

## **ATTACHMENT B - Analysis of Compliance with ORS Chapter 215**

This appendix to the proposed order addresses whether the proposed facility complies with the provisions of ORS chapter 215, governing uses of land in exclusive farm use (EFU) zones. The appendix is organized as follows:

- We begin with OOE's recommendations concerning how to apply the provisions of ORS chapter 215 to the proposed facility.
- Second, we describe the proposed facility and evaluate the facility in light of the requirements of ORS chapter 215 and the Project Order.
- Third, we state OOE's overall recommendations for the Council.

As set forth in more detail in section III of this proposed order, the proposed facility consists of a 24-inch diameter natural gas pipeline, which would be located underground. The proposed facility is located in portions of Washington, Clackamas, and Marion Counties. In each of the counties, the majority of the facility is proposed to be located in EFU-zoned lands .

### **I. How Does ORS Chapter 215 Apply to the Proposed Facility?**

#### **A. Overview**

ORS chapter 215 establishes the requirements for county zoning in Oregon. Among those requirements are the provisions concerning lands zoned for exclusive farm use. These statutes define what uses are allowed as farm uses, and what other uses are allowed on EFU-zoned lands. ORS 215.213 and ORS 215.283 contain multiple provisions that authorize the use of EFU-zoned lands for utility facilities.<sup>1</sup> Certain authorizations are provided for specific types of utility facilities, such as commercial facilities of the purpose of generating power, 215.283(2)(g), transmission towers over 200 feet in height, 215.283(2)(m), and fire service facilities, 215.283(1)(v). Other provisions of these statutes authorize utility facilities generally (as to type), but place geographic limitations on the authorization. ORS 215.283(1)(L) (authorizing utility facilities along public right-of-way). And still other provisions allow utility facilities generally (as to type), but only if they meet standards directed at ensuring that they must be located on EFU-zoned lands. ORS 215.283(1)(d).

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<sup>1</sup> ORS 215.213 applies in counties that have adopted marginal lands provisions under ORS 197.247 (1991 Edition). "ORS 215.213 pertains to nonfarm and ancillary farm uses in EFU zones in the counties--Lane and Washington--that have adopted "marginal lands" provisions. ORS 215.283 applies to uses in counties \* \* \* that have not adopted marginal lands provisions." *Marquam Farms Corp. v. Multnomah County*, 147 Or App 368, 936 P.2d 990, 994 (1997). Although ORS 215.213 applies in Washington County, and ORS 215.283 applies in Clackamas and Marion counties, for ease of reference and because there is no material difference between the statutes for purposes of this application, we refer only to the provisions of ORS 215.283.

In construing the multiple provisions of ORS 215.213 and 215.283, we first determine whether there are specific authorizations that encompass the particular type of facility proposed. If there are none, we next look to the more general authorizations that are specific as to the location proposed. To the extent that these do not apply, we then look to ORS 215.283(1)(d), which by its terms (and as a matter of historical development of the provisions of ORS 215.283) applies to utility facilities generally, except commercial facilities for the purpose of electrical generation and transmission towers over 200 feet in height. ORS 174.010, 174.020.

The proposed facility in this case is a natural gas pipeline. There are no specific provisions of ORS 215.283 that expressly apply to natural gas pipelines in particular. As a result, we look next to general authorizations for utility facilities on EFU lands that are specific as to location.

**B. ORS 215.283(1)(L). The Proposed Facility as a Utility Facility Along the Public Road and Highway Rights-of-Way**

Large portions of the proposed facility, where it is on EFU-zoned lands, include locations along public road rights-of-way. ORS 215.283(1)(L) allows “\* \* \* the placement of *utility facilities* overhead and in the subsurface of public roads and highways along the public right-of-way, \* \* \* where no removal or displacement of buildings would occur, or no new land parcels result.” Where the proposed facility meets the requirements of this statute, it is allowed on EFU-zoned lands with no additional limitations.

Utility facilities that are not located along the public right-of-way are allowed under ORS 215.283(1)(d) as “*utility facilities* necessary for public service,” if they meet the requirements of ORS 215.275. Where the facility is proposed to be located in a manner that cannot meet the locational limitation of ORS 215.283(1)(L), we have reviewed it under the standards of 215.283(1)(d) (as discussed at length in the sections following this one).

There is no definition of the term “utility facility” in ORS chapter 215. The ordinary meaning of “utility” is “a service provided by a public utility” and “a unit composed of one or more pieces of equipment [usually] connected to or part of a structure and designed to provide a service (as heat, light, power, water, or sewage disposal).” *Webster's Third New Int'l Dictionary*, 2525 (unabridged ed 1993); and the ordinary meaning of the noun “facility” is “something (as a hospital, machinery, plumbing) that is built, constructed, installed, or established to perform some particular function or to serve or facilitate some particular end.” *Id.* at 812-13. The Oregon Court of Appeals has held that the term “utility facility,” as used in 215.283(1)(d), means “equipment or apparatus, whether standing alone or as part of a structure, that functions to perform or provide, in whole or in part, a service such as the production, transmission, delivery or furnishing of electricity or natural gas, the purification of drinking water, or the treatment of solid or liquid waste. The equipment comprising the facility need not be extensive or complex; in addition, the facility may include ancillary or off-site equipment such as transmission lines.” *Cox v. Polk County*, 174 Or App 332, 343-344, 25 P.2d 970, *rev den* 332 Or 558 (2001).

The proposed NWN facility is a “utility facility” as that term is used in ORS 215.283(1)(d) and 215.283(1)(L) because it consists of a structure (the proposed pipeline) that is intended to

provide a service, in this case the transmission of natural gas. Construction of the facility requires a construction easement that is proposed to be 80 feet in width. Operation and maintenance of the facility requires a 40-foot easement width. In most places, NWN has requested approval of a 200-foot wide corridor within which the construction and operation/maintenance easements would be located. In order to approve a 200-foot corridor, the Council must determine that the entire corridor meets the applicable requirements of 215.283. *See, Bicycle Transp. Alliance v. Washington County*, 26 Or LUBA 265, 283 (1993) (regarding approval of road corridors under the county's comprehensive plan).

As noted above, ORS 215.283(1)(L) allows utility facilities to be located on lands zoned EFU where they are “\* \* \* in the subsurface of public roads and highways along the public right of way, \* \* \* where no removal or displacement of buildings would occur, or no new land parcels result, \* \* \*.” If the proposed facility meets these conditions, it is allowed outright.<sup>2</sup> In certain locations the applicant has proposed to locate the facility within a 200-foot-wide corridor, a portion of which includes existing public road right-of-way. In other locations, the proposed 200-foot corridor for the facility does not include any existing public road right-of-way. Where the proposed facility is located in a manner that meets the specific provisions of ORS 215.283(1)(L), it is not also required to comply with the limitations and conditions applicable to the general category of utility facilities (215.283(1)(d)). *Keicher v. Clackamas County*, 175 Or App 633, 29 P3d 1155 (2001); *Roth v. Jackson County*, \_\_ Or LUBA \_\_ (LUBA No. 2001-121, slip op 10/30/2001).

The first question regarding the application of ORS chapter 215 to the proposed facility is the geographic scope of the authorization in ORS 215.283(1)(L). This statute clearly allows the placement and operation of a natural gas pipeline within an EFU zone where the pipeline is located in the subsurface beneath public roads and highways, and where those roads and highways are also within public right-of-way. The statute *may* also be read to allow underground and overhead utility facilities placed along public road or highway right-of-way, e.g., running parallel to and adjacent to the right-of-way, but not necessarily within existing right-of-way.

The ordinary meaning of the word “along” is: “1: over the length of (a surface) <he crawled ~ the fence until he reached the gate> \* \* \* 3: in a line parallel with the length or direction of <a ship sailing ~ the coast> or a line through the center or central axis of <the boundary runs ~ the road> - distinguished from *across* \* \* \*.” *Webster’s Third New Int’l Dictionary, 60 (unabridged ed. 1993)*. Using the ordinary meaning of the word “along,” the statutory authorization allows “\* \* \*the placement of utility facilities overhead and in the subsurface of public roads \* \* \* [over the length of, or in a line parallel with the direction of,] the public right-of way.” Given that public roads and highways are normally understood to be within public right-of-way, the adjective “along” appears to modify the utility facilities rather than public roads. Thus, the most

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<sup>2</sup> Under the Oregon Supreme Court’s decision in *Brentmar v Jackson County*, 321 Or 481, 900 P.2d 1030 (1995), counties may not impose additional requirements on uses permitted under ORS 215.283(1). Additional requirements or limitations may be imposed under rules of LCDC, but LCDC has not elected to do so for utility facilities that meet the requirements of 215.283(1)(L). *Lane County v. LCDC*, 325 Or 569, 942 P.2d 278 (1997). *See*, OAR 660-033-0120 (Table 1).

likely textual meaning of the statute appears to allow for the placement of utility facilities outside of existing public road right of way, so long as those facilities are “along” the right-of-way and in the subsurface. The text of the statute is anything but clear, however.

The context for this statute includes a number of specific authorizations under ORS 215.283 for uses *within* or *on* or *requiring the acquisition of* right-of-way. These include 215.283(1)(k), authorizing “climbing and passing lanes within the right of way existing as of July 1, 1987;” ORS 215.283(1)(n), authorizing “[m]inor betterment of existing public road and highway related facilities \* \* \* within right of way existing as of July 1, 1987;” ORS 215.283(1)(x), authorizing “[u]tility facility service lines \* \* \* that are located on \* \* \* public right of way \* \* \* [or] land immediately adjacent to a public right of way \* \* \*;” ORS 215.283(2)(q), authorizing “[c]onstruction of additional passing and travel lanes requiring the acquisition of right of way \* \* \*;” ORS 215.283(2)(r), authorizing “reconstruction or modification of public roads and highways involving the removal or displacement of buildings but not resulting in the creation of new land parcels;” and ORS 215.283(2)(s), authorizing “improvement of public road and highway related facilities \* \* \* where additional property or right of way is required but not resulting in the creation of new land parcels.” At least one thing is evident from this context, that where the Legislature wants to restrict the location of new uses on EFU-zoned lands to existing right-of-way, it knows how to do so. ORS 215.283(1)(k), (1)(n), (1)(x) all place a geographic limit on the uses they authorize to lands within or adjacent to existing right of way, while the uses listed under ORS 215.283(2) generally allow placement on new right of way. Although this context suggests that the authorization in ORS 215.283(1)(L) extends outside of existing right-of-way, we believe it is not so clear that it precludes determining that the legislative intent was to restrict the use authorized by ORS 215.283(1)(L) to the placement of utility facilities within existing right of way. *See, e.g., State v. Cooper*, 319 Or. 162, 167, 874 P.2d 822 (1994) (statutory language is ambiguous when capable of two interpretations and “either interpretation is reasonable”); *Koitzsch v. Liberty Northwest Ins. Corp.*, 125 Or.App. 666, 669, 866 P.2d 514 (1994) (a statute is ambiguous if “it is capable of more than one reasonable interpretation”).<sup>3</sup> As a result, we believe that it is appropriate for the Council to look to the legislative history of ORS 215.283(1)(L) to assist in determining the legislative intent.

The text of ORS 215.283(1)(L) authorizing the placement of utility facilities along the public right-of-way was added by SB 834 in 1995 (1995 Or Laws ch. 528). The bill, as introduced, amended ORS 215.213(1)(L) as follows:

“Reconstruction or modification of public roads and highways, **including the placement of utility facilities in the subsurface of public roads and highways along the public right of way**, not including the addition of travel lanes, where no removal of buildings would occur, or no new land parcels result.”

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<sup>3</sup> The context of ORS 215.283(1)(L) includes ORS 758.010, which grants the right to construct, maintain and operate gas lines and other facilities “along the public roads in this state” (outside of cities) to any person or corporation free of charge. This statute appears to use the term “along” in the sense of within existing right-of-way.

The bill was later amended to authorize utility facilities overhead, as well as in the subsurface, of public roads along public right-of-way, and to add a parallel amendment to ORS 215.283(1)(L). In testimony before the House Committee on Natural Resources on May 3, 1995, the bill's main proponent, Northwest Natural Gas, testified that the purpose of the legislation was to allow the placement of utility facilities on EFU lands without a finding of necessity (as required by the general authorization for utility facilities in ORS 215.283(1)(d)), where the proposed facilities would be placed in a manner that would not take farmland out of production, e.g., *in* the right-of-way. Earlier in the Legislative Session, before the Senate Labor and Government Operations Committee, representatives of Northwest Natural Gas stated that this proposed amendment “\* \* \* is limited to (1) underground utilities and (2) the public right of way.” Thus, based on legislative history, it seems relatively clear that this legislation was intended to authorize *only* the placement of utility facilities beneath public roads and highways within existing public road right-of-way.

In sum, in this case the Council must apply a statutory provision where the text and (particularly) the context suggests (but does not command) one meaning, and the legislative history strongly suggests another. In this situation, we believe either interpretation is reasonable. The remainder of this proposed order assumes that the Council applies ORS 215.283(1)(L) as authorizing the placement of utility facilities in new right-of-way so long as that right-of-way is parallel to and contiguous with existing road or highway right-of-way. If the Council decides to apply ORS 215.283(1)(L) as only authorizing utility facilities *within* existing public road right-of-way, then the proposed “standard condition” (described below) requiring placement of the permanent easement for the facility either within or immediately adjacent to existing public road right-of-way, will need to be altered to require placement of the easement within the right-of-way (except where the applicant demonstrates that it is infeasible to locate the facility within the right-of-way under ORS 215.283(1)(d)).

Regardless of which approach the Council takes, we believe that the statutes also require that the Council apply ORS 215.283(1)(L) in a manner that minimizes the use of EFU-zoned lands by non-farm uses. As a result, we recommend that the Council generally require that in addition to being contiguous to existing road or highway right-of-way, any authorization of new easements under this statute minimize the width of both the construction and maintenance/operation easements, and utilize the existing road rights-of-way where it is reasonable to do so.<sup>4</sup>

Of the approximately 62-mile length of the proposed facility, approximately 56 miles are on EFU-zoned lands. Of the 56 miles on EFU-zoned lands, approximately 35 miles of the length of the proposed facility (or about 62 percent) are allowed under ORS 215.283(1)(L). The portions

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<sup>4</sup> In addition, under the express terms of the statute, the authorization only allows the proposed facility to the extent that no removal or displacement of buildings would occur, or no new land parcels result. The acquisition of easements for the construction, maintenance and operation of proposed facility will not result in the creation of new land parcels

of the proposed facility that would be placed underground along road or highway right-of-way are described below, in section III of this Attachment.

**C. ORS 215.283(1)(d) and 215.275. The Proposed Facility as a Utility Facility that Must be Placed on EFU-Zoned Lands that Are Not Along Road Right-of-Way**

Where the proposed facility is located so that it does not meet the requirements of 215.283(1)(L), e.g., where it is not along public road or highway right-of-way, then it must be evaluated under 215.283(1)(d). This statute authorizes the use of EFU-zoned land for utility facilities that are necessary for public service. The Legislature has further defined when a utility facility is necessary for public service, for purposes of 215.283(1)(d), in ORS 215.275. That statute provides that:

(1) A utility facility established under \* \* \* ORS 215.283 (1)(d) is necessary for public service if the facility must be sited in an exclusive farm use zone in order to provide the service.

(2) To demonstrate that a utility facility is necessary, an applicant for approval under \* \* \* 215.283 (1)(d) must show that reasonable alternatives have been considered and that the facility must be sited in an exclusive farm use zone due to one or more of the following factors:

(a) Technical and engineering feasibility;

(b) The proposed facility is locationally dependent. A utility facility is locationally dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;

(c) Lack of available urban and nonresource lands;

(d) Availability of existing rights of way;

(e) Public health and safety; and

(f) Other requirements of state or federal agencies.

(3) Costs associated with any of the factors listed in subsection (2) of this section may be considered, but cost alone may not be the only consideration in determining that a utility facility is necessary for public service. Land costs shall not be included when considering alternative locations for substantially similar utility facilities. \* \* \*

The context for how we recommend the Council apply this statute to the proposed facility includes ORS 215.283(1)(L), analyzed in the preceding section, and ORS 215.243, the Legislative statement of Oregon's agricultural land use policy. Adopted in 1973, this legislative policy statement has routinely been used to inform how the non-farm authorizations in 215.283 are applied:

The preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state and for the assurance of adequate, healthful and nutritious food for the people of this state and the nation." (ORS 215.243(2); emphasis added)

Thus, while it is clear from ORS 215.283 and 215.275 and other statutes that nonfarm use of EFU-zoned land is permissible under specified circumstances, ORS 215.243 generally requires that such authorizations be narrowly construed, and that the extent of such uses be minimized.

ORS 215.275, enacted by the 1999 Oregon Legislature, is the result of a series of decisions applying the authorization for utility facilities in ORS 215.283(1)(d). The first of these decisions was in 1989, when the Oregon Court of Appeals interpreted the meaning of the phrase “necessary for public service” in *McCaw Communication, Inc. v Marion County*, 96 Or App 522, 773 P2d 779 (1989). That decision provided the basis for decision making at the county level for over ten years, and was generally applied to permit siting utility facilities on lands zoned EFU where it was shown to be necessary to place the facility on EFU-zoned lands. In 1998, the Oregon Land Use Board of Appeals (LUBA) provided a further interpretation of the statute, stating that siting in the EFU zone was permissible only if there was “no feasible alternative.” Municipal and private utilities saw that interpretation as too restrictive and sought legislation to change the law. The result was 1999 House Bill 2865, codified as ORS 215.275. The committee that drafted HB 2865 included representatives from the Oregon Farm Bureau, 1000 Friends of Oregon, the Oregon Department of Agriculture, municipal utilities and private natural gas and electric utilities.

The new statute was inherently a compromise between interests favoring the LUBA interpretation and interests seeking a more permissive approach (including municipalities and utilities). The word “reasonable” appears prominently in the language of the statute, and the words “reasonable” and “compromise” figure prominently in the legislative testimony. The text of ORS 215.275 requires that the decision-maker consider whether it is necessary to locate the proposed facility on EFU-zoned lands, after considering reasonable alternatives. In determining whether the facility must be placed on EFU-zoned lands rather than in alternative locations, the decision-maker may base its determination on one or more of six listed factors including public safety, technical and engineering feasibility, locational dependence, lack of available non-EFU lands, availability of existing rights-of-way, and other requirements of state or federal law. The statute permits consideration of costs, but cost alone may not be used to justify the use of EFU lands. All of these factors require the exercise of substantial judgement by the decision-maker.

The statutory factors set forth in ORS 215.275(2) for determining whether a utility facility must be sited on EFU lands, or whether there are reasonable alternatives that do not require using EFU lands, do not provide quantitative, objective standards. The Legislature's use of the term "factors" strongly suggests that the listed considerations are just that, considerations rather than hard and fast criteria. Nor does the statute rank the factors in order of importance, or expressly call for a balancing or weighing of the factors. The text does provide that a decision that EFU-zoned lands must be used may be based on any one of the listed factors, but it also suggests that any or all of the factors may be used to show that non-EFU alternatives are reasonable.

ORS 215.275(2) provides two mandatory elements that must be proved, by substantial evidence, in the siting process. The applicant must prove that:

- (a) reasonable alternatives were considered; and
- (b) that those alternatives were rejected due to one or more of the six listed factors. Only the six factors listed in this section may be considered.

It is notable that ORS 215.275 does not require that the proposed utility facility be sited in “the best” location. Nor does it require that all alternatives to the facility be considered. It simply requires the Council to decide, based on substantial evidence, that “reasonable alternatives” to siting the proposed pipeline in the EFU zone “were considered,” and that the Council determine that the facility must be sited in such a zone due to one or more of the listed factors.

The requirement in the statute to consider "reasonable alternatives" does not expressly say whether the alternatives that must be considered are limited to locational alternatives, or whether the statute also requires consideration of alternative means of providing the service or use (use alternatives) that do not require the use of EFU-zoned lands. In terms of natural gas transmission and supply, use alternatives could include the use of conservation or other demand-side management techniques to reduce or eliminate the need for the utility service. To date, LUBA and the Oregon Court of Appeals have indicated that ORS 215.275 and 215.283 do *not* require an analysis of use alternatives (as opposed to locational alternatives). Nevertheless, OOE has required the applicant in this case to evaluate use alternatives as well as locational alternatives. This has been done, in part, to ensure that the applicant fully explains and justifies the purposes of the proposed use, which bear not only on use alternatives, but on locational alternatives as well (as described more fully in the following sections of this Appendix addressing constraint points).

The requirement to consider reasonable alternatives has been held to require examining locational alternatives to a proposed utility facility. *City of Albany v. Linn County*, \_\_\_ Or LUBA \_\_\_ (slip op. 2001-011, 5/10/2001); *Jordan v. Douglas County*, 40 Or LUBA 192 (2001). Indeed, many of the factors listed in ORS 215.275(2) require consideration of the relative advantages and/or disadvantages of alternative locations.

Once the Council has determined what “reasonable alternatives” must be considered, it has to determine how to consider them in evaluating whether the proposed facility must be sited in EFU-zoned areas rather than in an alternative location. The statute requires this decision to be made based on one or more of the six factors listed in ORS 215.275(2). Again, the factors are:

- a) Technical and engineering feasibility;
- b) The proposed facility is locationally dependent. A utility facility is locationally dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;
- c) Lack of available urban and nonresource lands;
- d) Availability of existing rights of way;
- e) Public health and safety; and
- f) Other requirements of state or federal agencies.

Despite the Legislature’s efforts to clarify what the term “necessary for public service” means in ORS 215.283(1)(d), the application of the six factors in ORS 215.275(2) to the proposed facility is not unambiguous.

- Technical and engineering feasibility – Engineers are fond of saying that virtually anything is “feasible” -- if enough money is available. We do not believe that this is what the Legislature intended when it used the term “feasibility” in ORS 215.275. For one thing, ORS 215.275(3) implies that the relative cost of “competing solutions” can be a factor (just not the sole factor) in choosing between them. Moreover, the lead-in language for this section requires the consideration of “reasonable” alternatives. We do not believe the statute requires the applicant to prove that siting in the proposed facility on EFU-zoned lands is necessary because it is infeasible from a technical and engineering standpoint to locate the facility elsewhere. Rather, OOE believes that this factor may be used to justify the use of EFU-zoned lands if the alternatives are theoretically feasible but practically difficult or high-risk from an engineering or technical standpoint. In these cases, the challenges associated with the alternative locations are so great as to render the alternatives unreasonable
- Lack of available urban and nonresource lands – This factor is a particularly curious one given that the predicate question is whether there are reasonable alternative locations on non-resource lands. The statute appears to call for the somewhat circular consideration of whether there are no reasonable alternative locations on non-EFU lands because of a lack of available urban and nonresource lands. It is possible that there could be a lack of such lands because the utility facility must be located in a place where there are few or no such lands, but this interpretation would seem to simply repeat the factor relating to locational dependence. Or the statute might be interpreted as requiring an examination of whether there are *available* urban and nonresource lands. We believe the applicant need only establish that there is a lack of “available urban and nonresource lands” in reasonable proximity to the intended site of the proposed facility to satisfy this factor. Such lands are “available,” we believe, if they are readily utilizable for the proposed facility, and do not require the displacement or removal of significant existing structures or improvements. *See, Webster’s*, at 150 (“\* \* \* 3: such as may be availed of: capable of use for the accomplishment of a purpose : immediately utilizable \* \* \*”). In addition, even if urban or nonresource lands are available, their use should cause a reduction in use of EFU land. For the proposed pipeline, NWN could go out of its way to use “available” urban land in cities such as Hillsboro, Canby or Aurora. That would make use of available urban land, but in the broader context of the apparent purpose of ORS 215.275(1) and ORS 215.243 above, it makes little sense if the end result is not a reduction in the overall use of EFU lands.
- Availability of existing rights-of-way – We believe this includes the availability of rights-of-way in areas zoned EFU, as well as non-EFU lands. Part of the context for this statute is the provision in ORS 215.283(1)(L) that authorizes utility facilities along road and highway rights-of-way. In effect, this means that road and highway rights-of-way are treated as non-EFU land for purposes of this factor. That this is the Legislative intent is further demonstrated by the fact that this criterion would have little, if any, meaning if it referred only to available right-of-way *outside* the EFU zone. The availability of right-of-way outside of EFU-zoned land should make no difference because the use of non-EFU land is clearly preferred whether there is existing right-of-way or not. Finally, this factor also allows consideration of rights-of-way other than public road and highway rights-of-way, in contrast to 215.283(1)(L). Thus, the factor reflects a preference for

placing new linear facilities in existing public and private rights-of-way, as opposed to creating new right-of-way.

- Public Health and Safety – Arguably, it is always safer to place a utility facility in a rural area, simply because there are fewer people to harm in the event of an accident. We do not believe this is the meaning of this criterion. If it were, it would effectively nullify the farm land protection afforded by ORS chapter 215. This factor does not provide an absolute criterion because safety is relative. We cannot say that a facility is absolutely “dangerous” or absolutely “safe”. For example, NWN asserts that accidents are less likely away from population centers, even though in the same application NWN proposes to place some portions of the facility in residential zones, and provides assurance that those sections of the facility are acceptably safe. We believe safety must be stated in terms of risk, which in turn is a product of likelihood and consequences. Taken this way, a non-EFU alternative could be rejected if the EFU alternative is significantly lower in risk. The Council must ultimately make a policy decision on “how safe is safe?”
- Locational Dependence – the statute allows consideration of whether EFU lands must be used in order to provide a “reasonably direct route”. Depending on point of view, a reasonably direct route could be a straight line, a route that is 20 or 30 percent longer, or perhaps a route that is twice as long. The statute does not say how much length a person proposing a utility facility may be required to add in order to avoid EFU-zoned lands. The Council has discretion to decide what is reasonable under the facts of a given case.
- Other requirements of state or federal agencies – Sometimes a statute or rule precludes the use of non-EFU land in a particular location. Examples include the Council’s Habitat Standard, which requires avoidance of Category 1 habitat, or the determination by US Fish and Wildlife that the pipeline could not go through the Tualatin Valley National Wildlife Refuge. The term “requirements” does not mean “preferences”. For example, ODFW and DSL policies prefer avoidance to mitigation for any natural habitat. But only Category 1 Habitat, as defined at OAR 635-415, is prohibited.

In summary, the six criteria of section (2) provide more specific legislative direction regarding what may be considered in determining whether EFU-zoned lands must be used by a utility facility than was previously the case, but the Council must still make some significant judgement calls based on the specifics of the particular project being proposed.

ORS 215.275(3) allows the applicant to consider costs, with three limitations:

- i. Only costs related to one or more of the six factors in section (2) may be considered;
- ii. Cost may not be the sole reason for rejecting a reasonable alternative on non-EFU land; and
- iii. When comparing locational alternatives between those in the EFU zone with non-EFU lands, land acquisition costs cannot be considered at all.

That this section exists at all is significant. As noted above, with an infinite budget even the seemingly impossible becomes feasible. Therefore, without this section, the statute might be interpreted in a manner that would effectively prohibit utility facilities on EFU lands. The statute appears to say that even if cost considerations seem to render a non-EFU alternative unreasonable, some other factor besides cost must justify rejecting the non-EFU alternative. But if that is the case, then cost need not be considered at all because the other factor is sufficient.

Faced with this apparent contradiction, we believe this section of the statute must be read in context. In doing so, OOE recommends the following interpretation:

- Section (3) regarding cost consideration should be read in the context of the requirement to consider reasonable alternatives. In short, NWN is not required to raise the project cost to a point that is clearly absurd or that effectively defeats the project purpose. Nor is NWN required to ignore the general obligation of public utilities to provide efficient cost-effective service. However, if NWN can avoid farmland by raising the cost of the project by a reasonable amount, then they must do so. The statute does not provide a threshold of “reasonableness;” the legislature left this decision to the Council.
- There are times when the comparison of an EFU location with a non-EFU location, based only on the six factors, leads to conflicting conclusions. In that case, the Council could use cost as a tiebreaker because it would not be the sole factor.

Even if reasonable alternatives to siting the facility on EFU-zoned lands have been considered, and one or more of the six factors compels the location on EFU land instead of the use of an alternative, ORS 215.275(4) requires the owner of the utility facility to restore any agricultural land and associated improvements that are damaged by siting, maintenance, repair or reconstruction of the facility. Subsection (5) requires “clear and objective conditions” to be imposed to “mitigate and minimize the impacts of the proposed facility, if any, on surrounding lands devoted to farm use “in order to prevent a significant change in accepted farm practices or a significant increase in the cost of farm practices on the surrounding farmlands.”

#### **D. Major Issues Raised Concerning the Application of ORS chapter 215**

In the review of the proposed facility for compliance with ORS chapter 215, a number of major issues have arisen concerning how these statutes apply to the proposed facility. These issues include:

- Whether locational alternatives to the proposed facility must be considered only at the “macro” level, at the “micro” level, or in some other fashion;
- The extent to which existing rights-of-way must be used as an alternative to EFU-zoned lands not in a right-of-way; and
- The lack of available urban and nonresource lands as a factor for demonstrating why the proposed facility must be placed on EFU lands.

##### **1. Locational alternatives at the “Macro” or “Micro” level**

###### *The “Macro” argument*

Figure K-9 of the ASC shows a map of the region between the Bacona station and Molalla gate station. The vast majority of the land within Washington, Clackamas and Marion counties is

agricultural land, primarily zoned EFU (*See also* County zoning maps, ASC Figures K-10, K-11, and K-12). The Molalla Gate Station is surrounded by farmland on all sides, and any path south from the Bacona station must cross substantial amounts of land in an EFU zone in order to reach Molalla Gate Station. Even with no other constraints on its location, a corridor *completely* outside the EFU zone is effectively impossible. Even if a route containing no land within the EFU zone were feasible, none achieve a reasonably direct route.

NWN has and continues to make the legal argument that because it can show that it must use *some* EFU-zoned land, it satisfies the "necessity" test in ORS 215.275.<sup>5</sup> In other words, NWN takes the position that if it can show, based on any of the factors in ORS 215.275, that it must use 100 feet of EFU-zoned land, that it has met the requirements of the ORS 215.283 with regard to the entire facility.

In the application and in this order, this argument is referred to as the "macro" argument. In its application, NWN has described the proposed corridor in more detail than a purely "macro" level. The application includes a set of 44 large-scale aerial photographic panels, showing the corridor in detail. Each panel is about 20 inches square and covers about one and a half miles. The application describes the corridor and the reasons for its selection on a panel-by-panel basis. However, NWN has reserved the right to argue that the "macro" argument alone satisfies the requirements of ORS 215.283 and 215.275.

In their written comments on the application, the Oregon Farm Bureau, Washington County and 1000 Friends of Oregon challenged the macro argument and asserted that NWN should have considered alternatives on a more "micro" basis.

### *The N+1 problem*

At the other end of the spectrum from the "macro" argument described above, some members of the public have commented that NWN must find the "best" route or that it must consider "all" alternatives. This implies a requirement to justify every foot of the facility. But the purpose of this analysis is not to determine if NWN picked the "best" route – the statute contains no allusion to a "best" route. Nor does this analysis ask if NWN considered *all* alternatives; ORS 215.275 requires the applicant to show that "reasonable alternatives" were considered, but it does not contain the word "all." No matter how many alternatives were considered, someone could always suggest one more, leading to an infinite number. OOE has called this the "N+1" dilemma and believes it is the reason why the statute does not require the consideration of "all" alternatives.

Notwithstanding its "macro" argument above, the ASC addresses the six factors of ORS 215.275(2) at a more localized level.

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<sup>5</sup> Indeed, NW Natural has argued that any number of corridors within the Project Study Area are permitted under ORS 215.275 because the "necessity" test can be satisfied based solely on the "locationally dependent" factor.

## *OOE Recommendation*

In this Proposed Order, OOE presents an approach to applying the several provisions of ORS 215.283 and 215.275 that is intended to give effect to all applicable parts of the statutes, and to the Legislature's statement of policy with regard to agricultural lands in ORS 215.243.

As noted above, OOE believes that ORS 215.283 the statute was intended to require consideration of "reasonable" alternatives. In the context of the authorization under ORS 215.283(1)(L) for utility facilities that are located underground along public road and highway rights-of-way in the EFU zone, the requirement to examine alternatives in ORS 215.275 appears to include the requirement to examine the use of road rights-of-way even where they are within an EFU zone. When applied to a linear facility such as the proposed facility here, the alternatives analysis required by 215.275 then becomes an analysis of how to connect the segments of the facility that must be located in particular places and the segments that are along public roads or highways, evaluating the alternatives using the factors of 215.275(2). This implies neither a macro nor a micro analysis, with its N+1 implications. In considering any 60-mile linear facility, there are points along any route where the choice of corridor is highly constrained by technical and engineering feasibility, or by other factors under section (2) of the statute. The Willamette River crossing is perhaps the best example – a good crossing location is hard to find, and its selection forces other choices for several miles both north and south. Other points within the general region present similar constraints. OOE therefore believes the Council should apply the statutes in ORS chapter 215 by determining first whether the proposed facility *must* go through particular locations. If so, the next level of analysis is how to get from each location to the next, using road rights-of-way wherever possible. This approach effectively divides the 60-mile route of the proposed facility into segments defined by these constraint points, with the ORS 215.275 analysis focusing on alternatives between these points. This produces an approach that is not purely macro or purely micro, but a compromise between the two.<sup>6</sup>

## **2. The Use of Rights-of-Way**

Although most of the land in Washington, Clackamas and Marion counties between the Bacona station and the Molalla gate station is in the EFU zone, NWN can avoid a substantial amount of direct impact on farm land by locating the proposed facility within or along existing road right-of-way. As described above, ORS 215.283(1)(L) allows the use of EFU-zoned lands for underground utility facilities that are placed along road or highway rights-of-way. By using these locations for the proposed facility, over 60 percent of the proposed route would be along existing roads. As described in more detail below, NWN's Preferred Corridor is nearly 10 miles longer than the route they initially described in the 1999 Notice of Intent. The extra length was largely due to the applicant's efforts to use a higher percentage of road right-of-way.

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<sup>6</sup> The Project Order states that "\*\*\*\*the requirement in HB 2865 is to justify not using the route that uses the least amount of EFU land outside the public right-of-way, based on the six factors in the bill."

In addition to the authorization under ORS 215.283(1)(L), one of the six factors allowing the use of EFU-zoned lands under 215.283(1)(d) and 215.275 is the "[a]vailability of existing rights of way." ORS 215.275(2)(d). Unlike the authorization provided by ORS 215.283(1)(L), the (1)(d) authorization is not limited to *road or highway* rights-of-way. This factor under 215.275(2) appears to allow the availability of other public and private rights-of-way to serve as a basis for use of EFU lands.

The suggestion to locate the pipeline within road right-of-way was the single most frequent comment offered by the public. In its application, NWN notes that the pipeline is permitted outright in road right-of-way. In written comments, the Oregon Farm Bureau takes nearly the same position (*See* November 21, 2001 letter from Christine Cook to Adam Bless).

In its application, however, NWN also provides arguments why the pipeline should not always be placed within existing road rights-of-way. In arguing that the pipeline should not always be placed within the road right-of-way, NWN described technical and safety factors that it considers before installing a large-diameter high-pressure natural gas pipeline within an existing public-road right-of-way, factors that it believes make such a location generally less desirable. The following is NWN's position, excerpted from the ASC, pages K-40 *et seq*:

(a) Utility Conflicts.

Traditionally, cities, counties, and the Oregon Department of Transportation ("ODOT") do not favor siting large-diameter gas pipelines within public rights-of-way because such pipelines consume valuable space within limited public right-of-way areas. Due to the diameter of the pipeline itself, and potential damage to the pipeline caused by post-installation digging in proximity to the pipeline, the pipeline area must be separated from areas needed to install and maintain other utility distribution systems, including water and waste water service, telephone lines, electrical systems, and smaller gas lines. Four to six feet of clearance on both sides of large pipelines is considered the minimum needed to maintain the system and enable future connections. This space can easily occupy more than 25 percent of an existing right-of-way area. (*See* comment letters from ODOT and the BPA, Appendix K 6 and K-9.)

(b) Third-Party Damage to Pipelines.

As discussed in Exhibit BB, third-party damage to natural gas pipelines accounts for more than half of all pipeline safety incidents nationwide, typically due to third-party digging adjacent to the pipelines. Ninety percent of the damage to NWN gas transmission facilities occurs in public rights-of-way, although only 40 percent of the lines are located within public rights-of-way. (*Id.*) With the increased use of the horizontal drilling installation method throughout the utility industries, including use for installing relatively small-diameter utility lines and cables, large pipelines within public rights-of-way are increasingly vulnerable to damage from boring for other utility installations. Further, where pipelines are located near the edge of rights-of-way, they are vulnerable to damage from augers installing power poles, highway sign poles, guardrails, and other equipment. Due to these safety and engineering concerns, NWN prefers to site

natural gas transmission pipelines adjacent to roadways, in locations where the roadway can be used for access and maintenance (thereby limiting impacts to private landowners) but the pipeline itself is in an area adjacent to the right-of-way, where NWN can control utility installation and third-party access. Under these circumstances, the property owner can be provided with good surface references to the pipeline's location, thereby avoiding inadvertent pipeline encounters through digging.

(c) Road Deterioration.

Wide, deep trenches will be required for Project construction. Such trenches can lead to increased road deterioration because it is very difficult within the road right-of-way area to match adjacent ground compaction, especially in areas where other adjacent ditch or trench lines have been previously installed and the earth compacted by various contractors. It is much easier to match adjacent ground compaction in areas outside the right-of-way that have not been repeatedly disturbed, back-filled, and compacted. Further, many existing roadways are built on fill, which is often not sufficiently compacted and engineered for large pipeline placement.

(d) Traffic Impacts During Construction.

Traffic control can be a very difficult issue during construction, particularly when a pipeline is installed within the traveled portion of a busy roadway. Regardless of the adequacy of traffic control, safety of the motoring public is to some extent jeopardized during construction. These impacts could also affect farm and residential uses along the pipeline corridor.

(e) Dimension of Required Construction Trenches.

The large diameter and rigidity of the pipe itself will make it difficult to route the pipeline around, under and/or over existing utilities. The need to install large pipe under other pipelines, utility lines and other buried objects will mean that the trench must be deeper and wider than is typical with other utility installations. Additionally, workers must be in the trench more often during this type of construction, with attendant safety concerns.

(f) Underground Bore Space Limitation.

Underground (HDD) bores at water crossings, roads, sensitive habitat areas, and so on, must be made from locations other than roads, due to space limitations and directional alignment needs. For example, the HDD process requires bore pads with a minimum of 100 feet by 175 feet of property, and the pipe laydown and assembly area must be equal to the length of the bore and approximately 40 feet wide. This space is needed to weld the pipe into a continuous string to pull the pipe through the bore hole. It is impossible to accommodate this need within existing rights-of-way. In fact, very few areas are available within the analysis area that have sufficient space to accommodate HDD boring. Seeking such areas, which will not unduly impact agricultural use of properties

and require the demolition of homes, barns, and other property improvements, has been a major constraint in guiding the Preferred Corridor location.

(g) Insufficient Bridge Design.

Most existing roadway bridges are not built to accommodate the dimension and weight of large diameter pipelines, due to issues with wind load and vertical load distribution. Most jurisdictions having authority over bridge use are reluctant to allow the use of bridges for this purpose.

Where one or more of these seven considerations limit the use of public rights-of-way, NWN has requested the flexibility to locate the pipeline adjacent to, but not within, the public right-of-way. In such instances, the impact to agricultural lands will be minimized through the use of the existing right-of-way for construction access and ongoing maintenance access purposes, and for the temporary placement of spoils and pipeline and equipment storage. Impacts will also be minimized and mitigated as described in the Agricultural Assessment, Appendix K-9 and the Flood Hazard Impact Mitigation Plan, Appendix K 10.

OOE general recommendation on the use of road right-of-way

In its review of NWN's proposed corridor, OOE treated lands along existing public road or highway rights-of-way as a use that is allowed outright, and that therefore must be considered in the same way that non-EFU lands are. Further, based on the more general right-of-way factor under ORS 215.275(2), OOE also has treated land within other types of rights-of-way as a reasonable alternative to the use of EFU-zoned lands. In both cases, the use of lands within or along rights-of-way is a reasonable alternative only where such rights-of-way provide a reasonably direct means of getting from one point to another. Further informing this analysis are the locational constraints for the proposed facility.

Where existing rights-of-way can be used, the question remains whether the facility should be placed within those rights-of-way, or should also be allowed along them. In the case of road rights-of-way, OOE has developed a recommended "standard condition," that would allow one half of the construction easement and all of the permanent easement for the facility to run immediately adjacent to, but outside of, existing road right-of-way. Nevertheless, where there is substantial evidence that placing the proposed facility outside of existing road-rights-of-way would interfere with farm practices or farm-related structures, OOE believes the Council has the authority to condition a site certificate to require NWN to place the facility (including the easements) within the road right-of-way.

**3. Use of Non-EFU Lands**

Within the study area for the proposed facility there are several incorporated cities. Three of them, Wilsonville, Hillsboro and Sherwood, are growing especially rapidly. Other cities include Canby, Forest Grove, Barlow, Aurora, Cornelius and North Plains. The proposed facility enters the city limits of Hillsboro for a short distance (about a mile) and follows the Sherwood Urban

Growth Boundary along its southern edge for about two miles. Clearly, where the proposed facility is not located along public road or highway rights-of-way, ORS 215.283(1)(d) and ORS 215.275 require NWN to consider placing the pipeline in non-EFU lands to the extent that use of such land is reasonable and is not rejected due to one or more of the six ORS 215.275 section (2) factors.

Some of the alternatives described in NWN's Notice of Intent and ASC include land within the urban areas described above. For example, at OOE's direction, NWN considered a potential corridor following major state and federal highways, and a corridor designed with farm avoidance as the only priority. NWN considered these corridors but rejected them, primarily for safety reasons.

In our May 2001 Request for Additional Information, OOE asked: "if pipelines should not be sited in cities for safety reasons, then how can existing pipelines continue to operate today in large cities such as Portland and Gresham? And, if pipelines can and do operate safely in those cities, then why not avoid farmland by routing this pipeline through Hillsboro or Sherwood?"

In its July 3, 2001 response to OOE's Request for Additional Information, NWN gave the following answer:

"Fundamentally the proposed pipeline will be a safe facility. However, both NWN and regulatory officials also recognize that placement of large, high-pressure gas pipelines within urban growth areas exposes the pipeline to an enhanced risk of third-party damage. As discussed in ASC Exhibits BB and K, page 41, third-party damage to pipelines accounts for more than half of all pipeline safety incidents nationwide, typically due to third-party digging adjacent to pipelines. Ninety percent of the damage to NWN's own gas transmission facilities in recent years has occurred on public right-of-way. Pipelines located within urban areas are exposed to even greater levels of risk of third-party damage due simply to population densities and the risk that property development activities and public right-of-way development will result in digging in close proximity to pipelines, thereby exposing the pipelines to greater risk of damage \* \* \*. In addition to potential exposure to third-party damage, locations within urban growth boundaries could likely require demolition of homes, businesses and industrial establishments and would expose the pipeline to locations where competing utility facilities crowd developed public rights-of-way. Further, substantial HDD operations within developed urban areas are extremely challenging due to lack of suitable sized undeveloped parcels for pipeline laydown areas and entry and exit locations."

In summary, NWN asserts that existing pipelines are safe even in major cities. However, placing a new pipeline in a rapidly developing suburb increases the risk to public safety. Public safety is one of the factors in ORS 215.275. Moreover, although the demolition of existing homes is not one the six ORS 215.275 factors, NWN does not consider it "reasonable." OOE recommends that the Council concur with the reasons NWN has given for not placing the proposed facility in urban and urbanizable areas.

## **E. Summary – OOE’s Recommendations Concerning How to Apply the Requirements of ORS chapter 215 to the Proposed Facility**

In the Project Order required by ORS 469.320, OOE issued a list of applicable requirements for the Application for Site Certificate, including instructions to NWN for complying with ORS 215.275. After reviewing the application, OOE followed the following construct for analyzing the project under ORS chapter 215. This construct closely parallels the instructions we gave NWN in the Project Order, but is refined by the information learned from review of the application.

### *Describe the Purpose of the Project*

In order to evaluate the proposed facility under ORS chapter 215, the Council must know the project’s purpose. Included in this are locational constraints on the project, including both locations that the facility must go through, and locations that the facility must avoid. Understanding these aspects of the proposed facility is crucial because, at their core, the statutory provisions in ORS chapter 215 (as they apply to this proposed facility) require the proposed facility to be evaluated against locational alternatives that minimize the use of EFU-zone land that is not within or along existing rights-of-way. In order to determine what alternatives are reasonable, the Council must know what the project’s purposes and constraints are. OOE believes that alternatives that are not consistent with the purpose of the project are not reasonable, as that term is used in ORS 215.275.

### *Describe alternatives to the project itself*

As noted previously, the statutes could be read to require consideration of use alternatives as well as locational ones. Such alternatives might include not building a gas pipeline at all. Therefore OOE directed NWN to show that non-pipeline alternatives were considered.

### *Define a Corridor Selection Study Area and Justify its Boundaries*

The statutes do not specify how far the applicant must go in considering locational alternatives or “reasonably direct routes.” Therefore OOE directed NWN to define the geographic area between Bacona and Molalla that it considered reasonable, and state why looking outside that area would be unreasonable. That area is referred to as the “Selection Study Area”.

### *Describe Reasonable Alternatives within the Selection Study Area*

OOE directed NWN to describe reasonable alternative locations within the Selection Study Area. In this context, alternative locations means *alternatives to the use of EFU land, including alternatives that use lands along existing public road or highway rights-of-way*. As noted above, a corridor that is completely outside the EFU zone may not be reasonable (if it is possible at all). However, OOE directed NWN to identify at least one corridor that was selected on the basis of minimizing the use of EFU-zoned land. OOE also directed NWN to include certain alternatives that the public suggested during the comment period on the Notice of Intent.

### Identify Major Constraints

As described above, there are some points between Bacona and Molalla that are clearly not reasonable locations for the proposed facility, and other points where the pipeline “must” be sited due to technical, safety or other factors allowed in section (2) of the statute. OOE directed NWN to identify those points and justify their selection based on one or more of the six section (2) factors.

### Consider reasonable alternatives in the “segments” between constraint points and between areas where the facility is located along public road or highway rights-of-way

As described above, OOE does not agree with the “macro” argument of NWN. That argument, taken to its logical conclusion, would mean that once an applicant shows that a utility facility must be placed on *any* EFU-zoned land, the applicant is then free (in terms of ORS chapter 215) to use as much EFU-zoned land as it desires. Nor does OOE agree with arguments that NWN must justify every foot of its proposed route, for the “N+1” reasons described above.

OOE believes the proper way to apply the statutory provisions of ORS chapter 215 to the proposed facility is as follows:

Certain key locations of the proposed facility are established through the definition of the purpose of and limitations on the proposed facility (the constraint points); further, as part of the consideration of project purpose, the applicant must also consider whether there are other alternative means of providing the function or use that avoid the use of EFU-zoned lands;

The statutes authorize the proposed facility where it is along public road or highway rights-of-way, ORS 215.283(1)(L), but the nature of the key term “along” (and its context) also provides the Council with authority to restrict the degree to which the use goes outside of existing right-of-way.

Finally, where there are no road or highway rights-of-way that provide a reasonably direct route between constraint points and/or between portions of the route where there is road or highway right-of-way, the applicant is required to consider reasonable alternatives for getting between these points. If there is no reasonable route between the two points that avoids the EFU zone or uses other rights-of-way, then NWN generally must show that it selected the routes between the points that is reasonably direct (thus using as little EFU-zoned land as possible), except to the extent that on or more of the factors under 215.275(2) requires using something other than a relatively direct route.

### Analyze the Location of the Proposed Facility in Detail

Even where the applicant has demonstrated the bases for the location of the proposed facility, , an analysis of the expected effects of the proposed facility on farm uses and practices is also required. This detailed examination is essential in order to identify mitigation and minimization measures required by sections (4) and (5).

Describe steps to mitigate and minimize agricultural impacts

The steps described in this Attachment to the proposed order are locational steps aimed at minimization. If EFU impact cannot be avoided, the Council must still impose mitigation under its Soils standard. Conditions to mitigate farm productivity impacts are described in detail under the Council's Soils standard.

**II. Analysis of the Proposed Facility**

In this section, we evaluate the proposed facility under the above construct.

**A. Project Purpose**

As directed in the Project Order, NWN began by describing the project's purpose. The following is essentially excerpted from the ASC, with some detail omitted for brevity:

NWN's purpose is to serve the energy needs of its growing customer base in the Portland metropolitan area and beyond. NWN's overall service goals are defined in terms of NWN's mandate to serve its customers and the company's operational objectives.

(a) **Obligation To Serve Customers; Customer Need for the Proposed Pipeline Facility**

NW Natural currently serves approximately 520,000 customers in Oregon and Washington. NW Natural has an exclusive service territory that includes a major portion of western Oregon, including the Willamette Valley and the coastal area of Oregon, extending from Astoria to Coos County. NW Natural is also one of the fastest growing gas distribution utilities in the country, due largely to population growth in its service territory. For example, between September 30, 1999 and September 30, 2000, the company added 22,413 customers. This 4.6 percent growth rate is well above average for American gas utilities. (Integrated Resource Plan ("IRP") (Appendix N-1.)

NWN has an obligation to serve customers within its exclusive service territory. This obligation derives from a utility's statutory duty to furnish adequate and safe service. *See* ORS 757.020. In order to provide gas to its growing customer base, the company projects its resource needs in a formal public planning process regulated by the Oregon Public Utility Commission ("Commission" or "OPUC").

As an Oregon public utility, NWN is required to describe its resource needs for the short and long term in an Integrated Resource Plan (IRP). The IRP is based upon a "least cost planning" process and methodology adopted by the OPUC in OPUC Order 89-507. (Appendix K-1). The company's IRP, first developed in the early 1990s, was reviewed in a public process conducted by the Commission and formally acknowledged by the OPUC. *See* OPUC Order LC-3. (ASC, Appendix K-2.) In 2000, NWN updated its IRP to analyze its projected customer growth, supply needs, and system capacity requirements through 2030.

Through the 2000 IRP update, NWN updated its forecast of its resource requirements and analyzed and forecasted supply- and demand-side resources. This methodology and analysis are described in detail in the 2000 IRP (Appendix N-1). In summary, the company analyzed and forecasted new residential customer gains largely based on housing starts in the service territory and the conversion of existing homes to natural gas. For commercial and industrial customers, the company similarly used forecasts of county employment gains and regional employment growth in NWN's service territories. Residential, commercial and industrial customer growth assumptions were reduced for projected attrition. Equations were then applied to estimate gas usage and make weather assumptions, as well as to predict energy-efficiency improvements and added appliances.

The IRP shows a projected steady growth in the number of residential, commercial, and industrial customers in the company's service area over a 30-year planning horizon. Under the growth-forecasting scenario accepted by the OPUC (Appendix K-3), compared to 1999 year-end, residential and commercial customers are expected to more than double in the 30-year planning horizon. For the period between 2000 and 2019, the IRP estimates that residential customers will grow by approximately 2.78 percent each year; commercial customers are expected to grow by 1.71 percent per year during this period. NWN expects that the firm industrial class will grow by approximately 1 percent per year during the planning period. Peak day gas requirements are projected to increase significantly over the 30-year planning horizon, rising from 9.0 million therms to over 14.7 million therms. (IRP, Appendix N-at A-3; OPUC Order, Appendix K-3 at 2.)

NWN also analyzed available resources, including current resources such as pipeline transportation contracts, gas supply contracts, storage options, and supply diversity. The IRP also analyzes future resource alternatives, including addition of more capacity from the interstate pipelines. In 2000, the OPUC determined that NWN's existing resources were in balance with its loads. The updated IRP concludes that the company must add resources as soon as possible to assure service to customers under peak load conditions.

(b) Needed Storage and Delivery Systems

NWN relies on underground gas storage at its Mist Field in Columbia County to meet the service needs of its growing customer base. The Mist underground storage facility provides NWN with a means of balancing relatively constant pipeline gas supplies with fluctuating market requirements. Gas is injected into storage during off-peak periods and is withdrawn when market demand exceeds available supplies from other sources. Underground reservoir storage requires suitable underground geological conditions in a specific geographic area. These conditions occur in depleted oil or gas pools. Thus, the storage location cannot be selected but must be where the proper conditions occur naturally.

The successful development of underground storage requires sufficient pipeline capacity to move natural gas into and out of storage. In the 2000 IRP update, NWN analyzed various alternatives to increased storage and pipeline capacity. That process confirmed that this Project—the South Mist Pipeline Extension—is the necessary pipeline infrastructure.

(c) System operational support

As described above, NWN described the project purpose primarily in terms of using underground storage to meet peak demand in the face of a fluctuating market. However, a second purpose is to provide needed infrastructure support in the region where load is growing.

NWN's gas distribution network is supported by approximately 500 miles of high-pressure transmission pipelines. The Portland distribution system is a hub-and-spoke design. A central high-pressure feeder pipeline encircles the core area, and numerous lateral spokes radiate out to the cities of Gresham, Forest Grove, and Newberg and south toward Salem. As new customers are added to the distribution system, additional pressure is needed in the piping network. Areas of high growth, such as Hillsboro and Sherwood, require frequent expansion of the supporting infrastructure. The proposed pipeline will provide operational support for the existing infrastructure to continue to serve the growing areas west and south of Portland. It will also provide pressure support into the central core of the distribution system. This operational support will include necessary tie-ins to the "feeder lines" that serve these communities, which must occur at several locations along the Preferred Corridor. (*See generally* IRP, Appendix N-1 at ES-9, B-18, B-23, D-1, D-2.)

As noted, the SMPE will need to be interconnected with NWN's existing piping network at several key locations. At the northern end, the Bacona Blowdown Station, the SMPE line will connect to the terminus of the 24-inch pipeline that NWN installed in 1999 and the original 16-inch South Mist Feeder line. At the southern end, the SMPE will connect to the Williams interstate transmission pipeline at NWN's existing Molalla Gate Station.

In order to meet the operational objectives and customer-service needs described above,<sup>7</sup> the SMPE will need to interconnect (or "tie in") with four additional pipelines. The first interconnection, to the South Mist Feeder line, will be just north of North Plains and north of the Sunset Highway. The second interconnection, to the feeder pipeline serving Forest Grove, will be near the western edge of Hillsboro. The third interconnection, to the Newberg Feeder, will be just west of the city of Sherwood. The fourth, an interconnection to the company's Willamette Valley Feeder, will be near the City of Aurora.

Summary of Purpose of the Proposed Pipeline

NWN described two distinct purposes for the SMPE. First, the SMPE is intended to enable NWN to use underground storage to minimize costs to ratepayers and to provide a measure of insulation from fluctuating spot markets. Second, the SMPE provides operational support for the distribution network in the western Metro area suburbs.

**B. Consideration of Non-pipeline Alternatives**

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<sup>7</sup> As the IRP states, "The SMPE is essential if any storage reserves beyond the three now in existence are to be developed, as this is the primary conduit through which additional supplies from Mist will reach NW Natural's customers." (IRP at B-23.)

NWN considered non-pipeline alternatives, but eliminated them based upon standard utility planning methods. NWN considered demand side measures, including weatherization programs and a residential furnace efficiency program. The PUC found that NWN should vigorously promote such measures, but concurred with NWN's assessment that they would not completely offset future demand growth. As a result, this alternative would not meet the project purpose and, as a result, is not a reasonable alternative to the proposed facility.

On the supply side, NWN considered options including:

- Increased gas supply contracts with firm transportation
- Increased contract storage with firm transportation
- Increased on-system LNG deliveries
- Satellite LNG and propane-air deliveries
- New direct connection to PG&E Gas Transmission Northwest.

#### Technical and Engineering Considerations

For purposes of the Integrated Resource Plan required by the OPUC, the expanded capacity at Mist was determined to be lower-cost and therefore preferable to the other alternatives based on cost of service considerations. However, pursuant to ORS 215.275, NWN may consider technical and engineering feasibility but may not rely on cost. NWN determined that a pipeline connecting its gas storage fields in Mist with the interstate pipeline station at Molalla was necessary to provide needed system support. Urban growth patterns determine the area where additional system support directly needed (southwest Portland) and where connection with the interstate gas pipeline system provides indirect support to more remote growth areas. (see the 2000 IRP discussion at pages B-20 through B-26). System support functions were not included as arguments in the IRP linear programming model and therefore, to the extent that the SMPE provides system support benefits, these functions were not monetarized and used in making cost comparisons to pipeline capacity alternatives.

Qualitatively, the underground storage at Mist and its related infrastructure provide system redundancy in times of emergencies. Meeting load growth through only subscribing to additional interstate pipeline capacity increases customers' exposure to single-supply source failures and consequential curtailment of service. As the IRP states:

" Whether the company added new supply resources at Mist or subscribed to equivalent capacity on the interstate pipeline system, construction of new distribution pipelines in NW Natural's service territory would be inevitable as the current grid of pipelines is running close to capacity under design conditions. Hence, a further benefit of Mist expansion is that the SMPE further diversifies and enhances the reliability of NW Natural's distribution system." (IRP at B-18.)

To successfully expand the Mist facility and provide reliable natural gas service to a growing customer base, NWN will need to construct additional delivery pipelines. The SMPE is an essential delivery pipeline to meet NWN's customer needs. (*Id.* at B-18.)

In summary, ORS 215.275 requires the analysis of "reasonable alternatives." In establishing the project purpose, NWN met this requirement (insofar as it requires consideration of other means of carrying out the use that do not require EFU-zoned lands) because it considered non-pipeline alternatives. Those alternatives were eliminated because they do not provide the necessary stability to NWN's distribution system or enable NWN to satisfy its statutory obligation to "furnish adequate and safe service, equipment and facilities" at a "reasonable and just" charge to customers in accordance with OPUC regulations. While IRP identifies the SMPE as the least cost supply-side resource, it also commits NWN to continue pursuing demand side resources as well.

### **C. The Corridor Selection Study Area**

As noted above, the statutes do not state how far NWN must go in finding a "reasonably direct route" as that term is described in the "locationally dependent" factor. In order to consider reasonable locational alternatives, NWN first had to define a manageable area of the state in which to study different alternative corridors. In its Notice of Intent, NWN defined a "corridor selection study area" that was bounded roughly by the Columbia/Washington county line to the north, Molalla to the south, the Coast Range to the west, and a line roughly following the eastern limits of Hillsboro, Sherwood, Wilsonville and Canby to the east.

The northern boundary was set at a point just north of the Bacona Blowdown Station, which is located in forested land north of Dairy Creek and just south of the Columbia/Washington county border. This is reasonably close to the southern end of the existing 30 mile South Mist Feeder pipeline loop, which NWN completed in 1999 under amendment 2 to the original South Mist Feeder Pipeline site certificate. NWN chose a point north of Bacona Blowdown station to allow for the possibility of different corridors leading south.

The western boundary was defined by the Coastal Range. The Coastal Range presents challenges of a geotechnical nature (*e.g.*, the need to install the pipeline on steep slopes and in geologically unstable areas, including areas prone to landslides). Areas west of this boundary and within the coast range were considered unsuitable for safety and geotechnical reasons.

The southern boundary was defined by the location of the existing Molalla Gate Station. It would be obviously be unreasonable to have gone further south.

The eastern boundary was selected based on a combination of technical and engineering factors and system operational factors that relate to the project purpose. The eastern boundary needed to be far enough west to provide increased reliability and operational support to the existing infrastructure. Previous system operational modeling work conducted by NWN concluded that an "outer loop" would increase the diversity of supply into the Portland-area distribution network. An outer loop not only optimizes the operation of the existing infrastructure, but also optimizes the operation of the entire system. A gas distribution network, much like a spider web, is strengthened by adding new elements that interconnect, not by paralleling existing elements. Comparing the impacts of a new outer loop with the expansion of existing facilities, both can be designed to achieve the same operational results, but only the outer loop optimizes operations

and flexibility of the total system. The eastern boundary was selected to provide an outer loop to the existing system.

To meet the purpose of the facility, the pipeline must also be located within reasonable proximity to the west-side feeder and the feeder lines serving growing communities including Forest Grove, Newberg, Hillsboro, etc. The west-side feeder is a high-pressure gas line with a diameter varying between 10 and 16 inches, traveling throughout the area west of Portland, connecting the system to a gas supply at the southeast gate near Oregon City. To meet the project purpose, the pipeline must be in a location that can provide system support and gas pressure for communities west and south of Portland while still being capable of flowing to the east to provide additional pressure for the west-side feeder line.

NWN conducted hydraulic studies to determine the best general location for the pipeline to accomplish these overarching system support objectives. They concluded that if the pipeline is too far east, flow will diminish and will not provide the needed support to growing communities. A pipeline too far to the east would simply be redundant to the west-side feeder, undermining the objective to provide system support to communities in the west. An important reason for the added support to the west-side feeder is to avoid the potential need to increase the size of the west-side feeder line in the coming years. A pipeline too far west will not provide pressure needed to enhance the flow and supply into the Portland area gained through connection to the west-side feeder.

In addition to system needs, the need to cross the Willamette River guided the eastern boundary location. In order to cross the Willamette River, substantial open areas are needed for bore pads and pipe laydown that will not require the demolition of homes and other property improvements. NWN studied the Willamette River extensively between I-5 and the western boundary of the Project Study Area to find an appropriate location for crossing. The choices were few because the riverbanks are lined with houses and other development throughout most of this area and property lines rarely align on both sides of the river. (*See* further discussion of the Willamette River Constraint, Exhibit K Section I.C.3.a. of the ASC.)

In summary, NWN established the boundaries of a manageable area, within which they could study in more detail the availability of existing road and highway rights-of-way, and what “reasonably direct routes” exist as alternative means of getting from one stretch of right-of-way to another. OOE believes that the boundaries of the corridor selection study area are reasonable based on the foregoing reasons.

#### **D. Alternatives within the Corridor Selection Study Area**

Having established a corridor selection study area, NWN is authorized to place the proposed facility along existing road and highway rights-of-way. The alternatives analysis required under ORS 215.275(2) comes into play in determining how to route the proposed facility between segments where it is already proposed along road rights-of way. NWN must consider reasonable alternatives that minimize the extent to which EFU lands are used in these “gap” areas. Washington, Clackamas and Marion counties are predominantly zoned EFU between the Bacona station and the Molalla gate station. Nonetheless, NWN must still consider reasonable

alternatives and demonstrate that the gaps cannot be filled through the use of existing rights-of-way or lands that are not zoned EFU, based on one or more of the six factors listed in section (2) of ORS 215.275

### *The Dilemma of Competing Requirements*

To identify reasonable alternatives within the corridor selection study area, NWN first noted that there are many competing priorities, such as safety, geology, land use, environmental concerns, agricultural impact, and operational objectives consistent with the project purpose. For example, it seems obvious that a pipeline is safer if it is in low population areas. However, the areas of low population are likely to be farmed. These two priorities compete. To balance competing priorities in a systematic way, NWN developed a list of different factors that needed to be taken into account. These included each of the EFSC standards, avoidance of farmland, public health and safety, compatibility with the project's operational objectives, and other factors of interest to NWN. In all, NWN identified 25 different priorities.

After developing this list of factors, NWN could mathematically assign different "weights" to each factor. For example, public safety and geological stability might be assigned weights of 10, while other factors might be assigned a weight of only 5. The result would be an alternate corridor with high emphasis on safety but only medium emphasis on other factors. Conversely, farm land avoidance could be assigned a high weight to produce a corridor that emphasizes farm land avoidance. The two corridors would look different. NWN could also assign equal weight to all factors, producing a compromise. Any weighting scheme is possible, and with computers it is possible to design any number of corridors, each with a different emphasis. For this reason, there is no "best" corridor, only a corridor that best meets a given emphasis.

In its Project Order, OOE also directed NWN to consider a route following major highways – US 26, 217, and Interstate 5. This route falls outside the selection study area described above, but it was the alternative most frequently suggested in public comment on the NOI. The ASC described this as the "highway corridor." NWN explored and rejected this route as a location of the proposed facility for the following reasons:

- (i) The Oregon Department of Transportation prohibits longitudinal placement of utilities within interstate rights-of-way unless there are no other available options. (ASC, Appendix K-6.)
- (ii) Sunset Highway and Highway 217 have limited rights-of-way available because of existing underground facilities within the rights-of-way. Pipeline construction within those rights-of-way would disrupt transportation systems and would present unnecessary safety concerns.
- (iii) This alternative location would require crossings at the Tualatin and Willamette rivers in locations that are not technically feasible because of geotechnical concerns as well as the lack of available lands suitable for subsurface bores. Moreover, in order to accommodate the HDD laydown and bore-pad areas, river crossings in proximity to the state highways (especially the Willamette River) would require substantial loss and demolition of property improvements, including homes, barns, and other agricultural property improvements.

(iv) This alternative, as well as other potential alternative routes to the east of the Selection Study Area, would require substantial lateral pipeline extensions over agricultural lands in order to connect the pipeline to other system facilities, including the feeder lines. Therefore, the Highway Corridor would not necessarily lessen the use of EFU-zoned lands.

NWN found the route following highways 217 and I-5 unsuitable because public right-of-way was unavailable and because of other federal and state agency requirements.

The Federal Highway Administration (FHWA) has regulations at 23 CFR 645 regarding accommodation of utilities. These regulations apply to new utility installations within the right-of-way of federal-aid or direct federal highway projects. For installation of longitudinal utilities within interstate highways such as I-5, states must submit an “accommodation plan” for FHWA approval. The plan must consider safety, environmental and economic effects of loss of productive agricultural land resulting from disapproving the utility in the right-of-way, and inclusion of utility access control lines. These regulations do not specifically prohibit longitudinal utilities on interstate highways; however a state may adopt a more stringent policy. The FHWA is directed to use the current edition of AASHTO “Guide for Accommodating Utilities Within Highway Right-of-Way” in evaluating the state accommodation policy.

OAR Chapter 734, Division 55 details the state policy. OAR 734-055-0080 states that:

- (1) All permit applications that request the use of freeway rights-of-way shall reasonably comply with AASHTO policy on the Accommodation of Utilities Within the Freeway Right-of-Way. Installations that may be allowed on freeways are generally limited to crossings only, with all of the installation work and maintenance activities performed outside of the access control line. All permit applications must include detailed drawings that show the location of the proposed facility and the freeway access control line and/or right-of-way lines.
- (2) Consideration will be given for new longitudinal installation that can be located between the freeway access control line and the freeway right-of-way line.
- (3) Only extreme hardship cases will be considered for new longitudinal installations that are inside the freeway access control lines. Application of this nature must satisfy the AASHTO policy requirements regarding the impact on the freeway traffic safety, operations and maintenance; the future freeway design and construction; and applicant must demonstrate that alternative locations are not available.\*\*\*”

NWN also found the I-5 route unsuitable because of the Willamette River crossing. In its response to OOE’s May 2001 request for additional information, NWN elaborated:

“The Willamette River crossing substantially compels the entire southern portion of the Preferred Corridor. NWN initially believed that a crossing along the I-5 corridor could be feasible using the existing I-5 bridge structure. However \*\*\* the existing bridge structure cannot be used for structural reasons; moreover it is unlikely that state and federal highway agencies would approve use of the I-5 corridor bridge. An HDD boring in this location is impossible given the need for substantial undeveloped land for the bore entry site, pipeline laydown area and exit location. Wilsonville simply lacks available

undeveloped land for this purpose. The only reasonable location for a Willamette River crossing is the location proposed in the Preferred Corridor. In essence, this factor alone eliminates any reasonable pipeline locations within the city of Wilsonville.”

OOE recommends that the Council find that NWN considered the “highway” corridor and provided substantial evidence that the proposed facility must be placed on EFU-zoned lands rather than along the highway, based on the six factors.

### *NWN’s Corridor Selection Study*

The corridor selection study area contains approximately 500 square miles and spans an average width of 12 miles. The number of possible routes within an area this size is infinite. To produce a manageable number of reasonable alternatives, NWN compiled data about the area that was available either through local government, Metro, NWN’s knowledge of the area around its existing pipelines, and in some cases the federal government. Much of the data was available digitally. For some factors, the digital data was highly reliable. For example, Washington and Clackamas Counties have digital zoning maps that are reasonably reliable. Reliable information on landslide potential was available also. For other factors, such as wetlands, NWN used available data, knowing that ground-level surveys would be needed later.

Using computer methods, NWN divided the 500 square mile study area into individual points of land that they called “pixels”. Each pixel was 52 feet square. NWN used the data to quantify the suitability of each pixel in terms of safety, stability, farm impact, environmental suitability, compatibility with local land use regulations, and each of the other 25 competing priorities, on a scale from 1 to 5. Areas where a pipeline is prohibited by law (for example, areas named in the EFSC Protected Area standard) were assigned a suitability rating of 99.

By assigning different weights to each of the 25 factors and by quantifying each 50 foot pixel for suitability with respect to each factor, NWN computed an overall suitability for each pixel. Again using computer methods, NWN could analyze any possible route for overall suitability. By assigning weighting factors with different emphasis, NWN could develop different corridors optimized for safety, environmental impact, land use compliance, or any other emphasis.

In its Notice of Intent, NWN proposed four different such corridors, entitled the Safety Corridor, the Land Use Corridor, the Environmental Corridor and the Balanced Corridor. These corridors were developed using the publicly available data and are not the basis for the Application for Site Certificate. The route location eventually proposed in the ASC is not within one of the four corridors described in the NOI. However, these corridors provided a starting point for public comment and for the detailed studies needed to produce the location of the proposed facility in the ASC.

As noted in public comment, the 25 criteria used in the development of the alternatives do not match the six factors of ORS 215.275(2). At the direction of OOE (see Project Order, Section III.B) NWN also developed a corridor considering only the factors listed in ORS 215.275. Specifically, OOE directed NWN to assign zero weight to five factors that were based on cost. OOE also selected five other factors from among the original 25 that NWN could only consider

after demonstrating that cost was not the sole consideration. In its ASC, NWN considered this new corridor, entitled the “HB2865 factors-only” corridor. They concluded that it was not suitable because:

“(i) The corridor raises numerous technical and engineering feasibility concerns, including the alignment's geologic instability and the location of numerous ancient and active landslides in the area of the proposed alignment. The corridor increases the amount of side-hill construction and decreases, therefore, the safety of the corridor. There is no possible Willamette River crossing in the vicinity of this alternative corridor because property is not available to meet the technical requirements of the bore crossing. This corridor is also a significant distance from the identified system tie-in locations, thus requiring long lateral pipe installations through EFU-zoned lands that would significantly increase the pipeline's overall impact on farm lands.

(ii) This corridor crosses more rivers and streams than any of the other corridors, including the Preferred Corridor described in this application. It has maximum detrimental impact on environmental areas and associated habitat.

(iii) Numerous trees would be lost in timber areas because the pipeline easements require an 80-foot construction easement and existing pipeline easements, reforestation along the permanent easement would be restricted, and public rights-of-way would not be available.

(iv) The corridor includes developed portions of the towns of Banks, Forest Grove, the Dundee and Newberg areas, and Donald.”

Avoiding developed portions of cities and towns is not by itself a factor that may be considered under ORS 215.275. Therefore, the Council should not consider this point even if NWN did. And factor (iii) is questionable since the original South Mist Feeder pipeline project is largely in forestland. However, points (i) and (ii) relate to technical feasibility, safety, and other requirements of state or federal law, and are therefore permissible considerations.

Finally, in the Project Order OOE directed NWN to consider one corridor that minimized use of EFU land. NWN described such a corridor in its application and deemed it unsuitable because:

“(i) Because the public right-of-way is used to the maximum extent, the route maximizes the risk of damage to existing underground facilities and maximizes the safety concerns that arise from installation of a large gas transmission pipeline within the public right-of-way. Further, traffic would be seriously disrupted during pipeline construction and maintenance activities, increasing safety concerns. The Willamette River cannot be crossed along the I-5 corridor, and the existing bridge structure cannot be utilized. Indeed, there is no feasible location for a bore crossing under the Willamette River. There is no available alternative for installing a transmission line through the city of Aurora, and the Pudding River cannot be crossed at this particular location. The Tualatin River cannot be bored in the location suggested. Furthermore, south of the Tualatin River there is an area of unstable ground and canyons. Side-hill construction would be required, which would be geotechnically infeasible and a safety hazard.

(ii) The corridor intersects numerous high-population-density areas including North Plains, Hillsboro, Sherwood, Wilsonville, and Aurora.

(iii) The corridor would also cross environmentally sensitive areas and important habitat areas, including the Jackson Bottom wetland and archaeological sites in the Aurora and Donald areas.”

In summary, NWN considered alternative corridors within the Selection Study Area, including:

- (i) a corridor designed to minimize use of EFU-zoned land;
- (ii) a corridor based only on criteria that matched the six ORS 215.275 factors, and
- (iii) a corridor designed specifically to follow major highways, as frequently suggested in public comment.

OOE recommends that the Council find that NWN considered reasonable alternative corridors within the Selection Study area in order to avoid the use of EFU-zoned lands. OOE further recommends that the Council approved NWN’s use of the “balanced corridor” as the starting point for the more detailed on-the-ground analysis of availability of right-of-way and the other factors that may be used to justify the use on land that is zoned EFU under ORS 215.275(2).

#### **E. Constraints within the Corridor Selection Study Area**

Regardless of how NWN identified reasonable alternatives or distinguished among them, there are certain severely constrained locations between the northern and southern end points of the proposed facility. For example, there are very few places where it is feasible to cross the Willamette River. Also, some locations should be avoided because they are less safe, conflict with requirements of state or federal laws, or present significant technical or engineering problems. Still other constraints involve operational concerns consistent with the project purpose, such as necessary locations for system tie-ins.

The Project Order recognized this and directed NWN to “identify and define specific geographical points that the pipeline must either cross or avoid in analyzing alternatives.” NWN identified 10 major constraints along the 60 miles of proposed pipeline. (ASC, Figure K-7.) Some are geographic points that the pipeline must cross in order to achieve a reasonably direct route, others are constraints related to technical feasibility, and others are areas that should be avoided for technical or safety reasons.

NWN summarized constraints in six overall categories:

(1) System tie-in locations are generally selected to maximize the pipeline's influence on customer supply capabilities, both today and in the future. Tie-in locations can be altered to some extent. However, if the proposed location of the facility is substantially altered, that change will typically require additional pipeline installations, with attendant surface disturbance and impacts. Tie-in locations remote from the proposed location of the facility would typically require additional pipeline extensions through EFU-zoned lands that would not be impacted by the proposed alignment.

(2) Construction-related constraints fall into the broader categories that include the utilization of existing construction advantages, areas where construction is prohibited, or directional drilling

(HDD) lineup considerations, including sufficient land for necessary bore pads and laydown areas, situated in locations that will not damage existing residences or harm environmentally sensitive areas. Examples include utilizing the existing Highway 26 overpass over the Burlington Northern Rail Road tracks, avoiding the Tualatin River National Wildlife Refuge, and the Willamette River crossing.

(3) Geotechnical issues include avoiding known and suspected slide areas, side-hill installations, and areas where soil conditions make it impractical for pipeline installations (*e.g.*, avoidance of blasting due to shallow rock, potential ground liquefaction, earthquake faults, etc.).

(4) River/creek/highway crossing locations must be selected to provide sufficient space and ground topography to allow long directional bores. The limiting factors influencing bore configuration include a specific 15-degree entrance angle, a pipe minimum radius of curvature of 2,400 feet, a bore pad large enough to set the boring machine and related equipment, and a laydown space long enough and flat enough to weld the pipe together for the pull-back through the bore.

(5) Isolation valves are a mandatory component of the pipeline facility. U.S. Dept. of Transportation regulations at part 192 require that isolation valves be spaced no more than eight miles apart. In other words, no point of the pipeline can be more than four miles from a valve. (*See* Pipeline Safety discussion, ASC Exhibit BB.) Some of the isolation-valve locations must be spacious enough and situated correctly to accept an aboveground pigging station to provide for periodic internal pipeline inspection. These locations are preferably away from residential areas (due to potential noise problems) and require a space of about 50 by 100 feet.

(6) Existing easements and rights-of-way are preferred pipeline locations, both under ORS chapter 215, and to maximize the multi-use corridor concept. Examples include the utilization of the Bonneville Power Administration right-of-way south of the Tualatin River National Wildlife Refuge and the use of the existing pipeline easement in the Dairy Creek Valley.

Proper evaluation of these constraints is essential because it is the constraints that, to a large extent, determine how NWN selected the location of its proposed facility, and whether there are larger-scale alternatives that are consistent with the purpose of the proposed facility. Briefly, the 10 major constraints that NWN identified are:

1. Start point – the Bacona Blowdown station
2. Dairy Creek Valley
3. Highway 26 Crossing
4. Tualatin Valley Highway Crossing
5. Tualatin Wildlife Refuge
6. “Geotechnically Undesirable Area West of the Tualatin Valley Wildlife Refuge”
7. Highway 99 Crossing
8. Willamette River Crossing
9. Pudding River Crossing
10. Finish point – the Molalla Gate Station

The ASC describes these points from north to south. However, some constraint points dominate the route finding process. For example, the Molalla gate station is obviously the only reasonable end point. The start point also offers very little flexibility. The Willamette and Pudding River crossings were “dominant” constraints because NWN tried many alternative crossings for these rivers and found almost no reasonable options. These constraints are not the most northerly, but they “drive” much of the decision making further north. In short, once NWN found where they could cross the Willamette, other constraints further north follow from the need to provide a reasonably direct route to the river crossing.

## **Detailed Description of the Ten Major Constraints**

### **Bacona Blowdown: The Starting Point**

NWN investigated several possible starting points for the proposed facility in the NOI process, including some that started farther north along the existing South Mist Feeder line. The Bacona Blowdown Station is the southern end of the 24-inch pipeline loop of the South Mist Feeder built in Phase III of the Mist project. NWN selected the Bacona Blowdown Station as the proposed facility's most reasonable starting point because other routes studied, which would have begun farther north on the existing line, were undesirable from a safety standpoint, mainly for geotechnical reasons. NWN selected the Bacona Blowdown Station as the starting point based on the factors described in Constraint 2. The routes described in Constraint 2 were studied and rejected in favor of the least constrained route in the area, which is Dairy Creek Road.

### **Dairy Creek Valley and the Potential Alternatives to Dairy Creek Valley (Green Mountain Road and Pumpkin Ridge Potential Corridor Segments)**<sup>8</sup>

NWN investigated several potential alternatives to determine whether it would be possible to locate the pipeline outside of the Dairy Creek Valley. Although NWN studied two primary potential alternative segments in this area, the company found that neither satisfied the need to build the pipeline in an area of sufficient geologic stability and safety. Therefore, NWN considers these two geographic areas studied to be negative constraint areas. This section describes the two main alternatives that were studied and contrasts them to the proposed facility location within the Dairy Creek Valley.

NWN looked for routes both west and east of Dairy Creek Valley. The western corridor is described below as the "Green Mountain Road Potential Corridor Segment." The eastern corridor is described below as the "Pumpkin Ridge Potential Corridor Segment." NWN proposes

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<sup>8</sup> NWN studied the two potential alternative corridors in the Dairy Creek Valley vicinity to confirm whether the Preferred Corridor through the valley was necessary. Referred to herein as "potential corridor segments," the two potential corridor alternatives studied in the Dairy Creek Valley vicinity have not been identified in this Exhibit as "alternate corridor segments" because they are not proposed for permitting. Nor are the two potential alternatives identified in the "alternative corridor" discussion above, in that these two potential alternatives were not overall corridor routes studied to meet the requirements of the Project Order or HB 2865.

the "Dairy Creek Corridor" as part of the Preferred Corridor, after considering the Green Mountain Road and Pumpkin Ridge Potential Corridor Segments.

*Green Mountain Road Potential Corridor Segment:*

This corridor would begin about 1.5 miles northwest of the Bacona Blowdown Station. It would follow a generally southerly route across the Denny Creek drainage, climb a ridgeline that is parallel to Whiskey Creek, drop over Red Slide Hill into the Murtaugh Creek drainage, climb back to the ridgeline, cross Big Canyon Creek, and then follow ridgelines and slopes south southeast to Mountindale. This is, topographically, the most extreme of the alternative routes to Dairy Creek.

This potential corridor segment also is potentially the most unstable, geologically, of the three alternative corridor segments in the Dairy Creek Valley vicinity. There are numerous ancient to recent landslides and rockfalls. The westerly facing slopes generally have more slope failures than the easterly facing slopes. The southern boundary of the Denny Creek drainage is noted for its steep slopes and wetlands at the base of these slopes. The rocks in the Denny Creek drainage are of the Scappoose Formation. This formation has produced numerous large ancient landslides in the area. The rocks in the rest of the corridor consist of weathered Columbia River basalt ("CRB"). Red Slide Hill (CRB) has a landslide in each quadrant, three of which are ancient and one recent. Elsewhere, the steep slopes of the CRB have produced many moderately sized landslides. Much of the steep basalt terrain is suggestive of slope failure. It would be very high risk to operate a pipeline safely on that hill.

Not only would pipeline construction in this corridor be very challenging but also the future safety of a pipeline would be difficult to ensure. Of the alternatives to Dairy Creek Valley, this is the most risky from a geotechnical perspective.

*Pumpkin Ridge Potential Corridor Segment:*

In the NOI for this application, NWN originally proposed a corridor avoiding Dairy Creek Valley and following Pumpkin Ridge instead. It later rejected the Pumpkin Ridge route after detailed on-the-ground study. This "potential" segment is a good example of a route that looked feasible based on computer data but did not hold up to field study.

This potential corridor segment was rejected based on a combination of geological and construction-related concerns. This potential corridor segment starts just south of Plentywater Creek on the east side of Dairy Creek Valley and follows the easterly slopes of Pumpkin Ridge just above the valley floor to a point near Murphy Road. From a pipeline-safety point of view, this potential corridor segment is undesirable as it traverses hillside slopes longitudinally for its entire length. Any down-slope movement of the ground will strain the pipeline.

Southwest dipping (down-slope) Scappoose Formation and CRB comprise the surface rocks in this potential corridor segment. Although not observed, undercutting of the CRB by erosion of the Scappoose Formation in the more active drainages is a concern. North of Meacham Corner the slopes are steep and forested. Many of the conifers are "bent" down-slope (down dip),

suggesting active soil creep in the weathered Scappoose Formation. The Columbia River Basalt forms a "cliff" some distance back from the valley floor. This is an area of concern because of the apparent active soil creep in the Scappoose Formation and the ponded water and wetlands at the base of the CRB. Furthermore, a ridgeline area south of Meacham Corner suggests an ancient landslide scarp.

The Pumpkin Ridge Potential Corridor Segment also presents safety concerns both during and after construction, including several short and long-term potential hazards for construction and maintenance workers and landowners. The route is currently covered with timber. To enable pipeline installation, NWN would need to remove the timber. The logging operation would be in close proximity to residences, creating potential safety concerns.

After logging, trenching for the pipeline would pose risks due to the subsurface materials and to the necessary method of excavation. The hills are mainly rock with only two possible methods for loosening the material. First, if the rock is solid, the only method available for removal is blasting. The blasting would severely impact the residents with noise and vibration. The possibility exists in this location of material cascading down the steep hills with deposition in the residents' yards or against the sides of the homes.

Second, the other method available is ripping the material with large earth-moving equipment and ripper teeth. This method poses similar safety issues for the residents with an additional issue for the workers, because an operator and machine would need to be tethered to additional equipment with winches to perform the operation. Once the material has been loosened, the only method available for removal is to tether an operator and excavator to the equipment with winches and slowly lower the two while trenching. This also poses risks to the residents because the loosened rock would be side-cast along the side of the ditch. Once again this material could find its way to the homes.

Finally, post-construction maintenance would be extremely difficult in this steep terrain. This pipeline must be surveyed annually for leakage and erosion. This annual survey is done on foot, with a backpack-mounted instrument for leakage detection and visual inspection for erosion. If repair work is necessary, equipment would again need to be tethered from the top and lowered into place. This process could cause as much damage reaching the repair as the repair itself, therefore requiring more work to be performed each time and the possibility of creating additional erosion during the next rain events.

#### *Dairy Creek Valley:*

Having considered alternatives to the Dairy Creek Valley, NWN determined that the Dairy Creek Valley must be used. An existing NWN pipeline easement can be utilized, there are minimum geotechnical issues associated with the valley floor, and the finished pipeline will be readily accessible for maintenance and inspection. Moreover, available public road rights-of-way exist.

In contrast to the Green Mountain and Pumpkin Ridge Potential Corridor Segment, the Dairy Creek valley floor offers the safest route for the pipeline installation, as well as ongoing pipeline maintenance. From a geotechnical standpoint, the Dairy Creek Valley Preferred Corridor

alignment option poses the least geologic hazard exposure. The landslide hazard of this alignment has been minimized by avoiding the majority of potentially unstable terrain in the northern portion of the corridor. NWN's geotechnical examined the proposed alignment in the Sherman Mill slide area and concluded that it is sufficiently set back from the slope break above the active landslide such that this slide poses a low geologic hazard to the proposed alignment. In the section of this Order covering the EFSC Structural standard, DOGAMI reviewed the geotechnical investigations and concurred with their findings.

Within the Dairy Creek Valley, NWN currently operates a 16-inch natural gas pipeline. Much of the proposed route in the valley floor will parallel the existing pipeline. The permanent easement for the new pipeline would require only an additional 10 feet of width on the affected tracts. In comparison, the Pumpkin Ridge Potential Corridor Segment would disturb previously unencumbered tracts of land, which would include substantial construction easement areas and forty feet of permanent easement. The availability of the existing pipeline right-of-way is a factor that may be considered under ORS 215.275(2). On the other hand, because the Pumpkin Ridge corridor would be located largely in a Forest (EFC) zone, the use of EFU-zoned land would be avoided. However, NWN states that on any farm tract where there is an existing or a proposed new easement, most farming would be allowed to continue once the pipeline is in place. Conversely, with the Pumpkin Ridge Potential Corridor Segment, marketable timber once removed could not be replanted within the easement area. Ongoing biological studies have not identified any threatened or endangered species of plants or animals within the proposed Dairy Creek Valley Preferred Corridor, most of which is farmland. In contrast, much of the habitat on Pumpkin Ridge is a forested ecosystem including big-game habitat areas.

Although the Dairy Creek Valley Preferred Corridor alignment has many streams and wetlands, this order includes recommended findings that the proposed crossing of creeks and wetlands in the Dairy Creek Valley can be done in compliance with the EFSC Fish and Wildlife Habitat standard, the EFSC Endangered Species standard, DSL wetland permitting requirements, and Washington County Riparian and Habitat overlay zone requirements.

The construction within the Dairy Creek Valley would, with adequate traffic control, allow for a safer work environment during the pipeline construction as well as a system that is safer and easier to manage following construction, during the operational phase.

### **End point -the Existing Williams Pipeline Molalla Gate Station**

This gate station is the designed terminus of the proposed pipeline, since the station already has a structure here and additional disruption will be minimal. This point connects with the Williams Pipeline, the interstate gas provider to the region. This connection is therefore critical to a fundamental purpose and need for the proposed facility.

### **Willamette River Crossing**

This crossing is one of the defining constraints in the corridor selection study area. Once a suitable location for this crossing was found, that location was the determining factor in making many of the routing decisions further north.

Very few options are available to cross the Willamette River because of houses built along the river's edge and bore alignment considerations. The Preferred Corridor is the only one that provides sufficient space to site the boring machine and laydown area. This bore requires a large boring machine on the northern side of the river and enough room to weld the 3,300-foot section of pipe on the south side of the river for the pull into the bore hole.

The Willamette River will be directionally bored to assure adequate depth under the river bottom to prevent damage to the pipe due to erosion caused by floods and fast currents. In addition, the HDD installation technique will eliminate any construction work within the river and ensure no disruption or impacts to the riparian area adjacent to the river's edge. A typical configuration of this crossing is shown in Figure K-8 of the ASC. The minimum radius of curvature for the 24-inch-diameter pipe is about 2,400 feet, the river is approximately 660 feet across, and the required depth is a minimum of 30 feet below the river bottom. This configuration requires that the bore be approximately 3,300 feet long with a 15-degree entry and exit angle.

The boring operation requires that a pipe laydown area, equal in length to the crossing distance (3,300 feet), be positioned perpendicular to the river on one side of the crossing for the pipe pull. A large piece of property is also necessary directly across the river from the pipe laydown area to accommodate the huge boring machinery. Both of these land parcels need to be relatively flat. NWN studied the Willamette River extensively between I-5 and the western boundary of the Project Study Area to find an appropriate location for crossing. The choices were few because the riverbanks are lined with houses and other development throughout most of this area, and property lines rarely align on both sides of the river.

One of the potential crossing sites that NWN analyzed lies adjacent to a large subdivision on the eastern edge of the town of Wilsonville. The company thought it might be possible to position the boring machine in an orchard just south of Wilsonville Road, bore under the mouth of Corral Creek where it empties into the Willamette River, and exit somewhere south of Butteville Road along the south edge of the Willamette River. However, it was not possible to acquire enough space on the south side for the laydown area because of the location of an existing barn and shop.

The location chosen for the ASC was the one place NWN found that had the necessary characteristics, as described above. In addition, the terrain to the west of the proposed crossing location changes to hills and valleys that are not conducive to this type of crossing.

Dave Wright, property manager with the state parks department, was contacted and indicated the Parks Department did not anticipate any problem with boring the pipeline under the Parks Department parcel on the south side of the Willamette River. A permanent easement for the pipeline maintenance will be obtained from the State of Oregon.

### **The Pudding River Crossing**

This crossing is also a key constraint that drives many of the decisions to the south and in the area between the Willamette and Pudding rivers. This crossing poses some difficult technical issues for the pipeline location, since the Pudding River is a "meandering" stream, which could

potentially change its location during flooding and/or high flow volumes. There is also a substantial change in elevation from the east and west banks of the river. The selected location is one of the few that will provide security for the pipeline in the future by having sufficient space to account for the elevation differences and allow for a deep and long bore to solve the meandering issue. This location also aligns well for a critical tie to the existing Willamette Valley Feeder line.

NWN examined a number of locations to cross the Pudding River. Locations closer to Aurora along Airport Road make the crossing increasingly difficult. For example, an alternative route along Arndt Road would have required disturbing known contaminated soils at Airport Road and Arndt Road. In addition, due to long stretches of false fill from Arndt Road to the Pudding River, that route provided virtually no way of trenching to a bore site for the Pudding River where it crosses Arndt Road closer to Canby.

### **The Sunset Highway Crossing**

A number of geographic constraints led NWN to select this area as the best crossing for the Sunset Highway. By locating the pipeline at this point, NWN can use an existing railroad overcrossing, a parallel state highway alignment, and an existing rail road easement, and allows the pipeline to be routed on a parallel easement along Milne Road, which is semi-improved, away from dense housing, and with minimal traffic congestion.

In a Request for Additional Information dated May 21, 2001, OOE asked NWN what other locations it had considered for the highway 26 crossing. In its July 3 reply, NWN said it had considered two alternatives: (1) a crossing farther east at the Gordon Road overpass and (2) to the west the Dersham/Mountaindale road overpass. NWN concluded both alternatives could increase the use of EFU-zoned land because they would require two bores instead of one, and because the pipeline would still have to cross EFU land to proceed generally in the direction of the Preferred Route. This is an example of a constraint that is driven by the need to “line up” with other constraints further to the north or south.

### **The Tualatin Valley Highway Crossing**

This is another area where a number of factors propel the decision to use a single location. The pipeline must cross the Tualatin Valley Highway. By making this crossing between Hillsboro and Cornelius, NWN can utilize a location where a single directional bore satisfies multiple pipeline issues, including safety (low housing density in the vicinity of the bore), minimum disruption to wetlands and creeks, the utilization of property owned by the Unified Sewerage Agency ("USA") parallel to a sewer line corridor, a good line-up for a bore of the Tualatin River, and a critical system supply tie-in location (the Hillsboro feeder line). The USA property will allow NWN to set up the bore on land that is not private farmland, minimizing conflict with existing farm uses. A more easterly location would put the pipeline in a highly developed section of Hillsboro, with relatively dense residential population and commercial development. In response to OOE's Request for Additional Information, NWN noted that a more westerly location would run into technical limitations on the length of the bore, would require two non-perpendicular stream crossings and would still require the use of lands zoned EFU.

### **Geotechnically Undesirable Area West of Tualatin Wildlife Refuge**

As the proposed location of the facility extends to the south toward the Tualatin River, the area west of the river is a negative constraint area due to the geotechnical problems with siting a pipeline either in the Chicken Creek/Laurel Ridge area north of Highway 99W, or the Brookman Road/Ladd Hill Road area south of Highway 99W.

NWN investigated the western alternative of Highway 210 and Sieffert Road along the west side of the Baker Creek drainage. This location would add three creek crossings to the route (McFee Creek, Heaton Creek, and Baker Creek). It would also force the bore under the Tualatin River to be parallel to the Scholls Bridge, which has virtually no set-up or pipe laydown room. In addition, this corridor would put the pipeline close to the Groner Elementary School.

The next section, along Kruger Road and Chapman Road, crosses Baker Creek and Chicken Creek in areas with steep terrain and no possibility of bores. A number of locations would require unsafe side hill construction, which would jeopardize the integrity of the pipeline. Continuing south to Bell Road, a narrow, often winding road, again necessitates side hill construction near the head of the Chicken Creek drainage basin. Bell Road includes severe side hill locations to reach Highway 99W.

From a pipeline integrity standpoint, the only safe corridor location coming south in this area is east of the Chicken Creek drainage. The Preferred Corridor in this area stays out of the steep valley and side hill locations that could jeopardize the structural integrity of the pipeline. For all of the above reasons, the area west of the Tualatin River National Wildlife Refuge is constrained and was not considered an acceptable corridor location.

### **Tualatin River National Wildlife Refuge; Preferred Corridor Using the BPA Right-of-Way**

To the east of the area described above is the Tualatin River National Wildlife Refuge, a protected area under federal management. The Tualatin River National Wildlife Refuge is a negative constraint area due to federal policies which strongly discourage siting facilities within the Refuge. (See Appendix K-7).<sup>9</sup> In NWN's discussions with the U.S. Fish and Wildlife Service ("USFWS" or "Service"), USFWS advised NWN that federal policies discourage such use of federally protected wildlife refuges. USFWS advised NWN that the pipeline would be an incompatible use within the Refuge, and the Service would not support the siting. Further, skirting around the Refuge on a parallel easement along Pleasant Valley Road provides a good

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<sup>9</sup> The USFWS manages the Tualatin River Wildlife National Refuge, established in 1992 under the Federal National Wildlife Refuge System statute, 16 USCA § 668dd (2000). The Refuge is protected by management goals that require the protection and restoration of a diversity of native habitats and associated wildlife and plant species. In accordance with the federal statute, the USFWS management policies do not permit any disruption of the sensitive habitat areas protected within the Refuge. See "Tualatin River National Wildlife Refuge Fact Sheet" and letter from Barry Mulder, USFWS, Appendix K-7.

line-up for the Tualatin River crossing. This location also avoids the geotechnical issues associated with the area to the west.

Another reason NWN chose the Preferred Corridor location in this area is the availability of the BPA right-of-way south of the Tualatin River National Wildlife Refuge. NWN has received conditional approval from the Bonneville Power Administration ("BPA") to use a portion of this right-of-way. (A request for another right-of-way at the south end of the corridor was refused.) See Appendix K-8 (letter from BPA to Ron Hordichok). Using the BPA right-of-way responds to several members of the public who suggested its use in commenting to the NOI. It also promotes the multi-use of public utility easement and right-of-way areas. Moreover, this is one of the few locations in this region that is suitable for a bore of the Tualatin River, due to alignment issues associated with space requirements and wetlands along the river.

However, within the portion from Highway 210 (Scholls Ferry Road) onto Pleasant Valley Road (suggested in public comments as a preferable alternative), NWN's analysis showed construction to be technically unfeasible because of existing utilities, domestic wells, and an engineering restraint with respect to a very tight bend onto Pleasant Valley Road from Highway 210. Additionally, overhead power lines and underground telephone cable and fiber-optic cables are located along the south side of Scholls Ferry Road, all within 20 feet of the road center line. A water well is located close to the road center line on the Salvation Army property as well as numerous overhead power and cable crossovers from the utility poles to the residences on the opposite side of the street. On Pleasant Valley Road, overhead power lines and other utility lines on poles are situated within 22 feet of the road center line. Within the first 1,000 feet on Pleasant Valley Road, south of Scholls Ferry Road, numerous residences and outbuildings are situated in close proximity to the edge of the road pavement. Finally, large trees stand next to the edge of the pavement.

The Tualatin Wildlife Refuge and the Tualatin river crossing immediately to the south of it is another example of a constraint that is driven by more severe constraints further to the south. A more easterly location would have placed the corridor directly in line with the relatively dense population area in Sherwood, an area characterized by new subdivisions. To miss this area, the pipeline would have to cross additional EFU-zoned land.

### **Highway 99W Crossing**

At some point the corridor must cross Highway 99. NWN chose a point where the highway intersects Brookman and Chapman roads. Crossing Highway 99W at this point captures a number of installation and operational opportunities. The location provides the space necessary to directionally bore Highway 99W, a state highway with very high traffic volume. It also aligns with an area that has the room necessary to bore under the railroad tracks, achieves the criteria necessary for the location of an aboveground pigging facility, and provides a location for a critical tie to the existing Newberg Feeder line, minimizing the need for lateral trenching across EFU-zoned lands to make this connection.

A more northerly crossing would have placed the pipeline corridor directly in line with dense new subdivisions in Sherwood, a very rapidly developing suburb. A more southerly crossing

would have required the pipeline to travel south through additional EFU land and would place the corridor in line with the hills south of Sherwood, which have geotechnical issues, drainages to cross, wetlands that would be difficult to bore because of the lack of space for a bore site and most importantly, no road that travels generally to the south and east. Also, the tie to the Newberg feeder is required for consistency with the project purpose.

Most important, for the reasons just mentioned, a crossing further south would prevent NWN from reaching the point where they can cross the Willamette. Thus, the highway 99 crossing is driven largely by the Willamette crossing.

### **Sherwood (an unofficial constraint)**

At some point the pipeline must go either through Sherwood or around it in order to reach the location of the Willamette River crossing. In its ASC, NWN did *not* name Sherwood as one of its 10 constraints. Nonetheless, the path around Sherwood is strongly driven by the Willamette crossing. NWN selected a location that follows Brookman Road, an east-west road that defines the border between the Sherwood Urban Growth Area (UGA) and farm land further south. The corridor along Brookman Road is not yet highly developed, but Sherwood will likely annex the land between this road and the current city limits. The corridor around Sherwood is an example of the tension between trying to maximize safety, while minimizing the use of lands zoned EFU.

In addition to the ten major constraints described above, NWN identified numerous more minor constraints and areas that further helped to determine the location of the proposed facility. Those constraints and constrained areas consist of locations where subsurface bores are technically feasible, areas that avoid geotechnically unsuitable locations, and alignments that maximize NWN's ability to locate in or adjacent to existing utility easements and public rights-of-way. Some of these minor constraints are depicted in ASC Figure K-7 and are discussed further in the section-by-section ORS 215.275 analysis below. The ASC discussed them further in its EFU discussion for each county, Section II of Exhibit K.

### **Constraints – Conclusion**

NWN identified 10 locations that the proposed facility must either use or avoid. In each case, the constraint point was based on public safety, geotechnical or engineering factors, other state or federal requirements, EFSC requirements, or the location of roads that travel generally in the right direction between the start and end points. In each case, NWN considered alternative solutions but found that the alternatives either were not reasonable for the reasons above, or would simply shift the use of EFU-zoned land to some other location.

### **F. Segment-by-Segment Analysis**

To a great extent the above constraint points “define” where the proposed facility must be located. Where NWN proposed placing the facility along existing road or highway rights-of-way, the proposed use is allowed as of right under ORS 215.283(1)(L). Where, however, NWN proposes deviating from such right-of-way, or where such right-of-way simply does not extend in the direction the proposed facility must go in order to proceed to the next constraint, NWN

must consider alternative ways of getting from point to point. The constraint points divide the corridor into 8 logical segments. In this section of the Proposed Order we consider each segment. Between each pair of constraint points, to the extent that it does not travel within or along existing road right-of-way, NWN must either consider an alternative that avoids EFU land, use other right-of-way, or show that there simply are no reasonable alternatives that would avoid the use of EFU land or use rights-of-way. If there are no reasonable alternatives, then subsections (4) and (5) of ORS 215.275 still require NWN to minimize effects on surrounding lands in farm use, and to mitigate any unavoidable effects.

### Segment 1 – Bacona to Highway 26

Between these two points, NWN considered three general alternatives: the Dairy Creek valley, the Green Mountain alternative, and the Pumpkin ridge alternative. In the discussion of constraint points described above, NWN concluded that the Green Mountain and Pumpkin Ridge alternatives were not reasonable alternatives for technical reasons, primarily as a result of geotechnical problems. Approximately the first six miles of the proposed corridor is in forested land not zoned EFU. South of Shiloh Road, all of the land within the Dairy Creek valley is zoned EFU. The location of the proposed facility uses public road right-of-way for part of this section, but for much of its length the facility uses the right-of-way for the existing 16-inch South Mist Feeder Pipeline, which generally follows property lines and is not adjacent to the road. Use of existing right-of-way is one of the six ORS 215.275 factors.

Locating the proposed facility along the existing pipeline right-of-way would entail construction on farm land. NWN considered the use of Dairy Creek Road as an alternative, but concluded that it was not reasonable based on technical constraints and other state and federal requirements. The technical factors include the general concerns with road right-of-way described in detail earlier in this Appendix, as well as some drainages that would either have to be trenched or bored, presenting construction difficulties. NWN also chose to follow its existing 16-inch right-of-way to avoid environmentally sensitive areas.

At the southern end of Dairy Creek Valley the existing right-of-way approaches Mountaindale Road. At this point NWN proposes two alternatives: a preferred alternate and a “supplemental alternate.” The preferred alternative continues to follow the existing 16-inch right-of-way. As an option, NWN proposed Alternate Corridor 1sa1, which leaves the existing right-of-way for the 16-inch pipeline and roughly parallels Dairy Creek along a section where the creek meanders a great deal. NWN proposes to bore under this section.

Although technically the supplemental alternate uses neither existing pipeline right-of-way nor road right-of-way, OOE believes it may actually have less effect on farm uses because it bores under the creek, it avoids bisecting a field currently in use, because farming within the tight meanders of the creek is difficult and because the use of directional boring would eliminate stream bank impacts. Therefore, Alternative 1sa1 may better meet the intent of ORS 215.275, even though it deviates from existing right-of-way. OOE also concurs that the pipeline “must” be located generally near the point where Dairy Creek and Mountaindale Road intersect because that is the place where the new pipeline would hook up with the existing 16-inch feeder, providing more reliable supply to Hillsboro and points east consistent with the project purpose.

After boring under Dairy Creek, the preferred and alternate corridors reunite into one proposed location, which crosses Mountaindale Road and uses a directional bore to cross under the road, the stream and forested wetlands. This is the northern-most location where NWN proposes to use directional boring. Continuing south of Mountaindale Road, the proposed energy facility generally follows the rights-of-way for Mountaindale and Dersham Roads.

In summary, between Bacona and Highway 26 NWN considered two major alternatives that were largely outside the EFU zone, but found neither to be a reasonable alternative because of landslide hazards and environmentally-sensitive areas. Within the Dairy Creek valley, NWN generally followed existing right-of-way for its existing 16-inch South Mist Feeder pipeline. Where NWN proposed an alternate corridor that deviated from the existing right-of-way, the alternate may actually result in less farm land impact.

### Segment 2 – Highway 26 to Tualatin Valley Highway

Between these two constraint points there is virtually no non-EFU land. In its Corridor Selection study NWN considered a corridor through Hillsboro and determined that it was not reasonable primarily for safety reasons (See section I.G of this analysis). Alternatives through Cornelius and Forest Grove were found not to be reasonable for the same reasons.

The proposed facility follows road right-of-way most of the way from highway 26 to the Tualatin Valley highway. NWN has proposed two “alternate” segments within this area, both of them relatively short. One alternate segment would follow Gordon Road rather than Milne Road. Both roads proceed generally south from highway 26, going almost entirely through EFU zoned lands.

Immediately north of the Tualatin Valley Highway, the corridor reaches a point where there is no direct north-south road. At this point the corridor must cross EFU-zoned land in order to reach the site where NWN was able to locate a place from which to bore under the Tualatin Valley Highway. (This same bore will also cross under the Tualatin River and other high-category habitat, avoiding environmental impacts associated with crossing the river and the wetland areas.) At this point NWN proposed another “supplemental alternative”. This alternative segment is very short and quickly rejoins the main preferred corridor. It is in an area where there is no road going from north to south. It crosses land zoned EFU similar to the preferred corridor, except that the preferred corridor is located on upland that is good farm land, where the alternate crosses land that is marginal wetland and, consequently, less productive as farm land.

In summary, NWN found no reasonable non-EFU alternatives that provided reasonably direct route between the Sunset and Tualatin Valley Highways. The proposed facility does follow public road rights-of-way to the extent practical.

### Segment 3 – TV Highway to Tualatin River National Wildlife Refuge

South of the Tualatin Valley Highway, the proposed facility exits from the bore under the highway and crosses land owned by the United Sewerage Agency. The proposed facility follows Highway 219 (Hillsboro highway) until an intersection with Burkhalter Road.

*Burkhalter Road – Rood Bridge Road section:*

At some point the corridor must go east of highway 219 in order to avoid the area west of the Tualatin National Wildlife Refuge. The proposed facility must also go east in order to avoid the refuge itself. NWN considered different alternative routes east, including Burkhalter Road and Farmington Road.

NWN's proposed route leaves Highway 219 at a point south of Burkhalter Road and travels east across farmland for roughly a mile. It rejoins Burkhalter Road until an intersection with Rood Bridge Road, and again crosses farmland, going east and then south until it approaches the point where the Tualatin River, River Road and Farmington Road come together. NWN considered use of public road right-of-way along Farmington or Burkhalter, but rejected that alternative primarily for environmental and safety reasons. Both roads have portions constructed on fill, with wetlands on one or both sides. NWN also pointed out that the frontage along Burkhalter Road is planted in peach trees, while the property lines behind those properties are planted in shallow crops which can be more effectively mitigated and restored.

NWN also rejected a route along Farmington Road because it would not allow them to "line up" for a necessary HDD bore. This bore would cross Farmington Road, the Tualatin River, wetland and habitat areas, and a busy intersection where future construction is likely. While this bore is not listed as one of the 10 major constraints, it was part of NWN's reasoning for not using Farmington Road.

South of this bore, the proposed facility remains in the EFU zone but follows River and Scholls Ferry Roads until reaching the Tualatin National Wildlife Refuge.

In summary, between the Tualatin Valley highway and the National Wildlife Refuge NWN did not identify any reasonably direct alternative to the use of lands in the EFU zone. The proposed corridor generally follows road rights-of-way, with the exception of the detour around Burkhalter Road. In that area, NWN considered the use of two public roads but rejected them primarily for technical and environmental reasons.

Segment 4 – Tualatin Wildlife Refuge to Highway 99 crossing

As discussed in the section of this Proposed Order describing the major constraints, the proposed facility must avoid the area west of the Tualatin Wildlife Refuge for geotechnical reasons, and must avoid the Refuge itself because of federal requirements. To avoid the Refuge, the pipeline must be situated upon EFU-zoned land in this vicinity. Further, this location allows NWN to make use of the Bonneville Power Administration right-of-way south of the Refuge. Avoiding the Refuge, and the geotechnically undesirable area to its west, substantially limits locational alternatives both to the north and south. The pipeline is situated on EFU-zoned land in this vicinity in order to accomplish a direct routing to remain within and adjacent to public rights-of-way, and to avoid conflicts with other regulatory requirements, including regulations, policies,

and environmental considerations protecting the Tualatin River National Wildlife Refuge and streams and wetlands in the vicinity. (Figure K-2, Panels 21-23; *see also* Exhibit P.)

Traveling south along the Pleasant Valley Road public right-of-way, the proposed facility joins the Bonneville Power Administration (BPA) utility right-of-way and lineup for an HDD bore for another crossing under the Tualatin River (the "Tualatin River BPA" HDD bore site), again for the purpose of avoiding impacts to the river and associated habitat areas. The pipeline is proposed to travel south along the existing BPA utility right-of-way, intersecting Scholls-Sherwood Road. The corridor location decisions in this vicinity are guided by the need to avoid any impacts upon the Tualatin Wildlife Refuge and to use the BPA public right-of-way to the extent possible, thereby avoiding the use of EFU-zoned lands unencumbered by rights-of-way.

*Eastview and Edy/Elwert Road Alternate Corridor Segments.*

The alternate segments along Eastview, Elwert, and Edy Roads have been extensively studied during the siting process. The proposed facility is located primarily along Scholls-Sherwood and Elwert Roads. The alternate corridor segment was first studied by NWN as the proposed "Balanced Corridor." The land in this vicinity is a mix of land-use zoning designations, including the EFU and AF-20 districts (which are both EFU districts under ORS 215.283), and the AF-10 and AF-5 districts (which are acknowledged as non-EFU zones). Both alternate segments minimize routing on EFU-zoned lands, which is not the predominant zoning district in this vicinity.

The preferred (Scholls-Sherwood/Elwert Road) alignment presents the following challenges: (1) Scholls-Sherwood Road is a major arterial, with 55-mile-per-hour traffic; (2) power lines, power poles, and other utility lines are situated in close proximity to the center line of both Scholls-Sherwood and Elwert Roads; (3) natural gas pipelines are located within the right-of-way; (4) large trees having drip lines overhanging the rights-of-way limit location decisions; (5) a portion of Elwert Road is built on fill; and (6) deep ravines are present on both sides of the roads in a number of locations. The Eastview Road alternative, connecting to Eastview Road from Stark Road, presents the following challenges: (1) the pipeline would run down Eastview Road, a narrow residential road; (2) this alignment would substantially impact grape producers, who grow a sensitive perennial crop of high value; (3) the corridor would require cross-county routing off of public rights-of-way and run through property used for Christmas-tree production; and (4) the Eastview Road area is an area of high population density, increasing the risk of third-party damage to the pipeline, with attendant public safety concerns. NWN requests a site certificate for both the alternate corridor and the preferred alignment to enable it to mitigate impacts, maintain construction feasibility, and address public safety considerations involving many property owners. (Figure K-2, Panels 24-27.)

From the preferred alignment in this location, NWN proposes an additional alternative segment (the Edy/Elwert Road alternate). The preferred alternative is proposed to travel through a wooded area via HDD bore, described below, while the Edy/Elwert alternative would be routed along rights-of-way and along property lines. These preferred and alternative segments join together at Haide Road. (Figure K-2, Panel 26.)

South of Scholls-Sherwood Road, NWN proposes an HDD bore (the "Chicken Creek" alternate HDD bore site), crossing Edy Road. This HDD bore is necessary due to topographic constraints and to avoid impacts to critical habitat areas. The Eastview Road alternative would cross under a power-line easement area and across a habitat and wetland area via HDD bore. The several alternate segments join together at the Kruger Road public right-of-way, west of Highway 99W. The pipeline is proposed to continue traveling south through an area with non-EFU (AF-5 and AF-10) zoning, along a new proposed utility easement area, reaching Brookman Road, where NWN proposes a bore under Highway 99.

In summary, in the area between the Tualatin Refuge and the Highway 99 crossing, NWN attempted to reduce use of land zoned EFU by utilizing sections zoned AF-5 or AF-10, as well as existing road rights-of-way. The preferred corridor makes use of road right-of-way along Scholls-Sherwood and Elwert Roads, and it makes use of existing power line right-of-way within a stretch of EFU-zoned land. NWN considered following Elwert Road all the way to Highway 99, but rejected it because of high density housing developments currently under construction along that road, presenting both public safety and third-party damage concerns, and because the public right-of-way there is already filled with existing utilities. Because of the unusual difficulty in siting this section of the corridor, NWN proposed three alternatives, each with a different set of trade-offs between public safety, agricultural, and land use concerns.

#### Segment 5 – Highway 99 to Willamette River

Within this section, NWN considered alternatives that avoided EFU-zoned lands. Choices were limited partly by the public safety concerns associated with siting the facility in a densely populated area, by the terrain between Sherwood and the Willamette, and by the fact that there are very few roads between Sherwood and the Willamette. Most importantly, the route of the proposed facility is locationally dependent on the Willamette River crossing. As discussed above, NWN considered several locations for the river crossing and found few feasible alternatives.

After crossing Highway 99, the proposed facility follows Brookman Road through land zoned rural residential. Brookman Road travels west to east and is the southern UGB for the City of Sherwood.

Before reaching the border between Washington and Clackamas counties, the proposed corridor goes south through land zoned AF-20 for about ½ mile. As noted above, the AF-20 district in Washington County is an exclusive farm use designation. NWN considered options through this area that followed roads or went through the rural residential zone. The “balanced corridor” originally proposed in the Notice of Intent did not turn south through the AF-20 zone, but continued east to an intersection with Baker Road. NWN also considered continuing east until the intersection with Ladd Hill Road, and then turning south along Ladd Hill Road through land zoned rural residential. NWN rejected both of these options as not being reasonable alternative partly because of known higher density housing developments expected there, partly because the houses there have shorter setbacks, and in part because the Ladd Hill Road route would require side hill construction. However, the proposed facility does turn south along Ladd Hill Road after

about ½ mile, straddling the border between Washington and Clackamas counties through land zoned rural residential.

As the pipeline approaches the intersection with Pleasant Hill Road, it travels east through land zoned RRFF-5, entering EFU-zoned land at the intersection with McConnell Road, then turning east along Tooze Road. The pipeline is proposed to travel through both RRFF-5 and EFU-zoned properties until it reaches Baker Road, where it turns south through EFU-zoned lands. To the west of Baker Road, the Preferred Corridor is within and adjacent to public rights-of-way in all locations.

The Preferred Corridor through the RRFF-5 zone is problematic, in that the Clackamas County Zoning and Development Ordinance (ZDO) does not appear to permit utility facilities within this zone, and also due to property owner concerns in areas of higher population densities. Notwithstanding these concerns, NWN proposes this location to avoid the use of EFU-zoned lands. (Figure K-2, Panels 28-30). In the RRFF-5 zone NWN has requested, and OOE recommends, findings of compliance with applicable statewide planning goals pursuant to ORS 469.504(1)(b)(B).

#### *Baker Road to the Willamette River*

Upon intersecting with Baker Road, the pipeline is proposed to travel directly south through EFU-zoned lands toward the Willamette River. While the lands along the route of the proposed facility in this area consist of relatively small land ownerships, they are zoned EFU. An alternate segment is proposed in this location, west of Baker Road. The preferred route continues south along the Baker Road right-of-way, and turns east to intersect with the "laydown" area proposed for the Willamette River Crossing. (Panel 31, Figure K-2). The alternate route would cross through an established filbert orchard and require installation through a forested area and a wetland area. (Panel 31, Figure K-2).

As the proposed facility approaches the Willamette River, numerous constraints confine its location, including the absence of existing public rights-of-way, sensitive natural habitat areas, and locational and engineering feasibility requirements for crossing the Willamette River. In considering suitable locations to "line up" for crossing the Willamette River, NWN originally studied a corridor location from Baker Road, intersecting with Bell and Grahams Ferry Roads, routed within and adjacent to the public rights-of-way. (Figure K-2, Panel 31). However, routing along these public rights-of-way proved infeasible in this location, for the following reasons: (1) utility poles are located in close proximity to the center lines; (2) large cut banks and filled wetlands present unacceptable geotechnical engineering and public safety challenges; (3) the roads are narrow with sharp curves; and (4) the roads have areas of significant trees and heavy timber, with drip lines extending well into the rights-of-way, risking damage both to the pipeline and to the health of the trees. In view of an absence of suitable right-of-way areas in this vicinity, NWN therefore proposes a route toward the Willamette River through a new pipeline easement, opting for a substantial HDD bore to avoid unacceptable impacts to forested and agricultural properties.

#### *Baker Road Alternate Corridor Segment*

NWN proposes an alternate route to reach the Willamette River HDD bore alignment. The preferred corridor follows south from the Baker road right-of-way, turning west to the proposed Corral Creek HDD bore site (Figure K-2, Panel 31). The alternate route would continue in a straight line, south from Baker Road to the "Corral Creek" HDD bore site. The preferred corridor is less direct than the alternative, but would avoid impacting a filbert orchard, avoid close proximity to a residence, and remain away from a small, forested wetland area.

Continuing south along a new easement area, the pipeline is proposed to be installed through an HDD bore in the vicinity of Grahams Ferry Road, in order to protect nursery crops and habitat areas associated with streams and wetlands (the Corral Creek HDD bore site). Upon completing the Corral Creek bore, the pipeline would be installed along a new pipeline easement, crossing adjacent to an orchard area, under the Grahams Ferry/Wilsonville Road, to the Willamette River HDD bore site. (Figure K-2, Panels 31 - 32). The Willamette River crossing is proposed to be via a HDD of approximately 3,300 feet, through EFU-zoned land, emerging from this bore in close proximity to the Marion County boundary.

As discussed previously, NWN comprehensively studied locations for the Willamette River crossing. Since the bore will require a 3,300-foot pipe laydown area adjacent to one end of the bore and a large footprint for the large boring equipment necessary for this type of operation, the proposed location was the only one in this vicinity with property on both sides of the river that will meet these specifications. One additional benefit to this location is that it utilizes a state-owned land parcel on the south bank of the river, thereby avoiding potentially significant impacts to privately owned agricultural property.

The location chosen for the crossing requires that the permanent easement and construction easement be routed through EFU lands in crop production. However, few other options were suitable and enabled appropriate alignments further to the south, within or adjacent to existing public rights-of-way, as well as satisfying other locational constraints and other considerations discussed above. Upon completing the Willamette River crossing, the pipeline will pass through Marion County before returning to Clackamas County to the southeast.

#### *Summary – proposed corridor between Sherwood and the Willamette*

The entire alignment from the Washington County boundary south into Clackamas County is driven by the primary locationally dependent constraint — the Willamette River. As described above, the Willamette River crossing requires a substantial HDD bore, necessitating substantial bore pad and laydown areas. The location for the crossing must satisfy geotechnical and public safety considerations, avoid unacceptable damage or loss to environmentally sensitive areas and important habitat areas, avoid substantial impacts to agricultural areas, especially sensitive perennial crops, and be sufficiently remote from populated areas to enable placement of the bore pad and laydown areas without the need to demolish homes, barns, and other buildings as part of the crossing process. These constraints significantly limit choices, and to a certain extent, drive overall pipeline corridor location decisions along the entire Preferred Corridor alignment in Clackamas County.

## Segment 6 – Willamette River to Pudding River

In the area of the Willamette crossing, the area to the south of the river is zoned EFU in both Marion and Clackamas counties. There is no alternative to the use of EFU-zoned lands. The proposed corridor travels south until Arndt road. OOE recommended that NWN consider the public right-of-way for Graham and Klupenger roads, which travel south through this area. NWN considered these roads, but concluded that they were not reasonable alternatives due to the requirement for the substantial laydown area south of the river required for the bore. By using this area for both the laydown area, and the permanent easement location for the pipeline, NWN minimizes the use of lands zoned EFU and utilizes right-of-way that would be necessary for the bore. In addition, NWN states that the use of these road rights-of-way use could have more impact on existing farm uses than the proposed location because of agricultural infrastructure utilities that parallel and cross the road. On p. 25 of ASC Exhibit BB, NWN states that “this is one case where use of the public right-of-way would actually create more impact on the agricultural operation.”

Arndt Road is the major road that local residents use to cross I-5. The proposed corridor follows Arndt Road, boring under I-5. In this area, NWN has proposed installing the pipeline “...within existing road right-of-way when it is possible to do so without conflicts with other utility placements and when the siting will not expose the pipeline to potential third-party damage with associated public safety risks.”

At the intersection of Arndt Road and Airport Road in Marion County the proposed facility reaches the Aurora Airport. At this point NWN proposes to turn south through the airport, and then southeast through EFU land in Marion County, boring under the Pudding River and exiting within EFU land on the east side of the Pudding River in Clackamas County.

NWN considered two alternatives that would have used more public road right-of-way. One option followed Arndt Road to Barlow Road, proceeding south on Barlow Road. This corridor is still in the EFU zone but follows roads. NWN rejected this alternative primarily because of known chemical contamination associated with the helicopter company at the intersection of Arndt and Aurora Roads. NWN states that it would risk spreading this contamination during the excavation activities necessary for pipeline construction. Therefore, NWN proposes to turn south through the airport before reaching Airport road, avoiding the area of contamination. NWN also looked at Arndt Road east of the airport and found it was technically unsuitable because it crosses several deep ravines with forested wetland on either side, and because the road in places is built on fill to cross the drainage. In its application NWN states that:

“NW Natural examined a number of locations to cross the Pudding River. A potential route along Arndt Road would require crossing a known environmental cleanup area at Airport Road and Arndt Road and would provide no feasible means of boring under the River where it crosses Arndt Road, near Canby. Other concerns included avoiding crossing in areas where the River has historically changed course. The Pudding River is a meandering stream, capable of shifting its course during flooding and high flows. The chosen location enables a crossing that follows a property line and exits after the crossing in a field large enough to accommodate the laydown area.”

NWN also considered following Airport Road south through the city of Aurora, crossing the Pudding River where the road does. On closer inspection NWN rejected this alternative because it did not provide a reasonable location to bore under the river. Also, using Airport Road through Aurora would mean running the pipeline through a higher population density and through an area where houses are relatively close to the road. Finally, even if the pipeline did go through Aurora, the area between Aurora and the Molalla gate station is still primarily EFU.

In summary, this segment is locationally dependent because it is driven by the Pudding River crossing. In its ASC, NWN states that “\* \* \*while NWN investigated numerous potential crossings, the proposed location was the only one feasible due to environmental considerations and engineering constraints.”

### Segment 7 – Pudding River to Molalla Gate Station

This segment is locationally dependent because both the Pudding River crossing and the Molalla gate station are firm constraint points. Virtually all of the land between these two points is EFU in Clackamas county. NWN considered using the Urban Growth Areas for Aurora and Barlow, but a route through these developed Urban Growth Areas would serve no purpose. It would significantly extend the length of the pipeline corridor, and the circuitous routing through developed areas would actually increase the length of pipeline in EFU-zoned lands. (ASC, Figure K-2, Panels 37, 38 & 39).

East of the bore under the Pudding River, NWN proposes to follow Anderson Road. NWN has requested a corridor that is up to 1,000 feet in width at its intersection with Anderson Road, in order to avoid a known cultural resource site. NWN then proposes to follow Anderson Road to a point approximately 600 feet west of Barlow Road. The area to the north of Anderson Road is within the City of Barlow. The area within Barlow is sparsely populated, with agricultural uses, but is zoned for single-family residential use (R-1). The area to the south of Anderson Road is a Goal 5 aggregate resource site and is zoned Rural Industrial (R-I). Use of the R-1 and R-I zones will require separate findings that are not part of the ORS chapter 215 analysis.

After leaving the R-I zone and re-entering the EFU zone, NWN proposes to follow Barlow, Zimmerman, Heinz and Dryland Roads before reaching Barnards Road and the end of the corridor.

Zimmerman and Heinz Roads both proceed from west to east across EFU-zoned land. NWN proposes these roads as an alternate corridor, but it requests a preferred corridor that follows property lines along the back of the properties adjacent to these roads. In its June 2001 supplement to the ASC, NWN also requested a preferred corridor following property lines along the back of the properties adjacent to Dryland Road, which runs south to Barnards Road. In all three cases, NWN submitted corridors along the road itself as an alternate but requested the corridor along property lines as the preferred corridor. NWN’s reason is partly based on safety concerns raised by residents whose homes are unusually close to the road (on inspection by OOE staff we observed that the houses in this area have shorter setbacks than those found in many other locations along the 62-mile corridor). NWN also states that this is another case where

placement along the road would actually have more effect on farm uses than placement along property lines. Regarding its request not to follow Heinz and Zimmerman Roads, NWN's application states:

*“Zimmerman Road Alternate Corridor Alignment.* As the Preferred Corridor approaches Zimmerman Road (Figure K-2, Panel 41), NW Natural proposes an Alternate Corridor Segment. Both the Preferred Corridor and Alternate Corridor Segment are proposed through EFU-zoned lands. The northerly route is the Preferred Corridor. It would travel in a less populated area and would be sited on a new pipeline easement from Barlow Road to a location near the intersection with Oglesby Road. The Preferred Corridor avoids a stream crossing and archeologically significant sites found along Zimmerman Road. The Preferred Corridor will be routed along property lines, thereby avoiding bisecting ownerships. It would route the pipeline outside a heavily populated residential area. Alternatively, the southerly Alternate Corridor Segment would run within or adjacent to the Zimmerman Road public right-of-way, in a heavily populated area in very close proximity to numerous residences, increasing the potential that the pipeline will be exposed to conflicting utility placements and third-party damage.

The Zimmerman Road Alternate Corridor Segment poses the following challenges: (1) large trees grow near the road's edge, with the drip lines extending well into the right-of-way; (2) a power pole, an existing phone line, and a gas line compete for very limited right-of-way space, with attendant concerns for pipeline installation and maintenance and risk of third-party damage within a populated area; and (3) the Alternate Corridor Segment would be in very close proximity to the Pure Seed Testing property, potentially harming its highly sensitive agricultural operation. The Zimmerman Road Alternate Corridor Segment involves a greater level of concern among residents for safety considerations and poses additional technical and engineering challenges. Finally, the Alternate Corridor Segment could cause significant impacts to a sensitive agricultural operation upon EFU-zoned lands.

*Heinz Road Alternate Corridor Segment.* From Oglesby Road heading east toward the Molalla Gate Station, NW Natural proposes an alternate corridor segment along Heinz Road. (Figure K-2, Panel 42-43). Both the Preferred Corridor and the Alternate Corridor Segment are situated within EFU-zoned lands, although the Preferred Corridor (extending east from Zimmerman Road) would require routing through a new easement, versus within or adjacent to the existing Heinz Road right-of-way. To the north of the Heinz Road public right-of-way, the northerly route (the Preferred Corridor) would travel through EFU-zoned land. NW Natural will negotiate acquisition of a pipeline easement over the affected property. However, the area proposed for the pipeline easement and installation is a straight, cleared farm road, travelling along property lines without bisecting fields. The southerly Alternate Corridor Segment along Heinz Road would be located within or adjacent to an existing public road right-of-way, but also would be in very close proximity to a more highly populated area, with residences situated close to the pipeline. The Preferred Corridor would avoid the potential safety risks associated with siting the pipeline amidst other conflicting utilities as well as risks of third-party damage, both inherent in locating a large high-pressure pipeline within a right-of-way in

a populated area in close proximity to residences. Further, the Preferred Corridor in this area would not cause any impacts upon agricultural lands that cannot be minimized and mitigated through measures described in the Agricultural Assessment, Appendix K-9.”

Regarding the request to follow property lines along the back of the properties adjacent to Dryland road, NWN states that:

“... This Supplemental Preferred Corridor is proposed for the following reasons: (1) it avoids siting the pipeline near nine of eleven houses along the original corridor in this location [Dryland road], primarily using existing farm roads rather than the Dryland Road right of way (2) the Dryland Road right-of-way contains a gas line and a telephone fiber optic cable, presenting substantial engineering feasibility and safety challenges within a narrow road constructed of road fill; (3) due to the location of other utilities, pipeline construction would require placement along the centerline of the road, requiring that the road be blocked for long periods of time, adversely affecting access to and from the adjacent agricultural properties and impeding through traffic; and (4) Dryland road includes three drainages that cross the road with culverts posing unique problems regarding structure and stability in installing a 24-inch pipeline in or adjacent to the road. The Dryland Road Preferred Corridor segment [along property lines] will allow for crossing the same drainages in shallower upstream locations that would result in less impact to the stream and avoid all of the problems with the road culverts...”

#### **G. Summary of the Bases for Using EFU-Zoned Lands Where Non-EFU Lands and/or Rights-of-Way Are Available in the Required Areas**

##### *Summary of the Consideration of the Factors within Washington County*

Nearly all of the land in Washington County between the Bacona Blowdown Station and the border with Clackamas County is zoned either for agricultural or forestry use, with EFU the predominant zoning. Even if safety concerns over placement of a pipeline in urban areas is ignored, a reasonably direct route from the Bacona Blowdown Station to the Molalla Gate must still pass through agricultural zones. Locational decisions throughout Washington County involved a myriad of challenges and constraints, each of which pose limitations upon siting the proposed linear facility

NWN proposes to avoid the use of EFU lands to the extent possible by using a route that is predominantly within or adjacent to public rights-of-way. As discussed above, the overall site-selection process has been guided by locationally dependent constraints that must be crossed or avoided, both due to geography and to meet NWN's purpose and needs to serve its customers. Seven of the ten major locationally dependent Constraints that have guided the entire location of the proposed facility at a "macro" level are within Washington County, making it not reasonable to site the pipeline outside EFU zones. Upon considering alternatives, NWN argues that the

proposed pipeline must be sited in EFU-zoned areas of Washington County due to the following factors:<sup>10</sup>

- (1) Technical and engineering feasibility limitations (ORS 215.275(2)(a)): The pipeline must avoid geotechnically unstable areas, including the Green Mountain and Pumpkin Ridge areas in the northern area of the corridor, as well as the area to the west of the Tualatin River National Wildlife Refuge. The pipeline must avoid areas within public rights-of-way where conflicts with other utilities are likely, and must provide ample areas outside populated areas for underground HDD boring operations and other construction-phase installations. At a local level, the seven major constraints have guided the pipeline siting, requiring that NWN balance numerous competing considerations and limitations;
- (2) The pipeline placement is locationally dependent (ORS 215.275(2)(b)): The pipeline must cross EFU-zoned lands in Washington County. Additionally, it is not possible to intersect with the locationally dependent constraints, such as the Sunset Highway, the Tualatin Valley Highway, and Highway 99W described above, and maintain a reasonably direct route through the county without crossing EFU lands. Numerous geographical features, existing roads, railways, and environmentally sensitive areas significantly limit routing decisions, necessitating siting upon EFU lands;
- (3) Lack of available urban and nonresource lands (ORS 215.275(2)(c)): While urban and nonresource lands exist in the vicinity of the pipeline, heavily populated areas pose significant challenges in siting a large high-pressure gas pipeline. These challenges have been addressed in the macro-level alternatives analysis above and are also discussed in the Pipeline Safety discussion in section IV.C of this proposed order;
- (4) Availability of existing rights-of-way (ORS 215.283(1)(L) and 215.275(2)(d)): The proposed corridor includes public road right-of-way for more than half of its length. Use of other rights-of-way (the existing pipeline right-of-way in Dairy Creek Valley and a portion of BPA right-of-way) further reduces the use of EFU-zoned lands. NWN argues, however, that siting a large high-pressure pipeline within existing road rights-of-way increases risk of third-party damage and conflicts with other utility placements. NWN proposes to minimize this risk by utilizing easements adjacent to existing rights-of-

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<sup>10</sup> The proposed pipeline must cross through EFU-zoned lands in order to connect the Bacona Blowdown Station to the Molalla Gate Station. NWN considered reasonable alternatives, based on the factors set forth in ORS 215.275 (HB 2865), and has taken substantial measures to mitigate and minimize impacts on EFU-zoned lands. Accordingly, the proposed pipeline is necessary for public service and must be sited on EFU-zoned lands. NWN believes that this "macro" analysis (described in Section I above) satisfies HB 2865 without applying the HB 2865 factors on a site-specific, parcel-by-parcel basis along the full pipeline alignment. Nevertheless, NWN has made siting decisions along the full length of the pipeline by applying HB 2865 factors, with all location decisions informed by the policy and the six locational factors of HB 2865. In doing so, NWN does not concede that the HB 2865 factors must be applied to each pipeline segment and to each site-specific location decision.

way. These easements would involve land in the EFU zone. However, NWN proposes siting the pipeline within and adjacent to existing pipeline maintenance easements and public rights-of-way, thereby reducing impact on farmed land. NWN attempted to avoid both farm land and populated areas by using the existing BPA transmission corridor; however BPA asserted federal authority in prohibiting such use. Finally, in the Dairy Creek Valley, NWN makes use of its existing 16-inch pipeline right of way. This would involve widening that right-of-way from 40 to 50 feet, but reduces the need for an entirely new corridor.

(5) Public health and safety (ORS 215.275(2)(e)): The protection of the pipeline from risk of damage and consequential public safety risks is of paramount importance. This objective is accomplished by avoiding locations where third-party damage to the pipeline is possible or likely. Public safety considerations are further met by choosing locations where the pipeline can intersect with feeder lines, enabling placement of isolation valves and pigging stations along the Preferred Corridor. Moreover, many of the major Constraints guiding the pipeline location involve minimizing the public's exposure to traffic safety risks along major roadway intersections during the construction process. Finally, siting the pipeline within EFU-zoned areas minimizes public safety risks associated with conflicts with other utilities within many public rights-of-way, as well as the risk of third-party damage to the pipeline.

(6) Other requirements of state or federal agencies (ORS 215.275(2)(f)): The location within Washington County's EFU-zoned lands is necessary to avoid impacts to environmentally sensitive areas, wildlife habitat areas, and protected animal and plant species. The federal requirement to avoid the Tualatin River National Wildlife Refuge and the EFSC protected-areas rule significantly limit location choices both to the north and the south of the Refuge. In certain locations, NWN was obliged to use EFU land in order to avoid particularly sensitive or important wetlands in compliance with DSL and U.S. Army Corps wetlands requirements. Finally, suggestions to follow U.S. highway 26, highway 217 and Interstate 5 were found to conflict with ODOT and federal highway administration requirements.

For all of the foregoing reasons, OOE recommends that the Council find that the proposed facility must use the EFU-zoned lands outside of public road or highway rights-of-way within Washington County. Measures to mitigate and minimize impacts to farm uses are described in NWN's "Agricultural Assessment," Appendix K-9, and in the discussion of the EFSC Soils standard.

#### Summary of the Consideration of the Factors Within Clackamas County

Any reasonably direct route between Washington County and the Molalla gate station must pass through at least some land in Clackamas County zoned EFU. NWN has endeavored to minimize locations within the EFU zone by proposing a route through RRFF-5 zoning areas, despite the fact that the RRFF-5 zoning code provisions do not allow utility facilities as a listed use. Accordingly NWN has requested, and this order recommends, findings of compliance with applicable statewide planning goals for the RRFF-5 zone.

NWN considered a route through the Aurora, Barlow or Canby Urban Growth Areas. However, a corridor through these urban areas would be a circuitous route, adding miles of additional pipeline, and would actually increase the total miles of pipeline in the EFU zone. Upon considering alternatives, the proposed pipeline must be sited in EFU-zoned areas of Clackamas County due to the following factors:

- (1) Technical and engineering feasibility limitations (ORS 215.275(2)(a)): The pipeline must avoid geotechnically unstable areas, avoid areas within public rights-of-way where conflicts with other utilities are likely, and provide ample areas outside populated areas for underground HDD boring operations and other construction phase installations. Routing the pipeline under the Willamette and Pudding Rivers presents fundamental technical and engineering challenges that substantially compel the proposed location through Clackamas County.
- (2) The pipeline placement is locationally dependent (ORS 215.275(2)(b)): Numerous geographical features, existing roads, railways, and environmentally sensitive areas significantly limit routing decisions, necessitating siting in the EFU zone. One of the primary locationally dependent constraints for the entire proposed facility is the Willamette River. The Pudding River crossing poses similar challenges. The terminus of the pipeline (the Molalla Gate Station) also is locationally dependent, substantially limiting other potential alignments.
- (3) Lack of available urban and nonresource lands (ORS 215.275(2)(c)): While urban and nonresource lands exist in the vicinity of the pipeline, heavily populated areas pose additional safety risks in siting and operating a large high-pressure gas pipeline. These challenges and constraints are discussed above. Moreover, siting in the Urban areas of Canby, Aurora and Barlow would not decrease EFU impact.
- (4) Availability of existing rights-of-way (ORS 215.275(2)(d)): Except for the Pudding River crossing, the proposed corridor in Clackamas county is generally within or adjacent to public rights-of-way. In certain locations NWN requests permission to use EFU land adjacent to public right-of-way. In other locations NWN proposes to follow property lines that parallel roads in the EFU zone. These requests are based on factors including public safety, engineering feasibility limitations, and geographical limitations on use of public right-of-way.
- (5) Public health and safety (ORS 215.275(2)(e)): The protection of the pipeline from risk of damage and consequential public safety risks is of paramount. This objective is accomplished by exceeding safety requirements and by avoiding locations where third-party damage to the pipeline is more likely.
- (6) Other requirements of state or federal agencies (ORS 215.275(2)(f)): The proposed locations for the Willamette River and Pudding River crossings avoid sensitive habitat areas, meeting local, state, and federal environmental protection requirements. Moreover, in the sections of this Order that address EFSC's Habitat standard and DSL

wetland permitting requirements, we have identified some locations where wetlands adjacent to the road are particularly sensitive or valuable, and must be avoided in order to comply with those environmental requirements.

For all of the foregoing reasons, OOE recommends that the Council find that the proposed facility must use the EFU-zoned lands outside of public road or highway rights-of-way within Clackamas County. Measures to mitigate and minimize impacts to farm uses are described in NWN's "Agricultural Assessment," Appendix K-9, and in the discussion of the EFSC Soils standard.

#### EFU Locational Necessity in Marion County

The section of the pipeline in Marion County is the section between the Willamette and Pudding river crossings. Both river crossings were selected carefully and few options are available between them. Other limiting factors include the I-5 crossing, the Willamette Valley Feeder tie-in, and the need to avoid a known area of hazardous waste contamination near the Columbia helicopter facility.

Upon considering alternatives, NWN determined that the proposed pipeline must be sited in EFU-zoned areas of Marion County outside of rights-of-way due to the following factors:

- (1) Technical and engineering feasibility limitations (ORS 215.275(2)(a)): The pipeline must avoid geotechnically unstable areas, avoid areas within public rights-of-way where conflicts with other utilities are likely, and provide ample areas outside populated areas for underground HDD boring operations and other construction-phase installations. The Willamette River and Pudding River crossings will impact EFU-zoned lands in Marion County. Further, the pipeline must intersect with the Willamette River Feeder. As described above, technical and engineering limitations narrow potential locations for these crossings;
- (2) The pipeline placement is locationally dependent (ORS 215.275(2)(b)): The pipeline must cross EFU-zoned lands in Marion County. Virtually all the land in this area of Marion County is zoned EFU. It is not possible to intersect with and address the locationally dependent constraints described above, including siting the pipeline in an alignment that can connect with the Molalla Gate Station, cross under the Pudding River, and maintain a reasonably direct route through Marion County without crossing EFU lands. Numerous geographical features, existing roads, and environmentally sensitive areas significantly limit routing decisions, necessitating siting upon EFU lands;
- (3) Lack of available urban and nonresource lands (ORS 215.275(2)(c)): This area of Marion County includes very limited urban and nonresource lands. The pipeline is proposed to cross nonresource lands in this area (the Public and Rural Industrial Zones);
- (4) Availability of existing rights-of-way (ORS 215.275(2)(d)): The proposed corridor generally parallels existing roads. NWN has requested permission to site the pipeline "in or adjacent to" existing road right-of-way. Factors concerning use of public road right-of-way are the same in Marion County as in Washington and Clackamas counties.

(5) Public health and safety (ORS 215.275(2)(e)): Public safety risks from utility conflicts and third-party damage are discussed in Washington and Clackamas counties. That discussion applies in Marion County as well.

(6) Other requirements of state or federal agencies (ORS 215.275(2)(f)): The location for the Pudding River crossing satisfies local, state, and federal regulations protecting environmentally sensitive areas. This crossing also drives routing decisions to the north and south. The I-5 crossing was also driven partly by ODOT requirements.

For all of the foregoing reasons, OOE recommends that the Council find that the proposed facility must use the EFU-zoned lands outside of public road or highway rights-of-way within Marion County. Measures to mitigate and minimize impacts to farm uses are described in NWN's "Agricultural Assessment," Appendix K-9, and in the discussion of the EFSC Soils standard.

## **H. Conclusion – Locational Necessity of the Proposed Facility**

The NWN application provides substantial evidence that, at a “macro” level, siting the pipeline within the EFU zone is necessary. The application provides evidence that the corridor must be located in the EFU zone considering factors of public safety, engineering and technical factors, state and federal requirements, and locational dependence. A major consideration is the fact that pipeline’s northernmost point is limited in flexibility and the pipeline’s southern terminus must be at the Molalla gate station. The preponderance of EFU-zoned land between those points makes avoiding such lands effectively impossible. The difficulty of finding a feasible location for the Willamette River crossing also greatly limited non-EFU alternatives. The application provides information concerning reasonable alternatives that avoid EFU land, including the frequently suggested alternative to follow highways 26, 217 and I-5. There is substantial evidence that these alternatives are not reasonable, either because of one or more of the factors under ORS 215.275(2), or because they are inconsistent with the project purpose.

NWN made reasonable efforts to identify a location for the proposed facility that is along public road or highway rights-of-way as much as is practical. In certain locations the proposed corridor could not follow a public road. In these locations, NWN has provided evidence as to why these locations were necessary due to factors listed in subsection (2) of ORS 215.275.

In locations where the corridor does follow a public road, the application states that the pipeline would be located “in or adjacent” to the public right-of-way. While, as set forth in more detail above, there are safety and other factors that may justify the use of lands along public road right-of-way rather than within the existing rights-of-way, OOE does not believe that these factors justify providing complete discretion to NWN regarding whether and if so, how much, existing right-of-way should be utilized. It is not possible to make a blanket determination for a 200 wide, 60-mile long corridor whether the pipeline must be *in* the right-of-way or *adjacent* to it. Nor can this determination be made over the entire length of the 8 segments defined by the constraint points. OOE has recommended a “standard condition” to address this situation, as described in more detail above.

In addition, under subsection (5) of ORS 215.275, the Council must condition the proposed facility to mitigate and minimize its effects on farm uses. Conditions to do so through construction practices are described in detail in NWN's "Agricultural Mitigation Plan," in Exhibit I of the ASC, and in this Order under the EFSC Soils standard.

### **III. Local Analysis of the Proposed Corridor**

The following description is based on the 44 photographic panels submitted as Appendix K-2 of the ASC. NWN supplemented these panels in July 2001 with supplemental alternate segments. This description begins at the northern end of the proposed facility and proceeds south.

**Panels 1,2 and 3:** In this area the proposed facility begins at the Bacona station and travels south through timberland in the EFC zone, not the EFU zone. The pipeline is a permitted use, with conditions. The proposed facility follows the existing right-of-way for the 16-inch South Mist Feeder pipe (SMF). Therefore in these panels ORS chapter 215 does not apply.

**Panels 4 through 8:** In the area shown on these panels, the proposed facility is located in the EFU zone. For approximately the first (most northerly) mile, the proposed facility follows the existing SMF right-of-way along Dairy Creek Road. The proposed facility is therefore a permitted use in this segment under ORS 215.283(1)(L).

The next 5.45<sup>11</sup> miles of the proposed facility follows the right-of-way for the existing 16-inch SMF pipeline, and are in EFU zoned land not adjacent to a road. As a result, this portion of the proposed facility is not authorized by ORS 215.283(1)(L), and it must comply with the requirements of ORS 215.283(1)(d) and 215.275, which require the applicant to demonstrate that the proposed facility must be located on EFU lands rather than avoiding such lands through the use of reasonable alternatives, based on one or more of the factors set forth in 215.275(2). There is no reasonable alternative for this portion of the proposed pipeline route that does not involve the use of significant amount of EFU land. In order to connect the portion of the proposed facility described above, with portions of the proposed facility to the south, this segment of the proposed pipeline must run down Dairy Creek valley. In this manner, this portion of the proposed facility is locationally-dependent, under ORS 215.275(2). The main alternative to the proposed location, under 215.275, is to route the proposed facility along the Dairy Creek Road right-of-way rather than along the existing SMF easement area.

By using the existing SMF easement area, NWN is able to limit the amount of new maintenance/operation easement area required to a width of 10 feet. NWN states that this is a positive factor under ORS 215.275, tending to justify its proposed location using the exiting utility easement area rather than the existing road right-of-way. In addition, NWN points out that using the existing road right-of-way would require the removal of a significant number of trees, including orchard. That there are buildings that would have to be displaced if the pipeline

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<sup>11</sup> The segment lengths that appear throughout this panel-by-panel discussion were obtained by measuring the 44 photographic panels (Appendix K-2 of the ASC). They are approximate, and are provided for illustration only.

were to be placed along the right-of-way. That there are portions of the road right-of-way constructed on poorly-compacted fill where locating the pipeline would present technical and engineering feasibility problems. And that placing the proposed facility along the Dairy Creek road right-of-way would, in some areas, disturb riparian areas. Based on the information submitted by NWN, OOE believes there is substantial evidence to support the proposed location utilizing the existing SMF right-of-way rather than Dairy Creek road right-of-way.<sup>12</sup> Finally, this segment of the proposed facility also is locationally dependent because it terminates near the first of the 8 major constraint points identified by NWN, the highway 26 crossing.

This segment of the proposed facility also includes the most northerly of the proposed “alternate” segments. In this alternate, NWN would deviate from the existing 16-inch SMF right-of-way and bore under Dairy Creek instead. For purposes of complying with ORS 215.275, this alternate route does not appear to be substantially different from the preferred location of the facility. Moreover, OOE has recommended a finding that this alternate can meet the Council’s Habitat standard and DSL wetland requirements. Therefore OOE recommends that NWN use the option that will minimize any negative effects of the proposed facility on the farm operation in this area.

**Panels 8 through 12:** In these panels, the proposed facility travels generally south for about 6 miles along Dersham, Milne, Wren, Leisy and Padgett roads, all located in the EFU district. The proposed facility is centered on road right-of-way.

Where NWN has proposed locating the facility along existing road-right-of-way, but has also asked that it be allowed to place the facility anywhere within a 200-foot corridor, OOE recommends that the Council conditionally approve the proposal to ensure that it complies with ORS 215.283(1)(L). We recommend the following condition:

*Where the proposed corridor is located along existing public road or highway right-of-way (whether or not that right-of-way is improved), both the construction and the maintenance/operation easements shall be located within or adjacent to the existing public road or highway right-of-way. In this condition, the term adjacent means contiguous.*

For the rest of this panel-by-panel description we refer to this as the “standard condition”. OOE recommends applying the standard condition to the (approximately) six-mile segment of the proposed facility shown in panels 8 through 12.

These panels also show a proposed alternate (the “Gordon road” alternate) location. The Gordon road alternate segment is approximately 2.35 miles long, primarily along roads that are in the EFU district. The standard condition should apply to this alternate segment as well.

**Panel 13:** In this panel, the proposed facility crosses EFU zoned land as it approaches the site where NWN proposes to bore under Dairy Creek and the Tualatin Valley highway. There are no roads in this stretch that go in generally the right direction, and as a result this portion of the facility must be reviewed under ORS 215.283(1)(d) and 215.275. The creek crossing and the TV

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<sup>12</sup> See NWN letter dated May 31, 2002 from Ron Gullberg, NWN to Adam Bless, OOE

highway crossing present technical and engineering obstacles that require NWN to bore, and suitable bore sites are limited. OOE believe that NWN has presented substantial evidence that reasonable non-EFU alternatives will not work in this location for technical and engineering reasons that are not solely based on cost. In addition, this portion of the proposed facility is locationally-dependent because it must line up with the Tualatin Valley highway crossing, one of the major locational constraints documented in the ASC, and discussed in section II.E of this analysis. OOE therefore recommends that the Council find that this EFU-zoned segment is “necessary” under ORS 215.275. It is approximately 1.6 miles long.

Just north of the Tualatin Valley highway crossing, NWN has proposed a short alternate segment. The alternate segment is on EFU land and is approximately 0.15 miles longer than the preferred location, but the extra length includes land of lower quality. OOE recommends that NWN be allowed to use either option.

**Panels 14 through 17:** After boring under the Tualatin Valley highway, the proposed facility crosses primarily EFU land for approximately 1.97 miles. A short (0.3 mile) segment of this is commercially zoned land in the city of Hillsboro, but the remainder is zoned EFU. This segment, which is not along road right-of-way, must be located on EFU-zoned lands that are not along a road right-of-way for the same reasons given in the discussion of panel 13. The proposed facility is primarily underground bore in this area.

The proposed facility then follows highway 219 for approximately 2.39 miles. This portion of the proposed facility is permitted under ORS 215.283(1)(L). OOE recommends the “standard” condition apply to this portion of the facility.

**Panel 17:** In this panel, the proposed facility bypasses Burkhalter Road and crosses farmland along property lines. This segment which is in the EFU zone and is not along a public road, is approximately 1.5 miles long.

This portion of the facility may be allowed only if it complies with the “necessary” test of ORS 215.275. The alternative location, Burkhalter Road, is surrounded by wetland on both sides and is built upon fill that presents engineering and technical feasibility problems according to NWN. Further east along Burkhalter Road there are houses with short setbacks and small-scale peach growing operations close to the road. For these reasons, which are primarily engineering and technical reasons under the factors of ORS 215.275(2),<sup>13</sup> OOE believes that the applicant has provided substantial evidence to justify approving the proposed location of the facility bypassing this portion of Burkhalter Road.

**Panel 18:** In this panel, the proposed facility rejoins Burkhalter Road for about 0.45 miles, and then turns south towards the intersection of Farmington Road and the Tualatin River.

At this point a 1.44-mile portion of the proposed facility crosses EFU-zoned land and does not follow a road. The segment is locationally-dependent because NWN must bore under the Tualatin River, which is Category 1 habitat under the EFSC Fish and Wildlife standard. Suitable

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<sup>13</sup> See NWN May 31, 2002 letter from Ron Gullberg, NWN to Adam Bless, OOE

locations for this bore are limited, which forces the facility to cross farmland not following a road at this point. This segment therefore meets the “necessary” requirement of ORS 215.275.

**Panels 19 through 21:** The proposed facility follows River and Scholls Ferry roads for approximately 4.25 miles. This portion of the facility is permitted under ORS 215.283(1)(L). The standard condition should apply.

As the proposed facility approaches Pleasant Valley Road near the Tualatin River National Wildlife Refuge, it crosses land away from the road for approximately 0.5 miles in the EFU zone. This short segment is necessary in order for NWN to have a reasonably direct route to the location of the proposed Tualatin River crossing. The proposed facility is locationally-dependent in this area because there are limited locations where the river can be crossed.

**Panels 22 and 23:** The proposed facility at this point follows Pleasant Valley Road for approximately 1 mile. Pleasant Valley Road in this area is the eastern border of the Tualatin Valley National Wildlife Refuge, which the U.S. Fish and Wildlife Service has directed NWN to avoid. The Refuge is one of the major constraints discussed in section II.E of this attachment. The use of Pleasant Valley Road is permitted under (1)(L), and the standard condition should apply.

At the southern end of Pleasant Valley Road, the proposed facility proceeds south for approximately 1.25 miles in the EFU zone, and does not follow a road. This segment includes the bore under the Tualatin River. The portion of the route must be located on EFU lands that are not along a road right-of-way due to evidence presented by NWN to show that engineering and environmental considerations limited the choice of locations to bore under the Tualatin River. Also, this portion of the facility makes use of existing right-of-way by following the BPA powerline right-of-way for slightly more than 1 mile. This is the only location where BPA agreed to make its existing right-of-way “available”.

**Panels 24 through 27:** The area between the Tualatin River National Wildlife Refuge and the City of Sherwood is shown on panels 24 through 27. As discussed in detail in the ASC, this region does not have a road that travels in the right direction and that is suitable for pipeline construction. The zoning is a checkerboard pattern of EFU and AF-20 zones (the latter is an EFU zone), and zones such as AF-5 and AF-10 that are not EFU zones. For this reason, NWN has proposed three alternate routes between the Refuge and the City of Sherwood. One of these is the “preferred” route and the other two are options. Each alternative is addressed below.

*Preferred Option* Where the BPA powerline crosses Scholls-Sherwood Road, the preferred route leaves the BPA right-of-way and goes east and then south along Scholls-Sherwood and then Elwert Road for about 1.75 miles. The route along these roads is permitted under ORS 215.283(1)(L). The standard condition should apply.

The preferred route then leaves the road and crosses EFU-zoned land, following a PGE powerline right-of-way for a short distance before turning south to reach Kruger Road. It then

proceeds south from Kruger Road across a checkerboard of rural residential and EFU land, finally reaching Chapman Road. This mixed segment is approximately 2.52 miles long.

*Alternate Corridor* In one alternate proposal, the route leaves the BPA right-of-way and goes west along Scholls-Sherwood road and then south along Stark and Lebeau roads. It then turns south through an area that has no through roads, crossing a mixed checkerboard of residential and EFU-zoned lands. This mixed segment, which is not along roads, is about 2.5 miles long and includes roughly 1 mile of EFU zone. It rejoins the preferred route at Kruger Road.

*Alternate Corridor* NWN proposed another alternate that generally follows the preferred route south along Elwert Road but continues another 0.3 miles along Elwert Road. It then includes a segment about 0.75 miles long that travels over land that is primarily zoned rural residential. It then rejoins the preferred route and proceeds across EFU zoned land for about 0.45 miles to reach Kruger Road, where all three options come together.

Any of these three alternate segments would involve some use of EFU land that is not along public roads, and there is substantial evidence in the record that all three meet the “necessary” test of ORS 215.275. NWN has described in detail the difficulty of finding a non-EFU location in this very difficult area around the outskirts of Sherwood. Numerous inspections by OOE staff have confirmed the fact that there is a large amount of development along Elwert Road and Highway 99 in this area. The large number of growing subdivisions here suggests that the risk of 3<sup>rd</sup> party damage to a natural gas pipeline is relatively high here. In addition, ODOT has stated that, although use of roads is generally acceptable, use of Highway 99 would violate FWHA standards. The difficulty of completely avoiding EFU land is shown by the fact that NWN proposed three alternates but none is clearly superior. Moreover, the options in this region are locationally-dependent because they must generally begin where the proposed route leaves the Tualatin National Wildlife Refuge, and must reach the point where NWN will cross highway 99W, one of the major constraint points identified in the ASC.

This checkerboard portion of the proposed facility ends on panel 27, where the route turns east on Chapman Road, crosses Highway 99W, and continues along Brookman Road. Along Chapman and Brookman Roads, OOE recommends that EFSC impose the standard condition. Brookman Road is the border between EFU zone to the south and the Sherwood Urban Growth Area (UGA) to the north. In the portion of Brookman Road that is zoned RRFF, EFSC need not apply the standard condition.

**Panel 28:** In the area shown on this panel the proposed facility leaves Brookman Road and turns south through EFU land, eventually rejoining the road at the point where Ladd Hill Road intersects the Washington-Clackamas County line. The zoning map suggests that NWN could avoid EFU zone by using Brookman and Ladd Hill roads, both located in the RRFF zone. However, site visits to this area showed engineering and safety concerns that are not evident from the map. The area has subdivisions under development, making the likelihood of competing utilities and third-party digging that could damage the pipeline relatively higher. This is one area where the concern over 3<sup>rd</sup> party damage appears particularly valid. Therefore OOE concurs that this portion of the proposed route through EFU land is justified based on safety and engineering factors.

OOE notes that the route also could avoid use of EFU land by continuing along Brookman Road for about another 220 yards and then following the Washington-Clackamas county line south. The Washington County side of the line is zoned EFU but the Clackamas County side of the line is zoned rural residential. This alternative was not suggested by any member of the public, but in response to questions from OOE, NWN provided the following reasons why this route is not a reasonable alternative: two additional water crossings would be required; the route would require the removal of approximately 2.6 acres of well-established trees; the route would impact an additional 2.6 acres of habitat (using HDD technology to avoid the creek crossing and habitat issues is not a viable option as it would require additional impact to forestland and filbert orchards to facilitate the pipe lay down area); because of topography, the pipeline would have a greater exposure to side slope stability issues. OOE believe that NWN has provided substantial evidence that satisfies the requirements of ORS 215.275 to show that the facility must be placed on EFU-zoned lands.

**Panels 29 and 30:** The proposed facility proceeds about 3.6 miles following Ladd hill, Pleasant Hill, Tooze and Baker Roads through a region known as Parrett Mountain. The zoning is a mixture of EFU and RRFF. For much of this portion of the route, the zoning is EFU on one side of the road and RRFF on the other. Because the proposed facility generally follows roads, ORS 215.283(1)(L) applies, and OOE recommends that EFSC apply the standard condition. In addition, OOE recommends that the Council require that where the corridor includes lands on both sides of a public road, and those lands are zoned EFU only on one side of the road, that the facility be located on the side of the road that is not zoned EFU except where NWN demonstrates that it would be necessary to remove or displace a building to stay on the non-EFU side (in which case, the standard condition would apply and the facility could be located on the EFU side). OOE notes that even if ORS 215.275 were to apply in this area, the facility is locationally-dependent because in this hilly region there are no through roads that travel generally to the southeast to the proposed Willamette River crossing.

**Panels 31 and 32:** The proposed facility in this area follows Baker Road to its southern dead-end, and then travels across EFU-zoned lands to reach the Willamette River crossing, one of the major locationally-constrained points for the proposed facility. This portion of the route is about 1.75 miles long and must meet the test of ORS 215.275. The proposed facility is locationally-dependent because options for crossing the Willamette are very limited. The only roads that approach this crossing are Bell and Grahams Ferry. These roads do not follow a natural contour in this hilly area, but rather were cut into sidehills. They have poor drainage and are prone to slides and washouts, as confirmed by on-site inspection. NWN proposed a short alternate in this area, but it changes the length of the route the EFU zone by only about 0.2 miles.

**Panels 33 and 34:** NWN provided substantial evidence that the proposed facility must cross the Willamette at the identified location. As described in the ASC and elsewhere in this Proposed Order, NWN has shown that Willamette River crossing is locationally dependent. In addition, OOE believes that, due to the surrounding topography, and the need for lay-down area to accomplish the bore, the route is locationally constrained for several miles to the north and south.

After exiting the Willamette River bore, the proposed facility includes a 1.48-mile segment that does not follow a road and is in the EFU zone. This segment must meet the “necessary” test of ORS 215.275. As noted above, a large portion of this segment is locationally-constrained as a result of the necessary lay-down area for the Willamette River bore. A nearby road (Klupenger Road) travels generally in the same direction and could be an alternative location. The applicant states that the proposed route must be located on EFU-zoned that are not along the road as a result of the availability of right-of-way needed for the laydown area, and that using the laydown area for pipeline placement will minimize disturbance of EFU-zoned lands. In addition, NWN identifies improvements that would likely need to be removed or displaced along Graham Road, as well as wetland and geological concerns with that route. NWN also cited the presence of large oak trees that would have to be removed. The applicant also states that use of Klupenger and Graham roads would adversely affect farm infrastructure more than the proposed location along the back of the property. The application states “...*this is one location where use of the road would actually increase farm impact...*”. OOE believes that NWN has provided substantial evidence justifying why the proposed facility must be placed on EFU-zoned lands rather than along Butteville and Graham Roads.<sup>14</sup> This 1.48-mile segment of the proposed facility ends as the route reaches Arndt. Rd.

**Panels 34 and 35:** The route follows Arndt Rd. for about 2.39 miles. OOE recommends that the standard condition be applied for this portion of the facility.

**Panel 36:** The proposed facility leaves Arndt. Road and travels south across the Aurora Airport for approximately 0.75 miles on land zoned Public Facilities (PF).

After leaving the PF zone, the proposed facility traverses land in the EFU zone for about 1.21 miles. The route here must meet the requirements of ORS 215.275. OOE believe that the proposed facility in this area is locationally-dependent because of difficulty finding a stable site to cross the Pudding River. The river is essentially in a very wide floodplain area, and the channel meanders from year to year. A long bore is required to ensure the crossing is located in stable soil. Moreover, continuing east on Arndt Road would have necessitated placing the corridor in an area of known chemical contamination associated with the Columbia Helicopter facility, possible conflicting with federal and state cleanup requirements. NWN also considered the alternative of avoiding farmland by following Airport Road, and in fact that option was described in the original NOI “Balanced Corridor.” After field surveys, however, NWN eliminated the Airport Road route because it did not provide a suitable location for crossing the Pudding River, due to the number of other underground utilities along the road as it enters the city of Aurora (and the attendant safety issues), and because using Airport Road would simply have necessitated crossing EFU lands further south resulting in no net decrease use of EFU-zoned lands. OOE notes that much of the 1.21 miles in this corridor segment is the Pudding River bore.

**Panels 37 through 40:** After the proposed facility exits from the Pudding River bore, it generally follows Anderson Road along the city limits of the City of Barlow, crosses Highway 99E, and follows Barlow Road to the south. This segment along Anderson and Barlow Roads is

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<sup>14</sup> NWN letter dated May 31, 2002 from Ron Gullberg, NWN to Adam Bless, OOE.

about 4.7 miles. Where Anderson and Barlow Roads are in the EFU zone, OOE recommends that the Council apply the standard condition.

**Panels 41 through 44:** In this southernmost segment of the proposed facility, NWN has presented the Council with a dilemma. The application includes two alternate routes. NWN's preferred route parallels Zimmerman, Heinz and Dryland Roads, but it is not contiguous with the existing rights-of-way of those roads. Instead, the proposed route crosses farmland and follows property lines parallel to those roads. NWN has also presented an alternate route that is along the public right-of-way associated with these same roads. Both options reach the project end point at the Molalla Gate Station.

NWN has characterized the alternate location along property lines parallel to Zimmerman, Heinz and Dryland Roads as its preferred route. NWN characterized the option along the roads as an alternate. Both alternatives are similar in length: the preferred route is 5.55 miles long and the alternate one is 5.35 miles long. NWN states in the ASC that the preference for the corridor along property lines is based on farm impact. Farmers along Zimmerman and Heinz roads in particular have commented that, due to the presence of drain tile and other farm infrastructure in and along the road right of way, construction along property lines, outside the public right of way, would actually produce less adverse impact on the farming operation. Note that similar reasoning was applied along Klupenger and Graham roads (*see* discussion of Panel 34).

The alternate corridor along the roads is permitted under ORS 215.283(1)(L). The option preferred by NWN is on EFU-zoned lands, and is not along existing right-of-way, and therefore must meet the requirements of ORS 215.275. Those provisions require NWN to avoid farmland unless reasonable alternatives were considered and found unsuitable for one or more of the six section (2) factors. At this point in time, OOE does not believe that there is substantial evidence showing why the route along the roads is unsuitable or not reasonable, based on one or more of the factors in 215.275(2). As a result, absent such evidence, OOE recommends that the Council adopt a condition requiring NWN to use the alternative route along the existing road rights-of-way for Zimmerman, Heinz and Dryland Roads.

**Summary:** Of the 44 "panels," there are 33 where the proposed facility is along road or highway right-of-way, or NWN has demonstrated that there is no reasonably direct road right-of-way that links the other portions of the proposed facility and allows NWN to meet the Constraint Points identified in the application. For these portions of the proposed route, that the portions of the proposed facility along existing road and highway rights-of-way, OOE believes NWN has demonstrated that there is no reasonable alternative to the proposed corridor. For the remaining panels, NWN has (with the exception of Panel 44, described above) provided substantial evidence upon which to conclude that seemingly available road right-of-way or non-EFU lands were not reasonable alternatives based on one or more of the factors listed in ORS 215.275. Most of the reasons for not using these alternatives relate to habitat protection, requirements of federal or state law, safety, or engineering feasibility. OOE received many public comments stating that the proposed facility could follow roads more than NWN has proposed. As noted at the outset of this analysis, however, over sixty percent of that portion of the proposed facility on EFU-zoned lands is along existing public road or highway rights-of-way. At this point in time, OOE believes there is substantial evidence in the record justifying why the approximately thirty-

eight percent of the proposed route on EFU lands must be placed there rather than in existing right-of-way or on non-EFU lands.

The following table is a summary of the relative proportion of the proposed facility route that is: (a) on or along public road or highway rights-of-way; (b) on EFU-zoned lands that are not in or along a road or highway right-of-way, and (c) on lands that are zoned residential or commercial. OOE estimated the figures in this table by measuring segment lengths on the 44 aerial photographs submitted with the ASC as Appendix K-2 (as supplemented in July 2001). No representation is made as to the accuracy or precision of these estimates, nor do these data form the basis for findings of compliance with any particular standard. The estimates are provided only to provide an overall picture of the extent to which the proposed facility would be located within each of the three categories outlined above.

The estimates here are based on the “preferred” corridor. Use of alternate corridor segments would change the mileage, but the difference would not be a significant percentage overall.

### Corridor Segment Lengths

<b>Panels #</b>	<b>Road ROW in EFU</b>	<b>EFU zone-farm land</b>	<b>Other Zone</b>
1,2,3			3.52 (EFC)
4 – 8	1.8	5.45	
9 – 13	5.95	1.59	
14 – 17	2.39	1.67	0.3 (Commercial)
17		1.52	
18	0.45	1.44	
19 – 21	4.24		
22,23	0.98	0.5	
24,25	1.74	1.25	
25,26,27		1.0	1.52 <sup>15</sup> (mixed)
28	1.44 <sup>16</sup>	0.68	
29-31	3.6		
31,32		1.75	
33,34,35	2.39	1.48	
36 – 41	4.7	1.21	0.76 (PF)
41 – 44	5.34 <sup>17</sup>		

<sup>15</sup> The zoning in panels 25 through 27 is a checkerboard of EFU, AF-20, and AF-5 and AF-10. AF-20 is an EFU zone. Other AF designations are non-EFU zones. Due to the checkerboarding, these mileage estimates are highly approximate. Precise estimates are made more difficult by segments where the corridor is EFU on one side and AF-5 or AF-10 on the other (“split zones”). These estimates are for discussion purposes only.

<sup>16</sup> Includes split zones

<sup>17</sup> Assumes OOE recommendation of NWN’s Heinz, Zimmerman and Dryland alternates. If NWN preferred corridor is used, this 5.34 mile segment would be in EFU zone.

<b>Total</b>	<b>35.04</b>	<b>21.29</b>	<b>6.1</b>
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OOE notes that ORS 215.275 provides that a utility facility is necessary only if it “*must*” be located on EFU-zoned lands for one or more of six reasons. The word “*must*” implies a substantial burden in order to reject a non-EFU alternative. NWN has presented substantial evidence that locating the pipeline within public ROW is generally less safe because of 3<sup>rd</sup> party damage risk. OOE agrees that this is true in many locations. But NWN did not identify specific locations where use of the public right-of-way is safe and where it is not. Moreover, authorizing the full 200-foot corridor for the entire 60 miles effectively would allow NWN to make this determination in the field, without an opportunity public comment on when the proposed facility will and will not be placed within or adjacent to existing rights-of-way. Therefore, as noted above, OOE recommends that the Council adopt a “standard condition” in all areas of the proposed route where the 200-foot corridor includes or is adjacent to existing rights-of-way, limiting the construction and permanent easements in these locations to areas that are within or contiguous to existing public rights-of-way, except where deviations are required to avoid displacing or removing buildings or where required to avoid Category 1 or 2 habitat.

Finally, the proposed facility includes sections where apparently-available road right-of-way was not proposed, based on somewhat generic arguments rather than site specific evidence. In some instances, NWN provided reasons such as landowner preference and proximity to residences that may be perfectly good policy reasons for determining the location of the facility, but that do not (on their face) directly relate to one or more of the six ORS 215.275(2) factors. In OOE's analysis, when the ORS 215.275 test applied, only evidence relating to one or more of the six factors was used.

#### **IV. Requirements to “Minimize and Mitigate” EFU impacts**

The NWN application addresses subsections (4) and (5) of the statute (and ORS 215.296) by providing a detailed assessment of existing farm practices in the area surrounding the proposed route, the potential conflicts between the construction and operation of the facility and these practices; and any measures to mitigate and minimize the pipeline impacts.

EFSC can impose conditions to mitigate and minimize EFU impact either by limiting the pipeline location or through construction practices and restoration requirements. In certain areas the pipeline will be located on farmed land, and in these area the construction practices and soil restoration requirements are described in detail in discussion of the EFSC Soil Standard.

The major condition requiring minimization by limiting the *amount* of farm land impacted is the “standard” condition described in section III of this analysis.