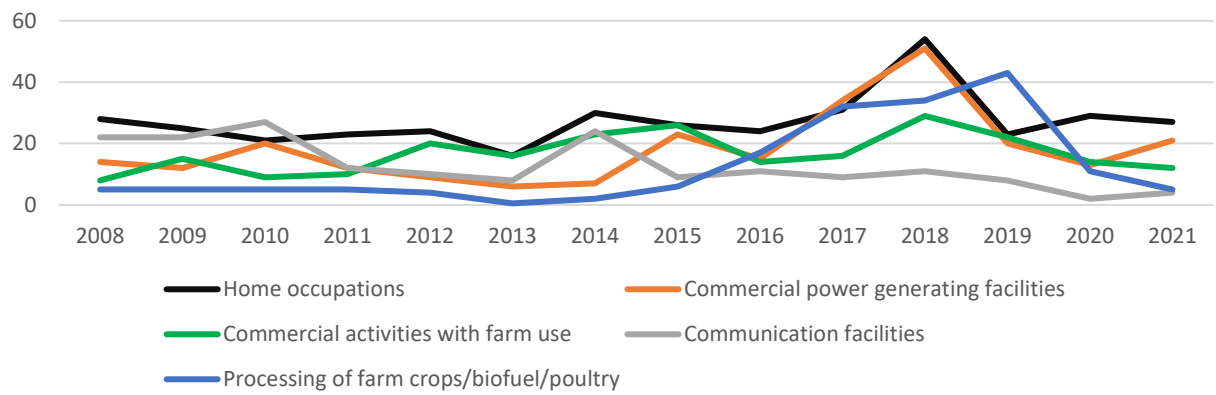
Table 7, Top ten Home Occupation approval types, 2008-20021

Home Occupation Type	Percent of historic Home Occupation approvals, 2008-2021
Lodging	30%
Food production	7%
Construction contracting	7%
Alcohol production and tasting	6%
Firearms	4%
Mechanical repair	4%
Events	3%
Auto sales	3%
Hair salons	3%
Excavation contractor	2%
Other	31%

Given the ambiguity and breadth of the definition of a Home Occupation, a very wide variety and intensity of activities are approved as Home Occupations in EFU zones: hair salons, firearms dealers, tasting rooms, medical offices, events venues, daycares, etc. The most common use of a Home Occupation approval is for bed & breakfasts and short-term rentals. These lodging uses account for 30 percent of Home Occupations permits since 2008.

The Court of Appeals issued a notable decision in 2022[5] ruling that, if counties choose to allow short-term rentals in resource zones, they are not allowed on farm or forest land without a permit review addressing the farm impacts test[6]. In this instance, both the Land Use Board of Appeals ('LUBA') and the Court of Appeals explicitly declined to address whether or not a short-term rental could be conditionally permitted as an accessory use through a home occupation approval. This is worth mentioning as an example of the legal uncertainty related to the broad definition of Home Occupation in statute and rule. Home Occupations have been a frequent topic of review by LUBA since the early 1990s. It has been suggested by farmland protection advocates that clarifying and limiting the definition of Home Occupation in EFU zones would alleviate confusion and uncertainty related to the scope of uses allowed.

Fig. 4, Top five nonfarm, nonresidential approvals on EFU, 2008-2021



[5] 1,000 Friends of Oregon v. Clackamas County. 320 Or App 444

[6] ORS 215.296(1), "A use allowed under ORS 215.213 (2) or (11) or 215.283 (2) or (4) may be approved only where the local governing body or its designee finds that the use will not: (a) Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or (b) Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use."

Commercial Activities in Conjunction with Farm Use ('CACFU'):

Table 8, Top ten CACFU approval types, 2008-20021

CACFU Type	Percent of historic CACFU approvals, 2008-2021
Alcohol production and tasting rooms	38%
Hemp Processing	8%
Agricultural processing	6%
Agricultural transport business	6%
Agricultural equipment manufacturing and sales	5%
Fertilizer production	5%
Events venues	4%
Agricultural equipment repair	4%
Seed cleaning and processing	3%
Dry storage/cold storage	2%
Other	19%

Like Home Occupations, CACFUs are very broadly defined in statute at ORS 215.213 (2)(c) and 215.283 (2)(a). There is no additional clarification in rule addressing what it means to be 'in conjunction with farm use'. CACFUs are also a frequent topic at the LUBA and there exists a body of generally accepted caselaw informing the interpretation of what constitutes a CACFU. Multiple court rulings have found under different circumstances that the use must: 1) be either exclusively or primarily a customer or supplier of farm products, 2) provide products or services essential to the practice of agriculture; and/or 3) significantly enhance the farming enterprises of the local agricultural community. Case law also establishes that associated events or activities must be incidental to the commercial activity. However, this caselaw has not been codified in statute or rule. Although DLCD provides summaries of important cases and changes enacted each legislative session, there exist a wide range in county resources to track precedents established by the courts and to update their ordinances. As a result, these standards are not applied uniformly throughout the state. Rulemaking codifying these broadly accepted standards established by the courts would improve the consistency of their application across the state.

Table 9, Examples of use approvals through various permitting paths in EFU zones

Use Type	Chapter 215 (Specific Provisions)	Commercial Activity in Conjunction with Farm Use (CACFU)	Home Occupation
Wineries	145	63	9
Cideries	1	5	1
Breweries	0	7	6
Farm Product Processing	174	35	30
Events*	12	9	13
**Does not include events permitted at wineries, cideries, breweries or farm stands*			

Thirty-eight percent of CACFU approvals are related to the production of alcohol and tasting rooms. It is worth noting that alcohol-related businesses are also one of the top-five Home Occupation uses in addition to the wineries, cideries and breweries permitted pursuant to the specific statutory

authorizations at ORS 215.452 to 453, 215.451 and 215.449 respectively. If one were only to review the number of approvals issued for wineries under ORS 215.452 and 215.453, one would underestimate the number of wineries permitted in the state. It is not uncommon for proposals that cannot meet the standards defined for a specific use in ORS Chapter 215 to seek approval under the broader Home Occupation or CACFU provisions.

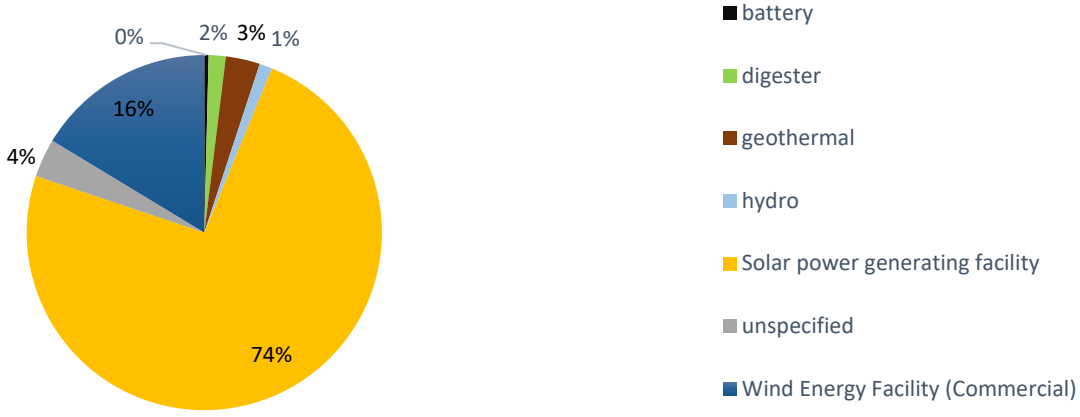
In addition to alcohol production and tasting, various types of processing facilities and events are other uses which are commonly approved under the broader provisions of a Home Occupations or CACFU use in the alternative to being approved under the standards specific to those uses in ORS Chapter 215. Like Home Occupations, it has been suggested that clarifying and limiting the definition of CACFUs in EFU zones would alleviate confusion and uncertainty related to the scope of uses allowed.

Power Generating Facilities:

Since 2008, 257 commercial power generating facilities have been permitted on farmland. The majority of these facilities have been approved in the last five years and have been for solar power generating facilities.

The increase in energy footprint on farmland, together with new major transmission line corridors to bring that energy to market, has raised questions and concerns about potential impacts to farm operations, wildlife habitat, scenic viewsheds, and tourism. Other concerns have been raised about the need for a state energy policy and more proactive state and regional roles in the siting of major transmission line corridors and energy facilities that may have regional impacts. At the same time Oregon is committed to the important role renewable energy development will play in addressing climate change. A balance is needed that affords renewable energy developers a degree of security in pursuing certain development sites over others while protecting our limited supply of working farmland.

Fig. 5, Local commercial Power Generating approvals on farm and forest land by type, 2008-2021



Solar Power Generating Facilities**:** Solar energy development is rapidly growing in Oregon. By the first quarter of 2022, Oregon's installed solar capacity was 1,330 MW with more than 200 MWs being added annually in 2020 and 2021 (Solar Energy Industries Association, 2022). Many utility-scale solar facilities

are opting to locate on land protected under EFU zoning due to proximity to high voltage powerlines and substations with interconnection opportunities, lower land acquisition or lease costs, availability of unobstructed sunlight, and ease of development due to clearing and flatter slopes.

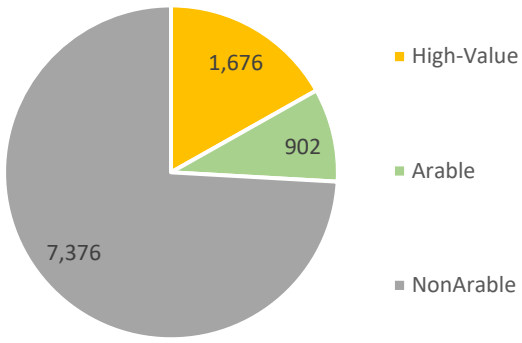
These facilities may seek land use approval in three different ways:

1. Conditional use applications reviewed by a county pursuant to LCDC's Agricultural Lands rule (OAR chapter 660, Division 33),
2. Post acknowledgment plan amendments reviewed by a county that include an exception to Goal 3 pursuant to OAR chapter 660, Division 4; and
3. Site Certificates granted by the Oregon Energy Facility Siting Counsel (EFSC) that include an exception to Goal 3 pursuant to ORS 469.504(2).

All solar review processes require the permitting authority, either EFSC or the local jurisdiction, to make a determination of the farmland classification of the property hosting the solar facility. There are three farmland classifications: 'high-value farmland' as that is defined in ORS 195.300, 'arable farmland' which is land that is cultivated or suitable for cultivation, and 'nonarable farmland', which is not suitable for cultivation and generally consists of lower capability class rangeland. DLCD's rules at OAR 660-033-0130(38) limit solar projects to occupying 12 acres of high-value farmland, 20 acres of arable farmland and 320 acres of nonarable farmland.

Local Review Pursuant to OAR 660-033-0130: Smaller utility scale power generation projects may be reviewed by the local jurisdictions in what is referred to as a 'conditional use review' process. LCDC initially adopted rules specifically for siting solar facilities on land zoned for exclusive farm use in 2011. These rules have been adjusted over time but remain fundamentally designed to encourage solar development on land with lower capability for agricultural use rather than on high-value farmland or irrigated croplands. Recognizing that taking a large amount of agricultural land out of production within an agricultural area has the potential to significantly impact the local agricultural economy[7], DLCD's rules at OAR 660-033-0130(38) are also designed to limit the cumulative conversion of farmland to solar use in a given area.

Fig. 6, Local Solar EFU Solar Approvals, Acres Used by Farmland Classification, 2011-2021



Oregon Board of Agriculture Policy Resolution on Energy Facility Siting: In 2018 the Board of Agriculture adopted a Policy Resolution (included as Attachment 3) concerning the siting of energy transmission and generation facilities on agricultural land wherein they express concern about the conversion of high-value and productive farmland to energy facility development. The resolution notes that DLCD's rules do not preclude the serial development of solar facilities or the placement of solar facilities on productive

[7] It is generally accepted that a certain critical mass of agricultural production is required to support food systems facilities, infrastructure and ancillary businesses like co-packing plants, transportation and logistics providers, feed stores, and diesel mechanics.

cropland and specifically recommends that LCDC evaluate and monitor the effectiveness of its rules for siting energy facilities on land zoned for exclusive farm use. The information provided herein may be used by the Commission in evaluating the effectiveness of its rules in encouraging renewable energy development at appropriate locations on less production agricultural lands and upholding the policy intent of Goal 3 to preserve agricultural lands.

Impact to Farmland: Since 2011, more permits have been issued by local jurisdictions for projects on high-value farmland than on arable or nonarable land. However, larger solar projects have been approved on nonarable farmland resulting in more nonarable acreage converted to solar use than high-value or arable farmland. This can be viewed as an indication that DLCD's solar rules have had the desired effect of encouraging solar development towards nonarable rangeland. However, as noted in Table 11 below, more acres (16,940 acres) have been approved for solar development under processes that do not require compliance with DLCD's solar rules than have been approved subject to OAR 660-033-0130(38) (8,336 acres). This occurs when an applicant demonstrates through the review process that there are reasons that Goal 3 should not apply, commonly known as an "exception."

Goal 3 Exception Review: When a proposed project does not meet the acreage thresholds established by LCDC in rule, the developer may seek an exception based on reasons that justify why statewide planning Goal 3 should not apply to the development. A goal exception for medium-sized projects that remain subject to local jurisdiction may be considered by a County through the exceptions process established pursuant to ORS 197.732 and statewide planning Goal 2. Alternatively, a Goal exception may be granted by the Energy Facility Siting Council (EFSC) for larger projects or projects which choose review under EFSC through the Site Certificate review process subject to a different set of criteria. In this way, a solar project may receive approval to occupy more rangeland, cultivated farmland, or high-value farmland than would be allowed under the Division 660 rules adopted by the Land Conservation and Development Commission (LCDC).

Table 10, Overview of certain regulatory thresholds for solar projects in Oregon

	Subject to local jurisdiction. May *choose* review by EFSC (ORS 469.230(8)(a)).		Subject to EFSC jurisdiction
	Goal exception not necessarily required	Goal Exception Required	
	Farmland used, occupied or covered under OAR 660-033-0130(38)	Farmland used, occupied or covered under OAR 660-033-0130(38) and/or as described at ORS 215.416*	"Energy Facilities" under ORS 469.300
High-value farmland	up to 12 acres	13-160 acres*	>160 acres
Cultivated farmland*	up to 20 acres	21-1280 acres	>1280 acres
Nonarable farmland and other land	up to 320 acres	321-1920 acres	>1920 acres

**Note: There are nuances in the language found in various chapters of statute and DLCD and EFSC rules which are not addressed here. This table is provided as a generalized overview.*

Case law indicates that the provisions of OAR 660-004-0022, 'Reasons Necessary to Justify an Exception Under Goal 2, Part II(c)', do not fit well with renewable energy projects proposals because no statewide planning goal identifies a "need" for renewable energy development. Furthermore, the Oregon Court of Appeals has held that photovoltaic solar projects are not property considered a "rural industrial" use as contemplated by the exceptions rule. Most solar projects cite the same set of justifications for a Goal 3 exception including the necessity of locating a generating project near high voltage transmission lines with interconnection capacity and a need for renewable energy as established by the Renewable Portfolio Standard[8]. These conditions are common to most utility-scale renewable energy projects and are not particularly exceptional.

Since 2011, 24 solar projects have been granted Goal 3 exceptions through either a county or the EFSC exceptions process. While more permit approvals have been issued pursuant to DLCD's solar siting rules, far more solar capacity and acreage associated with larger projects has been permitted under an exceptions process. Sixty-seven percent of the area approved to be occupied by solar projects has been approved subject to a local or EFSC Goal 3 exception (16,940 acres out of 25,276 acres). More of these exceptions have been issued to allow projects on arable, cultivated land than on high-value or nonarable farmland. Table 11 below contains detailed information on the number, acreage and farmland classification of solar projects approved since 2011.

Given that more solar capacity in the state has been approved through a process meant to be applied to unique cases meriting waiver of the agricultural lands land use program, it is necessary to ask if different standards are required for these larger projects that would appropriately incentivize siting on lands not needed to support the agricultural economy, or at least on less productive agricultural lands.

Energy Facility Site Council (EFSC): In lieu of seeking approval through the local jurisdiction, energy developers may seek permit approval through the Oregon Energy Facility Siting Council (EFSC) under their standards for review. While facilities over a certain size are *required* to obtain site certificate approval from EFSC, other developers may choose to do so voluntarily though none have yet chosen to do so. EFSC may grant a Goal exception through their site Certificate review process subject to the criteria found at ORS 469.504(2). Although similar to LCDC's Division 4 rules, ORS 469.504(2) does not require an analysis of potential alternative sites that would not require an exception.

Because EFSC's jurisdictional authority for solar projects is based on the acreage occupied by a solar project, larger projects are reviewed by EFSC rather than the local jurisdiction. DLCD's rule thresholds limiting the acres of each type of farmland that can be occupied by a solar project are designed for projects reviewed at the local level. Solar projects that are EFSC jurisdictional occupy more acres than the thresholds allowed in DLCD's rules and necessarily require a Goal 3 exception. For example:

- DLCD's rules do not permit a solar project to occupy more than 20 acres of arable farmland and a project proposing to use more than 20 acres of arable farmland requires an exception.
- Any solar project occupying more than 1,280 acres of arable land is subject to EFSC jurisdiction.

[8] It is worth noting that the Oregon Renewable Portfolio Standard does not require renewable generation facilities to be located in Oregon and projects generally have not obtained offtake commitments at the permitting stage demonstrating that the generation is intended to meet an RPS obligation. For these reasons, this argument is often rejected as demonstration of 'need'.

- Solar projects occupying between 21 and 1,280 acres of arable land may seek a goal exception through the county or through EFSC.

Since 2011, EFSC has issued eleven Site Certificate approvals for solar projects involving exceptions and occupying just over 15,000 acres. While more projects have been reviewed by local jurisdictions than by EFSC, the projects reviewed by EFSC are larger and impact more acres of farmland than projects reviewed by counties.

As of September 1st, 2022, EFSC had an additional six solar projects under review proposed to occupy more than 24,000 acres of farmland. This is roughly equivalent to the total area permitted for solar development over the past 10 years.

Table 11, Solar projects permitted on EFU by farmland type occupied and review authority, 2011-2021

Solar Projects Permitted on EFU (Including Exceptions), 2011-2021			
Review Authority	**Farmland Type**	**Number of Projects**	**Use Area (acres)**
county	high value farmland	89	1,433
county	arable farmland	17	281
county	nonarable farmland	37	6,622
	TOTAL LOCAL PURSUANT TO DLCD RULES	143	8,336
county exception	high value farmland	3	243
county exception	arable farmland	8	621
county exception	nonarable farmland	2	754
	TOTAL LOCAL EXCEPTIONS	13	1,618
EFSC exception	high value farmland	4	3,530
EFSC exception	arable farmland	5	7,601
EFSC exception	nonarable farmland	2	4,191
	TOTAL EFSC EXCEPTIONS	11	15,322
Total	Total high value farmland	29	5,206
Total	Total arable farmland	97	8,503
Total	Total nonarable farmland	41	11,567
TOTAL EFSC & Local EFU Approvals		**167**	**25,276****
**Projects permitted 01/01/2011 through 12/31/2021. County permits as reported to DLCD through the Farm & Forest Decision Reporting Database pursuant to ORS 197.065 and through the Post Acknowledgement Plan Amendment Reporting Database. Farmland type based on permit record findings. High-value Farmland as defined in ORS 195.300.* ***25,276 acres is equivalent to 39.5 square miles*			
Note: Seven (7) approvals for solar projects on EFU were issued by counties prior to 2011 with a use footprint of 427 acres. Farmland classification information for these projects is not available.			

Local and EFSC Solar Approvals: Table 11 above summarizes all solar approvals issued by local jurisdictions and EFSC since 2011, both issued pursuant to DLCD's rules and involving exceptions. As context for these acreage numbers, as discussed further below in this report, a total of 42,206 acres have been re-zoned

from EFU to other urban and rural uses since 1987, including re-zonings related to urban growth boundary (UGB) expansions. As noted in Table 11 above, more than half that amount of farmland (25,276 acres) has been approved for conversion to solar development in only the past decade.

At least 69 of the 156 projects approved at the local level (44%) were identified as under construction or as operating. Of the eleven facilities permitted by EFSC, four are currently in construction or are operating.

Looking Forward: Looking forward to the future, estimates for new renewable generation required to meet the state's 2040 renewable portfolio standard (RPS) targets vary considerably. Generalized ranges identify the need for an additional 1 gigawatt per year for the next 30 years on the lower end and an additional 3 gigawatts per year for the next 30 years on the higher end. If that need were to be filled only with utility-scale solar development, using a commonly accepted metric of 8 acres per megawatt, roughly 240,000 to 720,000 acres would be needed to accommodate that growth. If the trend of siting solar projects on farmland continues, this represents the conversion of a significant amount of agricultural land.

Table 12, all acres approved for solar development by farmland classification by county, 2011-2021

County	Arable Acres	HVFL Acres	Nonarable Acres	Total Acres
Lake	90		6,574	6,664
Wasco	5,307			5,307
Lake			3,921	3,921
Morrow	2,294	1,113		3,407
Crook		4	2,604	2,608
Gilliam		2,417		2,417
Jefferson	17		608	625
Clackamas	111	408	100	619
Harney			560	560
Deschutes		3	543	546
Klamath	36	368	105	509
Malheur	426		73	499
Marion	12	334	5	351
Jefferson			270	270
Jackson	53	104		157
Morrow		132		132
Baker			125	125
Yamhill		106		106
Sherman	100			100
Polk	7	83		90
Umatilla	6	80		86
Linn	32	35		67
Josephine	12			12
Washington		12		12
Wallowa		7		7
Total	8,503	5,206	11,567	25,276

The amount of farmland impacted by solar development varies significantly across the state. Table 12 summarizes the area permitted for solar development by county. Of note and not included in these data tables, applications for solar facilities proposed to occupy more than 16,000 additional acres in Morrow County have been filed with EFSC and the local jurisdiction as of September 15, 2022. More than 3,500 acres of solar projects have been approved or are operating in Morrow County. If current applications are approved, more than 20,000 acres of farmland in Morrow County would be converted to solar use. It is important to continue to track and consider the potential cumulative impact conversion to solar development may have to a county or region's agricultural land base and economy.

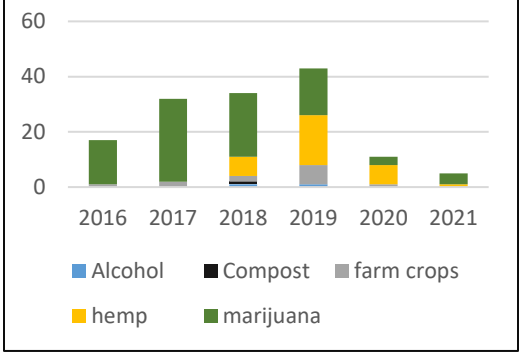
Agrivoltaics/Dual-use: There has been a significant amount of interest in the potential of co-locating solar projects with active farm uses in a way that allows for the generation of renewable energy and continued commercial agricultural production. The term "dual-use" refers to a solar project development that includes both solar arrays and commercial farming activity on the same ground.

DLCD's rules for solar development on farmland contained provisions that allowed a proposed solar project to occupy more than 12 acres of high-value farmland if a dual-use development plan providing for farm use at the solar project was established and maintained for the life of the project. Counties were given discretion to develop conditions for such plans suitable to the agricultural enterprises predominant in their region. No projects were proposed for review under these provisions, and they expired on January 1, 2022. However, there is nothing in statute or rule that would preclude a project from voluntarily implementing a dual-use program.

Farm Product Processing Facilities:

Processing of farm products is allowed on land zoned for exclusive farm use when at least 25 percent of the crops or poultry processed are produced on the farm operation and the processing area is smaller than 10,000 square feet. In 2019 the legislature enacted changes that exempt processing facilities using less than 2,500 square feet from local siting standards. Processing facilities permitted pursuant to ORS 215.255 include the processing of farm crops and poultry only and do not allow for other types of meat processing.

Fig. 7, Farm Product Processing Approvals by Types, 2016-2021

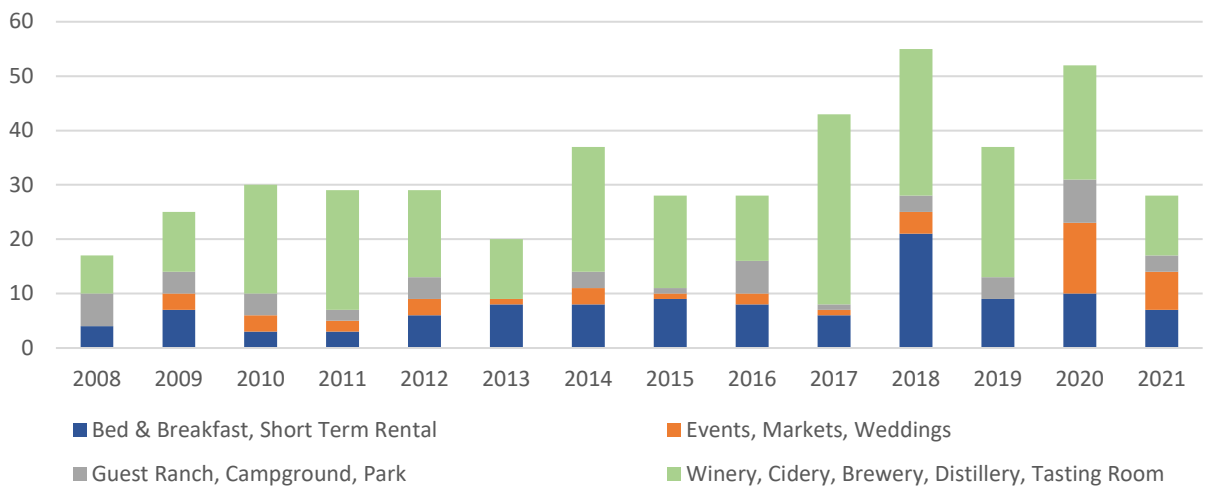


Prior to 2016, farm product processing facilities were occasionally permitted. Following the passage of Measure 91 in 2014 and subsequent enactment of HB 3400 in 2015 (legalization of non-medical marijuana), the number of approved processing facilities increased significantly with 89 percent of the processing facilities approved between 2016 and 2021 approved for the processing of marijuana and hemp crops. Marijuana processing includes the processing, compounding or conversion of marijuana into cannabinoid products, concentrates or extracts. As noted in Figure 7, the initial spike in applications following implementation of Measure 91 has cooled.

Agri-tourism:

There is no definition for agri-tourism in statute or rule and an understanding of what constitutes 'agri-tourism' can encompass a wide variety of potential options including: u-picks, farm stands, tasting rooms, guest ranches, farm-to-table dinners, corn mazes, bed and breakfast farm stays, camping, classes, markets, tours, concerts, festivals, parks, trails, etc. Many of the provisions related to agri-tourism opportunities are optional for counties to adopt into their ordinances, resulting in uneven application across the state.

Fig. 8, Agri-tourism and recreational approvals, by year, 2008-2021



Agri-tourism allows visitors to experience and learn about Oregon agriculture while providing additional income for farmers and has been growing in popularity over the past decade. USDA reports $16M in 2017 revenue earned from Oregon agri-tourism and recreational services (hunting, fishing, farm or wine tours, hayrides, etc.) (USDA NASS 2017). This represents an increase of 51 percent over 2012 revenues ($10.6M). However, the burgeoning industry has its share of controversy as operators and neighboring farmers negotiate a series of challenging conflicts, such as noise, litter, dust, trespass, traffic, parking and spraying.

In addition to the potential for conflict with neighboring agricultural operations, there have been some concerns about the effect of events and the cumulative impact of multiple agri-tourism and recreational operations on farm practices. Many agri-tourism uses, like farm stands and farm-to-table dinner events, are allowed outright and are not required to address changes to farm practices or cost increases as part of the land use approval process.

Agri-tourism can provide an alternate stream of income that helps farmers and can promote awareness of locally produced food. However, siting should occur under defined circumstances that address impacts to the neighboring agricultural area and ensure that the primary use of the property remains farm use rather than entertainment and tourism.

Figure 8 shows approvals of agri-tourism and recreation related uses from 2008 to 2021. Each of the categories summarized above might be permitted in a variety of ways including as uses allowed under ORS 215.213/215.283, as Home Occupations and as Commercial Activities in Conjunction with Farm Use. For example, Agri-tourism events were added to the list of uses allowed on farmland following the passage of Senate Bill 960 in 2011. Event venues are also sometimes permitted as outdoor mass gatherings, at farm stands, wineries, breweries and cider businesses, and occasionally as home occupations. Activities like product tastings can be permitted as agri-tourism events, home occupations, commercial activities in conjunction with farm use, and at farm stands, wineries, cider businesses, and breweries.

Land Divisions and Property Line Adjustments

Oregon land use law sets "minimum parcel sizes" and related standards applicable to land divisions in farm and forest zones. In EFU zones, the minimum size for new parcels is 160 acres on rangeland and 80 acres on other farmland. These standards implement those provisions of Goal 3[9], which recognize that large blocks of land may be necessary to maintain the agricultural economy of an area. The minimum parcel size standard also serves to discourage entropic land division of farmland into smaller and smaller parcels that become less feasible for farming and more attractive for residential use. If a county can justify a lower minimum lot size that will protect commercial farming, it may be approvable by the LCDC. This is commonly referred to as adoption of a "go-below" standard. Several counties have applied these lower minimums.

State statute also provides several options for creating new parcels smaller than the required minimum parcel size:

- A county may authorize creation of up to two new nonfarm parcels (each containing a dwelling) if the new parcels are predominantly comprised of non-agricultural soils.
- In addition, counties may approve nonfarm land divisions for certain approved conditional uses on farmland.
- Counties may also approve divisions smaller than the required minimum parcel size for parcels that span urban growth boundaries (UGBs).

In the past biennium, 136 land divisions were approved creating 171 new parcels. Fifty-one of the approvals were in association with a nonfarm dwelling approval and fourteen were in association with a new conditional use approval.

Property Line Adjustments:

Property line adjustments are commonly employed for a variety of reasons. Some common examples include reconfiguration of a tract in preparation to sell a parcel of the tract, or to align a boundary line with a natural feature like a river or creek. However, property owners may not use a property line adjustment to allow the approval of dwellings that would not otherwise be allowed. Many of the reported property line adjustments involve more than two tax lots. In 2020, 267 property line adjustments were approved and 274 were approved in 2021 for total of 541 property line adjustment, in line with historical trends.

[9] Goal 3 incorporates ORS 215.243 by reference as the Agricultural Land Use Policy was enacted prior to the adoption of Goal 3.

IV. Oregon's Forestland Protection Program

Statewide Planning Goal 4

To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

The conservation of forest land is one of the primary objectives of Oregon's statewide planning program. Oregon has determined that it is in the state's interest to protect the land resource foundation of one of its largest industries – forestry. Forestry products and services employ more than 61,000 people directly in Oregon and are critical to Oregon's rural communities (OFRI, 2019). That is approximately 3 percent of the total jobs in Oregon according to the Oregon Forest Research Institute. Oregon has been the top producer of softwood lumber and plywood in the United States for many years (OFRI, 2019). Oregon is also a leader in producing value-added engineered wood products such as cross-laminated timber (CLT), glue-laminated timber (glulam) and mass plywood panels (MPP) (OFRI, 2019).

Statewide Planning Goal 4 seeks to maintain Oregon's forests for tree harvesting in balance with the sound management of soil, air, water, fish, and wildlife resources. Healthy forests provide vital ecosystem functions and environmental, social, and economic benefits that people value: air, healthy soils capable of carbon storage, clean water, riparian areas, streams, wetlands and estuaries that enhance habitat for fish and wildlife. Investments in healthy ecosystems also provide recreational opportunities for those who live in and visit Oregon. Recreational opportunities and agriculture are also encouraged on forest land. Other uses allowed on forest land (e.g. dwellings) are limited and subject to standards that make them more compatible with forestry, agriculture, and the preservation of habitat and natural resources. Large minimum lot sizes are prescribed to help ensure land is used in accordance with the purposes of Goal 4.

Plans providing for the preservation of forest lands for forest uses must consider the carrying capacity of the air, land and water resources of the planning area. The land development actions provided for by such plans should not exceed the carrying capacity of such resources.

Forestlands

Oregon's forested landscape consists of a mosaic of land uses including working forests, conservation reserves, and those associated with human-dominated uses. Oregon is home to some of the world's most productive forests, ranging from dense Douglas-fir forests of the Willamette Valley and Coast Range to the high desert Ponderosa Pine stands in the Cascades and Blue Mountains. Forests cover more than 30.5 million acres of Oregon, almost half of the state. Sixty percent of the forest land base, approximately 16 million acres, is owned and managed by the federal government under management plans for different

> "Forest lands" as defined in Goal 4 are those lands acknowledged as forest lands, or, in the case of a plan amendment, forest lands include:
>
> (a) Lands that are suitable for commercial forest uses, including adjacent or nearby lands which are necessary to permit forest operations or practices; and
>
> (b) Other forested lands that maintain soil, air, water and fish and wildlife resources.

benefits. The Oregon Department of Forestry (ODF) estimates that there are approximately 10.4 million acres of nonfederal wildland forests and approximately 853,000 acres of mixed forest/agriculture. 11.8 million acres of the forest land base have been inventoried by counties as forest and mixed forest/agricultural lands and protected under zoning designations. These are the subset of lands subject to Goal 4.

Subsequent to original county designations, there are now provisions in administrative rules for the identification of forest lands which must be contemplated as part of an amendment to a county's comprehensive plan. Like the requirements for identifying agricultural lands, OAR 660-006-0010(2) requires forest land determinations be based on scientific data for vegetative capability classes published by the Natural Resource Conservation Service (NRCS) or other specific technical resources if such data is not available.

There is also a definition for high-value forest land at ORS 195.300(11) which is tied to the published vegetative capability classes for soils. However, while certain nonfarm uses and rules for UGB and URA expansions rely on the definition of high-value farmland at ORS 195.300(10), the definition for high-value forest land at 195.300(11) is not currently applied to land use reviews outside of procedures related to Measure 49 claims.

Forest and Mixed Farm-Forest Zones

Forest zoning has been instrumental in maintaining working forests in Oregon. The Oregon Department of Forestry reports that Washington state's loss of wildland forest between 1974 and 2014 was nearly three times the amount of wildland forest lost in Oregon (Gray et al, 2018).

Lands inventoried as forest land are required to be zoned forest or mixed farm-forest by counties. Approximately 11.8 million acres in Oregon are included in forest or mixed farm-forest zones. Mixed farm-forest zones must comply with both Goal 3 and Goal 4 requirements. A variety of uses are allowed in forest and mixed farm-forest zones. Some activities allowed under the Forest Practices Act (e.g. logging, reforestation) do not require county land use approval. Dwellings may be allowed under certain circumstances. Counties may also permit nonresidential uses that are compatible with farm and forest practices.

The required minimum parcel sizes of 80 acres is intended to support opportunities for economically efficient forest operations, the continuous growing and harvesting of trees, and conservation of natural resource and recreation values consistent with the Forest Practices Act Policy (ORS 527.630).

Minimizing fire risk is a major concern in forest zones and is reflected in siting and fire standards applied to all structural development in designated forest zones through DLCD's Goal 4 rules at OAR 660-006-0035 and -0040. All structures located in forest zones are required to have defensible fuel-free space around them. Dwellings must be in a fire protection district or have other sufficient means of suppressing fire such as an onsite lake and sprinklers. Fire retardant roofs and spark arrestors are required for dwellings. County road design requirements for firefighting equipment also need to be met. In addition to these siting and road design standards, DLCD's rules require that many uses in forest zones demonstrate that they will not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire suppression personnel[10].

V. Land Use Decisions on Forestland

Dwellings

Table 13, Forest dwelling approvals, statewide summary, 2020-2021

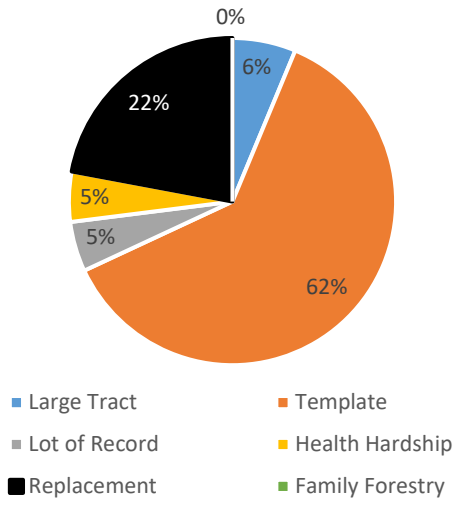
Dwellings in Forest Zones	Summary of Opportunity*	2020	2021
Large Tract Dwelling	Located on a tract of 160-240 acres depending on the location.	14	19
Lot of Record Dwelling	Located on a parcel owned continuously since 1985 or inherited from someone who owned the parcel continuously since 1985.	9	17
Alternative/Template Test Dwelling	Parcel is located in an area of residential development and parcelization as of 1993.	163	162
Temporary Health Hardship Dwelling	Located on a parcel with an existing dwelling for a caregiver or person suffering a medical hardship.	12	14
Replacement Dwelling	Allows the replacement of a legally established dwelling.	51	65
Family Forestry Dwelling**	Allows a second dwelling to be established on a parcel with an existing dwelling that is in commercial forest use subject to a forestry management plan.	0	0
**The basic essence of the test is described here. All referenced tests have additional, more specific criteria.* ***This dwelling type became effective in 2020.*			

[10] OAR 660-006-0025(5), "A use authorized by section (4) of this rule may be allowed provided the following requirements or their equivalent are met. These requirements are designed to make the use compatible with forest operations and agriculture and to conserve values found on forest lands:…(b) The proposed use will not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire suppression personnel."

Between 1994 and 2021, more than 9,800 dwellings of all types were approved on forest land across the state. Figure 10 shows the number of dwelling unit approvals since 1994 for the different dwelling types. A total of 9,834 dwellings were approved during this timeframe. Additional details are provided in Appendix tables 14 and 15.

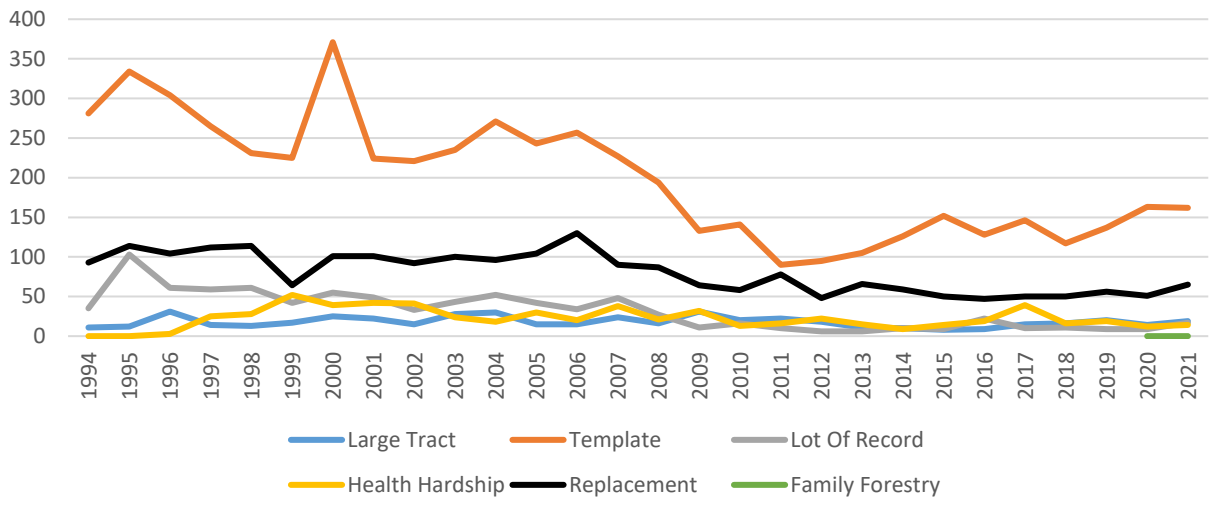
In 2020-2021, 526 dwellings were approved on forestlands, slightly higher than average. Appendix tables 7, 14 and 15 have detailed information on forest dwelling approvals in 2020-2021 and historically. As shown in Figure 10, the bulk of approvals in 2020 and 2021 were for template test and replacement dwellings, consistent with historical trends. Since 1994, 57 percent of approvals for dwellings on forestlands have been for template test dwellings and 23 percent have been for replacement dwellings.

Fig. 9, Forest dwelling approvals 2020-2021



In 2019 the legislature authorized a new type of dwelling approval in the forest zone – a family forestry dwelling. This opportunity is for a second dwelling to be established on a parcel that is in commercial forest use with an existing dwelling. Review of a forestry management plan is a condition of this dwelling type. This opportunity became effective January 1, 2020, but counties have yet to issue any approvals for this new dwelling type.

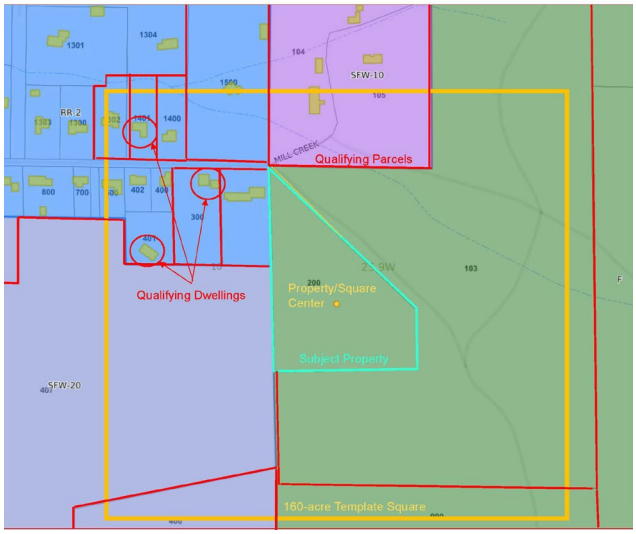
Fig. 10, Total dwelling approvals on forest land by year, all counties, 1994-2021



Template Dwellings:

"Template dwellings" are allowed on forestland in areas that were subject to certain more intensive patterns of development and parcelization as of 1993. Counties may approve template dwellings where a certain number of pre-1993 dwellings and parcels were established within a 160 acre "template" centered on the parcel. Locating multiple dwellings in the same area allows for more efficient provision of fire protection and services than scattered, isolated dwellings.

Fig. 11, Example Template Test Analysis



In 2020 and 2021, 325 template dwellings were approved. This is somewhat higher than the 10-year average of 133 template dwelling approvals per year. Template Dwellings account for 57 percent of all dwelling approvals on forestlands since 1994. Additional information on forest template dwelling approvals is contained in Appendix tables 8, 14 and 15.

The legislature enacted HB 2225 in 2019 to address some "loopholes" in the Forest Template Dwelling Test that have contributed to the high number of approvals. The bill precluded the use of property line adjustments to 'move' a parcel into an area where it would qualify for a dwelling and eliminated an opportunity for a property owner to secure additional template dwelling approvals on contiguous properties following the sale or transfer of a developed property. The new provisions are currently effective in fourteen counties and will become effective in the remaining twenty-two counties in 2023. HB 2225 staggers implementation of the provisions over a four-year period to reduce mailing costs to the agency related to notices we are required to send to all landowners who may be impacted by legislative changes ("Measure 56 Notices"). The increase in template dwelling approvals in the 2020-2021 biennium may be related to applicants seeking to obtain permit approvals before the new provisions became effective in their county.

Large Tract Dwellings:

Landowners with large amounts of forest land may construct a dwelling in a forest zone based on the acreage owned. In western Oregon, large tract dwellings must be on ownerships of at least 160 contiguous acres or 200 noncontiguous acres. In eastern Oregon, they must be on ownerships of 240 or more contiguous or 320 or more noncontiguous acres. In 2020 and 2021, 33 large tract dwellings were approved statewide. This is consistent with the 10-year average of 14 large tract dwelling approvals a year. Additional information on forest dwelling approvals is contained in Appendix tables 7, 14 and 15.

Lot of Record Dwellings:

Forest land that has been owned by the same family since 1985 may be eligible for a lot of record dwelling. The property must have a low capability for growing merchantable tree species and be located near a public road. Twenty-six lot of record dwellings were approved in the past biennium. This is consistent with

the 10-year average of 11 lot of record dwelling approvals a year. Lot of record dwelling approvals are spread fairly evenly across the state and are on a variety of parcel sizes. Additional information on forest dwelling approvals is contained in Appendix tables 7, 14 and 15.

Temporary Health Hardship Dwellings:

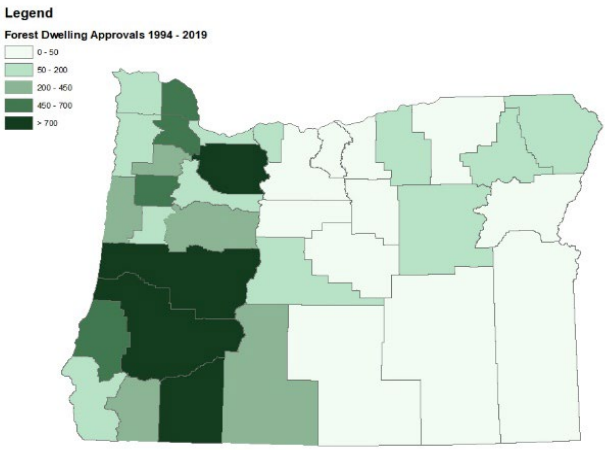
Temporary hardship dwellings are approved for relatives experiencing a medical hardship and must be removed at the end of the hardship. A temporary health hardship dwelling must be sited in conjunction with an existing dwelling and tied into an existing sanitation system. DLCD does not currently track the removal of these dwellings when they are no longer needed.

Twenty-six temporary health hardship dwellings were approved in 2020 and 2021, consistent with the 10-year average of 18 temporary health hardship dwelling approvals per year. Additional information on 2020-2021 and historic forest dwelling approvals is contained in Appendix tables 7, 14 and 15.

Replacement Dwellings:

A replacement dwelling is a new home that replaces an older dwelling on a parcel. In order to be replaced, a dwelling must have certain qualifying features such as walls and a roof. A total of 116 replacement dwellings were approved in the past biennium, consistent with the 10-year average of 54 dwelling approvals per year. The dwellings that were designated to be replaced must be removed, demolished, or converted to another allowed use within three months of completion of the replacement dwelling. Additional information on 2020-2021 and historic forest dwelling approvals is contained in Appendix tables 7, 14 and 15.

Fig. 12, Dwellings approved on forestland 1994-2021, all counties



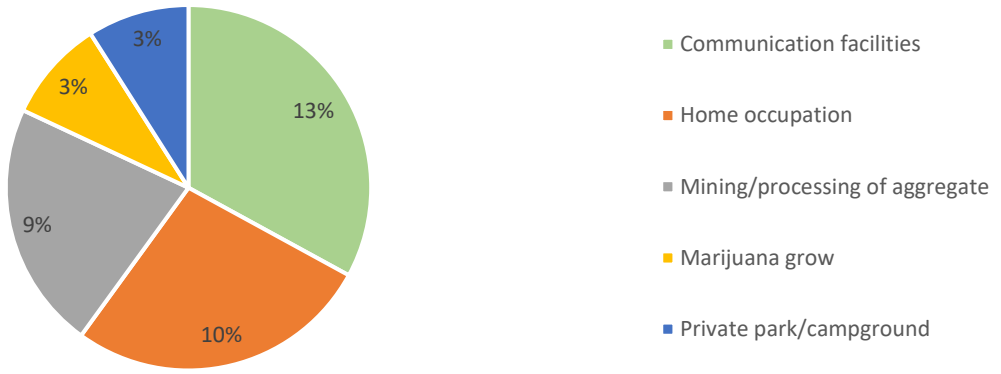
Nonresidential uses

In addition to a range of traditional forest-related uses, the commission has recognized that some non-forest uses are acceptable in forest and mixed farm-forest zones. These uses are set forth in OAR 660-006-0025 for forest zones and OAR 660-006-0050 for mixed farm-forest zones. Mixed farm-forest zones provide opportunities for all those nonresidential uses permitted in EFU zones and those uses permitted in forest zones. Non-forest uses are subject to local land use approval and must demonstrate that they will not force a significant change in or significantly increase the cost of accepted farm or forest practices on farm or forest land, and that they will not significantly increase fire hazard risk, fire suppression costs or the risk to fire suppression personnel. Appendix table 9 provides detailed data on nonresidential uses approved on forest and mixed farm-forest land in 2020 and 2021.

The most commonly approved uses historically have included cell towers, home occupations, mining and aggregate processing, marijuana cultivation, and campgrounds.

The same standards for Home Occupations in farm zones apply to those in forest and mixed farm-forest zones (ORS 215.448). As noted above, because this use is vaguely defined, a wide variety and intensity of uses are approved under this use category. Bed and breakfasts and short-term rentals are the most frequent Home Occupation use approved in forest zones just as they are in farm zones. Fabrication, manufacturing and repair shops, animal boarding, and retail sales of firearms are also frequently approved as Home Occupations in forest and mixed farm-forest zones.

Fig. 13, Top 5 uses permitted on forest lands, 2008-2021



Land Divisions and Property Line Adjustments

Forest zoning seeks to retain forestland for commercial forest operations and natural functions such as wildlife habitat. One way this is accomplished by establishing a large minimum parcel size of 80 acres. That is, a parcel smaller than 160 acres generally cannot be divided into smaller units. Thirty new parcels were created on forestland in the 2020-2021 biennium. These numbers represent a slight decrease from past reporting periods.

Substandard land divisions are allowed in only a few circumstances, including the creation of a parcel or parcels to separate one or more existing dwellings on a property and for certain approved conditional uses. Counties may also approve a substandard division along an urban growth boundary (UGB). The most common reported reason for creating smaller parcels in 2020-2021 was to divide land with multiple existing dwellings.

Property Line Adjustments:

Property line adjustments on forest land may occur for a variety of reasons. Occasionally they are used to adjust parcels to areas where they can be approved for dwellings. Many of the reported property line adjustments involve more than two tax lots. In 2020, 74 property line adjustments were approved and 78 were approved in 2021 for a total of 152 adjustments on forest land.

VI. Conversion: Zone changes, UGB Expansions and Other Metrics for Consideration

A primary goal of Oregon's land use program is the preservation of agricultural and forest lands. Exclusive farm use zoning and forest zoning limits development on resource lands conserving them for farm and timber uses. The less resource land that is converted to urban and rural development relative to the total amount zoned for exclusive farm use and forest use, the greater the indication that the land use program is working.

DLCD has traditionally measured conversion by tracking the amount of land that has been re-zoned from EFU and forest to other zones and by the amount of EFU and forest land added to Urban Growth Boundaries (UGBs). By 1986, LCDC had acknowledged the majority of local comprehensive plans and ordinances to be in compliance with statewide planning goals, thus making 1987 an appropriate base year from which to measure the success of the land use program. In 1987, approximately 16.1 million acres of land in Oregon were zoned EFU and 11.7 million acres were zoned forest. **Since 1987, a total of 42,206 acres have been rezoned from EFU to other urban and rural uses through 2021.** This means that 99.74 percent of land zoned EFU in 1987 was still zoned EFU in 2021. **A little over 10,000 acres of forest land have been removed from protective forest zoning since implementation of the program** meaning that 99.91 percent of land zoned forest or mixed farm-forest in 1987 was still zoned forest in 2021.

While this measure provides insight into the longevity of resource zoning over time, the modest amount of land rezoned or added to UGBs from EFU and forest lands over the past 40 years is relatively minimal compared to the large amount of agricultural land in Oregon. **It is estimated that several times as much acreage is converted to the non-resource uses discussed above as is rezoned out of EFU and forest zones each year.** This section discusses conversion through zone changes and UGB expansions, non-resource/rural resource lands and estimating conversion based on land cover review.

Zone Changes

A zone change most typically involves removing land from farm or forest zoning and assigning another zoning designation to that land. This can occur through a comprehensive plan amendment or an UGB expansion. Tables 14 and 15 below summarize acreage removed from farm or forest zoning in 2020 and 2021. These metrics have tended to vary widely from year to year.

Table 14, Zone changes involving agricultural lands, statewide summary, 2020-2021

Year	From EFU to Rural (Acres)	From EFU to Urban (Acres)	From EFU to Forest (Acres)	From EFU to Aggregate (Acres)	To EFU from Other Zone (Acres)	Total Rezone (Acres)	Net Rezone (Acres)
2020	131	231	265	315	315	941	626
2021	26	2,820	211	14	0	3,070	3,070
Total	157	3,050	476	329	315	4,012	3,696

The majority of farmland redesignation in the 2020-2021 biennium was related to three large UGB expansions (McMinnville, Metro and Central Point) which are further discussed below.

Table 15, Zone changes involving forestlands, statewide summary, 2020-2021

Year	From Forest to Rural (Acres)	From Forest to Urban (Acres)	From Forest to EFU (Acres)	From Forest to Aggregate (Acres)	Total Rezone (Acres)	To Forest from Other Zone (Acres)	Net Rezone (Acres)
2020	0	6	0	0	6	265	-259
2021	6	53	0	40	99	211	-113
Total	6	59	0	40	105	476	-372

372 net acres of forest or mixed farm-forest zones were *added* in the past biennium. In the past ten years more than 1,850 acres have been added to forest zones while 2,321 acres have been removed from protective forest zoning, resulting in a net redesignation of only 452 acres of forestland over the past decade. However, 96 percent of land added to forest zoning has been coverted from EFU meaning this does not necessarily represent a positive addition to resource lands.

Resource to Resource Zone Changes:

Resource-to-resource zone changes do not require exceptions to Goals 3 or 4 and typically occur when a landower proposes a development that is allowed in one resource zone but not the other. The most common example is a farm zone propery that is in a location that would qualify for a forest template dwelling. Since both farm and forest uses are allowed outright in both farm and forest zones, it is reasonable to assume that this acreage has been converted from exclusive farm use to forest for the purpose of facilitating non-resource development.

Resource to Rural Zone Changes:

Rural zone changes are typically approved in order to allow land uses that otherwise would not be permitted in an EFU or forest zone. Examples include clustered rural residential parcels, mineral and aggregate quarries, and institutional uses such as schools serving an urban population. **The majority of zone changes historically for both classes of resource lands have been to rural residential use which accounts for more than half of the re-designations in both cases.**

Zone Changes Requiring an Exception vs Non-resource Zone Changes:

A zone change typically includes an exception to Statewide Planning Goals 3 or 4 based on existing development, development patterns on surrounding lands, or other reasons unique to the properties involved. A goal exception is not required if it can be demonstrated that a parcel does not qualify as agricultural or forest land and is therefore 'non-resource' land. Appendix tables 11, 17, 18 and 19 contain detailed information on zone changes involving resource lands in the past biennium and from 1989-2019.

Non-resource Land Designations

Rural resource lands (commonly referred to as non-resource lands) are rural lands that do not meet the state's definition of agricultural or forest lands. Because they are not agricultural lands or forest lands, rural resource lands are not subject to Statewide Planning Goals 3 and 4 and do not require an exception to statewide planning goals 3 or 4 in order to be zoned by counties for rural residential, commercial, industrial, recreational or other uses. However, the land is still subject to compliance with the other Statewide Planning Goals unless an exception is taken. For example, Goal 11 (Public Facilities and Services) prohibits extension of sewer service to rural areas, including rural resource lands, without an exception. Resource values such as protecting open space to maintain soil, air, water quality, conservation of fish and wildlife habitat and opportunities for recreational opportunities need to be appropriately considered in planning for the use of rural resource lands.

Table 16, Acres designated non-resource by county

County	Total Acres Designated Rural Resource/ Non-resource
Clatsop	2,351
Crook	23,261
Deschutes	452
Douglas	3,341
Jackson	545
Josephine	15,573
Klamath	34,877
Linn	231
Lane	613
Wasco	7,047
Total	88,291

Table 16 identifies the total acreage by county of land designated non-resource at acknowledgement and through a non-resource zone change and plan amendment.

The rural resource land issue has been approached in several iterations over the years through extensive public review, work sessions, and pilot studies by the Oregon State Legislature and the Land Conservation and Development Commission (LCDC or the commission). In 2009, the Legislature adopted provisions that allow counties to correct mapping errors and designate rural land for non-resource use (see ORS 215.788 – 794). This process requires coordination with state agencies to ensure such lands are truly not agricultural or forest lands and that future development of them for their designated uses would not conflict with wildlife, water quality, rural character or increase the costs of public facilities and services.

Counties and landowners have not used this coordinated process but rather continue to designate rural resource lands on a case-by-case basis through a non-resource zone change and post-acknowledgement plan amendment. Lands designated non-resource through a post-acknowledgement plan amendment and zone change are most commonly rezoned for rural residential development with minimum parcel as low as 5 acres. There are currently no standards to guide counties in identifying and zoning individual parcels or tracts which do not meet the definition of agricultural or forest resource lands. **DLCD staff has found that counties vary in the degree to which consideration of carrying capacity, environmental factors, habitat protection, hazards, infrastructure requirements and availability of water and other services are considered in the non-resource designation process.**

In 2012 Executive Order 12-07 established a pilot program known as the Southern Oregon Regional Pilot Project (SORPP) which allowed Douglas, Josephine and Jackson counties to establish a regional planning framework to define non-resource land for their region. Ultimately the participating counties were unable to reach consensus on the scope of topics included in the executive order.

DLCD's 2014-2022 Strategic Plan identified development of a non-resource/rural resource lands policy as a work item. DLCD approached the project by researching the issue with the intent of documenting past efforts and current interests as well as what and how data can best inform rural resource designations. The department collected that research in the 2019 Rural Resource Lands Research Report. The report contains a set of prioritized recommendations for further research and suggests DLCD draft a guidance document for counties that addresses methodologies and criteria for rezoning resource lands and includes recommendations on appropriately identifying and establishing development parameters for newly designated rural resource lands. The report also recommends rulemaking to either require the process in ORS 215.788-794 to be used for all rural resource land designations or to develop additional rule requirements for rural resource land designations that do not utilize the process in ORS 215.788-794. The department has not taken action yet on the items recommended in the report. A copy of the 2019 Rural Resource Lands Research Report is included here as Appendix 4.

Urban Growth Boundary (UGB) Expansions

Table 17, Urban growth boundary expansions involving agricultural lands, statewide summary, 2020-2021

Year	Total Acres added to UGB	Acres Removed from UGB	Net Acres Added to UGB	EFU Acres Added to UGB	EFU Acres Added to County**	Net Acres EFU Loss*	% of Land Added to UGB from EFU	Net EFU % of Net Land Added*
2020	1,319	255	1,094	231	225	6	18%	0%
2021	3,727	71	3,656	2,820	0	2,820	76%	77%
* "UGB swaps" include acreage added to EFU as well as acreage removed from EFU and added to an UGB. **Reflects only acreage designated EFU reviewed as part of a UGB expansion proposal.								

Table 18, Urban growth boundary expansions involving forest lands, statewide summary, 2020-2021

Year	Acres to be added to UGB	Acres Removed from UGB	Net Acres Added to UGB	Forest Acres Removed from County	Forest Added to County*	Net Forest Loss	% of Land Added to UGB from Forest	Net Forest % of Net Land Added*
2020	1,319	255	1,094	6	6	0	0.5%	0%
2021	3,727	71	3,656	54	0	54	1.5%	1.5%
*Reflects only acreage designated Forest reviewed as part of a UGB expansion proposal.								

Statewide Planning Goal 14 requires establishment of an urban growth boundary (UGB) around each city. Urban growth boundaries (UGBs) are 20-year planning areas surrounding cities designed to promote orderly growth and the efficient provision of public services. When a city has an identified need to add additional area to its UGB to accommodate housing and economic development needs, the city may expand its UGB resulting in the conversion of rural lands. A UGB is expanded through a joint effort involving the city and county, and in coordination with special districts that provide important services in the urban area. **Since 2016, of the 41 UGB amendments proposed, 39 or 95 percent were approved.**

(2016 was chosen as the first year because of legislative action to streamline the process for making UGB adjustments.)

Lands zoned EFU, forest, and mixed farm-forest are given lower priority for inclusion in UGBs than lands already zoned for rural development, included in urban reserves or non-resource lands. DLCD tracks and reports on the amount of land zoned EFU, forest and mixed farm-forest that is added to UGBs.

Table 19, Acres added to UGBs, 2020-2021

Year	Acres EFU to UGB	Acres Forest to UGB	Acres Other Zone to UGB	Total Acres Resource Added to UGB	Acres From UGB Added To Resource	Total Acres From UGB Added To Other Zone	Total Acres Added to UGB	Net Acres Added to UGB	Net Resource Acres Lost
2020	230	0	1,089	230	225	0	1,319	1,094	5
2021	2,820	54	854	2,873	0	71	3,727	3,656	2,873
2020-2021 Biennium	3,050	54	1,943	3,104	225	71	5,047	4,750	2,879

In the past biennium, 3,104 acres of land previously zoned for resource use were added to UGBs accounting for 61 percent of lands added. 2021 additions included a single 2,181-acre expansion by Metro for four cities in the metro planning area and an 862-acre expansion of the McMinnville UGB that that was initiated almost a decade ago. Note, however, that the addition to the Metro UGB was on lands that were designated in 2010 as urban reserve but remained zoned as EFU, thus counting as addition of "resource lands" under this analysis.

Performance on this measure has varied widely from year to year over the past decade. For example, In 2018, 3 percent of land added to UGBs were converted resource lands and in 2019, 91 percent of land added to UGBs were converted resource lands. Given the inter-annual variability in acreage added to UGBs, a longer look at trends in this area is merited. Between 1987 and 2021, local governments added just over 70,000 acres to UGBs statewide. Of this amount, 44 percent of land added was zoned EFU, forest or mixed farm-forest and 56 percent was in other rural zones. Appendix tables 11 and 17 contain additional information on UGB expansions involving resource lands.

A recent trend in UGB expansions in the past decade has been **UGB land exchanges which result in neutral or net positive additions to land zoned for resource use**. Although there were no exchanges, often referred to as "swaps," involving added resource lands in 2021, two of the UGB expansions in 2020 involved removal of an amount of land from the UGB equivalent to the amount of land being brought in, resulting in a zero net conversion of resource land for those exchanges. This approach to UGB expansion serves to maintain the resource land base to some degree[11] while providing cities flexibility for future

[11] DLCD has not analyzed the relative quality of lands removed from the UGB and zoned for farm or forest use compared to the quality of resource lands being brought into the UGB. Although the swaps may not have resulted

growth planning. DLCD may wish to research ways this approach to expansion involving 'exchanges' could be incentivized.

Other Metrics for Evaluating Conversion

While the state's policy recognizes the significant role resource zoning plays in limiting alternative uses of farm and forest lands, many nonfarm and nonforest uses are allowed in statute and have the potential to contribute to de facto conversion of working lands even while the protective EFU and forest zoning remains in place. Zone changes may not capture actual conversion of agricultural and forest lands developed for permitted nonfarm or nonforest uses or pursuant to Measure 37 or Measure 49 orders (neither of which require actual rezoning of the land from EFU or forest to another zoning designation). In many cases dwellings or uses permitted on resource lands may result in de facto conversion of these lands to other uses, like residential use or solar power generation use, even while they remain under protective farm or forest zoning.

There are three additional data sources for considering farmland conversion in Oregon which are worth mentioning here: the USDA National Agricultural Statistics Service (NASS) Census of Agriculture and the Oregon Department of Forestry (ODF) "Forests, Farms and People" report, and the "Farms Under Threat: State of the States" report released in 2020 by the American Farmland Trust (AFT). Since publication of the 2018-2019 Oregon Farm & Forest Land Use Report, the Oregon Department of Forestry has published a 2021 update to the "Forests, Farms and People" report which is discussed below.

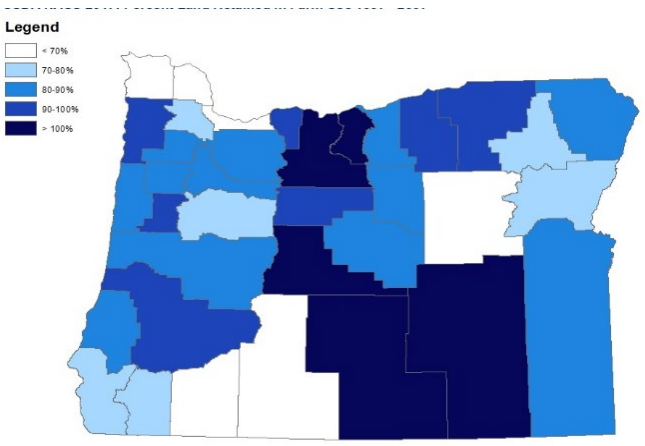
Resource Zoning:

As highlighted above, 99.7 percent of land zoned EFU in 1987 was still zoned EFU in 2021. From a base of 16.1 million acres of EFU-zoned land in 1987, a total of 44,206 net acres have been rezoned from EFU to other urban and rural uses through 2021. 99.9 percent of land zoned forest in 1987 was still zoned forest in 2021. From a base of 11,766,543 acres in 1987, a total of 10,759 net acres have been rezoned from Forest to other urban and rural uses through 2021.

USDA NASS 2017 Census of Agriculture:

USDA reports the current amount of land in actual farm use in Oregon at 15.9 million acres which is only 90 percent of the 17.7 million acres reported in farm use in 1997.

Fig. 14, Percent land retained in farm use, by county, 1997-2017 (USDA 2017)



in 'apples to apples' exchanges of land in terms of capability for resource production, nevertheless the lands designated for farm or forest use must meet the definition in rule of 'agricultural land' and/or 'forest land'. Even if the swap results in a 'downgrade' of resource capability, such an exchange may still be preferrable to a loss of working land.

The Census of Agriculture has been conducted on five-year intervals since 1982. The responsibility for the census was transferred from the Bureau of Census to USDA in 1997. The results represent a more significant decline in acres reported in farm use when compared to a measurement of whether land is maintained in EFU zoning. Over the twenty-year period, increases in working farm acreage were reported in five counties: Deschutes, Lake, Sherman, Harney and Wasco, while losses exceeding 30% were reported in six counties: Columbia, Grant, Clatsop, Jackson, Klamath and Multnomah. Appendix table 20 contains additional information from the 2017 Census of Agriculture on farmland conversion in Oregon from 1997 to 2017.

Oregon Department of Forestry (ODF) "Land Use Change on Non-Federal Land in Oregon and Washington. 2018 Update":

ODF has performed land use cover review based on interpretation of aerial imagery for seven different years between 1974 and 2018. Based on that review, ODF categorizes non-federal land into one of five resource land categories or into urban or low-density residential lands. ODF found that 97 percent of non-federal land categorized as cropland, rangeland or mixed farm-rangeland land in 1974 was retained in those uses in 2014. ODF uses 1984 as the land use implementation date to compare conversion rates pre- and post- land use implementation and finds a distinct slowing of conversion.

Table 20, Area of non-federal land in Oregon by land use class and year (ODF 2018)

	1984	1994	2000	2005	2009	2014	Land Retained
forest	10,570,000	10,512,000	10,497,000	10,468,000	10,455,000	10,446,000	98.83%
mixed farm forest	901,000	877,000	876,000	864,000	855,000	853,000	94.67%
SubTotal Forest/Mixed Forest	11,471,000	11,389,000	11,373,000	11,332,000	11,310,000	11,299,000	98.50%
range	9,164,000	9,116,000	9,087,000	9,045,000	9,034,000	9,013,000	98.35%
mixed range forest	664,000	666,000	678,000	690,000	690,000	699,000	105.27%
cropland	5,806,000	5,786,000	5,757,000	5,747,000	5,733,000	5,740,000	98.86%
SubTotal Agricultural Land	15,634,000	15,568,000	15,522,000	15,482,000	15,457,000	15,452,000	98.84%

An update to the report was published in February of 2021 that captures the additional four-year period between 2014 and 2018. The categorizations in the referenced report are based on interpretation of land cover and not on zoning designations. That update includes the following items of interest:

- Development of resource land occurs mostly in western Oregon and the Bend area near already-existing development.
- The largest proportional change in the 2009-2018 period was in further development of areas categorized as low-density residential lands.
- Approximately 8,000 acres of low-density residential land were converted to urban use in 2009-2018.
- Since 2009 the number of structures increased by 7 percent on wildland forests, 8 percent on wildland range and 3 percent on agricultural lands.

As discussed above, Oregon's policies for agricultural lands and forest lands acknowledge the need to preserve lands that are part of a cohesive working landscape in order to limit fragmentation and conflicting development, even when those lands may not be as productive as surrounding working lands. This may contribute to the difference in base acreage under resource zoning as tracked by DLCD and acreage in resource landscape cover as reported by ODF.

A copy of "Land Use Change on Non-Federal Land in Oregon and Washington. 2018 Update." is included as Appendix 5.

VII. Ballot Measures 37 and 49

If a state or local government enacts a land use regulation that restricts a residential use or a farm or forest practice, and thus has the potential to reduce the fair market value of a property, then the landowner may qualify for compensation under Ballot Measure 49. Oregon voters initially passed Ballot Measure 37 in 2004, which was later modified by the Oregon legislature and approved by the voters in 2007 as Ballot Measure 49. Enactment of Measure 49 retroactively voided some Measure 37 claims. Measure 49 relief for former Measure 37 claims ended in 2011. DLCD received 4,960 Measure 49 claims and authorized 3,542 claims for residential development. The difference between claims received and authorizations issued is partly due to multiple claims being filed for contiguous properties. Under Measure 49, contiguous properties were combined into single claims.

Table 21, M49 claims by county

County	Claims	Claims Authorized	Authorized New Dwellings	Authorized New Parcels
Baker	97	66	116	58
Benton	80	57	93	53
Clackamas	863	673	1,204	855
Clatsop	52	29	46	31
Columbia	79	50	92	64
Coos	135	96	182	104
Crook	33	21	44	27
Curry	75	48	102	50
Deschutes	116	83	133	97
Douglas	168	124	208	148
Gilliam	1	0	0	0
Grant	5	3	5	5
Harney	0	0	2	2
Hood River	160	117	180	121
Jackson	349	265	450	308
Jefferson	142	86	192	119
Josephine	124	82	142	106
Klamath	139	92	195	78
Lake	1	1	2	2
Lane	327	237	473	297
Lincoln	78	62	112	51
Linn	270	182	331	222
Malheur	19	11	33	21
Marion	322	211	361	223
Morrow	0	0	9	6
Multnomah	72	50	85	40
Polk	247	168	302	184
Sherman	0	0	0	0
Tillamook	67	40	78	46
Umatilla	34	25	72	45
Union	31	19	28	20
Wallowa	38	29	63	37
Wasco	31	26	45	21
Washington	485	360	607	390
Wheeler	2	0	29	15
Yamhill	318	229	401	250
Total	4,960	3,542	6,417	4,096

Almost all of claims were resolved by granting reversionary development rights rather than providing compensation for lost property value. Due to the variability in receiving notice of Measure 49 development from counties, DLCD periodically estimates the total numbers of Measure 49 dwellings built and parcels created since 2009, when the first authorizations were issued. This is accomplished by analyzing county tax assessor's data for counties that share this data. DLCD estimated that by 2016, 12 percent of new dwellings and 28 percent of new parcels authorized by Measure 49 had been completed.

Table 21 shows the number of new dwellings and new parcels authorized under Measure 49 for each county. A total of 6,238 new dwellings and 3,953 new parcels were authorized. Approximately 90 percent of Measure 49 approvals have been on land in farm and forest zones.

Measure 49 authorizations are tied to a specific property and may be conveyed to a new owner when the property is sold. Unless the new owner is a spouse or revocable trust, all authorized Measure 49 development must be completed within ten years of the property conveyance.

Many claimants who had completed development or who were vested in their Measure 37 projects on the date Measure 49 was enacted did not file a Measure 49 election. County approvals of Measure 37 developments are not included in this report. DLCD is working on tracking these developments and intends to provide that information in future reports.

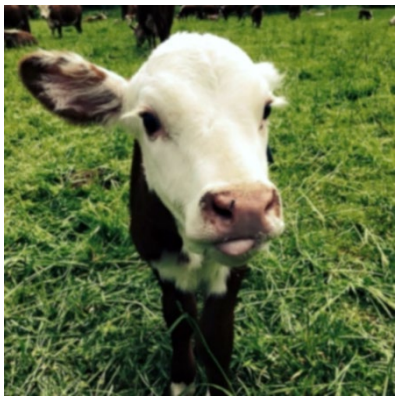
VIII. 2020-2021 Statutory and Rule Changes for Farm and Forest Lands Statutory Amendments

In a significant deviation from historical trends, very few changes were made to the statutes and rules implementing Goals 3 and 4 during the 2020-2021 biennium. Many of the changes that were adopted were done so in response to the 2020 wildfire emergency.

Table 22, Statutory changes implicating resource zones, 2020-2021

2021	HB 2109	Amends definition of "renewable energy facility" at ORS 215.446 to include only those solar, wind, and geothermal facilities on exclusive farm use lands as originally intended.
2021	HB 2809	Prohibits a state agency or local government from disallowing the use of a recreational vehicle as a residential dwelling on a lot with a manufactured or single-family dwelling damaged by natural disasters until no later than the date the dwelling has received an occupancy permit, the local government determines the owner is unreasonably delaying repairs, or 24 months after the dwelling was deemed uninhabitable.
2021	HB 2289	Allows applicants to choose an optional streamlined process for the replacement or restoration of residential and non-residential uses damaged in wildfires occurring between the beginning of August and the end of September 2020.
2021	HB 2312	Provides that lawfully created units of land with property lines that have been relocated pursuant to a circuit court judgment may also remain intact without additional validating procedures and prohibits denying permits because of the judicial boundary change.
2021	HB 2611	Authorizes additional uses of agricultural buildings that are exempt from the application of the state specialty code provided those uses meet specified criteria.
2021	HB 2837	HB 2837 removes the rural reserve designation from that portion of Lasich Lane to be consistent with adjacent properties which are not designated reserve lands.
2021	SB 16	Allows up to 200 acres of exclusive farm use (EFU) lands located in the Eastern Oregon Border Economic Development Region to be rezoned to residential use without taking an exception to either land use planning Goal 3 (Agricultural Lands) or Goal 14 (Urbanization).

IX. Conclusion



Oregon's farm and forest land protection program has provided a significant level of protection to the state's working landscapes over the last several decades. The total acres of farm and forest lands converted to low density residential and urban uses in Oregon has slowed considerably since the adoption of county comprehensive plans in 1984.

Over the years, the Legislature and LCDC have continued to refine the state's agricultural and forest land protections to accommodate changing needs and regional variation. As Oregon continues to change, it is important to remember the valuable role that agricultural and forest lands provide to the food and economic needs and health of all Oregonians. Agricultural and forest lands are also critical for the various industries that depend on Oregon produced farm and forest products and businesses that thrive on recreation and tourism opportunities. Maintaining the land base necessary to support agricultural and forestry operations is a critical component of a prosperous Oregon.

References

Brekken, C.A., Gwin, L., Horst, M., McAdams, N., and Martin, S.A. (2016). The Future of Oregon's Agricultural Land. Institute of Portland Metropolitan Studies Publications. 148. Retrieved from https://pdxscholar.library.pdx.edu/metropolitianstudies/148

Chun, Nicholas (2017). An Emerging Contradiction: Non-Farm Activity within Exclusive Farm Use Zones. Retrieved from https://metroscape.imspdx.org/an-emerging-contradiction-nonfarm-activity-within-exclusive-farm-use-zones

Gray, A.N., Hubner, D., Lettman, G.J., McKay, N., Thompson, J.L. (2016). Forests, farms & people: Land use change on non-federal land in Oregon 1974-2014. Oregon Department of Forestry. Retrieved from http://hdl.handle.net/1957/58941

Gray, A.N., Hubner, D., Lettman, G.J., Thompson, J.L., Tokarczyk, J. (2018). Land Use Change on Non-Federal Land in Oregon and Washington. Oregon Department of Forestry.

Oregon Community Food Systems Network (2018). State of the Food System. Retrieved from http://ocfsn.net/state-of-the-food-system/

Oregon Department of Agriculture (2021). Oregon Agricultural Statistics & Directory 2021. https://www.oregon.gov/oda/shared/Documents/Publications/Administration/AgStatsDirectory.pdf

Oregon Forest Resources Institute (2021). Oregon Forest Facts 2021-22 Edition. Retrieved from https://oregonforests.org/sites/default/files/2021-01/OFRI_2021ForestFacts_WEB3.pdf

Richmond, Henry R. & Houchen, Timothy G (2015). Farm Zoning and Fairness in Oregon 1964-2014. American Land Institute.

Solar Energy Industries Association (2022). State Solar Spotlight - Oregon. Retrieved from https://www.seia.org/sites/default/files/2022-09/Oregon%20State-Factsheet-2022-Q3.pdf

Oregon Agriculture, Food and Fiber: An Economic Analysis. Retrieved from http://www.oregon.gov/ODA/shared/Documents/Publications/Administration/OregonEconomicReport.pdf

USDA (USDA (2017)). Census of Agriculture. Retrieved from https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Oregon/

U.S. Forest Service (Photographer. (1989). Retrieved from https://www.flickr.com/photos/forestservicenw/36796830610

Wonderlane (Photographer). (2011). Retrieved from https://flic.kr/p/auRfwy

APPENDIX

1. 2020-2021 Data Tables

2. Historical Data Tables

3. Oregon Board of Agriculture Policy Resolution

4. 2019 Rural Resource Lands Research Report

5. Land Use Change on Non-Federal Land in Oregon and Washington. 2018 Update.

Appendix 1, 2020-2021 Data Tables

Appendix 1, Table 1, All Dwelling approvals on Farmland, type and county, 2020-2021

County	Primary Farm			Accessory Farm			Relative Farm			NonFarm			Lot of Record			Health Hardship			Replacement		
	2020	2021	Total	2020	2021	Total	2020	2021	Total	2020	2021	Total	2020	2021	Total	2020	2021	Total	2020	2021	Total
Baker		5	5	1	1	2	1	2	3			0	3	8	11			0	7	10	17
Benton		1	1			0		1	1			0			0	1		1		2	2
Clackamas	2	1	3			0	1	2	3			0			0	1	8	9	38	32	70
Clatsop			0			0	2		2			0		2	2			0	1		1
Columbia	4	1	5			0			0		3	3	2	2	4			0		1	1
Coos			0			0			0			0			0			0			0
Crook	3	3	6	2	1	3	1		1	4	2	6		2	2	1	2	3		9	9
Curry			0			0			0			0			0			0			0
Deschutes	2	1	3	1		1			0	17	22	39	1	5	6	3	3	6	14	20	34
Douglas		1	1			0	9	1	10	13	3	16			0	1		1	25		25
Gilliam			0			0			0			0			0			0	1		1
Grant			0			0		1	1	1	1	2		1	1			0	5	6	11
Harney	2	4	6	1	1	2	1	1	2	2	7	9		1	1			0	4		4
Hood River			0	6	6	12	1		1		2	2			0	2	3	5	9	7	16
Jackson	4	12	16		3	3	1	3	4	2	6	8	5	8	13	6	1	7	2	3	5
Jefferson	2	1	3		1	1	3	1	4	2	8	10	2		2	2		2	4	4	8
Josephine			0		1	1	1		1			0			0			0	1	2	3
Klamath	2	1	3		2	2			0	5	7	12		1	1			0			0
Lake	3	10	13	5	3	8		2	2	18	26	44	1	1	2	2		2	7	6	13
Lane	1	3	4	1		1	4	1	5	1		1			0	1	4	5	12	15	27
Lincoln		1	1			0			0			0			0			0			0
Linn	1	1	2	4		4	5	4	9	4	1	5	1	4	5	5	4	9	36	37	73
Malheur	1	5	6			0		1	1	5	7	12			0		4	4	9	10	19
Marion	5	6	11	1		1			0	4	3	7	2		2	13	17	30	10	7	17
Morrow	1	1	2			0	2		2	3	2	5			0			0	3	8	11
Multnomah		1	1			0			0		1	1			0			0	1	1	2
Polk			0	1		1	2		2			0			0	2	6	8	7	11	18
Sherman	1		1			0	1		1	1	1	2			0			0			0
Tillamook	1	3	4	2	3	5			0		1	1			0			0	7	9	16
Umatilla	2	1	3			0			0	1		1	1		1	1	2	3	13	7	20
Union	3	2	5			0	1	2	3	2	2	4		1	1	2		2	5	4	9
Wallowa	4	2	6			0	2		2	1		1	1		1		1	1	4	6	10
Wasco		2	2			0			0	1	4	5			0		2	2	1		1
Washington			0		2	2	4		4		5	5	6	1	7	2		2	12	12	24
Wheeler	1	3	4	1	1	2	3	1	4	3	1	4			0			0		2	2
Yamhill	1	3	4		10	10	2	6	8	2		2	1	1	2	3	20	23	2	1	3
Grand Total	46	75	121	26	35	61	47	29	76	92	115	207	26	38	64	48	77	125	240	232	472

Appendix 1, Table 2, Primary farm dwelling approvals, option and county, 2020-2021

	Total			HV Income		Non_HV Income		Large Lot		Non_HV Capability	
County	Grand Total	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Baker	5		5		1				1		3
Benton	1		1						1		
Clackamas	3	2	1	1	1	1					
Clatsop	0										
Columbia	5	4	1	2		2					1
Coos	0										
Crook	6	3	3				1	3	2		
Curry	0										
Deschutes	3	2	1		1					2	
Douglas	1		1						1		
Gilliam	0										
Grant	0										
Harney	6	2	4					2	4		
Hood River	0										
Jackson	16	4	12	2		2	1		10		1
Jefferson	3	2	1	2					1		
Josephine	0										
Klamath	3	2	1				1	2			
Lake	13	3	10			2	8	1	2		
Lane	4	1	3		1	1	1		1		
Lincoln	1		1				1				
Linn	2	1	1		1			1			
Malheur	6	1	5				3	1	2		
Marion	11	5	6	5	4				2		
Morrow	2	1	1					1	1		
Multnomah	1		1		1						
Polk	0										
Sherman	1	1						1			
Tillamook	4	1	3	1	2		1				
Umatilla	3	2	1	1			1	1			
Union	5	3	2	1	1			2			1
Wallowa	6	4	2					4	2		
Wasco	2		2						2		
Washington	0										
Wheeler	4	1	3					1	3		
Yamhill	4	1	3	1	3						
Grand Total	121	46	75	16	16	8	18	20	35	2	6

Appendix 1, Table 3, Primary farm dwelling approvals on Farmland, parcel size and county, 2020-2021

County	Total			0 to 10 Acres		11 to 20 Acres		21 to 40 Acres		41 to 79 Acres		80 to 159 Acres		>160 Acres	
	Grand Total	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Baker	5		5										1		3
Benton	1		1										1		
Clackamas	3	2	1					1		1			1		
Clatsop	0														
Columbia	5	4	1	1				3	1						
Coos	0														
Crook	6	3	3								1	1		2	2
Curry	0														
Deschutes	3	2	1		1	1				1					
Douglas	1		1												1
Gilliam	0														
Grant	0														
Harney	6	2	4											2	4
Hood River	0														
Jackson	16	4	12	1				3			1				10
Jefferson	3	2	1					1				1			1
Josephine	0														
Klamath	3	2	1									1		1	1
Lake	13	3	10		1				1	2				1	8
Lane	4	1	3						1		1			1	1
Lincoln	1		1												
Linn	2	1	1											1	1
Malheur	6	1	5										3	1	2
Marion	11	5	6		1		1	3	1		1	1	1		1
Morrow	2	1	1											1	1
Multnomah	1		1										1		
Polk	0														
Sherman	1	1												1	
Tillamook	4	1	3		1	1	1						1		
Umatilla	3	2	1									1		1	1
Union	5	3	2											3	2
Wallowa	6	4	2											4	2
Wasco	2		2												2
Washington	0														
Wheeler	4	1	3											1	3
Yamhill	4	1	3								1	1	1		
Grand Total	121	46	75	2	4	2	2	11	4	4	5	6	10	20	46

Appendix 1, Table 4a, Nonfarm dwelling approvals on Farmland, parcel size and county, 2020-2021

County	Total			0 to 5 Acres		6 to 10 Acres		11 to 20 Acres		21 to 40 Acres		41 to 80 Acres		> 80 Acres	
	Grand Total	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Baker															
Benton															
Clackamas															
Clatsop															
Columbia	3		3		1		0		1		0		0		1
Coos															
Crook	6	4	2	0	0	0	0	3	0	0	0	0	0	1	3
Curry	0														
Deschutes	39	17	22	6	9	6	2	4	5	2	5	0	1	2	1
Douglas	16	13	3	5	0	5	2	4	1	0	0	0	0	0	0
Gilliam	0														
Grant	2	1	1	0	0	0	0	0	0	1	0	0	1	0	0
Harney	9	2	7	0	0	0	0	1	1	1	6	0	0	0	1
Hood River	2		2		0		2		0		0		0		0
Jackson	8	2	6	2	1	0	0	0	5	0	0	0	0	0	0
Jefferson	10	2	8	0	2	0	1	0	1	2	1	0	1	0	2
Josephine	0														
Klamath	12	5	7	1	1	1	3	2	0	0	3	0	0	1	0
Lake	44	18	26	2	8	2	5	9	6	4	4	0	2	1	1
Lane	1	1		0		0		1		0		0		0	
Lincoln	0														
Linn	5	4	1	0	1	1	0	1	0	1	0	1	0	0	0
Malheur	12	5	7	2	6	1	1	2	0	1	0	0	0	0	0
Marion	7	4	3	1	1	1	0	2	1	0	0	0	1	0	0
Morrow	5	3	2	1	0	0	0	1	0	0	2	1	0	0	0
Multnomah	1		1		0		0		1		0		0		0
Polk	0														
Sherman	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Tillamook	1		1		1		0		0		0		0		0
Umatilla	1	1		0		1		0		0		0		0	
Union	4	2	2	0	0	0	0	0	0	1	1	0	0	1	1
Wallowa	1	1		0		0		1		0		0		0	
Wasco	5	1	4	0	1	0	0	0	1	0	0	0	1	1	1
Washington	5		5		1		1		0		2		2		0
Wheeler	4	3	1	1	0	1	0	1	0	0	1	0	0	0	0
Yamhill	2	2		1		1		0		0		0		0	
Grand Total	207	92	115	23	34	20	17	32	23	13	25	2	9	7	11

Appendix 1, Table 4b, Nonfarm dwelling approvals by type and county, 2020-2021

County	Nonfarm Dwlling Approvals			Involving Partition		Acres Removed From Special Assessment		Soils Challenge Used	
	Grand Total	2020	2021	2020	2021	2020	2021	2020	2021
Baker									
Benton									
Clackamas									
Clatsop									
Columbia	3		3				1		
Coos	0								
Crook	6	4	2		1	119	320	2	1
Curry	0								
Deschutes	39	17	22	4	7	27	242		1
Douglas	16	13	3	1	1	120	32	10	3
Gilliam	0								
Grant	2	1	1				42		
Harney	9	2	7		1	0	101		
Hood River	2		2						
Jackson	8	2	6				71		2
Jefferson	10	2	8			28	404		
Josephine	0								
Klamath	12	5	7	1	2	13	0		
Lake	44	18	26		1	0	0		
Lane	1	1				0			
Lincoln	0								
Linn	5	4	1			64	5	2	
Malheur	12	5	7	2	5	82	35		1
Marion	7	4	3			25	51		1
Morrow	5	3	2	1			54		
Multnomah	1		1				0		
Polk	0								
Sherman	2	1	1	1	1	3	3		
Tillamook	1		1		1		5		
Umatilla	1	1		1		7			
Union	4	2	2			30	3		
Wallowa	1	1				0			
Wasco	5	1	4				11		1
Washington	5		5		2		5		
Wheeler	4	3	1	3		9	0		
Yamhill	2	2				12		1	
Grand Total	207	92	115	14	22	538	1,381	15	10

Appendix 1, Table 5, Nonresidential use approvals on Farmland, 2020-2021

Use Description	Grand Total	2020	2021
Home occupation	58	28	30
Commercial activities with farm use	37	14	23
Solar power generating facility	36	12	24
Winery	21	16	5
Utility facility	20	8	12
Agri-tourism & other commercial events	19	7	12
Processing of farm crops/biofuel/poultry	17	12	5
Mineral Aggregate	13	11	2
Farm stand	10	6	4
Private park/campground	10	7	3
Road improvements, outright	7	3	4
Public/private school	6	4	2
Road improvements, conditional	5		5
Utility facility service lines	4	4	
Commercial dog boarding kennel	3	2	1
Farm Use Marijuana	3		3
County fairgrounds expansion	2		2
Fire service facility	2	1	1
Landscape contracting business	2		2
Public park	2		2
Residential home	2	1	1
Accessory use	1	1	
Cider business	1	1	
Commercial power generating facility	1	1	
Community Center	1	1	
Composting facility	1	1	
Dog training class/testing trials	1		1
Equine therapy	1		1
Guest ranch	1	1	
Irrigation reservoir/canals	1	1	
Outdoor mass gathering	1		1
Personal-use airport	1	1	
Temporary batch plant accessory to highways	1	1	
Grand Total	322	161	161

Appendix 1, Table 6, New parcel approvals on Farmland, parcel size and county, 2020-2021

County	Total			0 to 10 Acres		11 to 20 Acres		21 to 40 Acres		41 to 80 Acres		81 to 160 Acres		> 160 Acres		Division in conjunction with a Nonfarm Dwelling		Division in conjunction with a conditional use	
	Total	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Baker	2	2										1		1					
Benton	2	1	1		1									1	0		1		
Clackamas	1	1										1							
Clatsop	0																		
Columbia	0																		
Coos	0																		
Crook	12	5	7	1	1		1			1		1	3	2	2		2		
Curry	0																		
Deschutes	16	8	8	5	7		1	3								7	7		
Douglas	10	8	2	3	2							3		2		2	1		
Gilliam	2		2						1						1				
Grant	7	2	5				1							2	4				1
Harney	9	5	4						2			1		4	2		3		
Hood River	2	1	1	1	1														
Jackson	6	3	3	2			1			1					2				
Jefferson	0																		
Josephine	0																		
Klamath	11	3	8		7	1		1			1			1		1	1		4
Lake	17	6	11	1	2			1			1	1	4	3	4		4		
Lane	1	1		1															
Lincoln	0																		
Linn	4	4		2								2						1	
Malheur	21	4	17	3	10		1	1	2		2		2			3	5	1	
Marion	3	3				1						2							
Morrow	8	4	4		1	1	1				1		1	3		1			3
Multnomah	2		2										2						
Polk	2	2		2															
Sherman	4	2	2	2	1								1			1	1	1	
Tillamook	2		2		2												1		
Umatilla	13	9	4	6	1							1		2	3	1		**2**	
Union	4	2	2		2					1				1					
Wallowa	1		1												1				
Wasco	0																		
Washington	5	2	3	2	3												1		
Wheeler	3	3		2		1										3			
Yamhill	1	1						1											
Grand Total	171	82	89	33	41	4	6	7	5	3	5	13	13	22	19	19	27	5	8

Appendix 1, Table 7, Dwelling approvals on Forestland by type and county, 2020-2021

County	Total			Large Tract		Template		Lot of Record		Health Hardship		Replacement	
	Total	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Baker	6	5	1	1		1		2	1			1	
Benton	1	1	0							1			
Clackamas	45	19	26			14	19	2		2	7	1	
Clatsop	0	0	0										
Columbia	42	7	35		1	7	34						
Coos	17	11	6			10	6					1	
Crook	2	0	2										2
Curry	8	2	6		4	1	2					1	
Deschutes	22	2	20		3	1	16		1			1	
Douglas	0	0	0										
Gilliam	0	0	0										
Grant	1	0	1						1				
Harney	0	0	0										
Hood River	4	2	2			1	2					1	
Jackson	50	23	27	3	7	19	15		2	1	2		1
Jefferson	0	0	0										
Josephine	28	10	18	2	1	8	15						2
Klamath	13	8	5	1	1	7	4						
Lake	0	0	0										
Lane	107	67	40	1	1	52	6			1		13	33
Lincoln	2	0	2				2						
Linn	29	13	16			7	7		1		1	6	7
Malheur	1	0	1		1								
Marion	19	6	13			3	11	1		2			2
Morrow	4	2	2			2	2						
Multnomah	6	3	3	1					3			2	
Polk	39	23	16	2		8	9			4	2	9	5
Sherman	0	0	0										
Tillamook	1	1	0			1							
Umatilla	0	0	0										
Union	16	6	10	1		1	1	1	4		1	3	4
Wallowa	17	8	9	1		2	2	1	3			4	4
Wasco	0	0	0										
Washington	20	13	7			3	3	2				8	4
Wheeler	1	0	1										1
Yamhill	25	17	8	1		15	6		1	1	1		
Grand Total	526	249	277	14	19	163	162	9	17	12	14	51	65

Appendix 1, Table 8, Template dwelling approvals on Forestland, parcel size and county, 2020-2021

County	Total			VC Class 1		VC Class 2		VC Class 3		0 to 5 Acres		6 to 10 Acres		11 to 20 Acres		21 to 40 Acres		41 to 79 Acres		> 80 Acres	
	Total	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Baker	1	1	0	1						0		0		0		1		0		0	
Benton	0	0	0																		
Clackamas	33	14	19		1		2	14	16	0	5	1	2	5	3	8	6	0	3	0	0
Clatsop	0	0	0																		
Columbia	41	7	34					7	34	0	4	2	13	3	7	2	7	0	3	0	0
Coos	16	10	6					10	6	4	3	2	2	2	1	2	0	0	0	0	0
Crook	0	0	0																		
Curry	3	1	2	1	2					1	0	0	0	0	0	0	1	0	0	0	1
Deschutes	17	1	16		1	1	12		3	1	5	0	2	0	2	0	5	0	1	0	1
Douglas	0	0	0																		
Gilliam	0	0	0																		
Grant	0	0	0																		
Harney	0	0	0																		
Hood River	3	1	2					1	2	0	0	1	0	0	1	0	1	0	0	0	0
Jackson	34	19	15		1	1		18	14	2	1	1	4	2	5	6	1	4	3	4	1
Jefferson	0	0	0																		
Josephine	23	8	15		6			8	9	2	4	0	0	2	1	3	4	1	2	0	4
Klamath	11	7	4		1	7	3			2	2	0	0	2	1	2	1	0	0	1	0
Lake	0	0	0																		
Lane	58	52	6	2	1	1		49	5	10	2	13	1	19	0	8	0	0	1	2	2
Lincoln	2	0	2						2		0		2		0		0		0		0
Linn	14	7	7		2	1	1	6	4	3	2	1	1	0	1	3	0	0	1	0	2
Malheur	0	0	0																		
Marion	14	3	11					3	11	1	2	0	1	1	2	1	4	0	1	0	1
Morrow	4	2	2	2			1		1	2	2	0	0	0	0	0	0	0	0	0	0
Multnomah	0	0	0																		
Polk	17	8	9			1		7	9	2	2	1	1	2	0	2	4	1	1	0	1
Sherman	0	0	0																		
Tillamook	1	1	0					1		0		0		1		0		0		0	
Umatilla	0	0	0																		
Union	2	1	1					1	1	0	0	0	0	0	1	1	0	0	0	0	0
Wallowa	4	2	2	2			2			1	0	0	1	1	1	0	0	0	0	0	0
Wasco	0	0	0																		
Washington	6	3	3	3	3					3	2	0	0	0	0	0	1	0	0	0	0
Wheeler	0	0	0																		
Yamhill	21	15	6	3	1	1		11	5	3	2	3	2	3	1	5	1	1	0	0	0
Grand Total	325	163	162	14	19	13	21	136	122	37	38	25	32	43	27	44	36	7	16	7	13

Appendix 1, Table 9, Nonresidential use approvals on Forestland, 2020-2021

	Total	Baker	Benton	Clackamas	Clatsop	Columbia	Coos	Crook	Curry	Deschutes	Douglas	Gilliam	Grant	Harney	Hood River	Jackson	Jefferson	Josephine	Klamath	Lake	Lane	Lincoln	Linn	Malheur	Marion	Morrow	Multnomah	Polk	Sherman	Tillamook	Umatilla	Union	Wallowa	Wasco	Wheeler	Yamhill
Agri-tourism & other commercial events	1																																			1
Cemetery	1																										1									
Commercial activities with farm use	1																											1								
Commercial dog boarding kennel	1																																			1
Commercial power generating facility	3			1																								1					1			
Communication facilities	12			1						1						2	1	1					2				1	3								
Farm stand	2								2																											
Fish & wildlife structures	1																	1																		
Fishing/hunting accomodations	0																																			
Forest management research	1			1																																
Hemp grow	1															1																				
Home occupation	10						1		1							3									1		1	1				1	1			
Marijuana grow	4															4																				
Primary processing of forest products	2		1																				1													
Private park/campground	5															2														1		2				
Public park	1																				1															
Reservoirs/water impoundment	2																				1							1								
Utility facility	4														2	1												1								
Water intake facilities/canals for irrigation	2																				2															
Winery	2																											2								
Youth Camp	1																																	1		

Appendix 1, Table 10, New parcel approvals on Forestland, parcel size and county, 2020-2021

County	Total New Parcels			0 to 10 Acres		11 to 20 Acres		21 to 40 Acres		41 to 79 Acres		80 to 160 Acres		> 160 Acres		Division associated with Dwelling		Division associated with Conditional Use	
	Total	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Baker	0																		
Benton	0																		
Clackamas	4	3	1	2	1	0	0	0	0	0	0	1	0	0	0	2	1		
Clatsop	0																		
Columbia	5	5		5		0		0		0		0		0					
Coos	0																		
Crook	0																		
Curry	0																		
Deschutes	1		1		0		0		0		0		1		0				
Douglas	3	3		1		0		0		0		2		0					
Gilliam	0																		
Grant	1		1		0		0		0		0		0		1				
Harney	0																		
Hood River	1	1		1		0		0		0		0		0					
Jackson	0																		
Jefferson	0																		
Josephine	1		1		1		0		0		0		0		0				
Klamath	3		3		0		0		0		0		0		3				
Lake	0																		
Lane	1	1		1		0		0		0		0		0					
Lincoln	0																		
Linn	3	2	1	2	1	0	0	0	0	0	0	0	0	0	0	2	1		
Malheur	0																		
Marion	0																		
Morrow	0																		
Multnomah	0																		
Polk	0																		
Sherman	0																		
Tillamook	6	3	3	3	3	0	0	0	0	0	0	0	0	0	0				
Umatilla	0																		
Union	0																		
Wallowa	1	1		0		0		0		0		0		1					
Wasco	0																		
Washington	0																		
Wheeler	0																		
Yamhill	0																		
Total	30	**19**	**11**	**15**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**1**	**4**	4	2	0	0

Appendix 1, Table 11, UGB expansions and zone changes on Farm and Forest Land, by county, 2020-2021

UBG expansions, 2020-2021

Year	Jurisdiction	Acres added to UGB from EFU	Acres added to UGB from Forest	Acres added to UGB from other zones	Acres of resource lands converted	Acres removed from UGB and converted to resource zoning	Total acres added to UGB	Net acres added to UGB	Net percent converted resource
2020	Pendleton	69	0	0	69	69	69	0	0%
2020	Sandy	5	0	0	5	0	5	5	100%
2020	Redmond	156	0	0	156	156	156	0	0%
2020	Newport	0	6	0	6	6	6	0	0%
2021	Central Point	380		64	380		444	444	86%
2021	McMinnville	715		147	715		862	862	83%
2021	Metro	1,538		643	1,538		2,181	2,181	71%
2021	Newport*		43		43		43	-28	100%
2021	Redmond	40			40		40	40	100%
2021	Rockaway Beach		10		10		10	10	100%
2021	Umatilla	147			147		147	147	100%
	TOTAL 2020-2021	3,050	60	854	3,110	231	3,964	3,661	79%

*Note: The Newport UGB expansion involved removing 71.4 acres from the UGB which was converted to rural residential zoning.

Zone change of resource lands not involving UGB expansion, 2020-2021

Year	Jurisdiction	Zone Changed	To Rural Dev	To Urban Dev	To Forest*	To Aggregate	To Natural Resource	Resource Zone Change Acres	To Resource from other zone	Net conversion of Resource Land*
2020	Clackamas County	EFU				107		107		107
2020	Coos County	EFU			13			13		0
2020	Coos County	EFU			19			19		0
2020	Hood River County	EFU			46			46		0
2020	Linn County	EFU				155		155		155
2020	Marion County	EFU	17					17		17
2020	Marion County	EFU			187			187		0
2020	Marion County	EFU	21					21		21
2020	Multnomah County	EFU	1					1		1
2020	Marion County	EFU	3					3		3
2020	Morrow County	EFU	90					90	90	0
2020	Washington	EFU				53		53	0	53
2021	Gilliam County	EFU				14		14		14
2021	Lincoln County	EFU			8			8		0
2021	Coos County	EFU			8			8		0
2021	Marion County	EFU	3					3		3
2021	Linn County	EFU			195			195		0
2021	Marion County	EFU	20					20		20
2021	Marion County	EFU	2					2		2
2021	Coos County	Forest				40		40		40
2021	Linn County	Forest	6					6		6
	TOTAL 2020-2021	Resource	162	0	476	369	0	1,007	90	441

*Zone changes from EFU to Forest are not included in conversion totals

Appendix 2, Historical Data Tables

Appendix 2, Table 12, Dwellings approvals on Farmland, by county, 1994–2021

County	Total EFU Dwelling	% Approved by County	Primary Farm	Accessory Farm	Relative Farm	NonFarm	Lot Of Record	Health Hardship	Replacement
Baker	496	2%	57	35	35	45	118	26	180
Benton	216	1%	19	22	23	15	21	50	66
Clackamas	616	3%	74	54	62	33	73	245	75
Clatsop	84	0%	4	4	7	22	9	2	36
Columbia	73	0%	17	10	1	10	13	6	16
Coos	201	1%	10	8	33	6	25	23	96
Crook	1,012	5%	147	75	15	481	52	32	210
Curry	25	0%	5	0	8	10	1	1	0
Deschutes	1,390	7%	50	16	21	904	81	117	201
Douglas	2,326	12%	127	15	234	508	134	152	1,156
Gilliam	56	0%	12	11	5	8	2	1	17
Grant	331	2%	30	21	21	67	45	2	145
Harney	456	2%	118	39	17	189	37	9	47
Hood River	508	3%	23	149	11	37	29	33	226
Jackson	874	4%	74	30	60	291	270	130	19
Jefferson	380	2%	74	35	14	39	32	34	152
Josephine	106	1%	7	10	6	63	9	6	5
Klamath	634	3%	105	44	38	239	26	13	169
Lake	812	4%	105	42	27	555	5	9	69
Lane	738	4%	51	24	85	61	6	117	394
Lincoln	61	0%	4	0	0	28	21	5	3
Linn	837	4%	39	46	51	73	62	305	261
Malheur	904	5%	95	32	27	215	36	42	457
Marion	1,256	6%	89	77	18	96	39	299	638
Morrow	287	1%	31	33	21	67	23	5	107
Multnomah	85	0%	8	8	11	7	5	3	43
Polk	869	4%	68	33	45	21	93	133	476
Sherman	67	0%	11	2	5	35	3	0	11
Tillamook	262	1%	14	31	17	30	1	12	157
Umatilla	869	4%	67	23	33	119	57	59	511
Union	440	2%	67	24	20	67	54	20	188
Wallowa	259	1%	50	8	14	35	62	4	86
Wasco	483	2%	71	215	15	86	15	18	63
Washington	947	5%	88	23	32	69	26	145	564
Wheeler	146	1%	21	12	6	71	6	1	29
Yamhill	856	4%	80	46	77	42	123	213	275
Grand Total	19,962	100%	1,912	1,257	1,115	4,644	1,614	2,272	7,148

Appendix 2, Table 13, Dwellings approvals on Farmland, by year, 1994-2021

Year	Total	Primary Farm	Accessory Farm	Relative Farm	NonFarm	Lot Of Record	Health Hardship	Replacement
1994	905	79	94	48	226	105	127	226
1995	972	108	66	50	259	111	145	233
1996	1,025	82	59	56	264	133	116	315
1997	1,075	91	45	80	265	125	127	342
1998	840	69	35	60	183	103	102	288
1999	790	74	39	51	164	85	81	296
2000	1,117	96	52	59	279	106	146	379
2001	849	88	24	38	216	76	111	296
2002	956	76	27	48	283	87	102	333
2003	865	95	30	34	261	54	83	308
2004	783	87	20	54	193	64	71	294
2005	744	85	24	45	227	49	84	230
2006	789	102	24	33	239	54	82	255
2007	846	94	57	59	271	63	69	233
2008	645	72	57	37	123	54	52	250
2009	540	56	31	20	111	34	61	227
2010	468	34	29	25	84	20	58	218
2011	395	50	23	18	56	15	51	182
2012	458	38	59	22	71	21	59	188
2013	461	47	47	24	69	24	31	219
2014	486	45	31	36	70	28	54	222
2015	530	51	27	30	90	21	57	254
2016	725	41	189	23	117	39	64	252
2017	578	49	43	30	109	28	85	234
2018	530	47	30	31	115	29	65	213
2019	464	35	34	28	92	22	64	189
2020	525	46	26	47	92	26	48	240
2021	601	75	35	29	115	38	77	232
Grand Total	19,962	1,912	1,257	1,115	4,644	1,614	2,272	7,148
5-Year Average	540	50	34	33	105	29	68	222
10-Year Average	536	47	52	30	94	28	60	224
20-Year Average	619	61	42	34	139	39	66	239

Appendix 2, Table 14, Dwellings approvals on Forestland, by county, 1994–2021

County	Total Forest Dwelling Approvals 1994-2021	% Approved by County	Large Tract	Template Test	Lot of Record	Health Hardship	Replacement	Family Forestry
Baker	52	1%	9	3	21	0	19	0
Benton	103	1%	9	40	19	11	24	0
Clackamas	1,028	10%	20	703	133	170	2	0
Clatsop	112	1%	2	54	20	4	32	0
Columbia	690	7%	3	561	16	54	56	0
Coos	598	6%	9	386	22	13	168	0
Crook	22	0%	12	0	1	1	8	0
Curry	199	2%	49	124	17	1	8	0
Deschutes	140	1%	16	93	12	4	15	0
Douglas	727	7%	41	109	55	21	501	0
Gilliam	0	0%	0	0	0	0	0	0
Grant	122	1%	20	40	24	0	38	0
Harney	6	0%	0	0	5	0	1	0
Hood River	92	1%	9	48	13	0	22	0
Jackson	973	10%	113	578	177	74	31	0
Jefferson	2	0%	1	0	0	0	1	0
Josephine	348	4%	20	306	12	3	7	0
Klamath	308	3%	19	139	51	9	90	0
Lake	2	0%	0	1	0	0	1	0
Lane	1,485	15%	18	948	21	48	450	0
Lincoln	236	2%	7	179	34	5	11	0
Linn	370	4%	4	200	33	76	57	0
Malheur	1	0%	1	0	0	0	0	0
Marion	180	2%	0	110	13	9	48	0
Morrow	57	1%	6	37	2	0	12	0
Multnomah	139	1%	2	49	9	3	76	0
Polk	561	6%	23	271	27	47	193	0
Sherman	0	0%	0	0	0	0	0	0
Tillamook	73	1%	2	48	4	4	15	0
Umatilla	36	0%	13	3	6	1	13	0
Union	160	2%	27	21	43	6	63	0
Wallowa	122	1%	20	44	24	4	30	0
Wasco	14	0%	2	1	4	2	5	0
Washington	477	5%	5	208	45	18	201	0
Wheeler	9	0%	2	1	0	2	4	0
Yamhill	390	4%	17	273	27	31	42	0
Grand Total	9,834	100%	501	5,578	890	621	2,244	0

Appendix 2, Table 15, Dwellings approvals on Forestland, by year, 1994-2021

Year	Total	Large Tract	Template Test	Lot of Record	Health Hardship	Replacement	Family Forestry
1994	420	11	281	35	0	93	
1995	563	12	334	103	0	114	
1996	503	31	304	61	3	104	
1997	475	14	265	59	25	112	
1998	447	13	231	61	28	114	
1999	400	17	225	42	52	64	
2000	591	25	371	55	39	101	
2001	438	22	224	49	42	101	
2002	402	15	221	33	41	92	
2003	430	28	235	43	24	100	
2004	467	30	271	52	18	96	
2005	434	15	243	42	30	104	
2006	456	15	257	34	20	130	
2007	427	24	227	48	38	90	
2008	345	16	194	27	21	87	
2009	271	31	133	11	32	64	
2010	248	20	141	16	13	58	
2011	216	22	90	10	16	78	
2012	189	18	95	6	22	48	
2013	203	11	105	6	15	66	
2014	214	10	126	10	9	59	
2015	233	8	152	9	14	50	
2016	225	9	128	22	19	47	
2017	260	15	146	10	39	50	
2018	210	16	117	11	16	50	
2019	241	20	137	9	19	56	
2020	249	14	163	9	12	51	0
2021	277	19	162	17	14	65	0
Grand Total	9,834	501	5,578	890	621	2,244	0
5-Year Average	247	17	145	11	20	54	0
10-Year Average	230	14	133	11	18	54	0
20-Year Average	300	18	167	21	22	72	0

Appendix 2, Table 16, Total Measure 49 authorizations, by county

County	Claims	Claims Authorized	Authorized New Dwellings	Authorized New Parcels
Baker	97	66	116	58
Benton	80	57	93	53
Clackamas	863	673	1,204	855
Clatsop	52	29	46	31
Columbia	79	50	92	64
Coos	135	96	182	104
Crook	33	21	44	27
Curry	75	48	102	50
Deschutes	116	83	133	97
Douglas	168	124	208	148
Gilliam	1	0	0	0
Grant	5	3	5	5
Harney	0	0	2	2
Hood River	160	117	180	121
Jackson	349	265	450	308
Jefferson	142	86	192	119
Josephine	124	82	142	106
Klamath	139	92	195	78
Lake	1	1	2	2
Lane	327	237	473	297
Lincoln	78	62	112	51
Linn	270	182	331	222
Malheur	19	11	33	21
Marion	322	211	361	223
Morrow	0	0	9	6
Multnomah	72	50	85	40
Polk	247	168	302	184
Sherman	0	0	0	0
Tillamook	67	40	78	46
Umatilla	34	25	72	45
Union	31	19	28	20
Wallowa	38	29	63	37
Wasco	31	26	45	21
Washington	485	360	607	390
Wheeler	2	0	29	15
Yamhill	318	229	401	250
Grand Total	4,960	3,542	6,417	4,096

Appendix 2, Table 17, Farm and Forest Land included in UGBs by Year, 1989 – 2021

Year	Number of UGB Expansion Approvals	Acres added to UGBs	Acres from EFU Zones	Acres from Forest Zones
1989	25	1,445	259	100
1990	9	2,737	1,734	17
1991	21	1,480	177	70
1992	15	970	297	120
1993	22	2,277	1,390	448
1994	20	1,747	201	20
1995	15	624	219	143
1996	19	3,816	2,466	16
1997	12	668	508	40
1998	21	2,726	493	2
1999	10	927	587	72
2000	8	624	0	0
2001	4	140	11	0
2002	55	17,962	3,281	1,659
2003	10	385	124	85
2004	7	3,391	2,090	176
2005	10	739	70	8
2006	15	3,231	670	27
2007	19	292	105	65
2008	6	972	949	0
2009	7	782	686	4
2010	5	58	37	2
2011	6	2,738	1,662	699
2012	6	4,941	757	1,272
2013	7	894	559	0
2014	8	4,188	3,262	350
2015	7	1,028	79	1
2016	5	2,605	225	0
2017	10	1,845	1,192	135
2018	4	415	194	44
2019	7	2,497	1,294	0
2020	4	237	231	6
2021	7	3,727	2,820	54
Total	406	73,108	28,629	5,635

Appendix 2, Table 18, Farmland zone changes, not including urban changes, 1989–2021

Year	Acres to Commercial*	Acres to Industrial **	Acres to Residential	Acres to Forest or Natural Resource	Total Acres EFU Zone Change	Acres to EFU from Other Zone
1989-2000	614	1,370	5,986	2,410	10,380	944,670
2001	11	31	283	67	392	148
2002	18	69	147	202	436	10
2003	21	2	283	90	396	77
2004	25	1,681	220	269	2,195	52
2005	479	772	414	988	2,653	21
2006	31	539	1,468	311	2,349	777
2007	2	342	1,704	1,115	3,163	2,020
2008	79	10	1,011	73	1,173	0
2009	6	375	396	459	1,236	53
2010	30	439	402	546	1,417	41
2011	0	288	270	199	757	0
2012	57	1,075	42	517	1,691	0
2013	0	0	380	1,316	1,696	0
2014	22	55	2,987	6	3,070	916
2015	640	569	10	204	1,423	8
2016	103	167	206	0	476	93
2017	8	157	184	432	781	54
2018	106	505	674	498	1,784	263
2019	0	248	728	166	1,142	0
2020	0	19	21	211	251	90
2021	38	407	1	265	711	0
TOTAL	2,290	9,120	17,817	10,344	39,572	949,293
TOTAL 2001-2021	1,676	7,750	11,831	7,934	29,192	4,623

*Public zones are counted as commercial; ** Mineral and aggregate zones are counted as industrial.

Appendix 2, Table 19, Forest and mixed farm-forest zone changes, not including urban changes, 1989–2021

Year	Acres To Commercial*	Acres To Industrial **	Acres To Residential	Acres to EFU or Natural Resource	Total Forest Zone Change Acres	Acres to Forest from Other Zone
1989-2000	16	275	3,692	8,517	12,500	36,854
2001	0	0	232	0	232	0
2002	0	0	113	109	222	0
2003	0	0	520	113	633	0
2004	0	82	95	50	227	0
2005	0	31	101	44	176	50
2006	0	3	292	0	295	163
2007	2	5	1,269	0	1,276	90
2008	3	212	5	131	351	509
2009	0	56	2,451	0	2,507	27
2010	215	185	489	10	899	378
2011	2	0	53	162	217	0
2012	0	5	74	0	79	80
2013	18	129	0	288	435	0
2014	4	0	159	0	163	11
2015	0	197	164	0	361	204
2016	0	32	120	35	187	0
2017	16	136	32	41	225	432
2018	0	151	107	263	521	120
2019	0	165	0	0	165	83
2020	0	0	0	0	0	265
2021	0	46	0	0	46	211
TOTAL	276	1,710	9,968	9,763	21,717	39,477
TOTAL 2001-2021	260	1,435	6,276	1,246	9,217	2,623

*Public zones are counted as commercial; ** Mineral and aggregate zones are counted as industrial.

Appendix 2, Table 20, USDA NASS Acres in Farm Use by County 1997 - 2017

Table: USDA NASS 2017 Census of Agriculture: Oregon Land In Farms by County 1997-2017

County	2017	2012	2007	2002	1997	2017 to 2012	2017 to 1997	Acreage
COLUMBIA	43,379	56,668	57,758	62,398	72,700	77%	60%	-29,321
GRANT	628,895	656,410	761,541	892,400	1,041,463	96%	60%	-412,568
CLATSOP	15,070	16,382	21,198	22,234	24,341	92%	62%	-9,271
JACKSON	170,298	214,079	244,055	252,185	254,607	80%	67%	-84,309
KLAMATH	482,999	650,416	675,127	702,951	713,255	74%	68%	-230,256
MULTNOMAH	25,435	29,983	28,506	34,329	36,503	85%	70%	-11,068
UNION	385,152	411,671	487,584	478,411	544,720	94%	71%	-159,568
WASHINGTON	104,715	135,733	127,984	130,683	140,884	77%	74%	-36,169
JOSEPHINE	27,866	28,256	37,706	32,370	37,170	99%	75%	-9,304
LINN	314,947	331,316	376,483	385,589	416,737	95%	76%	-101,790
CURRY	70,338	63,342	74,336	70,459	90,090	111%	78%	-19,752
BAKER	754,585	710,789	711,809	869,523	953,771	106%	79%	-199,186
WHEELER	556,967	649,086	757,780	738,207	694,696	86%	80%	-137,729
CLACKAMAS	157,426	162,667	182,743	215,210	195,602	97%	80%	-38,176
POLK	148,905	144,748	166,663	168,881	184,323	103%	81%	-35,418
LINCOLN	29,017	30,225	31,179	32,791	35,780	96%	81%	-6,763
GILLIAM	611,920	723,405	733,387	642,996	752,067	85%	81%	-140,147
YAMHILL	169,357	177,365	180,846	196,298	204,739	95%	83%	-35,382
COOS	138,171	157,496	145,675	144,077	166,082	88%	83%	-27,911
LANE	203,148	219,625	245,531	234,807	238,014	92%	85%	-34,866
WALLOWA	520,213	452,559	527,957	518,110	606,259	115%	86%	-86,046
MALHEUR	1,093,362	1,076,768	1,170,664	1,175,280	1,252,746	102%	87%	-159,384
CROOK	799,845	822,676	761,548	937,628	904,794	97%	88%	-104,949
MARION	288,671	286,194	307,647	341,051	325,048	101%	89%	-36,377
TILLAMOOK	32,936	36,551	37,780	39,526	36,551	90%	90%	-3,615
HOOD RIVER	28,451	25,817	26,952	29,064	30,834	110%	92%	-2,383
BENTON	127,626	123,975	114,558	130,203	137,465	103%	93%	-9,839
DOUGLAS	400,179	382,386	396,984	390,140	422,605	105%	95%	-22,426
UMATILLA	1,352,241	1,308,312	1,447,321	1,330,932	1,403,598	103%	96%	-51,357
MORROW	1,126,101	1,165,126	1,104,250	1,124,593	1,165,678	97%	97%	-39,577
JEFFERSON	792,920	817,051	708,974	701,440	793,525	97%	100%	-605
DESCHUTES	134,600	131,036	129,369	138,226	131,734	103%	102%	2,866
LAKE	755,639	657,055	692,778	747,888	737,531	115%	102%	18,108
SHERMAN	524,857	513,649	514,004	507,705	451,769	102%	116%	73,088
HARNEY	1,557,103	1,505,437	1,461,508	1,575,020	1,319,828	103%	118%	237,275
WASCO	1,388,988	1,427,324	949,462	1,086,817	1,140,704	97%	122%	248,284
						Percent Change	Percent Change	Change
STATE LEVEL	**15,962,322**	**16,301,578**	**16,399,647**	**17,080,422**	**17,658,213**	**98%**	**90%**	**-1,695,891**

Appendix 3

Oregon Board of Agriculture, Policy Resolution 318

Oregon State Board of Agriculture Resolution

Title: Siting of energy transmission and generation facilities on agricultural land	**Number:** 318 **Effective Date:** 08/18/2022
Workgroup B: Boyer, Johnson, Lopez, Svaty, Zielinski **ODA Staff Contact:** Jim Johnson, Rusty Rock, Jess Paulson	**Next Review Date:** 00/00/2025 **Date of Last Review/Revision:** 08/18/2022 **Original Resolution Date:** 06/07/2018
Board Chair: Bryan Harper	Signature on file

Background

WHEREAS, the State Board of Agriculture has heard from the agricultural community about concerns related to the location and development of power transmission facilities through agricultural lands, including underground and above ground transmission lines and land intensive generation facilities on highly productive agricultural lands.

WHEREAS, energy produced from renewable sources is an important part of the future for our state and nation.

WHEREAS agriculture is both land and soil dependent, while the siting of energy related facilities does not require soils with a high capability for agricultural production.

WHEREAS, deliberations regarding designation and treatment of agricultural lands under the statewide land use planning program have included consideration of actions that designate or treat differently lands zoned exclusive farm use based solely on soil quality without accounting for other factors that are conducive to the production of high-value agricultural products, including livestock.

WHEREAS numerous applications to develop solar energy generation have been approved or are under review throughout the state on highly productive agricultural lands.

WHEREAS the existing state "exceptions process" provides for the consideration and location of land uses otherwise not permitted when reasons merit

WHEREAS, the State Board of Agriculture has in the past been contacted by the State Soil and Water Conservation Commission regarding concerns it has related to the increased development of agricultural lands by solar energy generation facilities. In response to the letter from the Soil and Water Conservation Commission the Board discussed issues related to the siting of solar energy generation facilities on productive farmland and expressed several concerns related to location on productive agricultural lands. The discussion by the Board resulted in a written request to the Land Conservation and Development Commission (LCDC) asking that LCDC initiate an evaluation of the current administrative rules related the siting of solar facilities on lands zoned exclusive farm use.

WHEREAS the Department of Land Conservation and Development has since developed rules (see OAR 660-033-0130(37) and (38)) for solar energy siting on designated agricultural lands. These rules are intended to direct energy development to lands that have limited value to wildlife and farming. For example, in the Willamette Valley solar panels are allowed up to 12 acres in areas with the best soil for farming. Up to 320

acres of land may be used for solar in areas with poor soils and no water rights. While these rules have had some impact in discouraging placement of large facilities in the Willamette Valley, they have not precluded the serial development of solar facilities. They have also not precluded the placement of solar facilities on productive irrigated cropland in Oregon outside the Willamette Valley.

Resolution

Be it resolved that the Oregon State Board of Agriculture is concerned about the conversion of high-value and productive farmland and the implications to ongoing and future agricultural operations by energy facility development on lands zoned exclusive farm use.

The Board:

1. Recognizes that energy produced from renewable sources is an important part of the future for our state and nation. We support developing renewable energy facilities at appropriate locations.
2. Recommends the Land Conservation and Development Commission continue to evaluate and monitor the effectiveness of existing administrative rules related to the siting of energy facilities on land zoned exclusive farm use.
3. Supports establishing review criteria to evaluate not only the individual impact of proposed energy development on agricultural lands, but also the cumulative impacts of existing and potential similar nonfarm land use on agricultural operations.
4. Supports the evaluation of the impacts of proposed linear energy transmission facilities on agricultural operations that focuses on individual segments of a linear facility that are comprised of similar agricultural characteristics.
5. Supports better definition of highly productive farmland (instead of "high-value farmland") based on multiple factors such as soils, crop types, operational characteristics, and developed agricultural infrastructure.
6. Supports land use regulations that afford greater protection for highly productive farmland including, land use requirements that preclude the location of energy facilities on highly productive or less valuable farmland when otherwise reasonable alternatives exist.
7. Supports evaluation and reconsideration of existing land use regulation that promotes serial development of energy facilities to skirt other more stringent review standards.

Appendix 4

Oregon Department of Land Conservation and Development 'Rural Resource Lands Research Report, 2019'

Rural Resource Lands

Research Report

Prepared by Stephanie Campbell, Rural Lands Research Fellow

OREGON
Department of
Land Conservation
& Development

May 16, 2019

Table of Contents

This report was prepared by Hatfield Resident Fellow Stephanie Campbell. The Hatfield Resident Fellowship, a program of Portland State University, is a rigorous, project-oriented, professional and educational experience for recent graduates designed to provide each Fellow with an opportunity to acquire leadership skills with a public service agency in Oregon.

Introduction

Problem Statement

The preservation of agricultural and forest land is a primary objective of Oregon's land use planning system. However, since the inception of Oregon's statewide land use planning program in 1973, there has been concern that there are lands currently protected for exclusive farm use (EFU), forest, or mixed farm-forest under Statewide Goal 3 (Agricultural Lands) and Goal 4 (Forest Lands) which have actually been mis-zoned due to low quality soils and limited potential for agricultural or forestry use. The rural resource land issue has been approached in several iterations over the years through extensive public review, work sessions, and pilot studies by the Oregon State Legislature and the Land Conservation and Development Commission (LCDC or the commission). These lands have been difficult to define and identify due to policy, technical, and jurisdictional issues.

Historically, these lands have been termed "marginal," "secondary," "small-scale resource," "nonresource," and "rural resource" in an attempt to describe their rural nature and lower production value. Most recently "nonresource" has been replaced by "rural resource" to underscore the land's function as a resource in some capacity. Rural resource land will be used within this document to refer to this grouping of less productive resource lands. It should be noted that rural resource lands do not require a goal exception from Statewide Planning Goals 3 or 4 and thus are not considered to be "exception" lands. Exception lands are typically designated due to the existing development patterns (e.g., platted subdivisions) that preclude viable farm and forest use while rural resource lands could be hundreds or even thousands of acres with no existing settlement pattern.

As Oregon faces continued growth, how to approach land development in an intentional and proactive manner while balancing resource protection has become an increasingly critical and challenging question. There is existing concern that Oregon's agricultural and forest economies are under threat from expanding development which can cause fragmentation of large parcels, conversion of land use and land cover, and degradation of critical habitat.[1] Furthermore, there is concern that other resource values such as protecting open space to maintain soil, air, water, and fish and wildlife resources and for recreational opportunities are not given adequate consideration. Concerns about preserving private property rights and bolstering local revenue has created political pressure to continue land conversion.[2] This report seeks to create a fact-based foundation to inform future productive discussion of the issues surrounding rural resource lands. With the current collection of new and evolving issues in land use planning, now is a critical time to move forward in addressing the rural resource lands issue.

This document synthesizes the rural resource lands issue by providing a synopsis of the history of the problem, outlining the best available scientific and technical data that can inform related policy and planning efforts, and summarizing options to further address the issue. Efforts to address the rural resource lands issue should be integrated with other resource lands protection strategies by creating standards which will serve to guide counties in identifying and zoning rural

[1] MacLaren, C.; Kimball, K.; Holmes, G.; and Eisenbeis, D., 1000 Friends of Oregon. (undated). *Too Many Homes on the Range*. <http://www.friends.org/sites/friends.org/files/reports/too_many_homes.pdf>.
[2] Hansen, T. M.; Francis, C.; Esseks, J. D.; and Williams, J. A. Jr., "Multifunctional Rural Landscapes: Economic, Environmental, Policy, and Social Impacts of Land Use Changes in Nebraska," (2007). *Theses, Dissertations, and Student Research in Agronomy and Horticulture*. 45.

lands which do not meet the definition of agricultural or forest resource lands and do not warrant protection under other Statewide Planning Goals.

Impetus for Project

A strategy identified in the Oregon Department of Land Conservation and Development's (DLCD or the department) 2014-2022 Strategic Plan is development of a "nonresource/rural resource lands" policy. LCDC's 2017-2019 Policy Agenda also includes "nonresource/other resource lands" and specifies a need for additional research and possible rulemaking:

> "Consider development of a "nonresource/other resource lands" policy that is integrated with resource lands protection strategies, including consideration of carrying capacity, environmental and habitat protection, infrastructure requirements and availability, and other factors. There are currently no standards to guide counties in identifying and zoning lands which do not meet the definition of agricultural or forest resource lands. To date, several stakeholder conversations have helped further define the issue. State agencies, in particular, are identifying issues of mutual interest."

DLCD is approaching the project by first researching the issue to provide an overview of past efforts and current interests as well as what and how data can best inform rural resource designations. The department may utilize information and data gathered during the research phase to conduct additional research or to make policy recommendations during a future rulemaking phase or it may be determined that rulemaking is unnecessary. All policy decisions will be based on best available scientific and technical data and information while being balanced with the state's goals for resource land protection. This report is the result of the research phase of the project.

Sources of Information

This report synthesizes current available information regarding rural resource lands from DLCD internal documentation and reports. Additionally, GIS data and information was collected along with accompanying relevant technical and policy context. Geospatial data collection focused on coordinating with state agencies which house information and data most pertinent to addressing rural resource land designation and carrying capacity considerations. Data provided herein was obtained primarily from DLCD, Oregon Department of Agriculture (ODA), Oregon Department of Forestry (ODF), Oregon Department of Fish and Wildlife (ODFW), Oregon Department of State Lands (ODSL), Oregon Department of Environmental Quality (ODEQ), and Oregon Water Resources Department (OWRD).

Data Gaps and Limitations

The level of accurate and applicable technical and scientific data and information available is a factor in determining the scope of department and commission efforts to protect Oregon's resource lands. This document provides a foundational rather than exhaustive list of data and information which the department and commission could apply to the rural resource lands issue.

DLCD focused on gathering statewide GIS datasets which are primarily coarse scale. Attempts were made to identify data that can be used at finer, parcel-level scales, but this data was not always available or did not exist at a consistent scale across the state, with data gaps being a common occurrence. The availability of finer scale or parcel-level data often coincides with funding associated with interest and necessity for program-based goals. Due to inherent gaps

and limitations, the datasets listed herein should serve as a basis for LCDC to make informed decisions on if and how to proceed with rural resource land policy. In many cases, qualified practitioners may need to make site specific investigations to establish accurate conditions at the parcel level.

Background

History of Issue

This section outlines an abbreviated history of the rural resource lands issue to establish the historical context for this report's analysis as well as subsequent options and recommendations.

Establishment of the Oregon Land Use Planning System

1973 SB 100 is passed, establishing the statewide Oregon land use planning program through the creation of LCDC, and its administrative branch, DLCD. Additionally, SB 101 is passed, creating statewide protections for farmland through further amendments to the EFU zone (ORS Chapter 215). One of the Oregon land use planning system's primary goals has been to protect Oregon's agricultural and timber economy and accompanying farm and forest land base through a combined strategy of tax incentives and development restrictions. From the passage of this bill came 19 Statewide Planning Goals, of which Goals 3 and 4 are most pertinent to the concept of rural resource lands. Goals 3 and 4 refer to agricultural and forest lands respectively, often referred to collectively as "Resource Lands." Oregon's resource lands protection is based on statute and administrative rules as interpreted by the Land Use Board of Appeals (LUBA) and the courts.

Statewide Planning Goal 3, "Agricultural Lands," requires identification of agricultural land, use of statutory EFU zones (ORS Chapter 215), and review of farm and non-farm uses according to statute and administrative rule (OAR chapter 660, division 33) provisions. These provisions also incorporate statutory minimum lot sizes and standards for all land divisions.

Statewide Planning Goal 4, "Forest Lands," seeks to maintain Oregon's forests to allow for tree harvesting that is consistent with sound management of soil, air, water, fish, and wildlife resources.

Marginal Lands

1983 Legislature adopts the Marginal Lands Act that established trade-off between less regulation of lower quality marginal lands and improved protection for the best or primary resource lands. Only Lane and Washington counties adopt the system.

1985 Legislature does not adopt a proposed trade-off to restrict nonfarm dwellings in return for expanded lot-of-record provisions in EFU zones. Instead, the Legislature directs the Commission to "[c]onsider adoption of rules, amendments of the goals and recommendations for legislation that will provide a practical means of identifying secondary resource land and allow specified uses of those lands."

April 1985 Commission establishes Rural Lands Advisory Committee to "review whether the application of the EFU, marginal lands and lot-of-record statutes are effective in achieving the purpose of Statewide Goal 3, to 'preserve and maintain agricultural lands.'"

Secondary Lands

1987 Legislature requires Commission to "[a]dopt and submit a definition of secondary resource lands and uses permitted on secondary resource lands."

July 1988 LCDC adopts definition of "Secondary Lands" and draft proposal for the identification and the uses and densities allowed for primary and secondary resource lands.

Oct 1988 LCDC begins process to amend Statewide Goals 3 and 4 to designate "primary" and "secondary" agricultural and forest lands and establish appropriate uses and densities for such lands.

1989 Legislature directs DLCD through budget notes to fund a Pilot Program for the testing of criteria to identify "secondary lands." Part of the notes requires that the Commission will not adopt any proposed rules as part of this program until after they are presented to the "appropriate legislative review agency."

1990 Statewide Goal 4 is amended after many public meetings, workshops, and hearings that began in October 1988. Work on Goal 3 is postponed pending completion of the "Farm and Forest Research Study." The Study will be an independent analysis of Oregon's productive farm and forest lands and will determine what actions or conditions may diminish the quality and quantity of these farm and forest lands.

1991 LCDC transmits to the Legislative Assembly the "Farm and Forest Research Study" that concluded that Oregon's current system of land use planning was failing to provide adequate protection for farm and forest lands.

1992 LCDC amends Goals 3 and 4 to distinguish between small-scale resource lands, high-value and important farm land, and forest land. LCDC adopts new administrative rules for the identification of small-scale resource lands, high-value and important farm land and forest land as well as the specific uses allowed on such lands.

1993 Legislature adopts HB 3661 establishing new lot-of-record provisions for farm and forest zones and directs LCDC to repeal goal and rule provisions regarding small-scale resource lands, closing the option for designation of marginal lands by any county other than Lane and Washington.

The Big Look and Regional Problem Solving

2005 The Big Look Task Force was created as a result of Senate Bill 82 to review the state's land use planning program. Primary conclusions included the need for a more flexible system, more responsiveness to regional variations, greater regional cooperation, a move toward a more adaptive planning model, and greater simplicity.

2009 The Big Look Task Force Report was released to the 2009 Oregon Legislature. Chapter 3 of the Report focuses on issues related to appropriate zoning of non-productive farm and forest land as well as the re-designation of these lands for other rural uses. The Big Look Task Force brought attention to the need to better define and set quantifiable limits for carrying capacity. As a result of The Big Look, the 2009 Legislature passed House Bill 2229. HB 2229 provided counties with a process for corrective remapping of rural land zoning to ensure sustainable development of rezoned lands and for prompting updates of natural resource protections. The bill created the structure for a regional problem-solving process that allowed counties to remap rural lands based on the results of regional problem solving. See ORS 215.788—794.

2012 Governor Kitzhaber signed Executive Order 12-07, known as the Southern Oregon Regional Pilot Project (SORPP), establishing a Pilot Program for Regional Farm and Forest Land Conservation. Douglas, Jackson, and Josephine counties began a regional process to develop a plan that allowed for regional variation in what lands must be planned and zoned for farm and forest use. The executive order focused specifically on the parameters and measures that should be used in determining what was, and was not, "nonresource land."

2016 Final SORPP reports were submitted to LCDC. Ultimately, participating counties were unable to reach consensus on the difficult topics included in the scope of the executive order, and were not able to establish a regional planning framework to address them.

Existing Regulatory Framework

Agricultural Land

Statewide Planning Goal 3, “Agricultural Lands,” requires identification of agricultural land, use of statutory EFU zones, and review of land uses according to statute and administrative rule (OAR chapter 660, division 33) requirements.

Agricultural lands are defined in OAR 660-033-0020(1):

> (1)(a) "Agricultural Land" as defined in Goal 3 includes:
>
> (A) Lands classified by the U.S. Natural Resources Conservation Service (NRCS) as predominantly Class I-IV soils in Western Oregon and I-VI soils in Eastern Oregon;
>
> (B) Land in other soil classes that is suitable for farm use as defined in ORS 215.203(2)(a), taking into consideration soil fertility; suitability for grazing; climatic conditions; existing and future availability of water for farm irrigation purposes; existing land use patterns; technological and energy inputs required; and accepted farming practices; and
>
> (C) Land that is necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands.

(b) Land in capability classes other than I-IV/I-VI that is adjacent to or intermingled with lands in capability classes I-IV/I-VI within a farm unit, shall be inventoried as agricultural lands even though this land may not be cropped or grazed;

(c) "Agricultural Land" does not include land within acknowledged urban growth boundaries or land within acknowledged exception areas for Goal 3 or 4.

The agricultural land definition includes land based on soil capability but also requires an in-depth analysis of whether the land is suitable for farm use, which typically requires the use of discretion by local decision makers. OAR 660-033-0030 provides additional guidance on identifying agricultural land and provides an option for the use of soil assessments that are more detailed than NRCS mapping. In addition, there is substantial case law which has served to further refine how suitability for farm use should be addressed.

Forest Land

Statewide Planning Goal 4, “Forest Lands,” seeks to maintain Oregon’s forests for tree harvesting that is consistent with sound management of soil, air, water, fish, and wildlife resources.

OAR 660-006-0005(7) defines forest lands as:

(7) “Forest lands” as defined in Goal 4 are those lands acknowledged as forest lands, or, in the case of a plan amendment, forest lands shall include:

(a) Lands that are suitable for commercial forest uses, including adjacent or nearby lands which are necessary to permit forest operations or practices; and

(b) Other forested lands that maintain soil, air, water and fish and wildlife resources.

OAR 660-006-0010 provides additional requirements for identifying forest land for a comprehensive plan and zone change amendments. NRCS is the primary source for wood production capability data. If NRCS mapping is unavailable or proven to be inaccurate, alternate data sources may be considered in the following order:

1. Oregon Department of Revenue (DOR) site class maps for Western Oregon

2. USDA Forest Service plant association guides

3. Other information determined by the State Forester to be of comparable quality.

The rule does not establish a minimum threshold for wood production capability that constitutes commercial forest use. In Just v. Linn County (60 Or LUBA 74 (2009)), the Land Use Board of Appeals (LUBA) found:

“Our cases suggest that land with a productivity of less than 20 cf/ac/yr may be unsuitable for commercial forest use unless there are factors that compensate for the land’s relatively low productivity. But land in a middle range from a low of approximately 40 cf/ac/yr to a high of approximately 80 cf/ac/yr is unlikely to be unsuitable for commercial forest use unless there are additional factors that render those moderately productive soils unsuitable for commercial forest use. Rural land with a wood fiber productivity of over 80 cf/ac/yr is almost certainly suitable for commercial forest use, even if there are limiting factors.”

The portion of the forest lands definition that addresses maintaining "soil, air, water and fish and wildlife resources" has not been further defined in rule. LUBA has determined that a lack of Goal 5 resources in a county comprehensive plan is not adequate justification, if such lands are needed to maintain soil, air, fish and wildlife resources (DLCD v. Curry County, 33 Or LUBA 728 (1997)).

Rural Resource Land

Found in ORS 215.788, the current definition for rural resource lands exists in statute by the term, "nonresource land," and is defined by what it is not:

> 215.788 Legislative review of lands zoned for farm and forest use; criteria.
>
> (4) A county must plan and zone land reviewed under this section:
>
> (a) For farm use if the land meets the definition of "agricultural land" in a goal relating to agricultural lands;
>
> (b) For forest use if the land meets the definition of "forest land" used for comprehensive plan amendments in the goal relating to forestlands;
>
> (c) For mixed farm and forest use if the land meets both definitions;
>
> (d) For nonresource use, consistent with ORS 215.794, if the land does not meet either definition; or
>
> (e) For a use other than farm use or forest use as provided in a goal relating to land use planning process and policy framework and subject to an exception to the appropriate goals under ORS 197.732 (2).

Presently, counties may designate rural resource lands through two methods. The first, and to date only process utilized, is by identifying land that does not meet the definition of "Agricultural Land" or "Forest Land" and thus is not subject to Goal 3 or 4 protection. These lands are typically designated in the county comprehensive plan as "nonresource lands" and may be developed for residential or other uses not allowed in farm and forest zones. Counties permit creation of new parcels in nonresource land zones that are smaller than typically is allowed in EFU or forest zones. Rural resource lands are still subject to the other Statewide Planning Goals which, among other matters, preclude the establishment or extension of public sewer systems and urbanization. Uses allowed on rural resource lands must also be compliant with county adopted Goal 5 inventories (e.g. wildlife habitat, wetlands, riparian corridors).

Ten Oregon counties have utilized this method to rezone land from EFU and forest. The primary purpose for nonresource designations appears to be the creation of rural residential parcels. [3] Between 2008 and 2018, DLCD identified 24 zone changes associated with nonresource designations. These zone changes did not require an exception from Statewide Planning Goals 3 or 4. Two zone changes were to rural commercial zones. Twenty-two zone changes were from EFU or forest zones to zones that list single-family residential dwellings as an outright allowed use. Residential minimum parcel sizes varied between 5, 10, and 20 acres.

[3] Clatsop, Crook, Deschutes, Douglas, Jackson, Josephine, Klamath, Linn, Lane, Wasco

The second path to rural resource land designation, which has not been used by counties, requires a more comprehensive evaluation and direct DLCD participation. Found in ORS 215.788 – 794, this option was created in 2009 as a result of the "Big Look." If used, this process would provide counties with an opportunity for corrective remapping of rural lands while considering the carrying capacity of those lands for development.

To begin the Big Look process, a scope of work for the reacknowledgement must be approved by DLCD. The process would then proceed as a legislative review of county lands to determine whether lands currently zoned farm and/or forest are consistent with the definitions of "agricultural lands" or "forest lands" as stated in the respective goals. Lands which are subject to a goal exception under ORS 197.732 must also be reviewed. After making determinations regarding what farm and/or forest lands do and do not meet the definition and analyzing carrying capacity, counties must submit findings to DLCD which will then be reviewed by LCDC in coordination with ODA and ODF.

Rural resource land designations do not require a goal exception from Statewide Planning Goals 3 or 4. However, the land is still subject to compliance with the other Statewide Planning Goals unless an exception is taken. For example, Goal 11 (Public Facilities and Services) prohibits extension of sewer service to rural areas, including rural resource lands, without an exception.

Analysis and Findings

A robust rural resource lands policy will consider: capability, suitability, and carrying capacity. Capability refers to the ability of the land to produce an agricultural or forest product. This factor is primarily governed by soils and water availability. [4] Agricultural land capability class and forest productivity thresholds are useful tools for determining at what level of capability an agricultural or forest operation is deemed feasible. Suitability, another significant factor, refers to the ability to conduct viable farm or forest operations and is intimately related to the size and position of the operation's land base in relation to surrounding uses as well as accompanying infrastructure.[5] Carrying capacity refers to the level of use which can be accommodated and continued without impairment of natural resources productivity, the ecosystem and the quality of air, land, and water resources.[6] Additionally, carrying capacity, in relation to rural resource lands, should account for impacts to water supply, energy use, transportation facilities, risk and cost of wildfire, cost of public facilities and services, and the fiscal health of local government as outlined in ORS 215.791. Finally, state land use policy ensures that rural lands remain sparsely settled and are not utilized for urban levels of development and services consistent with Goals 11 (Public Facilities and Services), 12 (Transportation), and 14 (Urbanization).

The following section of the report will address the above considerations through a (1) Farm and Forest Resource Evaluation and (2) Carrying Capacity Evaluation. To begin, the Farm and Forest Resource Evaluation considers what lands might qualify as rural resource lands based upon the land's potential agricultural capability and woody biomass productivity. The Carrying

[4] Johnson, J. Oregon Department of Agriculture. (2007). *Identification and Assessment of the Long-Term Commercial Viability of Metro Region Agricultural Lands.* < https://multco.us/file/27992/download>.
[5] Ibid.
[6] Department of Land Conservation and Development, *Statewide Planning Goals: Definitions*.

Capacity Evaluation considers how available geospatial data can inform questions of if or how to proceed with development on rural resource lands.

Two basic methodological frameworks exist for using the carrying capacity analysis. One framework would use this analysis to exclude lands from rural resource redesignation so that they would remain as farm and forest lands. The other framework would use this analysis not to exclude lands from rural resource designation but instead to limit the resulting increases in non-farm and non-forest development activity that local governments could approve on such lands. It is possible that these two methodological frameworks might be used in conjunction as well—for example, using location within an urban reserve to exclude lands, while using existence of a wildlife habitat overlay to allow less development on designated rural resource lands than on similarly-designated lands not within the wildlife habitat overlay.

Regional differences were taken into consideration due to the substantial climatic differences in lands east versus west of the Cascades. For this report, Eastern Oregon includes all the counties east of the Cascades: Baker, Crook, Deschutes, Gilliam, Grant, Harney, Jefferson, Klamath, Lake, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler. All other counties are considered to be in Western Oregon.

Consulting with state agencies has been and will continue to be a critical part of the process in creating a robust rural resource lands policy. Additional stakeholder conversations will be necessary to round out an informed discussion.

Farm and Forest Resource Evaluation

As rural resource lands are primarily defined by their exclusion from definitions in Statewide Planning Goals 3 and 4, analysis was first conducted to determine which lands are agricultural or forest lands.

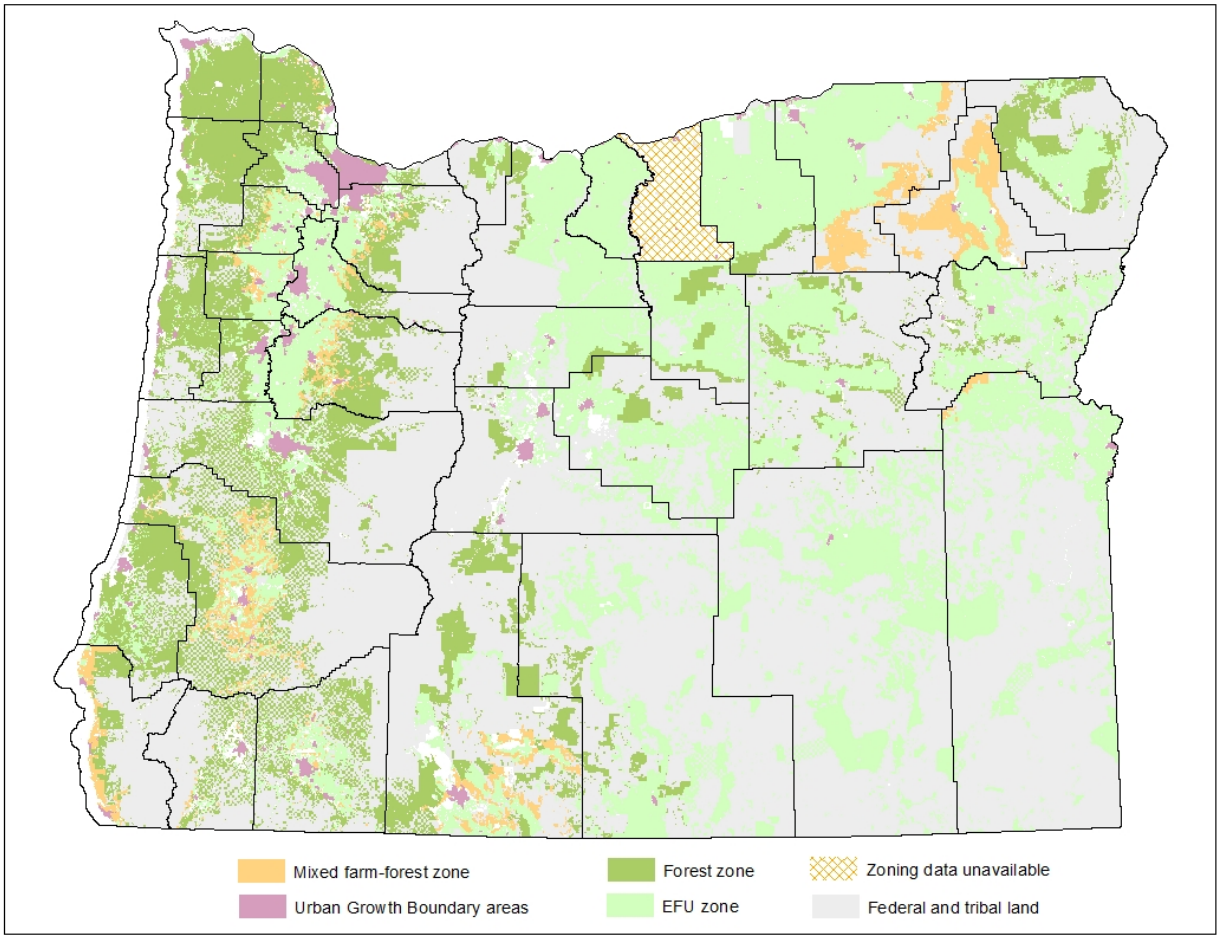
Farm and Forest Resource Evaluation goals:

1) Identify currently zoned farm and forest lands that meet capability and productivity thresholds.
2) Identify additional suitability factors that require further analysis to determine potential rural resource land designation qualifications.

Area of Analysis

Geospatial analysis began by narrowing the area of analysis to those lands which are potentially eligible for rural resource land designation. The initial area of analysis includes land currently zoned EFU, forest, and mixed farm-forest (see Figure 1).[7] Federal lands not subject to the Statewide Planning Goals were subsequently removed from the farm and forest zoning layer. Additionally, because local governments often retain farm and forest zoning as an interim measure for urbanizable lands within an urban growth boundary (UGB), such lands were also removed from the layer. The resulting narrowed layer formed the extent of the area analyzed in the following processes.

Figure 1: Exclusive Farm Use, Forest, and Mixed Farm-Forest Zoning on Non-Federal Lands



[7] Digital zoning data was unavailable for Gilliam County.

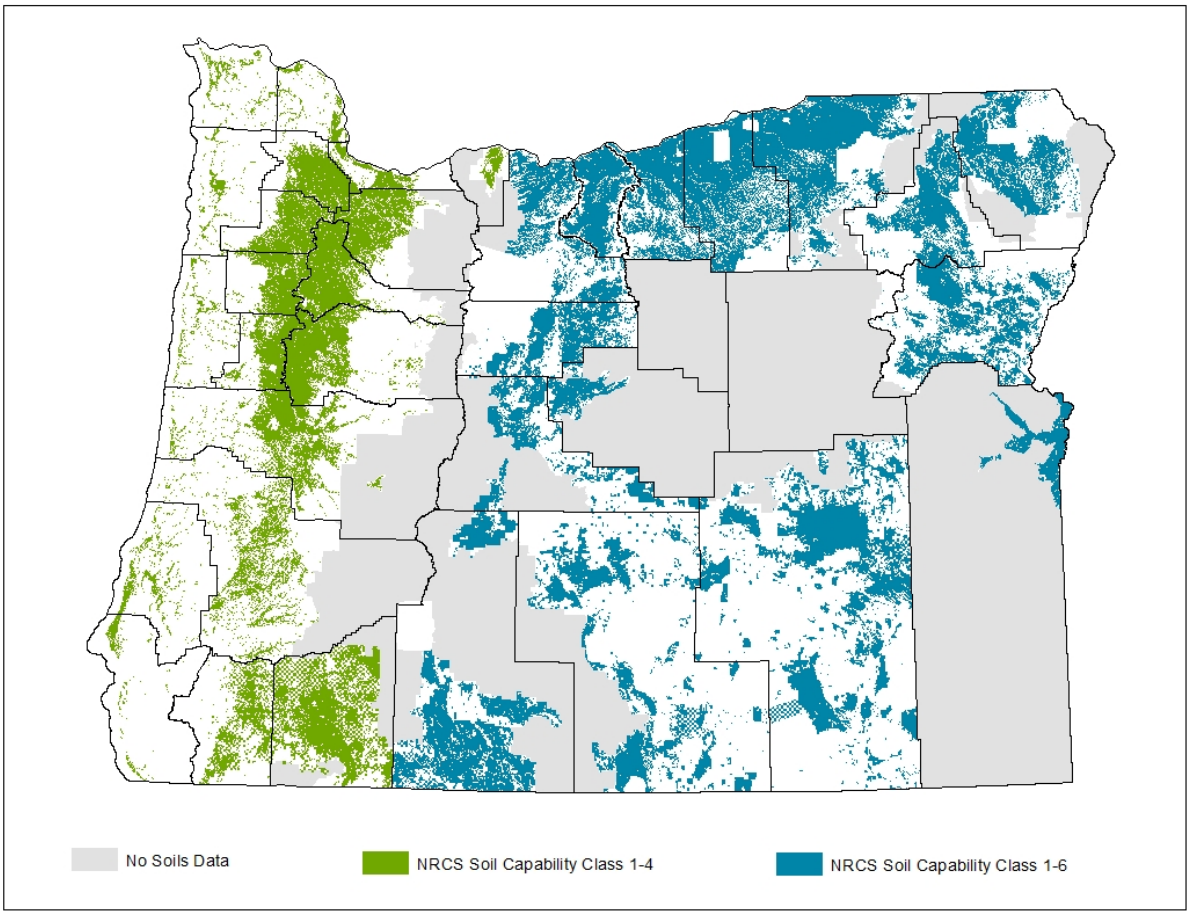
Agricultural Land

Agricultural Capability Classification

"Agricultural land" as defined by OAR 660-033-0020(1) is land composed of Class I-IV soils in Western Oregon and Class I-VI in Eastern Oregon as determined by Natural Resource Conservation Service (NRCS) soils data. Per this definition, the NRCS Gridded Soil Survey Geographic dataset for Oregon was used to determine agricultural soil capability classes for both irrigated and nonirrigated classifications. The NRCS Gridded Soil Survey Geographic is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey depicting information about the types and distribution of soils across Oregon. Soil map units are linked to attributes in the National Soil Information System relational database, giving the proportionate extent of the component soils and their properties. Large areas, particularly in Eastern Oregon, have not yet been surveyed yet, although NRCS is actively working on private land in these areas which should be done in the next five years.

For the purposes of this analysis, lands were considered to be agricultural land if they had either an irrigated or nonirrigated capability class of I-IV/I-VI due to lack of consistent statewide data regarding existing, former, or potential future irrigation rights. See Figure 2 for results. The ability to irrigate soils requires a more detailed analysis when lands are proposed for rural resource designation.

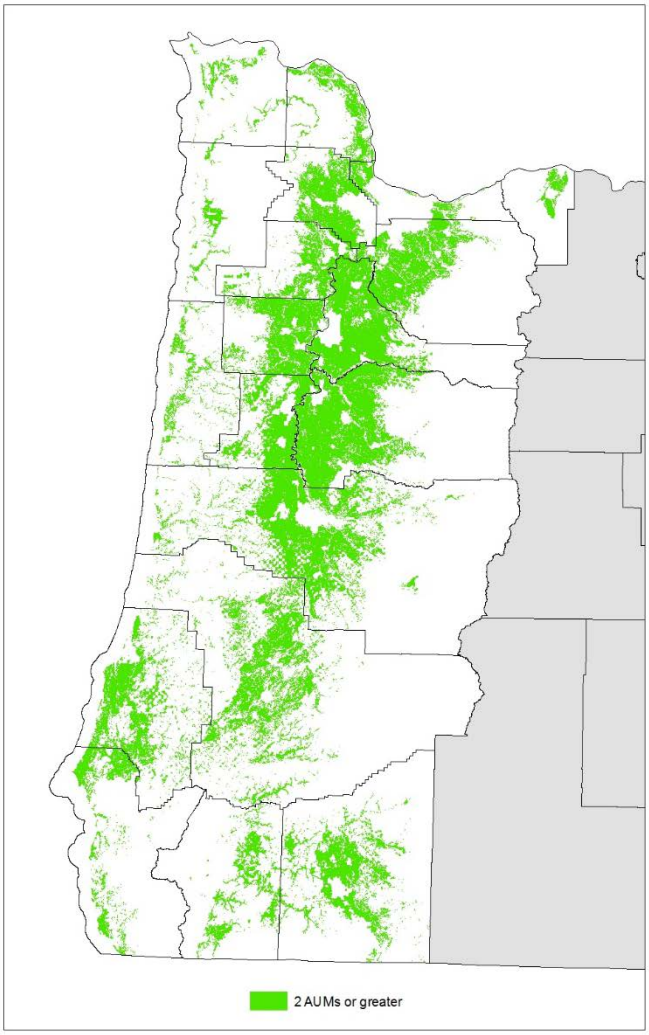
Figure 2: NRCS Agricultural Capability Classes on Non-Federal Lands



Suitability for Farm Use

In addition to NRCS soil capability classes, OAR 660-033-0020(1) further defines agricultural land as land in other soil classes that is suitable for farm use, taking into consideration soil fertility, suitability for grazing, climatic conditions, existing and future availability of water for farm irrigation purposes, existing land use patterns, technological and energy inputs required, and accepted farming practices. Land may also be suitable for farm use if it is necessary to allow farm practices to occur on nearby lands or if it is intermingled with lands in capability classes I-IV/I-VI within a farm unit. A property specific evaluation is most likely necessary to definitively ascertain whether or not a specific parcel meets the agricultural lands definition by these additional criteria, if the definition is not met by NRCS soil capability class.

Figure 3: Animal Unit Months (AUMs) for Western Oregon on Non-Federal Lands



Animal Unit Months (AUMs): Animal Unit Months are a measure of carrying capacity and land suitability for grazing and livestock production. AUMs are computed from the NRCS soils database as a way to assign pasture yields on a per acre basis for both irrigated and non-irrigated lands. Specifically, a single AUM unit denotes the amount of forage required to sustain one mature 1,000 pound cow and a calf up to 6 months of age, or equivalent (five sheep or goats, one bull or one horse), for one month. Two AUMs per acre has been considered suitable for grazing by ODA, which correlates with being capable of sustaining two cow/calf pairs, with the above stipulations, for an entire growing season. As AUMs are based on pasture yields, it is important to consider that the definition of pasture includes a high level of management which includes "periodic renovation and/or cultural treatments such as tillage, fertilization, mowing, weed control, and may be irrigated."[8] For this reason, AUMs are generally considered only applicable to Western Oregon, although there are some lands on the eastside which might have a level of management appropriate for AUM threshold application. For Eastern Oregon, pounds of forage per acre is the appropriate

[8] United States Department of Agriculture. *NRCS Range and Pasture Handbook: Glossary*. <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17746.wba>.

measure but there has been no definitive determination as to what is a reasonable productivity threshold for grazing operations. However, ten acres per AUM is considered excellent pasture for native rangeland in Eastern Oregon. Many commercial livestock producers depend on seasonal pasture that is less productive than ten acres per AUM. Additional criteria outside of productivity threshold metrics are necessary to maintain viable livestock operations including a minimum number of acres and a variety of land types to accommodate seasonal changes. These factors may require additional consideration by counties. See Figure 3 for analysis results.

Questions also remain regarding the development of appropriate eastside threshold parameters. It will likely be necessary to work with ODA and NRCS to identify beneficial forage and determine a suitable quantitative metric threshold for eastside range productivity. Conclusions would need to be verified through on-the-ground field analysis and stakeholder input.

Prime and unique farmland: Prime and unique farmland soils are considered to be high-value farmland soils per ORS 215.710.[9] In a limited number of circumstances, land that is classified as prime or unique farmland does not have a capability class that would automatically make it agricultural land. However, these areas may be suitable for farm use. It should also be noted that NRCS has not mapped unique soils across Oregon as has been done in other states. For the purposes of this report, farmland was considered to be prime or unique regardless of whether it needs to be irrigated or drained to receive those soil designations.

High-value farmland portions of American Viticultural Areas: Portions of Oregon's American Viticultural Areas are considered to be high-value farmland per the definition in ORS 195.300(10).[10] High-value American Viticultural Area data is derived from United States Geological Survey ten-meter digital elevation models processed to identify cells with aspect, slope, and elevation values meeting certain criteria and falling within specific viticultural areas. If land falls within high-value farmland portions of the specified American Viticultural Areas, it may be suitable for farm use.

Irrigation Districts: Irrigation is critical to consider as irrigated agriculture uses an estimated 86 percent of the water diverted from surface water or pumped from groundwater sources in the

[9] Prime farmland is defined by NRCS as "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses." Unique farmland is "land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables."

[10] ORS 195.300(10)(e) and (f): (10) "High-value farmland" means: (e) Land that is in an exclusive farm use zone and that is at an elevation between 200 and 1,000 feet above mean sea level, with an aspect between 67.5 and 292.5 degrees and a slope between zero and 15 percent, and that is located within: (A) The Southern Oregon viticultural area as described in 27 C.F.R. 9.179; (B) The Umpqua Valley viticultural area as described in 27 C.F.R. 9.89; or (C) The Willamette Valley viticultural area as described in 27 C.F.R. 9.90. (f) Land that is in an exclusive farm use zone and that is no more than 3,000 feet above mean sea level, with an aspect between 67.5 and 292.5 degrees and a slope between zero and 15 percent, and that is located within: (A) The portion of the Columbia Gorge viticultural area as described in 27 C.F.R. 9.178 that is within the State of Oregon; (B) The Rogue Valley viticultural area as described in 27 C.F.R. 9.132; (C) The portion of the Columbia Valley viticultural area as described in 27 C.F.R. 9.74 that is within the State of Oregon; (D) The portion of the Walla Walla Valley viticultural area as described in 27 C.F.R. 9.91 that is within the State of Oregon; or (E) The portion of the Snake River Valley viticultural area as described in 27 C.F.R. 9.208 that is within the State of Oregon.

state, with 40 percent of Oregon's farms relying on some level of irrigation.[11] The state requires irrigation districts to measure and report water use. Water rights in irrigation districts are managed by the district and are subject to frequent changes. The current irrigation districts GIS data layer available, provided by OWRD, is incomplete due to a lack of reporting. Further development of this dataset would provide decision makers with a better understanding of where governmental and physical water infrastructure may currently exist for agricultural uses. If land is inside an irrigation district, it may be inappropriate to designate it as rural resource land.

Irrigated Places of Use: The OWRD Places of Use dataset provides basic information on where the water right is being used and what it is being used for (e.g., irrigation, construction, recreation). All current and individually held water rights are included in the dataset except where held by irrigation districts, applications, temporary transfers, instream leases, and limited licenses. This data, updated on a regular basis, gives decision makers an understanding of where water is currently being reported as used for agricultural and forest uses. If land holds an irrigated water right, it may be inappropriate to designate it as rural resource land.

Forest Land

Woody Biomass Productivity Capability

OAR 660-006-0005(7) defines "forest lands" and 660-006-0010 provides a data hierarchy for evaluating biomass productivity capability. Productivity capability data was evaluated in this order, with data sources lower in the hierarchy used only when the primary data was unavailable:

1. NRCS productivity data
2. DOR Western Oregon site class data
3. USDA Forest Service plant association guides
4. Other information determined by the State Forester to be of comparable quality. In this case, U.S. Forest Service (USFS) Historic Vegetation was utilized as recommended by ODF.

NRCS productivity: Annual woody biomass production capability was determined through analysis of a layer provided by ODF, which contains NRCS Statewide Forest Productivity data. To compute annual wood production, productivity in cubic feet per acre per year was calculated as a weighted average, based on the percentage makeup, of the productivity ratings for the soil components which comprise a map unit from NRCS soils data. Where productivity calculations were available for multiple different tree species, the highest value was used. Unmapped areas are those that did not have a productivity rating available. A lack of productivity rating often, but not always, corresponds to non-forest areas. Non-forest areas may be capable of producing the minimum capability threshold even if they were not evaluated by NRCS for forest productivity.

Annual woody biomass production capability thresholds, 50 cubic feet per acre per year (cfay) or greater based on NRCS soils data using a weighted average calculation in Western Oregon and 20 cfay in Eastern Oregon, were selected based on information gathered during the SORPP process, input from ODF staff, and review of case law. The State of Oregon has

[11] Oregon Water Resources Department. (2017). *Oregon's Integrated Water Resources Strategy*. <https://www.oregon.gov/owrd/wrdpublications1/2017_IWRS_Final.pdf>.

consistently used a threshold of 20 cfay to define commercially viable forestland in Eastern Oregon and has either used a 20 or 50 cfay threshold to define commercial viability in Western Oregon. Current Forest Practices Act Reforestation Rules (OAR 629-610-0010) requires reforestation on any land capable of producing 20 cfay after a timber harvest has occurred. Land with a NRCS productivity rating of 20 cfay or greater for Eastern Oregon and 50 cfay or greater for Western Oregon is most likely "forest land" and not eligible for designation as rural resource lands.

DOR site class maps: For the purposes of property taxation, Oregon DOR assigned values to forestland in Western Oregon by classifying land into eight productivity classes. Oregon DOR's land productivity classifications, provided by ODF, indicate the average productivity class for 40-acre blocks of land in Western Oregon, as surveyed in the 1960s and 1970s. This data only exists for the west side and thus is not applicable to Eastern Oregon. DOR data has only been utilized when NRCS productivity data is unavailable. Land that falls within a DOR Forest classification capable of producing 50+ cfay in Western Oregon are most likely forest land as defined in OAR 660-006-0005(7) and subject to Goal 4 protection.

USDA Forest Service plant association guides: The use of USDA Forest Service plant association guides requires a field survey of plants within a specific parcel or area. The field observations would be cross-referenced with the guide in order to determine the "association type" of the field site. Using the guide, productivity could be inferred from the survey results. Plant association guides are not available statewide. Plant association guides may be useful when evaluating property specific zone change applications but have not been utilized as part of this analysis due to the need for field verification.

USFS Historic Vegetation: The U.S. Forest Service layer for Historic Vegetation comes from a 1930s forest resources survey which was later digitized.[12] The original vegetation types were sorted by ODF into "forest" and "non-forest" categories, where juniper was treated as "non-forest" for these purposes. Although this dataset does not quantitatively assess productivity, ODF considers the 1930s forest resources survey to be a high-quality data source which identifies lands that were historically capable of sustaining productive forest. USFS Historic Vegetation data should only be utilized when NRCS productivity data and DOR data are unavailable. Land that has a USFS Vegetation category of "forest" may be capable of forest productivity meeting the thresholds utilized in evaluating NRCS and DOR data.

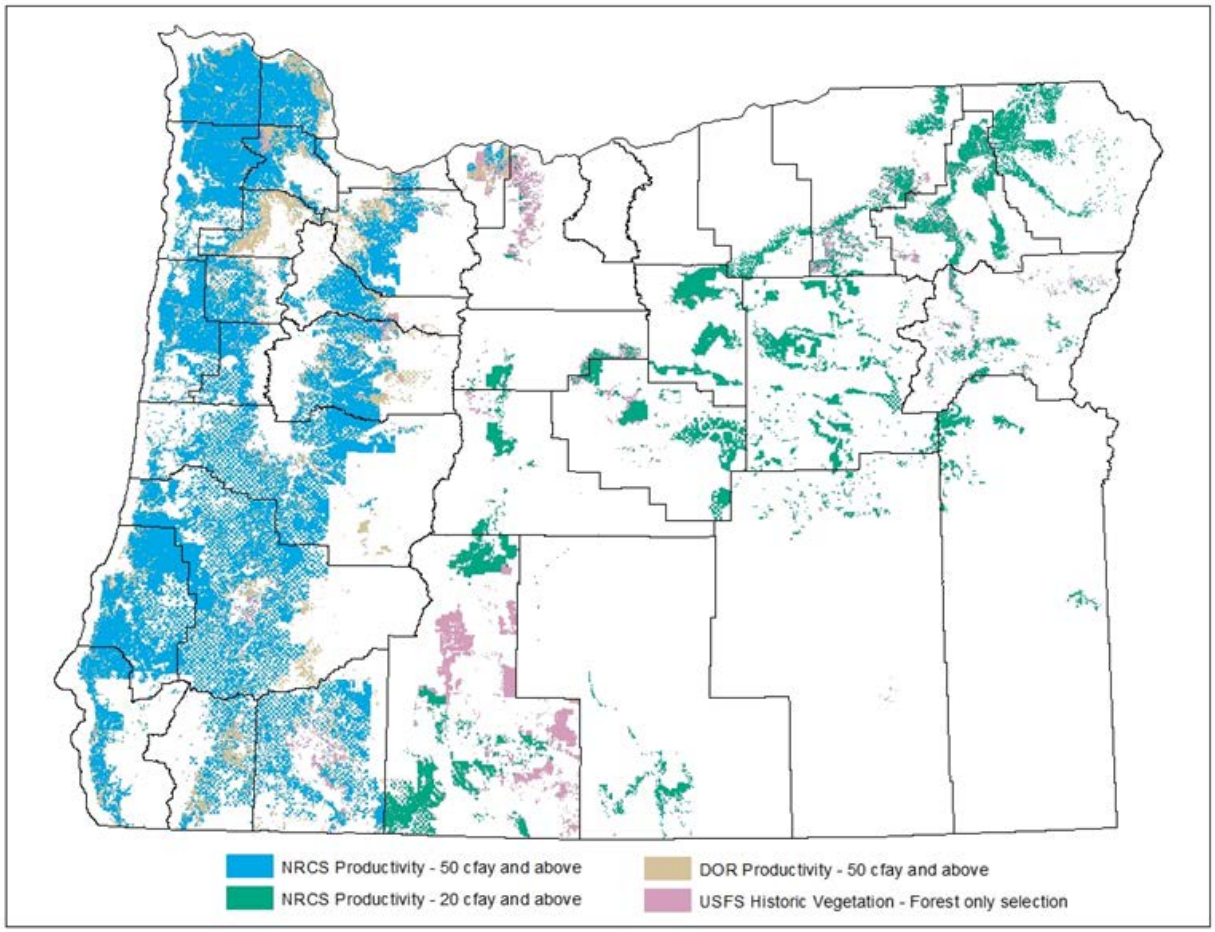
See Figure 4 for results.

Suitability for Forest Use

Suitability for forest use is tied to woody biomass productivity but also includes "adjacent or nearby lands which are necessary to permit forest operations or practices." Adequately addressing the suitability aspect of forest land reinforces the need for a detailed local analysis due to the inherent data gaps and limitations present in geospatial analysis such as was conducted for this report.

[12] United States Forest Service. "The 1930s Survey of Forest Resources in Washington and Oregon." <https://www.fs.fed.us/pnw/pubs/pnw_gtr584.pdf>.

Figure 4: Non-Federal Forest Lands Derived from NRCS, DOR, and Historic Vegetation Data



Natural Resources

The definition for "forest lands" in OAR 660-006-0005(7)(b) includes "other forested lands that maintain soil, air, water and fish and wildlife resources." To address this portion of the definition, data presented under the following Carrying Capacity Evaluation section should be considered. Additionally, agricultural lands may provide similar natural resource benefits but this consideration is not addressed within the current definition of agricultural land.

Conclusions from the Farm and Forest Resource Evaluation

DLCD has identified several datasets that are useful in determining which lands should continue to be protected under Statewide Planning Goals 3 and 4. NRCS-derived capability and productivity data is particularly useful due to the extent and quality of the data for determining both farm and forest land, with improvements being made continuously. As stated above, the NRCS soils data will be updated within the next five years to include areas where data does not currently exist, most notably in Eastern Oregon.

Regarding grazing potential, the 2 AUMs and greater threshold denoting viable pastureland on the westside is a useful metric for analysis, although the high level of management defining

pastureland may allow for some application of this metric to lands on the eastside meeting the pasture definition. A significant data omission is eastside forage productivity threshold data. This will likely consist of working with ODA and NRCS to determine beneficial forage species and productivity levels associated with soil capabilities. Consideration should also be given to whether AUM or beneficial forage thresholds should be added to the definitions of agricultural and forest lands.

A significant opportunity exists to incorporate natural resource data into farm and forest definitions to account for the considerable benefits provided by Oregon's vital natural resources. Information in the Carrying Capacity Evaluation section may be useful in this endeavor.

Carrying Capacity Evaluation

A carrying capacity evaluation requires analysis of multiple factors to determine whether potential rural resource land should continue to be protected as resource land in order to meet other Statewide Planning Goals or whether potential rural resource lands are suitable for development and in what form and density. Unless the process in ORS 215.788-794 is utilized, counties are not required to conduct a formal carrying capacity evaluation when designating rural resource lands although they do have to demonstrate compliance with the other Statewide Planning Goals.

The rural resource lands approval option in ORS 215.788-794 does require a formal carrying capacity analysis and is the basis for evaluation of potential rural resource lands under this section. DLCD has reviewed available data that can be used to evaluate the effect of development on:

- Fish, wildlife habitat, and other ecologically significant lands;
- Water quality or the availability of water supply; and
- Natural hazards including wildfire, flooding, and landslides.

In addition, ORS 215.791 requires consideration of:

- Ensuring that development will be rural and not urban in character;
- Impacts to farm and forest uses or practices;
- Impacts to development in urban areas;
- Energy use;
- State or local transportation facilities; and
- The cost of public facilities or services and the fiscal health of a local government.

Spatial data is not readily available or easily analyzed for these factors on a statewide scale. However, possible considerations for evaluation are discussed in this section as these issues are critical to evaluating the type and form of development on rural lands.

Fish, Wildlife Habitat, and Other Ecologically Significant Lands

The protection of natural resources is considered in the definition of Forest Lands in the phrase: "other forested lands that maintain soil, air, water and fish and wildlife resources" as well as in

Statewide Planning Goal 5. Due to the wording in both the Forest Lands definition and Goal 5 there is variation in how counties apply these rules—regarding what resources should be considered, how they should be evaluated, how to determine resource significance, and how to secure protections. In addition, many comprehensive plans and the accompanying Goal 5 resource inventories across the state have not been updated since LCDC's original acknowledgement in the 1980s. As a result, the best available natural resource data is not always included in local comprehensive plans or utilized when making land use decisions. Thus rural resource designations may create conflicts between newly allowed uses and natural resources. Due to these circumstances, it may be appropriate to evaluate rural resource lands using the best available data to avoid or minimize these potential conflicts, which may include a consideration of data beyond the outdated acknowledged Goal 5 inventories. In addition, it may be appropriate to consider conservation values, including restoration of natural resources, when determining the appropriate density and location of development.

Oregon Conservation Strategy

As ODFW is the agency responsible for developing the Oregon Conservation Strategy, DLCD worked with ODFW in assessing which natural resource GIS data would be most useful to address the rural resource lands issues. Although ODFW is charged with the protection and enhancement of fish and wildlife species, the agency has very limited authority over the habitat on which fish and wildlife depend. To address these cross-boundary management issues ODFW updated the Oregon Conservation Strategy[13] in 2016 using the best available scientific information to inform fish and wildlife conservation planning efforts statewide. This statewide strategy provides a shared set of priorities with corresponding recommended voluntary actions and tools. The natural resource geospatial data referenced in this section has been selected in consultation with ODFW, using the Conservation Strategy as guidance.

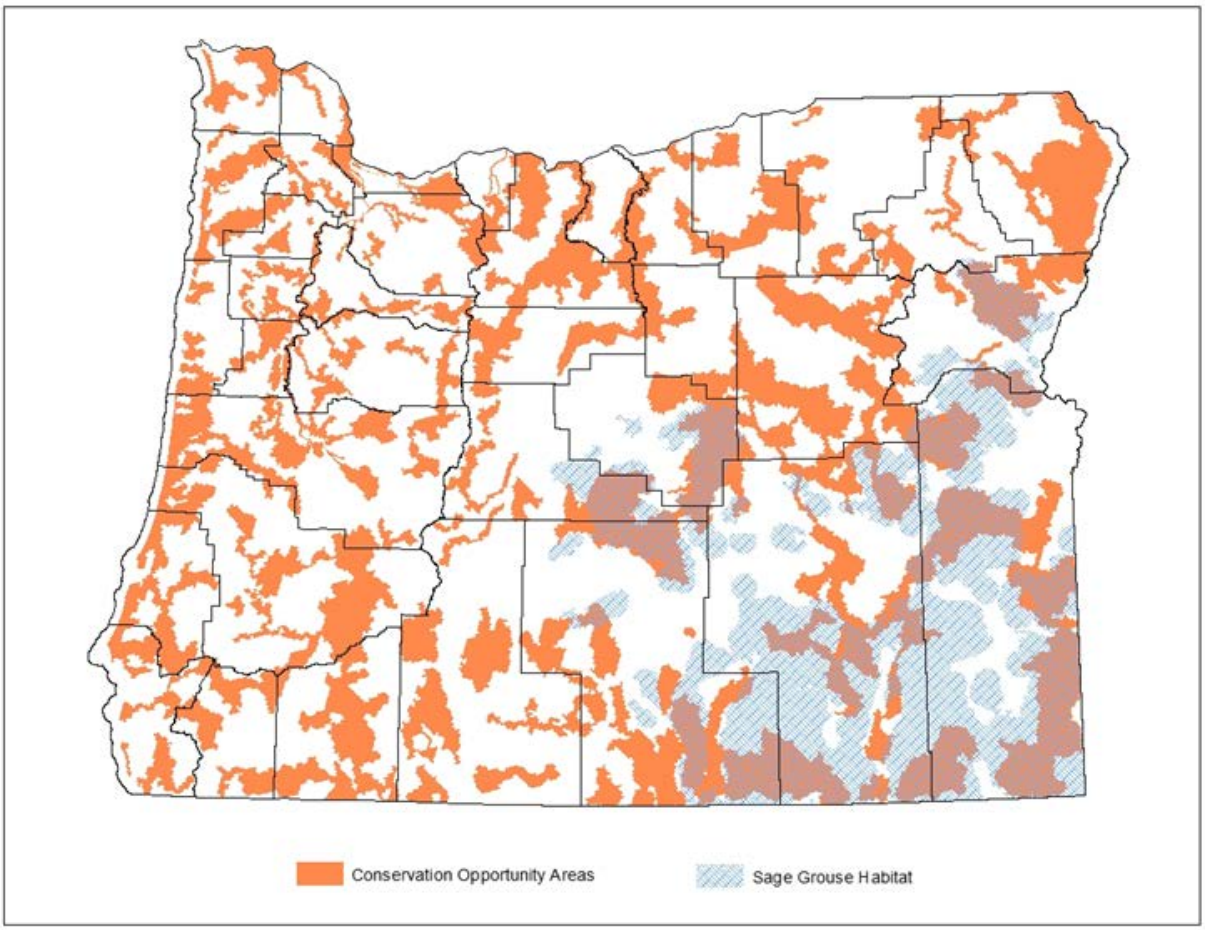
Conservation Opportunity Areas (COA): A component of the Oregon Conservation Strategy, Conservation Opportunity Areas (see Figure 5), encompass 206 priority conservation areas across the state. These areas are places where broad fish and wildlife conservation goals would best be met. COAs are generally either areas of high biodiversity, areas with unique habitat values, or areas with known restoration needs. All COAs have an associated COA profile, providing details about the area's Conservation Strategy priorities, recommended actions consistent with local priorities and ongoing conservation efforts.[14] For example, Crater Lake's COA profile details recommended conservation actions: "maintain or enhance wetland and wet meadow habitat" and "work with national and regional partners to provide Conservation Strategy outreach."

Although COAs were primarily developed to focus investments, there is precedent for using this data in making land use decisions. ORS 215.791, developed as part of "The Big Look" in 2009, requires counties designating rural resource lands to consider the 2006 version of the Oregon Conservation Strategy when evaluating whether such lands contain ecologically significant natural areas or resources. As previously mentioned, counties have not utilized "The Big Look" option when designating rural resource lands. Consideration of the current version of the Oregon Conservation Strategy when designating rural resource lands would help ensure that lands of ecological significance not identified in adopted Goal 5 inventories are zoned

[13] The Oregon Conservation Strategy site. <http://www.oregonconservationstrategy.org/>.
[14] Find COA profiles here: <http://oregonconservationstrategy.org/conservation-opportunity-areas/>.

appropriately for natural resource conservation. COAs may also be useful as a screening tool which may allow for those lands which fall inside a COA to trigger on-the ground site-specific natural resource analysis in consultation with ODFW before development may be considered. An on-site ODFW evaluation may be useful in determining the appropriate density and form of development (e.g. require large minimum lot sizes or clustering of structures to avoid sensitive habitat).

Figure 5: Conservation Opportunity Areas and Sage Grouse Habitat



Strategy Habitats: The 2016 Oregon Conservation Strategy identifies 11 Strategy Habitats[15] which focus on native habitats of conservation concern that are essential to many Strategy Species within the state. Strategy Species identifies 294 species of greatest conservation need and are defined as having small or declining populations, are at-risk, and/or are of management concern. For each Strategy Habitat and Strategy Species, information is provided in the Strategy that includes a conservation overview, data gaps, limiting factors to the species or habitat, recommended conservation actions, and available resources. To support the 10 year Oregon Conservation Strategy revision in 2016, the Institute for Natural Resources's (INR) Oregon Biodiversity Information Center (ORBIC) at Portland State University was contracted to

[15] "Oregon Conservation Strategy: Strategy Habitats." <http://oregonconservationstrategy.org/strategy-habitats/>.

use best available data and analyses to update the mapped extent and distribution of the Oregon Conservation Strategy Habitats. The objective was to comb existing data sources and use the most up-to-date and highest resolution maps available in Oregon for each Strategy Habitat, within their associated ecoregion. The results of this effort are presented in this Strategy Habitat dataset as a 30m pixel raster grid.

Strategy Habitats are useful tools to identify where potential rural resource lands may have conflicting uses with habitat that support sensitive fish and wildlife habitat (e.g., Strategy Species). Strategy Habitats may be evaluated during the consideration of eligible rural resource lands to identify those lands no longer qualifying as farm or forest land but that may have a significant conservation priority to address. This dataset can also be evaluated as part of any potential updates to existing Goal 5 resource maps and, based on the specific habitat or species, a more programmatic assessment of conflicting uses can be evaluated based on the rural resource lands proposed allowed uses. Additionally, ORBIC data, which informs much of the Conservation Strategy's geospatial data, could be useful in making more detailed spatial inquiries, although it is only available behind a $5,000 paywall, making it substantially more difficult to gain access to. Strategy Habitat data is intended to provide a broad view for these habitat types using the best available geospatial data. However, conditions may vary by site, watershed, or ecoregional level based on differences in soil, climate, and management history. Therefore, local conditions will need to be considered when determining site-appropriate conservation actions.

Oregon Fish Habitat Distribution

Oregon Fish Habitat Distribution maps provide data on the distribution of high priority fish species habitat. This data describes areas of suitable habitat believed to be used currently or historically by native or non-native fish populations. The term "currently" is defined as within the past five reproductive cycles. Historical habitat includes suitable habitat that fish no longer access and will not access in the foreseeable future without human intervention. This information is based on sampling, the best professional opinion of ODFW or other natural resources agency staff biologists or modeling. Historical habitat distribution data is not comprehensive.

While most comprehensive plans include a riparian buffer for perennial and intermittent streams, there are varying datasets and analysis used to apply appropriate protections. Assessment of current fish distribution, through the evaluation of this dataset, is a useful tool to gauge potential conflicts for streams that may have state or federally listed aquatic resources. Rural resource lands with aquatic habitats necessary for sustaining those aquatic resources for high priority fish species could apply more protective riparian protections (i.e., larger riparian buffers to avoid or minimize conflicts as a result of the new allowed uses). This dataset is useful in identifying important fish bearing streams and applying appropriate riparian buffers (i.e., Goal 5 Riparian Corridors) to avoid and minimize impacts to those aquatic resources, including many that may be listed as threatened or endangered.

Greater Sage-Grouse Habitat

Greater Sage-Grouse habitat is a distinctive wildlife resource subject to a multiplicity of threats across a wide landscape spanning several states on both public and private land. Due to the cross-boundary nature of sage-grouse management, partnership and cooperation among diverse stakeholders with accompanying voluntary conservation measures is key. In response to collaborative conservation planning for sage-grouse and the need to encourage responsible economic development, the Greater Sage-Grouse Conservation Assessment and Strategy, Oregon Sage-Grouse Action Plan, and Sage-Grouse Mitigation Program were developed. Through these planning and program efforts data were derived to map significant sage-grouse habitat and improved representation of vegetative components within sage-grouse habitat that can both be used to prioritize locations for proposed development, conservation, restoration, and mitigation actions. Specifically, the goal of these datasets is to protect essential sage-grouse habitats to meet habitat and population objectives. These data were derived based on proximity to sage-grouse leks[16] and as such may exhibit bias towards breeding and nesting areas.

To supplement this data, the Sage-Grouse Development Siting Tool[17] is an interactive application that allows prospective developers to input project data in order to get a coarse level perspective of potential project impacts to sage-grouse and their habitats. The tool utilizes best available remotely-sensed data on existing development, vegetation condition, and other land uses to provide information to help developers site projects within and adjacent to sage-grouse habitat. Prospective developers should contact the ODFW to discuss results of the Sage-Grouse Development Siting Tool and other important avoidance, minimization, and mitigation requirements contained within the Greater Sage-Grouse Conservation Strategy for Oregon (OAR 635-0140). The Oregon Sage-Grouse Data Viewer and Sage-Grouse Development Registry Viewer are also tools available through the Oregon Explorer website that are aimed at providing information about sage-grouse to help conservation and development action placement and track development actions in and around sage-grouse habitat. Additional tool(s) may be developed to provide landscape level information to help strategically place mitigation actions to increase potential benefits to sage-grouse.

Greater Sage-Grouse habitat (see Figure 5) is already considered a Goal 5 resource in the DLCD rule (OAR 660-023-0115). Maps are directly applied in county reviews unless a local jurisdiction goes through Goal 5 process, which has not yet occurred in any counties with such habitat.

Big Game Habitat

Big Game Habitat, including winter range, is already protected as a Goal 5 resource in local comprehensive plans across the state. However, many counties have not updated their big game maps since comprehensive plan acknowledgment. Additionally, comprehensive plans often do not specifically identify sensitive migration corridors. Protecting these areas is critical to maintaining habitats which sustain viable big game populations in Oregon. ODFW is working on

[16] (j) “Lek” means an area where male sage-grouse display during the breeding season to attract females (also referred to as strutting-ground). OAR 660-023-0115(3)
[17] Oregon Explorer: Sage-Grouse Development Siting Tool. <https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=sage_grouse_dev_siting>.

habitat connectivity mapping which will be available within the next three years which will further identify key conservation areas to support deer and elk in Oregon.

Big Game Habitat data is broken into Western Oregon Big Game Habitat and Eastern Oregon Big Game Habitat. Western Oregon Big Game Habitat contains two datasets: 1) Columbian White-tailed Deer (CWTD) – Occupied Habitat 2015 and 2) Western Oregon Deer and Elk Habitat. Columbian White-tailed Deer (CWTD) – Occupied Habitat 2015 covers critical, year-round habitats including brushy deciduous trees and shrubs and/or oak savanna habitats providing functions and values necessary to satisfy all CWTD life history needs. Much of these habitat areas, although impacted by anthropogenic development, are the only remaining available habitat for Columbian White-tailed Deer in Oregon. Western Oregon Deer and Elk Habitat is not inclusive of all big game species but it further categorizes habitat based on how Columbian black-tailed deer, Columbian white-tailed deer and Roosevelt elk use the habitat. Generally, deer and elk need habitat which provides a combination of food, water, and security to survive and reproduce. Abundance, distribution, and connectivity of these habitats are crucial to species survival and may vary seasonally depending on a specific species dependence on migratory or non-migratory behavior to fulfill life history requirements. Habitats supporting Black-tailed deer exhibiting a predominately migratory life history are subdivided into Summer Concentration Habitat and Winter Concentration Habitat. Habitats supporting Black-tailed deer and Elk exhibiting a predominately non-migratory life history are subdivided into Year-around Major Habitat and Year-round.

Western Oregon Deer and Elk Habitat are broken down as follows:

- Peripheral Habitat are those areas where the presence of deer and elk are considered in conflict with primary land uses and are described as Impacted Areas.
- Winter Concentration Areas are seasonal concentration areas providing essential and limited functions and values (e.g. thermal cover, security from predation and harassment, forage quantity, adequate nutritional quality, escape from disturbance, etc.) for concentrated migratory deer or elk typically from November through April.
- Summer Concentration Areas are seasonal concentration areas providing essential and limited functions and values (e.g., thermal cover, security from predation and harassment, forage quantity, adequate nutritional quality, calving and fawning areas, etc.) for concentrated migratory deer or elk typically from May through October.
- Year-round Major Habitat includes areas identified and mapped as providing essential functions and values (e.g., thermal cover, security from predation and harassment, forage quantity, adequate nutritional quality, calving and fawning areas, etc.) for non-migratory deer or elk.
- Year-round Peripheral Habitat includes areas identified and mapped as providing important but not essential functions and values (e.g. cover, forage, etc.) for deer or elk.
- Impacted Areas are identified by anthropogenic development such as areas within UGBs, city limits, otherwise determined to be less suitable habitat for deer or elk because of conflicts with proximity to humans, disease, damage, or public nuisance resulting from use by local or resident deer or elk.

Eastern Oregon Big Game Habitat is comprised of two datasets: Eastern Oregon Deer Winter Range and Eastern Oregon Elk Winter Range.[18] Eastern Oregon Deer Winter Range includes a single set of polygons which encompass the general outline of deer winter range for eastern Oregon, east of the crest of the Cascades. ODFW considers Winter Range to be that area normally occupied by deer from December through April. Data are current to 2009 except for updates made in 2012 to portions of The Dalles and Heppner Districts. Eastern Oregon Elk Winter Range includes a single set of polygons which encompass the general outline of elk winter range for eastern Oregon, east of the crest of the Cascades. The Oregon Department of Fish and Wildlife considers Winter Range to be that area normally occupied by deer from December through April. The data were assembled in 2009 with updates for The Dalles District in 2012.

Big game habitat data maps were not provided as part of this report due to the complexity and overlap of big game data layers. However, this data remains available for county use and it would be beneficial for DLCD to continue working with ODFW on appropriate application methods. While most comprehensive plans include Goal 5 considerations for big game, the acknowledged maps and implementing ordinances have typically not been updated to use the best available data and apply necessary protections to avoid conflicting uses. Utilizing the most recent big game data would help support the life history needs for big game and avoid or minimize conflicts with increased development densities.

Wetlands

Wetlands provide vital ecosystem services including flood storage and water supply, water quality improvement, food-web support, wildlife and fish habitat, as well as aesthetics, recreation, education. Oregon has lost a significant portion of its wetlands to other land uses, however these habitats remain of critical importance across the state and are identified as a Strategy Habitat in the Oregon Conservation Strategy.[19] Wetlands are already identified as significant Goal 5 resources in many local comprehensive plans across the state. However, many counties have not updated wetland inventories since original adoption in the 1980s and significant wetlands on acknowledged Goal 5 maps may not reflect current data related to water quality or wildlife habitat. [20] Improved geospatial data is available to assist in evaluating priority wetland areas and how the proposed new uses from development in rural resource zones may conflict with many of the ecosystem services they provide. Datasets which should be utilized in evaluating wetland considerations includes a combination of the National Wetland Inventory (NWI), Statewide Wetland Inventory (SWI), and Local Wetland Inventories (LWI). Using more recent data in rural resource designations would help avoid conversion of wetlands and direct development to suitable locations.

The U.S. Fish and Wildlife Service has developed a National Wetland Inventory as the principal agency tasked with national wetland management. The NWI delineates the areas of wetlands and surface waters based on an aerial data gathering methodology where wetlands were identified by their vegetation, visible hydrography and geography. The NWI dataset is

[18] ODFW Data Clearinghouse. Oregon Department of Fish and Wildlife. “ODFW Deer and Elk Winter Ranger for Eastern Oregon (2012).”
[19] Oregon Department of State Lands. “Wetland Planning and Conservation.” <https://www.oregon.gov/dsl/WW/Pages/WetlandConservation.aspx
[20] Ibid.

supplemented by the U.S. Geological Survey's National Hydrography Dataset, primarily for linear wetland and water surface features. Although they may be key, certain types of "farmed wetlands" are excluded from the dataset by policy. Due to the limitations and gaps inherent in this data gathering methodology, detailed on-the-ground site inspection is recommended. This dataset is to be integrated with the Oregon Department of State Lands' Statewide Wetland Inventory.

The Oregon Department of State Lands (DSL) is currently developing a Statewide Wetland Inventory which is an amalgamation of the NWI and DSL-approved LWI as well as the U.S. Geological Survey's National Hydrological Dataset and the U.S. Department of Agriculture National Resources Conservation Service Soil Survey data. Again, due to the limitations and gaps inherent in this data gathering methodology, detailed on-the-ground site inspection is recommended.[21]

The DSL SWI should be evaluated along with other geospatial datasets referenced above, such as Strategy Habitat or COAs, to assist in prioritizing and protecting significant wetlands, such as those providing a local watershed need or critical wildlife function. Prioritizing wetlands that are of particular importance to conservation actions should be considered and those conflicting uses be avoided or minimized to reduce potential conflicts (e.g., larger buffer around significant wetland). Consideration of this dataset with the COA overlay, for example, may also provide opportunities to develop incentives to either avoid or minimize development impacts to significant wetland areas or develop incentives to address or implement the conservation priorities.

Other Goal 5 resources

Goal 5 inventories also include natural areas, open space, scenic views and sites, federal wild and scenic rivers, Oregon scenic waterways. These areas may also be ecologically important. DLCD has not identified any new data layers that would better define these areas but they should be protected in accordance with current Goal 5 requirements in state rules and county comprehensive plans and land use ordinances.

Conclusion for fish, wildlife habitat, and other ecologically significant lands

A diversity of natural resource geospatial data exists across the state, although the extent, scalability, and applicability can vary considerably. It is likely beneficial to incorporate a subset of natural resource data into farm and forest definitions to appropriately recognize the conservation values provided by these resources. It will likely be beneficial for DLCD to institutionalize collaboration and communication with ODFW and other natural resource management agencies to determine how to best integrate their data for policy implementation. DLCD can utilize current natural resources data in consultation with the respective agencies while working with these same agencies to improve data for land use planning application.

[21] Oregon Department of State Lands. "Statewide Wetlands Inventory." <https://www.oregon.gov/dsl/WW/Pages/SWI.aspx>.

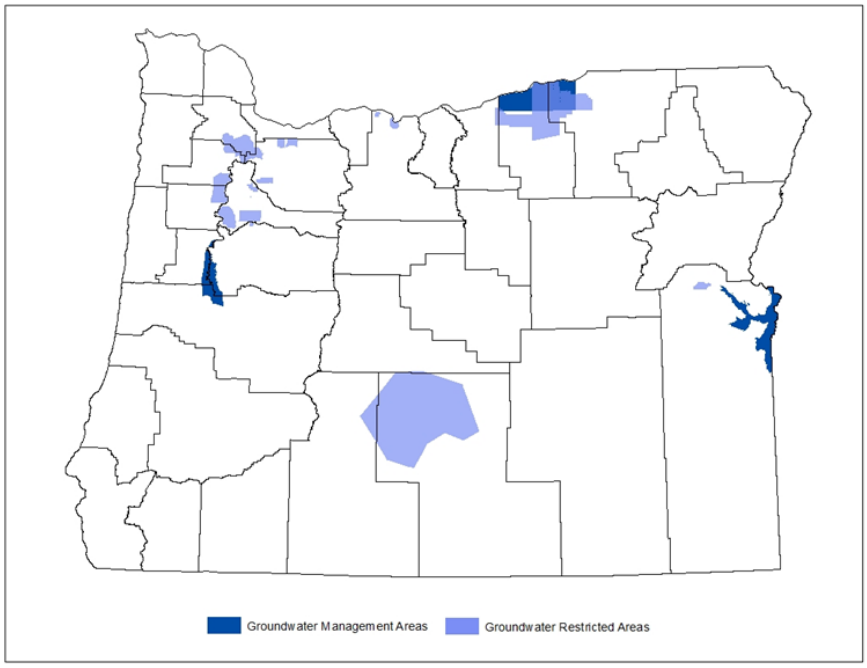
Water Quality and Quantity

Healthy watersheds and working lands are intimately connected. Degraded watersheds can negatively impact the economic viability of rangeland, farms, and forests. When sustainable management practices are employed, agricultural and forest lands provide valuable services and assets related to maintaining adequate water quality and quantity by supporting critical watershed functionality. Additionally, conversion of working lands to development can adversely influence water quality and quantity.[22] Rural development primarily affects water quality by increasing nutrient and bacterial inputs via faulty septic systems and increased road traffic.

Listed in this section are GIS datasets which may be of particular use when considering rural resource land designations.[23] Additional water availability considerations can be found in the "Agricultural Lands" section above. Development on lands which falls within multiple layers may have a greater chance of negatively impacting water quality and/or quantity and will likely trigger greater scrutiny in finer scale analyses.

<u>Groundwater Management Areas</u>

Figure 5: Groundwater Management Areas and Groundwater Restricted Areas



Oregon revised statute 468B.180 requires DEQ to declare a Groundwater Management Area (GWMA) when DEQ groundwater assessments reveal area-wide groundwater contamination problems at consistently high levels. Oregon currently has three groundwater management areas (Northern Malheur County, Lower Umatilla Basin, and Southern Willamette Valley) which exhibit widespread nitrate contamination (see Figure 6). Each area has developed a voluntary action plan to reduce nitrate concentrations in groundwater. This dataset gives decision makers an understanding of where widespread groundwater contamination currently exists and should likely trigger additional analysis regarding negative impacts on water quality indicators based on land use type and water quality issues.

[22] Sierra Nevada Alliance. (2008). *Planning for Water-Wise Development in the Sierra: A Water and Land Use Policy Guide*. <https://sierranevadaalliance.org/wp-content/uploads/2014/02/PlanningforWaterWiseDevelopment.pdf>.
[23] Merenlender, A. M. and Lohse, K. A. *Planners Guide: Chapter 9: Impacts of exurban development on water quality*. <https://ucanr.edu/sites/merenlender/files/143668.pdf>.

Groundwater Restricted Areas

The Oregon Water Resources Department has classified several areas where groundwater uses are restricted in order to prevent excessive groundwater decline, restore aquifer stability, and preserve aquifers with limited storage capacity for designated high public value uses. Limitations usually apply only to the specific aquifer that has had water-level declines or other documented issues, allowing for some occasions where groundwater may still be available at a different depth from a different aquifer. It is critical to note that water availability is dynamic as new uses for water are permitted. Even if water is shown to be unavailable, there may be conditional allowance for a limited number of specific uses to be permitted. Additionally, water availability is based on estimates with variable data reliability.[24] This dataset gives decision makers an understanding of where development may further strain water availability. Figure 6 shows the locations of groundwater restricted areas.

Natural Hazards

Local mitigation planning is vital to creating a disaster resilient Oregon. The 2015 Oregon Natural Hazards Mitigation Plan identifies eleven natural hazards in the state. For this review, natural hazards were considered based upon availability of relevant datasets. Wildfire, floodplains, and landslides were determined to be the most pertinent hazards to consider in relation to rural resource land designations. Other natural hazards such as tsunamis, earthquakes, and volcanic hazards might be useful for local planners to evaluate, depending on their respective location. Data and information associated with this section should be used to inform how to most appropriately locate and cluster rural development to avoid lands subject to natural hazards while minimizing effects on farm and forest uses and reducing costs of public facilities and services.

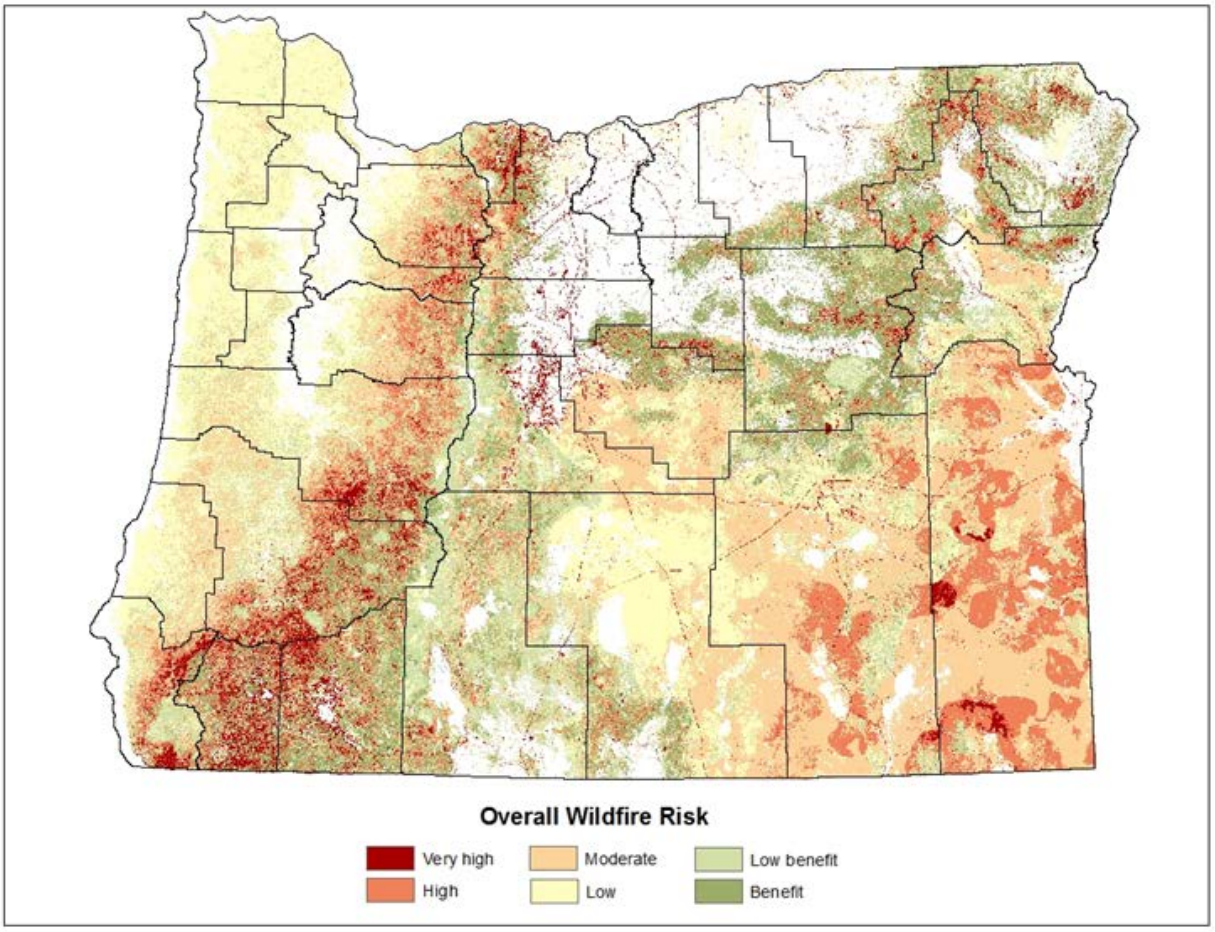
Wildfire Risk

Large, highly destructive wildfires are becoming increasingly common across the western United States including Oregon, extracting heavy economic, ecological, and social costs.[25] Additional rural development can increase vulnerability to wildfires at a time when wildfire risk is already at record heights.[26] Fire suppression is a costly endeavor with structural defense being by far the most significant of these costs.[27] The US Forest Service estimates that between 50 and 95 percent of its firefighting spending is used to defend residential structures.[28] In 2017 alone, $454 million was spent fighting wildfires across 665,000 acres statewide, with $38 million coming from state coffers.[29] Increasing development in high and very high risk areas will only serve to exacerbate rising suppression effort costs.[30] Wildfire not only causes these direct

[24] Oregon Water Resources Department. (2002). *Determining Surface Water Availability in Oregon*. <https://www.oregon.gov/OWRD/WRDPublications1/DeterminingSurfaceWaterAvailabilityInOregon.pdf>.
[25] Fox, A., 1000 Friends of Oregon. (2018). *A New Vision for Wildfire Planning: A Report on Land Use and Wildfires*. <https://www.friends.org/sites/friends.org/files/images/1kf_wildfire_paper_pdf_-_final-1.pdf>.
[26] Ibid.
[27] Fox, A., 1000 Friends of Oregon. (2018). *A New Vision for Wildfire Planning: A Report on Land Use and Wildfires*. <https://www.friends.org/sites/friends.org/files/images/1kf_wildfire_paper_pdf_-_final-1.pdf>.
[28] Ibid.
[29] Ibid.
[30] Ibid.

impacts, damaging structures and valuable resources, but can lead to secondary hazards including floods and landslides. Soil can become impermeable post-burning, increasing runoff and ultimately the risk of post-wildfire floods and landslides.[31]

Figure 6: Overall Wildfire Risk



Pyrologix, an organization contracted by the USFS to provide specialized fuel characterization and wildfire modeling services, has developed the most up-to-date, comprehensive quantitative data regarding wildfire hazard and risk to highly valued resources and assets as part of the USFS Pacific Northwest Region Quantitative Wildfire Risk Assessment. In consultation with the Oregon Department of Forestry, Pyrologix's Overall Wildfire Risk data, which can be found on Oregon Explorer, was deemed to be the most appropriate to consider in planning for rural development patterns. This dataset is the product of the likelihood and consequence of wildfire on all mapped highly valued resources and assets combined: critical infrastructure, developed recreation, housing unit density, seed orchards, sawmills, historic structures, timber, municipal watersheds, vegetation condition, and terrestrial and aquatic wildlife habitat. This dataset considers the likelihood of wildfire events encompassing more than 250 acres, the susceptibility of resources and assets to wildfire of different intensities, and the likelihood of occurrence of wildfires of each intensity. The data values reflect a range of impacts from a very high negative

[31] *Oregon Post-Wildfire Flood Playbook*. (2018). <https://silverjackets.nfrmp.us/Portals/0/doc/Oregon/PostFireFloodPlaybook_2018-09-30.pdf?ver=2018-10-04-203119-453>.

value—where wildfire is detrimental to one or more resources or assets (for example, structures, infrastructure, early seral stage and/or sensitive forests)—to positive, where wildfire will produce an overall benefit (for example, vegetation condition/forest health, wildlife habitat).[32] The Overall Wildfire Risk dataset, shown in Figure 7, can be used to determine areas where wildfire risk is high or very high. The risk of loss of life and property from wildland fire or the cost of fire suppression may be too high to justify locating additional rural development in these areas. An additional consideration in managing fire risk for rural development is Rural Fire Protection Districts (RFPDs), which delineate areas where fire and emergency medical services are provided to rural areas outside city limits. The Oregon Department of Forestry and the State Fire Marshal keep record of the state's rural and urban fire protection districts, respectively. Rural fire protection districts provide fire and emergency medical services in rural areas outside city limits. RFPDs do not always translate to adequate fire protection due to limited resources and the size of territories. These districts can also be expanded to include new developments, potentially causing further strain on existing capacity issues. Limiting rural resource land development to areas within existing RFPDs would concentrate fire protection efforts, which is critical in a time of growing wildfire threats. More information is needed to determine whether existing fire districts are currently functioning and if they have the capacity to expand.

Special Flood Hazard Areas

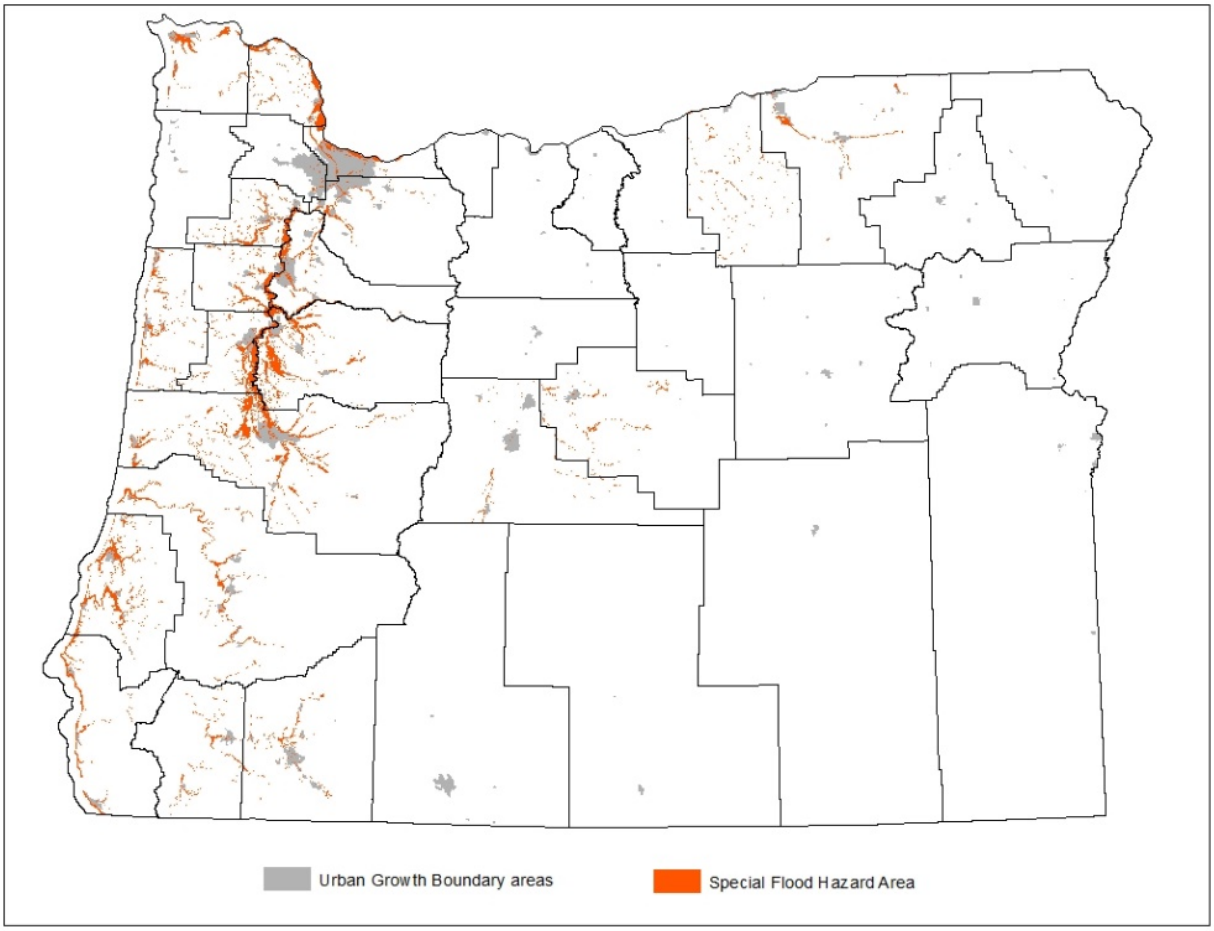
Historically, Oregon has experienced extensive flooding events, fluctuating in intensity and duration in tandem with local variability in weather, climate, and geophysical characteristics. Climate change models indicate a projected rise in extreme precipitation, resulting in an elevated flooding risk in specific basins, particularly in Western Oregon.[33] Floods alone cause property damage and loss of life but may also precipitate landslides, causing additional losses.[34]

The National Flood Hazard Layer for Oregon was developed by the Federal Emergency Management Agency's National Flood Insurance Program (NFIP). The layer contains current effective flood hazard data to support the NFIP including flood insurance zones, base flood elevations, floodways, and flood fringe areas. The majority of flood studies were conducted in the late 1970s and early 1980s and, although map updates have occurred in some locations, data gaps and limitations persist. Flooding probability is stated as a percent chance that a flood of a certain magnitude or greater will occur at a specific location in any given year. This probability is measured as the average recurrence interval of a flood in a given size and place.[35] A one percent chance of flooding at a location in any given year is commonly known as the 100-year flood and is the standard for flood regulation under the NFIP. The floodway and flood fringe together comprise the Special Flood Hazard Area (see Figure 8) which is the regulatory floodplain under the NFIP.

[32] Advanced Oregon Wildfire Risk Explorer. <https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfireplanning>.
[33] *Oregon Natural Hazards Mitigation Plan*. (2015). <https://drought.unl.edu/archive/plans/GeneralHazard/state/OR_2015.pdf>.
[34] Ibid.
[35] Ibid.

The National Flood Hazard layer for Oregon can be used to determine the areas most and least likely to flood. Flood hazard vulnerability and associated flood insurance costs can be mitigated by (a) not locating development inside the floodway; (b) avoiding building inside the Special Flood Hazard Area; or if building cannot be avoided, (c) building to NFIP minimum, or higher (more protective), standards in the Special Flood Hazard Area. Development includes building structures, filling, and grading.

Figure 7: Special Flood Hazard Area



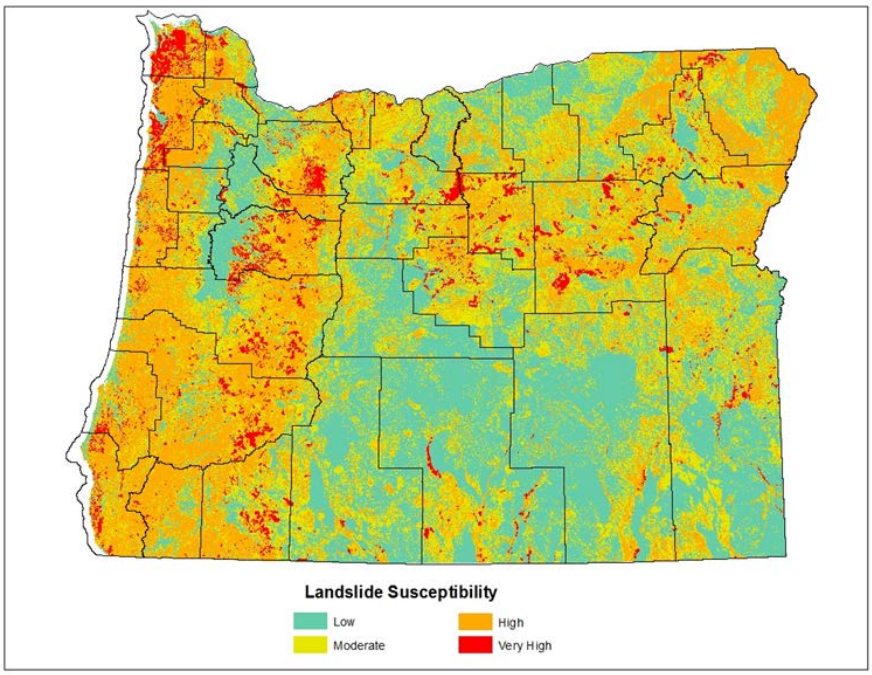
Landslide Susceptibility

Landslides are one of the most common and devastating geologic hazards in the state. Vulnerability to and costs from this hazard increase as population growth pushes development into more landslide-prone terrain. Landslides are typically triggered by ground saturation from heavy rainfall or rapid snowmelt, earthquakes, volcanoes, and human activity. Landslide susceptibility is influenced primarily by slope geometry (steepness), geologic material, and water. Due to strong correlation between precipitation and landslides, the projected increase in extreme precipitation accompanying climate change will likely result in an increase in landslide occurrence.[36]

[36] Ibid.

DOGAMI has developed a statewide landslide inventory layer (see Figure 9) at a coarse scale to inform regional planning and analysis. The intended use of this data is to help identify regions that may be more or less regionally at risk for future landslides which public agencies can then prioritize as areas for more detailed studies to be done. This coarse scale data is derived from elevation data converted into slopes which was then analyzed along with generalized geology and mapped existing landslides. Spatial statistics were then derived from the preceding analysis to create four susceptibility classes: Low, Moderate, High, and Very High.[37]

Figure 8: Landslide Susceptibility



Although the statewide landslide inventory layer is useful for regional planning and analysis, landslide risk is best evaluated using detailed landslide susceptibility data. This finer scale data is available in a few select locations. DOGAMI is continuing to develop shallow and deep landslide susceptibility maps as resources become available. Finer scale data should be used where available.[38] Shallow landslides involve movement of a relatively thin layer of slope material and have a shallow failure plane while deep landslides involve movement of a relatively deep layer of slope material. Although there is no widely accepted depth boundary between shallow and deep landslide susceptibility, DOGAMI selected 4.6m (approximately 15 feet) as the depth boundary for their shallow and deep landslide susceptibility mapping.[39] The Shallow and Deep Landslide Susceptibility maps can be used to locate new rural developments outside of areas categorized as having high and very high susceptibility to shallow or deep landslides. This data is not appropriate for site-specific evaluations but can be used to provide regional and community-scale land use planning information.[40]

[37] Burns, W. J.; Mickelson, K. A.; and Madin, I. P. Oregon Department of Geology and Mineral Industries. (2016). *Open-file Report O-16-02: Landslide Susceptibility Map of Oregon.* < https://www.oregongeology.org/pubs/ofr/p-O-16-02.htm>.
[38] Ibid.
[39] Burns, W. J.; Mickelson, K. A. *Protocol for Deep Landslide Susceptibility Mapping*. (2016). <https://www.oregongeology.org/pubs/sp/SP-48.pdf>.
[40] Burns, W. J.; Madin, I. P.; and Mickelson, K. A. *Protocol for Shallow Landslide Susceptibility Mapping*. (2012). <https://www.co.washington.or.us/lut/planningprojects/area93/upload/sp-45-protocol-for-shallow-landslide-susceptibility-mapping-web.pdf>.

Conclusions for Natural Hazards

Wildfire, floods, and landslides are likely the most useful datasets to use in addressing carrying capacity questions as they pertain to natural hazards. Depending on location, other natural hazards might be useful for local planners to consider in considering rural resource lands designation. Data and information associated with this section should be used to inform how to most appropriately locate and cluster rural development to avoid lands subject to natural hazards and associated negative cost impacts to public facilities and services. Site specific evaluation will inform what measures can be taken to appropriately mitigate natural hazards.

Rural Character of Development

LCDC's Statewide Planning Goals and rules help ensure that rural resource land remains rural. This is generally accomplished through thresholds on the type, size, and intensities of available uses, the application of parcel sizes, and limitations on the extension of sewer systems.

While not directly applicable to rural resource lands, the administrative rule regulating newly created rural residential exception areas (OAR 660-004-0040) illustrates one tool for maintaining rural lands. The rule requires a minimum parcel size of at least ten acres unless an exception is taken to Statewide Planning Goal 14 (Urbanization).The commission concluded, for the purposes of rural residential exception areas, that ten acres is the minimum parcel size to ensure fulfillment of the state's land use policy of maintaining rural land as sparsely settled with few public services. Depending on carrying capacity constraints (e.g., big game habitat), a parcel size larger than ten acres may be appropriate in some areas.

Statewide Planning Goal 11 (Public Facilities and Services) and OAR 660-011-0060 limit the establishment or extension of sewer systems on rural lands. For rural resource lands, sewage disposal requires an on-site treatment system serving a single parcel. On-site sewage disposal systems typically require larger parcel sizes which is consistent with the parcel size limitations described above.

One technique which could be implemented in order to retain rural character would be the use of open space conservation. Open space conservation is a key piece of retaining rural character. Conservation design or open space development design standards can be used in planning by structuring development around natural features. Planning begins by designating a significant percentage, at least a quarter, of otherwise buildable land to open space in a pattern conducive to a set of prioritized goals such as preserving agricultural and outdoor recreation uses as well as protecting environmental, scenic, and cultural assets.[41] Conservation design can be incentivized through offering density bonuses, reduced fees, and/or a streamlined permitting process.[42]

[41] Horst, M. et al. Portland State University. (2018). *Analysis of Expanding Rural Residential Housing in Malheur County, Oregon*.
[42] Ibid.

Impacts to Farm and Forest Uses or Practices

Development in rural areas may increase conflicts with or hinder neighboring agricultural and forestry operations. Examples of potential conflicts include complaints about spray and odor or increased traffic on public roads needed to move agricultural and forest machinery and products. For uses that may impact farm or forest uses in EFU and forest zones, property owners must demonstrate that the proposed use will not force a significant change to farm or forest practices or significantly increase their cost.[43] The rural resource designation process in ORS 215.791 similarly requires consideration of conflicts with farm and forest uses and practices.

The rural resource designation method that has been used by counties does not require these findings. Demonstrating general compliance with Goal 3 and Goal 4 may partially address impacts to neighboring farm and forest operations but it typically does not provide the level of detail that is currently required for approving conditional uses in EFU and forest zones.

Impacts to Urban Areas

Rural resource land designations may currently occur within urban reserves surrounding UGBs. Establishing new rural resource areas in close proximity to urban areas may provide some benefits when compared to isolated development (e.g. more efficient access to public services). However, such designations may interfere with the orderly and efficient development of urban areas if they are located within urban reserves. Urban reserves are intended for future UGB expansions and rural development in those areas may negatively affect the ability of cities to efficiently plan those lands for urban use following UGB expansion.

Additionally, most Oregon cities have not adopted urban reserves, and thus expand onto rural exception lands or farm and forest lands when adding to their UGBs. Allowing additional development associated with rural resource lands within close proximity to an existing UGB may hinder the ability of a city to expand its UGB in the most efficient manner possible when needed to assure a 20-year supply of urban land. Therefore, it may be appropriate to limit new development on rural resource lands within a certain distance from an existing UGB boundary.

Energy Use

Statewide Planning Goal 13 (Energy Conservation) is primarily concerned with conserving energy through proper land use planning. Goal 13 guidelines discuss promoting energy efficient development, reuse of vacant land, minimizing use of nonrenewable energy sources, and increasing density along high capacity transportation corridors.

Rural resource designations may conflict with Goal 13 when located in isolated rural areas. Isolated development may require an increase in vehicle miles traveled, inefficient extensions of energy facilities, and overall lacks the energy efficient compact design allowed in UGBs. Consideration of energy impacts is necessary when designating rural resource areas to ensure these impacts are minimized.

[43] ORS 215.296, OAR 660-033-0130(5) and OAR 660-006-0025(5)

Impacts to State or Local Transportation Facilities
Rural resource designations have potential to increase traffic on state and local roads and may even utilize private roads for access. Evaluating potential impacts to transportation systems is vitally important for public safety and is a consideration in determining the fiscal impacts of development which are associated with needed transportation facilities. Counties have adopted road standards which may dictate when a traffic impact study is required and requirements for road improvements. Counties have also adopted fire safety design standards for roads to ensure that adequate access is provided for firefighting equipment, although these standards may not apply outside of forest and mixed farm-forest zones. The application of county road and fire standards, in conjunction with consideration with the fiscal impact of rural resource land development, would help ensure that development on rural resource lands benefits counties and future landowners.

Impacts to Other Public Facilities
Rural resource designations also have the potential to increase other public facilities costs on a myriad of public services, such as fire protection, primary and secondary schools, public water service (in areas within special districts providing water service), storm runoff, and waste disposal. It is unclear how a local government would include such considerations in its analysis of carrying capacity issues.

Conclusions and Policy Options

This report provides a summary of issues pertinent to rural resource lands policy. The report documents the availability of spatial data that can be utilized at a statewide scale and highlights areas where additional data would be useful. DLCD intends to utilize the report as a basis for future research and possible rulemaking.

Regulatory application of geospatial data is challenging due to unavoidable statewide data gaps and scale limitations on the use of data. Also there are frequent updates to datasets which restrict the ability to utilize current data when relying on static date references in statute and rule. Perfect data is never an option. Policy development should consider the best available data, focus on development of new data where essential, and recognize that some issues can only be addressed upon consideration of local conditions.

Prior to 2017, DLCD began discussions with a few key stakeholders regarding rural resource policy. During the preparation of this paper, several parties expressed interest in the rural resource lands issue but, due to DLCD capacity, only a select few public agencies were able to provide input on the contents of this report. If further work on this issue is pursued, the department and commission should begin broader outreach on this issue to ensure citizen involvement. Further discussion of these issues could occur during a formal rulemaking advisory committee. However, it may be more appropriate to continue less formal discussions using this report as a reference document. Additional discussions would be most profitable if there were a set timeline for reaching conclusions and proceeding with a formal rulemaking process.

Discussion of Policy/Tool Options

Below are several policy options or tools which the department and commission could use to address rural resource lands. The department will be reviewing these policy options before presenting any recommendations for future work on this issue to the commission.

Pursue additional research

The department could conduct additional research on several aspects of the rural resource lands issue. Prioritized recommendations for further research include:

- *Citizen involvement*: Undertake stakeholder engagement process to solicit and integrate stakeholder input to bolster implementation feasibility.
- *Eastern Oregon grazing*: Develop eastside forage threshold data to delineate farm and/or forest zones from rural resource zones. However, this is complicated because grazing requires an extensive land base to sustain an economically viable operation. Animals are rotated among a variety of land types based on changing environmental conditions such as weather, forage, topography, and season. Thus, lands with less capable soils and water constraints often play a crucial role in ranchlands management.
- *Economic considerations*: ORS 215.791 requires consideration of the costs of public facilities and services and impacts to government fiscal health in designating rural resource lands.[44] A methodology for performing this analysis would help the state and counties better understand the impacts of rural resource designations.
- *Cumulative impacts*: Research cumulative impacts of development patterns on agriculture, forestry, water quality/quantity, fish and wildlife, and/or costs of public services/infrastructure.
- *Future potential resource uses:* It is critical to note that the agricultural economy is in a state of constant evolution, especially recently with expanding technologies, emerging markets and trends, and a changing climate. A significant example is seen in the Oregon's now booming viticulture industry taking hold in soils and landscapes once thought to be agriculturally insignificant and unproductive. Aside from valuable agricultural industries, these lands could be important for renewable energy resource production such as solar arrays for energy capture as well as biomass production from current invasive species (e.g., western juniper). Further research should be done to determine what burgeoning technologies and markets are on the horizon for which rural resource lands could be used.
- *Natural resource considerations:* Work with ODFW and other natural resource management agencies to determine how to best integrate their data for policy implementation. ODFW is continuing to develop geospatial data at more refined scales to support regional land use planning, which can be evaluated for updates to Goal 5

[44] ORS 215.791

acknowledged inventories. In addition, ODFW and DLCD could evaluate opportunities to enhance conservation values on lands subject to rural resource designation.

- *Climate change considerations:* Carbon sequestration is a contributor to keeping excess carbon-based greenhouse gases out of our atmosphere. Forest and agricultural lands provide a unique opportunity to withdraw atmospheric carbon through biological sequestration in soil and biomass carbon sinks.[45] Forests, particularly, play a crucial role in sequestering carbon—with U.S. forests offsetting approximately 10 to 20 percent of the nation's carbon emissions from burning fossil fuels annually.[46] Consideration of carbon storage opportunities may be beneficial in evaluating rural resource lands.
- *Ecosystem service valuation:* Ecosystem service valuation refers to the financial value of the measurable productivity of natural systems.[47] Ecosystem service valuation provides tools for decision-makers and policy-makers to evaluate management implications through rate of return on investment calculations and cost-benefit analyses of potential policies. There is an evolving understanding worldwide that the value of ecosystems increasingly can and should be taken into account in land use planning, yet efforts to do so are in their infancy.[48] Currently, ecosystem service valuation is primarily enacted through markets and payments for ecosystem services (PES) such as sulfur dioxide trading, wetlands mitigation banking, and nutrient trading. Research should be done to determine how ecosystem service valuation can be integrated into Oregon's land use planning system and how it can be applied to rural resource lands.
- *Irrigation districts:* The current OWRD irrigation district GIS data layer could be updated to provide statewide coverage.

Rulemaking

Require the process in ORS 215.788-794 to be used for all rural resource land designations.

As previously mentioned, this process currently exists and provides a thorough framework for review of rural resource lands by requiring a more comprehensive evaluation of the carrying capacity of potential rural resource lands, an assessment of impacts to the cost of public facilities or services, and includes direct DLCD involvement. This option would most likely require an amendment to rule with a potential need for an amendment to statute to update the current reference to the 2006 Oregon Conservation Strategy in ORS 215.791 to the 2016 version. It may be necessary to clarify whether the entire county needs to be evaluated or only a

[45] United States Department of Agriculture Economic Research Service. "Agriculture and Climate Change." <https://www.ers.usda.gov/topics/natural-resources-environment/climate-change/agriculture-and-climate-change/>.
[46] Oregon Forest Resources Institute. "Forests, carbon and climate change." <https://oregonforests.org/Carbon_Capture>.
[47] Davis, A. I. "Ecosystem Services and The Value of Land." *Duke Environmental Law and Policy Forum*. 20. <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1045&context=delpf>.
[48] Goldstein, J. H., Caldarone, G., Duarte, T. K., et al. (2012). "Integrating ecosystem-service tradeoffs into land-use decisions." *Proceedings of the National Academy of Sciences of the United States of America*. (2012) <https://www.pnas.org/content/109/19/7565>.

portion of the county. In addition, it may be necessary to adopt further rules to define or clarify statutory requirements.

Develop additional rule requirements for rural resource land designations that do not utilize the process in ORS 215.788-794.

Under this option, land could still be designated rural resource if it did not meet the definitions of agricultural and forest land. Rulemaking could clarify undefined terms in rule, establish new standards and criteria regarding which rural lands are eligible for redesignation, and address carrying capacity issues. Possible amendments include:

- Further defining land that is suitable for agriculture. This could include:
  - Land suitable for grazing
  - High-value farmland portions of the American Viticultural Areas identified in ORS 195.300.
  - Land in an irrigation district or place of use for agricultural water
  - Prime or unique farmland

- Further defining "Other forested lands that maintain soil, air, water and fish and wildlife resources" in OAR 660-006-0005(7).

- Further addressing areas important to fish and wildlife. This could potentially require a Goal 5 update before designating rural resource lands, or use of current ODFW data and/or consultation with ODFW for site-specific evaluations.

- Addressing carrying capacity issues discussed in this report such as natural hazards, groundwater impacts, and cost of services.

- Consideration of cumulative impacts of rural resource designations, and other surrounding development, on agriculture, forestry, and wildlife.

<u>Provide guidance to counties</u>

Rural resource lands has long been an interest of local planners. Considering current development pressures, giving additional guidance at the state level could be of assistance to counties as they develop land use planning policy. A rural lands guidance document could be provided to counties could offer clarity regarding methodology and criteria for rezoning resource lands in to a new Rural Resource Lands zone. The document could provide an outline of recommendations for how to identify and appropriately develop Rural Resource Land. This type of document could be used to supplement new rulemaking or provide guidance on the current rural resource framework. However, the positive impact of a guidance document using the current framework may be limited, especially where vague language exists in state rule.

Appendix

Appendix A: Oregon Revised Statutes related to Rural Resource Lands

215.304 Rule adoption; limitations. (1) The Land Conservation and Development Commission shall not adopt or implement any rule to identify or designate small-scale farmland or secondary land.

(2) Amendments required to conform rules to the provisions of subsection (1) of this section and ORS 215.700 to 215.780 shall be adopted by March 1, 1994.

(3) Any portion of a rule inconsistent with the provisions of ORS 197.247 (1991 Edition), 215.213, 215.214 (1991 Edition), 215.288 (1991 Edition), 215.317, 215.327 and 215.337 (1991 Edition) or 215.700 to 215.780 on March 1, 1994:

(a) Shall not be implemented or enforced; and

(b) Has no legal effect.

(4) Notwithstanding subsection (3) of this section, the uses authorized by ORS 215.283 (1)(x) or (2)(n) may be established on land in exclusive farm use zones, including high-value farmland. [1993 c.792 §28; 2001 c.672 §19; 2012 c.74 §4]

(NOTE: This section was added in 1993 following LCDC adoption of "secondary lands" rules, which were effectively repealed.)

215.316 Termination of adoption of marginal lands. (1) Unless a county applies the provisions of ORS 215.705 to 215.730 to land zoned for exclusive farm use, a county that adopted marginal lands provisions under ORS 197.247 (1991 Edition), 215.213, 215.214 (1991 Edition), 215.288 (1991 Edition), 215.317, 215.327 and 215.337 (1991 Edition) may continue to apply those provisions. After January 1, 1993, no county may adopt marginal lands provisions.

(2) If a county that had adopted marginal lands provisions before January 1, 1993, subsequently sites a dwelling under ORS 215.705 to 215.750 on land zoned for exclusive farm use, the county shall not later apply marginal lands provisions, including those set forth in ORS 215.213, to lots or parcels other than those to which the county applied the marginal lands provisions before the county sited a dwelling under ORS 215.705 to 215.750. [1993 c.792 §29]

(NOTE: Marginal lands designations are only allowed in Lane and Washington counties. Land uses allowed in Exclusive Farm Use zones for those counties are found in ORS 215.213 while the rest of the state uses 215.283.)

215.788 Legislative review of lands zoned for farm and forest use; criteria. (1) For the purposes of correcting mapping errors made in the acknowledgment process and updating the designation of farmlands and forestlands for land use planning, a county may conduct a legislative review of lands in the county to determine whether the lands planned and zoned for

farm use, forest use or mixed farm and forest use are consistent with the definitions of "agricultural lands" or "forest lands" in goals relating to agricultural lands or forestlands.

(2) A county may undertake the reacknowledgment process authorized by this section only if the Department of Land Conservation and Development approves a work plan, from the county, describing the expected scope of reacknowledgment. The department may condition approval of a work plan for reacknowledgment under this section to reflect the resources needed to complete the review required by ORS 197.659 and 215.794. The work plan of the county and the approval of the department are not final orders for purposes of review.

(3) A county that undertakes the reacknowledgment process authorized by this section shall provide an opportunity for all lands planned for farm use, forest use or mixed farm and forest use and all lands subject to an exception under ORS 197.732 to a goal relating to agricultural lands or forestlands to be included in the review.

(4) A county must plan and zone land reviewed under this section:

(a) For farm use if the land meets the definition of "agricultural land" in a goal relating to agricultural lands;

(b) For forest use if the land meets the definition of "forest land" used for comprehensive plan amendments in the goal relating to forestlands;

(c) For mixed farm and forest use if the land meets both definitions;

(d) For nonresource use, consistent with ORS 215.794, if the land does not meet either definition; or

(e) For a use other than farm use or forest use as provided in a goal relating to land use planning process and policy framework and subject to an exception to the appropriate goals under ORS 197.732 (2).

(5) A county may consider the current land use pattern on adjacent and nearby lands in determining whether land meets the appropriate definition. [2009 c.873 §5]

Note: 215.788 to 215.794 were enacted into law by the Legislative Assembly but were not added to or made a part of ORS chapter 215 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

215.791 Review of nonresource lands for ecological significance; inventory and protection of ecologically significant nonresource lands; criteria. (1) If a county amends its comprehensive plan or a land use regulation mapping zoning designations under ORS 215.788 to 215.794, the county shall review lands that are planned or rezoned as nonresource lands to determine whether the lands contain ecologically significant natural areas or resources. The county shall consider appropriate goals and the "Oregon Conservation Strategy" prepared in September of 2006 by the State Department of Fish and Wildlife.

(2) The county shall maintain an inventory in the comprehensive plan of nonresource lands that contain ecologically significant natural areas or resources and establish a program to

protect the areas or resources from the adverse effects of new uses allowed by the planning or zoning changes. The county may use nonregulatory programs to protect the resources including, but not limited to, programs for the transfer of severable development interests to other lands that do not contain ecologically significant resources.

(3) If a county amends its comprehensive plan or a land use regulation mapping zoning designations under ORS 215.788 to 215.794, the county shall review lands that are planned or rezoned as nonresource lands to determine that the uses allowed by the planning or zoning changes are consistent with the carrying capacity of the lands. The county shall ensure that:

(a) The amount, type, location and pattern of development on lands redesignated as nonresource lands:

(A) Will be rural in character and will not significantly interfere with orderly and efficient development of urban areas in the vicinity;

(B) Will not significantly conflict with existing or reasonably foreseeable farm or forest uses or with accepted farm or forest practices; and

(C) Will not lead to significant adverse effects including, but not limited to, adverse effects on:

(i) Water quality or the availability or cost of water supply;

(ii) Energy use;

(iii) State or local transportation facilities;

(iv) Fish or wildlife habitat or other ecologically significant lands;

(v) The risk of wildland fire or the cost of fire suppression;

(vi) The cost of public facilities or services; or

(vii) The fiscal health of a local government.

(b) Additional residential development on nonresource lands is, to the extent practicable, located and clustered to:

(A) Minimize the effects on farm and forest uses;

(B) Avoid lands subject to natural hazards; and

(C) Reduce the costs of public facilities and services. [2009 c.873 §6]

Note: See note under 215.788.

215.794 Review of county rezoning designations; rules. (1) A county shall submit decisions on planning and rezoning designations under ORS 215.788 to 215.794 to the Department of Land Conservation and Development for review pursuant to the procedures set forth in this section and ORS 197.659.

(2) The department shall coordinate with:

(a) The State Department of Agriculture in reviewing decisions on planning and rezoning designations for lands planned for farm use or mixed farm and forest use.

(b) The State Forestry Department in reviewing decisions on planning and rezoning designations for lands planned for forest use or mixed farm and forest use.

(3) The Land Conservation and Development Commission has exclusive jurisdiction for review of a county's decision made under ORS 215.788 to 215.794.

(4) A person who participated in the proceedings leading to the county's decisions under ORS 215.788 to 215.794 may not raise an issue on review before the commission that was not raised in the local proceedings.

(5) The commission may adopt rules implementing ORS 215.788 to 215.794. [2009 c.873 §7]

Note: See note under 215.788.

Appendix B: Oregon Administrative Rules related to Rural Resource Lands

Agricultural Lands (OAR Chapter 660, Division 33)

660-033-0020
Definitions

(1)(a) "Agricultural Land" as defined in Goal 3 includes:

(A) Lands classified by the U.S. Natural Resources Conservation Service (NRCS) as predominantly Class I-IV soils in Western Oregon and I-VI soils in Eastern Oregon;

(B) Land in other soil classes that is suitable for farm use as defined in ORS 215.203(2)(a), taking into consideration soil fertility; suitability for grazing; climatic conditions; existing and future availability of water for farm irrigation purposes; existing land use patterns; technological and energy inputs required; and accepted farming practices; and

(C) Land that is necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands.

(b) Land in capability classes other than I-IV/I-VI that is adjacent to or intermingled with lands in capability classes I-IV/I-VI within a farm unit, shall be inventoried as agricultural lands even though this land may not be cropped or grazed;

(c) "Agricultural Land" does not include land within acknowledged urban growth boundaries or land within acknowledged exception areas for Goal 3 or 4.

660-033-0030
Identifying Agricultural Land

(1) All land defined as "agricultural land" in OAR 660-033-0020(1) shall be inventoried as agricultural land.

(2) When a jurisdiction determines the predominant soil capability classification of a lot or parcel it need only look to the land within the lot or parcel being inventoried. However, whether land is "suitable for farm use" requires an inquiry into factors beyond the mere identification of scientific soil classifications. The factors are listed in the definition of agricultural land set forth at OAR 660-033-0020(1)(a)(B). This inquiry requires the consideration of conditions existing outside the lot or parcel being inventoried. Even if a lot or parcel is not predominantly Class I-IV soils or suitable for farm use, Goal 3 nonetheless defines as agricultural "Lands in other classes which are necessary to permit farm practices to be undertaken on adjacent or nearby lands." A determination that a lot or parcel is not agricultural land requires findings supported by substantial evidence that addresses each of the factors set forth in 660-033-0020(1).

(3) Goal 3 attaches no significance to the ownership of a lot or parcel when determining whether it is agricultural land. Nearby or adjacent land, regardless of ownership, shall be examined to the extent that a lot or parcel is either "suitable for farm use" or "necessary to permit farm practices to be undertaken on adjacent or nearby lands" outside the lot or parcel.

(4) When inventoried land satisfies the definition requirements of both agricultural land and forest land, an exception is not required to show why one resource designation is chosen over another. The plan need only document the factors that were used to select an agricultural, forest, agricultural/forest, or other appropriate designation.

(5)(a) More detailed data on soil capability than is contained in the USDA Natural Resources Conservation Service (NRCS) soil maps and soil surveys may be used to define agricultural land. However, the more detailed soils data shall be related to the NRCS land capability classification system.

(b) If a person concludes that more detailed soils information than that contained in the Web Soil Survey operated by the NRCS, would assist a county to make a better determination of whether land qualifies as agricultural land, the person must request that the department arrange for an assessment of the capability of the land by a professional soil classifier who is chosen by the person, using the process described in OAR 660-033-0045.

(c) This section and OAR 660-033-0045 apply to:

(A) A change to the designation of a lot or parcel planned and zoned for exclusive farm use, forest use or mixed farm-forest use to a nonresource plan designation and zone on the basis that such land is not agricultural land; and

(B) Excepting land use decisions under section (7) of this rule, any other proposed land use decision in which more detailed data is used to demonstrate that a lot or parcel planned and zoned for exclusive farm use does not meet the definition of agricultural land under OAR 660-033-0020(1)(a)(A).

(d) This section and OAR 660-033-0045 implement ORS 215.211, effective on October 1, 2011. After this date, only those soils assessments certified by the department under section (9) of this rule may be considered by local governments in land use proceedings described in subsection (c) of this section. However, a local government may consider soils assessments that have been completed and submitted prior to October 1, 2011.

(e) This section and OAR 660-033-0045 authorize a person to obtain additional information for use in the determination of whether a lot or parcel qualifies as agricultural land, but do not otherwise affect the process by which a county determines whether land qualifies as agricultural land as defined by Goal 3 and OAR 660-033-0020.

(6) Any county that adopted marginal lands provisions before January 1, 1993, may continue to designate lands as “marginal lands” according to those provisions and criteria in former ORS 197.247 (1991), as long as the county has not applied the provisions of ORS 215.705 to 215.750 to lands zoned for exclusive farm use.

(7)(a) For the purposes of approving a land use application on high-value farmland under ORS 215.705, the county may change the soil class, soil rating or other soil designation of a specific lot or parcel if the property owner:

(A) Submits a statement of agreement from the NRCS that the soil class, soil rating or other soil designation should be adjusted based on new information; or

(B) Submits a report from a soils scientist whose credentials are acceptable to the Oregon Department of Agriculture that the soil class, soil rating or other soil designation should be changed; and

(C) Submits a statement from the Oregon Department of Agriculture that the Director of Agriculture or the director’s designee has reviewed the report described in paragraph (a)(B) of this section and finds the analysis in the report to be soundly and scientifically based.

(b) Soil classes, soil ratings or other soil designations used in or made pursuant to this section are those of the NRCS Web Soil Survey for that class, rating or designation, except for changes made pursuant to subsection (a) of this section.

(8) For the purposes of approving a land use application on high-value farmland under OAR 660-033-0090, 660-033-0120, 660-033-0130 and 660-033-0135, soil classes, soil ratings or other soil designations used in or made pursuant to this definition are those of the NRCS Web Soil Survey for that class, rating or designation.

Forest Lands (OAR Chapter 660, Division 6)

660-006-0005
Definitions

(7) “Forest lands” as defined in Goal 4 are those lands acknowledged as forest lands, or, in the case of a plan amendment, forest lands shall include:

(a) Lands that are suitable for commercial forest uses, including adjacent or nearby lands which are necessary to permit forest operations or practices; and

(b) Other forested lands that maintain soil, air, water and fish and wildlife resources.

660-006-0010
Identifying Forest Land

(1) Governing bodies shall identify “forest lands” as defined by Goal 4 in the comprehensive plan. Lands inventoried as Goal 3 agricultural lands, lands for which an exception to Goal 4 is justified pursuant to ORS 197.732 and taken, and lands inside urban growth boundaries are not required to planned and zoned as forest lands.

(2) Where a plan amendment is proposed:

(a) Lands suitable for commercial forest uses shall be identified using a mapping of average annual wood production capability by cubic foot per acre (cf/ac) as reported by the USDA Natural Resources Conservation Service. Where NRCS data are not available or are shown to be inaccurate, other site productivity data may be used to identify forest land, in the following order of priority:

(A) Oregon Department of Revenue Western Oregon site class maps;

(B) USDA Forest Service plant association guides; or

(C) Other information determined by the State Forester to be of comparable quality.

(b) Where data of comparable quality under paragraphs (2)(a)(A) through (C) are not available or are shown to be inaccurate, an alternative method for determining productivity may be used as described in the Oregon Department of Forestry’s Technical Bulletin entitled “Land Use Planning Notes, Number 3 April 1998, Updated for Clarity April 2010.”

(c) Counties shall identify forest lands that maintain soil air, water and fish and wildlife resources.

Appendix C: Full-Size Maps

Figure 1: Exclusive Farm Use, Forest, and Mixed Farm-Forest Zoning on Non-Federal Lands

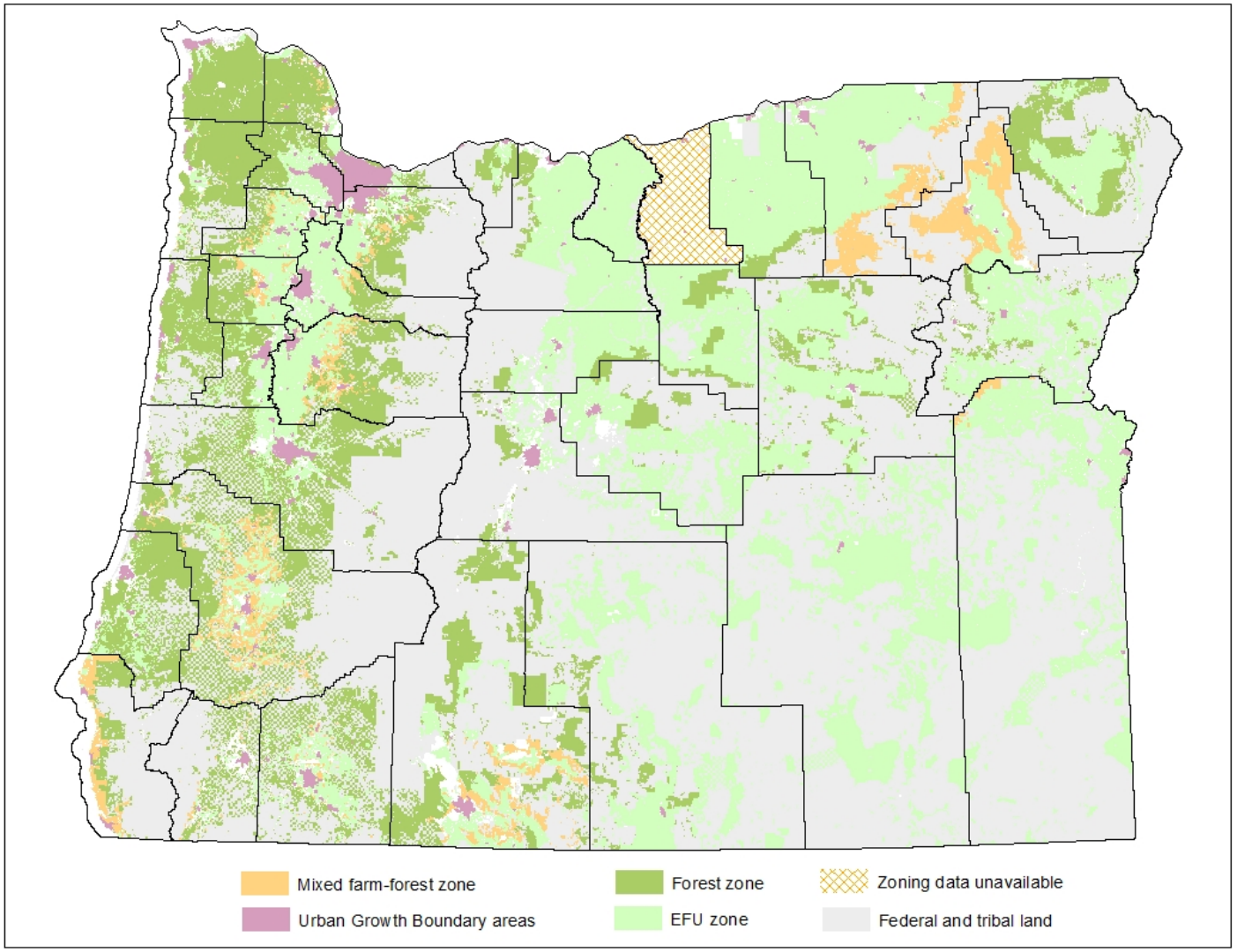


Figure 2: NRCS Agricultural Capability Classes on Non-Federal Lands

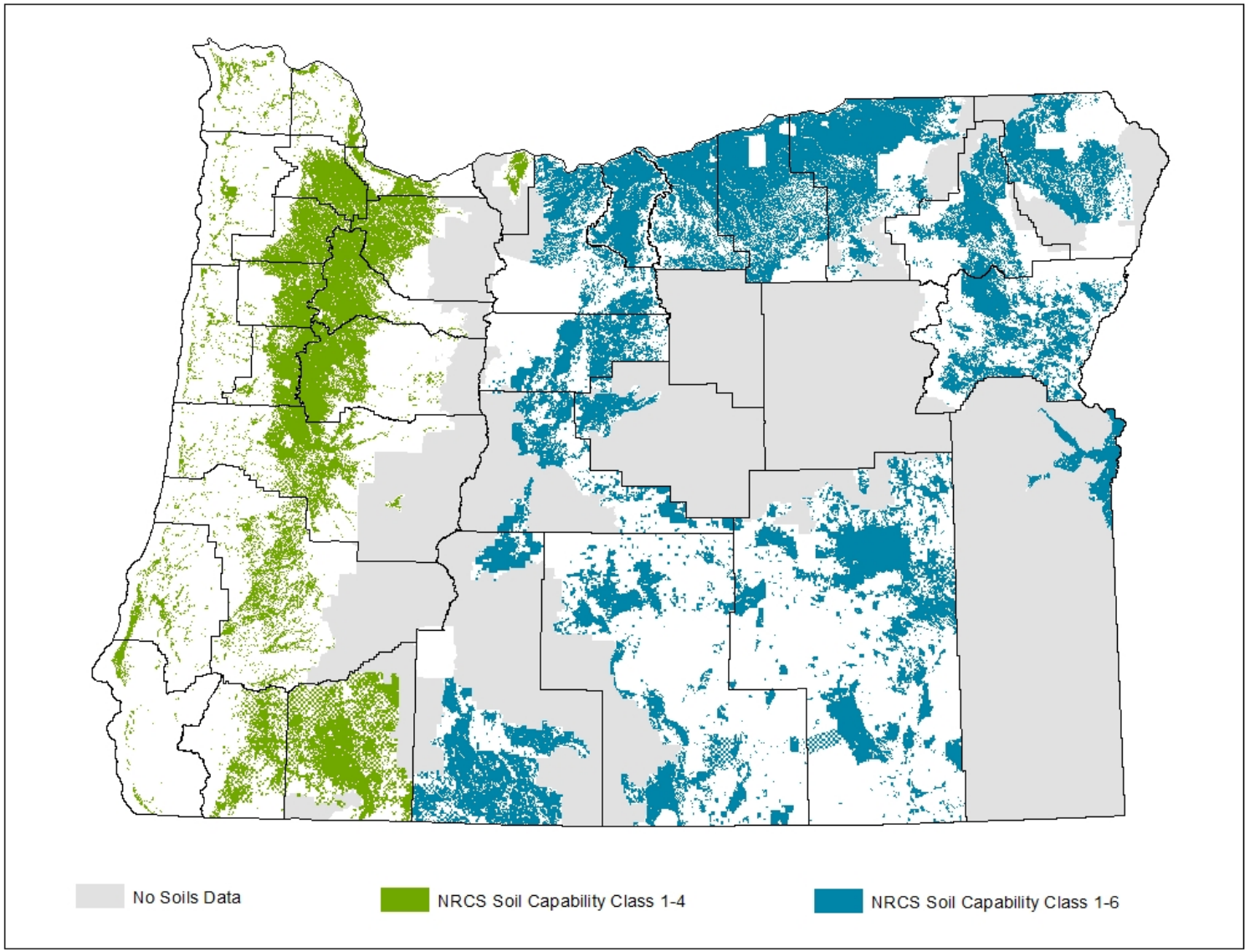


Figure 3: Animal Unit Months (AUMs) for Western Oregon on Non-Federal Lands

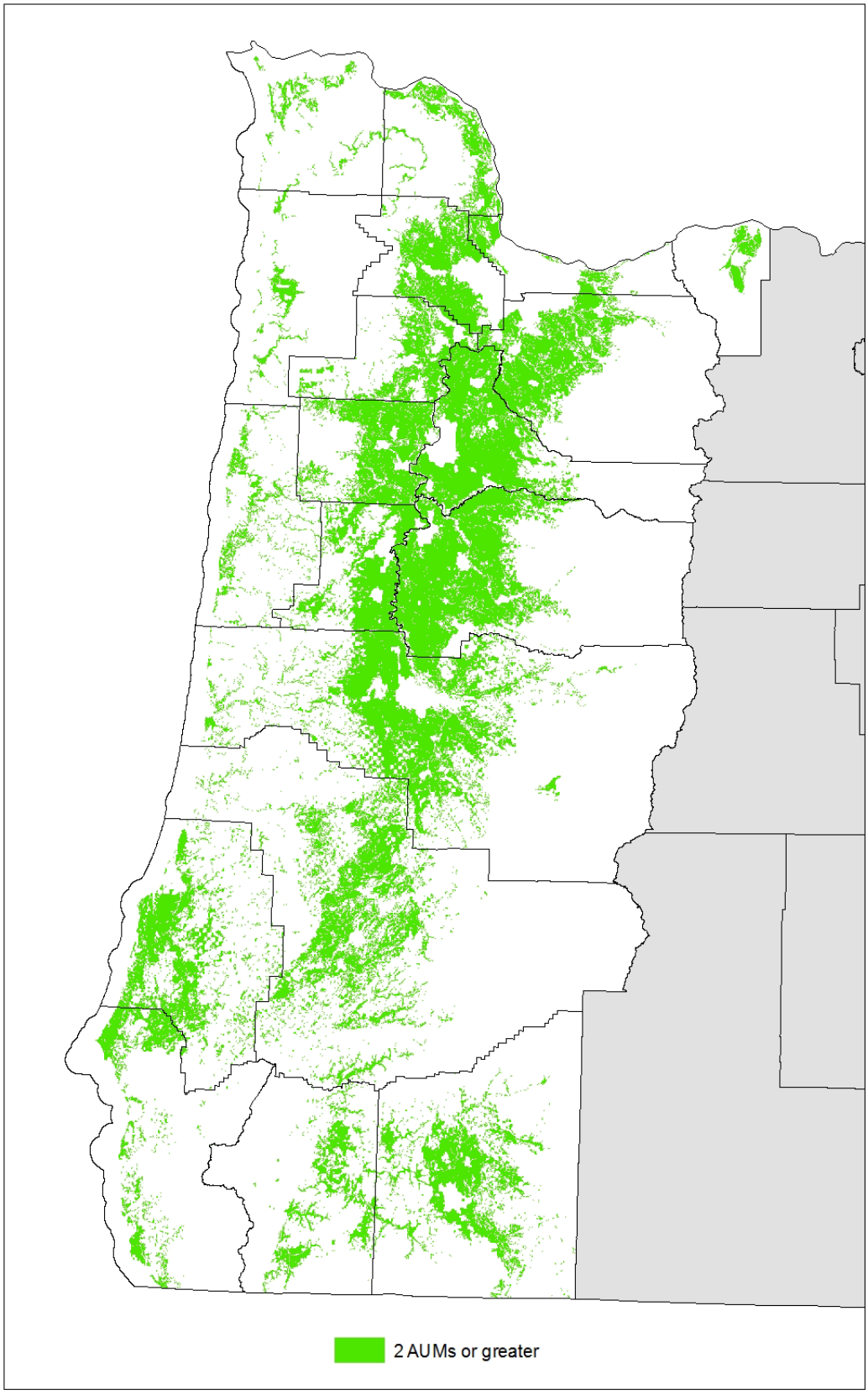


Figure 4: Non-Federal Forest Lands Derived from NRCS, DOR, and Historic Vegetation Data

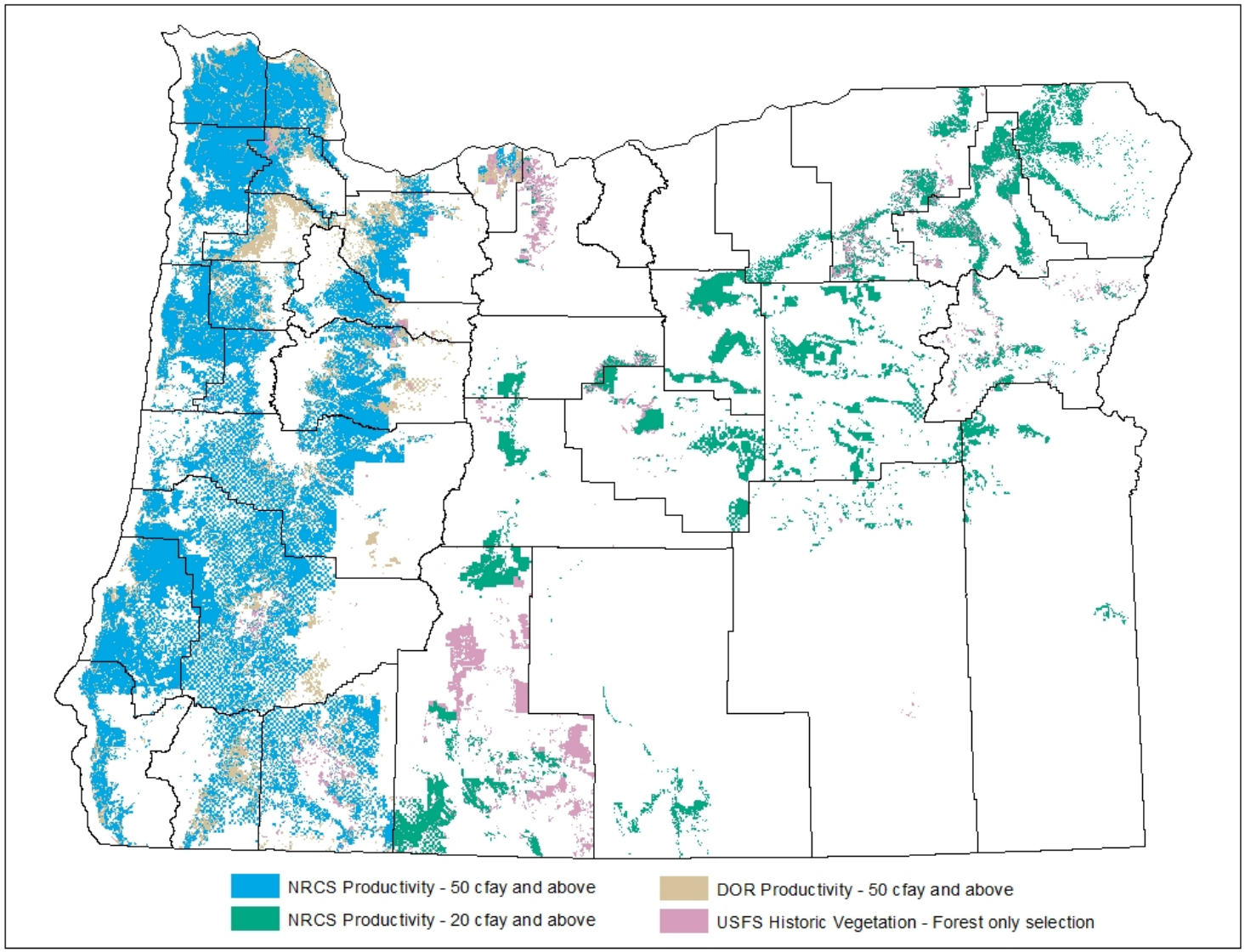


Figure 5: Conservation Opportunity Areas and Sage Grouse Habitat

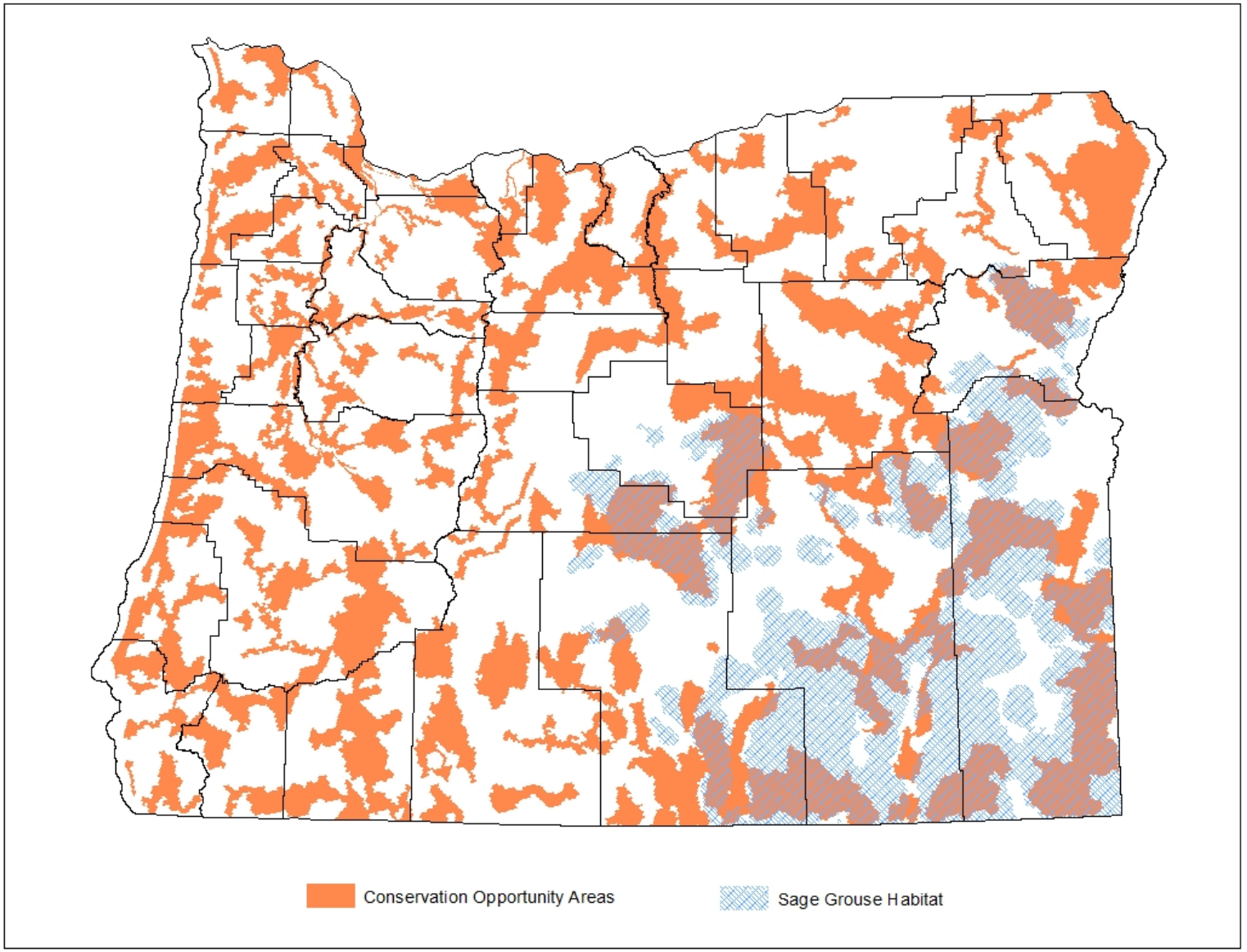


Figure 6: Groundwater Management Areas and Groundwater Restricted Areas

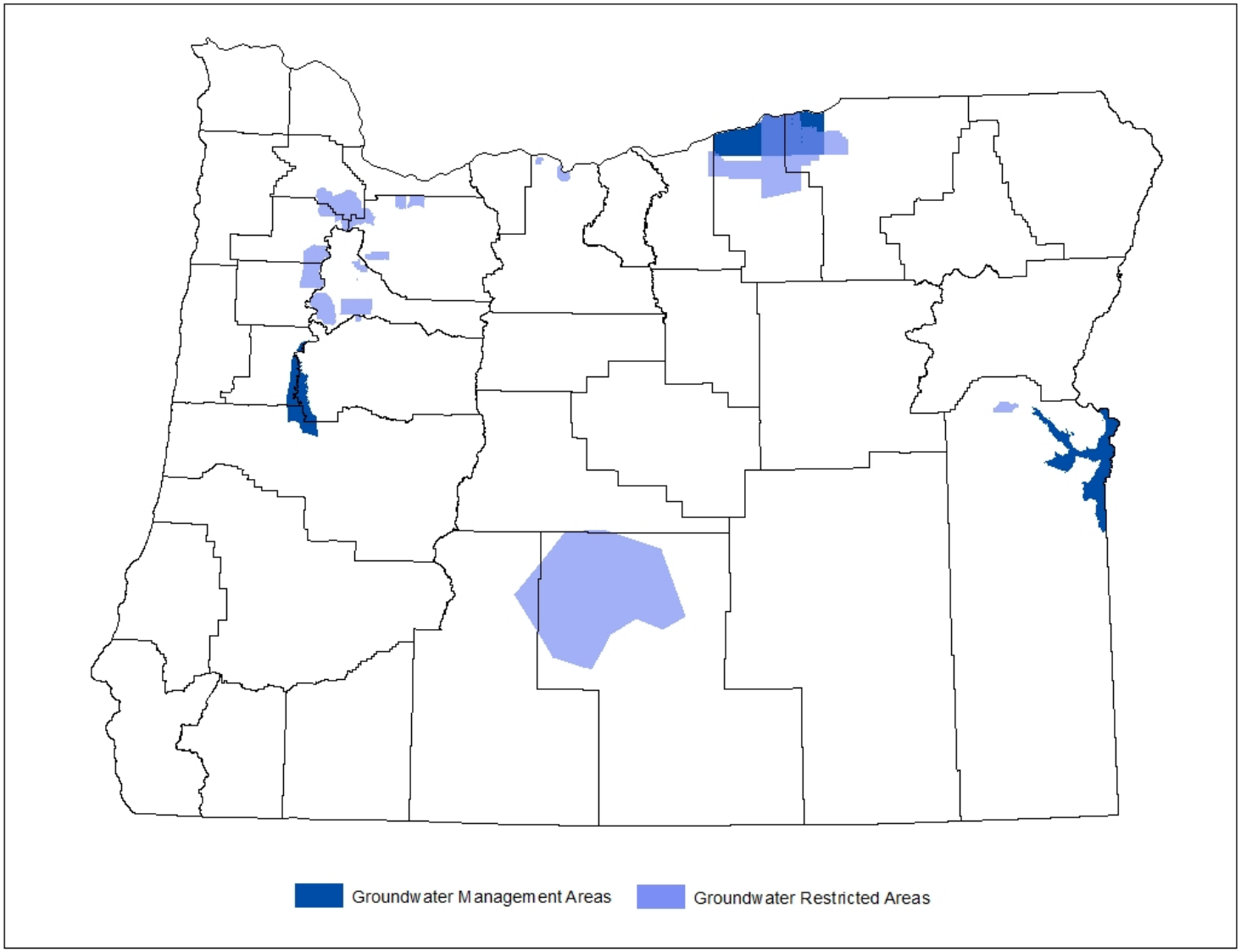


Figure 7: Overall Wildfire Risk

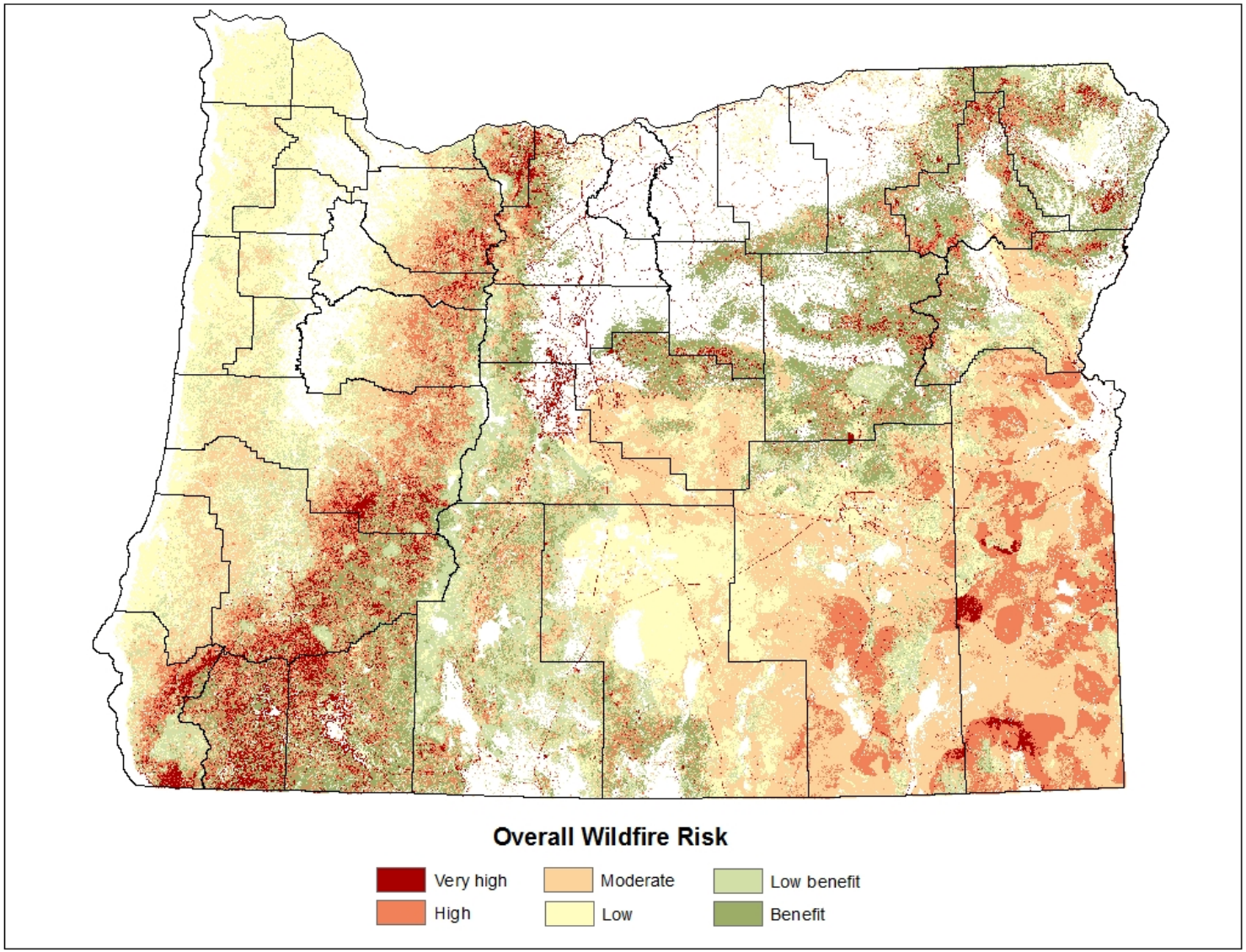


Figure 8: Special Flood Hazard Area

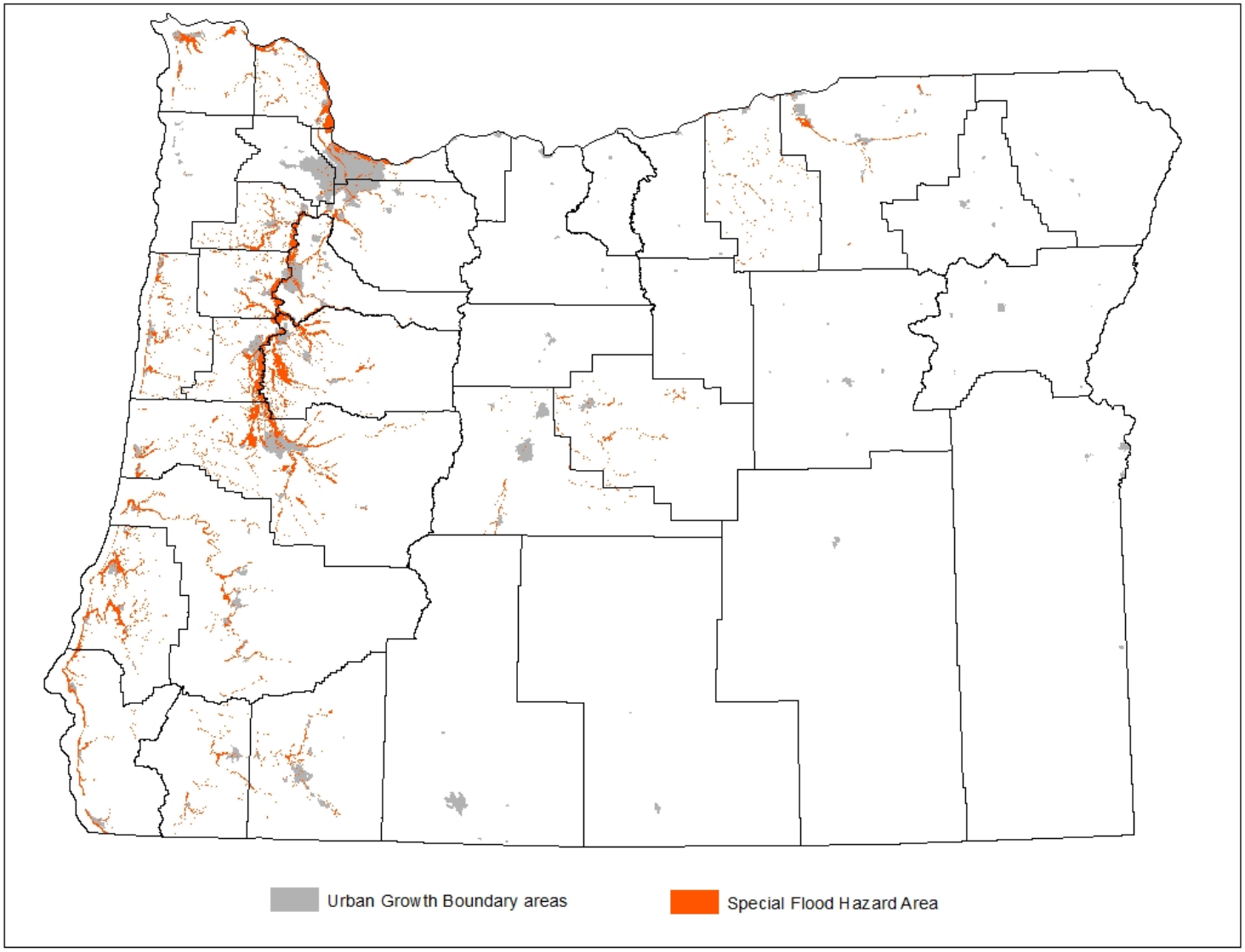
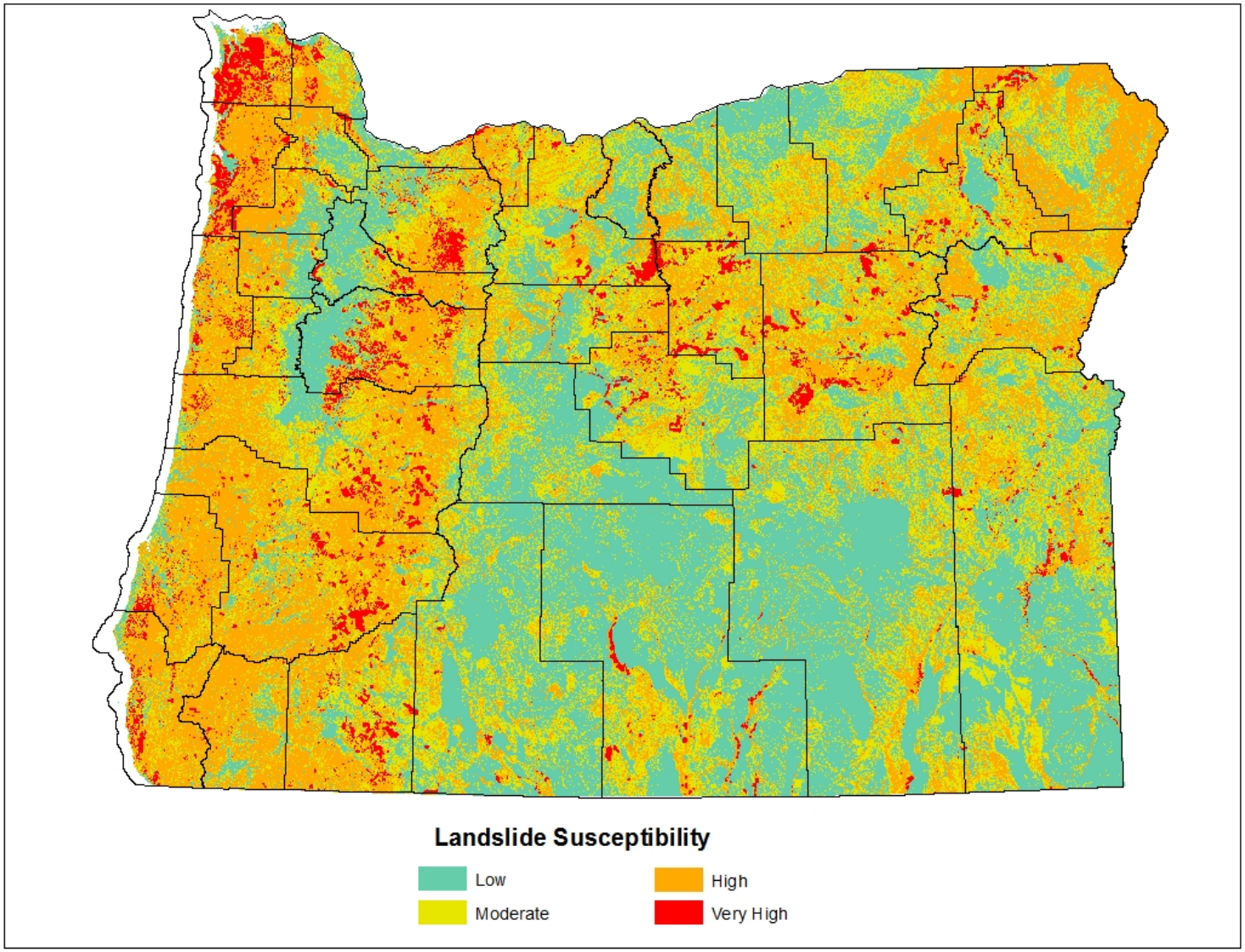


Figure 9: Landslide Susceptibility



Appendix 5

Oregon Department of Forestry, ‘Land Use Change on Non-Federal Land in Oregon and Washington, 2018 Update’

Land Use Change on Non-Federal Land in Oregon and Washington

2018 Update

July 2018

COORDINATOR:

Gary J. Lettman

RESEARCHERS (*Alphabetically*):

Andrew N. Gray (Forest Inventory and Analysis Program, Pacific Northwest Research Station)

Dan Hubner (Oregon Department of Forestry)

Gary J. Lettman (Oregon Department of Forestry)

Joel L. Thompson (Forest Inventory and Analysis Program, Pacific Northwest Research Station)

John Tokarczyk (Oregon Department of Forestry)

ADVISORS

Brandon Kaetzel (Oregon Department of Forestry)

Jim Johnson (Oregon Department of Agriculture)

Tim Murphy (Department of Land Conservation and Development)

Joy Vaughn (Oregon Department of Fish and Wildlife)

Rod Kramer (Oregon Department of Fish and Wildlife)

GRAPHIC DESIGN:

Crystal Jeffers

Executive Summary

Population Growth Drives Demand for Resource Lands

For decades Oregon and Washington have experienced substantial population growth that has driven demand for developable land. In response to growing concern surrounding increasing conversion of irreplaceable resource lands that are critical to ecosystem functionality and service delivery, Oregon enacted the Land Conservation Act and Washington the Growth Management Act.

Oregon and Washington Population Changes

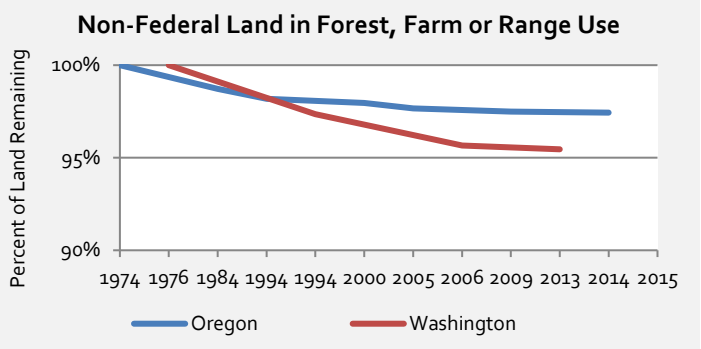
	New Residents	Change	Period
Oregon[1]	1,690,000	+74%	1974 – 2014
Washington[2]	3,247,000	+89%	1976 – 2013

[1]Oregon Office Economic Analysis, 2017, [2]Washington Office Financial Management, 2017

Land Use Laws Retain Resource Lands

Implementation of land use laws in Oregon (1984) and Washington (1994) have improved the retention of resource lands (agricultural, wildland forest, and wildland range).

- 97% of all non-Federal land in Oregon that was in resource land uses (farm, forest, or range) in 1974 remained in these uses in 2014.
- 95% of non-Federal land in Washington in these uses in 1976 remained in 2013.



In the periods following land use implementation there is a distinct slowing of the conversion of resource lands especially in Oregon. Following land use implementation the annual rate of wildland forest conversion in Oregon fell by 66%, range by 23% and intensive agricultural lands by 50%.

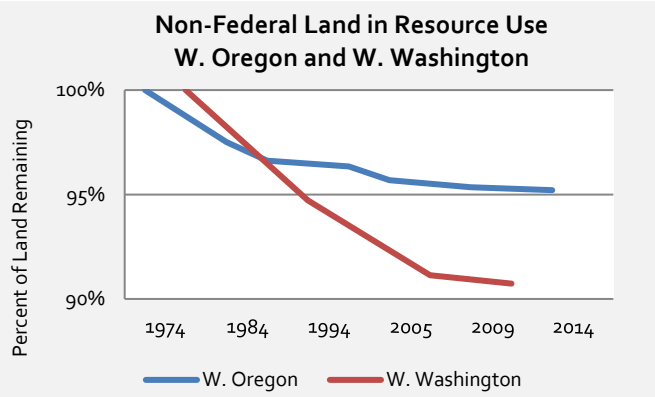
Oregon and Washington Resource Lands Converted Pre and Post Land Use Implementation

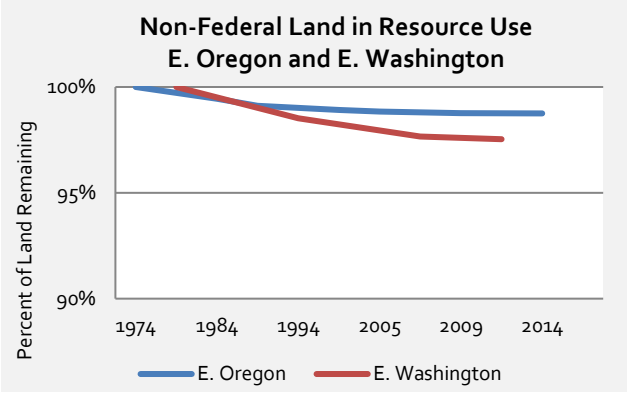
	Oregon, 1974-1984		Washington, 1976-1994		Oregon, 1984-2014		Washington, 1994-2013	
	Pre-Land Use Implementation				**Post** Land Use Implementation			
	Lands Converted	Annual Rate	Lands Converted	Annual Rate	Lands Converted	Annual Rate	Lands Converted	Annual Rate
	Thousand Acres							
Forest	-123	-12	-420	-23	-124	-4	-281	-15
Range	-133	-13	-184	-10	-151	-5	-181	-10
Agriculture	-42	-4	-101	-6	-66	-2	-32	-2
Totals	-298	-30	-705	-39	-341	-11.4	-494	-26

Region Specific Conversion

Conversion of resource lands follows population growth. More-populous western Oregon and western Washington experienced nearly twice as much resource land conversion to developed uses relative to the less-populous eastern portions of the states.

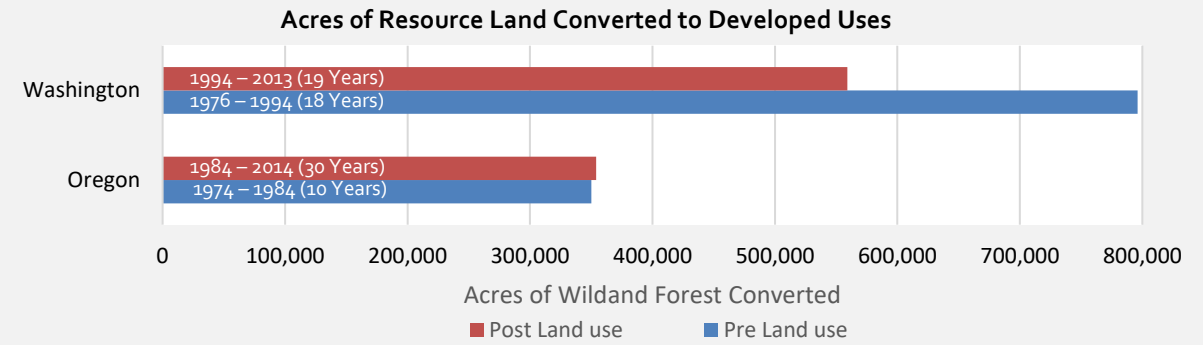
- In western Oregon, 95% of non-Federal land in resource uses in 1974 remained in 2014.
- In western Washington 91% of non-Federal land in resources uses in 1976 remained in in 2013.





Land Use Complements Resource Policy

The ability of land use planning to direct conversion and limit fragmentation of resource lands supports the vitality and productivity of resource lands as well as the functionality of ecosystems and services, social, economic, and ecologic. In this regard, Oregon has demonstrated a higher degree of success in retaining resource lands relative to Washington.



Continued Growth and Demand

Land use change will continue to be a critical concern, as Oregon and Washington's respective offices of economic and financial management predict that in the next 25 years:

- Oregon's population is projected to increase by 1,180,000 people (29 percent) and
- Washington's population is projected to increase by 1,932,000 people (26 percent).

Given this growth, there will be increased demands placed on PNW ecosystems to continue provision of critical services. Prior to land use implementation, conversion of resource lands in Oregon and Washington was vigorous and dispersed. Since implementation, conversion has been directed, supporting continuity and functionality of resource lands to the benefit of ecosystems and communities.

LAND USE CHANGE ON NON-FEDERAL LAND IN OREGON & WASHINGTON, 1974 – 2014

Verdant Resource Lands

The dynamic and varied natural landscape of the Pacific Northwest is the defining aspect of the region in many regards. The region's resource lands (e.g., forest, farm, and range) provide invaluable ecosystem services, sustain diverse renewable enterprises, and advance broad social benefits. Accordingly, there is distinct value in maintaining the integrity and functionality of the region's resource lands to ensure that the benefits they provide persist. This interest is challenged as significant regional population growth threatens to fragment resource lands and disrupt the continuity requisite to their ecological health, productivity, and functionality.

Increasing Population and Demand

Oregon and Washington have experienced significant population growth in recent decades:

State	New Residents	Change	Period
Oregon[1]	1,690,000	+74%	1974 – 2014
Washington[2]	3,247,000	+89%	1976 – 2013

[1]Oregon Office of Economic Analysis, 2017
[2]Washington Office of Financial Management, 2017

With regional growth, demands for resource land to accommodate and sustain new residents intensifies, placing increasing significance on the statutes, rules, and policies that collectively identify resource lands, moderate change, and direct development. In terms of land use statute and rule, Washington and Oregon are similar, however, administration differs in that Oregon exercises a more centralized approach relative to Washington.

In addition to law and policy, the relative health of state and local economies is a significant variable in dictating development and land use. The economic recession that followed the financial crisis of 2007 impacted economic growth and land conversion rates in Washington and Oregon. As the recession ended, development and conversion has resumed and increased in both states. The full extent of this increase is difficult to assess given the timelines of when data collection occurs relative to this analysis. New data will be necessary to more fully evaluate and discern the effect of land use laws and policies relative to economic drivers and population growth.

Report Focus

This evaluation seeks to provide an overview of how land use in both states has changed over recent decades. This report provides a macro-scale evaluation of land use change patterns using land use categories sufficient to recognize broad trends and gross policy efficacy. This report does not address micro-scale changes to ecosystem health, continuity, and functioning relative to land changes.

Land Use Policies

Oregon: Land Conservation and Development Act – 1973 (implemented mid- 1980s)

Oregon enacted the Land Conservation and Development Act in 1973, which was fully implemented statewide by the mid-1980s. The Act required all counties and incorporated municipalities to prepare comprehensive land use plans in accordance with 19 statewide planning goals specified in the Act. Resource lands were addressed through goals 3 and 4 which seek to limit and manage the loss of forest, agricultural, and range land consistently statewide.

In the course of implementation, non-Federal lands in Oregon were zoned either for resource uses (largely forest, farm, and range land) or as developable zones that were either already urbanized or adjacent to urbanized areas (predominately areas of low density residential and urban land use). Goal 14 mandated the establishment of urban growth boundaries to promote compact urban growth within these boundaries and to restrict the spread of development into forest and farm land. Development can and does still occur in resource lands through exceptions, but opportunities are limited.

GOAL 3: AGRICULTURAL LANDS
OAR 660-015-0000(3)

To preserve and maintain agricultural lands. Agricultural lands shall be preserved and maintained for farm use, consistent with existing and future needs for agricultural products, forest and open space and with the state's agricultural land use policy expressed in ORS 215.243 and 215.700.

Agricultural Land -- in western Oregon is land of predominantly Class I, II, III and IV soils and in eastern Oregon is land of predominantly Class I, II, III, IV, V and VI soils as identified in the Soil Capability Classification System of the United States Soil Conservation Service, and other lands which are suitable for farm use taking into consideration soil fertility, suitability for grazing, climatic conditions, existing and future availability of water for farm irrigation purposes, existing land-use patterns, technological and energy inputs required, or accepted farming practices. Lands in other classes which are necessary to permit farm practices to be undertaken on adjacent or nearby lands, shall be included as agricultural land in any event.

Washington: Growth Management Act – 1990 (implemented mid-1990s)

Washington passed the Growth Management Act (GMA) in 1990. The GMA was largely implemented by the mid-1990s. It required all counties and incorporated municipalities to conduct land use planning. Initial steps in the planning process required all counties to designate forest, farm, and other natural resource lands (range land was considered farm land in this process) and then to adopt local regulations to protect these lands from development. Additionally, 29 (of 39) counties were required or chose to plan fully by adopting county-wide planning policies based on 14 statewide goals specified in the Act. Each county then used its policies to develop and implement a county-level comprehensive land use plan. Included in these plans was the establishment of urban growth areas.

GOAL 4: FOREST LANDS
OAR 660-015-0000(4)

To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Forest lands are those lands acknowledged as forest lands as of the date of adoption of this goal amendment. Where a plan is not acknowledged or a plan amendment involving forest lands is proposed, forest land shall include lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources.

Land Use Administration in Oregon and Washington

In Washington the GMA framework provides direction to local governments, but allows flexibility regarding the specific content of comprehensive plans and implementation of development regulations. Under the GMA, land use planning at the county and city levels is assumed to be valid unless a constituent petitions a state growth management hearings board and the board rules against the local government. This aspect of the GMA decentralizes implementation and can generate more variable results across the landscape.

By comparison, Oregon's land use process is more centralized. In Oregon, one board (the Land Conservation and Development Commission) and one state agency (the Department of Land Conservation and Development) guide, review, and monitor land use planning throughout the state according to statute and rule. This centralized oversight helps ensure that local comprehensive plans and implementation are consistent with state policy and comply with the statewide planning goals.

Evaluation Methods

This evaluation compares changes in land use on non-Federal land between Oregon and Washington based on eight different land use classes (see Table 1). The study period is from the mid-1970s through 2014. To quantify land use change, interpreters evaluated 82,329 sample points distributed across non-Federal land in Oregon and Washington based on aerial imagery taken at successive dates. Each sample point was assigned one of the eight land use classes at each date. The sample point locations and the evaluation methods are consistent for all time periods. In Oregon, evaluation was carried out based on imagery from 1974, 1984, 1994, 2000, 2005, 2009, and 2014. In Washington evaluation was carried out based on imagery from 1976, 1994, 2006, and 2013.

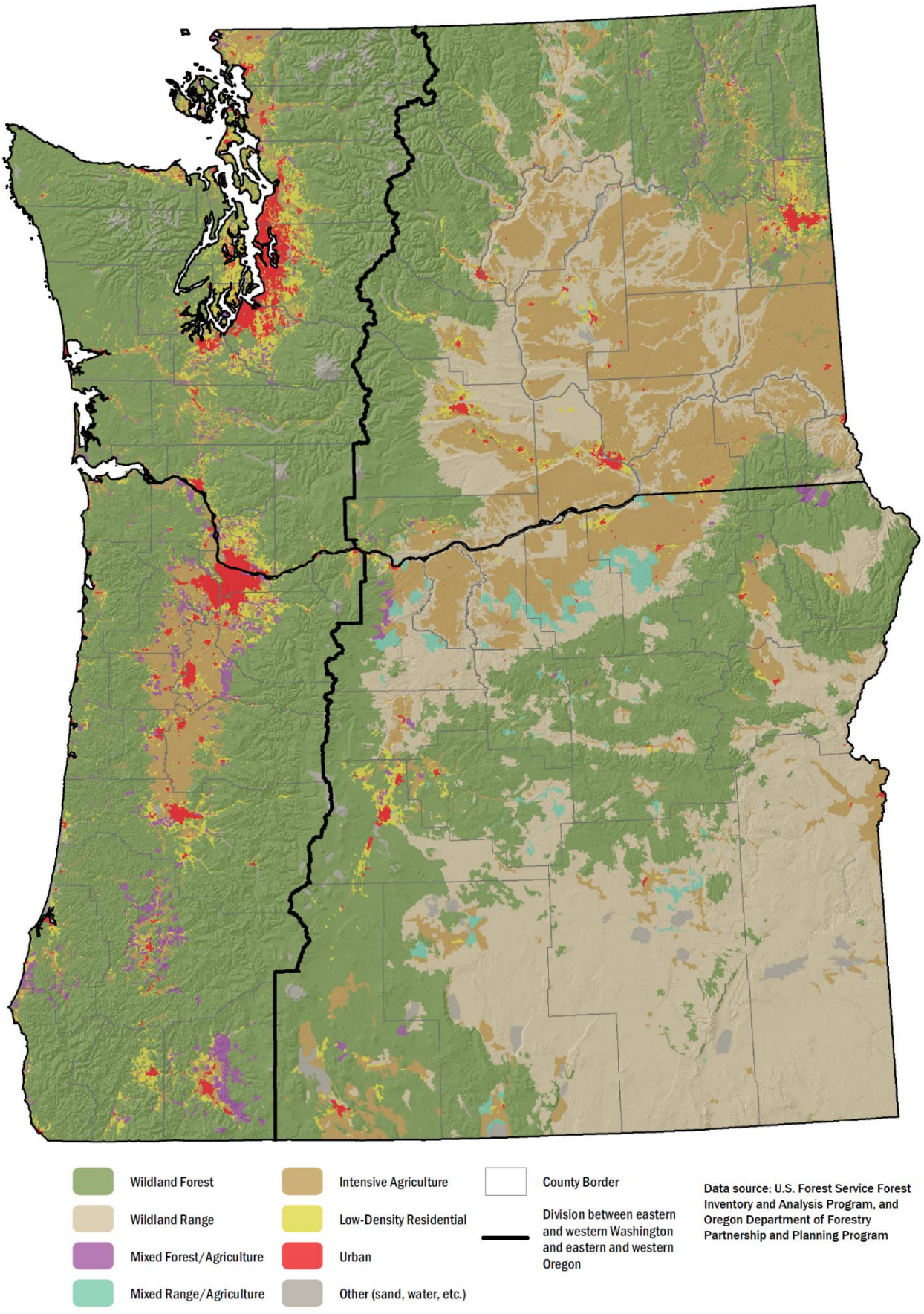
Table 1. Land Use Classes

Land Use Category	Description
Wildland Forest	- Area of land in forest use that is at least 640 acres in size and - Fewer than 5 structures per square mile on average.
Wildland Range	- Area of land in range use that is at least 640 acres in size and - Fewer than 5 structures per square mile on average.
Mixed Forest/Agriculture	- Area of land with intermixed forest and agricultural uses that is at least 640 acres in size and - Fewer than 9 non-farm-related structures per square mile on average.
Mixed Range/Agriculture	- Area of land with intermixed range and agricultural uses that is at least 640 acres in size and - Fewer than 9 non-farm-related structures per square mile on average.
Intensive Agriculture	- Area of land in agricultural use that is at least 640 acres in size and - Fewer than 9 non-farm-related structures per square mile on average.
Low-Density Residential	- An area of any size in rural residential or low-density commercial use that contains 9 or more structures.
Urban	- Area of land that is at least 40 acres in size and - Comprised of commercial, service, or subdivided residential uses with city street patterns and closely-spaced buildings.
Other (sand, rock, water, etc.)	- Area of naturally non-vegetated land that is at least 640 acres in size.

Examples of the eight land classes used in this report are identified in Figure 1 (mixed range/agriculture not shown). Figure 2 shows the distribution of these classes across Oregon and Washington and delineates the boundary between the western and eastern sides of the two states.

Figure 1 — Land Use Classes

Figure 2. Land Use: Washington 2013 and Oregon 2014



Land Use Changes

Oregon and Washington contain comparable areas of non-Federal land, with 28,706,000 acres and 31,600,000 acres respectively (see Figure 3). With growing populations, Oregon and Washington have experienced conversion of resource lands to low-density residential or urban uses.

- In Oregon 704,000 acres (2.6%) of all non-Federal land resource land (wildland forest, wildland range, intensive agriculture, mixed forest/agricultural and mixed range/agriculture uses) shifted to low-density residential or urban uses between 1974 and 2014 (see Figure 3).

- In Washington, 1,334,000 acres (4.5%) of all non-Federal resource land shifted to low-density residential or urban uses between 1976 and 2013 (see Figure 3).

The rate of conversion of resource lands has slowed in both states since implementation of land use laws. However, in this perspective a greater area of resource land conversion has occurred in Washington relative to Oregon (see Figure 4 and Table 2).

Figure 3. Non-Federal Land Conversion

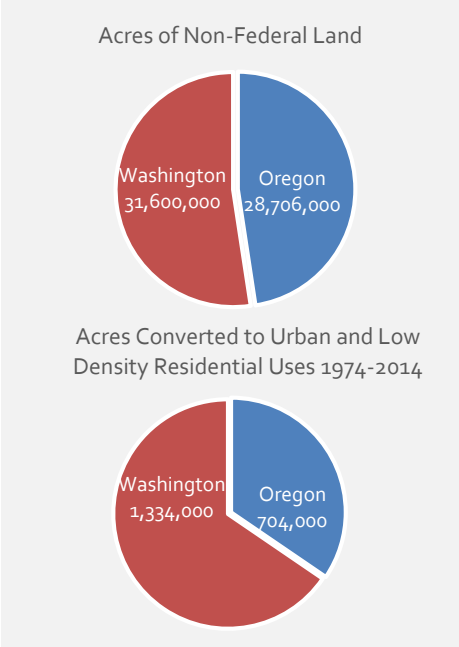
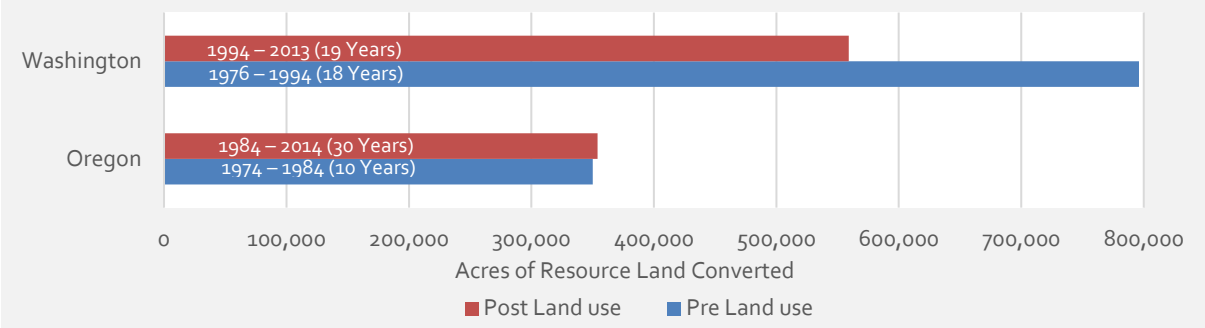


Figure 4. Area of Resource Lands Converted to Low Density Residential and Urban



In Washington, Wildland forest has been the principal resource land subject to conversion. Oregon has also experienced significant conversion of this resource as well (see Figure 5).

Figure 5. Oregon and Washington Land Use Change 1974 – 2014

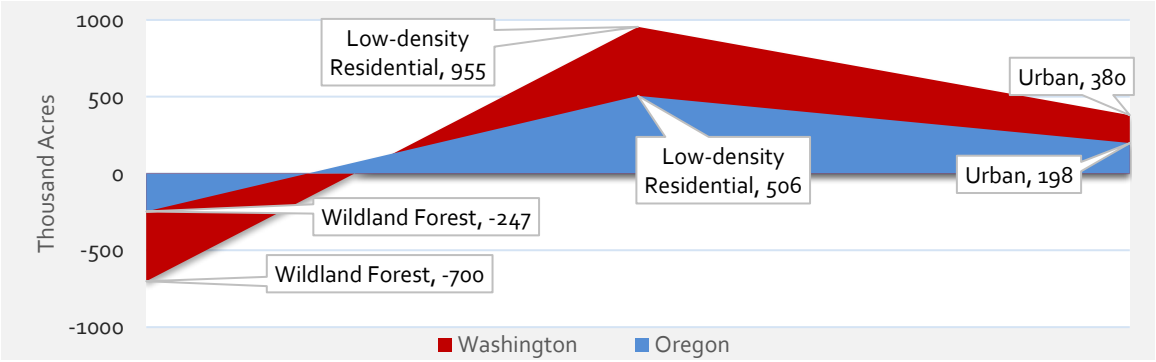


Table 2. Area and Percent of non-Federal Land in Oregon and Washington, by Land Use Class and Year

Oregon: land use class	1974		1984		1994		2000		2005		2009		2014		Change 1974-2014		Change 1984-2014*	
	Thousand acres | Percent of Non-Federal Land																	
Wildland forest	10,693	37.3	10,570	36.8	10,512	36.6	10,497	36.6	10,468	36.5	10,455	36.4	10,446	36.4	-247	- 0.9	-124	-0.4
Wildland range	9,297	32.4	9,164	31.9	9,116	31.8	9,087	31.7	9,045	31.5	9,034	31.5	9,013	31.4	-284	-1.0	-151	-0.5
Mixed forest/agriculture	959	3.3	901	3.1	877	3.1	876	3.1	864	3.0	855	3.0	853	3.0	-105	-0.4	-48	-0.2
Mixed range/agriculture	658	2.3	664	2.3	666	2.3	678	2.4	690	2.4	690	2.4	699	2.4	41	0.1	35	0.1
Intensive agriculture	5,848	20.4	5,806	20.2	5,786	20.2	5,757	20.1	5,747	20.0	5,733	20.0	5,740	20.0	-109	-0.4	-66	-0.2
Low-density residential	785	2.7	1,060	3.7	1,165	4.1	1,196	4.2	1,246	4.3	1,282	4.5	1,291	4.5	506	1.8	231	0.8
Urban	378	1.3	453	1.6	495	1.7	526	1.8	556	1.9	568	2.0	576	2.0	198	0.7	123	0.4
Other	88	0.3	88	0.3	88	0.3	88	0.3	88	0.3	88	0.3	88	0.3	0	0.0	0	0.0

*Oregon's land use laws were largely implemented by 1984

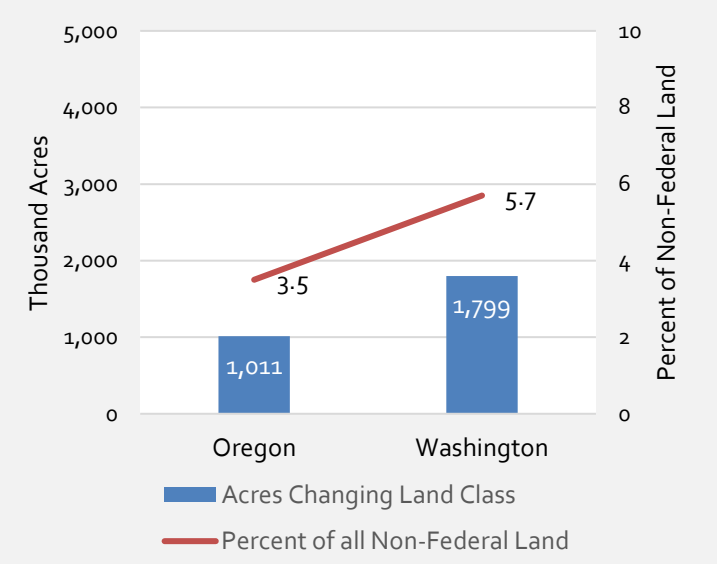
Washington: land use class	1976			1994			2006			2013		Change 1976-2013		Change 1994-2013*	
	Thousand acres | Percent of Non-Federal Land														
Wildland forest	13,653	43.2		13,233	41.9		12,991	41.1		12,952	41.0	-700	-2.2	-281	-0.9
Wildland range	6,170	19.5		5,986	18.9		5,884	18.6		5,805	18.4	-365	-1.2	-181	-0.6
Mixed forest/agriculture	545	1.7		471	1.5		407	1.3		403	1.3	-142	-0.4	-67	-0.2
Mixed range/agriculture	64	0.2		64	0.2		64	0.2		64	0.2	0	0.0	0	0.0
Intensive agriculture	9,059	28.7		8,958	28.3		8,865	28.1		8,926	28.2	-133	-0.4	-32	-0.1
Low-density residential	1,275	4.0		1,853	5.9		2,187	6.9		2,230	7.1	955	3.0	377	1.2
Urban	578	1.8		775	2.5		939	3.0		957	3.0	380	1.2	182	0.6
Other	256	0.8		260	0.8		262	0.8		262	0.8	6	<0.1	2	<0.1

* Washington's land use laws were largely implemented by 1994

A Changing Landscape - Non-Federal Land Use Change

In Washington approximately 1,799,000 acres of non-Federal land changed uses, moving from one category to another either through reduction of resource status or addition of developed use, between 1976 and 2013, (approximately 5.7% of all non-Federal land in the state). In comparison a total of approximately 1,011,000 acres of non-Federal land in Oregon changed uses between 1974 and 2014 (approximately 3.5% of all non-Federal land in the state)(see Figure 6).

Figure 6. Acres Changing Land Classification 1974 - 2014



Resource Land Conversion

Ninety-seven percent of all non-Federal land in Oregon that was in resource land uses (farm, forest, or range) in 1974 remained in these uses in 2014 (Figure 6). Ninety-five percent of non-Federal land in Washington that was in these uses in 1976 remained so in 2013.

In more-populous western Oregon and western Washington, almost twice as much resource land was converted to developed uses than in the less-populous eastern portions of the states (Figure 7). In western Oregon, 95% of non-Federal land that was in resource uses in 1974 remained in these uses in 2014, and in western Washington 91% of non-Federal land that was in resources uses in 1976 remained in these uses in 2013. Less change occurred in the Eastern portions of both states.

Figure 7. Non-Federal Land Remaining in Forest, Farm, or Range Oregon 1974-2014 and Washington 1976-2013

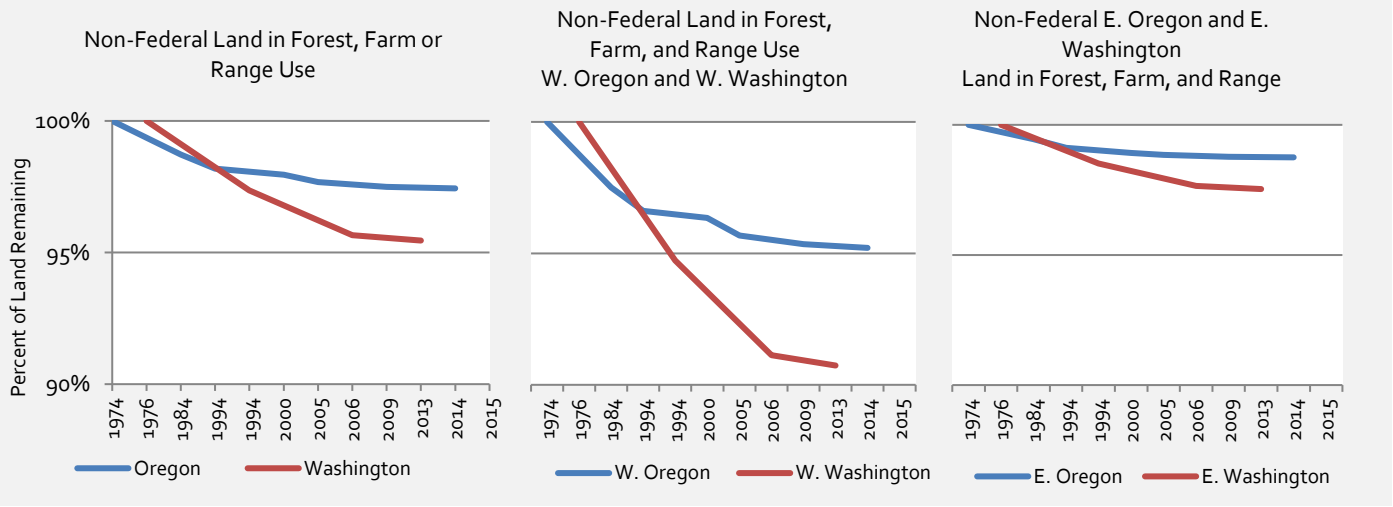
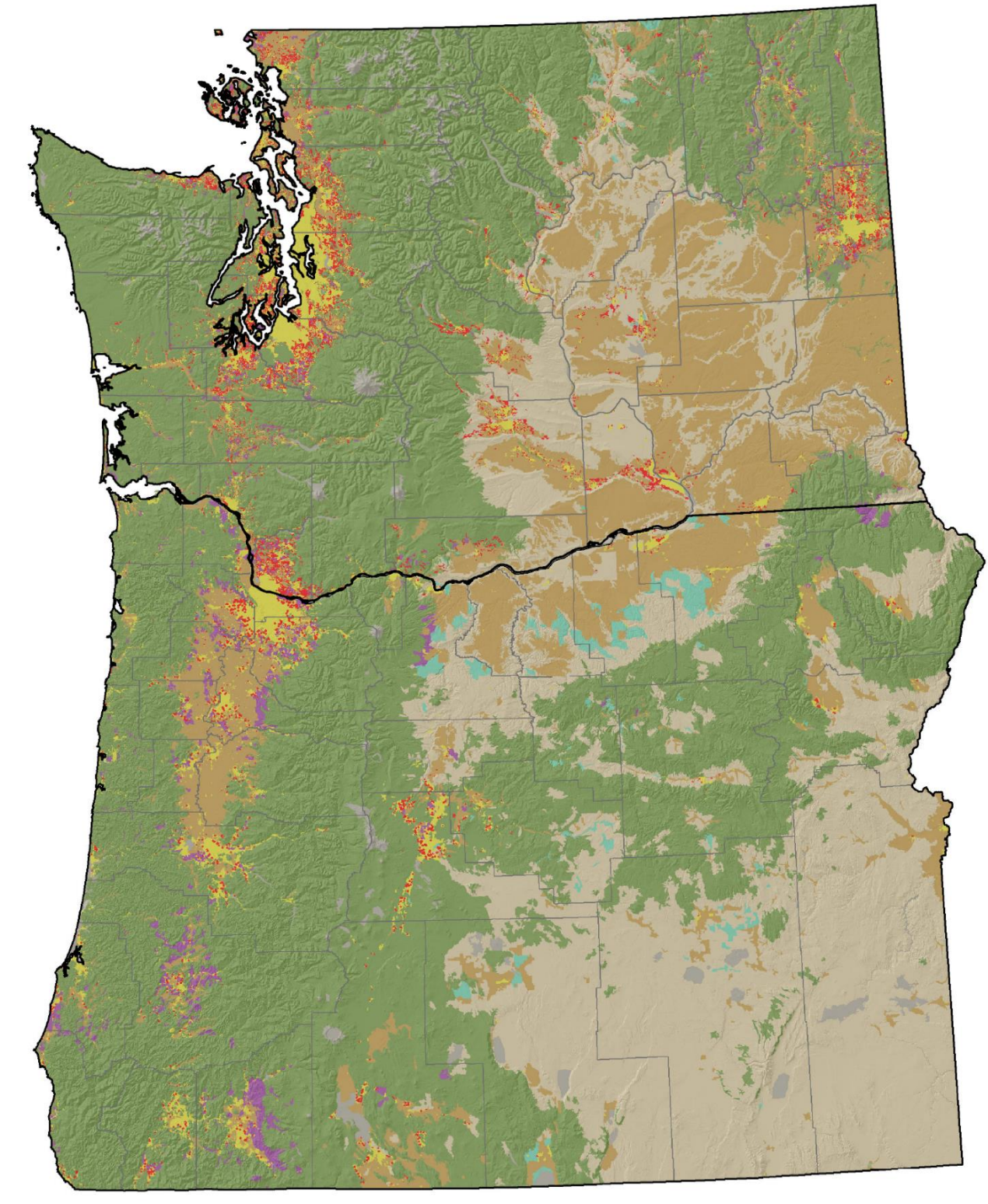


Figure 7. Changes in Land Use on Non-Federal Land: Washington 1976-2013, Oregon 1974-2014



Washington: Land in resource land uses* in 1976 but converted to low-density residential or urban uses by 2013

Oregon: Land in resource land uses* in 1974 but converted to low-density residential or urban uses by 2014

Wildland Forest

Wildland Range

Mixed Forest/Agriculture

Mixed Range/Agriculture

Intensive Agriculture

Land in low-density residential or urban in Washington (1976) or Oregon (1974)

Other (sand, water, etc.)

County Border

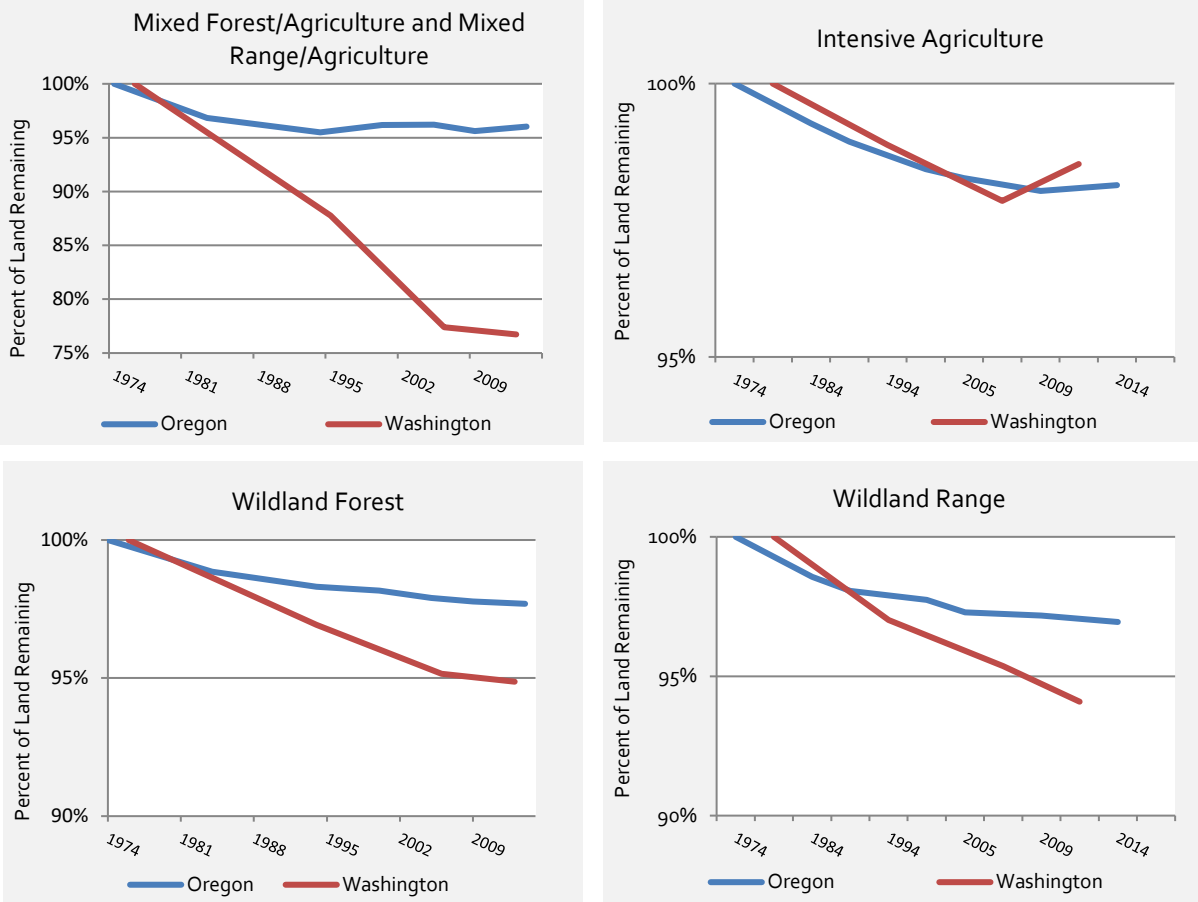
Data source: U.S. Forest Service Forest Inventory and Analysis Program, and Oregon Department of Forestry Partnership and Planning Program

*Resource land uses: wildland forest, wildland range, mixed forest/agriculture, mixed range/agriculture, intensive agriculture

Resource Land Use Changes By Land Use – Oregon and Washington

Both states have experienced ongoing conversion of non-Federal resource lands to more developed uses over the study period (with the exception of intensive and mixed agricultural lands, where a modest increase in agricultural use was observed in the later periods of evaluation). Washington experienced a greater loss of non-Federal resource lands relative to Oregon (Figure 8).

Figure 8. Non-Federal Rand Remaining in Resource Land Uses 1974 – 2014



The largest land use losses in Oregon and Washington occurred in wildland forest and wildland range. Together the two states experienced a combined conversion of 1,597,000 acres, an area larger than the state of Delaware. Conversely the land uses with the largest increases occurred in low-density residential and urban uses (Table 3).

Table 3. Largest Land Use Changes by State (1974-2014)

Land Use Losses			Land Use Gains		
Land Use	*State*	*Change (Acres)*	*Land Use*	*State*	*Change (Acres)*
Wildland Forest	Washington	-700,000	Low-Density Residential	Washington	+955,000
	Oregon	-247,000		Oregon	+506,000
Wildland Range	Washington	-365,000	Urban	Washington	+380,000
	Oregon	-284,000		Oregon	+198,000

Resource Land Conversion

In both states, shifts from resource land uses to low-density residential or urban uses occurred predominately on private land. Low-density residential use accounted for the majority of this conversion, increasing by 1.4 million acres total for both states (Table 4). (This macro-scale evaluation does not differentiate between specific sources of conversion such as industrial development, urban growth boundary incorporations, partitioning of resource parcels, or exceptions to resource land uses which collectively affect and impact the nature of resource lands in terms of habitat, ecosystem dynamics, and other landscape concerns.)

Table 4. Private Land Use Transitions in Oregon and Washington 1974-2014

Oregon: land use class	1974	2014	Net change 1974-2014	Net change 1974-2014
	Thousand Acres			*Percent*
Western Oregon				
Wildland forest	6,256	6,065	-191	-3.1
Mixed forest/agriculture	774	687	-87	-11.2
Intensive agriculture	1,938	1,754	-184	-9.5
Low-density residential	492	809	317	64.5
Urban	263	408	145	55.2
Eastern Oregon				
Wildland forest	2,950	2,905	-46	-1.6
Wildland range	8,258	8,013	-245	-3.0
Mixed forest/agriculture	128	116	-13	-9.8
Mixed range/agriculture	642	677	34	5.3
Intensive agriculture	3,652	3,714	62	1.7
Low-density residential	226	396	169	74.8
Urban	52	90	38	72.6

Washington: land use class	1976	2013	Net change 1976-2013	Net change 1976-2013
	Thousand Acres			*Percent*
Western Washington				
Wildland forest	5,932	5,421	-511	-8.6
Mixed forest/agriculture	333	225	-108	-32.4
Intensive agriculture	808	625	-182	-22.6
Low-density residential	863	1,406	543	63.0
Urban	331	584	253	76.6
Eastern Washington				
Wildland forest	4,690	4,529	-160	-3.4
Wildland range	5,850	5,487	-363	-6.2
Mixed forest/agriculture	173	145	-29	-16.6
Mixed range/agriculture	63	63	0	0.0
Intensive agriculture	8,161	8,219	58	0.7
Low-density residential	340	730	389	114.4
Urban	191	296	105	54.8

Wildland Forest Changes by Ownership

In both states the area of land in wildland forest use has declined, however the magnitude of conversion has varied by ownership. Industrial (active management entities) and public owners have largely retained land in wildland forest use, while non-industrial owners have accounted for most conversion (Table 5).

Table 5. Change in Area of Non-Federal Wildland Forest Based on Ownership

	Industrial	Non-industrial	Other public
	Change, in percent		
Oregon (1974 – 2014)	0	-7	-1
Western Oregon	0	-10	-1
Eastern Oregon	0	-4	0
Washington (1976 – 2013)	-1	-11	-1
Western Washington	-1	-24	-1
Eastern Washington	-1	-4	-1

Directed Growth and Comprehensive Planning

Land use planning can provide directed systematic development that reflects deliberate use of resources and consideration of dynamic social, economic, and ecological values. These values can be realized when planning and implementation occur in a comprehensive and consistent manner across regions and ecosystems (Costanza et al., 1997; Lubchenco et al., 2000; de Groot et al, 2000; de Groot et al., 2002; de Groot et al., 2003).

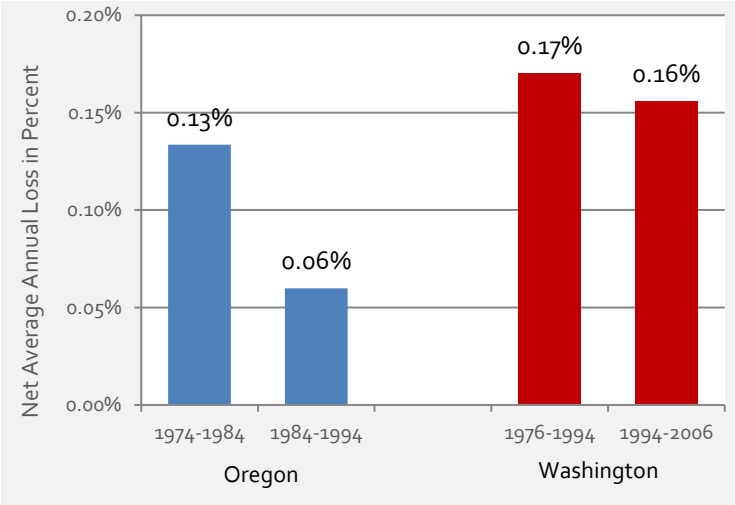
Comprehensive Planning and Conversion Rates

Conversion of private resource lands to low-density or urban land uses has slowed more in Oregon than Washington since implementation of comprehensive land use planning (Figure 9).

- In Oregon, net average annual conversion of private resource land declined by 54% after implementation of land use planning when considering the periods before and after land use plans were implemented in the 1980s.

- In Washington, net average annual conversion of private resource land declined by 6% after implementation of land use planning when considering the periods before and after land use plans were implemented in the 1990s.

Figure 9. Net Average Annual Loss of Private Resource Land Before and After Implementation of Land Use Plans

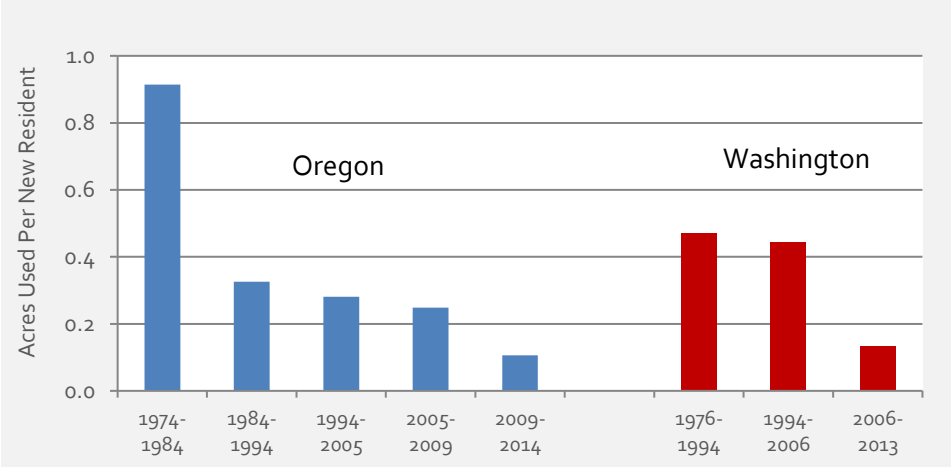


Improving Land Use Efficiency by Limiting Sprawl

Economic conditions and institutional policies are influential factors affecting the pace and nature of land use change. Where institutional policies are present, negative externalities of change, notably "sprawl," can be mediated (Lambina et al, 2001). Sprawl is described as dispersed, low-density growth that is characterized by inefficient resource use that creates social and environmental costs (Kunstler, 1993; Ewing, 1997; Downs, 1998; Burchell et al., 1998; Kahn, 2000; Bhatta and Bandyopadhyay, 2010).

Different methods are used to evaluate growth efficiency and sprawl, including examination of the per capita consumption of land as population increases (Hasse and Lathrop, 2003). In this regard, we consider the area of land shifting from resource to developed uses per new resident in Oregon and Washington. This metric reflects the relative efficiency of the two states over time in accommodating new growth, limiting sprawl, and converting resource lands to more developed uses. Oregon and Washington improved efficiency in accommodating growth with implementation of land use laws (see Figure 10).

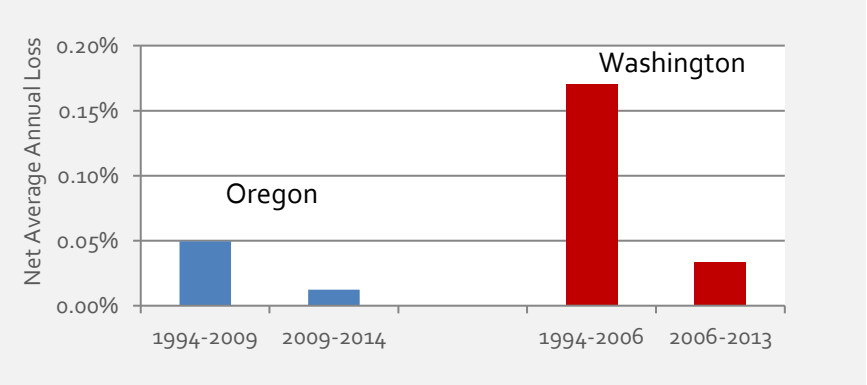
Figure 10. Average Area, Per New Resident, of Non-Federal Land Changing from Resource to Low-Density Residential or Urban Uses, Oregon 1974-2014, Washington 1976-2013



Recessionary Impact

Institutional policy alone does not determine the nature of land use change: regional economic and market conditions also exert influence on change. The most recent period of analysis reflects this conversion of resource lands significantly diminished in conjunction with the Great Recession (Figure 11).

Figure 11. Net Average Annual Loss of Private Resource Land Developed Uses Before and After Recession



Whether there is a rebound in resource land conversion rates with an improved economic environment or whether growth continues to densify cannot be determined until more recent imagery is available. This data should be available in 2019.

Ecosystem and Community Well-Being – Resource Lands and Comprehensive Planning

Human and community well-being is dynamically linked to ecosystem health by provision of ecosystem services (social, economic, and ecological) (Cairns 1993, Chivian, 2001, Chan et al. 2006). As the scale and complexity of human and ecosystem interactions increases, the reliance on resource lands and continued ecosystem functionality is increasingly critical (Chapin et al. 1997). Conversion of resource lands impairs ecosystem functionality and services such as but not limited to: water filtration, carbon and soil cycling, and provision of habitat necessary to maintain biological diversity.

Balancing development decisions with consideration of the dynamic ecosystem responses to land use change is paramount to maintaining ecosystem functionality (DeFries et al. 2004). Regionally, there are efforts to consider unique ecosystem features and functionality in land use planning. In Oregon, protection of natural resources on non-Federal land is directed via compliance with land use planning goals, such as Goals 4 and 5 that seek to recognize and retain continuity and vital features associated with unique and dynamic ecosystems such as wildland forest.

Wildland Forest

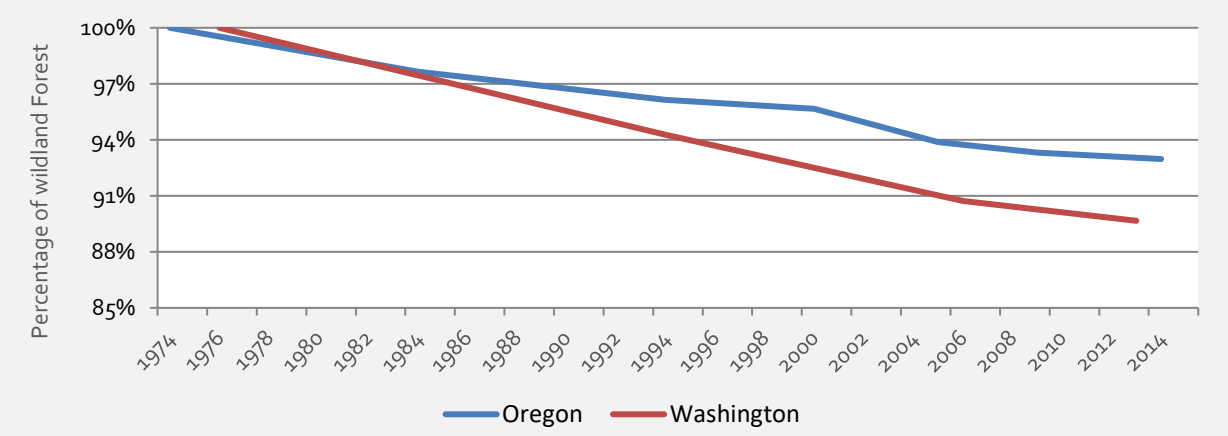
Wildland forest provides a range of services to communities, including but not limited to:

- Ecological benefits such as habitat, fertile soil, clean air, and water cycling and filtration;
- Economic goods including timber and other forest products;
- Social benefits such as recreation and existence values.

The extent and intensity to which these services are provided is dependent on maintaining continuity and limiting fragmentation as development (both suburban and exurban) challenges the ecological processes and functionality of wildland forest (Kahn, 2000; Marzluff and Ewing, 2001).

The density of residential developments is one metric for distinguishing relatively less-developed wildland forest zones from relatively more-developed wildland forest zones. In both Oregon and Washington, the amount of undeveloped and less-developed wildland forest has declined over the study period. The area of non-Federal land in wildland forest use with less than 10 residents per square mile declined by 7 percent (693,000 acres) in Oregon, and by 10 percent (1,280,000 acres) in Washington over the study period (Figure 12).

Figure 12. Non-Federal Land Remaining in Wildland Forest Use With Less Than 10 Residents per Square Mile, Oregon 1974-2014, Washington 1976-2013



This indicates that in both states, the area of wildland forest impacted by dispersed residential development is greater than the area of wildland forest that was converted to non-forest uses. Conversion and fragmentation of wildland forest impairs functionality via creation of new challenges:

- Increased conflict relative to resource management;
- Diminished value proposition for active management as cohesiveness and ability to operate is constrained;
- Increased ignition of wildfire and cost to manage wildfire;
- Diminished provision of ecosystem services: habitat, air, geochemical, and water cycling.

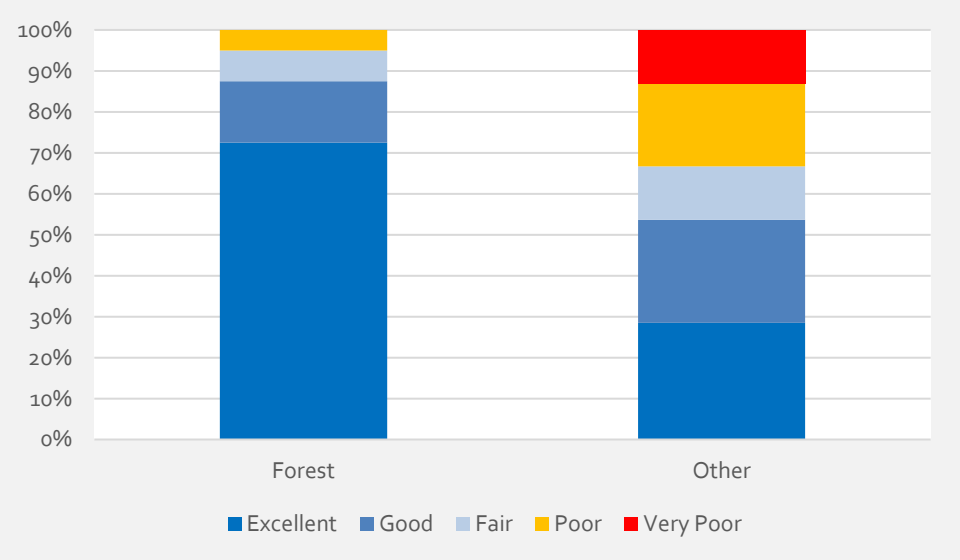
Maintaining resource continuity limits these and other negative externalities and ensures critical services such as clean water are sustained.

Resource Lands – Ecosystem Services

Water quality is inextricably linked to ecosystem and community health. Diminished water quality compromises ecosystem functioning and interactions such that habitat is undermined, biodiversity is challenged, and overall ecosystem health and resilience are undermined. Conversion of resource lands disrupts natural processes, surface area and flow, degrades water quality, and reduces vegetation cover and diversity. The changes made to the landscape through development tend to be permanent, and restoration to a natural state is difficult (Oregon Conservation Strategy, 2016).

A review of Oregon Department of Environmental Quality (DEQ) water quality index scores for sample points according to land use classification for the years 1996-2015 (Figure 13) demonstrates the relationship between land use and water quality. In particular, the prevalence of high water quality on forest lands indicates value of forest land use in this regard, and underlines the importance of avoiding conversion to alternative uses that cause deleterious effects on water quality.

Figure 13. Water Quality on non-Federal Land by Forest and Other Land Uses, Oregon 2015*



*DEQ water quality sampling point data was attributed according to land use classification, water quality scores were averaged for each point and allocated to water quality classes and land uses (1996-2015).

Recognizing the importance of wildland forest to maintaining water quality, both Oregon and Washington recognize the value of protecting this resource from development. To this end, the Oregon Board of Forestry has a stated policy to "Promote the maintenance of forestland in forest uses and promote the establishment of new forests as key elements in promoting high quality water and protection of soil productivity," and the Washington Department of Natural Resources Forest Legacy Program states that "Keeping land in traditional forest uses also aids protection of water quality, fish and wildlife habitat, cultural resources, and recreation opportunities."

Resource Lands – Ecosystem Functionality

Habitat availability and quality is a reflection of ecosystem capability as trophic cascades are a critical facet of ecosystem functionality (Ripple and Beschta, 2005). Resource lands benefit broader ecosystem functionality as their contiguous presence supports delivery of ecosystem benefits, habitat quality and quantity, and maintains connectivity, all key components of terrestrial and aquatic resource management.

In the Pacific Northwest, freshwater aquatic systems are essential habitat to multiple species, including important spawning and rearing habitat for salmonids and breeding habitat for amphibians, and invertebrates. The nature of land use in areas adjacent to aquatic systems can severely affect functionality and capability to provide adequate habitat depending on the nature of use (e.g. impermeable surfaces, pollutants, flow diversion, etc.). Where forests and other resource lands persist, habitat requirements such as water quality are more likely to be met (see Figure 13).

Beyond water quality, connectivity between aquatic habitats is an important part of garnering successful and healthy populations. Many species rely on the ability to move throughout the landscape to fulfill their needs for survival or complete their life cycles. Some species move seasonally, following food resources, moving to areas more suitable for raising young, or surviving the winter. This may mean moving north and south across thousands of miles, or higher and lower in elevation. Human-caused changes to the landscape can affect the ability of wildlife to move across terrestrial landscapes by adding obstacles, impacting critical stopover sites, and increasing habitat fragmentation (Oregon Conservation Strategy, 2016).

Patterns of land use and development within and adjacent to aquatic systems and streams supporting salmon differ between Oregon and Washington. In the 1994 – 2013 period for Washington and the 1994 – 2014 period for Oregon, stream availability for salmon within areas of wildland forest diminished, challenging connectivity and habitat serviceability and quality (see Table 6).

Table 6. Land Use Changes Along Salmon Streams, Washington (1994-2013) and Oregon (1994-2014)

	Washington	Oregon
Land Use Category	*Percentage change of fish stream length within land use category*	
Wildland Forest	-1.5	-0.6
Low Density Residential	+13.7	+7.5
Urban	+18.3	+7.3

Beyond areas proximate to streams and rivers, conversion throughout drainage basins can impact basin functioning as cumulative changes disrupt and impact the collective ecological processes associated with water movement as basin functionality and by extension ecosystem capability is influenced by multiple factors such as topography, shape, size, and soil type. Accordingly, land use change can impact drainage basin functionality where conversion introduces discordant disturbance, disrupted drainage, sources of pollution and other encumbrances (Forman, 1995).

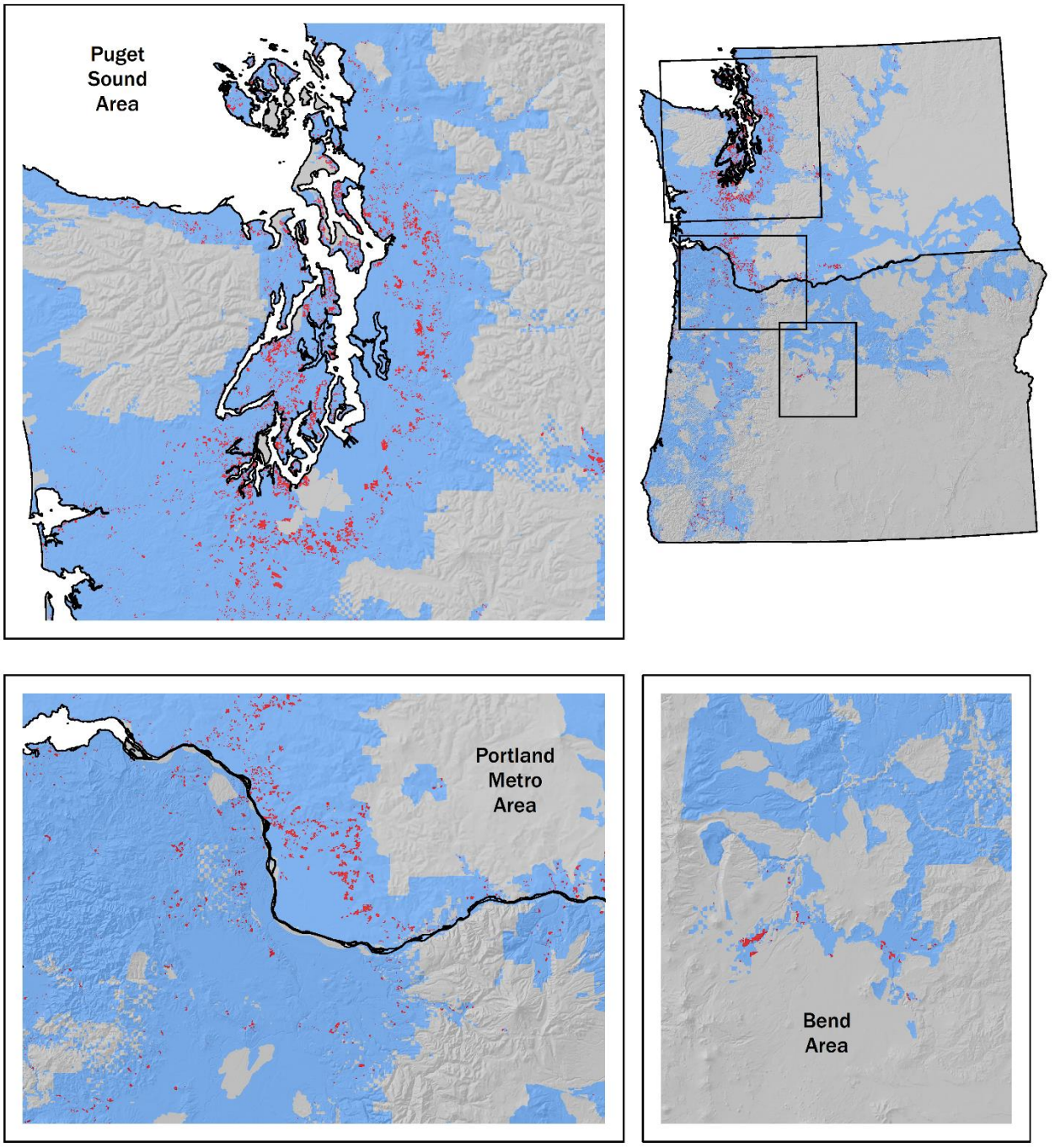
Using 1994 as baseline (change from 1994 – 2014 in Oregon and 1994 – 2013 in Washington) Washington has experienced more land use changes in drainage basins with currently utilized salmon habitat streams relative to Oregon on non-Federal land (see Table 7). Land use changes considered include loss of wildland forest to more developed land uses (low density residential and urban). These factors are important as wildland forest provides essential functions of connectivity and air and water filtration, while developed lands introduce ecosystem disturbances (Forman, 1995).

Table 7. Land Use Change on non-Federal Land Within Drainage Basins With Currently Used Salmon Streams, Washington (1994-2013) and Oregon (1994-2014)

	Washington	Oregon
	Percentage change within basins with currently used salmon streams	
Wildland Forest	-2.4	-0.6
Low Density Residential	18.6	9.9
Urban	26.1	13.6

Water quantity and quality is a critical component of a functioning ecosystem upon which species and communities are dependent. Erosion and loss of habitat challenges ecosystem functionality and the continued provision of goods, tangible and intangible. Conversion of resource lands is an inevitable function of population growth, however the subsequent impacts can be directed to minimize effects on resource and ecosystem functionality. Figure 14 highlights the breadth of land use change across drainage basins with currently used salmon streams and underlines the difference between Oregon and Washington in terms of basin area impacted.

Figure 14. Non-Federal Wildland Forest Changing to more Developed Uses in Drainage Basins of Streams with Chinook, Coho, and/or Steelhead Habitat: Washington 1994-2013, Oregon 1994-2014



Population Growth and Ecosystem Considerations

Prior to implementation of land use planning, conversion of nonfederal resource lands in Oregon and Washington was vigorous and dispersed. Since implementation, conversion in both states has been more directed, supporting retention, continuity, and functionality of resource lands. While multiple factors affect the rate, frequency, and nature of land use change, comprehensive planning holds capacity to inform and direct change to the benefit of resource lands and ecosystem functionality.

Land use change and consideration of how change impacts ecosystems will continue to be a critical concern. Oregon and Washington's respective offices of economic and financial management predict that in the next 25 years, Oregon's population is projected to increase by 1,180,000 people (29 percent) and Washington's population, by 1,932,000 people (26 percent). Given this projected growth, there will be increased demands and pressure placed on PNW ecosystems to continue provision of critical services upon which all are reliant. This underline the need to continue collect and evaluate land use change and further reinforces the value of comprehensive planning in terms of directing efficient growth, minimizing externalities, and maintaining the resource lands that are essential to ecosystem functionality.

Where to Find More Information

More detailed information about the data and techniques used in this report is available:

Forests, Farms and People: Land Use Change on Non-Federal Land in Western Oregon 1974-2009 (Lettman and others 2011) is available at http://www.oregon.gov/ODF/Documents/ForestBenefits/ForestsFarmsAndPeople1974_2009PublishedJuly2011.pdf.

Changes in Land Use and Housing on Resource Lands in Washington State, 1976-2006 (Gray and others 2013) is available at http://www.fs.fed.us/pnw/pubs/pnw_gtr881.pdf.

The Oregon Conservation Strategy: A blueprint for conservation in Oregon (2016) is available at *http://www.oregonconservationstrategy.org/*

References

Bhatta, B.; Saraswati, S.; Bandyopadhyay, D. (December 2010). "Urban sprawl measurement from remote sensing data". Applied Geography. 30 (4): 731–740.

Burchell, R. W., Shad, N.A., Listokin, D., Phillips, H., Downs, A., Seskin, S., Davis, J.S., Moore, T., Helton, D., & Gall, M. (1998). The cost of sprawl-revisited. TCRP report 39, Washington DC: National Academy Press.

Chan KMA, Shaw MR, Cameron DR, Underwood EC, Daily GC (2006) Conservation Planning for Ecosystem Services. PLoS Biol 4(11): 379.

Chapin, S., Walker, B., Hobbs, R., Hooper, D., Lawton, J., Sala, O., and D. Tilman. (1997). Biotic Control over the Functioning of Ecosystems. *Science.* Vol 277, Issue 5325, pp. 500-504.

Costanza, R., d'Arge, R., de Groot, R.S., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R.G., Sutton, P., van den Belt, M., 1997. The value of the world's ecosystem services and natural capital. Nature 387, 253–260.

de Groot, R.S., Perk, J., van der, Chiesura, A., Marguliew, S., 2000. Ecological functions and socio-economic values of critical natural capital as a measure for ecological integrity and environmental health. In: Crabbe, P. (Ed.), Implementing Ecological Integrity. ´ Kluwer Academic Publishers, pp. 191–214.

de Groot, R.S., van der Perk, J.P., Chiesura, A., van Vliet, A.J.H., 2003. Importance and threat as determining factors for criticality of natural capital. Ecol. Econ. 44 (2–3), 187– 204.

de Groot, R.S., Wilson, M., Boumans, R., 2002. A typology for the description, classification and valuation of Ecosystem Functions. Goods Services Econ. Vol. 41 (3), 393–408.

Downs, A. (1998). How America's cities are growing: the big picture. Brookins Review, 16(4), 8–12.
Eric F. Lambina,*, B.L. Turnerb , Helmut J. Geista , Samuel B. Agbolac , Arild Angelsend , John W. Brucee, Oliver T. Coomesf , Rodolfo Dirzog , Gunther Fischer . h , Carl Folkei , P.S. Georgej , Katherine Homewoodk , Jacques Imbernonl , Rik Leemansm, Xiubin Lin , Emilio F. Morano , Michael Mortimorep , P.S. Ramakrishnanq , John F. Richardsr , Helle Skanes (s , Will Steffent , Glenn D. Stoneu , Uno Svedinv , Tom A. Veldkampw, Coleen Vogelx , Jianchu Xuy. (2001). The causes of land-use and land-cover change: moving beyond the myths. Global Environmental Change 11 (2001) 261–269.

Ewing, R. (1997). Is Los Angeles-style sprawl desirable?. Journal of the American Planning Association, 63(1), 107–126.

Hasse, J. and R. Lathrop. (2003). Land resource impact indicators of urban sprawl. Applied Geography 23 159–175.

Cairns, J. and P., McCormick and B. Niederlehner (1993). Hydrobiologia 263: l-44, 1993. A proposed framework for developing indicators of ecosystem health. University Center for Environmental and Hazardous Materials Studies, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0415, USA.

Kahn, M. E. (2000). The environmental impact of suburbanization. Journal of Policy Analysis and Management, 19(4), 569–586.

Kunstler, J. H. (1993). The geography of nowhere: the rise and decline of america's man-made landscape. New York: Simon and Schuster.

T. T. Forman (1995). Land Mosaics: the Ecology of Landscapes and Regions: Cambridge University Press, Cambridge 632 pp.

Marzluff, J. M. 2001. Worldwide urbanization and its effects on birds. Pages 19–48 in Avian ecology and conservation in an urbanizing world. Kluwer Academic Publishers, Boston, Massachusetts, USA.

Oregon Conservation Strategy. 2016. Oregon Department of Fish and Wildlife, Salem, Oregon.

Ripple, W. and L. Beschta. 2005. Linking Wolves and Plants Aldo Leopold on Trophic Cascades. Bioscience, Vol. 55, Issue 7, pp. 613-621.