

# A MODEL ORDINANCE FOR ENERGY PROJECTS

A Guide for Oregon Cities and Counties on Siting:

- Wind, Solar, Biomass, Geothermal and Cogeneration Projects
- Electric Power Transmission and Distribution Lines
- Natural Gas and Petroleum Pipelines
- Biofuel Production Plants

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OREGON  
DEPARTMENT OF  
ENERGY

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## I. INTRODUCTION

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Over the years, local government planners have occasionally asked the Oregon Department of Energy for guidance in planning for energy project development within their jurisdictions. This guide is a response to those requests, and we hope it will prove helpful to local governments in planning for energy projects. Because of space and location requirements, most new locally regulated electric generation projects will likely be located in farm, forest or other county-controlled rural zones. In contrast, for more urban areas, this guide may be most helpful in the siting of locally regulated power lines, pipelines and industrial cogeneration projects.

In general, cities and counties have siting authority over energy projects that are below a certain size or generating capacity. The Oregon Energy Facility Siting Council (“Siting Council”) regulates larger energy facilities.<sup>1</sup> The thresholds for Siting Council jurisdiction are determined by the Legislature and are defined in Oregon Revised Statutes (ORS) 469.300. The Siting Council does not regulate hydroelectric development. Instead, the Oregon Water Resources Commission has the authority to appropriate water and issue licenses for hydroelectric development.

Though the Siting Council regulates large energy facilities, it would be misleading to say that local energy project planning is limited to energy projects that have little land use impact. Even “small” energy projects could cause significant impacts for a city or county. For example, counties may receive land use applications for wind energy projects that have a generating capacity of up to 105 megawatts. A 105-megawatt wind energy project would consist of many large wind turbines spread over many acres of land.

Cities and counties may face planning decisions for the following types of energy projects:

- Thermal power or combustion turbine electric generation projects having a nominal electric generating capacity of less than 25 megawatts.
- Electric generation projects having a nominal electric generating capacity greater than 25 megawatts but found to be exempt from Siting Council jurisdiction under ORS 469.320(2).
- Wind or solar electric generating projects having a peak generating capacity of less than 105 megawatts.
- Geothermal electric generating projects with a peak generating capacity of less than 38.8 megawatts.
- Electric transmission and distribution lines carrying less than 230 kilovolts.
- Electric transmission and distribution lines less than 10 miles in length.
- Natural gas or petroleum pipelines less than 16 inches in diameter.
- Natural gas or petroleum pipelines less than 5 miles in length.
- Petroleum product pipelines less than 6 inches in diameter.

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<sup>1</sup> Because Oregon law defines the terms “energy facility” and “facility” for statutes relating to the Siting Council’s jurisdiction (ORS 469.300), we use those terms when talking about development under the Siting Council’s authority and the term “energy project” when talking about development under a local government’s authority.

- Petroleum product pipelines less than 5 miles in length.
- Biofuel production facilities, if the fuel produced is capable of being burned to produce the equivalent of less than six billion Btu of heat a day or if the facility is otherwise exempt from Siting Council jurisdiction under ORS 469.320(2).
- Wind measurement devices that are not related to energy facilities under Siting Council jurisdiction.

In addition, a local government may decide to take a broader view of what constitutes an “energy resource.” For example, energy resources might include not only sources of energy, such as wind and solar resources, but also energy-related projects or structures such as industrial thermal loads, transmission line and pipeline corridors and existing small power plants used in cogeneration or other on-site electricity generation. Local knowledge plays an essential role in determining the specific energy resources that might be addressed by a local energy ordinance.

The centerpiece of this guide is Section II, the model ordinance for siting energy projects. What is important in the model ordinance is not the particular language but rather the set of concepts that the model addresses. Local governments and their planning agencies can adapt the model ordinance language to the style and format of their existing local land use ordinances. They can use the concepts presented in this guide as a framework for discussion of public policies that suit local circumstances and address local energy resources.

By adopting energy ordinances, local governments have the ability to affect energy siting decisions on facilities that have an impact on their city or county but that are outside of local regulatory authority. For example, both the Siting Council and the Water Resources Commission may apply local land use ordinances when they make permitting decisions for energy facilities under their statutory authority. Thus, through the adoption of a land use ordinance that addresses energy development, cities and counties have an opportunity to establish local public policy that will apply not just to locally-regulated projects, but also to all energy facilities within the local area. *See Section V for further discussion of the Siting Council’s use of local land use ordinances.*

In sum, the Oregon Department of Energy hopes this guide will:

- Increase understanding and stimulate consideration of energy project siting needs and issues common to Oregon cities and counties.
- Increase local regulatory options and local influence in the siting of large energy facilities through the Siting Council and Water Resources Commission.
- Increase understanding of federal and state laws and their relationships to local land use planning.
- Help cities and counties coordinate with federal and state agencies in the development of energy projects or facilities.
- Promote city and county energy resource planning.
- Increase the effectiveness of local land use regulations applicable to the siting of energy projects or facilities.

*A Model Ordinance for Energy Projects* is a work-in-progress. The Department welcomes comments and suggestions from local planning departments to make future versions more useful.

Please send comments to: John G. White, Oregon Department of Energy, 625 Marion Street NE, Salem, Oregon, 97301-3737 (e-mail: john.white@state.or.us).

## II. MODEL ORDINANCE

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In this section, we present a model ordinance for siting energy projects. The concepts expressed in the model ordinance would likely fit into the conditional use or special use provisions of a city or county development code. Broad policy statements might belong more appropriately in the local government’s comprehensive plan. Matters of writing style, formatting and whether a concept “belongs” in the ordinance or in the comprehensive plan are for the local government to decide.

Generally applicable provisions of the local government’s development code (for example, procedures for applying for and granting variances) should be made applicable to energy projects by appropriate cross-references in the energy project siting provisions. In addition, the local government may wish to define certain terms contained within the siting provisions, such as “significant adverse impact,” or compare their use to terms already defined within the local code.

Our purpose is to engender discussion of the issues that may arise for local governments in planning the development of energy projects. The model ordinance provides a framework of topics for local governments to think about when drafting local regulations for siting energy projects.

In the pages that follow in this section, we present the text of the model ordinance in a column on the left-hand side of the page. On the right-hand side, we provide a “commentary” that describes the intent and rationale of the model ordinance text, notes policy issues and describes options.

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**Section ##**

**ENERGY PROJECT SITING REQUIREMENTS**

**##.01 Energy Policy**

**##.01.01. Planning for Energy Projects**

(1) The [county/city] recognizes that new electric power generation facilities, electric transmission lines and pipelines for natural gas or petroleum will be needed to support the people and the economy of the [county/city].

(2) The [county/city] shall plan for the development of energy resource sites so that development occurs in a timely and orderly manner, with mitigation of any adverse environmental impacts that cannot be avoided.

(3) The [county/city] shall coordinate planning for energy projects with public and privately-owned electric utility companies, with independent developers and with state and federal agencies, including the Oregon Department of Energy, the Oregon Water Resources Department, the Northwest Power Planning Council, Bonneville Power Administration, the Bureau of Land Management and the USDA Forest Service.

**##.01.02. Protecting Energy Resource Sites**

(1) Energy resource sites are sites within the [county/city] where energy sources could be developed. “Energy sources” are among the natural resources protected under Statewide Planning Goal 5. “Energy sources” include naturally occurring locations, accumulations or deposits of one or more of the following resources used for the generation of energy: natural gas, surface water (i.e., dam sites), geothermal, solar and wind areas. The [county/city] shall evaluate energy sources within the [county/city] and shall identify significant energy resource sites.

(2) The [county/city] shall maintain an inventory of energy resource sites as a reference for comprehensive plan amendments, zone

**Commentary**

**1. Energy Policies**

A city or county may choose to adopt policy statements as official expressions of intent concerning resource conservation and energy project development. If adopted, policy statements provide context for the more specific provisions of the planning code. As well, energy resource policies provide guidance to state and federal authorities in the interpretation of the jurisdiction’s energy ordinances.

The definition of “energy sources” (##.01.02) is found in OAR 660-023-0190. Statewide Planning Goal 5 encourages local governments to maintain an inventory of energy resources. The administrative rules implementing Goal 5 include a process for developing an inventory and identifying “significant resource sites” (OAR 660-023-0030). *See further discussion at page 32.*

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changes, conditional use permitting, partitioning and subdividing.

(3) The [county/city] shall conserve and protect significant energy resource sites.

**##.01.03. Siting Energy Projects**

(1) The [county/city] shall require land use siting review for proposed electric generating projects that have a nameplate generating capacity of [50] kilowatts or more and for proposed electric transmission lines and pipelines for natural gas or petroleum, except when land use review is under the jurisdiction of the Oregon Energy Facility Siting Council as described in ORS 469.504 or is pre-empted by a federal agency.

(2) The [county/city] shall avoid duplicating the siting work of other governmental agencies to the extent the [county/city] standards or equivalent standards have been addressed by those agencies. During review of a proposed energy project, the [county/city] may adopt the reports and findings of other government agencies.

(3) The [county/city] shall be the lead coordinating agency in siting energy projects located in the [county/city], except for energy facilities that are under the jurisdiction of the Oregon Energy Facility Siting Council, the Water Resources Commission or the federal government.

(4) The [county/city] shall apply its energy project siting standards through zoning and land development ordinances without conflicting with the applicable standards of other government agencies.

**##.02 Purpose**

The intent of the standards in this section is to ensure timely and orderly development of energy projects to meet energy and economic needs while protecting the environment. These standards allow the [county/city] to protect the public health, safety and general welfare of its citizens. These standards comply with the comprehensive land use plan and with the Statewide Planning

**Commentary**

The “[50] kilowatts or more” threshold in paragraph (1) is a placeholder to be replaced with whatever limit the local government determines appropriate. This limit is the threshold for applying the siting standards. Generators smaller than the threshold level would be exempt.

**2. Purpose**

This ordinance section describes the need for standards relating to the siting of energy projects. It may refer to compliance with the local comprehensive plan and the Statewide Planning Goals.



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Goals.

**##.03 Exempt Energy Projects**

The following types of energy projects have minimal impact on land, air, water, wildlife, community services and cultural resources and are therefore exempt from the standards and conditions in this Section:

- (1) Electric generation equipment intended primarily for residential or agricultural use that has a generating capacity of less than [50] kilowatts.
- (2) Wind turbines intended primarily for residential or agricultural use that have a generating capacity of less than [50] kilowatts and that are less than 200 feet in height. A single tax parcel may have more than one exempt wind turbine.
- (3) A wind measurement device that is less than 200 feet in height, if it is for temporary use for a period not to exceed [24] months.
- (4) Photovoltaic panels mounted on residential, commercial or industrial structures that generate power for that structure.
- (5) Photovoltaic panels mounted on poles or the ground that do not exceed [400] square feet in area and that generate power for an adjacent residential, commercial or industrial use.

**Commentary**

**3. Exempt Energy Projects**

Some energy projects or equipment may be small enough and have such minimal impact that they should be exempt from the detailed standards and additional review steps required by the ordinance. The model ordinance proposes to exempt smaller electric generation projects designed for individual property-owner, agricultural or business use rather than for commercial power generation.

A higher capacity limit on exempt projects may be appropriate depending on the desires of the county or city; the “[50] kilowatts” threshold in paragraphs (1) and (2) is a placeholder to be replaced with whatever limit the local government determines appropriate. In specifying a limit, the local government should consider the generating capacity of commercially-available small-scale wind turbines.

The 200-foot height restriction in paragraphs (2) and (3) reflect the aviation safety requirements for warning lights on structures 200-feet-tall or greater.

The “[24] months” threshold in paragraph (3) is illustrative. Local governments should select an appropriate threshold to define a temporary facility, considering the duration of wind data a developer will need to obtain financing.

The 400-square-foot photovoltaic panel size restriction in paragraph (5) is a placeholder. A larger or smaller area restriction may be appropriate depending on the typical panel sizes of commercially-available photovoltaic equipment.

Customer-owned, small energy generation projects that are

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**Commentary**

**##.04 Energy Projects Subject to Sections ##.05 through ##.07**

(1)The standards and procedures in Sections ##.05 through ##.07 apply to the following types of power generation, transmission and pipeline projects, except projects that are exempt under Section ##.03:

- (a) Thermal power or combustion turbine electric generation projects with a nominal electric generating capacity of less than 25 megawatts.
- (b) Electric generation projects having a nominal electric generating capacity greater than 25 megawatts found to be exempt from Oregon Energy Facility Siting Council jurisdiction under ORS 469.320(2).
- (c) Wind generation projects with a nominal electric generating capacity of less than 105 megawatts.
- (d) Wind measurement devices more than 200 feet in height or intended to be used for more than [24] months.
- (e) Solar energy projects with a nominal electric generating capacity of less than 105 megawatts.
- (f) Geothermal energy projects with a nominal electric

eligible for “net metering” would be exempt, although the local utility company distributes some of the output to other users. Oregon’s net metering law (ORS 757.300) applies to solar, wind, hydroelectric and fuel cell systems that have a generating capacity of 25 kilowatts or smaller. Net metering allows electricity to flow through a single meter to and from customers who generate their own power, which allows an offset of the electricity the customer uses. The utility company credits the customer at the end of the billing period for the offsets at the full retail rate or, if the utility installs a second meter to measure generator output, at the avoided cost rate.

**4. Covered Energy Projects**

The model ordinance lists the types and sizes of energy projects that are subject to local development standards and permitting. The projects paragraph (1) describes are outside the jurisdiction of the Oregon Energy Facility Siting Council (“Siting Council”). ORS 469.300(11) establishes the jurisdictional thresholds of the Siting Council by defining “energy facility.”

The Oregon Legislature can change Siting Council jurisdiction and has done so in the past. To conform to future statutory changes, a local government should periodically review the energy ordinance and revise as necessary.

Hydroelectric projects are not included because the Oregon Water Resources Department and Water Resources Commission have essentially complete review and approval authority over hydroelectric projects at the state level.

Permanent wind measurement devices may be constructed as part of a wind generation project, and these structures would be subject to the ordinance. Temporary wind measurement devices are

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generating capacity of less than 38.85 megawatts.

(g) Electric transmission and distribution lines carrying less than 230 kilovolts or less than 10 miles in length.

(h) Natural gas or petroleum pipelines of less than 16 inch diameter or less than 5 miles in length.

(i) A plant that converts biomass to a gas, liquid or solid product or combination of such products intended to be used as a fuel, unless any one of such products is capable of being burned to produce the equivalent of six billion Btu of heat a day.

(2) The provisions in Sections ##.06 and ##.07 are also “applicable substantive criteria,” as described in ORS 469.504, for energy facilities that are subject to the jurisdiction of the Energy Facility Siting Council.

**Commentary**

structures that would be erected to measure the wind resource at a site before building a wind generation project. Temporary wind measurement devices (as defined in the section ##.03) would not be subject to the ordinance.

Subparagraph (1)(i) would apply to ethanol or biodiesel production plants that have a production capacity below the jurisdictional threshold of the Siting Council. The language in this subsection mirrors the definition in ORS 469.300(11)(G). The limit of “six billion Btu of heat a day” is the equivalent of approximately 26 million gallons per year of ethanol or 18 million gallons per year of biodiesel.

Under ORS 469.504(1)(b), the Siting Council may decide whether a proposed facility complies with the statewide planning goals by applying the “applicable substantive criteria” recommended by the “special advisory group” or determined independently by the Siting Council.

Paragraph (2) provides that the standards of sections ##.06 and ##.07 are designated by the local government as applicable substantive criteria under ORS 469.504. Several of the provisions in sections ##.06 and ##.07 address the same concerns as standards that have been adopted by the Siting Council. In those instances, the model ordinance provides that, for facilities that are subject to Siting Council jurisdiction, compliance with the Siting Council standard would satisfy the requirements of the corresponding local provision.

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**##.05 Permitting Process for Energy Projects**

**##.05.01. Application**

An applicant for a Conditional Use/Special Use permit must submit an application to the [county/city] Planning Department on the form prescribed by the Department. An application for approval of an energy project must include text and maps sufficient to show that the proposed facility would comply with the General Standards in Section ##.06 and the applicable Specific Standards in Section ##.07. The application must include the following:

- (1) A general description of the proposed energy project, including a legal description of the property on which the project would be located.
- (2) Maps showing the physical features and land uses of the project area, both before and after construction of the proposed energy project. The applicant must include at least one map printed on a standard 8 1/2" x 11" page. The applicant must include maps or color photographs that show:
  - (a) The project area boundaries.
  - (b) The location, height and dimensions of all existing and proposed structures and fencing.
  - (c) The location, grades and dimensions of all temporary and permanent on-site roads and access roads from the nearest county or state-maintained road.
  - (d) State and federal resource lands and other protected areas near the project site.
  - (e) Existing topography with contours that vary depending on the size and slope of the site.
  - (f) Water bodies, waterways, wetlands and drainage channels.
  - (g) The location of and distance to residences and other noise sensitive properties that could be affected by noise generated by the proposed energy project.

**Commentary**

**5. The Permitting Process**

All cities and counties have ordinances that describe the land use permitting procedures. We do not suggest that local governments need to modify their current procedures to accommodate energy project permitting. The local government could address permitting process requirements by including a cross-reference to the applicable section of the local government's development code.

Subsection ##.05.01 addresses the content of a land use application for an energy project. It suggests the level of detail regarding a proposed energy project that an applicant should provide to the local planning authority. This level of detail could be included in the development code, if appropriate, or could serve as guidance to the planning authority to use in designing an application form.

Because of the size and complexity of energy projects, the local government should require sufficient maps, documentation of other permits and licenses needed, development plans and other information the city or county will need to review the request.

We recommend that planning departments have an informal procedure for meeting with a potential applicant before the applicant submits a land use application. Such advance communication helps the planning department understand the scope of the project. It also provides an opportunity to answer the applicant's questions about standards and application requirements. This will also help ensure that the applicant submits adequate information in the application.

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- (h) The location and distance to public or private airports or airstrips.
- (i) For a wind power generation facility, copies of all baseline wildlife studies applicable to the project site.
- (j) For a wind power generation facility, the direction of prevailing winds across the project area.
- (3) A list of permits, approvals or other actions that the applicant has requested or will request from other government agencies or from public or privately-owned utility companies serving the site.
- (4) An explanation of all construction and other development associated with the proposed energy project and how that construction and development complies with the approval standards in Sections ##.06 and ##.07.
- (5) A transportation plan showing how vehicles would access the site and describing the impacts of the proposed energy project on the local and regional road system during construction and operation.
- (6) A revegetation plan for restoring areas temporarily disturbed during construction.
- (7) A drainage and erosion control plan for construction and operation developed in consultation with the [county/city] public works department.
- (8) A fire protection plan for construction and operation of the facility.
- (9) A plan to protect any archaeological, historical or cultural sites or artifacts found at the site.
- (10) A description of actions the applicant would take to restore the site to a useful, non-hazardous condition upon project termination.
- (11) A detailed cost estimate for site restoration in current-year dollars, including an explanation of the basis for cost estimates and assumptions.

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**##.05.02. Avoidance of Duplication**

The applicant may incorporate by reference any information developed or submitted in any other application if the applicant submits a copy or summary of the referenced material, identifies the proceeding in which it was submitted and the outcome of that proceeding and explains the relevance of the information to the approval standards.

**##.05.03. Application Fee**

The applicant must pay the appropriate fee [cross-reference to fee schedule] when the application is submitted to the county. However, if the applicant is a federal agency, the applicant may pay the county’s actual cost of processing an application at any time before the effective date of the county decision.

**##.05.04. List of Property Owners**

The applicant must submit, with the application, a list of the names and mailing addresses of all property owners within 500 feet of the project area (including the route of any related electric transmission or distribution lines or natural gas or petroleum pipelines).

**##.05.05. Notice**

Within 10 days after acceptance of the application, the [county/city] Planning Department shall notify affected property owners and the public of the pending review of the Conditional Use or Special Use Permit application for an energy facility.

**##.05.06. Decisions**

The procedures for review and action for a Conditional Use or Special Use Permit [cross-reference applicable section of the development code], including public hearings, apply to energy projects described in this section.

**Commentary**

Subsections ##.05.02 through ##.05.08 address other aspects of the permitting process in a somewhat cursory manner. We assume that local governments already have included detailed permitting procedures in other provisions of the local development codes. The energy ordinance could cross-reference these provisions.

Some energy projects may proceed in phases or use existing rights-of-way or other components previously approved to reduce cumulative impacts. Subsection ##.05.02 allows an applicant to include by reference studies or information previously submitted for other projects to avoid duplication of effort.

An energy project may require a higher than normal application fee to cover staff analysis, issuance of notice and public hearings. The local government, therefore, may consider adopting a special fee rate for energy projects.

An energy project may cover several acres, and some projects (for example, transmission lines, pipelines and wind projects) may cross zoning boundaries. Subsection ##.05.04 makes the applicant responsible for compiling a list of nearby property owners for the purpose of notification. If the scope of the proposed project is very large, the local government may choose to establish a broader notification area.

Due to the potential short-term and long-term impacts of energy projects, a city or county may want to establish different or additional public notice procedures than subsection ##.05.05 describes. If public hearings are part of the review procedures, then additional measures, such as published notice, should be incorporated into special notice requirements for review of an energy facility.

Subsection ##.05.06 applies standard procedures to the review of

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**##.05.07. Duration**

The applicant must begin substantial construction of the energy project within [two] years from the date of final Conditional Use or Special Use approval. This deadline may be extended by modification of the permit as described in subsection ##.05.08.

**##.05.08. Modification**

The procedures for modification of the terms and conditions of a Conditional Use or Special Use permit [cross-reference to applicable section of the development code] apply to energy projects.

**##.06 General Standards for Energy Projects**

The following standards apply to review and approval of all energy projects described in Section ##.04. The applicant for a Conditional Use or Special Use permit must demonstrate that the energy project meets these standards. In addition, the applicant must demonstrate compliance with the Specific Standards in Section ##.07. The provisions in Section ##.06 are “applicable substantive criteria,” as described in ORS 469.504, for energy facilities that are within the jurisdiction of the Energy Facility Siting Council.

**Commentary**

proposed energy projects. An appropriate cross-reference to applicable code provisions should be added.

Many cities or counties may limit the duration of a Conditional Use or Special Use approval to a 12-month period. That is, construction must begin within one year or the approval will lapse. The time needed for completion of construction of an energy facility depends on the demand for energy, negotiation of a power sales contract, the wholesale price for electricity, the processing time needed for other state or federal permits or approvals and other factors. Subsection ##.05.07 requires substantial construction to begin within “[two] years,” but this is a placeholder. The local government may choose a deadline for construction to begin that is longer, or shorter, than the two years suggested in the model ordinance provision.

**6. General Standards**

The planning approach of the model ordinance assumes that the local government would review proposed energy projects to assess potential impacts or conflicts with other land uses and to establish site-specific conditions, rather than allow the use outright in a zone. The local government may choose to allow some types of energy projects in some zones or may choose to prohibit some types of energy projects in some zones.

The “General Standards” apply to all non-exempt energy projects described in the model ordinance. These standards cover typical concerns that local governments might have about such land uses. The local government would determine whether these standards are satisfied before approving a permit for the proposed energy project. In addition, the local government would determine whether the proposed energy project complies with the “Specific

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**##.06.01. Comprehensive Plan**

The site of the proposed energy project:

- (1) Is in an area designated in the [county/city] comprehensive land use plan as suitable for an energy project of the size and type proposed, or
- (2) Complies with other applicable policies of the local comprehensive plan and with the Statewide Planning Goals.

**##.06.02. Federal and State Protected Areas**

- (1) The proposed site of the energy project is not on federal or state protected lands or special resource areas unless the applicant provides documentation from the responsible federal or state management agency that either:
  - (a) The responsible management agency has reviewed the proposed facility, and the agency has authorized the facility developer to proceed, or
  - (b) The proposed facility is an accessory facility to an existing permitted use on the federal or state land, and the responsible management agency will permit a change or addition to the

Standards” in section ##.07.

Some concerns that we might otherwise include here are likely covered under land use provisions that the local government has already adopted in other sections of the local land use code. For example, the local government might choose to address seismic issues under the building permit process rather than adopt a seismic standard in the energy ordinance.

(a) Comprehensive Plan (##.06.01)

Paragraph (1) of this standard applies if the applicant proposes to locate an energy project in an area that the local government has previously determined appropriate for such uses. Paragraph (2) provides an alternative if the adopted comprehensive plan does not designate specific areas for siting energy projects. Paragraph (2) precludes energy projects in areas where the comprehensive plan specifically prohibits such use.

Statewide Planning Goal 5 requires local governments to have a program to identify and protect energy resource sites within their jurisdiction. *See further discussion at page 32.*

(b) Federal and State Protected Areas (##.06.02)

Except in limited circumstances, this provision prohibits energy projects in federal and state protected areas or on special resource lands such as parks, wildlife refuges, scenic areas, research areas and similar areas. A local government may choose to include a definition of “special resource areas” in this section or in a separate “definitions” section of the local code. Paragraph (1) requires the applicant to provide documentation that the responsible management agency has approved the development.

Subsection ##.06.02 addresses potential adverse effects of an



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existing use.

(2) For facilities subject to Energy Facility Siting Council jurisdiction, a finding by the Council that a proposed energy facility meets the Council's Protected Areas standard, OAR 345-022-0040, satisfies the requirements of paragraph (1).

**##.06.03. Coordination and Documentation.**

The applicant has provided the county with copies of all applications for state and federal permits and licenses at the time of submitting a [county/city] Conditional Use or Special Use application or within 30 days after receiving notice of an incomplete application. Upon the issuance of any state and federal permits or licenses, biological opinions, records of decision, memoranda of understanding, exemptions, variances or other similar authorizations or approvals related to the proposed energy project, the applicant shall provide copies of these documents to the planning authority.

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energy project on federal and state protected areas. A Siting Council standard also addresses this concern. To avoid duplication, paragraph (2) provides that, for facilities subject to the Siting Council's jurisdiction, the requirements of the paragraph (1) are met if the Siting Council finds that a proposed energy facility meets its Protected Areas standard.

(c) Coordination and Documentation (##.06.03)

An applicant for a permit to construct a proposed energy project will need various state and federal permits, licenses and authorizations that cover conditions or concerns that are beyond the scope of local planning. This standard requires the applicant to submit documentation of applications to state or federal agencies at the time the local land use application is submitted or within 30 days after receiving notice of an incomplete application. Requiring submittal of the documents at the beginning of the local review will help the local government conduct a timely review and coordinate with the actions of state and federal agencies.

The 120-day (ORS 227.178) or 150-day (ORS 215.427) city or county time limit to act on a land use application starts when an application is "complete." The local government might specify that an application is complete when the documentation has been submitted.

This provision further requires the applicant to submit copies of permits and other relevant documentation upon issuance by the responsible agency.

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**##.06.04. Exclusive Farm Use Land**

- (1) If the site of a proposed power generating project is in an Exclusive Farm Use zone, the proposed project complies with the standards in ORS 215.296(1) and OAR 660-033-130(17) or 660-033-130(22).
- (2) If the proposed project is a transmission line or pipeline in an Exclusive Farm Use zone, the proposed project complies with the standards in ORS 215.275.
- (3) The applicant shall record in the [county/city] property records a Covenant Not to Sue with regard to generally accepted farm practices.
- (4) Notwithstanding paragraph (1), if the facility is within the jurisdiction of the Energy Facility Siting Council, the exception provisions of ORS 469.504(2) apply.

**##.06.05. Forest Land**

- (1) If the site of a proposed energy project is in a forest zone or mixed farm and forest zone, the proposed use complies with OAR 660-006-0025(4).
- (2) Notwithstanding paragraph (1), if the facility is within the jurisdiction of the Energy Facility Siting Council, the exception

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(d) Exclusive Farm Use Land (##.06.04)

“Commercial utility facilities for the purpose of generating power for public use by sale” are allowed on Exclusive Farm Use land subject to acreage limits in OAR 660-033-0130 (12 acres on high value farmland and 20 acres on non-high-value farmland, unless a Goal 3 exception is taken). In practice, the application of this provision requires the permitting authority to decide whether to treat some components of the proposed project (such as access roads or transmission interconnection lines) as separate from the “power generation facility” for purposes of OAR 660-033-0130.

Under ORS 215.296, a “commercial utility facility for the purpose of generating power for public use by sale” must not force a significant change in accepted farm or forest practices on surrounding lands or significantly increase the cost of accepted farm or forest practices.

Paragraph (4) clarifies the applicable exceptions process. The statute, ORS 469.504(2), describes the findings that the Siting Council must make to take an exception to a statewide planning goal for facilities under its jurisdiction. The statute provides that those findings apply, notwithstanding ORS 197.732, which states the findings that a local government must make to take a goal exception. This paragraph makes clear that ORS 469.504(2) applies to all exceptions decisions made by the Siting Council.

(e) Forest Land (##.06.05)

This standard reflects administrative rules regarding how much land can be used for a non-forest use. OAR 660-006-0025(4)(j) allows a “power generation facility” in forest land, subject to a limit of ten acres, unless a Goal 4 exception is taken. OAR 660-006-0025(4)(q) allows electric transmission lines with right-of-

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provisions of ORS 469.504(2) apply.

**##.06.06. Overlay or Combining Zones**

If the site of the proposed energy project is subject to an overlay zone, the proposed use meets or exceeds the applicable standards in the overlay zone.

**##.06.07. Air Safety**

For all structures that are more than 200 feet above grade or that exceed airport imaginary surfaces as defined in OAR Chapter 738, Division 70, the proposed facility complies with the air hazard rules of the Oregon Department of Aviation. The applicant shall notify the Department of Aviation and the Federal Aviation Agency of the proposed facility and shall submit documentation to the planning authority of any air safety conditions required by those agencies.

**##.06.08. Interference with Communications**

Operation of the energy project would not create conditions that unduly reduce or interfere with public or private television, radio, telemetry or other electromagnetic communication signals. If undue

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way widths of up to 100 feet and new “distribution lines” (including gas or oil lines) with rights-of-way of 50 feet or less in width.

Paragraph (2) clarifies the applicable exceptions process. The statute, ORS 469.504(2), describes the findings that the Siting Council must make to take an exception to a statewide planning goal for facilities under its jurisdiction. The statute provides that those findings apply, notwithstanding ORS 197.732, which states the findings that a local government must make to take a goal exception. This paragraph makes clear that ORS 469.504(2) applies to all exceptions decisions made by the Siting Council.

(f) Overlay or Combining Zones (##.06.06)

This standard recognizes that there may be local resource overlay zones that have separate land use standards. If an applicant proposes to locate an energy project within an overlay zone (such as a flood hazard area, steep slope area, riparian protection corridor, conservation reserve area or scenic corridor), then the standards of the overlay zone would apply to the energy project.

(g) Air Safety (##.06.07)

This standard applies to tall structures such as exhaust stacks and wind turbine towers that are more than 200 feet in height. The Federal Aviation Agency and the Oregon Department of Aviation require these structures to have lighted warning beacons.

(h) Interference with Communications (##.06.08)

A power generation facility or transmission line may cause interference with wireless communications. Although an energy

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reduction or interference occurs, the applicant must restore reception to the level present before operation of the energy project.

**##.06.09. Noise**

The proposed energy project complies with the noise regulations in OAR Chapter 340, Division 35. The applicant must submit a qualified expert's analysis and written report.

**##.06.10. Visual Impact**

(1) The applicant has reduced the visual impact of construction and operation of the proposed energy project to the extent practical by methods that may include, but are not limited to, the following:

- (a) Avoiding state or federal scenic areas and significant visual resources listed in the comprehensive plan.
- (b) Building the energy project near the edge of contiguous timber areas or using the natural topography to obscure the project.
- (c) Using materials and colors that blend with the background unless otherwise required by the Federal Aviation Administration or the Oregon Department of Aviation.
- (d) Retaining or planting vegetation to obscure views of the energy project; and
- (e) Setting the energy project back from the edge of public arterial rights-of-way and from Type F and Type D streams.

(2) For facilities subject to Energy Facility Siting Council

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project would be designed to prevent such interference, it may not be possible to determine whether such an effect occurs until after the facility is operating.

(i) Noise (##.06.09)

The Oregon Environmental Quality Commission (EQC) administrative rules regulate noise from industrial sources, including power generation projects. Local governments may rely on the EQC rules or adopt their own local noise standards. Although the EQC rules are in effect, the Department of Environmental Quality no longer has resources to administer a noise regulation program. Therefore, enforcement is a matter of local authority. The model ordinance standard requires compliance with the EQC rules.

(j) Visual Impact (##.06.10)

This standard allows the local government to consider standards to mitigate the visual impact of a proposed energy project in a designated scenic area or corridor. The local government may need to designate visual resources it considers “significant” and include that information in its comprehensive plan.

This standard refers to type D and F streams. Oregon Department of Forestry rules define these resources in OAR 629-635-0200.

Some of these general standards on visual impact may not be appropriate for wind energy projects. Section ##.07.01 of the model ordinance suggests other visual standards for wind energy projects.

Paragraph (1) addresses potential adverse effects of an energy project on scenic areas. A Siting Council standard also addresses this concern. To avoid duplication, paragraph (2) provides that,

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jurisdiction, a finding by the Council that a proposed energy facility meets the Council's Scenic and Aesthetic Values standard, OAR 345-022-0080, satisfies the requirements of paragraph (1).

**##.06.11. Scenic Area Corridor.**

(1) The proposed energy project is not within a formally-designated scenic corridor. Scenic corridors include federal or state scenic byways, scenic highways, scenic areas, scenic waterways and local scenic view corridors listed in the comprehensive plan.

(2) If the proposed energy project is adjacent to a formally-designated scenic corridor, the applicant agrees to implement mitigation measures that would protect the resource values of the designated scenic corridor as a condition of approval. Such measures may include, but are not limited to, using colors that blend with the background, setting the development back from a right-of-way or stream corridor, using the natural topography to screen the energy project and retaining or planting vegetation that would obscure the view of the energy project within the scenic corridor.

(3) For facilities subject to Energy Facility Siting Council jurisdiction, a finding by the Council that a proposed energy facility meets the Council's Scenic and Aesthetic Values standard, OAR 345-022-0080, satisfies the requirements of paragraphs (1) and (2).

**##.06.12. Fish, Wildlife and Native Plant Protection**

(1) The proposed energy project can be designed, constructed and operated without significant adverse impact to fish, wildlife and native plant resources, including fish and wildlife habitat, migratory routes and state or federally-listed threatened or endangered fish, wildlife or plant species. The applicant agrees to implement monitoring and mitigation actions that the planning authority determines appropriate after consultation with the Oregon Department of Fish and Wildlife and the Oregon Department of Agriculture.

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for facilities subject to the Siting Council's jurisdiction, the requirements of the paragraph (1) are met if the Siting Council finds that a proposed energy facility meets its Scenic and Aesthetic Values standard.

(k) Scenic Area Corridor (##.06.11)

This standard requires the applicant to consider the effect of a proposed energy project on nearby local, state or federal scenic corridors. Many parts of Oregon have designated state or federal scenic highways or scenic byways. An energy project within or near a corridor could adversely affect the scenic value of the corridor.

Paragraphs (1) and (2) address potential adverse effects of an energy project on scenic areas. A Siting Council standard also addresses this concern. To avoid duplication, paragraph (3) provides that, for facilities subject to the Siting Council's jurisdiction, the requirements of the paragraphs (1) and (2) are met if the Siting Council finds that a proposed energy facility meets its Scenic and Aesthetic Values standard.

(l) Fish, Wildlife and Native Plants (##.06.12)

This standard provides for the protection of fish and wildlife habitat and sensitive fish, wildlife and plant species. The standard provides for consultation with the Oregon Department of Fish and Wildlife (ODFW) and the Oregon Department of Agriculture (ODA) to determine appropriate monitoring and mitigation actions. Appropriate actions are actions that would avoid or mitigate for significant adverse impact on fish, wildlife or native plant resources. ODFW has adopted rules and standards to

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(2) For facilities subject to Energy Facility Siting Council jurisdiction, findings by the Council that a proposed energy facility meets the Council's Fish and Wildlife Habitat standard, OAR 345-022-0060, and Threatened and Endangered Species standard, OAR 345-022-0070, satisfy the requirements of paragraph (1).

**##.06.13. Fire Protection**

The applicant agrees to implement fire protection measures for the construction and operation of the energy project that are acceptable to the [county/city] and other land management agencies adjacent to the proposed energy project, if any. For power generation projects, the applicant must have an approved fire prevention or protection plan in place with the [county/city] or local fire protection district during construction and operation.

**##.06.14. Access and Parking**

The applicant agrees to implement adequate plans to:

- (1) Use existing roads for access to the extent practical and avoid construction of on-site roadways as much as possible.
- (2) Restore the natural grade and revegetate any temporary access

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“mitigate impacts to fish and wildlife habitat caused by land and water development actions” in OAR Chapter 635, Division 415. Under ORS 496.172, ODFW maintains a list of threatened or endangered fish and wildlife species and a list of state sensitive species. Under ORS 564.105, ODA maintains a list of threatened or endangered plant species.

The local development code may already define special overlay zones (such as zones for habitat protection or migratory corridors), and the standards applicable to those overlay zones may take precedence under subsection ##.06.06.

Paragraph (1) addresses potential adverse effects of an energy project on wildlife. Siting Council standards also address these concerns. To avoid duplication, paragraph (2) provides that, for facilities subject to the Siting Council’s jurisdiction, the requirements of the paragraph (1) are met if the Siting Council finds that a proposed energy facility meets its Habitat standard and Threatened and Endangered Species standard.

(m) Fire Protection (##.06.13)

Many rural areas have volunteer fire protection districts. Some sparsely populated areas may not have any organized fire protection district. This standard addresses fire protection for the energy project and surrounding public lands. Fire protection measures would be included as conditions on the land use permit.

(n) Access and Parking (##.06.14)

The objectives of this standard are to reduce the impact from new road construction and to provide for year-round access by emergency vehicles. The local government could add a cross-reference here to other parking or access provisions in the local

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roads, equipment staging areas and field office sites used during construction of the energy project. The applicant must specify the type and amount of seed or plants used to revegetate the disturbed areas and a timeline to complete this work.

(3) Construct and maintain access roads for all-weather use to assure adequate, safe and efficient emergency vehicle and maintenance vehicle access to the site.

**##.06.15. Local Roads**

The applicant has secured, or can secure, all necessary approvals from the local government or the State Highway Division of access points for project roads and parking areas at the project site.

**##.06.16. Protection of Historical and Cultural Resources**

(1) Construction and operation of the proposed energy project would not cause significant adverse impact to historical and cultural resources identified by the State Historic Preservation Office or identified in the local comprehensive plan or cultural resource inventory. The applicant agrees to implement a plan to preserve any previously undiscovered archeological, historical or cultural artifacts discovered during construction or operation of the energy project in compliance with applicable county, state and federal law.

(2) For facilities subject to Energy Facility Siting Council jurisdiction, a finding by the Council that a proposed energy facility meets the Council's Historic, Cultural and Archaeological Resources standard, OAR 345-022-0090, satisfies the requirements of paragraph (1).

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code. In addition, the standard provides for restoration of areas temporarily disturbed during construction, such as temporary access roads and construction laydown areas.

(o) Local Roads (##.06.15)

This standard provides for local or state control of access points to and from an energy project or operations area. The construction of the proposed energy project may require the use of large trucks and cranes that need a larger-than-normal turning radius. In addition, the size and weight of construction equipment may damage local roads – particularly the edges and shoulders – and bridges. The local government may include a permit condition requiring the applicant to repair any road damage from construction vehicles.

(p) Protection of Historical and Cultural Resources (##.06.16)

This standard requires the applicant to protect historical and cultural resources identified by the state or included in the local government's cultural resources inventory. The applicant must have a plan on file that describes how newly discovered artifacts would be cataloged and protected. If the energy project could disturb traditional tribal lands, the city or county should include a requirement of consultation with the affected tribes.

If artifacts are discovered during construction, state law requires a halt to construction activities and notification of the Oregon State Historic Preservation Officer to protect previously unidentified cultural resources (ORS 97.745 and 358.920). The model ordinance, in addition, requires notification of the local

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**##.06.17. Erosion and Sediment Control**

The applicant agrees to conduct all roadwork and other site development work in compliance with a National Pollutant Discharge Elimination System (NPDES) permit as required by Oregon Department of Environmental Quality regulations. The applicant must have an NPDES permit and an erosion and sediment control plan before beginning construction. The plan must include both general “best management practices” for erosion control during and after construction and permanent drainage and erosion control measures to prevent damage to local roads or adjacent areas and to minimize sediment run-off into waterways.

**##.06.18. Protection of Wetlands**

Construction of the proposed energy project would not have a

government.

Paragraph (1) addresses potential adverse effects of an energy project on historic and cultural resources. A Siting Council standard also addresses this concern. To avoid duplication, paragraph (2) provides that, for facilities subject to the Siting Council’s jurisdiction, the requirements of the paragraph (1) are met if the Siting Council finds that a proposed energy facility meets its Historic, Cultural and Archaeological Resources standard.

(q) Erosion and Sediment Control (##.06.17)

Ground disturbance caused by the construction of the energy project and associated access roads, pipelines or transmission lines can lead to erosion and add sediment to waterways. This standard requires that an erosion and sediment control plan be in place before construction, if required by Department of Environmental Quality regulations. Typical mitigation and control measures are straw bales or rounds, erosion control fences, topography change and seeding of disturbed areas. This section could include cross-references to other development code sections that address erosion.

An NPDES 1200-C stormwater runoff permit is required for construction on any site that is one acre or more in area (OAR 340-045-0033(10)(i)).

In addition, the energy project may require an NPDES 1200-Z stormwater runoff permit for operation or a state Water Pollution Control Facilities (WPCF) permit issued by DEQ.

(r) Wetlands (##.06.18)

The Oregon Removal-Fill Law (ORS 196.800 through 990) and



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significant adverse impact on wetlands.

**##.06.19. Weed Control**

The applicant agrees to implement a plan for weed control during construction and operation of the proposed energy project.

**##.06.20. Dust Control**

The applicant agrees to construct all non-paved temporary or permanent on-site roads and staging areas using compacted base-rock and gravel. During the site development and construction, the applicant must regularly water roads and staging areas as necessary to minimize dust and wind erosion.

**##.06.21. Signs**

The applicant agrees not to erect outdoor displays, signs or billboards within the energy project site, except:

- (1) Signs required for public or employee safety or otherwise required by law.
- (2) No more than two signs relating to the name and operation of the energy project; and
- (3) Signs specifically approved in the land use permit.

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regulations adopted by Division of State Lands (OAR 141-085-0005 through 141-085-0090) protect wetland areas. A permit is required if 50 cubic yards or more of material is removed, filled or altered within any waters of the state at the proposed site

(s) Weed Control (##.06.19)

Ground disturbance during construction of the energy project and associated access roads, pipelines or transmission lines exposes areas for weeds to become established. The spread of noxious weeds is a serious problem, especially in rural areas of the state. For counties with a large agricultural base, an invasion of weeds can affect the value of cropland. This standard requires the applicant to implement a plan for weed control. This section could also include cross-references to other code sections that address weed control.

(t) Dust Control (##.06.20)

Airborne dust can be a health and safety issue, especially in the dryer parts of the state. Requiring a rock base for roadways and staging areas reduces dust from vehicles and construction activity. In addition, construction contractors may have to use water for dust suppression in windy areas.

(u) Signs (##.06.21)

This standard allows for project identification signs and signs required for safety but generally prohibits other signs and outdoor displays. The local government could add a cross-reference to other provisions of the local development code regarding signage. The model ordinance language includes flexibility for the planning authority to allow additional signage if special circumstances warrant.

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**##.06.22. Termination and Decommissioning**

(1) The applicant agrees to the following as conditions of the land use permit:

- (a) If the applicant ceases operation of the energy project or begins, but does not complete, construction of the project, the applicant shall restore the site according to a plan approved by the planning authority. The applicant shall submit a plan that ensures that the site will be restored to a useful, non-hazardous condition without significant delay, including but not limited to the following:
  - (i) Removal of aboveground and underground equipment, structures and foundations to a depth of at least three feet below grade. Underground equipment, structures and foundations need not be removed if they are at least three feet below grade and do not constitute a hazard or interfere with agricultural use or other resource uses of the land.
  - (ii) Restoration of the surface grade and soil after removal of aboveground structures and equipment.
  - (iii) Removal of graveled areas and access roads.
  - (iv) Restoration of surface grade and soil.
  - (v) Revegetation of restored soil areas with native seed mixes, plant species suitable to the area, consistent with the [county/city]'s weed control plan.
  - (vi) For any part of the energy project on leased property, the plan may incorporate agreements with the landowner regarding leaving access roads, fences, gates or buildings in place or regarding restoration of agricultural crops or forest resource land.
  - (vii) The plan must provide for the protection of public health and safety and for protection of the environment and natural resources during site restoration.
  - (viii) The plan must include a schedule for completion of site

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(v) Termination and Decommissioning (##.06.22)

An applicant might begin construction of an energy project but fail to complete it; or an applicant might operate a completed energy project for a time and then shut it down. This standard requires the applicant to restore the site if construction stops before completion or the energy project is shut down. In addition, the standard provides financial protection to the local government if the applicant fails to restore the site.

Paragraph (1) addresses termination and decommissioning of energy projects. The financial assurance provided by paragraph (1)(b) would protect the local government from the cost of site restoration, if the applicant fails to restore the site as required under paragraph (1)(a).

A Siting Council standard also addresses this concern. To avoid duplication, paragraph (2) provides that, for facilities subject to the Siting Council's jurisdiction, the requirements of paragraph (1) are met if the Siting Council finds that a proposed energy facility meets its Retirement and Financial Assurance standard. In addition, a financial assurance bond or letter of credit is a mandatory condition in all site certificates (OAR 345-027-0020(8)). This site certificate condition protects both the local government and the state from the cost of site restoration.

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restoration work.

- (b) Before beginning construction of the energy project, the applicant must submit a bond or letter of credit in a form and amount satisfactory to the [county/city], assuring the availability of adequate funds to restore the site to a useful, non-hazardous condition, if the operator fails or is otherwise unable to restore the site as required by the permit.
- (c) The amount of the bond or letter of credit shall be adjusted for inflation using the U.S. Gross Domestic Product Implicit Price Deflator, Chain-Weight, as published in the Oregon Department of Administrative Services' "Oregon Economic and Revenue Forecast," or by any successor agency (the "Index"). The applicant shall increase the amount of the bond or letter of credit annually by the percentage increase in the Index and shall pro-rate the amount within the year to the date of retirement. If at any time the Index is no longer published, the [county/city] shall select a comparable index for adjusting the amount.
- (d) The certificate holder shall describe the status of the bond or letter of credit in an annual report submitted to the county/city.
- (e) The bond or letter of credit shall not be subject to revocation or reduction before retirement of the energy project site.

(2) For facilities subject to Energy Facility Siting Council jurisdiction, a finding by the Council that a proposed energy facility meets the Council's Retirement and Financial Assurance standard, OAR 345-022-0050, satisfies the requirements of paragraph (1).

**##.07 Specific Standards for Energy Projects**

The following standards apply to specific types of energy projects described in Section ##.04. These standards apply in addition to the General Standards in Section ##.06. The planning authority must find that the proposed energy project meets the applicable Specific Standards before issuing a Conditional Use/Special Use permit. The provisions in this section are "applicable substantive

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**7. Specific Standards**

In addition to the general standards described above, the energy project siting ordinance might include specific standards applicable to particular types of energy projects. These standards are supplemental requirements applicable to particular types of energy projects in addition to the requirements of the general

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criteria," as described in ORS 469.504, for energy facilities that are within the jurisdiction of the Energy Facility Siting Council.

**##.07.01. Wind Energy Generation**

(1) Visual Impact: To the extent practical, the proposed wind energy project has been designed to minimize visual impact by:

- (a) Using underground electric collection lines (transmission lines that connect each turbine to a substation).
- (b) Using turbine towers of uniform design, color and height.
- (c) Using the minimum lighting necessary for safety and security purposes in addition to aviation warning lights required by federal or state law.
- (d) Using appropriate techniques to prevent casting glare from the on-site area lighting.
- (e) Using existing roads to provide access to the site, or if new roads are needed, minimizing the amount of land used for new roads and locating roads to reduce visual impact and other adverse environmental impacts such as erosion.
- (f) Using existing substations, or if new substations are needed, minimizing the number of new substations.

(2) Wildlife Resources: The proposed wind energy project has been designed to reduce the likelihood of significant adverse effects on wildlife and wildlife habitat. Measures to reduce significant impact may include, but are not limited to, the following:

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standards.

The local government may determine that not every type of energy project requires additional specific standards. The general standards alone may be adequate for some energy projects, such as small natural gas or biogas-fueled generator sets.

To illustrate the concept, the model ordinance includes specific standards for the following types of energy projects: cogeneration projects, wind energy generation, solar electric generation, transmission lines and natural gas or petroleum product pipelines.

(a) Wind Energy Generation (##.07.01)

Under section ##.03, the model ordinance exempts wind turbines intended primarily for residential or agricultural use that have a generating capacity of less than 50 kilowatts and that are less than 200 feet in height. The 50-kilowatt limit is a placeholder to be replaced with whatever limit the local government determines appropriate.

The model ordinance is intended to apply to commercial-scale wind turbines. These turbines are likely to be large (exceeding 200 feet in overall height). The electric generating capacity of each turbine is likely to exceed 500 kilowatts (0.5 megawatts). Commercial wind generation turbines now operating in Oregon range from 0.66 megawatts to 1.5 megawatts each. Wind energy generation projects are likely to include multiple turbines operated together within the project site.

The visual impact of wind energy projects can be an issue of concern, especially when the applicant proposes to locate wind turbines near residential or urban areas. To some, the visual impact of the required aviation warning lights is more disturbing than the sight of wind turbines themselves during the daytime. A

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- (a) Conducting biologically appropriate baseline wildlife surveys in the areas affected by the proposed wind energy project to determine wildlife species present and patterns of habitat use.
  - (b) Selecting turbine locations to reduce the likelihood of significant adverse impacts on wildlife based on expert analysis of baseline data.
  - (c) Designing turbine towers to reduce horizontal surfaces for perching.
  - (d) Designing turbine towers and pad-mounted transformers to avoid creation of artificial habitat or shelter for raptor prey.
  - (e) Spreading gravel on turbine pad areas to minimize weeds and to avoid creation of habitat for raptor prey.
  - (f) Using anti-perching protection devices on transmission line support structures and appropriate spacing of conductors.
  - (g) Avoiding construction activities near raptor nesting locations during sensitive breeding periods and using appropriate no-construction buffers around known nest sites.
  - (h) Developing a plan for post-construction monitoring of the wind energy project site using appropriate survey protocols to measure the impact of the project on wildlife in the area.
- (3) **Public Safety:** The proposed wind energy project has been designed and will be operated to protect public safety by measures that may include, but are not limited to, the following:
- (a) Designing turbine blades so that at the closest point, the sweep of the blades is at least 20 feet above the tallest existing or foreseeable obstruction to blade movement.
  - (b) Designing, constructing and operating the facility to exclude the public from close proximity to turbine blades and electrical equipment.
  - (c) Designing, constructing and operating the facility to protect against structural failure of the turbine tower or blades that could endanger the public safety.

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city or county may restrict the location of wind energy projects through zoning designations as a means of addressing visual impact. Within an approved zone, little can be done to mitigate the visual impact of large wind turbines. To use the wind resource effectively, turbines must be placed in open terrain, often on high ground, and the turbine towers must be of sufficient height to operate efficiently and safely.

Paragraph (2) addresses the potential for adverse impacts on wildlife, particularly birds and bats. This has been a significant issue in the siting of wind energy projects. Because baseline wildlife surveys are essential to determine whether a proposed site is appropriate for wind development, they should be required. Such surveys identify the species of wildlife present in the area (including any threatened or endangered species) and patterns of habitat use by wildlife. Baseline surveys can provide information about migratory species and nesting areas. Having this information enables the wind project developer to design the location of turbines and accessory facilities to reduce the likelihood of significant adverse impact on wildlife. The local government should consult with the Oregon Department of Fish and Wildlife regarding the protocols for baseline wildlife surveys and the potential for adverse impacts on wildlife and wildlife habitat.

Post-construction monitoring surveys are important to determine the statistical fatality rate among avian and bat species for comparison with wind generation projects in other areas. Mitigation of significant adverse impacts should be considered if higher-than-average fatality rates occur.

Although large-scale wind turbines are designed to be safe in operation, paragraph (3) suggests specific standards to protect public safety. Setback requirements in paragraph (4) provide a

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(d) Restricting public access to the interior of tubular turbine towers by installing locked access doors.

(4) **Setback:** The proposed wind energy project has been designed so that all above-ground parts of the nearest wind turbine structure are set back from the property line by a distance that is at least 1.5 times the height of the wind turbine structure, including the rotor-swept area, except when the wind energy project extends onto the abutting property.

(5) For facilities subject to Energy Facility Siting Council jurisdiction, a finding by the Council that a proposed wind energy facility meets all requirements necessary for a site certificate satisfies the requirements of paragraphs (1) through (4).

**##.07.02. Solar Energy Generation**

(1) **Acreage:** The proposed solar energy project would occupy less than [40] acres on land zoned for commercial or industrial use or less than [20] acres on land zoned for Exclusive Farm Use.

(2) **Ground Leveling:** The proposed solar energy project has been designed and would be constructed so that ground leveling is limited to those areas needed for effective solar energy collection and so that the natural ground contour is preserved to the greatest extent practical.

(3) **Wildlife Resources:** The proposed solar energy project has been designed to reduce the likelihood of significant adverse effects on wildlife and wildlife habitat. Measures to reduce significant impact may include, but are not limited to, the following:

(a) Designing foundations and support structures for solar equipment to avoid creation of artificial habitat or shelter for

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buffer between wind turbines and neighboring properties, residences or areas accessible to the public. Most existing wind energy projects have been located on private land so that the area in proximity to turbine towers is not accessible without landowner permission. The local government may decide that existing setback ordinances in other parts of the local development code are adequate. In remote rural areas, exceptions to the setback requirements may be justified.

Paragraph (5) applies to facilities subject to the Siting Council’s jurisdiction. If a proposed energy facility meets all requirements necessary for the Council to issue a site certificate, then the concerns addressed by subsection ##.07.01 would be addressed by corresponding site certificate requirements. These requirements include specific standards for wind facilities (OAR 345-024-0010 and -0015), in addition to the Council standards in OAR Chapter 345, Division 22.

(b) Solar Energy Generation (##.07.02)

Under section ##.03, the model ordinance exempts solar electric equipment (photovoltaic panels) that are mounted on the roof of residential, commercial or industrial structures and that generate electric power solely for that structure. It also exempts photovoltaic panels mounted on poles or on the ground that do not exceed the specified size limit and that generate power solely for an adjacent residential, commercial or industrial use.

Solar devices designed to provide domestic hot water are excluded from consideration here.

Solar-thermal generation technology involves a large array of mirrors or other solar concentrating devices (heliostats) that are designed to direct solar radiation on water or another working

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raptor prey.

(b) Controlling weeds to avoid the creation of artificial habitat suitable for raptor prey.

(c) Using anti-perching protection devices on transmission line support structures and appropriate spacing of conductors.

(d) Avoiding construction activities near raptor nesting locations during sensitive breeding periods and using appropriate no-construction buffers around known nest sites.

(e) Using suitable methods such as coloration or sound-producing devices to discourage birds from entering areas of concentrated solar energy near solar-thermal mirrors or other devices that concentrate solar radiation.

(4) A finding by the Energy Facility Siting Council that a proposed energy facility meets the Council’s Fish and Wildlife Habitat standard, OAR 345-022-0060, satisfies the requirements of paragraph (3).

(5) Misdirection of Solar Radiation: The proposed solar energy project has been designed and would be operated to prevent the misdirection of concentrated solar radiation onto nearby property, public roads or other areas accessible to the public.

(6) Public Safety: The proposed solar energy project has been designed and will be operated to protect public safety, including development and implementation of a plan of operating procedures to prevent public access to hazardous areas.

(7) Airport Proximity: The proposed solar energy project is not located adjacent to, or within, the control zone of any airport.

(8) Cleaning Chemicals and Solvents: During operation of the proposed solar energy project, all chemicals or solvents used to clean photovoltaic panels or heliostats would be low in volatile organic compounds and the operator would use recyclable or biodegradable products to the extent possible.

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fluid to produce steam, which is then used to drive a generator.

Currently, there are no large-scale solar electric projects in Oregon that would be subject to the model ordinance according to section ##.04. Some areas of the state may be suitable for such projects.

With current technology, any large-scale solar energy project would require several acres of land to be cost-effective. The local government might choose to limit the size of such energy projects to minimize potential conflict with other land uses. The acreage limits suggested in this standard are placeholders, but the 20-acre limit is consistent with the standard for “commercial utility facility” use on non-high value farmland (OAR 660-033-0130). See section ##.06.04.

Leveling of the ground surface may be necessary for effective use of the solar resource but should be minimized. The wildlife protection provisions are specific to the characteristics of large solar energy projects. The local government should consult with the Oregon Department of Fish and Wildlife about the potential impacts of a proposed solar energy project on wildlife and wildlife habitat.

The model ordinance addresses the risk to public safety from misdirected solar rays from solar-thermal arrays. Photovoltaic panels also have reflective surfaces. The model ordinance therefore excludes solar energy projects from airport control zones. The local government should consult with the FAA or the Oregon Department of Aviation on other possible safety restrictions near airports.

To maintain optimal efficiency of the equipment, the operator of a solar energy project may need to clean heliostats or photovoltaic panels frequently. The model language includes a provision to

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**##.07.03. Cogeneration**

- (1) The proposed cogeneration project would supply thermal energy to an existing or approved industrial or commercial use.
- (2) Except as allowed in this section, an electric transmission line or natural gas or petroleum pipeline necessary for the cogeneration project must be an upgrade to an existing transmission line or pipeline or must otherwise be constructed in an existing right-of-way or utility easement. If the proposed electric transmission line or natural gas or petroleum product pipeline necessary for the proposed cogeneration project is not an upgrade to an existing transmission line or pipeline, the transmission line or pipeline must comply with the standards in Sections ##.07.04 or ##.07.05.

**##.07.04. Electric Transmission or Distribution Lines**

- (1) Use of Existing Routes: To the extent practical, the proposed transmission or distribution line would use developed or approved road and utility rights-of-way or easements that can safely accommodate the proposed line.
- (2) Adjacent to Existing Routes: To the extent practical, any part of the proposed transmission or distribution line outside an existing route would be adjacent to an existing public road or utility right-of-way or easement and would not increase the width of the clearing

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reduce adverse impacts to the soil, plants, animals and ground water from the use of cleaning chemicals and solvents.

(c) Cogeneration (##.07.03)

“Cogeneration” is the sequential production of electricity and thermal energy (usually in the form of steam) from a single fuel source. The user of the thermal energy output is called the “thermal host” or “steam host.” Due to the energy losses associated with transporting steam through a pipeline, a cogeneration facility must be located near the thermal host. For this reason, sites in or near industrial, commercial or mixed-use zones are the most likely sites for cogeneration projects.

If new fuel supply pipelines or electric transmission or distribution lines are needed, then the specific standards for transmission lines and pipelines discussed in subsections ##.07.04 and ##.07.05 below would apply to those proposed supporting facilities.

There may be air quality concerns associated with cogeneration projects. The model ordinance does not address air quality because federal law largely controls regulation of air emissions. The Oregon Department of Environmental Quality has authority for issuing air quality permits (except in Lane County, where the Lane Regional Air Pollution Authority is the permitting agency).

(d) Electric Transmission Lines (##.07.04)

Subsection ##.07.04 reflects a preference for locating new transmission (or distribution) lines within, or adjacent to, existing rights of way. These provisions aim to minimize the creation of new transmission corridors.

The “[125] feet” width limitation on expansion of the clearing for an existing right-of-way and the “[50] feet” width limitation on



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for the existing right-of-way or easement by more than [50] percent and not beyond a maximum width of [125] feet.

(3) New Routes: If all of part of the proposed transmission or distribution line is outside an existing route or not adjacent to an existing route, the permanent right-of-way for the new transmission line route would not exceed [50] feet in width, and:

- (a) The proposed new route would serve an existing or proposed electric generation project that is not adjacent to an existing right-of-way or easement, or
- (b) The proposed new route would result in less adverse energy, environmental, economic and social consequences than would result from using an existing route.

(4) Avian Habitat: The proposed transmission or distribution line has been designed to reduce the likelihood of significant adverse effects on nearby wetlands or water bodies identified as critical bird habitat. Measures to reduce significant impact may include, but are not limited to, the following:

- (a) Locating the transmission line at least 50 feet from the edge of the nearest wetland or water body.
- (b) Separating the transmission line from the nearest wetland or water body by topography or substantial vegetation.
- (c) Locating the transmission line parallel to the prevailing winds.

(5) For facilities subject to Energy Facility Siting Council jurisdiction, a finding by the Council that a proposed energy facility meets the Council's Fish and Wildlife Habitat standard, OAR 345-022-0060, satisfies the requirements of paragraph (4).

**##.07.05. Natural Gas or Petroleum Product Pipelines**

(1) Use of Existing Routes: To the extent practical, the proposed pipeline would use developed or approved road and utility rights-of-way or easements that can safely accommodate the proposed line.

(2) Adjacent to Existing Routes: To the extent practical, any part of

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new right-of-way in paragraphs (2) and (3) are placeholders. The local government would determine appropriate limits based on local circumstances.

If any part of a proposed new transmission line route is in an area zoned Exclusive Farm Use, the applicant must address the requirements of ORS 215.275. Transmission lines with support structures that are not more than 200 feet in height may be considered “utility facilities necessary for public service” under ORS 215.283(1)(d).

For proposed transmission lines that run near or across a water body, the model ordinance has standards to protect waterfowl. The local government would identify “critical bird habitat” after consultation with the Oregon Department of Fish and Wildlife.

A Siting Council standard also addresses potential impacts on wildlife habitat. To avoid duplication, paragraph (5) provides that, for facilities subject to the Siting Council’s jurisdiction, the requirements of paragraph (4) are met if the Siting Council finds that a proposed energy facility meets its Fish and Wildlife Habitat standard.

(e) Natural Gas or Petroleum Pipelines (##.07.05)

The first three paragraphs mirror the provisions for electric transmission lines. Although the preference for existing rights-of-way given above for transmission lines is copied here, public safety concerns may make placement of natural gas or petroleum

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the proposed pipeline outside an existing route would be adjacent to an existing public road or utility right-of-way or easement and would not increase the width of the clearing for the existing right-of-way or easement by more than [50] percent and not beyond a maximum width of [75] feet.

(3) New Routes: If all of part of the proposed pipeline is outside an existing route or not adjacent to an existing route, the permanent right-of-way for the new transmission line route would not exceed [40] feet in width, and:

- (a) The proposed new route would serve an existing or proposed electric generation project that is not adjacent to an existing right-of-way or easement, or
- (b) The proposed new route would result in less adverse energy, environmental, economic and social consequences than would result from using an existing route.

(4) Stream crossings: If the proposed pipeline would cross a stream or river that is important habitat for a state or federally-listed threatened or endangered species, the applicant must use a crossing technique or method approved by the Oregon Department of Fish and Wildlife.

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product pipelines in the right-of-way less desirable.

The “[75] feet” width limitation on expansion of the clearing for an existing right-of-way and the “[40] feet” width limitation on new right-of-way in paragraphs (2) and (3) are placeholders. The local government would determine appropriate limits based on local circumstances.

As with transmission lines, if any part of a proposed new pipeline route is in an area zoned Exclusive Farm Use, the applicant must address the requirements of ORS 215.275. Natural gas or petroleum product pipelines may be considered “utility facilities necessary for public service” under ORS 215.283(1)(d).

The model ordinance includes a standard for protection of fish-bearing streams or rivers that are important habitat for a threatened or endangered species. Consultation with the Oregon Department of Fish and Wildlife would be necessary to determine a suitable crossing method for a proposed pipeline in a particular case. For example, the new pipeline might be hung on an existing road bridge to keep it out of the streambed.

### **III. ENERGY RESOURCES AND STATEWIDE PLANNING GOAL 5**

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Statewide Planning Goal 5 requires local governments to “adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations.” Although Goal 5 does not impose substantive criteria for siting an energy project, cities and counties need to be aware of Goal 5 in planning for energy projects.

The purpose of Goal 5 is “to protect natural resources and conserve scenic and historic areas and open spaces.” Under Goal 5, energy sources are among the natural resources that qualify for protection. “Energy sources” are natural resources used for the generation of energy, including natural gas, hydroelectric dam sites and geothermal, solar and wind resource areas (OAR 660-023-0190).

For energy sources found to be “significant,” the protection required under Goal 5 means to limit new conflicting uses within the impact area and to authorize development of the energy source at the site (OAR 660-023-0190(1)(b)). Measures to protect a resource site from conflicting uses must contain clear and objective standards (OAR 660-023-0050(2)).

The local government may adopt a program to evaluate conflicts and develop a protection program for energy sources on a case-by-case basis (OAR 660-023-0190(2)). An application to develop an energy source within the local government’s jurisdiction would trigger a case-by-case Goal 5 evaluation.

Energy sources “applied for or approved through the Oregon Energy Facility Siting Council” are automatically deemed significant resources. For energy facilities approved by the Siting Council, the local government must amend its comprehensive plan and land use regulations at the time of periodic review to implement the Siting Council decision (OAR 660-023-0190(2)).

### **IV. ENERGY PROJECTS AND SITING ISSUES**

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In this section, we provide additional information about specific types of energy projects. We discuss some but not all of the issues that apply to siting these projects. We have included this section to provide background information for local government officials and staff who may not be familiar with energy technology.

#### **1. Wind Energy Generation**

Local governments could receive land use applications for wind energy projects of up to 105 megawatts (MW) of generating capacity. Such wind energy generation projects could include as many as 100 or more turbines and affect several square miles of land.

County governments have approved the siting of commercial-scale wind energy projects in Umatilla, Gilliam and Sherman counties. The generating capacity of the turbines now operating in these counties ranges from 660 kilowatts (kW) to 1.5 MW each. In the future, even larger turbines will be available to developers of wind energy projects.

The physical size of a wind turbine is proportional to its generating capacity. For example, the 660-kW wind turbines in operation at the Vansycle Ridge Wind Project in Umatilla County are about 165 feet tall at the rotor hub and each blade of the rotor is about 77 feet long. The overall height of these turbines is 242 feet. In contrast, the 1.5 MW turbines at the Klondike Wind

Project in Sherman County are about 213 feet tall at the rotor hub and each blade is about 115 feet long. The overall height is about 328 feet.

Construction of commercial-scale wind projects has direct on-site land impacts. Excavation, trenching and road construction can result in dust emissions and erosion unless appropriate measures are taken to minimize these risks. Ground disturbance may also allow the spread of noxious weeds unless control measures are imposed.

Construction of wind energy projects may have both temporary and permanent impacts on wildlife habitat. During operation, avian and bat fatalities from collision with turbine towers or blades have been a matter of concern. It is easier to avoid adverse impacts by making informed siting decisions before a wind energy project is approved than it is to try to mitigate for significant adverse wildlife impacts after construction. Requiring the applicant to conduct appropriate pre-construction wildlife surveys is essential.

Pre-construction surveys can provide information about the use of a proposed energy project site and vicinity by raptors and migratory species. Pre-construction surveys can also provide information about threatened, endangered or sensitive species that may be in the area. This information allows the applicant to design the proposed wind generation project to avoid or reduce direct impact on important wildlife habitat areas and to schedule construction to avoid critical breeding and nesting periods for threatened, endangered or sensitive species.

It is unwise to locate wind energy projects in known migratory bird routes or in areas of frequent use by raptors for foraging or nesting. It is unlawful to kill or “take” bird species protected under the Migratory Bird Treaty Act, 16 U.S.C. §§ 703-712, (MBTA). Strict liability applies to violations, meaning that “unintentional” killing of a protected species is no defense. A misdemeanor violation of the MBTA can result in a fine of up to \$15,000 and imprisonment for up to 6 months. The MBTA protects more than 830 species of migratory birds. There is additional protection for bald eagles and golden eagles under the Bald and Golden Eagle Protection Act, 16 U.S.C. §668. A civil penalty of \$5,000 per violation may result, even for an unintentional killing of an eagle.

Local governments should consider requiring post-construction monitoring to collect data on avian and bat fatalities. Although impacts to wildlife may be reduced substantially by siting and designing wind energy projects to avoid areas where protected species are likely to be present, post-construction monitoring is necessary to assess the actual impacts of a wind energy project on wildlife. Because wildlife use of the area is likely to vary from year-to-year, at least two years of post-construction monitoring is advisable to ensure a more accurate assessment of actual wildlife impacts.

In making the siting decision, local governments also should consider the visual impact of a proposed wind generation project. The need for high towers and exposure to open terrain is inherent in the function of wind turbines, and therefore visual impact is unavoidable. The greater the distance between the viewer and the turbine string, the less significant is the visual impact. At a distance, even a large wind energy project tends to blend into the background landscape. Nevertheless, it is better to avoid siting commercial-scale wind energy projects near residential areas or within important scenic areas.

Enforcement of building and electrical codes and limiting public access to the wind project site are ways to address public safety risks, such as broken turbine blades, fire or electrical hazards. A wind energy project may pose an air traffic hazard. Typically, commercial-scale wind turbines

exceed 200 feet in height (including the length of turbine blades). If the overall height of a structure is 200 feet or more, Federal Aviation Administration and Oregon Department of Aviation regulations require warning lights.

Unobstructed access to a consistent wind resource is necessary for safe, efficient operation of wind turbines. Wind access can be protected through property setback requirements and structure height limits. Oregon law also allows landowners to secure a “wind energy easement” to ensure the undisturbed flow of wind across a site (ORS 105.900 - .915).

The model ordinance suggests that small-scale wind turbines be exempt from the siting standards listed in the ordinance. A local government may choose instead to draft ordinances to refer specifically to small-scale turbines. Small-scale wind turbines are commercially available. These systems currently range up to 25 kilowatts of generating capacity. Small turbines are mounted on towers up to 120 feet tall. Many Oregon property owners have installed small wind generators to generate power for on-site use. Larger, higher-capacity systems may become available in the future. Although the local government may choose to exempt small wind turbines from the energy facility siting ordinances, other existing land use ordinances may apply, such as structure height and setback requirements.

## **2. Solar Energy Generation**

There are two types of solar electric generating technologies: photovoltaic panels and solar-thermal systems. Photovoltaic cells convert solar energy directly to electrical energy. Although photovoltaic technology and solar cell efficiency is steadily improving, high-capacity generation projects using photovoltaic panels is not economically feasible today.

Photovoltaic systems have been installed in remote locations in Oregon and in demonstration projects to meet small on-site needs for electricity. Photovoltaic panels can be a lower-cost power option in remote areas where building electric power distribution lines would be more costly. For example, a photovoltaic system is in use on an Oregon ranch to provide power for pumping water from a creek to a stock-watering pond. This use of solar energy has the added benefit of protecting water quality by keeping cattle away from stream banks and preserving riparian area vegetation.

Solar-thermal electric generation technology uses the sun’s energy to power a steam turbine. In one design of this technology, an array of mirrors, called “heliostats,” concentrates solar energy onto a boiler. Another design uses rows of mirrors to heat water in pipes that go to a boiler. In either case, the heat generated by the concentration of solar rays produces steam. The steam drives a turbine that is coupled to a generator to produce electricity. The exhaust steam condenses to water, which is recycled into the boiler. A cooling process, using water or cooling fans, is needed to condense the steam. Solar energy projects using thermal generation technology would require significant land area to collect sufficient solar energy to operate the steam turbine component. There are no solar-thermal energy projects in operation in Oregon. Beginning in 1984, nine solar thermal power projects have been installed in California’s Mojave Desert, totaling approximately 354 megawatts of generating capacity. This represents more than 90 percent of all of the commercial solar electric generation in the world.

Review of a proposed solar energy project should include analysis of possible significant adverse impacts on wildlife. Wildlife encountering the concentrated sunlight reflected by solar panels or mirrors could be killed or injured, and in a sensitive habitat – such as a desert ecosystem – the environmental effects might be significant. Photovoltaic panels or heliostats for a solar-thermal

system could create artificial habitat for prey species. Prey species might attract raptors and other predators to forage at the site, risking injury from focused sunlight. The local government should require applicants to implement measures to avoid creating prey habitat. The discussion of potential liability for impacts on protected species in the Wind Energy Generation section above applies to solar generation projects as well.

### **3. Cogeneration**

Energy projects that produce both electricity and useful thermal energy are called “cogeneration” projects (sometimes called “combined heat and power” or “CHP” systems). Steam turbines or combustion turbines produce electricity using natural gas or other fuels, such as fuel oil or biomass. In a typical cogeneration energy facility, a steam turbine turns a shaft that is coupled to an electric generator. Operation of the steam turbine produces electricity. The exhaust steam from the turbine is piped to a “thermal host,” such as a manufacturer or other industrial facility, that needs steam for an industrial process.

An energy project may generate electricity using a combustion turbine fueled by natural gas, instead of a steam turbine. Combustion turbines are derived from jet engine technology. The turbine drive shaft is coupled to a generator to generate electricity. The exhaust from a combustion turbine can be used to turn water into steam that, in turn, is used to generate additional electrical energy in a steam turbine. This two-stage process is called a “combined-cycle combustion turbine” facility (CCCT). If a thermal host uses the exhaust steam from a combustion turbine or CCCT, then the combustion turbine or CCCT would be considered a cogeneration project.

Cogeneration is an efficient use of fuel with reduced environmental impacts compared to generating either electricity or steam separately. Usually, the critical land use planning issues are the effect on air quality from emissions, water consumption, operation noise and construction impact on local roads. There may be other site-specific issues, including impacts on wetlands or fish and wildlife habitat.

Because cogeneration projects are necessarily located close to a thermal host, applicants will likely propose building them in areas already developed for industrial use. Appropriate thermal hosts for cogeneration projects are industrial plants with older boilers that have been used to supply steam alone. A new cogeneration facility will have lower emissions, use water more efficiently and displace older, less efficient equipment used by the thermal host.

Emissions from cogeneration projects are lower than the combined emissions would be from separate power and steam production plants. Depending largely on the size of the proposed cogeneration project, the result of replacing an old boiler with a cogeneration plant can result in an overall reduction of adverse environmental impacts while producing both electricity and steam for industrial use. Air quality improvements resulting from replacing old equipment with cogeneration may allow for additional industrial or commercial development in some areas where air quality is limited. Air quality permits are under the jurisdiction of the Oregon Department of Environmental Quality (or, in Lane County, the Lane Regional Air Pollution Authority).

A cogeneration project may need new transmission lines, natural gas pipelines and water supply pipelines. Often, public concerns will focus on these associated “linear” components rather than on the cogeneration project itself. We discuss transmission lines and pipelines below.

In the future, a new form of cogeneration, based on fuel cells, may become commonplace. Fuel cells use hydrogen, or hydrogen-rich fuels such as natural gas, ethanol and methanol. In a fuel cell, hydrogen reacts with oxygen in air. The products are electricity and hot water. The inner workings of a fuel cell are too complex to describe in any detail here, but the process is similar to what happens in a battery, except that the fuel cell needs an external fuel supply. The hot water produced by a fuel cell could be used for space heating or for other applications requiring thermal energy. If a fuel-cell based system produces both electricity and useful thermal energy, it is a cogeneration system.

Cities or counties may encounter siting applications for fuel cells or fuel cell cogeneration systems. Industries such as semi-conductor manufacturing may propose to build on-site fuel cell plants because of the high-quality power the fuel cells produce. Fuel cells may replace emergency back-up diesel power plants and may include a tank of propane or other back-up fuel to supplement natural gas. Fuel cells are small and quiet, and they produce reliable power. Siting review of proposed cogeneration projects using fuel cells should be relatively simple, because of small size and minimal resource impacts.

#### **4. Digesters**

In some counties, owners of large dairy farms may be interested in addressing the problem of manure management by installing a digester project. This technology helps control the disposal of animal waste and reduce odor. Digesters effectively eliminate the environmental hazards of runoff from dairy farms and other animal feedlots. Digester systems can reduce fecal coliform bacteria in manure by more than 99 percent, virtually eliminating a major source of water pollution.

Anaerobic digestion is a biochemical process in which particular kinds of bacteria that thrive in an oxygen-free environment break down complex organic wastes such as animal manure. The process results in the production of “biogas” (also known as “digester gas”). Controlled anaerobic digestion can take place in an airtight chamber, called a “digester.”

The biogas produced in a digester is actually a mixture of gases, with methane and carbon dioxide making up more than 90 percent of the total. The energy value of biogas depends on the amount of methane it contains. The methane content of biogas varies from about 55 percent to 80 percent. Typical digester gas, with a methane concentration of 65 percent, contains about 600 Btu of energy per cubic foot. By fueling an engine-generator set, the energy in digester gas can be converted to electricity. Digester systems also produce a significant amount of heat energy, which dairy farms can use to provide hot water. Because digester systems can produce both heat and electric energy, they are a form of cogeneration.

Digesters can be designed for individual dairies or for clusters of dairy farms. For example, a digester designed to process 8,000 gallons of manure per day would be an appropriate size for a 500-cow dairy. A digester of this size could produce more electricity and hot water than the dairy consumes. Through a contract with the local utility, the dairy could receive a payment or credit for the electricity produced in excess of the dairy’s on-site power consumption.

The electric generating capacity of a dairy digester system designed for an individual farm depends on the size of the digester. Smaller systems would have a capacity of less than 100 kilowatts; larger systems might have a capacity of 200 to 300 kilowatts. Under the model ordinance, electric generation projects of 50 kilowatts or larger would need a conditional use permit and would be subject to the energy project siting standards.

## 5. Electric Transmission and Distribution Lines

Growth in population and industrial activity will generate demand for new or upgraded electric transmission and distribution lines throughout Oregon. In addition, interstate electricity sales and balancing the electric transmission grid may require the development of new transmission lines. We use the broader term “transmission line” in this discussion, but similar land-use concerns apply to distribution lines, which carry power from the transmission grid to end-users.

The linear nature of transmission lines (and pipelines, discussed below) leads to several unique considerations. Long transmission lines might cross city or county boundaries, requiring coordination with neighboring jurisdictions. They might cross zoning district boundaries, requiring application of sections of the development code applicable to each zone. In addition, transmission lines may require associated structures such as access roads or substations.

Inappropriately located transmission line corridors could impede other development. Upgrades to existing transmission lines or placement of a new line in an existing corridor or public road right-of-way could reduce the impacts compared to creation of a new corridor. The local government should contact the Bonneville Power Administration and regional utilities to determine where new or upgraded transmission lines might be needed in the future.

Siting new transmission lines in forested areas requires clearing trees within the corridor. A major new transmission line route through forest land may require an exception to Statewide Planning Goal 4 if the cleared area is more than 100 feet wide for a transmission line or 50 feet wide for a distribution line (OAR 660-006-0025(4)(q)). In agricultural areas, transmission line support structures displace relatively small areas of farmland, but poorly placed support structures could obstruct farm machinery.

Wildlife effects of transmission line projects can be significant during construction. After construction, maintenance of corridors (for example, when herbicides are used) can have an adverse impact on wildlife. Long-term effects can be reduced by siting transmission lines away from habitat used by protected species, replanting cleared areas and limiting public and vehicular access. The goals and standards of the Oregon Department of Fish and Wildlife provide guidance on mitigating for habitat affected by development.

Transmission lines have no air quality impacts, unless maintenance of the transmission line corridor includes aerial spraying of herbicides. Water quality impacts of transmission lines are generally insignificant, except where access routes or tower sites come near to, or cross over, water bodies or wetlands. The local government can reduce water quality effects such as sedimentation and erosion by imposing conditions on construction techniques and site access.

The local government should consider public safety in siting transmission lines. Compliance with applicable building and electrical codes protects public health and safety. The applicant should analyze geologic and soil conditions to avoid building a transmission line on unstable soils. The operation of high-voltage transmission lines produces electric and magnetic fields in the immediate vicinity of the line. Transmission lines can be designed to meet the electric field standard that the Energy Facility Siting Council has adopted in OAR 345-024-0090. Electric fields around transmission lines can induce electric currents in metal structures in the immediate area such as metal fences, gates, cattle guards, trailers or other objects or structures, which should be grounded as a safety precaution. Numerous studies have explored whether magnetic fields can cause health effects on humans living or working near high-voltage lines. The Energy Facility Siting Council has concluded that there is insufficient scientific evidence to establish a



magnetic field standard. Nevertheless, as a matter of “prudent avoidance,” transmission lines should be located at least 200 feet away from any residence or occupied place of business.

The use of natural terrain, vegetation and appropriate support structure construction materials can mitigate the visual impact of transmission lines. Transmission line support structures can be designed to “ladder” or hang other telephone, cable or power service lines below the main transmission lines. The use of multi-line structures, where possible, avoids the need for new transmission line corridors.

## **6. Natural Gas and Petroleum Pipelines**

Underground natural gas and petroleum product pipelines present siting issues that are similar to those arising from siting transmission lines. For example, pipelines may cross jurisdictional or zoning boundaries. Decisions made about siting a new pipeline affect the location and need for future pipeline development or expansion. Some pipelines may need associated development such as access roads or compressor stations.

Permanent easements are needed to assure access to the pipeline and associated structures. Because buried pipelines are out of sight, it is extremely important to enforce easements and setbacks when reviewing new proposals for adjacent development. Utility line locates and marking should be required before excavation or construction near any pipeline corridor.

Areas prone to erosion or landslides are unsuitable for pipelines carrying high-pressure flammable gas or liquid. Safety requirements of state and federal agencies must be followed. The Oregon Public Utility Commission is the state agency responsible for ensuring the safety of pipelines. The Oregon Department of Geology and Mineral Industries (DOGAMI) has maps of areas prone to landslides and other geological risks. Local governments should consult DOGAMI during their review of proposed pipelines.

Erosion control measures should be implemented during pipeline construction. Permit conditions should include revegetation of disturbed areas and follow-up monitoring to assure successful restoration. Pipeline construction may cause significant wildlife impacts. Adverse impacts on wildlife may occur after construction if corridor maintenance includes the use of herbicides. Siting pipelines away from protected species habitat, replanting cleared areas and restricting public and vehicular access can reduce long-term effects on wildlife. The goals and standards of the Oregon Department of Fish and Wildlife provide guidance for mitigation of habitat affected by pipeline development.

Water quality impacts of pipelines can be significant where access routes or pumping stations come near to or cross water bodies and wetlands. Water or wetland crossing must be done according to the requirements of state and federal agencies. In Oregon, the Division of State Lands must approve a wetland disturbance or the crossing of a navigable waterway. Directional drilling beneath a riverbed is possible and should be considered if downstream sedimentation would damage critical habitat. Leak detection systems help prevent accidental pollution of surface or ground water from petroleum product pipelines.

Clearing trees for pipeline corridors and access easements can cause significant loss of timberland. To minimize this loss, pipelines should use existing developed rights-of-way and easements to the extent possible. Any major new pipeline route through forest land with rights-of-way more than 50 feet wide would require an exception to Statewide Planning Goal 4 (OAR 660-006-0025(4)(q)). In some cases, it may be possible to avoid creating new natural gas

pipeline corridors by increasing the operating pressures of existing pipelines so more gas can be transported. Local governments should contact interstate pipeline companies and local gas utilities to determine where new or upgraded pipelines might be needed in the future.

## **7. Hydroelectric Projects**

There is overlapping state and federal authority over hydroelectric projects. Oregon's hydroelectric licensing authority lies with the Water Resources Department and the Oregon Water Resources Commission. Since 1993, the Oregon Energy Facility Siting Council has had no jurisdiction over hydroelectric projects. A developer must comply with both federal and state permit processes before building a hydroelectric facility. Although siting hydroelectric projects is not within the local government's regulatory authority, the local government should participate in federal and state agency reviews to assist in meeting the objective of consistency between federal or state action and the local comprehensive plan. Construction of new hydroelectric projects may conflict with other land and water uses and may create environmental problems for riparian areas, vegetation and wildlife. The impacts of hydroelectric projects are site-specific and need case-by-case analysis.

Federal licenses issued to hydroelectric dams by the Federal Energy Regulatory Commission expire after 50 years. Many of the older hydroelectric projects in Oregon are reaching the stage of license renewal. The license renewal process is a unique opportunity for the local government to participate in updating the conditions of the license. The local government should contact the Water Resources Department for more information.

## **V. THE ENERGY FACILITY SITING COUNCIL**

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In Oregon, the Energy Facility Siting Council ("Siting Council") decides whether large energy facilities may be built. The Siting Council has authority for siting all large energy facilities, except for hydroelectric facilities and some relatively large wind facilities that are subject to local permitting, as discussed above. The Oregon Water Resources Commission has review and permitting authority over hydroelectric projects.

For facilities under Siting Council authority, the developer must apply to the Council for a "site certificate" and must supply information about the proposed facility and the proposed site. The energy facility siting statutes, beginning at ORS 469.300, make the Council siting process different from the permitting process in other states and different from the permitting practices of many other state and local agencies in Oregon. The Department of Energy website ([egov.oregon.gov/ENERGY/SITING/index.shtml](http://egov.oregon.gov/ENERGY/SITING/index.shtml)) includes the Siting Council's siting standards and a description of the process. Key provisions are as follows:

- The use of specific standards for issuing a site certificate.
- A "one-stop" process in which the Siting Council determines compliance with its own standards and the regulations and permitting requirements of other state agencies.
- Applicant's option of seeking land use approval by the local government or having the Siting Council determine compliance with statewide land use planning goals.
- Opportunity for public participation through comment periods at the front end of the process, followed by a public hearing and a more formal contested case proceeding.

- Direct review by the Oregon Supreme Court.

If a proposed facility meets the standards, the Siting Council must issue a site certificate. If the facility does not meet one or more of the standards, the Council cannot issue a site certificate except in unusual circumstances based on a finding that the public benefits of siting the energy facility outweigh the damage to the resource protected by the unmet standard.

In making the siting decision, the Siting Council applies not only its own standards but also relevant rules and ordinances of state and local agencies. The Council's decision is binding on all state and local agencies if they issue permits addressed in the Council's review (ORS 469.401(3)). The binding effect of a site certificate applies to issuance of conditional use or special use permits by local governments. The Siting Council's decision, however, does not apply to federally-delegated permits, such as permits under federal air quality or water quality programs (ORS 469.503(3)). Furthermore, a site certificate addresses siting issues only. Building permits and other permits and approvals that are related to construction or operation – rather than to siting – are not part of the Council's review (ORS 469.401(4)).

The Council siting process has two major phases. In the first phase, the applicant submits a notice of intent (NOI) to the Department of Energy (“Department”). The NOI describes the proposed facility in general terms and allows the Department to gather public comment and comments from other government agencies. Based on the NOI, state and local government agencies identify the laws, regulations and ordinances that apply to the proposed facility. The second phase of the process begins when the applicant submits an application to the Department and ends when the Council decides whether to issue a site certificate.

The Siting Council has two forms of expedited siting review (OAR 345-015-0300 and -0310). If a proposed facility qualifies for expedited review, the applicant is not required to submit a NOI.

### **1. The Notice of Intent**

OAR 345-020-0011 describes the required content of a NOI. The NOI must describe the proposed site, the proposed facility and the possible impacts of development in enough detail for the Department and other reviewing agencies to identify the applicable statutes, rules and local ordinances. The NOI must include proposed routes for linear facilities, such as gas pipelines or electric transmission lines.

The Department issues public notice of the NOI, and copies of the NOI are distributed to other state agencies for review. The NOI enables the Department and other agencies to identify issues and determine staffing needs for the review process. It provides the first opportunity for public comment. Public and agency comments on the NOI alert the Department and the applicant to issues that the applicant will need to address in the site certificate application.

### **2. Application for a Site Certificate**

An application for a site certificate includes a detailed description of the proposed site, the proposed facility and the anticipated impacts of construction and operation. The applicant must show how the proposed facility complies with the Siting Council's standards. The general content requirements for a site certificate application are listed in OAR 345-021-0010.

When an applicant submits an application, the applicant must choose whether to seek land use approval from the local jurisdiction or to have the Siting Council make the land use

determination. The choice is final. After submitting the application, the applicant cannot choose a different path for the land use decision.

The Siting Council may determine compliance with the statewide planning goals by finding that the proposed facility has received local land use approval (ORS 469.504(1)(a), which the Council informally refers to as “Path A”). Alternatively, the Council may determine compliance by making findings that the proposed facility “complies with applicable substantive criteria from the affected local government’s acknowledged comprehensive plan and land use regulations that are required by the statewide planning goals and in effect on the date the application is submitted, and with any Land Conservation and Development Commission administrative rules and goals and any land use statutes directly applicable to the facility under ORS 197.646(3)” (ORS 469.504(1)(b), referred to as “Path B”).

Local government participation is essential whether the applicant chooses Path A or Path B. If the applicant chooses Path A, then the applicant must follow the local procedures. The Council will issue a site certificate for the project only if the local jurisdiction has approved the proposed land use. If the local land use decision comes after the applicant has submitted a NOI, then any appeal of the land use decision is through an appeal of the Council’s decision on the site certificate.

If the applicant chooses instead to follow Path B, the Council determines whether the proposed facility complies with the local land use ordinances. Under Path (B), the local government has the opportunity to identify the applicable substantive land use criteria in the local land use ordinances and comprehensive plan for application by the Council. In addition, the local government can recommend site certificate conditions (addressing matters that would normally be included in a conditional use permit) and offer other comments about the proposed facility. If the local government does not identify the applicable substantive land use criteria to be applied by the Siting Council, the Siting Council can either determine which local criteria should be applied or apply statewide planning goals directly.

In analyzing compliance of a proposed facility with applicable substantive criteria under Path B, the Council has the authority to decide whether a local ordinance is “required by the statewide planning goals.” If the Council finds that an ordinance is not required, the Council need not apply the ordinance, but the Council must decide whether the proposed facility would comply with the relevant statewide planning goal. It may be useful, therefore, to identify the statewide planning goal or goals that the local government is implementing through particular ordinance provisions by inserting cross-references.

If the Council finds that the proposed facility does not comply with one or more local land use criteria, the Council may apply the relevant statewide planning goal directly. In addition, the Council has authority to take a goal exception under ORS 469.504(2).

Designation of provisions of the local energy ordinance as applicable substantive criteria provides an efficient means for a local government to influence the Siting Council’s energy facility siting decisions. Although state statutes control certain land uses, local ordinances can restrict or condition the use of land for energy projects. For example, local governments can make decisions about land in industrial use zones based on:

- The amount of industrial land available
- The location of industrial land relative to infrastructure necessary to support energy projects or facilities

- Zoning definitions
- Specific references to energy projects in zoning ordinances
- Restrictions applicable to energy projects (such as height or setback requirements)

### **3. Filing the Application**

The date the applicant *submits* the application to the Department is not the date of *filing*. After an applicant submits an application, the Department reviews it to determine if it is complete. Copies of the application are distributed to affected state agencies and to local and tribal governments for review. These “reviewing agencies” help the Department determine whether the application is complete; that is, whether it contains enough information to support findings by the Siting Council regarding compliance with the Council’s siting standards and applicable state and local regulations. It is quite common for an applicant to make changes to the site certificate application at this stage, whether in response to the Department’s requests for more information or as the result of changes in the applicant’s plans for the energy facility.

The application is “filed” when the Department determines it is complete. Upon filing, the Department issues a public notice, as described in OAR 345-015-0190.

### **4. Draft Proposed Order**

The Department conducts a thorough review of the filed application. During this review, the Department consults with the other state and local government agencies and requests their substantive comments and proposed site certificate conditions.

After completing its review, the Department issues a “draft proposed order.” If the Department concludes that the proposed facility can meet the Siting Council’s standards and other applicable regulations, the draft proposed order would propose findings of fact, determinations of compliance and site certificate conditions for design, construction, operation and retirement of the facility. The draft proposed order reflects the recommendations of Department staff and the comments from other state and local agencies.

After public notice of the draft proposed order, the Department holds a public hearing. Anyone having a concern in opposition to the proposed facility must raise the issue at this hearing or in writing by the close of the hearing. Only those issues that are raised at the hearing can be addressed later in the contested case proceeding (ORS 469.370).

### **5. Contested Case Proceeding**

After the public hearing, the Siting Council meets to review the draft proposed order. Based on the comments by the Council, public comment at the hearing, written comments and consultation with other governmental agencies, the Department then issues a “proposed order” and a public notice of a contested case proceeding. The contested case proceeding is mandatory (ORS 469.370(5)).

The Siting Council appoints an independent hearing officer to conduct the contested case proceeding. Aside from the applicant and Department staff, anyone else wanting to participate in the contested case proceeding must request party status from the hearing officer. The hearing

process includes presentation of evidence, rebuttal, cross-examination, rights to discovery and appeal.

Following the hearing, the hearing officer issues a proposed contested case order, and the parties in the contested case proceeding may file exceptions. The Siting Council then considers the hearing officer's proposed contested case order and any exceptions along with the Department's proposed order before deciding whether to issue a site certificate. At least four members of the seven-member Siting Council must vote to approve a site certificate before the Council can issue the certificate.

## **6. Appeal**

After the Siting Council's decision and final order, any party to the contested case has 30 days to apply for a rehearing. A party may petition for judicial review within 60 days after the date of service of the Council's final order (or within 30 days after the date a petition for rehearing is denied). The Oregon Supreme Court has exclusive jurisdiction for judicial review of the Siting Council's decision.

## **VI. OREGON WATER RESOURCES COMMISSION**

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It is the policy of the State of Oregon "to protect the natural resources of this state from possible adverse impacts caused by the use of the waters of the state for the development of hydroelectric power" (ORS 543.015). To carry out this policy, the Oregon Water Resources Commission ("Commission") has authority to review and approve new or expanded hydroelectric facilities. The Commission considers the expertise of other state agencies, such as the Energy Facility Siting Council and the Department of Environmental Quality, in reviewing a proposed hydroelectric project. The Commission applies the standards in OAR 690-051-0170 to 690-051-0290 in reviewing hydroelectric applications

### **1. Application Procedures**

Any non-municipal company or person who proposes to operate, develop or expand a hydroelectric project must apply to the Oregon Water Resources Department ("WRD") for a state "preliminary permit." The definition of a hydroelectric "project" is broad and includes the water rights, structures, rights-of-way, lands used for the facility and the transmission lines to the point of junction with a distribution system (ORS 543.010).

An application for a hydroelectric project will not be accepted if the project is in a designated federal or state resource area such as a park, scenic area or wildlife refuge listed in OAR 690-051-0030. An application is exempt from this restriction if the applicant has a valid lease from the agency managing the resource.

When the WRD receives an application to appropriate water for a hydroelectric project or for a hydroelectric permit or license, the agency must determine whether the impacts of the project would be "cumulative" with the impacts of other hydroelectric projects proposed in pending applications or with existing hydroelectric projects in the same basin (ORS 543.255). If the WRD determines that the project has cumulative impacts, the Commission must conduct a consolidated review as a contested case hearing under ORS 183.310 to 183.550.

## **2. Consultation with Public Agencies**

An applicant for a hydroelectric license or permit must consult with appropriate public and private agencies before filing an application with the WRD. By rule, an applicant must consult with the planning offices of affected local governments on matters that involve scenic resources, recreation resources, land use and access (OAR 690-051-0060).

## **3. Notice and Public Hearing**

After an application for a preliminary permit has been accepted and referred to a hearing, the Commission gives written notice to adjacent land owners, to any city or county interested in or affected by the project and to other interested parties. The Commission also publishes notice for at least four consecutive weeks in a newspaper of general circulation in the county in which the project is located (ORS 543.220).

The Commission holds a contested case hearing for any “major project” (a hydroelectric project of more than 100 theoretical horsepower). A contested case hearing may be held on lower-capacity “minor projects” if the Commission determines that it is in the public interest to do so (ORS 543.225 and OAR 690-051-0130).

A public hearing normally is held in a community near the proposed project, but the hearing can be held in Salem if no one files a protest or objection within the period announced in the notice. The governing body and the planning offices of any affected city and county must receive notice of the public hearing. Owners of property near the project also receive notice.

## **4. Issuance of Permits and Licenses**

If the Commission finds that the applicable standards have been met, the Commission can issue a preliminary permit. The preliminary permit is issued for a period not to exceed three years. The holder of a preliminary permit can make application for a license to build and operate the hydroelectric facility. The license specifies terms and conditions under which the project can be built and operated and is valid for a period not exceeding 50 years (ORS 543.250 and 543.260).

