

BEFORE THE NUCLEAR AND THERMAL
ENERGY COUNCIL

In the Matter of the Application of)
PORTLAND GENERAL ELECTRIC COMPANY,)
an Oregon Corporation, for a Site)
Certificate to construct and oper-)
ate certain thermal power plants)
the Boardman Site, Morrow)
County, Oregon.)

FINDINGS OF FACT, FINDINGS
OF ULTIMATE FACT, CONCLUSIONS
OF LAW, AND ORDER

Dated February 27, 1975

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BEFORE THE NUCLEAR AND THERMAL ENERGY COUNCIL
OF OREGON

In the Matter of the Application) of) PORTLAND GENERAL ELECTRIC COMPANY,) an Oregon corporation, for a Site) Certificate to construct and oper-) ate certain thermal power plants) at the Boardman Site,) Morrow County, Oregon.)	FINDINGS OF FACT, FINDINGS OF ULTIMATE FACT, CONCLUSIONS OF LAW, AND ORDER
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This proceeding involves an application by Portland General Electric Company ("PGE"), an Oregon corporation, for a site certificate to construct and operate two nuclear-fueled and one coal-fired thermal power plants, together with associated supporting facilities, in Morrow County, Oregon.

The following appearances were entered during the course of this proceeding;

PGE	H. H. Phillips and Warren G. Hastings, Attorneys at Law, Electric Building, 621 S. W. Alder Street, Portland, Oregon, 97205
Council's Staff	Richard M. Sandvik, Assistant Attorney General, 100 State Office Building, Salem, Oregon, 97310
Department of Environmental Quality	Raymond Underwood, Assistant Attorney General and Chief Counsel, 555 State Office Building, Portland, Oregon, 97201
Department of Geology and Mineral Industries	Arnold B. Silver, Assistant Attorney General, 555 State Office Building, Portland, Oregon, 97201
Limited Appearances	(See Appendix "A")

PROCEDURAL HISTORY

1. This proceeding for site certification is governed by pertinent provisions of ORS 453.305 through 453.595 and by Oregon's Administrative Procedures Act, ORS Chapter 183.

2. PGE filed a notice of intent to file an application for a site certificate with respect to this site on February 16, 1972, accompanied by the \$5,000 fee required by ORS 453.335. The Nuclear and Thermal Energy Council ("Council") gave public notice of this filing on February 16, 1972.

3. Effective October 15, 1972 the Council adopted rules establishing procedures governing site certification hearings (OAR 345-15-005 to 345-15-055) and prescribing information required in site certificate applications (OAR 345-25-001 to 345-25-049).

4. The proposed site is adjacent to the U. S. Navy's Boardman Weapons System Training Facility ("WSTF"), a practice bombing range. On November 29, 1972, PGE requested the Council to hold a hearing and consider whether it would recommend certification of the site if the Navy continued use of the WSTF. Hearings were held on this issue at Portland on January 15, 1973 and at Boardman, Oregon on January 19, 1973. In conjunction with these hearings, the Council retained an independent consultant to assess the probability of a Navy plane striking a power plant at the site. At a meeting on October 9, 1973, after reviewing the evidence, the Council stated its opposition "to any operation of a nuclear power plant at the Carty Reservoir site near Boardman as long as the Boardman Bombing Range is still in use by the military."

5. PGE filed its application for certification of the site pursuant to ORS 453.345 (1), accompanied by a fee of \$118,000 required by ORS 453.405, on February 28, 1973. The application was accepted for filing by the Council on March 13, 1973. On that date, the Council appointed the Morrow County Planning Commission as a special advisory group pursuant to ORS 453.475 (1), and instructed the Council's staff to circulate the application to affected state agencies pursuant to ORS 453.345 (3).

6. PGE amended its application in June, 1973, April 1974, July 1974 and on October 1, 1974. The July, 1974 amendment added a second nuclear-fueled plant at the site, and PGE paid an additional fee of \$33,000.

7. By letters dated March 16, 1973 and July 19, 1973, the Council's staff pointed out deficiencies in PGE's application and requested additional pertinent data. PGE addressed these comments with its amendments to the application.

8. Between January and June 1974, a series of six workshops were held whereby PGE, the Council's staff, affected state agencies, Morrow County and interested members of the public reviewed and commented upon the site certificate application. All state agencies involved in review of the site certificate application were urged to attend the workshops in order to make known their comments, concerns, or needs for additional information. Public notice of the workshops was given. Minutes were kept of each workshop. (See Exhibit S-1)

9. On July 3, 1974, the Council's staff wrote each affected state and local agency, requesting its final conclusion and specific recommended conditions regarding PGE's application pursuant to ORS 453.345 (3). The

responses are embodied in Exhibits 0-1 through 0-16. While many agencies recommended conditions for inclusion in the site certificate, none recommended against issuance of a site certificate.

10. On August 7, 1974, the Council's staff, pursuant to ORS 453.355, retained an independent consultant, Pollution Research and Control, Inc., to perform an independent evaluation of the air quality impacts of the Boardman coal-fired power plant. That evaluation is contained in Exhibit S-3.

11. On August 5, 1974, the Council gave notice pursuant to ORS 453.365 (1) and its rules that it would hold public hearings on the Application above referred to and fixed 1:30 p.m. and 7:00 p.m. on October 1, 1974 at Riverside High School, Boardman, Oregon, and 9:30 a.m. and 7:00 p.m. in Room 36, State Office Building, Portland, Oregon as the times and places for such hearings. A notice of such hearing was served upon the Applicant and was given wide public distribution. The Notice of Hearing provided that the basic issues to be considered during such public hearings were to be:

- (a) Whether the Applicant's Application for a Site Certificate should be granted in full or in part; and
- (b) If the Application was granted in whole or in part, what conditions should be imposed upon the Applicant in the construction and operation of the thermal power plants.

12. Pursuant to the Notice of Hearing and on September 6, 1974 a prehearing conference was held in Portland, Oregon before William C. DuValle, a hearings officer assigned to this matter by the Council. By order of the Hearing Officer, the prehearing conference was continued to

and concluded on September 26, 1974. Present during part or all of said conferences were the Applicant, the Council, Mr. Lloyd Marbet and Mr. David I'm One. Following the pre-hearing conference on September 6, 1974, Mr. Lloyd Marbet filed a petition to intervene in this proceeding as a party.

13. On October 1, 1974, the Council met at Boardman, Oregon prior to the evidentiary hearing on the Applicant's Application to consider the Petition to Intervene filed by Mr. Marbet during the course of which Mr. Marbet elected to withdraw his petition and participate only as an interested person.

14. Following disposition of the Petition to Intervene, the Council convened the hearing on the Application at the time and place specified in the Notice of Hearing. At such time and during the course of the hearings at Boardman and Portland, the hearing's officer appointed by the Council to conduct such hearings, Mr. William C. DuValle, allowed limited appearances to be made by the persons listed in Appendix "A". The Applicant and Staff, as parties, were also present and each produced sworn testimony and each cross-examined the other's witnesses in support of their respective positions.

15. At the conclusion of the public hearings, PGE and the Council's staff submitted proposed findings, conclusions and site certificates on October 31, 1974, and replies thereto on November 8, 1974. PGE and the staff filed briefs on December 2, 1974. A supplementary brief on air quality was filed by PGE on January 3, 1975. The Council staff replied to that brief on January 13, 1975.

16. The Council's deliberations on the Boardman application were conducted on December 10, 1974, January 21, 1975, January 27, 1975, February 11, 1975 and February 24, 1975. A stipulation regarding air quality entered into by PGE, the staff of the Department of Environmental Quality and the Council's staff was accepted by the Council on February 11, 1975.

17. Subsequent to the "contested case" hearing the Council adopted rules, effective March 10, 1975, governing the construction and operation of any thermal power plant and associated facility pursuant to a site certification agreement.

FINDINGS AND CONCLUSIONS

To recommend execution of the site certificate, the Council must conclude from the evidence at the "contested case" hearing that construction and operation of the thermal power plants can be accomplished in a manner consistent with protection to the public health, safety, and environmental policies of the state. In reaching this conclusion, the Council must consider the evidence presented in terms of the standards set forth in ORS 453.515 (1)-(8).

The following findings and conclusions of the Council, and the proposed Site Certificate Agreement attached hereto as Appendix "B" ("Site Certificate") are based upon the record developed in the "contested case" proceeding.

FINDINGS OF FACT

I. DESCRIPTION AND STATUS OF THE PROJECT

A. The Plants

1. By its amended application, PGE seeks authority to construct and operate the following thermal power plants:
 - a. Two 1,260 (\pm 50) megawatt nuclear-fueled power plants.
 - b. One 550 (\pm 50) megawatt coal-fired power plant.
2. PGE also seeks authority to construct and operate certain associated supporting facilities, including a 5,000 acre cooling reservoir, transmission lines, a pumping plant and make-up water pipeline, barge unloading facilities, access road, railroad spur, coal handling and storage facilities, and ash disposal sites.
3. The thermal power plants and associated facilities are to be located on the site as shown in the map attached as Figure 1 of the site certification agreement. Specific associated facilities may need to be constructed at locations at variance with such map due to terrain conditions.
4. At times herein, the thermal power plants and associated facilities will be referred to as "the Boardman Project."

B. The Site

1. The Boardman Project will be constructed and operated on property in Morrow County, Oregon, as described in the Site Certificate. (See Ex. A-1, Chapter 2)
2. At present PGE neither owns nor controls any of the property upon which the Boardman Project is to be constructed and

operated. (Tr. 119-126; Ex. A-1, Table 2-1) The portion of the site where the thermal power plants will be built is owned by the State of Oregon Department of Veterans Affairs and is under long-term lease to Boeing Agri-Industrial Company ("Boeing"). (Tr. 85-86) The easterly portion of the land necessary for Carty Reservoir is owned by the U.S. Navy. (Tr. 118,124)

3. PGE and Boeing have reached a tentative agreement whereby PGE can acquire from the State of Oregon the land necessary for the thermal power plants. (Ex. A-2) In exchange for subordination of Boeing's leasehold interest, PGE will provide irrigation water storage capacity to Boeing. (Tr. 90)
4. As shown on Table 2-1 of Exhibit A-1, PGE must negotiate successfully with a variety of property owners to acquire control of the site.
5. PGE has represented that it will acquire, by ownership, lease, easement or otherwise, the right to control all activities on the site and access thereto. (Tr. 121) An "exclusion area" of 800 meters surrounding the nuclear power plants is required by 10 CFR 100.
6. Because of its continuous monitoring and regulatory responsibilities under ORS 453.415, 453.425, 453.505, 453.545, 453.555, and 453.994, the Council needs to be assured prior to commencement of construction that PGE has the represented degree of control over the site.

C. Status of Boardman Project

1. As noted in the "Procedural History" the Council is opposed

to operation of nuclear power plants at the Boardman site so long as the U.S. Navy is using its adjacent Weapons System Training Facility. There is no evidence in the record that the U.S. Navy intends to cease operating its Boardman WSTF by a date certain.

2. Because of this situation, PGE intends to defer construction of the Boardman nuclear power plants and proceed with construction of two 1260 MW(e) nuclear power plants at its Pebble Springs site, if necessary approvals are obtained. (Tr. 175-176)
3. PGE is requesting the Nuclear Regulatory Commission (NRC) to approve Boardman as a "designated site" for two nuclear power plants. It has withdrawn its application before the NRC for a construction permit.
4. In light of the deferral of their construction it cannot be determined with accuracy when, and indeed if, the Boardman nuclear plants will be needed. Furthermore, it is impossible to assume that changes in environmental, demographic and technological information will not take place prior to the time construction of the Boardman nuclear plants eventually commences.
5. No firm decision has been made by PGE's Board of Directors to proceed with construction of the Boardman Coal Plant, even if site certification is obtained. (Tr. 250, 271) To achieve the 1979 target date for the plant described by PGE (Tr. 27), binding decisions on the purchase of turbine generators would have to have been made by October 10, 1974. (Tr. 282)

6. At the hearings, PGE represented that it agreed to provide the Council at least six months' advance notice prior to commencing work on a plant, the construction of which is deferred after site certification, to allow for a review of changes in circumstance and further public hearings.
(Tr. 185, 179)

II. IMPACT OF THE BOARDMAN PROJECT UPON THE PUBLIC HEALTH, SAFETY AND WELFARE

A. Boardman Nuclear Plants

1. In reviewing PGE's proposed Boardman nuclear power plants from the standpoint of their impact upon the public health, safety and welfare, evidence was considered on the subjects of radioactive emissions, transportation and storage of radioactive wastes, and the diversion or theft of fissionable materials.
(See Ex. A-1, Chapters 3 and 17; Ex. S-1, Attachment 4.)
2. Design, construction and operation of the nuclear plants is also subject to the jurisdiction of the NRC.
3. Both nuclear plants will employ Babcock and Wilcox Company pressurized water reactor nuclear steam systems, rated at 3600 MW(t) core power. PGE represented that its nuclear-fueled plants will meet the NRC design criteria contained in 10 CFR 50, Appendix A. (Ex. A-1, p. 3-5)
4. Plant design is such that two nuclear-fueled plants can be located on the site without the possibility of interacting accidents. (Ex. A-1, p. 3-5)
5. Because of plant design, there will be no discharge of liquid radioactive effluents to any surface or ground waters.

(Ex. A-1, p. 17-3)

6. Gaseous radioactive materials, including noble gases, halogens, tritium and other nuclides in particulate form, will be released to the atmosphere during normal operation of the plant. (Ex. A-1, p. 17-7) In-plant collection, processing and discharge systems are designed to reduce gaseous radioactive emissions to the lowest practicable level, consistent with 10 CFR Parts 20 and 50. (Ex. A-1, p. 17-7)
7. Estimated radiation doses to man from the plant, directly and via the food chain, are below the limits specified in 10 CFR Parts 20 and 50. (Ex. A-1, p. 17-12)
8. The Council's staff, based upon its review of the Boardman nuclear plants, concluded that the NRC regulations on radioactive emissions are adequate to protect public health and safety, and must be met. (Ex. S-1, pp. 4 & 5)
9. The State Department of Geology and Mineral Industries reviewed the geology and seismology of the site, and recommended the condition on seismic design contained in the site certificate relating to the nuclear plants. (Ex. 0-13)
10. PGE represented that the nuclear plants would be fueled with slightly enriched uranium dioxide, and the staff conducted its review on the basis of that representation. (Ex. A-1, p. 3-3; Ex. S-1, p. 21) At the hearing PGE stated it was considering the use of plutonium recycle fuel. (Tr. 201) The basic issue regarding the use of plutonium-enriched fuels is the adequacy of protective measures against diversion or theft of a material susceptible of being manufactured into a clandestine nuclear

- weapon. (Ex. S-1, p. 21) This issue was not addressed by PGE during the course of these proceedings.
11. The Council's staff also reviewed the generic issues of nuclear safety and transportation and disposal of radioactive materials, and concluded that, subject to the conditions in the Site Certification Agreement regarding emergency planning, and the representations of PGE regarding on-site storage of radioactive materials and the transportation of radioactive wastes, no substantial threat is posed to the public health, safety or welfare. (Ex. S-1, p. 4)
 12. As noted in the "Procedural History," the Council has concluded that operation of a Naval bombing range adjacent to the nuclear power plants increases the risk of a major accidental emission of radioactive materials.
 13. The Boardman Nuclear Plants will cost approximately \$1.25 billion to construct. (Ex. A-1, p. 22-2) Thus, unless construction is prohibited until the U.S. Navy commits to abandon the WSTF, large investments may be made upon a speculative hope. (Ex. S-1, p. 19)
 14. ORS. 453.590, and procedures developed at other nuclear power plants in the United States, indicate that PGE should prepare a plan for handling accidents or incidents which conceivably could occur in the operation of the Boardman Nuclear Power Plants. (Ex. S-1, p. 22)
 15. Grave concern has been expressed recently regarding the adequacy of present procedures for safeguarding nuclear power plants against sabotage or enemy attack. (Ex. S-1, Attach. 4, Tr. 390)

B. Boardman Coal-Fired Plant

1. The most significant aspects of the Boardman coal-fired plant, in terms of public health, safety and welfare, are its impact upon air quality and the potential environmental impact associated with coal delivery, handling and storage, and ash disposal.
2. A coal-fired plant such as that proposed emits a variety of air pollutants, the most significant of which are particulate matter, sulfur oxides, and nitrogen oxides. (See Ex. 0-10)
3. At present, due to an absence of nearby industrial operations or population centers, ambient levels of pollutants at the site can be presumed to be far below DEQ ambient standards. (Ex. A-1, p. 13-7) PGE presented no data on ambient levels of pollutants at the site. Particulate concentrations caused by windblown dust and soil are occasionally high. (Ex. A-1, p. 13-7)
4. Both federal and Oregon law require that degradation of existing clean air be minimized to the greatest extent possible, and that the highest and best practicable treatment be applied to a new source of air pollution in order that it have a minimal effect on existing air quality. (See 42 USC 1857 (b)(1) and ORS 468.280)
5. The design status of the Boardman coal-fired plant may be described as conceptual (Tr. 278). PGE has not retained an architect-engineer to perform detailed plant design work. (Tr. 278)
6. PGE presently plans to rely exclusively on the use of low-sulfur coal for the minimization of sulfur oxide emissions in gaseous effluents. (Tr. 280) However, PGE expressed a commitment to meet future more stringent standards imposed by the Oregon

Department of Environmental Quality (DEQ) or the Federal Environmental Protection Agency (EPA). (Tr. 316)

7. No firm contracts presently exist for purchase of coal for the plant. PGE expects to acquire sufficient reserves of coal to last the useful life of the plant. (Tr. 292)
8. A possible ambient air quality degradation limit, due to the proposed plant, of 10% of Oregon ambient air quality standards has been suggested in the past. (Ex. S-1, minutes of Workshops # 5 and 6) PGE has not objected to such a limit.
9. Present EPA stationary source emission standards are applicable to the proposed plant (36 FR 24876, December 23, 1971).
10. The present state-of-the-art in particulate removal should permit removal of at least 99.5% of the particulate material in stack gases. (Ex. S-3, p. 15)
11. Mr. Gosselin, a consultant hired by the Council, stated that sulfur dioxide removal equipment was being utilized in several plants; however, he did not recommend its installation in the Boardman plant because he believes that existing types of scrubbers will not be the state-of-the-art at the time the plant goes on-line. Mr. Gosselin instead recommended that space be reserved and other measures be taken to facilitate possible future addition of such equipment. (Tr. 340) The cost of such design provisions was estimated to be \$1 million. (Tr. 341) The cost of sulfur oxide removal equipment was estimated at \$60 million. (Tr. 341) The Department of

Environmental Quality also recommended that provisions be included in the plant design for possible later addition of such equipment. (Ex. 0-10, p. 2, Tr. 361)

12. The above findings (B. 1 through B. 13) are based upon information presented at the hearing. Subsequent to the hearing, on February 12, 1975, the Council accepted a stipulation regarding air quality which was entered into by PGE, the DEQ staff, and the Council Staff. This stipulation contains additional facts regarding air quality aspects of the proposed Boardman coal plant, and also contains air quality conditions jointly proposed

for inclusion in the site certificate by PGE, the DEQ staff and the Council staff.

15. Up to 3 million tons of coal will be delivered to the plant each year, probably by rail. (Ex. A-1, p. 15-3, Tr. 301)
Both the storage of coal and the disposal of ash will be done at the site. (Ex. A-1, pp. 15-4 & 15-6) While it is technically possible to transport the ash back to the coal source, PGE has made only preliminary studies of the economic feasibility of doing so. (Tr. 197)
16. The site experiences relatively strong winds, particularly during the summer months. (Ex. A01, p. 2-3 and Table 9-6) The potential exists for an environmental problem from windblown coal dust and ash. The need to protect the environment and groundwater from rain-induced coal dust runoff is recognized by PGE. (Ex. A-1, p. 15-5)
17. PGE expects to generate about 160 acre-feet of ash per year and to dispose of it by conventional wet or dry methods at the site. (Ex. A-1, p. 15-6) It plans to cover the deposited ash with indigent topsoil as soon as practicable. (Ex. A-1, p. 15-7)
18. PGE is investigating the possibility of burning the light combustible fraction of shredded solid waste as a supplementary fuel. (Ex. A-1, p. 15-3) Based on experience by Union Electric Co. in St. Louis in burning such material it is generally felt that degradation of stack-gas cleanup equipment due to burning such material would be minimal. (Tr. 300)

C. Associated Facilities

1. Carty Reservoir

- (a) Cooling water for the three thermal power plants will come from Carty Reservoir, a 5200-acre man-made lake to be constructed at the site to store water pumped from the Columbia River. (Ex. A-1, pp. 10-4 and 10-5) A final design for Carty Reservoir was not available for the hearings.
- (b) Carty Reservoir will be constructed with a capacity 35,000 acre-feet in excess of that necessary to provide for cooling. The excess capacity, paid for by PGE (Tr. 232), will be used by Boeing Company as storage for water to be used to irrigate 20,000 to 35,000 acres of land. (Tr. 235-236) PGE and Boeing have reached a tentative agreement on their future relationship regarding control of the site and use of Carty Reservoir. (Ex. A-2) Boeing will control the right to use the 35,000 acre-feet of irrigation storage capacity. (Tr. 233)
- (c) Chemical constituents in the waters of the Columbia River will achieve increased concentration in Carty Reservoir due to evaporation. This buildup will be limited by drawdown of irrigation water. (Ex. A-1, p. 11-2) However, since waterfowl and wildlife will be naturally attracted to the reservoir (Ex. A-1, p. 18-13), and because the water will be used for irrigation purposes, it is necessary to set maximum chemical concentration levels at or below threshold levels. (Ex. S-1, p. 19)

- (d) Protection of the wildlife resources which will be attracted to Carty Reservoir must be anticipated.
(Ex. A-1, p. 18-14)
- (e) Effects of Carty Reservoir on meteorological conditions will be limited to occasional fogging or icing in the vicinity of the reservoir an estimated 478 total hours per year. (Ex A-1, p. 9-21)
- (f) Carty Reservoir will provide a closed-cycle cooling source for the thermal power plants, with no discharges to the Columbia River or other natural bodies of water in the normal course of operation. (Ex. A-1, p. 11-1)
Under very unusual circumstances, such as a need to perform maintenance of the reservoir's dams, Carty Reservoir will be dewatered into a flow easement down Sixmile Canyon to the Columbia River at a maximum rate of 435 cfs. (Tr. 228)

2. Pumping Plant and Pipeline

- (a) PGE must construct a pumping plant on the Columbia River and a make-up water pipeline from the river to Carty Reservoir. (See Ex. 1 to Site Certificate)
- (b) The average make-up water flow of 165 cfs. compares to an average annual flow of the Columbia River of 185,000 cfs.
(Ex. A-1, p. 10-6)
- (c) The Columbia River intake structure has not been finally designed, and must be designed in a manner which will provide maximum protection to the sport and commercial fishery resources on the Columbia River. (See Ex. 0-3)

3. Barge Unloading Facilities

- (a) PGE will have to construct a temporary barge unloading facility on the Columbia River to receive large plant components such as the reactor vessel (Ex. A-1, p. 7-5) Final design of the facility has not yet been completed.
- (b) The Morrow County Planning Commission expressed an interest in use of the barge unloading facilities by parties other than PGE. (Ex. 0-1) PGE has tentatively agreed to permit the Boeing Company use of the barge basin. (Ex. A-2, p. 6)

4. Transmission Lines

- (a) PGE will need to construct approximately 32 miles of new transmission lines in connection with the Boardman thermal power plants. The routing of such transmission lines will be as shown on Figure 1 of the Site Certificate.
- (b) The transmission lines, which connect the plants to the Northwest Power Grid and to the pumping plant (Ex. A-1, p. 14-6), will utilize approximately 1500 acres of sparsely-populated and non-forested land. (Ex. S-1, p.7) The routing of the 500 kv and 230 kv transmission lines was developed by PGE in consultation with Boeing and the latter's lessees, and is acceptable to such landholders (Tr. 250), and to Morrow and Gilliam Counties.
- (c) The 500 kv line crosses Oregon State Highway No. 74. The 230 kv line from Pacific Power and Light Company's Dalread substation to the Columbia River pumping plant will be visible from the Corps of Engineers' proposed Willow Creek Recreational Area. (Tr. 241-242) That line also parallels

I-80N for two and one-half miles at a distance of one-half miles (Tr. 241) and crosses I-80N to reach the pumping station.

- (d) Existing transmission line rights-of-way in the vicinity of the site are shown on Figure 1 of the Site Certification Agreement. PGE contends that its proposed associated transmission lines cannot be consolidated with these existing facilities because of existing and proposed agricultural developments. (Tr. 262-263)
- (e) The Highway Division has noted that transmission towers should be located a safe distance from highways as a precaution against collapse in high winds. (Ex. 0-7)

D. Aesthetics, Public Use, and Historic and Archeologic Sites

1. Aesthetics

- (a) Visibility of the Boardman thermal power plants from normally-travelled routes will be minimal. (Ex. A-1, p. 20-2)
- (b) Aesthetic judgments are essentially subjective. PGE will employ building and landscape architects to integrate the Boardman Project into its surroundings. (Ex. A-1, p. 20-1)

2. Public Use

- (a) PGE and Boeing are concerned that public access to Carty Reservoir and the non-excluded areas of the thermal power plants will interfere with their respective uses of the site. (Tr. 98-99, 127) Furthermore, they believe there are sufficient existing and potential recreational facilities in the area. (Tr. 126-127, 99)

- (b) Morrow County expressed an interest in the public use of Carty Reservoir for recreational purposes, if that could be accomplished in a manner consistent with operation of the power plants and the development of agriculture. (Ex. 0-1, Tr. 148)

3. Historic and Archeologic Sites

- (a) The route of the "Old Oregon Trail" passes approximately four miles south of the proposed site. (Ex. A-1, p. 14-5)
- (b) Several potential archeologic sites have been discovered, near or on the proposed thermal power plant site, which could provide new evidence about early human inhabitants of the Columbia Plateau. (Ex. A-1, p. 14-6)

E. Environmental, Effluent, and Performance Monitoring

1. ORS 453.505 requires the Council to monitor, on a 24-hour continuing basis, the environmental and ecological effects of construction and operation of the thermal power plants, including the transportation process for all radioactive materials.
2. ORS 453.505 states that the Council shall have access to the operating logs, records, and reprints of the certificate holder, including those required by the Federal Nuclear Regulatory Commission.
3. The State Engineer has recommended a program for monitoring the structural performance of hydraulic structures. (Ex. 0-2)
4. The Fish Commission and the Wildlife Commission have recommended that a program be undertaken to monitor fish screening efficiency at the plant water intake. (Ex. 0-12)

5. The State Engineer has recommended that a program be undertaken to monitor groundwater in selected locations near the plant to determine whether groundwater quality is being adversely affected by the plant or associated facilities. (Ex. 0-2)
6. The Department of Environmental Quality has recommended monitoring efforts for the coal-fired plants of the following types: (1) meteorological monitoring, (2) ambient air quality monitoring, (3) emission monitoring, and (4) soil and vegetative monitoring. (Ex. 0-10)
7. Pollution Research & Control Corporation, consultant to the Council on the coal-fired plant air quality aspects, has recommended that the Council look into (1) how a valid background level of potential pollutants can be established which will separate out effects of plant construction, and (2) monitoring efforts which might be undertaken to determine possible plant impacts on regional visibility. (Ex. S-2)
8. PGE has expressed no position on the matter of mobile air quality monitoring equipment for the coal-fired plant. (Tr. 311) Pollution Research & Control Co. has expressed concern as to whether the fixed monitoring stations will be properly positioned to assure that the maximum air quality impact is known. (Ex. S-3, p. 10)

F. Approvals

1. In the event a site certificate is issued for the proposed site, affected state agencies are bound by ORS 453.395 to issue the appropriate permits, licenses, and certificates necessary to construction and operation of the plants, subject only to conditions of the site certificate. The staff has solicited comments

on the site certificate application from these agencies, (Ex. S-1), and has listed all permits, licenses or certificates, which have been identified as necessary by either the agencies, PGE or the staff in the draft site certificate presented at the hearings. (Ex. S-2)

III. RULES OF THE NUCLEAR REGULATORY COMMISSION AND THE ENVIRONMENTAL PROTECTION AGENCY

A. Nuclear Regulatory Commission ("NRC")

1. The nuclear power plants constitute "utilization facilities" as defined in 42 USC 2014, and as such, their design, construction and operation are subject to the regulatory jurisdiction of the NRC.
2. PGE is seeking approval of the NRC that the Boardman Project will be constructed as a "designated site." It has withdrawn its application before the NRC for a construction permit.
3. Under ORS 453.505(1), the Council may not impose safety standards upon the operation of the nuclear power plants related to issues of radiological health and safety which are more stringent than those of the NRC.
4. PGE represented in its application that the nuclear power plant would be designed, constructed and operated to meet all NRC standards governing the emission of radioactive effluents. (Ex. A-1, Chapter 17)
5. The Council's staff has considered all comments, concerns and questions regarding the nuclear power plants expressed by the NRC to date. (Ex. S-1, p. 5)

B. Environmental Protection Agency ("EPA")

1. Federal statutes administered by EPA, particularly the Clean Air Act, as amended (42 USC 1857 et. seq.) and the Federal Water Pollution Control Act, as amended (33 USC 1151 et. seq.), and regulations adopted thereunder, were considered in reviewing the Boardman Project. These federal laws are implemented and enforced by Oregon's DEQ.
2. Carty Reservoir, the cooling facility for the plants, is basically a closed-cycle system. Water will be discharged from the reservoir to adjacent land for irrigation purposes. It is conceivable, but unlikely, that water from Carty Reservoir will be discharged to the Columbia River in emergency situations. A National Pollution Discharge Elimination System permit may be required under the Federal Water Pollution Control Act. (Tr. 357) EPA had not issued a final opinion on this question by the time of the hearings. (Tr. 357)
3. Controversy is occurring nation-wide over the issue of non-degradation of existing "clean" air, based upon the "protect and enhance" standard of 42 USC. 1857(b)(1). In other jurisdictions the EPA's approval of state air quality implementation programs which would have permitted "significant deterioration" of existing "clean air" have been overturned in court. See, e.g., Sierra Club v. Ruckelshaus (Dist. Ct. D.C., 1972) 344 F. Supp. 253, aff'd 412 US 541, 93 S. Ct. 277, 37 LEd 2d 140 (1973). The EPA recently circulated proposed regulations on "significant deterioration" for public comment. See the Federal Register of August 27, 1974. Thus, the extent to which a new coal-fired

plant may be permitted to degrade the quality of existing "clean" air is unresolved.

4. Council's staff and affected agencies have reviewed the Boardman Project and fashioned site certificate conditions in light of these existing laws and identified uncertainties.

IV. LAND AND WATER USE CHARACTERISTICS

A. The Boardman Project is located almost entirely within 100,000 acres of state-owned land presently leased to Boeing. Topographically, it occupies a relatively flat plain with gentle slopes descending into Sixmile Canyon. The region is semi-arid, having an average annual rainfall of nine inches, hot summers and strong winds.

(Ex. A-1, p. 2-3)

B. Population and human activities at the site are sparse. Boardman, the nearest town, is 12 miles northeast. Ione and Arlington are 12 miles south and 15 miles west, respectively. In 1973, these three towns had an estimated aggregate population of 1,115.

(Ex. A-1, pp. 2-3 and 2-4)

C. At present only 6,300 acres of the Boardman tract are under irrigation. Some land is used for livestock grazing. The physical appearance of the site is bleak. (Ex. 1, p. 14-4)

D. The U.S. Navy WSTF is located directly east of the Boardman Project, and Navy land will be required for the creation of Carty Reservoir.

(Ex. 1 to Site Certificate)

E. The site would utilize directly 41 sections of land. Carty Reservoir requires 5,000 acres, and 150 acres will be required for ash disposal. The thermal power plants themselves will occupy about two full sections of land. Transmission lines of approximately

32 circuit miles will occupy about 1,500 acres. Four miles of new road and an 11-mile rail spur will provide access to the plants.

(Ex. S-1, pp. 6 & 7)

- F. The 35,000 acre-feet excess storage capacity of Carty Reservoir will provide irrigation water for up to 20,000 acres, a significant benefit to the region. (Ex. A-1, p. 10-6)
- G. Aesthetically, the Boardman Project will necessarily have significant visual effect on the local environment. However, visibility of the plant from normally-travelled routes, including I-80N and OSHR 74 is limited. PGE has agreed to construct the Boardman Project in a manner which is aesthetically compatible with adjacent areas. (Ex. A-1, p. 20-2)

V. NEED FOR POWER

- A. PGE presently serves 1,091,000 customers within a service area of 4,250 square miles. It anticipates that its present customer distribution -- 46% residential, 29% industrial, 24% commercial and 1% miscellaneous -- will continue into the future. (Ex. A-1, p. 5-2)
- B. Assuming critical hydroelectric generating conditions, PGE forecasted its firm peak demand and resources and firm energy demand and resources through 1985-86. (Ex. A-1, Tables 5-2 and 5-3) It also presented a summary of loads and resources of the West Group Area of the Northwest Power Pool through 1993-94. (Ex. A-1, Table 5-4) Through 1985-86, these forecasts show an increase in firm peak demand and firm energy demand of 241%. Through 1993-94, the forecasted growth in peak and average loads is 265% and 245% respectively. These projections assume that Boardman Nuclear No. 1, Boardman Nuclear No. 2 and Boardman Coal Plant are on line in 1981-82,

1983-84, and 1978-79, respectively.

- C. There is evidence that, based upon last winter's energy crisis and recent electric rate increases, conservation will result in slower growth in peak and energy loads than forecast. (Ex. 0-9, p. 4) However, shortages of, and price increases in, alternative energy sources such as oil and natural gas tend to offset the benefits of conservation. (Ex. 0-9, p. 1 & 2)
- D. PGE is also seeking certification of a site at Pebble Springs, near Arlington, Oregon, for two 1260 MW(e) nuclear power plants. PGE's description of the need for power in both application proceedings is identical. (Tr. 174) PGE does not expect that all four nuclear power plants need to be on line by 1984-86. (Tr. 175) It requested that the warranty dates for completion of construction of Boardman Nuclear Nos. 1 and 2 be August 1991 and August 1993.
- E. The evidence of a need for power by 1991-1993 is less precise and persuasive than that related to 1984-1986. Both the Council's staff and the Public Utility Commissioner (See Ex. 0-9) analyzed the need for power primarily in the 1984-86 context.
- F. PGE intends to "bank" the authority to construct and operate the Boardman nuclear power plants, if granted. (Tr. 177-179)
- G. There is a need for measures to encourage energy conservation. (Ex. S-1, Attach. 5)

VI. BENEFICIAL USE OF WASTE WATER

- A. The irrigation use of the waters of Carty Reservoir will provide up to 6,000 jobs in rural eastern Oregon. (Ex. S-1, p. 12)
- B. From the standpoint of water quality Carty Reservoir will be safe for recreational use, including swimming, boating and water skiing. (Tr. 170)

- C. Wildlife and waterfowl will be attracted to the reservoir. (Ex. A-1, p. 11-2) Naturally-occurring vegetation, including cattails, reeds, rushes, willow and cottonwood trees, will develop around the reservoir, enhancing the physical appearance of a presently bleak landscape. (Ex. A-1, p. 18-13)

VII. COMPATABILITY WITH COUNTY REGULATIONS

- A. The Morrow County Planning Commission, special county advisory group on the Boardman Project, participated throughout the application review process. (Ex. S-1, p. 13)
- B. On August 9, 1974, a letter was received from Lois M. Allyn, Secretary to the Planning Commission containing certain recommendations. (Ex. 0-1)
- C. At the Boardman hearing, Mr. Gene Trumbull, a member of the Planning Commission, qualified certain of the recommendations contained in Ex. 0-1. (Tr. 138-140)
- D. While the site is presently zoned for farming, operation of thermal power plants is an authorized conditional use in the County zoning ordinance. (Tr. 139-140)
- E. Morrow County would prefer for PGE to seek an "Industrial" classification for the site, and file separate conditional use applications for the nuclear and coal plants. (Tr. 140)
- F. Mr. Trumbull also recommended that Carty Reservoir be made available for public access, compatible with operation of the power plants. (Tr. 140, 148-149)

VIII. ABILITY OF AFFECTED AREA TO ABSORB RESULTING GROWTH

- A. PGE estimates that one nuclear plant will require an average construction force of about 815 over a period of almost five years.

This work force may be larger and exist for a longer period of time if there is an overlap in the construction of all three plants. (Ex. S-1, p. 13) The impact of the construction work force will be felt from 1974 until perhaps 1991. (Ex. A-1, p. 22-3)

- B. The numbers of plant-related employees will decrease substantially once the plants are operational. About 72 employees are required to operate a nuclear plant. (Ex. S-1, p. 13)
- C. Irrigation projects associated with Carty Reservoir will enlarge agri-business in Morrow County. (Ex. S-1, p. 13)
- D. Four communities -- Boardman, Arlington, Hermiston, and Umatilla -- will be primarily affected by the influx of construction workers. The water system and school facilities at Boardman are not sufficient to accommodate significant additional growth. (Tr. 161, 167)
- E. PGE's consultant, the Bechtel Corporation, recommends that a regional development organization be activated to coordinate implementation of a development plant for each community. (Tr. 166)
- F. The two nuclear plants at Boardman are expected to increase Morrow County's assessed valuation from 600 to 900 percent. (Ex. 1, p. 22-3)
- G. PGE represented that it would make an effort to establish programs with the affected areas to assure a flow of "tax dollars" prior to the time when the assessed value of the plants is actually part of Morrow County's tax rolls, in order to provide necessary community services. (Tr. 167)

FINDINGS OF ULTIMATE FACTS

Based upon the foregoing Findings of Fact, the Council makes the following Findings of Ultimate Fact:

1. If constructed and operated in a manner consistent with the Site Certification Agreement:

(a) The thermal power plants and associated supporting facilities present no danger to the public health, safety and welfare;

(b) The thermal power plants and associated supporting facilities will cause no undue impact upon the environment and associated natural resources and physical processes, including human, air, water, fish and wildlife, from waste heat, moisture or operational radioactive discharges.

2. The rules and regulations of the Nuclear Regulatory Commission and Environmental Protection Agency have been considered and applied in reviewing PGE's application and imposing site certificate conditions.

3. The Boardman Project is compatible with the land and water use characteristics of the site, including aesthetic and environmental characteristics, and will have a positive beneficial impact on the present and future use of adjacent areas.

4. By 1984-86, PGE's residential, commercial, and industrial customers will need the power generated by the thermal power plants. However, PGE may defer construction of the thermal power plants, and warrants that construction will be completed by August, 1985, August, 1991 and August 1993 for the Boardman Coal-Fired Plant, Boardman Nuclear #1 and Boardman Nuclear #2, respectively. To the extent that construction is deferred, further review of the need for power will be necessary.

5. The waste water developed by the thermal power plants will be returned to Carty Reservoir. Carty Reservoir will provide cooling waters

for the plants, irrigation water for approximately 20,000 acres of presently arid lands, and will be safe for recreational uses.

6. The Boardman Project is not within the borders of any incorporated city, and the only local regulations which apply to it are those of Morrow County. If constructed and operated in a manner consistent with the Site Certification Agreement, the Boardman Project will not contravene any regulations of Morrow County.

7. The Boardman Project, viewed alone or in conjunction with expected agri-business development in Morrow County, will cause substantial, but temporary, population growth, at Boardman, Arlington, Hermiston and Umatilla. PGE must cooperate with local governmental authorities to plan for the temporary dislocations which will be caused by the Boardman Project.

CONCLUSIONS OF LAW

From the foregoing Findings of Fact and Findings of Ultimate Facts, the Council draws the following Conclusions of Law:

I

The Council has jurisdiction of the subject matter and the parties to this proceeding.

II

Through its regulations and its actions in this proceeding, the Council has satisfied the intent of ORS 453.305 to 453.555 that site certification of thermal power plants be accomplished through one state agency.

III

All procedural requirements of ORS 453.305 to 453.555, of OAR 345-15-005 to 345-15-005, and of ORS Ch. 183 have been met in this proceeding.

IV

The conditions contained in the recommended Site Certification Agreement, including particularly the provision for an amendatory process, are necessary in order to assure continued compliance with ORS 453.305 to 453.555 and to properly discharge the Council's duties over the life of the Boardman Project.

V

With the conditions and warranties contained therein, the Boardman Project permits the beneficial development of thermal energy and disposition of the wastes therefrom in a manner consistent with protection to the public health and safety and in compliance with the air, water and other environmental protection policies of the State of Oregon.

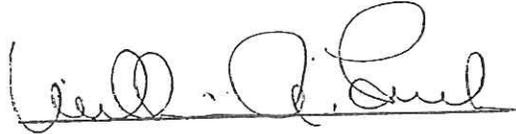
VI

The Council makes its recommendation upon the affirmative vote of _____ of its nine members, including _____ of its five public members, at a meeting of the Council held on February 27, 1975.

ORDER

Based upon the foregoing Findings and Conclusions the Council ORDERS that approval of PGE's application, subject to the terms, warranties and conditions of the Site Certification Agreement, be recommended to the Governor in accordance with ORS 453.365(1) and 453.395 (6).

Made, entered and effective this 27th day of February, 1975.

A handwritten signature in cursive script, appearing to read "William A. Luch", written over a horizontal line.

William A. Luch, Chairman

The above Findings, Conclusions and Order are hereby approved.

Edward Press
 Richard W. Selvin
 [Signature]
 John D. George
 [Signature]
 A. L. [Signature]

For or [Signature]

The following members of the Nuclear and Thermal Energy Council who were unable to attend the Council meeting on February 27, 1975 hereby indicate their concurrence with the action taken at that time.

[Signature] March 4, 1975
 [Signature] Mar. 11, 1975

APPENDIX "A"

LIMITED APPEARANCES

A. Testifying in Favor of Boardman Project

Hon. Paul W. Jones
Heppner, Oregon

Glenn C. Lee
P.O. Box 2608
Pasco, Washington

Joseph F. Lightfoot
820 East Fifth Avenue
Olympia, Washington

Jack L. McFadden
Boardman, Oregon

Gene Trumbull
Boardman, Oregon

Rupert Kennedy
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Boardman, Oregon

B. Testifying in Opposition to Boardman Project

Harold C. Christiansen
P.O. Box 721
Lincoln City, Oregon

Laurel Anderson
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Otis, Oregon

Carl Glanzman
3705 Southeast Market
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