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November 8, 2007

HAND-DELIVERED

Mr. Allen J. Fiksdal
Manager
Energy Facility Site Evaluation Council
905 Plum Street SE
Bldg. 3, 3rd Floor
Olympia, WA 98504

Re: Application 2006-01
Response Brief for Greenhouse Gas Reduction Plan

Dear Mr. Fiksdal:

Enclosed are the original and 15 copies on Energy Northwest's Response Brief for the Greenhouse Gas Plan and a Certificate of Service. An electronic disk is also enclosed.

Please call me at (206) 370-8024 if you have any questions.

Very truly yours,

KIRKPATRICK & LOCKHART PRESTON GATES ELLIS LLP

By
Denise M. Lietz

DL:dl

cc: Service List

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BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 2006-01: ENERGY NORTHWEST; PACIFIC MOUNTAIN ENERGY CENTER.	ENERGY NORTHWEST'S RESPONSE BRIEF - GREENHOUSE GAS PLAN

INTRODUCTION

Energy Northwest submits this brief in response to briefs filed by Counsel for the Environment, the Department of Community, Trade and Economic Development and the Department of Ecology (the "State Parties"); the Northwest Energy Coalition, Washington Environmental Council, and Sierra Club (collectively "NWEC"); and Columbia Riverkeeper, Rosemere Neighborhood Association, and Willapa Hills Audubon Society (collectively "Riverkeeper"). Appendix A to this response brief contains a table summarizing the positions of each party on the questions posed by the Energy Facility Site Evaluation Council ("EFSEC" or the "Council") regarding Energy Northwest's Greenhouse Gas Reduction Plan ("GHG Plan").

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The site certification process for energy facilities in Washington is complex. Energy facilities, like many major developments, are rarely easy to permit even with a dedicated, streamlined process like that envisioned by the Legislature in chapter 80.50 RCW. The process becomes even more complex when the rules change in mid-stream.

Chapter 80.80 RCW represents a profound transformation in the way that Washington regulates the greenhouse gas emissions from energy facilities. It is not surprising that the parties to the Council's adjudicative process for the Pacific Mountain Energy Center ("PMEC") interpret chapter 80.80 RCW differently. What is surprising is that only Energy Northwest appears to believe that the Council's site certification process can produce a result that will ensure compliance with chapter 80.80 RCW over the life of PMEC's operations.

The other parties spent substantial time and energy trying to prove that carbon capture and storage ("CCS") is feasible today. They failed to address, however, the possibility that it is not now feasible, and did not even attempt to answer the Council's question of how "may an applicant meet the requirement [to provide] 'full and sufficient documentation to support the planned sequestration' if technology to support plans for geological sequestration does not yet exist?" That question deserves an answer.

BACKGROUND

Chapter 80.80 RCW left undisturbed the legislative policies that govern the EFSEC process. Those policies recognize that the welfare of the State requires the development of energy facilities, albeit in an environmentally sensitive manner. The "growth in energy demands in the state of Washington requires the development of a procedure for the selection and utilization of sites for energy facilities and the identification of a state position with respect to each proposed site." RCW 80.50.010. It is State policy to "to recognize the pressing need for increased energy facilities...." *Id.* Among the goals of the process is to "provide abundant energy at reasonable cost." *Id.* The Council has long required mitigation of greenhouse gases, first under its general siting authority and more

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recently pursuant to chapter 80.70 RCW. Chapter 80.80 RCW provides additional certainty to EFSEC's siting process by specifying the requirements and limits for carbon dioxide sequestration.

Long before the legislation that would become chapter 80.80 RCW was introduced, Energy Northwest selected PMEC's Integrated Gasification Combined Cycle ("IGCC") configuration in order to obtain a fuel-flexible generation resource with lower criteria pollutant and greenhouse gas emissions than traditional technologies as well as the ability to utilize its carbon capture capability and accelerate the development of sequestration technologies. Declaration of Theodore J. Beatty ("Beatty Decl.") at ¶ 2. Consistent with those selection criteria, Energy Northwest's application for PMEC included provisions for the design and installation of a system capable of capturing approximately twenty percent of PMEC's expected carbon dioxide emissions. PMEC Draft Environmental Impact Statement at 3-34. Energy Northwest also proposed to build PMEC as a "capture-ready" facility, with carbon dioxide separation equipment, designed piping systems, connection points, shift and other equipment locations and sizing capacity that will allow the future addition of the equipment necessary to capture most of the carbon dioxide emissions from PMEC. *Id.* at 3-35. Energy Northwest included these features even though, at that time, greenhouse gas capture was not a part of the requirements for PMEC. It also selected the Kalama site based, in part, on its future potential for CCS operation. Beatty Decl. at ¶ 3. All of these pre-chapter 80.80 RCW decisions demonstrate Energy Northwest' commitment to advancing clean energy technology.[1]

Following the enactment of chapter 80.80 RCW, Energy Northwest has increased its commitments to advancing carbon dioxide management and sequestration technology. It will spend up to $10 million to characterize the sequestration potential associated with the Kalama site. *See* GHG Plan at 5. Energy Northwest has commissioned URS Corporation to take the first step in this

[1] Like NWEC and the other parties, Energy Northwest recognizes the importance of the region's hydro power and renewable resources. Its energy portfolio includes a hydro power facility, a wind project and a solar station. *See* http://www.energy-northwest.com for additional information about these resources.

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characterization effort. *See* Beatty Decl., Ex. 1 (URS Corporation, *Preliminary Evaluation of CO_2 Sequestration for the Pacific Mountain Energy Center* (Nov. 7, 2007)). Energy Northwest will evaluate the technological and economic feasibility of sequestration for PMEC's emissions not just once, but every five years through PMEC's operating life. *See* GHG Plan at 23. All of its actions, both pre- and post-chapter 80.80 RCW, demonstrate that Energy Northwest remains committed to implementing geological sequestration if it can be done while maintaining the economic viability of PMEC.

ARGUMENT

Each of the other parties argues that geological sequestration is technologically feasible now. This argument unpins the other parties' approach to nearly every one of the Council's questions. The question of technical feasibility is important, but it is not a question that the Council asked and it is a question of fact rather than law. Thus it is a proper topic for the evidentiary hearing but not for preliminary legal briefing.

The parties' reliance upon declarations and other external sources of information reflects that the Council's questions implicated a number of factual issues. To the extent that any of the Council's questions cannot be resolved without determining a disputed issue of material fact, those questions should not be decided now but instead should be resolved after the evidentiary hearing. Under RCW 34.05.461(4), "Findings of fact shall be based exclusively on the ***evidence of record*** in the adjudicative proceeding...." (Emphasis added.) Accordingly, no findings can be made until evidence has been entered into the record in the hearing phase of the adjudication. *See* WAC 463-30-310 (standards for admission of evidence); and Superior Court Civil Rules 12(b) and 56 (when matters outside a pleading are presented on a motion for failure to state a claim upon which relief can be granted – a question of legal sufficiency – then the motion must be treated as one for summary judgment; summary judgment may be granted only if there "is no genuine issue as to any

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material fact"). Energy Northwest believes that the following of the Council's questions may require resolution of disputed issues of material fact:

- Sufficiency of the Plan in general;
- Whether the Plan contains a good faith effort to implement;
- Sufficiency of Plan elements relating to the feasibility of sequestration, financial assurances, etc.; and
- Quantity of emissions to be addressed.

I. Rulemaking.

A. EFSEC is not required to stay PMEC's adjudicative proceeding until the completion of the rulemaking required by chapter 80.80 RCW.

The State Parties and NWEC agree with Energy Northwest that rulemaking is not required to implement the GHG Plan. State Parties' Opening Brief on ESSB 6001 Issues ("State Parties Brief") at 8; Opening Brief of Intervenors NW Energy Coalition, Washington Environmental Council, and Sierra Club on Energy Northwest's Greenhouse Gas Reduction Plan ("NWEC Brief") at 31-32. Only Riverkeeper argues that rulemaking is required. Opening Brief of Columbia Riverkeeper, Rosemere Neighborhood Association and Willapa Hill Audubon Society ("Riverkeeper Brief") at 6-8. Riverkeeper, however, fails to address the requirement of RCW 80.80.040(13) to include all of the provisions specified by RCW 80.80.040(11) in PMEC's sequestration plan – a provision that would be unnecessary if PMEC's adjudication had to await rulemaking.

B. The GHG Plan addresses all of the requirements of RCW 80.80.040(11).

All parties agree that RCW 80.80.040(13) requires the GHG Plan to include "all of the requirements of subsection (11) of this section in its carbon sequestration plan...." It is undisputed that the GHG Plan contains provisions designed to address those requirements. Where the parties diverge is whether those provisions are sufficient.[2]

[2] The State Parties argue that the Council should give their evaluation of the sequestration plan "substantial weight." State Parties Brief at 9. While the Department of Ecology does have a defined

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II. GHG Plan Compliance.

A. The GHG Plan is legally sufficient.

The other parties argue that sequestration is technologically feasible now. This assumption, either expressly or implicitly, underlies their analysis of the GHG Plan's sufficiency. Energy Northwest, after extensive research and analysis, has concluded that permanent geological sequestration is not yet technologically or economically feasible. Nevertheless, it has not rejected sequestration. Instead, Energy Northwest chose to rely on the Council's authority to monitor and control an energy facility's compliance over time in order to propose a plan that features adaptive management. This approach allows Energy Northwest and the Council to deal with the technological and economic uncertainties associated with sequestration over time while meeting the goals and requirements of chapter 80.80 RCW.

B. The GHG Plan provides compliance with chapter 80.80 RCW "in unison" with chapter 80.70 RCW.

PMEC will meet both the twenty percent carbon dioxide mitigation requirement of chapter 80.70 RCW and the 1,100 pounds per megawatt hour ("MWh") GHG performance standard of chapter 80.80 RCW. How it meets those requirements will depend on actual GHG emissions, which in turn will depend on the effectiveness of new gasifier optimization technology, relative use and blending of various feedstocks to make synthesis gas, and the blending of synthesis gas and natural gas to run the gas turbines. Operations on natural gas or natural gas dominated blends of synthesis gas are expected to meet the GHG performance standard with no need for any further action. In that case, PMEC will mitigate for twenty percent of its carbon dioxide emissions pursuant to an agreement with the Climate Trust. Beatty Decl., Ex. 2 (Letter from Sean Clark, Director of Offset Programs, The Climate Trust, to Ted Beatty, Project Manager, Generation Project Development, Energy Northwest (Nov. 6, 2007)). Operations on synthesis gas alone are expected to require

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role under chapter 80.80 RCW, that does not cloak the State Parties collectively with some mantle of deference.

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sequestration or purchases of emissions reductions for at least twenty percent and possibly up to thirty-five percent of PMEC's GHG emissions. *See* GHG Plan at 10. In that case, the sequestration or emissions reduction purchases will satisfy chapters 80.70 and 80.80 RCW at the same time. Operations on natural gas and synthesis gas blends may require some level of sequestration or emissions reductions to meet the 1,100 pound per MWh performance standard. Assume, for example, that operations on petcoke will require sequestration or emissions reductions for seven percent of its GHG emissions.[3] In that case, Energy Northwest will count the seven percent toward compliance with chapter 80.70 RCW, and will mitigate for an additional thirteen percent of its carbon dioxide emissions pursuant to its agreement with the Climate Trust.

This approach complies with the letter and spirit of both statutes. The statutes must be read "in unison," not in isolation. RCW 80.80.005(e). PMEC's obligations under chapter 80.80 RCW arise under the provision that applies exclusively to transitional projects, RCW 80.80.040(13). "[E]missions sequestered or mitigated[4] as approved under subsection (13)" of RCW 80.80.040 "shall not be counted as emissions of the power plant" for purposes of chapter 80.80 RCW. RCW 80.80.040(7)(c). Yet such emissions do count for purposes of chapter 80.70, and to the extent PMEC either sequesters them or purchases emissions reductions to cover such, PMEC has fully mitigated those emissions for purposes of chapter 80.70 RCW. Thus, if PMEC sequesters or otherwise mitigates for twenty percent of its GHG emissions under RCW 80.80.040(13), it has met its obligations under chapter 80.70 RCW. If PMEC does not sequester or otherwise mitigate for

[3] These figures are provided for illustrative purposes. PMEC is designed to be fuel-flexible in part to meet the goal of providing abundant energy at a relatively reasonable cost. Choice of fuel at any point in time during the life of the facility will depend upon fuel availability and price. Moreover different types of coal have different emissions profiles, as do different types of petcoke. Obviously it is impossible to determine at this time what actual emissions will be. *Cf.* State Brief at 18 (seeking a current determination of future emissions). Pursuant to chapter 80.80 RCW's focus on actual annual emissions, PMEC proposes to provide the Council with an annual accounting and true-up.

[4] This phrasing – "sequestered or mitigated" – demonstrates that the same treatment must be given to both approaches, and any argument to the contrary must be rejected. *Cf.* State Brief at 23.

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twenty percent of its GHG emissions under RCW 80.80.040(13), then it must provide additional mitigation, up to the full twenty percent, under chapter 80.70 RCW.

To require twenty percent mitigation under chapter 80.70 *on top of* sequestration or purchase of emission reductions under chapter 80.80 RCW would read into the law a performance standard that does not exist. For example, if PMEC sequestered or offset twenty percent of its GHG emissions to achieve the 1,100 pounds per MWh standard, and then had to mitigate for an additional twenty percent under chapter 80.70 RCW, it would be forced to meet a performance standard of 880 pounds per MWh, an outcome contrary to the performance standard expressly enacted by the legislature.[5]

C. The GHG Plan provides a good faith effort to implement sequestration.

RCW 80.80.040(13) requires Energy Northwest, once PMEC "receives final site certification agreement approval under chapter 80.50 RCW" to "make a good faith effort to implement the sequestration plan."[6] Energy Northwest is already attempting to implement sequestration. It has conducted extensive research. It has committed to invest significant amounts of money in facilities to capture carbon dioxide. It has worked with leaders in the field of sequestration, including the Big Sky Carbon Sequestration Partnership. Based on these efforts to implement sequestration, Energy Northwest has concluded that sequestration is not feasible on the scale needed for PMEC. Recognizing, however, chapter 80.80 RCW's preference for sequestration, Energy Northwest

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[5] The State's hypothetical "dirtier plant" (State Parties Brief at 24) rests on the flawed assumption that the cost to comply with each statute is the same. Yet compliance with chapter 80.80 RCW is substantially more expensive both on a per-ton basis and because more tons are involved. Compliance with chapter 80.70 RCW alone can be achieved at $1.60/ton. RCW 80.70.020(5). Compliance with chapter 80.80 RCW, however, costs whatever it takes up to the limit of project economics, which for PMEC is $5/ton. Moreover, chapter 80.80 RCW is only triggered by projects with GHG emissions that exceed 1,100 pounds per MWH, while chapter 80.70 RCW also applies to facilities with lower emissions rates.

[6] As noted in Energy Northwest's Opening Brief, this requirement is not without ambiguity, but Energy Northwest believes that the good faith requirement refers to the effort to implement sequestration. *See* Energy Northwest's Opening Brief – Greenhouse Gas Plan ("Energy Northwest Brief") 12 n.9.

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offered certain financial commitments to define its ongoing good faith effort to implement sequestration. *See* GHG Plan at 7 ("Spending $60 million to install carbon capture equipment at PMEC and to characterize the geological sequestration opportunities in the Kalama area represents a good faith effort to implement sequestration at PMEC."). Energy Northwest has begun this effort. *See* Beatty Decl., Ex. 1.

The other parties argue that the GHG Plan is legally insufficient and, thus, does not meet the good faith standard. *See, e.g.,* State Parties Brief at 25-26; NWEC Brief at 15; Riverkeeper Brief at 31. This position is based, however, in each of those parties' contention that sequestration is feasible. As discussed above, this contention is incorrect. How can Energy Northwest, in good faith, implement a plan for sequestration that it cannot write?

D. The GHG Plan includes all the elements of RCW 80.80.040(11).

RCW 80.80.040(10) requires the Department of Ecology ("Ecology") and the Council to draft rules to implement the greenhouse gas emissions performance standard. These rules must address the elements set out in RCW 80.80.040(11) and be complete by June 30, 2008. *Id.* Ecology and the Council have begun the rulemaking process.[7] Even with the short timeframe contemplated by RCW 80.80.040(10), these rules are still in the early stages of development and are likely to change before they are final. As a result it is inappropriate to speculate about the content of those rules to evaluate compliance with chapter 80.80 RCW. *Cf., e.g.,* State Parties Brief at 14, 15; Declaration of John Stormon at ¶¶ 3-8; Declaration of Alan Newman at ¶¶ 3-5.

1. Financial assurances. RCW 80.80.040(11)(a) requires the GHG Plan to include provisions "for financial assurances, as a condition of plant operation, sufficient to ensure successful implementation of the carbon sequestration plan." Energy Northwest committed to provide a $200

[7] For information about the status of and participants in this process, see http://www.ecy.wa.gov/laws-rules/activity/wac173407_218.html.

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million reserve to pay for the costs of sequestration or mitigation. *See* GHG Plan at 5. It proposed using its bonding capacity to meet additional financial assurance requirements. *Id.*

Energy Northwest's reliance on its bonding capacity is appropriate given its strong position in the bond market and the high ratings of its bonds. *See* Beatty Decl. at ¶ 8. The State Parties' reference to the Washington Public Power Supply System is a scare tactic. State Parties Brief at 10. While the State Parties cite to anticipated "evidence in the adjudication," they cite to no current authority to support their argument that Energy Northwest's intention to rely on bond capacity is "troubling." *Id.* Without factual support, these statements are inappropriate, inflammatory and prejudicial, and should be disregarded. Under the test proposed by Energy Northwest, a municipal corporation's bond capacity is assessed using objective criteria before it is available as a financial assurance. *See* 40 CFR § 258.74. This is an appropriate measure of whether Energy Northwest's bonding capacity provides adequate financial assurances.

Energy Northwest's bonding capacity will not be available to secure the performance of the portions of PMEC owned by private participants. As a result, Energy Northwest proposes to modify its GHG Plan to specify that financial assurances be secured by a letter of credit for those portions of PMEC in private ownership. Energy Northwest will also provide for a dedicated account in which the proposed $200 million reserve will reside.

Energy Northwest based the amount in its proposed reserve on the costs it expects to incur to purchase verifiable emissions reductions. *See* Beatty Decl. at ¶ 7. Energy Northwest expects to enter into a long-term contract with an option to purchase the emissions reductions required to comply with chapters 80.70 and 80.80 RCW for PMEC's operation prior to PMEC's financial close. *Id.* Under the GHG Plan, Energy Northwest's proposed emission reduction purchase will be subject to EFSEC approval. *See* GHG Plan at 23-24. Under this plan, the costs of PMEC's compliance with chapters 80.70 and 80.80 RCW will be known well in advance of PMEC's commencement of operations, when chapter 80.80 RCW requires financial assurances to be in place.

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2. Sequestration. The State Parties and NWEC state that GHG Plan must include a literature review and physical testing at the Kalama site. *See* State Parties Brief at 12; NWEC Brief at 13. Yet, the GHG Plan does include those elements, backed with a commitment to spend $10 million in the process of conducting those activities. *See* GHG Plan at 5. And, Energy Northwest has started that process. *See* Beatty Decl., Ex. 1. The other parties ignore the fact that Energy Northwest selected the Kalama site before the Legislature enacted chapter 80.80 RCW. Energy Northwest did include a site's potential suitability for on-site geological sequestration in its site selection criteria. *See* Beatty Decl. at ¶ 3. However, there is no guarantee that either on-site or off-site sequestration will be technologically or economically feasible for PMEC's emissions. Anything more than the activities that Energy Northwest has proposed is premature given the state of sequestration technology and its supporting legal and regulatory framework.

3. Monitoring. Here, again, the other parties' proposed monitoring provisions are premature given the state of sequestration technology and its supporting legal and regulatory framework. Moreover, the GHG Plan's Plan Compliance Program requires annual reporting of PMEC's carbon dioxide emissions and Energy Northwest's progress in complying with the requirements of chapters 80.70 and 80.80 RCW. These provisions are sufficient to ensure compliance with the laws.

4. Penalties. As explained in its opening brief, Energy Northwest believes that its proposed penalty provisions comply with the requirements of chapter 80.80 RCW.

5. Purchase of Offsets.

a. *Determination of which emissions to offset.* Energy Northwest has estimated the amount of carbon dioxide emissions it must sequester or mitigate in order to comply with chapters 80.70 and 80.80 RCW. First, Riverkeeper argues that the phrase should include emissions associated with operating the gasifier. Riverkeeper Brief at 21. This has already been done. Energy Northwest's conservative estimate of the emissions associated with PMEC does include the

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emissions associated with the gasifier and all other greenhouse gases expected to be emitted from PMEC during synthesis gas production and electrical generation. *See* Beatty Decl. at ¶ 9.

Second, NWEC and Riverkeeper argue that the phrase "total emissions associated with producing electricity" should include emissions associated with feedstock production and with the transportation of feedstock to Kalama. NWEC Brief at 36-37; Riverkeeper Brief at 21. As to off-site or indirect emissions from feedstock production and transportation, there are no apparent grounds for EFSEC to exercise any regulatory authority. "'An agency may only do that which it is authorized to do by the Legislature.'" *Moore v. Whitman County*, 143 Wn.2d 96, 100, 18 P.3d 566 (2001), *quoting Rettkowski v. Dep't of Ecology*, 122 Wn.2d 219, 226, 858 P.2d 232 (1993). An agency may not issue an order that is "outside the statutory authority or jurisdiction of the agency...." RCW 34.05.570(3)(b). Here, the legislature has authorized EFSEC to exercise siting jurisdiction over energy facilities, as defined by RCW 80.50.020.[8] It has not authorized EFSEC to regulate entities that supply fuel for an energy facility or entities that transport fuel to a facility, with the limited exception of certain intrastate pipelines that are not at issue here. Indeed, it has expressly precluded EFSEC from assuming jurisdiction over common carrier railroads. RCW 80.50.020(6).

Moreover, the suggestion that EFSEC should regulate GHG emissions from PMEC's suppliers and transporters raises a question of where such an accounting would stop. What if the

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[8] RCW 80.50.020 provides in pertinent part:

(4) "Site" means any proposed or approved location of an energy facility, alternative energy resource, or electrical transmission facility. ...

(6) "Associated facilities" means storage, transmission, handling, or other related and supporting facilities connecting an energy plant with the existing energy supply, processing, or distribution system, including, but not limited to, communications, controls, mobilizing or maintenance equipment, instrumentation, and other types of ancillary transmission equipment, off-line storage or venting required for efficient operation or safety of the transmission system and overhead, and surface or subsurface lines of physical access for the inspection, maintenance, and safe operations of the transmission facility and new transmission lines constructed to operate at nominal voltages of at least 115,000 volts to connect a thermal power plant or alternative energy facilities to the northwest power grid. ***However, common carrier railroads or motor vehicles shall not be included.*** (Emphasis added). ...

(11) "Energy facility" means an energy plant or transmission facilities....

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suppliers and transporters themselves are already mitigating their own emissions, perhaps pursuant to a mandate from a different regulatory authority? Would PMEC have to include the emissions from the vehicles used by PMEC's employees to drive back and forth to work? Can these emissions really be termed "associated with producing electricity?" How could PMEC accurately monitor these emissions when the operations that produce them are out its control?

Finally, NWEC asserts that Energy Northwest has understated the amount of emissions to be offset because its calculations use the current statutory standard of 1,100 pounds per megawatt-hour. NWEC Brief at 37-38. NWEC theorizes that PMEC will be subject to more stringent standards in the future because "the legislature provided for the emissions performance standard to be progressively tightened every five years as natural gas turbine technology advances and natural gas facilities are able to produce more power with fewer carbon dioxide emissions." *Id.* at 38. This argument relies on two faulty assumptions of law and fact.

From a factual standpoint, there is no guarantee that the performance standard will be tightened. Rather, the law requires the Department of Community, Trade, and Economic Development to survey certain new combined-cycle natural gas turbines every five years to determine the average rate of emissions of greenhouse gases for these turbines and adopt by rule the average available greenhouse gases emissions output. RCW 80.80.050. As a result, the emissions performance standard might be tightened, or it might not. There is no certainty that the survey will always result in tightening the standard. One can only speculate as to what future standards might be. The currently applicable standard, therefore, is the only reasonable basis for the calculations in Energy Northwest's plan.

From a legal standpoint, there is no guarantee that changes in the performance standard would apply to Energy Northwest. The statute does not expressly subject permitted facilities to

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after-adopted standards, and should not be interpreted to do so. Rather, the performance standard in effect at the time of permitting, and not as revised in the future, should apply for the life of the facility (absent significant modifications), consistent with the approach taken in other air quality permitting programs. For instance, when EFSEC permits a new facility, it imposes air emission limits based on "best available control technology" ("BACT"). If BACT changes in the future, EFSEC does not re-open the facility's permit to impose the new standard. The point of the permitting process is to ensure that the technology installed is "best available," while giving the developer certainty regarding the standards that the facility design must meet, without the risk of having to redesign and rebuild the facility if standards change. Facilities generally are not required to chase after a moving target, and should not have to do so in the case of chapter 80.80 RCW.

This logic underpins the vested rights doctrine, under which a developer is protected against after-enacted requirements. "Under Washington's 'vested rights doctrine' developers who file a timely and complete building permit application obtain a vested right to have their application processed according to the zoning and building ordinances in effect at the time of the application." *Rhod-A-Zalea & 35th, Inc. v. Snohomish County*, 136 Wn.2d 1, 16, 959 P.2d 1024 (1998) (citing *West Main Assocs. v. City of Bellevue*, 106 Wn.2d 47, 51, 720 P.2d 782 (1986)). The vested rights doctrine provides a "measure of certainty" to developers and protects them and their investments from fluctuating regulations and policies. *See Noble Manor Co. v. Pierce County*, 133 Wn.2d 269, 278, 943 P.2d 269 (1997). The doctrine is "based on constitutional principles of fairness and due process...." *Weyerhaeuser v. Pierce County*, 95 Wn. App. 883, 891, 976 P.2d 1279 (1999) (citations omitted).

> The doctrine is supported by notions of fundamental fairness. As James Madison stressed, citizens should be protected from the 'fluctuating policy' of the legislature. *The Federalist No. 44,* at 301 (J. Madison) (J. Cooke ed. 1961). Persons should be able to plan their conduct with reasonable certainty of the legal consequences. Hochman, *The Supreme Court and the Constitutionality of Retroactive Legislation*, 73 Harv. L. Rev. 692 (1960). Society suffers if property owners cannot plan developments with reasonable certainty, and cannot carry out the developments they begin.

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West Main Assocs., 106 Wn.2d at 51. This reasoning applies with equal force to compliance with a greenhouse gas performance standard -- Energy Northwest must plan PMEC "with reasonable certainty of the legal consequences" in order to make a reasoned evaluation of project economics over time for its participants.

b. *Arrangements for the purchase of offsets*. Energy Northwest expects to enter into a long-term contract with an option to purchase the emissions reductions required to comply with chapter 80.70 and 80.80 RCW for PMEC's operation prior to PMEC's financial close. Beatty Decl. at ¶ 7. Based on this approach, Energy Northwest calculated the amount of the financial reserve set out in the GHG Plan. *Id.* Under the provisions of the GHG Plan, Energy Northwest's proposed emission reduction purchases are subject to EFSEC's approval. *See* GHG Plan at 23-24. More recently, Energy Northwest has worked with The Climate Trust to ensure its compliance with chapter 80.70 RCW for the period of time before the gasifier achieves commercial operation. *See* Beatty Decl., Ex. 2.

The State Parties assert that the term "verifiable greenhouse gases emissions reductions" excludes the development of renewable energy resources in the western interconnection. State Parties Brief at 17. This is incorrect. As generally defined, an "emissions reduction" includes any activity, measure or means taken that reduces greenhouse gas emissions. *See* Prefiled Testimony of Michael S. Burnett at 5. Given the fact that the demand for new energy is growing, the installation of renewable energy resources displaces, or reduces, the greenhouse gas emissions that would result if that demand were instead met by nonrenewable sources. As a result, EFSEC should allow Energy Northwest to use renewable projects, as long as those projects otherwise meet the eligibility and verifiability requirements RCW 80.80.040(13), to meet chapter 80.80 RCW's emissions performance standard for PMEC.

6. Notice and Comment. Energy Northwest believes that the Council's adjudicative process provides significant opportunities for the public to provide input on its GHG Plan.

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However, Energy Northwest is open to suggestions regarding additional notice and comment opportunities keyed to specific activities in its GHG Plan and the Plan Compliance Program.

E. The GHG plan accounts for the uncertainty associated with sequestration by ensuring that Energy Northwest will provide "full and sufficient documentation" as that information becomes available.

Not one of the other parties answered the Council's question of how "may an applicant meet the requirement [to provide] 'full and sufficient documentation to support the planned sequestration' if technology to support plans for geological sequestration does not yet exist?" Instead, notwithstanding Energy Northwest's careful review of the status of sequestration science and the legal framework supporting it, the other parties make facile assertions that geological sequestration is feasible today. State Parties Brief at 27 ("The question, as phrased, assumes that technology supporting geological sequestration does not yet exist."); NWEC Brief at 6 ("NWEC respectfully submits that this question is built on an incorrect premise – repeated throughout EN's Plan – that technology for geologic sequestration does not currently exist."); Riverkeeper Brief at 32 ("It is certainly technically feasible to sequester carbon dioxide underground as a general matter.").

To make these claims, the other parties were required to ignore the very evidence that they chose to present as support for this view.[9] The State Parties rely upon the Interstate Oil and Gas Compact Commission's ("IOGCC") Model Rules to demonstrate that "the technology for carbon sequestration exists and is currently being used for enhanced oil and gas recovery." State Parties Brief at 27. Setting aside the absurdity of relying on a <u>model</u> rule to demonstrate the maturity of a technology, the IOGCC document itself shows a technology and accompanying legal framework in

[9] The question whether sequestration is feasible is a material issue of disputed fact that is not susceptible to legal analysis or determination. Thus, to the extent that the feasibility determination is necessary for the Council's decision on legal issues, the matter should be set for hearing and the parties allowed to present evidence in an adjudicative setting using expert testimony. For an alternative view, see the Declaration of Travis L. McLing Dated Nov. 7, 2007 in support of Energy Northwest's response brief. Although Mr. McLing is a supporter of CCS, he notes, based in part upon his experience in the nuclear industry, the substantial concerns in the scientific community about large-scale underground injection of carbon dioxide before there is a solid understanding of issues relating to permanence, leakage, etc.

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its infancy. For example, the IOGCC states "owing to the scarcity of post-injection CO_2 [Enhanced Oil Recovery ("EOR")] projects and abandoned natural gas storage fields, inadequate guidance for a long-term CO_2 storage regulatory framework exists." IOGCC, *Storage of Carbon Dioxide in Geologic Structures: A Legal and Regulatory Guide for States and Provinces* 14 (Sept. 25, 2007). And, while the IOGCC offers one path to implementing the legal and regulatory framework necessary to implement a sequestration project, it is by no means certain that it is the only path that the states and the federal government will take. There can certainly be no argument but that no legal or regulatory framework is now in place.[10]

Both NWEC and Riverkeeper point to the Wallula Energy Resource Center project ("Wallula") as a model. *See* NWEC Brief at 12; Riverkeeper Brief at 33. Wallula, however, is significantly different from PMEC; most importantly, RCW 80.80.040(13) does not apply to Wallula because it was not "under consideration by the energy facility site evaluation council by July 22, 2007...." As a result, if Wallula's emissions exceed 1,100 pound per Megawatt-hour standard, then Wallula *must* sequester emissions in excess of that amount and it may not instead purchase emission reductions. The Big Sky Regional Carbon Partnership has proposed some testing at Wallula's site. *See* Battelle, *Field Activity Plan: Characterization Test for CO_2 Sequestration in the Columbia River Basalt Group* (June 2007). While this field test is intended to "confirm the feasibility of permanently and safely sequestering large quantities of CO_2 within deep flood basalt formation," (*id.* at 1) the outcome is uncertain. Unless this test proves that on-site sequestration is feasible for Wallula's emissions, then Wallula must either find an alternative means for sequestering its emissions or delay its operation until sequestration is feasible. The fact that Wallula's developers

[10] Washington will have *some* standards in place once the rulemaking required under chapter 80.80 RCW is complete. This, however, is only half of the puzzle at the most. The U.S. Environmental Protection Agency has recently announced its intention to conduct rulemaking to support sequestration activities. *See* Press Release, Environmental Protection Agency, EPA to Develop Regulations for Geologic Sequestration of Carbon Dioxide (Oct. 11, 2007). There is no telling how long this process will take and, until it is finished, Energy Northwest cannot prudently propose or undertake geologic sequestration for PMEC.

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have asked EFSEC to conduct a potential site study for Wallula does not mean that sequestering its emissions is technically or economically feasible.

In his support of the NWEC Brief, Dr. George Peridas said that sequestration for PMEC's expected emissions is technically feasible. Declaration of George Peridas, PhD at ¶ 11. Nevertheless he conceded that, "It is true that no integrated large scale power sector CCS project is operational today. However, that is mainly due to the current legal framework governing CO_2 emissions, or in fact the lack thereof." *Id.* ¶ 15 (emphasis added). The other parties' evidence demonstrates that the legal and regulatory framework for geological sequestration is not in place, yet they still argue that sequestration is feasible. How is it possible for a technology to be feasible without a regulatory framework to support it in order to manage project risks and associated costs?

Chapter 80.80 RCW expressly commits the feasibility determination to the project owner, Energy Northwest. RCW 80.80.040(13) ("If the project owner determines that implementation is not feasible, the project owner shall submit documentation of that determination to the energy facility site evaluation council."). The authority for Energy Northwest to make this determination is consistent with the Council's approach to matters relating to economic viability. Even if the other parties were correct in their conclusion that sequestration is technically feasible, they have failed to address the second half of the equation. Feasibility for PMEC is determined based on both technological and economic feasibility. *Id.* (the project owner may present evidence of both "technological and economic barriers to successful implementation."). As demonstrated by a case cited by NWEC, Washington case law confirms that feasibility should include elements of technological and economic feasibility. *See Rios v. Wash. Dep't of Labor and Indust.*, 145 Wn.2d 483, 498-99, 39 P.3d 961 (2001). The Council accords a substantial amount of discretion in matters of economic viability to the applicant. *See, e.g., In the Matter of Application no. 2003-1*, Council Order No. 831, at 2-3 ("only the Applicant can determine when a reduction in the number of turbines permitted will prevent construction of the Project."). And, while NWEC argues that commercial

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availability is not the correct measure of feasibility (NWEC Brief at 14-18) it is likely that NWEC would staunchly oppose an Energy Northwest proposal to use an experimental process with potentially high, long-term and undefined future liability.

For the reasons discussed in Energy Northwest's opening brief, Energy Northwest does not have to await issuance of a site certification agreement, followed by some failed attempt to implement what can only be a doomed sequestration plan, before it can determine that sequestration is not currently feasible. The law should not be interpreted to require such an expensive and time-consuming quixotic venture. Any duty on the part of Energy Northwest to perform such a charade is discharged by the doctrine of impossibility. *See ONeal v. Colton Consolidated Sch. Dist.*, 16 Wn. App. 488, 557 P.2d 11 (1976) (duty to teach was discharged through operation of law by impossibility of performance when a teacher had become physically incapacitated for teaching).

The other parties' failure to answer the Council's question, even hypothetically, must mean that they do not have a viable answer that will work better than Energy Northwest's proposal to use adaptive management to accommodate the inherent uncertainties associated with sequestration.

F. PMEC's proposed natural gas operations will comply with both chapter 80.80 RCW and chapter 80.70 RCW.

As set out in the GHG Plan, Energy Northwest understands that it must comply with chapters 80.70 RCW and 80.80 RCW no matter what feedstock fuel it uses. As described above, Energy Northwest has worked with the Climate Trust to ensure its compliance with chapter 80.70 RCW for the period of time before the gasifier achieves commercial operation. *See* Beatty Decl., Ex. 2. This, together with the GHG Plan's adaptive management provisions, ensures that PMEC will meet its greenhouse gas requirements when it operates on natural gas.

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III. Timing of GHG Plan Support.

A. No provision of chapter 80.80 RCW or the Council's statutory or regulatory authority requires or allows delay of PMEC's adjudicative process based on the adequacy of the GHG Plan.

NWEC claims that extension of the Council's process for PMEC will not prejudice Energy Northwest. NWEC Brief at 31. In several places, the State Parties conclude that the actions they recommend for Council's review of the GHG Plan can be accomplished simply by extending chapter 80.50 RCW's twelve-month clock. *See, e.g.,* State Parties Brief at 30. These statements disregard chapter 80.50 RCW's goal that site certification decisions "are made timely and without unnecessary delay." RCW 80.50.010(5). Every month of delay adds significant costs for Energy Northwest, the utility participants and their ratepayers. *See* Beatty Decl. at ¶ 6. In addition, delay serves no purpose because many of the remaining issues are factual and should be resolved through an evidentiary hearing. While Energy Northwest has already accepted six months of delay to analyze and implement the new requirements of chapter 80.80 RCW, this does not mean that it has waived its right to a timely site certification decision.

B. Even if there is doubt as to the GHG Plan's sufficiency, processing should proceed because under WAC 463-60-116, Energy Northwest may modify the Plan in response to commitments and stipulations made during the adjudicative process.

Examination of the Council's recent site certification decisions indicates that the Council's adjudicative process can trigger and manage significant changes to an applicant's proposed facility. For example, the Kittitas Valley Wind Project applicant initially proposed 150 wind turbines. *In the Matter of Application 2003-01,* Council Order No. 826, at 18 (Mar. 27, 2007). In the course of working though land use consistency issues with Kittitas County, the applicant scaled its proposal back to 80 turbines and revised the project layout. *Id.* The final site certification agreement granted the applicant with authority to operate up to 65 wind turbines. *Id.* at 1. In response to the Governor's request that the Council review its site certification recommendation, the Council imposed an additional requirement for the applicant to employ "micro-siting" methods to minimize

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the turbines' potential effects on neighboring land owners. *In the Matter of Application 2003-01*, Council Order No. 831, at 4 (Aug. 8, 2007). Thus, the adjudicative process resulted in a wind project with less than one-half the capacity that was initially proposed and included new and substantial conditions. This is not a "minor change." *Cf.* NWEC Brief at 32. Indeed, WAC 463-60-116 does not use the term "minor" and, given the Council's previous practice, it is inappropriate to read it into the regulation now. The Council's adjudicative process is ideally suited to assess the legal and factual issues associated with the GHG Plan and implement requirements that are compliant with the requirements of chapter 80.70 and 80.80 RCW.

C. Even if the GHG Plan were facially deficient, the provisions of RCW 80.80.040(13) would apply to PMEC.

Only the State Parties believe that the provisions of RCW 80.80.040(13) will cease to apply to PMEC "[i]f the Council decides to proceed on Energy Northwest's incomplete application and determines that the GGRP is insufficient...." State Parties Brief at 30. However, the State Parties fail to explain how PMEC would cease to be a facility "under the consideration by the energy facility site evaluation council by July 22, 2007" even if this were the case. Because that language would continue to apply to PMEC even under the circumstances described by the State Parties, RCW 80.80.040(13) should continue to apply to PMEC even if the Council determines that the GHG Plan is deficient or that Energy Northwest must modify its application.

IV. Conditional Permit Possibility.

The other parties appear to be united in their belief that the Council's authority to condition site certification and to use a flexible adjudicative process to achieve resolution of disputed issues is limited. But the Council's authority is not so restricted. It has express statutory authority to impose binding conditions on applicants in its site certification agreements. RCW 80.50.100(1). As explained in Energy Northwest's opening brief, chapter 80.80 RCW does not modify this authority. Energy Northwest also believes that its approach does allow the Council to make a recommendation to the Governor "disposing of all contested issues" as required by WAC 463-30-320(6). *Cf.* State

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Parties Brief at 32. "Disposing of all contested issues" does not mean that all parties must agree with the Council's approach. It simply means that the Council must make a decision about those contested issues. Moreover, the Council regularly disposes of issues by requiring follow-on plans and activities. *See, e.g.,* Certification Agreement between the State of Washington and BP West Coast Products, LLC, at 22-30, 35-40 (Dec. 21, 2004, as amended Oct. 10, 2006).

CONCLUSION

The other parties' arguments regarding the sufficiency of the GHG Plan are largely premised on their contention that geological sequestration is feasible today. Even if this premise were true, the path to compliance with chapter 80.80 RCW for PMEC would be difficult. But, it is not true. By enacting RCW 80.80.040(13), the Legislature recognized that Energy Northwest had already committed significant resources to PMEC's development and that, as a result, its path to compliance with chapter 80.80 RCW should be different. This is only fair. Energy Northwest respectfully asks the Council to find that the GHG Plan's approach to the inherent uncertainties associated with geological sequestration complies with the requirements of chapter 80.80 RCW and to proceed with the rest of the adjudicative process for PMEC.

DATED this 8th day of November, 2007.

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By _____
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Appendix A: Parties' Positions on Council's Questions

Issue	Energy Northwest	State Parties	NWEC	Riverkeeper
Await rulemaking?	No	No	No	Yes
Must Plan include all 80.80.040(11) elements?	Yes	Yes	Yes	Yes
Is Plan legally sufficient?	Yes	No	No	No
Does Plan work in unison with 80.70 RCW?	Yes	No	No	No
Does Plan include good faith effort to implement sequestration?	Yes	No	No	No
Does Plan comply with RCW 80.80.040(11)?	Yes	No	No	No
• Financial Assurances?	Yes	No	No	No
• Sequestration?	Yes	No	No	No
• Monitoring?	Yes	No	No	No
• Penalties?	Yes	Yes	No	No
• Purchase of Offsets?	Yes	No	No	No
• Public Notice and Comment?	Yes	No	Not directly addressed[1]	No
Need technical documentation for sequestration when the technology doesn't exist?	No	Not answered	Not answered	Not answered
Will PMEC meet 80.70 and 80.80 RCW on natural gas?	Yes	Yes for 80.80; no for 80.70	Yes for 80.80; no for 80.70	No
Must Plan be legally sufficient prior to adjudicative process?	No	Yes	Yes	Yes
May applicant modify Plan during adjudication?	Yes	No	No	No
Is Energy Northwest vested under RCW 80.80.040(13)?	Yes	No	Yes	Yes
May Council condition PMEC's operation on future completion of GHG Plan?	Yes	No	No	No
Is consideration of final reduction plan premature?	No	No	Not addressed	Not addressed

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[1] We tried to characterize the parties' positions accurately. For the NWEC Brief, it was difficult to align the Council's questions to the NWEC positions because they did not follow the Council's outline.

BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 2006-01: ENERGY NORTHWEST; PACIFIC MOUNTAIN ENERGY CENTER.	DECLARATION OF TRAVIS L. McLING

1. I am a geologist for the Big Sky Carbon Sequestration Partnership and the Carbon Management Technical lead for the Idaho National Laboratory. I have a Master of Science and a Bachelor of Science degree in Geology from the Idaho State University. I am currently in a PhD program at the University of Idaho. I have been working in the field of carbon management and sequestration since 2004.

2. I have reviewed the opening briefs addressing the Pacific Mountain Energy Center's ("PMEC") Greenhouse Gas Reduction Plan ("GHG Plan") filed with the Energy Facility Site

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Evaluation Council last month. At Energy Northwest's request I evaluated the statements regarding the feasibility of geologic sequestration made by the Counsel for the Environment, the Department of Community, Trade and Economic Development and the Department of Ecology; NW Energy Coalition, Washington Environmental Council, and Sierra Club; and Columbia Riverkeeper, Rosemere Neighborhood Association, and Willapa Hills Audubon Society. I believe that those parties' conclusions about the feasibility of geologic sequestration as a ready-to-implement technology is incorrect.

3. Although I am a strong proponent of carbon capture and storage ("CCS"), I believe it is unwise to prematurely implement CCS at large-scale without considering the long-term impacts to the environment. As a scientist working at a US Department of Energy ("DOE") nuclear research facility I have spent a large amount of my career working to clean up mistakes that were made in the past. For more than 30 years it was standard practice in the US to dispose of undesirable waste of all kinds by injecting it into the subsurface. At the time it was considered perfectly reasonable based on the flawed assumption that enough was known to do it safely and that any leaks or problems could be mitigated with existing technology or technology to be developed in the future. Today billions of dollars have been spent in an attempt to remediate these past mistakes, with only moderate success. Although CO_2 is a rather benign substance, deep injection is not without risk and great care should be exercised in the planning and implementation of CCS. Additionally, to my knowledge there does not exist today any technology to mitigate leakage of CO_2 or impacted water from deep large-scale sequestration reservoirs. Therefore there is a risk of long-term liability for any operator who decides to implement CCS to mitigate for CO_2.

4. It is my opinion that without significant waivers of legal and economic liability geologic sequestration is not feasible today and will not be feasible for some time to come. Not

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because industry lacks the ability to inject large volumes of CO_2 into the subsurface, rather because CCS involves much more than injecting free phase CO_2 into underground environs. The science of CCS is still in its infancy and the learning curve for it is still very steep and will be for some time to come. Much information has been gathered from enhanced oil recovery ("EOR") operations and other research projects, but much more needs to be collected before geologic sequestration is proven to be a large-scale long-term solution to our climate problem. The scientific community is beginning to recognize that it is important that we don't rush to implement CCS for climate change purposes, and thereby create an even bigger environmental problem by implementing an immature technology. The current push in the United States is toward large scale pilot demonstrations (greater than 1 million tons/year) to provide a proof of concept for this technology and the DOE recently announced its award of three such large scale demonstration projects, with three more announcements to follow in the coming months. Although geologic sequestration is viewed in a favorable light by the scientific community we may be a decade or two away from seeing large-scale implementation. The sheer volume of CO_2 that must be injected into the earth to make a dent in the climate problem is staggering. If implemented geologic sequestration will represent the single largest perturbation to the earth's subsurface ever undertaken. Aside from the environmental risks posed by geologic sequestration there is a sizable financial risk involved. I believe that currently, the technology does not exist to monitor the sequestered carbon dioxide to meet financial liability standards. There needs to be a leap in the scientific community's ability to economically monitor and verify stored carbon dioxide (e.g. what is an acceptable leakage standard, and does the monitoring, mitigation and verification process ("MMV") exist to monitor leakage at that rate?). In short, it is my opinion much more needs to be known from a technical and regulatory standpoint before CCS is sufficiently proven.

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5. The enhanced oil recovery process, while providing very useful information to those examining the science of geologic sequestration, does not tell us that permanent sequestration is feasible today. This is, in part, due to the fact that the process does not monitor or control carbon dioxide leakage at the level that would be necessary to support permanent geologic sequestration. Additionally, these operations are only economically viable because of the hydrocarbon produced; if these operations were conducted for sequestration purposes they would be prohibitively expensive.

6. Based on the current state of the science I expect that large-scale implementation of geologic sequestration at more than a few test sites will not occur before 2020. I base this conclusion on several considerations. The first is there are still many technical issues that need to be solved for geologic sequestration to be widely accepted, many of these issues will not be solved until large (millions of tons) field test are completed. Currently these tests are planned but will not be completed and evaluated until at least 2012 and potentially later. For example, the DOE's recently-announced large-scale demonstration programs are part of its sequestration research's "deployment phase," which is expected to run until 2017. Second, there is not currently a US carbon tax or cap and trade program in place. Until such a time as the federal government moves on this topic, industry is unlikely to move to adopt expensive new carbon capture technology as regulated utilities will be unable to pass on the increased cost to the consumer. Third, there is not currently a mechanism in place to permit a facility scale sequestration operation. Associated with this is the lack of legal precedent associated with ownership of the deep pore space needed for geologic storage. Law will need to be established and tested before large-scale implementation occurs. Very few states have even begun the process of establishing legal framework for such activities. Fourth, although the public is largely supportive of CCS, experience has shown that once a facility is announced the "not in my backyard" mindset takes effect. Last, the most significant roadblock to

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implementation of CCS currently is the immense cost associated with capture, compression and transportation of carbon dioxide.

7. The issues associated with CCS do not relieve Energy Northwest of its responsibility to submit an appropriate and well thought out GHG Plan, nor does it mean that CCS cannot be implemented in the future. Rather, it means that all parties involved in the process need to work closely together and have realistic expectations in order for CCS to be adopted in the near future.

I declare under penalty of perjury that the foregoing is true and correct:

EXECUTED this __6th___ day of November, 2007 at ___Idaho Falls Idaho_____.

TRAVIS L. McLING

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BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 2006-01: ENERGY NORTHWEST; PACIFIC MOUNTAIN ENERGY CENTER.	DECLARATION OF THEODORE J. BEATTY

1. I am the project manager for the development of the Pacific Mountain Energy Center ("PMEC") for Energy Northwest. Over the last 15 years I have gained experience in a variety of areas throughout the energy industry, with the majority of my time spent in the electric power industry. Most recently I have been focused on managing the development of renewable and thermal resource projects to meet the growing load requirements for northwest public utilities along with efforts in power supply planning and strategy. My educational background is a Bachelors of Science in Mechanical Engineering from Carnegie Mellon University and a Masters of Business Administration in Energy Finance from the University of Texas at Austin. In addition, I am a registered Professional Engineer in the State of Washington.

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2. In mid-2004, Energy Northwest began the process that resulted in its selection of PMEC's Integrated Gasification Combined Cycle ("IGCC") technology. Energy Northwest considered several other forms of power generation, but ultimately selected the IGCC technology because it offered a clean, efficient, flexible fuel technology with lower criteria pollutant and greenhouse gas emissions than other traditional technologies. In addition, the IGCC technology facilitates the future capture of carbon dioxide that will be necessary to employ geological sequestration for PMEC's carbon dioxide emissions.

3. Energy Northwest also chose PMEC's Kalama site based on its potential to support future carbon dioxide sequestration operations. Though sequestration potential was not the only factor in the selection of the Kalama site, it has steadily evolved into an important criteria. Underground natural gas storage operations to the north of the site at Jackson Prairie and to the west at Mist made the Kalama site more attractive in terms of underground storage potential. Regional natural gas wells and future coal bed methane applications offered the possibility of utilizing carbon dioxide for natural gas recovery in the area. The formation of the Department of Energy's Regional Carbon Sequestration Partnerships, especially the Big Sky Carbon Sequestration Partnership, opened the door to research and study on sequestration in various area formations.

4. More recently, Energy Northwest commissioned URS Corporation to conduct a preliminary evaluation of the options for carbon sequestration operations within 100 miles of the Kalama site. This evaluation is attached as Exhibit 1 to this declaration.

5. Energy Northwest and The Climate Trust are also working together to secure PMEC's compliance with chapter 80.70 RCW. A letter setting out the terms of this relationship is attached as Exhibit 2 to this declaration.

6. Energy Northwest has invested a significant amount of time, money and effort into planning for PMEC, including its compliance with chapter 80.80 RCW. Each additional month that PMEC spends in the Council's permitting process adds to our costs. More importantly, the real costs

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of the development continue to increase. Over the last couple of years power plant construction costs have increased dramatically. This cost escalation is not isolated to the power industry but has been a significant issue for nearly all industries. Like other power developments with significant capital cost, PMEC has been susceptible to these cost increases. In fact, PMEC construction cost estimates have escalated by approximately 50% (approximately $500 million) from June 2005 through December 2006. This cost escalation was due to a variety of factors, such as equipment fabrication and logistical constraints, massive demand growth in Asia for engineering and equipment, shortage of qualified labor, rapidly rising commodity costs, declining purchasing power of the US dollar and others. Though the initial shock of these increases has worked its way through the system and cost increases have slowed somewhat, worldwide demand for power plants of all types continues to drive prices upward. All of these factors point to the need to get power plants such as PMEC, into commercial operation as quickly as reasonably possible. Delays of even a few months can significantly drive up costs for Washington ratepayers.

7. Prior to PMEC's financial close, Energy Northwest expects to enter into a contract to purchase an option for the emission reductions required for long-term compliance with chapters 80.70 and 80.80 RCW. Based on this approach, we calculated the amount of the financial reserve set out in the GHG Plan – $200 million – based on the costs we expect to incur for the purchase of those emission reductions. The $200 million reserve represents a significant portion of the PMEC capital cost (over 13%) and exceeds the current market cost for required greenhouse gas reductions on a dollar per ton basis over the expected life of PMEC.

8. We continue to believe that Energy Northwest's bonding capacity is an appropriate mechanism to provide financial assurances for the Plan. Energy Northwest enjoys robust financial health. We routinely issue millions of dollars in bonds. For example, in fiscal year 2007 alone, we issued bonds on four occasions for a variety of purposes, with proceeds of almost $600 million. *See* Exhibit 3 to my declaration (portions of Energy Northwest's 2007 Annual Report) at 54-58 (noting

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outstanding bonds issued each year). In addition, we are viewed positively by rating agencies. *Id.* at 64 (showing current debt ratings from various agencies for various types of debt; generally in the "A" to "AAA" range). The State Parties' characterization of reliance upon our bonding capacity as "risky" therefore lacks merit, and is not shared by the financial community.

9. As Energy Northwest developed its Greenhouse Gas Reduction Plan ("GHG Plan"), we developed an estimate of the greenhouse gases expected to be emitted from PMEC. These estimates include the emissions from the combustion turbines, tank vent oxidizer and the flare. This is all of the equipment at PMEC that is expected to emit greenhouse gases during synthesis gas production and electrical generation. While Energy Northwest has not omitted any expected source of greenhouse gases located at PMEC from its estimate of greenhouse gases, this estimate is only that – an estimate. Because of its fuel-flexible design, which allows fuels to be chosen based on price and availability, PMEC's emissions will vary based on the feedstock used, as well as on other operating conditions. Energy Northwest will continue to refine the range of emissions set out in the GHG Plan (1,500 to 1,700 pounds of greenhouse gases per megawatt-hour for coal and petroleum coke and 800 to 900 pounds of greenhouse gases per megawatt-hour for natural gas) as it develops additional fuel supplies and plant design information.

I declare under penalty of perjury that the foregoing is true and correct:

EXECUTED this 7th day of November, 2007 at Richland, WA.

Theodore J. Beatty

THEODORE J. BEATTY

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Exhibit 1
to
Declaration of Theodore J. Beatty

URS

November 7, 2007

Ted Beatty, Project Manager
Pacific Mountain Energy Center
Energy Northwest
3000 George Washington Way
Richland, Washington 99354

Preliminary Evaluation of CO_2 Sequestration
Pacific Mountain Energy Center
Kalama, Washington
URS Project No. 33760382.00001

Dear Mr. Beatty:

URS Corporation (URS) is pleased to present Energy Northwest with this Preliminary Evaluation of CO_2 Sequestration for the Pacific Mountain Energy Center (PMEC). This is a screening tool to assess whether subsurface CO_2 sequestration is a physically viable option for PMEC green house gas offset. There appears to be both sufficient capacity and the necessary geologic structure within 100 miles of the PMEC site to allow CO_2 to be successfully trapped underground for the facility's 30 year expected life span.

The next step toward design and implementation of a geologic CO_2 sequestration program would be to identify specific sites where CO_2 injection could incur. This would require more detailed study of the information available (e.g., existing boring logs, small scale geologic studies) and possibly field reconnaissance and geophysical survey work (i.e., mapping) to develop a list of potential sites.

URS appreciates the opportunity to assist you on this project. Please do not hesitate to contact us if you have questions regarding this report or require additional assistance.

Very truly yours,

URS Corporation

Geoff Garrison, PhD., LG #2546
Senior Geologist

Ty Griffith, LHG # 2170
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Plate 1. Geologic Map of Southwestern Washington Overlain With Sedimentary Basins and Coal-Bearing Regions

1.0 INTRODUCTION

Energy Northwest is developing the 793-megawatt Pacific Mountain Energy Center (PMEC) power plant in Kalama, Washington. PMEC will use Integrated Gasification Combined Cycle (IGCC) technology to produce electricity for southwest Washington and northwest Oregon. Based on facility design, power production could produce approximately 4 metric tons (Mt) of CO_2 annually over a 30 year life span (Energy Northwest, 2006).

One of the goals of PMEC is to reduce its green house gas (GHG) emissions in compliance with Chapter 80.80 RCW. As a member of the of the Big Sky Regional Carbon Sequestration Partnership, Energy Northwest has committed itself to actively studying and promoting the viability of sequestering CO_2 underground as one means of achieving GHG reduction (Energy Northwest, 2006).

The purpose of the study is to screen options for geologic sequestration of CO_2 within an approximate 100 mile radius of the PMEC facility. The study includes:

- Review of existing geologic and hydrogeologic data of formations in northwest Oregon and southwest Washington within 100 miles of the Kalama site;
- Identification of areas with geologic units and structure suitable for containment of CO_2; and
- Examination of geologic formations with respect to their structure and potential CO_2 holding capacity to determine whether CO_2 sequestration is a physically viable option for PMEC.

2.0 SUITABLE GEOLOGIC FORMATION TYPES

2.1 DEEP POROUS FORMATIONS

2.1.1 Characteristics

The ideal target formations for CO_2 sequestration are thick, laterally continuous and relatively homogeneous sandstones, carbonates, or fractured basalts with high porosity and permeability (McGrail et al., 2006; WESTCARB, 2007). High porosity in a thick formation provides a large capacity for CO_2 storage, and high to moderate permeability reduces the potential for clogging the narrow passageways connecting pore spaces by precipitation of carbonate minerals.

The process of successful CO_2 entrapment is similar to that for both petroleum and natural gas. That is, the same physical characteristics that can produce a successful oil or gas field will also produce a successful field for CO_2 sequestration. Therefore, proven petroleum and gas plays (an industry term that refers a region of potential oil or gas reserves from a region) are also attractive targets to inject CO_2 below ground. While several successful natural gas reserves have either been discovered or are believed to exist within 100 miles of the PMEC site, there have not been any viably productive petroleum oil fields in the same area (Johnson et al., 1997).

It is beneficial to target formations with saline groundwater because they are unsuitable as groundwater resources (GEO-SEQ, 2004). Furthermore, the more laterally extensive the formation, the longer and slower the flow path for potential CO_2 migration back to the biosphere. The disadvantages of deep saline formations result from their depth and lack of economic value. Deep saline formations are not well characterized because they are not targets for oil and gas exploration and there is limited data on their hydrogeology and geochemistry (NAE/NRC, 2003). The thickness and quality of the cap rock or seal may be unknown. Furthermore, monitoring of CO_2 injection and migration and of fluid/rock interaction processes can be expensive or have limited resolution at depth.

Pilot Research projects such as Statoil's Sleipner West Field in the North Sea have demonstrated that sequestration in deep saline formations is a very promising storage option where CO_2 is separated from gas production and injected in the Utsira sandstone formation. Since 1996, approximately 2,800 tons of CO_2 are stored daily at a depth of 3,280 feet in the 50 to 250 foot thick Utsira sandstone (Torp and Brown, 2003). Since 2000 monitoring has demonstrated that injected CO_2 remains fixated and is not migrating

away from the reservoir formation. In addition, ongoing tests at a research site in Texas have had promising results (http://www.jsg.utexas.edu/news/feats/2006/frio.html).

2.1.2 Trapping Mechanisms

Three processes sequester CO_2 in saline formations (Herzog and Golomb, 2004; White et al., 2003): hydrodynamic, solution, and mineral. Each process is discussed below.

Hydrodynamic – Sequestration in saline formations need an impermeable cap rock to seal in the CO_2, which is less dense than the brine. Over time the CO_2 becomes entrained in the groundwater and trapped hydrodynamically. The CO_2 moves away from the well under the influence of the injection pressure, but eventually migrates outside the influence of the well and flows with the natural hydraulic gradient. Depending of the gradient, hydraulic properties of the formation, and time, the CO_2 may migrate up to a few kilometers from the injection well. Horizontal geologic limitations – either structural or lithologic – can limit the horizontal CO_2 migration.

Solution – CO_2 also can be trapped by solution into the saline groundwater (brine) in the formations. Dissolved CO_2 is not buoyant and is not dependent on the cap rock for trapping. Injection of CO_2 lowers the pH of the formation brine and increases mineral dissolution in sandstone formations. Mineral dissolution has a buffering effect that increases the solubility of CO_2 in the brine. This buffering effect does not occur in carbonate formations because dissolution of the mineral matrix does not increase the solubility of CO_2 or solution trapping.

Mineralization – Mineralization occurs when CO_2 reacts with minerals present in the formation rock to form stable solids. Mineral trapping is prevalent where divalent ions (e.g., Mg^{2+}, Ca^{2+}, and Fe^{2+} found in magnesium, calcium, or iron silicate minerals) are present to precipitate metal carbonates. A draw back to mineralization arises from reduced permeability and effective storage capacity of the formation due to mineral growth. Chow et al. (2003) envisions a cyclical process of carbonate mineral precipitation and re-dissolution in saline formations, as well as in coal seams. They hypothesize that the drop in CO_2 partial pressure as the CO_2 moves away from the injection well will cause mineral precipitation and permeability reduction. The reduction in permeability will cause the partial pressure of CO_2 to increase and re-dissolve the precipitated minerals and open pore spaces for increased CO_2 movement away from the injection well. This cyclical process could continue until CO_2 equilibrates with the formation and is neutralized.

2.2 DEEP UNMINEABLE COAL DEPOSITS

2.2.1 Characteristics

Coal deposits are unique reservoirs for trapping CO_2 because the organic carbon preferentially sorbs CO_2 and can retain it indefinitely. Furthermore, CO_2 tends to displace coal bed methane (CBM). Thus, CBM production combined with CO_2 injection and storage expands the use of a coal resource by providing both increased methane recovery, termed enhanced coal bed methane recovery (ECBM), and long-term CO_2 storage (Stanton et al., 2001). Deep unmineable coal deposits have additional advantages for CO_2 storage:

- Coal cleats (small fractures in the coal seams) provide porosity and permeability in the coal seams and increase the capacity for CO_2 capture.
- Coal is generally more efficient for CO_2 capture than it is for methane gas retention. Depending on coal quality, two or more molecules of CO_2 are captured for each methane molecule displaced (Stanton et al., 2001).
- CO_2 accelerates gas recovery. Higher injection rates often result in higher methane production.
- The injected gas can be a mixture of nitrogen (N_2) and CO_2, such as is found in smokestack (flue) gases, that need not be purified prior to injection (Chow et al., 2003). This advantage can significantly reduce the cost of separating and cleaning CO_2 from flue gases.

The disadvantages of using deep unmineable coal deposits include:

- A limited depth range of 2,600 to 5,200 feet for optimum performance of CO_2 injection. Below that depth, coal cleats begin to close up, reducing porosity (Stevens et al., 1999).
- Uncertain sensitivity of the coal seams to sorption capacity for CO_2 depending on the coal purity. A sensitivity study by Reeves et al. (2004) concluded CO_2 sorption is more favorable in higher purity coal seams.

- With CO_2 injection there is a general decline in coal permeability and as coal cleats dry out and begin to close up (Klara et al., 2003).

Burlington Resources has been injecting CO_2 into CBM wells at their Allison Unit in southwestern Colorado since 1995. The CO_2 is obtained from a natural source and is technically not a CO_2 sequestration project, although it has proven the viability of the process by injecting more than 300,000 tons of CO_2. This operation has lost some injectivity over time because the coal swells when it is contacted by CO_2 (Klara et al., 2003).

2.2.2 Trapping Mechanisms

The mechanisms by which CO_2 is sorbed into coal are not entirely understood (Chow et al., 2003). Carbon dioxide in coal can cause swelling, shrinking, structural rearrangement, softening, and chemically alteration of the coal material (Goodman et al., 2007). Temperature, pressure, geologic maturity, and particularly water content can have significant effects on the CO_2 sorption capacity within a coal seam. Coal bed sorption is not dependent on the presence of geologic traps and seals to retain the CO_2 since sequestration relies primarily on chemically fixation instead of physical containment.

3.0 SCREENING CRITERIA FOR GEOLOGIC FORMATIONS

The suitability of geologic formations for CO_2 sequestration is based on the following physical and chemical criteria:

- Sequestration should target porous formations preferably with saline fluids containing greater than 10,000 parts per million (ppm) total dissolved solids (TDS). Such water would not be considered economically valuable source for domestic, agricultural, or industrial uses and thus not a target for resource exploitation.

- Sequestration should occur at depths greater than approximately 3000 feet. At this depth CO_2 exists as a supercritical fluid; it behaves as a gas with the density of a fluid. Thus, supercritical CO_2 will diffuse through a formation like a gas but with a high enough density that it would not mix with formation fluids. The increased density and fluid displacement greatly increases the amount of CO_2 that can be entrained.

- A maximum depth of approximately 6500 feet is suggested to limit the required wellhead injection pressure, and also cap the cost to drill an injection well (Allis et al., 2003).

- Target formations must have a storage capacity or retention time of hundreds to thousands of years.

- Supercritical CO_2 is less dense than other formation fluids and it will rise within the formation. Therefore, a structural or stratigraphic (sealing formation) geologic trap that is impermeable to gas migration is needed to prevent CO_2 from escaping a reservoir formation (NAE/NRC, 2003).

4.0 POTENTIAL CO_2 SEQUESTRATION TARGETS FOR PMEC

This study identified specific geologic formations within 100 miles of the PMEC project site that appear to have the characteristics necessary to allow injection and entrapment of CO_2. Suitable geologic units of all types (i.e., porous sedimentary units, fractured basalts, and coal seams) are found within distinct sedimentary basins within southwestern Washington and northwestern Oregon. The geologic nature of potential reservoirs, seals, and traps are summarized below. Basin locations, including areas of significant coal deposits, are overlain on a geologic map of southwestern Washington on Figure 1.

4.1 PUGET LOWLAND BASIN

The Puget Lowland Basin flanks the western limits of the Cascade Range. This region experienced rapid subsidence during the Eocene when coal-bearing rocks of the Puget Group and correlative strata were deposited. Oligocene to Holocene deformation of the area has resulted in numerous faults and broad to tight folds making precise correlation of stratigraphic units across the basin difficult. The basin extends north from Morton to Tiger Mountain and is about 18 to 30 miles wide (Johnson and Tennyson, 1995; Johnson and Tennyson et al., 1997).

Potential reservoir units are bounded to the east by either pre-Tertiary rocks uplifted along fault contacts or a depositional contact below a thick cover of Eocene and younger volcanic rocks. To the northwest the basin is bounded by a facies contact between upper middle to upper Eocene nonmarine rocks (potential reservoirs) and impermeable marine siltstones. To the west, the potential reservoirs of thicker mostly nonmarine middle to upper Eocene units are bordered by a north-trending boundary with a thinner, mixed marine-nonmarine upper Eocene sequence. Bedrock is typically overlain by hundreds to thousands of feet of unconsolidated glacial-interglacial Quaternary fluvial, lacustrine, and shallow marine deposits.

4.1.1 Potential CO_2 Reservoirs

4.1.1.1 Porous Reservoirs

Middle to upper Eocene fluvial sandstone of the undifferentiated Puget Group, the Tiger Mountain Formation, the Renton Formation, the Carbonado Formation, and the Spiketon

Formation are potential CO_2 reservoirs for this basin and are believed to have a good potential for gas retention (Johnson and Tennyson, 1995; Johnson and Tennyson et al., 1997). These units overlay a basement of dense and impermeable oceanic basalts forming the Crescent Formation (lower Eocene). Younger basalt units (e.g., Columbia Flood Basalts) are not encountered in the basin.

The potential reservoirs range in thickness from 10 ft to more than 200 ft, are laterally constrained by fine-grained flood-plain deposits, and may be present at depths between 1,000 and 10,000 feet. Petrographic and limited porosity-permeability data indicate loss of porosity by compaction and alteration of lithic fragments and feldspar in the eastern area where rocks have been subjected to higher geothermal gradients (due to emplacement of Cascadian volcanics), while porosity and permeability increase to the west. Porosities in potential reservoir units in two cores located near Black Diamond, WA, (99 miles from PMEC) range from 6 to 37 percent and permeability ranges from 1 millidarcy (mD) to 2 Darcys (D) at depths between 1,840 and 6,000 feet (Johnson et al., 1997).

4.1.1.2 Coal Seams

Coal deposits are found to interlayer within the porous rock units of Eocene age in the southern Puget Lowland Basin at depths of less than 1,000 feet to over 5,000 feet. These coal deposits tend to be concentrated along the western slope of the Cascades and have resulted from volcanic burial of peat accumulations in ancient poorly drained swamps. Deformation and fracturing of the coal-bearing units increases toward the Cascade front which could allow greater CO_2 storage but could also compromise sealing units. The most significant confirmed coal deposits in the basin are the Green River district in south-central King County and the Wilkerson-Carbonado coalfield in north-central Pierce County. Analysis indicates excellent coal seam reservoir properties: 100 ft coal thickness (in the Skookumchuck formation); 700-850 ft^3/ton CO_2 sorption capacity; and 5 mD permeability (WESTCARB, 2007).

4.1.2 Potential Seals and Traps

Interbedded fine-grained rocks (fluvial overbank deposits) and Oligocene and younger volcanic rocks provide possible seals to hold CO_2 within the subsurface. Anticlines and fault blocks such as those that occur in the Morton or Carbon River anticlines or near Black Diamond form the most viable structural traps. Traps might be present at depths ranging from the near surface to 10,000 feet. The area is structurally complex and

includes many faults and folds that may have been active from the Neogene to the Quaternary and may have compromised the integrity of traps and seals (Johnson et al., 1997).

4.2 WILLAPA HILLS BASIN

The Willapa Hills rise above Grays Harbor along the southwest coast of Washington to about 3,100 feet above sea level and are situated between the Olympic Mountains to the north and the Columbia River to the south. The Willapa Hills Basin contains up to 15,000 feet of late Eocene to Quaternary strata overlying a broken mélange of mid to early Eocene age Crescent Formation. Eocene and Oligocene sediments consist predominantly of deep-water sandstones contained within thick marine shale sequences. The basin has been subsequently deformed by contractional shortening, strike-slip faulting, and rotation. The basin has an irregular shape and is bounded by the upwarped basin margins to the north, south, and east. To the west, the basin extends offshore for at least several miles. The Willapa Hills basin is promising for CO_2 storage because of the potential anticlinal traps with thick shale and claystone seals (Johnson and Tennyson, 1995; Johnson and Tennyson et al., 1997).

4.2.1 Potential CO_2 Reservoirs

4.2.1.1 Porous Reservoirs

Potential reservoirs are found in the shallow marine and deltaic sandstones of the Astoria and lower Montesano Formations in the eastern part of the basin and the Montesano Formation to the west. Younger basalt units (e.g., Columbia Flood Basalts) are not encountered in the basin. The Montesano Formation sandstones are between 100 and 600 feet thick with porosities between 6 and 33 percent and permeabilities between 2 mD and 2 D (WESTCARB, 2007). The proportion of sandstone in both the Montesano and Astoria Formations generally decreases to the west. Sandstone units are typically bounded by marine mudstone. Target reservoir sandstone units occur at depths of about 1,000 to 3,200 feet. There are no available porosity and permeability data for the Astoria Formation in this basin, but Astoria sandstone outcrops are friable, and values similar to those of the Montesano Formation are inferred (Johnson et al. 1997).

4.2.1.2 Coal Seams

No significant coal deposits have been documented within the Willapa Hills Basin.

4.2.2 Potential Seals and Traps

Small anticlinal traps are present associated either with thrust or strike-slip faulting or with underlying mudstone diapirs. The Montesano Formation sandstone beds may pinch-out to the west. Upper Miocene to Pliocene marine mudstones in the upper part of and above the Montesano Formation form potential seals. Closure on anticlinal traps cannot be demonstrated with available data and, if present, are probably no more than 1,000 acres (Johnson et al., 1997).

4.3 COWLITZ-SPENCER GAS PLAY/ASTORIA-NEHALEM BASIN

This area is defined as the southern Puget Lowland, southwestern Coast Range of Washington, and the lower Columbia River and Willamette Valleys of Oregon. The area within Washington has been described as the Cowlitz-Spencer Gas Play (Johnson and Tennyson, 1995; Johnson and Tennyson et al., 1997), while the area within Oregon has been described as the Astoria-Nehalem Basin (WESTCARB, 2007). The two areas are discussed together because they have the same geologic history and lithology. The area includes both Oregon's Mist gas field and Washington's Jackson Prairie gas storage field (Johnson and Tennyson, 1995).

The success of natural gas production within the area demonstrates that the area has the geologic properties necessary to successfully trap CO_2. Furthermore, the confirmed presence of natural gas reservoirs means there is potential added value in methane recovery for power production. The area is defined by the known or inferred limits of potential reservoir sandstones in the lower Columbia River area and the Willamette Valley, principally the Eocene Cowlitz and Spencer Formations. The area is confined to the east by volcanic rocks of the Cascade Range or tightly folded and faulted Eocene strata in the Cascade foothills. To the northwest and to the west the area is confined by a facies change from sandstone to mudstone. Basin geology is complex because of extensive folding and faulting. Normal and strike-slip faulting is common, with the predominant fault trend being northwest, while some significant east-west and northeast-southwest faulting does exists.

4.3.1 Potential CO_2 Reservoirs

4.3.1.1 Porous Reservoirs

Middle to upper Eocene fluvial, deltaic, shallow-marine, and submarine-fan arkosic sandstone of the Cowlitz, Skookumchuck, and McIntosh Formations are the primary potential reservoir rocks and are up to 170 feet thick. Skookumchuck Formation sandstone encountered in the Jackson Prairie gas storage wells in the Chehalis basin has porosities of 30 to 40 percent at depths of 1,500 to 3,000 ft and permeabilities as high as several Darcies (Johnson et al., 1997). The Cowlitz Formation reservoir rocks of the Mist field are up to several hundred feet thick, located at depths of 2,500 to 3,500 feet, have porosities of 25 to 39 percent and permeabilities of 100 mD to several Darcies. Deep-marine sandstone of the McIntosh Formation in the western part of the area has reported porosities of 10 to 22 percent, but measured permeabilities are less than 6.2 mD. Porosity in these rocks is commonly blocked by formation of smectite and chlorite rim cements, zeolites, and sparry calcite, while some secondary porosity results from dissolution of feldspar and lithic fragments. Limited Miocene age Columbia River Flood Basalts occur along the stretch of the Columbia River between Washington and Oregon. However, being the western most extent of the flood basalts they are much thinner and limited in extent relative to the large deposits found in the Columbia Basin of eastern Washington and north-central Oregon. This limited extent coupled with their shallow depth and highly fractured and faulted nature make these basalts poor candidates for CO_2 storage.

4.3.1.2 Coal Seams

Coal seams have been found within the Eocene sedimentary rocks in the Washington part of this area. The most significant confirmed coal deposits in the area are the Centralia-Chehalis district in northern Lewis and southern Thurston Counties and the Kelso-Castle Rock District in northern Cowlitz and southern Lewis Counties. As in the Puget Lowland Basin, coal seams in the Cowlitz-Spencer play are found as layers and lenses within the porous rock units at depths of less than 500 feet to over 5,000 feet. However, there is no published information regarding the CO_2 absorptive capacity of these specific coal seams. Significant coal deposits have not been documented south of the Columbia River in the Astoria-Nehalem Basin.

4.3.2 Potential Seals and Traps

The Mist and Jackson Prairie fields demonstrate the structural style of gas entrapment in this area (Niem at al., 199). Natural gas reservoirs (approximately 1 to 8 BCF) are found in multiple, small, fault-block traps and within gentle anticlines or along stratigraphic pinch-outs of nearshore or deltaic sandstone bodies. Overlying thickly to thinly bedded tuffaceous mudstones, siltstones, and sandstones of the Spencer, Keasey, Pittsburg Bluff, Astoria, and Lincoln Creek Formations (all mid-upper Eocene) can provide efficient seals. Traps associated with good reservoir rocks probably occur at depths between about 1,000 and 7,000 feet (Johnson et al., 1997; WESTBCARB, 2007).

5.0 CALCULATED SEQUESTRATION VOLUME REQUIREMENTS

The amount of geologic formation needed to sequester a given mass of CO_2, that is the sequestration volume, can be estimated by converting the mass of CO_2 emitted into volumes of geologic formations needed to sequester CO_2 based on known or inferred geologic conditions. If CO_2 emissions are calculated as units of specific volume (i.e. volume of storage media per unit mass of CO_2) then the volume of a geologic reservoir necessary to store CO_2 emissions from a point source can be estimated (Brennan and Buruss, 2003).

5.1 METHOD

Specific sequestration volume (SSV), which is the mass of CO_2 storable within a certain medium, was calculated for five settings (Table 1): empty space, high and low sorption coal, pure water, and a solution of 4 molal (m) sodium chloride (NaCl). SSVs were used to calculate potential sequestration volumes based on conditions of 60°C and 150 bars, reasonable values for a 3300 foot deep reservoir. Sequestration volumes were calculated for both coal seams and porous formations at porosity values of 6 percent and 40 percent and residual water saturation values of 5, 50, 75, and 100 percent (Table 2).

Table 1. Predicted CO2 Sequestration Densities, Specific Sequestration Volumes (SSV's) and Sequestration Volumes

Setting	Sequestration capacity (kg CO^2/m^3)	SSV (m^3/tonne CO_2)
Empty space[1]	604	1.7
Coal, high sorption[1, 2]	75	13
Coal, low sorption[1, 2]	34	29
0m NaCl solution[3,4]	41	24
4m NaCl solution[3,4]	22	45

[1]Based on free phase CO_2 density at 60°C and 150 bars (Span and Wagner, 1996; Lemmon et al., 2003)
[2]Assuming sorption only, no CO_2 present in pore spaces
[3]Assuming CO_2 dissolution only, no free phase CO_2 present
[3]4m NaCl = 2.3 g/L NaCl

Table 2. Predicted volume of reservoir required annually to sequester 4Mt of CO_2

Reservoir Type	Reservoir volume (acre-feet)							
	0m NaCl groundwater				4m NaCl groundwater			
	residual water saturation							
	5%	50%	75%	100%	5%	50%	75%	100%
Empty space	9.1E+03	4.2E+04	6.0E+04	7.8E+04	1.3E+04	7.6E+04	1.1E+05	1.5E+05
Sandstone, 6% porosity	1.5E+05	6.9E+05	1.0E+06	1.3E+06	2.1E+05	1.3E+06	1.8E+06	2.4E+06
Sandstone, 40% porosity	2.3E+04	1.0E+05	1.5E+05	1.9E+05	3.1E+04	1.9E+05	2.8E+05	3.6E+05
Coal, high sorption, 40% porosity[1, 2]	3.1E+04	4.4E+04	5.1E+04	5.8E+04	3.2E+04	5.5E+05	3.6E+05	1.7E+05
Coal, low sorption, 6% porosity[1, 2]	9.5E+04	9.7E+04	9.8E+04	9.9E+04	9.5E+04	9.9E+04	1.0E+05	1.0E+05

Volumes are calculated based upon setting SSVs shown in Table 1.

5.1.1 Coal SSV

Sequestration ion values used in this study are from Krooss et al. (2002), who report CO_2 sorption isotherms at 40, 60, and 80°C, from 1 to 200 bars, on three coal samples of varying rank (high volatile bituminous; medium volatile bituminous, and low volatile bituminous). The highest (31 cm^3/g) and lowest (14 cm^3/g) sorption values at 60°C and 150 bars were used as end members for coal SSV (Table 1). These sorption values were reported at 15°C and 1 atm (1.01325 bars), so CO_2 volume was converted to a unit mass (i.e., kg CO_2/m^3) using the density of CO_2 at these conditions, which is 1.86 kg/m^3. The mass of coal was converted to a volume using an approximate bituminous coal density of 1,300 kg/m^3 (van Krevelen, 1993).

5.1.2 Aqueous Fluids and Porous Formation SSV

The GEOFLUIDS solubility model (http://geotherm.ucsd.edu/geofluids/), which is the online version of the model reported in Duan et al. (1995), was used to calculate the solubility of CO_2 both in pure H_2O and in a 4m NaCl solution. GEOFLUIDS determines solution density and mole fractions of CO_2, H_2O, and NaCl. Solubility of CO_2 in pure water is 0.018 mole fraction CO_2 with a solution density of 0.938 g/cm^3 and the solubility

of CO_2 in the 4m NaCl solution (0.066 mole fraction NaCl) is 0.01 mole fraction CO_2 with a solution density of 1.077 g/cm^3 (Brennan and Burruss, 2003). Mass of CO_2 per mass of the solution was converted to mass of CO_2 per volume of solution using these calculated densities (Table 1). CO_2 storage capacities were calculated for these solutions in porous formations with 6% and 40% porosity and residual water saturations ranging from 0 to 100 percent. The remaining pore space was calculated to contain free phase supercritical CO_2 which has a density of 604 kg/m^3 at 60°C and 150 bars (Span and Wagner, 1996; Lemmon et al., 2003).

5.1.3 CO_2 Sequestration Volume and Aerial Extent

The volumes of formation required to sequester CO_2 for the PMEC power plant were calculated based on an annual production of 4 million metric tons (Mt) of CO_2 (Energy Northwest, 2006). These volumes were then used to calculate the aerial extent of a formation to sequester CO_2 at 10, 100, and 600 foot thicknesses which have been measured in the area around the PMEC site (Table 3).

5.2 RESULTS

This model indicates that under the least successful CO_2 sequestration scenario–a 10 foot thick formation with 6% porosity that is 100% saturated with a 4m NaCl brine–PMEC would require over 7 million acres to sequester its CO_2 over a 30 year life span (Table 3). Under this scenario an area the size of Cowlitz County (approximately 1,166 square miles) would be filled in about 3 years. Under the most successful CO_2 sequestration scenario–a 600 foot thick formation with 40% porosity that is 5% saturated with pure water–PMEC would require only 1100 acres (less than 2 square miles) to sequester 30 years of CO_2. The extreme range calculated in these end member scenarios are not considered very realistic situations for PMEC. Under more realistically anticipated conditions, it is expected that an area on the order of 100 square miles might be required to hold CO_2 for the 30 year designed life span of the PMEC facility.

Table 3. Predicted aerial extent of reservoir required to sequester 4Mt of CO_2 annually

Reservoir Type	Reservoir aerial extent (acres)					
	10 foot thick reservoir		100 foot thick reservoir		600 foot thick reservoir	
	Low capacity[1]	High capacity[1]	Low capacity[1]	High capacity[1]	Low capacity[1]	High capacity[1]
Empty space	4.4E+05	3.0E+04	4.5E+04	3.0E+03	7.5E+03	4.5E+02
Sandstone, 6% porosity	7.3E+06	4.6E+05	7.3E+05	4.6E+04	1.2E+05	7.6E+03
Sandstone, 40% porosity	1.1E+06	6.9E+04	1.1E+05	6.9E+03	1.8E+04	1.1E+03
Coal, high sorption, 40% porosity[1, 2]	5.0E+05	9.3E+04	5.1E+04	9.3E+03	8.4E+03	1.5E+03
Coal, low sorption, 6% porosity[1, 2]	3.1E+05	2.9E+05	3.3E+04	2.9E+04	5.4E+03	4.8E+03

[1]Low reservoir capacity is 100% reservoir pore space saturation with 4m NaCl groundwater; high capacity is 5% saturation with pure water

6.0 DISCUSSION AND CONCLUSIONS

This study analyzed the potential for PMEC to sequester CO_2 produced during its power production processes. Three areas have been identified within 100 miles of the PMEC site as having good potential for CO_2 storage: Puget Lowland Basin, Willapa Hills Basin, and Cowlitz-Spencer Gas Play/Astoria-Nehalem Basin. The potential CO_2 reservoirs identified in these areas are primarily upper Eocene to lower Miocene fluvial and deltaic sandstones having thicknesses between 10 and 600 feet, and porosities between 6 and 40 percent. These units tend to be confined laterally by facies changes to impermeable units or by fault contacts with pre-Tertiary basement rock. These potential reservoirs tend to be sealed stratigraphically with siltstones and shales. Structural traps consist of anticlinal folds or fault contacts. Coal seams are commonly present as interlayers within these sandstones and as such may provide even greater CO_2 storage capacity.

Based on the geologic conditions summarized herein and proximity to the PMEC site, two areas were identified that appear most favorable for further evaluation as potential CO_2 sequestration reservoirs: (1) Kelso-Castle Rock coalfields and Eocene sandstones in northwest Cowlitz County and (2) Eocene sandstones in the Astoria-Newhalem Basin between the PMEC site and Mist gas field in Oregon (Figure 1).

One other potential area for which there is currently very limited information is the area immediately east of the PMEC site between it and Mount Saint Helens. Late Eocene age volcanic rocks have been mapped at the surface in this area. Based on the regional geology, Eocene sedimentary strata are likely to underlay these potentially sealing volcanic units. Furthermore, it may also be prudent to research further whether companies are pursuing CBM recovery in either the Kelso-Castle Rock or Centralia-Chehalis coalfields. Such projects may have permeability data and other more detailed subsurface data could potentially use CO_2 injection to enhance methane recovery.

Using both documented existing conditions and geologically reasonable assumptions, belowground sequestration of CO_2 appears to be a reasonable option for the PMEC facility; an area of approximately 100 square miles may be sufficient to retain the CO_2 produced by PMEC over its expected 30 year life span. The model described here could be easily modified and refined to include additional information for a potential future design phase of a CO_2 sequestration system. The viability of CO_2 sequestration for the PMEC facility will depend on further and more detailed analysis of the subsurface geology, hydrogeology, and hydrodynamics of a potential sequestration site. Other significant factors will include the specific design and distance of the transport system

from the plant to a site; cost of materials, construction, and operation; mineral right and land ownership determination and access; and gas storage liability requirements.

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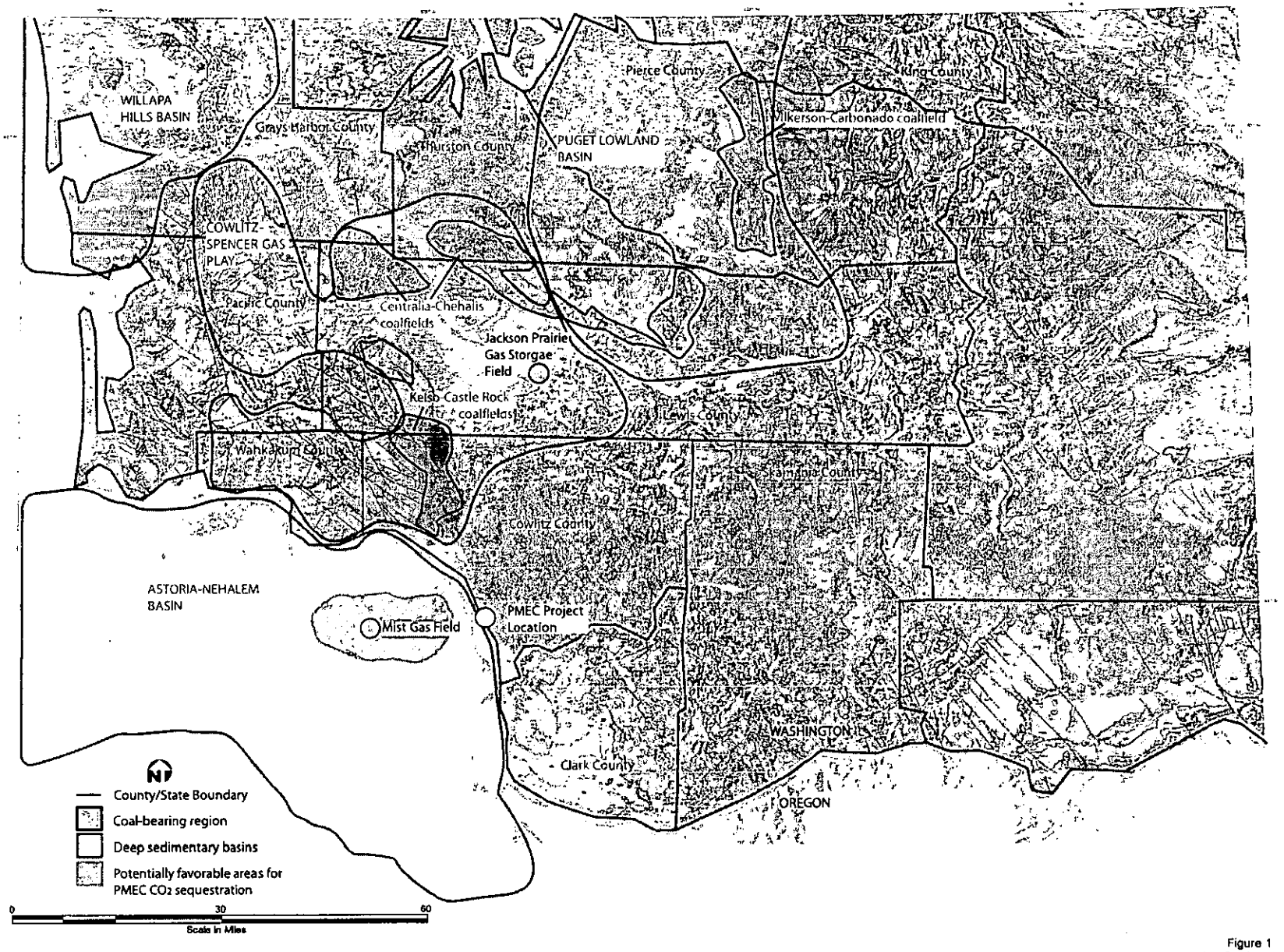

Source: Walsh et al. 1987. Geologic Map of Washington - Southwest Quadrant

Figure 1
Geologic Map of Southwestern Washington Overlain With Sedimentary Basins and Coal-Bearing Regions

Exhibit 2
to
Declaration of Theodore J. Beatty

The Climate Trust

November 7, 2007

BOARD OF DIRECTORS

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Mike Burnett,
Executive Director

Ted Beatty
Project Manager, Generation Project Development
Energy Northwest
Via Email

Ted,

This letter is a formal acceptance of your invitation – conveyed via email dated November 3rd - to be the Independent Qualified Organization (IQO) in support the compliance goals of the Energy Northwest's Pacific Mountain Energy Center (PMEC) under the Washington Greenhouse Gas Standard (GHG) for new sited power facilities (WA RCW 80.70). This letter will provide information on The Climate Trust's qualifications as an IQO and an outline of a Memorandum of Understanding to formalize this relationship. Note that this letter only addresses the Climate Trust – Energy Northwest relationship under 80.70 and is not intended to address GHG mitigation activities under WA RCW 80.80.

80.70.050 Requirements for an Independent Qualified Organization

It is The Climate Trust's view that we meet the criteria set forth in WA RCW 80.70.050 will be able to meet any formal IQO review process conducted by the Washington Energy Facility Site Evaluation Council (EFSEC).

The Climate Trust has served as an independent qualified organization under the Oregon Carbon dioxide Standard since 1997. To date, The Climate Trust has assembled a diverse portfolio of 17 high quality carbon dioxide offset projects, representing approximately $8.8 million dollars in carbon mitigation funding. The Climate Trust has developed strict offset quality evaluation criteria and a rigorous selection and contracting process that ensures only projects with a high degree of additionality are funded. All offset projects funded to date have met the rigorous compliance criteria set forth by the Oregon Carbon Dioxide Standard of new, additional, real and verifiable.

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The specific requirements of an IQO and The Climate Trust's qualifications for each are as follows:

Requirement: "An independent qualified organization shall not use more than twenty percent of the total funds for selection, monitoring and evaluation of mitigation projects and that management and enforcement of contracts..." Section 80.70.050(2).
Our Quals: This is also the requirement for all the funds The Climate Trust receives under the Oregon GHG Standard. To date, we have been in compliance with this obligation and we maintain a third-party annual audit to ensure ongoing compliance.

Requirement: "Before signing contracts to purchase offsets with funds from certificate holders or order of approval holders, an independent qualified organization must demonstrate to the council that the mitigation projects it proposes to use provides a reasonable certainty that the performance requirements of the carbon dioxide mitigation projects will be achieved." Section 80.70.050(3).
Our Quals: The Climate Trust continues to utilize the highest offset project assessment standards in the U.S. offset market.

Requirement: "The Independent Qualified Organization shall permit the council to appoint up to three persons to inspect plans, operation, and compliance activities of the organization and to audit financial records and performance measures for carbon dioxide mitigation projects using carbon dioxide mitigation money paid by certificate holders or order of approval holders under this chapter." Section 80.70.050(4),
Our Quals: The Climate Trust has an offset review committee, comprised of members of the Climate Trust's Board of Directors that is responsible for the review of carbon dioxide mitigation projects used to meet compliance obligations under the Oregon Carbon Dioxide Standard. It is anticipated that EFSEC appointed members would sit on that committee.

Requirement: "Independent qualified organizations must file biennial reports with the council, the department, or authority on the performance of carbon dioxide mitigation projects, including the amount of carbon dioxide reductions achieved and a statement of cost for the mitigation period." Section 80.70.050(5).
Our Quals: The Climate Trust undergoes an annual financial audit conducted by an independent auditing agency.

Outline of Memorandum of Understanding Between The Climate Trust and Energy Northwest

It is anticipated that Washington EFSEC will require The Climate Trust and Energy Northwest to execute some sort of Memorandum of Understanding (MOU) in order for PMAC to meet their 80.70 obligation. The following are elements of that MOU that will be proposed by The Climate Trust:

- The total volume of offsets to be mitigated will be calculated by a methodology approved by EFSEC.
- Energy Northwest will make a final decision on the total number of years of mitigation to be covered in the MOU.

- Energy Northwest will make offset funds available per the final approval of EFSEC regarding PMEC's mitigation requirement under 80.70.
- Energy Northwest will provide a standby letter of credit in the Trust's name sufficient to meet the monetary path requirement.
- The Climate Trust will spend monetary path funds per the requirements of 80.70.
- The Climate Trust will have the ability to draw offset funds from Energy Northwest upon execution of a letter of intent to acquire an offset project.
- The Climate Trust will use best efforts to maintain its status as a qualified organization throughout the duration of the MOU.
- Energy Northwest will have no approval rights over The Climate Trust's offset contracts, disbursement of offset funds, or day-to-day operations of The Climate Trust.

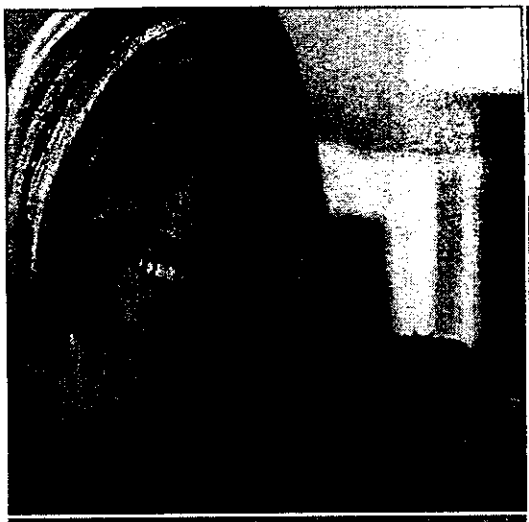
I would recommend that that Energy Northwest have a discussion with EFSEC on their required level of involvement in the MOU (review vs. approval).

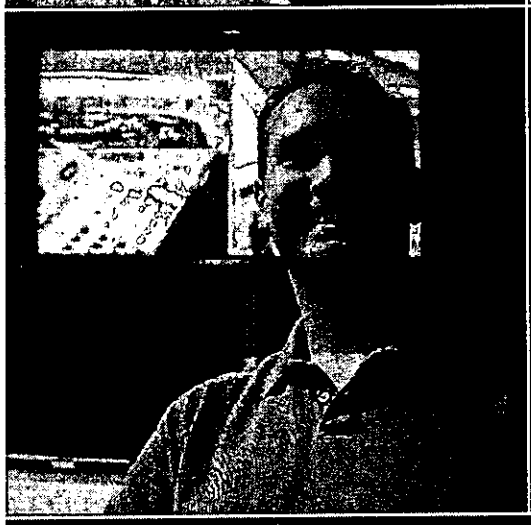
Again, thank you for the interest in working with The Climate Trust.

Best regards,

Sean Clark
Director of Offset Programs

Exhibit 3
to
Declaration of Theodore J. Beatty





ENERGY NORTHWEST

50 YEARS SERVING PUBLIC POWER

1957

1958 1965 1972 1979 1986 1993 2000
1959 1966 1973 1980 1987 1994 2001
1960 1967 1974 1981 1988 1995 2002
1961 1968 1975 1982 1989 1996 2003
1962 1969 1976 1983 1990 1997 2004
1963 1970 1977 1984 1991 1998 2005
1964 1971 1978 1985 1992 1999 2006

2007

ANNUAL REPORT

Both Energy Northwest and the employees make the required contributions. The required employer contribution increased January 1, 2007, from 3.69 percent for all plans to the current level of 5.46 percent. For FY 2005 and FY 2006 the rates ranged from 1.38 percent to 2.44 percent. Energy Northwest's required contributions for the years ended June 30 was:

	PERS Plan 1	PERS Plan 2	PERS Plan 3
2007	$ 174,813	$ 3,235,922	$ 1,269,321
2006	$ 107,096	$ 1,458,655	$ 564,242
2005	$ 86,067	$ 958,601	$ 364,653

In addition to the pension benefits available through PERS, Energy Northwest offers post-employment life insurance benefits to retirees who are eligible to receive pensions under PERS Plan 1, Plan 2, and Plan 3. Ninety-seven retirees have elected to participate in this insurance. In 1994, Energy Northwest's Executive Board approved provisions which continued the life insurance benefit to retirees at 25 percent of the premium for employees who retire prior to January 1, 1995, and charged the full 100 percent premium to employees who retired after December 31, 1994. The life insurance benefit is equal to the employee's annual rate of salary at retirement for non-bargaining employees retiring prior to January 1, 1995. The cost of coverage for employees who retired after January 1, 1995, is $2.33 per $1,000 of coverage with a maximum limit of $10,000. Employees who retired prior to January 1, 1995, contribute $.58 per $1,000 of coverage while Energy Northwest pays the remainder. Premiums are paid to the insurer on a current period basis.

At the time each employee retires, Energy Northwest accrues a liability for the actuarial value of estimated future premiums, net of retiree contributions. The total liability recorded at June 30, 2007, was $0.7 million for these benefits.

During FY 2007, pension costs for Energy Northwest employees and post-employment life insurance benefit costs for retirees were calculated and allocated to each Business Unit based on direct labor dollars. This allocation basis resulted in the following percentages by Business Unit for FY 2007 for this and other allocated costs; Columbia at 92 percent, Business Development at 6 percent, and Project 1, Nine Canyon, Packwood and Project 3 receiving the residual amount of 2 percent.

401(k) and 457 Plan Deferred Compensation Plan

Energy Northwest provides a 401(k) Deferred Compensation Plan (401(k) Plan), and a 457 Deferred Compensation Plan. Both Plans are defined contribution plans that were established to provide a means for investing savings by employees for retirement purposes. All permanent, full-time employees are eligible to enroll in the Plans. Participants are immediately vested in their contributions and direct the investment of their contribution. Each participant may elect to contribute pre-tax annual compensation, subject to current Internal Revenue Service limitations. For the 401(k) Plan, Energy Northwest may elect to make an Employer matching contribution for each of its Employees who are a Participant during the Plan Year. The amount of such an Employer match shall be 50 percent of the maximum salary deferral percentage. During FY 2007 Energy Northwest contributed $2.0 million in employer matching funds.

NOTE E - LONG-TERM DEBT

Each Energy Northwest Business Unit is financed separately. The resolutions of Energy Northwest authorizing issuance of revenue bonds for each Business Unit provide that such bonds are payable from the revenues of that Business Unit. All bonds

issued under Resolutions Nos. 769, 775 and 640 for Nuclear Projects Nos. 1, 3 and Columbia, respectively, have the same priority of payment within the Business Unit (the "Prior Lien Bonds"). All bonds issued under Resolutions Nos. 835, 838 and 1042 (the "Electric Revenue Bonds") for Nuclear Projects Nos. 1, 3 and Columbia, respectively, are subordinate to the Prior Lien Bonds and have the same subordinated priority of payment within the Business Unit. Nine Canyon's bonds were authorized by the following resolutions: Resolution No. 1214 2001 Bonds, Resolution No. 1299 2003 Bonds, Resolution No. 1376 2005 Bonds and Resolution No.1482 the 2006 Bonds. The Packwood Bonds were authorized by Resolution 325 for the 1962 Bonds and Resolution 328 for the 1965 Bonds.

During the year ended June 30, 2007, Energy Northwest issued, for Nuclear Projects No. 1 and 3, and Columbia, the Series 2007-A Bonds, Series 2007-B Bonds, Series 2007-C Bonds, and Series 2007-D Bonds. The Series 2007-A, 2007-B, 2007-C, and 2007-D Bonds issued for Nuclear Project No. 1, Nuclear Project No. 3, and Columbia are fixed rate bonds with a weighted average coupon interest rate ranging from 4.50 percent to 5.33 percent. This transaction resulted in a net-loss for accounting purposes of $24.82 million. According to GASB No. 23, "Accounting and Financial Reporting for Refundings of Debt Reported by Proprietary Activities," gains and losses on the refundings are deferred and amortized over the remaining life of the old debt or the new debt, whichever is shorter. However an economic gain of $19.13 million, based on the present value of debt service comparison, was obtained. The economic gain was recorded according to GASB 7, "Advance Refundings Resulting in Defeasance of Debt."

The Series 2007-A Bonds, issued for Nuclear Project No. 1, Nuclear Project No. 3, and Columbia are tax exempt fixed-rate bonds that create savings based on improved interest rates.

The Series 2007-B Bonds, issued for Nuclear Project No.1, Nuclear Project No. 3 and Columbia are taxable fixed-rate for the purpose of paying costs relating to the issuance of the Series 2007-A, Series 2007-B, and Series 2007-C Bonds as well as certain costs relating to the refunding of certain outstanding bonds.

The Series 2007-C Bonds, issued for Nuclear Project No. 1 and Nuclear Project No. 3 are tax exempt fixed-rate bonds that created savings based on improved interest rates.

The Series 2007-D Bonds issued for Columbia are tax exempt fixed-rate bonds to finance a portion of the cost of certain capital improvements at Columbia.

Nuclear Projects Nos. 1 and 3 have long debt that contains variable rate interest. These rates are set periodically through a weekly auction rate. These rates ranged from 3.102 percent to 4.000 percent during FY 2007.

The Bond Proceeds, Weighted Average Coupon Interest Rates, Net Accounting Loss, Economic Gain, and total defeased bonds for 2007-A, 2007-B, 2007-C, and 2007-D are presented in the following tables:

Bond Proceeds ($ in millions)

	2007A	2007B	2007C	2007D	Total
Project 1	$ 56.17	$ 6.74	$ 237.05	$ -	$ 299.96
Columbia	84.17	10.67	-	37.72	132.56
Project 3	91.43	1.72	66.17	-	159.32
Total	$ 231.77	$ 19.13	$ 303.22	$ 37.72	$ 591.84

Weighted Average Coupon Interest Rate for Refunded Bonds

	2007A	2007B	2007C	2007D
Total	5.64%	-	5.16%	-

Weighted Average Coupon Interest Rate for New Bonds

	2007A	2007B	2007C	2007D
Total	4.99%	5.26%	5.00%	5.00%

Net Accounting Loss ($ in millions)

	2007A	2007B	2007C	2007D	Total
Project 1	$ 0.05	$ 6.70	$ 12.20	$ -	$ 18.95
Columbia	-0.57	0.72	-	-	0.15
Project 3	0.54	1.71	3.47	-	5.72
Total	$ 0.02	$ 9.13	$ 15.67	$ -	$ 24.82

Total Defeased ($ in millions)

	2007A	2007B	2007C	2007D	Total
Project 1	$ 56.17	$ -	$ 235.48	$ -	$ 291.65
Columbia	84.18	-	NA	-	84.18
Project 3	91.45	-	65.71	-	157.16
Total	$ 231.80	$ -	$ 301.19	$ -	$ 532.99

During the Fiscal Year ended June 30, 2007, Energy Northwest also issued, Nine Canyon, the Series 2007 Wind Project Revenue Bonds. The Series 2007 Bonds, in aggregate principal amount of $69.4 million, are fixed-rate bonds with an average coupon interest rate of 5.0 percent. The Series 2007 Bonds were issued to finance the costs of acquiring, constructing and installing Phase III of Nine Canyon which consists of an additional 14 wind turbines.

Energy Northwest did not issue or refund any bonds associated with Packwood for FY 2007.

In prior fiscal years, Energy Northwest also defeased certain revenue bonds by placing the net proceeds from the refunding bonds in irrevocable trusts to provide for all required future debt service payments on the refunded bonds until their dates of redemption. Accordingly, the trust account assets and liability for the defeased bonds are not included in the financial statements in accordance with GASB statements No. 7 and 23. Including the FY 2007 defeasements, $440.4 million, $159.9 million, and $314.3 million of defeased bonds were not called or had not matured at June 30, 2007, for Nuclear Projects Nos. 1 and 3, and Columbia respectively.

Outstanding principal on revenue and refunding bonds for the various Business Units as of June 30, 2007, and future debt service requirements for these bonds are presented in the following tables:

OUTSTANDING LONG-TERM DEBT

As of June 30, 2007 (Dollars in Thousands)

Columbia Generating Refunding Revenue Bonds

Series	Coupon Rate	Serial or Term Maturities	Amount
1992A	6.30	7-1-2012	$ 50,000
1993A	5.70-5.80	7-1-2008	4,415
1994A	(A)	7-1-2009	4,776
	5.40	7-1-2012	100,200
			104,976
1996A	6.00	7-1-2008	17,475
1997B	5.00-5.20	7-1-09/2011	15,000
1998A	5.00-5.75	7-1-08/2012	160,640
2001A	5.00-5.50	7-1-13/2017	186,600
2001B	5.50	7-1-2018	48,000
2002A	5.20-5.75	7-1-17/2018	157,260
2002B	5.35-6.00	7-1-2018	123,815
2003A	5.50	7-1-10/2015	132,970
2003B	4.15	7-1-2009	4,530
2003F	5.00-5.25	7-1-07/2018	41,330
2004A	3.75-5.25	7-1-08/2018	403,080
2004B	5.50	7-1-2013	12,715
2004C	5.25	7-1-07/2018	26,620
2005A	5.00	7-1-15/2018	114,985
2005B	4.11	7-1-2008	1,600
2005C	4.34-4.74	7-1-09/2015	91,890
2006A	5.00	7-1-20/2024	434,210
2006B	5.23	7-1-2011	4,420
2006C	5.00	7-1-20/2024	62,200
2006D	5.80	7-1-2023	3,425
2007A	5.00	7-1-13/2018	77,575
2007B	5.07-5.33	7-1-12/2021	10,665
2007D	5.00	7-1-21/2024	35,080
		Compound interest bonds accretion	6,224
		Revenue bonds payable	$ 2,331,700
		Estimated fair value at June 30, 2007	$ 2,446,584 (B)

(A) Compound Interest Bonds

(B) The estimated fair value shown has been reported to meet the disclosure requirements of the Statement of Financial Accounting Standards (SFAS) 107 and does not purport to represent the amounts at which these obligations would be settled.

Nuclear Project No.1 Refunding Revenue Bonds

Series	Coupon Rate	Serial or Term Maturities	Amount
1989B	7.125	7-1-2016	$ 41,070
1990B	7.25	7-1-2009	3,590
1993A	7.00	7-1-2008	13,075
1993B	7.00	7-1-08/2009	15,090
1993C	5.20	7-1-2008	1,985
1996A	6.00	7-1-2008	40,050
1996C	6.00	7-1-2009	8,445
1997A	6.00	7-1-2008	7,080
1997B	5.00-5.125	7-1-08/2011	4,885
1998A	5.00-5.75	7-1-08/2017	78,260
2001A	4.50-5.50	7-1-10/2013	76,560
2001B	5.50	7-1-2017	23,600 (C)
2002A	5.50-5.75	7-1-13/2017	248,485
2002B	6.00	7-1-2017	101,950
2003A	5.50	7-1-13/2017	241,455
2003B	4.06	7-1-2009	18,210
2004A	5.25	7-1-2013	62,485
2004B	5.50	7-1-2013	$1,135
2005A	5.00	7-1-13/2015	72,175
2005B	4.11	7-1-2008	925
2006A	5.00	7-1-08/2017	309,205
2006B	5.16	7/1/2007	9,160
2007A	5.00	7-1-13/2017	51,730
2007B	5.07-5.10	7-1-12/2013	6,740
2007C	5.00	7-1-13/2017	219,020
1993-1A-1	VARIABLE		39,070
1993-1A-2	VARIABLE		39,070
1993-1A-3	VARIABLE		12,810
2003-C-1	VARIABLE		50,235
2003-C-2	VARIABLE		50,000
2003-C-3	VARIABLE		50,250
2003-C-4	VARIABLE		50,000
		Revenue bonds payable	$ 1,947,800
		Estimated fair value at June 30, 2007	$ 2,046,150 (B)

(B) The estimated fair value shown has been reported to meet the disclosure requirements of the Statement of Financial Accounting Standards (SFAS) 107 and does not purport to represent the amounts at which these obligations would be settled.

(C) Auction Rate Certificates that will have a rate of 5.50 through 7/1/2008 and a variable rate thereafter until 7/1/2017.

OUTSTANDING LONG-TERM DEBT (CONT'D)

As of June 30, 2007 (Dollars in Thousands)

Nuclear Project No.3 Refunding Revenue Bonds

Series	Coupon Rate	Serial or Term Maturities	Amount
1989A	(A)	7-1-08/2014	$ 11,112
1989B	(A)	7-1-08/2014	37,537
	7.125	7-1-2016	76,145
			113,682
1990B	(A)	7-1-08/2010	8,225
1993B	5.65-7.00	7-1-08/2009	23,460
1993C	7.50	7-1-2008	14,150
	(A)	7-1-13/2018	23,963
			38,113
1997A	5.10-6.00	7-1-08/2011	28,690
1998A	5.125	7-1-17/2018	53,825
2001A	5.50	7-1-10/2018	151,380
2001B	5.50	7-01-2018	10,675
2002B	6.00	7-01-2016	75,360
2003A	5.50	7-1-11/2017	241,915
2003B	4.15	7-1-2009	21,575
2004A	5.25	7-1-14/2016	83,835
2004B	5.50	7-1-2013	1,515
2005A	5.00	7-1-13/2015	129,265
2005B	4.11	7-1-2008	1,060
2006A	5.00	7-1-08/2018	54,760
2006B	5.21	7-1-2008	525
2007A	4.50-5.00	7-1-13/2018	84,465
2007B	5.07	7-1-2012	1,725
2007C	5.00	7-1-12/2018	61,085
1993-3A-3	VARIABLE		18,205
1998-3A	VARIABLE		119,560
2001B-3-1	VARIABLE		5,000 (C)
2001B-3-2	VARIABLE		10,000 (C)
2003D-1	VARIABLE		100,665
2003D-2	VARIABLE		100,400
2003E	VARIABLE		98,025
		Compound interest bonds accretion	261,328
		Revenue bonds payable	$ 1,909,430
		Estimated fair value at June 30, 2007	$ 1,923,111 (B)

(A) Compound Interest Bonds

(B) The estimated fair value shown has been reported to meet the disclosure requirements of the Statement of Financial Accounting Standards (SFAS) 107 and does not purport to represent the amounts at which these obligations would be settled.

(C) Auction Rate Certificates that will have a rate of 5.50 through 7/1/2010 and a variable rate thereafter until 7/1/2018.

Packwood Lake Hydroelectric Project Refunding Revenue Bonds

Series	Coupon Rate	Serial or Term Maturities	Amount
1962	3.625	3-1-08/2010	$ 1,271
1965	3.75	3-1-08/2012	630
		Revenue bonds payable	$ 1,901
		Estimated fair value at June 30, 2007	$ 1,898 (B)

(B) The estimated fair value shown has been reported to meet the disclosure requirements of the Statement of Financial Accounting Standards (SFAS) 107 and does not purport to represent the amounts at which these obligations would be settled.

Nine Canyon Wind Project Refunding Revenue Bonds

Series	Coupon Rate	Serial or Term Maturities	Amount
2001A	4.75	7-1-2007	$ 1,675
2001A	4.95	7-1-2008	1,760
2001B	4.75	7-1-2007	675
2001B	4.95	7-1-2008	705
			4,815
2003	3.00	7-1-2007	820
	3.75-5.00	7-1-08/2023	19,335
			20,155
2005	4.00	7-1-2007	210
	4.00-5.00	7-1-08/2023	61,540
			61,750
2006	4.50-5.00	7-1-10/2030	69,410
		Revenue bonds payable	$ 156,130
		Estimated fair value at June 30, 2007	$ 161,375 (B)

(B) The estimated fair value shown has been reported to meet the disclosure requirements of the Statement of Financial Accounting Standards (SFAS) 107 and does not purport to represent the amounts at which these obligations would be settled.

Total Bonds Payable - Energy Northwest	$ 6,346,961
Estimated fair value at June 30, 2007	$ 6,579,118

DEBT SERVICE REQUIREMENTS

As of June 30, 2007 (Dollars in Thousands)

Columbia Generating Station

Fiscal Year	Principal	Interest	Total
6/30/2007 Balance*	$ 4,280	$ 48,711	$ 52,991
2008	126,285	121,504	247,789
2009	115,806	120,964	236,770
2010	157,650	108,982	266,632
2011	95,405	100,803	196,208
2012	267,885	95,958	363,843
2013-2017	535,020	358,871	893,891
2018-2022	789,120	148,067	937,187
2023-2024	234,025	17,723	251,748
Adjustment **	6,224	(6,224)	-
	$ 2,331,700	$ 1,115,359	$ 3,447,059

* Principal and interest due July 1, 2007.

** Adjustment for Compound Interest Bonds accretion; Compound Interest Bonds are reflected at their face amount less discount on the balance sheet

Nuclear Project No. 1

Fiscal Year	Principal	Interest	Total
6/30/2007 Balance*	$ 9,160	$ 40,371	$ 49,531
2008	80,310	100,452	180,762
2009	87,110	95,623	182,733
2010	80,620	91,161	171,781
2011	89,090	87,204	176,294
2012	87,475	82,828	170,303
2013-2017	1,514,035	253,831	1,767,866
	$ 1,947,800	$ 751,470	$ 2,699,270

* Principal and interest due July 1, 2007.

Nuclear Project No. 3

Fiscal Year	Principal	Interest	Total
6/30/2007 Balance*	$ -	$ 27,603	$ 27,603
2008	64,426	109,861	174,287
2009	68,378	109,158	177,536
2010	38,862	107,074	145,936
2011	87,514	97,697	185,211
2012	74,832	93,937	168,769
2013-2017	921,780	349,942	1,271,722
2018	392,310	26,464	418,774
Adjustment **	261,328	(261,328)	-
	$ 1,909,430	$ 660,408	$ 2,569,838

* Principal and interest due July 1, 2007.

** Adjustment for Compound Interest Bonds accretion; Compound Interest Bonds are reflected at their face amount less discount on the balance sheet

Packwood Lake Hydroelectric Project

Fiscal Year	Principal	Interest	Total
6/30/2007 Balance***	$ 660	$ 68	$ 728
2008	690	46	736
2009	336	20	356
2010	150	8	158
2011	65	2	67
	$ 1,901	$ 144	$ 2,045

*** Principal and Interest due March 1, 2008.

Nine Canyon Wind Project

Fiscal Year	Principal	Interest	Total
6/30/2007 Balance*	$ 3,380	$ 3,768	$ 7,148
2008	4,315	7,335	11,650
2009	3,705	7,139	10,844
2010	3,965	6,963	10,928
2011	4,260	6,774	11,034
2012	4,575	6,570	11,145
2013-2017	38,240	28,224	66,464
2018-2022	48,495	18,134	66,629
2023-2030	45,195	8,692	53,887
	$ 156,130	$ 93,599	$ 249,729

* Principal and interest due July 1, 2007.

CURRENT DEBT RATINGS (unaudited)

Energy Northwest (Long-Term)	Net-Billed Rating	Nine Canyon Rating
Fitch, Inc.	AA-	A-
Moodys Investors Service, Inc. (Moodys)	Aaa	A3
Standard and Poor's Ratings Services (S & P)	AA-	A-

Variable Rate Debt	S&P	FITCH	MOODYS
Letter of Credit Banks			
Bank of America			
Long-Term	AA		Aa1
Short-Term	A-1+		P-1
JPMorgan Chase Bank			
Long-Term	AA	A+	Aa3
Short-Term	A-1+	F1	VMIG-1
Bond Insurance (Long-Term)			
MBIA Insurance Corporation	AAA	AAA	Aaa
AMBAC Assurance Corporation	AAA	AAA	Aaa
Financial Guaranty Insurance Company	AAA	AAA	Aaa
XL Capital Assurance Inc.	AAA	AAA	Aaa
Financial Security Assurance	AAA	AAA	Aaa
FSA (Short-Term)			
Dexia	A-1+	F1+	VMIG-1

BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 2006-01 ENERGY NORTHWEST; PACIFIC MOUNTAIN ENERGY CENTER POWER PROJECT.	CERTIFICATE OF SERVICE

I hereby certify under penalty of perjury of the laws of the State of Washington that a true and correct copy of ENERGY NORTHWEST'S RESPONSE BRIEF – GREENHOUSE GAS PLAN was served by electronic mail on each of the parties listed on the attached Service List. In addition, the original and fifteen (15) copies were delivered by messenger to EFSEC Manager, Allen Fiksdal.

DATED at Seattle, Washington this 8th day of November, 2007.

Mia M. Wiltse

Service List

Energy Northwest v. Pacific Mountain Energy Center Power Project
Energy Facility Site Evaluation Council
Application No. 2006-01

Energy Facility Site Evaluation Council	
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Applicant – Energy Northwest		
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