Impacts of the Pacific Northwest Electric Power Planning and Conservation Act on the Development of Energy Resources in the Pacific Northwest: An Analysis of the Resource Acquisition Priority Scheme*

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I. INTRODUCTION

Pascal's[1] analytical approach to a universally perplexing problem provides important clues to understanding why modern utilities believe that acquiring new energy resources is unavoidable. Pascal was concerned with the problem of whether to believe in God. Unable to prove or disprove God's existence, he examined the consequences of selecting the wrong option. To Pascal, the consequences of mistakenly believing that God did not exist far outweighed the consequences of wrongly believing that God existed, particularly if God were retributive and condemned nonbelievers to eternal damnation. Pascal's conclusion that it was safer to believe in God is commonly known as "Pascal's Wager."

The logic of Pascal's Wager applies to the construction of electric power resources because, like God's existence, the future demand for electric power is unknown.[2] Utilities attempt to predict future demand,[3] however, their forecasts'[4] accuracies are

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* The opinions presented here are solely those of the author and do not necessarily represent the views of the Bonneville Power Administration or the United States Department of Energy.

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1. Blaise Pascal was a 17th century French mathematician, scientist, and philosopher. His major accomplishments involved fluid mechanics and algebraic expansions.

2. *See* PACIFIC NORTHWEST REGIONAL COMMISSION, ENERGY FUTURES NORTHWEST: NORTHWEST ENERGY POLICY PROJECT FINAL REPORT 66 (1978) [hereinafter cited as ENERGY FUTURES].

3. For a general discussion of forecasting, see BONNEVILLE POWER ADMINISTRATION DEPARTMENT OF THE INTERIOR, THE ROLE OF THE BONNEVILLE POWER ADMINISTRATION IN THE PACIFIC NORTHWEST POWER SUPPLY SYSTEM, INCLUDING ITS PARTICIPATION IN THE

uncertain. Utilities often develop two or more precise forecasts

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HYDRO-THERMAL POWER PROGRAM: A PROGRAM ENVIRONMENTAL STATEMENT AND PLANNING REPORT (DRAFT ROLE ENVIRONMENTAL IMPACT STATEMENT) part 1, at IV-1 to -110 (1977) [hereinafter cited as DREIS]. Forecasts may be hourly, daily, weekly, monthly, yearly or longer. Utilities use short-term forecasts for operational purposes, while long-term forecasts are used to plan new generating facilities which may require a decade or more from planning to completion. *Id.* at IV-1. There are three general techniques of forecasting: simulation, time series projection, and holistic analysis. *Id.* at IV-16.

The validity of the simulation technique depends on the premise that the whole is equal to the sum of its parts. The theory is that if the basic components of a system can be identified and their individual effects on future energy demand estimated through statistical analysis, the sum of the estimated component effects yields the total forecasted demand. *Id.* at IV-22 to -29. This process, called econometric modeling, is a commonly used simulation method of analyzing the relationship between known economic variables. The econometric model's advantage is that it provides an estimate of the forecast's reliability in addition to the demand estimate. *Id.* at IV-25 to -26. The econometric model's disadvantage is that it requires an extensive and accurate data base. *Id.* at IV-23. Even though econometric modeling is based on sound mathematical theory, a recent study indicates that:

> [T]he field of econometric estimation invariably harbors a multitude of obstacles and complexities which, if unaccounted for, can trap the unwary practitioner. The validity of those assumptions which justify the use of one or the other method of estimation is often questionable in practice. Even the validity of statistical tests which normally indicate the presence of econometric difficulties can be nullified under certain fairly common conditions. [T]he application of econometrics should proceed only with great caution.

NORTHWEST ENERGY POLICY PROJECT, ENERGY DEMAND MODELING AND FORECASTING FINAL REPORT 15 (1977).

The time series projection technique involves selection of a series of historical data based on the analyst's judgment that the series approximates future behavior and extrapolation of the data to make predictions. The analyst may consider past demand trends, seasonal variations, cyclical variations such as fluctuations in business activity, pattern identification such as shifts in life-styles, and the probability of various future outcomes. The accuracy of time series projection depends on the truthfulness of the adage history repeats itself. *See DREIS, supra,* at IV-16 to -21. *See also* NORTHWEST ENERGY POLICY PROJECT, *supra,* at 4-6.

The basic premise for a holistic analysis is that the whole is greater than the sum of its parts, thus demonstrating that econometric models produce unreliable forecasts. *See* THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 628 (1976). A holistic analysis attempts to identify broad systemwide factors influencing demand rather than focusing on the individual components' effects. Analysts then combine the systemwide factors to form scenarios based on expert opinions. In short, holistic analyses are analogous to educated guesses. *See* DREIS, *supra,* at IV-21 to -22.

In developing load forecasts for the Pacific Northwest, the Pacific Northwest Utilities Conference Committee (PNUCC), a voluntary organization of utilities, totals the individual load forecasts for each utility service area. The PNUCC does not attempt to standardize forecasting methods; each utility uses any technique it wishes. Thus, the PNUCC forecast is a potpourri of forecasting techniques, and the uncertainty in the total forecast is equal to the sum of the uncertainties of each forecast. *See generally* S. MEYER, DATA ANALYSIS FOR SCIENTISTS AND ENGINEERS 39-48 (1975).

4. Demand forecasters use statistical techniques to estimate their forecasts' errors. A common technique is the standard deviation which is an estimate of the probability that the true demand will fall within a specified tolerance. *See, e.g.,* S. MEYER, *supra* note 3,

predicting widely divergent increases in future demand.[5] When utilities produce inconsistent forecasts, three questions arise: first, should the utility meet the projected demand?; second, which demand forecast should the utility believe?; and third, which resources should be constructed?

Most utilities[6] have answered the first question, whether to meet the projected demand, affirmatively. In exchange for monopoly status, state legislatures have burdened investor-owned utilities and public and peoples' utility districts with the statutory obligation to provide sufficient power to meet all future demand.[7] Furthermore, even if this requirement did not exist, utilities would tend to construct resources to meet projected increased demand for four reasons: first, everyone wants to be captain of a big ship;[8] second, businesses naturally tend to expand wherever there is a market;[9] third, utilities seek to update and expand their facilities,[10] thereby locking them into a psychology favoring technological improvements and a projected increased demand creates an opportunity to update and expand their facilities; and finally, the tax laws, through such devices as investment credits, encourage expansion.[11] In short, utilities per-

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at 22.

5. A forecast may be "precise" yet inaccurate. If a forecast predicts the same value each time future demand is measured, the forecast is said to be "precise." If the forecasted demand is twice the actual demand, however, the forecast is clearly inaccurate, though precise. Thus, two "precise" forecasts may have different accuracies and hence vary in the amount of predicted demand. *See generally* F. DANIELS, EXPERIMENTAL PHYSICAL CHEMISTRY 429-54 (1970).

6. The term "utility," in this analysis, means any entity which sells electric power.

7. *E.g.*, the Oregon statutes provide: "Every public utility is required to furnish adequate . . . service." OR. REV. STAT. § 757.020 (1979). "The Legislative Assembly finds and declares it to be in the public interest and for a public purpose that [Peoples' Utility Districts] . . . meet the future power needs of this state and its inhabitants." OR. REV. STAT. § 261.240(1)(b) (1979). This duty to meet all future power needs is termed public utility responsibility.

8. Conversations with Dr. Mike Katz, BPA economist, in Portland, Or. (1980).

9. Utilities or any other business will normally seek to exploit unsatisfied demand. This is especially true if a company is a monopoly, because the business risks associated with expanded production in a competitive market are nonexistent. *See generally* M. FRIEDMAN & R. FRIEDMAN, FREE TO CHOOSE (1980).

10. Upgrading occurs when a utility seeks to keep its facilities in state-of-the-art condition even at the expense of replacing components that are still fully functional. Because the public guarantees some utilities (investor-owned-utilities, not peoples' utility districts) a reasonable rate of return on investment, utilities tend to upgrade their facilities beyond what engineering considerations justify. This gold plating is sometimes referred to as the "Averech-Johnson effect," named after the authors who described the phenomenon.

11. The Internal Revenue Code provides for an investment credit equal to the sum

ceive strong incentives to construct additional resources to meet future demand.

Resorting to Pascal's Wager helps to answer the second question of which demand forecast to believe. Utilities perceive the social cost of an energy shortage as significantly greater than the social cost of constructing idle resources.[12] Thus, when a

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of the following percentages of the qualified investment: (i) the regular percentage (10%); (ii) in the case of energy property, the energy percentage (presently 10%); and (iii) the ESOP percentage (presently 1%). I.R.C. § 46(a)(2)(A).

12.

> Energy Planning based on forecasts that are too low means running the risk of having to install high-cost inefficient stop-gap resources, of shortages and rationing, of shortfalls in economic performance, of dangers to public safety from brownouts or from dreaded rotating blackouts, of the threat of cascading outages, of inconveniences and suffering as occurred in parts of the United States during the severe winter of 1976-1977. Attempts have been made to assign a dollar value to the costs of electricity shortages, the most recent of which has estimated the value to be on the order of $1.00 per kilowatt-hour of electricity.

ENERGY FUTURES, *supra* note 2, at 66 (footnote omitted) (1975 dollars).

The following table shows three different planning assumptions: (1) a low-energy growth demand forecast; (2) a medium demand forecast; and (3) a high demand forecast. The left column lists the loads which actually develop (any one of which may occur). Positive numbers indicate a surplus of energy; negative numbers indicate an energy shortage.

Table I

Alternative Planning Assumptions: 1990 (Billions of Kilowatt-Hours)

Loads Which Actually Develop	Alternative Planning Assumptions		
	Low	Medium	High
Low	0.0	33.3	62.3
Medium	−33.3	0.0	29.0
High	−62.3	−29.0	0.0

Computations are based on Northwest Energy Policy Project 1990 demand forecasts for electricity for the Northwest States of Idaho, Oregon, and Washington. ENERGY FUTURES, *supra* note 2, at 67.

Table II, *infra*, converts the Table I figures into annual dollar costs (in 1975 dollars) in 1990. Two key assumptions underlie these cost projections. First, the projections assume the cost of excess capacity equals the annual fixed cost (approximately 15% of the total cost) of fully completed, unused facilities. This is an unrealistic assumption because it is probable that the utilities can sell surplus power outside the region and planners can delay construction on unfinished plants, once they recognize that those plants will temporarily constitute excess capacity. Second, the table assumes the cost of a shortage is ten cents per kilowatt hour, one-tenth of California's most recent estimate. Yet the ten cent figure probably more nearly reflects the cost of adding combustion turbines on a crash basis and operating them at far above design capacity. This assumes that utilities will foresee a shortage early enough to install combustion turbines, even

utility compares the consequences of not building additional resources because of belief in a low demand forecast, where in fact demand is high, with the consequences of building additional resources, because of a belief in a high demand forecast where in fact demand is low, the logic of Pascal's Wager leads the utility to believe the greater demand forecast[13] and construct additional resources. Recent forecasts indicate that electric power demand in the Pacific Northwest will grow significantly in the next decade[14] and presently no resources are idle in the Pacific Northwest. Therefore, without resource development the

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though installation of such turbines takes a relatively short time. A utility's failure to foresee a shortage would produce much greater shortage costs than Table II presents.

Table II

Annual Costs of Overbuilding and Underbuilding Electrical Generating Facilities: 1990 (Billions of 1975 Dollars)

Loads Which Actually Develop	Alternative Planning Assumptions		
	Low	Medium	High
Low	0.00	.44	.82
Medium	3.33	0.00	.38
High	6.23	2.90	0.00

Table III shows that even assuming shortage costs of only $0.025 per kilowatt hour (less than the present residential rate for most Oregon energy consumers), the costs of underbuilding are still significantly greater than the costs of overbuilding.

Table III

Annual Costs of Overbuilding and Underbuilding Electrical Generating Facilities: Alternative Assumption: 1990 (Billions of 1975 Dollars)

Loads Which Actually Develop	Alternative Planning Assumptions		
	Low	Medium	High
Low	0.00	.44	.82
Medium	.83	0.00	.38
High	1.53	.72	0.00

13. Power planners do not expect that Pacific Northwest resources will remain idle for long, because (1) there is a market for surplus energy outside the region; (2) even if demand increased slowly, the region would eventually utilize the idle capacity; and (3) surplus energy would attract energy intensive industries to the area.

14. The Pacific Northwest Utilities Conference Committee in 1980 forecasted an annual growth rate of 4.5%. ENERGY FUTURES, *supra* note 2, at 67. That rate, if accurate, would double resource requirements in less than 15 years. *Id.* at 66-67.

region will be unable to meet projected demand. The accuracy of demand forecasts[15] becomes immaterial to a utility's decision to build new resources because the logic of Pascal's Wager forces utilities to believe reasonable, but pessimistic forecasts. Thus, Pacific Northwest utilities will construct new resources to meet higher demand forecast. Consequently, the ultimate question becomes what type of resources the utilities should build.

This article discusses how the Pacific Northwest Electric Power Planning and Conservation Act[16] (PNEPPCA) may affect the region's choice of resources to construct. Potential choices range from conventional resources such as coal and nuclear to renewable resources such as geothermal, biomass, wave, tidal, solar, and wind. In addition, conservation and cogeneration[17] are now viable energy alternatives. This discussion focuses on PNEPPCA's resource acquisition priority scheme and provides an overview of the incentives and disincentives which may influence the resource selection process. Rather than predicting which resources the region's utilities may ultimately construct, this article analyzes the legal barriers proponents of particular resources must overcome and the tools those proponents may employ to advance their respective interests.

II. The Bill's Basic Structure

A. *The Administrator,[18] The Regional Planning Council, and The Electric Power Plan*

The central figure in the Pacific Northwest Electric Power Planning and Conservation Act is the Bonneville Power Administrator. According to some critics, the Act changes the Administrator's role from marketer of surplus federal power to Pacific Northwest energy czar. The Federal Columbia River Power Sys-

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15. For a discussion of demand forecasting, see note 3 *supra*.

16. Pacific Northwest Electric Power Planning and Conservation Act, Pub. L. No. 96-501, 94 Stat. 2697 (1980) (to be codified at 16 U.S.C. § 839) [hereinafter cited as PNEPPCA].

17. Cogeneration is the process of producing steam from a single boiler for two purposes: (1) to provide energy needed for industrial processes and (2) to generate electricity for in-plant consumption. *See generally* Oregon State Bar (Continuing Legal Education), Industrial Production and Cogeneration of Electricity (1979).

18. The "Administrator" means the Administrator of the Bonneville Power Administration, PNEPPCA *supra*, note 16, § 3(2), 94 Stat. 2688. For a description of the functions of the Bonneville Power Administration, see Foote, Larsen & Maddox, *Bonneville Power Administration: Northwest Power Broker*, 6 Envt'l L. Rev. 831, 833-34 (1976).

tem,[19] built by the Administrator, however, provides a unique opportunity to combine and operate the region's[20] generating and transmitting facilities as if a single utility owned them. This one-utility concept is the Act's major theme. To achieve this objective, the Act created the Pacific Northwest Electric Power Planning Council.[21]

The Council must adopt a regional electric power plan[22] designed, through a system of incentives, to achieve a level of cooperation among the region's electric energy suppliers approaching the idealized single-utility goal. PNEPPCA requires the Administrator to act consistent with the Council's plan.[23]

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19. For a description of the Federal Columbia River Power System (FCRPS), see Hittle, Larsen, Randall & Michie, *Pacific Northwest Power Generation, Multipurpose Use of the Columbia River and Regional Energy Legislation: An Overview*, 10 ENVT'L L. REV. 235 (1980).

20. The Pacific Northwest "region" officially includes:

> (A) the area consisting of the States of Oregon, Washington, and Idaho, the portion of the State of Montana west of the Continental Divide, and such portions of the States of Nevada, Utah, and Wyoming as are within the Columbia River drainage basin; and
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> (B) any contiguous areas, not in excess of seventy-five air miles from the area referred to in subparagraph (A), which are part of the service area of a rural electric cooperative customer served by the Administrator on the effective date of this Act which has a distribution system from which it serves both within and without such region.

PNEPPCA, *supra* note 16, § 3(14), 94 Stat. 2700.

21. The Act specifies:

> [T]here shall be established a regional agency known as the "Pacific Northwest Electric Power and Conservation Planning Council" which (i) shall have its offices in the Pacific Northwest, (ii) shall carry out its functions and responsibilities in accordance with the provisions of this Act, (iii) shall continue in force and effect in accordance with the provisions of this Act, and (iv) except as otherwise provided in this Act, shall not be considered an agency or instrumentality of the United States for the purpose of any Federal law.

Id. § 4(a)(2)(A), 94 Stat. 2701.

22. *See id.*

23. The Act requires the Administrator to act consistently with the regional plan: "Following adoption of the plan and any amendment thereto, all actions of the Administrator pursuant to section 6 of this Act shall be consistent with the plan and any amendment thereto, except as otherwise specifically provided in this Act." *Id.* § 4(d)(2), 94 Stat. 2705.

> The Administrator shall use the Bonneville Power Administrator fund and the authorities available to the Administrator under this Act and other laws administered by the Administrator to protect, mitigate, and enhance fish and wildlife to the extent affected by the development and operation of any hydroelectric project of the Columbia River and its tributaries in a manner consistent with the plan, if in existence, the program adopted by the Council under this subsection, and the purposes of this Act. Expenditures of the Administrator pursuant to this paragraph shall be in addition to, not in lieu of, other expenditures authorized or required from other entities under other agree-

PNEPPCA further requires that the plan reflect the following priority scheme for resource acquisition:[24] first, conservation; second, renewable resources; third, generating resources utilizing waste heat or generating resources of high fuel conversion efficiency; and fourth, all other resources.[25] Thus, the consistency provision[26] requires the Administrator to defer to the priority scheme and makes the resource priority scheme a major factor in deciding which resources the region should construct. But as this article illustrates, the key factor in the selection of resources is actually cost-effectiveness rather than the resource priority scheme.

B. The Four Big Carrots

1. The Administrator's Public Utility Responsibility

The importance of the one-utility concept is reflected in the Act's four major incentives, designed to bring utilities under the plan's control voluntarily. First, at a preference customer's[27] or

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ments or provisions of law.

Id. § 4(h)(10)(A), 94 Stat. 2710.

> The Administrator and other Federal agencies responsible for managing, operating or regulating Federal or non-Federal hydroelectric facilities located on the Columbia River or its tributaries shall—
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> (i) exercise such responsibilities consistent with the purposes of this Act and other applicable laws, to adequately protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, affected by such projects or facilities in a manner that provides equitable treatment for such fish and wildlife with the other purposes for which such system and facilities are managed and operated;
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> (ii) exercise such responsibilities, taking into account at each relevant stage of decision-making processes to the fullest extent practicable, the program adopted by the Council under this subsection. If, and to the extent that, such other Federal agencies as a result of such consideration impose upon any non-Federal electric power project measures to protect, mitigate, and enhance fish and wildlife which are not attributable to the development and operation of such project, then the resulting monetary costs and power losses (if any) shall be borne by the Administrator in accordance with this subsection.

Id. § 4(h)(11)(A), 94 Stat. 2710-2711.

24. " 'Resource' means (A) electric power, including the actual or planned electric power capability of generating facilities, or (B) actual or planned load reduction resulting from direct application of a renewable energy resource by a consumer, or from a conservation measure." *Id.* § 3(19), 94 Stat. 2700.

25. *Id.* § 4(e)(1), 94 Stat. 2705.

26. *See id.* § 4(d)(2), 94 Stat. 2705.

27. The drafters derived the term "preference customer" from the so-called preference clause in the Bonneville Project Act which requires the Administrator to give preference to "public bodies and cooperatives" when allocating federal hydropower. 16 U.S.C. § 832c(a) (1976). PNEPPCA preserves the preference clause: "All power sales

investor-owned utility's request, the Act requires the Administrator to offer to sell sufficient

> electric power[28] to meet the firm power[29] load of such public body, cooperative or investor-owned utility in the region to the extent that such firm power load exceeds (A) the capability of such entity firm peaking and energy resources . . . and (B) such other resources as such entity determines . . . will be used to serve its firm load in the region.[30]

Thus, a utility confronted with a projected resource shortage can acquire its own resources or purchase the needed electric power from BPA. Consequently, under PNEPPCA, the Administrator has public utility responsibility[31] which may convert the Admin-

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under this Act shall be subject at all times to the preference and priority provisions of the Bonneville Project Act of 1937." PNEPPCA, *supra* note 16, § 5(a), 94 Stat. 2712. For an excellent discussion of preference clauses in general, see Fereday, *The Meaning of the Preference Clause in Hydroelectric Power Allocation Under the Federal Reclamation Statutes*, 9 ENVT'L L. REV. 601 (1979).

28. " 'Electric power' means electric peaking capacity, or electric energy, or both." PNEPPCA, *supra* note 16, § 3(9), 84 Stat. 2699. It is important to distinguish capacity from energy. Capacity is the maximum rate at which a resource can produce energy. Thus, capacity, measured in kilowatts, is merely the maximum power potential of a resource. Energy, on the other hand, is a measure of the amount of work that can be done by applying the power output of a resource for a specific time to a given task. Therefore, energy equals capacity multiplied by time. For example, a 100-watt light bulb consumes one kilowatt-hour of electricity (energy) every 10 hours. But a power supply (capacity) equal to 100 watts is sufficient to light the bulb. Similarly, it takes a one kilowatt power supply to light ten 100-watt bulbs which will collectively consume one kilowatt-hour of energy every hour.

29. A "customer" is an entity that contracts to purchase power from the Administrator pursuant to PNEPPCA. *Id.* § 3(7), 94 Stat. 2699. A "consumer" is "any end user of electric power." *Id.* § 3(5), 94 Stat. 2699. BPA presently sells power to investor-owned utilities, peoples' utility districts, Federal agencies, and direct service industries. This policy would continue under the bill. *See generally id.* § 5, 94 Stat. 2712-2716.

"Firm power" is power that is available at all times, even under adverse conditions, except by reason of certain uncontrollable forces such as sabotage, earthquakes, or ice storms which may sever transmission lines or damage facilities. Because the Administrator markets hydroelectric power, the amount of firm power depends on the Columbia River's lowest flow. The power generated during the period of least flow represents BPA's "firm power." The Administrator uses a 42-month critical flow period to determine the amount of firm power it can allocate among preference customers. The Administrator can increase the amount of firm power by increasing the length of the critical flow period, however, such manipulations decrease the degree of firmness because the longer the critical flow period, the higher the probability that such low flows will occur. If the actual flow were to fall below the critical flow, the Administrator would have allocated more firm power than it had to allocate. Thus, the ideal approach is to guess conservatively by picking a critical flow period that is unique. *See* Hittle, *supra* note 19, at 266-74.

30. PNEPPCA, *supra* note 16, § 5(b)(1), 94 Stat. 2712 (footnotes added).

31. The Administrator's public utility responsibility is slightly different from the

istrator into the dominant regional resource acquisition entity.

2. *Electricity Exchange Sales*

Second, the Act requires the Administrator to purchase electric power offered by any Northwest electric utility and, in exchange,[32] to offer to sell[33] an equivalent amount of electric power back to that utility for resale to its residential[34] consumers. Through this exchange device, a utility can reduce the price of electric power sold to its residential consumers because the Administrator would purchase the electric power at the utility's average system cost and sell the electric power back to the utility at a melded rate which includes low-cost hydroelectric power.[35] In lieu of purchasing the power offered by such utility, "the Administrator may acquire an equivalent amount of electric power from other sources to replace power sold to such utility as part of an exchange sale if the cost of such acquisition is

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usual definition of public utility responsibility. For a traditional definition of public utility responsibility, see note 7 *supra*. The Administrator's responsibility is triggered by a utility's request for power to meet a projected shortage, whereas the traditional public utility responsibility to supply electric power arises from the projected shortage itself. The Act states: "Whenever requested the Administrator shall offer to sell . . . electric power to meet the firm power load of such public body, cooperative or investor-owned utility in the Region . . . ." PNEPPCA, *supra* note 16, § 5(b)(1), 94 Stat. 2712. Apparently, PNEPPCA does not require the requesting customer to make such requests within a specified lead time. Unless the Administrator knows how much electric power it must supply, however, it cannot plan its own acquisitions accordingly. In interpreting this section, the practical constraints on developing and acquiring resources seem likely to necessitate a reasonable lead time standard; it is impossible to receive a request for electric power equal to the output of a nuclear power plant on Tuesday and deliver such electric power on Wednesday unless extensive prior planning has occurred. Because the Council must prepare 20-year demand forecasts, *see id.* § 4(e)(3)(D), 94 Stat. 2706, efficient planning mandates imposition of advance notice requirements.

32. *See id.* § 5(c)(1), 94 Stat. 2713.

33. The Administrator must establish wholesale rates that: (1) are sufficient to repay the federal investment in the Federal Columbia River Power System over a reasonable number of years; (2) are based on the Administrator's total system costs; and (3) equitably allocate the costs of the federal transmission system between federal and non-federal users of such system. *See id.* § 7(a)(2), 94 Stat. 2723. Thus the Administrator will resell power to the offering utility at a melded rate (total system costs), generally less than the price of the power the utility offered to the Administrator at average system cost because the electric power the utility re-purchases will include low-cost federal hydropower. The Act, however, requires the requesting utility to pass the cost benefits on to residential customers directly. *See id.* § 5(c)(3), 94 Stat. 2713.

34. " 'Residential use' or 'residential load' means all usual residential, apartment, seasonal dwelling and farm electrical loads or uses, but only the first four hundred horsepower during any monthly billing period of farm irrigation and pumping for any farm." PNEPPCA, *supra* note 16, § 3(18), 94 Stat. 2700.

35. *See* note 33 *supra*.

less than the cost of purchasing the electric power offered by such utility."[36]

3. *The Administrator's Bonding Authority*

Third, the Act authorizes the Administrator to issue bonds in the Administrator's name to implement the Administrator's authority.[37] This provision is limited, however, and the Administrator may not issue bonds to acquire a generating facility with a planned capability of more than fifty average megawatts.[38] The Act endows the Administrator with broad bonding authority for providing funds for conservation and renewable resource loans and grants.[39] Therefore, because utilities can shift funding responsibility for resource acquisition to the Administrator by merely requesting from the Administrator electric power to meet their own electric power requirements, the Administrator's acquisition bonding authority would seem to represent a significant financial tool to develop renewable resources and conservation.

4. *The Dry-Hole Provisions*

The final incentive to induce utilities to come under the plan voluntarily is the Act's dry-hole provisions. The Administrator's ratepayers may absorb the cost of an acquired resource that never comes on line because the term "resource" includes "*planned* electric power capability of generating facilities, or . . . *planned* load reduction resulting from direct application of a renewable energy resource by a consumer, or from a conserva-

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36. PNEPPCA, *supra* note 16, § 5(c)(5), 94 Stat. 2714.

37. The Administrator is authorized to issue and sell to the Secretary of the Treasury from time to time in the name and for and on behalf of the Bonneville Power Administration bonds, notes, and other evidences of indebtedness . . . to assist in financing the construction, acquisition, and replacement of the transmission system, to implement the Administrator's authority pursuant to the Pacific Northwest Electric Power Planning and Conservation Act (including his authority to provide financial assistance for conservation measures, renewable resources, and fish and wildlife, but not including the authority to acquire under section 6 of that Act electric power from a generating facility having a planned capability greater than fifty average megawatts), and to issue and sell bonds to refund such bonds.

Pacific Northwest Federal Transmission System Act, 16 U.S.C.A. § 838 (West Supp. 1980), *as amended by* PNEPPCA, *supra* note 16, § 8(d), 94 Stat. 2729 (parenthetical contains amended language).

38. *See id.*

39. *Id.*

tion measure."[40] In certain instances the Act also authorizes the Administrator to fund or secure debts incurred in the investigation and initial development of renewable resources[41] which may be eligible for acquisition by the Administrator.[42] Further, the Administrator may reimburse sponsors of any other resource for investigation and preconstruction expenses[43] if that resource was not constructed because (1) a state denied siting approval or other necessary permits, (2) a federal agency denied a necessary permit, (3) such investigation demonstrated that the resource did not meet the criteria of section 4(e)(1)[44] and the considerations of section 4(e)(2),[45] (4) the resource was environmentally unacceptable, or (5) the Administrator decided not to acquire the resource.[46] Thus, the Administrator's ratepayers may bear a significant portion of the risks and costs of developing new energy resources. These dry-hole provisions thus provide a strong financial incentive for individual utilities to cooperate with the plan because the Administrator's acquiring their

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40. *Id.* § 3(19), 94 Stat. 2700 (emphasis added). "[M]ajor resources shall be deemed to be acquired upon publication (of notice of the decision) in the Federal Register . . . ." *Id.* § 9(e)(4)(A), 94 Stat. 2731. "[R]esources, other than major resources, shall be deemed to be acquired upon execution of the contract therefor . . . ." *Id.* § 9(e)(4)(B), 94 Stat. 2731. "[C]onservation measures shall be deemed to be implemented upon execution of the contract or grant therefor . . . ." *Id.* § 9(e)(4)(C), 94 Stat. 2731.

41. Renewable resources which are also major resources are not included within this provision. PNEPPCA, *supra* note 16, § 6(f)(1)(A), 94 Stat. 2719. A "major resource" is a resource which (A) has a planned capability greater than fifty average megawatts, and (B) if acquired by the Administrator, is acquired for a period of more than five years." *Id.* § 3(12), 94 Stat. 2699.

42. *Id.* § 6(f)(1)(A), 94 Stat. 2719.

43. Such expenses "shall not include procurement of capital equipment or construction material." *Id.* § 6(f)(1)(B), 94 Stat. 2720.

44. The plan gives priority to cost-effective resources. Further, "[p]riority shall be given: first, to conservation; second, to renewable resources; third, to generating resources utilizing waste heat or generating resources of high fuel conversion efficiency; and fourth, to all other resources." *Id.* § 4(e)(1), 94 Stat. 2705.

45. Considerations include "(A) environmental quality, (B) compatibility with the existing regional power system, (C) protection, mitigation, and enhancement of fish and wildlife and related spawning grounds and habitat, including sufficient quantities and qualities of flows for successful migration, survival, and propagation of anadromous fish, and (D) other criteria which may be set forth in the plan." *Id.* § 4(e)(2), 94 Stat. 2706.

46. The Administrator must demonstrate "inequitable hardship" to the consumers or the sponsors of these resources to implement section 6(f) of the Act. *Id.* § 6(f)(1)-(2), 94 Stat. 2719-2720. Whenever the Administrator agrees to reimburse resource sponsors for preconstruction expenses, such agreements "shall provide the Administrator an option to acquire any such resource." *Id.* § 6(f)(3), 94 Stat. 2720. It is puzzling that major renewable resources do not qualify for reimbursement of investigation and initial development expenses while major nonrenewable resources do qualify for reimbursement for investigation and preconstruction expenses.

resource should reduce the utilities' financial risk[47] because all the region's ratepayers will share the risk and lower interest rates on construction bonds should result. In short, utilities should have greater financial protection for their investment and lower rates for their customers.

These four provisions should provide strong financial incentives for utilities to cooperate with the Administrator. It is unlikely that Pacific Northwest utilities will pass up the fiscal advantages of cooperation. Thus, under PNEPPCA, the Administrator may become the focal point for most, if not all, future Pacific Northwest electric power resource development.

C. The Cost-Effectiveness Test

The cost-effectiveness test is the polestar of resource acquisition under PNEPPCA. Unless a resource is cost-effective, the Administrator cannot acquire it without congressional approval.[48] A resource is cost-effective if it is forecast: (a) "to be reliable and available within the time it is needed,"[49] and (b) "to meet or reduce the electric power demand . . . at an estimated incremental system cost no greater than that of the least-cost similarly reliable and available alternative measure or resource 50. *Id.* § 3(4)(A)(ii), 94 Stat. 2698. Thus, PNEPPCA bases the cost-effectiveness of resources on estimates and applies the test when the Administrator decides to acquire the resource.

The fact that the cost estimate may later prove to be inaccurate is immaterial to the legality of a cost-effectiveness determination. If events were to delay a resource's construction beyond the time it is needed or if the estimated incremental system cost were to turn out to be greater than for that of a similarly available alternative, the resource acquisition decision cannot be challenged on the grounds that the resource is not cost effective because the resource was determined to be cost-effective when the resource was acquired. Assuming a limited need for electric power, this result places a premium on the accuracy of cost estimates and seems likely to result in sponsors of competing resources vigorously attempting to convince the Adminis-

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47. By shifting funding responsibility to the Administrator, the Act will spread the risk among all the region's ratepayers rather than among a single utility's ratepayers. A regional sharing of electric power costs is one of Congress' paramount interests. *See id.* § 2(4), 94 Stat. 2698.

48. *Id.* § 4(e)(1), 94 Stat. 2705; § 6(c)(3), 94 Stat. 2719-2720.

49. *Id.* § 3(4)(A)(i), 94 Stat. 2698.

trator that their cost estimates are more accurate than those of their competitors and that their resources cost less than their competitors'. Under PNEPPCA, the Administrator's acquiring a resource constitutes final agency action subject to judicial review.[51] Thus, the accuracy of cost estimates upon which such acquisitions are based may be litigated. PNEPPCA, however, bars actions not commenced within 90 days of the Administrator's decision.[52]

The basis of cost-effectiveness under the Act is the estimated incremental system costs including "estimate[s] of all direct costs of a measure or resource over its effective life."[53] Because estimates suffice, the Act does not require direct system costs to be known exactly prior to the cost-effectiveness determination. The Act may therefore produce fact battles between proponents of competing resources over the accuracy of their respective direct-system cost estimates. Although the Act requires the Administrator to base resource acquisition decisions on the evidence and to develop a record,[54] the Administrator need only produce reasonable estimates of direct-system costs to justify his decision.[55]

As defined in the Act, direct system costs include: (a) "the cost of distribution and transmission to the consumer,"[56] (b) "waste disposal costs,"[57] (c) "end-of-cycle costs,"[58] (d) "fuel costs (including projected increases),"[59] (e) "such quantifiable

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51. *Id.* § 9(e)(1)(C), 94 Stat. 2731.

52. "[S]uits shall be filed within ninety days of the time such action or decision is deemed final, or, if notice of the action is required by this Act to be published in the Federal Register, within ninety days from such notice, or be barred." *Id.* § 9(e)(5), 94 Stat. 2731-2732.

53. *Id.* § 3(4)(B), 94 Stat. 2698.

54. *See id.* § 6(c)(1), 94 Stat. 2718.

55. *See* 5 U.S.C. § 706(2)(A) (1976). The Administrator may not act arbitrarily or capriciously, and he may not abuse his discretion or act other than in accordance with law.

56. PNEPPCA, *supra* note 16, § 3(4)(B), 94 Stat. 2698. This provision may influence the location of resources. If two resources have equal direct system costs, the resource located closer to consumers will probably be less costly.

57. *Id.* Waste disposal costs presumably will include the cost of storing or processing spent nuclear fuel. The waste disposal costs for renewable resources such as wind and solar are certainly far lower than for nuclear resources, all other factors being equal. If waste disposal costs are discounted to present value, however, they may be negligible for long-term resources.

58. *Id.* This provision probably will adversely affect nuclear power development because the cost of decommissioning a nuclear power plant is substantial, perhaps equaling approximately 20 to 25% of the construction cost.

59. *Id.* The inclusion of fuel costs should promote conservation and renewable

environmental costs and benefits as the Administrator determines, on the basis of a methodology developed by the Council as part of the plan, or in the absence of the plan by the Administrator, are directly attributable to such [conservation] measure or resource,"[60] and (f) "other factors."[61] The first four elements are relatively straightforward and, although it may defy modern economics to produce meaningful cost estimates for these factors, any reasonable life-cycle cost estimate will probably be sufficient. The sixth factor is a catchall granting the Administrator discretion to add other considerations which either the Administrator or the Council[62] deem appropriate. The fifth element, environmental costs, however, requires a closer examination.

The fifth element of direct system costs forces consideration of external costs into the decision-making process. It plugs direct environmental costs into the analysis, to the extent such costs are quantifiable.[63] Deciding which environmental costs are quantifiable may be difficult, but distinguishing between direct and indirect environmental costs may be virtually impossible. Yet these distinctions may be crucial to a resource sponsor because a resource's cost-effectiveness may vary significantly depending upon which environmental costs the Administrator deems quantifiable and directly attributable to that resource

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resources. Therefore, this provision should prejudice the Administrator against resources utilizing fossil fuels, particularly oil and gas.

60. *Id.* This provision should benefit conservation and renewable resources such as solar at the expense of resources utilizing air and water polluting fuels such as coal and oil.

61. *Id.* This provision provides flexibility for the Administrator to include other direct system costs as he identifies them.

62. *Id.* The Administrator will determine those costs directly attributable to particular resources, on the basis of a methodology the council develops as part of the regional plan.

63. The term "quantifiable" may mean "convertible into dollar equivalents," thus, if the Administrator cannot assign a dollar value to an environmental or social cost or benefit, it is not quantifiable. This result differs from the National Environmental Policy Act which does not require conversion of environmental costs and benefits into dollars and cents. *See* National Environmental Policy Act of 1969, § 102(B), 42 U.S.C. § 4332(B) (1976). As long as the quantification is comparable to economic and engineering considerations, NEPA views such comparisons as satisfactory even though the comparisons involve different categories. *See* 40 C.F.R. § 1502.23 (1980).

On the other hand, "quantifiable" may mean "convertible into concrete figures" such as acres of land or tons of pollutants. The problem is that no one knows how to convert acres of land into dollars. Thus, the Administrator may have to decide such questions as whether a higher cancer incidence rate of two deaths per 100,000 people-years is worth one mill per kilowatt hour. Conversations with Robert C. Lewis, BPA economist, in Portland, Or. (1980).

and to the resources of that sponsor's competitors. Thus, although the fifth element is based on high ideals, it may prove to be a source of consternation to the Administrator.

It is significant, however, that PNEPPCA includes direct and quantifiable environmental benefits as well as costs in the cost-effectiveness test. As a result, the balancing may include such factors as air and water quality, and the potential for creating new jobs if the term "environmental" is interpreted to mean that which "human environment" means under the National Environmental Policy Act (NEPA).[64] NEPA[65] requires federal agencies to consider environmental factors including social impacts in their decision-making process.[66] As long as an agency includes such environmental factors in its decision-making process, NEPA is satisfied even though the agency fails to choose the best environmental alternative. Unlike NEPA, PNEPPCA mandates that the Administrator include direct and quantifiable environmental costs in estimating cost-effectiveness. To this extent, the Act cures one of NEPA's alleged defects[67] and forecloses the acquisition of environmentally costly resources. From an economic view, the cost-effectiveness test represents Congress' attempt to force the Administrator to estimate the true social costs of resources under consideration for acquisition.[68] Thus, in this regard PNEPPCA represents a significant addition to the body of environmental law.

III. The Priority Scheme

A. First Priority to Conservation

Nationally syndicated columnist James J. (Jack) Kilpatrick once referred to the idea of acquiring electric power through conservation as "one of those dizzy theories from the Blue Eagle School of Screwball Economics . . . ."[69] Kilpatrick's remarks

64. *See* 40 C.F.R. §§ 1508.8, .14 (1980).

65. 42 U.S.C. §§ 4321-4347 (1976).

66. *See* 40 C.F.R. § 1508.8 (1980).

67. Section 102(C) of NEPA, 42 U.S.C. 4332(C) (1976) is a procedural law. It therefore, does not require the decision-maker to make the best environmental decision. Strycker's Bay Neighborhood Council v. Karlen, 444 U.S. 223, 227 (1980).

68. For a fascinating analysis of the impact of social costs in the resource allocation analysis, see Coase, *The Problem of Social Cost*, 3 J.L. & Econ. 1 (1960).

69. Pacific Power & Light Co., Annual Report to Employees 1979, at 5 (1980) (on file with the author). Kilpatrick was referring to Pacific Power & Light's weatherization program which provides no-interest loans to consumers for cost-effective weatherization measures.

represent the prejudices against conservation that have plagued some energy planners in the past. Those prejudices help explain why some utilities have resisted conservation and alternative energy technologies.[70] The experts have had difficulty understanding that the energy problem is as much a social and cultural problem as a technological one.[71] Seven years after the 1973 oil embargo, the Administrator still did not have express authority to conserve electric power.[72] PNEPPCA, however, remedies that deficiency.

1. Conservation Measured by Efficiency

The Act broadly defines conservation as any reduction in electric power consumption resulting from increases in the efficiency of energy use, production, or distribution.[73] A wide variety of efficiency-improving actions qualify as conservation measures. For example, redesigning a coal boiler may qualify as a conservation measure if the conversion increases energy production efficiency. Similarly, converting two small capacity transmission lines into a single, larger capacity line may be a conser-

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70. Report by anthropologist Dr. Laura Nader, described in Salisbury, *Energy Planners Resist Change, Social Scientist Finds*, Christian Sci. Monitor, Jan. 22, 1980, at 10, col. 1. Under the auspices of the National Academy of Sciences, Dr. Nader studied the attitudes of energy experts towards lifestyle changes which could result in two future societies:

> One [society] was essentially today's society projected into the future without major changes in attitudes but with improvements in amenities and energy efficiencies. In the second society, attitudes toward resources were significantly different. The values of thrift and self-reliance were increased, resulting in high technology but extremely low energy consumption.
>
> Solar energy, advanced automobiles, magnetically levitated trains, computer control of buildings and industrial applications, more efficient onsite generation of electricity, major occupational shifts from large corporate to individual jobs, and increased leisure and recreation time were assumed in the alternative society.

Id. The experts accused proponents of the second society of "describing impossible futures and planning futures that 'go against the grain of human nature'." *Id.* Nader replied to criticism: "For me, denial [of the second society] translated into 'we don't like it'." *Id.*

71. *Id.*

72. Op. U.S. Controller Gen. No. B-114858 (July 10, 1979) (opinion to Representative James Weaver regarding BPA authority to engage in energy conservation measures). *See also* Letter from Assistant Attorney General Larry Sims to the Office of Management and Budget. (Oct. 12, 1979) (unpublished opinion letter stating Need for Express Congressional Approval Authorizing BPA to Implement Long-Range Conservation Programs).

73. PNEPPCA, *supra* note 16, § 3(3), 94 Stat. 2698.

vation measure if a net increase in energy distribution efficiency results. Other measures electric energy consumers implement may be conservation measures if they result in increased efficiency.

Two significant results flow from using a conservation definition based on efficiency. First, electric power is not conserved by merely displacing electric power with another energy source, even a renewable resource. Thus, solar space heating will not qualify as a conservation resource because a solar collector does not improve a building's energy efficiency. The building will still require the same amount of energy, although the energy to heat the building comes partly from a source other than electric power. Second, foregoing consumption is not a conservation measure, because, paradoxically, energy must be consumed to be conserved. Thus, turning down the thermostat is not PNEPPCA conservation because, although it reduces resource use, it does not increase efficiency. Congress failed to encourage residents of the Northwest to reduce electric demand by the cheapest technique—foregoing consumption.

The Act's definition of conservation contains a contradiction, however. Read literally, the definition requires that a generating resource reduce electric power consumption as a result of increased electric power production efficiency to qualify as a conservation resource. How can electric power consumption be reduced as a result of a production efficiency increase? The reduction in consumption criteria limits the scope of conservation resources to those which either (1) reduce electric energy consumption as a result of increasing the efficiency of electric energy use or distribution as opposed to reducing other forms of energy consumption, or (2) increase the efficiency of electric power production as opposed to increasing the efficiency of producing energy other than electric power. Thus, the key to conservation is efficiency.[74]

Although the term "efficiency" is not defined in PNEPPCA or its legislative history, increased efficiency probably results in two instances. First, an increase in efficiency occurs when a resource improves the net conversion of useful energy from one form such as coal to another such as electric power. This defini-

74. Energy efficiency is a stated purpose of PNEPPCA. *Id.* § 2(1)(a)(2), 94 Stat. 2697.

tion is derived from the First Law of Thermodynamics.[75] Stated more precisely, this First Law Efficiency[76] is "[t]he useful energy transfer achieved by a device divided by the energy input required to achieve the effect."[77] The First Law Efficiency of a resource may not be an adequate measure of a resource's merit because this efficiency relies on energy as its basic unit of measure.[78] Such a measure is inadequate because it ignores the quality of energy use.[79]

> For example, claiming that an oil furnace heats a building with 75% efficiency implies that 100% efficient furnace is the best possible use of the available energy. This is an incorrect conclusion, because if the oil for the furnace had been used instead as fuel for a turbine powering a heat pump, which can provide more heat to the building than the total heating value of the raw fuel, the energy of the oil would have been used more effectively than in the furnace.[80]

Measurement based on First Law Efficiency disregards the importance of energy use quality.

Second, an increase in efficiency also results when a resource decreases the amount of available energy consumed in doing a task compared to the theoretical amount of available energy needed to accomplish that task. This definition is derived from the Second Law of Thermodynamics.[81] Stated more precisely, this Second Law Efficiency is "the ratio of the minimum amount of available energy required to perform A task, to the available energy task A_{min} actually consumed by use of a given system."[82] The Second Law Efficiency "affords a method of ranking energy uses by quality-of-energy use and the approach to the thermodynamic limit of a given process."[83] Maximizing the Second Law Efficiency minimizes consumption of energy in

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75. F. KREITH & J. KREIDER, PRINCIPLES OF SOLAR ENGINEERING 27 (1978) (emphasis omitted).

76. *Id.*

77. *Id.*

78. *Id.*

79. *Id.* at 28.

80. *Id.* at 27.

81. 11 ENCYCLOPAEDIA BRITANNICA 238, 240 W. BENTON ED. 1973. "Efficiency is fixed solely by the temperatures of the bodies between which, in the last resort, the transfer of heat is effected." *Id.*

82. F. KREITH, *supra* note 75, at 28 (emphasis omitted).

83. *Id.*

accomplishing a given task.[84] Therefore, that resource with the highest Second Law Efficiency will always be the best resource to acquire from a thermodynamic point of view.

The Act's broad conservation definition should ultimately have a technology-forcing effect for two reasons. First, because PNEPPCA affords top priority to conservation measures, the Administrator will acquire all cost-effective technological improvements that qualify as conservation measures. Second, PNEPPCA gives a ten percent edge to conservation.[85] Thus, the Administrator is able to acquire innovative conservation techniques which otherwise might not be cost-effective. PNEPPCA should therefore encourage technological improvements in using electric power efficiently.

2. *Conservation Resources Installed by Residential and Small Commercial Consumers*

PNEPPCA further requires the Administrator to acquire conservation resources installed by residential and small commercial consumers to reduce load.[86] Before the Administrator is able to acquire any other resource to meet his contractual obligations, he must determine that a need for power exists, after taking into account the planned savings from conservation and renewable resources acquired from residential and small commercial consumers.[87] These requirements should spur widespread development of conservation and renewable resources among residential and small commercial consumers.

3. *Model Conservation Standards*

In addition to encouraging conservation through resource acquisition, PNEPPCA requires the Council to incorporate model conservation standards[88] in the regional plan. These

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84. *Id.*

85. PNEPPCA, *supra* note 16, § 3(4)(D), 94 Stat. 2699. The Administration may phase out the 10% advantage to conservation after five years, or if on the basis of a council study the Administration determines that the advantage is unnecessarily costly, inequitable to consumers, or likely to impair the Administrator's ability to carry out his obligation consistent with sound business principles. *Id.* § 4(k), 94 Stat. 2711-2712.

86. "The Administrator shall acquire such resources through conservation, implement all such conservation measures, and acquire such renewable resources which are installed by a residential or small commercial consumer to reduce load, as the Administrator determines are consistent with the plan . . . ." *Id.* § 6(a)(1), 94 Stat. 2717.

87. *Id.* § 6(a)(2)(A), 94 Stat. 2717.

88. Model conservation standards to be included in the plan shall include, but

model standards are, in effect, efficiency standards. PNEPPCA gives force to the model standards because the Administrator may, on the Council's recommendation, impose a surcharge against any customer who fails to implement conservation measures comparable to the model standards.[89] If implemented, the surcharge may be from ten to fifty percent of the rate charged such customers. The surcharge enables the Administrator to recover at least part of the additional costs incurred due to the customer's failure to meet the model standards.[90] An old chess strategy maxim describes this penalty provision's probable effect: the threat of a move is often more effective than the move itself. Thus, the mere existence of the Administrator's authority to impose a surcharge should encourage compliance with the plan's model conservation standards.

PNEPPCA directs the Administrator to implement all conservation measures the Administrator determines are consistent with the plan.[91] Such measures may include loans or grants to consumers for insulation or weatherization, increased system

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not be limited to, standards applicable to (A) new and existing structures, (B) utility, customer, and governmental conservation programs, and (C) other consumer actions for achieving conservation. Model conservation standards shall reflect geographic and climatic differences within the region and other appropriate considerations, and shall be designed to produce all power savings that are cost-effective for the region and economically feasible for consumers, taking into account financial assistance made available to consumers under section 6(a) of this Act. These model conservation standards shall be adopted by the Council and included in the plan after consultation, in such manner as the Council deems appropriate, with the Administrator, States, and political subdivisions, customers of the Administrator, and the public.

Id. § 4(f)(1), 94 Stat. 2706-2707.

89. The Council by a majority vote of the members of the Council is authorized to recommend to the Administrator a surcharge and the Administrator may thereafter impose such a surcharge in accordance with the methodology provided in the plan, on customers for those portions of their loads within the region that are within States or political subdivisions which have not, or on the Administrator's customers which have not, implemented conservation measures that achieve energy savings which the Administrator determines are comparable to those which would be obtained under such standards. Such surcharges shall be established to recover such additional costs as the Administrator determines will be incurred because such projected energy savings attributable to such conservation measures have not been achieved, but in no case may such surcharges be less than 10 per centum or more than 50 per centum of the Administrator's applicable rates for such loan or portion thereof.

Id. § 4(f)(2), 94 Stat. 2707.

90. *Id.*

91. *Id.* § 6(a)(1), 94 Stat. 2717.

efficiency, and waste energy recovery.[92] The Administrator may assist the Administrator's customers and governmental authorities' implementation of conservation measures by (1) providing financial and technical assistance to encourage maximum cost-effective voluntary conservation, (2) "aiding customers and governmental authorities in implementing conservation standards," and (3) "conducting demonstration projects to determine the cost-effectiveness of conservation measures and direct application of renewable energy resources."[93]

4. Billing Credits

As a further incentive to conservation, the Administration must grant billing credits to customers for independently implemented conservation activities or for independently implemented resources other than conservation which reduce the Administration's obligation.[94] Voluntarily implemented retail rate structures which induce conservation or installation of consumer-owned renewable resources may qualify for billing credits.[95] The amount of the credit for conservation activities is

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92. *Id.* § 6(a)(1)(A), 94 Stat. 2717.

> Waste energy recovery by direct application includes measures such as the recovery of heat produced in lighting or industrial processes and use of the recovered heat to reduce space heating requirements; waste energy recovery does not include measures such as solar water heating systems which by direct application convert energy for use by consumers, however, such systems could be acquired as a renewable resource under subsection 6(b).

S. REP. No. 272, 96th Cong., 1st Sess. 28 (1979).

93. PNEPPCA, *supra* note 16, § 6(a)(1)(B)-(D), 94 Stat. 2717. These important provisions are likely to be of technical assistance. The Administrator has the resources to develop a highly trained professional staff to produce needed information. There are still very few experts in the fields of solar and wind energy, thus, information costs are high. Competent furnace salesmen know the BTU requirements of an average home and can accurately advise potential consumers as to which systems are cheapest and most feasible. In contrast, virtually no one knows whom to call to obtain information about solar installation. Even if solar power information is available, the average consumer unfamiliar with solar jargon may have difficulty understanding the information.

94. *Id.* § 6(h)(1), 94 Stat. 2720-2721. Billing credits for energy conservation activities are not subject to the requirements of sections 4(e)(1) or 4(e)(2) of the Act. Billing credits for other resources are subject to sections 4(e)(1) and 4(e)(2) of the Act. *Id.* § 6(h)(1)(B), 94 Stat. 2720-2721.

95. Retail rate structures which are voluntarily implemented by the Administrator's customers and which induce conservation or installation of consumer-owned renewable resources shall be considered, for purposes of this subsection, to be (A) conservation activities independently undertaken or carried on by such customers, or (B) customer-owned renewable resources, and shall qualify for billing credits upon the same showing as that required for other conservation or renewable resource activities.

equal to the price the Administration would have had to pay to acquire resources equal in amount to the energy saved by the conservation activity for which the credit is granted.[96] In the case of resources other than conservation, the credit is limited to "Net cash actually incurred . . . in acquiring, constructing, or operating the resource for which the credit is granted."[97]

The purpose of the Act's billing credit provision is to overcome the adverse effects of the Administrator's selling electric power at a melded rate. Representative Weaver described the adverse effects of the melding rate when he defended his unsuccessful attempt to impose a two-tiered pricing structure:

> What it [Representative Weaver's proposed amendment] does is this: It prices electricity at its cost. In other words, what we have today is a distorted price of electricity, of energy, so that the price signals sent to people are distorted. They do not get the message [that energy is expensive]; and, therefore, they do not use electricity wisely.
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> In the Northwest we have millions o[f] tons of wood waste that we burn in our forests. There are millions of tons of that waste in Oregon forests, enough to heat three-quarters of all the homes in Oregon. Yet we are not using that energy for the simple reason that the way the utilities in Bonneville operate with electricity, they take the cheap hydro power and the expensive thermal power and average them, meld them together. So we go on letting them build these enormously expensive thermal plants, and we are wasting energy sources that are much cheaper. It is crazy.[98]

Id. § 6(h)(5), 94 Stat. 2721.

96. The amount of credits for conservation under this subsection shall be set to credit the customer implementing or continuing the conservation activity for which the credit is granted for the savings resulting from such activity. The rate impact on the Administrator's other customers of granting the credit shall be equal to the rate impact such customers would have experienced had the Administrator been obligated to acquire resources in an amount equal to that actually saved by the activity for which the credit is granted.

Id. § 6(h)(3), 94 Stat. 2721.

97. For resources other than conservation, the customer shall be credited for net costs actually incurred by such customer, an entity acting on behalf of such customer, or political subdivision served by such customer, in acquiring, constructing, or operating the resource for which the credit is granted. The rate impact to the Administrator's other customers of granting the credit shall be no greater than the rate impact such customers would have experienced had the Administrator been obligated to acquire resources in an amount equal to that actually produced by the resource for which the credit is granted.

Id. § 6(h)(4), 94 Stat. 2721.

98. 126 CONG. REC. H10,526 (daily ed. Nov. 12, 1980) (remarks of Rep. Weaver of

Representative Swift countered Mr. Weaver's contentions by noting that the General Accounting Office had indicated that the billing credits would send an effective price signal encouraging conservation.[99]

5. Acquiring Experimental Resources

The Administrator is authorized to acquire resources not meeting the Act's requirements ordinarily applicable to resource acquisitions if the resource is "an experimental, developmental, demonstration, or pilot project of a type with a potential for providing cost-effective service to the region."[100] The Administrator is further ordered to make maximum use of the Administrator's authority "to acquire conservation measures and renewable resources, to implement conservation measures, and to provide credits and technical and financial assistance for the development and implementation of such resources and measures . . . ."[101] These directives should produce significant electric power conservation and spur the development of new and innovative solutions to electric power shortages. PNEPPCA will almost certainly result in a high degree of conservation and is likely to lead to the development of new technologies designed to maximize the efficiency of electric power production, distribution, and use.

To summarize, PNEPPCA should strongly promote conservation resources because they are top priority resources and they additionally receive a ten percent edge under the Act over non-

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Oregon).

99. *Id.* at H10,527 (remarks of Rep. Swift of Washington). The report from the Committee on Energy and Natural Resources states:

> [T]hese credits are to provide an economic incentive for the development of such resources taking into account the risks and benefits accruing to the entity to be credited . . . . The Committee is concerned that such resources would not otherwise be developed at an early date because it might be economically disadvantageous for a customer or political subdivision to undertake such measures or resources if the alternative is to rely on the Administrator to serve such loads at a melded rate.

S. REP. No. 272, *supra* note 99, at 30. The Senate registered its intent that such credits be "available only to the extent that power is actually available from the resource for which credits are granted." *Id.*

This contrasts with resource acquisitions where forecasts are sufficient. For this reason, utilities may be reluctant to implement independent conservation measures or to develop renewable resources unless they feel certain the resource will be cautious about investing in untested technologies with the goal of seeking billing credits.

100. PNEPPCA, *supra* note 16, § 6(d), 94 Stat. 2719.

101. *Id.* § 6(e), 94 Stat. 2719.

conservation resources. Furthermore, residential and small commercial consumers should strive to install cost-effective conservation measures the Administrator is then authorized to acquire. The Model Conservation standards enable the Administrator to impose a surcharge on customers who fail to comply with these efficiency standards, and the Administrator may grant billing credits to customers who independently institute conservation activities in addition to those implemented by the Administrator or required by the plan. The Act's system of incentives should achieve conservation.

B. Second Priority to Renewable Resources

The bill defines "renewable resource" as a resource "which utilizes solar, wind, hydro, geothermal, biomass, or similar sources of energy and . . . which is used for electric power generation or will reduce the electric power requirements of a consumer, including by direct application."[102] The term "renewable" means that the energy source is "regenerative or essentially inexhaustive." Any *planned* generation of electric power from a renewable energy source is a renewable resource. The Administrator ordinarily is unable to acquire a renewable resource unless it is cost-effective.[103] Thus, as a prerequisite to acquisition, the estimated incremental system cost of a renewable resource must be less than ninety percent of the estimated incremental system cost of any similarly available conservation measure and less than the estimated incremental system cost of any similarly reliable and available renewable resource.

The Administration may be able to construct and own conservation and renewable resources which are not generating facilities. Congress defined the term "acquire" to mean that the Administrator is not authorized "to construct, or have ownership of . . . any electric generating facility."[104] By negative implication, however, the Administrator may be authorized to own non-electric-generating resources. PNEPPCA directs the Administra-

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102. *Id.* § 3(16), 94 Stat. 2700.

103. See *id.* § 4(e)(1), 94 Stat. 2705; § 6(c)(3), 94 Stat. 2718-2719. The priorities in the cost-effective resource determination are conservation, renewable resources, generating resources using waste heat or otherwise highly efficient resources, and, finally, all other resources. *Id.* § 4(e)(1), 94 Stat. 2705. The Administrator may acquire resources which are inconsistent with these and the considerations of section 4(e)(2) by securing Congressional approval. *Id.* § 6(c)(3)(B), 94 Stat. 2719.

104. *Id.* § 3(1), 94 Stat. 2698.

tor to look beyond the region for opportunities to add renewable resources[105] to the region's power supply. The Administrator may cooperate with the sponsor of such resources to accelerate their development[106] and he is authorized to acquire such resources.[107]

In addition, PNEPPCA authorizes the Administrator to enter into an agreement with the sponsor of a renewable resource which may be eligible for acquisition "to fund or secure debt incurred in the investigation and initial development of such resource."[108] To enter into such agreements the Administrator must determine that an inequitable hardship to the consumers of the resource's sponsor would exist if the Administrator fails to enter into such an agreement.[109]

One potential weakness of PNEPPCA arises when the BPA Administrator attempts to compare the cost-effectiveness of a first priority conservation measure with that of a second priority renewable resource. The Act does not clarify whether the Administrator should compute the resource promoter's tax consequences, and other possible economic incentives, into the cost-effectiveness test.[110] If the tax consequences are included, the cost-effectiveness will change as tax codes change. For example, an individual may claim a federal tax credit equal to fifteen percent of any energy conservation expenditure not to exceed $2,000.[111] An individual, however, is entitled to a tax credit

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105. PNEPPCA, *supra* note 16, § 6(1)(1), 94 Stat. 2722.

106. *Id.*

107. *Id.*

108. *Id.* § 6(f)(1)(A), 94 Stat. 2719. This provision does not apply to renewable resources that are also major resources. *Id.*

109. *Id.* § 6(d), 94 Stat. 2719. This provision does not apply to major resources. *Id.* The Administrator's authority is significant because of its technology-forcing effect. The Administrator must only show a "potential" for providing cost-effective service to acquire such experimental, developmental, demonstration, or pilot projects. It may be extremely difficult to distinguish between an experimental and a commercial resource because most experimentalism seems likely to lead to a showing of commercial feasibility. Perhaps a resource transforms itself from a research project into a commercial resource when the most important product of the resource becomes energy rather than data.

110. The Windfall Profit Tax Act prevents taxpayers from taking a tax credit and receiving an additional federal benefit. I.R.C. § 6511(h).

111. "In the case of any dwelling unit, the qualified energy conservation expenditures are 15 percent of so much of the energy conservation expenditures made by the taxpayer during the taxable year with respect to such unit as does not exceed $2,000." *Id.* § 44C(b)(1).

Additionally, a person may qualify for tax credits. "In the case of an individual, there shall be allowed as a credit against the tax imposed by this chapter for the taxable

equal to forty percent up to $10,000 expended for a renewable energy source.[112] These differences could change cost-effectiveness of some resources sufficiently to reverse the articulated resource priority scheme.

Consider two resources that would deliver, or save, equal amounts of power. Suppose the direct-system costs are $10,000 for each, one of which is a conservation resource and, the other the least costly alternative renewable resource. Excluding tax considerations, the Administrator would acquire the conservation measure because any conservation measure could cost up to 110 percent of the least costly alternative resource[113] and, furthermore, conservation is a first priority resource. Plugging the

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year an amount equal to the sum of—(1) the qualified energy conservation expenditures, plus (2) the qualified renewable energy source expenditures." *Id.* § 44C(a). However, only insulation or any "other energy-conserving component" qualifies for the conservation tax credit. *Id.* § 44C(c)(1). "The term 'other energy-conserving component' means . . . an item of the kind which the Secretary specifies by regulations as increasing the energy efficiency of the dwelling . . . ." *Id.* § 44C(c)(4)(A)(viii). Thus, Congress has limited the tax definition of conservation to specific measures that improve the efficiency of energy use in dwellings.

112. "In the case of any dwelling unit, the qualified renewable energy source expenditures are 40 percent of so much of the renewable energy source expenditures made by the taxpayer during the taxable year with respect to such unit as does not exceed $10,000." I.R.C. § 44C(b)(2). Only expenditures for "renewable energy source property" qualify as renewable source expenditures.

> The term 'renewable energy source property' means property—
> (A) which, when installed in connection with a dwelling, transmits or uses—
> (i) solar energy, energy derived from the geothermal deposits (as defined in section 613(e)(3)), or any other form of renewable energy which the Secretary specifies by regulations, for the purpose of heating or cooling such dwelling, . . . or
> (ii) wind energy for nonbusiness residential purposes . . . .

Id. § 44C(c)(5). This definition is considerably narrower than the definition of renewable resource contained in section 3(16) of PNEPPCA.

113. For purposes of this paragraph, the "estimated incremental system cost" of any conservation measure or resource shall not be treated as greater than that of any nonconservation measure or resource unless the incremental system cost of such conservation measure or resource is in excess of 110 per centum of the incremental system cost of the nonconservation measure or resource.

PNEPPCA, *supra* note 16, § 3(4)(D), 94 Stat. 2699.

tax consequences into the equation, however, changes the result:

Conservation			*Renewable Resource*
Direct System Costs:	$10,000		$10,000
Tax Credits			
15% of first $2,000:	− 300	40% of first $10,000:	− 4,000
Net Cost:	$ 9,700		$ 6,000
10% Advantage:	− 600		
Comparison Cost:	$ 9,100		$ 6,000

Thus, if the tax credits are included in the cost-effectiveness calculation, the Administrator is required to acquire the renewable resource rather than the conservation measure. In the hypothetical, the direct-system costs of the conservation measure would have to be $3,100 less than the direct-system costs of the renewable resource for conservation to prevail, despite the ten percent advantage of conservation.[114]

Assuming the purpose of the cost-effectiveness test is to determine which of two resources has the lower social cost, the tax consequences should be omitted from the cost-effectiveness test. This is true because taxpayers are subsidizing conservation and renewable resources that qualify for tax benefits. The true social cost of a resource includes those costs paid for by other taxpayers.

In summary, the Administrator is likely to develop and

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114. Thus, 3,100 dollars is 31% of $10,000. For resources costing $2,000, the advantage to renewable resources is only 18% or $360.

Table IV

Conservation			*Renewable Resource*
Direct System Costs:	$2,000		$2,000
Tax Credit			
15% of first $2,000:	− 300	40% of first $2,000:	− 800
New Cost:	$1,700		$1,200
10% Advantage:	− 120		− 0
Comparison Cost:	$1,580		$1,200

The effect of state tax laws could further disrupt the priority scheme. For example, Oregon provides a tax credit equal to 25% or $125 for a weatherization measure, whichever is less. OR. REV. STAT. § 316.088 (1979). In comparison, Oregon provides a tax credit for an alternative energy device equal to the lesser of either 25% of the actual cost or $1,000. OR. REV. STAT. § 316.116 (1979). Inserting these figures into the cost-effectiveness test results in the figures in Table V.

acquire renewable resources for several reasons: first, they are second priority resources; second, they are likely to be promoted strongly by the Administrator; and third, billing credits and other incentives such as the Administrator's financing investigation costs should favor the development of renewable resources over other resources except conservation. The requirement that the Administrator acquire renewable resources installed by residential and small commercial consumers to reduce load should significantly promote renewable resource development among these consumers. Finally, the Act should encourage the development of new technology in the renewable resource field through funding of experimental projects and through the economic benefits that will accrue to successful resource promoters.

C. *Third Priority to Waste Heat Utilization and High-Fuel Conversion Efficiency*

The Act assigns third priority to generating resources utilizing waste heat or generating resources of high-fuel conversion efficiency.[115] Presumably, generating resources are those which generate electric power.[116] This requirement precludes resources

Table V

Conservation		*Renewable Resource*	
Direct System Costs:	$10,000		$10,000
Fed. Tax Credits			
15% of first $2,000:	− 300	40% of first $10,000:	− 4,000
Oregon Tax Credits			
25% or $125	− 125	25% or $1,000	− 1,000
Net Cost:	$ 9,575		$ 5,000
10% Advantage:	− 500		− 0
Comparison Cost:	$ 9,075		$ 5,000

This is a difference of $4,075, which is an advantage to renewable resources.

Of particular interest to the proponents of geothermal resources is the geothermal deposit depletion allowance which permits owners of geothermal deposits to deduct 15% of the gross income from such deposits annually. I.R.C. § 613(a), 613(e). Geothermal wells also qualify for special treatment of intangible drilling costs and for an energy property investment credit. See *id.* § 263(c). Because geothermal resources are renewable resources, the Administrator is more likely to acquire geothermal resources as a second priority resource when the cost-effectiveness calculation includes tax consequences than when it does not.

115. PNEPPCA, *supra* note 16, § 4(e)(1), 94 Stat. 2705.

116. Neither PNEPPCA nor its legislative history defines the term "generating

utilizing waste heat for purposes other than for generating electric power.

Despite the requirement that third priority resources must be generating resources, the Act's distinction between conservation measures and third priority resources is difficult to ascertain. Consider the case of a cogeneration resource[117] using coal to produce electric power and steam for manufacturing. Because cogeneration reduces transmission losses and may increase the efficiency of energy use by extracting more work from each calorie of fuel consumed, some cogeneration resources may arguably be conservation resources. PNEPPCA does not require that the increased efficiency in energy use be an increase in the efficiency of *electric* energy use to qualify as a conservation resource. Thus, PNEPPCA should promote improved coal consumption efficiency when coal is used to produce electric power in cogeneration resources.

Cogeneration resources using wood or municipal waste may qualify as renewable resources because they utilize renewable biomass to produce electricity. Interestingly, some cogeneration resources may not qualify as generating resources utilizing waste heat because not all cogeneration resources extract energy to produce electricity from waste heat; often electric power is produced directly from energy produced specifically for that purpose rather than from heat that would otherwise be wasted.[118] In short, the Administrator must determine the priority of cogeneration resources on a case-by-case basis.

PNEPPCA fails to define "high-fuel conversion efficiency," and reference to the Act's legislative history is unavailing. The term implies that in comparing two resources, that resource utilizing fuel more efficiently will be a third priority resource, and the other resource will be a fourth priority resource. Because cogeneration resources do not inherently possess high fuel efficiency, cogeneration may not qualify as a third priority resource at all. The high-fuel efficiency conversion test is a technology-forcing standard similar to the best available technology

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resources."

117. *See generally* OREGON STATE BAR CONTINUING LEGAL EDUCATION: INDUSTRIAL PRODUCTION AND COGENERATION OF ELECTRICITY (1979).

118. *Id.* This analysis hinges on the meaning of the word "waste." If waste means "unwanted, useless leftover," the heat produced by cogeneration is hardly waste heat because the producer intends to use it. The heat loss during cogeneration would, of course, qualify as a third priority resource were it recovered.

and the best practicable technology standards of the Federal Clean Air Act and the Federal Water Pollution Control Act.[119]

Numerous innovative technologies are likely to qualify as third priority resources. For example, a fluidized bed boiler[120] promises high fuel conversion efficiency and a low pollutant level.[121] Another example of a third priority resource utilizing waste heat would be a resource extracting waste heat via the method used in Ocean Thermal Energy Conversion.[122] Waste heat, extracted from the waste hot water of a nuclear power plant, could be a first priority conservation resource because such an extraction may increase the efficiency of nuclear fuel use by producing more electric power per unit of fuel. Thus, the third priority is also likely to promote innovative approaches to energy use because of its emphasis on waste heat utilization and efficiency.

D. Fourth Priority to All Other Resources

The term "fourth priority resource" seems a misnomer because PNEPPCA does not describe a lower priority resource. The Administrator, however, cannot indiscriminately acquire any fourth priority resource. The Administrator must show that the acquired resource is the least-costly similarly reliable and available alternative.[123] This least-cost requirement is a priority scheme based solely on cost without any legislative bias in favor of a particular resource class. The Administrator can acquire either of two fourth priority resources provided their estimated incremental system costs are equal. Presumably, fourth priority resources include conventional thermal resources such as nuclear, coal, oil, gas, and any resources not qualifying for a

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119. Air Pollution Control, ch. 85, 42 U.S.C. § 7401-7642 (1977).

120. A fluidized bed boiler is a furnace that burns coal on a bed of fluidized sand which is similar to quicksand. The bed boiler is very similar in principle to a blacksmith's forge. The advantage of fluidized bed boilers is that the fire tends to burn at high temperatures which yields a very efficient conversion ratio and a much lower pollutant level.

121. The amount of polluting byproducts is less because more complete combustion occurs at elevated temperatures.

122. Basically, thermal energy conversion systems extract heat by immersing a working fluid such as freon into a source of heat, an example of which is waste hot water from a nuclear plant. The hot water vaporizes the fluid which then passes through a turbine, cools, and recycles.

123. *See* PNEPPCA, *supra* note 16, § 3(4)(A)(1), 94 Stat. 2698; § 4(e)(1), 94 Stat. 2705.

higher priority.

The fact that a resource is a fourth priority resource does not mean that it cannot compete effectively against higher priority resources. These conventional resources have the distinct advantage of known characteristics in determining the amount and quality of electric power that a resource will be expected to save or produce. In comparing resources, the Administrator must take into account "appropriate historical experience with similar measures or resources."[124] Conventional resources' direct-system costs may be easier to estimate, and the ability to calculate the direct-system costs of a resource accurately favors the resource because the logic of Pascal's Wager causes the Administrator to estimate direct-system costs conservatively to reduce the consequences of an incorrect guess. Thus, the Administrator may conclude, for example, that proceeding on the basis of known direct-system costs may be a better choice than proceeding on the basis of estimated but unknown direct-system costs.

The cost-effectiveness test also requires that a resource be available within the time it is needed.[125] This availability requirement places a premium on accurate demand forecasting. Planners know construction times for conventional resources with reasonable certainty, whereas proponents of a new technology may be unable to demonstrate that a new resource will be available within the necessary time. At some future date a fourth priority resource already constructed may be the only resource the Administrator can acquire because it may be the only one available at the time of an unanticipated shortage. Of course some fourth priority resources are the least costly. In short, acquisition of some fourth priority resources seems certain. Given the factors discussed above, fourth priority resources may be capable of competing quite well within the priority scheme, especially when competing with new, untested technologies.

IV. Conclusion

The logic of Pascal's Wager leads to the conclusion that the Administrator and other electric power suppliers will attempt to acquire sufficient resources to meet the projected demand. The

124. *Id.* § 3(4)(c), 94 Stat. 2699.
125. *Id.* § 3(4)(A)(1), 94 Stat. 2698.

Pacific Northwest Electric Power Planning and Conservation Act will influence the type of resources the region will acquire to meet future demand. PNEPPCA provides several incentives designed to encourage the development of a wide variety of resource technologies—especially renewable resources and conservation. At the core of the proposed allocation process is the resource priority scheme which seems likely to promote resource development in the order of its priorities. On the other hand, the overriding consideration in resource acquisition is cost-effectiveness. Perhaps most importantly, PNEPPCA assures proponents of all resources the opportunity to demonstrate the advantages of acquiring their respective resources.

The key to a successful acquisition under the Act rests on proof that the proposed resource is cost-effective. At the same time, PNEPPCA's melded rates may mask the true social cost of electric power by sending inappropriate price signals to consumers. Yet, to the degree that estimates of environmental costs accurately reflect external costs, the acquisition of resources will be economically sound[126] decisions. The priority scheme influences acquisition decisions only where competing resources possess equal system costs. In this instance, the priority scheme favors conservation thus promoting the efficiency of electric power usage. Similarly, utilization of renewable resources should also be promoted.

To summarize, PNEPPCA seems likely to produce at least four significant impacts on the resource acquisition process. First, the Act should stimulate technological improvements in the efficiency of electric power generation, distribution, and consumption. Second, PNEPPCA should spur development of new resources to meet anticipated needs. Third, the burden of finding electric power to satisfy the region's insatiable desire for more energy will likely shift to the Administrator, although the

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126. The most important factor in rational economic decision-making is accurate information. *See generally* M. FRIEDMAN, *supra* note 9. Because the acquisition process should develop a greater amount of more accurate information pertaining to the true costs of energy resources, decision-making should improve. *Contra*, Boly, *Energy Bill Clears Path for Nukes*, Willamette Week, April 7, 1980, at 1, col. 1. Boly suggests that the bill would "lead to a nuclear-power-plant building boom." *Id.* Although some provisions of the bill might favor nuclear power, the bill's thrust is to require that proponents of a specific resource prove that their resource has the least social and environmental cost. To the degree that the Administrator is biased in favor of a particular resource, acquisition of that resource could have a slight advantage if other factors are equal. The solution to any such bias is political—change the Administrator in power.

Pacific Northwest should see a high degree of cooperation among all utilities. Finally, PNEPPCA should encourage development of resources as though they were owned by a single utility.