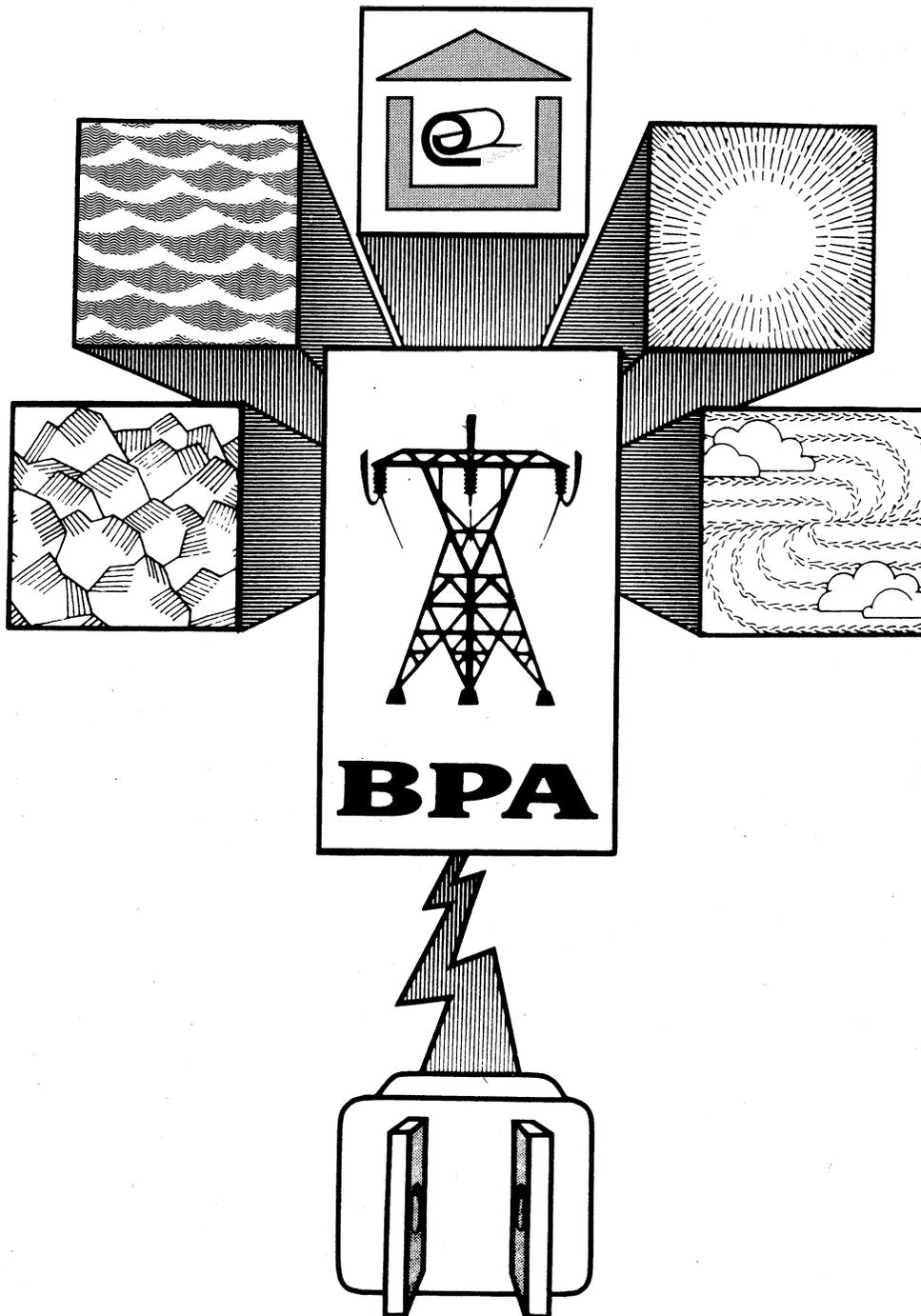


# Final Environmental Impact Statement Resource Programs

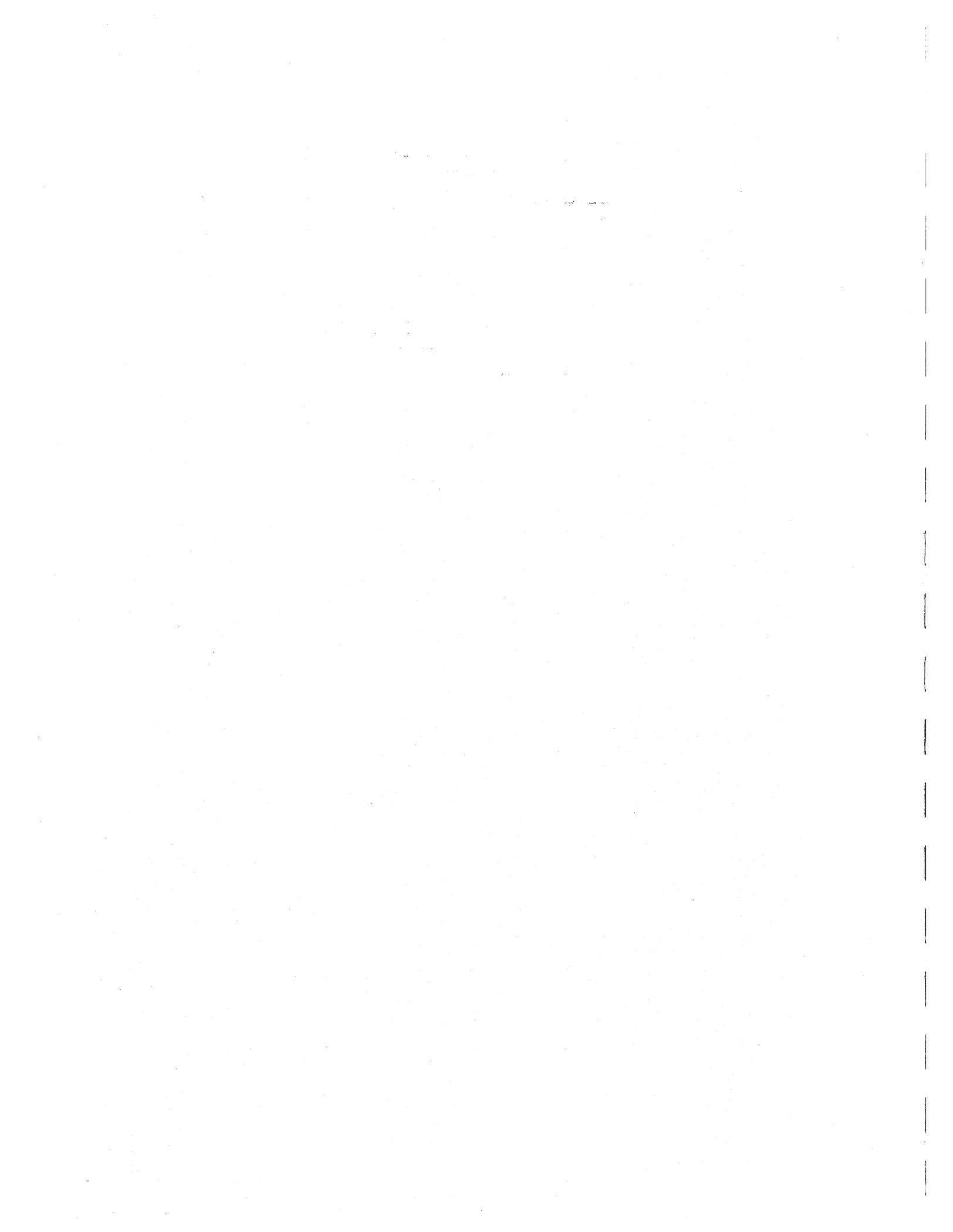
DOE/EIS

## Volume 3: Public Involvement

February 1993



U.S. Department  
of Energy



**Resource Programs  
Final Environmental Impact Statement**

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**Volume 3: Comments and Responses**

**Bonneville Power Administration**

**February 1993**



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# **Public Involvement Activities and Publications**

## **Section 1**



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# Section 1: Public Involvement Activities and Publications

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## 1.1. Activities

### Notice of Intent:

April 2, 1990. Notice of Intent to Prepare an EIS published in Federal Register.

### Scoping:

BPA sent a letter announcing scoping to an extensive mailing list, including to participants in the Technical Review Panel for the Resource Program.

Announcements also appeared in the BPA Journal and the BPA Calendar.

- ◆ May 1, 1990. Scoping Meeting, Portland Oregon.
- ◆ April 2 - May 15, 1990. Official public comment period on scope of EIS. BPA accepted comments through October 1990. In response to suggestions from the public, a second public hearing was held on August 13, 1990.

### Development of analysis of alternatives:

Persons involved in BPA's Resource Program, as well as people interested in fish and Tribal issues, were invited to participate in Technical Review Panels to develop analysis methods. Those who were interested came to an initial meeting on August 13, 1990, and participated at various levels thereafter as they chose. Members included representatives from public and investor-owned utilities, state and Federal agencies, independent power producers, interest groups, and private citizens. BPA used suggestions from participants throughout the analysis.

### Draft EIS Review:

- ◆ May 15, 1992. The Draft EIS was released for public review. The full EIS was sent to a targeted list of agencies and organizations as well as to those who requested it, while a 17-page summary was sent to an extensive mailing list. Notice of the review period and public meeting was sent to mailing lists and appeared in the BPA Calendar and Journal.
- ◆ May 15 - July 6, 1992. Draft EIS public comment period.
- ◆ June 16, 1992. Open house and public hearing on Draft EIS, Portland, Oregon.
- ◆ October 28, 1992. Comment summary letter to mailing list.

## **1.2. Publications**

Backgrounder, December 1991. Bonneville's Balancing Act: How BPA Acquires Energy Resources.

Issue Alert, January 1992. Planning for an Uncertain Energy Future: BPA's Draft 1992 Resource Program.

Issue Alert, April 1992. Resource choices and environmental consequences: What's at stake?

Videotape, 1992. Keeping the Lights On--At What Cost?

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# **Scoping Comments**

## **Section 2**



## **Section 2: RPEIS Scoping Comments**

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### **1. Max Bader, M.D., Private Citizen**

- A. Solid waste incineration should be considered as an alternative in the RPEIS.
- B. RPEIS should discuss how high population growth would influence the environment and the demand for power.
- C. The RPEIS should show what power availability at various costs will do to attract/retain industry.
- D. BPA should focus on conservation measures which reduce power needs without affecting lifestyles as opposed to methods which will impinge upon lifestyles and convenience.

### **2. Ronald G. Bailey, Puget Sound Power & Light**

- A. BPA must work with its customers in connection with its resource acquisitions.
- B. BPA should not assume that generation and transmission projects need to be entirely federally funded.
- C. It is unclear to Puget that BPA needs to acquire resources. BPA should define clearly its need for resources and should work with the region's utilities to fulfill its needs.
- D. BPA has not yet adequately studied various aspects of its optioning of 800 MW of combined-cycle combustion turbines.
- E. BPA's conservation programs should focus on lost-opportunity resources in all sectors. BPA conservation programs should meet the need of high load growth scenarios.
- F. Concerning global warming, it is not clear that fuel switching from electricity to natural gas will reduce CO<sub>2</sub> emissions. Greater emphasis should be placed on conservation, hydro development, solar, geothermal and wind.

### **3. Max E. Benitz, Washington State Senate Energy and Utilities Committee**

- B. State policies should be considered in the analysis of resource options.
- C. When considering conservation, try to determine hidden costs.
- D. BPA should consider a wide range of potential resources, including new nuclear plants in addition to WNP-1 and -3.
- E. The RPEIS should be consistent when examining different resources.
- F. BPA may want to remain consistent with its endorsement of the Valdez Principles. In reviewing these principles, it appears that WNP-1 and -3 are BPA's most attractive options for resources in the future.

**4. Richard Byers, Washington State Energy Office**

- A. Extend the conservation supply curves.
- B. Hold the magnitude of the emphasized resources constant across all alternatives; otherwise we will mask the benefits of clean but small resources.
- C. Alternatives should be made up of combinations of resources.
- D. The increased price of resources due to internalization of environmental costs will affect load growth and reduce the need to acquire new resources.

**5. John D. Carr, Direct Service Industries, Inc.**

- A. The DSIs fully support PNUCC's alternative scope for the RPEIS and urge BPA to carefully consider the alternative proposed.
- B. This RPEIS should, as broadly as possible, identify the full range of environmental impacts that would result from assuming that BPA must acquire resources to meet the Council's high load forecast.
- C. The "worst case" environmental analysis would assume that load growth was served exclusively with each type of resource available.
- D. BPA should resist the temptation to adopt a future-looking "preferred alternative" resource stack. To do so would imply a false level of certainty or precision. If, however, BPA believes that it should evaluate the environmental impacts of a specific resource portfolio, BPA should focus on the 1990 Resource Program.
- E. When BPA revises its resource program every two years, it should update and supplement the RPEIS with an analysis of any changes.
- F. The RPEIS should be supplemented by site-specific EISs as particular resource acquisition decisions are made.

**6. Ed Chaney, Columbia-Snake Rivers Main-Stem Flow Coalition**

- A. The acquisition of resources to meet future regional load should be left to the private sector because BPA generates revenue at the expense of economic and ecological productivity.
- B. The EIS should address where resource acquisition is designed to enhance revenue as opposed to meeting load.
- C. The EIS should evaluate the effects to fish survival of acquiring new resources.
- D. Commenter requested a hands-on role in structuring an alternative which includes creative future resource acquisitions specifically designed to meet the dual objective of fish runs and power.
- E. It is essential to fully address the interrelationship of system operations, transmission and marketing and storage agreements.

**7. Ed Chaney, Northwest Resource Information Center, Inc.**

- A. BPA has not met its obligation to develop a resource acquisition program that will meet the fish and wildlife protection/restoration intent of the Northwest Power Act.

- B. The RPEIS should be folded into one EIS for resources, system operations, and marketing/transmission due to the synergistic nature of the system.

#### **8. Jerry M. Conley, Idaho Fish and Game**

- A. The EIS should fully evaluate and disclose the potential for proposed power resources to directly and indirectly impact fish and flow in the Columbia River.
- B. BPA should explore resource alternatives and develop summer energy-load markets to improve the ability of the hydrosystem to provide fish survival flows.

#### **9. William K. Drummond, Public Power Council**

- A. Insufficient time has been allowed for scoping. BPA should work to ensure that the RPEIS involves customers at every possible stage of the analysis.
- B. BPA should limit the period over which possible actions would be analyzed to the ten years ending 2001.
- C. BPA should define the "need for action" strictly as the existing set of contractual and statutory obligations to meet loads placed on the Administrator. The RPEIS should examine the impacts of meeting load growth from existing customers under existing contracts.
- D. Constraints on the agency should be defined at the start, including the statutory limitation on actual ownership by BPA of resources, the obligation to meet fish and wildlife standards, and the Council's plan.
- E. Simple ranges of alternatives are not an appropriate framework for the analysis. Rather, BPA should consider the impacts of resource-intensive alternatives, with the size of each resource block defined by the megawatts of additional supply required to meet high load growth.
- F. Given the "pure" alternatives defined by individual resource types, BPA should analyze the impacts of certain specific "bundles" or combinations of resources such as the final 1990 Resource Program, also for the high forecast. A "preferred alternative" for the Draft RPEIS may emerge from this analysis of probable or possible bundles of resources.
- G. It is important to define the relationship between the more generic environmental analyses and the site-specific work expected for individual resources.
- H. The relationship between the RPEIS and the SOR EIS must be carefully stated and continually redefined.
- I. BPA should concentrate now on collecting the best data available and on constructing the best tools possible for conducting specific NEPA analyses on individual resources through the coming decade.

#### **10. Randall W. Hardy, Seattle City Light**

- A. Evaluation Techniques:
  - 1. BPA should establish threshold environmental standards that must be met for a resource to be considered for further evaluation and potential acquisition.

2. For resources passing these thresholds, the cost of environmental impacts should be quantified where feasible and added to the cost of the resource.
3. Nonquantifiable impacts should be weighted according to their relative severity and potential for mitigation.
4. Proposed resources that meet the threshold standard can then be ranked based on the relative weighting of their impacts. This approach gives equal importance to environmental and economic factors in resource selection.

**B. Impacts and Alternatives:**

1. BPA should review Council Issue Paper 90-1, and Seattle City Light's Strategic Corporate Plan Database for a synopsis of environmental impacts associated with energy resources.
2. The scope of the RPEIS should include analysis of the following effects:  

anadromous fish; resident fish; wildlife; threatened and endangered species; air quality and emissions including air toxics, particulates, visibility, H<sub>2</sub>S, NO<sub>x</sub>, hydrocarbons, CO, SO<sub>2</sub>, heavy metals, radioactive gases, and CO<sub>2</sub>; global warming; acid rain; water quality; land use; habitat loss; impacts to protected areas such as parks and wilderness; hazardous and solid waste disposal; mining and drilling impacts; transportation; public health; worker health and safety; radioactive emissions; noise; thermal effects; water use; recreation; aesthetics; cultural and historical resources; archaeological sites; erosion and siltation; vegetation impacts; geologic impact; deforestation; impacts on sensitive areas such as wetlands; and socioeconomic impacts.
3. Lifecycle impacts (mining, transportation, construction, operation, and decommissioning) should be evaluated. Indirect and cumulative impacts should be evaluated as well.
4. The alternatives should include a least cost to the region and least cost to BPA.
5. BPA should explain why the global warming alternative and the anadromous fish alternative are used to define separate alternatives.

**C. Resource Types:**

1. The RPEIS should include biomass and fuel cells.
2. Small hydro should be defined to indicate how large a project is included. Run-of-the-river projects should be analyzed separately from those having reservoirs. Retrofitting existing dams should also be assessed as a separate resource.

**D. Mitigation:**

The EIS should include an assessment of mitigation alternatives available to address the environmental effects of each resource.

**E. Acquisition Mechanisms:**

The EIS should include an evaluation of alternative methods of incorporating environmental concerns into acquisition mechanisms and a recommended approach.

**F. Incorporate SEPA requirements into BPA's NEPA EIS:**

1. Contracts to purchase power (for new resources) are evaluated in the same way as the new resources would be if owned.
2. Lead agency cannot limit its consideration of a proposal's impacts only to those aspects within its jurisdiction.
3. Both direct and indirect impacts must be evaluated.

**G. Tiered Review Process:**

1. To maximize the efficiency of this approach, all impacts that can be effectively analyzed as generic should be included in the first level review.
2. There is no compelling need for separate environmental review of a commercial-sector conservation program; it should be handled in the RPEIS.

**11. Barbara D. Rhodes, Private Citizen**

Provided documents entitled "Comments on Draft 1988 Supplement and Solar Energy Enablement July 10, 1989," "Comments, Paper 89-39 Assessment of the Potential for the Direct Application of Renewable Resources, Northwest Power Planning Council: November 8, 1989" and "Comments on Staff Issue Paper Conservation Acquisition Program Design: Lessons Learned and Implications for Future Programs, November 27, 1989."

**12. Edward Sheets, Northwest Power Planning Council**

- A. Everyone would benefit if BPA would extend the scoping process for this EIS.

**13. H.F. Straw, Texaco, Inc.**

BPA should consider a proposed Texaco project to be located in Wyoming in its Resource Program for the potential future benefits of a new major power plant integrated with the Northwest power system.

**14. Robert D. Tibbs, CE Exploration Company**

- A. Direction is needed to effectively identify the environmental impacts of energy resources . . . especially to ensure that data used to quantify impacts accurately represents the resource using best available control technology.
- B. BPA's document "Environmental Effects and Mitigation for Energy Resources," May, 1990, draws inconclusive assumptions by using data from geothermal operations which differ in technology.
- C. Resources should be analyzed with regard to current regulatory standards, not as if the free market controlled the level of environmental abuse. A discussion of federal and state standards by which geothermal operations are governed is needed.
- D. Renewability and reliability of energy supplies should be considered in examining resources. Also, acceptable levels of tolerance should be established consistent with goals set by state(s), and each resource be examined in relation to this level. In particular, comparative analysis quantifying impact on a per megawatt basis would seem to balance the

process and provide a base for economic valuation when mitigation techniques are known.

- E. A system of weights should be established to prioritize impacts according to the cost of tolerance. (Examples included with letter.)

#### **15. Merritt Tuttle, National Marine Fisheries Service**

- A. The EIS should fully evaluate and disclose the potential for proposed power resources to directly and indirectly impact fish and flows in the Pacific Northwest.
- B. Include fuel switching and seasonal exchanges as alternatives.

#### **16. Carl Van Hoff, Washington Public Power Supply System**

- A. It is appropriate that the EIS address the high load growth scenario.
- B. The RPEIS should incorporate and rely on previous environmental analyses done on WNP-1 and -3.
- C. The analysis and decision choices should reflect the economic impacts of unemployment.
- D. The analysis and decision choices should reflect the value of ratepayers owning a generating resource at the end of the amortization period or contract period.
- E. The investigations and analyses of resources should be consistent. That is, the same elements of life cycle should be included for all resources. The analysis should also consistently apply the same standards of acceptable risks to all resources.
- F. WNP-1 and -3 plants fit into all of the offered alternatives.

#### **17. Richard H. Watson, Washington State Energy Office**

- A. It is difficult to see how an analysis of generic resource program alternatives could provide decisionmaking material, since these generic alternatives are not expected to represent actual resource program alternatives or to provide the basis for a formal EIS preferred alternative.
- B. BPA should develop a methodology for incorporating environmental costs and benefits into Resource Program development. The methodology could be used to develop preferred alternatives for the 1992 Resource Program. We have enclosed an example of a least-cost plan done in Vermont that contains an example of the incorporation of environmental costs and benefits.
- C. The value of the RPEIS will be its identification and quantification of the environmental effects attributable to the various resource types and its development of a methodology to assess the combined impacts of alternative resource mixes.

#### **18. Don Weathers, U.S. Fish and Wildlife Service**

- A. The environmental impacts of new resource additions, and of changes to the existing system, need to be examined together to accurately assess cumulative impacts and to achieve a resource stack that minimizes environmental impacts.

- B. Fish and Wildlife is concerned that firming nonfirm energy in the operation of the hydropower system through the use of combustion turbines or by other means will result in further shifting of flows from the spring and summer, when flows are needed for juvenile fish migration, into the fall and winter. It urges BPA to look at seasonal exchanges, increased residential conservation, fuel substitution, and other means to shift more flow into the critical spring and summer period.
- C. The proposed RPEIS Environmental Impact Matrix deals only with discrete measurements of physical parameters and does not display the integration of interactions between and within biological systems.

**19. Al Wright, Pacific Northwest Utilities Conference Committee**

- A. BPA should hold a second public scoping meeting after BPA staff has had an opportunity to review the public comments.
- B. PNUCC recommends the following purpose and need to help focus the EIS:

**NEED:** The need for the EIS is to guide BPA in meeting its contractual obligation to supply requested electric power to its customers. The federal action that triggers this EIS is the development of a proposed list of electric power resources to meet BPA's contractual commitments.

**PURPOSE:** BPA's purpose to be accomplished through the Resource Program is to:

1. "acquire...sufficient resources" to meet "contractual obligations." 16 U.S.C. 839d(a)(2).
2. acquire cost-effective resources consistent with the Northwest Power Plan as determined by the Administrator. 16 U.S.C. 839d(b)(1); 16 U.S.C. 839b(e)(1).
3. keep "the lowest possible rates to consumers consistent with sound business principles." 16 U.S.C. 838(g).

In carrying out these obligations, BPA must act consistently with the following objectives of the Pacific Northwest Electric Power Planning and Conservation Act:

1. to "encourage conservation and efficiency in the use of electric power." 16 U.S.C. 839(1)(A)
  2. to protect, mitigate and enhance fish and wildlife. 16 U.S.C. 839b(h)
  3. encourage "the development of renewable resources within the Northwest." 16 U.S.C. 839(1)(B)
- C. The RPEIS should be scoped broadly enough to accommodate BPA decisionmaking regarding resource acquisitions through the year 2001.
  - D. The preliminary alternatives described at the May 1 scoping meeting are too narrowly focused to cover adequately the potential decisions BPA will face within this time period.
  - E. As the first step in its analysis, BPA should examine the outer range impacts of resource decisions to define the various environmental impacts of its resource options. In one scenario, BPA would assume that all high load growth would be met with coal plants; in another scenario, BPA would assume that all high load growth would be met with combustion turbines, and so forth. Where the aggregate maximum capability of such resources would be insufficient to meet high load growth, BPA should

assume that one other type of resource is used exclusively to meet any deficit.

- F. As a second step in the analysis, BPA should develop preferred packages of resources and alternative packages of resources that key off the scenarios outlined in its 1990 Resource Program.
- G. The "no action" alternative should be that BPA will rely entirely on its customers to provide resources to meet load growth.
- H. BPA should fold the preliminary alternatives "least global warming impact" and "least impact on anadromous fish" into the "least environmental impact" alternative.
- I. The "least cost" alternative is a least cost mix of resources as "least cost" is defined under the Northwest Power Act. This means that most environmental costs are already included.
- J. BPA should qualitatively address the Power Planning Council's resource portfolio.
- K. BPA must also describe in the RPEIS the linkages between the System Operations Review and the RPEIS, and the potential impacts of loss of part of the generating capability of the hydroelectric system.
- L. BPA should not examine, as an alternative, that certain load goes unserved or that fuel switching ought to be examined as a means of meeting load.

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# **Comments on the Draft RPEIS**

## **Section 3**



## **Section 3: Comments on the Draft RPEIS**

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### **3.1. Introduction**

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**Section 3** summarizes comments BPA received on the Draft EIS during the public review period, May 15 to July 6, 1992.

**Section 3.2** lists the comment categories and number of comments in each. Comments were assigned to a main category (of which there were three) and then to one of several subcategories. For example, comments on environmental costs were assigned to Category B (Analysis Methods), Subcategory 4 (Economic Effects). A few categories, such as Conservation (Category C, Subcategory 4) are further subdivided. So, for example, comments on electric hot water timers were assigned to Category C4b (Resources: Conservation - Appliances).

**Section 3.3** lists the commenters and the categories into which their comments were placed. The table lists commenters alphabetically, with a brief phrase summarizing each of their comments. It is designed to help commenters find their own comments more easily. Each comment that discusses a separate idea is numbered individually.

**Section 3.4** is a detailed summary of each comment and BPA's response. Most but not all comments warranted responses.

**Section 3.5** contains copies of the complete comment letters and cards, and a transcript of comments made at the public meeting.



### 3.2. Summary of Comments, Resource Programs Draft EIS

Category	Number of Comments
<b>A: GENERAL/OVERALL</b>	
A1: Priorities	20
A2: No Action	4
A3: Compliments	8
A4: No Comment	5
A5: Editorial Comments	10
<b>Subtotal</b>	<b>47</b>
<b>B: ANALYSIS METHODS</b>	
B1: General	14
B2: Air Quality	
a) CO2	5
b) Other Air Emissions	9
B3: Construction Impacts	2
B4: Economic Effects	25
B5: Land and Water Use	8
B6: Other Impacts	7
<b>Subtotal</b>	<b>70</b>
<b>C: RESOURCES</b>	
C1: Coal	6
C2: Cogeneration	2
C3: Combustion Turbines/Natural Gas	3
C4: Conservation	
a) General	19
b) Appliances	2
c) System Efficiencies	1
C5: Fuel Switching	9
C6: Miscellaneous	
a) Aluminum Plants	1
b) Hydrogen	1
c) Magneto-hydrodynamics	1
d) Methane/garbage	1
e) Other	4
C7: Nuclear	12
C8: Power Exchanges	4
C9: Renewables	
a) General	2
b) Geothermal	2
c) Hydroelectric	8
d) Solar - Photovoltaics (Passive Solar)	3
e) Wind	4
<b>Subtotal</b>	<b>85</b>
<b>TOTAL COMMENTS</b>	<b>202</b>



<b>3.3 COMMENTERS and COMMENTS for the RESOURCE PROGRAMS EIS</b>				
Commenter:	Category:	Comment :	Topic:	Letter No:
Adams, Jeff	Priorities	A1-13	Prefer conservation & renewables except hydro	10
Adams, Jeff	Conservtn:General	C4a-4	Support conservation; impacts are low with mitigation	10
Adams, Jeff	Renew:Genl	C9a-1	Support renewables	10
Arizona Energy Office	Priorities	A3-8	Agree with preferred alternative	26
Arizona Energy Office	Analysis:General	B1-2	Good job on analysis	26
Arizona Energy Office	Economic Effects	B4-2	Incorporate environmental costs to assure proper resource mix	26
Arizona Energy Office	Power Exchanges	C8-2	Seasonal exchanges mean interrelated markets	26
Assoc NW Gas Utilities	Fuel Switching	C5-8	Fuel Switching should be preferred alternative	48
Assoc NW Gas Utilities	Fuel Switching	C5-9	Fuel Switching costs are more certain than you say	48
Brunsdon, KJ Booster Club	No Action	A2-1	No Action is not an alternative	5
Brunsdon, KJ Booster Club	Conservtn:General	C4a-6	Conservation alone is not viable	5
Brunsdon, KJ Booster Club	Cons:Appliances	C4b-1	Why aren't free hot water heater timers supplied?	5
Brunsdon, KJ Booster Club	Fuel Switching	C5-1	Support fuel switching	5
Brunsdon, KJ Booster Club	Misc:Methane/garb.	C6d-1	Burn methane from garbage	5
Brunsdon, KJ Booster Club	Nuclear	C7-2	Nuclear needs contract guarantees	5
Brunsdon, KJ Booster Club	Power Exchanges	C8-1	Don't rely on imports	5
Collins, Austin	Compliments	A3-8	Compliment	Pub. Mtg.
Cooper, Hal	Compliments	A3-7	Compliment	Pub. Mtg.
Cooper, Hal	Analysis:General	B1-14	High load forecast may be too low	Pub.Mtg.
Cooper, Hal	Coal	C1-4	We have lots of coal, should use it	Pub. Mtg
Cooper, Hal	CTs/Ntl Gas	C3-3	Need to use more natural gas	Pub.Mtg.
Cooper, Hal	Conservtn:General	C4a-19	Cons can be taken from several customer types	Pub.Mtg.
Cooper, Hal	Misc:Other	C6e-3	Benefits of electrical transportation	Pub.Mtg.
Cooper, Hal	Nuclear	C7-10	Best we can do with nuclear is get Hanford units on line	Pub.Mtg.
Cooper, Hal	Nuclear	C7-11	Use nuclear units for waste treatment	Pub.Mtg.
Cooper, Hal	Power Exchanges	C8-4	Build an intertie with the Midwest	Pub.Mtg.
Cooper, Hal	Renew:Genl	C9a-2	Need to move on renewables, solar, thermal	Pub.Mtg.
Cooper, Hal	Renew:Wind	C9e-2	Wind power in WY, MT, & ND is advantageous	Pub.Mtg.
Demarco, Jack	Compliments	A3-1	Compliment	2
DR Johnson Lumber Co	Air Q:CO2	B2a-5	Tree harvesting & CO2	1
DR Johnson Lumber Co	Cogen	C2-2	Support cogeneration	1
Dutro, Barbara	Misc:Other	C6e-2	Appalled that Solar/Conservation Program is not included	21
Dutro, Barbara	Nuclear	C7-6	Nuclear plants should not be used	21
Dutro, Barbara	Renew:Hydro	C9c-2	Libby Dam: use for firm power	21
Ellis, Frederick	Conservtn:General	C4a-1	Support conservation	9
Ellis, Frederick	Misc:Hydrogen	C6b-1	Must use hydrogen	9
Ellis, Frederick	Misc:Other	C6e-1	E. Wash. has the potential for electric generation	9

<b>3.3 COMMENTERS and COMMENTS for the RESOURCE PROGRAMS EIS</b>				
Commenter:	Category:	Comment :	Topic:	Letter No:
Ellis, Frederick	Nuclear	C7-3	Nuclear is not an option	9
Emerald PUD-Doug Still	CTs/Ntl Gas	C3-1	Natural gas CTs are not efficient	24
Emerald PUD-Doug Still	Conservtn:General	C4a-2	Support cost effective conservation	24
Emerald PUD-Doug Still	Fuel Switching	C5-6	Support fuel switching	24
Emerald PUD-Doug Still	Nuclear	C7-5	Don't waste \$ on nuclear	24
Emerald PUD-Doug Still	Renew:Solar	C9d-1	Support passive solar	24
Emerald PUD-J. Shields	Priorities	A1-11	Agree with preferred alternative; support High Cons	24
Emerald PUD-J. Shields	Analysis:General	B1-6	Show a weighted comparison of effects	24
Emerald PUD-J. Shields	Air Q:CO2	B2a-2	Don't exclude costs for CO2	24
Emerald PUD-J. Shields	Economic Effects	B4-5	Don't exclude costs for catastrophic event and nuclear waste	24
Emerald PUD-J. Shields	Economic Effects	B4-15	Costs of nuclear & renew & cogen aits illogical	24
Emerald PUD-J. Shields	Conservtn:General	C4a-10	Choose High Conservation for preferred alternative	24
EPA	Priorities	A1-20	Explain resource stack	46
EPA	No Comment	A4-5	EIS rated "Lack of Objections"	46
EPA	Editorial	A5-9	Where are "estimates of water consumption"	46
EPA	Analysis:General	B1-12	Base case and conservation alternatives similar	46
EPA	Air Q:Other	B2b-7	Air impacts of fuel switching under No Action	46
EPA	Air Q:Other	B2b-8	Radon exposure and regulations	46
EPA	Air Q:Other	B2b-9	New conservation legislation	46
EPA	Land & Water	B5-6	Solar land estimates too high	46
EPA	Land & Water	B5-7	Effect of low water on alternatives and resources	46
EPA	Land & Water	B5-8	Add water rights/demand effects	46
Flathead Electric Coop	Priorities	A1-16	Priorities	20
Garnett, Robert	Renew:Hydro	C9c-1	Use small hydro	11
Gomez, Merrill Lynch	Priorities	A1-14	Priorities and support of nuclear	17
Gregory, Dow Corning Corp	Priorities	A1-3	Agree with preferred alternative	13
Gregory, Dow Corning Corp	Fuel Switching	C5-3	Support fuel switching	13
Griffing, Milton	Conservtn:General	C4a-16	Buy-out old aluminum plants for conservation	30
Haber, Mercy Healthcare, Inc.	Cogen	C2-1	Support cogen in PPL area	4
Heinert, Champion Intl Corp	Conservtn:General	C4a-5	Emphasize conservation and nuclear	31
Heinert, Champion Intl Corp	Nuclear	C7-2	Expand and use Nuclear	31
IDA West Energy Co	Air Q:CO2	B2a-3	Clean Coal, Cogen & CO2 tables not accurate	16
IDA West Energy Co	Air Q:Other	B2b-1	Clean Coal, Cogen & SO2 & NOx tables not accurate	16
Idaho Dpt Water Resources	Priorities	A1-12	Support High Conservation Alternative	50
Idaho Dpt Water Resources	No Action	A2-3	Increase R&D in alternatives besides No Action	50
Idaho Dpt Water Resources	No Action	A2-4	No action may not cause the impacts predicted	50
Idaho Dpt Water Resources	Editorial	A5-5	Change resource "actions" to "acquisitions"	50
Idaho Dpt Water Resources	Analysis:General	B1-10	Evaluate more mixes of alternatives	50

<b>3.3 COMMENTERS and COMMENTS for the RESOURCE PROGRAMS EIS</b>				
Commenter:	Category:	Comment :	Topic:	Letter No:
Idaho Dpt Water Resources	Economic Effects	B4-13	Conservation will have operations employment benefit	50
Idaho Dpt Water Resources	Other Impacts	B6-7	Irrig & Ag Cons reduces soil erosion does not increase it	50
Idaho Dpt Water Resources	Conservtn:General	C4a-15	Why is aluminum not a part of conservation program	50
Idaho Dpt Water Resources	Conservtn:General	C4a-17	Over-emphasis on conservation impacts	50
Idaho Dpt Water Resources	Conservtn:General	C4a-18	Conservation section has no cost and supply table in ch 4	50
Idaho Dpt Water Resources	Renew:Hydro	C9c-3	Discuss potential at existing hydro sites	50
Idaho Dpt Water Resources	Renew:Hydro	C9c-8	Add impact table for hydro	50
Jeffries, Aileen	Economic Effects	B4-8	Nuclear costs would change if entire fuel cycle included	49
Jeffries, Aileen	Renew:Solar	C9d-3	Recommend photovoltaics	49
Jeffries, Aileen	Renew:Wind	C9e-4	Recommend wind site at Rattlesnake	49
Klinger, Marvin	Power Exchanges	C8-3	Import Alternative should include imports from east	44
Lantz, George	Misc:Aluminum	C6a-1	Life expectancy and resource value of aluminum plants?	19
Lantz, George	Misc:Hydrogen	C6c-1	Is magnetohydrodynamics viable?	19
Lantz, George	Renew:Geothermal	C9b-1	Is geothermal feasible?	19
Lemaer, Paul	Misc:Other	C6e-4	Conserve water	52
Lemaer, Paul	Nuclear	C7-12	Don't need nuclear	52
Morgan, City of Renton	Priorities	A1-15	Priorities	18
Morgan, City of Renton	Coal	C1-1	Reduce emissions from coal through research	18
Morgan, City of Renton	Conservtn:General	C4a-7	Conservation has limited benefits	18
Mudge, John	Compliments	A3-3	Compliment	6
Mudge, John	Fuel Switching	C5-2	Excluding fuel switching is a cop-out	6
NWPPC	Priorities	A1-9	Support least total cost alternatives	42
NWPPC	Compliments	A3-5	Compliment	42
NWPPC	Air Q:Other	B2b-4	Use of load growth ranges would change SO2 numbers	42
NWPPC	Economic Effects	B4-14	Use of high forecast distorts costs	42
Ogden, Dan	Priorities	A1-4	Agree with preferred alternative	24
Olson, John	Priorities	A1-17	Priorities	22
Olson, John	Fuel Switching	C5-5	Encourage fuel switching	22
ONRC	Renew:Geothermal	C9b-2	BPA can't develop geothermal before RPEIS is done	51
Oregon DOE	Priorities	A1-5	Priorities	33
Oregon DOE	Air Q:CO2	B2a-1	Describe how EIS would change with CO2 impacts	33
Oregon DOE	Conservtn:General	C4a-3	Support cost-effective conservation	33
Oregon DOE	Fuel Switching	C5-7	Improve inadequate fuel switching analysis	33
Oregon DOE	Nuclear	C7-7	Complete nuclear only with the right contracts	33
Ottinger, Pace Law School	Priorities	A1-6	Agree with priorities but analysis superficial	12
Ottinger, Pace Law School	Analysis:General	B1-1	Supply back-up data	12
Ottinger, Pace Law School	Air Q:CO2	B2a-4	Lack of CO2 impacts in nuclear discussion	12
Philbrick, David	Priorities	A1-7	Agree with conservation; obtain creatively	28

<b>3.3 COMMENTERS and COMMENTS for the RESOURCE PROGRAMS EIS</b>				
Commenter:	Category:	Comment :	Topic:	Letter No:
Philbrick, David	Conservtn:General	C4a-8	BPA should be creative in capturing conservation	28
Philbrick, David	Fuel Switching	C5-4	Support fuel switching before CTs	28
Poulin, N. American Energy Svcs	Compliments	A3-4	Compliment	15
Puget Power	Economic Effects	B4-1	Quantifying costs not best	34
Puget Power	Conservtn:General	C4a-13	Include "contracted requirements" customers in cons cost-sharing	34
Resources Agency of CA	No Comment	A4-3	No Comment	40
Rudolf, Mathew	Compliments	A3-2	Compliment	3
Salem Electric	Priorities	A1-10	Take High Conservation Alternative	27
Salem Electric	Economic Effects	B4-1	Include catastrophic costs for nuclear	21
Salem Electric	Conservtn:General	C4a-9	Adopt the High Conservation Alternative	27
Salem Electric	Nuclear	C7-4	Terminate WPPSS 1 & 3	21
Seattle City Light	Priorities	A1-19	What are resource priorities if no high load growth occurs	47
Seattle City Light	Compliments	A3-6	Compliment	47
Seattle City Light	Editorial	A5-1	Add Table of Contents to Volume 2	47
Seattle City Light	Analysis:General	B1-7	Add a matrix to compare resource impacts	47
Seattle City Light	Analysis:General	B1-11	Support programmatic EIS	47
Seattle City Light	Air Q:Other	B2b-6	Agree with the IAQ conclusions	47
Seattle City Light	Economic Effects	B4-3	Environmental costs are only draft and too low	47
Seattle City Light	Economic Effects	B4-10	Clarify inclusion of environmental costs for nuclear	47
Seattle City Light	Economic Effects	B4-23	Geothermal and solar env costs changed since last TRP	47
Seattle City Light	Economic Effects	B4-25	Why are env costs of imports zero	47
Seattle City Light	Other Impacts	B6-6	Disposal is not an impact from conservation	47
Seattle City Light	Coal	C1-6	Explain ISAAC output of nuclear & coal in High Conservation Alternative	47
Seattle City Light	Conservtn:General	C4a-11	Add High Conservation measures to EIS as they are confirmed	47
Seattle City Light	Conservtn:General	C4a-12	Agree with the conservation estimates	47
Seattle City Light	Nuclear	C7-9	Question including nuclear in preferred alternative	47
Sofge, Fair Share of Springfield	Priorities	A1-1	Support conservation	7
State of Nevada	No Comment	A4-4	No Comment	45
State of Utah	No Comment	A4-2	No Comment	39
Tau, Tina	Priorities	A1-2	Support conservation	8
Tau, Tina	Cons:Appliances	C4b-2	Support conservation incentives	8
U.S. DOE Idaho Field Office	Editorial	A5-2	Appendix A tables	43
U.S. DOE Idaho Field Office	Analysis:General	B1-13	Provide comparison of impacts & benefits	43
U.S. DOE Idaho Field Office	Other Impacts	B6-3	Changes to the hydro system is significant environmental impact	43
U.S. DOE Idaho Field Office	Renew:Hydro	C9c-7	Describe hydro categories	43
US DOE Idaho Ntl. Engineering Lab	Editorial	A5-6	Hydrocarbon fluid use; freon not used in U.S.	41
US DOE Idaho Ntl. Engineering Lab	Editorial	A5-7	Supply of The Geysers	41
US DOE Idaho Ntl. Engineering Lab	Editorial	A5-8	Operation of The Geysers	41

<b>3.3 COMMENTERS and COMMENTS for the RESOURCE PROGRAMS EIS</b>				
Commenter:	Category:	Comment :	Topic:	Letter No.:
US DOE Idaho Ntl. Engineering Lab	Economic Effects	B4-17	Renewables have different costs	41
US DOE Idaho Ntl. Engineering Lab	Renew:Solar	C9d-2	Solar thermal also has waste heat	41
US Bureau of Land Mgmt	No Comment	A4-1	No Comment	25
Wash. State Energy Office	No Action	A2-2	No action is just conjecture	37
Wash. State Energy Office	Editorial	A5-3	New Homes EIS reference	37
Wash. State Energy Office	Editorial	A5-4	Add passive stack ventilation to list	37
Wash. State Energy Office	Editorial	A5-10	Describe impacts for conservation in Chapter 3	37
Wash. State Energy Office	Analysis:General	B1-9	Include resource mix alternatives in Final	37
Wash. State Energy Office	Air Q:Other	B2b-5	Describe efficiency improvements to gas turbine plants	37
Wash. State Energy Office	Economic Effects	B4-6	Environmental costs for nuclear should be more comprehensive	37
Wash. State Energy Office	Economic Effects	B4-7	Use new nuclear operating capacities & O&M costs	37
Wash. State Energy Office	Economic Effects	B4-16	ISAAC should include env costs for IOUs	37
Wash. State Energy Office	Economic Effects	B4-19	Include environmental costs in ISAAC	37
Wash. State Energy Office	Economic Effects	B4-21	Clarify conservation costs	37
Wash. State Energy Office	Economic Effects	B4-22	Use of term "cost-effectiveness"	37
Wash. State Energy Office	Economic Effects	B4-24	How are costs of imports characterized	37
Wash. State Energy Office	Nuclear	C7-8	Use current figures for nuclear operating capacity	37
Wash. State Energy Office	Renew:Hydro	C9c-6	Describe hydro categories	37
Wind Turbine Co.	Land & Water Impacts	B5-3	Land use for wind too high	14
Wind Turbine Co.	Land & Water	B5-4	Wind turbines don't preclude other land uses	14
Wind Turbine Co.	Land & Water	B5-5	Wind turbines enhance land values	14
Wind Turbine Co.	Other Impacts	B6-2	Noise & visual impact of wind turbines not worse than others	14
Wold, Timothy	Analysis:General	B1-4	Discuss site-specific impacts of nuclear	36
Wold, Timothy	Analysis:General	B1-8	Nuclear & Conservation Alternatives are the same	36
Wold, Timothy	Other Impacts	B6-5	Misleading to leave out nuclear disposal and accident impacts	36
WPPSS	Analysis:General	B1-3	Use site-specific information for nuclear	32
WPPSS	Analysis:General	B1-5	Subject all findings for all impacts to logic test	32
WPPSS	Air Q:Other	B2b-2	Air impacts of cogen & nuclear alternatives are wrong	32
WPPSS	Air Q:Other	B2b-3	Radiological emissions not listed for cogen, coal, CTs	32
WPPSS	Construction Impacts	B3-1	Construction costs for nuclear should be zero	32
WPPSS	Construction Impacts	B3-2	Discuss construction impacts consistently	32
WPPSS	Economic Effects	B4-9	Values for nuclear land and water too high	32
WPPSS	Economic Effects	B4-11	Operations jobs are a benefit not an impact	32
WPPSS	Economic Effects	B4-12	Cogen operations employment too high	32
WPPSS	Economic Effects	B4-20	Discuss displaceable impacts consistently	32
WPPSS	Land & Water	B5-1	Land use too high for nuclear, too low for wind & solar	32
WPPSS	Land & Water	B5-2	Impacts for nuclear should be added for other resources	32
WPPSS	Other Impacts	B6-4	New thermal can be a benefit to hydro system	32

<b>3.3 COMMENTERS and COMMENTS for the RESOURCE PROGRAMS EIS</b>				
Commenter:	Category:	Comment :	Topic:	Letter No:
Wyoming Public Service Comm	Priorities	A1-18	Include coal & fuel switching in preferred alt.	38
Wyoming Public Service Comm	Economic Effects	B4-18	Environmental costs for thermal can be internalized	38
Wyoming Public Service Comm	Coal	C1-2	Coal can be environmentally sound	38
Wyoming Public Service Comm	Coal	C1-3	Wyoming has low sulfur coal which BPA should use	38
Wyoming Public Service Comm	Coal	C1-5	Wise siting of coal plants improves viability	38
Wyoming Public Service Comm	CTs/Ntl Gas	C3-2	Use natural gas in Resource Program	38
Wyoming Public Service Comm	Conservtn:General	C4a-14	Assign the costs of conservation to those who benefit	38
Wyoming Public Service Comm	Conservtn:General	C4a-14	Test all conservation programs	38
Wyoming Public Service Comm	Conservtn:General	C4a-14	Use conservation carefully in rural areas	38
Wyoming Public Service Comm	Conservtn:General	C4a-14	Conservation should accommodate economic expansion	38
Wyoming Public Service Comm	Cons:Efficiencies	C4c-1	Use advanced metering technologies for conservation	38
Wyoming Public Service Comm	Renew:Hydro	C9c-4	Avoid restrictions on hydro	38
Wyoming Public Service Comm	Renew:Hydro	C9c-5	Hydro: keep cost low, supply available	38
Wyoming Public Service Comm	Renew:Wind	C9e1	Wyoming wind sites are viable	38
Wyoming Public Service Comm	Renew:Wind	C9e-3	Wind power potential should be studied	38

### 3.4. Comment Summary and Responses

#### General/Overall (A) Priorities (A1)

Comments and Responses	Letter #	Comment #
<b>Glenn Sofge, Fair Share of Springfield</b>	<b>007</b>	<b>A1-1</b>
<i>My first, second, and third choices for additional resources are conservation.</i>		
<b>Tina Tau</b>	<b>008</b>	<b>A1-2</b>
<i>Strongly support conservation "as the preferred alternative for meeting our local (and national) energy needs. . . . In the long run, [it] seems much the most realistic choice."</i>		
<b>William T. Gregory, Dow Corning Corporation</b>	<b>013</b>	<b>A1-3</b>
<i>"I agree that the preferred alternative is to emphasize conservation. Everyone wins with this approach."</i>		
<b>Dan Ogden</b>	<b>024</b>	<b>A1-4</b>
<i>I support BPA's recommendation for the conservation package as the preferred alternative. The package contains a responsible balance of new generation resources and a level of conservation which is optimistic but attainable.</i>		
<b>Response to Comments A1 - A4:</b> We agree, as reflected in our Preferred Alternative.		
<b>John Savage, Oregon Dept. of Energy</b>	<b>033</b>	<b>A1-5</b>
<i>"With a few exceptions, the resource priorities and actions set forth in the program are in accord with Oregon's energy policies."</i>		
<b>Richard Ottinger</b>	<b>012</b>	<b>A1-6</b>
<i>"The priorities are excellent but the analysis is very superficial."</i>		
<b>Response:</b> See response to Comment B1-1.		
<b>David Philbrick</b>	<b>028</b>	<b>A1-7</b>
<i>Conservation should be the preferred choice as proposed. BPA should be more creative in how it is obtained.</i>		
<b>Response:</b> BPA has initiated the Resource Supply Expansion Program to confirm additional conservation and renewable energy resources in the region. It is designed to move new conservation techniques to market readiness. See also response to Comments A1-17 and C4a-1.		

**Comments and Responses**

Letter #

Comment #

**Stephen Ahearn, Arizona Energy Office****026****A3-8**

*The preferred alternative, Emphasize Conservation, seems to cost-effectively address the system resource needs of the future while safe-guarding environmental quality.*

**Response:** We agree, as reflected in our Preferred Alternative.

**Richard Watson, NW Power Planning Council****042****A1-9**

"The alternatives identified as least total cost are the preferable alternatives."

**Response:** Among the alternatives emphasizing resources with confirmed costs and supply, BPA's preferred alternative represents the least total cost.

**Jere Overs, Salem Electric****027****A1-10**

*"We urge BPA to adopt the High Conservation Alternative as its goal and take the appropriate steps to acquire this low-cost resource."*

**Response:** See responses to Comments A1-12, C4a-8, and C4a-9.

**Jeffrey K. Shields, Emerald PUD****035****A1-11**

*We agree that the preferred alternative should be the Emphasize Conservation Alternative. If it can be shown that the High Conservation Alternative can be equally or more cost-effective and reliable, as well as available, this alternative should be the preferred alternative.*

**Response:** We agree. As pointed out on page S-17 of the Draft EIS, if the availability and cost-effectiveness of additional conservation were confirmed, Emphasize High Conservation would be the preferred alternative. At the time the Final EIS was prepared, however, those conditions had not yet been met. BPA continues to explore ways to expand and confirm the supply of conservation.

**Wayne Haas, Idaho Dept. of Water Resources****050****A1-12**

*While we support the preferred Conservation Alternative, we urge BPA to venture closer to the High Conservation Alternative as a preferred course. Although cost and supply may not be verified for a high conservation resource, the RPEIS confirms that "more conservation is expected to be available in the future than the supply curves indicate" (Vol. 1, Pg. 4-26), and the impacts on water consumption and thermal discharge are significantly less with the High Conservation resource portfolio. (Table S-5, Summary, pg. S-15).*

**Comments and Responses**

Letter #

Comment #

**Response:** Thank you for your support of the Conservation Alternative. As the cost-effectiveness, reliability, and commercial availability of the conservation measures included in the High Conservation alternative are confirmed, we will consider them.

**Jeff Adams****010****A1-13**

*"The most reasonable and long lasting resource choice is conservation. . . . Next is renewables. . . . Hydropower has destroyed the Columbia basin already; it cannot be an option. The other choices appear to cause more pollution and despoil the environment."*

**Response:** As noted on page 4-13 of the Draft EIS, "The Emphasize High Conservation Alternative has a lower total system cost than the Base Case Alternative because of lower direct costs and very low environmental costs. There is some concern, however, over the cost-effectiveness, reliability, and commercial availability of these high conservation resources." The Draft EIS shows that the Base Case and the Emphasize Conservation Alternative, which are the same, have the lowest total cost (except for the Emphasize High Conservation case). The Emphasize Renewables Alternative, which emphasizes the addition of renewables including hydropower, geothermal, wind, and solar, shows higher direct and total costs (i.e., direct plus environmental costs) than the Base Case and Emphasize Conservation Alternatives. Other alternatives have equal or higher total costs compared to the Base Case. While we are moving toward a greater mix of resources, we still need to rely on the hydro we already have.

**Pamela Gomez****017****A1-14**

*"Conservation, power exchange and system efficiencies are the leading choices towards power supply. To the extent, however, that it is determined to develop new power resources, I would like to see the completion of the nuclear facilities at WPPSS #1 or #3. It is a shame to throw away these partially completed projects."*

**Response:** As indicated in the preferred alternative, conservation and system efficiencies are also leading choices for BPA. Imports are also considered; however, they could have substantial air quality impacts in California and could significantly change hydro system operations.

See also responses to Comments C7-1 and C7-2.

**Comments and Responses****Letter #****Comment #****Clinton Morgan, City of Renton, Washington****018****A1-15**

*Immediate pursuits to meet power demands: a) Use of hydroelectric to its fullest potential b) Natural gas c) Geothermal if available Conservation may have limited practical benefits except improving on new development designs and codes.*

For longer range pursuits for power, I would suggest research on using coal fired plants to reduce the impact of emissions to an acceptable level. Research on all the other alternatives, including nuclear fusion and or fission, should continue to reduce their environmental impacts.

**Response:** BPA continues to rely on its hydro base for much of the region's power supply, within the constraints imposed by other uses such as irrigation, navigation, fish and wildlife, and recreation. New hydro development is limited by a number of factors, as discussed in Chapter 3.2.1.1 of the Draft EIS.

Gas-fired combustion turbines are included in the resource stack of all alternatives.

To test geothermal availability, BPA currently is working with developers and other agencies on pilot projects at promising sites in the Northwest. See response to Comment C9b-2.

BPA believes that a substantial conservation resource exists in the region. See response to Comment C4a-7.

See Chapter 3.4.3 for a discussion of new nuclear fission technology. Also, see response to Comment C1-1 regarding coal generation.

**Jerry Brobst, Flathead Electric Coop****020****A1-16**

*"Resource choices: 1. Conservation 2. Combustion turbines 3. System efficiencies 4. Hydro 5. Photovoltaics"*

**John Eric Olson****022****A1-17**

*Encourage fuel switching for space and water heating for residential use, to free hydro power for the growth of industry. Focus more on development of alternative energy sources such as geothermal and agricultural waste materials. Shift from fossil fuels and hydro.*

## Comments and Responses

Letter #

Comment #

**Response:** See response to Comment C5-7 for a discussion of BPA's approach to fuel switching.

BPA is emphasizing conservation and renewable energy sources as it develops new ways to meet the region's electrical energy needs. Specifically, the Resource Supply Expansion Program (RSEP) is intended to move conservation and renewable technologies to market readiness. RSEP is a regional effort among the region's energy interests to cooperatively develop and co-fund demonstration projects in a variety of new conservation and renewable energy technologies, including geothermal energy. Nine conservation and renewable demonstration projects, costing more than \$3,000,000, are being funded in fiscal year 1992. Twenty-five organizations are involved in one or more projects. About half of the program's cost is covered by BPA. Development of a collaborative 50 megawatt wind demonstration has also been announced as part of RSEP.

While biomass/alcohol generation is not currently part of the RSEP program, BPA supports demonstration projects of biofuels through the Pacific Northwest-Alaska Regional Bio-Energy Program, a congressionally funded program managed by BPA for the U.S. Department of Energy. Current demonstration projects include biodiesel fuel from rapeseed and safflower seed.

The hydrosystem will remain an important resource for BPA. In the future, we will rely on a broader range of resources than in the past. However, the existing hydroelectric system and fossil fuels are likely to remain an important element of the resource mix because of costs and limitations in the supply of other resources. BPA is charged by Congress to give preference to public utility customers in order to operate the system for the benefit of the general public, especially domestic and rural customers.

**Smyth/Ellenbecker, Wyoming Public Service**

**038**

**A1-18**

*Under BPA's preferred alternative, Emphasize Conservation, no new coal, clean coal or fuel switching resources are to be acquired. The Wyoming Commission believes these proven resources should remain part of a truly integrated resource planning effort.*

**Response:** The Emphasize Conservation Alternative was derived from the Base Case by first selecting all available conservation resources to meet load growth. However, the supply of conservation is not adequate to meet demand. In our analysis, the balance of the load growth would be met by other available resources, ranked according to cost. Although new pulverized coal resources were available, they were not selected because of their higher costs.

**Comments and Responses****Letter #****Comment #**

Fuel switching resources were not included because BPA has not confirmed their supply. However, an Emphasize Fuel Switching Alternative was included in order to assess its environmental impacts should the supply and cost-effectiveness be confirmed.

**Kirvil Skinnarland, Seattle City Light****047****A1-19**

*It is appropriate to use the High Load Growth estimates for a worst case analysis. However, what resource scenario would be your fall-back if that growth estimate does not materialize? Would the resource priority of the current Preferred Alternative be preserved? BPA should clarify that it will pursue all conservation resources as the first priority, no matter what the load growth scenario.*

**Response:** Under the full range of load growth scenarios, the Preferred Alternative would be Emphasize Conservation. BPA intends to develop all cost-effective conservation. However, even under lower load growth scenarios, some generating resources would need to be acquired because the supply of conservation would not be adequate. It also is prudent to acquire a mix of conservation and generating resources to provide the flexibility and diversity necessary to control risk. This mix of resources would be acquired based upon cost-effectiveness, reliability, and environmental effects.

In the Final EIS (Section 4.1.2), BPA has examined how the resource mix might change if medium loads are assumed instead of high loads. As shown in Table 4-1, in the year 2000, with medium loads, no nuclear or renewables would be acquired and fewer cogeneration and combustion turbine resources would be acquired than in the high load Base Case. In the year 2010, under medium loads, no nuclear and fewer cogeneration, combustion turbine, renewable resources would be acquired than in the high load Base Case.

**Ronald A. Lee, Environmental Protection Agency****046****A1-20**

*The "resource stack" (page 1-7) needs to be more clearly explained. How does the "resource stack" affect resource planning decisions? Is it an implied priority list?*

**Response:** The purpose and development of the "resource stack" are explained in more detail on page 4-1 of the Draft EIS, Volume 1.

## No Action (A2)

### Comments and Responses

Letter #

Comment #

Harry L. Brunson, KJ Booster Club

005

A2-1

*"No action is not an alternative. If it is even considered we can eliminate all the planners, etc."*

**Response:** The National Environmental Policy Act and its implementing regulations (40 CFR 1500-1508) specify that environmental impact statements must examine the impacts of a no action alternative. As stated on page S-7 of the Draft EIS, "Under the No Action Alternative, the underlying need for energy to meet the growing loads of BPA customers would not be met." The analysis in the Draft EIS suggests that the No Action Alternative could lead to major environmental and social impacts, and this alternative is clearly not BPA's preferred alternative.

Byers/Harding, Washington State Energy Office

037

A2-2

*The "No Action Alternative" (Section 4.2) states that "neither BPA, nor the Region would acquire resources to meet these loads." This assumption is unrealistic.*

*The "No Action Alternative" should not be meaningless nor should it mislead. BPA's EIS addresses the consequences of its actions, not the actions of others. It is absurd and improper to assume that no utility in the region will build to meet load. IOUs and publics both operate with legal mandates to serve. In particular, there is no reason to assume that IOU planning and resource development would be as haphazard and uncoordinated as the discussion on pages 4-8 and 4-9 suggest. A more realistic "No Action Alternative" might assume that BPA's failure to acquire new resources would lead to reliance on IOUs for incremental public utility load.*

**Response:** The No Action Alternative was developed after extensive internal discussions and a public process (which included the Resource Programs EIS Technical Review Panel). We are aware that growing customer loads would somehow be met--perhaps by our customers placing their incremental loads on investor-owned utilities. However, since "no action" means the need is not met, the true definition of the No Action Alternative is that no one meets the underlying need. Defining the No Action Alternative in this way is neither meaningless nor misleading. It allows for a more relevant comparison between meeting the underlying need and not meeting that need. It also provides for the examination of a full range of alternatives.

**Comments and Responses**

Letter #

Comment #

**Wayne Haas, Idaho Dept. of Water Resources****050****A2-3**

*"Vol. 1, pp. 4-8 to 4-9: The consequences of a 'No Action' alternative include an increased emphasis on and investment in research and development (seems like a generally good idea). Research and development should be encouraged with the other alternatives."*

**Response:** The No Action Alternative described on page 4-8 emphasizes that the research and development that would probably occur in this case would focus on ways to extend the life of existing generating resources and increase system efficiencies, because new major generating resources and conservation programs would probably not occur. Research and development would also be integral to the other alternatives. In particular, in the Emphasize High Conservation and Emphasize Renewables alternatives, research and development are critical if the ambitious acquisition targets for new technologies are to be reached. In the Base Case/Emphasize Conservation Alternative, research and development would be a necessary element of long-term conservation development and acquisition.

**Wayne Haas, Idaho Dept. of Water Resources****050****A2-4**

*Vol. 1, pp. 4-8 to 4-9: The consequences of the "No Action" alternative are described in histrionic terms. An assumed consequence of the alternative is that socio-economic impacts would be major and adverse, new industries and residents would be discouraged from relocating to the region, many existing industries and residents would likely emigrate, and private power developments would lead to increased population dispersion.*

*If prices stabilize at the national average, why would the Northwest be any more unattractive than any other region of the U.S. without a federal power marketing authority? If the population decreases, then so would energy demand. "This must be taken into calculations if the assumptions are followed. Given relative electricity costs in other parts of the country and the costs of moving, a large out-migration might be as unlikely as likely. And finally, given the increased costs of dispersed services, economic forces will likely press toward greater population concentrations or urbanization."*

**Comments and Responses****Letter #****Comment #**

**Response:** The No Action Alternative highlights the impacts if no utilities acquired resources. The consequences were developed in a public process with BPA's Technical Review Panel. We believe that if energy supplies are not increased, socioeconomic impacts would in fact be major and adverse. If new industries could not be assured of an energy supply, they may well not locate in the Northwest. The general economic disruption could cause out-migration, and could cause cost of electricity to increase significantly because of competition for a limited supply. We agree that the alternative as structured describes an extreme condition which is unlikely to occur. The Status Quo Alternative is a more realistic picture of consequences if BPA does not change the existing policy direction of the 1990 Resource Program. See also the response to Comment A2-2.

**Compliments (A3)**

<b>Jack Demarco</b>	<b>002</b>	<b>A3-1</b>
<i>"I like being informed. Keep up the good work on informing us."</i>		
<b>Matthew Rudolf, Security Pacific Bank</b>	<b>003</b>	<b>A3-2</b>
<i>"Good job keeping the information coming."</i>		
<b>John T. Mudge</b>	<b>006</b>	<b>A3-3</b>
<i>"Generally good document--but your head is still in the sand regarding fuel switching."</i>		
<b>Response:</b> See response to Comment C5-2.		
<b>Bruce Poulin, North American Energy Services</b>	<b>015</b>	<b>A3-4</b>
<i>"Thanks for the chance to review the Draft Resource Program [EIS]. I like what I see--good job."</i>		
<b>Richard Watson, NW Power Planning Council</b>	<b>042</b>	<b>A3-5</b>
<i>We compliment BPA on the overall quality of the draft. It is a reasonable basis for decisions. Our comments are suggestions for useful extensions of the analysis, perhaps as part of the EIS's first supplement.</i>		
<b>Kirvii Skinnarland, Seattle City Light</b>	<b>047</b>	<b>A3-6</b>
<i>We commend BPA on the thoroughness of the analysis. Environmental effects and mitigation measures for resources are described in detail in easy-to-follow language. The Appendices contain a wealth of useful background.</i>		
<b>Hal Cooper</b>	<b>Public Meeting</b>	<b>A3-7</b>
<i>BPA has done a good job in putting together the alternatives.</i>		

## Comments and Responses

Letter #

Comment #

Austin Collins

Public  
Meeting

A3-8

*I compliment BPA staff in moving in the right direction in an expedient manner and getting on with it.*

### No Comment (A4)

David A. Jones, U. S. Bureau of Land Management

025

A4-1

*"It does not appear that any of the alternatives considered would affect lands managed by the Medford District of the BLM."*

**Response:** The RPEIS is designed to be a programmatic document which describes the effects (including land use) of generic resources, not site-specific resources. Once BPA has determined that a resource must be built to meet our load growth, a site will be proposed and further site-specific environmental documentation will be developed. Therefore, a site may be proposed in your district in the future.

Brad T. Barber, State of Utah

039

A4-2

*No comment.*

Carol Whiteside, Resources Agency of California

040

A4-3

*No comment.*

Ron Sparks II, State of Nevada

045

A4-4

*"Your proposal is not in conflict with state plans, goals or objectives."*

Ronald A. Lee, Environmental Protection Agency

046

A4-5

*The EPA has rated the draft EIS LO (Lack of Objections). This rating and a summary of our comments will be published in the Federal Register.*

### Editorial Comments (A5)

Kirvil Skinnerland, Seattle City Light

047

A5-1

*Please add a table of contents in the beginning of Volume 2: Appendices. It would help greatly in finding different sections.*

**Response:** We are not reprinting Volume 2 for the Final EIS, although it is still available for those who want one. We are printing only an Addendum to Volume 2. A Table of Contents for Volume 2 and the Addendum to Volume 2 is in Volume 1.

<b>Comments and Responses</b>	<b>Letter #</b>	<b>Comment #</b>
<b>Peggy Brookshier, USDOE, Idaho Field Office</b>	<b>043</b>	<b>A5-2</b>
<i>"Page 2-7, Sec. 2.1.4, 1st Paragraph--The reference to Appendix A, Figure A-2 and Table A-2 is incorrect. [It] should be Figure A-1 and Table A-1."</i>		
<b>Response:</b> The change has been made, and in the Final EIS, the reference is correct.		
<b>Byers/Harding, Washington State Energy Office</b>	<b>037</b>	<b>A5-3</b>
<i>"Page 3-12: The second paragraph should clarify that the 1988 EIS focused on new homes."</i>		
<b>Response:</b> The change has been made.		
<b>Byers/Harding, Washington State Energy Office</b>	<b>037</b>	<b>A5-4</b>
<i>"Page 3-12: Passive stack ventilation should be added to the bullet list."</i>		
<b>Response:</b> Passive stack ventilation has been added to the bulleted list.		
<b>Wayne Haas, Idaho Dept. of Water Resources</b>	<b>050</b>	<b>A5-5</b>
<i>"Vol. 1, pg. 4-1: 'The resource actions proposed in future Resource Programs are expected to fall within this range.' Resource actions is a confusing term. It could be replaced with a similar sentence from the Summary -- 'The resource acquisitions proposed in future...'"</i>		
<b>Response:</b> The change has been made, now on page 4-1 of the Final EIS.		
<b>Robert Creed, USDOE, Idaho Ntl. Engineering Lab</b>	<b>041</b>	<b>A5-6</b>
<i>Page 3-30, lines 2 and 3: A working hydrocarbon fluid (such as butane, iso-butane, pentane, etc.) would be better; to our knowledge, freon is not in use in the United States.</i>		
<b>Response:</b> The change has been made.		
<b>Robert Creed, USDOE, Idaho Ntl. Engineering Lab</b>	<b>041</b>	<b>A5-7</b>
<i>"Page 3-30, line 14: Spelling should be 'The Geysers' and about 2,000 MW; 3,000 MW is the total in the United States."</i>		
<b>Response:</b> The change has been made.		

**Comments and Responses**

Letter #

Comment #

**Robert Creed, USDOE, Idaho Ntl. Engineering Lab****041****A5-8**

*"Page 3-30: The operating characteristics of power plants are generally referenced to and maintained at a baseload power level; however, some plants (including many at The Geysers) are operated in a load following manner. Although the plants are not amenable to very rapid fluctuations, power is successfully ramped up over short enough periods to be used in a load following manner by utility-operated geothermal sites such as the Northern California Power Agency plants at The Geysers."*

**Response:** The change has been made.

**Ronald A. Lee, Environmental Protection Agency****046****A5-9**

*"We could not locate the 'estimates of water consumption by each resource type' referenced on page 5-47."*

**Response:** That sentence now reads: "Estimates of water consumption for each resource type are provided in Chapter 3 in the Environmental Effects and Mitigation section for each resource."

**Byers/Harding, Washington State Energy Office****037****A5-10**

*"In chapter 4, we understand the importance of identifying the environmental impacts of conservation measures and have no objection to the values used. It may not be appropriate, however, to list these impacts in great detail in describing the Base Case Alternative and the Emphasize Conservation Alternative without characterizing the impacts of resources emphasized in other cases. This discussion may be more appropriately included in conservation sections in chapter 3."*

**Response:** The detailed list of impacts of commercial conservation has been removed from Chapter 4, as similar detail for other resources would be unknown until site-specific proposals are made. In addition, conservation impact discussions from Chapters 2 and 3 of the Draft EIS have been consolidated into one discussion in Chapter 3 of the Final.

## Analysis Methods (B)

### General (B1)

Comments and Responses	Letter #	Comment #
<b>Richard Ottinger, Pace Law School</b>	<b>012</b>	<b>B1-1</b>
<p><i>"[T]he analysis is very superficial. Back-up data should be supplied together with estimated environmental and economic externalities for each resource."</i></p> <p><b>Response:</b> The analysis in the Draft EIS summarizes the products of two years of work. Analysis methods were developed through technical panels open to the public and made up of citizens with technical expertise or interest in the Resource Program. Chapter 3 of the DEIS includes an extensive analysis of environmental costs of each resource. Back-up data on environmental costs and externalities are provided in Appendices D and F of the DEIS.</p>		
<b>Stephen Ahearn, Arizona Energy Office</b>	<b>026</b>	<b>B1-2</b>
<p><i>"The AEO commends BPA for what seems to be an exhaustive review of multiple options with an eye to balancing both electrical customer and environmental considerations. Incorporating quantifiable environmental externality costs will assure the proper resource mix and lowest total social costs without jeopardizing system reliability, and should be included in future resource decisions."</i></p> <p><b>Response:</b> Thank you. We agree.</p>		
<b>Carl Van Hoff, Wash. Public Power Supply System</b>	<b>032</b>	<b>B1-3</b>
<p><i>The EIS compares various types of resources that, in most cases, have not been sited. Consequently, the study team used a generic form of a resource, using values for impacts or discharges that were either projections, or were surrogate values created by averaging the impacts of several other facilities.</i></p> <p><i>This approach is neither necessary nor appropriate for examining the nuclear option. As the EIS points out, the option would mean completing either or both of the partially completed plants, WNP 1 and 3. Construction impacts were documented as part of licensing. We were told by BPA staff that project-specific data would be used, but we received no requests for documentation.</i></p> <p><i>The EIS shows generic data for land use, water withdrawals, and discharges to water and air which are generally greater than currently known or calculated using known plant dimensions and process capacities. Such over-statements negatively impact the nuclear projects in a resource-to-resource comparison and overstate the impact of the nuclear scenario. Because the values are used throughout the analysis, they also have ripple effects throughout the EIS. Thus, the overstated nuclear impacts distort the effects of every alternative which calls upon a nuclear plant, including the base case and four other scenarios by the year 2000, and in all but one of the scenarios in 2010.</i></p>		

**Comments and Responses****Letter #****Comment #**

*The EIS should use project-specific values for impacts related to nuclear, when available, as BPA staff indicated would be done. "I request that all calculations, comparisons and analyses which use values from the nuclear projects used in the RP EIS--in short, WNP 1 and 3--be rerun, using the new information, and that all tables, charts, graphs and narratives be reprinted showing or using the new information." This offers the decisionmaker the most realistic information for selecting strategies and resource approaches.*

*I have supplied the data and values which should be changed.*

**Response:** Site-specific values derived from the environmental reports prepared for the operating licenses of WNP 1 and 3 have been used to revise data on the nuclear projects. See revised Table 3-28 in the Final EIS.

**Timothy Michael Wold****036****B1-4**

*Though this is a programmatic document, the sources of nuclear power are site-specific. Therefore, it would be appropriate to discuss site-specific rather than generic impacts of using power from these plants.*

**Response:** See response to Comment B1-3.

**Carl Van Hoff, Wash. Public Power Supply System****032****B1-5**

*The EIS in effect says to a decisionmaker, "If you care about [land impacts, air emissions, etc.], here is how the various alternative energy scenarios compare." I request that you subject all your findings for all of the impacts to the same logic test that is described in my comment on air emissions [B2b-2]. Do the findings square with logic and reality?*

**Response:** The comparison of alternatives in the EIS allows the decisionmaker to consider environmental factors along with technical and economic factors in reaching a decision. The analysis in the EIS was subjected to extensive internal and external reviews, which have improved the analysis and led to changes in the document. See response to Comment B1-3.

**Jeffrey K. Shields, Emerald PUD****035****B1-6**

*We suggest you include in the final draft summary the environmental impacts of each of the different resources for comparison purposes; a comparison of the different environmental impacts and how they are weighted, i.e., land use vs. CO<sub>2</sub>; and the types of externalities, beyond those already listed, that have not been included in the analysis.*

**Comments and Responses****Letter #****Comment #**

**Response:** The Final EIS includes a new Figure (S-1 and 3-1) that compares the environmental impacts of major generating types for selected environmental impacts shown in Draft EIS Tables S-5 and S-6 (i.e., SO<sub>2</sub>, NO<sub>x</sub>, TSP, CO, CO<sub>2</sub>, water consumption, thermal discharges, land use, direct and environmental costs, and hydro system operations). Other environmental impacts (externalities) of the operations of each resource are identified in the tables that characterize each resource in Chapter 3 of the Draft EIS (e.g., Table 3-16 for flash geothermal and Table 3-27 for nuclear operations).

BPA has not weighted the environmental externalities of each resource type, for several reasons:

- The data available about environmental impacts are variable, and, in some cases, apply only imprecisely to the generic resources analyzed in this EIS. Applying numerical weights to these data would imply a degree of accuracy that they cannot attain.
- There is no clear consensus on how to apply numeric weights to reflect the relative importance of environmental issues. How, for example, should BPA weight the effects of reduced air quality and visibility against removing large amounts of land from agricultural production?

For these reasons, BPA presented the environmental impacts of the alternatives (which include a mix of resources) in a relative manner in Tables S-5 and S-6 in the Draft EIS and, as a comparison, in the Final EIS added Figure S-1 (also 3-1) to show the relative environmental impacts of individual resource types.

**Kirvil Skinnerland, Seattle City Light**

**047****B1-7**

*We suggest you add a matrix that would provide the reader an easy way to compare the impacts of various resources on different elements of the affected environment.*

**Response:** See response to Comment B1-6.

**Timothy Michael Wold**

**036****B1-8**

*In your mix of options, use of some of the resource types is the same or virtually the same across all the alternatives. In particular, the use of combustion turbines is the same across all the alternatives in 2010. Nuclear power use is exactly the same across all but one of the alternatives. This means there is no substantive comparison of the environmental impacts of using or not using that resource type. It is not possible to meaningfully assess the environmental impacts of including these resources in the BPA resource plan nor to choose .*

*among the resources with reference to those specific impacts, since any alternative selected will have identical impacts with respect to those resources. By the year 2010, Emphasize Nuclear uses no more nuclear power than Emphasize Conservation (or the Base Case) and almost as much conservation! With minor differences, these two alternatives are virtually identical. They are not true alternatives, only phasing scenarios for the same alternative*

**Response:** The discussion in Chapter 3 of the EIS allows for substantive comparison of the environmental tradeoffs among the various resource types. A new figure (S-1) has been included in the Final EIS to facilitate such a comparison. Each of the alternatives developed for the EIS (except for No Action) allows BPA to meet the approximately 5000 aMW of energy forecast to be needed under high load growth. Because of the limited supply of resources and because the most cost-effective resources are acquired first, some of the alternatives are similar by 2010.

**Byers/Harding, Washington State Energy Office**

**037**

**B1-9**

*BPA developed a number of scenarios to measure differences in direct system cost, total system cost, and environmental impacts expected from emphasizing one resource over another. This approach forces the ISAAC model to place a priority on a specific type of resource. Our concern, raised in May 1990 comments on BPA's RPEIS scoping document, is that this approach does not easily accommodate the evaluation of Resource Program mixes that may provide more interesting information. Suppose a Resource Program alternative was proposed that prioritized resources in a manner precisely consistent with the priorities set out in Section 4(e)(1) of the PNW Power Planning Act. None of the modelled scenarios does this (primary emphasis on conservation, secondary emphasis on renewables, tertiary emphasis on cogeneration and fuel switching, and final emphasis on large thermal resources). To establish the relative performance of such an approach, we strongly recommend that BPA include resource mix scenarios in the final EIS.*

**Response:** BPA recognizes that a wide variety of resource program mixes could be developed, each emphasizing or illustrating a particular environmental or resource supply issue. We developed the alternatives analyzed in the Draft EIS through a public process that included opportunities to review technical assumptions and methodologies. The alternatives analyzed in the DEIS were selected in order to highlight differences among resource types and to represent the range of potential alternatives. Although BPA did not develop an alternative that precisely parallels the priorities of the Pacific Northwest Power Planning Act, the Renewables Alternative does, to some degree, reflect its priorities. As shown in the Draft EIS, Tables S-1 and S-2, the Renewables Alternative

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acquires all of the conservation of the Conservation Alternative, as well as all available renewable energy resources and efficiency improvements and a high level of cogeneration resources.

**Wayne Haas, Idaho Dept. of Water Resources****050****B1-10**

*"[We] would like BPA to propose refined alternatives in the final RPEIS. The simple rearrangement of the resource stacks does not fully explore alternatives. For example, the fuel switching resource could be added to the other alternatives for a new mix of energy sources. Nuclear resources, which have the greatest impact on water consumption (Vol. 1, pg. 5-47), should be displaced in the conservation alternatives by adding energy acquired through lower-cost fuel switching and an amplified cogeneration package (lower environmental costs). Other resource mixes assembled along these lines may be analyzed. At least one alternative in the RPEIS should discuss demand management strategies in contrast to traditional supply management, particularly in the face of Northwest electricity consumption rates."*

**Response:** The alternatives BPA developed for the EIS were designed to reveal the major differences in environmental impacts among resources. These alternatives were developed through a public process that included advice from a technical panel. BPA recognizes that a variety of other resource mixes could have been analyzed; however, these mixes would fall within the range of alternatives included in the EIS. Demand management is addressed in the Draft EIS as one means to address load. As described on page 3-78 of the Draft EIS, BPA has begun evaluating demand-side management options in addition to conservation.

**Kirvil Skinnarland, Seattle City Light****047****B1-11**

*We understand that this EIS will support decisions in the 1992 and future resource programs. We support this approach, especially as BPA intends to complete site-specific analyses and because an assessment of cumulative impacts on the existing system will be undertaken as needed.*

**Response:** Thank you for your support.

**Ronald A. Lee, Environmental Protection Agency****046****B1-12**

*The Base Case and the Emphasize Conservation alternatives should be made more distinguishable, as they seem to be the same.*

**Comments and Responses**

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**Response:** The Base Case was designed to order resources strictly by least cost and not to emphasize any particular resource type. The other alternatives, except No Action, were designed to emphasize a particular resource regardless of cost and, when the available supply of that resource was exhausted, to acquire other resources according to cost. Because it is so cost-effective, all of the available conservation was acquired in the Base Case. Therefore, emphasizing the conservation resources in the Emphasize Conservation Alternative would not change the stack.

**Peggy Brookshier, USDOE, Idaho Field Office**

**043**

**B1-13**

*"The report is well organized such that the impacts of one energy source can be compared to a different energy source. However as usual, there is no comparison between the impacts and the benefits."*

**Response:** Each of the alternatives analyzed in the EIS (except the No Action Alternative) was formulated to meet the underlying need: BPA's statutory obligation to serve its customers' loads. Meeting this need benefits BPA's ratepayers and the region. More specific economic benefits (in the form of employment effects) are addressed for each resource type in Chapter 3 of the EIS.

**Hal Cooper**

**Public Meeting**

**B1-14**

*The high-growth-rate case appears to be a one-and-a-half percent per year increase. I think this may turn out to be low, because over the past ten years the Pacific Northwest has been closer to two-and-a-half percent. We may need more generating resources than we might have thought.*

**Response:** Although regional demand for electricity has grown at 2.4% per year over the last two years, BPA's loads grew 1.7% per year. In the 1991 Joint Load Forecast (prepared by BPA and the Power Planning Council), the Forecasted Federal System load growth ranges from -1.2% annually in the low case to 2.1% in the high case.

Our calculations show a 5% chance that the high load growth scenario will occur. The Draft 1992 Resource Program Technical Report (January 1992) predicts a 50% probability that load will fall between the medium-high and medium-low cases, i.e., between 1.8% and 0.6% annually through 2011.

High load growth was assumed in the EIS analysis to assure that maximum environmental impacts were identified. This high load forecast could represent a combination of load growth and the loss of an existing resource as well as increased load growth.

## Air Quality (B2)

### CO<sub>2</sub>(a)

Comments and Responses	Letter #	Comment #
<b>John Savage, Oregon Dept. of Energy</b>	<b>033</b>	<b>B2a-1</b>
<p><i>"BPA should describe how its plan would differ if carbon dioxide emissions had not been considered. Because BPA did not quantify the costs of carbon dioxide emissions, the draft lacks sufficient analysis to assess how carbon dioxide impacts were considered. The final EIS should indicate how BPA's resource choices changed because it considered such impacts."</i></p> <p><b>Response:</b> BPA did not include CO<sub>2</sub> in the environmental costs used to rank resources in the resource stack because of the uncertain evidence supporting CO<sub>2</sub> impacts cost data. However, we did include CO<sub>2</sub> in our analysis of the environmental effects of resource types in Chapter 3 and of alternatives in Chapter 4. CO<sub>2</sub> impacts are also shown in Summary Figures S-2 and S-3 of the FEIS. BPA's resource decisions will reflect all the findings of the EIS. When we acquire resources, such as under the Competitive Acquisition Program or the Options Program, we consider CO<sub>2</sub> in the non-cost portion of our evaluation.</p> <p>BPA recognizes that other utilities and state regulatory agencies in the U.S. have quantified environmental costs for CO<sub>2</sub>. In the future, if more conclusive information or a more complete consensus supports including CO<sub>2</sub> environmental costs, it is possible that our relative ranking of various resource types might change. For example, coal would likely become relatively more costly with any positive CO<sub>2</sub> cost.</p>		
<b>Jeffrey K. Shields, Emerald PUD</b>	<b>035</b>	<b>B2a-2</b>
<p><i>Because BPA has chosen to exclude, inappropriately, the effects of CO<sub>2</sub> from the analysis, some analyses of direct and environmental costs contradict logic. The exclusion of CO<sub>2</sub> from the analysis is ridiculous. Several credible agencies across the country have deemed the scientific evidence sufficient to include CO<sub>2</sub> in their analysis and BPA should do the same.</i></p> <p><b>Response:</b> See response to Comment B2a-1.</p>		

**Comments and Responses**

Letter #

Comment #

**Edmund V. Clark, Ida-West Energy Company****016****B2a-3**

*"In looking over Tables S-5 and S-6, which compare the environmental impact of various resource alternatives, we believe some of the technologies are not accurately represented. . . .*

*"CO<sub>2</sub> emissions from 'cogeneration' will be similar to 'CT's.'*

*"CO<sub>2</sub> emissions from 'clean coal' will be lower than 'coal' due to the higher efficiencies realized with the 'clean coal' technologies.*

*". . . I strongly recommend that you request the Electric Power Research Institute's review of Tables S-5 and S-6; Ron Wolk, Director of EPRI's Advanced Fossil Power Systems Department."*

**Response:** Mr. Clark is correct in pointing out that CO<sub>2</sub> emissions from cogeneration are generally similar to CTs; in fact, we used identical values for both in the Draft EIS. Impacts by resource type are described in the Draft EIS in Chapter 3, Volume 1. However, the tables to which he refers compare *alternatives*, which include a mix of resources. Therefore, the Cogeneration Alternative shows more impact from CO<sub>2</sub> because this alternative has more units of resources that emit CO<sub>2</sub>. See Section 4.1 of the EIS for a description of how we developed the resource mix, or stack, in the alternatives.

**Richard Ottinger****012****B2a-4**

*"Nuclear discussion fails to account for emissions (including CO<sub>2</sub>) from processing uranium."*

**Response:** At this time BPA is focusing only on the operations phase of the total fuel cycle because it is the only phase which has accurate data available for estimates. As the data improves, we will reflect more of the total fuel cycle environmental costs in our estimates of environmental impacts for future resource acquisition decisions.

**Don W. Leach, D.R. Johnson Lumber Company****001****B2a-5**

*"We desire BPA give cogeneration serious research and review. CO<sub>2</sub> may be compensated for by use of timber harvesting in an appropriate manner. As older trees are harvested and replanted with young vigorous trees, the CO<sub>2</sub>-O<sub>2</sub> exchange rate is substantially increased. However, the tens of thousands of acres in the Pacific Northwest that have dead and dying timber assist in the CO<sub>2</sub> greenhouse effect. With BPA's support, the energy industry, environment, and the timber industry can benefit from the harvesting of this natural resource."*

**Response:** Cogeneration is included in BPA's resource stack and in most of the EIS alternatives. BPA is considering cogeneration facilities in its resource acquisition and resource contingency programs. To our knowledge, harvesting older trees as an effective mitigation measure for CO<sub>2</sub> has not been confirmed.

## Other Air Emissions (b)

Comments and Responses	Letter #	Comment #
<b>Edmund V. Clark, Ida-West Energy Company</b>	<b>016</b>	<b>B2b-1</b>
<p><i>"In Tables S-5 and S-6, which compare the environmental impact of various resource alternatives, we believe some of the technologies are not accurately represented. . . .</i></p> <p><i>"Cogeneration' and 'CT's' will be primarily natural gas fired and the same very low level of SO<sub>2</sub> emissions can be expected for both.</i></p> <p><i>"'Clean coal' will have lower SO<sub>2</sub> emissions than 'coal.' A 'coal' plant with FGD [flue gas desulfurization] will typically remove 75-90% of the sulfur, while a coal gasification plant will remove 96-99% of the sulfur.</i></p> <p><i>"'Clean coal' will have significantly lower NO<sub>x</sub> emissions than 'coal.' NO<sub>x</sub> emissions from an IGCC [integrated gasification combined cycle] will be comparable to those from a natural gas fired C.T. due to the diluents in the synthesis gas reducing thermal NO<sub>x</sub> formation.</i></p> <p><i>". . . I strongly recommend that you request the Electric Power Research Institute's review of Tables S-5 and S-6; Ron Wolk, Director of EPRI's Advanced Fossil Power Systems Department."</i></p> <p><b>Response:</b> Mr. Clark is correct in stating that clean coal has lower SO<sub>2</sub> emissions than coal. The Final EIS includes a new figure, S-1 (and 3-1), which compares the environmental impacts of <u>resources</u> and shows the lower air impacts of clean coal. Revised figures in the Final EIS also clarify that the Clean Coal <u>Alternative</u> (which includes a mix of resources) has lower SO<sub>2</sub> and NO<sub>x</sub> impacts than the Coal Alternative (Figures S-2 and S-3).</p>		
<b>Carl Van Hoff, Wash. Public Power Supply System</b>	<b>032</b>	<b>B2b-2</b>
<p><i>The resources for the Cogeneration and Nuclear alternatives to be called upon by the year 2000 are essentially the same, except that the Cogeneration path contains no nuclear plants and has 1423 more average megawatts from burning fossil fuels. (See Table 5-2.)</i></p> <p><i>However, the analysis shows the region receiving more SO<sub>2</sub> (Figures 5-10, 5-27, 5-28 and 5-29), total TSP (Figures 5-11, 5-30, 5-31, and 5-32), and criteria pollutants (Figures 5-20, 5-21, 5-23, and 5-25) for the Nuclear option than for Cogeneration. This is counterintuitive, as nuclear plants burn no fossil fuels other than periodic testing of diesel generators.</i></p> <p><i>"These results would be counterintuitive even if all the Cogen used natural gas. However, report PNL-8044, 'Air Quality Analysis and Related Risk Assessment for the Bonneville Power Administration's Resource Program EIS' seems to indicate that most of the cogeneration is fired either by wood waste or municipal solid waste. Hence, to say these results are counterintuitive is to dramatically understate the case; something is drastically wrong with the analysis."</i></p>		

*Please correct the analysis or explain in the final document why such results are reasonable.*

**Response:** Mr. Van Hoff is correct in asserting that the results in question are quite different from what the casual reader might expect from the description of the alternatives; however, a careful analysis of the power generation and pollutant emission data for the alternatives supports BPA's findings. The following material, presented in detail in Chapter 5.2.2, describes:

- the procedure that was followed to generate projections of pollutant release rates for each alternative;
- the results for the two alternatives--Emphasize Nuclear and Emphasize Cogeneration--questioned in Mr. Van Hoff's comment.

#### Procedure for Calculating Average Pollutant Emission Rates

Total average pollutant emission rates for each alternative in the year 2000 (as presented in the Draft EIS in Figures 5.9 - 5.11) are computed using the following data:

- the power generated by each type of power plant at each of the release sites, shown as annual averages in Table 5-2 of the Draft EIS;
- the number of British thermal units (Btu) required to generate a kilowatthour of power for each of the major categories of power plant (described on page 5-26 of the DEIS);
- the quantity of each pollutant emitted to the atmosphere per million Btus of heat energy released by each type of power plant. These data are provided in Table 5-5 of the Draft EIS.

#### Review of Emission Rates for the Emphasize Nuclear and Emphasize Cogeneration Alternatives

A summary of the regional thermal power production data for the Emphasize Nuclear and Emphasize Cogeneration alternatives is presented as part of Table 5-2. The data indicate that, for the Nuclear Alternative, power generation from fossil fuel power plants is about 82% of the level for the Cogeneration Alternative. In total, the Cogeneration Alternative generates an additional 1,360 megawatts of power from fossil fuel fired power plants. Based on this data alone, it is easy to see how a reader might intuitively expect the pollutant emissions in the Cogeneration Alternative to significantly exceed those in the Nuclear Alternative.

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However, the difference in power generation between the two alternatives does not produce a comparable difference in the rate of pollutant emissions. This is because different types of power plants are characterized by very different pollutant emission rates. For example, the generation of 1300 MW of power from cogeneration facilities produces the same rate of SO<sub>2</sub> emissions as 1 MW of power from an existing coal-fired power plant. (See new Table 5-6 in Chapter 5 of the Final EIS.) As a result, the Emphasize Nuclear Alternative (with slightly more power generated by coal-fired power plants) has equal or greater levels of pollutant emissions than the Emphasize Cogeneration Alternative (with its much higher level of power generation from cogeneration facilities).

**Carl Van Hoff, Wash. Public Power Supply System****032****B2b-3**

*The impacts of resources were evaluated inconsistently. For example, radiological air emissions were listed for nuclear but not for cogeneration, coal, or combustion turbines. I request that you modify the narrative and analyses to treat resources in a more consistent manner.*

**Response:** We agree that the reporting and analysis of environmental impacts for each resource type should be as comprehensive as possible. The tables showing generic impacts for nuclear, cogeneration, coal, and combustion turbines all include categories for air emissions, water pollutants, land use impacts, employment, and occupational health and safety. The generic tables in Chapter 3 do list the radionuclides emitted by coal and geothermal, and health effects from the radiological and carcinogenic component of coal particulates are calculated in the health effects analysis in Chapter 5. This analysis is described in greater detail in Appendix F, Section 2, and in the report, "Air Quality Analysis and Related Risk Assessment for the Bonneville Power Administration's Resource Program Environmental Impact Statement."

**Richard Watson, NW Power Planning Council****042****B2b-4**

*If the ISAAC analysis on the full range of load uncertainty is carried out, at least one result might change. Table S-5 shows emissions of SO<sub>2</sub> in the year 2000 to be greater for the High Conservation Alternative than for the Base Case. This is counter-intuitive, since increasing conservation would seem more likely to decrease emissions. Apparently, a combination of high load growth and the time when conservation is available result in combustion turbines operating at higher levels until conservation acquisitions accumulate. If the High Conservation Alternative were compared to the Base Case using the full range of load growth, many lower growth scenarios would not require increases in combustion turbine use, so that the expected level of SO<sub>2</sub> emissions would probably not increase.*

**Response:** The High Conservation Alternative has higher total SO<sub>2</sub> emissions than the Base Case primarily because of the mix of resources that fill out the resource portfolio for each case. In each of the alternatives that emphasize a particular resource (such as conservation), it is assumed that all available supply of that resource is acquired. Assuming high loads, the remaining load is served by resources that are acquired according to their cost (including environmental cost), subject to resource availability, lead time, and unit size. In the High Conservation Alternative, 260 aMW of cogeneration and 277 aMW of combustion turbines are acquired and operated, in addition to conservation; in the Base Case, resources acquired and operated include cogeneration (260 aMW), combustion turbines (140 aMW), and nuclear (813 aMW). In the Draft EIS, the High Conservation Alternative shows higher SO<sub>2</sub> emissions because it includes more combustion turbines, which emit SO<sub>2</sub>, than the Base Case. In the FEIS, however, revised figures considerably narrow the difference in the SO<sub>2</sub> amounts emitted in the two alternatives so that they are essentially the same in the year 2000, whereas in 2010, the status Quo Alternative shows much higher SO<sub>2</sub> emissions than either the High Conservation or Base Case Alternative (see FEIS Figures S-2 and S-3). BPA recognizes that if load growth is less than the high loads assumed in the EIS, a different mix of resources would be acquired.

**Byers/Harding, Washington State Energy Office**

**037**

**B2b-5**

*"Pages 3-50/51: It may be useful to describe some of the recent improvements in efficiency (e.g., STIGs) and air quality controls (e.g., dry NO<sub>x</sub>) for gas turbine based power plants."*

**Response:** Performance and cost estimates for combustion turbines are currently being updated. They will be available in 1993 and will assume state-of-the-art emission controls. Revised estimates of environmental costs will be used in future Resource Programs.

**Kirvil Skinnerland, Seattle City Light**

**047**

**B2b-6**

*We agree that indoor air quality (IAQ) is not affected adversely by energy-efficient building design or retrofit, in any sector. We support the program's prescriptive requirements, such as ventilation requirements, to ensure that neither IAQ nor energy savings are compromised.*

**Response:** Your support is appreciated. The ventilation requirements will be incorporated into program design and administration.

**Ronald A. Lee, Environmental Protection Agency**

**046**

**B2b-7**

*The air quality effects of fuel switching involving wood burning (page S-7) would be somewhat offset by current "burn bans."*

**Response:** BPA recognizes that wood burning is restricted in many areas that already have air quality problems. We believe, however, that the potential exists outside those areas for some consumers to switch to wood fuels to at least partially meet their needs.

**Ronald A. Lee, Environmental Protection Agency**

**046**

**B2b-6**

*A threshold of 5,000 working level months (page 5-62) is implied for radon exposure. There is no indication of a true threshold at this or any other level. There is no significant data at low exposure levels.*

*There is not now a "national standard" for radon (page 5-62) in buildings nor is one anticipated. A standard implies the force of law or regulation. EPA does have a recommended action level of 4 picocuries per liter.*

**Response:** The EIS has been revised to reflect that, in general, experimental studies of the uranium mine environment, using rats, show that pulmonary fibrosis, emphysema, and lifespan shortening are not produced to any significant extent until radon-daughter exposures exceed about 5000 working level months (WLM). Lung cancer is produced in these studies at levels down to 20 WLM, which are typical for human environmental exposures. These numbers do not imply the levels at which regulatory standards should be set; rather, they are the results of animal studies and demonstrate that respiratory carcinoma is the most prominent health effect associated with radon exposure.

We recognize EPA's recommended action level of 4 picocuries (pCi) per liter. For comparison, 1 pCi/l translates to about 0.005 working levels (WL), a unit of exposure. Thus, 1 WL equals about 200 pCi/l. Exposure to 1 WL for 170 hours (a working month) amounts to 1 WLM of exposure. Most people spend much more than 170 hours in their homes over the course of a month; thus residential exposure may be much greater than 1 WLM on a monthly basis, if radon exposures are high. For example, over a month's time, a child spending 75% of his or her time at home would receive an exposure of 3.2 WLM at 1 WL exposure (NRC 1991). BPA agrees that few data exist to clearly determine health effects at the low exposure levels that occur in most homes. There is a great deal of uncertainty in extrapolating human health effects from hard-working, adult, male miners receiving relatively high doses in mine environments for short periods of time to a more sedentary and diverse group of individuals exposed to low levels of radon for extended periods of time. However, recent studies suggest that data from miners is likely to be the principal basis for estimating the risks of indoor radon for the immediate future (NRC 1991). These studies also demonstrate the uncertainty surrounding risk assessments of radon in homes and conclude that even recent extrapolations of risk estimates from mining to the home environment may overestimate the number of radon-caused lung cancer cases by 20 - 30% (NRC 1991).

**Reference:** National Research Council (NRC). 1991. Comparative Dosimetry of Radon In Mines and Homes. National Academy Press, Washington D.C.

**Ronald A. Lee, Environmental Protection Agency**

**046**

**B2b-9**

*In addition to the proposed indoor air quality legislation cited (page A-27), House Bill 3258 has also been drafted.*

**Response:** The reference to House Bill 3258 has been included in the indoor air quality discussion in Chapter 3.

**Construction Impacts (B3)**

**Carl Van Hoff, Wash. Public Power Supply System**

**032**

**B3-1**

*Although the normal decisionmaking process requires analysis of environmental impacts before they occur, WNP 1 and 3 do not neatly fit this pattern. The construction impacts have already occurred--"land has been cleared and excavated, building foundations, pipelines and utilities have been installed below grade and backfilled, streambed and streamside excavation has been completed, revegetation has occurred, and roads and parking lots have been graded and paved--and all of this has been done for a decade or more." Almost all the remaining work is within existing structures.*

*Please acknowledge that the Federal decision to acquire these resources will create no or negligible new construction impacts. Please change the values for construction impacts to zero, and redo all pieces of the analysis that use those values, such as the work reflected in Figure 5-7 and Table 5-14.*

**Response:** The discussion of environmental impacts of nuclear resources on page 3-57 of the Draft EIS does acknowledge that WNP 1 and 3 are more than half completed, and that therefore many of the construction impacts have already occurred. The data for nuclear in Table 5-14 of the DEIS reflect land use requirements and water impacts of operation, not construction impacts. Figure 5-7 shows the acres of land required by a completed plant, which is a continuing rather than a transitory impact.

**Carl Van Hoff, Wash. Public Power Supply System**

**032**

**B3-2**

*The impacts of resources were evaluated inconsistently. For example, construction impacts (that have already occurred) were discussed on page 3-57, fifth paragraph, for WNP 1 and 3. Though construction impacts will occur for most other resources, they were not mentioned. Please modify the narrative and analyses to treat resources in a more consistent manner.*

**Response:** The construction impacts described for nuclear resources (erosion, dust, and local economic impacts) are characteristic of all large thermal generation projects, because of the complexity and scale of construction. These impacts were mentioned only for nuclear plants because of the large scale of nuclear facilities. On an impacts-per-megawatt scale, of course, these impacts would be more comparable to other resource types. The discussion of coal plants in Chapter 3 has been revised to include more information on construction impacts for large coal plants.

**Economic Effects (B4)**

**J.R. Lauckhart, Puget Sound Power & Light**

**034**

**B4-1**

*Puget does not believe that quantitative monetization is the best method for considering costs and benefits of environmental externalities. Given current data or assumptions regarding environmental costs and benefits, the uncertainties surrounding monetization are so large that Puget believes the resulting externality values are unusable.*

*The Draft EIS recognizes the uncertainty at page 5-51 and indicates that the range of values or costs is sometimes quite large. Table 5-14 at page 5-52 contains six different estimates of environmental externality costs. The range is quite dramatic. For example, the estimated environmental externality cost of municipal solid waste-fired cogeneration ranges from 7.9 mills/kWhr to 124.7 mills/kWhr; that of simple cycle combustion turbine ranges from 1.5 mills/kWhr to 24.8 mills/kWhr.*

*These ranges demonstrate that no consensus exists on monetized quantification of environmental externalities. Therefore, BPA should not attempt to quantify environmental costs.*

*Monetization does not assure that the lowest environmental impact resources will be selected. In BPA's most recent competitive bid solicitation, BPA used monetized estimates of environmental externality costs; the resources selected totaled over 1,000 aMW, of which less than 40 aMW were not gas-fired.*

**Response:** As Puget notes in its letter (for the complete text, see Section 3.5 of this volume, letter 34), BPA is required by the Northwest Power Act to include quantifiable environmental costs in determining a resource's total system costs. The letter states, "Of course, the Regional Act does not require that all environmental externality costs and benefits be considered." BPA is including in its environmental cost values only those effects to which a meaningful economic cost or benefit can be applied. Our environmental cost estimates were developed through a formal work group made up of representatives from federal and state agencies, public and investor-owned utilities, independent power producers, environmental groups and private citizens. Our estimates were then presented for public comment and revised based on the comments received. This is consistent with the guidelines presented by the Northwest Power Planning Council in its 1986 Power Plan.

BPA is legally required to include quantifiable environmental costs in its energy resource decisionmaking. Also, the ranges presented in Table 5-14 represent both control and damage cost approaches to quantifying environmental costs, which often in practice have different values for the same pollutant. These values were developed for a range of geographic locations, which would have different economic values depending on physical characteristics and population density. In any case, BPA considers both monetized and non-quantified environmental impacts in its resource acquisition decisions.

**Stephen Ahearn, Arizona Energy Office**

**026**

**B4-2**

*"Incorporating quantifiable environmental externality costs will assure the proper resource mix and lowest total social costs without jeopardizing system reliability, and should be included in future resource decisions."*

**Response:** BPA has incorporated quantifiable environmental costs in its resource planning. Also, see response to Comment B4-1.

**Kirvil Skinnarland, Seattle City Light**

**047**

**B4-3**

*While we support BPA in its efforts to quantify environmental externalities, we reiterate that these are initial, partial estimates, which do not include (or under-represent) true, life-cycle impacts from fuel extraction to decommissioning and from human health to ecological damage. Consequently, in general, these costs are too low. One major problem is that BPA has not included CO<sub>2</sub> impacts in this round, which has a major impact on costs of fossil fuel plants. Please continue the effort to refine these values and publish a schedule for the work in this report. These partial estimates should be used with caution. Meanwhile, a combination of quantitative and qualitative criteria must be used to select new energy resources.*

**Response:** We recognize that our current environmental cost estimates do not reflect all of the potential environmental costs and benefits of energy resources, and we have never represented the estimates as all-inclusive. We routinely point out that the estimates reflect the environmental costs and benefits of only the operations phase of the fuel cycle. As more information becomes available, we will revise estimates to include more of the life-cycle costs of fuel extraction and consumption processes for use in future BPA resource evaluations.

BPA believes it would be premature to assign a cost to CO<sub>2</sub> in planning activities such as the Resource Programs EIS and the 1992 Resource Program, because of the lack of scientific consensus on the true environmental costs and the very wide range of costs proposed. However, we considered CO<sub>2</sub> emissions in the overall evaluation of resources shown in the Draft EIS, Summary Tables 5 and 6 and in the non-price evaluation of resources offered to us through our acquisition activities. Also, see response to Comment B2a-1.

**Jere Overs, Salem Electric**

**027**

**B4-4**

*"(Pg. S-6) - 'The potential environmental costs associated with radioactive emissions from a catastrophic nuclear event are not estimated or included in this analysis.' Though these costs may both be difficult to quantify and so horribly large as to preclude even thinking about them, some cost is definitely a better estimate than no cost.*

*"A full accounting of these costs, as well as the certain cost overruns and unreliability of operation and lifetime, and the political impossibility of actually finishing WPPSS 1 and 3 should finally convince BPA to terminate these projects."*

**Response:** BPA recognizes that its estimate of the environmental costs of nuclear resources is imprecise. We agree that some cost is better than no cost. Efforts are underway to revise our environmental cost values for all resources, including land and water costs from use impacts. We also will revise our estimates based on findings from the U.S. Department of Energy's joint study with the European Community on the environmental externality costs of the total fuel cycle for energy resources.

BPA did not develop costs for the effects of a catastrophic nuclear event because of the great uncertainty surrounding those effects. Any BPA decision regarding nuclear plants would consider both the quantified and the non-quantified environmental costs described in the RPEIS, as well as safety and financial factors. If completion of WNP 1 or 3 were proposed, BPA and the Nuclear Regulatory Commission (NRC) would consult about the appropriate environmental analysis and documentation. BPA would raise all these issues with the NRC.

**Comments and Responses****Letter #****Comment #****Jeffrey K. Shields, Emerald PUD****035****B4-5**

*BPA underestimates the externalities of nuclear power by not including the "environmental costs associated with radioactive emissions from a catastrophic nuclear event." Relying on the Price-Anderson Act is insufficient. It has been clearly demonstrated that damage from a nuclear accident could be many times greater than the artificial limit set by Price-Anderson. In addition, the analysis does not adequately account for waste disposal in the nuclear externality.*

**Response:** The Nuclear Regulatory Commission charges the operating utility a 1 mill/kWh fee for nuclear waste disposal. This charge is included in the direct costs for nuclear, shown in Section 3.2.2.3. See also response to Comment B4-4.

**Byers/Harding, Washington State Energy Office****037****B4-6**

*"Nearly all the scenarios yield a significant component of nuclear resources by the year 2010. This is clearly an important result, but deserves more discussion than is provided, particularly on the environmental consequences of nuclear resources. Environmental costs for nuclear power have not been considered by BPA. In fairness to the discussion of other resources, they should be. Page 3-58 (4th Paragraph) states that average plant release of radioactive materials is a small percentage of the limits specified by Federal regulation. This is true, but is clearly the least important potential externality raised by analyses in the literature. Page S-6 states, "The environmental costs of nuclear plants cited in this document consist only of estimates associated with land and water use impacts for all large thermal plants." Low probability accidental releases, fuel melt accidents without releases, and fuel cycle impacts (especially uranium mining) deservedly receive the greatest attention in the literature. The RPEIS should do a more comprehensive job of characterizing the non-internalized environmental costs and impacts if nuclear power is to play as large a role as the analysis suggests."*

**Response:** See response to Comment B4-4.

**Byers/Harding, Washington State Energy Office****037****B4-7**

*Page 3-56: "It may be useful for BPA to review the current literature on nuclear O&M costs, capital additions, and capacity factors. EIA released a detailed report on reactor O&M costs in May 1991 that clearly discourages the use of annual industry averages for projecting future costs. The June 1992 issue of Energy Policy also includes a recent assessment of this issue. Both assessments generally support the conclusions described, but continuing attention to this issue appears warranted. The same point applies to capacity factors, which have clearly risen in response to longer fuel residence times, and perhaps in response to higher levels of maintenance and capital spending."*

**Comments and Responses**

Letter #

Comment #

**Response:** BPA will continue to review nuclear performance and cost issues as we consider decisions on completing WNP 1 and 3.

**Aileen Jeffries****049****B4-8**

*The draft could not have included the expenses that have and will be generated to find a waste repository for spent nuclear fuel. If you add in all the costs that have gone into investigating the Nevada storage site, the nuclear costs would look very different!*

**Response:** See responses to Comments B4-4, B4-5, and B6-5.

**Carl Van Hoff, Wash. Public Power Supply System****032****B4-9**

*During my experience with the "mini Technical Review Panel" that worked on environmental costs, I was reassured that no environmental "adders" were to be calculated for nuclear, as those numbers were to be used to screen proposals in response to BPA's 300 MW Request for Proposal and no nuclear project was being proposed.*

*However, the EIS, in Section 5.3.3--Table 5-14--shows a 2 mill/kwhr adder for nuclear. No documentation is provided to show how that number was derived. A BPA staffer told me in June that it reflects the land and water impacts of the projects. As I have noted elsewhere, these values are too high, making the environmental cost too high. In addition, the 2 mill penalty does not pass the common sense test, similar to the problem with air emissions. [See Comment B2b-2.] Although it is lower than the penalty assigned other resources, it is inexplicably higher than that for natural gas cogen, combined cycle CT, and even single cycle CT.*

*Use values for land and water environmental costs that reflect the actual impacts from operating WNP 1 and 3 (as shown in my Attachment 1). If the number must be greater than zero, use one that is lower than that for combustion resources and resources that take more acres per megawatt, like solar and wind.*

**Response:** The 2 mills/kWh environmental cost value for nuclear reflects only land and water effects from the operations phase of the total fuel cycle; it does not include air emissions from the operations phase of the fuel cycle, nor does it include the "upstream" and "downstream" effects, such as the environmental costs associated with mining and processing uranium, the disposal of mill tailings, and the transport, storage and disposal of nuclear waste.

The 2 mill value environmental cost figure is lower than the environmental cost values for nuclear resources used by other utilities and in other studies. For example, as shown on page 5-52 of the Draft EIS, Pace University used 29 mills/kWh (in 1989 dollars); Portland General Electric Co., in its 1992 least cost plan, used a range of 0 to 7 mills (in 1993 dollars). The 2 mill cost is indeed higher than the cost of natural gas cogeneration and combined and single cycle combustion turbines, all of which, though their environmental cost includes air impacts, are nevertheless relatively clean-burning and also use relatively little land and water.

BPA recognizes that its estimate of the environmental costs of nuclear resources is imprecise, but it believes that a positive value is better at this time than no value. We also believe that the 2 mill number is, if anything, at the lower range of estimated environmental costs of nuclear power. BPA will continue to reexamine its estimates of environmental costs of nuclear resources, and will revise them as new information becomes available. BPA's Contingent Valuation Methodology project and the U.S. Department of Energy's joint study with the European Community of the costs of the total fuel cycle of generating resources are two ongoing studies that will provide new information that may be used to refine nuclear environmental externality costs.

**Kirvil Skinnarland, Seattle City Light**

**047**

**B4-10**

*"Both the Base case and the Conservation Alternative show WNP1 being completed in 1999. We find this highly unlikely and cannot support such an outcome. Was this resource selected in these alternatives partly because there is, as yet, no accounting of environmental externalities for nuclear projects? According to page D-77, environmental cost adjustments for nuclear were under development and to be available by April 15, 1991. We find that Table D-13, which lists draft environmental cost adjustments by resource type, does not include nuclear."*

**Response:** Environmental externalities for nuclear were quantified and a cost of 2 mills/kWh was used to reflect those costs, as shown on page 5-52 of the Draft EIS. See also responses to Comments B4-9, C7-1, and C7-2.

**Carl Van Hoff, Wash. Public Power Supply System**

**032**

**B4-11**

*The "boomtown" experiences of the 1970s helped institutionalize our concern for socioeconomic impacts on communities when too many new jobs are created too fast. However, this jaundiced view of new jobs*

*is not appropriate for jobs of long duration, such as those associated with the 15- to 40-year operating period of an energy project. States and local governments actively work to attract new jobs to generate new tax revenues; to dampen the effects of seasonal or cyclical layoffs in primary industries; to create new support jobs to serve a primary industry; and to attract similar businesses, as Silicon Valley has. Other aspects of society welcome new jobs for a variety of reasons. Those who view the presence of paying jobs as a burden to society need to visit some of the lumber mill towns in Oregon and Washington. If you were to go to those communities and offer to create 50 permanent jobs, they'd rejoice; they wouldn't be asking, "Where's my mitigation?"*

*Please rethink the inference that operations phase jobs are a negative impact. Treat jobs as a benefit and an offset against other impacts. Develop narrative consistent with this to introduce the operation employment material, and take the word "Impacts" out of the title of Figure 5-19.*

**Response:** The Draft EIS makes a distinction between short-term and long-term employment. Either type of job may be beneficial or harmful to all or part of a community, depending on that community's particular circumstances. Important considerations include the availability of social and physical infrastructure (schools, police, sewers, roads) in place to handle the new facilities, the ability to fund capital improvements, and the presence or need for trained employees.

The word "impact" is used to describe the addition of short-term and long-term employees. The commenter requests that a different word be used that does not carry a negative inference. The National Environmental Policy Act states the following regarding the evaluation of impact intensity (Section 1508.27 (b)(1)):

"Impacts . . . may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial."

Thus, "impact" is intended to be a neutral word that implies change. The change may be either positive or negative.

**Carl Van Hoff, Wash. Public Power Supply System**

**032**

**04-12**

*"Page F-5-3, Table 1. Operations employment for cogen seems to be very high, unless the analysis inappropriately includes all of the employment at the industrial facility, and not just the employment connected with the production of steam and electricity."*

*Please re-perform the impact analysis.*

**Comments and Responses**

**Letter #**

**Comment #**

**Response:** The number used to estimate operations employment impacts from cogeneration is 0.1 employees per megawatt of capacity. This number matches that used for combustion turbine operation and is the smallest number used for calculating operations employment for any of the other generation types. The combustion turbine number was chosen because BPA assumes that most new cogeneration will be natural gas-fired. For comparison, the operation of a cogeneration plant relying on municipal solid waste would use 4.5 employees per megawatt capacity. Thus, the 0.1 figure is a conservative estimate.

**Wayne Hans, Idaho Dept. of Water Resources**

**050**

**B4-13**

*"Vol. 1, pg. 5-58: The paragraph on operations employment fails to recognize or detail permanent employment and business opportunities in the conservation industry in contrast to those provided by a power plant."*

**Response:** We calculated conservation employment based on labor to install measures such as insulation, lighting, and appliances. We report this up-front labor in the same way as labor for the construction of a new power plant. However, conservation employment does not follow the same pattern as that for a new generation plant. An employee-year dedicated to conservation may involve one employee working on several small jobs over the course of a year, and the worker's position may be stable over a long period of time. Construction labor on a new power plant may involve more people working for a shorter period of time.

There is a qualitative difference between the two types of work. The longer term employment associated with conservation is more likely to provide steady income to an individual and to the community that relies on business, sales, and income taxes. The longer term employment is also less likely to negatively affect schools, roads, police and other community infrastructure.

It is extremely difficult to estimate operations and maintenance employment impacts for conservation measures. Once installed, conservation measures may require attention from workers. However, a non-energy-efficient measure would also require attention. The increment between these two sets of requirements is unknown, and may be a net decrease in labor. For example, energy-efficient lighting that is longer lasting than conventional lighting will need fewer lamp replacements and may reduce maintenance costs.

**Richard Watson, NW Power Planning Council**

**042**

**B4-14**

*Using a single "high" load growth forecast in the analysis, while allowing analysts to estimate maximum environmental effects, may distort the expected value of total system costs and the relative*

*attractiveness of alternative resource strategies. As the DEIS notes on page 5-53, "The assumption of high loads significantly affects the economics of the analysis. It makes large baseload generating resources much more attractive than would be the case under random loads." While the total system costs (Table 5-15) seem reasonable, the relative ranking of alternatives may be biased by the concentration on the high load growth forecast. The ISAAC model simulates the ability of strategies to recover from mistaken forecasts of load growth, as well as other uncertainties. An ISAAC analysis of direct costs shows that while resource acquisition strategy A may appear to be least-cost if load growth is assumed to be known, strategy B may well have the lowest expected cost when load growth is recognized as uncertain. Therefore, it seems quite likely that when analyzing total (direct plus environmental) costs, strategy C might appear to have lower cost if load growth is known, while strategy D has the lowest expected cost when the uncertainty of load growth is taken into account. We recommend using ISAAC to analyze expected total costs over the full range of load uncertainty to test whether the alternative strategies maintain their rankings.*

*Such an expanded analysis might change the conclusions about SO<sub>2</sub> levels (shown in Table S-5). [See comment under Other Air Emissions (B2b-4)].*

**Response:** BPA agrees that using the high load forecast may affect the relative ranking of alternatives with respect to system cost. Although the RPEIS does assess economics, it is designed primarily to assess environmental effects of resource acquisition decisions. Using deterministic high loads allows evaluation of maximum environmental effects. The Final EIS does include analysis of the resources that would likely be acquired under expected (medium) loads. See the response to Comment A1-19 and Section 4.2 of the Final EIS.

Economic analysis of resource acquisition decisions, on the other hand, is conducted in detail in BPA's biennial planning process, the Resource Program. The Resource Program process fine-tunes the economic analysis that accounts for uncertainty, including load uncertainty. Because the Resource Program deals with shorter term decisions, its more up-to-date load information better enables us to deal with the uncertainties of load.

Decisions on a general direction for resource acquisitions will be made based on the EIS analysis. Decisions on specific resources will be based upon economic analysis in the most recent Resource Program, the environmental analysis in the RPEIS, and on site-specific environmental review.

**Comments and Responses****Letter #****Comment #****Jeffrey K. Shields, Emerald PUD****035****B4-15**

*We are concerned about a result that shows the direct cost of the nuclear alternative as lower than the renewables or the cogeneration alternatives; or the environmental cost of the renewables and cogeneration alternatives as equal to the nuclear alternative. These results seem to contradict logic.*

**Response:** These results are due to the manner in which the alternatives were constructed. In each alternative, the emphasized resource is moved from its place in the Base Case resource stack to the top of the resource stack (after nondiscretionary resources). The two nuclear plants are estimated to cost 37 mills/kWh (including environmental costs). The costs of cogeneration and renewable resources, however, vary widely. Cogeneration costs range from 32 mills/kWh to 49 mills/kWh while the costs of renewable resources range from 21 mills/kWh to 111 mills/kWh. (See Table D-1, Volume 2: Appendices.) Thus, while some cogeneration and renewable resources are competitive with nuclear, many are far more costly. In the Cogeneration and Renewables alternatives, because the costly (as well as less costly) cogeneration and renewables are acquired before other, less expensive kinds of resources, total system costs are relatively high.

In the Final EIS, a summary figure (S-1) has been added to display more clearly the environmental trade-offs among resources (as opposed to alternatives).

**Byers/Harding, Washington State Energy Office****037****B4-16**

*Chapter 4 in Vol. 1 indicates that ISAAC modeling was based on the assumptions that BPA meets only its loads, and investor owned loads assume that no environmental costs are considered. The IOUs in Washington and Oregon currently consider environmental costs in their planning and acquisition decisions. While monetization has not been adopted in Oregon, it is under serious consideration. It has not been adopted in Washington, but IOUs are still required to consider these costs in least cost planning. A better modelling assumption might be that the same environmental costs used in the BPA analysis apply to resources being acquired by IOUs. This may not perfectly reflect how the IOUs value environmental externalities, but it acknowledges that they do not ignore these costs.*

**Comments and Responses****Letter #****Comment #**

**Response:** We did not include quantified environmental costs in modeling IOU acquisition decision-making because IOUs in the region do not treat environmental costs consistently. Neither IOUs nor the state regulatory bodies in the region agree on this issue. Because ISAAC models the IOUs as one entity, BPA believed it was wiser to assume no quantification of environmental costs than to impose BPA's or another utility's environmental cost estimates upon the IOUs as a whole. Although we assumed that the IOUs did not monetize environmental costs, we did not assume that environmental costs were not considered.

**Robert Creed, USDOE, Idaho National Engineering Lab****041****B4-17**

*"Pages S-15 and 16: It is not fair to lump all of the renewables together from a cost standpoint. They have quite different costs as you are aware."*

**Response:** The figures on pages S-15 and S-16 reflect the costs (direct costs and environmental costs) of the various alternatives analyzed in the EIS. Therefore, the costs shown for the Emphasize Renewables Alternative include costs for all new resources projected to be operating in 2000 and 2010, not just the renewables. Draft EIS tables S-3 and S-4 show the actual mix of resources operating in the Emphasize Renewables Alternative.

Chapter 3 of the Draft EIS includes cost tables for all of the renewable resources--Table 3-14 for conventional hydropower, Table 3-16 for geothermal, Table 3-18 for wind, and Table 3-20 for solar. In the Final EIS, a new figure (S-1) compares direct and environmental costs of renewables (and other resources).

**Smyth/Ellenbecker, Wyoming Public Service****038****B4-18**

*Our experience shows that externality costs can be internalized for thermoelectric generation without undue economic disruption. The Wyoming Commission has granted internal cost recovery to Wyoming's electricity generating utilities for all direct costs to install scrubbers and other facilities needed to comply with our stringent air pollution laws.*

**Response:** In our competitive bidding and resource contingency programs, we do not apply an environmental cost adjustment for a particular pollutant (for example, sulfur dioxide) if a utility can show that the costs of all residual emissions of that pollutant have been fully internalized.

**Comments and Responses****Letter #****Comment #****Byers/Harding, Washington State Energy Office****037****B4-19**

*"On page 5-1, Vol. 1, it is stated that environmental costs are assigned to resources after ISAAC modelling establishes their level of operation. It is also stated that including these costs in ISAAC inevitably leads to their inclusion in dispatch. We agree with the latter point. However, this appears to be a temporary fix rather than a true solution. It may be useful to consider changes in ISAAC that allow for resource selection based on full social costs without forcing ISAAC to include external costs in dispatch."*

**Response:** In all but the No Action and Status Quo alternatives, the ISAAC modelling did reflect the use of environmental costs in decisions about resource acquisitions, but did not use environmental decisions to dispatch (i.e., operate) resources. Environmental costs were included in the costs used to rank resources in the stack of available resources. ISAAC then selected resources from the stack according to their cost, subject to resource availability, lead time, and unit size.

**Carl Van Hoff, Wash. Public Power Supply System****032****B4-20**

*The impacts of resources were evaluated inconsistently. For example, page 5-5[3] suggests that large thermal plants lose value because they are not displaceable or subject to economic dispatch, but the same problems are not recognized for solar or wind. I request that you modify the narrative and analyses to treat resources in a more consistent manner.*

**Response:** The discussion of solar in the Draft EIS (page 3-41) does acknowledge that without gas back-up, solar generation has limited capacity value. Similarly, page 3-36 discusses the limited capacity value of wind resources. These sections have been modified to clarify that these resources are not normally dispatchable.\* However, the ISAAC analysis of resource acquisitions and operations does recognize that solar and wind are not dispatchable resources.

\* "Dispatchable" in this context means the ability of the utility to operate a generating plant to meet load, or not to operate it if it isn't needed.

**Byers/Harding, Washington State Energy Office****037****B4-21**

*Tables 3-4, 3-8, and 3-9: The cost figures (\$/MW) [for conservation types] need clarification. Do they include both capital and operating costs, initial capital costs per unit of capacity savings, or annual capital charges per unit of energy or capacity? Do the dollars reflect only BPA expenditures, or total expenditures including customer contributions?*

**Comments and Responses****Letter #****Comment #**

**Response:** The cost figures represent the regional costs of conservation per unit of energy (aMW), which are the sum of BPA, utility and customer expenditures over the life of the programs. Operating and capital costs are included in the cost of installation, as are administrative costs for BPA and utilities. (See Table D-7, page D-62, in Volume 2: Appendices to the Draft EIS.)

**Byers/Harding, Washington State Energy Office****037****B4-22**

*Page 4-13, first paragraph of 4.2.5 [Emphasize High Conservation Alternative], in the sentence beginning, "There is some concern...": "The use of the term cost-effectiveness is inconsistent with the results of the analysis of this alternative. If the alternative has a lower total system cost, then the resources included are cost effective if input assumptions are correct. The uncertainty surrounds whether the costs and savings assumed for these resources are correct."*

**Response:** The commenters are correct in assuming that the Emphasize High Conservation Alternative appears to have the lowest total system cost of all the alternatives if the input assumptions are correct. However, as the discussion in section 4.2.5 points out, there is currently no institutional support for the cost and availability of the measures included in the Emphasize High Conservation Alternative. As supply curves are confirmed, more conservation may become available. Including this alternative in the EIS allows BPA to analyze the environmental and economic effects of acquiring more conservation, should it become available.

**Kirvil Skinnarland, Seattle City Light****047****B4-23**

*Seattle City Light participated with the Working Group on environmental externalities costing. Several costs have changed since the last draft the Working Group saw.*

*The value of geothermal has increased from 0.5 to 1.0 mills/kWh. We support the direction of change. The impacts of this resource on local eco-systems can be severe since the resource is often found in areas with unique scenic, natural or wilderness features. What were BPA's reasons for revising these numbers?*

*The value of solar has also increased from 0.5 to 1.0 mills/kwh. It is unclear why this decision was made and which specific costs were added.*

*Depending on site-specific characteristics, new hydro and geothermal costs are likely to be significantly higher than the generic numbers presented in this report. While it is excellent policy to eliminate projects in Protected Areas, there may still be significant aesthetic or recreational impacts (e.g., for recreation on a white-water section of a river), which could increase the environmental costs of individual projects considerably.*

*Since "Land, Water and Other" impacts can make up a large proportion of the value assigned to various resources, BPA should define the kinds of impacts captured by this proxy value. BPA should also explain that land impacts are not necessarily equal to the area of land occupied by the generating resource. It appears that not all geothermal, cogeneration, and non-thermal resources carry this proxy cost. This deserves some explanation. For example, in the case of cogeneration, equating the land proxy costs to zero may be justified for projects that are remodels/additions to existing steam plants. However, new cogeneration projects, whose cost-effectiveness is partly justified by electricity production, should have partial land costs assigned to the electricity generation.*

*Given BPA assumptions regarding criteria air pollutants, land, water, and other impacts, the relative ranking of the thermal resources appears logical and is generally acceptable. However, partly because CO<sub>2</sub> impacts are not included in the cost of thermal resources, the resulting values are far too low and lead to the absurd conclusion that more benign resources such as solar and additions to existing hydro have the same environmental externality costs as a new combustion turbine.*

**Response:** The environmental cost estimate for geothermal was revised from 0.5 mills/kWh to 1 mill/kWh to reflect use of cooling water at geothermal plants. The solar estimate was revised to include the cooling water and land used by solar thermal plants.

"Land, water, and other" includes impacts such as cooling water use, land use, impacts on habitat and wildlife, and aquifer and water table impacts. We also recognize that the land and water environmental costs will vary between specific sites, but for the Resource Programs EIS we are considering the environmental costs of generic resources only. For this generic analysis, BPA assumed that cogeneration would not require new commitments of land. As specific cogeneration projects are evaluated in site-specific NEPA reviews, BPA would examine their actual land impacts.

We have added a figure, S-1 (also 3-1), that highlights the potential environmental effects of generic resource types as opposed to effects of alternatives. Used together with Figures S-2 and S-3 (which compare alternatives) and the environmental costs tables, it may help to give a total picture of the potential environmental impacts. Decisions will be based on all the analyses in the EIS, not solely on environmental costs.

**Comments and Responses****Letter #****Comment #****Byers/Harding, Washington State Energy Office****037****B4-24**

*"Page 3-76/77: Are the expected environmental effects of exchanges (inside the Canadian/US Northwest and in California) included quantitatively or qualitatively in the analysis, or are exchanges only characterized in direct cost and benefit dollar terms?"*

**Response:** For the analysis in Chapters 4 and 5 and the summary tables, imports were assumed to be gas-fired combustion turbines, and their impacts to air and water quality and land were examined. Summary figures S-2 and S-3 show the quantified impacts on air, water, and land.

**Kirvil Skinnarland, Seattle City Light****047****B4-25**

*On page D-74 in Section 6, why are the costs for short-term imports equal to zero? Do these contracts include energy exchanges?*

**Response:** The contract described on page D-74 was added to all alternatives to assure that the ISAAC model did not acquire new resources to cover the deficits in the early years of the study. Because the same contract was added to all alternatives and would not change the relative cost of each alternative, it was valued at zero. The contracts do not include energy exchanges, only purchases.

## Land and Water Use (B5)

### Comments and Responses

Letter #

Comment #

Carl Van Hoff, Wash. Public Power Supply System

032

B5-1

*The impacts of resources were evaluated inconsistently. For example: 3-38 is deficient in the same way.*

*The figure in Table 3-18 for land use of 5.9 acres per MW capacity for wind resources seems to be a distinct underestimation. Draft NUREG-1437, Vol. 1, Page 9-7 says 15-45 ac/MW depending on terrain and turbine size. Also note that the Altamont Pass development uses 62 acres/MW.*

*In Table 3-20, page 3-43, land use of 3 acres per MW capacity for solar resources also seems to be an underestimate. Draft NUREG-1437, Vol. 1, page 9-11 says up to 10 ac/MW. Note that the Luz facility uses 1770 acres for 334 MW capacity (5.3 ac/MW capacity).*

*Please re-perform the impact analyses, after incorporating the values as noted in US NRC Draft NUREG-1437.*

**Response:** The Draft EIS does highlight the large land requirement of wind power: page 3-37 of the DEIS states, "Wind parks of any sizable megawatt capacity require the development of large tracts of land." The point is also made on page S-4. Table 3-18 on page 3-38 of the DEIS shows land impacts of 5.9 acres per MW capacity. The technical appendix which is the source of this statistic (Shankle, Baechler, Blondin, and Grover, *Employment and Land-Use Impacts of Resource Program Elements*), makes clear that this figure is only for land directly occupied by facilities or partially obstructed by guy wires. Additional land must be reserved to space the generators, although some of this land could be put to some limited beneficial uses.

The solar discussion on page 3-42 of the Draft EIS states, "Because of the diffuse nature of solar radiation, large sections of land are required for developing solar thermal sites. . ." The point is also made on page S-4, for both solar thermal sites and for photovoltaic systems. Table 3-20 indicates that 3 acres per MW capacity are required (compared with 1.74 acres/MW shown for nuclear). In the Final EIS, the land use impacts numbers have been corrected to reflect the differing capacity factors of the various resource types. For example, the land use per MW for wind has been changed from 5.9 acres/MW to 23.6 acres, to reflect the 25 percent capacity factor assumed for wind. Similarly, the land use figure has been changed to 6 acres per MW for solar, which is assumed to have a 50% capacity factor, and to 2.26 acres per MW for nuclear, which is assumed to have 65% capacity factor. The text and tables have been revised for the Final EIS.

Significant variations in land requirements can be caused by irregular topography at specific sites, which would be accounted for in a site-specific environmental analysis.

**Comments and Responses****Letter #****Comment #****Carl Van Hoff, Wash. Public Power Supply System****032****B5-2**

*Page S-5, third paragraph, lists impacts of nuclear as thermal discharge, water consumption, and release of waterborne chemicals. Most of these impacts should also have been noted for cogeneration, coal, and combustion turbines.*

*I request that you modify the narrative and analyses to treat resources in a more consistent manner.*

**Response:** The potential impacts of the resource types are described in detail in Chapter 3. In the Summary, only the major impacts of each resource type were highlighted. Therefore, thermal discharge, water consumption, release of airborne radioactive materials, release of waterborne chemical pollutants, and radioactive waste disposal were identified as the important environmental concerns for nuclear plants. Although air pollution was identified as the impact of greatest concern from coal generation, the summary also mentions that coal plants use large amounts of cooling water.

**Lawrence W. Miles, The Wind Turbine Company****014****B5-3**

*"It is true that 'wind parks require large amounts of land,' however, no more than 5% of the required land is actually occupied by wind turbines and other facility infrastructure."*

**Response:** See response to Comment B5-1.

**Lawrence W. Miles, The Wind Turbine Company****014****B5-4**

*Unlike a dam, the reservoir of which precludes any previously existing uses, wind farms are completely compatible with previously existing activities such as farming and ranching. If you bury land under water by the square mile behind a dam and look at the recreation possibilities as the bright side, you should recognize that wind turbines do not preclude most other likely uses of the land."*

**Response:** This is not strictly correct, since certain intensive agricultural uses would have to be adjusted or precluded to accommodate the placement of wind turbines, access roads, buildings, electrical collector lines, etc., in order to produce the most cost-effective electrical energy from a given wind park. It is true, however, that the land in wind parks may be used in a number of ways.

## Comments and Responses

Letter #

Comment #

Lawrence W. Miles, The Wind Turbine Company

014

B5-5

*"At the same time, the capture of wind energy significantly enhances the value of the land to the owner, often more than doubling the value."*

**Response:** The point is generally true, but there are also mitigating offsets, e.g.,:

- 1) property and federal income taxes and, where applicable, state income taxes increase; and
- 2) if the wind farm produces fewer kWh than expected, or is shut down because it is uneconomic for some reason, the property would need to be revalued by the county assessor/board of appeals to avoid incurring property taxes greater than the new, lower income. With the undepreciated capital value of the turbines in place, this could be difficult and would require time and effort from the landowner. Also, if the wind park becomes inoperative and the developer/bonding company goes bankrupt, the landowner may have to pay to have the wind turbines removed. The landowner may not be able to recover his or her costs and expenses due to a court's restrictions on the ability of "creditors" to recover under a bankruptcy plan.

Ronald A. Lee, Environmental Protection Agency

046

B5-6

*"The inference that photovoltaic systems require large amounts of land (page S-4) should be explained. New efficiencies would seem to significantly reduce land requirements and rooftop systems could make land requirements more economical."*

**Response:** The photovoltaic systems referred to are large-scale commercial systems, which do require large amounts of land, as discussed in detail in Chapter 3 of the Draft EIS. Rooftop systems for residential energy conservation are discussed on page 3-14.

Ronald A. Lee, Environmental Protection Agency

046

B5-7

*"Given the high variability of runoff for the hydroelectric power system (page E-7) what would be the effects of low water on operation of each of the alternatives?"*

*"What are the effects of drought on all resource values (fish, economics, etc.) for each alternative?"*

## Comments and Responses

Letter #

Comment #

**Response:** Runoff variability was taken into account in the EIS through the primary models used, ISAAC and SAM. They are typically run with random water conditions. The 50 years for which detailed information is available (1929 - 1978) are weighted based on the 102-year historical record.

Unfortunately, due to the large quantity of data and the interrelationships between various elements, it would be extremely difficult to isolate the effects of low water conditions on each value measure for each alternative. During periods of low streamflow, however, generating resources would likely be operated to their fullest capabilities, with little if any displacement from nonfirm hydro energy. Assuming purchases from outside the region are similar among alternatives, rough estimates of impacts to some natural resources can be made. Under low water conditions, generation which typically is displaced due to high operating costs will appear less attractive than shown in the compiled results. Air emissions would be at the highest levels for each generating resource. Finally, under low water conditions, scenarios with large amounts of shaping may provide some benefit to fish by increasing spring flows. However, until completion of the System Operations Review, it is not clear whether this operation will be feasible.

Ronald A. Lee, Environmental Protection Agency

046

B5-8

*"Water rights/water demand effects for applicable alternatives need to be added in the final EIS."*

**Response:** The Draft EIS does address water consumption of each alternative. For example, the description of each resource in Chapter 3 includes tables showing water consumption per aMW; likewise, the Summary figures S-1, S-2, and S-3 include water demand. Water rights issues vary considerably among and within regions; any power plant that requires water for cooling or other uses would, of course, have to obtain a water right. Water rights issues, because they are site-specific, are more appropriately addressed in the site-specific environmental documentation tiered to the RPEIS.

## Other Impacts (B6)

Lawrence W. Miles, The Wind Turbine Company

014

B6-1

*"It is true that wind turbines can create noise. So does most everything else that moves. In a residential neighborhood virtually any source of electricity save perhaps photovoltaic will create objectionable noise. From comparable distances you will find wind turbines no noisier than any other source of electricity production."*

## Comments and Responses

Letter #

Comment #

**Response:** One peculiar aspect of certain designs of wind turbines is their propensity to create a periodic "blade whump" sound which, under certain atmospheric/topographic conditions, can be heard over long distances. The "blade whump," under certain other specific circumstances associated with the dimensions and materials used for residences, can create a low-frequency noise which is objectionable to certain persons. This effect can be mitigated with recently developed "acoustic muffler" technology, if the person does not mind living in a home where virtually all incoming noises are eliminated.

Lawrence W. Miles, The Wind Turbine Company

014

B6-2

*"I guess [wind turbines] can also have a significant visual impact. Does this mean that a windfarm is more or less aesthetically unpleasing than say a hydro, nuclear, coal, solar or other generating facility? When properly maintained and operating, the public's view of wind energy regarding visual impacts is undoubtedly no different than for any other generating facility."*

**Response:** The visual impact is not more or less "aesthetically unpleasing." Rather, it encompasses different visual impacts compared with other resources. The significant difference in visual impact associated with a wind turbine is motion of the rotating blades, which other resources do not have. In addition, wind turbines create "blade flash," where, under certain conditions, sunlight "flashes" or reflects off the turbine's blades, causing an irritating visual disturbance to certain persons either living nearby or traveling through the area. This latter aspect is incorporated in the Final EIS, Section 3.2.1.3.

Peggy Brookshier, USDOE, Idaho Field Office

043

B6-3

*The [discussion of] impacts to hydro system operations was interesting. It is important in the Pacific Northwest because hydro provides two thirds of electrical energy and changes due to other requirements (such as draw down for fish) are significant to the total system balance.*

**Response:** We agree.

Carl Van Hoff, Wash. Public Power Supply System

032

B6-4

*The discussion of impacts to the existing hydro system on page 5-15 assumes that the current hydro system is just fine, and that resource additions are negative if they perturb the present system. The current debates over fish flush, drawdowns, and how the hydro system should be run give the lie to this assumption. Many fish advocates seek to change the release time of large amounts of water to benefit fish, and to increase the flexibility of the hydro system to respond to fish needs.*

## Comments and Responses

Letter #

Comment #

*The discussion on page 5-15 misses the point that new non-hydro resources can provide a "floor" beneath the hydro system to improve its flexibility. The scheduling of both operations and outages for WNP 2 have been adjusted to support or absorb flow levels for fish.*

*Please recognize this in the EIS and change the narrative to acknowledge that impacts to the hydro system from large units can be positive or negative or both. Remove any automatic penalty from the model.*

**Response:** The discussion has been changed to better reflect the potential for positive as well as negative effects resulting from maintenance schedules. Other portions of the document, however, already recognize this point. In particular, page 5-69 of the Draft states, "Resources which are down for maintenance in the spring months aid juvenile migration by increasing flows during this period." Additionally, page 5-70 of the Draft states, "Alternatives which would typically include maintenance during the spring period include those that emphasize nuclear and coal." Effects of new resources on the existing hydro system were not quantified, and there was no "automatic penalty" applied to large units to reflect such impacts.

Timothy Michael Wold

036

B6-5

*The discussion of environmental impacts of nuclear power is misleading. The DEIS does not evaluate waste disposal problems, although this is probably the most difficult environmental problem associated with nuclear power and is by no means solved. Also, the DEIS does not discuss risk or consequences of reactor accidents, such as the one at Three Mile Island, or the difficulties of disposing of the reactor once the plant's useful life is over.*

**Response:** The DEIS acknowledges the problems of nuclear waste disposal (pages 3-58/59). While the environmental cost assumed for nuclear in the DEIS is 2 mills/kWh, reflecting only the land and water impacts of a nuclear plant, efforts are underway to revise our environmental cost value for nuclear. We will use findings from the U.S. Department of Energy's joint study with the European Community on the environmental externality costs of the total fuel cycle for energy resources, and results from our contingent valuation method survey of the public's willingness to pay to avoid the environmental costs of various energy resources, including nuclear. See also response to Comments B4-4 and B4-5.

## Comments and Responses

Letter #

Comment #

**Kirvil Skinnerland, Seattle City Light**

**047**

**B6-6**

*The DEIS mentions minor concerns about disposal of hazardous materials removed during conservation retrofits. Measures funded under the program do not introduce hazardous materials into buildings. The materials are already installed and must eventually be disposed of. They have a much better chance of being disposed of properly if done as part of a conservation program than if disposal is done as equipment randomly fails. Thus, any mitigation of hazards done as part of a BPA conservation program is a net improvement over the status quo, rather than a negative effect.*

**Response:** Your comment adds an important clarification. We were referring generally to materials removed from buildings. The language has been changed to clarify this point.

**Wayne Haas, Idaho Dept. of Water Resources**

**050**

**B6-7**

*Vol. 1, pg. 3-23: Table 3-12 shows erosion impacts for low-pressure sprinkler and drip irrigation systems. The table and related discussion are misleading. These systems greatly reduce soil erosion compared with traditional flood and furrow irrigation methods. The conservation measures proposed under Irrigation and Agricultural Conservation (3.1.4) would reduce soil erosion rather than create a greater impact.*

**Response:** BPA agrees that when low pressure sprinkler or drip irrigation systems replace traditional flood or furrow irrigation methods, soil erosion is reduced. The potential erosion impacts identified on page 3-23 of the Draft EIS refer primarily to impacts of replacing existing sprinkler systems with more efficient methods, and as indicated in the text on page 3-22, these impacts can generally be mitigated. The text of the Final EIS (Section 3.1.4) was revised to clarify these points.

## Resources (C)

### Coal (C1)

**Clinton Morgan, City of Renton, Washington**

**018**

**C1-1**

*"For longer range pursuits for power, I would suggest research on using coal fired plants to reduce the impact of emissions to an acceptable level. A federal grant should be provided for this approach. Controlled coal fired technology should be improved enough to begin going on line within 10 years. Coal is an abundant resource."*

**Comments and Responses****Letter #****Comment #**

**Response:** The U. S. Department of Energy is devoting significant research and development resources to clean coal technology. For planning purposes in the 1992 Resource Program, BPA assumes that only "clean coal" technologies will be used in the Northwest. However, in the Resource Programs EIS, both conventional and "clean coal" are investigated to highlight the differences between them. BPA periodically updates its coal technology assumptions, including emission performance. Coal gasification cost and performance assumptions are currently being updated and will be reflected in future Resource Programs.

**Smyth/Ellenbecker, Wyoming Public Service****038****C1-2**

*Wyoming's experience shows that, when wisely managed, coal-fired generation is a harmonious part of an environmentally sound resource mix. It is reliable, cost-effective, and viable. Wyoming has air quality standards as tough or tougher than federal standards in the areas of SO<sub>2</sub>, particulate emissions, and NO<sub>x</sub>. We also require use of the best available control technology to meet them. Thermoelectric generation should be encouraged by fostering improved abatement measures, further development of clean coal technologies and the construction of new facilities incorporating such technology.*

**Response:** We agree that new coal technologies have made great strides in reducing air emissions. However, coal plants other than clean coal types still could be developed. Therefore, we included impacts from both traditional and clean coal technologies, enabling a broader look at the potential environmental impacts from coal facility development.

**Smyth/Ellenbecker, Wyoming Public Service****038****C1-3**

*Use of Wyoming's low sulfur coal reduces the real cost of emissions from plants which use it exclusively or in a coal blending program. Our coal can be drawn on regionally to reduce emissions.*

**Response:** BPA assumed the use of low-sulfur coal in its air quality analysis of new coal resources. See page 3-62 of the Draft EIS.

**Hal Cooper****Public  
Meeting****C1-4**

*We have lots of coal, particularly in Wyoming and Montana, and we should use it. And gas-supplying coal is an excellent alternative.*

**Response:** Coal is considered as a potential resource but falls out of most alternatives due to its higher cost. Coal gasification has been included in the Clean Coal Alternative.

## Comments and Responses

Letter #

Comment #

Smyth/Ellenbecker, Wyoming Public Service

038

C1-5

*"BPA should also consider the siting of thermoelectric plants as a contributing factor in their continued viability. The wise siting of plants outside of airsheds which have serious air quality nonattainment problems further reduces their incremental impact on the environment. This would allow BPA to control cumulative impacts of new resource additions."*

**Response:** BPA agrees that incremental and cumulative impacts of new electric plants need to be seriously factored into decisions about which plants to build and where. When specific plants are proposed, BPA will consider site specific information at that time. Factors that must be accounted for include contributions to air pollution levels in nonattainment areas, as well protection of Class 1 airsheds in wilderness areas and national parks.

Kirvil Skinnarland, Seattle City Light

047

C1-6

*"Table 4 on page F-4-19, which is an example of ISAAC output showing resources in the high conservation alternative, shows two coal and two nuclear plants being completed within the next ten to fifteen years. Please explain this result."*

**Response:** Table 4 in Appendix F shows resources expected to be acquired by utilities throughout the region, not just by BPA. When reviewing the results of the ISAAC analysis, it is important to keep in mind that ISAAC acquires resources based on BPA's high load forecast in order to identify maximum environmental impacts. Under high forecasts, regional loads grow by 5,000 aMW from 1991 through 2000 and by 11,000 aMW from 1991 through 2010. Even under the High Conservation Alternative there are insufficient amounts of lower-cost resources in the resource stack to meet this need. ISAAC must move further down the resource stack and acquire more expensive nuclear and coal plants in order to meet this dramatic load growth.

## Cogeneration (C2)

Anthony J. Haber, Mercy Healthcare, Inc.

004

C2-1

*"Would like BPA to "encourage the support of PP&L" in small-scale cogeneration efforts. They presently are "against this type of energy conservation, particularly in smaller communities."*

**Response:** BPA is not aware of PP&L opposition to cogeneration resources. Our acquisition programs are open to investor owned utilities, but we do not have programs to encourage specific utilities to acquire cogeneration.

## Comments and Responses

Letter #

Comment #

Don W. Leach, D. R. Johnson Lumber Co.

001

C2-2

*"Cogeneration, in part due to the multi-use of the facilities, offers the greatest benefit to both the communities where they are located and to BPA. We desire BPA give cogeneration serious research and review. CO<sub>2</sub> may be compensated for by use of timber harvesting in an appropriate manner."*

**Response:** BPA has several program activities underway that will encourage the use of cogeneration resources in the region. We host quarterly meetings with regional utilities to discuss the development of cogeneration, and we are proposing a targeted cogeneration solicitation in the Draft 1992 Resource Program. When we evaluate specific resource proposals for acquisition, we give cogeneration credit for more efficient use of energy. See also response to Comment B2a-5.

## Combustion Turbines/Natural Gas (C3)

Douglas M. Still, Emerald PUD

029

C3-1

*"Use of natural gas for CT's is energy inefficient. Minimize this option."*

**Response:** BPA's analysis shows CTs to be relatively efficient, as reflected in their relatively low cost.

Smyth/Ellenbecker, Wyoming Public Service

038

C3-2

*Expanded use of natural gas, in fuel switching and generation applications, should be seriously considered as the resource program develops. It is among the cleanest burning fuels and is especially useful for peaking and cycling generation. It can also be used to supplement coal in coal-fired units where operational and environmental concerns are present, and could replace some portion of BPA's hydropower resources if environmental concerns curtail their efficient operation.*

**Response:** See response to Comment C5-4. In addition, please note that the Draft EIS (pages 3-49 through 3-53) supports the conclusion that gas can be used in combustion turbines to provide a relatively clean source of peaking power. As shown in Figures S-2 and S-3, in most alternatives analyzed in the DEIS, several hundred megawatts of combustion turbines would be strong candidates for acquisition to meet load growth and/or if the capabilities of the hydro system are reduced because of future restrictions on operations. We recognize that it is technically feasible, and in many cases, environmentally beneficial, to use gas to supplement or replace coal as a fuel in coal-burning plants, as several eastern utilities with costly SO<sub>2</sub> emission compliance problems are doing.

## Comments and Responses

Letter #

Comment #

Hal Cooper

Public  
Meeting

C3-3

*We are going to need to use a lot of natural gas in the near term, but in the long run, we need to guard against price increases.*

**Response:** BPA does not expect to use a lot of natural gas. However, when we use it, we are sensitive to price increases and are working closely with project sponsors and the gas industry to minimize such risks in our contracts.

### Conservation (C4)

#### General (a)

Frederick E. Ellis

009

C4a-1

*"Conservation is still the most cost-effective way to save energy. It must be exploited far more intensively."*

**Response:** The Draft EIS supports the conclusion that conservation is the most cost-effective energy source (see Summary, page S-7). Decisions about the levels of conservation BPA plans to acquire will be made in biennial Resource Programs.

Douglas M. Still, Emerald PUD

029

C4a-2

*"Secure all conservation which is cost effective."*

**Response:** See response to Comment C4a-1.

John Savage, Oregon Dept. of Energy

033

C4a-3

*"BPA lays out aggressive conservation goals. We support efforts aimed at assuring we capture all cost-effective conservation. These include the use of tiered rates, lost-revenue payments, and a revamped billing credits program to provide incentives to utilities to pursue conservation."*

**Response:** BPA's Conservation Implementation Plan (CIP) process examines all those incentives. Contact conservation staff in the nearest BPA Area or District Office for CIP's status and opportunities to participate.

Jeff Adams

010

C4a-4

*"The most reasonable and long lasting resource choice is conservation. . . . Insulation and other 'tightening' measures would be a minor concern with correct mitigation."*

**Response:** See response to Comment C4a-1. Section 3.1 of the DEIS describes measures that mitigate most of the environmental impacts of conservation programs.

**Comments and Responses**

Letter #

Comment #

**Ralph Hahnert, Champion International****031****C4a-5**

*"I agree with the high emphasis on conservation alternatives; however, I believe we will make a serious mistake if we do not emphasize and use our nuclear plants and expand those capabilities."*

**Response:** See response to Comment C7-2.

**Harry L. Brunson, KJ Booster Club****005****C4a-6**

*"Conservation by itself is not viable."*

**Response:** As stated in the Summary and Chapter 4 of the Draft EIS, BPA's analysis shows that, because of limitations in the supply of conservation resources, even aggressive conservation acquisition programs would not provide enough conservation to meet high load growth. By the year 2010, even in the Emphasize High Conservation Alternative, more than half the load growth would have to be met by resources other than conservation.

**Clinton Morgan, City of Renton, Washington****018****C4a-7**

*Conservation has been underway for the past 10 years and may have limited practical benefits except improving on new development designs and codes.*

**Response:** Commercial sector conservation has improved the efficiency of building designs, strengthened energy codes in various jurisdictions, and upgraded technology available for use in new or existing buildings. Residential conservation has upgraded the sophistication of both building codes and building construction practices. Conservation is also beginning to have its presence felt in operations and maintenance in commercial buildings. Existing buildings usually see immediate benefits from lighting improvements. The variety of lighting options available today far exceeds that of a few years ago. Energy efficient motors, too, are available for many applications. A number of trade or utility publications are available to document the radical changes in thinking about conservation as a viable option for home or building owners and utilities.

**David Philbrick****028****C4a-8**

*Conservation should be the preferred choice as proposed. BPA should be more creative in how it is obtained. Some utilities do a good job. Others are reluctant and thus ineffective in capturing such resources. Furthermore, utilities, who may or may not be interested, have a credibility problem, so alternative providers should be supported.*

**Response:** BPA is attempting to be more creative in how conservation resources are planned and delivered.

More flexible programs are being offered, so utilities should be able to find program options more to their liking. Cross-program offerings, such as motor rebates, allow more flexibility. With more appropriate incentives, fewer consumer actions should fall through the cracks.

BPA is strengthening its efforts to help utilities be more active in their program efforts. From their perspective, utilities often have very sound reasons for not whole-heartedly embracing conservation. They may lose sales and revenue. Conservation may take staff time away from other legitimate, and from their perspective, more important utility pursuits, such as customer service. We are now actively addressing the issue of how to reduce the problems of lost revenue for small or low-growth utilities.

In an effort to structure programs to ease the hiring of staff to promote conservation, the Energy Smart Design (commercial sector) program will base its administrative payments on the number of staff devoted to program efforts.

BPA has also offered both billing credits and competitive acquisition pilot processes to explore alternative ways to deliver conservation, including through energy service companies. These processes should provide useful information about whether some alternative delivery mechanisms work and whether the risks are manageable. We actively support cooperative ventures among utilities, allowing them to build on each other's strengths. Some utilities are using energy service companies, such as subsidiaries or non-utility suppliers, to help deliver conservation. The private sector is used as part of the regular BPA and utility delivery chain, providing engineering and modeling studies for commercial and industrial conservation.

**Jere Overs, Salem Electric**

**027**

**C4a-9**

*"Salem Electric applauds the Resource Program's general conclusion that conservation is both the least-cost and least environmentally damaging resource. We hope that BPA will follow this analysis with meaningful, aggressive programs to acquire the necessary savings.*

*"[However,] (Pg. 5-17) - [t]he alternative recommended by BPA is not the least-cost and/or least-impact choice. '...the High Conservation Alternative had lower costs and fewer environmental impacts.' BPA's reasons for not choosing this alternative ('...concern about the cost-effectiveness, reliability and commercial availability of the high conservation resources') could be applied to most of the other alternatives as well. Only by actively pursuing the High Conservation Alternative option can we attain it.*

*"We urge BPA to adopt the High Conservation Alternative as its goal and take the appropriate steps to acquire this low-cost resource."*

## Comments and Responses

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**Response:** BPA is committed to acquiring all proven and cost-effective conservation resources. BPA's Resource Supply Expansion Program will provide opportunities to gain additional experience in conservation supplies and acquisitions that will make meeting higher conservation targets more feasible. See response to Comments A1-7 and A1-17.

**Jeffrey K. Shields, Emerald PUD**

**035**

**C4a-10**

*We agree that the preferred alternative should be the Emphasize Conservation Alternative. It is environmentally responsible and cost-effective and BPA should pursue it with vigor. We believe we have barely tapped the conservation and efficiency resource and that its value is underestimated. If it can be shown that the High Conservation Alternative can be equally or more cost-effective and reliable, as well as available, this alternative should be the preferred alternative, and it is appropriate to leave room in the EIS to shift to this potentially superior alternative.*

**Response:** We agree. As pointed out on page S-17 of the Draft, if the availability and cost-effectiveness of additional conservation are confirmed, the High Conservation Alternative would be the preferred alternative. We have included the analysis of environmental impacts of the High Conservation Alternative to allow us to pursue that option if the cost-effectiveness and availability of the resource are confirmed.

**Kirvii Skinnarland, Seattle City Light**

**047**

**C4a-11**

*The High Conservation Alternative in the DEIS links a higher quantity of conservation resources to the introduction of new and emerging measures (beyond those assumed in the BPA/NPPC supply curves). The higher total changes the resource mix and the expected environmental consequences.*

*However, the results of this analysis would be no different if the increase in conservation were caused because, for example, the base case supply curve analysis underestimated how much conservation existing, reliable, proven measures could produce.*

*Since the known environmental impacts of the new and emerging conservation measures are analyzed in this report, we strongly believe that when they become reliable and available, they should automatically become part of the list of activities approved in the RPEIS.*

*If the base case, rather than the high conservation case, is chosen for the preferred alternative in the Final EIS, language should be added to the FEIS explicitly stating that introducing any of the new measures described in the high case would not require modification of the EIS or further environmental review.*

## Comments and Responses

Letter #

Comment #

**Response:** BPA agrees that the potential environmental impacts of the conservation measures that are part of the High Conservation Alternative are adequately described in the Draft EIS. If BPA decides to pursue the measures that are part of the High Conservation Alternative, this EIS should provide adequate environmental analysis pursuant to NEPA to support such a decision.

**Kirvil Skinnerland, Seattle City Light**

047

C4a-12

*Base case conservation in this DEIS represents a good estimate of conservation that would be produced by reliable, currently available, proven measures.*

*However, there is no overwhelming body of evidence to support any specific estimate of the "true" size of the conservation resource. Seattle City Light uses the same conservation supply curves as those which lead to BPA's base case estimate and therefore tends to support conservation estimates in this range. On the other hand, future revisions (up or down) to estimates of the conservation potential would not be startling or unexpected.*

*Given this uncertainty, it is prudent to examine the effects of different levels of conservation acquisition, which the "high case conservation" alternative provides.*

*Either base case or high case levels result in the same near-term policy implications: each represents a dramatic ramp-up of current conservation activity and will be a profound challenge for utilities, trade allies, and end-users.*

**Response:** BPA agrees. As pointed out in Draft II of the 1992 Resource Program, acquiring all available cost-effective conservation in the region presents major challenges that will require hard work, time and perseverance to resolve. Although it won't be easy, there appears to be widespread agreement that this is the right path to take.

**J.R. Lauckhart, Puget Sound Power & Light**

034

C4a-13

*BPA should consider in its EIS and adopt a more restricted role with respect to acquisition of new resources and conservation in the region. BPA should focus its efforts on assisting utilities and groups of utilities in integrating their acquisitions and their respective loads. Recent developments, since adoption of the Regional Act, have increasingly emphasized smaller resources and conservation measures for which there is no need to spread the risk through a BPA acquisition.*

## Comments and Responses

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*The Draft II 1992 Resource Program proposes that "contracted requirements" customers of BPA not receive BPA cost sharing funding for conservation. However, the Regional Act requires BPA to serve all the firm loads of the region's utilities to the extent such loads exceed their pre-Regional Act resources, including the regional loads of "contracted requirements" customers. The EIS should consider conservation cost-sharing for all its regional utility customers including contracted requirements customers.*

**Response:** BPA considers all kinds of resources and many different ways of acquiring them before making any resource decisions. We consider costs, timing, risk, reliability, effects on the system and our customers, and how the resource could be acquired. The RPEIS will help BPA decide a general direction for what we acquire. How we acquire resources will be evaluated in the biennial Resource Program process and in specific program designs.

**Smyth/Ellenbecker, Wyoming Public Service**

**038**

**C4a-14**

*The Wyoming Commission supports the concept of conservation as a resource. However, it should be used carefully in several respects.*

- It should accommodate economic expansion and the resulting increased demands for power.*
- Conservation initiatives should be carefully structured so that the costs of conservation are shared equitably by those who benefit from them. For example, if a system or customer has made successful conservation efforts before the BPA program takes effect, that person should receive rate credit for those efforts. Further, if a program actually benefits only a certain portion of BPA's customers, that group should be the one to bear the cost.*
- Conservation programs should be tested before they are widely implemented so that their actual public acceptance and achievable efficiency can be assessed accurately. Costs should be carefully tracked and contrasted with the savings achievable through other means.*
- Conservation initiatives should be used carefully in largely rural areas where economies are not particularly vigorous. Here, the resource program should help nurture the economy and assist in recovery and expansion--which could mean accommodating an expansion in real load at a price which does not stifle development.*

**Response:** BPA plans for future load growth in the region by forecasting a range of load growth from low to medium to high. These ranges account for the uncertainty of future economic growth in the region, including unexpected high demand on BPA and its customers. The Resource Program develops strategies and budgets for meeting load growth based on the ranges.

This EIS focuses on the environmental effects of resource additions needed to meet load. Matching who benefits and who pays is an implementation issue not directly addressed by this EIS, which is focused on "if we need to add resources, which ones have which effects regardless of how they are paid for." Issues of who pays and who benefits are addressed in program and process design and underlying policy development. For conservation, for example, the Conservation Implementation Plan (CIP) has been a forum for such discussions.

BPA treats conservation the same as any resource it intends to acquire. Before an acquisition decision is made, an extensive assessment is conducted. We test technologies for their costs and savings, review and evaluate the experiences of others, review manufacturers' literature and professional journals, sometimes run pilot tests, and sometimes conduct market surveys. We don't use all these methods for each of the many types of conservation resource. However, we conduct a thorough analysis to assure the cost-effectiveness and reliability of each resource type before any acquisition decision.

A key goal of BPA's Resource Program is to identify new conservation and generation resources that are cost-effective and that minimize adverse environmental impacts. Meeting this goal will help assure that electricity will be available to support economic development in rural areas and elsewhere in the region at the lowest possible cost. As the Draft EIS shows (see, for example, page S-17), conservation is generally the most cost-effective resource, and therefore aggressive conservation acquisition is an essential part of maintaining low electrical rates.

**Wayne Haas, Idaho Dept. of Water Resources**

**050**

**C4a-15**

*"The exclusion of the aluminum smelting industry from conservation programs is not explained. A cost/benefit analysis of conservation measures for the industry should be included to explain the reasoning."*

**Response:** Several issues surrounding conservation programs for the aluminum smelter DSIs must be resolved before BPA can pursue further conservation in this sector.

First, smelter loads in the long term are uncertain due to factors such as future power cost and availability, renegotiation of power sales and raw material supply contracts, and how the Clean Air Act amendment is applied to aluminum smelters.

## Comments and Responses

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Second, since electricity is a major input in aluminum production, comprising roughly a third of the average regional smelter's net operating costs, smelters may undertake conservation on their own with little or no external incentives.

Third, BPA needs to examine "free-rider" and "take-back" issues more thoroughly in order to determine how to design any future aluminum smelter conservation programs, or to determine in general whether future programs for this industry are appropriate.

Fourth, some customer and interest groups have commented in other forums that the DSIs have received special treatment with respect to conservation programs and other incentives. BPA will focus our efforts in the near term on acquiring conservation in other areas. However, we will continue to research and assess the conservation potential for the regional aluminum industry and work toward resolution of these issues.

**Milton Griffing**

**030**

**C4a-16**

*"I recognize that the aluminum plants provide a convenient 'jockey-box' for resource planners and a good customer for seasonally surplus energy. However, I remember data from 1982-85 showing extreme differences between the most and least efficient aluminum plants in terms of KWh/pound of aluminum. The most dramatic conservation that we can do is to buy out these old, inefficient, largely depreciated plants. At this time of excess capacity in the aluminum industry, this outmoded capacity should be cheap to buy. With the aluminum industry using 1/3 of the BPA regional power and employing only 12,000 people, beneficial impacts outweigh adverse impacts."*

**Response:** BPA disagrees.

First, the difference between the most efficient smelter and the least efficient smelter has decreased since 1985, due in part to the implementation of BPA's Conservation/Modernization program. In addition, aluminum is produced in a world market, in which aluminum prices and total cost of production are important, not just energy efficiency. PNW regional smelters are still relatively competitive compared to other world smelters. At the present time, our regional smelters are not necessarily "excess capacity," which is "outmoded" and "cheap to buy," in part because the smelters' owners have continued to make capital investments to keep them competitive. However, for resource planning purposes, BPA assumes that roughly 20 percent of regional smelter capacity will not be operating in the long-term. Factors including, but not limited to, the Clean Air Act amendment implementation, alumina supply disruptions, less favorable contracts for alumina supply and other needs, and labor disputes have been accounted for in BPA's forecast of smelter loads, such that a range of possible outcomes is considered and incorporated in our resource planning process.

**Comments and Responses**

Letter #

Comment #

Second, it has not been BPA's policy to actively promote regional industrial plant closure to achieve "conservation" or to serve as a substitute for generation resource acquisition. From an equity standpoint, the same argument could be made to buy out old, inefficient plants to achieve "conservation" in other large industries in the region whose technology may be outmoded. While the aluminum industry might be first to be considered because of the size of its load, doing so could set a precedent leading to subsequent exercises to determine which industries are second, third, etc. Furthermore, by buying out and closing some aluminum smelters and freeing up firm power for other industries through their utilities, BPA might actually be subsidizing other outmoded industries at the expense of the aluminum industry.

**Wayne Haas, Idaho Dept. of Water Resources****050****C4a-17**

*Vol. 1, pp. 3-3, 5-59: It appears that a lot of time and space are spent on impacts of conservation measures (e.g., PCBs, CFCs, etc.) compared to other resource stacks, particularly when the impacts will occur, with or without BPA or other conservation programs, by fixture failure or appliance manufacture.*

**Response:** BPA agrees that many of the impacts associated with certain conservation measures would occur even in the absence of the BPA conservation program. However, when BPA implements a conservation program, it is responsible under the National Environmental Policy Act to evaluate the potential environmental impacts of its actions. See also Comment B6-6.

**Wayne Haas, Idaho Dept. of Water Resources****050****C4a-18**

*"Vol. 1, pp. 4-11 to 4-15: A detailed costs and supply table is provided for resource stacks, with the exception of conservation."*

**Response:** Pages 4-11 to 4-15 describe all the resources that make up the Base Case and the Conservation and High Conservation alternatives. Tables showing specific cost and supply information for each resource type, including conservation, are shown in Section 3.1 of the Draft EIS.

**Hal Cooper****Public  
Meeting****C4a-19**

*Energy conservation in the short range is an excellent and a necessary alternative. Benefits can be taken from a number of customers in the industrial sector, including in the forest products, aluminum, mining, and perhaps petroleum refining industries.*

**Response:** We agree. See discussions in chapter 3 of the Final EIS and Appendix C of Volume 2 on industrial conservation measures and potential industries.

## Appliances (b)

### Comments and Responses

Letter #

Comment #

Harry L. Brunson, KJ Booster Club

005

C4b-1

*Why aren't electric timers for hot water tanks supplied free? They cut electric consumption by 20%.*

**Response:** Average water heater electricity use in the Pacific Northwest, based upon submetered data, is about 4200 kWh/year.

Almost all of this energy is used to heat the water from the temperature of the incoming water to the temperature setting on the water heater thermostat. A timer on the water heater does not reduce the energy required to heat water. This can only be reduced by using less hot water or by reducing the thermostat setting.

A timer can only reduce standby losses--the amount of energy lost through the walls of the tank. The total amount of energy going to standby losses is much less than 20% of 4200 kWh/year. Standby losses depend upon the size of the tank, the temperature difference between the water inside the tank and the air temperature where the tank is located, and the amount of insulation between the tank and the air. A timer reduces standby losses by turning off the heating elements and allowing the temperature of the water in the tank to decrease when hot water is not required.

Laboratory tests performed by BPA in 1984 showed small savings for both standard and energy-efficient water heaters. The savings for installing timers on standard and energy-efficient water heaters was 35 kWh and 17 kWh respectively.

The energy-efficient water heaters now available are much more efficient than those available in 1984 and would therefore have even lower savings if timers were installed. Even if a timer was provided free of charge, most people would have to hire an electrician to install it. The cost of the timer and its installation compared to the small energy savings produces a levelized cost that is much higher than the cost of new generation resources.

Tina Tau

008

C4b-2

*Increased appliance (esp. refrigerator) & lighting & heating efficiency are all important. I would support incentives by BPA (such as distribution of fluorescent bulbs, rebates on solar collectors, etc.). We have a solar collector to heat our home's water; we are the only house with one in our entire neighborhood. This seems ridiculous. Education is critical; incentives will help.*

## Comments and Responses

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**Response:** BPA has incentives and education programs for a number of energy-efficient technologies. Improved thermal efficiency (insulation, better windows) realizes the most benefit for homebuyers and the region, but many other approaches are also cost-effective. For example, BPA pays incentives for efficient lighting and refrigerators in new homes, and expects to add solar water heaters and solar access\* within the next year. Energy-efficient heating systems are also eligible for rebates under our new homes programs.

\*Solar access measures involve building codes or easements for new residences which assure homeowners access to sunlight. See response to Comment C6e-2.

### System Efficiencies (c)

**Smyth/Ellenbecker, Wyoming Public Service**

**038**

**C4c-1**

*BPA should examine carefully advanced metering technology and related power system operating technology to achieve efficiencies while maintaining quality and availability of service. The technology has benefits beyond just conservation and can assist BPA in making small-increment residential, commercial and industrial conservation programs more efficient and acceptable to the public.*

**Response:** BPA recognizes the potential for significant savings from power transmission and distribution system efficiencies. As shown in the Draft EIS Summary, all alternatives include 134 MW of efficiency improvements. BPA also recognizes that advanced metering techniques could support the load management options described on page 3-78 of the Draft EIS. The Electric Power Research Institute, with BPA financial support, is currently conducting research on advanced metering technology.

## Fuel Switching (C5)

Comments and Responses	Letter #	Comment #
<p><b>Harry L. Brunson, KJ Booster Club</b></p> <p><i>"Fuel switching from electric hot water tanks and furnaces to natural gas is a move in the right direction."</i></p> <p><b>Response:</b> BPA believes that market forces are adequately encouraging this alternative. See also response to Comment C5-7.</p>	005	C5-1
<p><b>John T. Mudge</b></p> <p><i>To quote the document, p. [S-7]: "Neither of these (fuel switching) were included in the base case because neither has been confirmed as to cost or availability."</i></p> <p><i>"This is a cop-out to avoid BPA loss of market share--the survival of an old, poor attitude. You have essentially redefined 'least cost' to exclude the actual least-cost ideas. Such convoluted 'reasoning' is inappropriate."</i></p> <p><i>"If fuel switching reduces coal plant electric production, there could be an environmental gain to consider."</i></p> <p><b>Response:</b> We continue to believe BPA's statement is accurate. The RPEIS does clearly identify a potential for regionally cost-effective fuel switching after taking into account all costs incurred by the electric utility, gas utility, and consumer. We do not yet have sufficient evidence, however, that utility programs can be designed to capture a significant amount of this potential in a cost-effective manner.</p> <p>Several utilities in the region have conducted, or are conducting fuel switching pilot programs. These efforts are providing valuable information on how to design effective utility programs. They have not, however, confirmed that large-scale programs would be effective.</p> <p>BPA agrees that additional studies and pilot programs are needed to confirm the amount and accessibility of cost-effective fuel switching. We are carefully following the activities of gas and electric utilities in the region. If and when sufficient evidence is available to establish the reliability and cost-effectiveness of fuel switching as a resource, we will include fuel switching in BPA's resource stack.</p>	006	C5-2
<p><b>William T. Gregory, Dow Corning Corporation</b></p> <p><i>"I realize that promoting the use of natural gas in place of electrical power for space and water heating is advertising for another industry but believe it should be considered."</i></p> <p><b>Response:</b> See response to Comments C5-2 and C5-7.</p>	013	C5-3
<p><b>David Philbrick</b></p> <p><i>"It makes no sense to support combustion turbines before exhausting all options to switch electric water and/or space heating customers to natural gas. Both use the same fuel and the use of it to create heat at the point of use is much more efficient."</i></p>	028	C5-4

**Comments and Responses**

Letter #

Comment #

**Response:** Under all but the lowest regional load growth scenarios, conservation and fuel switching programs alone would be insufficient to meet regional electricity needs. BPA must consider supply side generating resources as well in meeting electricity needs. To the extent that gas-fired generation is a cost-effective generating resource (considering all environmental effects), it is appropriate to consider it concurrent with fuel switching.

**John Eric Olson**

022

C5-5

*Encourage fuel switching to natural gas for space and water heating to ensure enough safe and environmentally friendly residential use, and in turn more hydro power will be available for the growth of industry.*

**Response:** See response to Comment C5-7.

**Douglas M. Still, Emerald FUD**

029

C5-6

*Fuel switching is in the interest of ratepayers (bill payers) and the region. It should be a part of BPA Resource Programs.*

**Response:** See response to Comments C5-2 and C5-7.

**John Savage, Oregon Dept. of Energy**

033

C5-7

*"The draft lacks sufficient analysis of fuel-switching. . . .*

*"BPA "should evaluate and pursue cost-effective end-use fuel-switching. BPA states that it 'has decided not to develop or participate in fuel-switching programs at this time. This decision is based on utility concerns and evidence that a significant amount of market-driven fuel switching is already occurring.' (Page 8, Resource Program Draft II).*

*"We find neither reason compelling. BPA's draft EIS identifies 550 average megawatts of potential fuel-switching. Although the value is preliminary, BPA should not ignore a resource of this size."*

*BPA should study fuel-switching further and implement programs within two years. Studies are needed to determine cost-effective measures. "For example, BPA excluded from its analysis new homes within 1/4 mile of mains and existing electric water heaters in homes with gas service. However, BPA provides no evidence that 'switching is expected to occur over time (in such homes) due to market forces alone.'*

*"BPA's analysis should estimate total resource costs, including costs of installing gas lines and using gas, and not simply costs to BPA of reducing loads."*

**Response:** BPA believes that the regional fuel switching supply described in the DEIS (approximately 550 aMW under high loads) is a reasonable estimate of the regional supply based on the current understanding of fuel prices, supplies, and consumer behavior. BPA's

## Comments and Responses

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review of the economics of fuel switching in the Technical Report on the Draft 1992 Resource Program, January 1992, supports the assumption that gas is likely to be used in new homes within one quarter mile of mains, without additional incentive or fuel switching programs. We continue to refine our characterization of fuel choice and fuel switching in load forecasts and to monitor actual market fuel choices. We also regularly review existing policies, regulations, procedures, and program incentives to assess their effects on fuel choice. See also response to Comment C5-2.

**John C. Jones, Associated NW Gas Utilities**

**048**

**C5-8**

*We encourage BPA to designate the "fuel switching" alternative as the preferred alternative and rename it the "energy efficient" alternative because it is low cost and has the same or less environmental impact as the Base Case.*

**Response:** See response to Comment C5-2.

**John C. Jones, Associated NW Gas Utilities**

**048**

**C5-9**

*"The EIS states it did not consider the 'fuel switching' alternative because the cost and availability of fuel conversions have not been confirmed. We believe that the cost and technology of converting electric space and water heaters to natural gas have been long established and are well known and thoroughly documented. For example, please refer to the Snohomish County PUD/Washington Natural Gas Water Heating Pilot Program report or the Washington Water Power's November 13, 1991 presentation to the Fuel Choice Working Group on the 1991 Switch Saver Test Program Results. Availability is confirmed in the BPA load forecast. In fact, the BPA Resource Program EIS estimates 550 aMW of fuel conversion potential.*

*"We encourage BPA to examine costs and availability in these documents and also BC Hydro/BC Gas' recent electric to gas fuel conversion program. This documentation and BPA's own forecasts should leave little or no doubt about the cost-effectiveness, reliability, and commercial availability of fuel conversions."*

**Response:** See response to Comments C5-2 and C5-7.

**Miscellaneous (C6)  
Aluminum Plants (a)**

**Comments and Responses**

**Letter #**

**Comment #**

**George A. Lantz**

**019**

**C6a-1**

*What is the life expectancy of the aluminum smelters in the Northwest?  
What is the feasibility of them helping to meet power demands in the  
next 20 years?*

**Response:** Some Pacific Northwest smelters are less efficient in the production of aluminum than others. Over the long term, when new, highly efficient smelters are built anywhere in the world, older, less efficient, smelters become less competitive in terms of cost of production. There is a limit to gaining greater efficiencies from an older smelter.

What this suggests about a specific life expectancy is not clear. Alcoa's Massena smelter in New York, constructed before World War I, is still in operation; at the same time, the Alcoa Palestine plant in Texas, built as recently as the late 1960's, has been closed. The life expectancy is more a function of the economics facing a particular smelter at a specific location than of age alone.

The exact financial and competitive condition of each PNW smelter is known only to the owner of that smelter. However, it appears that some PNW smelter capacity, approximately 500 - 550 megawatts, may not be viable over the long term with currently forecasted conditions. More might become non-viable as a result of significant unanticipated changes facing them. BPA's forecast of smelter loads has accounted for factors including, but not limited to, the Clean Air Act amendment implementation, alumina supply disruptions, less favorable alumina supply and other contracts, and labor disputes.

See also response to Comment C4a-16.

**Hydrogen (b)**

**Frederick E. Ellis**

**009**

**C6b-1**

*"The use of hydrogen is a must! The remaining problems are not that difficult to resolve--if we still have the will to [wean] ourselves from hydrocarbon fuels!"*

**Response:** BPA completed the Pacific Northwest Hydrocarbon Feasibility Study in March 1991. Although use of hydrogen has several environmental benefits, two factors--cost and lack of infrastructure--continue to constrain its development. The technology for production and use of hydrogen is known, but its cost, compared to other alternatives, is prohibitive. A hydrogen economy would require the creation of a new system for its production, delivery, and use. Large-scale use would require substantial societal investment. Our studies and

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those of other researchers show that the first practical uses of hydrogen will most likely be in the transportation industry. Since we do not have a role in that industry we have not pursued hydrogen research aggressively.

Although it is not prudent to plan for large-scale use of hydrogen over the 20-year planning period of this document, BPA continues to monitor developments in this field for possible cost-effective utility application. Hydrogen was discussed in Chapter 3 of the Draft EIS.

### Magneto hydrodynamics (c)

George A. Lantz

019

C6c-1

*Is magneto hydrodynamics generation viable? What is the feasibility of it helping meet power demands in the next 20 years?*

**Response:** The U.S. Department of Energy has operated a research program on magneto hydrodynamics for more than ten years. DOE still believes it may be possible to bring this technology into cost-effective use, but it is expected to be several years before that happens. Industry experts in general are not as optimistic and very little private research money is being spent on this technology.

### Methane/garbage (d)

Harry L. Brunson, KJ Booster Club

005

C6d-1

*"Why are we not considering the methane being burnt at the garbage dumps as an electric energy source?"*

**Response:** Municipal waste as a potential fuel source for cogeneration plants is included in the discussion of cogeneration on page 3-44 of the DEIS.

### Other (e)

Frederick E. Ellis

009

C6e-1

*"The potential for further electrical generation in eastern Washington is waiting to be utilized."*

**Response:** As described in Section 3.2 of the Draft EIS, BPA assumes that a share of new generating resources would be developed in eastern Washington.

Barbara Dutro

021

C6e-2

*"... I am again appalled that the Solar Conservation Program is not included in your analysis. I have participated in this process from the beginning, working on the technical review panels and reading and submitting my comments at every stage of development, and you have always ignored my input.*

*"... Enclosed are my previous comments." [5/26/92]*

The following summarizes those portions of the 36 pages of letters submitted by Ms. Dutro that appear to apply to the Resource Programs EIS, particularly to her proposed Solar/Conservation program. In her letters, beginning in 1989, Ms. Dutro also raises concerns about methods of calculating environmental costs for solar, geothermal, hydro, and nuclear; methods of calculating impacts to various natural resources; use of contingency valuations; nuclear waste storage and disposal and costs of decommissioning; and projects such as Cowlitz Falls. However, Ms. Dutro's 5/26/92 letter focuses on the lack of response to her solar/conservation proposal. Therefore, we summarized mostly comments related to that proposal.

One other letter from Ms. Dutro, dated 4/13/92, contains comments on subjects related to the Resource Programs EIS. They are included in this summary in the appropriate comment categories.

*The problem with conservation programs is that they are viewed as uninteresting by the public--merely insulation projects. Utilities often do not support conservation because it reduces their profits. Therefore, I propose that conservation and passive solar projects be combined with rate incentives to utilities and consumers to provide a package that will be attractive to both.*

*The following are characteristics of the program.*

- *The program is voluntary.*
- *The program is offered to all, whether or not they heat with electricity.*
- *BPA offers "conservation energy" to a utility for -1.6 cents, as a billing credit. The utility offers it to its customers who participate in the solar conservation program for 2.4 cents, instead of 4.9 cents. The utility makes a profit of 4 cents/kWh; the consumer saves 2.5 cents/kWh, theoretically cutting his electric bill in half. Using low-interest loans, the consumer installs insulation, weatherstripping, caulking, reglazed windows and a passive solar hot water preheat. The special price for energy to participants would be limited to the amount of electricity they used before installing the conservation.*

*Consumers also have the incentive to install solar space heating with the money saved on electricity due to the conservation measures and the lower price of the "conservation energy" they use. Even in Libby, Montana, with its dreary winters, a 12- by 40-foot addition to the south side of my house is all it takes to provide 12,000 average kW hours, or 1,000 average kW hours per foot width. It cost \$6,500.*

## Comments and Responses

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*Some designs don't do as well, maximizing glass, which is not a costly building material. Planning the space as a garden optimizes the solar gain. Heat loss into the greenhouse is one of the most important effects, keeping the heat close to the house instead of having it dissipate into the air. In summer, my system does not overheat. The 6-foot overhang that houses the vents shades the south side windows and contributes to cooling, provided there is adequate ventilation.*

- *An integrated package would include:*

<i>Option</i>	<i>Costs</i>	<i>Savings</i>	<i>Levelized Cost cents/KWh</i>
<i>Water heating</i>	<i>\$1,942</i>	<i>2,584 KWh</i>	<i>9.6</i>
<i>Space heating</i>	<i>6,500</i>	<i>12,000 KWh</i>	<i>5.4</i>
<i>Insulation</i>	<i>2,000</i>	<i>6,000 KWh</i>	<i>1.9</i>
	<i>\$10,442</i>	<i>20,584 KWh</i>	<i>15.8 melded</i>

*Reject heat from conventional cooling systems could be a backup system, as could wood heat in the winter. Also, couldn't a solar system generate the compression of freon for cooling systems, especially cooperating with a heat pump?*

*With this package, over a 20-year contract, the dollar savings to the consumer, at 4.9 cents/KWh, is \$21,600 in electricity. In addition, the consumer adds \$10,442 equity to the building. [Editor's Note: In a letter dated Feb. 27, 1991, Ms. Dutro uses \$20,000 in 20 years as the equity value a consumer acquires from the retrofit and efficiency improvements.] These figures do not include interest. [11/8/89]*

*Figures gleaned from a conference proceeding fifteen years ago reflect that, at the level of efficiency and cost now extant, photovoltaics are, at present, cost competitive with existing central station facilities.*

*[Photovoltaics and Materials. Vol. 6, Sharing the Sun, Solar Technology in the Seventies. A Joint Conference 1976 of the American Section of the International Solar Energy Society and the Solar Energy Society of Canada, Inc. Proceedings. August 15-20, Winnipeg.]*

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*1This cost level is born by the homeowner, not the utility or BPA. The utility makes 2.5 cents more on conservation electricity and BPA spends 4 cents for the avoided cost incentive to encourage participation in the Solar Conservation program. [11/8/89] BPA contends that the cost to the homeowner for improvements must be figured into the cost of the resource, making the program appear to cost 9.8 cents. But this is not what it costs, because the homeowner would be consuming less than half of this original consumption before improvements. [2/27/91]*

*At the figures quoted in the proceedings, passive solar electricity can be provided at the same or under the cost of a providing utility. A square meter array produces 1 kW of electric energy at a cost of \$600 for the panel. To provide the 960 kWh a household would use in a month, it would take 4 square-meter panels providing 4 kWh x 8 hours of sunshine a day x 30 days = 960 kWh. Four panels at \$600 a panel cost \$2,400, plus \$2,000 for the battery storage system (maximum), which makes a total of \$4,400 to provide 960 kWh a month. 960 kWh @ \$4,400 amortized at 25 years and with 7% interest yields a competitive cost compared to buying the 960 kWh @ 4.9 cents for 600 kWh and 3.6 cents for 360 kWh for a total of \$42.36 for 960 kWh. I figure that the photovoltaic electricity can be provided for \$9.16 a month less. [10/15/91]*

*If there are 4,500,000 people and 2,250,000 households in the Northwest, the market potential is a saving of 20/MWhr/year per household. It becomes 45,000,000 MWha at 365 days x 24 hours = 8,760 KWh/KWh capacity = 5,100 MW. [11/8/89] [Editor's Note: In later letters, Ms. Dutro uses the range 5,100 - 20,200 MW, e.g., 4/13/92.] The potential is there for 17,000 direct jobs and \$20 billion in development in the BPA region. [3/1/91]*

*The program should use only small-scale, site-specific technologies that have been proven. No legislation is necessary, so state legislatures and local governments need not be involved. BPA should be the wholesaler, utilities the retailers, and the private sector the consumers. BPA should not be a retailer; however, it should act as a conservation advocate and promoter.*

*Education workshops for builders, low-interest home improvement loans, and rate design would all be pertinent. Regulations and codes would be irrelevant. The high rate of return/short payback requirements could be overcome by working with the National Solar Conservation Bank to provide low interest loans with 20-year terms. [11/27/89]*

*The program will free existing generation to serve future electric needs without having to build dams, new coal plants, nuclear plants or any other wasteful or environmentally damaging technology. It is the least cost, only costing Bonneville the avoided cost incentive, and is in keeping with the Congressional mandate for conservation as the first priority in energy planning. [3/26/91]*

**Response:** Use of passive solar energy for low grade heat applications, such as space and water heating, e.g., the solar greenhouse at Ms. Dutro's home in Libby, Montana, is an excellent example of wise use of indigenous renewable energy resources, which every resident of the region should be encouraged to do if they are able. Many, but not all, homes could be retrofitted with this type of passive solar collector.

However, most Pacific Northwest residents live west of the Cascade Mountains, in densely populated cities where many dwellings are shaded by trees and/or adjacent buildings to the south. These and other factors, such as cost, discourage use of solar energy for passive (or active) solar energy collection.

**Making Effective Use of the Sun's Energy**

- **Types of Collector Systems:** Passive solar applications, e.g., solar greenhouses, space heaters, and water heaters, use the total incoming solar radiation, which consists of direct and diffuse components. The direct component varies from about 70 percent (Eugene, Oregon) to 80 percent (Whitehorse Ranch, southeast Oregon) of the total incoming radiation. Commercially available flat plate photovoltaic panels can use only the direct component.
- **The Solar Energy Resource (Where and How Much):** The University of Oregon, through actual measurements during a study commissioned by BPA during the early eighties, identified southern Idaho and southeastern Oregon as the most favorable areas in the Pacific Northwest for potential future application of solar energy devices. Measurements of incoming solar energy were also made at Eugene, Oregon, which is representative of locations west of the Cascades. The amount of incoming solar energy varies considerably throughout the Northwest, both by season of the year and by physical location. The following table summarizes the pertinent details of selected stations where incoming solar energy was measured:

**Average Incoming Direct Solar Radiation, kWh/m<sup>2</sup>/day**

<u>Location</u>	<u>Period</u>	<u>Annual</u>	<u>January</u>	<u>July</u>
Whitehorse Ranch	1979-1985	5.27	2.76	8.44
Eugene	1978-1985	3.43	1.22	6.94

The maximum value of the incoming solar radiation reaching the surface of the earth, which occurs only at solar noon on a day with full sunlight, is about 1 kW/m<sup>2</sup>. Obviously, at other times of the day, the value is less.

The maximum conversion efficiency of commercially available photovoltaic (PV) systems is only about 8 percent, according to experts at Solar Engineering, Inc., of Lacey Washington.

The resulting maximum useful output to the consumer, after accounting for the losses in the solar collector, connecting wires, and converter/battery, is 80 Watts/m<sup>2</sup>, not 1,000 Watts/m<sup>2</sup>, as indicated in Ms. Dutro's letter. There is a substantial difference between the value of incoming solar energy and the amount of electricity that can be produced from it after accounting for the various efficiencies of the conversion equipment. In Eugene, Oregon, which is representative of the solar energy environment where most Northwesterners live, a photovoltaic plant would require panels about 172 feet wide by 8 feet high (or 1,375 square feet) in order to achieve the 960 kWh/month average for the year. These numbers were derived using figures from the table above and assume 90 percent of the incoming solar radiation is useable and an 8 percent sun-to-electricity conversion efficiency. They were calculated using the following formula:

$$\frac{(960 \text{ kWh/month})(12 \text{ months/year})}{(0.9)(0.08)(3.43 \text{ kWh/m}^2/\text{day})(365 \text{ days/year})} = 127.8 \text{ m}^2 \text{ or } 1,375 \text{ ft}^2$$

Panels this size would have a peak output of about 10.2 kW (80 Watts/m<sup>2</sup>)(127.8 m<sup>2</sup>).

- The Bottom Line: Without installation, such a system would cost from \$125,000 to \$149,000, based on extrapolation of information obtained from Solar Engineering, Inc. These are 1992 dollars.

If 7 percent financing were available for such a home improvement loan over a 20-year period, the monthly payment would range from about \$970 to \$1,155. This compares to the projected savings of \$47.04 per month, for 960 kWh/month at 4.9 cents/kWh. Increasing the repayment time to 15 years would reduce the monthly payments to \$883 - \$1,053. Even with zero interest, the monthly payments over 25 years would be \$417 - \$497. Recovering the cost of installation would increase these amounts.

While pursuing such solar applications on a large scale does not appear cost effective at this time, BPA is pursuing other solar options. We are currently studying the feasibility of acquiring energy savings through the development of solar access measures which protect a new home's access to sunlight through building codes or easements. Measures may include height limits on buildings, setbacks for property lines, and street orientation.

Recent studies by BPA confirm that solar access as a resource is cost-effective and should be pursued. BPA's draft 1992 Resource Program estimates solar access at a levelized direct cost of 12.1 mills/kWh, acquiring between 9 and 19 aMWs of savings between 1994-2010 (medium/high forecasts). In addition, the future savings acquired

**Comments and Responses**

**Letter #**

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from preserving the option to add photovoltaics, solar water heating, and other solar technologies when they become cost-effective will far exceed the savings acquired from good solar site design and orientation. BPA is developing a draft solar access strategy which will propose ways to acquire solar energy through site design and orientation.

BPA also is considering whether to offer solar water heating next year as a part of the Super Good Cents Program and is negotiating with the Eugene Water and Electric Board and the University of Oregon to research and assess solar energy resource potential.

**Hal Cooper**

**Public Meeting**

**C6e-3**

*We need to factor in the future use of electrical transportation, not in terms of increased load, which it will cause, but also the fact that it has environmental benefits of its own, particularly urban air quality.*

**Response:** Mr. Cooper makes a good point about the benefits of electrical transportation. However, transportation issues are outside the scope of the energy supply issues of this EIS.

**Paul Lemaer**

**052**

**C6e-4**

*"We should cut back on use of water permanently. We can learn to conserve--all resources."*

**Response:** We agree that water conservation is a good idea.

## Nuclear (C7)

### Comments and Responses

Letter #      Comment #

Harry L. Brunson, KJ Booster Club

005

C7-1

*"One of the two power plants, #1 or #3, should be completed with a no change guarantee from NRC and a specific dollar amount to complete it from both the contractor and the unions."*

**Response:** BPA believes that a number of other resource types in the resource stack are more cost-effective than WNP-1 and WNP-3. However, the nuclear plants would be acquired if load growth were high, or in the event of major resource failures. The contractors for both plants have indicated a willingness to negotiate cost-capped contracts for completion should either of the plants be needed. The NRC traditionally has not committed itself to a no-change guarantee until final decisions are made on operating license approvals; but the Supply System would prefer, if possible, to complete the NRC licensing process and any labor negotiations with the unions before construction is resumed.

Ralph Heinert, Champion International

031

C7-2

*I believe we will make a serious mistake if we do not emphasize and use our nuclear plants and expand those capabilities. Next to hydroelectric, it is probably the cleanest, most efficient source of power available. Although politically volatile, it is technically and economically sound, and public awareness and education can correct that problem if we spend some dollars to run an educational campaign.*

**Response:** Nuclear resources do have an environmental advantage over other resources as far as greenhouse gases are concerned. However, they also have the disadvantage of producing high-level radioactive waste, for which there is no permanent solution in this country. While there is a slight economic advantage over a new coal resource, BPA believes that a number of other resources are technically viable, have shorter lead times, are less expensive, and are available in smaller increments than nuclear plants. All these issues and many others will be considered before any decision is made on the nuclear plants.

While BPA does not have an educational program focusing on nuclear energy, the Washington Public Power Supply System does operate a speakers bureau and offers tours of WNP-1 and WNP-3 to the public to address questions and concerns about the projects.

Frederick E. Ellis

009

C7-3

*"Nuclear is not a viable option--let's forget it."*

**Response:** BPA considers a number of factors in deciding which alternatives to pursue, including cost-effectiveness, environmental impacts, lead time, availability, and unit size. Under certain conditions, nuclear may be viable, although BPA believes a number of other resources have advantages over nuclear. See responses to Comments C7-1 and C7-4.

## Comments and Responses

Letter #      Comment #

**Jere Overs, Salem Electric**

**027**

**C7-4**

*"A full accounting of [environmental costs associated with radioactive emissions from a catastrophic nuclear event], as well as the certain cost overruns and unreliability of operation and lifetime, and the political impossibility of actually finishing WPPSS 1 and 3 should finally convince BPA to terminate these projects."*

**Response:** See response to Comment B4-4.

**Douglas M. Still, Emerald PUD**

**029**

**C7-5**

*"Don't waste more dollars on WPPSS 1 and 3. Stop Trojan."*

**Response:** Nuclear resources come on line under high load growth forecasts. If high load growth does not occur, we are unlikely to need this resource in the future. See responses to Comments B4-4 and C7-2.

**Barbara Dutra**

**021**

**C7-6**

*"If additional revenue is needed, why is the system encumbered with the indebtedness on nuclear plants 1, 3, 4, and 5 for the Washington Public Power Supply System when we get nothing from them. The free enterprise response to these bonds would be that the investment was lost. In fact, the bonds have trebled the initial investment and we will go on paying for these plants forever, never touching the principal. There should be a break-out for Hanford; however, it looks to me like there would be approximately a \$300 million savings here alone. My stance is that a raise in rates is not justified under the circumstances. With safety and nuclear waste still a problem, these plants should never be finished, and in fact the two that are generating should be closed down." [4/13/92]*

**Response:** BPA never contracted for the capability of WNP-4 and WNP-5 and is not paying debt service on those bonds. BPA is obligated by its contracts to guarantee the debt service for the WNP-1 and WNP-3 bonds, whether or not the projects produce any power.

Beginning in 1989 and ending in 1991, the Supply System successfully completed a total of seven refinancings for units WNP-1, WNP-2 and WNP-3. The total savings from these refinancings will exceed \$1.2 billion during the life of the bonds (to year 2018 for WNP-1 and WNP-3). Much of the savings will occur in the near future. In BPA's fiscal year 1992 alone, this will mean debt service reductions of more than \$130 million. The Supply System and BPA continue to look for refinancing savings. Another refinancing is currently planned for fall of 1992.

Safety and nuclear waste (which are Nuclear Regulatory Commission responsibilities) will be factors along with the need for power and economics that would be considered in any BPA decision on nuclear resources in the Northwest.

**Comments and Responses**

Letter #      Comment #

**John Savage, Oregon Dept. of Energy****033****C7-7**

*"The draft lacks sufficient analysis of the WNP 1 and 3 facilities. . . .*

*"BPA should only plan to complete WNP 1 and 3 if it can obtain power sales contracts similar to those for other generating resources. BPA plans to acquire WNP 1 and 3 power under its high scenario.*

*However, WNP 1 and 3 pose substantial risks. One . . . [is] that the contract between WPPSS and BPA provides inadequate ability to control costs.*

*"BPA and the region's ratepayers should not build large resources or buy capability. New generation should be acquired only through power sales contracts, [which] allow the market to display the relative risks of various resources. If power sales arrangements are not feasible for WNP 1 and 3, they should be terminated."*

**Response:** BPA is aware of the risks and exposures associated with large generating resources. These issues would be considered in any BPA decision to restart the nuclear plants. Our supply estimates for new resources other than WNP-1 or 3 do not include units of the same scale as WNP-1 and 3--most are 250-400 aMW units.

**Byers/Harding, Washington State Energy Office****037****C7-8**

*Page 3-55: There is no clear reason to use mid-1989 data on operating nuclear capacity. The values in January 1992 were 111 licensed (operating is ambiguous) reactors with a combined design capacity of 111 gigawatts. In 1991, these units met nearly 22 percent of the nation's electrical load.*

**Response:** When this document was prepared, mid-1989 data were the latest available. The Final EIS was revised to use this new information.

**Kirvil Skinnarland, Seattle City Light****047****C7-9**

*"We question inclusion of nuclear resources in the preferred alternative [in light of their high environmental impacts], and recommend substituting resources shown to be both cost-effective and more environmentally benign.*

*"Also, Table 4 on page F-4-19, which is an example of ISAAC output showing resources in the high conservation alternative, shows two coal and two nuclear plants being completed within the next ten to fifteen years. Please explain this result."*

## Comments and Responses

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**Response:** Table 4 in Appendix F shows resources expected to be acquired by utilities throughout the region, not just by BPA. It is important to keep in mind that the ISAAC program acquires resources based on BPA's high load forecast. Under high forecasts, regional loads grow by 5,000 aMW from 1991 through 2000 and by 11,000 aMW from 1991 through 2010. Even under the High Conservation Alternative there are insufficient amounts of lower-cost resources in the resource stack to meet this need. ISAAC must move further down the resource stack and acquire more expensive nuclear and coal plants in order to meet this dramatic load growth.

Our calculations show a 5% chance that the high load scenario will occur. We have no plans to resume construction of the nuclear plants. The likelihood of completing them is less than 10%. Our analysis of where these plants fall in the resource stack regionally is based on the best currently available knowledge. Before we would make any decision to complete the plants, we would review those costs in light of current estimates. New estimates could change these figures substantially.

In the Final EIS, a new table (4-1) shows resources likely to be acquired under medium loads. It shows that no nuclear would be acquired in that case.

**Hal Cooper**

**Public  
Meeting**

**C7-10**

*The best we are going to be able to do in the area of nuclear is perhaps to get the units we have at Hanford on line.*

**Response:** See responses to Comments C7-1 and C7-2.

**Hal Cooper**

**Public  
Meeting**

**C7-11**

*At Hanford it may be advantageous to use the nuclear units as part of the overall waste treatment for nuclear waste cleanup, as Hanford has one of the greatest single concentrations in the world of residues from nuclear weapons production. Building a transmutation plant to convert radioactive isotopes to nonradioactive materials would require a large amount of power in and of itself, plus cleanup of the ground water in the vitrification plants.*

**Response:** The U.S. Department of Energy is looking at alternative ways to clean up Hanford. The effort is not within the scope of the energy resource issues of this EIS.

**Paul Lemaer**

**052**

**C7-12**

*"No nuclear energy need."*

**Response:** See response to Comment C7-9.

## Power Exchanges (C8)

### Comments and Responses

Comments and Responses	Letter #	Comment #
<p><b>Harry L. Brunedon, KJ Booster Club</b></p> <p><i>"We should not rely on imported power from Canada or Mexico as we do not have control. A political change can cut us off."</i></p> <p><b>Response:</b> BPA and other northwest utilities have a long history of power purchase agreements, exchanges, and other transactions with Canada. In all cases, contractual terms, international law, and treaty provisions protect all parties to the transactions.</p>	005	C8-1
<p><b>Stephen Ahearn, Arizona Energy Office</b></p> <p><i>The Arizona Energy Office offers comments on the DEIS because of the seasonal energy and capacity exchanges between Northwest and California utilities, and Arizona's energy sales into that market. The seasonal exchanges between Arizona Public Service and PacifiCorp are further testimony to the interrelated, increasingly regional nature of electricity markets and more reason for our comments.</i></p> <p><b>Response:</b> We agree that the power system is becoming increasingly interrelated. Inter-regional transactions are a source of energy and capacity and are considered in the EIS.</p>	026	C8-2
<p><b>Marvin Klinger</b></p> <p><i>The Emphasize Imports Alternative apparently assumes that all opportunities for imports exist either in Canada or the Pacific Southwest.</i></p> <p><i>I have pointed out in the past and do so again that opportunities exist today for importing reliable and economical resources from the MAPP region to the east. These resources have been operating for more than 6 years with an availability of better than 80%.</i></p> <p><i>This resource is owned by Basin Electric Power Cooperative, is surplus to that system's needs, and is available for acquisition for up to 20 years starting in 1995. Since it is a proven, existing resource that meets or exceeds all existing environmental regulations, the Region would incur little financial risk. As it is now operating and will continue to, whether or not acquired by BPA, it would cause no incremental environmental impacts.</i></p> <p><i>An existing 500-kv transmission path owned by BPA is under-used as far as the interests of BPA Preference Customers are concerned and could provide a path for imports from the MAPP region. It presently is used for wheeling for others and for short-term purchases by BPA. It would have much greater value if used to acquire and transmit long-term resources for BPA and its customers.</i></p>	044	C8-3

## Comments and Responses

Letter #      Comment #

**Response:** Additional imports from Basin Electric are constrained by transmission limitations, both on the interconnection to Montana as well as on paths within BPA's Northwest service area. Basin Electric is interconnected with Montana through an AC-DC-AC intertie at Miles City, Montana, east of Colstrip. The capacity of this interconnection is 200 MW. The transmission path between Montana and the Northwest is also severely constrained by other users. The capacity is approximately 2000 MW, with a BPA share of 180 MW. To increase transfer capability between Montana and the Northwest, constraints on three groups of transmission lines in the Northwest, plus constraints on the interconnection point with Basin, must be removed.

The West of Garrison transmission lines--two 500-kV lines with underlying 230-kV and lower voltage lines--are limited to 2000 MW. Studies are proceeding to upgrade equipment at BPA's Garrison substation, along with other measures, to increase the path capacity 200 MW by the mid-1990s. Further increases on the BPA system would require other additions.

The next constrained group of lines to the west consists of two 500-kV and seven underlying 230-kV and 115-kV lines crossing the northwest Montana/north Idaho border. Analysis of the capacity of this group is currently underway.

The third group of lines is in the Lewiston, Idaho to Spokane, Washington area. The existing limit on one 500-kV and lower voltage lines ranges from 1525 MW to 1850 MW, depending on Northwest to Idaho schedules. To meet current obligations of about 2800 MW, 230-kV line construction and reconductoring is proposed for completion in 1995.

A major upgrade to the existing transmission path could affect environmentally sensitive areas in several states. The cost of doubling the present capacity from Colstrip to load centers in the Puget Sound area could be about \$1 billion, or about \$500 per kW. Such an alternative would also require upgrading the AC-DC-AC converter at Miles City, at an added cost of about \$140 - \$160 per kW.

**Hal Cooper**

**Public  
Meeting**

**C8-4**

*I think it would be beneficial for BPA, in conjunction with other appropriate federal agencies, to consider not only north/south transmission, but to build an intertie with the Midwest, because then we can make extensive use of renewable resources, particularly wind. We can make use of coal. And they can make use of ours during other periods. It may make for lower prices in the longer range.*

**Response:** See response to Comment C8-3.

## Renewables (C9)

### General (a)

#### Comments and Responses

Letter #      Comment #

Jeff Adams

010

C9a-1

*Renewables will create jobs with the needed infrastructure and will conserve non-renewable sources for the long term. Geothermal, wind and solar are the only serious options.*

**Response:** BPA is committed to acquiring cost-effective conservation. Efforts are also underway to develop cost-effective renewables. Right now it appears that supplies of such resources may not be sufficient to meet load growth forecasts. However, a goal of BPA's recently initiated Resource Supply Expansion Program is to confirm additional renewable energy resources in the region. See also response to Comment A1-17.

Hal Cooper

Public  
Meeting

C9a-2

*We really need to move on to renewable energy, solar energy and thermal.*

**Response:** The preferred alternative includes all these resources.

### Geothermal (b)

George A. Lantz

019

C9b-1

*Is there any geothermal generation of electrical energy going on now? What is the feasibility of it helping meet power demands in the next 20 years?*

**Response:** No geothermal plants are operating in the BPA service territory. The nearest plants are in northern Nevada and northern California. In the U.S., about 70 plants are currently operating, with about 2700 megawatts of generating capacity. The first U.S. plant began operations at The Geysers in northern California in 1960.

As stated on page 3-35 of the Draft EIS, BPA believes that a 30-aMW pilot project is feasible within the next decade, and that in the longer term, there is the potential for a substantial geothermal resource in the Northwest. The Base Case Alternative assumes 45 aMW of geothermal resource operations in 2000 and 383 aMW in 2010.

See also response to Comment C9b-2.

Stuart Sugarman, OR Natural Resources Council

051

C9b-2

*Neither the Resource Program nor the Resource Programs EIS contain decisions to construct geothermal power plants in eastern Oregon. The EIS recommends an alternative which would include 45 aMW of geothermal energy, but does not contain a final decision.*

## Comments and Responses

Letter #      Comment #

*However, concurrently with these actions, BPA appears to be heavily involved with the construction of three future geothermal plants in eastern Oregon at Newberry, Glass Mountain, and Vale. BPA is already working on EISs for these "pilot projects" and expects to complete the documents in 15 to 21 months. How is it that the Resource Program and the DEIS discuss whether to develop geothermal energy while BPA has already decided to go ahead?*

*The National Environmental Policy Act requires BPA to consider the impacts of major federal actions significantly affecting the human environment; to include the public and to solicit information from them; and to complete NEPA documentation before irretrievably committing resources. BPA appears to have ignored this mandate.*

**Response:** The 1990 Resource Program recommended that BPA undertake a geothermal pilot project. Contents of that Resource Program were widely reviewed and reflect considerable regional dialogue. The geothermal recommendation resulted from the lack of cost-effective renewable resources in regional resource stacks, and from the perception that the availability and viability of geothermal needed to be demonstrated before including that resource in utility planning.

BPA is now engaged in contract discussions to establish two pilot geothermal projects in eastern Oregon, at Newberry Volcano (near Bend) and Vale. BPA is a cooperating agency with the federal land managing agencies--U.S. Forest Service and Bureau of Land Management--at each site. These agencies are leading the environmental reviews required by the National Environmental Policy Act, which will provide further opportunities for public input. BPA will make no irrevocable commitment to purchase power from either project until the environmental review is completed.

The California Energy Company and the Eugene Water and Electric Board have formed a citizens advisory committee in the Bend/La Pine area for the Newberry Geothermal Project. The committee has been holding monthly meetings, open to the public, since March 1992. A representative from BPA attends these meetings, mostly as an information resource for the committee.

### Hydroelectric (c)

**Robert J. Garnett**

011

C9c-1

*BPA need could be helped by more small hydro. Several small ones could have less environmental effect and no water consumption, [unlike one large system]. There are many potential small streams.*

**Response:** BPA is interested in cost-effective, environmentally benign small hydro projects. The renewable resources considered in the RPEIS include small hydro.

## Comments and Responses

Letter #      Comment #

Barbara Dutro

021

C9c-2

*"... Libby [Dam] could [be] operated as a firm power producer, increasing revenue for that project to meet repayment and also alleviate the need for more projects. In fact, Libby Dam does not generate enough income to cover its operation and maintenance costs or to cover its interest. It has never touched its principal. Non-firm power is sold to the southwest at the lowest possible rate, and the possibilities of firm power to generate the base load that we do need here in the northwest are passed by. Libby would generate 262 MW of firm power, and that would almost satisfy the need that you perceive for additional firm power."*

**Response:** Libby Dam has been and will continue to be operated to maximize firm power capability at the dam and downstream on the Columbia River, subject to limitations for flood control, fishery needs, and recreation. Firm power capability at Libby (based on low streamflows) is about 200 average MW, and the storage operation at Libby increases firm power capability at downstream dams in the United States by about 160 aMW. Any change in Libby's operation to increase firm power capability would bring added risk of drafting the reservoir system empty and failing to meet our firm loads. It would also decrease the probability of refilling the reservoir in the spring, something the Corps of Engineers has stated they are not willing to do.

Income from Libby's power operation does not cover the total operation, maintenance and construction costs of the dam. Costs for flood control are borne by the taxpayers and were never intended to be paid for by power revenues. However, BPA's electricity rates do pay the full costs, including principal and interest on U.S. Treasury debt, of construction, operations, and maintenance costs for hydropower operations.

Nonfirm power is indeed sold at rates lower than firm power is sold in the Northwest. Nonfirm power has less value to buyers because they can't count on it every year and so must rely on other sources as well. All nonfirm energy is offered to Northwest utilities before it is sold in the Southwest. Some years the Northwest buys the majority of this inexpensive energy. We negotiate for the best price we can get, with all parties knowing that we must eventually sell the power to the highest bidder or spill the water over the dam's spillways.

This situation is the norm for a predominantly hydropower system. Because about 2/3 of the Northwest's electricity comes from hydropower, we must build enough resources to meet our firm loads even under very low streamflow conditions ( like 1992). Since Columbia River annual streamflows can be almost three times greater than the lowest water year, we have large amounts of nonfirm power available in about three out of four years.

## Comments and Responses

Letter #      Comment #

**Wayne Haas, Idaho Dept. of Water Resources**

**050**

**C9c-3**

*Vol. 1, pg. 4-15: "There is no discussion of generation potential at existing dams or hydropower projects as opposed to the need for new hydropower projects."*

**Response:** New hydropower estimates are derived from analysis of projects that are in the FERC licensing process, including both new projects as well as those adding generation capability at existing dams. The potential for additional generation at large federally owned dams is limited and would add little energy capability. This issue is discussed in Section 3.3.3--Efficiency Improvements.

**Smyth/Ellenbecker, Wyoming Public Service**

**038**

**C9c-4**

*Environmental restrictions may reduce the hydroelectric generating capacity available to BPA, and this may result in reductions in hydropower availability in the western United States. To minimize this problem, every effort should be made in the resource program to avoid undue restrictions in hydropower availability. The price per kwh for hydropower should also be kept as realistically low as possible.*

**Response:** BPA's Resource Program does not directly address the future availability of hydroelectricity from the Columbia River System. BPA is participating with other federal agencies and numerous other parties in a comprehensive evaluation of the multiple uses of the Columbia River system known as the System Operations Review (SOR). The SOR may lead to changes in river operations that could reduce the amount of power generated by the hydroelectric system. The draft SOR EIS is expected to be available for public review in fall of 1993. Future Resource Programs will address the need for additional conservation and generation resources to replace any reductions in hydroelectric power availability. The environmental effects of these replacement resources have been analyzed in the RPEIS.

**Smyth/Ellenbecker, Wyoming Public Service**

**038**

**C9c-5**

*The price per kWh for hydropower should be kept as low as possible. If reductions in availability are inevitable, the interest of the electric consumer should govern any reallocation. For example, BPA should examine carefully the situation of systems, especially the smaller systems, which depend heavily on BPA hydropower, to see if it is realistic to reduce its availability or increase its price.*

**Response:** These issues are being dealt with in the Systems Operations Review EIS. The draft is expected to be available for public review in the fall of 1993.

**Byers/Harding, Washington State Energy Office**

**037**

**C9c-6**

*Table 3-14 [Costs and Supply - Hydroelectric]: What differentiates "Hydro-1" from "Hydro-2", etc.*

## Comments and Responses

Letter #      Comment #

**Response:** Hydroelectric generation projects vary considerably in their characteristics and costs. The four Hydro blocks identified in Table 3-14 of the Draft EIS are distinguished by their costs.

Peggy Brookshier, USDOE, Idaho Field Office

043

C9c-7

*"Page 3-26, Sec. 3.2.1.1, Cost Paragraph--This paragraph should contain a brief description of each of the cost categories, i.e., Hydro-1, -2, -3, and -4. The other energy cost sections include descriptions for each category."*

**Response:** See response to Comment C9c-6.

Wayne Haas, Idaho Dept. of Water Resources

050

C9c-8

*Vol. 1, pg. 3-25 to 3-44: The "Renewables" alternative highlights hydropower, geothermal, wind, and solar resources. Each section includes an "Impact" table with the exception of hydropower. In this section, a table should be added and the potential impacts of hydro-power development on water quality and use, other than fish and wildlife, should be discussed.*

**Response:** A new table (Table 3-15) has been added to Section 3.2.1 to identify the impacts of hydroelectric generation.

## Solar & Photovoltaics (Passive Solar) (d)

Douglas M. Still, Emerald PUD

029

C9d-1

*"Passive solar building design should get more emphasis--it is cost effective and available. It needs more promotion."*

**Response:** BPA believes that one of the more effective ways to encourage use of the passive solar resource is through development of solar access measures. These are ordinances or easements that protect access of new residences to sunlight. Recent studies by BPA confirm that solar access as a resource is cost-effective and should be pursued. BPA's draft 1992 Resource Program estimates solar access at a levelized direct cost of 12.1 mills/kWh, acquiring between 9 and 19 aMWs of savings between 1994-2010 (medium/high forecasts). In addition, it is important to note that the future savings acquired from preserving the option to add photovoltaics, solar water heating, and other solar technologies when they become cost-effective will far exceed the savings acquired from good solar access. BPA is now developing a draft solar access strategy.

Robert Creed, USDOE, Idaho National Engineering Lab

041

C9d-2

*"Page S-4 near the bottom: In line with the comment that there is a waste heat problem with geothermal, there are similar problems with solar thermal unless they are 100% efficient."*

## Comments and Responses

Letter #      Comment #

**Response:** The summary section was written to highlight the major impacts associated with each resource. Waste heat is not the most significant impact of solar thermal generation. Waste heat impacts are noted in the detailed discussion of impacts in Chapter 3.

**Aileen Jeffries**

049

C9d-3

*Recommend use of photovoltaics everywhere practical, such as repeater stations, remote point power supplies, roadside emergency stations, etc. Wind, solar, etc. will have to be used the future--the sooner we start "learning new" the better.*

**Response:** See response to Comment C9d-1. BPA also uses solar power for some of its own facilities.

## Wind (e)

**Smyth/Ellenbecker, Wyoming Public Service**

038

C9e-1

*Recent advances in wind power technology have made a number of Wyoming sites viable.*

**Response:** There is no question about the magnitude of potentially developable wind energy resources in Wyoming. They are of the same general magnitude as the wind resources in Montana. The major problem in developing Wyoming's wind resources for use in the larger load centers of the Pacific Northwest, i.e., in the states of Washington, Oregon, Idaho, and western Montana, is lack of available transmission to bring the energy to those load centers, and the added incremental cost and time to provide it. BPA participated in a recently completed study by the Pacific Northwest Utilities Conference Committee which concluded that integration of 3,000 peak megawatts of wind energy from Montana (using an optimistic 33% capacity factor which would yield 1,000 average megawatts) would take roughly ten years at a cost of about \$1 billion to complete. Identifying entities which would be willing to finance such an undertaking would also be a formidable challenge.

To bring power from Wyoming wind resources, which are outside the BPA service territory, to the Pacific Northwest--assuming suitable corridors for new transmission lines through the environmentally sensitive Rocky Mountain (and other) areas could be identified and approved--could require about the same in time and cost as estimates for the Montana integration study. It is probably more feasible for other parties to investigate a closer load center, such as Denver or Salt Lake City, to market Wyoming wind resources.

**Hal Cooper**

Public  
Meeting

C9e-2

*Wind power, probably in the eastern part of the region and Wyoming, Montana, and North Dakota, would be very advantageous.*

**Comments and Responses**

**Letter #      Comment #**

**Response:** See response to Comment C9e-1. The same concerns would apply to wind power in North Dakota.

**Smyth/Ellenbecker, Wyoming Public Service**

**038**

**C9e-3**

*Wind power should be carefully studied to determine its potential for replacing hydropower lost through curtailed operations. Part of the assessment and development should include a realistic projection of the percentage of the market wind power could serve while maintaining adequate and reliable service.*

**Response:** BPA is initiating a pilot program to look at wind power in which these and other issues will be addressed.

**Aileen Jeffries**

**049**

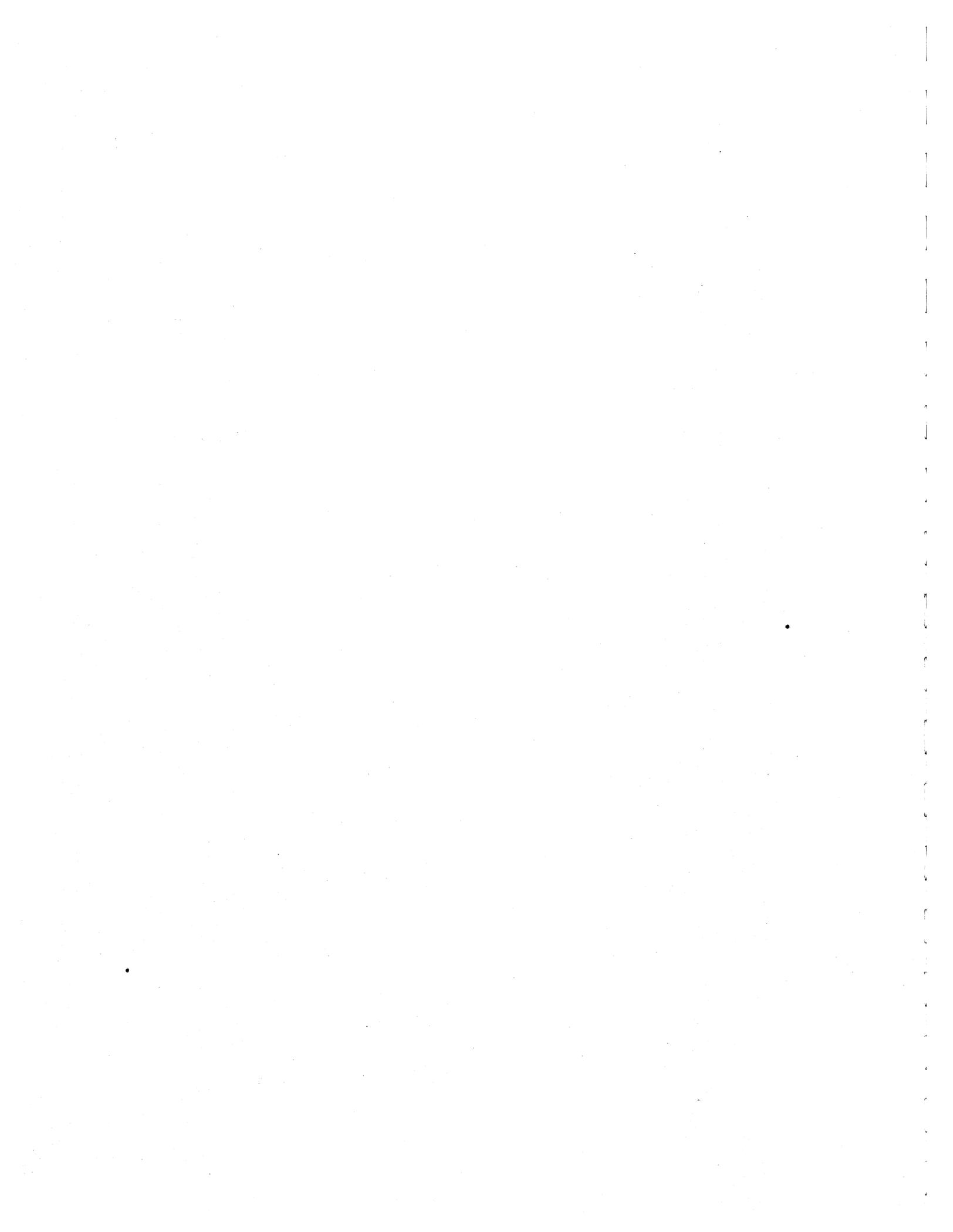
**C9e-4**

*You need more emphasis on acquiring renewable resources. I recommend a wind site at Rattlesnake Hills.*

**Response:** BPA is following the efforts of regional utilities to explore a wind generation site at Rattlesnake Hills.

---

# **Letters, Cards, and Transcript**



### **3.5 Letters, Cards, and Transcripts**

---

<b>Letter #</b>	<b>Author</b>
1	D.R. Johnson Lumber Company
2	Jack Demarco
3	Security Pacific Bank - Matthew Rudolf
4	Mercy Healthcare, Inc. - Anthony J. Haber
5	K.J. Booster Club - Harry L. Brundson
6	John T. Mudge
7	Fair Share of Springfield - Glenn Sofge
8	Tina Tau
9	Frederick E. Ellis
10	Jeff Adams
11	Robert J. Garnett
12	Pace Law School - Richard Ottinger
13	Dow Corning Corporation - William T. Gregory
14	The Wind Turbine Company - Lawrence W. Miles
15	North American Energy Services - Bruce Poulin
16	Ida-West Energy Company
17	Merrill Lynch - Pamela Gomez
18	City of Renton - Clint Morgan
19	George A. Lantz
20	Flathead Electric Coop Inc.
21	Barbara Dutro
22	John Eric Olson
23	Evergreen State College - Byron L. Youtz
24	Dan Ogden
25	Bureau of Land Management
26	Arizona Energy Office
27	Salem Electric
28	David Philbrick
29	Emerald PUD - Doug M. Still
30	Milton Griffing
31	Champion International Corporation - Ralph Heinert
32	Washington Public Power Supply System
33	Oregon Department of Energy
34	Puget Power
35	Emerald PUD - Jeffrey K. Shields
36	Timothy M. Wold
37	Washington State Energy Office
38	Wyoming Public Service Commission
39	State of Utah - Office of Planning and Budget
40	The Resources Agency of California

**Letter #****Author**

41	U.S. DOE Idaho Field Office
42	Northwest Power Planning Council
43	Idaho Department of Energy
44	Marvin Klinger
45	State of Nevada - Department of Administration
46	U.S. Environmental Protection Agency
47	Seattle City Light
48	Association of Northwest Gas Utilities
49	Aileen Jeffries
50	State of Idaho - Department of Water Resources
51	Stuart A. Sugarman
52	Paul Lemaer

### 3.5 Letters, Cards, and Transcript

LETTER 1

IPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT

The comment period ends on July 6, 1992.

The Bonneville Power Administration (BPA) is interested in your comments on this Draft Environmental Impact Statement's (EIS) preferred alternative. We also invite you to offer comments on any other portion of this Draft EIS.

Feel free to complete this form if it is convenient. Please fold and mail this form or send your comments to: BPA, Public Involvement Manager, P.O. Box 12999, Portland, OR 97212-0999.

*Cogeneration, in part due to the multi-use of the facilities, offer the greatest benefit to both the communities where they are located and to BPA. We desire BPA give cogeneration serious research and review. CO<sub>2</sub> may be compensated for by use of timber harvesting in an appropriate manner. As older trees are harvested and replanted with young vigorous trees, the CO<sub>2</sub>-O<sub>2</sub> exchange rate is substantially increased. However, the tens of thousands of acres in the Pacific NW that has dead and dying timber assist in the CO<sub>2</sub> greenhouse effect. With BPA's support, the energy industry, environment, and the timber industry can benefit from the harvesting of this natural resource.*

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0060084  
D R JOHNSON LUMBER COMPANY  
CORPORATE COUNSEL  
DON W LEACH  
PRUNER RD  
PO BOX 66  
RIDDLE OR 97469

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-001
RECEIPT DATE: 5/11/92
AREA: DISTRICT

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Phone Number

503

874 - 2231

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**DRAFT ENVIRONMENTAL IMPACT STATEMENT**  
**RESOURCE PROGRAMS-BPA MARCH 1992**

**Review Comments**-Briefly looked at the complete document. Specifically reviewed the sections which addressed hydropower.

**General Comments**

The report is well organized such that the impacts of one energy source can be compared to a different energy source. However as usual, there is no comparisons between the impacts and the benefits.

**Specific Comments**

**Hydro System Operation**-The impacts to the Hydro System Operation as other sources of energy are brought on line was interesting. This is important in the Pacific Northwest, because as stated, hydro provides two thirds of the electrical energy and a firm base of over 12000 MW. Also any operational changes to the hydro system because of other requirements (such as draw down for fish) is significant to the total system balance. These type of issues were discussed.

**Page 2-7, Sec. 2.1.4, 1st Paragraph**-The reference to Appendix A, Figure A-2 and Table A-2 is incorrect. Should be Figure A-1 and Table A-1.

**Page 3-26, Sec. 3.2.1.1, Cost Paragraph**-This paragraph should contain a brief description of each of the cost categories, i.e., Hydro-1,-2,-3, and -4. The other energy cost sections include descriptions for each category.

**DRAFT ENVIRONMENTAL IMPACT STATEMENT**

**RESOURCE PROGRAMS**

**PUBLIC COMMENT MEETING**

**June 16, 1992**

**BE IT REMEMBERED** That, the above-mentioned public meeting was taken down in stenotype before Candace Markley, Certified Shorthand Reporter for Oregon, on Tuesday, June 16, 1992, commencing at 1:00 p.m. in the offices of Bonneville Power Administration, 905 N.E. 11th Avenue, Portland, Oregon.

FACILITATOR:

Ms. Kristie Langlow

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Oral Comments	
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Austin Collins	6
Closing Remarks	8

\*\*\*\*\*  
COMPUTER-ASSISTED TRANSCRIPTION  
BY  
PIETKA COURT REPORTING  
3344 N.E. Klickitat Street  
Portland, Oregon 97212  
(503) 249-8210  
\*\*\*\*\*

1 P R O C E E D I N G S

2  
3 MS. LANGLOW: We are now at the formal  
4 hearing part of our afternoon. I ask that when you make  
5 your comments, you identify yourself one more time. Not  
6 for our benefit, we are all clear about your name, but it  
7 will help Candace in her transcript and it will  
8 contribute to the accuracy of that and of its capture of  
9 your remarks.

10 So I would like to throw open the discussion to  
11 your comments and contributions. Is there someone who  
12 would like to begin this formal comment period?

13 Go ahead.

14 MR. COOPER: I had a chance to briefly  
15 review the Environmental Impact Draft Statement, and I  
16 think that Bonneville has done a good job in putting  
17 together the alternatives.

18 I do have some suggestions, though, of things I  
19 think that need to be addressed. They have taken what  
20 they consider to be a relatively high-growth-rate case,  
21 and it appears to be in the one and a half percent per  
22 year rate increase. I think this may turn out to be low,  
23 because over the past ten years the Pacific Northwest has  
24 been closer to two-and-a-half percent. And we may need  
25 more generating resources than we might have thought.

1           I think energy conservation in the short range  
2 is an excellent and a necessary alternative, and that one  
3 of the areas that really needs to be focused on world  
4 large, benefits can be taken from a number of customers,  
5 is in the industrial sector. The forest products  
6 industry, the aluminum industry, perhaps petroleum  
7 refining, other forest products industry and mining would  
8 be particularly beneficial.

9           We are going to need to use a lot of natural gas  
10 in the near term. However, I think in the long run, we  
11 need to be on guard against price increases.

12           We have lots of coal, particularly in Wyoming  
13 and Montana, and we should use it. And gas-supplying  
14 coal is an excellent alternative.

15           As far as nuclear is concerned, I think the best  
16 we are going to be able to do is to get the units that we  
17 have at Hanford, and that's perhaps, on line in the  
18 future.

19           One of the things that has not generally been  
20 suggested, and may not be within the scope of this  
21 particular proceeding, is the fact that at Hanford it may  
22 be advantageous to consider those nuclear units to be  
23 used as part of the overall waste treatment as far as the  
24 nuclear waste clean up, being as Hanford is one of the  
25 greatest single concentrations in the entire world of

1 residues from nuclear weapons' production. Building a  
2 transmutation plant to convert radioactive isotopes to  
3 nonradioactive materials would require a large amount of  
4 power, in and of itself, plus cleanup of the ground water  
5 in the vitrification plants.

6           In addition to that, I personally believe that  
7 we really need to move on to renewable energy, solar  
8 energy and thermal. And I think in the near term, wind  
9 power, probably in the eastern part of the region, and  
10 Wyoming, Montana, New Dakota, would be very advantageous.

11           But I think it would be very beneficial for  
12 Bonneville, in conjunction with whatever agencies of the  
13 Federal Government are appropriate, to consider not only  
14 north/south transmission, but to build some type of an  
15 inner tie with the Midwest, because then we can make  
16 extensive use of the renewable resources, particularly  
17 wind. We can make use of coal. And they can make use of  
18 ours during other periods. And it may act to make for  
19 lower prices in the longer range.

20           And the last thing is, I think we need to factor  
21 in the future use of electrical transportation, not in  
22 terms of increase load, which it will cause, but also the  
23 fact that it has environmental benefits of its own,  
24 particularly urban air quality.

25           That's all.

1 MS. LANGLOW: Thank you very much for those  
2 contributions.

3 Any other? Yes.

4 MS. DOLCY: I'm sorry. I couldn't hear him  
5 identify himself.

6 MR. COOPER: Hal Cooper.

7 MS. LANGLOW: Now, we are ready to move on  
8 to the next comment. Is that our only comment for the  
9 afternoon?

10 Mr. Collins has a comment.

11 MR. COLLINS: I am Austin Collins, and I  
12 have come into this from definitely a nontechnical  
13 position. I'm here because I have been interested in  
14 this program since before it was. In 1929 I was part of  
15 a group where we had a trite little saying that we are  
16 bringing power for the public at cost; we hope a low  
17 cost. The rationale was that the only power available  
18 was controlled and marketed by a stock corporation,  
19 investor-owned, and those costs were horrible.

20 I was a little dismayed, perhaps, when we got  
21 into the dam building phase because we became too  
22 enthusiastic and over did it to a considerable extent and  
23 did our program a disservice that we are still suffering  
24 for. That disservice was a sponsoring of bad usage  
25 habits, and I'm still guilty. I haven't weatherized my

1 house that I have lived in for close to 40 years and I  
2 should have.

3 I would like to say that my experience includes  
4 a phase in the late 1930s where I joined a builder in the  
5 Yakama country who was building energy-efficient houses  
6 for the market. We thought we were doing real well when  
7 the inspector would give us an R-19 rating. Mostly they  
8 came up somewhere between R-11 and R-13, and that is not  
9 really acceptable at the present day.

10 But as far as supporting and promoting the  
11 development of alternate energy, it has been a long  
12 ongoing project with me. I recall my first cousin, who  
13 was head of the counseling department at Linnfield  
14 College at McMinnville driving into the family farmyard  
15 in a brand new Nash car with a methane generator bolted  
16 onto the back of it. He was active in his profession as  
17 an educator in promoting, at that time, in 1926 or 1927  
18 -- I don't recall which it was -- he was actually at that  
19 time promoting the development and use of alternate  
20 fuels, which program fell by the wayside because of our  
21 indiscretion of developing electric generating facility  
22 on the Columbia River at too rapid a rate.

23 MS. LANGLOW: Let me bring you back to this  
24 draft. Do you have specific comments about the E.I.S.

25 MR. COLLINS: Yes, I have had only a couple

1 hours to review it, but I join Hal in complimenting the  
2 BPA staff in moving in the right direction in the  
3 expedient manner and getting with it. They don't pay  
4 much attention to my offerings, but I can afford that.  
5 After all, I've got another 15 or 16 years, the doctor  
6 says.

7 MS. LANGLOW: And you will be at meetings  
8 every time they have a meeting, right?

9 MR. COLLINS: Well, maybe not every time,  
10 but I won't miss many.

11 MS. LANGLOW: Thanks very much for your  
12 contribution.

13 Other official statements you would like to make  
14 about the E.I.S.? Anyone else?

15 I have to assume that there are no additional  
16 comments that you want to make about the formal E.I.S.

17 This is not, however, your last opportunity.  
18 The comment period is open until July 6th. All comments  
19 which are received by BPA staff will be responded to in  
20 the final E.I.S., which will be available when?

21 MS. ROHE: We're looking at next March.

22 MS. LANGLOW: Send your comments by July  
23 6th.

24 We have asked several times for final comments.  
25 Is there anything anybody would like to contribute?

1           Okay. With that, I would like to conclude this  
2 formal part of the afternoon.

3           This morning you had the opportunity to  
4 informally get your questions answered. Are there any  
5 final observations before we close?

6           A brief but productive hearing is now,  
7 officially over.

8           Thank you all very much for your contributions  
9 and time.

10                   (PROCEEDINGS CONCLUDED AT 1:40 P.M.)

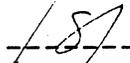
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CERTIFICATE

(The Stenographic notes of this transcript will be destroyed three years from the date appearing on the certificate, unless notice is received otherwise from any party or counsel hereof on or before the 30th day of June 1995. )

I, Candace Markley, a Certified Shorthand Reporter for the State of Oregon, certify that at the time and place mentioned in the caption; that the public comment meeting on June 16, 1992 was taken down by me in stenotype and thereafter reduced to typewriting; and that the foregoing transcript, pages 1-9, constitutes a full, true, and accurate record of said examination of and testimony of and all other oral proceedings had during said meeting.

IN WITNESS THEREOF, I have hereunto set my hand this 30th day of June, 1992.

  
-----  
Candace Markley, CSR 90-0111

IPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

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KEEP ME ON ALL LISTS. I LIKE  
BEING INFORMED. KEEP UP THE  
GOOD WORK ON INFORMING US

(attach blank sheets if required)

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0038812  
JACK DEMARCO  
4683 46TH AVE NE  
SALEM OR 97305

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BONNEVILLE POWER ADMINISTRATION

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*Good job on keeping the information coming. Thank you.*

*Matt Rudolf*

(attach blank sheets if required)

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0037860  
SECURITY PACIFIC BANK  
MATTHEW RUDOLF  
9315 SE 43RD ST  
MERCER ISLAND WA 98040-4206

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BONNEVILLE POWER ADMINISTRATION

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WE WOULD LIKE FOR BPA TO ENCOURAGE  
THE SUPPORT OF PP&L IN COGENERATION  
(SMALL SCALE) EFFORTS. THEY PRESENTLY  
ARE VERY MUCH AGAINST THIS TYPE  
OF ENERGY CONSERVATION, PARTICULARLY  
IN SMALLER COMMUNITIES.

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0084010  
MERCY MEDICAL CENTER INC HEALTHCARE, INC.  
DEPARTMENT OF PLANT SERVICES GENERAL SERVICES  
ANTHONY J HABER  
DIRECTOR  
2700 STEWART PKY  
ROSEBURG OR 97470

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IPA F 1210.07  
(04-92)

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BONNEVILLE POWER ADMINISTRATION

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No action is not an alternative. If it is even considered we can eliminate all the planners, etc. Conservation by itself is not viable.

Why are we not considering the methane being burnt at the garbage dumps as an electric energy source? Fuel switching from electric hot water tanks and furnaces to natural gas is a move in the right direction.

Why are not electric timmers for hot water tanks supplied free? Hot water tank timmers cut electric consumption by 20%.

We should not rely on imported power from Canada or Mexico as we do not have control. A political change can cut us off.

One of the two power plants, #1 or #3 should be compleated with a no change guarantee from NRC and a specific dollar amount to complete it from both the contractor and the Unions.

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0000967  
KJ BOOSTER CLUB  
HARRY L BRUNSDON  
901 S WRIGHT AVE  
TACOMA WA 98408-4036

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BPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT

The comment period ends on July 6, 1992.

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GENERALLY good document - BUT YOUR HEAD IS STILL IN THE SAND REGARDING FUEL SWITCHING (p. 5-7). TO QUOTE "NEITHER OF THESE (FUEL SWITCHING) WERE INCLUDED IN THE BASE CASE BECAUSE NEITHER HAS BEEN CONFIRMED AS TO COST OR AVAILABILITY."

THIS IS A COP-OUT TO AVOID BPA LOSS OF MARKET SHARE - THE SURVIVAL OF AN OLD, POOR ATTITUDE. YOU HAVE ESSENTIALLY RE-DEFINED "LEAST COST" TO EXCLUDE THE ACTUAL LEAST COST IDEAS. SUCH CONVOLUTED "REASONING" IS INAPPROPRIATE.

IF FUEL SWITCHING REDUCES COAL PLANT ELECTRIC PRODUCTION, THERE COULD BE AN ENVIRONMENTAL GAIN TO CONSIDER.

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0008764  
JOHN T MUDGE  
190 SANDERSON RD  
CHEHALIS WA 98532-8620

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AREA:	DISTRICT

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My first choice for additional resources is conservation.  
" Second " " " " " Conservation.  
My third choice for additional resources is Conservation!

Thank you

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0011301  
FAIR SHARE OF SPRINGFIELD  
GLENN SOFGE  
912 D ST  
SPRINGFIELD OR 97477-4740

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I strongly support the development of conservation as the preferred alternative for meeting our local (& national) energy needs. Increased appliance (esp. refrigerator) & lighting & heating efficiency are all important. Incentives by BPA (such as distribution of fluorescent bulbs, rebates on solar collectors, etc.) are ~~the~~ things I would support. We have a solar collector to heat the water in our home & are the only house with one in our entire neighborhood. This seems ridiculous. Education is critical; incentives will help. In the long run, conservation seems much the most realistic choice. Tina Tau

(attach blank sheets if required)

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New address for  
Rosanna Mattingly,  
12247 NW Cornell Rd  
#201  
Portland, OR 97229

0037928  
~~PORTLAND STATE UNIVERSITY  
CONTINUING EDUCATION  
ROSANNA MATTINGLY  
PO BOX 1491  
PORTLAND OR 97207~~

Add

Tina Tau  
925 SE Center  
Portland, OR 97207

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RECEIPT DATE: 5/14/92
AREA: DISTRICT

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BPA F 1210.07  
(04-92)

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~~Conservation is still the most cost-effective way to save energy.~~

~~It must be exploited far more intensively. The potential for further electrical generation in eastern Washington is waiting to be utilized. Finally, the use of hydrogen is a must! The remaining problems are not that difficult to resolve - if we have the will to ween ourselves from hydrocarbon fuels! Nuclear is not a viable option - let's forget it.~~

(attach blank sheets if required)

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0093736  
FREDERICK E ELLIS  
PO BOX 462  
SHAW ISLAND WA 98286

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The most reasonable & long lasting resource choice is conservation. use existing energy more efficiently, insulation & other "tightening" measures would be a minor concern w/ correct mitigation; ~~the~~

Next is renewable. it will create jobs w/ the needed infrastructure & will conserve nonrenewable sources for the long term. geothermal & wind are the only serious options. hydro power has destroyed the Columbia basin already. it cannot be an option

The other choices appear to cause more pollution & despoil the environment. please try the conservation & renewable route

(attach blank sheets if required)

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RECEIVED BY BPA PUBLIC INVOLVEM LOG #: DRPEIS-01-02
RECEIPT DATE: 5/18/92
AREA:           DISTRICT

0114348  
JEFF ADAMS  
PO BOX 441  
KING SALMON AK 99613

Thanks for  
the change  
to comment

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*B.P.A. NEED COULD BE HELPED BY MORE SMALL HYDRO IN  
STREAM SYSTEMS SEVERAL SMALL ONE COULD HAVE LESS  
ENVIRONMENTAL EFFECT AND MORE WATER CONSUMPTION.  
AS ONE LARGE SYSTEM. THERE ARE MANY SMALL  
STREAM PROTECTION.*

(attach blank sheets if required)

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RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-DI-01	
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0006577  
ROBERT J GARNETT  
RR 1 BOX 476  
IMNAHA OR 97842

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503

577

- 3294

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*The priorities are excellent but the analysis is very superficial. Back-up data should be supplied together with estimated environmental and economic externalities for each resource. Nuclear discussion fails to account for emissions (including CO<sub>2</sub>) from processing uranium.*

*Richard Ottinger*

(attach blank sheets if required)

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RECEIPT DATE: 5/18/92	
AREA:	DISTRICT

0094353  
PACE LAW SCHOOL  
RICHARD OTTINGER  
78 N BROADWAY  
WHITE PLAINS NY 10603

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IPA F 1210.07  
(04-92)

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*Based on the information given in the Draft Environmental Impact Statement Resource Programs Summary I agree that the preferred alternative is to emphasize conservation. Everyone wins with this approach.*  
*I realize that promoting the use of natural gas in place of electrical power for space and water heating is advertising for another industry but believe it should be considered.*

(attach blank sheets if required)

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AREA:	DISTRICT

0012712  
DOW CORNING CORPORATION  
WILLIAM T GREGORY  
1801 ASTER ST  
SPRINGFIELD OR 97477

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# The Wind Turbine Company

23723 S.E. 225th Street  
Maple Valley, WA 98038  
(206) 432-2219

May 11, 1992

Bonneville Power Administration  
Public Involvement Manager  
P.O. Box 12999  
Portland, OR 97212-0999

Dear Sir/Madam:

This is in response to your April, 1992, Issue Alert "Resource choices and environmental consequences: What's at stake?"

Regarding wind energy: It is true that "wind parks require large amounts of land," however, no more than 5% of the required land is actually occupied by wind turbines and other facility infrastructure. Unlike a hydro facility, the reservoir of which precludes any previously existing uses, windfarms are completely compatible with previously existing activities such as farming, ranching, etc. If you bury land under water by the square mile behind a dam and look at the recreation possibilities as the bright side, you should recognize that wind turbines do not preclude most other likely uses of the land. At the same time, the capture of wind energy significantly enhances the value of the land to the owner, often more than doubling the value.

It is also true that wind turbines, can create noise. So does most every thing else than moves. In a residential neighborhood virtually any source of electricity save perhaps photovoltaic will create objectionable noise. From comparable distances you will find wind turbines no noisier than any other source of electricity production.

Finally, I guess they can also have a significant visual impact. Does this mean that a windfarm is more or less aesthetically unpleasing than say a hydro, nuclear, coal, solar or other generating facility? When properly maintained and operating, the public's view of wind energy regarding visual impacts is undoubtedly no different than for any other generating facility.

Thank you for the opportunity to express my views.

Sincerely,

*Lawrence W. Miles*  
Lawrence W. Miles

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U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

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THANKS FOR THE CHANCE TO REVIEW THE DRAFT RESOURCE PROGRAM. I LIKE WHAT I SEE - GOOD JOB

BRUCE POULIN

(attach blank sheets if required)

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RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #DRPEIS-01-015	
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0034200  
NORTH AMERICAN ENERGY SERVICES  
BRUCE POULIN  
999 LAKE DR SUITE 310  
ISSAQUAH WA 98034

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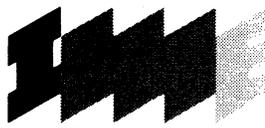
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IDA-WEST ENERGY COMPANY

P.O. Box 7867, Boise, Idaho 83707 • 1199 Shoreline Lane, Suite 310, Boise, Idaho 83702 • (208) 336-4254 FAX (208) 336-9795

May 13, 1992

Bonneville Power Administration  
 Public Involvement Manager  
 P.O. Box 12999  
 Portland, OR 97212-0999

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG # RPETS-01-016	
RECEIPT DATE: 5/18/92	
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Gentlemen:

We enjoyed reviewing your "Draft Environmental Impact Statement Resource Programs, Summary;" document DOE/EIS-0162. In looking over Tables S-5 and S-6, which compare the environmental impact of various resource alternatives, we believe some of the technologies are not accurately represented.

SO<sub>2</sub>

"Cogeneration" and "CT's" will be primarily natural gas fired and the same very low level of SO<sub>2</sub> emissions can be expected for both.

"Clean coal" will have lower SO<sub>2</sub> emissions than "coal". A "coal" plant with FGD will typically remove 75-90% of the sulfur; while a coal gasification plant will remove 96-99% of the sulfur.

NO<sub>x</sub>

"Clean coal" will have significantly lower NO<sub>x</sub> emissions than "coal". NO<sub>x</sub> emissions from an IGCC will be comparable to those from a natural gas fired C.T. due to the diluents in the synthesis gas reducing thermal NO<sub>x</sub> formation.

CO<sub>2</sub>

CO<sub>2</sub> emissions from "cogeneration" will be similar to "CT's".

CO<sub>2</sub> emissions from "clean coal" will be lower than "coal" due to the higher efficiencies realized with the "clean coal" technologies.

Bonneville Power Administration  
May 13, 1992  
Page 2

Please call if you have questions. I strongly recommend that you request the Electric Power Research Institute's review of Tables S-5 and S-6; Ron Wolk, Director of EPRI's Advanced Fossil Power Systems Department.

Sincerely,



Edmund V. Clark  
Manager - Thermal Projects

cc: Kip Runyan

EVC/ns

c:\docs\clark\BPA.ltr

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

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Certainly Conservation, Power Exchange and System Efficiencies are the leading choices towards power supply to the extent, however, that it is determined to develop new power resources I would like to see the completion of the nuclear facilities at WPPSS #1 or #3. It is a shame to throw away these partially completed projects.

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0040487  
MERRILL LYNCH  
PAMELA GOMEZ  
1215 4TH AVE 25TH FLOOR  
SEATTLE WA 98161

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See Attachment

(attach blank sheets if required)

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0095115  
CITY OF RENTON  
CLINT MORGAN  
200 MILL AVE S  
RENTON WA 98055-2189

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Review Comments  
By Clinton Morgan  
ON  
Issue Alert Bulletin  
May 18, 1992

Immediate pursuits to meet power demands in my estimate is as follows:

- a) Use of hydroelectric to it fullest potential.
- b) Natural Gas
- c) Geothermal if available

It is my belief conservation has been under way for the pass ten(10) years and may only have limited practical benefits except improving on new Development designs and codes.

For longer range pursuits for power, I would suggest research for using coal fired plants to reduce the impact of emissions problems to an acceptable level. A Federal grant should be provided for this approach. Controlled coal fired technology should be improved enough to begin going on line within ten(10) years. Coal is an abundant resource.

Research for all the other alternatives should continue to reduce their environmental impacts including nuclear fusion and or fission.

92CEM077

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RECEIPT DATE: 5/26/92	
AREA:	DISTRICT

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PUBLIC INVOLVEMENT  
LOG # 12285-01-09  
RECEIPT DATE: 5/26/92  
AREA: DISTRICT

GEORGE A. LANTZ (PRIVATE CITIZEN)

MAY I PLEASE HAVE INFORMATION ON THE  
FEASIBILITY OF THE ITEMS BELOW TO HELP MEET  
THE POWER DEMANDS IN NEXT 20 YRS.

1. WHAT IS THE LIFE EXPECTANCY OF THE  
ALUMINUM SMELTERS IN THE NORTHWEST?

2. IS MAGNETOHYDRODYNAMICS GENERATION VIABLE?

3. IS THERE ANY GEOTHERMAL GENERATION  
OF ELECTRICAL ENERGY GOING ON NOW?

(attach blank sheets if required)

I am on the mailing list for this project.

Please add me to the mailing list for this project. (Complete blocks below.)

Name (Last, First, & Middle Initial)

GEORGE A LANTZ

Organization

Street/P.O. Box

1319 E 2nd St

City

WHITEFISH

State

MT

9-Digit ZIP Code

59937

Phone Number

906 862-3432

Call me, I have additional comments and information.

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BPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT

The comment period ends on July 6, 1992.

The Bonneville Power Administration (BPA) is interested in your comments on this Draft Environmental Impact Statement's (EIS) preferred alternative. We also invite you to offer comments on any other portion of this Draft EIS.

Feel free to complete this form if it is convenient. Please fold and mail this form or send your comments to: BPA, Public Involvement Manager, P.O. Box 12999, Portland, OR 97212-0999.

Resource choices -

- 1. Conservation
- 2. Combustion turbines
- 3. system efficiencies
- 4. hydro
- 5. photovoltaics

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0003404  
FLATHEAD ELECTRIC COOP INC  
JERRY BROBST  
2510 HWY 2 E  
~~PO BOX 5253~~  
KALISPELL MT 59901-2397

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DEPEIS-11-020	
RECEIPT DATE: 5/26/92	
AREA:	DISTRICT

- Make changes to all BPA mail lists.
- Make changes for this project only.

- Delete me from all BPA mail lists.
- Call me, I have additional comments and information.

Phone Number

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PRIVACY ACT STATEMENT: Authority for collection of this information is Section 4(g) of The Pacific NW Electric Power Planning and Conservation Act. The purpose for collection of the information is to carry out the responsibilities of Section 4(g). The information will be used by BPA to continue communication and consultation with individuals and organizations. The information will also be a part of public records. Providing this information is voluntary.

Barbara Dutro  
319 Minnesota Avenue  
Libby, Montana 59923

April 13, 1992

Randall W. Hardy, Administrator  
Bonneville Power Administration  
P. O. Box 3621  
Portland, Oregon 97208-3621

Dear Mr. Hardy:

I would like to have these comments included in your Programs In Perspectives, and in the Resource Aquisition E.I.S. public review. In response to your newsletter previewing the challenges for the year I have several observations.

To begin with you are leaving the mandate of Congress in your current work. I am always alarmed by such activity and since 1980 have been watching your progress with the mission that Congress has given you.

In regards to revenue:

1. Southwest sales are always the lowest revenue producer. As an example, Libby could operated as a firm power producer, increasing revenue for that project to meet repayment and also alleviate the need for more projects. In fact Libby Dam does not generate enough income to cover it's operation and maintenance costs or to cover it's interest. It has never touched it's principle. Non-firm power is sold to the southwest at the lowest possible rate, and the possibilities of firm power to generate the base load that we do need here in the northwest are passed by. Libby would generate 262 MW of firm power, and that would almost satisfy the need that you percieve for additional firm power.

2. If additional revenue is needed why is the system encumbered with the indebtedness on nuclear power plants 1,3,4, and 5 for the Washington Public Power Supply System when we get nothing from them. The free enterprize response to these bonds would be that the investment was lost. In fact the bonds have trebled the intitial investment and we will go on paying for these plants forever, never touching the principle. There should be a break out for Hanford, however it looks to me like there would be approximately a 300 million savings here alone. My stance is that a raise in rates is not justified under the circumstances. With safety and nuclear waste still a problem these plants should never be finished and in fact the two that are generating should be closed down.

With the Solar-Conservation Program I have outlined for you there would be no problem keeping up with the need for power since

Comment:D.E.I.S. Resource Programs-March 1992 Bonneville Power Administration, Barbara Dutro. May 26, 1992

I, naturally, turned to the Solar section of this document first to see how you treated this option in your resource program. As throughout this process I am again appalled that the Solar-Conservation Program is not included in your analysis. I have participated in this process from the beginning working on the technical review panels and reading and submitting my comments at every stage of development and you have always ignored by input.

For the good of the order I will again submit by comments and hope that you will be willing to adjust your process to include this data. If you do not understand I would be happy to visit with your staff to clarify any discrepancies in information. Enclosed are my previous comments.

Sincerely,

*Barbara Dutro*  
~~Barbara Dutro~~

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-21	
RECEIPT DATE: 5/29/92	
AREA:	DISTRICT

Solar-Conservation Enablement July 10 Northwest Power  
Planning Council

The impasse in development of Passive Solar energy systems is interesting existing utility consumers in conservation, why would they want to open their homes to conservation? I am aware of diligent efforts on the part of my own utility to interest the consumer in conservation. Their approach is to offer no-interest homeowner loans and to help with facilitating conservation work. This is the most vigorous attempt I am aware of in capturing conservation potential.

More interest might be generated if there were a conservation program that would offer electricity to the consumer at a rate approximately one half of the existing rate. I see a possibility in the four cent avoided cost for acquisition of new resources. If this were applied to the basic cost of electricity it could be an incentive to participate in conservation. Then a passive solar retrofit could be offered at the homeowners expense with the money saved on the consumption of electricity. In other words Bonneville offers conservation energy to say Pacific Power and Light for -1.6 cents. P P and L offers to it's consumer for 2.4 cents. On a \$50 electric bill approximately \$25 is saved to apply to solar energy, an investment in equity and increased value of the house instead of simply being consumed. The conservation program would include insulation, weather stripping, caulking, reglazing windows and a passive solar hot water preheat. Low interest would further interest the homeowner in a program of this nature. The point is not so much to conserve electricity immediately since we have the surplus and call back provisions on contracts to southern California utilities. However, in the next decade I believe we would be seeing significant savings and a much greater awareness of what conservation is. Also, I believe that offering this program to virtually everyone, whether or not they are heating their home electrically is important since that would be avoiding future load growth in homes that might turn to electricity, and if we narrow our potential market we will be limiting the effectiveness and rates of participation.

Bonneville must be the initiator of the program, without that there is no other entity to take responsibility. The program should be completely voluntary and I think kept on separate books so that the cost stabilizing effects of conservation will show up and so that it is more easily discernable what is happening to consumption as well as other factors that may be variable.

Your power program calls for the development of new resources starting in 1991 or 1992, that is only a few years away. The best feature of this program is that it can be brought on line so quickly. A voluntary program,

Page 2. Solar Conservation.

utilizing the avoided cost incentive to offer electric power at a conservation rate for a 20 year period, to stabilize the cost of electricity and the glamor of solar energy as an added bonus will encourage participation.

This is a business proposition, and represents billions of dollars in investment ultimately, and I want your full attention and participation. I want to see it possible, within the time frame that you have delineated in the power plan, to start construction on a solar capability that will free existing generation to serve future electric needs without having to build dams, new coal plants, nuclear plants or any other technology that is wasteful or environmentally damaging.

This conservation program is feasible, cost effective, uses the avoided cost incentive in a creative approach, gives incentives for participation in conservation, overcomes buyers resistance to incursion into the home to effectuate insulation and weatherizing. It creates an advertizing agency approach to merchandizing conservation.

Thank you for your attention, and for this opportunity to participate.

Sincerely,

---

Barbara D. Rhodes

Comments, Paper 89-39 Assessment of the Potential for the Direct Application of Renewable Resources, Northwest Power Planning Council: November 8, 1989, Barbara D. Rhodes

The Council asked "are detailed supply curves necessary to attempt to develop these resources." I don't think they are, however it would be helpful to estimate the market potential and then establish targets for penetration that would be valuable to assess promotional levels. Programs should be developed that would facilitate an orderly and comprehensive voluntary acceptance of a package that would overcome buyers resistance and enable the utilities to participate without having to lose money in the process. (See my comments on solar and conservation facilitation and enablement).

The Council states that resources of this nature tend to be large. They are not necessarily large, a 12' x 40' addition to the south-side of my house is all it takes to provide 12,000 KWh or 1,000 KWh/foot width. Therefore the original premise should be checked. As I explained in my solar comments a package of resource options is the way to merchandise conservation such as insulation that would not be glamorous standing on it's own, and therefore not saleable. In a package with passive solar space and water heating the various resources become not only cost effective, melded, but also financeable and installable without the usual reluctance to buy one part of the program in isolation. In other words in an integrated package with:

Option	Costs	Savings	Levelized Cost cents/KWh
water heating	\$1,942	2,584 KWh	9.6
space heating	6,500	12,000 KWh	5.4
insulation	<u>2,000</u>	<u>6,000 KWh</u>	<u>1.9</u>
	\$10,442	20,584 KWh	5.8 melded*

\*It should be realized that this cost level is born by the homeowner not the utility or Bonneville. The utility makes 2.5 cents more on conservation electricity and Bonneville spends 4 cents for the avoided cost incentive as incentive for participating in the Solar Conservation program.

Over a 20 year contract the dollar savings to the consumer at 4.9 cents/KWh is \$21,600 in electricity while adding a \$10,442 equity to the building. These figures do not reflect interest. This is the direct saving for energy not used. In addition the homeowner has the conservation (Solar Conservation program) rate incentive of electricity at 2.4 cents/KWh instead of 4.9 cents. In effect for the electricity he does consume he will be paying less and hypothetically cutting his bill in half. In other words he could save the cost of the installation and interest by participating in the program plus the additional saving due to

Page 2 Potential for renewable resources.

conservation.

The market potential if there are 4,500,000 people and 2,250,000 households in the Northwest is a saving of 20 MW/year/household and becomes 45,000,000 MWh as a market potential, 365 days x 24 hours = 8,760 KWh/KWh capacity = 5,100 MW.

Even in Libby with it's dreary winters my 12' x 40' retrofit gains 12,000 KWh and cost me \$6,500. Some designs don't do as well, maximizing glass, which after all is not a costly building material, and planning the space as a garden optimizes the solar gain. You seem to think that the heat loss into the greenhouse does not temper the entire south side of the house, whereas it is one of the most important effects, keeping heat loss close to the house instead of having it dissipate into the air.

All your objections could be overcome by the proper program. Why not include every building that is retrofittable? Are you unnaturally limiting your effectiveness? Reject heat from conventional cooling systems could be a backup system, as could wood heat in the winter, site specific hot water heat systems, however to be maximally efficient would need to be in conjunction with a passive solar space heating capability.

Your contention that solar systems overheat in summer is not my experience. The 6 foot overhang that houses the vents shades the southside windows and contributes to cooling provided adequate ventilation.

Also, couldn't a solar system generate the compression of freon for cooling systems? Especially co-operating with a heat pump. What is so fascinating about solar technology is the potential applications and this is probably one of the problems with state of the art in flux by way of designs and methods. People are still reluctant waiting for more perfection before they invest, but we have to start somewhere and the best designs are probably already available. I believe that anywhere in the region these ideas are workable and cost effective.

Thank you again for this opportunity to participate. I feel that we are gaining an understanding.

Comments on Staff Issue Paper Conservation Acquisition Program Design: Lessons Learned and Implications for Future Programs November 27, 1989 Barbara D. Rhodes.

The largest barrier to the acceptance of conservation is the utilities reluctance to participate when they can't make a profit. This has also led to a false bifurcation between classes of utilities. In other words, IOU's, privates, and publics. Conservation is a load reducing resource and utilities could facilitate the acceptance of conservation if they could

Page 3 Potential for renewable resources.

make a profit. Since conservation is desired by Congress, the people, and mandated for Bonneville the effect is to keep rates down for everyone. The barrier to acceptance by the consumer is that conservation is seen as insulation and not very interesting. Whereas solar conservation is glamorous, thereby overcoming this reticence.

The solar conservation program (see Planning Council July 10 Solar Enablement) is possible without bringing into direct participation anyone who is reticent. Obstructors and those who would divert attention away from the possibilities inherent in a program of solar conservation are not necessary. We don't need to involve State Legislatures or local governments when no legislation is sought. We already have what we need for a voluntary program. Except for the conservation rate incentive there is no necessity for making this complex. Don't pursue unneeded parties. Keep to the small scale, site specific technologies that have already been proven. When Bonneville accepts the responsibility the directly involved participants will be the only ones who need to be kept informed. This streamlines the effort and therefore will be more effective. In other words model free enterprise systems.

Bonneville should be the wholesaler, the utilities should be the retailers, and the private sector should be the consumers, as it is. State and local governments should keep *laissez faire*, and let the principals act. Other types of energy businesses are not directly involved and are outside the scope of this concern.

Bonneville acting as retailer is an improper role, however Bonneville should act as conservation advocate and promoter. All facilitation in this regard is appreciated. You can therefore use the expertise you develop to help the utilities. The utilities can reassign responsibilities for the duration of the program, of perhaps 10 years. The need for State and local government coordination activities will be obviated by the solar Conservation program, as well as keep rates steady and alleviate utility objections.

Billing credits would be used in applying the 4 cents avoided cost incentive.

Education workshops for builders, low interest home improvement loans, and rate design would all be pertinent. Regulations, and codes would be irrelevant. There is a national Solar and Conservation Bank that could provide the necessary financing and inaccurate signals could be overcome by public relations and promotion. When Bonneville takes responsibility everything else will come into place. The high rate of return/short payback requirements could be overcome by working with the National Solar Conservation Bank with low interest and 20 year terms. Since the

Page 4. Potential for renewable resources.

homeowner buys his own Solar Conservation there is not a financial loss to the government or to the utilities except for the incentive that your organization is already offering to encourage participation in generating resource acquisition.

It is my experience that people are reluctant to invest because they are afraid the best designs are yet to come.

By providing a program that features Solar space and water heating and insulation there would be enough interest and the utilities would be more interested if there were a profit for them. The Solar Conservation program enables them to earn 4 cents/KWh on conservation electricity instead of 2.5 cents/Kwh.

Mortgage type mechanisms should be easily understood by homeowners. Naturally there must be quality control both for your protection and for the homeowner. An added incentive is the approximate \$10,000 added equity in the home instead of merely consuming electricity. You will probably want to limit the amount of conservation electricity to historical use instead of letting it be unlimited. When the program is in place for existing housing then application to new housing will become apparent. Political resistance to code, regulations or standards is why this approach evolved. The standards can be Bonneville and the homeowner/consumer is the party that should bear the financial burden. There are ample incentives so acquisition payments are redundant. Rate design and conservation rates are a principal strategy. Hands on workshops to train builders would lead to more understanding and expertise. Applications for this kind of participation could be processed and acted upon within one year bringing conservation on line quickly. Information and incentives are all that is necessary to bring this kind of program into acceptance. Increased equity in the participants building is an incentive and would be a rational economic choice.

This program would maximise the free market approach, features incentives, is a clear signal to conserve, and will even help those who don't participate by keeping rates down.

Thank you for your attention. Will you please take the time to write to me with any questions you have. I will take the time to answer.

---

Barbara D. Rhodes

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

December 7, 1990

Paul Norman, Planning Branch Chief  
Bonneville Power Administration  
P. O. Box 3621  
Portland, Oregon 97208-3621

Dear Mr. Norman:

As a member of your technical review panel for the Resources Program Environmental Impact Statement I have provided the Solar-Conservation program I have developed for Bonneville's implementation, and so far in the process I am not aware of my input being incorporated with the existing data base. This makes me very uncomfortable in that I expected and want to see the Solar-Conservation program presented right along side any other resource. As Planning Branch Chief I thought you might be able to do something about this.

My feeling is that unless Solar-Conservation is presented as a resource option it would not be possible to gain acceptance for it, or to make it possible. I believe it is the only resource needed for the next 20 years (the life of the program). Solar-Conservation obsoletes any other resource and every part of the program is with the Congressional mandate for planning under the Northwest Power Planning and Conservation Act. Everything that is necessary is already in place. No new legislation need be pursued, no new concepts need be presented. The Solar-Conservation program simply enables the four cents avoided cost incentive to be applied in an innovative way to encourage participation.

Enclosed please find my comments written for the Planning Council that presents the Solar-Conservation program. If you find gaps in my communication please tell me so I can clarify. Beyond this initial Solar-Conservation program as now presented I can foresee Bonneville, as marketing agency, enabling Photo-voltaics (or passive solar electricity as I think we should be designating this form of energy) in the same way passive solar space and water heating is being put forward today by this program.

I am sure that you are aware that Bonneville would be providing the funding mechanism since financing seems to be the constraint for any solar technology today.

I look forward to seeing my data for the Solar-Conservation program included in your E. I. S. model. Thank you for your attention in this matter.

Another related agenda that I would like to pursue with you is

Page 2 Solar Conservation, Conservation Easements

I would like to make you aware that I have been working for the conservation of riparian ecosystem values since before the Northwest Power Planning Act was passed, to enable equity for fish and wildlife values. As coordinator for Save the Kootenai and as President and Natural Resources and Energy chair for the League of Women Voters both locally and on the state of Montana level I have spent many hours attending hearings, conducting meetings, and studying.

My concern relative to preservation is that private land ownership is being eroded. Fee simple acquisition as a mitigation tool displaces farmers and homesteaders. I applauded the council's and Bonneville's work to reestablish a livable environment for wildlife, dam building has destroyed much of the sensitive and diverse ecosystem they depend upon for food and shelter. At the same time I am alarmed at the further erosion of the private land base and the people's right to the land. In Lincoln County, Montana the Forest Service manages 70% of the land base with large private companies holding another 20% there doesn't remain much for the small farmer and homesteader. I want to encourage you to stop fee simple acquisition and begin to see conservation easements as your most effective conservation tool. Then lands that are conserved will be managed compatible for wildlife and a land ethic is built in the citizenry that is probably the most important product of our conservation efforts.

Condemnation and eminent domain should be forever halted and willing sellers encouraged to place a conservation easement on their land to keep that land in agriculture and to improve it in ways that are compatible with the needs of wildlife.

I have been working on these issues for years and have proposed a media tool to discuss this issue and the development of solar conservation as a way to broaden the scope of concern so that people and the agencies can see why and how we could conserve these values. I have had this proposal before the Army Corps of Engineers, the Montana Department of Fish, Wildlife and Parks, the Planning Council, and the Forest Service in the past several years. I find them to be uninterested and not very encouraging. I believe their mandate is for conservation and I think it beneficial for them to be concerned with these values.

The Kootenai River has been nominated for inclusion in the Wild and Scenic Rivers System, the Forest Service has the go ahead to initiate a study for designation and development rights of riparian ecosystem lands is going to be brought up for public discussion. I am concerned because of the sensitivity of the subject of government interference in the private rights of land owners. Understandably there is resistance to condemnation and eminent domain. This leads to a breakdown in the development of a land ethic that

Page 3. Solar Conservation-Conservation Easements.

preserves the natural quality of riparian ecosystem lands. I believe that these agencies have a responsibility and a unique opportunity to help present the concept of conservation easements and work with the managing agency to enhance the preservation efforts of the community of Libby. Conservation easements with an acceptable compensation for willing sellers with the understanding that they are preserving their land and retaining rights to use the land in an undeveloped state would be acceptable, if presented in a concise manner.

I propose the production of a 23 minute, color, sound tracked, 16mm documentary of the history, alternatives for development and a discussion of conservation easements of development rights along the balance of the Kootenai. The purpose of this media tool is the presentation of the opportunity for conservation before polarization of the community due to misunderstanding and emotionalism. I do not want to rush this project, a time frame of two summer seasons for a shooting schedule would do justice to the sensitive nature of the subject.

My proposal would cover the following material:

1. History of development, responsibilities and mitigation.
2. Natural energy development that enables the the preservation of the remaining free flowing river, (i.e. the Solar-Conservation program).
3. The preservation of riparian ecosystem land via the conservation easement opportunity.
4. A definition of conservation easements and a thorough discussion of the concept of development rights being conserved. The definition being "when the landowner wishes to retain ownership for himself and his family, to retain rights to use the land in an undeveloped state, to dispose of the land by inheritance or sale at a later date, and to keep land in its natural state; and when continuation of existing uses (as modified by the terms of the easement) is consistent with public objectives." State and Local Acquisition of Floodplains and Wetlands, A Handbook on the Use of Acquisition in Floodplain Management. Prepared by Ralph M. Field Associates, Inc. For the U.S. Water Resources Council. September 1981.

I am interested in applying this media tool to help establish a Page 4. Solar-Conservation-Conservation Easements.

conservation district that includes all levels of government and interested citizens that would facilitate an orderly voluntary acceptance of conservation easements, the preservation of riparian ecosystem values, and enable funding to convey development rights to the conservation district. By cooperating with all involved entities the best possible resolution of conflicts will be accomplished while maintaining a free enterprise stance on the management of riverine land.

At the present time the Northwest Power Planning Council is working on mitigation efforts in the Northwest and proposes that Bonneville buy land for mitigation via fee simple acquisition as did the Army Corps of Engineers and the State Department of Fish, Wildlife and Parks. I believe that this is an unfortunate departure from the best interests of the people as well as the environment. Possibilities could include selling already purchases mitigation lands with a conservation reservation, thereby funding further conservation easements.

Since I have been exploring these possibilities for the past 10 years and working on these issues I feel I am uniquely qualified to pursue this project and further feel it would be of positive effect in your public relations work to lead a free enterprize approach to land and water conservation.

I would like to show you the kind of media tool I am proposing and further discuss conservation easements and Bonneville's opportunity to participate in the preservation of sensitive riparian ecosystem lands. I think it would be natural to cooperate with the affected agencies for the sake of a wider distribution and for in house training. My thought is that this media presentation could be a tool for gaining understanding of the possibilities for preservation.

The League of Women Voters is an example of an organization that could work with us to present these ideas. Every local League in the Northwest could receive a copy of the film, perhaps on videotape to show in their community to help convey the establishment of an equitable solar future, that makes it possible for us to offer conservation easements to landowners and thereby preserve wildlife and fisheries values.

My sons Gordon Brown and Charles Brown are established in the film business and I propose to work with them. They would do the filming, and sound work, I would do the script writing and directing. Naturally a performance bond will be furnished with the contract.

Sincerely,

---

Barbara D. Rhodes  
Page 5. Solar-Conservation-Conservation Easements.

## FILM BUDGET

36 feet per minute x		
23 minutes =	736 x	
20 to 1 shooting ratio =	14,720 x	
0.50 cents per foot cost =		\$7,360.00
Editing		9,000.00
Shooting schedule		
Interviews	10 days audio	
	man-450	
	equipment-100	
	550 x 10	5,500.00
	5 days camera	
	man-600	
	equipment 100	
	750 x 5	3,750.00
Scenics	10 days audio=	5,500.00
	20 days camera=	15,000.00
Travel four trips contingency		4,000.00
Sound editing		9,000.00
Music		5,000.00
Operating expenses and profit 20%		<u>11,000.00</u>
Brown and Brown Films	Total	\$78,110.00
Script, Direction, and Sales		<u>22,890.00</u>
Grand total		\$100,000.00

Page 6. Solar-Conservation-Conservation-Easements.

Interviewees for "The River That Doesn't Leave"

State of Montana Fisheries Biologist

USDA Forest Service

Corps of Engineers

Kootenai Tribe

Bonneville Power Administration

Northwest Power Planning Council

Farmers-Landowners

Industrialists

W.R. Grace  
Champion International

County Commisessioners

Libby Rod and Gun Club

Subject to further planning.

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

December 11, 1990

Paul Norman  
Bonneville Power Administration  
P. O. Box 3621  
Portland, Oregon 97208-3621

Dear Mr. Norman:

As Planning Branch Chief I feel that you may pay more attention to my input, since your responsibilities are long term. Therefore I am writing to you in hope that my input will be considered in the preliminary writing work for the Resources Program Environmental Impact Statement.

My comments at this time center on the methodologies for cost accounting the physical environmental and socio-political environmental impacts of soft vs. hard path technologies. A definition of soft vs. hard part technologies would be:

SOFT PATH

Dispersed  
Small scale  
Benign environmentally  
Renewable

HARD PATH

Centralized  
Large scale  
Environmentally damaging  
Fossil fueled

A soft path technology would be one that is voluntary, environmentally benign and a good long term investment. One of the earliest advocates of what I am calling soft path technology would be Socrates when he wrote more than 2,000 years ago, as quoted by Xenophon in Memorabilia, "Now in houses with a south aspect, the sun's rays penetrate into the porticoes in winter, but in summer the path of the sun is right over our heads and above the roof. so that there is shade. If, then, this is the best arrangement, we should build the south side loftier to get the winter sun and the north side lower to keep out the cold winds."

In your Table One you express the value of Environmental Externality Per KWh for Solar Energy as <.5. What is being qualified? If this is for Passive Solar space heating like my sun space there are absolutely no negative impacts. In fact indoor air quality is enhanced by the oxygen generation of the plants in the garden (tomatoes, cucumbers, peppers, mint, grapes, melissa, and strawberries), air exchange whenever the sun space is generating warmth, and ventilation to the outside when temperatures are equalized, in spring, and fall, and mornings and evenings in summer. The sun space is a living and breathing part of the house.

Page Two. Environmental Externality Damage Costs.

Beyond the environmental externality damage costs I believe their should be a quantification of Socio-Political impacts. When applied to Solar Energy these factors are positive, i.e. greater equity in the home, freedom from the psychological damage and Dharmic damage (if this term is acceptable) that comes from degrading the environment. Greater self sufficiency in providing for necessities like home heating and air quality.

Applied to nuclear power these factors become something quiet different. Since I have lived in a solar house for ten years I can claim expertise in this area. However, I can't do that when it comes to nuclear power, so I will turn to men who have this expertise and quote them extensively. Amory Lovins in Soft Energy Paths, Energy Strategy: The Road Not Taken, Sociopolitics, says "Perhaps the most profound difference between the soft and hard paths-the difference that ultimately distinguishes them- is their domestic sociopolitical impact. Both paths, like any fifty-year energy path entail significant social change. But the kinds of social change needed for a hard path are apt to be much less pleasant, less plausible, less compatible with social diversity and personal freedom of choice, and less consistent with traditional values than are the social changes that could make a soft path work.

"It is often said that, on the contrary, a soft path must be repressive; and coercive paths to energy conservation and soft technologies can indeed be imagined. But coercion is not necessary and its use would signal a major failure of imagination, given the many policy instruments available to achieve a given technical end. Why use penal legislation to encourage roof insulation when tax incentives and education .....will do? Policy tools need not harm ..... liberties if chosen with reasonable sensitivity."

David Lilienthal (First Chairman of the Atomic Energy Commission) obviously an early advocate of nuclear power said "Once a bright hope shared by all mankind, including myself, the rash proliferation of atomic-power plants has become one of the ugliest clouds overhanging America." From Progress As If Survival Mattered, Friends of the Earth, 1977, p. 45.

"Of all the changes introduced by man into the household of nature, lange-scale nuclear fission is undoubtedly the most dangerous and profound. As a result, ionising radiation has become the most serious agent of pollution of the environment and the greatest threat to man's survival on earth. The attention of the layman, not surprisingly, has been captured by the atom bomb, although there is at least a chance that it may never be used again. The danger to humanity created by the so-called peaceful uses of atomic energy may be much greater.

Page Three. Environmental Externality Damage Costs.

"A new 'dimension' is given also by the fact that while man now can-and does-create radioactive elements, there is nothing he can do to reduce their radioactivity once he has created them. No chemical reaction, no physical interference, only the passage of time reduces the intensity of radiation once it has been set going. Carbon-14 has a half-life of 5900 years, which means that it takes nearly 6000 years for its radioactivity to decline to one-half of what it was before. The half-life of strontium-90 is twenty-eight years. But whatever the length of the half-life, some radiation continues almost indefinitely, and there is nothing that can be done about it, except to try and put the radioactive substance into a safe place.

"But what is a safe place, let us say, for the enormous amounts of radioactive waste products created by nuclear reactors? No place on earth can be shown to be safe.

"The most massive wastes are, of course, the nuclear reactors themselves after they have become unserviceable. There is a lot of discussion on the trivial economic question of whether they will last for twenty, twenty-five, or thirty years. No one discusses the humanly vital point that they cannot be dismantled and cannot be shifted but have to be left standing where they are, probably for centuries, perhaps for thousands of years, an active menace to all life, silently leaking radioactivity into air, water and soil. No one has considered the number and location of these satanic mills which will relentlessly accumulate. Earth-quakes, of course, are not supposed to happen, nor wars, nor civil disturbances, nor riots like those that infested American cities. Disused nuclear power stations will stand as unsightly monuments to unquiet man's assumption that nothing but tranquillity, from now on, stretches before him, or else-that the future counts as nothing compared with the slightest economic gain now.

"No degree of prosperity could justify the accumulation of large amounts of highly toxic substances which nobody knows how to make 'safe' and which remain an incalculable danger to the whole of creation for historical or even geological ages. To do such a thing is a transgression against life itself, a transgression infinitely more serious than any crime ever perpetrated by man. The idea that a civilisation could sustain itself on the basis of such a transgression is an ethical, spiritual, and metaphysical monstrosity. It means conducting the economic affairs of man as if people really did not matter at all." E. F. Schumacher, *Ibid.* p. 49.

"Radioactivity causes mutations in the structure of DNA, the long molecule that contains the coded genetic information necessary for the development of a human being. That is perhaps its most devious effect, since the damage may not appear for a generation or more." The Cousteau Society. *Ibid* p. 53.

Page Four. Environmental Externality Damage Costs.

"If, as I am suggesting here, the disagreement of experts on major aspects of nuclear power is not a temporary condition but, for practical purposes, at least a semipermanent one, then how is society to proceed? Others have said that nuclear power is too technical an issue to be handled by the public or even by legislators. I believe almost exactly the opposite: the problem is to nontechnical to be handled by the technical experts.

"I am myself a technologist by training—my background is in engineering and plasma physics—but I have been preoccupied for a substantial part of the past several years with some of the liabilities and shortcomings of technology. One of the biggest of these is our tendency to perceive certain issues as mainly technological, when in fact the fraction of the problem that actually can be illuminated by technical insights is small; the result is to reserve for the judgement of experts decisions where their expertise is of very limited relevance.

"The nuclear controversy is clearly such a case. The toughest questions cannot be resolved by technical expertise. Experts can and should clarify the technical aspects of options and the range of technical uncertainty as best they can. But the public-policy question in the nuclear controversy—how to deal with a situation characterized by uncertainties of these kinds and in these degrees—is not a technical issue. It is a social one. What kinds of risks should be accepted in exchange for what kinds of benefits? With how much uncertainty of specific kinds does the public care to live? How does one weigh the high routine impact of some technologies (for example, burning coal) against the small chance of a big disaster associated with others (for example, nuclear reactors)? The answers to these kinds of questions should be sought in a way that embodies the fullest possible participation of the affected public, and that places the major decisions in the hands of those most directly accountable to the public through the political process." John Holdren. Ibid, p. 55.

"The energy panaceas that were being advanced with confidence a decade ago are likely to be a lethal problem in themselves and no solution to any existing problem. Any nation that pursues the nuclear energy alternative not only increases the existing rate of fossil-fuel depletion, but further opens the path to nuclear war, nuclear blackmail and sabotage, the high risk of nuclear-power-plant accident, and finally the impossible task of finding a secure means for disposal of nuclear wastes. The nation that adopts the nuclear option helps to endanger the future of life on earth and almost guarantees the growing restriction of human freedom imposed by the need for increasing security measures. Furthermore, it is no answer to the energy problem, but may militate against finding long-term solutions." Raymond Dasmann. Ibid, p. 56.

Page Five. Environmental Externalities Damage Costs.

With these kinds of concerns articulated I feel it is imperative that the costs of nuclear power be quantified to reflect what is known of the drawbacks to this kind of development. If it would cost 5.4 cents to finish the WPPSS plants 1 and 3, then decommissioning should also be considered at 10 cents, and the environmental and socio-political costs should be quantified as another 20 cents. The true cost of nuclear power should be seen as 35.4 cents/KWh and the true cost of Passive Solar (as in the Solar-Conservation program) should be seen as 4 cents because that is all it costs Bonneville. There are no environmental or socio-political costs. The melded value cost of the program is born by the homeowner at 5.8 cents and is payed for by the savings on electricity. If a utility customer becomes a conservation customer his 900 KWh is 2.4 cents instead of 4.9 with a savings of \$22.50 on his used electricity. The conserved electricity due to the insulation, weatherizing, solar space and water heating would be 20,000 KWh/year at 4.9 cents amounts to over \$80/month. My figures for electricity may not be exact due to inverted block rates, however the idea should be conveyed that the conservation customer has over \$100 savings/month to pay his home improvement loan for the Solar-Conservation program.

The difference between the nuclear option and the Solar-Conservation program should be apparent to anyone. In real dollar values 35.4 cents vs. 4 cents.

I hope that this is helpful to you in your work. Thank you for the opportunity to participate in this vital decision making process.

Sincerely,

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Barbara D. Rhodes

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

February 27, 1991

Paul Norman, Planning Branch Chief  
Bonneville Power Administration  
P. O. Box 3621  
Portland, Oregon 97208-3621

Dear Mr. Norman:

I have just received your R. O. D., E.I.S., and Attachment on the Cowlitz Falls Project. I notice immediately that the E.I.S. does not address the alternative of conservation as I believe the National Environmental Policy Act requires, as well as the Northwest Power Planning and Conservation Act.

My observation is that the Solar-Conservation Program, as soon as it is in place as a functional program, will make the need for this project obsolete. I would like to see Bonneville factor this alternative into it's decision making model, considering the 5,100 MW that are available.

Before any actions are taken, and I notice the option goes until June, I would like to have the opportunity to review the E.I.S. and comment in more detail. I believe the fact that conservation was not treated as an alternative could be your rationale for this.

I have written to the Federal Energy Regulatory Commission asking for documentation and have previously sent my Solar-Conservation work to them. I will be asking them to consider Solar-Conservation in their decision model for a license.

In a related matter I have a December 17, 1990 letter from, Charles E. Meyer, Director, Division of Resource Planning wherein he responds to my request to have Solar-Conservation placed more advantageously in the resource stack by saying "(w)e are constrained by legal requirements to determine cost effectiveness by considering the full cost of resources, including any protion paid by consumers. Therefore, we are unable to move the solar conservation alternative higher in the resource stack because we must consider the property owners' share. It is unfortunate that there has not been sufficient economies of scale in development of direct application techniques to make these the most cost effective resources at this time."

This is not a reflection of reality. It is inflexible in that value to the consumer is not being considered. The utility consumer has the value of the retrofit and energy efficiency improvements to his home. He is gaining equity of \$20,000 in 20 years as a result of the program instead of spending his wealth

Page 2. Cowlitz Falls, Solar Conservation

on escalating electrical energy prices. The only cost to Bonneville is the avoided cost 4 cents/KWh for the conservation program electricity that is consumed. After installation of the program components this would be less than half the electricity originally consumed. This must be seen from this perspective or the import is missed. From the perspective of Mr. Meyers the resource would be in the neighborhood of 9.8 cents and this is not what it costs.

Please address this as I do not feel confident that Solar-Conservation is being given a just opportunity. Solar-Conservation is more competitive in reality than any other program and your cost factoring should reflect this.

In addition I would like to have a copy of the Pacific Northwest Rivers Study.

Thank you for your attention. Please respond!

Sincerely,

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Barbara D. Rhodes

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

March 1, 1991

Elizabeth Bowers and Paul Norman  
Bonneville Power Administration  
P. O. Box 3621  
Portland, Oregon 97208-3621

Dear Ms. Bowers and Mr. Norman:

In response to your Environmental Costs and Benefits: Documentation and Supplementary Information I have a few comments for the record.

Why isn't Magneto-hydrodynamics included? There is a demonstration project at Butte, Montana, one of only two in the entire world, the other being in the Soviet Union. Information should be readily available from them. If coal technology is pursued (I think Solar-Conservation is superior) then this should be looked into. It is virtually pollution free, is 80% efficient and existing coal plants can be retrofitted.

On the environmental cost adders for new and existing hydro facilities were the recreational values factored by asking people what they would pay not to lose the resource? This was a factoring tool used to quantify the value of the Kootenai Falls. The value was established by asking every visitor to the Falls for a period of time during the summer, then averaging, and then multiplying by the population of the area within a days drive. This gave an estimate of the value to the people of the area and became a substantial amount. Say, the average value for 2 visits to the Falls in a year was valued at \$80 x the population of the Northwest (this is not the precise methodology, however the point is made) @ 8 million becomes \$640,000,000/year. Just knowing it is there when not visited is a value. The fact that the reach is free flowing qualifies it as a natural attraction that will become more valuable as time goes by.

On the geothermal section I question the validity of pursuing this resource. There is considerable concern over utilizing a hot spring north of Yellowstone Park at Corwin Springs. The National Park Service feels that drilling and pumping would interfere with the natural dynamics of the underground caldera. "There are many examples of how man's tampering with geothermal areas had destroyed entire geysers basins. Perhaps the most infamous example of man's destruction has occurred in New Zealand. There, the development of the Wairakei geothermal electric power plant has obliterated all geyser activity through its extensive extraction of hot fluids. In addition to New Zealand, geysers in Beowave and Steamboat Springs, Nevada have been tampered with and are now inactive." Rhinehart, supra note

Page 2 Bowers, Norman

12, at 143. Protection of the Geothermal Resource of Yellowstone National Park-A Case Study, by David Ness, in Public Land Law Review, Volume 9, 1988, University of Montana Press.

Crater Lake is a resource that has been mentioned as having geothermal potential, scientists are concerned that the lake could be drained as a result of geothermal tampering. What is the value of Crater Lake to the people of the northwest, or to the United States?

In the section of conservation, pollutants are mentioned as coming from sealing of homes. Natural building materials would take care of this problem, and with a solar retrofit the air exchange and added oxygen from the growing garden would enhance indoor air quality.

In attachment 1 coal is listed as 48% carbon. Bitumous coal is 60% carbon and anthracite is 88%. The atomic weight of carbon is  $12.011 \times 10$  to the minus 24th grams and is only relative to oxygen with an assigned value of  $16 \times 10$  to the minus 24th grams. A pound of carbon still only weights a pound. At atomic weights above mentioned the weight would be 44.011 atomic weight of the molecule, breathed in by trees this becomes sequestered as lignin thereforee is not a pollutant. An acre of mixed conifers with broad leaves would be more effective since the leaf surface is greater. The late Clancy Gordon head of Environmental Studies at the University of Montana suggested energy parks at the load centers with huynreds of acres of trees surrounding them and short stacks so that the air was cleaned before it could drift away and become an astmospheric pollutant.

You are still not factoring the small scale, site specific Solar-Conservation Program. Unless you do so you are simple ignoring the 5,100 to 10,200 MW possible from this program. When will I see it factored? Is there anyone on board that can understand and if not why don't you contact me with your clarifying questions.

Solar-Conservation will provide the energy we need and the employment that is desired by people. The potential is there for 17,000 direct jobs and 20 billion dollars in development in the Bonneville region. Nationally this could become 850,000 jobs and a trillion dollars worth of environmentally compatible development. As bad money drives out good money, bad development drives out good development. If we pursue the path of hard energy development we will not be able to realize this potential. As I have said before I expected to see this as a part of the Resources Acquisition Program E.I.S.

Thank you for your attention.

Sincerely,

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

March 5, 1991

Paul Norman, Planning Branch Chief  
Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

Re: R.O.D. Cowlitz Falls Project

Dear Mr. Norman:

The opening of this E.I.S. says current forecasts indicate Bonneville will essentially remain in load/resource balance through 2001 under medium growth rates. If growth experienced is at a higher level what about the call back provisions of southern California utility contracts that the Natural Resources Defence Council went to court to provide? Wouldn't this provide necessary flexibility?

You say that your pilot resource acquisition program needs to:

1. Acquire cost effective resources, and you have figured this project at 30 mills. My figures for 30.8 average MW @ \$180,000,000 says the project will cost 60 mills. Tom Truelove in a letter to Rodney Sakrison January 27, 1989 says "we estimate the first year cost of the project to be approximately 62 mills per kilowatt-hour, greatly in excess the expected cost of purchases from Bonneville at that time."
2. Be consistent with Bonneville's Resource Acquisition Program, and you have explained that this is a pilot effort.
3. To be consistent with the Northwest Conservation and Electric Power Plan, see above quote, and to be consistent this effort should optimise conservation and in fact allow a 10% cost effectiveness advantage to conservation.
4. Minimise environmental cost. The F.E.R.C. E.I.S. on the Kootenai Falls Project says that we have altered with the works of man 85% of all riverine riparian ecosystem lands. With only 15% remaining in natural condition it is imperative that preservation be elevated and all cost factors be considered to allow a more realistic evaluation of free flowing water. You are authorized to provide a market and whelling for electric output or energy as conservation.

If this project were not bought by Bonneville would it be built anyway or would it be dropped? Since Wild and Scenic Rivers values are being looked into would this reach qualify and would it be protected if the project were not built? Have you quatiified the recreational values as explained in my March 1, 1991 letter on the environmental cost adders for hydro Page 2.

Re: Cowlitz Falls Project.

facilities?

As a program option in your 1990 Resource Program criteria Solar-Conservation instead of the Cowlitz Falls Project would:

1. Better minimise the present value of total system costs. This project would cost 6.2 cents, without factoring transmission costs compared to 4 cents cost to Bonneville for Solar-Conservation.
2. Better ensure that Bonneville has the ability to meet high Bonneville firm loads in 1994 through 2000 because there is so much potential for Solar-Conservation.
3. Better minimise Bonneville financial risk because the utility customer is investing in his passive solar retrofit and insulation.
4. Better minimise near-term rate impacts.
5. Better minimise long-term rate impacts.
6. Better minimise exposure to economic risks of adjusting to unplanned changes in load growth, resource availability, and costs.

Solar-Conservation would protect not only Bonneville but the utilities as well as the consumer from rate escalation and the effects of diminishing returns. Since Solar-Conservation penetration would be depending upon advertizing and promotion by Bonneville and the utilities it would be as elastic as the need for new energy happened to be.

7. Better minimise local and global environmental impacts from resource actions, as well as retain wild and scenic rivers values, because there are no impacts.

8. Better maximise resoure deliverability in view of social/political factors because there would be more employment, less boom bust economic impacts. Community based steady employment is one of the best features.

9. Not only would it do all of the above better, it would be on line faster—one year from the time the program is placed in service. Compared to a three year construction shedule for Cowlitz Falls.

Some interesting figures. 22 aMW (the output of the project) is the equivalent of 9,635 passive solar retrofits/with insulation, and hot water heaters, and would cost \$96,350,000 to the utility consumer, and is a value to the homeowner because he is

Page 3. Re: Cowlitz Falls Project.

building equity in his building instead of collecting electric power receipts.

The fisheries interests did not object to licensing? Is this because they never object to a project that is in process? As a trade off for mitigation of anadromous fish runs, collection facilities and conservation easements? All these will be affordable in the future because rates will be kept down and because there already is a responsibility to restore, protect and enhance fisheries values from dam bulding at Mayfield and Mossyrock.

Addressing the Fish and Wildlife components of the mitigation plan a reservoir is not the same thing as a free flowing natural water body and therefore does not properly constitute a riparian area, with its seasonal fluctuations. Power management would use the water out of the natural water cycle so that the unnatural regimine effects fish spawning and rearing, and aquatic insects. The river would best serve fisheries values by remaining natural.

What about the salmon proposed for listing? It should be the responsiblity of the existing generators to mitigate for these losses.

Did the cost/benefit work include the cost of transmission and why is no increase in impact factored for upgrading the lines from 115 KV to 230 KV. Visual impacts are of a magnitude of 200%.

I hope these comments are still able to be factored in your decision to build or not to build this project. I feel that with Solar-Conservation so close to realization it would be foolhardy to build another hydro-project and destroy for all time the scenic beauty of a river segment that could be preserved.

Thank you for your attention.

Sincerely,

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Barbara D. Rhodes

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

March 26, 1991

Paul Norman, Planning Branch Chief  
Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

Dear Mr. Norman:

I have written you, as Planning Branch Chief, concerning my Solar-Conservation Program and participated in your Resource Acquisition Program Environmental Impact Statement scoping process because I thought my ideas would be incorporated in the document. I see nothing that would lead me to believe that Solar-Conservation is being included. It is least cost, only costing Bonneville the avoided cost incentive, it is in keeping with the Congressional mandate for conservation being first priority in energy planning, and it is the most benign environmentally because it shifts emphases for development away from degrading unprofitable technologies.

As an example of unprofitable ventures in degrading technologies let me give you my perspective on Libby Dam and what happens to it's power. In the early 1980's I wrote an article, published in the Kalispell weekly news about a Price-Waterhouse Report on Libby Dam.

Libby Dam was built in the 1970's when construction costs had not escalated to their present extreme. Libby Dam was financed for 3% interest. Libby Dam has never made a profit, and what is more, Libby Dam must go to Congress every year to get an appropriation from Congress to cover it's operating and maintenance costs, and it has never touched it's principal, because it does not even cover it's interest.

Now, Bonneville expects us as citizens, taxpayers, and rate payers, to continue this kind of subsidy: to wit, Cowlitz Falls.

Not only that but Bonneville further plans to build yet another transmission project to Southern California so that L.A.D.W.P. may buy this subsidized electricity for less than the cost of buying it from the U. S. Army Corps of Engineers, plus the wheeling costs.

At a loss and at a loss.

That is not good business.

Solar-Conservation is good business.

Page 2. Solar-Conservation.

Solar-Conservation belongs in this process as the least cost, most environmentally benign development, and because it is with the Congressional mandate for conservation. It is the lost opportunity resource you should be pursuing because it makes every household that participates a generator of solar energy.

Also, I tendered a proposal for a film on conservation easements and solar conservation that I see as a training (in house) tool and promotion tool for your use in implementing Solar-Conservation, with the public and with the utilities. I feel that it is important for you to follow up on this project as it helps you explain how it is possible to save the values inherent in a free flowing river and the open space that is a plus for fish and wildlife values by developing environmentally compatible energy systems.

I had hoped to hear from you by now. If there is something in my proposal you don't understand or if you would feel more comfortable meeting with me before you respond officially please give me this opportunity.

I hope that I have made the point concerning the Third A. C. Line. It would be less costly and better for us to keep that energy here to help us make our Solar-Conservation transition than it would be to build yet another questionable degrading, and financially bankrupting transmission project.

I feel it is incumbent upon you to pursue your Congressional mandate to effect an energy future that is equitable and environmentally sound. This is where your support belongs.

In the March 1991 Bonneville Journal item "Congress studies \$3.4 billion budget for fiscal 1992" you itemize \$171 million for acquisition of new resources, and \$241 million for additions to the transmission system, \$50 million for the Third A. C. Intertie. That amounts to \$461 million that could be better spent for a Solar-Conservation transition. A pilot project at Libby and with the G. and T. REAs that proposed the Kootenai Falls Project, and a promotion tool to initiate this program would put you Solar light years ahead, as well as, be the boost the local economy needs since this is free enterprise.

You could do this instead of escalating rates (12%) to pursue projects that lose money. Please answer my letter! I have been writing for you for over ten years and I have yet to receive an intelligent reply. Thank you again for your attention.

Sincerely,

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Barbara D. Rhodes  
copies: James Jura, Max Baucus, Pat Williams.

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

July 17, 1991

Paul Norman, Planning Branch Chief  
Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

Dear Mr. Norman:

Thank you for your letter. I too, feel the necessity for a discussion of these issues, and by your letter I see that you do not understand my Solar-Conservation Program at all. May I suggest that you come to Libby for an informal discussion. I would be available during the week and we could meet at the Lincoln County Library or at the Forest Supervisor's Office at your convenience. Let me know.

I feel that it is in your best interest to do so, first because I am talking about 5,100 to 10,200 MW of conservation energy, secondly because the potential investment by conservation customers amounts to many billions of dollars, thirdly because of the environmental consequences of not understanding or acting upon this information and fourthly because of the far reaching implications for the nation, indeed the world in pursuit of a responsible path toward an energy future that is correct financially as well as environmentally.

Solar-Conservation is passive solar, however, it is also much more. It includes the insulation and weatherization potential of every retrofittable building. You would never reach these customers with existing programs because, as I pointed out in my comments to the council, insulation standing on its own is not very glamorous and therefore is not saleable. In tandem with a passive solar retrofit and hot water heater it becomes saleable and at a melded cost of 5.8 cents to the homeowner is cost competitive. Remember that he is building equity in an energy efficient building instead of consuming his money. With my program the homeowner saves enough to cover the cost of the construction and conservation tightening of the home plus the interest payment. The risk of investment is ameliorated by a positive increase in the value of the equity in the building. The energy bill will be smaller when the Solar-Conservation is payed for and the homeowner has the benefit of the conservatory room as well.

The reason that this program, is cost effective is because the only cost to Bonneville is for the conservation program electricity. This amounts to a billing credit of 1.6 cents/kWh to the utility that participates and is for only the electricity the utility sells in the conservation program. This allows the utility to sell conservation program electricity at a profit to conservation customers for the usual wholesale rate of 2.4 cents/kWh. The differential is 4 cents therefore he has a bigger profit margin than with conventional customers, and this is incentive to promote the conservation program.

Page 2. Solar-Conservation.

Conventional pricing is 2.4 cents wholesale to the utility from Bonneville and 4.9 cents to the customer for the first 600 kWhs 3.5 cents thereafter which is only a profit margin of 2.5 to 1.1. For conservation program electricity the profit margin is 4 cents. With the billing credit of 1.6 cents/kWh and sales price of 2.4 cents/kWh.

The utilities consumer customer is able to buy his electricity at the conservation rate of 2.4 cents therefore he is able to save 2.5 cents/kWh and on a bill of \$50 this would amount to enough to cover the mortgage payment on the conservation improvements.

These figures may not be exact, however, again you can see my point.

In regard to the Resources Acquisition Program E.I.S. I expected you to understand and create an alternative that promoted the possibility of my Solar-Conservation approach to satisfying the mandate of the Pacific Northwest Power Planning and Conservation Act. Is it still possible?

I certainly want to read your document, so be sure I am on that mailing list.

In regard to my plans for a conservation easements film. I am sure that it is still relevant. As you can well understand Libby has been impacted by development plans for many years. With the possibility of a Wild and Scenic River designation for the Kootenai River, conservation easements will be brought up. There has been so much polarization, and so little opportunity for a calm discussion of the conservation possibilities I feel it is impertive that this idea be pursued. Please, consider coming to Libby and let me sell you this approach to public relations for the environment.

Sincerely,

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Barbara D. Rhodes

Comments August 9, 1991 Environmental Cost Work Group On Contingency Valuation and Estimates for Environmental Costs for the Resources Aquisition Program E.I.S. August 27, 1991. Barbara D. Rhodes. Libby, Montana.

My first observation relative to the materials you sent is that contingency valuation is a spurious point. The examples you cite are unlawful whether they be endangered species or air pollution. This valuation has never been used to support environmental claims for an unlawful taking. Rather valuation of the the avoidance of loss is quantifies, say for enjoyment of knowing that a wilderness or a river is untrammelled and pristine but not pricing unlawful activities. It is unreasonable and irresponsible to encourage people to think like this, since it is leaving the Congressional mandate for protection of species and species diversity as well as for clean air, clean water, and a host of other environmental values that have recently been recognized and codified as being a logical extension of personal and property rights.

In regard to the cost estimates. It appears to me that these figures are misleading. The difference in valuation from Bonneville's to Southern California Edison or San Diego Gas and Electric is of a magnitude of 340x. That means that Bonneville's mill is SCE's 3.4 cents, and that makes a big difference in a technology that produces electricity for 5 cents. Bonneville says including environmental cost brings that figure to 5.1 cents/kwh. SCE says including environmental cost brings that figure to 8.4 cents/kwh and prices that technology out of the market.

The discussion centers on Bonneville's unwillingness to see the need to quantify in terms of the cost of control of pollutants. When ambient air degradation is unlawful there is no choice, and for planning purposes these technologies should be evaluated on the basis of the cost of control, not upon the societal cost of early death and ill health. Using damage function analysis instead of the cost of clean technology is irresponsible. This creates a huge disparity in the analysis of the relative feasibility of the different resource options.

These land use figures are not based upon the productivity of the land, but on the purchase price, and this is unrealistic as a measure of damage. An acre of good riparian farm land yields \$200 +/-yr. in alfalfa and \$25 in wildlife and open space values. If inundated that land would not return to productivity for 1000 years, so the value to society is \$225,000/acre. The 23,000 acres lost to Libby Dam (if those acres averaged \$100,000/acre, to include less productive ground) cost Lincoln County 2,300,000,000 in societal costs. That is two billion, three hundred million. Since Libby Dam's useful life is for far less than the 1000 years that the land is out of production and since Libby has never earned a profit, does not even cover its operating and maintenance budget, or interest (at 3%) and has

Page 2. Environmental Cost Analysis.

never touched its principle, it is not a very good technology.

Solar energy is being quantified as an environmental cost of one mill due to its land use impact. This must be for large scale technology like parabolic troughs, not for small scale site specific solar installations like the passive Solar-Conservation Program where the land use is a part of the residence and more valuable for a solar space than for any other use. Or for passive solar electricity that uses roof top space that is otherwise unproductive.

I do not agree with your figures and I do not see this effort as being productive. I had hope that it would be at the beginning, but both methodology and goals are incorrect.

The assumption that it is possible to acquire cost effective environmentally compatible resources through a competitive bidding process is onerous. This encourages the irresponsible stance of damage cost analysis. Where else could this faulty logic go?

The Solar-Conservation program is not being given its proper place in these planning efforts. Indeed it is being ignored. That is why this planning process is unable to lead and to gain the program that is appropriate at this time.

Please send me this E.I.S. Thank you for allowing my input even though it never was included in anything. If this effort continues in this direction I will see you in Court.

Barbara D. Rhodes  
319 Minnesota Avenue  
Libby, Montana 59923

October 15, 1991

Randall Hardy, Administrator  
Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

Re: Photovoltaics as a supplier of passive solar electricity and its application to a Solar-Conservation Program.

Dear Mr. Hardy:

The Solar-Conservation Program is a method whereby the benefits of passive solar energy could be realized in the near term by an orderly acceptance of the principles of the mandate of the Northwest Power Planning and Conservation Act.

As new administrator of Bonneville it is your responsibility to carry out this mandate.

In conjunction with this program the use of photovoltaics could provide for passive solar electricity as well as solar space and water heating and conservation measures that tighten a building to retain the energy that is generated by solar technology.

The impasse in the acceptance of photovoltaics is seen by the manufactures of solar arrays and the researcher in this technology as the cost of energy. Innovative techniques and materials have been pursued looking for a breakthrough that would enable the cost effectiveness barrier to be overcome.

Figures gleaned from a conference proceeding fifteen years ago reflect that at the level of efficiency and cost now extant photovoltaics are, at present, cost competitive with existing central station facilities.

Photovoltaics and Materials, Volume 6, Sharing the Sun, Solar Technology in the Seventies. A Joint Conference 1976 of the American Section of the International Solar Energy Society and the Solar Energy Society of Canada, Inc. Proceedings August 15th-20th Winnipeg. Explains that state of the art in solar cell technology and costs to provide household passive solar electricity.

At the figures that are being quoted in this proceedings 15 years ago passive solar electricity can be provided at the same or under the cost of a providing utility. A square meter array produces 1 kW of electric energy at a cost of \$600 for the panel. To provide the 960 kWhs a household would use in a month it would take 4 sq. meter panels providing 4 kWh x 8 hours of sunshine a

Page 2. Photovoltaics in Solar-Conservation Program.

day x 30 days = 960 kWhs at a cost of \$600 a panel x 4 = \$2,400 and \$2,000 dollars for the battery storage system (maximum) or a total of \$4,400 providing 960 kWh a month. 960 kWh @ \$4,400 amortized at 25 years and with 7% interest yields a competitive cost compared to buying the 960 kWhs @ 4.9 cents for 600 kWh and 3.6 cents for 360 kWhs for a total of \$42.36 for 960 kWhs. I figure that the photovoltaic electricity can be provided for \$9.16 a month less.

As in the basic Solar-Conservation program equity is being built into a household energy production system instead of being consumed.

Therefore with the long term financing and a balanced Solar-Conservation program the homeowner is earning his own energy production capacity. The utility could be involved in any composit of the program through selling photovoltaic equipment and providing the mortgage financing as a capital investment.

Heretofore the impasse to solar energy development was seen as the cost effectiveness factor. However, the real impasse, as I have shown is political and the manifestation of this impasse is seen in a lack of financing and a large scale market. Bonneville could overcome these hurdles by including P. V. systems in their Solar-Conservation program. Thereby, providing a huge market potential and making financing possible through the political acceptance of passive solar energy.

The enclosed filing is to alert you to where I feel I must turn if you are not willing to pay attention to my input. I have been writing for your agency for more than 10 years and I have seen you fumble every possibility for carrying out the mission of the Northwest Power Planning and Conservation Act.

I would like an intelligent reply and I would certainly be willing to work this out without the necessity of going to court if it is possible.

I want to see Solar-Conservation a viable alternative in your present Resource Aquisition Environmental Impact Statement.

Please see Paul Normans files for a complete explanation of my Solar-Conservation program.

I trust you will see the efficacy of this approach to energy planning and will respond.

I remain most sincerely yours,

---

Barbara D. Rhodes

Barbara Rae Dutro  
319 Minnesota Avenue  
Libby, Montana 59923

February 4, 1992

Randall W. Hardy, Administrator  
Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

Dear Mr. Hardy:

Re: Acquisition Program

The systems described in your Environmental Impact Statement Draft 1992 Resource Program Technical Report are large scale central station systems. These solar systems are plagued by the same inherent difficulties as fossil fueled central stations. The efficiency of site specific generation is what you should be looking at and my solar conservation program (see Paul Norman, he has my program in his files) makes it possible to enable the orderly development on these facilities. Small scale homeowner facilities are more relevant to the need for energy than inefficient systems that waste investment capital. A small system tailored to meet the need of a household can effectively generate the needed energy at the point of use and could enable the homeowner to build equity in his own property rather than to participate in a large scale central system owned by either government or utilities.

Passive solar space and water heating could be accomplished and photovoltaics passive solar electricity could fill the need for backup heat and electrical power needs.

I participated in your process as a work group member and presented to you all the information you needed to formulate a solar conservation alternative. I expected to see it here with the features of the conservation program electricity at the wholesale rate to utility customers, with the 4 cents avoided cost incentive applied to the utilities purchase of power for the solar conservation program, with billing credit of 1.6 cents per kWh for electricity sold under this program.

I would be happy to spend a few hours visiting with you to get this program written for your environmental impact statement. Roy Grant is in Libby and is an expert on leading impact statement preparation, and I think we could draw on him as a resource. I am not sure that the final is the place for this kind of documentation, I suggest a supplement since it should be available to the public at the draft stage to be legal.

There should never be another central station facility built in the Northwest, and if you present this option in this process you would have everything you need to meet all future load growth by freeing existing generation meeting the demand with solar

conservation. Page 2. Acquisition Program.

As I wrote you previously, if you do not present this option and make it possible to conserve our rivers, our clean air, our free society I will take this to Federal Court and have you brought back to task.

Your Conservation Implementation Plan covers the same material and is unintelligible to me, and it hurts my brain to read it.

Let's get on with our work!

Sincerely,

-----  
Barbara Rae Dutro (formerly Barbara D. Rhodes)

Page 2. Challenges for the year.....

existing generation would be freed for load growth without building more central station facilities, freeing 5,100 to 10,200 MW.

Fisheries adjustments should not be a problem for meeting the firm load requirements because stable river flows should mean more base load is generated.

Rebuilding power lines is an overinvestment in central station facilities and would tend to take the system away from a stance of investing in renewables, your highest priority.

I am looking forward to you intire package of Resource Aquisition Documents in May and I am hoping that you have included the Solar-Conservation Program as I have outlined it for you.

Thank you for your attention.

Sincerely,

---

Barbara Dutro

IPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT

The comment period ends on July 6, 1992.

The Bonneville Power Administration (BPA) is interested in your comments on this Draft Environmental Impact Statement's (EIS) preferred alternative. We also invite you to offer comments on any other portion of this Draft EIS.

Feel free to complete this form if it is convenient. Please fold and mail this form or send your comments to: BPA, Public Involvement Manager, P.O. Box 12999, Portland, OR 97212-0999.

ENCOURAGE Fuel Switching For Spaces And  
water Heating to NATURAL GAS in AN  
Attempt to insure enough SAFE AND  
environmentally Friendly residential use, AND  
in turn more hydro power will be  
AVAILABLE For the growth of industry -  
the two are closely related.

Focus more on development of ALTERNATIVE  
energy sources - i.e. Geothermal, Agricultural  
waste materials to produce Alcohol generated.  
SHIFT FROM Fossil Fuels AND Hydro.

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0008997  
JOHN ERIC OLSON  
PO BOX 669  
CASCADE LOCKS OR 97014-9610

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-022	
RECEIPT DATE: 6/8/92	
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**DRPEIS-01-023**

**Please note that DRPEIS-01-023 was incorrectly logged as a comment. It was only a request to be deleted from our mail list system and should not be considered as a comment.**

BPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

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*I support BPA's Draft EIS + its recommendation for the preferred alternative as the conservation package. This package contains a responsible balance of new generation resources and a level of conservation which is optimistic but possibly attainable*

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0085563  
DAN OGDEN  
3118 NE ROYAL OAKS DR  
VANCOUVER WA 98662

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: <b>DEP015-01-024</b>	
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# United States Department of the Interior



BUREAU OF LAND MANAGEMENT  
Medford District Office  
3040 Biddle Road  
Medford, Oregon 97504

IN REPLY REFER TO:

1795(11300)  
bpa.ltr/clb

MAY 29 1992

Public Involvement Manager  
P.O. Box 12999  
Portland, Oregon 97212

Dear Sir/Madam:

Thank you for the opportunity to review the Resource Programs Draft Environmental Impact Statement Summary. From our review, it does not appear that any of the alternatives considered would effect lands managed by the Medford District of the Bureau of Land Management.

Sincerely,

David A. Jones  
District Manager

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPETS-01-025	
RECEIPT DATE: 6/8/92	
AREA:	DISTRICT



# ARIZONA

Department of Commerce

Fife Symington  
Governor of Arizona

James E. Marsh  
Director

May 27, 1992

Bonneville Power Administration  
Public Involvement Manager  
P.O. Box 12999  
Portland, OR 97212-0999

Dear Sir/Madame:

The Arizona Energy Office (AEO) offers the following comments on Bonneville's Draft Environmental Impact Statement because of the seasonal energy and capacity exchanges that take place between the Northwest and California utilities, and Arizona's sales of energy into that same market. The seasonal exchanges between Arizona Public Service and PacifiCorp are further testimony to the interrelated, increasingly regional nature of electricity markets, and provide additional reason for our commentary.

The AEO commends BPA for what seems to be an exhaustive review of multiple options with an eye to at once balancing both electrical customer and environmental considerations. Incorporating quantifiable environmental externality costs will assure the proper resource mix and lowest total social costs without jeopardizing system reliability, and should be included in future resource decisions.

To that end, the "Emphasize Conservation" alternative identified in the draft EIS as being the preferred action seems to cost-effectively address the system resource needs of the future while safe-guarding environmental quality.

Sincerely,

Stephen Ahearn  
Manager, Planning & Policy

SA:hs

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-026	
RECEIPT DATE: 6/8/92	
AREA:	DISTRICT

**SALEM ELECTRIC**



May 29, 1992

Bonneville Power Administration  
Public Involvement Manager  
PO Box 12999  
Portland, Oregon 97212-0999

**RE: DRAFT RESOURCE PROGRAMS EIS**

Enclosed are Salem Electric's comments regarding the Draft Resource Programs Environmental Impact Statement. We appreciate the opportunity to participate in this process.

If you have any questions, please call.

Sincerely,

Jere Overs  
General Manager

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DPP615-01-027	
RECEIPT DATE: 6/8/92	
AREA:	DISTRICT

cjw  
Enc  
oL052992

SALEM ELECTRIC  
DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT  
STATEMENT (EIS) COMMENTS

Salem Electric applauds the Resource Program's general conclusion that conservation is both the least-cost and least environmentally damaging resource. We hope that BPA will follow this analysis with meaningful, aggressive programs to acquire the necessary savings.

We have two objections to specific statements in the draft EIS.

1. (Pg. 5-6) - "The potential environmental costs associated with radioactive emissions from a catastrophic nuclear event are not estimated or included in this analysis." Though these costs may both be difficult to quantify and so horribly large as to preclude even thinking about them, some cost is definitely a better estimate than no cost.

A full accounting of these costs, as well as the certain cost overruns and unreliability of operation and lifetime, and the political impossibility of actually finishing WPPSS 1 and 3 should finally convince BPA to terminate these projects.

2. (Pg. 5-17) - The alternative recommended by BPA is not the least-cost and/or least-impact choice. "...the High Conservation Alternative had lower costs and fewer environmental impacts." BPA's reasons for not choosing this alternative ("...concern about the cost-effectiveness, reliability and commercial availability of the high conservation resources.") could be applied to most of the other alternatives as well. Only by actively pursuing the High Conservation Alternative option can we attain it.

We urge BPA to adopt the High Conservation Alternative as its goal and take the appropriate steps to acquire this low-cost resource.

cjw  
05/29/92  
csSWC

IPA F 1210.07  
104-921

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT

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*It makes no sense to support combustion turbines before exhausting all options to switch electric water and/or space heating customers to natural gas. Both use the same fuel + the use of it to create heat at the point of use is much more efficient.*

*Conservation should be the preferred choice as proposed. BPA should be more creative in how it is obtained. Some utilities do a good job others are reluctant. The reluctant ones are not effective in capturing such resources. Furthermore, utilities who sometimes are interested and who other times aren't, often have a credibility problem. Given both concerns, alternative providers should be encouraged and supported* (attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0011031  
DAVID PHILBRICK  
1180 LOCKHAVEN DR NE  
SALEM OR 97303-3644

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U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

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1. Passive solar building design should get more emphasis - it is cost effective and available. It needs more promotion

2. Fuel switching is in the regional interest and in the interest of rate-payers (bill payers) It should be a part of BPA Resource Programs.

3. Use of natural gas for C.T.'s is energy inefficient. Minimize this option

4. Don't waste more \$ on WPPSS 1 + 3. Stop Trojan

5. Secure cell conservation which is cost effective

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0011418  
EMERALD PUD  
GOVERNING BOARD  
DOUGLAS M STILL  
78315 SNAUER LN  
COTTAGE GROVE OR 97424

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RECEIPT DATE: 6/16/92	
AREA:	DISTRICT

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503

942

- 7893

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BPA F 1210.07  
104-921

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*I recognize that the aluminum plants provide a convenient "Jockey-Box" for resource planners and a good customer for seasonally surplus energy. However, I remember data from 1987-85 showing extreme differences between the most efficient and least efficient aluminum plants in terms of kWh/lb. of aluminum. The most dramatic conservation that we can do is to buy out these old, inefficient, largely depreciated out aluminum plants. At this time of excess capacity in the aluminum industry, this outmoded capacity should be cheap to buy. With the aluminum industry using 1/3 of the BPA regional power and employing only 12,000 people, beneficial impacts outweigh adverse impacts.*

*(attach blank sheets if required) Thank you, Milton E. Griffing*

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0004085  
MILTON GRIFFING  
RETIRED ECONOMIST  
326 CARLSBORG RD  
SEQUIM WA 98382-9451

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #DRPEIS-01-030	
RECEIPT DATE: 6-19-92	
AREA:	DISTRICT

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U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

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Feel free to complete this form if it is convenient. Please fold and mail this form or send your comments to: BPA, Public Involvement Manager, P.O. Box 12999, Portland, OR 97212-0999.

I agree w/ the high emphasis on conservation alternatives, however I do believe we will make a serious mistake if we do not emphasize & utilize our nuclear plants & expand those capabilities. Next to hydroelectric it is probably the cleanest, most efficient source of power available to us. Although politically volatile, it is technically and economically sound, and public awareness and education can correct that problem if we are willing to emphasize it & spend some dollars to run an educational campaign to do so.

(attach blank sheets if required)

CLEARLY MARK ADDRESS CHANGES, DO NOT WRITE OVER FIRST-LINE I.D. NUMBER.

0083932  
CHAMPION INTERNATIONAL CORPORATION  
RALPH HEINERT  
~~PO BOX 1578~~ 952 E. Spruce St.  
LIBBY MT 59923

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DP/EIS-01-031
RECEIPT DATE: 6-19-92
AREA:                      DISTRICT

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Phone Number

406 293 - 4141

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 WASHINGTON PUBLIC POWER SUPPLY SYSTEM
 

---

 P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352
 

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July 2, 1992

 Public Involvement Manager  
 Bonneville Power Administration  
 P.O. Box 12999  
 Portland, Oregon 97212

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DPPEIS-01-032	
RECEIPT DATE: 7/2/92	
AREA:	DISTRICT

Dear Friends:

 Subject: **COMMENTS ON DRAFT RESOURCE PROGRAM EIS**

Thank you for the opportunity to review the Draft Resource Program EIS (RP EIS). As a result of our review, we find that we have several concerns. This letter will address the concerns by subject, with the concern set forth, followed by either a recommendation or a request.

**ISSUE 1. USE OF PROJECT SPECIFIC VALUES WHEN SUCH VALUES EXIST.**

**CONCERN:** The RP EIS is primarily a comparison of various types of resources, and that in most instances, specific forms of that resource at particular sites do not yet exist. Consequently, in most cases the study team used a generic form of a resource; frequently this meant using values for impacts or discharges that were either projections, or surrogate values created by averaging the impacts or discharges of several other facilities.

While this approach may be the only way the study team could examine some of the hypothetical future resource pathways, it is neither necessary nor appropriate for an examination of the environmental impacts and consequences of calling upon the nuclear option. As the RP EIS points out, BPA's pursuit of that option would mean completing one or both of two specific projects that are partially completed -- WNP 1 at about 66% complete, and WNP 3 at about 75% complete. Construction is currently suspended on the projects. The location of the resources that would comprise the nuclear option are known, and the environmental impacts of the two projects have been extensively documented, as a result of the licensing work done by the Supply System, and the review done to date by the State of Washington and the US Nuclear Regulatory Commission. At the beginning of this EIS effort, the Supply System offered a listing of the applicable documents to the BPA environmental staff, noted that the documents were already possessed by BPA, and offered to reproduce or loan any documents that BPA could not locate. We received no such requests. We then requested that data and values specific to the two projects be used, in place of generic data, since these two known plants were the resources that comprised the nuclear alternative. We received no indication that the

Public Involvement Manager  
Page 2  
July 2, 1992  
**COMMENTS ON DRAFT RESOURCE PROGRAM EIS**

specific data would not be used, and during the "answer session" on June 16, 1992, Charles Alton and Mike Berger of the BPA staff indicated that it was BPA's position and intent to use project specific data and projections for WNP-1 and 3, rather than generic material.

A review of both volumes of the RP EIS shows that generic data for land use, water withdrawals, and discharges to water and air are assigned to WNP 1 and 3. The generic data have values generally greater than the impacts currently known, i.e. land used by the project, or greater than values calculated using known plant dimensions and process capacities. This causes the impacts from the nuclear plants to be overstated. Such overstatement negatively impacts the nuclear projects in a resource to resource comparison, and it overstates the impact of the nuclear scenario. Most importantly, because overstated values are used throughout the analysis, the mistakes ripple throughout the EIS. Thus, the overstated impacts of nuclear projects distort the impacts of every alternative which calls upon a nuclear plant; this occurs in the base case and four other scenarios by the year 2000, and in all but one of the scenarios in year 2010.

REQUEST: We take the statements of Messrs. Alton and Berger at face value. The use of project specific information, when available, is logical, and offers the decisionmaker the best and most realistic information to use in selecting strategies and resource approaches. Such a pledge to use project specific information is also consistent with what I was led to believe earlier in the process. Therefore, I request that BPA use, in all pertinent places in the RP EIS, the data and values that are known for the projects, or which have been calculated from known plant dimensions and processes. I further request that all calculations, comparisons and analyses which use values from the nuclear projects used in the RP EIS -- in short, WNP 1 and 3 -- be rerun, using the new information, and that all tables, charts, graphs and narratives be reprinted showing or using the new information.

To assist you in this effort, I have included the data and values which should be changed, as Attachment 1 to this letter.

## ISSUE 2. INEXPLICABLE AND ILLOGICAL ANALYSIS RESULTS

CONCERN: The resources projected to be called upon in the Cogeneration alternative and the Nuclear alternative, by the year 2000, are essentially the same, with two significant exceptions -- the Cogen path contains no nuclear plants, and has 1423 MORE average megawatts from the burning of fossil fuels. (See Table 5-2) Despite this greater amount of combustion, the analysis concludes that the nuclear alternative will result in the region receiving greater amounts of total SO<sub>2</sub> emission (Figures 5-10, 5-27, 5-28 and 5-29), total TSP (Figures 5-11, 5-30, 5-31 and 5-32) and the effects of criteria pollutants (Figures 5-20, 5-21, 5-23, and 5-25). Other than the periodic testing of diesel generators, there is no burning of fossil fuels associated with nuclear plants.

Public Involvement Manager  
Page 3  
July 2, 1992  
COMMENTS ON DRAFT RESOURCE PROGRAM EIS

The results noted above would be disturbing and counterintuitive even if all of the Cogen used natural gas. However, report PNL-8044, "Air Quality Analysis and Related Risk Assessment for the Bonneville Power Administration's Resource Program Environmental Impact Statement", used as a basis for the RP EIS, seems to indicate that most of the cogeneration is fired by either wood waste or municipal solid waste. Hence, to say that these results are counterintuitive is to dramatically understate the case; something is drastically wrong with the analysis.

REQUEST: When I raised this issue at the session of June 16, 1992, Mr. Michael Baechler "worked backwards" through the data and tables that fed this analysis. He agreed that something appeared amiss, but was unable to find a logical explanation. Please have Mr. Baechler continue to examine this part of the analysis, and either correct the analysis, or explain to me and in the final document why such counterintuitive results are in fact reasonable.

The RP EIS examines a number of impacts or consequences of energy resources, and in effect says to a decisionmaker, "If you really care about [land impacts, air emissions, etc.], here is how the various alternative energy paths compare". I request that you subject all your findings for all of the impacts to the same logic test that was just discussed for air emissions, asking yourselves if the findings portrayed in the RP EIS square with logic and reality. The decisionmaker should at least be able to rely on findings and rankings that have been debugged and passed a sniff test.

### ISSUE 3. CONSTRUCTION PHASE IMPACTS FOR WNP 1 AND 3.

BACKGROUND/ CONCERN: An EIS is designed to highlight for a decisionmaker how each alternative would impact or use the natural and human environment. By design, this highlighting occurs before any decisions have been made, and more importantly for the environment, before any actions have been taken which will impact the environment.

WNP 1 and 3 represent resources that do not neatly fit within this sequence of actions. For both of these projects, the kinds of construction activities that impact the environment have already occurred -- land has been cleared and excavated, building foundations, pipelines and utilities have been installed below grade and backfilled, streambed and streamside excavation has been completed, revegetation has occurred, and roads and parking lots have been graded and paved -- and all of this has been done for a decade or more. The construction work remaining will almost all occur within existing structures -- installing wires and control circuits, wrapping pipes with insulation, painting, and the testing and acceptance of plant systems.

Public Involvement Manager

Page 4

July 2, 1992

**COMMENTS ON DRAFT RESOURCE PROGRAM EIS**

REQUEST: I request that you acknowledge that the construction impacts for these resources have already occurred, and that the Federal action of a decisionmaker selecting these resources for completion will create no or negligible new construction impacts. Please change the values for construction impacts to zero, and redo all pieces of the analysis that use these construction impact values. Such efforts should include the work that created Figure 5-7 and Table 5-14.

**ISSUE 4. TREATMENT OF OPERATIONAL EMPLOYMENT**

BACKGROUND/ CONCERN: During the 1970s, the "boomtown" experiences of small communities gained attention. People came to understand that if too many new jobs were created too fast, and/or if they came and went in too short a period, it could put a significant strain on local services, governments and infrastructure. More recently, the typical EIS checklist has institutionalized our sensitivity to socioeconomic impacts; it has moved us from merely recognizing a potential problem to a de facto acceptance of the notion that all new jobs are a problem, and that this problem has to be mitigated by the project.

While this institutionalized assumption may be an appropriate place to start a review of projects that are larger than some de minimus level of a boomtown spike, such a jaundiced view of new jobs is not an appropriate way to view jobs of long duration, such as those associated with the 15 to 40 year operating period of an energy project. Why isn't it appropriate? Because it flies in the face of how almost every other facet of our economy and society views new jobs. State governments have entire departments devoted to bringing new businesses to the state, and this mission is aggressively pursued for several reasons -- new jobs generate many kinds of new tax revenues; permanent jobs provide a solid layer of economic activity which can dampen the effects from seasonal or cyclical layoffs, seen in forest products, agricultural products and services, smelters and even retail sales; permanent jobs in non-metropolitan areas (where most energy facilities are located) put paychecks into circulation in ways that for isolated communities can make the difference in the survival of other stores and services; many primary industries create other new jobs in businesses to support the principal industry, e.g., chemicals for paper mills, parts manufacturers to support Boeing, etc.; and finally, certain kinds of new jobs can attract similar businesses (how many areas yearn for not just one computer chip company, but the creation of a new Silicon Valley?).

Cities, counties, port districts, and coalitions of these all pursue new businesses for these same reasons. Examples of such pursuit abound. Many communities dreamed of a Hewlett-Packard locating in their area, and more than a few communities in the Northwest aggressively wooed such firms. The successful ones crowed about their victories. Even on much smaller and more mundane scales, whether it's a Tupperware factory or a checkclearing department of a bank, new businesses that create new jobs are pursued and welcomed. Such rejoicing is not just boosterism of a bygone age, where every little burg dreamed of becoming another Chicago. Rather, it comes from a visceral recognition that jobs and paychecks provide the lifeblood of a settlement, and that almost no community can exist without income from somewhere.

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Other facets of our society welcome and pursue growth as well. Most churches desire new members, and see new members not as some kind of burden to be compensated for, but as a source of new leaders and doers. Schools and school districts welcome a new source of parent involvement, whether it's in the classroom, the booster club, or on the school board. Civic groups and other organizations are no different; new blood is welcomed, and is a source of new energy. Even the region's champions of conservation recognize the value of jobs and incomes, for they are quick to claim that yet another reason that conservation is the best path is because it's the path that creates the most jobs.

Those who view the presence of paying jobs as a burden to society need to visit some of the lumber mill towns in Oregon and Washington. When the primary employer in a town shuts down, probably a third of the number of jobs disappear, and probably over half of the paycheck value disappears as well. In such cases, it's more than the marginal businesses that fold; frequently the only business of a type will fold as well. As more and more people are forced to move elsewhere to find work, the "community" as a collection of functioning supportive relationships ceases to exist. If you were to go to those communities and offer to create 50 permanent jobs, they'd rejoice; they wouldn't be asking "Where's my mitigation?".

REQUEST: Rethink the position or inference that operations phase jobs are a negative impact. View the creation of jobs as a benefit, just like the rest of society does, and treat jobs created as a benefit and an offset against other impacts. Develop narrative consistent with this to introduce the operation employment material, and take the word "Impacts" out of the title of Figure 5-19.

#### ISSUE 5. IMPACTS TO HYDRO SYSTEM

CONCERN: The discussion of impacts to the existing hydro system on page 5-15 contains an assumption that the current hydro system is just fine, and resource additions are viewed negatively if they perturb the present system. The current debates over fish flush, drawdown and whether the hydro system should be run for the primary benefit of power or fish give the lie to any notion that the status quo is just fine with everyone. Many of the fish advocates seek to change the release time of large blocks of water by many months, and seek to increase the flexibility of the hydro system, so that they could have more ability to make daily, weekly or even seasonal adjustments to flows to benefit fish.

What is missed in the discussion on page 5-15 is the recognition that new non-hydro resources can provide a layer or "floor" beneath the hydro system, thereby restoring a flexibility in hydro operations and flows that could be used to benefit fish. Even the outages for thermal projects which were discussed on that page can be used to advantage. Over the last several years, the scheduling of both the operations and outages of WNP 2 have been adjusted to support or absorb flow levels set to aid fish.

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**RECOMMENDATION:** Recognize that additional large thermal units can provide the region with new flexibility, and change the narrative to acknowledge that impacts to the hydro system from large units can be positive or negative or both. Remove any automatic penalty from the model.

**ISSUE 6. ENVIRONMENTAL COSTS**

**CONCERN/BACKGROUND:** I sat on the "mini Technical Review Panel" that worked with staff on environmental costs. Many discussions were held on the methodology to be used to calculate such costs, especially in those instances when the impacts were unquantifiable, and on how high those costs should be for each resource. At no time did I ever hear a distinct number proposed for nuclear resources, and at no time was I asked to review or rebut a proposed number. At that time, I was not alarmed at the silence on the issue, because I was reassured that the environmental "adders" were being created for use in screening proposals made to BPA in response to the 300MW Request For Proposal, and since no nuclear projects were being proposed, no environmental adder for nuclear needed to be calculated.

When I opened my RP EIS to Section 5.3.3. Economic Effects, and more specifically to Table 5-14, I found that nuclear had been assigned a 2 mill/kwhr adder. This discovery was particularly disturbing on three counts. First, no documentation is offered to illustrate how this value was derived. Volume 2, Appendix D, Section 7 offers cost estimates and economic analysis of the environmental costs for many types of resources, but no information is offered for nuclear. Second, during the "answer session" on June 16, 1992, I asked the cognizant BPA staff person for the source or the composition of the 2 mill adder. She replied that it was to reflect the land and water impacts of the projects. As we have noted in Issue 1 and Attachment 1, the water and land values used in the analysis were inappropriately high, and thus the penalty created for environmental costs has been set too high. Finally, the 2 mill created value does not pass the common sense test, in much the same way that the conclusions on air emissions did not. (See further the discussion of this problem in Issue 2.) Although the 2 mill penalty assigned to nuclear was lower than that imposed on several other resources, it was still inexplicably HIGHER than the penalty for natural gas cogen, combined cycle CT, and even a single cycle CT.

**REQUEST:** First, use values for water and land impacts that reflect the actual impacts to the environment that would occur from operating WNP 1 and 3. The values are contained in Attachment 1. Second, if after that discussion you still feel it's necessary to create "some number greater than zero" and no demonstrable or logical path exists to get to that number, at least create a value that is lower than that for combustion resources, and lower than that for resources that take more acres per megawatt, like solar and wind resources.

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#### ISSUE 7. CONSISTENCY OF TREATMENT BETWEEN RESOURCES

Theoretically, this is an EIS that evaluates all resources in the same way or compares them all to the same standard. In several instances, however, this was not the case. Such a departure from uniform treatment is a disservice to the evaluation process, and hampers a decisionmaker.

The following items are examples of inconsistent treatment:

a. Page S-5 notes that siting nuclear power plants requires a large amount of land (not necessarily true; see discussion of land impacts in Attachment 1). This same point -- large land requirement -- was not included in the discussion of wind or solar, where the point is true, especially on a perMW basis. The discussion of wind power on page 3-37 and Table 3-18 on page 3-38 is deficient in the same way.

b. Page S-5, third paragraph, lists environmental impacts of nuclear as thermal discharge, water consumption, release of waterborne chemicals, and radiological air emissions. Most of these impacts should also have been noted in the discussions of cogen, coal and CTs.

c. Page 3-57, fifth paragraph, offers a discussion of the construction impacts associated with WNP 1 and 3, where these impacts have already occurred. These same construction impacts will also occur with most of the resources considered in this EIS, but the discussion of those resources does not mention construction impacts.

d. Page 5-57, fourth paragraph, suggests that large thermal plants lose value because they are not displaceable, or subject to economic dispatch. I doubt that solar and wind resources will be subject to economic dispatch, and there will be little ability to change the time when their output is available. Why was no penalty, even in narrative form, was assigned to these resources?

REQUEST: Modify the narrative and analyses to treat resources in a more consistent manner.

#### ISSUE 8. VALUES FOR NON-NUCLEAR RESOURCES

The following are several instances where significantly different values exist for the key features of several non-nuclear resources.

a. Page 3-38, Table 3-18. Land use of 5.9 ac per MW capacity for wind resources seems to be a distinct underestimation. Draft NUREG-1437, Vol. 1, Page 9-7 says 15-45 ac/MW depending on terrain and turbine size. Also note that the Altamont Pass development uses 62 acres/MW.

b. Page 3-43, Table 3-20. Land use of 3 ac per MW capacity for solar resources also seems to be an underestimate. Draft NUREG-1437, Vol. 1, Page 9-11 says up to 10 ac/MW. Note that the Luz facility uses 1770 acres for 334 MW capacity (5.3 ac/MW capacity).

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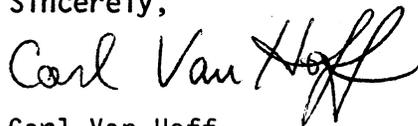
**COMMENTS ON DRAFT RESOURCE PROGRAM EIS**

c. Page F-5-3, Table 1. Operations employment for cogen seems to be very high, unless the analysis inappropriately includes all of the employment at the industrial facility, and not just the employment connected with the production of steam and electricity.

RECOMMENDATION: Reperform the impact analyses, after incorporating the values for land impacts for solar and wind resources, as noted in US NRC Draft NUREG-1437.

If clarification is necessary, please feel free to call me at 509 372-5565.

Sincerely,



Carl Van Hoff  
Manager, Regional Planning

Attachment (As stated)

## Attachment 1

## Thermal, Water, and Land Use Impacts for Nuclear Power Generation

Thermal Discharges

The Draft RP EIS is somewhat inconsistent as to how thermal discharges are considered in Chapter 3 (for example, Table 3-22 does not list a thermal component for MSW combustion). If thermal energy losses are to be recognized as a pollutant or impact, they should be listed under discharges to air, not water. Most of the energy will be rejected to the atmosphere in cooling towers and flue stack (in the case of a combustion process). Only very minor amounts of thermal energy will be discharged to water bodies via the cooling system blowdown. The 60,000 MMBtu listed in Table 3-27 for nuclear generation is a reasonable, though conservative, number. WNP-1 and WNP-3 are expected to have heat rates under 9,900 Btu/kwhr which would result in reject heat of less than 57,000 MMBtu per MWe-yr.

Water Quality Impacts

Water is listed as an air pollutant in Table 3-27. We do not believe the evaporated water should be listed as an air pollutant, but if BPA insists on such a characterization, we suggest consistency. See, for example, Table 3-30 where water is not listed as an air pollutant for coal.

Water consumption may be characterized as a water quality impact. However, we see some inconsistencies within Table 3-27. For example, almost all of the water consumed by the nuclear plant will be lost through evaporative cooling. Therefore, there should not be such a discrepancy between what Table 3-27 lists for airborne water ( $5.43 \times 10^6$  gal) and consumed water (22.85 ac-ft or  $7.45 \times 10^6$  gal). In fact,  $5.4 \times 10^6$  gallons/year (or 16.6 ac-ft) per MWe capacity is conservative estimate for evaporative losses. (See discussion above regarding heat rates and Note a, below.)

Since water consumption is a significant element of the environmental assessment, BPA needs to be careful in applying consumption factors listed in Table 1 of Appendix F (the same factors are used in Chapter 3). These factors are presented as consumption per average annual megawatt which is derived by dividing the consumption per MWe capacity by the assumed capacity factor for the resource (see Page F-6-1 for CCCT example). These factors are apparently multiplied by the resource's average megawatts to obtain a water consumption impact to the region for the resource. However, the result appears to be an annual water consumption estimate for the resource operating at full power for the year.<sup>(b)</sup> This calculation penalizes a resource such as nuclear which is a relatively large water user and is assigned a modest capacity factor. The result is an overestimate (by at least 35%) in Tables 3b and 3c (Pages F-6-6 and F-6-7) and some skewed conclusions.

In the Draft RP EIS water quality impacts for nuclear plants are characterized in terms of pollutant concentrations.<sup>(c)</sup> The numbers in Table 3-27 (and Page F-6-4) are one or two orders of magnitude higher than expected for WNP-1 and 3. For example, BPA lists the total dissolved solids concentration as 4,090 mg/l, but the anticipated TDS in blowdown from WNP-1 and 3 are 837 mg/l and 730 mg/l, respectively. Other examples are expected chromium concentrations

of 80 and 23  $\mu\text{g/l}$  for WNP-1 and 3 vs 429  $\mu\text{g/l}$  in Table 3-27; copper at 211 and 21  $\mu\text{g/l}$  for WNP-1 and 3 vs 1,040  $\mu\text{g/l}$  in Table 3-27; and zinc levels of 94 and 31  $\mu\text{g/l}$  for WNP-1 and 3 vs 1,200  $\mu\text{g/l}$  in Table 3-27.<sup>(d)</sup> (It could be noted that concentrations in blowdown from WNP-2 in 1991 averaged <34  $\mu\text{g/l}$  Cr, 85  $\mu\text{g/l}$  Cu, and 66  $\mu\text{g/l}$  Zn.) The BPA estimate of 18,400 mg/l total suspended solids is ridiculous; the TSS in cooling water at WNP-2 is typically less than 50 mg/l.

### Land Use Impacts

Table 3-27 Draft RP EIS uses a land use factor of 1.74 ac/MWe for nuclear plants.<sup>(e)</sup> This is excessive because it charges the exclusion area required for plant siting as an impact.<sup>(f)</sup> It is true that considerable acreage is required to be owned or controlled by the plant licensee to satisfy the USNRC's siting criteria (10 CFR Part 100). But once the plant is sited (as are WNP-1 and WNP-3) the land is available, subject to limitations, to other beneficial uses such as tree farming, wildlife habitat, and open space. It is incorrect to assume that all the land associated with a nuclear project represents an ecological impact. It would be more accurate to assign a land use impact based on the land required for the plant and support facilities. For WNP-1 and WNP-3 the occupied and developed land is about 185 acres at each site, so the correct factor to use in Table 3-27 and the impact assessments is 0.15 ac/MWe.

### Notes

- (a) Consumption in the evaporative cooling process can be estimated as (heat rejected)  $\div$  (latent heat of vaporization)  $\times$  (fraction of heat transferred by evaporation; rest by water-to-air conduction). Therefore,  $W_{tr, evap} = [(60,000 \text{ MMBtu/MWe-yr} \div 1050 \text{ Btu/lb}) \div 8.34 \text{ lb/gal}] \times [0.8] = 5.48 \times 10^6 \text{ gal/MWe-yr}$ . A more precise estimate may be derived by performing heat and mass balance calculations using site meteorology. The estimated annual water loss to evaporation and drift associated with year-round, full-power operation of WNP-1 is  $6.11 \times 10^9$  gallons, or  $4.9 \times 10^6 \text{ gal/MWe-yr}$  (Table 3.4-3 in WNP-1 Environmental Report for the Operating License submitted to the USNRC in May 1982).
- (b) The Draft RP EIS calculates water consumption as [(water consumption rate per MWe)  $\div$  (capacity factor)]  $\times$  [average megawatts, or MWe  $\times$  capacity factor]. The capacity factors cancel and the calculated consumption is for full-power, year-round operation.
- (c) The statement on Page 5-82 that "effluent from nuclear plants is typically reported in milligrams per liter, rather than tons per year as for fossil-fuel plants" is strange. BPA could take an average cooling system blowdown rate of 3,200 gpm and calculate mass if it used more reasonable concentrations. BPA should also recognize that a large component of the cooling system pollutant mass is the concentrated constituents of the makeup water supply.
- (d) Sources are the Environmental Reports - Operating License Stage for WNP-1 and WNP-3.
- (e) The land use factor in Table 3-27 is inconsistent with multipliers listed in Appendix F (Page F-5-4).
- (f) One absurd result is that 94% of the calculated Base Case land impact in 2000 is charged to one nuclear project while 505 MWe of other generation projects only disturb 85 acres.

**OREGON DEPARTMENT OF ENERGY  
COMMENTS ON BONNEVILLE POWER ADMINISTRATION'S  
DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT**

We appreciate the opportunity to comment on Bonneville's Resource Program and draft environmental impact statement (EIS). With a few exceptions, the resource priorities and actions set forth in the program are in accord with Oregon's energy policies.

Bonneville lays out aggressive conservation goals. We support efforts aimed at assuring we capture all cost-effective conservation. These include the use of tiered rates, lost-revenue payments, and a revamped billing credits program to provide incentives to utilities to pursue conservation.

We have two broad concerns. First, the draft lacks sufficient analysis of fuel-switching and the WNP 1 and WNP 3 facilities. Second, the draft lacks specifics on how carbon dioxide is considered in the plan. Accordingly, we make the following recommendations.

1. Bonneville should evaluate and pursue cost-effective end-use fuel-switching. Bonneville states that it "has decided not to develop or participate in fuel-switching programs at this time. This decision is based on utility concerns and evidence that a significant amount of market-driven fuel switching is already occurring." (Page 8, Resource Program Draft II).

We find neither reason compelling. Bonneville's draft EIS identifies 550 average megawatts of potential fuel-switching. Although the value is preliminary, Bonneville should not ignore a resource of this size.

Bonneville should study fuel-switching further and implement programs within two years. Further studies are needed to determine what measures are cost-effective. For example, Bonneville excluded from its analysis new homes within 1/4 mile of mains and existing electric water heaters in homes with gas service. However, Bonneville provides no evidence that "switching is expected to occur over time (in such homes) due to market forces alone."

Bonneville's analysis should estimate total resource costs, including the costs of installing gas lines and using gas, and not simply costs to Bonneville of reducing loads.

2. Bonneville should only plan to complete WNP 1 and WNP 3 if it can obtain power sales contracts similar to those for other generating resources. Bonneville plans to acquire WNP 1 and WNP 3 power under its high scenario. However, WNP 1 and WNP 3 pose substantial risks. One form of risk stems from the fact that the contract between WPPSS and Bonneville provides inadequate ability to control costs.

Bonneville and the region's ratepayers should not build large resources or buy capability. New generation should be acquired only through power sales contracts. Such contracts allow the market to display the relative risks of various resources. If power sales arrangements are not feasible for WNP 1 and 3, they should be terminated.

3. Bonneville should describe how its plan would differ if carbon dioxide emissions had not been considered. Because Bonneville did not quantify the costs of carbon dioxide emissions, the draft lacks sufficient analysis to assess how carbon dioxide impacts were considered. The final EIS should indicate how Bonneville's resource choices changed because it considered such impacts.

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RECEIPT DATE: <u>7-6-92</u>	
AREA:	DISTRICT

**PUGET  
POWER**

July 6, 1992

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DEPEIS-01-034	
RECEIPT DATE: 7/6/92	
AREA:	DISTRICT

Public Involvement Manager  
Bonneville Power Administration  
P.O. Box 12999  
Portland, OR 97212

**Re: BPA Resource Programs Draft EIS**

Dear Public Involvement Manager:

These comments are submitted on behalf of Puget Sound Power & Light Company in response to BPA's letter dated April 30, 1992, requesting comments regarding the above. The principal concern addressed in this letter is the attempt in the Resource Programs Draft Environmental Impact Statement (Draft EIS) to quantify environmental externality costs.

**I. Attempts to Estimate the Cost of Environmental Externalities**

There can be no dispute that environmental considerations should receive emphasis when BPA is making decisions about the future. Obviously, BPA must include a number of environmental considerations in its resource planning process. These environmental considerations place constraints upon the resource selection process. For example, limits on pollutant emissions constrain the choices of resource selection and design. Various environmental considerations also introduce uncertainties relating to resource costs and availability.

In the Draft EIS and in some electric resource planning and acquisition activities across the nation, there have been a number of attempts to quantify the cost of environmental externalities. However, there is no agreement on an appropriate method for quantifying such costs. An arbitrary assignment of externality costs would introduce further uncertainty and potential distortion into the resource planning process.

The Draft EIS states at page 5-50 that "BPA is required by the Northwest Power Act to include quantifiable environmental externalities in determining a resource's total system cost for BPA's planning and acquisition activities."

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Of course, the Regional Act does not require that all environmental externality costs and benefits be quantified. Rather, the Regional Act directs the Regional Council at Section 4(e)(3) to include in the Regional Plan "a methodology for determining quantifiable environmental costs and benefits . . . ." (Emphasis added.) Similarly, "system cost" is defined in the Regional Act at Section 3(4)(B) as including "such quantifiable environmental costs and benefits as the Administrator determines, on the basis of a methodology developed by the Council as part of the plan, . . . are directly attributable to such measure or resource."

Puget does not believe that quantitative monetization is the best method for considering costs and benefits of environmental externalities, given current data or assumptions regarding environmental costs and benefits. The uncertainties surrounding monetization are so large that Puget believes the resulting externality values are unusable.

The Draft EIS itself recognizes at page 5-51 that "[m]uch uncertainty and debate surround environmental cost quantifications. Several organizations have estimated environmental costs and the range of values for each pollutant or other potential cost is quite large in some instances." This range is reflected in the Draft EIS in Table 5-14 at page 5-52, which contains six different estimates of environmental externality costs. The range of these estimates is dramatic. For example, the estimated environmental externality cost of municipal solid waste-fired cogeneration ranges from 7.9 mills per kilowatt-hour to 124.7 mills per kilowatt-hour. Similarly, the estimated environmental externality cost of simple cycle combustion turbine ranges from 1.5 mills per kilowatt-hour to 24.8 mills per kilowatt hour. The range of these estimates demonstrates that there is no consensus on the monetization of environmental externality cost of resources.

Indeed, the March 26, 1992, issue of the Clean Air Report indicated at pages 30-31 that "[s]tate utility regulators in New England are less convinced than ever that emissions from power plants should be addressed using monetized values for externalities, according to a variety of state sources from the region." The article further indicated that the Massachusetts Department of Public Utilities was reconsidering

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its added values. (A 1991 estimate of externality costs by the Massachusetts Department of Public Utilities is one of the estimates set forth in Table 5-14 of the Draft EIS.)

The great disparity among monetized estimates of environmental externality costs demonstrates that there is no general consensus on monetized quantification of the cost of environmental externalities. In view of the foregoing, BPA should not attempt to quantify the costs of environmental externalities.

Monetization of estimated environmental externality costs does not assure that the lowest environmental impact resources will be selected. (In that regard, it is interesting to note that, in BPA's most recent competitive bid solicitation, BPA used monetized estimates of environmental externality costs; the resources selected by BPA totaled over 1,000 aMW, of which less than 40 aMW were not gas-fired.)

## II. Role of BPA and Conservation Cost-Sharing

BPA in its Draft II of the 1992 Resource Program adopts, essentially without discussion, criteria for BPA conservation cost sharing developed by one segment of BPA's customers through the Public Power Council. The BPA Draft Resource Program proposes that "contracted requirements" customers of BPA not receive BPA cost sharing funding for conservation. However, BPA is required by the Regional Act to offer to serve the firm loads in the region of all of the utilities to the extent such loads exceed their pre-Regional Act resources used to meet such loads. This includes the regional loads of all of BPA's utility customers in the region, including "contracted requirement" customers of BPA.

BPA should consider in its EIS and adopt a more restricted role with respect to acquisition of new resources and conservation in the region; BPA should focus its efforts on assisting utilities and groups of utilities in integrating their acquisitions and their respective loads. This is particularly true in light of the fact that recent developments, since the adoption of the Regional Act, have placed increasing emphasis on smaller resources and conservation measures for which there is no need to spread the risk through a BPA acquisition. BPA's EIS should also

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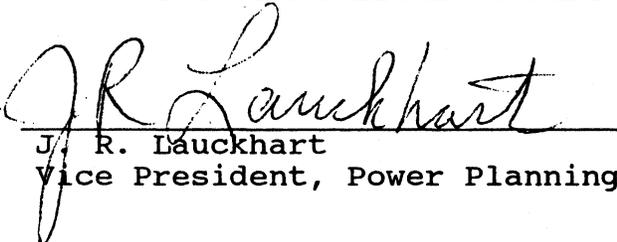
consider conservation cost-sharing for all of its utility customers in the region, including contracted requirements customers. This matter will be discussed in further detail in Puget's comments on the Resource Program Draft II.

Puget appreciates the opportunity to submit these comments.

Very truly yours,

PUGET SOUND POWER & LIGHT COMPANY

By

  
J. R. Lauckhart  
Vice President, Power Planning



**EMERALD PEOPLE'S UTILITY DISTRICT**

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LETTER ~~3~~ Board of Directors

JIM CAP  
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DICK EYMA  
KATHERINE SCHACI  
DOUGLAS M. STI

General Manag  
JEFF SHIEL

July 6, 1992

Jo Ann Scott  
Public Involvement Manager  
Bonneville Power Administration - ALP  
P.O. Box 12999  
Portland, Oregon 97212

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-035	
RECEIPT DATE: 7/6/92	
AREA:	DISTRICT:

**RE: RESOURCE PROGRAM DRAFT ENVIRONMENTAL IMPACT STATEMENT**

Dear Ms. Scott:

Emerald People's Utility District appreciates the opportunity to comment on the Resource Program Draft Environmental Impact Statement (Draft RP-EIS) and offers the following comments.

**1. Preferred Alternative**

Emerald agrees that the preferred alternative should be the "Emphasize Conservation Alternative." This alternative is an environmentally responsible and cost-effective alternative that Bonneville should pursue with vigor. Emerald believes that we have barely tapped the conservation and efficiency resource and that the cost, reliability, and availability of this resource is underestimated. We therefore concur that if it can be shown that the "High Conservation Alternative" can be equally or more cost-effective and reliable, as well as available, this alternative should be the preferred alternative of the Draft RP-EIS, and it is appropriate to leave room in the Draft RP-EIS to shift to this potentially superior alternative.

**2. Alternative Analysis**

The alternatives analysis creates some troubling outcomes as the result, we believe, of inadequate analysis. The state of the art of externalities research and inclusion into

resource planning and acquisition is such that not all externalities are included in the analysis, the weighting of the different impacts is not well understood, and therefore the analysis can create skewed results. For instance, we are concerned about a result that shows the direct cost of the nuclear alternative as lower than the renewables or the cogeneration alternatives; or the environmental cost of the renewables and cogeneration alternatives as equal to the nuclear alternative. These results seem to contradict logic.

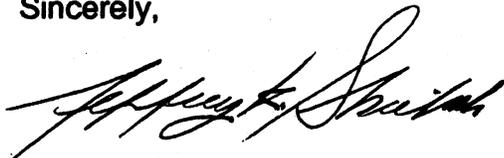
Part of the reason these and other outcomes seem inappropriate is the fact that Bonneville has chosen to inappropriately excluded the effects of CO<sub>2</sub> from the analysis. The exclusion of CO<sub>2</sub> from the analysis is ridiculous, several extremely credible agencies across the country have deemed the scientific evidence sufficient to included CO<sub>2</sub> in their analysis and Bonneville should do the same. As well, we believe that Bonneville underestimates the externalities of nuclear power by not including the "environmental costs associated with radioactive emissions from a catastrophic nuclear event," simply relying on the Price-Anderson Act is insufficient. It has been clearly demonstrated that the damage from a nuclear accident could be many times greater than the artificial limit set by Price-Anderson. In addition, the analysis does not adequately account for waste disposal in the nuclear externality.

### **3. Additional Suggestions For The Final Draft RP-EIS**

We suggest that in addition to the above suggestions you specifically include in the final draft summary the environmental impacts of each of the different resources for comparison purposes; a comparison of the different environmental impacts and how they are weighted, i.e., land-use versus CO<sub>2</sub>; and what types of externalities, beyond those already listed, that have not been included in the analysis.

Emerald appreciates the opportunity to comment on this Draft EIS, and hopes that you will carefully consider our comments.

Sincerely,



Jeffrey K. Shields  
General Manager

3232 34th Avenue South  
 Seattle, WA 98144  
 June 30, 1992

Public Involvement Manager  
 Bonneville Power Administration  
 PO Box 12999  
 Portland, OR 97212

Dear Public Involvement Manager:

Although I appreciate your efforts to identify a "full" range of alternatives by emphasizing the effects of different mixes of options, use of some of the resource types is the same or virtually the same across all the alternatives, which means that there is no substantive comparison of the environmental impacts of using or not using that resource type. In particular, the use of combustion turbines is the same across all the alternatives in 2010. Nuclear power use is exactly the same across all but one of the alternatives. It is not possible to meaningfully assess the environmental impacts of including these resources in the BPA resource plan nor to choose among the resources with reference to those specific impacts, since any alternative selected will have identical impacts with respect to those resources. In this respect, the titles of the alternatives are misleading; "Emphasize Nuclear" uses no more nuclear power than "Emphasize Conservation" (or the Baseline Alternative) by the year 2010, and almost as much conservation! Although there are minor differences, these two alternatives are virtually identical. These are not true alternatives, but only phasing scenarios for the same alternative.

In addition, the discussion of the environmental impacts of using nuclear power is misleading and unnecessarily generic. The DEIS excludes consideration of waste disposal from its evaluation, even though this is probably the most difficult environmental problem associated with nuclear power, and a problem that is by no means solved. Similarly, there is no discussion of risk or consequences of reactor accidents, such as the one that occurred at Three Mile Island, or of the difficulties of disposing of the reactor itself once the useful lifetime of the plant has been reached. Finally, even though this is a programmatic document, the sources of nuclear power in the document are site-specific. Because of this, it would be appropriate to discuss site-specific impacts of using power from these plants, rather than simply discussing environmental impacts of nuclear reactors on a generic level.

Sincerely,



Timothy Michael Wold

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-036	
RECEIPT DATE: 7/7/92	
AREA: T	DISTRICT



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

July 3, 1992

Public Involvement Manager  
Bonneville Power Administration  
P.O. Box 12999  
Portland, OR 97212

Dear Sir:

Thank you for the opportunity to comment on the draft environmental impact statement for the Resource Programs (DOE/EIS-0162). We coordinated the review of this DEIS with other state resource agencies and received comments from the State Energy Office. A copy of their letter is attached to provide detailed information on the issues summarized below.

We are concerned with the methodology used to evaluate the impacts of this proposal. Specific concerns relate to the scenarios in the evaluation and the lack of resource mix scenarios. Also, the assumption in the no action alternative that the region would not acquire resources to meet the loads appears unrealistic.

Since nearly all of the scenarios include a nuclear resource component, additional information is needed on this component and the potential environmental consequences.

If you have any questions, please call Mr. Dick Byers of the State Energy Office at (206) 956-2022.

Sincerely,

Barbara J. Ritchie  
Environmental Review Section

BJR:  
92-2929

Attachment

cc: Dick Byers, Energy

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-037	
RECEIPT DATE: 7/7/92	
AREA: T	DISTRICT

AMY F. BE  
Director

STATE OF WASHINGTON  
WASHINGTON STATE ENERGY OFFICE

809 Legion Way S.E. • PO Box 43165 • Olympia, Washington 98504-3165

June 18, 1992

MEMORANDUM

TO: Barbara Ritchie, Department of Ecology

FROM: Dick Byers and Jim Harding, Washington State Energy Office <sup>JK</sup>

SUBJECT: Comments on BPA Resource Program EIS

This memo conveys WSEO's comments concerning BPA's Resource Program Environmental Impact Statement (RPEIS). This EIS is intended to be a programmatic EIS that will act as the central environmental reference document covering BPA decisions to acquire new supply or demand-side electricity resources. The RPEIS is intended to cover the implementation of broad, multi-year, resource acquisition programs that involve many types of resources. BPA envisions that individual resource acquisition decisions may trigger the need for specific environmental documentation.

We have organized our comments on the Draft RPEIS into the following three categories:

- methodological issues;
- specific technical issues that may have been omitted or should be treated differently; and,
- editorial suggestions on ways to improve the Draft text.

Issues Concerning the Analytic Approach

1. BPA has developed a number of scenarios to measure differences in direct system cost, total system cost, and environmental impacts expected from emphasizing one resource over another. This approach requires forcing the ISAAC model to place a priority on a specific type of resource. Our concern, which we raised in May 1990 comments on BPA's RPEIS scoping document, is that this approach does not easily accommodate the evaluation of Resource Program *mixes* that may provide more interesting information. Suppose a Resource Program alternative was proposed which prioritized resources in a manner *precisely* consistent with the resource priorities set out in Section 4(e)(1) of the Pacific Northwest Electric Power Planning and Conservation Act. None of the modelled scenarios does this (primary emphasis on conservation, secondary emphasis on renewables, tertiary emphasis on cogeneration and fuel switching, and final emphasis on large thermal resources). To establish the relative performance of such an approach, we strongly recommend that BPA include resource mix scenarios in the final EIS.

2. Chapter 4 in Volume 1 indicates that ISAAC modeling was based on the assumptions that BPA meets only its loads and investor owned loads assume that no environmental costs are considered. The "No Action Alternative" (Section 4.2) states that "neither BPA, nor the Region would acquire resources to meet these loads." These assumptions are both internally inconsistent and unrealistic.
  - a. The IOU's in Washington and Oregon currently consider environmental costs in their planning and acquisition decisions. While monetization has not been adopted in Oregon, it is clearly under serious consideration. It has not been adopted in Washington, but IOU's are still required to consider these costs in least cost planning. A better modelling assumption might be that the same environmental costs used in the BPA analysis apply to resources being acquired by IOU's. This may not perfectly reflect how the IOU's will value environmental externalities, but it clearly acknowledges that they do not ignore these costs.
  - b. As stated in the Draft, the "No Action Alternative" is meaningless. It should not be; nor should it mislead. BPA's EIS addresses the consequences of BPA's resource plan actions, not the actions of others. It is absurd and improper to assume that no utility in the region will build to meet load. IOU's and publics both operate with legal obligations to serve. In particular, there is no reason to assume that IOU planning and resource development would be as haphazard and uncoordinated as the discussion on page 4-8 and 4-9 would seem to suggest. In fact, the discussion on these two pages appears to be little more than conjecture. A more realistic "No Action Alternative" might assume that BPA's failure to acquire new resources would lead to reliance on IOUs for incremental public utility load.
3. On page 5-1 in Volume 1, it is stated that environmental costs are assigned to resources after ISAAC modelling establishes their level of operation. It is also stated that including these costs in ISAAC inevitably leads to their inclusion in dispatch. We agree with the latter point. However, this appears to be a temporary fix rather than a true solution. It may be useful to consider changes in ISAAC that allow for resource selection based on full social costs without forcing ISAAC to include external costs in dispatch.

#### Issues that Have Been Omitted or Inappropriately Treated

1. Nearly all the scenarios yield a significant component of nuclear resources by the year 2010. This is clearly an important result, but deserves more discussion than is provided, particularly on the environmental consequences of nuclear resources. Environmental costs for nuclear power have not been considered by BPA. In fairness to the discussion of other resources, they should be. Page 3-58 (fourth paragraph) states that *average* plant release of radioactive materials is a small percentage of the limits specified by Federal regulation. This is true, but is clearly the least important potential externality raised by analyses in the literature. Page S-6 states "The environmental costs of nuclear plants cited in this document consist only of estimates associated with land and water use impacts for all large thermal plants." Low probability accidental releases, fuel melt accidents without releases, and fuel cycle impacts (especially uranium mining) deservedly receive the greatest attention in the literature. The RPEIS should do a more comprehensive job of characterizing the non-internalized environmental costs and impacts if nuclear power is to play as large a role as the analysis suggests.
2. In chapter 4, we understand the importance of identifying the environmental impacts of conservation measures and have no objection to the values used. It may not be appropriate, however, to list these impacts in great detail in describing the Base Case Alternative and the

Emphasize Conservation Alternative without characterizing the impacts of resources emphasized in other cases. This discussion may be more appropriately included in conservation sections in chapter 3.

### Editorial Comments

1. Page 3-12: The second paragraph should clarify that the 1988 EIS focused on new homes.
2. Page 3-12: Passive stack ventilation should be added to the bullet list.
3. Tables 3-4, 3-8, and 3-9: The cost figures (\$/MW) need clarification. Are these \$/aMW inclusive of both capital and operating costs, initial capital costs per unit of capacity savings, or annual capital charges per unit of energy or capacity. Do these dollars reflect only BPA expenditures, or total expenditures including customer contributions?
4. Table 3-14: The different categories Hydro-1, etc., need to be described.
5. Pages 3-50/51. It may be useful to describe some of the recent improvements in efficiency (e.g., STIGs) and air quality controls (e.g., dry NOx) for gas turbine based power plants.
6. Page 3-55. There is no clear reason to use mid 1989 data on operating nuclear capacity. The values in January 1992 were 111 *licensed* (operating is ambiguous) reactors with a combined design capacity of 111 gigawatts. In 1991, these units met nearly 22 percent of the nation's electrical load.
7. Page 3-56. It may be useful for BPA to review the current literature on nuclear O&M costs, capital additions, and capacity factors. EIA released a detailed report on reactor O&M costs in May 1991 that clearly discourages the use of annual industry averages for projecting future costs. The June 1992 issue of *Energy Policy* also includes a recent assessment of this issue. Both assessments generally support the conclusions described, but continuing attention to this issue appears warranted. The same point applies to capacity factors, which have clearly risen in response to longer fuel residence times, and perhaps in response to higher levels of maintenance and capital spending.
8. Page 3-76/77: Are the expected environmental effects of exchanges (inside the Canadian/US Northwest and in California) included quantitatively or qualitatively in the analysis, or are exchanges only characterized in direct cost and benefit dollar terms?
9. Page 4-13: In the first paragraph of 4.2.5, in the sentence beginning "There is some concern...", the use of the term cost-effectiveness is inconsistent with the results of the analysis of this alternative. If the alternative has a lower total system cost, than the resources included are cost effective if input assumptions are correct. The uncertainty surrounds whether the costs and savings assumed for these resources are correct.

We hope these comments are useful. If you have questions concerning our comments, please contact Jim Harding or Dick Byers.

THE STATE



OF WYOMING

MIKE SULLIVAN  
GOVERNOR

## Public Service Commission

700 W. 21ST STREET

(307) 777-7427  
FAX (307) 777-5700

CHEYENNE, WYOMING 82002

**BIL TUCKER**  
CHAIRMAN  
**JOHN R. "DICK" SMYTH**  
DEPUTY CHAIRMAN  
**STEVE ELLENBECKER**  
COMMISSIONER

**ALEX J. ELIOPULOS**  
CHIEF COUNSEL AND  
COMMISSION SECRETARY  
**STEPHEN G. OXLEY**  
ADMINISTRATOR

Tuesday, June 30, 1992

Bonneville Power Administration  
Public Involvement Manger  
P. O. Box 12999  
Portland, Oregon 97212-0999

Gentlemen:

The Bonneville Power Administration (BPA) has solicited comments from the public on its Draft Resource Programs Environmental Impact Statement, DOE/EIS-0162 (the Draft Statement). The Wyoming Public Service Commission (the Wyoming Commission) wishes to share its comments on the Draft Statement as the BPA chooses among its alternatives.

### 1. Conservation as a resource.

The Wyoming Commission supports the concept of conservation as a resource in planning for the needs of BPA's customers in the future. Conservation, however, should be used carefully in several respects. First, if the resource program is to be structured to meet *growing* needs, as BPA states, it must plan to meet increased power needs. It should accommodate economic expansion and the increased demands for power that such expansion places on the BPA customer systems. Second, conservation initiatives should be carefully structured so that the costs of conservation are shared equitably by those who benefit from them. For example, if a system or a customer has made successful conservation efforts before the BPA program takes effect, that person should receive rate credit for those efforts. Further, if a program actually benefits only a certain portion of BPA's customers, that customer group should be the one to which the cost responsibility should flow. Third, conservation programs should be tested before they are widely implemented so that their actual public acceptance potential and true achievable efficiency can be assessed accurately. Costs should be carefully tracked and contrasted with the savings achievable through other means. Fourth, conservation initiatives should be used carefully in largely rural areas which have economies which are not

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-038	
RECEIPT DATE: 7/7/92	
AREA: WI	DISTRICT

particularly vigorous. Here, the resource program should help to nurture the economy and assist in recovery and expansion -- which could mean accommodating an expansion in real load at a price which does not stifle development.

In reviewing conservation options made possible by emerging technology, BPA should examine carefully the use and encouragement of advanced metering technology and related power system operating technology to achieve efficiencies while maintaining quality and availability of service. This technology has benefits beyond just conservation potential which should not be ignored. It can also assist BPA in its stated goal of making small-increment residential, commercial and industrial conservation programs more efficient and acceptable to the public.

## **2. Coal and natural gas resources.**

BPA projects that it could need up to 5,000 more average megawatts of energy within the next 20 years. This potential demand requires that all resource possibilities be examined thoroughly and carefully. In this examination, environmental concerns weigh heavily in BPA's decisions and rightly so. Wyoming's experience shows that, when it is wisely managed, coal-fired generation is an harmonious part of an environmentally sound resource mix. The Wyoming experience also shows that coal-fired generation retains its proven reliability, cost effectiveness and viability.

Wyoming has seen and appreciated the potential for air quality problems with thermoelectric generation and has taken initiatives in enacting and enforcing air quality standards that are as tough or tougher than comparable federal standards applicable to new coal-fired generating plants. Wyoming has acted in the areas of SO<sub>2</sub>, particulate emissions and NO<sub>x</sub>. Beyond setting stringent standards, Wyoming also requires the use of the best available control technology in meeting them. As a consequence, actual results show that control initiatives in Wyoming generally exceed -- rather than merely meet -- our State's strict standards and the applicable federal standards.

The utilization of low sulfur Wyoming coal is clearly another significant measure which should be recognized for its value in reducing the real cost of emissions from thermoelectric generating plants which utilize this high quality fossil fuel exclusively or in a coal blending program. Wyoming's low sulfur coal will remain a reliable resource that can be drawn on regionally in efforts to abate unwanted emissions.

In the Draft Statement, BPA considers the externality costs of various resource options. Our experience shows that such costs can be internalized for thermoelectric generation without undue economic disruption. The Wyoming Commission has already granted internal cost recovery to utilities which generate electric power in Wyoming for all direct costs associated with the installation of scrubbers and other facilities employed in their

efforts to comply with our stringent air pollution laws.

Wyoming has shown that thermoelectric generating facilities can be brought into compliance with stringent air quality standards and that this effort has provided valuable, responsible, low-emission electric generation resources. Thermoelectric generation remains a proven and dependable technology which should be encouraged by fostering improved abatement measures, further development of clean coal technologies and the construction of new facilities incorporating such technology.

BPA should also consider the siting of thermoelectric plants as a contributing factor in their continued viability. The wise siting of plants outside of airsheds which have serious air quality nonattainment problems further reduces their incremental impact on the environment. This would allow BPA to control cumulative impacts of new resource additions.

Finally, expanded use of natural gas, in fuel switching and generation applications, should be seriously considered as the resource program develops. It is among the cleanest burning fuels and is especially useful for peaking and cycling generation. Natural gas can also be used to supplement coal in coal-fired units where operational and environmental concerns are present, and it could be used to replace some portion of BPA's hydropower resources if environmental concerns curtail their efficient operation.

### **3. Renewable resource technology.**

Environmental restrictions may reduce the hydroelectric generating capacity available to BPA, and this may result in reductions in hydropower availability in the western United States. To minimize this problem, every effort should be made in the resource program to avoid undue restrictions in availability. The price per kwh for hydropower should also be kept as realistically low as possible. If reductions in availability are inevitable, until they can be determined with reasonable certainty, extreme caution should be exercised in making any reallocations of this valuable resource. The public interest of the electric consumer should govern any allocation of diminished resources. For example, BPA should examine carefully the situation of systems, especially the smaller systems, which depend heavily upon BPA's hydropower to see if it is realistic to reduce the availability or increase the price of this resource option.

Recent advances in wind power technology have made a number of Wyoming sites viable resources. Continued development of windpower technology should allow it to contribute more meaningfully to the overall power mix in the areas served by BPA. Wind power should be carefully studied to determine its potential for replacing hydropower capacity lost through curtailed operations. Part of the assessment and development of windpower should include a realistic projection of the potential percentage of the market which windpower could realistically serve while maintaining the adequacy and reliability of service.

**4. The preferred alternative.**

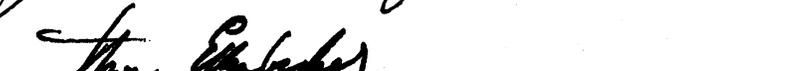
BPA has stated that its preferred alternative resource plan is the Emphasize Conservation Alternative. Under this option, no new coal, clean coal or fuel switching resources are to be acquired. The Wyoming Commission believes that these proven resource options should not be excluded from BPA's process. They should remain a part of the overall planning effort just as they are a part of the electric supply in the western United States.

Integrated resource planning is becoming more widely accepted as it seeks to obtain the most reliable and reasonably priced mixture of resources to serve the energy needs of the public in a sound and responsible manner. Truly integrated resource planning continues to identify and compare all practicable energy efficiency and supply alternatives in seeking to serve the public interest at the least cost consistent with reliability of service. The Wyoming Commission therefore recommends that these existing technologies not be excluded from planning consideration.

Yours very truly,

WYOMING PUBLIC SERVICE COMMISSION

  
\_\_\_\_\_  
JOHN R. SMYTH, Deputy Chairman

  
\_\_\_\_\_  
STEVE ELLENBECKER, Commissioner



**State of Utah**  
**OFFICE OF PLANNING AND BUDGET**  
**Resource Development Coordinating Committee**

**Charles E. Johnson, CPA**  
 Office Director  
**Brad T. Barber**  
 Office Deputy Director  
**Rod D. Millar**  
 Committee Chairman  
**John A. Harja**  
 Executive Director

116 State Capitol  
 Salt Lake City, Utah 84114  
 (801) 538-1027

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-039	
RECEIPT DATE: 07/07/92	
AREA: WI	DISTRICT

June 17, 1992

Public Involvement Manager  
 Bonneville Power Administration  
 P.O. Box 12999  
 Portland, OR 97212

**SUBJECT: Resource Programs Draft Environmental Impact Statement**  
**State Identifier Number: UT920511-010**

**To Whom It May Concern:**

The Resource Development Coordinating Committee, representing the State of Utah, has reviewed this Draft Environmental Impact Statement, and has no comments at this time.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse at the above address, or call Carolyn Wright at (801) 538-1535 or John Harja at (801) 538-1559.

Sincerely,

**Brad T. Barber**  
 State Planning Coordinator

BTB/rpj

# The Resources Agency

LETTER 40

Pete Wilson  
Governor



Douglas P. Wheeler  
Secretary

## of California

California Conservation Corps • Department of Boating & Waterways • Department of Conservation  
Department of Fish & Game • Department of Forestry & Fire Protection • Department of Parks & Recreation • Department of Water Resources

July 6, 1992

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEK-01-040	
RECEIPT DATE: 7/8/92	
AREA:	DISTRICT PC

U. S. Department of Energy  
Bonneville Power Administration  
Public Involvement Manager  
P. O. Box 12999  
Portland, OR 97212

Dear Sir:

The State has reviewed the Draft Environmental Impact Statement, Resource Programs, DOE/EIS-0162, the State of California, submitted through the Office of Planning and Research.

We coordinated review of this document with the Energy Resources, Public Utilities, and State Lands Commissions, and the Departments of Conservation, Fish and Game, Parks and Recreation, Transportation, and Water Resources.

None of the above-listed reviewers has provided a comment regarding this proposed project. Consequently, the State will have no comments or recommendations to offer.

Thank you for providing an opportunity to review this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Carol Whiteside".

for Carol Whiteside  
Assistant Secretary,  
Intergovernmental Relations

cc: Office of Planning and Research  
1400 Tenth Street  
Sacramento, CA 95814  
(SCH 92054017)

The Resources Building Sacramento, CA 95814 (916) 653-5656 FAX (916) 653-8102

California Coastal Commission • California Tahoe Conservancy • Colorado River Board of California  
Energy Resources, Conservation & Development Commission • San Francisco Bay Conservation & Development Commission  
State Coastal Conservancy • State Lands Commission • State Reclamation Board



## Department of Energy

Idaho Field Office  
785 DOE Place  
Idaho Falls, Idaho 83401-1562

July 2, 1992

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-041	
RECEIPT DATE: 7/8/92	
AREA:	DISTRICT WI

United States Department of Energy  
Bonneville Power Administration  
Public Involvement Manager  
P.O. Box 12999  
Portland, Oregon 97212-9984

SUBJECT: Review of Draft Resource Programs Environmental Impact Statement -  
AM/EP-ETD-ATB-92-127

REFERENCE: Comments of the Draft Environmental Impact Statement's preferred  
alternative.

The Idaho National Engineering Laboratory staff have the following comments  
on the Bonneville Power Administration Draft Resource Programs Environmental  
Impact Statement.

Page S-4 near the bottom: In line with the comment that there is a waste  
heat problem with geothermal, there are similar problems with solar thermal  
unless they are 100% efficient.

Pages S-15 and 16: It is not fair to lump all of the renewables together  
from a cost standpoint. They have quite different costs as you are aware.

Volume 1

Page 30, lines 2 and 3: A working hydrocarbon fluid (such as butane,  
iso-butane, pentane, etc.) would be better; to our knowledge freon is not in  
use in the United States.

Page 30, line 14: Spelling should be "The Geysers" and about 2,000 MW,  
3,000 MW is the total in the United States.

Page 30: The operating characteristics of power plants are generally  
referenced to and maintained at a baseload power level, however some plants  
(including many at The Geysers) are operated in a load following manner.  
Although the plants are not amenable to very rapid fluctuations, power is  
successfully ramped up over short enough periods to be used in a load  
following manner by utility operated geothermal sites such as the Northern  
California Power Agency plants at the Geysers.

Robert Creed  
Advanced Technologies Branch

**NORTHWEST POWER PLANNING COUNCIL**

851 S.W. SIXTH AVENUE, SUITE 1100  
 PORTLAND, OREGON 97204

Phone: 503-222-5161  
 Toll Free: 1-800-222-3355  
 FAX: 503-795-3370

July 2, 1992

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Ms. JoAnn Scott  
 Public Involvement Manager  
 United States Department of Energy  
 Bonneville Power Administration  
 P.O. Box 12999; Routing ALP  
 Portland, Oregon 97212-9984

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01042	
RECEIPT DATE: 7/8/92	
AREA:	DISTRICT

Dear Ms. Scott:

This letter is to convey comments of the staff of the Northwest Power Planning Council on the Resource Programs Draft Environmental Impact Statement.

Council staff would like to compliment BPA on the overall quality of the draft statement. A great deal of good work is evident in the document. Our comments can be generally characterized as suggestions for useful extensions of the analysis.

The main subject of our comments is the use, in the Draft Environmental Impact Statement's analysis of total system costs, of a single "high" load growth forecast. This approach has the advantage of relative simplicity and allows the estimation of maximum environmental effects. It may, however distort the expected value of total system costs, and the relative attractiveness of alternative resource strategies. As the DEIS itself notes, (Volume 1, page 5-53) "The assumption of high loads significantly affects the economics of the analysis. It makes large baseload generating resources much more attractive than would be the case under random loads." While the total system costs (Table 5-15) seem reasonable, the relative ranking of alternatives may be biased by the concentration on the high load growth forecast.

The Integrated System for Analysis of Acquisition (ISAAC) was designed to analyze the performance of resource acquisition strategies taking uncertainty into account. ISAAC simulates the ability of strategies to recover from mistaken forecasts of load growth, as well as other uncertainties. Analysis of direct costs carried out with ISAAC has demonstrated that while resource acquisition strategy A may appear to be least-cost if load growth is assumed to be known, strategy B may well have the lowest expected cost when load growth is recognized as uncertain. Therefore, it seems quite likely that when analyzing total (direct plus environmental) costs strategy C might appear to have lower cost if load growth is known, while strategy D

has the lowest expected cost when the uncertainty of load growth is taken into account. We recommend using ISAAC to analyze expected total costs over the full range of load uncertainty to test whether the alternative strategies maintain their rankings.

There is at least one result in the Draft Environmental Impact Statement that might change if the recommended analysis across the full range of load uncertainty is carried out: according to Table S-5, emissions of SO<sub>2</sub> in the year 2000 are greater for the High Conservation alternative than for the base case. This is somewhat counterintuitive, since increasing conservation would seem more likely to decrease emissions. Apparently, a combination of high load growth and the schedule of availability of conservation result in combustion turbines operating at higher levels until conservation acquisitions accumulate. (A brief explanation of this result would help the puzzled reader, and would take no more than a footnote). If the High Conservation alternative were compared to the base case using the full range of load growth, many of the lower growth games would not require increases in combustion turbine use, so that the expected level of SO<sub>2</sub> emissions would probably not increase.

To summarize, we regard the Draft Environmental Impact Statement as a whole as quality work, and a reasonable basis for decisions. We think that the alternatives identified as least total cost are the preferable alternatives. While we have the concerns about the ISAAC analysis detailed above, we are not suggesting that the analysis needs to be revised before the Final Environmental Impact Statement. Rather, we suggest that the extension of the analysis to consider the effects of a range of uncertainty in load growth be made part of the first supplement to the EIS.

Sincerely,



Richard H. Watson  
Director, Power Planning Division

RHW/KC/kec

g:\KC\WW\RPEIS.DOC



**Department of Energy**

Idaho Field Office  
785 DOE Place  
Idaho Falls, Idaho 83401-1562

June 26, 1992

Bonneville Power Administration  
Public Involvement Manager  
P.O. Box 12999  
Portland, OR 97212-9984

**SUBJECT: Draft Resource Programs Environmental Impact Statement  
(EP-ETC-ITB-92-122)**

To Whom It May Concern:

We have reviewed the above referenced EIS and are comments are attached.

If you have any questions, please call me on 208-526-1403.

Sincerely,

A handwritten signature in cursive script that reads "Peggy A.M. Brookshier".

Peggy A.M. Brookshier  
Project Manager  
Advanced Technologies Branch

cc: John Flynn, DOE-ID  
Garold Sommers, EG&G

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-043	
RECEIPT DATE: 7/14/92	
AREA:	DISTRICT WI

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-044	
RECEIPT DATE: 7/14/92	
AREA T	DISTRICT

Marvin Klinger  
12322 42nd Drive S.E.  
Everett, WA 98208

July 10, 1992

Bonneville Power Administration  
Public Involvement Manager  
Box 12999  
Portland, OR 97212

Madam or Sir:

The Draft Resource Program Environmental Impact Statement as well as the Resource Program itself has as an alternative for acquiring resources one which is called the "Emphasize Imports Alternative". The alternative apparently assumes that all opportunities for imports exist either in Canada or the Pacific Southwest.

The writer has called to the staff's attention in the past and does so once again that there are opportunities for importing reliable and economical resources from the MAPP region to the east. These are resources which are in existence today and have been operating for more than 6 years with an availability of better than 80%.

There also exists today, a 500kv transmission path owned by BPA that is underutilized as far as the interests of the BPA Preference Customers is concerned, that has the potential of providing a path for imports from the MAPP region. This path is presently being used for wheeling for others and short term purchases by BPA. It would have a much greater value if it were used to acquire and transmit long-term resources for BPA and its customers.

The resource that I am speaking of is owned by Basin Electric Power Cooperative and is surplus to that system's needs and is available for acquisition for up to 20 years starting in 1995. Since it is a proven, existing resource that meets or exceeds all existing environmental regulations, the Region would incur little financial risk. Furthermore, as it is an operating resource and will continue to operate, whether or not acquired by BPA, there are no incremental environmental impacts associated with it.

I urge BPA to consider this desirable, domestic resource in its planning for the acquisition of new resources.

Sincerely,

  
Marvin Klinger, P.E.





JUL - 6 1992

REPLY TO  
ATTN OF:

WD-126

Charles Alton  
Environmental Coordinator  
Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97212

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRP/ISCT 046	
RECEIPT DATE: 7/16/92	
AREA:	DISTRICT

Dear Mr. Alton:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and § 309 of the Clean Air Act, we have reviewed the **Resource Programs Draft Environmental Impact Statement (draft EIS)**. This EIS is a programmatic document which will support decisions made on power resources to meet obligations to serve forecasted requirements. The "Emphasize Conservation" is the preferred alternative because it is the most cost-effective and environmentally sound.

Based on our review we have rated the draft EIS LO (Lack of Objections). This rating and a summary of our comments will be published in the *Federal Register*. We offer the following suggestions to assist in clarifying several areas in the final EIS.

- The "Base Case" and the "Emphasize Conservation" alternatives should be made more distinguishable as they seem to be the same.
- The inference that photovoltaic systems require large amounts of land (page S-4) should be explained. New efficiencies would seem to significantly reduce land requirements and rooftop systems could make land requirements more economical.
- The air quality effects of fuel switching involving wood burning (page S-7) would be somewhat offset by current "burn bans."
- The "resource stack" (page 1-7) needs to be more clearly explained. How does the "resource stack" affect resource planning decisions? Is it an implied priority list?
- We could not locate the "estimates of water consumption by each resource type" referenced on page 5-47.

- What are the effects of drought on all resource values (fish resources, economics, etc.) for each alternative?
- Given the high variability of runoff for the hydroelectric power system (page E-7) what would be the effects of low water on operation of each of the alternatives?
- Water rights/water demand effects for applicable alternatives need to be added in the final EIS.
- A threshold of 5,000 working level months (page 5-62) is implied for radon exposure. There is no indication of a true threshold at this or any other level. There is no significant data at low exposure levels.
- There currently is no "national standard" for radon (page 5-62) in buildings now or anticipated in the future. A standard implies the force of law or regulation. EPA does have a recommended action level of 4 picocuries per liter.
- In addition to the proposed indoor air quality legislation cited (page A-27) House Bill 3258 has also been drafted.

Thank you for the opportunity to review this draft EIS. Please contact Wayne Elson at (206) 553-1463 if you have any questions about our comments.

Sincerely,



Ronald A. Lee, Chief  
Environmental Evaluation Branch

# Seattle City Light

M. J. Macdonald, Acting Superintendent  
Norman B. Rice, Mayor

July 6, 1992

Charles Alton  
Public Involvement Manager  
Bonneville Power Administration  
P.O. Box 12999  
Portland, Oregon 97232

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-047	
RECEIPT DATE: 7/16/92	
AREA:	DISTRICT

Dear Mr. Alton:

## Resource Programs Draft Environmental Impact Statement

Seattle City Light has reviewed the Resource Program Draft EIS published earlier this year, and has the following comments.

In general, we wish to commend Bonneville on the thoroughness of this analysis. The environmental effects and possible mitigation measures for various generic resources under consideration are described in detail and in language that is easy to follow. The Appendices also contain a wealth of useful background information. Below are some more specific suggestions, questions, and comments.

### NEPA Review

We are pleased to see that Bonneville has undertaken this NEPA review. We understand that this EIS is to support decisions in this year's as well as future Resource programs. We support this approach especially as Bonneville clearly intends to complete site-specific analyses, and an assessment of cumulative impacts on the existing system will be undertaken, as needed.

### Resource Impacts

Bonneville's descriptions of the environmental impacts and possible mitigation measures for each resource are adequately detailed. However, there is no easy way for the reader to compare the severity of the impacts of various resources on different elements of the affected environment. We suggest you add a matrix that would summarize this information. The charts used in Bonneville's Puget Sound Area Electric Reliability Plan EIS are an excellent method for displaying the relative severity of impacts of different resources in a qualitative manner.

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City of Seattle — City Light Department, 1015 Third Avenue, Seattle, Washington 98104-1198, Telephone: (206) 625-3000, FAX: (206) 625-3709

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Charles Alton  
Page 2  
July 6, 1992

Environmental Impacts of Conservation Measures

Seattle City Light supports the conclusion in the DEIS that the first priority conservation resources in the Resource Program are environmentally benign. The DEIS mentions minor concerns about the disposal of occasional hazardous materials removed during retrofits and about indoor air quality.

We note that the conservation measures funded under the program do not introduce hazardous materials into buildings. Any hazardous materials are already installed and will inevitably be disposed of in some manner. We have a far better chance of disposing of them in a controlled, safe manner through a concerted conservation program than if their disposal is left to chance through random replacement by building owners as the equipment fails in service. Thus, any mitigation of hazards through careful disposal and proper handling in a Bonneville conservation program represents a net improvement over the status quo rather than a negative effect for the programs to overcome. We fully support Bonneville's program objectives of proper handling and disposal.

We also agree with the conclusions in the DEIS that indoor air quality (IAQ) is not affected adversely by energy-efficient building design or retrofit, in any sector. We support the program's prescriptive requirements, such as ventilation requirements, to ensure that neither IAQ nor energy savings are compromised.

Base Case Conservation Alternative.

Base case conservation in this DEIS represents a good estimate of the achievable conservation which would be produced by reliable, currently available, proven conservation measures.

However, there is general consensus in the Region that uncertainty exists in estimating conservation potential. There is no overwhelming body of evidence to support any specific estimate of the "true" size of the conservation resource. Seattle City Light bases its resource analyses on the same conservation supply curves as those which lead to Bonneville's base case estimate, and therefore tends to support conservation estimates in this range. On the other hand, future revisions (up or down) to estimates of the conservation potential would not be a startling or unexpected result.

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Given this uncertainty, it is prudent to examine the effects of different levels of conservation acquisition. The "high case conservation" alternative, in fact, provides such a sensitivity analysis.

Either base case or high case levels result in the same near-term policy implications: each represents a dramatic ramp-up of current conservation activity and will be a profound challenge for utilities, trade allies, and end-users.

#### New and Emerging Conservation Technologies

The High Conservation alternative in the Draft EIS links a higher quantity of conservation resources to the introduction of new and emerging measures (beyond those assumed in the Bonneville/NPPC supply curves). Not surprisingly, this higher conservation total results in changes in the resource mix as well as the expected environmental consequences. Again, we agree that this analysis is appropriate as a sensitivity run.

However, the results of this analysis would be no different if the increase in conservation were caused by something else quite unrelated to the introduction of new conservation measures. It is conceivable that the high case conservation level could be reached simply because the base case supply curve analysis underestimated what the list of existing, reliable, proven conservation measures could produce. Other than size of the conservation resource, there is no special linkage between the new measures and environmental consequences.

Since the known environmental impacts of the new and emerging conservation measures are analyzed in this report, Seattle City Light strongly believes that when these additional measures, such as those described under the high case, become reliable and available, they should automatically become part of the list of activities approved in the Resource Program EIS. (Over time, experience will permit more reliable estimates of the conservation potential of the standard measures already included in the base case, also resulting in changes in base case size.)

If the base case, rather than the high conservation case, is chosen for the preferred alternative in the Final EIS, that choice should not in any way imply that introducing any of the new measures described in the high case would require modification of the EIS or further environmental review. We suggest explicit language in the final EIS to make this clear.

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July 6, 1992

#### Nuclear and Coal Plants

Both the Base case and the Conservation Alternative show WNP1 being completed in 1999. We find this highly unlikely and cannot support such an outcome. Was this resource selected in these alternatives partly because there is, as yet, no accounting of environmental externalities for nuclear projects? According to page D-77, environmental cost adjustments for nuclear were under development and to be available by April 15, 1991. We find that Table D-13, which lists draft environmental cost adjustments by resource type, does not include nuclear. Please clarify the need for WNP1 in these alternatives in light of its high environmental impacts. We again question inclusion of nuclear resources in the preferred alternative, and recommend substituting resources shown to be both cost-effective and more environmentally benign.

Also, Table 4 on page F-4-19, which is an example of ISAAC output showing resources in the high conservation alternative, shows two coal and two nuclear plants being completed within the next ten to fifteen years. Please explain this result.

#### Environmental Costing

While supporting Bonneville in its efforts to quantify environmental externalities, Seattle City Light is compelled to reiterate that these are initial, partial estimates, which do not include (or under-represent) true, life-cycle impacts from fuel extraction to decommissioning and from human health to ecological damage. Consequently, in general, these costs are too low. One major problem is that Bonneville has not included CO<sub>2</sub> impacts in this round. This omission has a major impact on the costs associated with fossil fuel plants. We encourage you to continue this effort to refine these values and to publish a schedule in this report for accomplishing further work on this issue. Certainly, caution needs to be exercised in using these partial estimates. Meanwhile, a combination of quantitative and qualitative criteria must be used in selecting new energy resources.

Seattle City Light was involved in the Working Group Bonneville convened to discuss environmental externalities costing. In reviewing this report, we note that the environmental costs for several of the resources have changed since the last draft that the Working Group saw.

The value of geothermal has increased from 0.5 to 1.0 mills/kwh. We support the direction of change because we believe the impacts of this resource on local ecosystems can

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be severe since the resource is often found in areas with unique scenic, natural or wilderness features. What were the reasons for Bonneville's revising these numbers?

The value of solar has also increased (from 0.5 to 1.0 mills/kwh). It is unclear in the report why this decision was made and what specific costs were added.

Depending on site-specific characteristics, new hydro and geothermal costs are likely to be significantly higher than the generic numbers presented in this report. We believe that it is an excellent policy to eliminate projects in Protected Areas. However, there may still be significant aesthetic or recreational impacts (e.g. for recreation on a white water section of a river). These impacts could increase the environmental costs of individual projects considerably.

Since "Land, Water and Other" impacts can make up a large proportion of the value assigned to various resources, Bonneville should define what kinds of impacts are captured by this proxy value. It is also important to explain that land impacts are not necessarily equal to the area of land occupied by the generating resource. It appears that not all geothermal, cogeneration, and non-thermal resources carry this proxy cost. This deserves some explanation. For example, in the case of cogeneration, equating the land proxy costs to zero may be justified for projects that are remodels/additions to existing steam plants. However, new cogeneration projects, whose cost-effectiveness is partly justified by production of electricity, should have partial land costs assigned to the electricity generation.

Given Bonneville's assumptions regarding criteria air pollutants, land, water, and other impacts, etc., the relative ranking of the thermal resources appears logical and is generally acceptable. However, in part because CO<sub>2</sub> impacts are not included in the cost of thermal resources, the resulting values are far too low and lead to the absurd conclusion that more benign resources such as solar and additions to existing hydro have the same environmental externality costs as a new combustion turbine.

#### Load Growth

It is appropriate that Bonneville uses the High Load Growth estimates for a worst case analysis. However, it is unclear what you intend to do if that growth estimate does not materialize. What resource scenario would be your fall-back, and would the resource priority of the current Preferred

Charles Alton  
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July 6, 1992

Alternative be preserved? It should be clarified that Bonneville will pursue all conservation resources as the first priority, no matter what the load growth scenario.

Resource Costs

On page D-74 in Section 6, why are the costs for short term imports equal to zero? Do these contracts include energy exchanges?

Lastly, please add a table of contents in the beginning of Volume 2: Appendices. It would help greatly in finding different sections.

Thank you for the opportunity to comment on this important EIS. If you have questions on any of the above comments please feel free to call Lynn Best of my staff. Her phone number is (206) 386-4586.

Sincerely,

Handwritten signature of Lynn Best in cursive script.

Kirvil Skinnarland, Director  
Environmental Affairs Division

EE:pb



ASSOCIATION  
OF NORTHWEST  
GAS UTILITIES

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LETTER 48

July 15, 1992

Public Involvement Manager  
Bonneville Power Administration  
PO Box 12999  
Portland, OR 97212

**Re: Resource Programs Draft Environmental Impact Statement**

The Association of Northwest Gas Utilities appreciates the opportunity to comment on this document.

We encourage BPA to designate the "fuel switching" alternative as the preferred alternative. Then it should be renamed the "energy efficient" alternative because it is low cost and has the same or less environmental impacts as the base case alternative.

The EIS states it did not consider the "fuel switching" alternative because the cost and availability of fuel conversions have not been confirmed. We believe that the cost and technology of converting electric space and water heaters to natural gas have been long established and are well known and thoroughly documented. For example, please refer to the Snohomish County PUD/Washington Natural Gas Water Heating Pilot Program report or the Washington Water Power's November 13, 1991 presentation to the Fuel Choice Working Group on the 1991 Switch Saver Test Program Results. Availability is confirmed in the BPA load forecast. In fact, the BPA Resource Program EIS estimates 550 aMW of fuel conversion potential.

We encourage BPA to examine costs and availability in these documents and also BC Hydro/BC Gas' recent electric to gas fuel conversion program. This documentation and BPA's own forecasts should leave little or no doubt about the cost-effectiveness, reliability, and commercial availability of fuel conversions.

Sincerely,

John C. Jones  
Executive Director

IPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT

The comment period ends on July 6, 1992.

The Bonneville Power Administration (BPA) is interested in your comments on this Draft Environmental Impact Statement's (EIS) preferred alternative. We also invite you to offer comments on any other portion of this Draft EIS.

Feel free to complete this form if it is convenient. Please fold and mail this form or send your comments to: BPA, Public Involvement Manager, P.O. Box 12999, Portland, OR 97212-0999.

You Need more emphasis on acquiring renewable resources. I urge you to expand this further. I Recommend a wind site at Rattlesnake Hills. Also recommend use of photovoltaics everywhere practical - such as repeater stations, remote point power supplies, roadside emergency stations etc. Wind, solar etc. will have to be used in the future - The sooner we start "learning how" the better -  
The draft states that it includes environmental costs. It may include idealized costs - But - you could not have included the expenses that have and will be generated to find a waste repository for spent nuclear fuel. If you added in <sup>all</sup> the costs that have gone into <sup>investigating</sup> the Nevada storage site the nuclear costs would look very different!

(attach blank sheets if required)

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SEATTLE WA 98111

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**State of Idaho**  
**DEPARTMENT OF WATER RESOURCES**

1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000  
 Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS  
 GOVERNOR

R. KEITH HIGGINSON  
 DIRECTOR

RECEIVED BY BPA PUBLIC INVOLVEMENT LOG #: DRPEIS-01-050	
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July 22, 1992

Public Involvement Manager  
 Bonneville Power Administration  
 P.O. Box 12999  
 Portland, Oregon 97212

Dear Mr. Alton:

Idaho Department of Water Resources personnel have reviewed the Resource Programs Draft Environmental Impact Statement (RPEIS). We offer the following comments and recommendations.

The Department is supportive of the emphasis on conservation in the proposed alternatives. With electricity use per Northwest customer higher than the U.S. average more emphasis must be given to conservation. Additionally, the conservation resource itself does not effect shaping of the hydro system (Vol. 1, pg. 5-15). Only the addition of other resources to the conservation stacks affect the load/resource balance and system shaping. While we lend support to the preferred "Conservation" alternative, we would urge the BPA to venture closer to the "High Conservation" alternative as a preferred course of resource acquisition. Although cost and supply may not be verified for a high conservation resource, the RPEIS confirms that "more conservation is expected to be available in the future than the supply curves indicate" (Vol. 1, pg. 4-26), and the impacts on water consumption and thermal discharge are significantly less with the "High Conservation" resource portfolio (Table S-5, Summary, pg. S-15).

The Department, however, would like the BPA to propose refined alternatives in the final RPEIS. The simple rearrangement of the resource stacks does not fully explore *alternatives*. For example, the fuel switching resource could be added to the other alternatives for a new mix of energy sources. Nuclear resources, which have the greatest impact on water consumption (Vol. 1, pg. 5-47), should be displaced in the conservation alternatives by adding energy acquired through lower-cost fuel switching and an amplified cogeneration package (lower environmental costs). Other resource mixes assembled along these lines may be analyzed. At least one alternative in the RPEIS should discuss demand management strategies in contrast to traditional supply management, particularly in the face of Northwest electricity consumption rates.

Referenced comments on the Draft RPEIS are:

Summary, pg. S-8

The exclusion of the aluminum smelting industry from conservation programs is not explained. A cost/benefit analysis of conservation measures for the industry should be included to explain the reasoning.

Vol. 1: Environmental Analyses

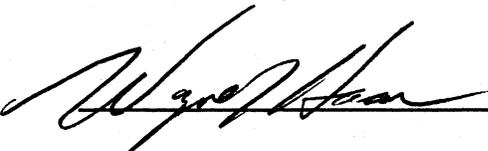
- pp. 3-3;  
5-59            It appears that a great deal of time and space are spent on impacts and concerns with regard to conservation measures (i.e., PCBs, CFCs, etc.) in comparison with other resource stacks, particularly when the impacts will be induced with or without BPA or other conservation programs by fixture failure or appliance manufacture.
- pg. 3-23        Table 3-12 shows erosion impacts for low-pressure sprinkler and drip irrigation systems. Sprinkler and drip irrigation systems greatly reduce soil erosion compared with traditional flood and furrow irrigation methods. The conservation measures proposed under Irrigation and Agricultural Conservation (3.1.4) would reduce soil erosion rather than create a greater impact. Table 3-12 and the related discussion are misleading in this regard.
- pp. 3-25  
to 3-44        The "Renewables" alternative highlights hydropower, geothermal, wind, and solar resources. Each section includes an "Impact" table with the exception of hydropower. In addition to adding a table to this section, the potential impacts of hydropower development on water quality and water use, other than fish and wildlife, should be discussed in this section.
- pg. 4-1        "The resource actions proposed in future Resource Programs are expected to fall within this range." *Resource actions* is a confusing term. It could be replaced with a similar sentence from the Summary -- "The *resource acquisitions* proposed in future....."
- pp. 4-8  
to 4-9        (1) The consequences of a "No Action" alternative include an increased emphasis on and investment in research and development (seems like a generally good idea). Research and development should be encouraged with the other alternatives.
- (2) Consequences of the "No-Action" alternative are described in histrionic terms. An assumed consequence of the alternative is that socio-economic impacts would be major and adverse, new industries and residents would be discouraged from relocating

to the region, many existing industries and residents would likely emigrate, and private power developments would lead to increased population dispersion.

If prices stabilize at the national average why would the Northwest be any more unattractive than any other region of the United States without a federal power marketing authority? If the population decreases then the energy demand would also decrease. This must be taken into calculations if the assumptions are followed. Given relative electricity costs in other parts of the country and the costs of moving, a large out-migration might be as unlikely as likely. And finally, given the *increased* costs of dispersed services, economic forces will likely press toward greater population concentrations or urbanization.

- pp. 4-11 to 4-15 A detailed costs and supply table is provided for resource stacks with the exception of conservation.
- pg. 4-15 There is no discussion of generation potential at existing dams or hydropower projects as opposed to the need for new hydropower projects.
- pg. 5-58 The paragraph on operations employment fails to recognize or detail permanent employment and business opportunities in the conservation industry in contrast to those provided by a power plant.

Thank you for the opportunity to comment on the Resource Program Draft Environmental Impact Statement.



Wayne Haas, Administrator  
Planning and Policy Division

\*The Boise BPA Office informed our staff that comments were due July 23, 1992, and could be sent to the Boise Office.

STUART A. SUGARMAN  
ATTORNEY AT LAW314 N.E. 71st Avenue  
Portland, OR 97213  
Res. (503) 255-7221

23 July 1992

Public Involvement Manager  
Bonneville Power Administration  
P.O. Box 12999  
Portland, OR 97212

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DRPETS-01  
051  
92RA-2  
016RE: Bonneville Power Administration's 1992 Resource Program  
VIA FAX AND MAIL

Dear Public Involvement Manager:

I write these comments on behalf of the Oregon Natural Resources Council (ONRC). ONRC is concerned with what the Bonneville Power Administration (BPA) calls "Potential Types of Acquisitions". See Resource Program page 18. BPA does not list renewable resources as a "Potential Type of Acquisition", but we believe renewable energy such as geothermal energy would fall within this category. We are concerned that BPA has already decided to help construct geothermal power plants in eastern Oregon without having completed the necessary public review process.

The Resource Program, as we read it, does not include a decision which can be remotely interpreted as a decision to construct geothermal plants in eastern Oregon. In fact, since this is only the second draft of the generally worded Resource Programs document, it includes no Record of Decision at all.

Likewise, the Resource Programs Environmental Impact Statement Draft II (EIS draft) does not include a decision to help construct geothermal power plants in eastern Oregon. BPA in the EIS draft considers 13 alternatives and recommends an alternative which would include 45 aMW of geothermal energy. As you know, this is only a preferred alternative and not a final decision to develop geothermal energy.

These two drafts are not final and merely discuss what might become a final decision. Concurrent with these actions, BPA appears to be heavily involved with the construction of three future geothermal plants in eastern Oregon. We believe these three plants will be at Newberry, Glass Mountain, and Vale. In fact, BPA is already working on EISs for these "pilot projects" and expects to complete these documents in 15 to 21 months. How is it that the Resource Program and the EIS draft discuss whether to develop geothermal energy while BPA has already decided to go ahead?

The National Environmental Policy Act (NEPA, 43 U.S.C. 4371 et. seq.) and its implementing regulations (40 C.F.R. 1500 et. seq.) require BPA to consider the impacts of major federal actions significantly affecting the human environment. Specifically, 40 C.F.R. 1503.1 and 1508.10 require BPA to include the public to the extent practicable and to solicit appropriate information from the public. Case law interpreting NEPA requires NEPA documentation (ie. EIS or EA) before BPA commits an irretrievable commitment of resources to a such a project. Scientists' Institute for Public Information, Inc. v. Atomic Energy Commission, 481 F.2d 1079, 156 U.S.App.D.C. 395 (D.C. Cir. 1973). BPA appears to have ignored this mandate. Thank you for this opportunity to comment.

Sincerely,

  
Stuart Sugarman

BPA F 1210.07  
(04-92)

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

DRAFT RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT

The comment period ends on July 6, 1992.

The Bonneville Power Administration (BPA) is interested in your comments on this Draft Environmental Impact Statement's (EIS) preferred alternative. We also invite you to offer comments on any other portion of this Draft EIS.

Feel free to complete this form if it is convenient. Please fold and mail this form or send your comments to: BPA, Public Involvement Manager, P.O. Box 12999, Portland, OR 97212-0999.

I think we should cut back on use of water permanently.  
We can learn to conserve - all resources.

No Nuclear energy need -

(attach blank sheets if required)

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DOE/BP-2077  
February 1993  
7C