

SMALL BUSINESS ECONOMIC IMPACT STATEMENT
FOR PROPOSED
ENERGY FACILITY SITE EVALUATION COUNCIL
RULE REVISIONS
(Chapter 463 WAC)

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Executive Summary

The Energy Facility Site Evaluation Council (EFSEC) is proposing revisions to the rules for siting energy facilities in Washington State. The proposed revisions provide clarified direction under authority of RCW 80.50 for public and private proponents that are considering constructing energy facilities within Washington State. EFSEC's goal is to adopt rules that help achieve the legislature's statutory policy objective of assuring abundant power at reasonable cost while protecting the public interest and the environment. This rulemaking is in response to a recent report on EFSEC, Governor Locke's directive for clearer standards and a collaborative stakeholder process.

EFSEC provides "one-stop" siting review for large energy facilities located in Washington. The Council oversees the permitting and environmental review of proposed facilities and makes a recommendation on the project to the Governor. In the past, EFSEC has been involved in siting nuclear power plants, coal-fired electric generating plants, petroleum product and natural gas transmission facilities and more recently, natural gas-fired electricity generating facilities. In the last 12 years, 12 of 15 projects have been natural gas-fired electricity generation facilities and two are wind-powered facilities currently under review.

The proposed rule revisions include changes to most sections of the current rules and the addition of several new sections. In order to evaluate the impacts of the proposed rules, the first consideration was to develop the baseline from which the changes are measured. Parties to adjudicative proceedings before the Council have used the opportunity to present settlement agreements, and EFSEC has often approved negotiated settlements between parties and made them permit conditions. Moreover, the EFSEC siting process has evolved over time to provide more comprehensive information, though the detailed requirements may not be explicitly listed in the existing rules. As such, EFSEC considered two baselines to better inform the rulemaking process. The existing rule baseline (ER baseline) considers the existing rule language as the baseline. The existing process baseline (EP baseline) utilizes the existing process as implemented by EFSEC in its review of a proposal as the baseline. Existing requirements under the EP baseline were determined based on previously reviewed projects.

EFSEC has carefully evaluated the changes between the existing rules and proposed rule revisions. Most of the changes will be minor in nature and will not significantly affect applicants. Others may impose additional costs on new applicants. EFSEC has identified the following significant changes using the ER baseline:

1. A new requirement to conduct a public meeting during potential site studies.
2. Increased application requirements associated with noise and socioeconomic analyses, and review by EFSEC's independent consultant.
3. Term limits and conditional updates on Site Certification Agreements (SCA).
4. New pollution insurance requirements.
5. Elimination of the requirement to show a "Need for Power".

Using the EP baseline, only small changes in requirements associated with expanded socioeconomic analysis and elimination of demonstrating a Need for Power will affect applicants.

To determine the impact of the rule revisions on future facility costs requires consideration of the market for wholesale power. This market has seen considerable change in the last 25 years resulting from federal efforts to increase competition, technological innovation and increased environmental concerns associated with energy extraction, transmission and use. In order to forecast the type and quantity of expected new energy facilities a computer model was utilized. The results of the model indicate an increased use of coal and wind for power generation together with additional natural gas fired facilities. Several scenarios were considered to evaluate the responsiveness of expected resource development. The results indicate that greater environmental regulation tends to increase the expected amount of natural gas and renewable power generation.

Using the ER baseline, a typical natural gas-fired or coal-fired electrical generating facility will experience an increase in siting costs of approximately \$67,000 and an increase in operation related expenses of approximately \$25,000-\$80,000 per year. The increased annual expense comes from the requirement for pollution liability insurance and varies significantly based on facility type, operator, and location. Renewable sources should experience a siting cost increase of approximately \$20,000 since noise analyses requirements are likely to be reduced. Pollution liability insurance is also likely to be less expensive for these facilities. Using the EP baseline, a very small cost savings is anticipated.

It is possible that increased siting costs could affect sales by delaying development of new facilities or changing the returns on generating technologies. Under the ER baseline, the percentage increase in capital cost due to the rule revisions for a typical generation facility is estimated to be between 0.01% and 0.02% depending on the generating technology. Non-fuel operation and maintenance costs will rise between 0.4% and 1.0%. Overall, the cost increases are relatively modest.

The impacts to small businesses were also evaluated. An analysis of compliance cost per employee indicates the impacts may be disproportionate. However, an alternative measure of compliance cost per hundred dollars of sales indicates no dis-proportionality. The extent of the burden is related to facility capacity as more sales can reduce the impact since the increased costs can be allocated over greater output. Analysis of past projects reviewed by EFSEC indicates that capacity selection is unrelated to the number of employees. Therefore, cost incurred per unit of sales is likely to be a more relevant statistic and the impacts are unlikely to be disproportionate. Secondary effects on retail rates were also considered and no dis-proportionality is anticipated.

As noted above, it is unlikely the impacts will be disproportionate and so no specific actions were taken by EFSEC to reduce the impacts of the rule on small businesses. However, it is hoped the review process will be improved with these rule revisions in

such a way that uncertainty and process application time are reduced. This should be a benefit to both small and large businesses. Businesses had the option of being involved in this rulemaking through a stakeholder rule development process conducted in 2001-2002 and several public meetings and a public comment period.

In general, the industry most likely to be affected by this rule making is that involved in SIC 4911 “Electric Services”. However other industries could be indirectly affected and a list of potentially affected industries is listed in Section 5.

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1. INTRODUCTION

BACKGROUND

The Energy Facility Site Evaluation Council (EFSEC) is proposing adoption of revised rules for siting energy facilities in Washington State. The proposed rules provide clarified direction under authority of RCW 80.50 for public and private proponents that are considering constructing certain energy facilities within Washington State. EFSEC's goal is to adopt rules that help achieve the legislature's statutory policy objective of assuring abundant power at reasonable cost while protecting the public interest and the environment. This rulemaking is in response to:

- a. A report on EFSEC reform requested by Governor Locke entitled "Improving Washington Energy Facility Site Evaluation Council"¹ that suggested changes to EFSEC including rule making to improve the application and review process.
- b. The Governor's directive to establish clear, quantifiable standards for siting new energy facilities to reduce uncertainty and expedite decision-making.
- c. Results of a collaborative process involving stakeholders to develop proposed rules that would provide standards for siting energy facilities.

As required under RCW 19.85.030, EFSEC is developing and issuing this Small Business Economic Impact Statement (SBEIS) as part of its rule adoption process. EFSEC will use the information developed in the SBEIS as required by law to ensure that the proposed rules are consistent with legislative policy.

EFSEC AND RULEMAKING

EFSEC was created to provide "one-stop shopping" for those desiring to construct large energy facilities in Washington State. The Council consists of six permanent² members: a full-time Chair appointed by the Governor, and one representative from each of five different State agencies including Fish and Wildlife, Ecology, Natural Resources, Community Trade and Economic Development, and the Utilities and Transportation Commission. The Council oversees the permitting and environmental review of proposed facilities and makes a recommendation on the project to the Governor. An approval by the Governor binds all State and local agencies to the Site Certification Agreement (SCA).

EFSEC's authority is described in RCW 80.50 and implemented via administrative rule Title 463 (WAC 463). Title 463 describes the make-up of the Council and outlines the procedures potential applicants are to follow when siting energy facilities in Washington

¹ Known as "the Earl Report." This report and other information including minutes of stakeholder discussions can be found at the EFSEC website; www.efsec.wa.gov.

² When an application is received by EFSEC, four additional agencies may opt into the review of the proposal, and local governments and port districts where the facility is proposed may also appoint members to the Council.

State. The rules include requirements for environmental review and application requirements.

Several recent events have led to efforts to improve the EFSEC siting process. The Earl Report proposed several changes including appointing a full-time chair and directing the chair to initiate rulemaking. Improving the siting process in this context meant providing greater certainty for applicants and the financial markets that support them and improving the timeliness of the siting decision. The Governor's directive also spurred EFSEC to consider the current process and the result was a series of stakeholder development group meetings that took place in 2001-02 and formed the basis for the rules currently presented.³

The proposed rules describe council procedures, requirements for application and review and standards for wetland mitigation, fish and wildlife, noise, etc. These may impact applicants in terms of increased permitting, construction, operation and maintenance and site restoration costs. It is the purpose of this document to outline the potential cost impacts of the proposed rules.

THE EFSEC PROCESS

The process for licensing major energy facilities⁴ in Washington begins with an optional Potential Site Study (PSS), commissioned by EFSEC at the request of the proponent that identifies major impacts of a proposed facility, or with an Application for Site Certification (ASC). The PSS is prepared in consultation with state agencies, local and tribal governments, federal agencies and other stakeholders and used to develop guidelines the applicant is to consider when developing the ASC and to determine if there are any significant environmental or other obstacles that would be difficult or impossible to mitigate. An applicant may elect to not request a PSS and simply submit an ASC.

By statute, EFSEC must make a recommendation to the Governor within one year upon receipt of an application. Application review involves review by an independent consultant for completeness with respect to EFSEC rules, includes notification and distribution of the ASC to interested parties and appropriate governmental agencies, together with an initial public hearing in the vicinity of the proposed project (within 60 days after receipt of the application) for the purposes of informing the public about the proposed project. This also formally initiates scoping under SEPA (and NEPA if applicable) for the EIS and EFSEC's independent consultant proceeds to develop a draft environmental impact statement. Subsequently, another hearing is held to determine whether the project is consistent with local land use plans.

EFSEC's certification process requires the Council to hold formal adjudicative hearings on the proposed project to allow the applicant and other parties admitted to the case to present information to support their positions. The testimony and exhibits introduced

³ The results of those meetings are summarized in "Krogh & Leonard Report to Jim Luce, Chair, Washington Energy Facility Site Evaluation Council Regarding EFSEC Standards Development", 2002, available at www.efsec.wa.gov.

⁴ A process known as "certification."

through this hearing process form the basis for the record the Council will consider when determining whether to recommend project approval or disapproval to the Governor. Concurrent with this process, EFSEC initiates the process for development of air and water discharge permits required by state and federal law and regulation⁵. Draft permits, and public comments received thereto, and additional documents prepared to comply with the State Environmental Policy Act (EIS), are also considered in the decision making process.

After the completion of its adjudicative review and completion of the final EIS, and if the Council finds the project should proceed, EFSEC develops a draft Site Certification Agreement (SCA) for consideration by the Governor. If it finds the project should not proceed, then it will recommend to the Governor that the project application be rejected. Within 60 days after receipt of the recommendation from EFSEC, the Governor may approve the recommendation and execute the draft SCA, reject the application, or direct EFSEC to reconsider some aspects of the project and draft SCA.

EFSEC has been involved in approximately 30 major energy projects since its inception. While projects proposed in the 1970s and 1980s tended to be nuclear power plants and oil pipelines and associated facilities, recent projects have been predominantly fossil-fuel or renewable energy powered electricity generation facilities.⁶

DESCRIPTION AND PURPOSE OF THE SBEIS

The objective of this SBEIS is to identify and evaluate the various requirements and costs that the proposed rules might impose on business. In particular, the SBEIS examines whether the costs on business that might be imposed by the proposed rules impose a disproportionate impact on the State's small businesses. This is consistent with the legislative purpose of the Regulatory Fairness Act (RCW 19.85) and is set out in RCW 19.85.011:

“The legislature finds that administrative rules adopted by state agencies can have a disproportionate impact on the state’s small businesses because of the size of those businesses. This disproportionate impact reduces competition, innovation, employment and new employment opportunities, and threatens the very existence of some small businesses.”

The specific purpose and required contents of the SBEIS are contained in RCW 19.85.040. (The bracketed numbers and emphasized words are for the reader's convenience, and reflect some of the organization of this draft SBEIS.)

“A small business economic impact statement must include [1] a brief description of the reporting, record keeping and other compliance requirements of the proposed rule, and [2] the kinds of professional services that a small business is likely to need in order to

⁵ EFSEC has been delegated authority by the EPA to issue air and water quality permits authorized in federal law.

⁶ Projects EFSEC has provided review and oversight of since 1992 can be found in Appendix B. Attachment 3 of the Earl Report provides a listing of project involvement prior to 1992.

comply with such requirements. [3] It shall analyze the costs of compliance for business required to comply with the proposed rule adopted pursuant to RCW 34.05.320, including costs of equipment, supplies, labor and increased administrative costs. [4] It shall consider, based on input received, whether compliance with the rule will cause businesses to lose sales or revenue. [5] To determine whether the proposed rule will have a disproportionate impact on small businesses, the impact statement must compare the costs of compliance for small businesses with the cost of compliance for the ten percent of businesses that are the largest businesses required to comply with the proposed rules using one or more of the following as a basis for comparing costs:

- a. Cost per employee*
- b. Cost per hour of labor*
- c. Cost per hundred dollars of sales*

(2) A small business economic impact statement must also include:

- a. [6] A statement taken by the agency to reduce the costs of the rule on small businesses as required by RCW 19.85.030(3), or reasonable justification for not doing so, addressing the options listed in RCW 19.85.030(3).*
- b. [7] A description of how the agency will involve small business in the development of the rule; and*
- c. [8] A list of industries that will be required to comply with the rule.*

For purposes of an SBEIS, the terms “business,” “Small business,” and “industry” are defined by RCW 19.85.020. “*Small business*” means any business entity, including a sole proprietorship, corporation, partnership, or other legal entity, that is owned and operated independently from all other businesses, that has the purpose of making a profit, and that has fifty or fewer employees. “*Industry*” means all of the businesses in this state in any one four-digit standard industrial classification as published by the United States Department of Commerce.

CONTENTS OF THE DOCUMENT

The proposed rules developed by EFSEC as part of this rulemaking process will be further evaluated in the following sections of this document. Specifically, the following sections contain the information required by the Regulatory Fairness Act (RCW 19.85):

Section 2 contains a discussion of the rule revisions and the new rule sections. This section also provides [1] a brief description of the reporting, record keeping, and other compliance requirements of the proposed rule, [2] the kinds of professional services that a small business is likely to need in order to comply with such requirements, and [3] the costs of compliance for businesses required to comply with the proposed rule including costs of equipment, supplies, labor, and increased administrative costs. Section 3 provides a forecast of electricity generation for Washington State. Section 4 considers [4] whether compliance with the rule will cause businesses to lose sales or revenue and evaluates [5] whether the proposed rule will have a disproportionate impact on small business. Section 5 considers [6] actions taken to reduce the impact of the rule on small

business, describes [7] how small business was involved in the development of this rule and provides [8] a list of industries required to comply with the rule.

The Appendices contain additional information used in this analysis⁷. See the Table of Contents for a more detailed description.

⁷ Due to size limitations relating to the filing of documents with the Code Reviser, the SBEIS does not contain the appendices that further explain the Council's analysis. Additionally, it does not contain the raw data used in this analysis, or all of EFSEC's analysis of this data. However, this information is being placed in the Council's rule-making file, and is available upon request.

2. DISCUSSION OF COMPLIANCE COSTS FOR WASHINGTON BUSINESSES

INTRODUCTION

The proposed rules include revisions to most existing rule sections as well as completely new sections. In some sections, there were no changes made. In other cases, the changes made will have little or no effect on applicants. EFSEC has carefully evaluated each of the proposed revised or new rule sections and determined which are likely to have significant effects on future applicants. These rule sections were evaluated to determine the specific likely impacts and are described below. A description of the anticipated cost impacts and information utilized to determine the baseline is also provided.

BASELINE DEVELOPMENT

In order to discuss the cost impacts of the proposed rule revisions it is necessary to consider the baseline from which the change in requirements is measured. In the case of EFSEC, the regulatory baseline can be difficult to determine as many of the executed SCA's have involved requirements determined during the adjudicative phase of the application process. Negotiated settlements between parties to the adjudicated proceedings are often proposed to and approved by EFSEC and placed as permit conditions. Moreover, some procedures and precedents have developed over time and are not explicitly stated in the existing rules.

In an effort to more clearly present potential impacts, EFSEC has considered two different baselines in this analysis. One baseline represents what is presently stated in existing rule language. Where it is unclear what the requirements may be by rule, existing guidelines, policy, etc. present at the time of rule adoption were considered to be the standard in effect. The other baseline considered what applicants would have expected as a result of the adjudicative phase and existing review processes. It involved evaluating past projects and determining typical requirements and adjudicative outcomes. These baselines are denoted the "expected rule baseline" or "ER" baseline and the "expected process baseline" or "EP" baseline respectively.

Determining the impacts of the rule changes involves not only evaluating the changes in the rule language, but also considering the future social, economic and natural environment. In the case of the proposed rule revisions, this is made difficult because of the significant uncertainty associated with the partially restructured wholesale electricity industry, federal policies, etc. A forecast of electricity generation in Washington State, and its impacts to the environment and citizens of the state is considered in Section 3.

COMPLIANCE COST BACKGROUND

RCW 19.85 is quite specific about the types of costs that are to be considered in an SBEIS. The specific requirements were listed in Section 1 and will be further considered below. EFSEC has carefully evaluated the rules it expects to have cost impacts on

businesses (under both baselines). Only those rules that appear to impose significant additional costs on businesses are included below.⁸

The specific costs to be evaluated in this section include reporting and recordkeeping costs, professional service fees and costs of equipment, supplies, and labor and increased administrative costs. Additional compliance costs will be noted separately. Lost revenue and proportionality are considered in Section 4. In cases where it appears likely that consultants will provide services requiring equipment or supplies, it is assumed to be included in the unit cost of consultants used for the analysis. All costs incurred by EFSEC are assumed to be passed along to applicants.

COMPLIANCE COSTS⁹

Part I. Agency Procedures

463-22 Potential Site Studies

The possibility that EFSEC will require a public information meeting during completion of a Potential Site Study will be a new requirement under the ER Baseline for those applicants that choose to complete one. This new rule section may require the applicant, the applicant's consultants, EFSEC members and staff, and EFSEC's consultants to travel to a location near the proposed site for a public meeting. It will also involve preparatory time and materials for the applicant and EFSEC staff. Under the EP baseline this will not be an increase in efforts as it has been required on many projects in the past. Table 2-1 summarizes the likely additional costs under both baselines.

Reporting and Recordkeeping Costs: It is not anticipated that there will be any additional reporting and recordkeeping costs as part of this proposed rule.

Professional Services: As mentioned previously, additional professional services will likely be required as part of this new rule language including payment to EFSEC for the Council, Staff and EFSEC's consultant to prepare for and attend the meeting, and the cost to the applicant and applicant's consultant to prepare and conduct a presentation. The additional costs are estimated to be approximately \$17,000.

Equipment and Supply Costs: Additional equipment and supply costs should be negligible. It is possible that extra media devices or presentation supplies may be required, but it is assumed that the consultants would include all equipment in their expenses.

Increased Labor Costs: No additional labor should be required for the applicant outside of that purchased through the consultants.

Increased Administrative Costs: As noted above, the applicant will be involved in the preparation and presentation of information about the application at a public meeting. EFSEC and the applicant will likely be involved in administration in setting up the meeting, processing invoices, etc. This increase is estimated to be approximately \$400.

⁸ A complete "crosswalk" describing existing and proposed rules can be found in Appendix C.

⁹ All Chapter numbers listed are the "new" numbers assigned by the Code Reviser.

Other Compliance Requirements: No additional compliance requirements are anticipated.

Table 2-1. Compliance Cost Increase Associated with PSS Site Meeting Requirement

Cost Description	ER Baseline (\$)	EP Baseline (\$)
Professional Services (incl. EFSEC)	\$17,000	\$0
Administrative Costs	\$400	\$0
Total	\$17,400	\$0

Part II. Application and Standards

463-60 Applications for Site Certification

The proposed rule section will require additional information to be provided compared to what has been required in the past. These increased application requirements will likely involve increased professional services in preparing the application together with increased EFSEC consultant review costs. The detailed application costs are summarized in Table 2-2.

The significant requirements for increased information include those associated with a noise analysis and socioeconomic studies. Noise analysis associated with evaluating noise emissions from a proposed facility will require pre-construction background noise monitoring and computer simulation of potential noise impacts. This has been required on past projects¹⁰, but was not present in the existing rule. The expanded socioeconomic analysis¹¹ will require data and analysis regarding impacts to housing and local government revenue.

Reporting and Recordkeeping Costs: This rule should not require increased reporting and recordkeeping costs unless operational noise monitoring is required. However, this is not likely to be required unless there is a violation of applicable noise standards after the project has received certification, has been constructed and is operating.

Professional Services: Professional service fees will be incurred as a result of the proposed noise standards. This will include initial background monitoring and computer simulations of noise. The estimated cost for background noise monitoring is approximately \$17,000. Noise modeling can range from \$10,000-\$50,000 depending on the site characteristics and the surrounding development. If operational noise monitoring and analysis is required and it could be performed by plant staff, it will likely cost approximately \$10,000 to complete. If a consultant is required, it would likely cost approximately \$17,000 per analysis.

The requirements for expanded socioeconomic analysis will require collection of more comprehensive data and data analysis associated with housing and projections of

¹⁰ Potential noise impacts have become a very significant issue in EFSEC reviewed projects in the past 10 years.

¹¹ To complete an EIS, detailed socioeconomic information is required.

revenues and costs for local government. The increased cost associated with these new requirements is estimated to be approximately \$7,700.

Additional consulting and EFSEC review services will be required to review the noise and expanded socioeconomic analyses. The additional requirements will result in estimated additional costs of approximately \$3,000.

Equipment Costs, Supplies and Labor and Increased Administrative Costs: No additional equipment costs, supplies, labor or administrative costs are anticipated.

Other Compliance Requirements: No other compliance requirements are likely to be required.

Table 2-2. Compliance Cost Increase from New Application Requirements

Cost Description	ER Baseline (\$)	EP Baseline (\$)
Professional Services (Noise-Application)	\$37,000	\$0
Professional Services (Socioeconomics)	\$7,700	\$7,700
Professional Services (Ind. Consultant)	\$3,000	\$900
Total (Siting)	\$47,700	\$8,600
Professional Services (Noise-Operation)	\$10,000	\$0
Total (Operation)¹²	\$10,000	\$0

It is also intended that more explicit noise standards will reduce the amount of time spent determining the proper monitoring and analysis in the adjudicative process. In the past, this has accounted for one or two days of discussions and could be a substantial reduction in cost for applicants. This cost reduction is not included in Table 2-2.

Natural Environment-Wetlands

In some cases, wetlands will be an important component in siting facilities. The proposed wetland requirements will utilize revised rating criteria and revised requirements for wetlands creation and enhancement, and include provisions for wetland banking. The revised rating criteria will likely result in no net change or a slight reduction in wetland rating levels. Wetland enhancement ratios are expected to increase based on the draft "Guidance on Wetland Mitigation in Washington State" that has been completed. In general, this could result in increased wetlands mitigation requirements for applicants. In the past, applicable mitigation ratios were used to form a "starting point" for determining required mitigation at specific sites. In some cases, they were reduced due to other mitigating factors. The exact cost of any increased mitigation requirements will vary with the project site, other mitigation provided, etc. No additional reporting or recordkeeping

¹² Only required if it is determined that current noise emissions exceed applicable WACs. Amount assumes that monitoring is conducted by plant staff.

should be required. Professional service fees will be required and will vary with the design requirements of the project. Typical values would vary from \$10,000-\$30,000. No additional equipment costs, supplies and labor or increased administrative costs should be required. Other compliance costs include the cost for wetland creation or enhancement which varies significantly depending on the extent of grading, structures, etc. but ranges from \$10,000-\$60,000 per acre. Land acquisition could also be required, although most mitigation is expected to be performed on-site.

Wetland banking will also be allowed by the new rules and has the potential to reduce mitigation costs for applicants. No existing banks have been approved by Ecology at this time and so it is difficult to determine the resulting cost savings. In general, lower design costs, and possibly lower construction costs are expected.

463-62 Construction and Operation Standards for Energy Facilities

The new rule will eliminate the requirement to show a “Need for Power”. This will reduce the applicant’s time in preparation and testimony before the Council.

Reporting and Recordkeeping: No reduced reporting and recordkeeping is likely.

Professional Services: Fewer professional services will likely be required of applicants in the application process. This will involve less preparation and testimony than was previously the case and is estimated to save approximately \$9,200.

Equipment Costs, Supplies and Labor: No reduction in equipment costs, supplies or labor is likely.

Decreased Administrative Costs: No reduction in administrative costs is expected.

Other Compliance Requirements: No additional compliance requirements are likely.

This reduction in cost will be applicable for both the ER Baseline and the EP Baseline.

Table 2-4. Compliance Costs Associated with Elimination of the Requirement to Show a Need for Power

Cost Description	ER Baseline (\$)	EP Baseline (\$)
Professional Services	-\$9,200	-\$9,200
Total	-\$9,200	-\$9,200

Part III. Site Certification Agreement

463-68 Site Certification Agreement-Start of Construction, Expiration and Reporting

The proposed rule has specific requirements for providing information if construction is delayed more than five years from the effective date of the SCA. It also directs that SCA’s expire 10 years from their effective date. Applicants will lose some flexibility in

terms of delaying construction and may experience increased costs if standards have changed after the first five years.

Reporting and recordkeeping: This requirement is likely to result in increased reporting and recordkeeping costs associated with keeping EFSEC informed of changes at the proposed site over time. If a report is required, it will involve evaluating the executed SCA, current conditions at the site and in the proposed design, and an appearance before the Council. If changes have occurred to the physical or regulatory environment, then this could necessitate opening up the Agreement, additional review and potentially more mitigation. In general, the most significant impacts from a power plant are air and water impacts that are already being considered in permits that have a defined update process required by state and federal law and regulatory procedures. Technological changes requested by the certificate holder are already required to go through an SCA amendment process. As such, it is unlikely these requirements will be much of a deviation for new certificate holders from the current procedure. The estimated cost increase to develop a report for certificate holders that wait at least five years before construction is approximately \$10,700. Any additional requirements due to changes in regulations or site environment would likely cost more.

If an agreement expires after ten years and the certificate holder wants another agreement, then this would require a complete new application process. This would involve not only the increased costs of the application, but also the increased cost associated with any new rules in effect. Application costs could be \$1.5-2 million and mitigation of impacts pursuant to updated rules in effect at the time of re-application could cost substantially more. This type of situation has not occurred in the recent history of the Council.

No additional equipment costs, supplies, labor or administrative costs are likely to be required.

Other Compliance Requirements: No additional compliance costs are anticipated.

Table 2-3. Compliance Costs Associated with Site Certification Agreement Expiration

Cost Description	ER Baseline (\$)	EP Baseline (\$)
Professional Services	\$10,700	\$0
Total	\$10,700	\$0

463-72 Site Restoration and Preservation

The revised rule will now require pollution liability insurance for new facilities. The exact cost impact for new facilities depends significantly on the type of facility proposed, technological processes, environment, applicant, etc. This has been required for several projects by EFSEC in the past and is not considered a new requirement under the EP baseline.

Reporting and Recordkeeping: No additional reporting and recordkeeping should be required.

Professional Services: Professional services will be required associated with increased pollution insurance requirements. Pollution insurance will likely cost between \$10,000 and \$80,000 per year for most new facilities depending on the site and generating technology. For coal-fired facilities, the cost could be higher. Wind power projects would likely incur costs closer to \$10,000-\$20,000/year.

Equipment Costs, Supplies and Labor and Increased Administrative Costs: No additional equipment costs, supplies, or labor costs are anticipated. Some increase in administrative cost is possible for ensuring the policy is in place every year.

Other Compliance Requirements: No additional compliance requirements are expected as part of this analysis.

Part IV. Permits

No significant economic impacts are anticipated.

COMMENTS ON COMPLIANCE COSTS

As can be determined above, it is likely that siting costs for a typical natural gas fired power plant could increase approximately \$67,000¹³ and operation and related expenses could increase approximately \$50,000 per year utilizing the existing rule baseline. However, it is important to note that under the existing process baseline, very few of these costs will be new to potential applicants. In fact, the above analysis actually indicates a very small compliance cost savings for applicants under the existing process baseline. As such, for any applicants familiar with EFSEC's process and requirements there will likely be a slight reduction in expected compliance costs.

The above analysis has focused on generating resources and has not considered transmission facilities, oil refineries and other types of facilities that come under the regulation of EFSEC. For those types of projects, many of the new application requirements are still likely to apply. For example it is reasonable to expect that an applicant proposing a new transmission line would still be required to conduct a PSS Public Information Meeting (if they elect to request a PSS), provide expanded socioeconomic analysis (and possibly a noise evaluation), be required to have pollution insurance and have its SCA subject to term limits and conditional updates. As such, much of the above analysis should apply.

¹³ Assumes project construction begins more than five years from the effective date of the SCA. If project commences before that period, then the siting cost increase would be approximately \$56,300 for a typical site.

3. FORECAST OF ELECTRICITY GENERATION IN WASHINGTON

INTRODUCTION

Providing a quantitative estimate of the cost impacts and proportionality of the proposed EFSEC rule revisions requires considering the physical impacts to the regulated industry. Since the rules will only apply to newly certified and constructed plants, a forecast of the future development of energy generation facilities in Washington State is required and involves considering the structural changes in the markets for wholesale and retail electricity. The following section provides an estimate of the number and types of generation assets likely to be developed in Washington through 2025.¹⁴

BASELINE

In order to discuss the economic costs of the proposed rule revisions it is necessary to consider both the regulatory and economic baseline. As was described in Section 2, EFSEC has decided to consider two different regulatory baselines for analysis.

The economic baseline is also important to consider. Future generating facilities will be developed in the context of changing wholesale power markets, evolving government regulation and technological improvements. In an effort to consider this variability, EFSEC considered three alternative scenarios related to new requirements for greenhouse gas mitigation. This does not reduce the importance of other sources of uncertainty, but was provided to give some sense of how this specific source of uncertainty might affect new generation assets.¹⁵ The following scenarios were considered:

Scenario 1

Scenario 1 assumes that existing conditions in the market for wholesale power do not change. The Oregon and Washington CO₂ mitigation requirements continue to be in effect at the existing rates adjusted by the Producer Price Index and existing mitigation amounts through 2025. There is no federal policy or additional state level policies put into effect over the life of the analysis and the Kyoto protocol does not go into effect. The Canadian provinces would also not adopt any further climate change mitigation programs. No other changes would occur in the competitive structure of the wholesale electricity industry from what is outlined elsewhere (see Appendix D).

Scenario 2

Scenario 2 assumes revisions occur to existing climate change programs. The Oregon and Washington CO₂ standards remain in effect but the offset price rises to \$30/ton in 2025. These requirements are assumed to apply only to new power plants and not existing sources of greenhouse gas emissions. California, British Columbia and Alberta would

¹⁴ A complete description of the modeling can be found in Appendix E.

¹⁵ These modeling results were originally developed for consideration of a proposed EFSEC carbon dioxide mitigation rule section. The Legislature passed HSB 3141 which was very similar to EFSEC's proposed rule and EFSEC is no longer considering any CO₂ mitigation as part of this rulemaking.

begin an emission offset program similar to Oregon's in 2007. All other states on the Western Interconnect would require carbon dioxide mitigation in 2012.

Scenario 3

Scenario 3 involves significant changes to current climate change policy. Oregon and Washington standards for CO₂ remain in effect until 2012 when a Federal program modeled after U.S. Senate Bill 139 of 2003 (the proposed Climate Stewardship Act) would go into effect. This would impact all new and existing electricity generating assets if they produce greenhouse gases by requiring permits for emissions.

ELECTRICITY GENERATION FORECAST

The evaluation of how future electricity demand will be met by generation resources constructed in Washington is complicated. Electricity demand in Washington is only partially linked to generating resources in Washington. Because the power grid is an interconnected regional bulk power system, it is possible that plants built in Washington will serve loads in other states/countries and vice versa.

The Northwest Power and Conservation Council (NPPC) evaluates the supply of power in the Northwest power pool by looking at the entire Western Interconnect (WECC). They use a computer optimization model¹⁶ that forecasts wholesale prices, develops the types of resources that are likely to come on-line and which will be likely to go off-line. The model evaluations involve significant input parameters including a library of possible generating facilities and operational characteristics and demand growth in various regions.¹⁷ They also make explicit assumptions regarding the future of the power system.

There are various ways that new capacity could be provided to meet the projected load growth. Moreover, there are several things to consider including the future extent of deregulation and generation ownership, the outfall from the 2000-2001 energy crisis and increased preference for renewables due to state and federal policy and risk reduction. Restructuring has left us with a partially de-regulated system, and further moves to refine the system are important to consider. Attempts to increase retail competition might significantly affect the amount of new resource required if consumers begin responding to price signals. The energy crisis has pushed utilities to further consider risk management options like addition of wind power (fixed-cost resources) to their portfolios and to create their own generation alternatives to reduce the impact of market price volatility. In Washington, RCW 19.29A, passed in 2001, requires firms to offer some renewable power to their customers and utilities are currently actively involved in moving forward to do this. Proposed federal legislation is also considering extending existing wind power subsidies. All these changes may lead to increased demand for wind power.

¹⁶ NPPC uses Aurora by Epis, Inc. EFSEC acknowledges the excellent assistance provided by Jeff King and the Council on this analysis.

¹⁷ The regions are based on transmission congestion difficulties rather than political boundaries and are described in the Appendix.

The development of increased siting and operation standards in Washington may also lead to an increase in the likelihood that power would be supplied from out-of-state sources. However, project location decisions are still driven to some extent by proximity to load as transmission system congestion and line losses from lengthy transmission routes can be significant and costly problems.¹⁸ Additionally, the attractiveness of generation assets will be affected by the amount of carbon mitigation required of new fossil-fueled power sources. This was considered in the scenarios used for this analysis and the results of the simulations are presented below in Tables 3-1 through 3-3.¹⁹

Table 3-1. Scenario 1: CO₂ Mitigation Requirements in WA/OR/N. ID

Resource Group	2003 (1)	2005	2010	2015	2020	2025 (2)	Total Change (2)-(1)
New Coal	0	0	400	1600	1600	1600	1600
New NGCC ²⁰	0	0	0	0	0	0	0
New Wind	0	0	0	0	2098	4996	4996
New Solar	0	0	0	0	0	0	0
Planned NGCC	490	741	741	502	502	502	12
Planned Wind	4	120	655	1127	1127	1127	1123
Total Generating Capacity(MW)²¹	41799	42434	43288	43667	45765	48626	6827

As can be seen, four new coal plants and approximately 5,000 MW of new wind powered generating facilities are forecast to be added in the region over the next 20 years. Coal plants are cost-effective assets if environmental requirements are not increased. Wind becomes an important energy source due to technological improvements.

Scenario 1 does not consider the impacts of Kyoto obligations in the Canadian provinces of British Columbia and Alberta. Moreover, this model is unlikely to best approximate the future for more than a few years since it is likely that other actions will be taken to mitigate climate change. Therefore, Scenario 2 might be a more realistic forecast of future generating assets.

Table 3-2. Scenario 2: CO₂ Mitigation Requirements all Across the WECC by 2012.

Resource Group	2003 (1)	2005	2010	2015	2020	2025 (2)	Total Change (2)-(1)
New Coal	0	0	400	400	400	400	400
New NGCC	0	0	0	0	616	1848	1848
New Wind	0	0	0	1599	4798	4996	4996
New Solar	0	0	0	0	0	0	0

¹⁸ Proximity to fuel supply, water for cooling and transmission connections are also important factors.

¹⁹ Appendix D provides background information on the industry and Appendix E has a more complete discussion of the modeling procedure and results.

²⁰ Natural Gas combined cycle power plant.

²¹ Total includes existing capacity in addition to new and planned facilities.

Planned NGCC	490	741	741	741	741	741	251
Planned Wind	4	120	655	1127	1127	1127	1123
Total Generating Capacity(MW)	41799	42434	42398	43538	47353	48783	6984

The model indicates that approximately 400 MW of new coal fired generation would come on-line in Washington, Oregon and northern Idaho by 2025 if climate change mitigation is required in other states. This represents fewer coal-fired plants than identified under Scenario 1, indicating that coal plant siting is affected by out-of region environmental requirements. However, 1,848 MW of new natural gas combined cycle power plants would be located in the region if mitigation standards are present elsewhere and 4,996 MW of new wind would be added. Natural gas appears to be the fuel of choice for base-load plants subject to increasingly strict environmental regulations.

Scenario 3 was developed to represent the possibility that some federal action is taken on climate change. The results are presented below.

Table 3-3. Scenario 3 with Federal CO₂ Permit Requirements.

Resource Group	2003	2005	2010	2015	2020	2025	Total Change
New Coal	0	0	0	0	0	0	0
New NGCC	0	0	0	616	2466	3083	3083
New Wind	0	0	3398	4996	4996	4996	4996
New Solar	0	0	0	0	0	100	100
Natural Gas Industrial Cogeneration	416	457	457	457	457	457	457
Planned NGCC	490	741	741	741	741	741	741
Planned Wind	4	120	655	1127	1127	1127	1123
Total Generation Capacity(MW)	41799	42434	45468	46809	47243	47957	6158

As can be seen, much stricter greenhouse gas mitigation requirements makes new coal-fired plants infeasible, but increases the quantity of gas-fired plants added over time relative to less-strict requirements. New wind sources are unaffected by the new greenhouse gas requirements. This scenario also requires existing plants to consider obtaining emission offsets and the model indicates increased retirements of existing plants.

ELECTRICITY GENERATION IN WASHINGTON

The results of the computer analyses indicate the amount and type of new generation resources that would be proposed/constructed under alternative scenarios. The important result is that new natural gas, coal, wind and possibly solar powered plants are likely to be constructed in the Northwest in the next 20 years.

The results presented describe the estimated generation assets for Washington, Oregon and northern Idaho together. Therefore, it is necessary to separate the resources that will be developed in Washington from those developed in the other states in order to evaluate the impacts from EFSEC's proposed rule. Additionally, the modeling results presented utilize a library of new generation resources. For the fossil fuel facilities, the model library considers projects larger than 350 MW that would come under EFSEC review.²² In reality, the additions could also come from smaller facilities that would not all be under EFSEC jurisdiction.

The forecasted generation assets were allocated among states based on existing retail electricity demand. This may over or underestimate new Washington generating resources since load growth rates will vary among states and generating resources may be located remotely from load. Moreover, renewable energy sources are much more location dependent than fossil fuel plants and this is not reflected within the region. Allocations were rounded to the nearest unit plant size. The results are presented in Table 3-4 below.

Table 3-4. Estimated Type and Size of New Generation Assets through 2025

	Estimated Number of New Plants WA/OR/n. ID	Estimated New Capacity for WA/OR/n. ID (MW)	Estimated Number of New Plants in Washington	Estimated New Capacity for Washington (MW)	Estimated Number of New Plants in WA Regulated by EFSEC	Estimated New Capacity Regulated by EFSEC (MW)
Scenario 1						
New Coal	4	1,600	2	1,200	2	800
New NGCC	0	0	0	0	0	0
New Wind	50	4,996	28	2,798	12	1,200
Planned NGCC	-	251	-	251	-	0
Planned Wind	-	1,123	-	629	-	629
Scenario 2						
New Coal	1	400	1	400	1	400
New NGCC	3	1,848	2	1,232	1	616
New Wind	50	4,996	28	2,798	12	1,200
Planned NGCC	-	251	-	251	-	0
Planned Wind	-	1,123	-	629	-	629
Scenario 3						
New Coal	0	0	0	0	0	0
New NGCC	5	3,083	3	1,848	2	1,232
New Wind	50	4,996	28	2,798	12	1,200
New Solar	1	100	1	100	1	100
Planned NGCC	-	251	-	251	-	0
Planned Wind	-	1,123	-	629	-	629

²² Model coal plant size is 400 MW, gas plant is 610 MW (w/duct firing), wind is 150 MW and solar is 100 MW.

4. SALES IMPACTS AND DISTRIBUTION OF COSTS

INTRODUCTION

RCW 19.85.040 requires that the analysis consider [4] whether compliance with this rule will cause businesses to lose sales or revenue and [5] whether the proposed rule will have a disproportionate impact on small business. The increased costs come from increased siting and operation requirements for new energy facilities locating in the State.

The increased costs will affect both existing and proposed energy facilities and could have indirect effects on other business entities operating in Washington State. The majority of the increase will affect siting and operation costs and is unrelated to output of the facility.²³ In general, an increase in fixed costs will impact firms with less output (i.e. “small” firms) more significantly than firms with more output (i.e. “large” firms). This occurs because firms with less output that try to recoup fixed costs by raising the price of their final product must raise the price proportionately more than large firms.

Increased siting and operating costs for new energy facilities could benefit existing firms as existing plants are used more intensively or retirements of existing plants are delayed. In some cases, the impacts may be passed along to others as secondary impacts. Which business entities are affected and how these new requirements will affect them depend on the specific markets and market participants.

SALES IMPACTS BY RESOURCE TECHNOLOGY

Potential sales impacts to new generating resources in Washington could occur if the increased costs of siting facilities delay construction or are passed along in wholesale electricity prices. The estimated increased siting and operation cost under the existing rule basis is approximately \$930,000 for a typical natural gas fired combined-cycle power plant.²⁴ This represents approximately 0.02% of a typical plant’s capital costs. If increased costs are passed along in wholesale electricity prices, the price of wholesale electricity is expected to increase by approximately \$0.01/MWh which represents about 0.025% of the price of wholesale power.²⁵ Table 4-1 provides the results for the different electricity generating technologies.

Table 4-1. Facility Siting and Wholesale Power Cost Increases by Electricity Generating Technology Due to the Proposed Rule Revisions

	Natural Gas	Coal Steam	Wind-Powered	Solar-Powered
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²³ These are known as “fixed” costs. Costs that depend on output levels are known as “variable” costs.

²⁴ This calculated cost increase and those listed in Table 4-1 are based on compliance costs outlined in Section 2 under the existing rule baseline, assume no wetlands are impacted and assume construction begins more than 5 years from SCA execution. The real discount rate used is 4%.

²⁵ Assuming a wholesale price of \$40/MWh.

	CC (610 MW)	(400 MW)	(100 MW)	(100 MW)
Capital Cost (Million \$) ²⁶	359.9	559.3	110.3	651.8
Capital Cost Increase (Mill\$)	0.07	0.07	0.02	0.02
Percentage Increase in Capital Cost	0.02%	0.01%	0.02%	0.00%
Fixed Non-Fuel O&M Cost (Mill\$/yr)	4.9	16.0	2	1.5
Fixed Non-Fuel O&M Increase (Mill\$/yr)	0.05	0.07	0.02	0.02
Percentage Increase in Non-Fuel O&M Cost	1.0%	0.4%	1.0%	1.3%
Percentage Change in NPV ²⁷	-0.4%	-1.1%	-1.1%	N/A ²⁸
Change in Cost of Electricity (\$/MWh)	0.01	0.03	0.09	0.14

As can be seen, the net present values of the investments fall for an assumed market price, and electricity costs increase. In general, NPV falls less for gas plants than coal or wind powered plants since compliance costs are less and output is greater. The estimated cost per megawatt-hour increases more for coal than gas fired plants and even more for wind power due to the intermittent nature of this resource.

Because of the reduction in NPV and increase in wholesale power costs it is possible that existing plants may experience an increase in sales if siting of new facilities is delayed due to the reduced investment return. This would increase the time of use of existing plants and potentially delay retirement of some plants. The impact of these investment value and price changes for both existing and new plants is likely to be relatively minor as other factors will drive siting decisions like fuel costs, public responsiveness and environmental policy. The fact that several facilities have been certified using standards similar to the proposed rules (i.e. the existing process baseline) supports this assertion.

²⁶ Cost assumptions taken from "Wholesale Power Price Forecast for the Fifth Power Plan", NPPC, 2003

²⁷ Calculations assume an initial wholesale price of \$40/MWh for gas plants, \$45/MWh for coal plants and \$60/MWh for wind plants. The calculations do not include the federal production tax credit for wind.

²⁸ Solar power is not economically viable at this time.

DISTRIBUTION OF COMPLIANCE COSTS

RCW 19.85.040 requires an evaluation of how compliance costs may vary between small and large firms. In general, the proportionality of cost impacts will depend on the baseline considered, entity type, and generation technology. Entities are classified as consumer owned utilities (COUs), investor owned utilities (IOUs) and independent power producers (IPPs).

RCW 19.85 allows impacts to be measured based on cost per employee, labor hour or hundred dollars of sales. Determining the number of employees is made difficult because the rule revisions only apply to future generation facilities. Entities that currently own existing plants or transmit and distribute electricity in Washington along with IPP's currently involved with the Northwest electricity industry were used as a proxy for future developers.²⁹ The generation technologies considered are those considered likely for development in Washington and identified in Section 3. The results of the proportionality analysis are listed using two of the criteria from RCW 19.85 in Tables 4-2 and 4-3.³⁰

Table 4-2 Proportionality of Compliance Costs (Dollars per Employee)

	No. Firms	Avg. No. Employees	Compliance Cost (\$/employee)			
			Natural Gas CC (610 MW)	Coal-Fired (400 MW)	Wind-Powered (100 MW)	Solar-Powered (100 MW)
Existing Rule Basis						
<i>IOU</i>						
Small	2	10,057	92.7	127.0	36.4	36.4
Large	1	20,200	46.1	63.2	18.1	18.1
<i>COU</i>						
Small	34	14	66,557.3	91,260.2	26,145.8	26,145.8
Large	25	292	3,191.1	4,375.5	1,253.6	1,253.6
<i>IPP</i>						
Small	4	21	44,371.5	60,840.1	17,430.5	17,430.5
Large	17	53,550	17.4	23.9	6.8	6.8
Existing Process Basis						
<i>IOU</i>						
Small	2	10,057	-0.0	-0.0	-0.0	-0.0
Large	1	20,200	-0.0	-0.0	-0.0	-0.0
<i>COU</i>						
Small	34	14	-42.9	-42.9	-42.9	-42.9
Large	25	292	-2.0	-2.0	-2.0	-2.0
<i>IPP</i>						
Small	4	21	-28.6	-28.6	-28.6	-28.6
Large	17	53,550	-0.0	-0.0	-0.0	-0.0

²⁹ Data used is from NPPC "Power Plants of the Northwest", the Northwest Independent Power Producers Coalition, Washington Employment Security, Corporate websites and personal contacts.

³⁰ The average number of employees listed for the large firms is based on the largest 10% of firms by employee number.

Table 4-3 Proportionality of Compliance Costs (Dollars per Hundred Dollars in Sales)

		Compliance Cost (\$/sales)			
	No. Firms	Natural Gas CC (610 MW)	Coal-Fired (400 MW)	Wind- Powered (100 MW)	Solar- Powered (100 MW)
Existing Rule Basis					
<i>IOU</i>					
Small	2	0.020	0.040	0.116	0.173
Large	1	0.020	0.040	0.116	0.173
<i>COU</i>					
Small	34	0.020	0.040	0.116	0.173
Large	25	0.020	0.040	0.116	0.173
<i>IPP</i>					
Small	4	0.020	0.040	0.116	0.173
Large	17	0.020	0.040	0.116	0.173
Existing Process Base					
<i>IOU</i>					
Small	2	-0.00	-0.00	-0.00	-0.00
Large	1	-0.00	-0.00	-0.00	-0.00
<i>COU</i>					
Small	34	-0.00	-0.00	-0.00	-0.00
Large	25	-0.00	-0.00	-0.00	-0.00
<i>IPP</i>					
Small	4	-0.00	-0.00	-0.00	-0.00
Large	17	-0.00	-0.00	-0.00	-0.00

As can be seen from Table 4-2, the distribution of cost impacts as measured by additional dollars per employee appears to indicate that the impacts will be greater for firms with fewer employees and tend to hurt small COU's and IPPs more. However, Table 4-3 indicates that the cost impacts as measured per hundred dollars in revenue will not be greater for small firms but will vary with generating technology.

These conflicting results are not surprising. The compliance costs for any given technology are largely the same regardless of employment and plant capacity. Therefore, as the number of employees increases the cost impacts per employee appear smaller. However, when costs are measured based on sales revenue, those costs are spread over the same revenue stream for a given size plant and technology regardless of the number of employees. Therefore, there appears to be no disproportionate impact.

If plant capacity or technology selection varies with the size of developer, we would expect that effects would be disproportionate. Therefore a more relevant question is "does new plant capacity or technology choice vary with the size of the proponent firm in the class of plants 350 MW or larger?" EFSEC's experience with previous SCA's

indicates no clear trend in plant size, generation technology and proponent size.³¹ Oregon's siting council (EFSC) has had a similar experience.³² It appears that both small and large firms develop plants greater than 350 MW and capacity and energy source choices are largely unrelated to developer size. As such, these rule revisions should not disproportionately affect smaller proponents more than large proponents.

SECONDARY IMPACTS

Rate Impacts

It is possible that some or all of the increased costs associated with the proposed rule revisions will be passed on to consumers in the form of higher electricity rates. For COUs and IOUs this would occur by including the increased cost in the utility rates approved by individual utility boards. For IPPs, higher prices would be determined within the market for wholesale power.

Generation costs would increase differently for each type of generation technology since some plants have less capacity and lower capacity factors. A new wind power plant would have to raise money for a lower average MW capacity than a natural gas plant. As noted previously, we would expect a cost increase of between \$0.01 and \$0.09 per megawatt-hour depending on the technology. Given the typical quantities of power used by various types of consumers in Washington³³, we would expect the average annual utility bills for the different consumer classes to increase as listed in Table 4-4.

Table 4-4 Estimated Annual Consumer Bill Increase if Costs are passed on to Consumers.

	100% New Sources		10% New Sources	
Wholesale Power Cost Increase	\$0.01/MWh	\$0.09/MWh	\$0.01/MWh	\$0.09/MWh
Residential Consumers	\$0.13/yr	\$1.15/yr	\$0.01/yr	\$0.12/yr
Commercial Consumers	\$0.84/yr	\$7.56/yr	\$0.08/yr	\$0.76/yr
Industrial Consumers	\$10.62/yr	\$95.60/yr	\$1.06/yr	\$9.56/yr

Table 4-4 lists the consumer class and additional annual cost of electricity for both a \$0.01/MWh increase and \$0.09/MWh increase assuming all electricity comes from a source subject to the new rules ("100% new sources") or that only 10% of the power comes from a source subject to the new rules ("10% new sources"). It is unlikely that any given consumer would get all its power from a single new source. Therefore, the second scenario (i.e. 10% power from a new source) is likely to be more representative.

To consider whether these potential rate impacts would be disproportionately borne among business consumers involves evaluating the amount of power used by firms of

³¹ The proponent for the largest EFSEC certified facility was a small firm. The sole constructed plant was built by a large firm.

³² 90% of plants certified by Oregon's EFSC were large firms.

³³ Data from Energy Information Administration (EIA) "U.S. Average Monthly Bill by Sector, Census Division and State, 2001," <http://www.eia.doe.gov/cneaf/electricity>

different sizes. Table 4-5 lists the employment sizes, consumption per employee and average energy consumption for typical firms.³⁴

Table 4-5 Firm Size, Consumption and Cost/Employee

Firm Size (No. of Employees)	Average No. of Employees	Consumption/Employee (MWh/yr)	Cost/Employee (assuming \$0.01/MWh increase)	Cost/Employee (assuming \$0.09/MWh increase)
<50	6	2.72	\$0.03	\$0.24
50-99	68	8.32	\$0.08	\$0.75
100-499	193	23.80	\$0.24	\$2.14
500-999	690	36.57	\$0.37	\$3.29
>1000	5892	5.19	\$0.05	\$0.47

As can be seen from Table 4-5, the exact distribution of costs tend to hurt firms at least partially in proportion to their size. Bigger firms pay more per employee for the cost impacts. For very large firms the effect is smaller, but still larger than for small firms.

Input Impacts

Natural gas has been the most efficient fuel used for new electricity facilities in recent years. Raising the cost to develop these plants might lead to a reduction in the use of natural gas. However, any impact would depend on the cost of the other generation technologies like wind, and on the cost for other inputs like coal. To the extent that coal will also be subject to increased requirements for carbon mitigation and that wind is a site specific resource with a low capacity factor, it is unlikely that the increased costs will change the generation technology choice at the margin. However, the price of natural gas may remain high which will tend to encourage the use of other fuel sources. Generally speaking, it is unlikely that firms will be able to negotiate reduced energy input prices that will allow them to avoid raising prices or accepting a reduced investment return.

CONCLUSION

Businesses engaged in the production of electricity will incur increased compliance costs as a result of the rule revisions. In general these increases will vary significantly depending on the evaluation baseline used, and changes in markets for wholesale electricity and environmental regulation.

Many of the cost impacts outlined in this section depend on the “existing rule” baseline. As was noted previously, most of the changes written into the revised and new rules are already being experienced by applicants planning to site large energy facilities in Washington because they are incorporated into the existing review process. Therefore, the impact on the decision by a proponent to locate a facility will likely not be impacted to any great extent as firms are already taking the proposed changes into their project planning process.

³⁴ Data from “Electricity: Components of Net Demand, 1998” Energy Information Administration and “U.S. Employer Firms 2000,” U.S. Census Bureau

This analysis was provided to clarify the potential impacts of the rule change. In general, it appears the impacts from the rule revisions will be relatively minor and are unlikely to be disproportionately borne by small businesses.

5. BUSINESS INVOLVEMENT AND INDUSTRY

ACTIONS TAKEN TO REDUCE THE IMPACT ON SMALL BUSINESS

As noted previously, it appears that the rulemaking will be unlikely to have disproportionate impacts on smaller firms. EFSEC's overall intent for this rulemaking was to make the application process more efficient for project proponents. It is intended that the new rules will reduce the uncertainty associated with siting facilities in Washington and reduce the associated financial penalties. It is also hoped that more explicit standards will reduce the time for a recommendation to be made to the Governor by more clearly stating the type and quantity of submittals required of an applicant.

In addition, EFSEC removed the requirement to provide the Need for Power analysis which should reduce the burden on firms. To the extent, that these tasks are fixed costs, they will benefit firms with less output more than firms with greater output. EFSEC did not reduce the level of inspections for small firms, delay compliance timetables or reduce fines.

HOW WAS SMALL BUSINESS INVOLVED IN THE DEVELOPMENT OF THIS RULE?

As mentioned previously, the stimulus for rulemaking came from the Earl Report. The Council began rulemaking in 2001 by convening a standards development group that met from December 2001 to August 2002. The task of the group was to identify subjects that needed to be considered and develop proposals for rules. The results of this effort were reported in the Krogh and Leonard report and were the basis for the draft rules that were developed by EFSEC. Two public meetings were held to consider the proposed rules and written comments were taken through December, 2003. The proposed standards were also posted on EFSEC's website and a final public meeting was held in May, 2004. Throughout the process, EFSEC has encouraged participation from all entities to help in the Council's consideration of the impacts and outcomes of the proposed rules. The public process was open to both small and large businesses.

LIST OF INDUSTRIES REQUIRED TO COMPLY

The most likely industries to which these rules would apply would be those involved in the production and transmission of electricity or development of refineries or fuel transmission lines. Other firms that elect to develop co-generation facilities might also be included. Table 5.1 contains [9] a list of industries required to comply with the rule(s). The table was constructed based on data provided by the Washington State Employment Security Department. In general, the majority of plants are classified SIC code 4911. The other codes reflect related services such as management consultants and commodities brokers.

Table 5.1. Industries Likely to be Required to Comply with the Rule Revisions

SIC Code	Description
1321	Natural Gas Liquids
2911	Petroleum Refining
4612	Crude Petroleum Pipeline
4911	Electric Services
4922	Natural Gas Transmission
6221	Commodity Contract Brokers, Dealers
7389	Business Services, nec
8742	Management Consulting Services

APPENDIX A: REFERENCES

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15. Washington State Community, Trade and Economic Development, Comparative Evaluation of Electric Power Plant Siting Requirements in Washington, Oregon and California, 2001.

16. Western Electricity Coordinating Council, Information Summary, 2003

APPENDIX B: PROJECTS EVALUATED BY EFSEC SINCE 1992.

Project	Potential Site Study (PSS)	Application Date	Date Order Signed by Council ³⁵	Recommendation sent to Governor	Governor Approval	Notes
Cowlitz Cogeneration	12/1992	6/11/1993: Request for Expedited Processing	11/03/93	See footnote ³⁶	2/7/94 valid thru 2/7/2004	Amendments executed by Governor: 3/8/96, 12/1/97
Northwest Regional Power Facility (Creston, Lincoln County)	None Requested	12/10/1993 Revised 11/15/1994	7/10/96	See footnote ³⁶	9/19/96 Valid thru 9/19/2006	Their PSD permit lapsed many years ago, and the company is apparently no longer operating
Satsop Combustion Turbine Project	None Requested	Request for Amendment of existing SCA 8/8/1994	3/19/1996 (amended order 4/15/1996)	See footnote ³⁶	5/21/96	Original certification for Satsop Nuclear WNP 3 and 5
Satsop II	None Requested	11/19/2001	NA	NA	NA	Request for amendment for Satsop CT II; review suspended 10/23/2002
Chehalis Generation Facility	April 1994	9/12/1994 Revised 6/12/1995	6/10/1996	8/20/1996 first recommendation 1/3/1997: recommendation on remand	11/6/1996: remanded to Council 3/4/97 approval valid thru 3/4/2007	Constructed and Operating
Chehalis Generation - amendment	NA	1/14/2000	2/12/2001	2/13/01	3/6/2001	Went thru an adjudicative hearing
	None	6/4/1999,	2/16/2001	Not transmitted to	NA	

³⁵ The date the order was signed and the date it was transmitted to the governor could be different because of several factors: 1) 10 day wait period for motions for reconsideration, and 2) consideration of/ruling on motions for reconsideration if any.

³⁶ Files too old to find actual date sent to governor.

Project	Potential Site Study (PSS)	Application Date	Date Order Signed by Council³⁵	Recommendation sent to Governor	Governor Approval	Notes
Sumas Energy 2 (SE2)	Requested	Revised Jan. 2001		Governor		
SE2 2 nd Revised Application	NA	6/29/2001	5/24/2002	6/24/2002	8/23/2002	
Mercer Ranch	10/12/2000; completed 7/20/2001	None Submitted	NA	NA	NA	
Starbuck Power Project	2/14/2000; completed 3/5/2001	8/31/2001	NA	NA	NA	Review Suspended as of 3/11/2002
Wallula Power Project	6/30/2000; completed 4/30/2001	8/27/2001	8/8/2002;	11/18/02	12/18/2002	
BP Cherry Point Cogeneration	3/12/2001; completed 9/28/2001	6/10/2002; revised 4/15/2003	Future	Future	Future	
Olympic Pipeline	None Requested	February 1996	NA	NA	NA	Application withdrawn June 1999
Kittitas Valley Wind	None Requested	January 2003	Future	Future	Future	
Wild Horse Wind	7/2/2003 Completed October 2003	3/9/04	Future	Future	Future	

APPENDIX C: ANALYSIS OF THE EXISTING AND PROPOSED RULES

INTRODUCTION

The proposed rule changes can be grouped into two primary groups, those affecting existing rules under Title 463 and completely new rules.³⁷ In some cases, there were no changes made to the existing rules. In other cases, the changes made will have little or no effect on applicants. EFSEC has carefully evaluated each of the proposed revised or new rules and determined which are likely to have significant effects on future applicants. All the rules are listed below with rule changes outlined by WAC number and new rule sections listed by the chapter number given by the Code Reviser.³⁸ A qualitative description of the costs and information utilized to determine the bases is also provided.

PROPOSED RULE REVISIONS AND NEW RULE SECTIONS

The following outlines changes in existing rule language for each existing section and the proposed new rule language for the new sections. A more complete description of the existing and proposed rules can be obtained by consulting the proposed rules.

Part 1. Agency Procedures

463-06 Agency Operations and Public Records

The proposed rule contains further explanations of the Chair's role and the role of staff and outlines procedures for obtaining information. The rule also provides for a lower maximum fee for copying. No significant economic impact is anticipated.

463-10 Definitions

The proposed rule provides for improved organization of this Title and adds several definitions. No significant economic impact is anticipated.

463-14 Policy and Interpretation

The proposed rule requires informational/land-use meetings to be held in several locations for multi-county projects and discusses legislative intent. No significant economic impact is anticipated.

463-18 Council Meetings and Procedures

The proposed rule provides additional guidance on how proceedings should occur. No significant economic impact is anticipated.

463-22 Potential Site Studies

Applicants have the option to complete a Potential Site Study (PSS) as part of the application process. Under the new rule, Applicants that elect to complete a PSS may be required to attend a public meeting held by EFSEC in the nearest county to discuss the proposed project. This requirement will involve the applicant, consultants and EFSEC members and staff traveling to a location near the proposed site and conducting a public

³⁷ Table C-7 provides a summary comparison of the old and new rule language.

³⁸ Proposed rules may be reviewed at the EFSEC website; www.efsec.wa.gov.

meeting. It will also involve preparatory time and materials for all involved. In the past, EFSEC has held these types of public meetings for many potential site studies.³⁹ The additional cost associated with this proposal will be that associated with presentation preparation and execution and travel time for EFSEC, consultants and the applicant.

Under the EP base, it is assumed that this new rule requirement will be no change for applicants since EFSEC conducted these meetings for most projects in the past. Under the ER base it is assumed to be a completely new requirement for all projects.

463-26 Public Informational Meeting and Land Use Hearing

The proposed rule provides more detailed requirements for public meetings. No significant economic impact is anticipated.

463-28 State Preemption

The proposed rule involves minor editorial changes. No significant economic impact is anticipated.

463-30 Adjudicative Proceedings

The proposed rule eliminates charging for extended adjudications, further specifies filing and service requirements and encourages alternative dispute resolution (ADR) alternatives. It also outlines procedures for settlement. No significant economic impact is anticipated.

463-34 Petitions for Rule Making and Declaratory Orders

Minor procedural changes were made to this section. No significant economic impact is anticipated.

463-43 Expedited Processing

The proposed rule proposes minor changes to the application process. No significant economic impact is anticipated.

463-47 SEPA Rules

The proposed rule proposes minor changes to the SEPA process. No significant economic impact is anticipated.

463-50 Independent Consultants

The proposed rule proposes minor changes to the duties performed. The increased requirements for applicants may also increase the time and expense associated with the Council's consultant review to ensure applications comply with the standards. For example, a consultant will now be required to evaluate a more detailed socioeconomic study to ensure compliance with the new standards. The cost of this increased effort is included in section *463-60 Applications for Site Certification*.

³⁹ Since 1992, seven out of ten projects have conducted a PSS. Of those, BP Cherry Point, Mercer Ranch, Starbuck, Wallula Power and Cowlitz Co-Gen have held PSS meetings. Wild Horse Wind did not conduct a meeting and information on the Chehalis Generation project could not be located.

463-58 Fees and Charges for Independent Consultant Study

Initial deposits will be required to be paid in advance of any work being commenced. The 30 day payment requirement for ongoing work was eliminated. No significant economic impact is anticipated.

Part II. Applications and Standards

463-60 Applications for Site Certification [Formerly 463-42]

The proposed rule for site certification applications is more explicit about what is required of potential applicants. An applicant must provide explicit data and analyses on discharges, spill prevention and runoff measures, flood hazards, habitat, plants, wetlands and fish and wildlife. Additional permits that may be required are noted along with expanded requirements for socioeconomic analyses.

The proposed rule may necessitate additional professional services associated with application preparation compared to what was required in the past. However, EFSEC's experience has been that much of the information explicitly listed in the new rule has been required as part of the application process in the past and has often been provided via subsequent requests for information. EFSEC's intent with more detailed application requirements is to reduce the time and expense associated with additional submittals. As such, the impacts of the new rule should be minimal with the exception of some substantially revised or completely new requirements further described below.

Subpart A-General

463-60-010 Purpose

No significant economic impact.

463-60-020 Council Recognizes a Pressing Need for Energy Facilities

In the past, the Council has interpreted RCW 80.50 to require applicants to demonstrate a "Need for Power". This has typically involved presenting a case of the need for a new generating resource in the adjudicative hearing. The new rule will eliminate this requirement resulting in cost savings to applicants. Under both the EP and ER Baselines this will be considered to be a cost reduction.

463-60-055 through 463-60-117

Minor changes were made to the information required and form of submittals. A new section describing Applications for expedited processing was added. No significant economic impact anticipated.

Subpart B-Proposal

463-60-125 through 463-60-155

Minor changes were made to these proposal requirements. No significant economic impact is anticipated.

463-60-165 Proposal-Water Supply

Applicants will now be required to consider water supply alternatives including use of reclaimed water, water reuse, and conservation. Applicants will also be required to

consider air cooling as an alternative to water cooling and describe all water conservation methods that will be used in construction or operation of the facility.

The existing rules provide guidance for obtaining water rights. In general, the proposed rule places the burden of obtaining the water right(s) on the developer and requires submittal of water use authorizations, water right permits or applications for water right changes or transfers. Mitigation proposed for the water supply shall be included in the application including that required by the Department of Ecology.

In cases where new withdrawals or changes to existing withdrawals are requested by the proponent, EFSEC has typically utilized the expertise of the Department of Ecology for past projects to ensure adequate water can be obtained and appropriate mitigation is agreed to before a recommendation is made to the Governor. The new rule requires the applicant to obtain the necessary water through an agreement with a purveyor or through purchase or issuance of a water right. A review of past projects that EFSEC has reviewed indicates that many proponents have obtained water from a local purveyor and many have been required to provide mitigation for water use. Table C-1 provides summary information for selected projects.

Table C-1. Process Water Requirements for Selected EFSEC Projects

Project	Water Use Requirements (GPM)	Water Source	Required Mitigation	Water Conservation Measures
Chehalis Generation	133 (avg.)	City of Chehalis	Water right retirement	Air cooling
Walla Walla Power	7,901 (max.)	Port of Walla Walla, Dean Howe and Boise Cascade	Water right retirement before const. and at end of plant life.	Water re-use measures are in effect
Sumas Energy 2	802 (max.)	City of Sumas	Well monitoring, aquifer protection funding	Wet/dry cooling

As indicated in Table C-1, mitigation required for water use has ranged from agreements to retire water rights to requirements to monitor groundwater levels.

The benefit of the proposed rule is that the applicant will now directly work with those that have water to sell and/or Ecology to acquire water for use eliminating EFSEC involvement except in those cases where EFSEC makes a recommendation to pre-empt. Conservation and re-use will also be considered by Ecology as part of the water rights acquisition process with the intention of ensuring water goes to the highest valued uses and that proper mitigation is provided. Therefore, the proposed rule should result in little change from what has occurred in the past.

Under both the EP and ER Bases, it is assumed that these changes will not be significantly different from what has been required on past projects.

463-60-175-Proposal- System of Heat Dissipation

Minor editorial changes were made. No significant economic impact is anticipated.

463-60-185-Proposal-Characteristics of Aquatic Discharge Systems

The Section lists more explicit requirements for describing the existing and proposed waste discharge systems, but very little change from what has been required in the past. No significant economic impact is anticipated.

463-60-195 through 463-60-297

The proposed sections contain more explicit requirements and changes in the organization of the proposal. No significant economic impact is anticipated.

Subpart C-Natural Environment

463-60-302 through 463-60-312

The proposed sections contain minor changes. No significant economic impact is anticipated.

463-60-322 Natural Environment-Water

Revisions require a further description of potential upstream and down stream flood impacts. No significant economic impact is anticipated.

463-60-332-Habitat, Vegetation, Fish and Wildlife

The existing rule contains general requirements for evaluating fish and wildlife impacts and considering mitigation. The proposed rule contains much more specific detail including habitat evaluation procedures and mitigation and planning requirements.

In the past, EFSEC has utilized the Washington State Department of Fish and Wildlife (F&W) to provide expertise on fish and wildlife issues. They have evaluated projects against existing state rules and policy and made recommendations to EFSEC regarding impact evaluation and recommended mitigation.

The requirements in the proposed rule were based on current practice that has been utilized by Fish and Wildlife to evaluate impacts and require mitigation on previous EFSEC projects. The current practices were utilized by F&W prior to adoption of the existing rule. F&W and EFSEC believe the new rule will not represent any significant change from the existing requirements. As such, the proposed rule is not further considered in this analysis.

463-60-333 Natural Environment-Wetlands

The existing wetlands standards applicable to EFSEC projects are described in WAC 463-42-322 “Natural Environment-Plant and Animals” and in the SEPA Requirements. The proposed rule is much more specific than the existing rule including use of ratings

criteria and mitigation plan requirements. Historically, EFSEC has consulted with Department of Ecology when considering wetland impacts and permitting of new facilities and applicants and independent consultants have typically referred to Ecology standards in the PSS documents and applications.

The new rule will require wetlands to be delineated according to the Washington State Wetland Identification and Delineation Manual published in 1997. Prior to this time, the 1987 Corps of Engineering Manual was used to delineate wetlands. However, the 1987 and 1997 manuals are similar and Ecology expects no significant change to how wetlands are currently delineated.

The new rule will also require categorization of wetland per Ecology manuals that are currently being revised. The intention of this revised rating system is to more appropriately classify wetlands. However, wetland buffer widths will not change within a given rating.

Mitigation plans will be required to be in compliance with the “Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals” 1994 or as revised. Ecology is currently working on new guidelines that are available in draft form. Preferences for mitigation actions will remain the same but mitigation acreage ratios may change. Increased emphasis on function may be a benefit for applicants as wetlands are likely to be more appropriately classified.

Experimental mitigation techniques and wetland banking may be allowed on a case by case basis. Ecology currently does not have a rule for wetland banking, but one is expected to become available in the future. This may reduce wetland mitigation costs for some applicants.

The impacts of these proposed changes will vary with the project, site and mitigation alternatives. Wetlands are variable from site to site and State regulations have been kept deliberately flexible to be able to adapt to this variability. In the past, wetlands have been present on five out of eight power generation plant sites and mitigation has been required at three locations. Table C-2 provides summary statistics of those projects that had either temporary or permanent impacts to wetlands.

Table C-2. Wetland Characteristics of Previous EFSEC Projects

Project	Impacted Wetland Area (Acres)	Wetland Category	Required Mitigation	Buffer Width
Sumas Energy 2	9.45	Category II-IV	9.03 acres of enhancement 3.73 acres of wetland creation 8.8 acres of Enhancement	50'
Wallula Power	40-42	Category III-IV	Protection of 22	100'

			acres of habitat reserve area	
Chehalis Generation	Unknown (temporary impacts)	Wetlands disturbed during pipeline construction	Mitigation plan required for disturbed areas	N/A
Satsop	20 (temporary impacts)	Impacts associated with pipeline construction	Mitigation plan required for disturbed areas	N/A

For those sites with wetlands that would be permanently impacted, approximately 10-25% of the project area was wetland. In general, the wetland areas were rated in categories II-IV. Wetland buffers were required as noted above and mitigation plans were prepared and described the mitigation timing and ratios.

The impact of the new ratings criteria may actually result in cost savings for applicants as improved ability to accurately rate wetlands leads to more appropriate classifications. Ecology has performed sample assessments to consider the impacts of the new wetlands rating system in both Eastern and Western Washington. Data was collected by ranking 90 wetlands under both systems in Eastern Washington and the results are noted in Table C-3 below.

Table C-3. Impact of the New Rating System on Sample Wetlands in Eastern Washington

Category	Old Rating System	New Rating System
I	15	13
II	42	36
III	33	35
IV	0	6

As can be noted, there was a reduction in those wetlands classified as Category I or II and an increase in those classified as Category III or IV. In a survey of 122 wetlands in Western Washington, the information in Table C-4 was determined.

Table C-4. Impact of New Rating Criteria on Western Washington

Category	Old Rating System	New Rating System
I	27	24
II	68	50
III	20	39
IV	7	9

This table also indicates a significant reduction in the number of wetlands rated in Categories I and II and an increase of those ranked in Categories III and IV. It is likely that the new rating criteria will result in no increase in wetland requirements and may actually yield a decrease in costs for applicants. Guidelines for wetlands mitigation are

being developed by Ecology and the draft indicates that wetlands mitigation ratios may increase in some situations. This may result in increased mitigation costs for some applicants.

The benefit of this rule change is more appropriate protection and mitigation of wetlands impacts and the consequent benefits to fish and wildlife. It may also result in lower cost mitigation that achieves the same objectives through the use of mitigation banking and more appropriate ratings. However, it could also increase costs at any specific site if more mitigation is required.

Under both the EP and ER Bases, it is assumed that the requirements for wetland delineation, rating and mitigation will result in no significant change for most applicants. However, information on the potential costs of wetlands mitigation is provided for those cases where more extensive mitigation is likely to be required.

463-60-342 Natural Environment-Energy and Natural Resources

The proposed rule contains minor revisions. No significant economic impact is anticipated.

Subpart D- Built Environment

463-60-352 Built Environment-Environmental Health

The existing rules reference applicable noise standards but contain no explicit requirements for noise monitoring. The proposed rule includes explicit requirements for noise monitoring and modeling and incorporates pre-existing requirements for emergency planning. Under the proposed rule, complete background noise monitoring and computer modeling of proposed facilities is required.

EFSEC has required monitoring on several of the projects that have been constructed in the past. Table C-5 lists four recent projects and the noise monitoring requirements.

Table C-5. Noise Monitoring Requirements on Selected EFSEC Projects

Project	Monitoring Required		
	Background	Post-Const./Pre-Operational	Operational
BP Cherry Point ⁴⁰	Yes	N/A	N/A
Sumas Energy 2	Yes	Yes	Yes
Chehalis Generation	Yes	No	Yes ⁴¹
Wallula Power	Yes	No	Yes

⁴⁰ BP Cherry Point is undergoing review by EFSEC. Exact requirements for Post-Construction/Pre-Operational and Operational monitoring (if any) have not been determined. The applicant has performed background noise measurements.

⁴¹ Operational monitoring was not required in the SCA, but was required due to non-compliance with existing noise standards.

The proposed rule will have the benefit of ensuring that the noise impacts from newly sited energy facilities do not exceed applicable noise standards. The additional costs associated with this proposed rule will be the increased siting costs associated with noise monitoring and computer analyses.

Under the EP Base, it is assumed that the proposed rule is no change from what is currently required by EFSEC under the current process. Under the ER Base, it is assumed that the noise monitoring requirements will be a completely new requirement for applicants.

463-60-362 through 463-60-372

Minor revisions were made to these sections. No significant economic impact is anticipated.

463-60-535 Socioeconomic Impact

The proposed rule contains expanded requirements for providing socioeconomic data and analysis in the application. These include specific requirements for population, employment, housing, economics, and public service impacts. A selection of previous applications was evaluated to determine the level of analysis typically required in the past.⁴² In all cases, some information required under the new standard was not provided. The most important omitted information includes specific requirements to provide ten-year housing data and analysis of government revenues both during construction and operation of the project. This will necessitate further professional services in preparing the application and increased costs to applicants.

Under both the EP and ER baselines, it is assumed that the cost of preparing the application will be increased due to these expanded socioeconomic analysis requirements.

Subpart E-Applications for Permits and Authorizations

463-60-536 Air Emissions Permits and Authorizations

This new section stipulates that a completed PSD application be provided with the application for site certification. No significant economic impact is anticipated.

463-60-537 Wastewater/Storm Water Discharge Permit

The new section requires applications to discharge wastewater. No significant economic impact is anticipated.

463-62 Construction and Operation Standards for Energy Facilities [New Section]

463-62-010 Purpose

No significant economic impact is anticipated.

463-62-030 Seismicity

⁴² The projects considered were BP Cherry Point, Cowlitz Cogeneration, Sumas Energy 2 and Wallula. A complete description of this analysis can be found in Table C-8 at the end of the chapter.

There is no clear description of what seismic standards to use in the existing rules. The new rule explicitly requires the applicant to comply with the state building code for the hazards at that location. No significant economic impact is anticipated.

463-62-040 Noise

Energy facilities shall meet the minimum requirements of chapter 70.107 RCW and state rules to implement the requirements in Chapter 173-60 WAC. No significant economic impact is anticipated.

463-62-050 Fish and Wildlife

A proponent must emphasize no net loss of habitat function and values and mitigate losses. The ratio of replacement habitat to impacted habitat shall be greater than 1:1. These requirements are no significant change from what has been required by the rules in the past and no significant economic impact is anticipated.

463-62-060 Impact and Mitigation Standards for Wetlands

A proponent must emphasize no net loss of wetland areas and mitigate losses. The proposed standards are not significantly different from what has been required by the existing rules and no significant economic impact is anticipated.

463-62-070 Environmental, Esthetic and Other Benefits

The proposed section references current statute. No significant economic impact is anticipated.

463-62-080 Water Quality

Waste discharges are to meet current state laws and rules for surface and groundwater quality. No significant economic impact is anticipated.

463-62-090 Air Quality

Air emissions shall comply with all state and federal standards. No significant economic impact is anticipated.

Part III. Site Certification Agreement

463-64 Issuance of Site Certification Agreement [New Section]

This new section sets out rules relating to reporting recommendations to the governor as to approval or rejection of an application for site certification. The processes listed reflect the existing processes and will represent no significant change for applicants. No significant economic impact is anticipated.

463-66 Amending or Terminating a Site Certification Agreement [Formerly 463-36]

The proposed rule requires a schedule determination. No significant economic impact is anticipated.

463-68 Site Certification Agreement-Start of Construction, Expiration and Reporting [New Section]

The existing rules do not address the expiration of site certification agreements. The proposed rule will require agreements to expire ten years after execution of the SCA. It will also require that a report updating the project be completed if construction has not commenced within five years of the effective date of the Site Certification Agreement.

In practice, EFSEC has required expiration of SCAs after ten years on all projects that have obtained agreements since 1994.⁴³ As such, this will represent no change from what has been required of applicants in the past. However, the project updates required after five years will be a new requirement. The cost of this rule will include additional professional service fees for the reports and for re-application submittals after 10 years. If site conditions or environmental standards have changed significantly, it could also mean increased construction and mitigation costs.

Under the EP Base it is assumed that applicants will experience no change in costs associated with the proposed rule. Under the ER Base, it is assumed that new applicants would be faced with additional costs associated with site evaluation updates and new application fees for those that elect to re-certify after ten years.

463-70 Certification Compliance Monitoring and Enforcement [Formerly 463-54]

Minor revisions were made to this section. No significant economic impact is anticipated.

463-72 Site Restoration and Preservation [New Section]

The existing site restoration rules include requirements for site restoration plans and bonding. The proposed requirements for site restoration are more explicit but contain similar requirements as the existing rules. A site restoration plan is required, but was required under the old rule and will not likely result in increased costs. A site restoration bond and pollution insurance will also be required. Site restoration bonding is required in the existing rules, but the requirement for pollution insurance is not in the existing rules and will result in increased cost to applicants using the ER baseline.

In the past, requirements for bonding and insurance have varied. Table C-6 outlines past requirements for four projects that had available data.

Table C-6. Requirements for Bonding and Pollution Insurance

Project	Bonding Requirements	Pollution Insurance
Satsop	\$5 million site closure bond before construction. \$5 million financial instrument within 6 years of commencing operations	Not Required
Chehalis Generation	Same as above	Not required
Wallula Power	Yes-No dollar amount set	Yes- No dollar amount set
Sumas Energy 2	Yes	\$10 million insurance policy

⁴³ These facilities include Chehalis Generation, Cowlitz Cogeneration, Satsop, Sumas Energy 2, Northwest Regional Power Facility, and Wallula Power.

As can be seen, site restoration bonding has been required in all projects in the past, but pollution insurance has only been required on several recent projects. The increased cost will be the annual fee required for coverage. This will depend on environmental conditions, type of facility, ownership type and financial health.

Under the EP Base, it is assumed that the proposed rule represents no change from existing requirements. Under the ER Base, it is assumed that the requirement for pollution insurance is a new requirement.

463-74 Dangerous Wastes [Formerly 463-40]

Minor revisions were made to this Rule. No significant economic impact is anticipated.

Part IV. Permits

463-76 NPDES Permit [Formerly 463-38]

EFSEC has an existing National Pollutant Discharge Elimination System (NPDES) permit rule as part of WAC 463. The existing rule was revised to better match the Washington State Department of Ecology's (Ecology's) program and to meet current federal Clean Water Act requirements. Revisions to the existing rule include allowing use of general permits for some applicants, requiring All Known Available and Reasonable Technology (AKART) for discharges and specifying monitoring requirements.

General permits cover multiple dischargers within a distinct geographical area and eliminate the need for each discharger to obtain an individual permit. This can result in cost savings for those applicants to which they apply. General permits are provided for in the Federal Clean Water Act.

RCW 90.48 requires AKART for any discharge to waters of the State.⁴⁴ As such, this revision is simply stating in rule what is already in statute. Monitoring requirements used to refer to Ecology's program. The more explicit requirements in the new rule are taken from Ecology's existing program and will represent little change from what has been required previously.

The new rule should not result in any change from what has been required in the past. No significant economic impact is anticipated.

463-78 General and Operating Permit Regulations for Air Pollution Sources [Formerly 463-39]

No revisions were made to this rule.

⁴⁴ Moreover, the Federal government requires BACT/BCT for discharges, which is functionally the same as AKART.

Table C-7. Summary of EFSEC Rule Revisions

Title 463 WAC	Existing Rule	Proposed Rule	Revision/Impact
<i>Part I. Agency Procedures</i>			
463-06 Agency Operations and Public Records	Describes the roles and procedures of EFSEC	Explains staff roles and procedures	No Significant Economic Impact
463-10 Definitions	Provides Definitions	Provides organization and definitions	No Significant Economic Impact
463-14 Policy and Interpretation	Explains public hearing and deliberation procedures	Explains public hearing and deliberation procedures	No Significant Economic Impact
463-18 Council Meetings and Proceedings	Outlines rules for proceedings	Outlines rules for proceedings	No Significant Economic Impact
463-22 Potential Site Studies	Describes requirements for potential site studies	Adds requirement for additional site meeting	<i>Increased Public Meeting Costs (ER Baseline)</i>
463-26 Public Informational Meeting and Land Use Hearing	Describes Requirements for public meetings	Describes Requirements for public meetings	No Significant Economic Impact
463-28 State Preemption	Describes procedures for state preemption	Describes procedures for state preemption	No Revisions
463-30 Procedure-Adjudicative Proceedings	Describes dispute resolution procedures	Eliminates charging for extended adjudications, encourages ADR	No Significant Economic Impact
463-34 Petitions for Rule Making and Declaratory Orders	Describes procedures for petitions for rule making	Describes procedures for petitions for rule making	No Significant Economic Impact
463-43 Expedited Processing	Describes requirements for expedited permits	Describes requirements for expedited permits	No Significant Economic Impact
463-50 Independent Consultants	Describes guidelines for Council Use of Independent Consultants	Describes guidelines for Council Use of Independent Consultants	No Significant Economic Impact
463-58 Fees and Charges for Independent Consultant Study	Outlines charges and payment mechanisms	Outlines charges and payment mechanisms	No Significant Economic Impact
<i>Part II. Applications and Standards</i>			
463-60 Applications for Site Certification	Outlines requirements for SCA Applications	Adds expanded documentation requirements, expanded socioeconomic studies	<i>Increased application fees associated with additional information requirements. Eliminates need for power (ER and EP Baseline)</i>
463-62 Construction and Operation Standards for Energy Facilities	New Section	New standards for Noise, Fish and Wildlife, Water Quality, etc.	No significant economic impact
<i>Part III. Site Certification Agreement</i>			
463-64 Issuance of Site	Describes procedures for	Describes procedures	No significant

Certification Agreement	issuing an SCA	for issuing an SCA	economic impact
463-66 Amending or Terminating a Site Certification Agreement	Describes amendment/termination Procedures	Describes amendment/termination procedures	No Significant Economic Impact
463-68 Site Certification Agreement-Start of Construction, Expiration and Reporting	No Expiration date is provided	Requires increased evaluation after five years and SCA expiration after 10 years	<i>May require increased professional services (ER Basis)</i>
463-70 Certification Compliance Monitoring and Enforcement	Requires compliance monitoring	Requires compliance monitoring	No significant economic impact
463-72 Site Restoration and Preservation	Requires a site restoration plan and site closure bond	Requires a plan, pollution liability insurance and site closure bond	<i>Pollution liability insurance is new requirement (ER Basis)</i>
463-74 Dangerous Wastes	Procedures for Dangerous Waste	Procedures for Dangerous Waste	No Revisions
<i>Part IV. Permits</i>			
463-76 NPDES Permit Program	Describes NPDES program	Describes NPDES program	No significant economic impact
463-78 General and Operating Permit Regulations for Air Pollution Sources	Describes air-pollution prevention and control procedures	Describes air-pollution prevention and control procedures	No Revisions

Table C-8. Socioeconomic Analysis on Selected EFSEC Projects

WAC 463-60-535 Socioeconomic impact	BP Cherry Point Application for Site Certification, April 2003	Cowlitz Cogeneration Project Application for Site Certification, June 1993	Sumas Energy 2 Generation Facility. Second Revised Application, June 2001	Wallula Power Project. Application for Site Certification, August 2001
<p>The applica(n)tion shall((submit)) include a detailed socioeconomic impact ((study))analysis which identifies primary, ((and-))secondary, ((and-))positive as well as negative impacts on the socioeconomic environment <u>in the area potentially affected by the project, with particular attention ((and analysis of))to the impact of the proposed facility on population, work force((s)), property values, housing, ((traffic-))health ((and safety-))facilities and services, education facilities, ((and))governmental services, and local economy.</u></p>				
<p>The study area shall include the area that may be affected by employment within a one-hour commute distance of the project site. The analysis shall use the most recent data as published by the U.S. Census or state of Washington Sources. (1) The analysis shall include:</p>	<p>Define study area within 50-mile radius of the project site, page 3.12-1.</p>	<p>Provided in the application, page 8.1-1 and 8.1-3.</p>	<p>Provided in the application, page 8.1-1 through 8.1-3.</p>	<p>Provided in the application, page 8.1-1.</p>
<p>(a) Population and growth rate data for the most current ten-year period for the county or counties and incorporated cities in the study area;</p>	<p>Data on population and growth rate for ten-year period was provided in the application, page 3.12-2</p>	<p>Data on population and growth rate for ten-year period was provided in the application, page 8.1-2 through 8.1-3.</p>	<p>Data on population and growth rate for ten-year period was provided in the application, page 8.1-2.</p>	<p>Data on population and growth rate for ten-year period was provided in page 8.1-2-3.</p>

<p>(b) Published forecast population figures for the study area for both the construction and operations periods;</p>	<p>Provided in the application, page 3.12-2 through 3.12-3.</p>	<p>Provided in the application, page 8.1-3.</p>	<p>Provided in the application, page 8.1-3, and table 8.1-4.</p>	<p>Provided in the application, page 8.1-3.</p>
<p>(c) Numbers and percentages describing the race/ethnic composition of the cities and counties in the study area;</p>	<p>Provided in the application, page 3.12-2.</p>	<p>Did not provide this information in the application.</p>	<p>Provided in the application, page 8.1-2, and table 8.1-3.</p>	<p>Provided in the application, page 8.1-5.</p>
<p>(d) Average per capita and household incomes, including the number and percentage of the population below the poverty level for the cities and counties within the study area;</p>	<p>Provide in the application, page 3.12-5 and 3.12-16.</p>	<p>The application provided information on the average per capita and household income. However, it did not provide number and percentage of the population below the poverty level for the cities and counties within the study area.</p>	<p>The application provided information on household income. However, it did not provide the average per capita, number and percentage of the population below the poverty level for the cities and counties within the study area.</p>	<p>Provided in the application page 8.1-10-12.</p>

<p>(e) A description of whether or not any minority or low-income populations would be displaced by this project or disproportionately impacted;</p>	<p>Provided in the application, page 3.12-16</p>	<p>Did not provide this information in the application.</p>	<p>Did not provide this information in the application.</p>	<p>Provided in the application, page 8.1-22-23.</p>
<p>(f) The average annual workforce size, total number of employed workers, and the number and percentage of unemployed workers including the year that data are most recently available. Employment numbers and percentage of the total workforce should be provided for the primary employment sectors;</p>	<p>The application provided unemployment rate in the study area, page 3.12-5 and table 3.12-3. However, it did not provide information on the annual workforce size, the total number of employed workers, nor the employment numbers and percentage of the total workforce by sectors.</p>	<p>Provided the employment numbers and percentage of the total workforce by sectors.</p>	<p>The application provided information on the average annual workforce size by sectors. However, it did not provide information on the number and percentage of unemployed workers.</p>	<p>The application provided information on the average annual workforce size, number and percentage of unemployed workers by sectors.</p>
<p>(g) An estimate by month of the average size of the project construction, operational workforce by trade, and workforce peak periods;</p>	<p>Provided in the application, page 3.12-6, 3.12-7, 3.12-6-8.</p>	<p>The application estimated the average annual size of the construction workforce but not the average annual size of the operational workforce, page 8.1-1.</p>	<p>Provided in the application, page 8.1-5, 8.</p>	<p>Provided in the application, page 8.1-17-18, 8.1-34.</p>
<p>(h) An analysis of whether or not the locally available workforce would be sufficient to meet the anticipated demand for direct workers and an estimate of the number of construction and operation workers that</p>	<p>Provided in the application, page 3.12-8.</p>	<p>Provided in the application, page 8.1-4.</p>	<p>Provided in the application, however, the analysis was based on the fact that the</p>	<p>Provided in the application, page 8.1-19-21.</p>

would be hired from outside of the study area if the locally available workforce would not meet the demand;			region has a large and long established industrial base, page 8.1-6, and not on the estimated unemployment figures.	
(i) A list of the required trades for the proposed project construction;	Provided in the application, page 3.12-7, and table 3.12-4.	The application provided the list of common skills needed during construction phase, but not all the required trades.	Provided in the application, page 8.1-6. Table 8.1-7.	Provided in the application, page 8.1-20.
(k) An estimate of how many workers would potentially commute on a daily basis and where they would originate.	Provide in the application, page 3.12-10-11.	Provided in the application, page 8.1-1.	Provided in the application, page 8.17.	Provided in the application, page 8.1-34-35.
(2) The application shall describe the potential impact on housing needs, costs, or availability due to influx of workers for construction and operation of the facility and include the following:				
(a) Housing data from the most recent ten-year period that data is available, including the total number of housing units in the study area, number of units occupied, number and percentage of units vacant, median home value, and median gross rent. A description of the available hotels, motels, bed and breakfasts, campgrounds or other recreational facilities.	The application provided data on vacant rental and owned housing, available hotels, motels, bed and breakfasts, campground, page 3.12-11. However, it did not provide the number of housing	The application provided data on rental, transient housing, available hotels, motels, bed & breakfast, campgrounds, and other recreational facilities on page 8.1-5. However, it did not provide the total	The application provided housing data. However, it did not provide information on median home values, or median gross rent.	The application provided housing data, number of units occupied, number and percentage of units vacant, median home value, and median gross rent.

	units, the number of units occupied, median home values, and median gross rent.	number of housing units, median home value, and median gross rent.		
(b) How and where the direct construction and indirect workforce would likely be housed. A description of the potential impacts on area hotels, motels, bed and breakfasts, campgrounds and recreational facilities;	Provided in the application, page 3.12-11.	Provided in the application, page 8.1-6.	Provided in the application, page 8.1-7.	Provided in the application, page 8.1-27
(c) Whether or not meeting the direct construction and indirect workforce’s housing needs might constrain the housing market for existing residents and whether or not increased demand could lead to increased median housing values or median gross rents and/or new housing construction. Describe mitigation plans, if needed, to meet shortfalls in housing needs for these direct and indirect workforces.	Provided in the application, page 3.12-11.	The application indicated the rental rates and availability are not expected to be impacted, page 8.1-5-6. The application did not indicate if the workforce’s housing needs might constrain the housing market or could lead to increased median housing values or median gross rent and/or new housing construction. There was no mitigation plan in the application.	Provided in the application, page 8.1-7.	Provided in the application, page 8.1-27-28.
(3) The application shall have an analysis of the economic factors including the following:				
(a) The approximate average hourly wage that would likely be paid to construction and	Provided in the application, page 3.11-	The application provided information	The application provided information	The application provided information on the total

<p>operational workers, how these wage levels vary from existing wage levels in the study area, and estimate the expendable income that direct workers would likely spend within the study area;</p>	<p>12, table 3.12-7.</p>	<p>on the average hourly wage that would likely be paid to construction workers, page 8.1-7. However, the application did not provide the average hourly wage that would likely be paid to operation workers.</p>	<p>on the average hourly wage that would likely be paid to operation workers, page 8.1-9, but did not provide information on average hourly wage that would likely be paid to construction workers. 1-9.</p>	<p>payroll cost during construction phase, page 8.1-29, but did not provide information on average hourly wage for construction workers. Hourly wage for operation workers was provided on page 8.1-30.</p>
<p>b) How much, and what types of direct and indirect taxes would be paid during construction and operation of the project and which jurisdictions would receive those tax revenues;</p>	<p>Provided in the application, page 3.12-14-15.</p>	<p>Provided types of taxes that would be paid during construction in the application, page 8.1-9 through 8.1-11. However, the application did not mention how these taxes would be paid through the operation of the project.</p>	<p>Provided types of taxes that would be paid during construction in the application, page 8.1-8. However, the application did not mention how these taxes would be paid through the operation of the project.</p>	<p>Provided in the application, page 8.1-36-37.</p>
<p>c) The other overall economic benefits (including mitigation measures) and costs of the project on the economies of the county, the study area and the state, as appropriate, during both the construction and operational periods.</p>	<p>Provided in the application, page 3.15-16-17.</p>	<p>Provided in the application, page 8.1-11 through 8.1-12.</p>	<p>Provided in the application page 8.1-10-11.</p>	<p>Provided in the application, page 8.1-37-39.</p>
<p>(4) The application shall describe the impacts, relationships, and plans for utilizing or mitigating impacts caused by construction or operation of the</p>	<p>Provided in the application, page 3.13-1 through 3.13-9.</p>	<p>Provided in the application, section 5.3.</p>	<p>Provided in the application, section 1.4.</p>	<p>Provided in the application, section 5.3.</p>

<p>facility to the following public facilities and services:</p> <ul style="list-style-type: none"> (a) Fire; (b) Police; (c) Schools; (d) Parks or other recreational facilities; (e) Utility; (f) Maintenance; (g) Communications; (h) Water/storm water; (i) Sewer/solid waste; (j) Other governmental services or utilities; 				
<p>(5) The application shall compare local government revenues generated by the project (e.g. property tax, sales tax, business and occupation tax, payroll taxes) with their additional service expenditures resulting from the project; and identify any potential gaps in expenditures and revenues during both construction and operation of the project. This discussion should also address potential temporal gaps in revenues and expenditures.</p>	<p>The application provided information on the estimated revenues that will be collected by the local government, page 3.13-19. However, the application did not provide information on the additional expenditures resulting from the project. Furthermore, the application did not address potential temporal gaps in revenues and expenditures.</p>	<p>The application provided information on the estimated revenues that will be collected by the local government, but not on the additional expenditures resulting from the project. Furthermore, the application did not address potential temporal gaps in revenues and expenditures.</p>	<p>The application provided information on the estimated revenues that will be collected by the local government, but not on the additional expenditures resulting from the project. Furthermore, the application did not address potential temporal gaps in revenues and expenditures.</p>	<p>The application provided information on the estimated revenues that will be collected by the local government and the additional expenditures resulting from the project, page 8.1-31. However, the application did not address potential temporal gaps in revenues and expenditures</p>
<p>(6) To the degree that a project will have a primary or secondary negative impact on any element of the socioeconomic environment, the applicant is</p>	<p>The application indicated the impact of the proposed project is</p>	<p>The application indicated the impact of the proposed project is</p>	<p>The application indicated the impact of the proposed project is</p>	<p>Provided in the application, page 8.1-15.</p>

<p>encouraged to work with local governments to avoid, minimize, or compensate for the negative impact. The term “local government” is defined to include cities, counties, school districts, fire districts, sewer districts, water districts, irrigation districts, or other special purpose districts.</p>	<p>positive, page 3.12-17.</p>	<p>positive, page 8.1-11 through 8.1-12.</p>	<p>positive, 8.1-10-11.</p>	
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[Statutory Authority: RCW 80.50.040. 92-23-012, § 463-42-535, filed 11/6/92, effective 12/7/92. Statutory Authority: RCW 80.50.040(1) and chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-535, filed 10/8/81. Formerly WAC 463-42-620.]

APPENDIX D: CHARACTERIZATION OF INDUSTRY AND IMPACTS

INTRODUCTION

Evaluation of the economic impacts of the proposed rule revisions must consider the wholesale power industry, consumer behavior, government policy and how they might evolve during the evaluation period. The electric power industry has undergone significant changes in the move toward greater wholesale electricity competition and is likely to experience more changes in the future. Consideration of these factors will be especially important for the proposed EFSEC rule revisions because they will apply only to new and expanding energy facilities.

This section provides a sketch of the wholesale electric power industry in Washington. It is not intended as a detailed discussion of the issues, but as context for the analysis and modeling provided. In general, the discussion to follow will focus on energy generation facilities. Although EFSEC is also responsible for siting transmission pipelines, oil refineries, and underground natural gas storage facilities, the main impact of the rule changes is expected to be on new electricity generation facilities and the focus of this analysis is on these facilities.

WHOLESALE ELECTRIC POWER INDUSTRY

The wholesale electric power industry utilizes resources such as fossil fuels, labor, equipment and capital to produce electricity. The electricity generated is transmitted to retail providers for distribution to residential, commercial and industrial consumers. The electric power industry is a major manufacturing sector, accounting for approximately \$210 billion in annual sales, approximately \$40 billion in annual investment and 35% of U.S. primary energy use.⁴⁵ For most of us, electricity makes possible many of the goods and services we associate with modern living.

The industry has recently experienced significant change. In the past 25 years, the federal government has moved this market from a fully regulated market to one characterized by partial de-regulation and wholesale competition among consumer and investor owned utilities and independent power producers. This re-structuring has been undertaken in an effort to lower prices and provide better quality and variety of service to consumers.⁴⁶ The large vertically integrated public utility that provides electricity generation, transmission and distribution services is not the dominant corporate form that it has been in the past. Independently owned power producers (IPPs) and energy marketers that package produced energy for re-sale have become significant participants in the wholesale electricity market.⁴⁷

⁴⁵ Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector, Joskow, 1997.

⁴⁶ The Evolving Northwest Electricity Industry, 4th Northwest Conservation and Electric Power Plan, NPPC, 1998. Joskow, 1997 also discusses the benefits of restructuring.

⁴⁷ Of 1270 companies licensed to sell wholesale power at market rates, 468 are Independent Power Marketers and 545 are affiliated power producers or marketers. See www.ferc.gov.

Federal efforts, either through legislation or rulemaking, have largely been responsible for the movement toward wholesale competition. Beginning in 1979 with the Public Utilities Regulatory Policies Act (PURPA) that allowed qualifying facilities to sell their output to utilities and FERC market-based rate approval for a small number of entities in the mid-1980s, federal policy has moved the system to one characterized by market-based pricing where wholesale electricity producers cannot be discriminated against and transmission must be provided to producers on an equal basis to what the transmission owner would charge itself for “wheeling”⁴⁸ wholesale power.

Besides market reforms, there have been significant technological changes that have affected the market. Though coal-fired plants are still the most dominant technology in terms of energy generation in the U.S., research on new generation technologies has led to the development of gas-fired combined-cycle generating technology that is more efficient and less polluting than previous fossil fuel technologies. This technological improvement together with low natural gas prices and increased environmental regulation has made gas-fired combined-cycle technology the most frequently selected in recent years. Increased concern with the environmental effects of fossil fuel combustion has also led to increased demand for renewable supply sources and wind power is becoming more prevalent. Conservation and demand management alternatives are also affecting the desirability of different generation alternatives.

Wholesale Electricity Generation in Washington

Washington State’s experience has been similar to what has happened nationwide with a significant amount of new independently generated electricity. Washington power is now generated, transmitted and/or distributed by four main entities; the Bonneville Power Administration (BPA), Consumer Owned Utilities (COUs) which includes municipalities, public utility districts and co-ops, Investor Owned Utilities (IOUs) and IPP’s. A breakdown by entity and size class⁴⁹ is provided in Table D-1.

Table D-1. Power Generation, Transmission and Distribution Entities in Washington

Entity	Total Entities	Small Entities	Large Entities
Consumer Owned Utilities	59	34	25
Investor Owned Utilities	3	0	3
Independent Power Producers	21	4	17
Bonneville Power Administration	1	-	1

In general, only about 15% of the COUs own or operate generating facilities. BPA (in conjunction with the federal dam management agencies) dominates in terms of power

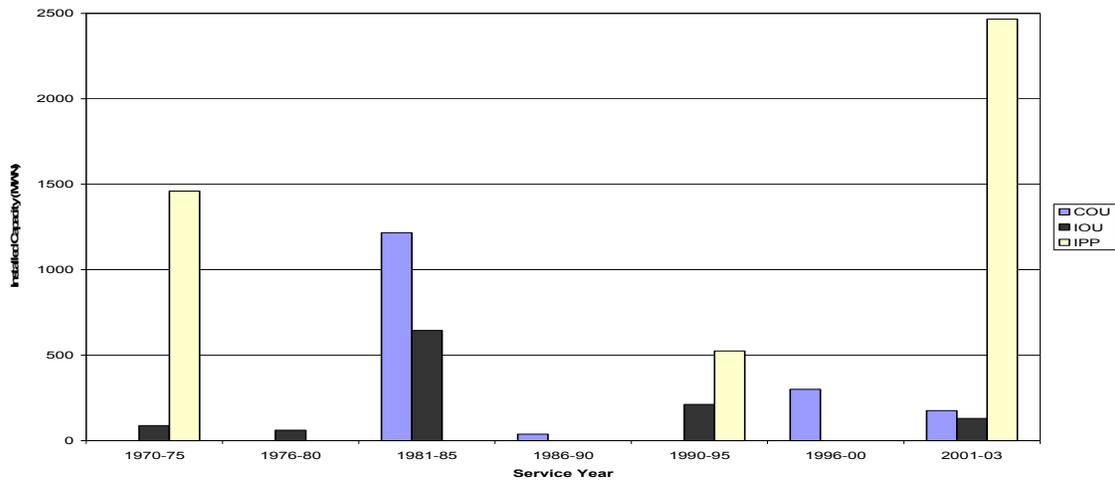
⁴⁸ “Wheeling” is a term used to describe transmitting of power across a utility’s lines.

⁴⁹ Small entities are defined as having 50 or fewer employees.

generation capacity. IPP's are for the most part energy generators or marketers with a current presence in Washington.

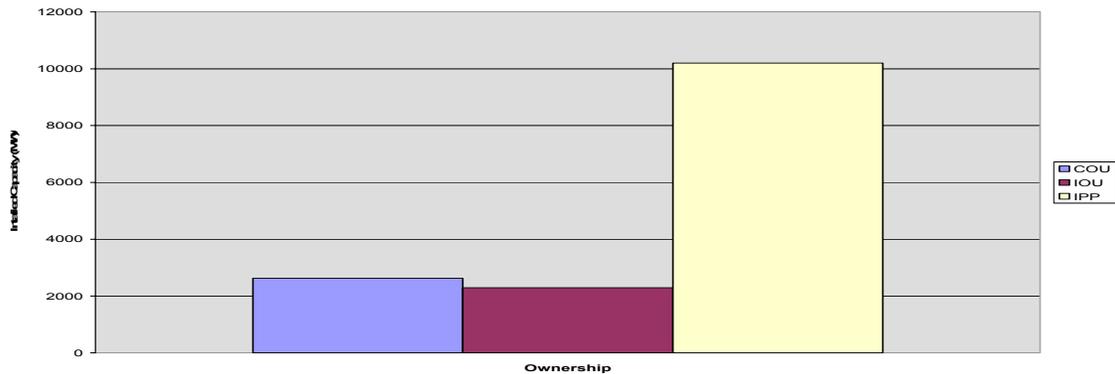
The developers of power plants in recent years have tended to be IPP's, which parallels national developments. Figure D-1 indicates the growth in new facilities that sell electricity exclusively to the grid in Washington.⁵⁰

Figure D-1. Power Plant Construction in Washington by Ownership Type and Service Year



As can be seen, the amount of generation added during any period over the last 30 years varies considerably. However, the last three years have been a period of substantial growth in IPP generation in Washington. Moreover as Figure D-2 indicates, the ownership type for planned plants in Washington will also likely be predominantly IPP's.

Figure D-2. Proposed Power Plants in Washington State (2000 Base)⁵¹



⁵⁰ Data for Figures C-1 and C-2 from "Power Plants of the Pacific Northwest", NPPC, www.nwcouncil.org

⁵¹ Since the crisis of 2000-2001, developer activity has dropped significantly. It is likely that many of the projects noted in this figure are no longer planned.

Generation by resource type in Washington is difficult to determine since some of the power generated in Washington is consumed out of state and since other electricity flows into the State. Perhaps the best estimate of the generation mix in Washington is the mix for the entire Western Interconnect. Table D-2 provides this breakdown.

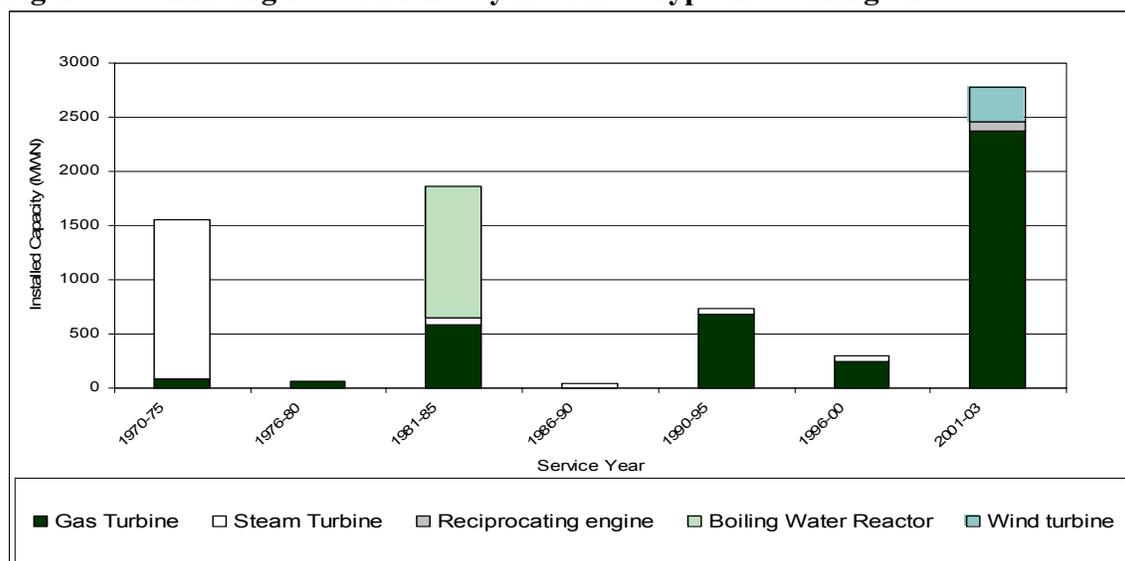
Table D-2. Percentage of Generation by Fuel Type on the Western Interconnect⁵²

Fuel Type	Percentage of Total
Coal	35%
Natural Gas	8%
Nuclear	13%
Hydroelectric	43%
Renewables (wind, geothermal, other)	1%

Most of the hydroelectric power produced in Washington comes from the Federal Columbia River Power System (FCRPS) which is marketed by BPA. BPA sells the power generated by the 31 dams located on the Columbia River and its tributaries and has been providing inexpensive power to the Northwest since the 1940s. Only one nuclear power plant is currently operating in Washington.

The generation assets that have been developed in Washington in the last 10 to 15 years have typically used natural gas as a fuel source. This move toward natural gas generation has occurred due to falling gas prices, improved technology and improved supply reliability. As can be seen in Figure C-3, the number of new natural gas plants has been significant lately.

Figure C-3. Existing Power Plants by Resource Type in Washington



There has also been an increase in the amount of wind power that has been developed or is currently being developed in Washington. This is in response to continued falling costs

⁵² From the 2001 Biennial Report on Energy, Washington CTED, 2001.

associated with the technology, government incentives and changing consumer preferences.

Output Markets, Transmission and Distribution

Electrical generation facilities ultimately deliver their product over the electrical transmission grid. The Western Interconnect is made up of the western states and parts of Canada and Mexico.⁵³ The grid allows high voltage electricity to flow between generation locations and load areas. In the Northwest, the Bonneville Power Administration owns approximately 80% of the existing transmission grid. The BPA uses the grid to supply the power generated by the FCRPS and also allows other generators to supply electricity over the grid by paying a fee for use of the facilities. Other transmission facilities in Washington are owned by various COU's and IOU's. Costs of transmission across these facilities vary. The costs to electrical generators on BPA facilities are the same for any location in Washington. However, if electricity must be sent over linked facilities provided by other owners, then additional rates apply in what is known as rate "pancaking".⁵⁴

Existing transmission facilities are limited by congestion and reliability concerns. In some cases, the full capacity of the line has been reached so that no more electricity can be transmitted without compromising reliability. Transmission congestion points have been identified by BPA, and in Washington occur in two main areas, one running north-south along the Cascades and another running east-west along the southern border. This restricts the free access for generation facility proponents desiring to locate remotely from load areas. BPA has noted that no new transmission investment has occurred since 1987.⁵⁵ In many cases, shared cost of new transmission facilities is a significant consideration for project proponents.

Power generated and transmitted in Washington is either distributed to consumers in Washington or sold out of state. Currently, 63 retail utilities distribute power to consumers in Washington. Of these, the three IOU's account for approximately one-third of retail electricity sales and the remaining two-thirds is conducted by COUs and the BPA (through the direct service industries).

Input Markets

Inputs to power generation facilities include energy inputs, and construction and operation equipment and labor. Fossil fuel inputs include coal, fuel oil and natural gas. Coal has been a relatively minor fuel for electricity generation in the Pacific Northwest. Most of the coal used comes from sources in Wyoming, Montana, and several other western states and the provinces. Oil products are playing a decreasing role in both electricity generation and in space heating.

⁵³ This includes California, Oregon, Washington, Idaho, Nevada, Montana, Wyoming, Colorado, Arizona, New Mexico, British Columbia and Alberta and Baja California.

⁵⁴ Pancaking is adding transmission rates on top of transmission rates to pay for wheeling of power.

⁵⁵ From "The Power Grid Needs Mandatory Reliability Standards and Infrastructure Investment" by Steve Wright, BPA Administrator.

As mentioned previously, natural gas has become the fuel of choice in recent years. The Pacific Northwest is served by two interstate pipelines bringing fuel from Canada or the Rocky Mountains. The Northwest Pipeline owned by the Northwest Pipeline Corporation enters the U.S. from Canada at Sumas, Washington and extends to Eastern Washington. The GTN pipeline owned and operated by PG&E Gas Transmission, Northwest (GTN) connects the region to supply in Alberta. The locations of these supply sources have been very significant in the siting decisions of many of the plants sited in Washington in the recent past.

POWER GENERATION DEVELOPMENT ISSUES

There are several specific trends in energy generation and facility siting that will likely affect the ownership, quantity and types of new generation facilities developed in the future. These trends and projections are outlined below and were incorporated in the computer analysis described in Section 3 and Appendix E.

Commodity Markets and Developer Type

The cash market for wholesale power has been used in the past by many utilities. This power could be used to supplement utility owned generation resources or to provide peaking capacity during periods of maximum load. However, events in 2000 and 2001 led to precipitous increases in power prices. This experience has led some utilities to reconsider their dependence on the cash market and merchant generators and has increased the incentive to own assets.

The 2000-2001 crisis and the consequent high prices has led to diminished activity in wholesale power trading and several firms have indicated their intention to leave the wholesale trading business. For those power providers that have decided to move away from short-term markets, reliance on bilateral contract arrangements has been substituted. Lenders and equity investors have pulled back support for new assets and the result is a decline in forward trading markets and construction of merchant generating assets. During the period January 2001 to August 2002, developers tabled or cancelled 160,000 MW of proposed new generation in the U.S. In addition, the weak economy and falling stock market have significantly reduced the market capitalization of many firms. Some are struggling just to meet debt obligations, and are not attempting to finance expansion plans and many developers have recently received credit downgrades.

Along with weakness in the market for wholesale power, generation asset transaction values have trended down toward replacement values. Pressure to sell assets among IPPs has also increased the incentive for some utilities to consider new resource alternatives in their portfolio. This may be a viable option for serving new loads and may impact the decisions to purchase market product or tolling agreements.⁵⁶

The modeling described in Appendix E has considered the mix of developers by incorporating a weighted average cost of capital that reflects the expected mix of developers.

⁵⁶ Tolling agreements allow a utility to operate a generation resource without owning it.

Generation Technology

The choice of power generation technology is driven by the type of load served (base, intermediate or peaking) and cost components such as equipment costs, available resources and government policy. In the past, coal and oil fired plants were the technology of choice, but there has been a move toward natural gas fired plants due to falling input prices and rising environmental concerns. Gas prices have hovered around \$2-\$3 per mmBTU and low price forecasts have encouraged many to construct combined cycle plants

However, the recent reluctance to construct new plants has caused proposed pipeline expansions to be delayed or canceled. This may put upward pressure on gas prices as generation capacity begins to expand. Moreover, the reduction in commodities trading activity has made it more difficult to hedge against gas price increases. For reasons, higher prices and greater price volatility may be the result. This may encourage developers to consider other types of electricity generation technologies.

The choices of generating technologies include coal and natural gas units and several types of renewable sources. Coal, petroleum and gas are the typical fossil-fuel powered sources that have been used in the past. The price stability associated with coal-fired plants has renewed interest in these plants in some locations.

Energy generation will also be affected by the move toward renewable energy sources. Wind power has become much more cost effective over the past 20 years and is likely to continue to drop in price. Solar, biomass and other alternatives are also becoming cost effective. The increased viability of these sources has been driven by real cost reductions in power generation and by government programs. In Washington, the green power program requires several of Washington's utilities to provide a "qualified alternative energy product" for voluntary consumption by consumers.⁵⁷ Other states have instituted Renewable Portfolio Standards (RPS) which requires some percentage of energy generated to be from renewable sources⁵⁸ and System Development Charges (SDCs) in which consumers are taxed on their electricity use and the funds used to promote green power sources. The federal government has also encouraged wind and other resource development through the federal production tax credit.⁵⁹ Distributed generation which involves small scale generation sources located close to load is also a possible solution to supply needs in the future.⁶⁰ The modeling for this paper considered the relative costs for different technologies, government programs to subsidize renewable sources and included an exogenous rate of technological improvement.

Electricity Demand Factors

⁵⁷ RCW 19.29A

⁵⁸ 12 states have these programs in place.

⁵⁹ The PTC expired on December 31, 2003. It has been proposed for extension as part of the federal energy bill, but at the current time has not been extended.

⁶⁰ PSE has begun to consider this in their resource planning.

Future electricity demand could be affected by several innovations. For example, retail electricity rates are often based on average cost since they are government regulated. However, newly developing demand management programs may affect future energy use through marginal cost pricing. This will involve higher prices during peak periods that will likely result in reduced usage during these periods. Several pilot programs have already been developed.⁶¹ Other conservation and energy efficiency programs are also being pursued and may be a significant factor in determining future demand. Lastly, the reduction in production by the aluminum industry in the Northwest may result in a significant permanent reduction in load.⁶²

Transmission Planning Uncertainty

All utilities have had to comply with FERC's open access transmission requirements. However, uncertainty surrounding the extent of restructuring has led to a significant reduction in investment in these facilities. Regional Transmission Organizations (RTO's) have been a significant topic of discussion among many of the local providers and FERC⁶³ and may have significant impacts on how transmission facilities expand. This uncertainty makes it difficult to estimate future transmission capability and costs.

Federal and State Initiatives

There are several national policy proposals that might also affect power generation. One of the most significant is the reauthorization of the production tax credit for renewable power generation. This credit expired in 2003 and has been proposed for reauthorization in the Energy Bill, but currently is not in effect. This could significantly influence the amount of wind powered plants that are constructed. Several other pieces of legislation could affect power plants including stricter air emissions rules,⁶⁴ policies to encourage cogeneration plant development and some transportation policy reforms.

State policy development may also affect generation technology choices. As mentioned, RCW 19.29A already requires utilities to offer a renewable alternative source. Additional requirements that could be developed include renewable portfolio standards or system benefit charges.

Climate Change

In the last 20 years there has been an increasing concern regarding the impacts of fossil fuel combustion on the earth's atmosphere and increasing calls for government intervention. Since the impacts of greenhouse gases can be broadly thought of as having public good characteristics,⁶⁵ government involvement is likely to be warranted. This was initiated in 1992 with the development of the Framework for Climate Change Convention in which voluntary emissions standards were initiated. However, as it became clear that this approach would not be successful, mandatory standards were developed and resulted

⁶¹ Puget Sound Energy has conducted several pilot programs.

⁶² NPPC indicates that if all aluminum plants are operating, their instantaneous load can be 15% of the total.

⁶³ White Paper Wholesale Power Market Platform, Federal Energy Regulatory Commission, 2003

⁶⁴ The Clean Air Planning Act has tighter emissions limits on SO₂, NO_x and Mercury.

⁶⁵ Public good characteristics include non-rivalrous consumption and non-excludeability.

in what has become known as the Kyoto protocol. This agreement would provide binding reductions in greenhouse gas emissions for developed countries. It has been signed and ratified by many countries but the United States has opted out of the agreement citing economic concerns and the lack of involvement by the developing world. Other federal policies have also been proposed, the most recent being the Climate Stewardship Act defeated in the Senate in 2003.⁶⁶

Failure to secure agreement at the international or federal level has led some state and local governments to take action. Several of the east coast states have agreed to work together on climate change. New Hampshire and Massachusetts have developed trading programs for power plant emissions. In 1997, Oregon became the first state to require carbon mitigation in the siting of energy facilities. Washington followed in 2004 with a program very similar to Oregon's. Local governments such as the City of Seattle have also begun to require carbon dioxide mitigation to implement a net zero emissions policy in power generation. Climate change mitigation requirements were explicitly considered in the model for new generation facilities.

DESCRIPTION OF IMPACTS TO ENERGY FACILITIES

Development of new generation facilities is a function of perceived demand for additional electricity supply (current and expected in the future) and the existing portfolio of generation assets. Additional electricity demand can be met either from more intensive use of existing resources, increasing the capacity of existing resources, construction of new capacity or demand side management and conservation. In addition, because electricity flows on a grid, there is considerable flexibility as to where new facilities can be constructed.⁶⁷ The proponent's decision to construct a new generation resource is based on many additional factors including government regulation, suitable sites and public acceptance. The information below provides a general description of the impacts of the proposed rules on siting energy facilities.

Impacts to Existing Energy Facilities

The proposed rules will directly impact new applicants for EFSEC site certification. However, to the extent that they raise the cost of siting new facilities, they may also have impacts on existing power plants. Proponents interested in bringing power to market may choose from building new plants or purchasing existing facilities. Raising the cost of constructing new facilities will make purchasing existing facilities more attractive and raise the asset value of existing generating resources. This will be a benefit to owners of existing facilities. The exact impact will depend on whether a plant is new or old, a baseload or peaking plant, and whether it is a renewable or non-renewable source among many other considerations. Offsetting this potential increase in asset value is any reduction in the ability to expand existing plants. Plants that are expanded must meet the new rules (if greater than 350 MW in capacity) and the statutory requirement to offset carbon dioxide emissions. Expansions that will lead to an increase in emissions of 18,500

⁶⁶ See U.S. Senate Bill 139 (2003), Pizer and Kopp (2003) and Paltsev Et. al. (2003).

⁶⁷ This flexibility is limited by transmission congestion, risk and desire to have generating resources near load.

metric tons per year will have to offset increased emissions.⁶⁸ The exact change in asset value will ultimately depend on how good of a substitute an existing asset is to a proposed new asset. Assets that are not currently dispatched often but located in a desirable location could be very efficient at serving future loads compared with a new facility.

The proposed rules may also impact use of existing plants. The service lives of some plants may be extended since constructing new plants is relatively more expensive. These new plants must recover increased costs by increasing wholesale rates and this makes use of existing assets more attractive. This will also affect asset values. Existing plants might also be used more frequently during a given time period even if retirement rates are unaffected.

It is important to note, that the cost increases associated with the new standards are going to be a relatively small fraction of the cost of siting a new facility. As such, the impacts on asset values and use described above may be relatively small.

Impacts to Future Energy Facilities

Increasing the cost of siting generation facilities may significantly affect new power generation facilities. The proposed rules are likely to result in greater cost increases for fossil fueled plants than for renewable power sources. Therefore, renewable technologies may be favored. The timing of construction of new facilities may be affected since increasing costs might make it difficult to compete in the wholesale power market. It also could lead some proponents to locate their facilities out-of-state to avoid the increased costs if other states have more favorable environments. Proponents could also reduce the capacity of proposed plants so that they would not fall under EFSEC oversight. The exact response will depend on the specific project proponent.

Fossil Fuel Technologies

To consider the cost impacts for potential fossil fueled plants, a typical 540 MW natural gas plant and 400 MW coal-fired plant were considered. It was assumed that they would both meet the base load requirements of a typical load area. Several of the results of this analysis are listed in Table D-3. The best overall investment under the pricing assumptions is still a natural gas combined cycle facility for a given output price level. Coal fired power plants have significantly lower fuel costs, roughly 25% of a similar size gas plant but higher O&M costs.

Table D-3. Costs of Electricity Production and Cost Increase Associated with the Proposed Rules for Fossil Fuel Powered Plants

Item	Natural Gas	Coal-Fired
Capital Cost (mill \$)	359.9	559.3
Cost of Elec (\$/MWh)	\$34.78	\$39.02
Change in the Cost of Electricity (\$/MWh)	\$0.01	\$0.03

⁶⁸ HSB 3141. This would include a 5-6 MW increase in a natural gas facility or a 2 MW increase in a coal facility

The cost of producing electricity is lower for natural gas fired plants and analysis of typical fossil fueled plants indicates that if the proposed rules are put into effect, the cost of power generation may increase approximately \$0.01-\$0.03/MWh.

Renewable Technologies

Proposed renewable generation facilities are uniquely regulated by EFSEC in that these facilities can choose to go through EFSEC or a conventional permitting process through local government. Increased costs associated with EFSEC permitting might encourage some applicants to opt out of the EFSEC process. These involve increased costs associated with site applications and construction. The benefits of EFSEC review include streamlining of all permits that would have to be otherwise obtained through local and state government. The potential increased costs to wind facilities appear small enough that it is unlikely that their choice of permitting jurisdiction (EFSEC or local) will be substantially affected by the rule revisions. Solar-powered plants may also become a possibility if solar technology costs continue to fall. These plants tend to be central station photovoltaic plants and will likely not come on-line until well into the future. Evaluating the impacts of the rule leads to the costs noted in Table D-4.

Table D-4. Costs of Electricity Production and Cost Increase Associated with the Proposed Rules for Renewable Powered Plants

Item	Wind-Powered	Solar-Powered
Capital Cost (mill \$)	\$110.3	\$651.8
Cost of Elec. (\$/MWh)	\$38.94	\$299.63
Change in the Cost of Electricity (\$/MWh)	\$0.09	\$0.14

Plant Location Impacts

Evaluation of incentives for new power plants implies that some new power projects may get delayed or moved to other locations. This might occur due to the higher costs associated with siting a facility in Washington or the higher relative price of Washington and other states. The proposed rule revisions will likely result in net costs to new power generation facilities sited in Washington State. Economic theory would predict that the attractiveness of Washington as a potential location for energy facilities would be reduced relative to other states or provinces. The important question is whether this impact will be significant. Fundamental to answering this question is consideration of how flexible plants can be to alternative locations.

The published literature on plant siting decisions is relatively limited. Predpall, (1990), considers the siting of plants within Florida by Florida Power. Important considerations in the siting decisions include generation technology, fuel availability, environmental regulation, and public concern. They identified a process that involved public input, looking for shared resource opportunities, and a GIS based land selection process. Land was eliminated based on proximity to natural areas, residential areas and other factors, which resulted in about 10% of useable land area remaining. Using rating criteria, a list of sites could be obtained.

Washington State considered a comparative evaluation of State policies in a report for Washington, Oregon and California.⁶⁹ Each state was evaluated for plant siting desirability considering all costs associated with development of a hypothetical 530 MW CC natural gas facility. Oregon provides the lowest life-cycle cost location followed by Washington and California. This analysis included Oregon's carbon dioxide mitigation requirement and California's air emissions offset requirements.⁷⁰ The analysis indicated that Oregon offers a 5.23% higher return than Washington and California offers a 4.01% lower return.

The study indicates that certain minimum requirements are necessary for siting new natural gas combined-cycle facilities including availability of real property, proximity to natural gas, water, and electric transmission lines and wastewater discharge facilities. Once several sites have been identified with these characteristics, the developer will likely consider state tax structure, cost of construction, cost of natural gas, cost of electric transmission, markets for electricity, timing and certainty of the site certification process and cost of environmental compliance. Washington can rapidly become the most favorable state in times of rising fuel or electricity costs since there is no state income tax.

Secondary Effects

Secondary effects may occur where the increased costs are passed along to input or output markets. It could be assumed that all the costs are passed along to consumers in retail rates or input suppliers in the form of lower prices for their products. In the case of new generation owned and operated by a COU or an IOU, it may be reasonable to expect that the increased costs will be passed along to consumers in revised retail rates. Retail rates are regulated by either the WUTC or independent public boards that could provide for these new costs within a revised rate structure. The disproportionate impacts to businesses from the rate increases would then be dependent on electricity use by small and large firms.

To pass these costs upstream to input (e.g. gas/coal) suppliers would require negotiating for reduced input prices. This might involve a negotiation for reduced natural gas prices or reduction in transmission rates for using power lines before a facility would make the decision to construct. Some combination of input/output/lower return might also occur or a reduction in spending on other items at a site such as environmental mitigation.

⁶⁹ "Comparative Evaluation of Electric Power Plant Siting Requirements in Washington, Oregon and California," Washington State Department of Community, Trade and Economic Development, 2001.

⁷⁰ California requires plants to offset their NO_x emissions.

APPENDIX E: FORECAST OF ELECTRICITY GENERATION IN WASHINGTON

INTRODUCTION

To provide a quantitative estimate of the costs of the proposed EFSEC rule revisions requires consideration of the physical impacts to the regulated industry. Since the rules will apply only to newly constructed plants, this requires a forecast of the future development of energy generation facilities in Washington State and involves considering not only structural changes in the markets for wholesale and retail electricity but also the potential impacts from federal or state carbon dioxide requirements. The following section outlines projected demand for electricity and simulated supply responses performed by the Northwest Power and Conservation Council (NPPC) for the three scenarios described previously. The result is an estimate of the number and type of generation resources likely to be developed in Washington in the next 20 years.

NPPC evaluates the supply of power in the Northwest power pool by looking at the western grid in its entirety.⁷¹ Demand in Washington is only partially linked to resources in Washington because the power grid is an interconnected regional bulk power system. It is possible that plants built in Washington will serve loads in other states and vice versa. NPPC uses a computer optimization model⁷² that forecasts wholesale prices, and determines the types of resources that are likely to come on-line and which will be likely to go off-line. The model evaluations involve significant input parameters including types and operational characteristics of potential generating facilities and demand growth in various regions.⁷³ They also make explicit assumptions regarding the future of the power system.

There are various ways that new capacity could be provided to meet the projected load growth. Several items to consider include the future extent of restructuring and type of generation ownership, the outfall from the 2000-2001 energy crisis and increased preference for renewables due to government policy and utility risk management. Deregulation is partially complete, but moves to increase retail competition and FERC's push to utilize RTO's might further affect the industry. The energy crisis has pushed utilities to further consider risk management options like wind power (fixed-cost resources) and asset ownership to reduce the variability in power prices. RCW 19.29A passed in 2001 requires utilities to offer renewable power alternatives and utilities have actively moved forward to meet it. Proposed federal legislation is also considering extending wind power subsidies. In 2001, the production tax credit was extended for two more years although it was not re-enacted in 2003. All these factors will affect the type and ownership of new assets.

MODELING APPROACH

Introduction

⁷¹ This includes the entire Western Electric Coordinating Council (WECC) electric reliability area.

⁷² NPPC uses Aurora™ by EPIS, Inc.

⁷³ The regions are determined based on existing transmission congestion.

To model the economic impacts of the proposed rule revisions involves modeling the entire electrical grid. Changes in costs in Washington can affect all other sources on the grid and therefore the NPPC was asked to provide several analyses for the purpose of analyzing the rule changes.⁷⁴ The NPPC models the system using the AuroraTM computer model. Aurora forecasts wholesale power prices based on the variable cost of the most expensive generating plant or increment of load curtailment needed to meet load for each hour through the planning horizon.

The Aurora model provides dynamic simulation of power generation, market prices and demand based on inputs and assumptions of the programmer. A two-step process is followed. First, a forecast of capacity additions and retirements beyond those currently scheduled is developed using Aurora's long-term resource optimization logic. This is an iterative process in which the present values of possible resource additions and retirements are calculated for each year over the study period. Existing resources are retired if maintenance and operation costs can't be met and new facilities are added if costs are such that they meet the required return on a developer's investment. Alternative resource technologies are analyzed, selecting the resources that provide the greatest benefits to arrive at the optimal expansion forecast that results in least cost to the consumer. The second step is the power price forecast using the assets determined in the first step.

Aurora simulates power plant dispatch in each of sixteen load-resource areas (LRAs) comprising the WECC electric reliability area. The zones are defined by major transmission constraints and are each characterized by forecast load, existing generating units, scheduled project additions and retirements, fuel price forecasts, load curtailment alternatives, and a portfolio of new resource options. Transmission interconnections are characterized by transfer capacity, losses, and wheeling costs. The load within a load-resource zone may be served by native generation, load curtailment or by imports. The transmission bottlenecks restrict the free movement of electricity in such a way that it is more difficult (i.e. costly) to serve these regions from adjacent regions. Washington is divided into two LRAs by the Cascade Mountains which represents a significant congestion area in east-west movement of power. Each LRA uses a different estimate of fuel price, load, and new resource options.

The model requires an estimate of the demand for electricity and utilizes the Power Council's mid-level forecast. It also requires fuel price and hydrologic forecasts and resource assessments. The mid-range forecasts are used for all. The model assumes that if a project is under construction at the time of the model run, it is completed as scheduled. Planned projects that the Council is aware of are assumed to be constructed on schedule. Additional projects are market driven. Those scheduled for retirement are retired on schedule and suspended projects become another resource alternative given their estimated cost to complete.

Aurora uses a library of "typical" new resources to evaluate as part of the long-run optimization procedure. This library of resources was developed by NPPC and reflects

⁷⁴ Ecology acknowledges the excellent support provided by Mr. Jeff King and the Council in this analysis.

the attributes of plants that can be expected to be developed in the area in the future together with exogenous technological change parameters.

Model Data and Parameters

Developing the generating asset forecasts includes estimating future loads, fuel prices, hydropower characteristics and energy and environmental considerations and were developed by the Generating Resource Advisory Committee (GRAC) at the NPPC. In general, the medium-case forecasts were used with sensitivity analyses performed around these cases. A more complete description can be found in “Revised Draft Wholesale Power Price Forecast for the Fifth Power Plan” available at the NPPC.

Electricity Demand

To determine the number and type of electrical generating facilities likely to be developed over the planning horizon and those likely to be subject to the new rules requires us to forecast future electricity demand. New plants will not be developed without demand sufficient to encourage development. Electricity demand is determined by many factors including fuel prices, population, households, conservation measures and local economic conditions. These must be forecast for areas in the Northwest in order to arrive at an estimate of future electricity demand. For areas outside the Northwest, future growth in electricity demand was determined by considering the historical growth rate of electricity use per capita multiplied by a forecast of the population growth rate for the area.⁷⁵

As can be noted in the five scenarios listed in Table E-1 below, the exact demand growth will vary depending on several factors. Moreover, this projected demand growth must be met either through more intensive use of existing resources or construction of new generating resources.

Table E-1. Demand Forecast (aMW) for NWPP (from Draft 5th Power Plan)⁷⁶

Forecast	Year			Growth Rates	
	2000	2015	2025	2000-2015	2000-2025
Low	20,080	17,489	17,822	-0.92	-0.48
Medium	20,080	19,942	21,934	-0.05	0.35
Low					
Medium	20,080	22,105	25,423	0.64	0.95
Medium	20,080	24,200	29,138	1.25	1.50
high					
High	20,080	27,687	35,897	2.16	2.35

As can be noted, the medium projection for demand growth is expected to be approximately 1% per year between 2000 and 2025. However, with the reduction in demand that occurred in 2001-2002, the actual growth rate from 2003 is expected to be

⁷⁵ Exceptions to this included the Canadian provinces and California where better data existed.

⁷⁶ Demand is for the Northwest Planning Region; Washington, Oregon, Idaho and Montana. 2000 values are actual demand values.

approximately 1.5% per year.⁷⁷ This additional growth is predicted to result in a net increase in electricity demand of approximately 5,400 aMW in the Council's planning area by 2025. As a result of the energy crisis in 2000-2001, 2003 demand is estimated to be about 2000 megawatts lower than in the year 2000. This would imply that there is likely sufficient capacity in the system to at least make up this demand without the construction of new resources. The remaining required capacity would have to be provided by either new generation or more intensive generation from existing sources.

Other estimates of demand growth are available. The WECC published estimates of the projected peak demand.⁷⁸ They forecast an increase in summer demand of 1.3% and an increase in winter demand of 2.5% for the entire Northwest Power Pool. The summer increase is relatively similar to the NPPC estimate and the winter estimate is quite a bit higher. The investor owned utilities in Washington also estimate load growth in their service areas. Avista estimates an increase in retail demand of approximately 3.4% per year.⁷⁹ PSE estimates an increase of 1.6% per year in billed sales.

Fuels

Prices for coal, fuel oil and natural gas are important for the generating resources selected by the model. Delivered coal and natural gas prices for each load-resource area are based on western mine-mouth coal and average U.S. natural gas wellhead price forecasts. These are adjusted for each specific area.

Table E-2. Existing and Estimated Fuel Prices by Fuel Type

Fuel Type	2000 Price	2025 Price (2000 dollars)
Coal	\$0.51/MMBtu	\$0.42/MMBtu
Fuel Oil	\$6.71/MMBtu	\$6.00/MMBtu
Natural Gas	\$3.60/MMBTU	\$3.60/MMBtu

As can be seen, input prices are expected to either remain constant or decline slightly. In the cases of fuel oil and natural gas, prices will actually fall to lows in 2005 and rise to the listed 2025 price.

Demand Response

Demand response alternatives were considered as an attractive response to new peak power facilities. Reduced demand occurs due to a choice by the consumer. An 8% reduction in the load was assumed through demand response mechanisms.

Resource Alternatives

Several different resource types are available to provide new generation. This includes natural gas combined cycle power plants, two cost blocks of wind power plants, coal-fired steam electric plants, natural gas simple cycle gas turbine generating sets and central station solar photovoltaic plants. Gas fired resources have been the technology of choice

⁷⁷ This reduction in demand was largely due to a reduction in demand by the DSI industries (the majority of which are aluminum plants.)

⁷⁸ Information Summary, Western Electricity Coordinating Council, July, 2003.

⁷⁹ From Least Cost Plan 2003, Avista.

since the early 1990s but increasing gas prices and climate change policy may affect their desirability. Climate change policies will likely have the effect of making them more desirable since it will be the cheapest technology for base-load plants.

Wind power has progressed from niche to mainstream over the past decade. This includes improved reliability, cost reduction, financial incentives and emerging interest in the hedge value of wind. Wind prices are currently higher than non-renewables, but expected to decrease.

Coal powered sources are likely to increasingly become cost effective. This is due to the reduced cost of coal and improved technology. However, climate change strategies might affect this resource choice.

Solar power is a promising alternative but is not a viable option at today's prices. The rapid pace of technological change may make it more desirable and it was included as a potential resource.

Several partially compete resources are also included in this analysis. A complete description of the size and costs associated with each type of resource is provided in Table 2 of the NPPC Wholesale Price Forecast.

Transmission

Transfer capability between LRA's is modeled on the existing transmission system plus committed additions. An intra-regional transmission cost of \$15/KW/yr for access to a given location and a 2% transmission loss are assumed. Peaking units and co-generation are assumed to serve a local load area and are not subject to transmission fees or losses.

Financial Incentives

Federal tax incentives are modeled, but state and local tax considerations are not considered. The renewable energy production tax credit (PTC) and the energy production incentive (REPI) for tax-exempt entities are considered to be in place.

Climate Change

Oregon and Washington have both instituted programs to reduce the impacts from climate change due to power generation. California has recently joined with these states to implement planning. The three scenarios described previously were developed to analyze the impacts of alternative proposals. A CO₂ standard is utilized using a base rate that escalates at variable rates depending on the scenario. This value is applied to a percentage of the carbon dioxide generated from new fossil-fuel powered facilities. The rate is varied with the baseline assumptions.

RESULTS

Given the assumptions listed above, a best estimate of new resource generation and location by type and baseline can be generated.

Scenario 1

Scenario 1 assumes only Oregon and Washington will have carbon dioxide mitigation requirements through 2025. The mitigation rates are adjusted by the Producer Price Index and no international, federal or other state program goes into effect. This would correspond with the existing regulatory environment and assumes that no other states adopt climate policies in the future. As can be seen in Table E-3, the new resources of choice are coal and wind. Wind resources are projected to increase 10 times the level of 2001 by 2025 and projected to provide approximately 13% of the region's power by 2025. The other big additions will be coal-fired plants which are forecast to increase by 1,600 MW by 2025.

Table E-3. Scenario 1: CO₂ Mitigation Requirements in WA/OR/N. ID

Resource Group	2003 (1)	2005	2010	2015	2020	2025 (2)	Total Change (2)-(1)
Coal Steam	1896	1896	1896	1896	1896	1896	0
Biomass/MSW	400	362	362	362	362	362	(48)
Nuclear	1170	1170	1170	1170	1170	1170	0
Hydropower	32205	32206	32206	32206	32206	32206	1
Wind	414	428	428	428	428	428	14
Fuel Oil	37	37	37	37	37	37	0
Gas GT & IC	1279	1279	1199	765	765	728	(551)
Existing NGCC	3172	3422	3422	2920	2921	2920	(252)
New Coal	0	0	400	1600	1600	1600	1600
Storage	314	314	314	314	314	314	0
New NGCC	0	0	0	0	0	0	0
New Wind	0	0	0	0	2098	4996	4996
New Solar	0	0	0	0	0	0	0
NG Ind. Cogen	417	457	457	339	339	339	(78)
Planned NGCC	490	741	741	502	502	502	12
Planned Wind	4	120	655	1127	1127	1127	1123
Total	41799	42434	43288	43667	45765	48626	6827

As can be seen there is a net increase in generation of 6,827 MW.

Scenario 2

Scenario 1 does not consider the impacts of Kyoto obligations in the Canadian provinces of British Columbia and Alberta and this model is unlikely to be the case in reality for more than a few years since there appears to be growing momentum towards action on climate change.

The Scenario 2 analysis utilizes the best information available and what is perceived to be reasonable assumptions about the electricity industry and climate change policy. It assumes that the Washington and Oregon policies remain in effect, but that the offset price rises to \$30/ton by 2025. California, British Columbia and Alberta are assumed to

begin an emission offset program similar to Oregon's in 2007 and all other states initiate similar programs in 2012.

The model results indicate that approximately 400 MW of new coal fired generation would come on-line in LRA 1 and 16 by 2025 under Scenario 2. This is a reduction in coal-fired assets from Scenario 1. In addition, 1,848 MW of new natural gas combined cycle capacity would be developed along with the same amount of wind as under Scenario 1. Table E-4 presents the results.

Table E-4. Scenario 2: CO₂ Mitigation Requirements all across the WECC by 2012

Resource Group	2003 (1)	2005	2010	2015	2020	2025 (2)	Total Change (2)-(1)
Coal Steam	1896	1896	1896	1896	1896	1896	0
Biomass/MSW	400	362	362	362	362	362	(38)
Nuclear	1170	1170	1170	1170	1170	1170	0
Hydropower	32205	32206	32206	32206	32206	32206	1
Wind	414	428	428	428	428	428	14
Fuel Oil	37	37	37	37	37	37	0
Gas GT & IC	1279	1279	309	101	101	101	(1178)
Existing NGCC	3172	3422	2935	2934	2935	2935	(237)
New Coal	0	0	400	400	400	400	400
Storage	314	314	314	314	314	314	0
New NGCC	0	0	0	0	616	1848	1848
New Wind	0	0	0	1599	4798	4996	4996
New Solar	0	0	0	0	0	0	0
NG Ind. Cogen	417	457	457	457	457	457	40
Planned NGCC	490	741	741	741	741	741	251
Planned Wind	4	120	655	1127	1127	1127	1123
Total	41799	42434	42398	43538	47353	48783	6984

Scenario 3

Scenario 3 assumes the imposition of the Climate Stewardship Act in 2012. This would affect both existing and new facilities in terms of requiring emission offsets and would likely substantially affect the type of new resources added in the future. If this is the case, existing plants will have higher operating costs and we are likely to see more retirements of existing plants. The results are shown in Table E-5. As can be seen, retirement of existing gas and coal facilities is significantly increased from the previous scenarios and much more new natural gas-fired resources (3,083 MW) are provided.

Table E-5. Scenario 3 with CSA Requirements for Climate Change.

Resource Group	2003	2005	2010	2015	2020	2025	Total Change
Coal Steam	1896	1896	1340	670	0	0	(1896)
Biomass/MSW	414	363	363	363	363	363	(51)

Nuclear	1170	1170	1170	1170	1170	1170	0
Hydropower	32177	32206	32206	32206	32206	32206	29
Wind	413	428	428	428	428	428	14
Fuel Oil	37	37	37	37	37	37	0
Gas GT & IC	1279	1279	937	262	0	0	(1279)
Existing NGCC	3172	3422	3422	3422	2935	2935	(237)
Storage	314	314	314	314	314	314	0
New NGCC	0	0	0	616	2466	3083	3083
New Wind	0	0	3398	4996	4996	4996	4996
New Solar	0	0	0	0	0	100	100
NG Ind. Cogen	416	457	457	457	457	457	457
Planned NGCC	490	741	741	741	741	741	741
Planned Wind	4	120	655	1127	1127	1127	1123
Total	41799	42434	45468	46809	47243	47957	6158