NOTHING BUT NET: RENEWABLE ENERGY AND THE ENVIRONMENT, *MIDAMERICAN* LEGAL FICTIONS, AND SUPREMACY DOCTRINE

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I. OVERVIEW

With state governments at the barricades of federalism, an energy revolution has been launched. Perhaps usurping federal law, thirty-eight states recently mounted a statutory and regulatory charge to establish "net metering," a regulatory innovation to implement decentralized renewable power. This innovation fundamentally shifts the regulatory balance as well as the energy mix in America. Net metering profoundly reshapes the energy landscape, providing the most significant boost of any policy tool at any level of government—both qualitatively and quantitatively—to decentralize and "green" American energy sources.

While only twelve states have passed statutory initiatives to implement renewable energy system benefit charges and eight have elected to implement renewable portfolio standards,[1] thirty-six states to date have implemented net metering.[2] Net metering enables consumers with small generating facilities, for example solar panels, fuel cells, or wind turbine systems, to offset their electric bills with any ex-

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1. Steven Ferrey, *Renewed Energy: Constitutional Impediments to State Action Crafting America's Renewable Energy Future* (forthcoming 2004) (manuscript at 65, on file with the Duke Environmental Law and Policy Forum).

2. Net metering provides an automatic credit to decentralized renewable power producers, while system benefit charges pay selective one-time payment benefits to decentralized power producers, and renewable portfolio standards provide for a tradable "green" credit that provides less of a price differential between centralized power utilities and decentralized renewable power producers than net metering.

cess power produced at their facility, running the retail utility meter backwards when the renewable energy generator funnels power to the grid. Net billing, or net metering, is the cornerstone of state energy policies encouraging private investment in renewable energy sources.[3]

Net metering can pay the eligible renewable energy source approximately four times more for this power than paid to any other independent generators and much more than the time-dependent value of this power to the purchasing utility. A 400% price advantage over the competition provides a nationwide platform in thirty-six states—including all of the major states—to launch a revolution in renewable and decentralized energy production.

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3. *See* Seth M. Colton and James W. Brehl, *Cogeneration - The Small Facility Perspective in Minnesota*, 11 WM. MITCHELL L. REV. 477, 480-81 (1985) (citing MINN. STAT. § 216B.164(1) (1982), a net metering provision "intended 'to give the maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayers and the public.'"). "Net metering" or "net billing" is a system that utilizes a single bi-directional meter (or the mathematically netted result of two unidirectional meters) to measure and bill electric energy purchased and sold by a customer. Brief for Respondent/Appellant Iowa Utilities Board at 9, MidAmerican Energy Co. v. Iowa Util. Bd. (Aug. 18, 2000) (No. 99-1529). The single meter connects a Qualifying Facility or small power producer directly to an electric utility. *See Id.* Net metering allows consumers with small generating facilities (usually photovoltaic solar panels, a fuel cell, or a wind turbine system) to use a single reversible meter to measure the difference between the total electric generation exported to the grid and their total consumption of electricity from the grid. Net metering enables consumers with on-site generation systems to employ any excess electricity that they generate to offset their electric bills. As the consumer's generation system produces electricity, the kilowatts are first used for on-site (sometimes called "station power") needs. Then, if the consumer creates more electricity than he/she needs, the excess generation is fed back into the utility grid and sold back to the utility. Typically, the small producer produces power primarily for his own needs, but when an excess is generated it is sold to the utility and the meter turns backwards. *Id.* Likewise, if the small producer consumes additional power, it may be obtained from the utility through the same meter, turning the meter forward. *Id.* Finally, at the end of the billing cycle, the meter is read and the small producer pays the utility, at the retail rate, for any electricity the utility has supplied to the customer-generator during the billing cycle. *Id.* at 13. Similarly, in many states, the utility will pay or credit the customer-generator for any power the customer-generator has generated in excess of its needs during that billing cycle. *Id.* Why use a single meter to track both inflow and outflow of energy? Most existing meters are bi-directional. If the existing meters were not utilized, the customer-generator would have to purchase and install new dual, unidirectional meters. Brief of Amici Curiae Renewable Energy Advocates at 7, MidAmerican Energy Co. v. Iowa Util. Bd. (U.S. Aug. 18, 2000) (No. 99-1529). Typically, these meters cost between $200 and $1,000. Therefore, meter replacement on a small residential system would add substantially to the total installation cost. *Id.* Some jurisdictions such as Maine agree that meter replacement is an unnecessary burden to impose upon such small energy producers. *Id.* The Maine Public Utilities Commission held that "requiring two meters (one for purchase and one for sales) would be unnecessarily costly for such small facilities." Talmage, Nos. 97-513 & 97-532, at 7 (Me. Pub. Util. Comm'n Oct. 27, 1997) (order) (citing *Chapter* 36 Cogeneration and Power Production, No. 80269, at 18 (Me. Pub. Util. Comm'n May 7, 1981)).

This article analyzes the key net metering decision, *MidAmerican Energy Co. v. Iowa Utilities Board*, through its illogical "hairpin" twists in federal and state courts.[4] But that is the beginning, not the resolution, of the tension between state and federal government regulation of net metering. Not one of the precedents cited in the decision support the propositions for which they are summoned. Analysis of the precedential links in the jurisprudential chain erodes the foundation of the holding. The constitutional constraints on state regulation of the traditionally federally governed American energy system are contested on the net metering battleground.

Section II, examines the unique role of electric energy, as well as the emerging role played by decentralized and renewable energy sources, in shaping American institutions and society. Electric energy is fragile and unique; it cannot be preserved or stored and moves at the speed of light, yet when centralized it is vulnerable to disruption. It is protected and distributed under a stringent legal regulatory construct. Section III introduces the mechanics of net metering. Section IV examines and tracks the seminal *MidAmerican* case through the state courts to an outcome that holds against the state, then to its ultimate reversal in federal court. Section V places a magnifying glass on this federal decision and analyzes the primary precedent on which it relies, and then proceeds to discuss the secondary precedent underlying the decision. The decision rests on *much* less than meets the eye. The precedent supports a holding contrary to that announced. Section VI examines the commerce clause and supremacy clause constitutional jurisprudence demarcating federal and state jurisdiction over power. Last, this article will set forth the federal statutory and regulatory framework for decentralized and renewable energy sources and finally discuss the supremacy clause issues raised by net metering.

The pending state/federal struggle over net metering replays seventy years of federalism's jurisdictional friction regarding electric power development. This article concludes by suggesting how to construct a more stable foundation for important net metering policy. Net metering is a vital platform for restructuring the energy interface in twenty-first century America. It is preferable to sanction net metering practices at the state level through a federal rulemaking rather

4. MidAmerican Energy Co. v. Iowa Utils. Bd., No. AA3173, 3195, 3196 (Iowa District Court May 25, 1999). [hereinafter "*MidAmerican*"]

than by jurisprudential "precedent" that does not support the propositions for which they are cited.

II. MODERN SOCIETY AND THE FORCE OF ENERGY

Energy has always been important. Since humankind first created the wheel and harnessed animals to do productive labor, energy has been the means to organize production. Certain energy technologies—principally those associated with the critical modular portable fuel role of petroleum products and the resultant formative impact of the automobile in sculpting modern use of land and space—are the stuff of folklore. These are specific examples in a long continuum of the harnessing and application of energy by society.

A. *Decentralization of Energy Supply*

There are significant efficiency reasons to promote decentralized on-site electricity supply. Decentralized electric production can transform electric production efficiency from approximately 33% for central station conventional steam cycle utility supply to approaching 80% for decentralized cogeneration.[5] These decentralized electric supply technologies, in addition to greater potential efficiency, and in certain circumstances environmental benefits, tend to encourage the deployment of renewable energy sources and applications.

Particularly in the aftermath of the attacks on the World Trade Center, the security of the centralized electric supply and distribution system in the United States has been subject to substantial scrutiny. The security of large nuclear and fossil-fuel-fired power plants is not assured. The security of the nation's supply of renewable energy sources is deemed by many to be more predictable, and more reliable than that of conventional fossil fuels.[6]

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5. *See* LEONARD S. HYMAN, AMERICA'S ELECTRIC UTILITIES: PAST, PRESENT AND FUTURE 27 (6th ed. 1997) ("In the production of electricity, roughly two-thirds of the caloric content of the fuel is lost up the smokestack or into waterways in the form of waste heat."); AMORY B. LOVINS, SOFT ENERGY PATHS: TOWARD A DURABLE PEACE 343 (1977) ("Using fuel to raise steam to drive turbines to generate electricity inevitably loses about three-fifths or more of the fuels energy in the form of warm water used to cool the steam condenser. But this heat need not be wasted, as it normally is in U.S. power stations. Instead, it can be used to heat buildings or greenhouses via a combined-heat-and-power station. Such an integrated "total-energy system" can raise to 80% or more the efficiency with which useful work is extracted from the fuel, saving money correspondingly. This can be done particularly well on a small scale because it is more difficult to transport low-temperature heat for long distances than electricity.").

6. *See* LOVINS, *supra* note 5, at 269 ("Fluctuations in renewable energy flows are in this sense better understood and more predictable than those in the supply of conventional fuels and power. The methods used to forecast the path of the sun, or even next weeks weather, are con-

Because renewable energy sources are not under the control of any nation or cartel, but are instead distributed across the earth, they are not subject to embargo or manipulation.[7] Because decentralized renewable energy sources are developed in relatively small modules, the reliability and resiliency of the system is promoted.[8] Because decentralized energy resources are built close to their points of use, they are less dependent on long transmission and distribution networks, and they are less vulnerable to supply disruption from an overloaded system line, storm, or intentional disruption.[9]

A move to greater reliance on either cogeneration or dispersed renewable energy sources will decentralize the sources of power. Smaller power sources are deployed in modular form, at small size, close to the user of the electricity. Therefore, they rely much less on an integrated transmission and distribution system, except for supplemental and back-up supply.

In this way, decentralization breaks the dependency relationship between major urban infrastructure suppliers and energy consumers.[10]

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siderably more reliable than those which predict reactor accidents or Saudi politics."); *id.* at 268 ("Renewable sources eliminate at a stroke two of the most fragile parts of today's energy system—the special localities (foremost among them the Persian Gulf) where rich deposits of fuel occur in the earth's crust; and the far flung links which carry raw fuels and deliver processed energy in copious but concentrated flows over long distances. In place of these power transportation systems, renewable sources rely on the automatic arrival of the natural energy flows, direct and indirect, which are distributed freely, equitably, and daily over the entire surface of the earth. This energy flow is not subject to embargoes, strikes, wars, sabotage, or other interferences, nor to depletion, scarcity, and exhaustion.").

7. *See id*. at 288-289 ("Being inexhaustible and relying only on domestic energy flows, renewable sources can never place this nation at the mercy of other countries which control dwindling and scarce fuel resources.").

8. *See id.* at 264 ("A resilient energy supply system should consist of numerous, relatively small modules with a low individual cost of failure. The philosophy of resilience, on the other hand, accepts the inevitability of failure and seeks to limit the damage that failure can do.").

9. *See id.* at 265 ("A resilient supply system delivers energy to its users via short, robust links. Energy that travels simply and directly from ones own rooftop, or down the street, or across town, is more likely to arrive than energy that must travel hundreds or thousands of miles and be processed and converted in complex devices along the way."); HYMAN, *supra* note 6, at 34 ("Electricity travels at close to the speed of light, and those running the network must make decisions quickly, or have in place devices that make decisions automatically. A few seconds of delay may turn a local perturbation into a multistate blackout. In an interconnected system, a deviation from normal operations in one region affects all the connections, as well.").

10. JON VAN TIL, LIVING WITH ENERGY SHORTFALLS: A FUTURE FOR AMERICAN TOWNS AND CITIES 107 (1982) ("Other statements have been made to the point that energy shortfall contains within it a set of implications more conducive to decentralization than to reconcentration. Peterson and Hempel have analyzed the decentralizing influence of solar, recycling, and communications technologies and note that 'each of these technological developments offers an individual the opportunity to withdraw from traditional dependency relationships which have been created by the basic urban institutions of our time: city govern-

Decentralized energy sources encourage independent responsibility in lieu of a more centralized dependency. This shift towards independent responsibility has the potential to be a formative force on spatial development, modern society and lifestyle, and institutional evolution.

With demand for electricity increasing in both developed and developing nations, whether new power supplies are developed in a centralized or decentralized mode has profound implications. How states encourage or discourage the creation of decentralized dispersed energy sources through various regulatory, subsidy, and metering initiatives, will sculpt the electric energy future. Net metering is the principal mechanism employed by the states to encourage decentralized and renewable energy technologies. However, net metering must survive legal scrutiny.

B. *On-Site Efficiency*

Both conventional electric generation technologies and industrial process heat applications are inefficient. Conventional electric generating technologies typically exhaust as much as two-thirds of the heat energy produced to power electric generators.[11] Industry uses process steam most often in applications below 400 degrees Fahrenheit. However, combustion of fossil fuels to produce that heat results in temperatures of more than 3000 degrees Fahrenheit, much of which is wasted.[12] The next major leap in efficiency must come from recovering and reusing waste heat. Machines that recover all waste heat and produce electricity have the capability to achieve efficiencies from 50

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ments, utility companies, major educational centers and the workplaces of corporate capitalism. . . .' There is increasing evidence that dispersed settlement patterns can be combined with what we have previously considered 'urban' levels of quality of life.").

11. *See generally* I.C. BUPP ET AL., ENERGY FUTURE (Robert Stobaugh & Daniel Yergins eds., 1979); LOVINS, *supra* note 5; BARRY COMMONER, THE POVERTY OF POWER (1976).

12. CALIFORNIA ENERGY COMMISSION, COGENERATION HANDBOOK (CEC P500-82-054) 1-1 (1982). When designing a total energy system, one typically designs around the usable quantity of heat, and scales the electricity production relative to both the electricity demand and the output characteristics of various technologies to produce an appropriate split of thermal and electric energy. There is a myriad of promising cogeneration technologies available in the industrial and commercial sectors. They all have the ability to simultaneously generate electricity and heat for useful application. Typically, cogeneration technologies capture waste heat and harness it for additional purposes, rather than exhausting it as a waste material. This use of otherwise wasted energy is cogeneration's principal advantage over conventional electric generating technologies. Cogeneration technologies realize a "cascading" effect of capturing waste heat by-product of an industrial or energy process, thereby realizing a double value use of the energy.

to 90%, much better than the typical thirty-plus percent of the existing central station utility fossil fuel steam system.

Cogeneration technologies make use of the otherwise wasted heat from the combustion process. Cogeneration technologies produce electricity and a second form of useful energy, heat. The use gets two forms of useful energy for the effort and price of one. Thus, cogeneration facilities operate at overall thermal efficiencies as great as 250 to 300% higher than conventional electric generating technologies.[13] The very best cogeneration technologies are more than twice as efficient as new coal-fired power plants.[14] As generating technologies become more efficient, they diminish the residual heat energy wasted. This, in turn, diminishes the by-product or cogeneration potential application of heat energy.

The heat recovered from a cogenerating energy system, a system generating heat and electricity, can be used for direct application heat, for industrial process heat, or for pre-heating the combustion air for a utility boiler.[15] By capturing waste heat in the process of electric generation, greater efficiency is achieved. This means that more useful energy can be produced while generating a lower amount of environmental pollutants and emissions. It also means that less transmission capability would be required if there is development of dispersed electric and total energy systems, located close to load centers. Not only will additional transmission capacity not be required in certain areas, but capacity requirements of existing transmission grids will be alleviated. One way to view this phenomenon is that if natural gas co-

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13. *Id.* at 1-3 ("A cogeneration system operates at an overall thermal efficiency as much as 2½ to 3 times that of conventional utility electrical generating systems.").

14. Barney L. Capehart & Lynne C. Capehart, *Efficiency in Industrial Cogeneration: The Regulatory Role*, PUBLIC UTILITIES FORTNIGHTLY, Mar. 15, 1990, at 17. Typical heat rates for large, modern, coal-fired power plants are 10,500 British Thermal Units per Kilowatt-hour (Btu/kWh) as compared to 4,500 Btu/kWh for efficient, steam-topping cogeneration power plants. *Id.* at 17-18.

15. Many of these technologies are derivative from the aircraft turbine industry. With mass production, smaller generators in the 1-5 MW range are likely to become even more cost-effective. It is possible that the most cost-effective application could be in the 1-10 MW size, depending on a variety of engineering factors and environmental requirements. With smaller facilities located on or near the site of consumption, the necessity for transmission facilities is minimized, along with transmission losses and transmission-related outage problems. Once one constructs a combined-cycle gas-fired facility in the 50 to 100 MW range, there are only a few additional technological economies of scale from larger size, although there still may be fuel procurement and arbitrage advantages at larger size. Units of this size are not inappropriate to put near population centers, depending upon the land-use, siting, emissions, and engineering factors involved. In fact, some of the most efficient gas turbine technology is realized at below 50 MW.

generation or total energy systems replace centrally dispatched electricity, energy will be moved more in its primary form by natural gas pipelines and less in its derived form as electricity.[16]

C. *Environmental Benefits*

Conventional production of electricity by electric utilities in the United States is responsible for substantial shares of criteria pollutant emissions[17] including:

(1) 68% of sulfur dioxide (SO_2) emissions;

(2) 33% of nitrogen oxide (NO_x) emissions; and

(3) 33% of carbon dioxide (CO_2) emissions.

Environmental costs associated with power plants occur at each of three stages of the energy process: at the point of extraction and processing of energy sources,[18] direct costs associated with the use of energy sources,[19] and back-end residual costs.[20] There were 838 electric utilities that both generated and sold power in the United States in 1998. The twenty largest of these electric utilities were accountable for 50% of the utility emissions of sulfur dioxide, nitrogen oxide, and

16. *See* discussion *infra* Section II.

17. In 1985, electric utilities contributed 68% of the national SO_2 emissions (16,204,000 tons of 23,699,000 tons emitted nationally), and 33% of the national NO_x emissions (6,989,000 tons of 21,054,000 tons emitted nationally). 1 NAT'L ACID PRECIPITATION ASSESSMENT PROGRAM, INTERIM ASSESSMENT: THE CAUSES AND EFFECTS OF ACIDIC DEPOSITION 11 (1987). Electric utilities accounted for 57% of carbon dioxide emissions in the 1980s. E.P.A. Office of Policy, *Planning and Evaluation, Policy, Draft Report To Congress, Options for Stabilizing Global Change*, 4 (Mar. 1989) *in Policy Options for Stabilizing Global Climate: Hearing Before the Senate Subcommittee on Environmental Protection, Committee on Environment and Public Works*, 101st Cong. 101-31 (1989). [hereinafter EPA Report]. Carbon dioxide accounts for 80% of global warming because of its long duration in the atmosphere. Daniel A. Lashof & Dilip R. Ahuja, *Relative Contributions of Greenhouse Gas Emissions to Global Warming*, 344 NATURE 529, 529 (Apr. 5, 1990). The remaining greenhouse gases, CH_4, CFC 11 & 12, N_2O, and others, accounted for the gases contributing to the balance of global warming. EPA Report, *supra* note 17, at 3.

18. Front-end costs include the costs of drilling, mining, or otherwise extracting raw fuel sources, the processing, enrichment or concentration on these fuel sources, the manufacture of equipment to effectively utilize these fuel sources, and transportation costs for fuel and equipment.

19. These include the emission of a variety of pollutants, health impacts from these emissions, impacts on the natural environment of such emissions, and human occupational exposure or illness at the power plant work site. The primary effects on human populations are the increased risk of mortality and morbidity, including chronic illness and increased risk of chronic disease.

20. These include waste disposal costs for residual elements of fuel and the eventual costs of decommissioning energy producing facilities.

carbon dioxide. The 100 largest of these electric utilities were responsible for 90% or more of each of these emissions.[21]

The primary impacts on human health from direct production of electric energy are from emissions of the criteria pollutants sulfur dioxide,[22] nitrogen oxide,[23] carbon dioxide,[24] ozone,[25] particulates,[26] and acid deposition.[27] Conventional power facilities exert environmental impacts on health and the environment in the form of water pollution[28] and impairment of land uses.[29]

The level of carbon dioxide in the atmosphere has increased steadily during the last 100 years from approximately 270 parts per million (ppm) to 340 ppm. A common prediction, found in many discussions of global change, states that if the carbon dioxide level continues to increase at the current rate, the concentration will be double preindustrial levels by the year 2050 and the earth will experience an average increase of between two degrees and eight degrees Fahrenheit.[30] To help put these statistics in perspective, a five degree Fahr-

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21. NATURAL RESOURCES DEFENSE COUNCIL, BENCHMARKING AIR EMISSIONS OF ELECTRIC UTILITY GENERATORS IN THE UNITED STATES (July 1998).

22. Sulfur exerts a significant impact on human health directly, is also a precursor of aerosols that result in acid deposition, and is transformed into sulfates, which pose independent problems. *See id.* at 44 (discussing the impacts of sulfur dioxides).

23. NO_x is formed by the conversion of chemically bound nitrogen in the fuel or from thermal fixation of atmospheric nitrogen in the combustion air. *See id.* at 40-43 (discussing the effects of nitrogen oxides).

24. Carbon dioxide is caused principally by the burning of fossil fuels, and is a principal greenhouse gas, responsible for global warming. *See id.* at 45 (discussing the effects of carbon dioxides).

25. Ozone causes damage to human health, agriculture, and plant life. *See id.* at 40 (discussing the effects of ozone).

26. Particulates include solid particles and liquid matter, which range in size from one micron to more than 100 microns in diameter. They are responsible for major health impairment, impairment of visibility by causing haze, and the creation of sulfate from SO_2 emissions. *See id.* at 44 (discussing sulfur dioxide emissions in relation to particulate matter).

27. Acid deposition causes damage to forests, wildlife, water quality, and aquatic species. *Id.* at 44 fig. 2.5 (discussing the hazards caused by acid deposition).

28. This is primarily in the form of thermal discharge from fossil-fuel and nuclear power facilities, water impacts from hydroelectric dams and spillways, and leachate contamination from discharge ponds or landfills for contaminated facility water. *See id.* at 38-46 (discussing the adverse effects of power plant pollution).

29. Large hydroelectric generating stations flood upstream land; solar and wind electric production facilities create visual, aesthetic and, in some cases, television signal interference externalities; large generating facilities, particularly nuclear facilities, may adversely impact property values in the region where the facility is located.

30. Michael D. Lemonick, *The Heat is On*, TIME, Oct. 19, 1987, at 60.

enheit decrease in temperature accompanied the last great ice age 12,000 years ago.[31]

The increased rate of combustion of fossil fuels in the last century accounts for about 75% of the increase in anthropogenic carbon in the atmosphere, while the reduction in organic matter in the biosphere, which absorbs carbon in the atmosphere through assimilation, resulting from deforestation accounts for approximately the remaining 25%.[32] Unassimilated carbon dioxide in the atmosphere lasts more than 100 generations.

Carbon dioxide is the most important greenhouse gas.[33] Carbon dioxide, which is released by burning fossil fuels and deforestation, is thought to account for about 50% of the global greenhouse effect. The impacts of other greenhouse gases—methane,[34] nitrogen oxide,

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31. T.M. Georges, *Climate Change and Public Policy* (unpublished manuscript at 3, *available at* http://tgeorges.home.comcast.net/climate.html (1992)).

32. Many researchers suspect that deforestation contributes to global climate change to the same degree as industrial emissions. Deforestation reduces the amount of plant matter available to store carbon dioxide. The remaining bare land stores less carbon dioxide. Therefore, less water is released to the atmosphere, reducing annual rainfall, which increases local temperature significantly. In addition, stripped lands do not store heat as well as forested areas, which adds to the increase in temperature in areas of deforestation. These factors upset climate balance. In addition to attempting to regulate industrial emissions, the governments may have to control the land use activities of farmers, loggers, and developers.

33. Carbon dioxide is relatively transparent to sun, but absorbs the longer infrared radiation, trapping heat above the earth's surface.

34. Methane is different from other greenhouse gases due to its immediate impact on the atmosphere and its short atmospheric lifetime. Methane has twenty to thirty times more greenhouse capacity (the ability to trap infrared heat) per molecule than carbon dioxide. STEPHEN H. SCHNEIDER, GLOBAL WARMING; ARE WE ENTERING THE GREENHOUSE CENTURY? 101 (1989). Or put another way, a gram of methane absorbs seventy times more infrared radiation than a gram of carbon dioxide. Methane in the atmosphere also contributes to tropospheric ozone formation, another greenhouse gas, and potentially stratospheric ozone depletion. These characteristics make methane an extremely potent greenhouse gas, giving it 120 times more power to cause global warming than carbon dioxide. This characteristic is called "high global warming potential." "Global warming potential is defined as "the ratio of the warming caused by the emission unit of a trace gas to that caused by the emission of carbon dioxide at current concentration levels." U.S. ENVIRONMENTAL PROTECTION AGENCY, METHANE EMISSIONS AND OPPORTUNITIES FOR CONTROL 20-21 (1990) [hereinafter METHANE EMISSIONS]. Methane is produced by bacteria that adapt to relatively oxygen-free environments including the intestinal tracts of animals, bogs, marshes, rice paddies, arctic permafrost, and garbage dumps. SCHNEIDER, *supra* note 34, at 101. Monitoring indicates that methane levels in the atmosphere have increased by almost 100% since 1800. *See id.* at 21. This increase is mainly attributed to population growth and human related activities, accounting for about 70% of total methane emissions. Major anthropogenic sources of methane emissions, include rice cultivation, livestock, biomass burning, coal mining, gas systems leaks, and landfills. METHANE EMISSIONS, *supra* note 34, at 7 (reporting the findings of two international workshops sponsored by the International Panel on Climate Change which focused on current methane emissions and opportunities to control these emissions). Although methane presents numerous problems when

and chlorofluorocarbons (CFCs)—are believed to collectively account for the remaining 50%. Although these gases are only evident in trace quantities, they are extremely efficient at absorbing radiation, and any substantial change in their concentration is likely to affect the atmosphere's natural ability to regulate global temperatures. Nitrogen oxide, which accounts for about 5% of the greenhouse effect, is generated by burning fuels.

It is projected that the electric power sector will account for 35% of carbon dioxide emissions, industry 27%, transportation 25%, and the domestic sector 14%.[35] The choice of fuels, as well as the technology for converting those fuels to electricity, has profound implications for attaining carbon dioxide reduction targets to limit possible effects of global warming.

1. *Renewable Energy*

What the renewable energy projects do have in common is that they do not utilize combustion of fossil fuels to produce electricity. They either create mechanical shaft power from the movement of wind or water, tap naturally produced geothermal energy sources or employ solar energy to induce direct current on a chemical surface. Wind energy facilities create noise and land-use externalities.[36] The cost of these externalities are approximately 0.1 cents/kilowatt hour, as illustrated in Table 1.

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released directly into the earth's atmosphere, it presents significant benefits when utilized as an energy source. Methane is a main component of natural gas. When compared with fossil fuels, natural gas has significantly lower emissions of carbon dioxide, sulfur dioxide, nitrogen oxide, and particulates. When directly substituted for electricity generated by fossil fuels, significant reductions of carbon dioxide emissions are achieved. METHANE EMISSIONS, *supra* note 34, at 20, 37. Methane in the atmosphere also contributes to tropospheric ozone formation, another greenhouse gas, and potentially stratospheric ozone depletion. These characteristics make methane an extremely potent greenhouse gas, giving it 120 times more power to cause global warming than carbon dioxide. This characteristic is called "high global warming potential." Global warming potential is defined as "the ratio of the warming caused by the emission unit of a trace gas to that caused by the emission of carbon dioxide at current concentration levels." METHANE EMISSIONS, *supra* note 34, at 20-21.

35. While use of coal in power plants is a major source of carbon dioxide, the fastest growing source of carbon dioxide emissions is vehicle exhaust.

36. *See e.g.*, Oregon Dep't of Energy, *Noise Regulation and Wind Energy Facilities at* http://www.energy.state.or.us/siting/noise.htm (January 7, 2004).

TABLE 1
Summary of Environmental Costs for
Various Renewable Technologies[37]

Technology Type	Cents/Kilowatt Hour
Solar	0 to 0.4
Wind	0 to 0.1
Biomass	0 to 0.7

Geothermal energy sources have minimal environmental impacts that while limited, include air pollution and noise.[38] Photovoltaic solar energy systems exhibit limited negative environmental impacts because they necessitate manufacture of photovoltaic cells, use of large land areas, and a negative aesthetic impact. On balance, these environmental externalities range from 0 to 0.4 cents/kilowatt-hour (kWh), as illustrated in Table 1. However, distributed energy systems can be sited near load centers, thereby eliminating the need for power lines and associated environmental impacts and line losses of power.

Biomass energy facilities, depending on the fuel source, emit a variety of criteria air pollutants resulting from the combustion of organic materials. The environmental externalities of biomass power facilities range from 0 to 0.7 cents/kWh, as illustrated in Table 1. The combustion of biomass has no net emission of carbon dioxide. The carbon dioxide released during combustion is offset by an equal amount of carbon dioxide absorbed during photosynthesis.

2. Cogeneration

Cogeneration facilities should cause fewer environmental impacts than equivalent megawatts of conventional power production. This is because cogeneration facilities simultaneously produce electricity and thermal energy by the same continuous process, thereby recapturing and utilizing more efficiently energy that would otherwise be wasted. This substitution of an integrated cogeneration technology, in lieu of conventional separate electricity and thermal energy production technologies, should save 15 to 25% of the energy input otherwise consumed by separate energy production configurations.[39]

37. PACE UNIVERSITY, ENVIRONMENTAL COSTS OF ELECTRICITY 36 (1990).

38. *Id*. at 36.

39. A 15% reduction in fuel use should accompany a change from a separate steam electric generator and separate low-pressure steam boiler to a steam electric cogeneration system. *In-*

This can also be true of small power production Qualifying Facilities (QFs) which, although they do not realize the efficiency inherent in cogeneration technologies, combust waste or alternative energy.

These reductions in the amount of fuel burned by cogenerators should translate into fewer criteria pollutants discharged as by-products of the combustion process, and less residual waste product of the facility. For example, various cogeneration technologies can reduce the levels of sulfur dioxide,[40] particulate matter,[41] carbon dioxide,[42] and nitrogen oxide[43] per unit of useful energy output, al-

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dustrial Cogeneration–What It Is, How It Works, Its Potential, U.S. Gen. Accounting Office (U.S. Gov't Printing Office, EMD-80-7, Apr. 29, 1980). Use of a diesel cogeneration system (assuming recovery of 75% of the usable heat) in lieu of a diesel electric generator plus an oil-fired furnace, or use of a gas turbine cogeneration system in lieu of a gas turbine electric generator plus separate furnace. Consolidated Edison, Environmental Assessment of Cogeneration in New York City, Presentation to New York Pub. Serv. Comm'n. 13 (Mar. 17, 1980). Improvements in combined cycle efficiencies, approaching 60% total electric efficiency, compared to slightly more than half that efficiency for simple cycle gas turbines, counters that improved first law efficiency of cogeneration.

40. A diesel cogeneration system using 0.2% sulfur No. 2 oil could save about 0.1 pounds of SO_2 for every 100 kWh of electricity generated by the facility. *See* U.S. OFFICE OF TECH. ASSESSMENT, INDUSTRIAL AND COMMERCIAL COGENERATION 286-87 (1983).

41. Particulates are solid or liquid substances in a wide range of sizes, produced primarily by stationary fuel combustion and industrial processes. While some particulates or particulate matter, as they are commonly referred to, are noncombustible material from the original waste input, some are condensed gases from material vaporized during incineration but cooled into or onto particles. Arnold W. Reitze, Jr. & Andrew N. Davis, *Regulating Municipal Solid Waste Incinerators Under the Clean Air Act: History, Technology and Risks*, 21 B.C. ENVTL. AFF. L. REV. 1, 21 (1993). Particulate matter is formed from non-combustible constituents in fuel or in the combustion air, from products of incomplete combustion, or from formation of ammonium sulfates after combustion. These typically are unburned hydrocarbons and sulfur. This can include unreacted ammonia slip from an SCR NO_x reduction system. There are no federal standards regarding ammonia emission rates. Because ammonia is soluble in water, it does not reside long in the atmosphere. Ammonia slip is directly proportional to the stoichiometric ratio of ammonia to NO_x, and the uncontrolled NO_x concentration. If one continuously monitors the flow rates of NO_2, NO, and NH_3, ammonia slip can be minimized. In addition to control strategies at the back end of the combustion process, the ash content of fuel inputs varies. Four types of emission control devices are used to control particulate ash emissions: electrostatic precipitation and filters, multitube cyclones, and wet scrubbers. Electrostatic precipitation and fabric filters remove 96% and more of particulates. Multitube cyclones are mechanical devices and are less efficient.

42. Carbon dioxide, which is released by burning fossil fuels and deforestation, is thought to account for about half of the greenhouse effect. About three-quarters of the anthropogenic sources of carbon in the atmosphere is the result of the combustion of fossil fuels, while 25% is the result of deforestation and the resultant inability of the biosphere to assimilate and reprocess this chemical compound. Excess carbon dioxide in the atmosphere or ocean systems lasts more than 100 generations. Carbon dioxide is absorbed by plants, soils, and oceans. These large carbon dioxide "sinks" exist primarily in temperate latitudes in the northern hemisphere. S. Fan et al., *A Large Territorial Carbon Sink in North America Implied by Atmospheric and Oceanic Carbon Dioxide Data and Models*, 282 SCI. MAG., Oct. 16, 1998, at 442. The primary such sink is

though certain technology configurations can also increase the discharge of these critical emissions.[44] A cogeneration system's use of lower carbon and lower sulfur fuels, thereby producing less carbon dioxide, nitrogen oxide, and sulfur dioxide and incurring a lesser capital investment in sulfur dioxide emission containment technology, are primary environmental advantages.[45]

In the shift to on-site distributed generation, QFs[46] and self-generation both have the potential to dramatically lessen the emission of criteria pollutants. The continued deployment of both technologies promises to limit the emission of pollutants and their attendant environmental costs, as compared to conventional generation. First, more than a quarter of QFs utilize renewable energy sources, which exhibit minimal environmental externalities.[47] Second, 75% of QFs and independent power facilities constructed are cogeneration facilities. Cogeneration facilities produce more usable energy per unit of energy input than comparably sized stand-alone conventional electric generating facilities.[48] Thus, there is more usable and used energy output per unit of pollution from the combustion. Third, the fuel of preference for QFs and independent power projects is natural gas—a relatively clean fossil fuel. Fifty percent of all QFs and independent power facilities and most new self-generation powered by fossil fuels use natural gas.[49]

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in North America. The North American land surface appears to absorb 1-2 billion tons annually of carbon dioxide. *Id*. at 444. This indicates that North America absorbs much of the carbon dioxide that it generates. However, a 2001 study indicates that the absorption is much less at .3-.58 billion tons annually indicating that the North American continent is producing much more cardon dioxide than it absorbs. S.W. Pacala et al., *Consistent Land- and Atmosphere-Based U.S. Carbon Sink Estimates*, 292 SCI. MAG., June 22, 2001, at 2316.

43. A gas turbine cogeneration system can reduce NO_x emissions by about 0.3 lb. for every 100 kWh of electricity generated by the facility.

44. A shift in electricity generation from utility central-station conventional technologies to either gas or diesel turbine cogeneration systems will actually increase NO_x emissions, and the latter technology will also increase carbon monoxide (CO) and particulate emissions. *Id.*; NATIONAL RESOURCES DEFENSE COUNCIL, *supra* note 21.

45. The amount of SO_2 produced is independent of the QF technology deployed. Essentially, all sulfur in the fuel is converted to sulfur dioxide. *Id*.

46. *See* discussion *infra* at Section VI.

47. If solid waste is included, this percentage increases to 33%. RCG/Hagler, Bailly, *Profile of the Independent Power Market: 1991 Status and Trends*, cited in McGraw-Hill, *Independent Power Report*, (BNA) at 2-3 (Mar. 1, 1991) [hereinafter RCG/Hagler, Bailly].

48. Cogeneration can be about 20% more efficient than electricity-only plants. Many independent power projects are of comparable size to smaller utility plants. J Morrison, *Why We Need Stand-by Rates for On-Site Generation*, ELECTRICITY JOURNAL Oct. 2003, at n.15.

49. RCG/Hagler, Bailly, *supra* note 47, at n.49.

These three factors result in fewer environmental emissions than if conventional power facilities supplied all power resources. These self-generation technologies may deploy renewable resources without fossil fuel combustion, or may use the cogenerated output more efficiently than conventional technologies.

III. STATE NET METERING INITIATIVES: SCOPE AND BASIS

A. *Introduction*

Electricity consumption is determined by a meter, which measures for the purpose of accounting and billing. The electric utility company that provides the retail service typically reads the meter several times a year or calculates estimates for each billing period. Where the electric consumer generates its own electricity on-site, the concept of net metering[50] may be applicable.

Net metering is the process by which an electric utility meter is designed and allowed by law to rotate either forward or backwards depending on who the supplier of electricity is at a particular instant as reflected in the net electricity flow.[51] For example, if a customer owns and operates a solar photovoltaic solar panel and is a generator of electricity available for export when in surplus, the meter would run backwards reflecting export of power to the electric utility provider during the day while the sun was providing the customer-generator with surplus electricity. This excess electricity would commingle on the grid with the electricity generated by the utility and be sold to and consumed by someone else along the transmission line. However, at night, the solar photovoltaic panel would cease to generate and the customer would purchase electricity from the generating utility, causing the meter to run forward in the conventional direction reflecting a sale to the customer.

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50. The term "net metering" is the commonly accepted term for this concept, however, states differ in how they describe the same concept. Various phrases used include "net metering," "net billing," "net energy metering," "net energy billing," "parallel billing," "reverse direction metering" and "distributed generation." For the purposes of this paper the phrase "net metering" will include the various different references to the same concept.

51. State statutes and regulations generally define what net metering means in each particular state. For example, see New Hampshire's definition of net metering: "'[n]et energy metering' means measuring the difference between the electricity supplied over the electric distribution system and the electricity generated by an eligible customer-generator which is fed back into the electric distribution system over a billing period." N.H. REV. STAT. ANN. § 362-A:1-a (III)(a) (Supp. 2002).

This net metering process balances and nets these flows at the end of the billing period. The net gain of electricity sold or a net loss of electricity bought for the customer-generator at the end of the billing period becomes an amount owed to or by the generator. If the customer-generator produced less electricity than it consumed, the electric utility would bill the customer for the difference. If the customer-generator produced more than its required amount of electricity, then each state's net metering law would determine what would happen to the customer-generator's net gain.

This is a relatively straight-forward concept that has been adopted in some form in thirty-eight U.S. states.[52] As a result, each state has adopted its own unique set of statutes and regulations. The implementation of net metering evolved among the states in two phases.[53] Several states adopted net metering shortly after the enactment of the Public Utility Regulatory Policies Act of 1978 (PURPA) in the early 1980s. Other states adopted net metering more recently, which coincided with the proliferation of deregulation in the electric utility industry.[54]

B. *The Federalism Model: Qualifying Facilities*

There is a federalist model of independent electric power production. It is embodied in the federal legislation establishing and sanctioning QFs. QFs have been expressly sanctioned by federal law for more than two decades. They are federally protected against state-level discouragement, although the states play a significant role. This federal preemption has been upheld by the Supreme Court.[55]

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52. Arizona; Arkansas; California; Colorado; Connecticut; Delaware; Florida; Georgia; Hawaii; Idaho; Illinois; Indiana; Iowa; Kentucky; Maine; Maryland; Massachusetts; Minnesota; Montana; Nevada; New Hampshire; New Jersey; New Mexico; New York; North Dakota; Ohio; Oklahoma; Oregon; Pennsylvania; Rhode Island; Texas; Utah; Vermont; Virginia; Washington; Wisconsin; Wyoming. *See* The Green Power Network, *Net Metering*, *at* http://www.eere.energy.gov/greenpower/netmetering (last modified Jan. 31, 2004).

53. *See* STEVEN FERREY, THE LAW OF INDEPENDENT POWER: DEVELOPMENT/COGENERATION UTILITY REGULATION § 4:25 (20th ed., 2003) (noting that prior to 1993, QFs sold gross output to utilities, but since then, this practice has been challenged by utilities who wish to limit the amount of electricity that they are required to purchase at "avoided cost" rates to the QFs' net output).

54. Colton & Brehl, *supra* note 3, at 480.

55. *See, e.g.* Am. Petroleum Inst. v. Am. Electric Power Serv. Corp., 461 U.S. 402, 403 (1983) (holding FERC appropriately made rules requiring utilities to pay QFs a rate equivalent to the cost they would incur if they had generated the electricity themselves and made interconnections to cogeneration facilities); FERC v. Mississippi, 456 U.S. 742, 744 (1982) (upholding § 210 of Title II of PURPA, which exempts QFs from conflicting state regulations).

1. Legislative Purpose

In 1978, to respond to a perceived national electric energy crisis, Congress enacted PURPA.[56] The Congressional impetus for PURPA Title II[57]—authorizing Qualifying Facilities (QFs)—was to encourage:

(1) Conservation of energy,

(2) Optimization of efficient use of electric utility facilities and resources, and

(3) Equitable electric rates to consumers.

Congress' goal was to accomplish greater diversity in the supply of electric power by providing incentives for development of small alternative power and cogeneration resources. Congress perceived both reluctance among electric utilities to transact business with alternative power producers and a fear held by alternative power developers that they would be regulated as "public utilities" if they sold power. One of the impediments to self-generation projects was that electric utilities could employ one of several methods to discourage such customer generation.[58] First, they could cut the retail rates that they would otherwise offer such a customer to discourage self-generation. Resulting lower retail revenues could be offset by shifting costs to other consumers, thereby requiring consumers without the option to self-generate to bear the subsidy used to discourage self-generation.

Second, utilities could impose discouraging rates, terms, and conditions on stand-by and back-up power requirements for self-generating entities. This could make it prohibitively expensive to self-generate. With deregulation, a third tool presented itself: Exit fees could be proposed to discourage exodus from the conventional system.

PURPA Title II sought to remedy these perceived barriers to alternative power development by permitting some alternative power producers to operate in a relatively unregulated environment.[59] PURPA section 210 breaks the utility monopoly on generation of electric power specifically for certain types of power production. It creates a privileged class of commercial entities known as QFs.[60] To

56. 16 U.S.C. § 824a(c) (2000) (granting emergency powers).

57. *See* 18 C.F.R. § 292 (2003).

58. *See generally* Richard Hirsh , *PURPA: The Spur to Competition and Utility Restructuring*, ELECTRICITY JOURNAL, Aug.-Sept. 1999, at 60 (arguing that the passage of PURPA undermined the monopolistic qualities of the energy production industry, facilitating the emergence of a competitive free-market in energy).

59. *See* 18 C.F.R. § 292.

60. 16 U.S.C. § 824a-3(a).

qualify as a QF, a project must meet certain facility-specific and sponsor-specific criteria. Title II also requires that electric utilities deal with project sponsors in a nondiscriminatory manner.

Under PURPA, if power projects meet specific and exacting requirements, they qualify to sell their power output to electric utilities. The price for this sale is equal to what the utility itself would pay to generate or purchase power. The price at which utilities must purchase power from QFs is determined by the incremental cost of power for the purchasing utility.[61] PURPA imposes mandatory equipment interconnection and purchase obligations on electric utilities. These obligations reduce the monopoly power the utilities would otherwise exercise as the exclusive outlet for sale of power produced by an independent entity. In turn, PURPA required utilities to interconnect with QFs, to purchase their power, and to supply them with supplemental or backup power.[62] Moreover, QFs are exempt from most state and federal laws regulating power generation.[63]

In 1980, the Federal Energy Regulatory Commission (FERC) promulgated regulations pursuant to Title II of PURPA.[64] These regulations are divided into two relevant parts: (1) Subpart B regulations define the operating and efficiency standards that cogeneration facilities must meet in order to qualify as QFs; [65] and (2) Subpart C regulations define the benefits to which QFs are entitled.[66]

2. Federal Regulatory Exemptions Enjoyed by Qualifying Facilities

QF cogenerators are federally exempt from regulatory-established discouragement. Perhaps the single most important benefit for QFs is that they are exempt from the Federal Power Act,[67] the Public Utility Holding Company Act,[68] and, importantly, most state

61. 16 U.S.C. § 824a-3(b); 18 C.F.R. § 292.304(b)(2).

62. 16 U.S.C. § 824a-3(a); 18 C.F.R. § 292.303(a)-(c).

63. 16 U.S.C. § 824a-3(e)(1); 18 C.F.R. § 292.601(c).

64. *See* 18 C.F.R. § 292.

65. 18 C.F.R. §§ 292.201-.211. The Commission's operating standard provides that the cogenerating facility's annual useful thermal energy output (i.e., the energy that is used for an industrial or commercial purpose) be at least 5% of the total energy output. 18 C.F.R. § 292.205(a)(1). The Commission's efficiency standard require that a cogenerating facility use fuel efficiently and that fuel efficiency is calculated based on the facility's annual fossil fuel input, the useful thermal energy output, and the total energy output. 18 C.F.R. § 292.205(a)(2)-(b).

66. 18 C.F.R. §§ 292.301-.308.

67. 16 U.S.C. § 791a (2000); 16 U.S.C. § 824a-3(e)(1); 18 C.F.R. § 292.601(c).

68. 15 U.S.C. § 79 (2000); 16 U.S.C. § 824a-3(e)(1); 18 C.F.R. § 292.602(b).

regulations.[69] Otherwise federal law would regulate QF conduct as if QFs were public utilities and subject their financial structures, corporate organizations, and profits to regulatory scrutiny.

Pursuant to PURPA, in its original form, only small power producers of 30 megawatts (MW) or less were exempt from provisions of the Federal Power Act and the Holding Company Act; however, small power facilities of up to 80 MW that employ geothermal resources may be exempt from both Acts.[70] In 1990, Congress removed the 80 MW ceiling for small power producers that are fueled at least in part by waste products or renewable energy.[71] Such larger facilities are also exempt from the Public Utility Holding Company Act.[72] A major advantage of these changes is that larger small power producers fueled by waste or renewable resources at a single site no longer have to find a thermal application to retain their QF status at larger than 80 MW capacity. Moreover, certain renewable energy technologies will become more cost-competitive when developed on a larger scale. To the extent that a project loses QF status within its lifetime, it is subject to plenary regulations as a public utility.[73]

These regulatory exemptions carve out a distinct role for QFs. Under PURPA, QFs can sell power only to electric utilities under the

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69. 16 U.S.C. § 824a-3(e)(1) (exempting QFs from provisions of the Federal Power Act, the Public Utility Holding Company Act and State laws respecting rates or financial or organizational regulation); 18 C.F.R. § 292.602(c) (exempting QFs from State laws respecting ratemaking, financial, and organizational regulations).

70. 18 C.F.R. § 292.601(b). Wherever a small power QF between 30-80 MW is financed and operated by a third party as a sale/leaseback transaction, FERC approval pursuant to Section 203 of the Federal Power Act is required. *See* Signal Shasta Energy Co., 41 F.E.R.C. ¶ 62,347, at 63,877 (1987) (approving sale/leaseback of a 55 MW wood-fired small power facility).

71. Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990, Pub. L. 101-575, 104 Stat. 2834 (1990). Those waste-fueled sources that can be larger than 80 MW are those that are by-products of industrial processes, such as coal waste or waste tires. The 80 MW cap still applies to biomass, including municipal solid waste, and to hydroelectric facilities. Projects have until the end of 1994 to apply for FERC certification, and until the end of 1999 to begin construction or exercise reasonable diligence towards completion, to take advantage of this larger size allowance. Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990, Pub. L. No. 101-575, 104 Stat. 2834 (1990). *See In re* Cambria Cogeneration Co., 53 F.E.R.C. ¶61,459, at 61,619 (1990) (certifying as a QF an 85 MW generating facility that uses bituminous coal refuse as its primary energy source).

72. *See* 16 U.S.C. § 824a-3(e)(1) (exempting QFs from provisions of the Federal Power Act, the Public Utility Holding Company Act and State laws respecting rates or financial or organizational regulation); 18 C.F.R. § 292.602(c) .

73. Under PURPA, no QF is exempt from sections 1-18, 21-30, 202(c), 210-214, and 305(c) of the Federal Power Act. 16 U.S.C. § 824a-3(e)(3); 18 C.F.R. § 292.601(c). These sections pertain to the requirement of interconnection with QFs, wheeling of power, and the enforcement of these two provisions. These provisions, however, do not affect the fundamental economics of QF power development.

sanctions of state regulatory commissions.[74] Nothing in PURPA, however, authorized a QF to make a power sale for any purpose other than on a wholesale basis.[75]

a. "Utility-Type" Regulation

Exemption from "utility-type" regulation comes with QF status.[76] The question remains "what is utility-type regulation?" Does it include exit fees? FERC's regulations state that: "Any qualifying facility shall be exempted from state law [regulating]: (i) [t]he rates of electric utilities; and (ii) the financial and organizational regulation of electric utilities."[77]

The litigation around utility-type regulation focuses on power sale rates and contract terms, but not newly imposed state exit fees. Utilities have attempted to circumvent the ability of a QF to receive a fixed price through the life of a contract by the use of contractual clauses allowing for rate revision at a future time.[78] Courts have found that these types of QF rate revision clauses constitute "utility type" regulation and undermine the intent of Congress. In 1984, the Idaho Supreme Court rejected a utility's attempt to include a clause in the QF contract that provided that the rates and terms in the contract were subject to change in the event that the state found the new rates "just, fair, reasonable, sufficient, non-preferential and non-discriminatory."[79]

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74. QFs have suggested in several states that they would like to be able to directly sell power to retail customers. As discussed *infra* Part 4.09[3], some states allow such practices.

75. *See* 16 U.S.C. § 824a-3(a)(2) (stating that rules shall be promulgated requiring utilities to purchase power from QFs); 18 C.F.R. § 292.303 (requiring electric utilities to purchase energy produced by QFs).

76. Am. Petroleum Inst. v. Am. Electric Power Serv. Corp., 461 U.S. 402, 403 (1983).

77. 18 C.F.R. § 292.602(c)(1).

78. *See* Smith Cogeneration Mgmt., Inc. v. Corp. Comm'n and Pub. Serv. Co., 863 P.2d 1227, 1237, 1241 (Okla. 1993) (voiding Oklahoma Commission's order requiring a notice provision allowing reconsideration of avoided costs to be placed into the contract). The court said "[r]econsideration of long-term contracts with established estimated costs imposes utility-type regulations over QFs." *Id*. at 1240. The court also states that PURPA and FERC seek to prevent reconsideration of these contracts and that the legislative history shows that Congress did not intend to impose traditional utility-type ratemaking concepts on sales from [QFs] to utilities." *Id.* "Requiring QFs and utilities to include a notice provision allowing reconsideration of established avoided costs conflicts with PURPA and FERC regulations." *Id*. at 1241. Therefore, "Rule 58(H) [was] preempted by PURPA and FERC regulations." *Id*. *See also* Afton Energy, Inc. v. Idaho Power Co., 693 P.2d 427, 434 (Idaho 1984) (finding contractual language would result in "utility-type" regulation over QF).

79. *See* Afton Energy., 693 P.2d at 432-34 (Idaho 1984) (declining to accept the utility's argument that the clause represented a stricter public interest standard ensuring that the utility rates remain "just and reasonable" and "in the public interest"). The court found that this con-

The Third Circuit found an attempt at QF rate reconsideration after approval and implementation by the state utility regulatory commission was preempted by federal law.[80] The court found the state utility regulatory commission's attempt to modify or revoke approval of the power purchase agreement constituted "utility-type" regulation. The court noted Congress' intention to exempt QFs from state and federal utility rate regulation, and held the "regulatory out" clause did not confer any continuing jurisdiction on the state utility commission and did not reflect the QF's agreement to surrender any protection from state regulation it is entitled to under federal PURPA. Because the QF was exempt from this type of rate regulation, the attempt by the state regulatory board to revise the contract was preempted by federal law.[81]

A Pennsylvania court affirmed the state Public Utility Commission's decision to deny an electric utility's request for rescission of prior rate approval under power purchase agreements made with QFs, because it found that they were not public utilities and revisiting the rate issue was preempted by federal law.[82] In 1998, a Michigan federal district court noted that once a state has established the

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tractual language constituted utility type regulation over QFs contrary to congressional intent and PURPA. Allowing the state utility commission to have continuing jurisdiction over the avoided cost rate would subject QFs to pervasive "utility-type regulation." The original contract provided that the commission could only modify the terms of the contract if the modification was necessary in the public interest. The court noted that this public interest standard represents the standard to which "any rate contract may be superseded by later Commission orders." *Id.* at 432.

80. Freehold Cogeneration Assocs. v. Bd. of Regulatory Comm'rs of the State of N.J., 44 F.3d 1178, 1192 (3d Cir. 1995) (finding that the utility sought to modify the power purchase agreement it had made with Freehold in 1992. The state utility regulatory board directed Freehold and the utility to renegotiate the purchase price terms or alternatively negotiate a buy-out of the contract. If the parties did not reach an agreement within 30 days, the Board of Regulatory Commissioners would commence a hearing to consider various courses of action. Freehold rejected the utility's attempt at renegotiation. The utility claimed that the QF had voluntarily agreed by contract to the state commission's continuing jurisdiction over the power purchase agreement and the rates contained therein. This continuing jurisdiction would allow the commission to modify the previously approved rates. Freehold contended that this is an action under PURPA section 210(e) which grants cogenerators immunity from state utility-type regulation and this court agrees. Because of this, it was an error for the District Court to dismiss Freehold's complaint for lack of jurisdiction. The Board of Regulatory Commissioner's order to renegotiate or buy-out the contract is preempted by PURPA.).

81. *Id.* at 1194.

82. W. Penn Power Co. v. Pa. Pub. Util. Comm'n, 659 A.2d 1055, 1066 (Pa. Commw. Ct. 1995) (following the Third Circuit's decision in *Freehold*, the court found that PURPA preempts the state utility regulatory commission from changing or reconsidering its prior approval of rates established in QF contracts).

avoided cost rate, it no longer has the authority to regulate the QF's rate.[83]

QFs are also exempt from state laws respecting "[t]he financial and organizational regulation of electric utilities."[84] The FERC regulations fail to define exactly what makes up "financial and organization regulation." Several courts—including the First Circuit and the Ninth Circuit—have determined that certain activities by a state utility commission do not fall under the financial regulation exemption and therefore are not "utility type regulation."[85] FERC upheld a

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83. N. Am. Natural Res., Inc. v. Mich. Pub. Serv. Comm'n, 41 F. Supp. 2d 736, 742-43 (W.D. Mich. 1998) (allowing plaintiff QFs to seek declaration that orders issued by state commission pursuant to deregulation would not disallow recovery of QF avoided cost rates).

84. 18 C.F.R. § 292.602(c)(1)(ii).

85. Bristol Energy Corp. v. N.H. Pub. Utils. Comm'n, 13 F.3d 471, 475 (1st Cir. 1994) (finding that the request for information to complete this study did not constitute state regulation respecting the financial and organizational regulation of QFs. A group of QFs sought an injunction to prevent the state utility commission from forcing the QF to disclose detailed financial information. This information included: financing agreements, retired debt, monthly volume of electricity generated, identity of customers, and fuel use including price paid for fuel. The financial information was requested by the state utility commission so that it could complete a one-time study of wholesale power supplies pursuant to the Energy Policy Act of 1992. The QFs claimed that the exemption provided in the PURPA regulations precluded the state utility commission from demanding this type of information. A limited inquiry for the purposes of completing a federally mandated study did not constitute "utility type" regulation because the state utility commission was not asserting full authority over QFs and had only requested information related to the factors indicated in the Energy Policy Act of 1992.). In *Indep. Energy Producers Ass'n, Inc. v. Cal. Pub. Utilities Comm'n*, 36 F.3d 848, 859 (9th Cir. 1994) (finding that reasonable monitoring of QFs "falls with the state board's ratemaking authority"), the state utility commission authorized utilities to monitor QFs to determine whether they met federal standards. In addition to allowing the monitoring, the state commission allowed the utility to suspend payment to the QF if the utility found that the QF did not comply with the federal standards. The utility was authorized to substitute a lower, alternative rate in the event that it determined that the QF did not comply. Forty-two non-utility power producing facilities asked the court to determine whether PURPA authorizes utilities to enforce the federal operating and efficiency standards as applied to QFs. In examining the program, the court noted that the underlying motivation of the program was to lower the rates set in California "standard offer contracts because they [were] higher than. . . current avoided costs." *Id.* at 858. The court found that because the monitoring program authorized states to make QF status determinations, an area over which FERC exercises exclusive authority, the program was preempted by federal law. Although the court found that the program violated federal law by allowing utilities to make QF status determinations, the court allowed the utilities to continue to monitor the QFs. It found that the program's requirements that QFs submit operating data to the utilities was reasonable under the state's broad ratemaking authority as long as the requirements did not impose an undue burden on the facilities. *Id.* at 859. *See also* Indep. Power Producers of N.Y., Inc., 80 F.E.R.C. ¶ 61,125, at 61,398 (1997). The New York state monitoring program was designed to enable utilities to have sufficient data to determine whether the QF is in compliance with federal standards. The QFs argued that the state commission's requirements to file data with the utilities is inconsistent with PURPA's exemption for QFs from "financial and organizational" regulation of utilities. FERC found that the program does not represent "financial and

monitoring program instituted by the New York Public Service Commission.

Exit fees have aspects of both rate regulation and financial regulation. Where the exit fee is embodied in a back-up power rate, as with the Massachusetts exit fee for the Massachusetts Institute of Technology, it works as a disincentive rate. Where exit fees are imposed as a function of the self-generation decision, they are powerful regulatory disincentives. It is yet unresolved whether they run afoul of PURPA's federal preemption.

3. Threading the Needle: Size and Efficiency Criteria

A proposed self-generation facility may qualify as a QF, as a cogeneration facility, or as a small power producer. As defined by federal law; both produce electric power for resale to regulated electric utilities.[86] Next, we describe those federal requirements for self-generation to be certified as a Qualifying Facility so as to enjoy protection against state utility-type regulation.

a. Cogeneration

Cogeneration is the sequential use of energy to produce electricity and either steam or some other useful thermal energy.[87] The key concept is that electricity production as a co-product of heat or non-electric energy forms may be more resource-efficient than separate production of electricity and other energy forms.[88]

The key federal qualifying issue for cogeneration is not size, but efficiency.[89] Cogeneration facilities qualify as QFs regardless of their size or the fuel input used, as long as they satisfy operating and effi-

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organizational" regulation of QFs contrary to the exemption. Because the program was designed to collect data solely for the purpose of determining QF status, FERC found it was consistent with the Ninth Circuit decision in *Independent Energy* and did not impose an undue burden on QFs. *See* Niagara Mohawk Power Corp. v. U.S. Dept. of Energy, 169 F.3d 16, 19 (D.C. Cir. 1999) (overturning a District Court's grant of summary judgment against Niagara Mohawk Power Corporation, which, pursuant to the Freedom of Information Act, was seeking information pertaining to the quantity of fuel consumed, and power generated by QFs).

86. 16 U.S.C. § 824a-3(e)(1); 18 C.F.R. §§ 292.101(b)(1), 292.203.

87. Am. Paper Inst. v. Am. Elec. Power Serv. Corp., 461 U.S. 402, 404 n. 1 (1987) ("The statute defines a 'cogeneration facility' as a facility that produces both electric energy and steam or some other form of useful energy, such as heat. 16 U.S.C. § 796(18)(A).").

88. Proposed Regulations Providing for Qualification of Small Power Production and Cogeneration Facilities under Section 201 of the Public Utilities Regulatory Policies Act of 1978 – Notice of Proposed Rulemaking, 44 Fed. Reg. 38,872, 38,875, FERC Statutes and Regulations, Proposed Regulations 1977-1981, ¶ 32,028, at 32,328 (July 3, 1979).

89. 18 C.F.R. § 292.202(c). The two forms of energy output (electric and thermal) must be produced through the sequential use of energy inputs.

ciency standards.[90] At least 5% of the total energy output of any cogeneration facility must be useful thermal energy.[91]

The regulations establish an operating standard and efficiency standard to determine "qualifying cogeneration facilities."[92] Section 292.205 of the commission's regulations establishes an operating standard for topping-cycle cogeneration facilities.[93] Under the operating standard, useful thermal energy output must be at least 5% of total annual energy output.[94]

Both standards involve calculations of the electric and non-electric energy produced in the cogeneration process.[95] The regulations define these by-products, or outputs, as "useful power output" and "useful thermal energy output" respectively.[96] The regulations define useful thermal energy as the "thermal energy made available for use in any industrial or commercial process, or used in any heating or cooling application."[97]

1. Efficiency Standards and Sequential Use

Section 292.205 also establishes an efficiency standard for cogeneration facilities wholly or partly powered by oil, natural gas, or other

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90. *See* 18 C.F.R. §§ 292.203(b), 292.205.

91. This output requirement applies only to topping cycles. 18 C.F.R. § 292.205(a)(1). Bottoming cycles will always meet the requirement. 16 U.S.C. § 824a-3(e)(1); 18 C.F.R. § 292.205(b)(1). Topping cycles are defined at 18 C.F.R. § 292.202(d). Useful thermal energy output is energy made available in any commercial or industrial process, or used for heating or cooling applications. 18 C.F.R. § 292.202(h).

92. The Commission's regulations define cogeneration facilities as "equipment used to produce electric energy and forms of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes, through the sequential use of energy." 18 C.F.R. § 292.202(c).

93. A topping-cycle cogeneration facility means a cogeneration facility which first uses energy input to produce useful power output and then captures reject heat from the power production process to provide useful thermal energy. 18 C.F.R. § 292.202(d).

94. 18 C.F.R. § 292.205(a)(1).

95. *See* 18 C.F.R. §§ 292.205(a)(1), (a)(2) (requiring that at least 5% of the total annual energy output be in the form of useful thermal energy and basing the efficiency requirements on the proportion of thermal energy produced).

96. *See* 18 C.F.R. §§ 292.202(g)-(h) (1988) (defining "useful power output" as "the electric or mechanical energy made available for use, exclusive of any such energy used in the power production process;" and "useful thermal energy output" as "the thermal energy made available for use in any industrial or commercial process, or used in any heating or cooling application").

97. 18 C.F.R. § 292.202(h). The Commission's regulations provide the following definition: "(h) 'Useful thermal energy output' of a topping-cycle cogeneration facility means the thermal energy:

(1) That is made available to an industrial or commercial process. . . ;

(2) That is used in a heating application (*e.g.,* space heating, domestic hot water heating); or

(3) That is used in a space cooling application (*i.e.*, thermal energy used by an absorption chiller)." *Id.*

fuels of limited resource. Under the efficiency standard, the QF's useful power output plus one-half of the useful thermal energy output during any calendar year must be no less than 42.5% of the total energy input of natural gas or oil.[98]

These standards require the use of efficient combinations of electric and thermal energy production technologies.[99] FERC's efficiency standards were set to ensure that a cogenerating QF produced power and heat more efficiently than a conventional combined cycle unit with a heat rate of 8,500 British Thermal Units (Btu)/kWh operating at 90% boiler efficiency. FERC has reiterated that at the pre-operational stage, it will accept as true or attainable the assertions of a QF project developer as to satisfying QF requirements at the time of operation. This also is true with respect to the efficiency and 5% minimum output requirements of cogeneration facilities.[100]

The relevant time to determine whether efficiency requirements are met is the time of first commercial operation of the facility, and thereafter.[101] On rehearing of Order No. 70, in which the efficiency standard regulations were established, the Commission found that

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98. 18 C.F.R. § 292.205(a)(2).

99. For topping cycle technologies using oil or natural gas as their fuel inputs, the useful power output of the facility plus one-half the useful thermal energy output during each calendar year must exceed 42.5% of the total energy input, where the thermal output is greater than 15% of the total. 18 C.F.R. § 292.205(a)(2)(i)(A). Where thermal output is less than 15% of the total, the efficiency standard is 45% where oil or natural gas is used as the energy input. 18 C.F.R. § 292.205(a)(2)(i)(B). There is no efficiency standard for topping cycle technologies where neither oil nor natural gas is used as the energy input. 18 C.F.R. § 292.205(a)(2)(ii). Bottoming cycle technologies employing natural gas or oil as their primary energy inputs must achieve 45% combined output efficiency as a fraction of total energy input. 18 C.F.R. § 292.205(b)(1). If natural gas or oil is not employed, there is no efficiency standard for bottoming cycles. 18 C.F.R. § 292.205(b)(2).

100. *See* Cherokee County Cogeneration Partners, L.P., 75 F.E.R.C. ¶ 61,156, at 61,513-14 (1996) (finding filing that asserts that a QF will meet the 5% minimum output requirement in each of its three modes of operation satisfies Commission's regulations. This facility planned to operate a topping-cycle cogeneration facility, the thermal output of which would be used to process ammonia refrigerant, which would then be used in ice production, or in a liquefied natural gas production facility, or both).

101. *See* Georgetown Cogeneration, L.P., 54 F.E.R.C. ¶ 61,049, at 61,186 (1991) (finding that empirical data must be submitted to support alleged data inconsistencies between data submitted to FERC and data available elsewhere and denying an abeyance because of the inconsistency was not sufficiently demonstrated); Georgetown Cogeneration L.P., 55 F.E.R.C. ¶ 61,038, at 61,111 (1991) (finding Coalition improperly used current data, rather than data from the date the proposed facility first produces energy in asserting that the facility would not meet minimum energy requirements); *see also* Kamine/Besicorp Alleghany L.P. 63 F.E.R.C. ¶ 61,320, at 63,157 (1993) (finding Kamine provided sufficient information to grant certification when prospective data for QF certification was submitted from the date the facility anticipates first producing electrical energy).

"energy obtained from supplementary firing was inadvertently excluded from the definition of the total energy input."[102] The Commission amended the definition of "total energy input" so that it included all forms of energy supplied from external sources, including supplementary firing.[103]

When calculating compliance with the efficiency requirement, all supplemental natural gas or oil consumed must be calculated in the input calculation. If a QF facility is grafted onto an existing facility, the operation of the equipment from the original installation must be part of the calculation of the total energy input, if it still operates in tandem.[104] This is true even if there are separate qualifying and nonqualifying parts of the facility.

Many cogenerators employ an extraction steam turbine technology to draw minimal thermal energy from the cogeneration facility.[105] FERC allows extraction steam turbine technology to qualify for QF status,[106] despite the apparent inconsistency of that rule with the sequential use rule articulated in other cases.[107]

Where efficient thermal energy is not produced sequentially, FERC will deny QF status. Where auxiliary boilers are employed to boost thermal energy, some of the capacity can be disqualified from QF status. Where steam is produced directly for thermal uses and is

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102. Order Granting in Part and Denying in Part Rehearing of Order Nos. 69 and 70, and Amending Regulations, F.E.R.C. Statutes and Regulations, Regulations Preambles 1977-1981 ¶ 30,160, at 31,112 (1980) ("Since energy from supplementary firing was not excluded from the definition of total energy *output*," the rule as it originally appeared distorted "the efficiency of facilities in which large amounts of energy [were] supplied from supplementary firing, making them appear more efficient that they [actually were]."); 18 C.F.R. § 292.202(i).

103. Order Granting in Part and Denying in Part Rehearing of Order Nos. 69 and 70, and Amending Regulations, F.E.R.C. Statutes and Regulations, Regulations Preambles 1977-1981 ¶30,160, at 31,112 (1980); 18 C.F.R. §§ 292.202(f), (j).

104. Walker Res., Inc., 47 F.E.R.C. ¶61,399, at 62,316 (1989) (counting existing preheated feed water in gas use for entire facility); Walker Res., Inc., 47 F.E.R.C. ¶ 61,088, at 61,249 (1989) (denying application for certification as qualifying cogeneration facility because applicant improperly failed to account for total existing preheated feed water in measuring the gas use for the entire facility).

105. The extraction steam turbine draws minimal waste heat off an otherwise conventional electric generating system, downstream of the electricity production.

106. *See* Texas Indus., Inc., 29 F.E.R.C. ¶ 61,051, at 61,111 (1984) (holding for extraction steam turbines the part of steam flow used for thermal application need only have been previously used for generation, rather than that all steam used for generation sequentially flow to a subsequent thermal application. Because the facility in question in this case was fueled by coal, no efficiency standards were applicable).

107. *See, e.g.,* Cal. Portland Cement Co., 20 F.E.R.C. ¶ 61,217, at 61,419 (1982) (granting qualifying cogeneration status to that portion of a facility representing sequential energy use, but not to that portion employing non-sequential energy use).

not sequentially used for the production of electricity, that proportion of the electricity production represented by the auxiliary steam is not counted toward the qualifying capacity.[108]

This decision, essentially, allows conventional electric generating technologies to obtain QF status merely by capturing waste heat for some useful thermal purpose. Most small power production facilities, which exceed the PURPA small power producer size requirements, could qualify instead as cogeneration QFs by finding a useful thermal application.[109]

Two exceptions to these cogeneration requirements are notable. First, cogeneration facilities for which construction began prior to March 13, 1980, are not subject to efficiency criteria.[110] Second, FERC can waive either the efficiency or the 5% thermal output requirements if it finds that a project will produce significant energy savings.[111] FERC has waived, on a case-by-case basis, the QF efficiency standard where additional capacity is required by the local utility to meet temporary emergency capacity shortfalls.[112]

Waiver of the FERC requirement potentially is available for a QF that cannot achieve the efficiency or output requirements.[113] Several QFs that failed to comply have retroactively asked FERC for a waiver. These have generally been denied. Typically, this is because the QF applicant has been unable to demonstrate significant energy

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108. U.S. West Fin. Servs., 55 F.E.R.C. ¶61,377, at 62,147 (1991) (refusing to find satisfaction of 18 C.F.R. § 292.202(c)'s sequential use requirement. 3.2 MW of a 22.2 MW cogeneration unit at a cement plant host facility was deemed not to qualify for QF status, because 14.5% of the steam for the turbines was provided by an auxiliary boiler. The reduction in QF qualifying capacity was based on the percentage of steam that was produced by the auxiliary boilers directly for electricity production not related to a direct thermal application. The technology employed was a bottoming cycle, for which no PURPA efficiency standard exists. The sequential use requirement is contained at 18 C.F.R. § 292.202(c)).

109. However, FERC denied a requalification of a 27 MW facility from small power to cogeneration status. This was because FERC found that heating liquid sodium in a furnace for research purposes while simultaneously producing steam for electricity at a sodium research facility did not constitute an independent thermal application. *See* Rockwell Int'l Corp., 27 F.E.R.C. ¶ 62,190 (1984).

110. 18 C.F.R. § 292.205(a)(2)(B)(ii).

111. 18 C.F.R. § 292.205(c).

112. FERC granted a request in 1990 to allow a QF to generate an additional 2 MW of power even if that resulted in it not meeting the QF efficiency standards for cogenerators. This waiver was conditioned on there being a system emergency in the New England Power Pool and that the particular cogenerator was specifically called on to generate a maximum capacity. Consolidated Power Co., 52 F.E.R.C. ¶ 61,220 (1990).

113. 18 C.F.R. § 292.205(c) (stating that a waiver will be granted if a facility shows that it will produce significant energy savings).

savings, which is the regulatory criterion for a waiver.[114] Waivers are denied for the first phase of a facility's operation, even where the facility may achieve the operating efficiency and output requirements during its second phase.[115]

A waiver is permitted when there is a temporary need, typically associated with problems with start-up and shakedown of a facility. It is not fatal if the waiver is requested after the fact.[116] Temporary waivers in these limited circumstances have been granted by FERC from the output requirement and the efficiency requirement.[117]

2. Output Parameters

At least 5% of total QF cogeneration energy output must be useful thermal energy. This threshold is used to assure that a project cogenerates two useful forms of energy. In 1995, the Commission considered how to calculate the useful thermal energy output of a QF that produced and sold steam to a thermal host.[118] FERC calculated

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114. *See, e.g.,* Metro. Dade County, Fla. v. Energy Sys. of Thermo Electron Corp., 65 F.E.R.C. ¶ 61,090, at 61,539, 61,540 (1993) (denying a request for a waiver, retroactive for a period of five years, when no evidence of energy savings was presented); *see also* Nelson Indus. Steam Co., 38 F.E.R.C. ¶ 61,162, at 61,146 (1987) (denying request for temporary waiver; no energy savings demonstrated); Mercy Hosp. & Med. Ctr., 18 F.E.R.C. ¶ 61,128, at 61,256 (1982) (denying a request for a permanent waiver for a proposed cogeneration facility, despite a 4.4% energy savings (when compared with a non-cogeneration facility), because proposed alternative facility could achieve an 18.4% energy savings).

115. *See* Nelson Indus. Steam Co., 38 F.E.R.C. ¶61,162, at 61,146 (1987) (denying sixty month waiver of efficiency standards).

116. Altamount Cogeneration Corp., 62 F.E.R.C. ¶61,206, at 62,489 (1993) (granting a request for a temporary waiver, effective three years prior).

117. The Commission has exercised its waiver authority in a number of cases based on factors such as the limited duration of the requested waiver; the fact that noncompliance was confined to the testing stage and that further waivers would therefore be unnecessary; and the fact that granting waiver would fulfill PURPA's goal of encouraging cogeneration development. *See* LG&E-Westmoreland Hopewell, 62 F.E.R.C. ¶ 61,098, at 61,712 (1993) (granting temporary waiver for operating standard for qualifying topping-cycle for co-generation facilities); O.L.S. Energy-Agnews, Inc., 61 F.E.R.C. ¶ 61,293, at 62,114-15 (1992) (granting request for temporary waiver in part when request prompted by the facility not complying with operating standards during start-up and testing phases); Archbald Power Corp., 53 F.E.R.C. ¶ 61,324, at 62,199 (1990) (granting waiver when facility will not meet operating standard because peak thermal requirements are seasonal); Continental Power Co., 52 F.E.R.C. ¶ 61,220, at 62,305 (1990); CMS Midland, Inc., 50 F.E.R.C. ¶ 61,098, at 61,305 (1990) (granting waiver petition in light of technical and ownership changes to facility), *reh'g denied*, 56 F.E.R.C. ¶ 61,177 (1991); Nelson Indus. Steam Co., 39 FERC ¶ 61,201, at 61,724 (1987) (granting a request for waiver subject to conditions on basis of multiple case-specific facts including lack of opposition, and resulting increased employment). *Cf.* Megan-Racine Assoc., Inc., 73 F.E.R.C. ¶ 61,308, at 61,309 (1995) (denying waiver because it was requested only after a revocation request had been filed. Waiver request was untimely because it came four years after start-up, during which time the facility was aware that it was not in compliance).

118. Megan-Racine Assoc., Inc., 73 F.E.R.C. at 61,309.

the QF's "useful thermal energy" as the thermal content of the steam delivered, rather than the thermal content of the steam used.

FERC has stated that thermal output is "useful" if it has "an independent business purpose with some economic justification."[119] However, the Commission has stopped short of articulating a rule to determine when a thermal application is "useful." It is clear that "useful output" must not be used for internal QF purposes, such as feedwater preheating or deaerating. "Useful output" must be used for heating or affecting a chemical or physical change as part of a process that demonstrates economic significance.[120]

Two FERC opinions demarcate the basic boundaries of what satisfies the requirement of at least 5% "useful" thermal output from a QF facility. The requirement was met when thermal energy byproduct was used to raise the temperature of water by forty degrees to heat aquaculture ponds, and thus, the thermal energy use provided the requisite economic "independent benefit."[121] Where FERC found

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119. Electrodyne Research Corp., 32 F.E.R.C. ¶ 61,102, at 61,278 (1985) (finding culm drying process "useful" because the opportunity to cogenerate electricity efficiently was predicated on an independent market for processed culm. The 80 MW topping cycle cogeneration facility where steam would be used to dry an affiliate's anthracite coal was certified as a QF). This means that the thermal energy must profit an industrial or commercial operation without subsidy from the QF's sale of electricity. The QF must present quantitative evidence that a person contemplating the use of thermal energy would find it economical to pursue, absent the incentive to qualify as a cogeneration facility. Otherwise, the QF may find that the cost of the thermal output exceeds its value but that the opportunity to sell power as avoided cost rates more than makes up for the diseconomy. In *Electrodyne*, the QF proposed burning anthracite coal culm and selling its thermal energy output, in the form of process steam, to Gilberton Coal to produce dry culm. The dry culm was to be sold back to Electrodyne for use in the cogeneration process and to other commercial consumers. The Commission found the culm drying process "useful" because the opportunity to cogenerate electricity efficiently was predicated on an independent market for processed culm. Although Electrodyne showed that dried culm has reduced storage and transportation costs and is preferable to "wet" culm as a fuel, the Commission deemed useful only the use of steam to dry culm for sale to entities not affiliated with the QF. The Commission explained that Gilberton, the thermal host, may be willing to pay an uneconomical price to Electrodyne for steam if, in exchange, Electrodyne purchased culm exclusively from Gilberton. *Id.*

120. *Id.*

121. John W. Savage, 28 F.E.R.C. ¶ 61,273, at 61,501 (1984). This application involved an internal combustion topping cycle 1 MW system driven by natural gas. Exhausted thermal output was used to raise the ambient average temperature of a stream from 40°F to 80°F to raise catfish in aquaculture ponds. FERC found persuasive that evidence of the economics of the aquaculture venture was offered, the temperature of the aquaculture operation would be controlled, and the thermal output was substantially greater than the required minimum 5% of total output (indicating that the thermal application was not a mere afterthought). The thermal application had viable independent economic significance. *See also* James A. Drake & Miller's Plant Farm, , 28 F.E.R.C. ¶ 61,241, at 61,455 (1984) (granting QF status to a facility that used thermal output to heat a greenhouse, in which ornamental plants were grown to saleable size).

that a similar aquaculture application was not independent, but was merely an attempt to dump cooling water from a conventional power plant design, cogenerator QF status was denied.[122] The independent basis for the thermal energy application is critical to satisfy FERC's 5% output minimum. This independent basis must not be related to the power generation process, such as the use of thermal energy to assist in fuel scrubbing or fuel preparation before combustion.[123] For example, the use of thermal energy to produce electricity or mechanical energy is not a thermal output under FERC's definition of usefulness.[124]

When a QF files with FERC stating that it will achieve QF status, there is a rebuttable presumption that the thermal output is "use-

122. Electrodyne Research Corp. 32 F.E.R.C. ¶ 61,102, at 61,279 (1985) (granting cogeneration status to a proposed 580 MW topping cycle cogeneration plant using gasified coal as a fuel source in a combined cycle, providing extraction steam for its thermal application. Condenser discharge water would be used at 70°-100°F to raise fish. The Commission did not believe that fuel would be burned independently for the aquaculture application, absent the PURPA regulatory benefits. Nothing distinguished this thermal application from exhaust of thermal energy in a conventional power plant operation.) (citing E.G.&G., 16 F.E.R.C. ¶ 61,060, at 61,104, 61,105 (1981) (finding that thermal applications such as power plant feed water, deaerating and fuel preparation are internal to the power production cycle, and therefore, inapposite to the thermal output requirement)).

123. E.G.&G., Inc., 16 F.E.R.C. ¶ 61,060, at 61,104 (1981). *See also* LaJet Energy Co., 43 F.E.R.C. ¶ 61,288, at 61,790 (1988) (finding distilled water process was not economically viable on its own in the consideration of "useful" economic viability and therefore the facility doesn't meet definition of topping-cycle cogeneration facility. Furthermore, steam may not merely enhance generation of electricity in another affiliated facility); Everett Energy Corp., 45 F.E.R.C. ¶ 61,314, at 62,000 (1988) (denying Everett's appeal of prior denial of application for certification as qualifying cogeneration facility because use of thermal energy is not completely independent of power production process and is not useful thermal energy output.); Everett Energy Corp., 43 FERC ¶ 62,306 (1988) (finding failure to satisfy 292.205 criteria for reasons similar to *LaJet*. Thermal output may not be utilized to perform residual heating in commercial power plant). In *LaJet*, the QF proposed selling steam generated with exhaust heat from diesel generators to a solar small power producer to enhance the producer's start-up and operating efficiency. The commission did not find an independent need for thermal energy because the application proposed one ultimate product, electricity. In *Everett*, FERC objected to the applicant's use of steam, though separate from the power production cycle, to enhance generation at another plant. Everett proposed to sell steam extracted from its extraction/condensing turbine generator to Boston Edison Company for space heating in buildings housing generating units, steam tracing of pipes, condensate tank heating, and the heating of residual fuel oil tanks. The commission noted that the multitude of steam uses within a typical power plant would require a detailed analysis to determine how the power plant would operate in the absence of cogeneration to identify independently useful thermal energy.

124. *See* 43 F.E.R.C. ¶ 61,288, at 61,199 (1988) (finding proposed uses of thermal output of LaJet's facility do not constitute useful thermal energy and denying rehearing of decision of denial of application for certification).

ful."[125] "Usefulness" is determined by any common industrial or commercial application.[126] If the use is not common, a more exacting standard is applied. It has two parts. Where a thermal using energy facility is not related[127] to the QF, either plausible evidence of an arm's length market transaction for the thermal energy or an end product produced with the aid of the thermal output can establish its "usefulness."[128] However, if the thermal use is related to the QF, a more careful examination without a presumption of legitimacy is applied by FERC.[129] If a challenger rebuts or raises questions about

125. *See* Kamine/Besicorp Alleghany L.P., 63 F.E.R.C. ¶ 61,320, at 63,158 (1993) (noting the thermal energy output of the Kamine facility is presumptively useful).

126. *Id.* (noting the Commission adjudges the thermal output presumptively useful, regardless of the user's relationship to the cogeneration facility). *See* LaJet Energy Company, 43 F.E.R.C. at ¶ 61,288, at 61,789 (generally, the commission accepts as useful any common industrial or commercial thermal application, such as space heating, crop drying, or chemical process use) ; Electrodyne Research Corp., 32 F.E.R.C. ¶ 61,102, at 61,279 (1985) (describing ways to establish that a thermal application is useful). *See also* Overland Energy Corp., 43 F.E.R.C. ¶ 61,224, at 61,575 (1988) (finding energy sold to Great River is useful because common industrial applications such as space heating and cooling are presumptively useful.). *Overland* proposed thermal energy recovery from the engine exhaust of two natural gas-fired generators and from jacket cooling water to provide domestic hot water, space heating and cooling, and to supply process heating for boiling/vaporization of liquid propane. Even assuming that the QF and its thermal host were affiliated, FERC found that space heating and cooling constituted common industrial applications, and ordered the application presumptively useful. Furthermore, the commission determined that most natural gas utilities maintained peak shaving facilities, and the proposed use of thermal energy to heat a water bath vaporizer was common industry practice.

127. The Commission defines the term "affiliate" when used in relation to any person or entity, "as another person or entity [that] controls, is controlled by, or is under common control with such person or entity." Electrodyne Research Corp., 32 F.E.R.C. ¶ 61,102, at 61,278 n.8 (1985). Affiliate use of QF power raises the issue of whether the proposed arrangement is the result of arm's length negotiations. *See* Overland Energy Corp., 43 F.E.R.C. ¶ 61,224, at 61,575 (stating that even assuming that the QF and its thermal host were affiliated, FERC found that space heating and cooling constituted common industrial applications, and ordered the application presumptively useful).

128. Electrodyne Research Corp., 32 F.E.R.C. ¶ 61,102, at 61,278 (1985).

129. Common suppliers and financiers are not evidence of an affiliation between the QF and its thermal energy host. The ultimate determination of usefulness will be made in the marketplace. Electrodyne Research Corp, 32 F.E.R.C. ¶ 61,102, at 61,278 (1985). Under the "plausible evidence" standard, applicants might submit quantitative data, statements by or contracts with potential purchasers, or such other evidence of a market as is available. *Id.* at 61,279. *See* River Delta Cogeneration, 40 F.E.R.C. ¶ 62,103, at 63,175 (1987) (finding usefulness of the thermal output established by contract for sale of the thermal energy where thermal energy output was sold to a non-affiliated purchaser for use in a brine desalinization plant pursuant to an arm's-length contract); Rio Grande Cogen, Inc., 39 F.E.R.C. ¶ 62,082, at 63,236 (1987) (finding that the provision of fresh water for an entire city constitutes an arm's-length market for a product, when no electric utility or electric utility holding company had "any ownership interest in the facility," thus satisfying the requirement of a prima facie showing of usefulness). *Cf. LaJet*, 44 F.E.R.C. ¶ 61,070, at 61,195, 61,196 (finding an "obligation to review the economic justification

qualification, then FERC will review the actual contracts for thermal energy use to reach a decision.[130]

If, however, the cogenerator or an affiliate use the output in an innovative fashion, the Commission requires qualitative evidence of economic justification.[131] Under the affiliate use test, the applicant may provide a cost-benefit analysis[132] or submit other evidence of a market establishing economic viability.[133]

The Commission fails to require "economic usefulness" of thermal output when the application produces an end product whose market is established—the independent business test does not apply.[134] Accordingly, FERC overlooked statements by QF personnel claiming innovative recovery of thermal energy in providing refrigeration for an adjacent ice-skating rink.[135]

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once presented," even if the project's thermal output, if used by a non-affiliate, would be considered presumptively useful and refusing to find presumptively useful an affiliated water distillation process of smaller proportion. Thus, where a non-affiliated thermal host uses the non-electric output, plausible evidence of an arm's-length transaction makes a prima facie case for usefulness, according to FERC.).

130. *Contra* Kamine/Besicorp Alleghany L.P., 63 F.E.R.C. ¶ 61,320, at 63,158 (1993) (finding that "[b]ecause the thermal energy output of the Kamine facility is presumptively useful, the Commission has no need to review the contracts between Kamine and the non-affiliated purchaser of the facility's thermal output").

131. Electrodyne Research Corp., 32 F.E.R.C. ¶ 61,102, at 61,279 (1985).

132. *See, e.g.*, Long Island Cogeneration Ltd. Partners, 40 F.E.R.C. ¶ 62,272, at 63,442 (1987) (noting the facility's provision of a cost-benefit analysis that established the economic viability of the affiliated sludge waste processing system, independent of revenue earned by the cogeneration facility's electricity sales).

133. *See e.g.*, Freeport-McMoRan Inc. and Gunnison Capital, Ltd., 38 F.E.R.C. ¶ 61,059, at 61,165 (1987) (noting the production of evidence that the product had been "marketed for many years and the revenues from [its] production have at times been sufficient to maintain operations and induce capital expenditures"); York Canyon Cogeneration Assoc., 44 F.E.R.C. ¶ 61,101, at 61,288 (1988) (noting the provision of evidence of an escalating future sales price, and a cost-benefit analysis projecting profitability based on the transportation cost savings and increased value of coal with a lower moisture content. York Canyon proposed the recovery of steam to produce hot oil for purchase by an affiliated user in a thermal coal drying operation. The commission found that neither the thermal coal drying process, nor the application of a QF's thermal output to produce dry coal were common. As a result, York Canyon provided evidence of an escalating future sales price, and a cost-benefit analysis projecting profitability based on the transportation cost savings and increased value of coal with a lower moisture content. The commission also analyzed projected increases in tonnage of washed coal produced, and certified the facility).

134. *See* Polk Power Partners, L.P., 61 F.E.R.C. ¶ 61,300, at 62,128 (1992) (finding that the use of thermal output to produce carbon dioxide is common and therefore, concluding it is presumptively useful).

135. Arroyo Energy, L.P., 62 F.E.R.C. ¶ 61,257, at 62,722, 62,723 (1993) (The innovative use of technology to provide refrigeration for an ice rink did not trigger the independent business purpose test because, the Commissioner explained, "ice is a universal product and its use in ice

Thermal applications which would not be undertaken, but for the by-product availability of inexpensive thermal energy, are not "useful" thermal applications.[136] Use of by-product thermal energy for agricultural purposes are particularly suspect, because conventional power plants dump waste thermal energy into the water or the air.[137]

The Commission found that "[t]hermal applications such as power plant feedwater heating, deaerating and fuel preparation are internal to the power production cycle," and therefore, inapposite to the thermal output requirement.[138] However, where there is a close sizing of the facility to the thermal needs of the facility, rather than sizing to the maximum electric output available, an agricultural use of the thermal output can pass muster as "useful" thermal output.[139]

Where the facility is sized for maximum electric output and revenues, where the heat that is produced is not efficiently used and controlled, where the heat-using facility is not independent, or where the product is not economic (that meaning the product is dumped on the market to justify the QF status and electric production), the thermal application may not be "useful."

FERC finds presumptively useful a common, if inefficient, application of thermal output.[140] The distillation of water originally was

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skating rinks is also common." Thus, innovative uses do not compel a rigorous economic analysis when FERC finds that a market for the end product is already established).

136. EG&G, Inc., 16 F.E.R.C. ¶61,060, at 61,104, 61,105 (1981) (finding that the aquaculture facility would not burn natural gas for the purpose of heating pond water but simply in order to achieve QF status for the facility).

137. *Id*.

138. Electrodyne Research Corp., 32 F.E.R.C. ¶ 61,102, at 61,279 (1985).

139. John W. Savage, 28 F.E.R.C. ¶ 61,273, at 61,501 (1984) (finding that four factors allowed an aquaculture thermal use to qualify as "useful." First, the facility was sized to deliver the appropriate amount of thermal energy—more than 50% of the useful energy output was thermal energy. Its primary purpose was not the production of electric power. Second, there was independent economic significance to the production of fast-maturing catfish. The production of catfish achieved a profit. Third, there was no relationship between the electric and thermal projects. Both were independent of the other. Fourth, the heat was adequately controlled to best use the thermal output.).

140. Polk Power Partners, L.P., 61 F.E.R.C. ¶ 61,300, at 62,128 (1992) (approving application for certification as a qualifying cogeneration facility. Liquid Carbonic Industries Corporation, a competing carbon dioxide producer, submitted evidence that the QF's thermal hosts failed to employ the most economic process of carbon dioxide production , and could not exist viably without subsidies from electric sales. The commission found no reason to investigate the presumption of usefulness because it had certified fourteen other such facilities. Moreover, six of the QFs involved unaffiliated thermal hosts, demonstrating that there was a market for thermal output to produce carbon dioxide. Therefore, FERC upheld certification of all three facilities, noting concern that a potential competitor could undermine PURPA by alleging that a thermal process is not the most economic, no matter how common the process.); *see* Polk Power Partners, L.P., 61 F.E.R.C. ¶ 61,030, at 61,162 (1992) (noting Liquid Carbonic asserted that the

not, but now is, considered a "useful" thermal output application. In *Bayside Cogeneration, L.P.*, the Commission explained that it had reviewed sufficient applications to declare the use of thermal energy to water distillation as common and, therefore, presumptively useful.[141]

The Brazos Electric Power Cooperative sought court review of the FERC decision upholding QF status of the 284 MW Tenaska Power Project in Cleburne, Texas. FERC had held that the thermal output of a QF under PURPA need not be economic to be considered "presumptively useful." The FERC opinion rested on the finding that there is no statutory requirement that the thermal output be used in a cost-effective or economic manner. "Presumptively useful" to FERC means that, in theory, such a thermal energy project could be economically useful. It is irrelevant if in fact it is useful in the specific circumstances for a specific project, or is effectively a sham.[142]

Brazos Electric Power Cooperative, Inc. opposed FERC's determination of what is "useful thermal energy" generally, and whether water distillation constitutes an economically justified business purpose, per se.[143] Tenaska finds support *in Brooklyn Navy Yard*

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flue gas method of carbon dioxide employed by Lavair is much more expensive and inefficient than the conventional method of recovering carbon dioxide as a waste gas from another industrial process. It also argued that the Florida market for carbon dioxide is easily met with the plant which Polk proposes.).

141. Bayside Cogeneration, L.P., 67 F.E.R.C. ¶ 61,290, at 62,005 (1994) (noting the Commission expressly rejected that its finding of usefulness in *Kamine* may have been influenced by evidence presented by the QF as to arm's length contracts with unaffiliated local chemical companies to dilute solid and concentrated chemicals that otherwise would be produced in solution form). The Commission rejected the electric company's view of "presumption" as a rebuttable evidentiary burden that may be overcome by the submission of economic evidence. The Commission explained that it only examines economic viability "when the thermal host is an affiliate of the cogenerator. . . and only when the technology is previously unproven." *Id.* at 62,006. FERC recognizes that poor management may render an operation inefficient. Therefore, water distillation passed the independent business purpose test because a thermal host "is in theory capable of making money employing the new technology." *Id. See also* Kamine/Besicorp Allegheny L.P., 63 F.E.R.C. ¶ 61,320, at 63,158 (1993) (stating that, "the distillation of water can no longer be treated as novel, but rather is a common use of thermal output").

142. *See* Brazos Electric Power Coop. v. Tenaska IV Tex. Partners, Ltd., 83 F.E.R.C. ¶ 61,176, 61,727 (1998) (denying petition for revocation). The appeal was taken to the U.S. Court of Appeals for the Fifth Circuit. In response, the project owner, Tenaska, began exploring several alternative uses for the purified water product made with the thermal output. In theory, this might attract additional companies to the host city industrial park. The very fact that the project sponsor was looking for alternatives for the water, which on paper was sold to the city—which occasionally simply dumped it into the sewer—rather than the city looking for such alternative uses, underscores the suspicious nature of the economic relationships involved with a particular thermal application. *See id.* at 61,724.

143. *Id.* at 61,725-61,727. Tenaska owns a topping-cycle cogeneration facility located in Cleburne, Texas, which sells electricity exclusively to Brazos pursuant to a 1993 power purchase agreement. In an effort to obtain QF status, Tenaska IV Texas Partners initially applied for cer-

Cogeneration Partners, L.P.,[144] a project that planned to use cogenerated steam to process the waste water effluent of a water pollution control plant in order to produce distilled water. The Commission declined to investigate the actual use of a product that "has already met the Commission's usefulness requirement." FERC decided in 1998 that there is a presumption of usefulness even when the facts indicate that thermal output is not useful, is not used in an economic manner, or is being discarded, as long as there is a common usage in theory for the output, making it "presumptively useful" thermal energy.[145]

FERC refused to remove a 56 MW cogeneration facility at Georgetown University in Washington, D.C. from QF status, when challenged by citizen groups on grounds of not satisfying the thermal output and project efficiency tests of PURPA.[146] In its decision, FERC noted that allegations of self-dealing were not properly raised in a proceeding for QF certification.[147] A cogenerator can achieve QF status if it satisfies the efficiency and output requirements. With this QF status, the cogenerator is exempt from state utility-type regulation or discouragement.

b. Small Power Production

There is a second way that self-generation can attain QF status. Small power production facilities may attain QF status if they are waste or renewable energy-fueled freestanding electric generating units. They may be independent power producers that only produce

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tification representing that extracted steam would be used to dry brewer's spent grains which would then serve as livestock feed. The Texas Public Utilities Commission certified the power purchase agreement, and less than two weeks later, Tenaska filed a new notice of self-certification stating that low pressure steam would be used to distill water for sale to a third party. A few months later, FERC certified the facility based on the same representations regarding the use of thermal output. Brazos alleges that the distilled water produced by the QF is not useful because it is "returned to the city" and disposed of into the city's sewer system. The QF maintains that it satisfies operating and efficiency standards, and that its application of the thermal output to produce distilled water is "common" and thus, "presumptively useful." Moreover, the QF asserts that Brazos' argument fails because it incorrectly focuses on how the distilled water is being used by the non-affiliated party to which it is sold. Tenaska charges that FERC need not consider how the City uses the distilled water because water distillation is a presumptively useful application of thermal heat.

144. Brooklyn Navy Yard Cogeneration Partners, 74 F.E.R.C. ¶ 61,015, at 61,046 (1996); *see also* Brooklyn Navy Yard Cogeneration Partners, 79 F.E.R.C. ¶ 62,006, at 64,009 (1997) (granting certification of Brooklyn Navy Yard's cogeneration facility as a QF. Consolidated Edison challenged the QF's use of the distilled water as not constituting a "useful" application and the Commission found such use to be common and, therefore, presumptively useful).

145. *Brazos Electric Power Coop.*, 83 F.E.R.C. ¶ 61,176, at 61,727.

146. Georgetown Cogeneration Ltd. P'ship, 54 F.E.R.C. ¶ 61,049, at 61,186 (1991).

147. *Id.*

electric power or power producers that do not produce thermal energy in excess of 5% of the facilities' total output.[148]

1. Size Parameters

Although there are no applicable efficiency or operating requirements, small power producers are limited in size to less than 80 MW[149] at the same site,[150] with the exception that, as of 1990, renewable energy-fueled and industrial waste byproduct-fueled facilities may exceed 80 MW.[151] Some QF units that are too large to qualify for QF exemptions based on their engineering and technology have qualified by downlisting the rating of the prime mover so that it appears legally to be smaller than it actually is.[152]

FERC denied QF status to a second waste incinerator within one mile of another waste incinerator owned by the same county agency, where their combined capacity exceeded 80 MW.[153] For the purpose of determining the size of a small power production facility, project

148. 18 C.F.R. §§ 292.203(a), 292.204(a)-(b).

149. A small power producer that exceeds a 30 MW threshold can still qualify if its generating source is biomass energy. Biomass is any organic matter not derived from fossil fuels. 18 C.F.R. § 292.202(a) (thus logically including agricultural waste, wood and refuse). To be considered biomass, the fuel must consist of at least 50% of such matter, thereby permitting some blending of fuels. 18 C.F.R. § 292.204(b) (1987). There is no clue in the legislative history as to why the distinction for small power production facilities greater or less than 30 MW was enacted. Both the 30 MW limit for additional exemptions and the ultimate 80 MW cap appear arbitrarily selected and not based on any technologic, economic, or environmental criteria.

150. Facilities within a one mile radius (measured from their respective generating equipment) are deemed to be at a common site; hydroelectric facilities that utilize the water from the same impoundment are deemed at a common site. 18 C.F.R. § 292.204(a)(2). In this instance, nine distinct ridgetops in a region were designated for installation of wind turbines ranging in size from 5 to 25 MW each, with an aggregate installed capacity of 87.5 MW. The applicant sought successfully a determination that each of the nine locations could be individually regarded as a separate site of less than 30 MW. Windfarms, Ltd., 19 F.E.R.C. ¶61,220, at 61,435 (1982); Windfarms, Ltd., 20 F.E.R.C. ¶61,165, at 61,340 (1982); *see also* Windpower Partners, 23 F.E.R.C. ¶61,470, at 62,025 (1983) (holding that a 60 MW wind turbine complex did not exceed the 30 MW limit for exemption at "any single site," where a single site is defined as the aggregate of all wind generating facilities "within a one mile radius of any one wind generating facility"); El Dorado County Water Agency and El Dorado Irrigation District, 24 F.E.R.C. ¶ 61,280, at 61,576-61,578 (1983) (finding that a 110.4 MW cluster of three hydroelectric facilities that were not within a one mile radius did not exceed the 80 MW limit)..

151. Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990, Pub. L. No. 101-575, 104 Stat. 2834 (1990) (stating that projects that qualify to be larger than 80 MW had until the end of 1994 to apply for FERC certification and until the end of 1999 to begin construction or to exercise reasonable diligence towards completion).; Cambria Cogen Co., 53 F.E.R.C. ¶ 61,459, at 62,617 n.3 (1990).

152. For example, in New York State units owned by Besicorp Group and by Kamine Development Corp. with technologically rated turbines at 100 MW, listed the ratings at 79 MW to qualify under applicable New York statute for certain QF benefits.

153. Pinellas County, Fla., 50 F.E.R.C. ¶ 61,269, at 61,852, 61,855-61,857 (1990).

size/capacity can be determined at the busbar, rather than at the point of interconnection with the utility grid.[154] Size and fuel therefore, are key to determining small power producer QF status.[155]

FERC declined to grant QF status to a proposed small power production facility comprised of two methane production facilities associated with municipal sewage treatment plants located forty-five miles apart. The methane would be traded to a natural gas company that, in return, would provide natural gas at a third location to supply a 20 MW small power producer.[156] It appeared that this concept's failure to gain QF status was related not so much to its disparate sites or convoluted trading structure, but, rather, to the fact that the fuel ultimately burned would be pipeline quality natural gas. Under FERC regulations, QF status is not granted to small power producers producing pipeline quality natural gas. FERC found unconvincing the petitioner's argument that the gas was acquired in exchange for recovered methane, thus in an accounting sense, if not in a physical sense, the small power production facility was offsetting the fossil fuel it consumed with a waste resource.

2. Fuel Input Parameters

A small power producer must employ primarily alternative fuel or waste inputs. The definition of alternative fuel has evolved from case law. "Waste" is defined as "byproduct material" that has little or no commercial value and is considered to be unessential and subordinate to the overall economic goal of an industrial process or operation. [157]

In some limited situations, even conventional fossil fuels can qualify as "waste" material to allow certification as a small power project. FERC defines "waste" to include natural gas, which would

154. Malacha Hydro Limited Partnership, 43 F.E.R.C. ¶ 62,267 (1988). This reverses a prior FERC determination allowing subtraction of line losses and measuring capacity at the point of interconnection, Malacha Power Project, Inc., 41 F.E.R.C. ¶ 61,350, at 61,946 (1987). This previously measured the actual amount of power delivered to the utility after any line losses, rather than the net power sendout of the project after allowance for on-site consumption, as the determinative value. In this instance, it rendered Malacha Power at a net capacity of no more than 30 MW and thus exempted the project from federal regulation.

155. Total energy input by the small power producer must be at least 75% biomass, waste, renewable resources, geothermal resources, or a combination of these sources. 18 C.F.R. § 292.204(b)(1).

156. Gary Hibbert, 53 F.E.R.C. ¶ 62,259, at 63,380 (1990). The problem with this configuration is that the synthetic waste-derived fuel produced would not necessarily be the same gas that was burned at the remote small power production facility, given that the gas would be blended into the distribution system and transported by a common carriage pipeline.

157. American Lignite Prods. Co., 25 F.E.R.C. ¶ 61,054, at 61,228 (1983).

otherwise be flared and used as refuse lignite/anthracite.[158] Low or medium-quality natural gas with minimal commercial value can qualify as a "waste" material.[159] However, FERC did not consider the downstroke portion of an ordinary oil well pump as "wasted" and did not consider the inertial energy of such a facility to qualify for the benefits of PURPA.[160]

FERC will grant waivers from the fuel use requirement under several circumstances. If a project encounters problems during start-up or testing of a new project, it can receive a waiver.[161] FERC also grants waivers where there are unanticipated problems associated with innovative or novel technologies.[162] Where there is a single unusual event that is outside the normal control of the QF sponsor, a waiver also may be granted.[163] In deciding whether or not to grant a waiver, FERC will consider the duration of the waiver period, how the waiver will effect the financial health of the company, whether a waiver request was submitted in a timely fashion, whether the waiver is likely to be a one-time event, employment impacts associated with closing the QF, and how the waiver fits within general policy goals.[164]

Several situations have prompted FERC fuel use waivers. FERC granted a waiver from the 25% fossil fuel maximum limitation for a QF when weather-related factors temporarily diminished the inherent capability to use renewable energy sources.[165] Where there have been

158. *Id.* at 61,229; Steiren Farms, 17 F.E.R.C. ¶ 61,260 , at 61,509 (1981).

159. Gabriel Mills, 41 F.E.R.C. ¶ 62,288, at 63,645 (1987).

160. Turbine Tech, 31 F.E.R.C. ¶ 61,184, at 61,357, 61,359 (1985) (holding that a properly balanced pump would not produce any wasted mechanical energy, and denying the application to consider as a QF an 11 kW pump electric system.)

161. *E.g.*, Polk Power Partners, L.P., 66 F.E.R.C. ¶61,116, at 61,202 (1994); LG&E-Westmoreland Hopewell, 62 F.E.R.C. ¶ 61,098, 61,712 (1993); O.L.S. Energy-Agnews, Inc., 61 F.E.R.C. ¶61,293, 62,115 (1992).

162. *See* Continental Energy Assoc., 50 F.E.R.C. ¶ 61,425, at 62,306 (1990) (also taking into account the local economic interests).

163. *E.g.,* Kramer Junction Co., 61 F.E.R.C. ¶ 61,309, at 62,159, 62,160 (1992); Daggett Leasing Corp., 64 F.E.R.C. ¶61,148, at 62,177 (1993).

164. Pacific Gas & Elec. Co. v. Red Top Cogeneration L.P., 84 F.E.R.C. ¶ 61,138, at 61,757 (1998) (rejecting a request for waiver since non-compliance extended beyond initial start-up and testing, was sought only after challenge, and a grant would not produce significant energy savings or serve the public interest).

165. Kramer Junction Co., Harper Lake Co. VIII and HLC IX Co., 61 F.E.R.C. ¶ 61,309, at 62,159-62,160 (1992). This case involved the LUZ Solar Partnerships, in which generation was partially solar electric and partially from traditional fossil fuels. Because of volcanic activity from the eruption of Mount Pinatubo, solar insulation was reduced, cutting power production. This event was seen as unforeseen, or the result of uncontrollable force or force majeure. This event reduced available solar infiltration. Although opposed by Southern California Edison, the utility purchasing power from the facility, FERC elected to grant a waiver. Under this waiver, it

start-up or other testing problems or the introduction of novel technologies, FERC has granted waivers from the 25% fossil fuel limitation.[166] FERC has also allowed waivers where the purchasing utility declares a system emergency and needs additional power.[167]

FERC rejected a request to waive the fuel use limitation for a small power producer while that facility underwent repairs.[168] Essentially, this would force the QF to shut-down or scale back its production during the repair period to stay within the fuel use requirements.

During any calendar year, not more than 25% of the fuel input into a small power production QF can be from fossil fuels.[169] In limited situations, however, fossil fuels can be used in excess of this percentage limitation to enhance overall efficiency.[170] In 1989, FERC waived the 25% fossil fuel ceiling for small power producers for three solar energy projects to meet an electric system supply emergency in Southern California.

4. Legal Criteria for Ownership

Whether a cogenerator or a small power producer, a QF must not be primarily owned by an electric utility, an electric utility holding company, or a subsidiary of either.[171] Implementing rules define greater than 50% cumulative equity ownership by any such regulated electric utility entities as disqualifying the project from QF status.[172] A partially or wholly owned subsidiary of an electric utility or a utility

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would fire more fossil fuel and use less than 75% solar energy. A waiver was granted for the calendar year of the volcanic activity, allowing the project to exceed 25% utilization of fossil fuels. *Id.* at 62,158 n.11, 62,156.

166. *See e.g.,* O.L.S. Energy-Agnews, Inc., 61 F.E.R.C. ¶ 61,293, at 62,114 (1992); Archibald Power Corp., 53 F.E.R.C. ¶61,324, at 62,199 (1990); Consolidated Water Power Co., 52 F.E.R.C. ¶61,220, at 61,778 (1990); CMS Midland, Inc., 50 F.E.R.C. ¶ 61,098, at 61,305 (1990); Nelson Indus. Steam Co., 39 F.E.R.C. ¶61,201, at 61,724 (1987).

167. LUZ Solar Partners III, Ltd., 49 F.E.R.C. ¶ 61,070, at 61,273 (1989) (granting a waiver due to a system emergency that resulted when Southern California Edison, the purchasing utility, had a curtailment of natural gas to its power generation equipment. It was necessary for the purchasing utility to rely on maximum output of renewable energy facilities. This greater use of fossil fuel at the QF facility caused the QF to exceed its air emission limitations under its air permits.).

168. New Charleston Power, Inc., 65 F.E.R.C. ¶ 61,378, at 63,026-63,027 (1993).

169. 18 C.F.R. § 292.204(b)(2).

170. Luz Solar Partners II, Ltd., 34 F.E.R.C. ¶ 61,383, at 61,714 (1986); Luz Solar Partners, Ltd., 30 F.E.R.C. ¶61,122, at 61,227 (1986); Power Developers, Inc., 32 F.E.R.C. ¶ 61,101, at 61,276 (1985); Northeastern Power Co., 34 F.E.R.C. ¶ 61,197, at 61,330 (1986).

171. 16 U.S.C. § 824a-3(e); 18 C.F.R. § 292.602(c).

172. 18 C.F.R. § 292.206(b).

holding company is treated as utility ownership in applying the 50% limitation.[173]

Certain subsidiaries of electric utility holding companies are exempt from this restriction.[174] There are very limited but critical exceptions to this definitional structure, which allow certain wholly-owned subsidiaries of electric utility holding companies to wholly own QFs.[175]

PURPA itself is silent regarding ownership by utility subsidiaries. In one sense, FERC conservatively construed the PURPA statutory limitation by restricting utility subsidiary ownership of a QF by the same parameters as the restriction of parent utility company ownership. In another sense, FERC liberally construed the statutory ownership limitation by defining utility ownership as ownership only in excess of a 50% equity share. State regulatory commissions can further limit investments in QFs by the electric utilities they regulate.

FERC bases QF certification on the sale of a facility's net output power measured at the point of sale. For purposes of size and efficiency determinations, net output power is the gross output power of a facility minus the power utilized on-site. Therefore, a facility may exceed the 50% utility ownership limitation until the point of commercial operation without jeopardizing ultimate QF status.

FERC interprets the 50% utility ownership limitation as permitting the subsidiary of a regulated electric utility to invest more than 50% of the capital in a QF project as long as it retains no more than 50% of the equity interest.[176] If capital contributions do not reflect

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173. *Id.*

174. 18 C.F.R. § 292.602(c)(1).

175. 18 C.F.R. § 292.206(c) (stating that a company shall not be considered to be an "electric utility" company if it (1) is a subsidiary of an electric utility holding company which is exempt by rule or order adopted or issued pursuant to section 3(a)(3) or 3(a)(5) of the Public Utility Holding Company Act of 1935, 15 U.S.C. § 79c(a)(3), 79c(a)(5); or (2) is declared not to be an electric utility company by rule or order of the Securities and Exchange Commission pursuant to section 2(a)(3)(A) of the Public Utility Holding Company Act of 1935, 15 U.S.C. § 79b(a)(3)(A).). These critical exceptions were not contained in the original regulations. 45 Fed. Reg. 17959-17976 (1980). They were added later.

176. Ultrapower 3, 27 F.E.R.C. ¶ 61,094, at 61,183-61,184 (1984) (involving a fuel facility that had an 11.4 MW power production capacity and was owned by a general partnership in California. One of the two general partners was a wholly owned subsidiary of Tucson Electric Power Company (Rincon), which made an initial capital investment of $5 million; the other non-utility partner contributed $2.5 million (Ultrapower 3). The partnership agreement provided a half interest in all decisions, profits, losses, and tax consequences to each general partner. According to 18 C.F.R. § 292.206(b), equity interest determines ownership interest. 18 C.F.R. § 292.206(b). The Ultrapower 3 decision was the first effort by FERC to specify and weigh factors contributing to equity. The decision construed capital contribution, management control and shares of profits and losses as they bear on equity interest. Even though capital con-

management control they do not affect equity. A partner's entitlement to profits, losses, and surplus (stream of benefits) is a dispositive factor in determining a partner's equity position in a facility.[177] FERC has limited its discussion of equity interests to situations where partners own facility assets on an undivided basis and no shares of stock are outstanding.

In a 1987 ruling, FERC held that a return of capital contribution is a mere return of debt and not part of the equity interest.[178] This effectively allowed the utility partner to receive larger distributions of cash flow until its initial capital contribution was repaid.[179]

In September 1988, FERC granted QF status to a project where the utility subsidiary co-owner received more than 50% of the tax depreciation on the facility for the first five years of operation. All other streams of benefits were distributed equally.[180] FERC agreed that, by taking all of the tax depreciation benefits, the utility partner's claim to assets at the dissolution of the joint venture correspondingly lessened. Although the utility partner received more than 50% of the tax depreciation, the nonutility partner received more than 50% of the claim at dissolution. Provided the partnership takes the time value of money into account, utility partners may trade away future capital account assets for current tax depreciation benefits.

Since 1991, FERC has let utility partners take more than 50% of the stream of benefits early in the partnership in an exchange for a promise that over the life of the partnership, ownership will not exceed the 50% equity limitation.[181]

The Commission also effectively may waive the ownership limit by declaring that a retail sale of electricity does not qualify the selling entity as an "electric utility," despite general precedent to the contrary. In particular, FERC sanctioned QF status for a real estate development corporation generating and reselling electricity to building tenants, based on the theory that the corporation was not an "electric

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tribution provided one partner greater balance sheet assets, FERC indicated that the capital contribution was debt and not equity. Therefore the utility partner did not exceed the 50% equity limitation by contributing twice as much capital as the non-utility partner.)

177. 27 F.E.R.C. ¶ 61,094, at 61,184.

178. Prodek-/Hydro Resources Joint Venture, 41 F.E.R.C. ¶ 61,152, at 61,381 (1987); *but see* NYSD Ltd. Partnership, 53 F.E.R.C. ¶ 62,223, at 63,344 (1990) (granting QF status. A utility partner taking more than 50% tax benefit can be offset by a greater than 50% capital contribution.).

179. Prodek/Hydro Resources Joint Venture, 41 F.E.R.C. ¶ 61,152, at 61,381 (1987).

180. James River Cogeneration Co., 44 F.E.R.C. ¶ 61,352, at 62,189-62,190 (1988).

181. Zond Sky River Dev. Co., 57 F.E.R.C. ¶ 62,019, 63,027 (1991).

utility" and thus could wholly own the QF project.[182] A sale-leaseback to an electric utility may not avoid the ownership limitation.[183]

The QF ownership limitations are measured at the point after construction when the QF first sells its power output, and thereafter. The ownership limitation need not be satisfied prior to commercial operations. Therefore, a utility may own greater than 50% of a QF during development and construction phases, reducing its ownership to less than 50% at the point of commercial operation.

5. Federal Requirements for Utility Purchases of Power from QFs at State-Administered Prices

Regulated and unregulated electric utilities are directed to purchase energy and capacity offered to them by QFs.[184] PURPA requires that rates for purchase of this power not exceed the "incremental cost" of the power supply to the purchasing utility and must be both "just and reasonable" to electric utility customers and be in the public interest.[185]

a. Rates for Purchase

By regulation, FERC (1) defined the "incremental cost" of a purchasing utility as its "avoided cost," and (2) dictated that this avoided cost was the requirement for electric utilities purchasing QF power. FERC regulations define "avoided costs" as "the incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the qualifying facility or qualifying facilities, such utility would generate itself or purchase from another source."[186] The Supreme Court upheld FERC's discretion to set the price that utilities must pay for QF power at the ceiling value allowed by the Congress.[187] All electric utilities must purchase power offered to them by QFs.[188] This obligation is absolute whether QF power is supplied by a QF within the service territory, or transmitted to it

182. Riverbay Corp., 25 F.E.R.C. ¶ 61,316, at 61,719 (1983).

183. Allegheny Elec. Coop., F.E.R.C. Docket No. QF-88-452 (approved in draft form Mar. 29, 1989). A lessee entity that fails the electric utility ownership limitation, controls the power facility and enjoys an option to purchase at the end of the lease term, "owns" the facility for the purposes of this test. Substance is emphasized over form of the transaction in evaluating which party (the lessee) enjoys the "stream of benefits" and is the putative "owner."

184. 18 C.F.R. § 292.303(a).

185. 18 C.F.R. § 292.304(a).

186. 18 C.F.R. § 292.101(6).

187. Am. Paper Inst. v. Am. Elec. Power Serv. Corp., 461 U.S. 402, 413 (1983).

188. 18 C.F.R. § 292.303(a).

through the service territory and transmission system of another utility.[189]

Rates required to be paid by utilities for QF power must simultaneously satisfy three criteria: (1) they must be "just and reasonable" to electric consumers of the purchasing utility, (2) they must be in the public interest, and (3) they must be not discriminatory against QFs.[190] This is in the nature of a simultaneous equation: One rate determination must simultaneously satisfy all three criteria. The value that satisfies the criteria per se is a rate established at the purchasing utility's avoided cost.[191] Nothing in PURPA requires a purchasing utility to pay more than avoided cost.[192] States can set QF power purchase rates less than utilities' avoided costs for other than new capacity only.[193] However, some states require utilities, as a matter of state law, to pay in excess of avoided cost for QF power.[194] Although QF rates are necessarily estimated for the purposes of entering a long-term contract, the avoided cost concept is not violated by such estimates.[195]

Each state regulatory commission, for each electric utility it regulates, and each unregulated electric utilities on its own account, must calculate the variable costs and the fixed capacity costs that the utility avoids by purchasing blocks of QF power.[196] The constitutionality of this federal action-forcing statute vis-à-vis the states, was initially held unconstitutional by a federal district court; however, on appeal, the Supreme Court narrowly upheld the statute.[197]

FERC announced that once a contract for power sale is signed, it thereafter is too late to challenge whether a particular power sale rate exceeds avoided costs.[198] FERC announced that it would not entertain any requests to invalidate on preemption grounds any preexisting

189. 18 C.F.R. § 292.303(d).

190. 18 C.F.R. § 292.304(a).

191. 18 C.F.R. § 292.304(b)(2).

192. 18 C.F.R. § 292.304(a)(2).

193. 18 C.F.R. § 292.304(b)(3). "New capacity" is defined as any purchase from capacity of a qualifying facility, construction of which was commenced on or after November 9, 1978. 18 C.F.R. § 292.304(b)(1) (2003).

194. New York established a minimum $0.06/KWh rate, in excess of short-term avoided cost. This was subsequently repealed.

195. 18 C.F.R. § 292.304(b)(5).

196. 18 C.F.R. § 292.304(e). Relevant factors include, among other things, peak loads, purchased power agreements, the value of electric power, the ability to defer capacity additions and net line losses. *Id.*

197. *See* FERC v. Mississippi, 456 U.S. 742, 759 (1982) (holding that the statute "does nothing more than preempt conflicting state enactments in the traditional way").

198. Conn. Light & Power Co., 70 F.E.R.C. ¶ 61,012, at 61,029 (1995).

contracts where the avoided cost issue could have been previously raised.[199] A federal district court ruled that it had no authority to deal with rates or state regulation affecting an individual QF. Instead, it ruled that it only had authority to ensure that states implemented QF regulations.[200]

FERC regulations specify three considerations each state regulatory commission should consider in establishing "avoided cost" rates.[201] First, all QF power quality is not identical. State regulatory commissions are directed to evaluate the availability of any particular QF power to be available at daily and seasonal peak demand times.[202] Factors relevant to availability include the dispatchability of the power, reliability, maintenance requirements that take the QF off-line, and availability at times of system emergencies.[203]

Second, avoided costs may only reflect the particular capacity situation faced by each electric utility.[204] Therefore, utilities may offer very different avoided cost rates. A QF offering capacity and energy to the utility is entitled to the utility's full avoided capacity costs for any year in which the utility has capacity additions in its supply forecast or plan.[205] This comports with the federal requirement to pay the QF the purchasing utility's full avoided costs, which include avoided capacity and avoided energy. Third, the avoided cost paid by a purchasing electric utility can reflect the net power actually delivered to the utility's load center.[206]

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199. Williams Natural Gas Co. v. F.E.R.C., 3 F.3d 1544, 1554 (D.C. Cir. 1993) (denying retroactive effective date to an agency rule to protect expectations of those relying on preexisting rule); Pearlman v. F.E.R.C., 845 F.2d 529, 534 (5th Cir. 1988) (stating no retroactive effect to a new FERC rule); Clark-Cowlitz Joint Operating Agency v. F.E.R.C., 826 F.2d 1074, 1081 (D.C. Cir. 1987) (holding retroactive application of new rule avoided to prevent manifest injustice); Aliceville Hydro Assocs. v. F.E.R.C., 800 F.2d 1147, 1152-53 (D.C. Cir. 1986) (allowing retroactive application under certain conditions); Tenn. Gas Pipeline Co. v. F.E.R.C., 606 F.2d 1094, 1115-16, 1116 n.77 (D.C. Cir. 1979) (permitting retroactive application of new rule when there was no reasonable basis for reliance on preexisting rule).

200. Mass. Inst. of Tech. v. Mass. Dept. of Pub. Utils., 941 F. Supp. 233, 236-38 (D. Mass. 1996).

201. 18 C.F.R. § 292.304(e).

202. 18 C.F.R. § 292.304(e)(2). Peak periods of demand are usually during the period approximately from 8:00 A.M. to 9:00 P.M. during warmest summer and/or coldest winter months.

203. These are qualitative variables which indicate whether the QF can be controlled as can power generating facilities owned and operated by the utility. *See* 18 C.F.R. § 292.304(e)(2)(i)-(vii).

204. 18 C.F.R. § 292.304(e)(3).

205. 18 C.F.R. § 292.304(b)(5).

206. 18 C.F.R. § 292.304(e)(4). A certain amount of electricity transported by wire is lost as by-product heat in the process of transmission. Power purchased can be net of line losses under conventional power transactions.

It is permissible under PURPA to sell QF power to a neighboring territory rather than to a host utility. If the host territory utility refuses to wheel QF power, it must offer to purchase the power. The Energy Policy Act of 1992 allows QFs to obtain wholesale power wheeling. FERC has the power to order utility wheeling.[207]

Small QFs producing 100 kilowatts per hour or less are entitled under federal law to benefit from standardized tariffs.[208] Several states extend the standardized tariff to larger facilities.[209] Utilities are also allowed to suspend temporarily purchasing power from QFs in situations in which such purchases would increase the operating costs of the utility.[210]

b. Net Versus Gross Power Sale

There is a controversy presented in several states regarding whether a QF is entitled to sell only net power[211] or can sell its gross power output, regardless of on-site requirements for power. Many QFs were purchasing supplemental power from the host native utility in an amount equal to their internal needs, thereby allowing the maximum sale of nameplate generating capacity output back to the utility at avoided cost rates. The question arises as to whose power is actually being (re)sold to the purchasing utility.

The issue of sale of gross versus net QF power output was touched upon in early FERC decisions, but never squarely addressed until 1998. Early in the QF era, the commission determined that the "power production capacity" of a geothermal QF facility is equal to the maximum net output that the facility safely and reliably achieves under the most favorable operating conditions likely to occur over its lifetime. The net output was determined to be what the QF facility sends out after all station use of power for auxiliary equipment and

207. 16 U.S.C. § 824(a)(3).

208. 18 C.F.R. § 292.304(c). The limit reflects design capacity. *Id.*

209. Pennsylvania and the Tennessee Valley Authority raised this limit to 500 kW; Maryland, Delaware and New Jersey have a 1 MW limit; North Carolina has 5 MW limit. WILLIAM R. MEADE & KEVIN L. PORTER, RENEWABLE ENERGY INSTITUTE, TRENDS IN STATE UTILITY REGULATION AFFECTING RENEWABLE ENERGY 16 (1987).

210. 18 C.F.R. § 292.304(f) (stating a utility is not required to purchase energy or capacity from a QF during any period in which purchases from QFs will result in costs greater than those which the utility would incur if it did not make such purchases, but generated the power itself). This provision has not been interpreted by either FERC or any courts.

211. Net power is defined as gross facility power output, reduced by the amount of native load, or power consumed by the QF for its own internal needs.

other electricity uses at the facility.[212] FERC later clarified that line losses incurred while moving power from its point of generation to its point of grid interconnection must be deducted to determine net output.[213]

FERC interpreted that the prohibition on selling in excess of net output could cause a QF to violate the PURPA prohibition that the unit must be owned by a person not primarily engaged in sale of electric power, unless such sale of power was solely from cogeneration facilities or small power production facilities.[214] In its 1991 decision in *Turner Falls Limited Partnership*, FERC first articulated that while QFs are entitled to simultaneously buy and sell power, they are not allowed to sell power in excess of their net outputs. FERC explains the meshing of these two principles—simultaneous QF buy-sell and sale only of net output—as necessary to separate the production and consumption functions of a QF.

FERC distinguishes between the power purchases of a cogeneration QF and a small power producer QF. First, for purposes of auxiliary station power requirements, FERC does not allow any QF to displace native power with power supplied by the purchasing utility, and it may not sell gross power and buy back from the utility power it requires for such station uses.[215] By contrast, a cogeneration QF is deemed to be able to supply its host facility's electricity needs, depending upon whether such a sale is permitted under state law. A cogenerator could sell its entire net output to the utility and buy back from the utility such power as is necessary for host uses not associated with electric generation at the QF.[216]

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212. Occidental Geothermal, Inc., 17 F.E.R.C. ¶ 61,231, at 61,445 (1981) (stating that such auxiliary equipment uses could be for pumps, blowers, machinery necessary to prepare fuel, exciters for the generators, lighting, computerized controls, electric waste-handling equipment, emission monitors, etc. and construing whether the net or gross output facility was used for purposes of determining whether the facility was below the 80 MW limitation of PURPA for geothermal QF projects); *see also* Power Developers, Inc., 32 F.E.R.C. ¶ 61,101, at 61,276 (1985), *reh'g denied*, 34 F.E.R.C. ¶ 61,136 (1986) (stating that the power production capability of a facility is equal to its net output, not its gross output).

213. Malacha Power Project, Inc., 41 F.E.R.C. ¶ 61,350, at 61,946 (1987).

214. 16 U.S.C. § 824(a)(3); Turners Falls Limited Partnership, 55 F.E.R.C. ¶ 61,487, at 62,668 (1991) (describing how loss of QF status would subject a project to regulation as a utility and sale of power under FERC-approved rates).

215. Conn. Valley Elec. Co. v. Wheelabrator Claremont Co., 82 F.E.R.C. ¶ 61,116, at 61,419 (1998) (deciding three disputes regarding gross versus net power output sale involving Wheelabrator and a Connecticut utility, Stone Container Corp. and a South Carolina power company, and Penntech Papers and Niagara Mohawk Power Corp. in New York).

216. *Id.;* Union Carbide Corp., 48 F.E.R.C. ¶ 61,130, at 61, 505-07 (1989), *reh'g denied*, 49 F.E.R.C. ¶ 61,209 (1989).

FERC elected to measure the quantity of power sales on a rolling hour-to-hour basis, so that there must be a constant limitation of sale to no more than net power output.[217] FERC holds that the purchase of a line loss service for losses beyond the point of interconnection or some other ancillary service by a QF from a third party does not result in the QF engaging in a sale for resale of power.

The penalty for selling gross power in lieu of net power that takes account of station use and line losses is declared by FERC as of February 1998 to be loss of QF status. Loss of QF status causes the QF to lose avoided cost prices for all its QF power sales.[218] If a QF loses its QF protections, it files rates pursuant to Section 205 of the Federal Power Act.[219] If a QF facility that has been selling more than net output decides thereafter only to sell net output, it could then regain QF status on a prospective basis from the date of this change. However, the temporary loss of QF status retroactively could, as a matter of contract law, jeopardize the QF power sale agreement with the purchasing utility, depending upon whether retention at all times of such QF status is mandated by the power sale contract.[220]

The two 1998 *Connecticut Valley Electric Company, Inc.* decisions do not address directly whether, even though QF status is retained by continuing to sell gross output under a pre-1991 QF contract, the purchasing utility must pay the contract price up to full avoided costs for that output in excess of net station output. FERC does declare in dicta that the price paid for power under a QF con-

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217. Conn. Valley Elec. Co., 82 F.E.R.C. ¶ 61,116, at 61,420-61,421 (holding such method is consistent with how FERC measures a facility's net capacity); Am. Ref-Fuel Co. of Bergen County, 54 F.E.R.C. ¶ 61,287, at 61, 816 (March 14, 1991) (asserting that a one-hour period for measuring customer demand also is typical in the industry and recognizing that use of a rolling one-hour period does not allow the potential for manipulation of maximum power outputs as would a longer measuring period).

218. To lose QF status once a QF is certified by FERC, there must be an affirmative petition filed by a complainant questioning QF status. Pending that, it is possible that a purchasing utility ultimately might refuse to pay the QF contract or QF avoided cost price to a QF for the amount of power sold in excess of its net station output.

219. LG&E-Westmoreland Southhampton, 76 F.E.R.C. ¶ 61,116, at 61,605 (1996).

220. Medina Power Co., 71 F.E.R.C. ¶ 61,264, 62,051 (1995), *reh'g denied*, 72 F.E.R.C. ¶ 61,224 (1995) (stating that FERC does not retroactively impose new rules on pre-existing QF contracts). This is particularly true of revision of existing QF contracts at the unilateral request of a single party. FERC acknowledged that its rules regarding net versus gross power sales were ambiguous, at least until the point of the *Turner Falls Limited Partnership* decision in 1991. 55 F.E.R.C. ¶61,487 (1991). Any contract executed before this decision, in which the contract explicitly, or the conduct of the parties implicitly, indicates that gross output may be sold to the utility with station requirements purchased from the utility, will be respected by FERC without the loss of QF status. *Id.* at 62,670 n.33.

tract should be the price specified in the contract with the utility up to the net output of the QF facility, suggesting that the contract price is paid for all output in a pre-1991 "grandfathered" contract.[221]

FERC denied rehearing and issued a partially clarifying decision in May 1998.[222] In its May 1998 Order, FERC clarified that it had ruled as a matter of federal law that "a QF may not sell in excess of its net output."[223] The determining date for implementing this new rule by revoking QF status for any sale in excess of net power is contracts entered into before June 25, 1991, the date of promulgation of the *Turner Falls Limited Partnership* decision. The key here is the date of contract execution, not the date of any development or operation of the QF facility. The two 1998 *Connecticut Valley Electric Company, Inc.* FERC opinions do not specifically discuss the remedy, other than loss of QF status, if a QF sells more than net output.

6. Utility Power Sales to QFs

Electric utilities must offer to sell necessary backup,[224] interruptible,[225] maintenance[226] or supplementary[227] power to QFs.

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221. Because the *Connecticut Valley* case involved a challenge to QF status rather than *per se* a QF pricing dispute, this issue was not at the focal point of this matter. The *Connecticut Valley* decision states that

> While a QF can never sell more power than its net output at its point of interconnection with the grid, its location in relation to its purchaser (and thus its losses) may be relevant in the calculation of the avoided cost which it is entitled for the power it does deliver to its electric utility purchaser.

Conn. Valley Elec. Co. Inc. v. Wheelabrator Claremont Co., 82 F.E.R.C. ¶ 61,116, at 61,421 (1998). Later the decision continues, "The rate for all amounts sold up to the facility's net output should be the contract rate reflected in the parties' agreement, assuming such rate is no higher than the applicable avoided cost rate established by the State regulatory authority or non-regulated electric utility." *Id.* at 61,421-22. A utility might attack a pre-1991 QF contract either by refusing to purchase that power in excess of net station output, or claiming that that increment of power is entitled neither to full avoided cost nor the contract price, but only on energy price. FERC states in its reconsideration of the *Connecticut Valley* decision:

> In the event that a court were to determine that a QF with a pre-*Turners Falls* contract that has not previously sold up to gross output does in fact have the contractual right to sell up to gross output, and that right has not been modified through, for example, the parties' course of performance, we would consider that contract to be grandfathered in, as is the case for those pre-*Turner* contracts under which a QF has consistently sold up to gross output.

Conn. Valley Elec. Co., Inc. v. Wheelabrator Claremont Co., 83 F.E.R.C. ¶ 61,136, at 61,611 (1998). FERC recognizes that ambiguities in contracts can be interpreted through the UCC's courses of performance.

222. *Conn. Valley Elec. Co., Inc.*, 83 F.E.R.C. ¶ 61,136, at 61,607.

223. *Id.*

224. 18 C.F.R. § 292.101(b)(9) (defining backup power as the electric energy or capacity during an unscheduled outage to supply power generally self-generated).

225. 18 C.F.R. § 292.101(b)(10) (defining interruptible power as the power or capacity supplied by an electric utility to a QF subject to interruption under specific conditions).

PURPA requires that such power sales by a utility to a QF be made nondiscriminatory, and their rate for sales must be "just and reasonable and in the public interest."[228] Essentially, there must be a cost basis and justification for any QF power sale activity that is inconsistent with economic principles.

A QF is entitled to simultaneously purchase from and sell power to a utility.[229] In essence, the purchase and sale relationships between a QF and a utility are legally separated; each transaction is independent and self-contained as a matter of regulatory and contract law. The Supreme Court upheld this provision against challenge by utilities.[230]

Rates for backup and standby power under federal law must be nondiscriminatory to hosts which self-generate or have a third-party self-generate power at their facilities. Under *Alcon (Puerto Rico), Inc.*,[231] hosts are allowed to receive backup power from the utility

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226. 18 C.F.R. § 292.101(b)(11) (defining maintenance power as the power or capacity supplied by an electric utility to a QF during periods of scheduled outages).

227. 18 C.F.R. § 292.101(b)(8) (defining supplementary power as the power or capacity supplied by an electric utility to a QF to augment self-generated electricity).

228. 18 C.F.R. § 292.305(a).

229. There is no requirement that only "excess" electricity of a QF must be purchased by the electric utility. 16 U.S.C. § 824a-3; 18 C.F.R. § 292.101 *et seq*.. Consequently, for bookkeeping purposes, the QF can sell all electrical output to the utility, if it so desires.

230. Am. Paper Inst. v. Am. Elec. Power Serv. Corp., 461 U.S. 402, 423 (1983).

231. 32 FERC ¶ 61,247 (1985). After initially ruling that the host customer of a third-party owned QF power project was not eligible to receive standby power, FERC later reversed itself on rehearing. Alcon (Puerto Rico), Inc., 38 F.E.R.C. ¶ 61,042 (1987)), *aff'd*, Puerto Rico Elec. Power Auth. v. F.E.R.C., 848 F.2d 243 (D.C. Cir. 1988) (holding a broad reading of QFs fulfills congressional purpose). This case involved two topping cycle cogeneration facilities with a combined capacity of 1.8 MW. Alcon (Puerto Rico), Inc., 32 F.E.R.C. ¶ 61,247, at 61,576. Alcon, the owner of the site and consumer of energy produced, leases the cogeneration equipment from O'Brien which installed and will operate the equipment. *Id.* Alcon argued that, effectively, it was the owner of the equipment. *Id.* at 61,576. If this was the case, Alcon could purchase backup power directly from the local electric utility, However, if O'Brien was the owner of the QF facility's backup power, it was prohibited from reselling or retailing that backup power to Alcon. The lease/purchase arrangement between the parties was not persuasive initially in convincing FERC that Alcon and O'Brien were joint owners of the equipment. *Id*. at 61,579. FERC also declined to find that the entire Alcon pharmaceutical facility was a cogeneration facility. *Id.* O'-Brien was not permitted to sell backup power to Alcon. *Id.* at 61,579 Commissioner Stalon vigorously dissented from this position on the grounds that the form of corporate ownership selected should not bias the right to backup power for a QF. *Id*. at 61,581. On hearing and reversal, his position became the majority opinion. FERC's reversal of position was motivated by a desire to encourage cogeneration. This reversal was prompted by a storm of protest from QFs, states, and the natural gas industry. Alcon (Puerto Rico), Inc., 38 F.E.R.C. ¶ 61,042, at 61,118 (1987). FERC held that the consequence of its earlier order was to deny backup power to some entities which consume QF power merely because of the financial and legal structuring of these entities. *Id.* at 61,119. Third party ownership of QFs would be disadvantaged. *Id.* at 61,120. FERC deemed this result to be inconsistent with the intent of PURPA. *Id.* at 61,119. The legis-

notwithstanding acquiring primary power from a private third party. Rates for backup power vary dramatically. In some jurisdictions, these rates are set and standardized, in others they must be negotiated with the utility.

There are several factors outlined by the FERC to be considered by utilities when determining standby rates.[232] They are:

> (1) The expected timing of forced outages of the QF, if there is any reason to expect they could not occur with random probability;
>
> (2) The expected frequency of forced outages of the QF;
>
> (3) The expected duration of forced outages of the QF;
>
> (4) The expected demand placed on the supplying utility's generating resources in the event of a forced outage of the QF;
>
> (5) The expected cost of electrical energy associated with the capacity to be used to meet the demand in the event of a forced outage of the QF;
>
> (6) The cost, if any, associated with transmission and distribution facilities used to meet the demand resulting from a forced outage of the QF; and
>
> (7) The terms of backup service, in regard to its position as firm or interruptible service, and the cost of such terms of service imposed on the supplying utility.

There are other major issues and concerns for utilities beyond those factors mandated by FERC when creating standby rates. In an effort to recognize all costs imposed, utilities may consider the changes from a standby customer to a full requirements customer, or alternatively, the changes from full requirements to standby customer, timing and probability of peak load outages, need to provide operating reserves, number and size of backup customers, the metering of energy and demand, and system protection requirements.[233]

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lative history of PURPA indicates a desire to liberally afford nondiscriminatory backup power, without distinction as to ownership and use. *Id.* at 61,120 n.5. Alcon, while leasing rather than owning the QF equipment, consumed the energy output and contractually had an option to purchase the QF equipment at the conclusion of the lease term. Because the output of the QF was dedicated to Alcon for consumption, FERC found distinctions in ownership to be immaterial. *Id.* at 61,120. Although the owner of the QF equipment and consumer of the QF energy output were distinct, the distinction was compelled by tax and financing advantages, and the two entities demonstrated a close nexus. *Id.* FERC Commissioner Sousa dissented on the reversal, based on his literal reading of PURPA. *Id.* at 61,121. He found the FERC regulations, which the majority used to support its reversal, to be inconsistent with the plain mandate of PURPA. *Id.* FERC would codify the substance of the *Alcon* decision. *See* FERC Docket RM88-6-000, 53 Fed. Reg. 9331 (1988). *But see* 84 F.E.R.C. ¶ 61,265 (1998) (terminating docket and noting that competition has overtaken the need to regulate in this area).

232. *See* FERC, Notice of Proposed Rulemaking RM88-6-000, 53 Fed. Reg. 9331 (1988).

233. Edison Electric Institute, *Standby Rates: Methods and Descriptions* 9, 18 (1991).

The goal in standby rate design is cost recovery. Rate design must contemplate unit size and outage rates of standby rate customers. The utility system tries to maintain a given loss-of-load probability in designing its standby rates. To determine standby rates, which are designed on a cost recovery basis, utilities must first consider the costs of providing this service.

The methodologies for standby rate design vary. Most utilities price standby service through a modification of a general service rate, while others use a complex pricing analysis for this service.[234] The stochastic method of analysis is a statistical determination of the level of power generation required to provide a sufficient level of reliability to standby service customers.[235] This approach takes into account the unit sizes and outage rates of each individual standby customer. A second approach, called the reserve rationale approach, provides utility generation reserves for the standby customer based on a utility planning reserve factor multiplied by the standby customer's peak load.[236] The third method, the dispatch model, is based on an assessment of a utility's entire system, as well as an individual standby customer's outage rate and size. A determination of requisite capacity is made to maintain the same system-wide loss-of-load probability; the standby rate is set according to the cost of producing this level of power.[237] The fourth method is called the customer-based standby rate approach. This market-driven approach sets the price for standby service based on what the customer would pay if the customer provided standby service.[238]

As a result of these methods, demand rates for standby service are normally lower than a utility's general service rates.[239] Energy charges, however, usually exceed the comparable general service

234. *Id.* at 35-39. The modification is most often a percentage of the allocated capacity charge for the general service rate, using the equivalent forced outage rate (EFOR) estimated to exist for the standby load. *Id.* Thus the standby rate is designed based on the cost incurred by having standby load during peak hours. *Id*. at 18. Of ninety utility companies across forty-five states, 61% of the standby rates are modifications of general service rates; 20% are the same as the general service rate; and 19% of those utilities studied use a completely separate and distinct standby rate. *Id*. at 40.

235. *Id*. The stochastic analysis considers the standby customer class only. *Standby Rates: Methods and Descriptions*, *supra* note 233 at 13.

236. *Standby Rates: Methods and Descriptions, supra* note 233, at 14.

237. *Id.* at 14.

238. *Id.*

239. *Id.* at 29. The lower demand rate reflects the probability of usage of the standby service on the utility system. *Id*.

rates.[240] Interestingly, there is no correlation between the amount of self-generation or its penetration on utility systems and the methodology employed to determine the standby rate.[241] Therefore, rates and methodologies are not necessarily less favorable in service territories where there is extensive penetration of independent power.[242]

7. Summary

The PURPA rules require that QFs be efficient cogenerators who productively use both electrical and thermal energy production, or consume renewable or waste resources. The ownership limitations prevent majority utility ownership. QFs benefit from the ability to sell power to the utility at full avoided cost and to purchase supplemental power from the utility. These on-site generation facilities can have significant efficiency and environmental advantages over conventional centralized electric generation – but they only exist either as QFs or as authorized entities in that minority of states that have both deregulated and not imposed exit fees on self generating consumers.

C. *Net Metering Law: Born in Minnesota*

Minnesota was the first state to implement a net metering statute shortly after the enactment of PURPA and its companion regulations promulgated by FERC. The Minnesota Cogeneration and Small Power Production Act (MCSPPA) was adopted in 1981, and in 1983 the Minnesota Public Utilities Commission (MPUC) adopted rules to implement the Act.[243] The net metering statute provides that in the event that a QF consumes more electricity than it produces, the QF shall be billed according to the QFs customer class as determined by the utility. However, if the QF generates more electricity than it con-

240. *Id.*

241. *Id.* at 12.

242. STEVEN FERREY, *supra* note 53, § 4:25 (20th ed. 2003); *see also id.* at § 4:31 (standby and backup rates for more than sixty-five utilities are disaggregated at Table 4.1 for demand charges, capacity charges, energy charges, peak and off-peak periods, and voltage at delivery).

243. Colton & Brehl, *supra* note 3, at 479 n.15. The Minnesota net metering statute provides that any facility that utilizes cogeneration or renewable fuels will be considered a qualifying facility ("QF") if its operating capacity is less than 40 kW. MINN. STAT. § 216B-164, Subd. 3(a) (2002). The statute provides that the utilities are required to interconnect with any QF that requests interconnection, provided that the QF reimburse the utility for its normal interconnection costs. MINN. STAT. § 216B-164, Subd. 8. In the event a dispute arises between the QF and the utility the statute provides for a determination before the MPUC, however, the utility always has the burden of proof in such a hearing. MINN. STAT. § 216B-164, Subd. 5.

sumes the utility shall compensate the QF according to rates set by the MPUC based on avoided costs as they are defined by FERC.[244]

FERC defines avoided costs as "the incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the QF or QFs, such utility would generate itself or purchase from another source."[245]

However, notwithstanding the provision providing for the avoided cost rate, the Minnesota net metering statute provides that a net metering customer-generator may elect to receive compensation from the utility at the "average retail utility energy rate."[246]

In Minnesota, a potential small power producer, Ann Lanners, filed a petition with the MPUC against the Minnesota Valley Cooperative Light and Power Association (MVCLPA) regarding this particular issue.[247] Ms. Lanners sought to be compensated at the average retail utility rate that was $0.0608 per kilowatt hour.[248] The MVCLPA argued that its avoided cost was $0.0100 per kilowatt hour.[249] The power company also argued that the Minnesota statute was preempted by federal law under the Supremacy Clause of the United States Constitution because federal law bars the states from forcing utilities to pay QFs more than avoided cost for electricity purchases.[250]

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244. MINN. STAT. § 216B-164, Subd. 3 (2002). The determination of how, or even if, a utility should compensate a QF that generates more electricity than it uses is controversial. The FERC rules provide that no utility shall have to pay more than its avoided costs for purchases of electricity. 18 C.F.R. 292.304(a)(2). The problem arises when state net metering laws, such as the statute in Minnesota, provide for purchases at a rate that is potentially higher than the utility's avoided cost.

245. 18 C.F.R. 292.101(6). It appeared that the Minnesota statute was clear that a customer-generator was only entitled to receive the utility's avoided cost for the excess electricity provided. Originally, the MPUC rules provided that a QF with a capacity of less than 20 kilowatts would be compensated at the lowest retail rate and a QF with a capacity of 20-40 kilowatts would be compensated at the utility's avoided cost. Colton & Brehl, *supra* note 3, at 485. The MPUC rule that provided for these alternative rates was subsequently amended to provide for the current rates as described above. MINN. R. 7835.3300 (2002); MINN. STAT. § 216B-164, Subd. 3(c) (2002).

246. MINN. STAT. § 216B-164, Subd. 3(c) (2002). "The 'average retail utility rate' means, for any class of utility customer, the quotient of the total annual class revenue from sales of electricity minus the annual revenue resulting from fixed charges, divided by the annual class kilowatt-hour sales". MINN. R. 7835.0100 Subp. 2a (2002). This rate is "exclusive of special rates based on income age, or energy conservation, according to the applicable rate schedule of the utility for sales to that class of customer". MINN. STAT. § 216B-164, Subd. 3(c) (2002).

247. Lanners v. Minn. Valley Coop. Light and Power Ass'n, No. E-123/C-95-1085 (Minn. Pub. Utils Comm'n March 31, 1997).

248. *Id.* at 2.

249. *Id.*

250. *Id.*

The MPUC ruled that the proposition that QF compensation cannot exceed avoided cost is not settled at law.[251] The MPUC reasoned that although FERC itself could not set QF rates above avoided costs, the states were free to do so and the preamble to the FERC rules provided so.[252] The MPUC argued that FERC could not reverse its position from that taken in the preamble to the one it seeks to impose now without initiating a rulemaking under the federal Administrative Procedure Act.[253] The MPUC then held that other FERC decisions on this issue were not binding on the MPUC without judicial action, and even if they were, the factual difference between the cases would prevent comparison.[254] Finally, the MPUC held that the alternative rate set by the MPUC should be upheld because it provides an alternative to the avoided cost determination proceeding by providing a reasonable statutory proxy.[255] In other words, a small power producer should not have to take part in an expensive, time consuming, avoided cost determination hearing since the statute has provided a reasonable, somewhat comparable alternative. As a result of this ruling, the MVCLPA was required to compensate Ms. Lanners at the statutory rate provided for small power producers.

D. *Net Metering in Other States*

While Minnesota was the first state to enact net metering, it was not the only state. Between 1980 and 2000, twenty-nine other states adopted some form of net metering. Those states are analyzed in Appendix I to this article.[256] Since the 2001 FERC decision in Mid-American sanctioning net metering, eight additional states have implemented net metering. All thirty-eight of these states' net metering programs are set forth on the following table.

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251. *Id.* The MPUC first found that it could not accept the MVCLPA's statement that its avoided cost was $0.010, this had to be proven through a fact intensive process.

252. *Id.* The MPUC pointed to the preamble of FERC's 1980 rules in which FERC stated that "if a state program were to provide that electric utilities must purchase power from certain types of facilities, among which are QFs, at a rate higher than that provided by these rules, a QF might seek to obtain the benefits of that state program. In such a case, however, the higher rates would be based on state authority to establish such rates, and not on the Commission's rules." *Id.* MPUC argued that FERC could not reverse its position from that taken in the preamble to the one it seeks to impose now without initiating a rulemaking under the federal Administrative Procedure Act. *Id.*

253. *Id.*

254. *Id.* at 2.

255. *Id.*

256. The appendix, because of its scope and depth, is not published with the article. However, it is available online at www.law.duke.edy/journals/delpf.

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
Ariz.	Renewables and cogeneration	All customer classes	≤ 100kW (≤10kW for AZ Public Service customers)	NEG* carried forward; granted to utility at year end	Ariz. Corp. Comm. Decision No. 52345 Docket 81-045	None
Ark.	Most renewables, fuel cells, and microturbines	All customer classes	≤25kW residential ≤100kW commercial	Monthly NEG granted to utilities	Ark. Code Ann. § 23-18-603	None
Cal.	PV, landfill gas, anaerobic digestion, solar, and wind	All customer classes	≤1000kW	Annual NEG granted to utilities	Cal. Pub. Util. Code § 2827	None
Colo.	Small hydro, wind, and PV	Varies by utility	Varies Xcel: ≤10kW	NEG carried forward month-to-month	Colo. Pub. Utils. Comm'n Advice Letter 1265; PUC Decision C96-901	NA

Note: NEG is net energy generated in excess of purchases.

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
Conn.	Renewables, cogeneration, MSW, and fuel cells	Residential customers	≤ 50kW fossil tech ≤ 100kW renewables	NEG purchased at spot market price	Conn. Gen. Stat. 16-243	None
Del.	Solar, wind, and other renewables	Residential and commercial	≤ 25kW	Not specified	Del. Code Ann. tit. 26, § 1014	None
D.C.	Solar, PV, wind, biomass, fuel cells, and microturbines	All customer classes	≤ 100kW	Not specified	D.C. Code § 34-1518	None
Fla.	PV	All customer classes	Not specified	Customers receive full retail credit	UCNSB Electric Load Management Provisions	None

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
Ga.	PV, wind, fuel cells	Residential and commercial	≤ 10kW residential ≤ 100kW commercial	Monthly NEG carried forward; granted to utility at year end	Ga. Code Ann. § 46-3-50 (2001)	0.2% of annual peak demand
Haw.	PV, wind, biomass, and hydro	Residential and small commercial	≤10kW	Monthly NEG granted to utilities	Haw. Rev. Stat. § 269-101	0.5% of annual peak demand
Idaho	Renewables and fuel cells	All customer classes	Varies by utility	Monthly NEG purchased at retail rate	Idaho Pub. Util. Comm'n No. 16,025 (1980); 26,750 (1997) Tariff Sheets 86-1 to 86-7	None
Ill.	PV, biomass, and wind	Retail customer classes; Commonwealth Edison only	≤40kW	NEG purchased at avoided cost monthly plus annual payment to bring payment to retail rate	Commonwealth Edison tariff special billing experiment	0.1% of annual peak demand

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
Ind.	Renewables and cogeneration	All customer classes	≤1000kWh/ month	Monthly NEG granted to utilities	Ind. Admin. Code tit. 170 r. 4-4.1 (2000)	None
Iowa	Renewables and MSW	All customer classes	No limit per system	Monthly NEG purchased at avoided cost	Iowa Admin. Code r. 199-15.11	105 MW
Ky.	PV, hydro, and wind	All customer classes	≤10kW	NEG carried to next month	PUC Order March 14, 2002 Case 2001 - D0303, D0304	First 25 customers for each utility
La.	Renewables, fuel cells, and microturbines	All customer classes	Residential ≤ 25 kW; Commercial & Agriculture ≤ 100	Not specified	La. Rev. Stat. Ann. § 51:3062 (West 2003)	Not specified

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
Me.	MSW, cogeneration, renewables, and fuel cells	All customer classes	≤100kW	NEG carried forward; annual NEG granted to utilities	Pub. Util. Comm'n No. 98-621; Me. Rev. Stat. Tit. 35-A, § 3210	None
Md.	Solar and PV	Residential and schools only	≤80kW	TBD by PSC	Md. Code. Ann., Pub. Util. Co. § 7-306 (2002)	0.2% of 1998 peak
Mass.	MSW, renewables, cogeneration, and fuel cells	All customer classes	≤60kW	Monthly NEG purchased at avoided cost	Mass Gen. Laws, ch 164, § 1G; D.T.E. Order 97-11	None
Minn.	Renewables, MSW, and cogeneration	All customer classes	≤40kW	NEG purchased at utility average retail energy rate	Minn. Stat. § 216B.164(3)	None

State	**Eligible Technology**	**Eligible Customers Limits**	**Size Limits**	**Price**	**Authorization**	**Statewide Limit**
Mont.	Fuel cells, geothermal, solar, wind, and hydro	All customer classes	≤50kW	Carried forward to next month; annual NEG granted to utility	Mont. Code. Ann. § 6-8-601 (2002)	None
Nev.	Wind, hydro, biomass, solar, and wind	All customer classes	≤30kW	Granted to Utility	Nev. Rev. Stat. 704.766 (2003)	None
N.H.	PV, wind, and hydro	All customer classes	≤25kW	NEG credited to next month	N.H. Rev. Stat. Ann. § 362-A	0.05% of utility's annual peak
N.J.	PV and wind	Residential and small commercial	≤100kW	Carried forward to next month; annualized NEG purchased at avoided cost	N.J. Stat. Ann. § 48:3-49 (1999)	0.1% of peak or $2 million annual financial impact

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
N.M.	Renewables, microturbines, and cogeneration	All customer classes	≤10kW	NEG credited to next month, or monthly NEG purchased at avoided cost (utility choice)	N.M. Admin. Code tit. 17, § 10.571 (1999)	None
N.Y.	PV only (biogas for farms)	Residential and agriculture only	≤10kW (PV); ≤ 400 kW (biogas)	NEG credited to next month; Annualized NEG purchased at avoided cost	N.Y. Pub. Serv. Law. § 66-j (1) (d), (2) (2000)	0.1% of 1996 peak demand
N.D.	Renewables, MSW, and cogeneration	All customer classes	≤100kW	Monthly NEG purchased at avoided cost	N.D. Admin. Code § 69-09-07-09 (1991)	None
Ohio	Renewables, microturbines, and fuel cells	All customer classes	No size limit (≤100 kW for microtur-bines)	NEG purchased at unbundled generation rate	Ohio Rev. Code. Ann. § 4928.67 (West 1999)	1.0% of aggregate customer demand

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
Okla.	Renewables, MSW, and cogeneration	All customer classes	≤100kW and ≤25,000kWh/ year	Monthly NEG granted to utility	Okla. Corp. Comm'n Rule 165:35-29-1	None
Or.	Solar thermal, wind, fuel cells, and hydro	All customer classes	≤25kW	Annual NEG granted to low-income programs, credited to customer, or other use determined by Commission	Or. Rev. Stat. § 757.300 (1) (d) (1999)	0.5% of peak demand
Pa.	Solar thermal and renewables	All customer classes	Varies by utility ≤50kW	NEG granted to utility	52 Pa. Code 57.34	None

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
R.I.	MSW, cogeneration, renewables, and fuel cells	All customer classes	≤25kW	Carried forward month to month; annual NEG granted to utilities	R.I. Pub. Util. Comm'n, No. 11,789	1MW for Narragansett Electric Company
Tex.	Renewables only	All customer classes	≤50kW	Monthly NEG purchased at avoided cost	Pub. Util. Comm'n Subst. R. 23.66(f)(4)	None
Utah	Solar thermal, PV, wind, hydro and fuel cells	All customer classes	≤25kW	NEG credited to next month; any unused credit granted to utility at end of calendar year	Utah Code Ann § 54-15-102 (2003)	0.1% of 2001 peak demand

State	**Eligible Technology**	**Eligible Customers Limits**	**Size Limits**	**Price**	**Authorization**	**Statewide Limit**
Vt.	PV, wind, fuel cells using renewable fuels, and anaerobic digesters	Residential, commercial and agricultural	≤15kW; Farm biogas ≤150kW	NEG credited to the following month; annual NEG granted to utilities	Vt. Stat. Ann. tit. 30, § 219a (2002)	1% of 1996 peak demand
Va.	Solar thermal, wind, PV, and hydro	Residential and commercial	≤10kW residential ≤25kW non-residential	NEG carried forward indefinitely	Va. Code. Ann. § 56-594(A) (1999)	0.1% of peak of previous year
Wash.	Solar, wind, fuel cells and hydro	All customer classes	≤25kW	NEG carried forward monthly; annual NEG granted to utility	Wash. Rev. Code Ann. § 80.60.020(1) (2001)	0.1% of 1996 peak demand

State	Eligible Technology	Eligible Customers Limits	Size Limits	Price	Authorization	Statewide Limit
Wis.	Renewables, MSW, and cogeneration	All customer classes	≤20kW	Monthly NEG purchased at retail rate for renewables, avoided cost for non-renewables	Wisc. Pub. Serv. Comm'n No. 6690-UR-107	None
Wyo.	PV, wind, biomass, and hydro	All customer classes	≤25kW	NEG carried forward monthly; Annual NEG purchased at avoided cost	Wyo. Stat. Ann. § 37-16-101 (2003)	None
P.R.	Renewables	Residential	≤50kW	NEG carried over month-to-month; unused credits at end of year purchased at avoided cost		None

IV. CHANGING *[MID] AMERICAN* VALUES: A TALE OF TWO FORUMS

Net metering is the cornerstone of state energy policy to encourage private investment in renewable energy resources. Under net metering, the customer who utilizes an alternate (typically renewable) energy production system connects with the utility grid employing a bi-directional single meter. The single meter allows the customer to draw power to meet instantaneous energy consumption when need exceeds the self-generated production. Conversely the small energy producer can offset the amount of such power "takes" by self-generated production put back into the grid at any time during the billing period, which causes the single meter to run backwards.[257]

A. *The Iowa Proceeding Finds Against Iowa*

On August 24, 1999, the Polk County District Court of Iowa issued a decision that would impact energy policy throughout the United States.[258] The district court ruled that federal law preempts Iowa regulatory authority used to compel a utility to permit small generating facilities, such as on-site dispersed wind and solar facilities, to interconnect with the power grid under net metering arrangements.[259] The Polk County District Court ruled that small electric generation facilities are Qualifying Facilities (QFs) governed by PURPA, which precludes sales of excess power generated by QFs at rates in excess of the purchasing utility's avoided cost.[260] The court also ruled that, if these small generating facilities are not QFs under PURPA, then they are public utilities engaged in the wholesale sale of power in interstate commerce and are, therefore, governed by the Federal Power Act and regulated by the FERC.[261]

In either event, federal law governed all activities. In Iowa, prior to the Polk County decision, the utility company compensated the customer for such excess power delivered at the utility's avoided cost.

257. MidAmerican Energy Company v. Iowa Utilities Board, No. AA3173, 3195, 3196, at 18-20 (Iowa District Court May 25, 1999).

258. *Id*. (finding that the case involved potential conflicts between state and federal laws. The court further held that federal preemption under PURPA is broad enough to encompass state regulations affecting the avoided cost rate change to utilities purchasing alternative energy from AEPs because of three FERC decisions that the district court interpreted as "unequivocally" stating the scope of federal preemption).

259. *Id.* at 7.

260. *Id* at 7-8.

261. Colton & Brehl, *supra* note 3, at 480.

Iowa, and other states with net billing laws or rules, assumed the right to regulate these billing arrangements locally, without regard to federal law or FERC regulation of wholesale power transactions.[262]

1. The Choreography

How did this all begin? In the beginning: In 1998, two individuals and a school district sought a ruling from the Iowa Utilities Board (IUB) compelling MidAmerican Energy Company (MEC), the local monopoly retail utility, to allow them to interconnect their small electric generation facilities with the utility's power grid and to enter into net billing arrangements with them.[263] The IUB issued a ruling favorable to the three small energy producers pursuant to Iowa's Alternative Energy Producers Statute and §199-15.11(5) of the regulations thereunder.[264] Federal law was not involved.

The utility then sought FERC's intervention in a federal forum to block the Iowa action. On October 8, 1998, MEC filed a Petition for Enforcement and Declaratory Order with FERC, asserting jurisdiction under PURPA, 16 U.S.C. §824a-3(h).[265] MEC sought a ruling that if the small renewable Alternative Energy Producers are QFs, then PURPA federally preempts IUB's state actions directing net billing arrangements.[266] MEC contended in the alternative that if the Alternative Energy Producers are not QFs, a wholesale transaction is involved and the IUB's action is preempted by the Federal Power Act.[267] Interventions were allowed by FERC.[268]

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262. *See* The Green Power Network, *Net Metering Policies*, *at* http://www.eere.energy.gov/greenpower/netmetering/ (last modified Oct. 31, 2003); *see also* The Green Power Network, *Net Metering Policies at The Green Power Network – Net Metering Policies, at* http://www.eere.energy.gov/greenpower/netmetering/#state (last modified Oct. 31, 2003) (listing net metering policies by state).

263. *See MidAmerican Energy Co.*, No. AA3173, 3195, 3196.

264. *See* Reply Brief of Respondent/Appellant Iowa Utilities Board at 1, MidAmerican Energy Co. v. Iowa Util. Bd. (August 18, 2000) (No. 99-1529).

265. *See* Order Granting Waiver and Approving, with Clarifications, Tariff at 4, MidAmerican Energy Co. (March 8, 2002) (Nos. TF-01-293 WRU-02-8-156) *available at* http://www.state.ia.us/government/com/util/_private/Orders/2002/0308_tf01293.pdf.

266. *Id*.

267. *See* MidAmerican Energy Company v. Iowa Utilities Board, Brief of Petitioner, Docket No. 99-1529.

268. A motion to intervene and protest was filed with FERC by the American Solar Energy Society, the American Wind Energy Association, California Solar Energy Industries Association, the Environmental and Energy Study Institute, Hawaii Renewable Energy Alliance, Solar Energy Industries Association and the Solarex Corporation (Renewable Energy Advocates). *See* Motion To Intervene and Protest Of the American Solar Energy Society, American Wind Energy Assoc., California Solar Energy Industries Assoc., Environmental And Energy Study Institute, Hawaii Renewable Energy Alliance, Solar Energy Industries Assoc., and the Solarex

FERC received intervener filings from the Renewable Energy Advocates' filing and the Protest's filings in early December, 1998.[269] Almost immediately, on December 30, 1998, FERC declined to entertain the enforcement action requested by MEC.[270] FERC indicated, however, that it would address at a later date MEC's request for an order declaring that the IUB's order directing net billing arrangements is preempted by federal law.[271] Left without federal venue, MEC then filed a petition for judicial review of the IUB's order in an Iowa district court.[272] While a federal quasi-judicial forum was denied, a state judicial forum was opened. Little did MEC appreciate that what then seemed like a forum disadvantage was in fact fortuitous.

2. The Positions of the Parties

Before examining the district court proceeding, the initial posture of interveners before FERC in support of net metering illuminated the battle to come. On a jurisdictional level, the intervener Renewable Energy Advocates argued to FERC that the Iowa trial court misinterpreted PURPA, the Federal Power Act, and FERC's orders thereunder as prohibiting states from imposing net billing requirements.[273] They contended that MEC requested FERC intervention to adjudicate an area of retail electricity service, which uniquely and exclusively is reserved to the states under the Act and FERC's prior or-

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Corp., FERC No. EL99-3-000 (Dec. 3, 1998) [hereinafter "Motion to Intervene"]. A protest was filed with FERC by the Project for Sustainable FERC Energy Policy on behalf of multiple public interest organizations and renewable energy groups (the Project); *Id*. These group filed arguments with FERC. The arguments are instructional because they emphasize the need for a factual basis for any decision regarding the issues, not only before the IUB, but also before FERC and the Polk County District Court and Supreme Court of Iowa.. Without the policy considerations, definitions of, and limitations on, small-scale facilities, as well as the benefits both to the environment and to existing utility companies of such facilities, the decision of the Polk County District Court stands without a full policy context. The public policy considerations were not reached, and the factual premise for implementation of net billing was not available to the court. No expert testimony was presented from which the court could conclude that the rate the utility was required to pay for the excess energy generated actually exceeded avoided costs. It is a uniquely factual inquiry whether a net metering facility, by virtue of its location, and local area peak demand, actually produces excess energy at a higher value than avoided cost to the utility. Additionally, in order to prove that excess electricity produced is transmitted in interstate commerce, expert testimony is required.

269. *See id*. at 1.

270. *See* MidAmerican Energy Co., 85 F.E.R.C. ¶ 61,470, at 62,713 (1998).

271. *Id*.

272. MidAmerican Energy Company v. Iowa Utilities Board, No. AA3173, 3195, 3196 (Iowa District Court May 25, 1999).

273. *See* Motion to Intervene, *supra* note 268, at 3.

ders.[274] On a substantive level, the intervenors focused on the nature of the transaction. They argued that MEC mischaracterized the transaction between the net billing customer and the utility as the "sale" of electricity, thereby converting retail net billing customers into PURPA QFs.[275]

The renewable energy advocates urged FERC to place the issue into two separate contexts. First, they argued that from a policy perspective, state net billing and metering policies are evolving into one of the cornerstones of renewable energy policy for small-scale solar and wind energy facilities used by residential and non-commercial customers supplying their own energy needs. There is little dispute that subsidies, in whatever form, help the recipients.

Second, they argued that net billing policies impose no direct costs on utilities and cause only minor reductions in retail sales, not unlike reductions associated with customer investments in energy efficiency.[276] Emphasis on *direct* costs may obscure the fact that net metering shifts the responsibility to cover fixed system costs among ratepayers.

Additionally, they charged that MEC did not allege facts upon which the court could conclude that direct costs result from Iowa's net billing policy.[277] The renewable energy advocates contended that MEC's analysis failed to address the benefits to the utility of customer-sited small-scale distribution generating facilities.[278] They contended that:

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274. *Id.* at 3.

275. *Id.* at 3-9.

276. *Id.*(presenting the Motion, by the Advocates, as issues of national importance. With thirty states, ten of those in the last four years, adopting net billing policies, the Advocates posit the intent is to encourage private investment in renewable energy resources, while improving the environment, and at the same time reducing the economic costs that act as an economic barrier to self-generation); *Id.* at 4-5.

277. *Id.* (failing to demonstrate a technical burden on the utility if sometimes, when customer demand is reduced below zero, power is returned to the grid. Instead they allege that *MidAmerican* focuses solely on the legalism of preemption, completely devoid of concern for the policy considerations underlying net billing).

278. *Id.* at 4-5 (arguing for FERC to take a position on the MidAmerican request that would favor the long-term public interest. It argued that renewable technologies, energy efficiency and other demand side management resources must play a greater role in the supply mix in order to achieve lower costs and a cleaner environment. The Project acknowledged that net metering has the effect of lowering utility revenues, but it urged that the purpose is to encourage customer investment in small scale renewable energy resources—the latter incentive being consistent with both state and federal policy. Ignoring this policy, to fit within the federal regulatory scheme, MidAmerican argues the net metering customers are either QFs under PURPA, or public utilities under the Federal Power Act selling energy at wholesale in interstate commerce).

> Distributed generation reduces energy losses in transmission and distribution lines, provides voltage support, reduces reactive power losses, defers substation upgrades, defers the need for new transmission and distribution capacity, increases reliability of electricity supply and reduces the demand for spinning reserve capacity. A number of studies—including several sponsored by the utilities—have identified direct, measurable economic benefits of having generation sources located close to the end user.[279]

The Project, another intervener, also attempted to recharacterize the nature of the net metering transaction by urging FERC to consider net billing arrangements as energy "offsets" subject to state regulation. Further, the Project contended that it is inaccurate to refer to the daily energy offset produced by the customer as a "purchase," because it is only a reduction in the amount that will be purchased by the customer at the end of the month.[280] In other words, a "purchase" is not when one takes something but only when one pays for it. The Project argued that these generating customers are not PURPA QFs, and the IUB did not rely on PURPA to require the utility to purchase any excess power generated.[281] Moreover, it submitted that retail cus-

279. *See* Motion To Intervene, *supra* at 268, at 4.

280. *Id.* at 5-6. (submitting that the nature of the transaction is an exchange or offset of electricity, and not a sale; *Id.* at 10-11. (reflecting the states' differing treatment of excess energy produced. For instance, Ohio excludes from the definition of purchased power, non-monetary exchanges of electricity. In addition, the Federal Power Act distinguishes between sales and exchanges of electricity); *Id.* at 11 (citing 16 U.S.C. § 824(i)(C)). Although the determination of retail rates is customarily based on measures of energy use and demand on a periodic basis, MidAmerican's argument depends on measuring energy demand instantaneously, rather than periodically. The offset of produced power versus drawn power occurs over the entire billing period. It is only excess generation, over the whole billing period, which is required to be purchased at avoided cost rate).

281. The Project argued that MidAmerican assumes that the net billing customers rely on PURPA to force net billing through the IUB because PURPA contains a provision requiring utilities to purchase power from QFs at utility avoided cost. The MidAmerican argument further assumes that if net billing customers are QFs, that status transforms actions under state law as if taken under PURPA. The *MidAmerican* assumptions ignore the fact that the IUB's action was pursuant to state statute under which a PURPA QF is not precluded from qualifying for net billing. This exception allowing PURPA QFs to qualify for net billing does not make all net billing into a PURPA-governed issue, or all net billing customers into QFs controlled by PURPA. The Project argues that state laws have governed *intrastate* retail sales and distribution of electricity for decades, and the only authorities addressing net billing are state agencies in Maine and in Iowa. The state statutes and rules dealing with net billing were enacted without reference to the Federal Power Act or PURPA because they were doing no more than creating a new category of customer, not of energy producer. Both the Federal Power Act and PURPA are silent on net billing; therefore, the issue is uniquely a state issue, as recognized by the IUB and the Maine Public Utilities Commission, citing to Iowa Utilities Board, *Order Denying Request for Formal Complaint Proceedings*, Docket No. C-97-53 (July 14, 1998), and Maine Public Utilities Commission, *Order Re: Petition regarding Commission Intercession Regarding Efforts to Obtain Net Energy Billing Purchasing Contract with Central Maine Power Company*, No. 97-

tomers are not public utilities,[282] energy offsets are not "sales" for resale, and these offsets are not wholesale purchases in interstate commerce.[283]

The Project then argued that because no evidence was presented which illustrated the cost avoided by purchasing excess energy from local small-scale wind or solar producers, there was no factual basis for a ruling that the IUB compels purchases at a price in excess of avoided costs. They argued that in order to determine those avoided costs, a comparison must be made between electricity costs within a distribution system at or near the load center and wholesale price. In addition, the Project argued the comparison is not complete until a determination is made regarding whether a net metering facility actually produced excess energy at a higher value to the utility than avoided cost.

The Project disputed that FERC and the Federal Power Act govern the billing arrangements of these small-scale facilities. In fact, the Federal Power Act *excludes* "facilities used in local distribution" from the jurisdiction of FERC.[284] PURPA is completely silent as to net billing practices; FERC, as of 1998, had only made a passing reference to the practice: "The Commission will leave to state regulatory authorities and the non-regulated electric utilities the determination

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532 (Oct. 27, 1997). Both regulatory agencies determined that billing and metering practices between residential customers and the utility and the practices themselves are within the state's authority and regulatory jurisdiction.

282. The Project argued that MidAmerican's Federal Power Act argument that net metering customers are utilities selling power in interstate commerce was rejected by the IUB because net metering is exclusively limited to retail customers who meet state requirements. Both cases cited by *MidAmerican* to support its contention that retail customers who are afforded net billing are transformed into public utilities, do not stand for that proposition according to the Project. MidAmerican cited the 1997 FERC opinion, Zond Development Corp, 80 F.E.R.C. ¶61,051, at 61,151-61,155 (1997); *See*, MidAmerican Energy Co. v. Iowa Utils. Bd., No. AA3173, 3195, 3196 (Iowa District Court May 25, 1999) (involving an Iowa facility consisting of approximately 150 large 750 kW wind turbines involved in the wholesale sale of power to MidAmerican).

283. The Project claimed that *MidAmerican*'s claims are without merit when it asserts, without legal authority or the cloak of policy, that net billing sets rates for QFs above avoided cost, contrary to PURPA and rates for wholesale sales in interstate commerce by public utilities, contrary to the Federal Power Act. First, the Project claimed that MidAmerican cites no facts to establish that net metering customers are QFs, or that it must purchase their energy because of PURPA's mandatory purchase provisions. Even if it were conceded that the transaction was governed by PURPA, no evidence was submitted to prove that MidAmerican is required to purchase energy at rates in excess of avoided costs. Protest of the Project For Sustainable FERC Energy Policy On Behalf Of Multiple Public Interest Organizations And Renewable Energy Groups, FERC No. EL99-3-000 at 14. [hereinafter "Project Protest"]

284. *See Id.* at 9-12.

as to whether to institute net energy billing."[285] Nevertheless, MEC contended that net metering customers are public utilities that net metering energy offsets are actually "sales for resale," and that net metering customers are operating in interstate commerce.[286]

The intervening Project next argued that because the excess energy going into local distribution is incidental to the facilities' basic function, regulation of billing is subject to state, not federal jurisdiction.[287] The Project asked FERC to analyze the facility in terms of the criteria set out in FERC Order No. 888, which, it contends, leads to the conclusion that net billing customers are local distribution facilities only, exempt from federal jurisdiction under 16 U.S.C. § 824(b)(1).[288]

The interveners, therefore, chose to characterize the actual physical flow of electrons at a given second or hour as an event without legal significance. Once its legal significance was eliminated, an

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285. *See Id*. at 9.

286. *Id.* The Project characterized these claims as "baseless and bizarre". Consistent with the ruling of the D.C. Circuit Court of Appeals, in *Salt River Project Agric. Improvement & Power Dist. v. Fed. Power Comm'n*, 391 F.2d 470 (D.C. Cir. 1968), that nonprofit rural electric cooperatives are not subject to the Federal Power Act or FERC, small consumer-owned self generating facilities are not either. Neither cooperative rural electric customers nor consumer-owned small scale generating customers are "public utilities." However, QFs typically are not coops. In addition, no case can be made that the net billing customer is involved in sales for resale. First, no evidence was presented to support that they are in any way "wholesale producers." These customers are merely involved in an exchange of electricity, with only an occasional arguable "sale" occurring when there is excess energy produced. They are not wholesale producers involved in interstate commerce because no proof has been provided that their electrons go anywhere other than the local grid, *and* they are not public utilities. FERC does not have jurisdiction over "any other sale of electric energy." In order for *MidAmerican* to prove that any of the excess energy produced is transmitted in interstate commerce, expert testimony is required, as the determination of where electricity flows is "an engineering and scientific, rather than a legalistic test." FPC v. S. Cal. Edison Co., 376 U.S. 205, 209 n.5 (citing Conn. Light & Power Co. v. FPC, 325 U.S. 515 (1945)). A determination by FERC that any flow of electricity triggers federal jurisdiction must be supported by expert opinion that is in accord with the facts known for certain. FPC v. Fla. Power & Light Co., 404 U.S. 453 (1972), *reh'g denied*, 405 U.S. 948 (1972).

287. *Id*.

288. *See* Project Protest, *supra* note 283, at 22. (setting out in the order are seven factors for qualifying as a local distribution facility: it is normally in close proximity to the retail customer, primarily radial in character, with power flowing into the local distribution systems, rarely out, and energy is consumed in the local distribution system, and not recosigned to another market; meters are based at the transmission/local distribution interface to measure flows into local distribution system, and that flow will be of reduced voltage. Although FERC did not have the facts necessary to determine the application of these factors, the Project contended that if the facts were before FERC, the conclusion would be that net billing facilities are exempt local distribution facilities. The Project asks FERC to make those factual findings and deny *MidAmerican*'s requests). *Id.* at 20-21.

alternative rubric of a single "sale" or transfer of energy only at the time of billing was substituted. This altered construct provided the foundation for shifting the jurisdictional authority from federal to state law. But to get to this alternative state authority, it is necessary to create a legal fiction superimposed on the actual physical flow of the net metered power in question.

3. The Iowa District Court Opinion

After FERC declined to act on MEC's request for a federal injunction, MEC retrenched its petition for judicial review in state court. At the outset, the local court found the case involved a potential conflict between state and federal law. The court found that federal preemption under PURPA is broad enough to encompass control of state regulations affecting the avoided cost rate imposed on utilities purchasing alternative energy producers' excess energy.[289] Central to the court's conclusion was a determination of what the transaction involves at its core: A finding that net billing involves a "sale" of electricity. It followed from this finding that irrespective of the volume of power involved, the transactions are considered wholesale sales; as soon as the energy flowing to the utility is commingled with other energy in the power grid, it is sold in interstate commerce.[290]

In an earlier decision, the Iowa Supreme Court had ruled that ". . . the broad language of the federal regulations accompanying PURPA does not suggest federal preemption . . . [and] the states are free under their own authority to enact laws or regulations providing rates which would result in even greater encouragement of these technologies."[291] A subsequent decision by FERC in *Orange & Rockland Utilities, Inc.* cast doubt on the validity of such state holdings.[292] The district court interpreted three subsequent FERC decisions as "unequivocally" stating the scope of federal preemption to control state regulation of net billing customers.[293] The federal rules govern.

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289. *See* MidAmerican Energy Co., No. AA3173, 3195, 3196, at 3-4 (Iowa District Court Aug. 24, 1999) (indicating that the size of the three proposed net billing customers' facilities is disclosed: two 20kW wind turbines, and the school district's 45kW wind turbine).

290. *Id.*

291. Iowa Power & Light Co. v. Iowa State Commerce Comm'n, 410 N.W.2d 236, 242 (Iowa 1987).

292. Orange & Rockland Utilities, Inc., 43 F.E.R.C. ¶ 61,067, at 61,197 (1983).

293. *See MidAmerican Energy Co*., No. AA3173, 3195, 3196, at 11; These three decisions, *Conn. Light & Power Co.*, 70 F.E.R.C. ¶61,012 (1995), *S. Cal. Edison Co. and San Diego Gas & Elec. Co.*, 70 F.E.R.C. ¶ 61,215 (1995), and *Midwest Power Sys. Inc.,* 78 F.E.R.C. ¶ 61,067

The district court decision next turned to whether the state net metering rule fell within the class of regulations FERC declared preempted.[294] The IUB had submitted that the rule was not preempted because it was not a rate setting provision, but merely a metering and billing practice within state regulatory jurisdiction.

The IUB then blamed itself for its poor drafting of prior orders explaining net billing to the public. The IUB argued that irrespective of this poorly drafted language, MEC does not "pay" a retail rate to a net billed customer. There is no discrete sale when the meter runs backward; there is a monthly transaction of measuring how much commodity or service was produced or purchased, not what price was paid. The flow of power back and forth is in the category of a like-kind exchange, not a purchase and sale of electricity.

On the other hand, MEC contended that net billing required it to purchase power above avoided cost. MEC argued that each instant of backward meter operation measures a discrete purchase and sale transaction.[295]

The court discussed the two options under the Iowa rule for purchases or "sales" of energy,[296] and found that irrespective of the dif-

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(1997), all involved QFs under PURPA. The IUB points out in its brief to the Iowa Supreme Court that one of these rulings recognizes the state's broad authority to direct planning and resource decisions of electric utilities and section 201(a) of the Federal Power Act specifically preserves state retail jurisdiction. The brief quotes from *S. Cal. Edison Co. and San Diego Gas and Elec.*:

> As a general matter, states have broad powers under state law to direct the planning and resource decisions of utilities under their jurisdiction. States may, for example, order utilities to build renewable generators themselves, or deny certification of other types of facilities if state law so permits. They also, assuming state law permits, may order utilities to purchase renewable generation.

70 FERC ¶ 61,215, at 61,676 (1995).

294. *MidAmerican Energy Co*., No. AA3173, 3195, 3196, at 11.

295. *Id*. Each backward run from an AEP is a payment to the utility; and each draw or transmit from the utility is a purchase and sale. *MidAmerican* contends to the court that because its obligation to pay is fixed at the point of transmission and receipt, even if the transactions are netted at the end of a billing cycle.

296. The district court conceptualized net billing as allowing the AEP to "charge" the utility retail rates when the meter runs backward during the billing cycle, and only to charge avoided cost when there is a net negative. The district court assumes that net billing assumes a "sale" of electricity to the utility when the AEP uses less than it produced. The court characterized the rate of sale as a "negotiated or buy-back" rate. Under the first option for the AEP, the single meter method, if the AEP produces less energy than it needs, it purchases at retail rates as the meter runs forward; if it produces more, the meter runs backward offsetting the AEP purchases at retail rates. Under the second option, two meters, the purchase meter is at retail rates, and the "sale" meter is at avoided cost rates, and there is no offset at retail rates during the billing period. The court concludes that so long as the tariffed retail rate is greater than the avoided cost rate, option one is more attractive to the AEP.

ferent language used by the IUB and the intervener, the nature of the transaction remained a purchase and sale.[297] The district court rejected the IUB's use of different terms to avoid the discrete purchase and sale transaction.[298] It characterizes the IUB's euphemistic verb artistry with verbs such as "receive," "draw," "supply," and "transmit," as "linguistic distinctions" which do not mask the true nature of a purchase and sale each instant that energy is exchanged.[299]

The court then dealt with the fact that only one of theses AEPs was actually federally certified as a QF under PURPA.[300] Although PURPA QFs are not precluded from seeking net billing arrangements under the Iowa rule, the court acknowledged that non-QFs are not governed by PURPA. The court determined, however, that non-QFs are still governed by the Federal Power Act.[301]

FERC has exclusive jurisdiction to set rates governing wholesale sale of electricity in interstate commerce.[302] The *MidAmerican* court then found that energy flowing to the utility is commingled with other energy in the power grid and is therefore sold in interstate commerce. Accordingly, FERC's exclusive rate-setting authority over interstate commerce under the Federal Power Act preempts the IUB's ruling.

The fact that power flow was actually transacted is significant. The United States Supreme Court held that "mere connection [to the local power grid] is not enough" to invoke federal regulation.[303] FERC ruled in 1992 that the "hypothetical flow of a negligible amount of electricity" . . . where the "possibility of . . . power even entering . . . the system is both remote and inconsequential" does not invoke federal jurisdiction.[304]

In Iowa, given the uncertainty created by the pending case, the IUB granted the utilities waivers to permit them to recoup from the

297. *Id.*

298. *Id.* at 15-16.

299. *See Id*. at 17.

300. *Id.* at 17-18.

301. *Id.* at 18.

302. *Id.* This is assuming a customer can store, or bank, his generation from month-to-month over a one year period. After the end of the year, neither the utility nor any generation provider would be obligated to pay for any net generation from the customer. The Commission set limits on the type of facility that was eligible for annualized net billing. The customer will have to employ one of the technologies or fuel types listed in the rule, such as small hydro and wind power, and have a maximum installed capacity of 100 kW or less. Availability is not restricted to residential customers as the Commission saw no reason to exclude small businesses that wish to generate their own electricity from taking advantage of net billing.

303. Jersey Cent. Power & Light Co. v. FPC, 319 U.S. 61, 72 (1943).

304. People's Elec. Coop., 60 F.E.R.C. ¶ 63,004, at 65,073 (1992).

energy adjustment clause any lost margin revenues resulting from the self-use of generated power. The IUB acknowledges in one order:

> The court challenge to [Iowa's net billing rule] has put a chill on all alternative energy development that is primarily for self-use, whether through net billing arrangements or through arrangements such as the one proposed here.[305]

The utility had been granted the right not only to recover the alleged losses it experienced because of net billing, but also losses claimed as a result of customer use of self-generation.[306] Thus, the utility prevailed, unexpectedly, in a state forum.

All the while, a second case was proceeding in Maine. The Maine Public Utilities Commission developed a new net metering rule.[307] Because the net billing practice was found consistent with legislative policies favoring renewable energy generation and energy efficiency, the commission decided not to eliminate it solely as a result of industry restructuring.[308] The commission announced it would include new annualized methods of net billing in which usage and generation would be netted against each other on a twelve-month basis.[309]

The annualized netting approach taken by the Maine Public Utilities Commission enables use of small renewable technologies whose output varies greatly over a given year. The absence of any power "sales" removes any incentive to size facilities larger than nec-

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305. *In re* Eldora-New Providence School District, No. C-00-171, (Iowa Utils. Bd. Aug. 4, 2000) (order requiring interconnection and granting waivers) (justifying its approach as follows: "While the Board continues to believe these [net billing] arrangements are valid and that the rule will ultimately be upheld, the delay caused by the litigation may cause some worthwhile projects to be canceled. Therefore, to encourage continued development of alternate energy pending the outcome of the litigation, the Board will grant the waiver as originally proposed by IES in the waiver docket."); *Id*. at 5.

306. One commissioner dissented. While supporting the utilities' ability to recoup any lost revenues as a result of net billing, during the pendency of the litigation, she opposed granting a right to recover for customer use of self-generation, writing: "A small power producer should not be required to sell all of his output to the utility but should be able to determine how much self-generated electricity is kept for self-use. I do not view the amount of self-generated electricity retained by the producer as a 'loss' to the utility that should be reimbursed by ratepayers though the EAC. This is simply the cost of doing business." *Id*. at 7.

307. *See generally* Talmage, Nos. 97-513 & 97-532 (Me. Pub. Util. Comm'n Oct. 27, 1997) (issuing an order that addressed the need to adopt new rules to reflect the change in Maine law and the impact on the electric utility industry by deregulation of electric generation facilities and allowance of retail competition. The Commission found that net billing had become more than a way of reducing metering costs. It found that it has developed into a means of encouraging the use of small-scale renewable technologies designed primarily to serve the customer's own energy needs).

308. *Id*. at 6 (finding that new net billing arrangements ought to be governed by a rule that generally oversees the promotion of renewable resources in a restructured industry).

309. *Id*.

essary to generate more power than necessary to meet the customer's needs.

But the utility victory would be short-lived. FERC Commissioner William L. Massey, while delivering an address in Washington D.C. on April 28, 2000, forecasted what might come on subsequent appeal: "No sale by the distributed generator seems to be involved so I would think this interconnection would not be FERC jurisdictional."[310]

B. *The FERC Decision Abandons Federal Authority*

When the utility board sought appeal to the state supreme court, the utility moved laterally and took its grievance back to FERC, which on this second approach accepted grievance.[311] MEC contended that Iowa's Alternate Energy Production statute[312] was preempted by PURPA.[313] MEC also claimed that under Iowa's statute it would be forced to pay in excess of its avoided costs for QF power generated by Iowa's Alternative Energy Production facilities.

On March 28, 2001, FERC denied MEC's request for a declaratory order.[314]

In its decision, FERC held that the IUB decisions were not preempted by federal law. FERC reformulated the issue in this case as

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310. See William L. Massey, ISO/RTO Interconnection Policy For Distributed Generation, Keynote Address to Distributed Power Coalition of America conference (April 28, 2000) *at* http://www.distributed-generation.com/dpca/events/Massey%204-28-00%20ISO%20Speech.pdf (emphasizing how situational each interconnection is, presenting a number of scenarios that may or may not involve a wholesale or resale sale. He specifically recognized the scenario where a distributed generator solely loads on the generator's side of the interconnection and the interconnection solely receives back-up or standby power, such as a fuel cell installed in a house or business. He further characterized the current state of the regulations as a "jurisdictional quagmire" and asked the attendees to help FERC in evolving a policy to guide the individual decisions.

311. After the adverse district court decision, the Iowa Utilities Board took an appeal to the Iowa Supreme Court, which entertained the appeal but never rendered a decision. The FERC decision stands as the ultimate adjudication and was not appealed.

312. *See* IOWA CODE ANN. § 476.41 (2003) (requiring Iowa's electric utilities to buy power from generators using renewable resources under terms and conditions approved by the IUB).

313. *See* Orange & Rockland Util., Inc., 43 F.E.R.C. ¶ 61,067 (1988) (holding that FERC eliminated any possibility that the states can impose rates exceeding avoided cost on wholesale purchases in interstate commerce).

314. *See* MidAmerican Energy Co., 85 F.E.R.C. ¶ 61,470, at 62,264 (stating that in March 2001, MidAmerican Energy Company challenged before FERC the state of Iowa's regulations directing MEC to interconnect with three "Alternate Energy facilities and to offer net billing arrangements to those facilities." MEC also requested a declaratory order that federal law preempted these regulations and asked FERC to undertake enforcement action against the Iowa Board, or to issue a declaratory order that the final orders of the Iowa Board are preempted by PURPA).

how to measure the transaction between MEC and those entities that installed generation on their premises. FERC held inapposite MEC's argument that every flow of power constitutes a sale and that every flow of power from a QF or a non-QF to MEC must be priced consistently with the requirements of either PURPA or the Federal Power Act. In its holding, FERC held that no sale occurs when an individual homeowner, farmer, or similar entity installs generation and accounts for its dealings with a utility through netting.[315]

This surprising decision appeared to contradict FERC precedent in its upholding state jurisdiction over such net metering transactions, declining FERC jurisdiction, and deeming a change of title to power to not constitute a "sale."[316]

FERC rejected MEC's argument that a "sale" occurs each time ownership and control of a flow of power changes. As a result, energy flow must be measured on a net basis rather than on a transactional basis. MEC argued that the state could not measure sales on a net basis. It asserted that these transactions are separate and each is wholesale in nature, thus falling under the jurisdiction of PURPA for Qualifying Facilities or the Federal Power Act for AEPs that are not designated as QFs.[317]

The rationale behind MEC's arguments was economic. The illustration used in the opinion shows that the utility would incur a greater loss with net metering than with two separate and billable-recorded transactions. Assume a QF customer generates 1000 kWh in one month, and in turn consumes 2000 kWh that same month. Under net billing, a single meter measures the net quantity delivered to the AEP, which is 1000 kWh. Assuming the retail rate for service is $0.07 per kWh, the bill for MEC's electricity to the AEP is $70.00.[318]

On the other hand, as a PURPA transaction two meters would be employed. One meter would measure the AEP's production, billed at the utility's avoided cost of $0.02 per kWh. This meter would generate a bill to MEC of $20.00, payable to the AEP. The second meter, accounting for the energy used by the AEP, would be billed at the $0.07 per kWh retail rate, and would equal $140.00 payable to MEC

315. *Id.* at 62,261.
316. *Id*. at 62,203 n.7.
317. *Id*. at 62,261 n.1.
318. *Id*.

by the AEP.[319] This three to one differential between the retail rate and the wholesale rate is typical of most utilities.[320]

Thus, if the transaction was a net metering transaction rather than a PURPA transaction MEC would collect $50.00, or 60% less per month. Depending on the volume of QF contracts a utility has in place and the amount of power transacted, the utility could experience noticeable shortfalls. MEC pointed out this differential in arguing that net billing resulted in a utility "paying in excess of its avoided cost"[321] for power, which it claimed violates PURPA.

In reviewing the argument that MEC would have to pay retail rates for all power generated by the AEP, FERC took issue with MEC's illustration of how net billing operates.[322] FERC explained that under net billing the AEP produces power primarily for its own needs, and when it produces power in excess of those needs, it is supplied to the utility through the single meter.[323] FERC stated that at times when the AEP does not generate enough power to fulfill its own needs, the AEP will draw energy from the utility and it will be measured through that same meter: "Energy flows through one meter in both directions and is netted out."[324]

Ultimately, FERC held that a "sale" does not occur when an individual installs generation and accounts for its dealings with the utility through the practice of netting.[325] Thus, FERC reached a decision supported by policy only. FERC leaves regulation of the netting aspect of the transaction to the state.[326]

FERC did not address the fact that the utility is forced to take title to, and dispose of, energy that a small power producer generates in excess of its own needs. Title, physical possession, and the right to make subsequent sale of the power pass concomitantly to the utility so, the transaction could be characterized as a wholesale "purchase" of power by the utility to be resold to other end users., FERC arrived at the position that AEPs are retail consumers and that sales are retail

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319. *Id*.

320. *See e.g.*, www.iso-ne.com (providing wholesale New England prices); www.nstaronline.com (providing retail New England prices).

321. 85 F.E.R.C. ¶ 61,470, at 62,261.

322. *Id.* at 62,263.

323. *Id*. (holding that net billing involves "only one meter and one net transaction").

324. *Id*.

325. *Id.* at 62,263.

326. *Id.* at 62,263 n.8.

in nature, with all retail sales jurisdictionally governed by state regulation.

While the first half of this final statement is true, the second half is not. A transaction *to* a utility cannot be retail, even if the seller of power is, at times, a retail consumer. This FERC holding appears contrary to other FERC jurisdictional decisions. Notwithstanding, FERC cited various cases to support each aspect of its decision. Does precedent, in fact, ground the decision?

V. ANATOMY OF A DECISION WITHOUT PRECEDENT: THE FOUNDATION ERODES

A. *What Constitutes a "Sale": The Missing Precedent.*

FERC stated in *MidAmerican* that "there is no sale (for end use or otherwise) between two different parties when one party is using its own generating resources for the purpose of self-supply of station power, and accounting for such usage through the practice of netting," citing a former FERC opinion, *PJM Interconnection, L.L.C.*[327] FERC cited more than eight decisions in *MidAmerican* that purportedly support its holding. However, with the exception of *PJM Interconnection*,[328] none of the cases cited concern the issues raised in *MidAmerican*. Furthermore, a careful examination of *PJM Interconnection* reveals that it does not support the broad proposition for which it is cited. To paraphrase Gertrude Stein, there is no "there" there.

Specifically, *PJM Interconnection* states that "a generator's self-supply of station power does not involve a sale. However, the third-party provision of station power generally involves a sale for end use that is not subject to our jurisdiction." No one disputes that the retail sale of power from the utility to the consumer is not subject to federal jurisdiction. *PJM Interconnection* does not address the transfer of power back to the utility's lines. The key issue in *MidAmerican* is not the initial self-supply of power, but whether excess self-generated power transferred to a utility should be transferred back to the consumer/generator regardless of whether or not power is later resold to the consumer/generator. Therefore, *PJM Interconnection* only con-

327. *Id.* at 62,263; PJM Interconnection, L.L.C., 94 F.E.R.C. ¶ 61,251 (2001). [hereinafter "*PJM Interconnection* "]

328. *Id*.

cludes an issue raised by net metering transactions that is not in question in *MidAmerican*.

In *PJM Interconnection*, FERC reviewed the Federal Power Act's definition of "sale of electricity at wholesale" as "sale of electric energy to any person for resale."[329] FERC only has jurisdiction over the transmission of power in interstate commerce and the sale of electricity at wholesale in interstate commerce.[330] FERC does not have jurisdiction over the sale of electricity for end use.[331] Therefore, for FERC to decide it does not have jurisdiction over net-metering transactions, it must find that in net-metering transactions, a "sale" does not occur. Therefore, it must be determined whether the provision of station power from a generator to an unwilling utility is a "sale." In making this determination, FERC examined three circumstances of small generator supply of power to an unwilling utility:

> (1) The small generator is on-line and producing enough energy to meet its needs (self-supply).
>
> (2) The small generator uses an off-site source of power owned by the same company (remote self-supply).
>
> (3) The small generator uses an off-site source of power owned by third party (third party supply).[332]

In *PJM Interconnection*, FERC found that a generator's self-supply of station power does not involve a "sale."[333] This is not controversial. Logically speaking, it does not constitute a "sale" because there is only one party, and it cannot sell to itself. Whether the source of supply is on-site or off-site, the generator is using its own power resources, so facilities typically self-supply net power requirements against gross output.[334] Thus, the first two situations above are not "sales."

PJM Interconnection does not address the third situation. But even if it did, the third situation is not directly applicable to a net metering situation because it does not address whether transfer of excess self-supply to a utility is a sale.

Thus, *PJM Interconnection* does not offer the support that FERC's *MidAmerican* decision claims. But perhaps the support is in the precedent underlying *PJM Interconnection*? FERC in *PJM Inter-*

329. *Id.* at 61,889 (noting that 16 U.S.C. § 824(d) invests FERC with jurisdiction).

330. *Id.* (citing 16 U.S.C. § 824(b)(1)).

331. *Id*.

332. *Id*.

333. *Id*.

334. *Id.* at 61,891.

connection cites three cases in support of its analysis, but, as analyzed below, none of these address the factual or legal situation of net metering. They seem, rather, to support a conclusion opposite to that reached by FERC.

1. Occidental Geothermal, Inc. (1981)

In *Occidental Geothermal, Inc.*, FERC strived to define the "power production capacity" of a facility. In this case, it was disputed whether the actual capacity would exceed the maximum allowed size limit of the facility, thus disallowing its certification to be a small power producer QF. FERC held that the actual output of the facility may vary over time due to changes in operating conditions,[335] and that the power production capacity will be the maximum net output that can reliably be achieved over a period of several years.[336]

There can be little argument with this method to determine capacity, but it does not address either net metering or the definition of "sale." *PJM Interconnection* cites the *Occidental Geothermal, Inc.* case for the simple premise that the net output of the facility is what it can transmit to the power grid after subtracting the power used to operate the equipment necessary for the actual power generation (*i.e.* station power).[337] There is no discussion whatsoever of the key legal issue of whether this transaction is treated as a "sale."

2. Power Developers, Inc. (1985)

PJM Interconnection also cites *Power Developers, Inc.*, which addresses a very similar issue to that addressed in *Occidental Geothermal, Inc.* and *Penntech Papers, Inc*. FERC reviewed an application for certification of a small power producer as a QF, and addressed the question of whether the facility gross output or its net electricity output is the qualifying capacity for the project.[338] In its opinion, FERC clarified that although section 292.303(a) of the commission's regulations states that electric utilities must purchase "any energy and capacity that is made available from a qualifying facility," FERC has interpreted "the capacity of a qualifying facility for purposes of

335. Occidental Geothermal, Inc., 17 F.E.R.C. ¶ 61, 231, at 61,445 (1981).

336. *See id.* (taking into account favorable operating conditions most likely to occur in that time period).

337. *Id*.; *see also* PJM Interconnection L.L.C., 94 F.E.R.C. ¶ 61,251, at 61,891.

338. Power Developers, Inc., 32 F.E.R.C. ¶ 61, 101, at 61,274 (1985).

obtaining qualifying status to be its net power production output, rather than its gross output."[339]

This is consistent with *Occidental Geothermal, Inc.* and with the subsequent holding in *Penntech Papers, Inc.*, that only excess "net" power can be sold by a QF to the utility. From the date of *Occidental Geothermal, Inc.*, FERC holds that even though there is no specific statement that QF sales are limited to net output, it was implicit in its discussion. FERC emphasizes that if a QF were allowed to sell all the gross power it could produce, while buying power for its own station needs from another source, it would be selling power that the facility, without assistance from the grid, is capable of delivering.[340]

Sale of gross power output was prohibited also because it has a disparate impact on the utilities involved, much as net metering can. This is because the "QF would be receiving avoided cost prices for power that it does not enable the utility to avoid generating or purchasing," much as net metering does.[341] The utility would be forced to produce more electricity because the QF is not self-supplying its own station needs, thus increasing "the utility's load over what it would be in the absence of the QF."[342]

Through netting, the QF may or may not cause the utility to produce more power than it would have been producing anyway. But net metering does shift—randomly in many instances—the time at which energy is transferred to the utility, and at certain hours could saddle the utility with additional unsaleable excess power. This may explain why FERC finds no need to have the transfer of energy accounted for by two separate meters at the respective retail and wholesale rates. The issue that FERC avoids is the effect on the utility when it is forced to take excess power from the generating AEP or QF, thus taking title to a surplus of energy it cannot sell and is forced to ground.

This line of precedent more supports MEC, the utility, than the utility commission or the power producer. Yet FERC grasped at this straw, without obvious rationale, to attempt to cobble together some foundation for its departure in *MidAmerican*. Although *PJM Interconnection* cites *Power Developers, Inc.* for the premise that qualifying capacity is net, not gross, power production capacity, the analysis

339. *Id.* at 61,276.
340. *Id.*
341. *Id.*
342. *Id.*

in this case helps to underscore the unsuccessful arguments made by MEC.

3. Penntech Papers, Inc. (1989)

PJM Interconnection next cites *Penntech Papers Inc.*, wherein a QF wanted to sell its entire gross output to a utility and purchase any and all power it needed for its own operations from a third-party supplier, creating a total separation between the power sold to the utility and the power purchased from the third-party supplier.[343] In *Penntech Papers, Inc.*, FERC held that this arrangement was inconsistent with FERC regulations prohibiting the sale of gross output.[344] FERC went on to state that allowing Penntech Papers Inc. to sell gross output at "the utility's avoided cost rate while the cogenerator purchases auxiliary power at another utility's retail rate" could result in economic distortion.[345] While establishing the principle that only excess power can be sold to the utility, *Penntech Papers, Inc.* also seems to imply that the transfer of power to a utility is a "sale."

PJM Interconnection cites *Penntech Papers, Inc.* to establish that only "excess" power can be sold by a QF pursuant to PURPA.[346] Power used by the QF itself cannot constitute a "sale" to the QF. Net metering is analogous to the sale of power under PURPA in that it typically (although not always) only transacts excess power. However, the analogy does not directly address whether net metering and billing, where power is put to an unwilling utility, is a "sale" or an exchange of power.

4. MidAmerican Redux

None of these three precedential foundations for *PJM Interconnection* supports FERC's holding in *MidAmerican*. In fact, they seem to suggest the contrary; that when a utility takes generator power, a sale of wholesale power occurs. FERC does admit in *PJM Interconnection* that the legal issue becomes more complicated when a facility cannot meet its station power needs, so that a generator's "gross output would be less than station power requirements, and thus it has a negative net output."[347] The generator then turns to an off-site source,

343. 94 F.E.R.C. ¶ 61,251, at 61,891 (citing Penntech Papers, Inc., 48 F.E.R.C. ¶ 61,120, at 61,442 (1989)).

344. 48 F.E.R.C. ¶ 61,120, at 61,423.

345. *Id*.

346. 94 F.E.R.C. ¶ 61,251, at 61,891.

347. *Id.* at 61,890.

whether it be a remote generator, utility, or an affiliate, and the generator "with negative output 'leans' on the interconnected network and takes it's station power requirements from any generating source located on the network, without regard to ownership."[348]

FERC's statement raises more questions than clarifications and does not address the controversial net metering transaction to a utility. The example in *PJM Interconnection* refers to self-supply, which is neither the uni-party supply nor the transfer of power to a utility involved in net metering. Yet FERC uses *PJM Interconnection* as the springboard in *MidAmerican* to define "sale" as not including uni-party supply or the transfer of power to a utility.

The opinion in *PJM Interconnection* never confronts the legal implications of a net metering "sale" from a QF to a utility. Instead, it focuses on the converse issue; the unidirectional transfer of power from a utility to a QF when needed. In *PJM Interconnection*, FERC notes that it has never treated netting as a "sale."[349] Thus, *PJM Interconnection* is a negative declaration but does not reach the issue: It does not define a "sale" nor does it deal with net metering. It only states that self-supply is not a "sale." But self-supply is not the key transaction in the net metering debate.

FERC concluded in *MidAmerican* that net billing arrangements would be appropriate in some situations, and left the decision of when to allow such arrangements to state regulatory authorities.[350] In *American Electric Power Services Corp.*, a utility appealed both the provisions of PURPA and FERC regulations governing the "simultaneous transaction" rule, the "avoided cost" rule, and the "interconnection" rule.[351] FERC deemed that utilities must simultaneously purchase and sell to the QF.[352] "Simultaneous transactions" are mechanically similar to net metering transactions.

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348. *Id.* (remarking that the idea that ownership is immaterial may be another reason why the netting of energy does not indicate a sale, because the actual parties involved are no longer separate. If ownership does not matter, than there would be no need to track the delivery and purchase of electricity to and from the QF as separate. The single meter would account for the totality of activity).

349. *Id.* at 61,891.

350. MidAmerican Energy Co., 85 F.E.R.C. ¶ 61,470, at 62,264.

351. Am. Elec. Power Serv. Corp. v. F.E.R.C., 675 F.2d 1226 (D.C. Cir. 1982), *rev'd*, Am. Paper Inst., Inc. v. Am. Elec. Power Serv. Corp., 461 U.S. 402 (1983).

352. *Am. Elec. Power Serv. Corp.*, 675 F.2d at 1237 (upholding FERC's "simultaneous transaction" rule, in which a utility is deemed to have purchased all of a cogenerator's power, and to have sold back what the cogenerator used for itself), *modified*, Conn. Valley Elec. Co. v. Wheelabrator Claremont Co., 82 FERC ¶ 61,116, at 61,419 (1998) (finding that the "avoided cost" rule, as implemented by FERC, would have states set rates for purchases of power from

In the opinion, the intermediate court stressed the need for FERC to encourage small power production and to promulgate regulations to advance that goal.[353] The circuit court feared that the utility would suffer economic injury from an "across the board" rule, and then pass its costs along to the consumer.[354] The circuit court found that this was not in the public interest.

The U.S. Supreme Court was not as concerned. It overruled the Appeals Court in *American Paper Institute, Inc. v. American Electric Power Service Corp.*, upholding both the "avoided cost" rule and the "interconnection" rule promulgated by FERC.[355] There is no mention of net metering or billing in either opinion.

B. *The Wholesale*

In *Occidental Geothermal, Inc.* and *Power Developers, Inc.*, FERC discusses the importance of preventing economic distortion in QF power production capacity. However, *MidAmerican* illustrates a clear example of a utility subject to economic distortion and losing revenue. In *MidAmerican*, FERC notes that wholesale-avoided cost rates have, at times, exceeded current avoided cost. However, FERC cited routine expressions of contract payments above avoided cost, and was, in fact, quite disapproving of such above-avoided-cost payments. FERC allowed them to continue, not in principle, but only as a matter of estoppel and reliance where the QF contract was final and implemented prior to FERC's decision.[356] These cases, when closely

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AEPs at the utility's full avoided cost). Examining the legislative history, the court found that Congress made a clear distinction between a "just and reasonable" rate and a rate based on the full avoided cost, although they may overlap at times. *Id.* The court went on to point out that "the essence of the just and reasonable standard is a balancing of the interests of the affected parties," and that the mandate of the agency is to balance the interests of cogenerators, consumers, and the public interest, not just to ensure that cogenerators are not discriminated against. *Id.*

353. *Am. Elec. Power Serv. Corp*., 675 F.2d at 1230.

354. *Id.* at 1236.

355. *Am. Paper Inst., Inc.,* 461 U.S. 402 (1983). In overturning *Am. Electric Power Services Corp.* the Court noted that the agency was not arbitrary or capricious in applying the full avoided cost rule, nor did it exceed its authority applying the "interconnection" rule. Basically, the full avoided cost rule was in the best interest of the public because the support and encouragement of alternative fuels and energy are in the public's best interest. The interconnection rule, on the other hand, was in the spirit of judicial economy. Thus, a case by case hearing, as mandated by *American Electric Power Services Corp.,* was unnecessary.

356. *See* Conn. Valley Elec. Co., Inc. v. Wheelabrator Claremont Co., L.P., 82 F.E.R.C. ¶ 61,116, (1998); Conn. Light & Power Co., 70 F.E.R.C. ¶ 61,012, (1995); Niagara Mohawk Power Corp. v. F.E.R.C., 117 F.3d 1485 (D.C. Cir. 1997).

examined, actually seem to cut against FERC's *MidAmerican* decision.

1. Connecticut Valley Electric Company, Inc.

In *Connecticut Valley Electric Company, Inc.*, the issue presented was gross versus net power sale, or whether the interpretation of the "simultaneous buy-sell" rule by state regulatory authorities had been correct in light of FERC precedent.[357] The QF argued that it was not clear from previous FERC statements whether QFs were able to sell gross output at avoided cost while purchasing back needed power at the utility's retail rate.

This combined transaction evidences similarities to net metering and billing in that the QF would actually seek to sell higher priced QF power to the utility at full avoided cost and simultaneously buy back its host electric requirements—it wants two separate sales recognized. In contrast, in net metering, the QF wants this same transaction not to be recognized as a "sale." In net metering the QF only wants to buy, rather than sell, net requirements.

What *Connecticut Valley Electric Co.* does not address is whether that net amount can be reduced or offset by sales or transactions of QF power to the utility. FERC held in *Connecticut Valley Electric Co.* that *Power Developers, Inc.*[358] and *Turner Falls Limited Partnership*[359] several years earlier put the industry on notice that this simultaneous gross sale and buy back cannot happen. Citing *Power Developers, Inc.*, the Commission stated that QF generator sales are limited to net output, and QFs cannot sell in excess of that net amount (that being the sale of gross output).[360]

The Commission made it clear that if a QF were allowed to sell gross output, the QF would receive avoided cost prices for that incremental amount of power that the purchasing utility could not avoid generating.[361] In citing *Turner Falls Limited Partnership*, FERC held that its opinions make it clear that a sale in excess of net output would deprive a generating facility of QF status, thus removing any

357. *Conn. Valley Elec. Co.*, 82 F.E.R.C. ¶ 61,116, at 61,411.

358. Power Developers, Inc., 32 F.E.R.C. ¶ 61,101 (1985).

359. Turner Falls Limited Partnership, 55 F.E.R.C. ¶ 61,487 (1991).

360. Conn. Valley Elec. Co. v. Wheelabrator Claremont Co., 82 F.E.R.C. ¶ 61,116, at 61,417 (1998). The facts in *Connecticut Valley* involved two uni-directional meters, not a single bi-directional net meter.

361. *Id.* at 61,418 (stating the "simultaneous buy-sell" rule was not intended to permit a QF to sell at avoided cost rate while buying back at a lower retail rate).

obligation of the utility to purchase any QF power.[362] Only unneeded or excess power may be sold.[363]

2. Connecticut Light & Power Co.

In *Connecticut Light & Power Co.*, FERC addressed the issue of whether a state statute regulating the sale of power to an electric utility from a resource recovery facility (owned and operated by a municipality) is preempted by PURPA, where the rate prescribed by state statute exceeds the utility buyer's federal avoided cost. The commission held that federal regulations require that rates charged to a utility by any QF shall "be just and reasonable and in the public interest, and also not discriminatory," and such is accomplished if "the rate equals . . . avoided cost."[364] The commission notes that the Connecticut state statute required that the utility must pay the same rate for purchasing power from a municipal QF that it charges the municipality for power. This is exactly what occurs with net metering. This rate is essentially the fully loaded retail rate, which should always exceed the wholesale-avoided cost.

FERC held in *Connecticut Light & Power Co.* that pursuant to state requirements, a utility could not be forced to pay more than avoided cost for any purchased power. The statute in that case was federally preempted because it compelled a wholesale sale of energy for resale at more than the avoided cost.[365] While this case involved a state statute applying only to municipally owned QFs, the FERC determination is not limited to these facts. State establishment of utility power purchase prices in excess of avoided cost is preempted. This is directly analogous to net metering: the same retail price (greater than the wholesale price) is assigned by net metering to power transactions in either direction through the meter.

FERC points out that PURPA does not preempt or regulate sales of power supplied for retail or end use.[366] FERC emphasizes that states have the ability to pass their own laws on separate grounds to support small power production, in keeping with the mission of PURPA. The commission stresses that "the States are free, under their own authority, to enact laws or regulations providing for rates

362. *Id*. at 61,417.

363. *Id.* at 61,411.

364. Conn. Light and Power Co., 70 F.E.R.C. ¶ 61,012, at 61,023, 61,024 (1995).

365. *Id.* at 61,029.

366. *Id.* at 61,027, 61,028 (stating that a state may prescribe per unit charge in accordance with the FERC's rules).

which would result in even greater encouragement of these technologies."[367] However, this freedom does not explicitly include setting wholesale power sale rates for the QF either *de facto* or *de jure* in excess of the wholesale-avoided cost. When a "sale" of power back to a utility is made, this is and can always be a wholesale transaction not subject to state jurisdiction, but exclusively within federal jurisdiction.[368]

The *MidAmerican* decision, although not supported by the precedent that FERC relies on, stands for the proposition that no "sale" occurs when a small power producer installs generation and uses net metering to measure, and ultimately account for, its power transactions with a utility. State regulatory authorities are left to decide when net billing arrangements are appropriate. Thus, the physical transfer of power is legally ignored.

The implications of this are far-reaching. States are free to use this costless transaction to subsidize projects without FERC oversight. This elevates meter reading, an occasional discretionary act, to a position of more importance than the constant flow of power. If no sale of power is deemed to occur until the net meter is read at the end of the billing period, then every retail consumer could refuse to pay every estimated bill not based on a meter reading sent routinely by a utility. While it is not possible to track the flow of individual electrons, it is possible to determine the utility transaction by tracking the gross power transfer.

C. *"Sales," "Trades," or "Offsets?": The Characterization of the Transaction Determines the Applicable Renewable Power Policy*

States that have adopted the concept of net billing argue that net metering is "simply a method to measure the amount of power that passes to and from the consumer and the utility."[369] These states characterize the transaction as a mere "exchange" of energy; not a sale. So what is this electricity transaction, and how should it legally be treated?

Many proponents of net billing describe the transmissions as mere "offsets" of energy rather than "sales." These proponents argue

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367. *Id.* at 61,029.

368. Niagara Mohawk Power Corp. v. F.E.R.C., 117 F.3d 1485, 1489 (D.C. Cir. 1997) (denying review of a decision upholding FERC PURPA orders to encourage cogeneration). In its brief opinion, the court cites *Conn. Light and Power Co.* as part of the predicate for the opinion.

369. Brief for Respondent/Appellant Iowa Utilities Board at 9, MidAmerican Energy Co. v. Iowa Util. Bd. (Aug. 18, 2000) (No. 99-1529).

that net billing allows the customer to use "electricity generated at one point during the billing period to offset electricity delivered from the utility at some other point during the billing period."[370] When an "offset" of energy occurs between a customer and a utility, the customer's bill will be reduced accordingly to represent any energy that has been transmitted from the small producer back to the utility during the billing period.[371] The proponents of this net billing system have called such transmission of energy a "non-monetary exchange of electricity."[372]

1. Legal Definitions

So is this an "exchange" or "offset" rather than a "sale?" "Exchange" is defined in Black's Law Dictionary as "[t]o barter; to swap. To part with, give or transfer for an equivalent."[373] Interestingly, also found under the definition for "exchange" is language setting forth a criterion distinguishing an "exchange" from a "sale:" "the criterion in determining whether a transaction is a sale or an exchange is whether there is a determination of the value of the things exchanged. If no price is set for either property, it is said to be an exchange."[374]

Proponents of the "exchange" view argue that there has been no value assigned to the energy transmitted because the single meter is read only at the end of the billing period. Because an assignment of value cannot take place prior to the meter being read, the criterion establishing a "sale" will not be met. Therefore, only an "exchange" has taken place, yielding no PURPA requirements limiting the sale price. Proponents of the contrary view note that even if no payment is yet due, the title passes as electrons pass through the meter, and a monetary obligation accrues to the beneficiary under either a power purchase agreement or a utility tariff.

There is a related issue of whether electricity transactions involve a "good" or a service.[375] Sales are governed either by common law or the U.C.C. The common law definition of "sale" as found in Black's Law Dictionary is a "[t]ransfer of property or providing of services

370. *Id*.

371. *Id*.

372. *Id*.

373. BLACK'S LAW DICTIONARY 562 (6th ed. 1990).

374. Gruver v. Comm'r, 142 F.2d 363, 366 (4th Cir. 1944).

375. *See*, FERREY, *supra* note 53; STEVEN FERREY, THE NEW RULES Ch. 12 (Penwell, 2001); Steven Ferrey, *Defining Power: Electrons and the Law*, 32 ENVTL. L. REP. 10038 (2002).

for consideration."[376] "Sale" is also defined as "[a] transfer of property for a fixed price in money or its equivalent."[377]

If electricity is a "good," the U.C.C. governs the sale of electricity. The U.C.C. defines "sale" in § 2-106(1) as the "[p]assing of title from seller to buyer for a price."[378] Black's Law Dictionary further defines "sale" as "[a] contract whereby property is transferred from one person to another for a consideration of value, implying the passing of the general and absolute title, as distinguished from a special interest falling short of complete ownership."[379]

The language of U.C.C. § 2-107(1) defines goods to be severed from realty: "A contract for the sale of minerals or the like (including oil and gas) or a structure or its materials to be removed from realty is a contract for the sale of goods within this Article. . ."[380] The Federal Power Act defines the "sale of electric energy at wholesale" as "a sale of electric energy to any person for resale."[381] Neither the federal regulations nor a review of federal decisions reveals any language referring to energy transmission as anything other than a "sale." Title passes, a property right is transferred, and power is transmitted for a wholesale transaction when net metering occurs. This appears to satisfy the U.C.C., common law, and federal statutory definitions of a sale, not an exchange.

2. Case Law

If not an exchange, the netting transaction is a "sale," and it may occur at illegal prices, depending on the state net metering law. In a string of four cases prior to *MidAmerican*, FERC established that QF power sellers may not receive more than avoided cost for power transmitted to the utility. Under section 210(b) of PURPA, FERC also made clear that the states cannot impose rates exceeding the utility's avoided cost.[382] By contrast, in the preamble to the PURPA

376. BLACK'S LAW DICTIONARY 1337 (6th ed. 1990).

377. *Id.*

378. U.C.C. § 2-106(1) (2003). The U.C.C.'s definition for "good" states that "[g]oods means all things (including specially manufactured goods) which are *moveable* at the time of identification to the contract for sale other than the money in which the price is to be paid, investment securities (Article 8) and things in action." U.C.C. § 2-105(1) (emphasis added).

379. BLACK'S LAW DICTIONARY 1337 (6th ed. 1990).

380. U.C.C. § 2-107(1).

381. 16 U.S.C. § 824(d) (2000).

382. 16 U.S.C. § 824a-3(b). Section 210(b) of PURPA requires electric utilities to offer to purchase electric energy from QFs at rates that are (1) just and reasonable to the electric consumers of the electric energy and in the public interest, (2) nondiscriminatory with respect to

regulations promulgated in 1980, FERC originally expressly allowed state regulators to impose rates exceeding avoided cost.[383] This was later retracted and clarified by FERC in subsequent case precedent.

a. Orange & Rockland Utilities, Inc.

In 1988, FERC issued the controversial *Orange & Rockland Utilities, Inc.* decision purporting to federally preempt state authority to establish power purchase rates in excess of avoided cost.[384] FERC never reached a consensus on the rationale for its *Orange & Rockland Utilities, Inc.* decision. Less than two months later, FERC stayed its decision pending judicial review.[385] A state appeals court upheld FERC's six-cent minimum rate. The U.S. Supreme Court refused to grant certiorari.[386] Subsequently, the state legislature repealed the statue in question, and a federal appeals court ruled the utility challenge moot. Therefore, a definitive resolution was never reached.

The case involved a multistate, fully integrated system with operating sister companies located in three contiguous states interconnected by transmission capabilities.[387] Common system costs were allocated to the three operating subsidiaries according to a determination of proportionate use, as embodied in a FERC rate filing.[388] New York, by state statute, mandated a six-cent per Kilowatt hour minimum rate for utility purchase of QF power.[389]

QFs, and (3) not in excess of the incremental cost to the electric utility of alternative electric energy.

383. *See* FERC Statutes and Regulations, Regulations Preambles 1977-1981 ¶ 30,128, at 30,875 ("the States are free, under their own authority, to enact laws or regulations providing for rates which would result in even greater encouragement of these technologies").

384. In re Orange & Rockland Util., Inc., 43 F.E.R.C. ¶ 61,067, at 61,194 (1988); *see also* Occidental Chem. Corp. v. F.E.R.C., 869 F.2d 127 (2d Cir. 1989) (dismissing an appeal of the FERC decision on the grounds of ripeness pending conclusion of the FERC rulemaking in Docket RM-88-6-000). In June 1988, FERC stayed the enforcement of its administrative decision pending appeal. In re Orange & Rockland Util., 43 F.E.R.C. ¶61,547, at 62,361 (1988).

385. *In re* Orange & Rockland Util., 43 F.E.R.C. ¶61,547, at 62,361.

386. Consol. Edison of N.Y. v. Public Serv. Comm'n of N.Y., 470 U.S. 1075 (1985) (upholding decision at 472 N.E. 2d 981 (N.Y. 1984)).

387. Operating companies are located in New York, New Jersey, and Pennsylvania; however, Orange & Rockland, the New York entity, owns and operates all generating stations and supplies full requirements service to its sister companies. 43 F.E.R.C. ¶ 61,067, at 61,185 (1988).

388. Costs are allocated 70% to the New York entity, 29% to the New Jersey entity, and 1% to the Pennsylvania entity. *Id*. at 61,186.

389. *Id*. at 61,186 (comparing N.Y. Pub. Serv. Law §§ 2-a to -c (McKinney Supp. 1987) with 18 C.F.R. §§ 292.202-.209 (1988)). On September 28, 1987, the New York Public Service Commission issued an interim policy statement regarding rates for purchases from qualifying facilities. *Interim Statement of Policy and Order on Contracts for the Purchase of Electricity from On-site Generators*, Case Nos. 28962, 28793 and 28689. The New York Commission expressed con-

The purchasing utility contested whether that minimum New York rate could be applied to a utility system not operating exclusively in New York.[390] As applied to multistate utilities, the question presented was whether the minimum rate imposed by New York statute impermissibly causes rates to out-of-state customers to be increased. Since other states may not require a minimum price in excess of avoided cost, this provision effectively violated the PURPA provision requiring, in the absence of a state law basis to pay higher costs, power purchase rates to equal avoided cost. It also could be argued that it imposes New York policy on contiguous states by virtue of application to a multistate utility.[391]

In July 1987, Orange & Rockland Utilities, Inc. (O&R), Rockland Electric Company, and Pike County Light & Power Company, filed a petition for declaratory order challenging the application of the New York Public Service Commissions' legislation that imposed a minimum rate of six cents per kWh for purchases by the utilities from New York state QFs.[392] O&R contended that the six-cent rate was invalid as applied to an integrated multistate[393] utility system such as theirs, and that the application of the six-cent rate rather than the avoided cost wholesale rate would result in excess costs to the O&R system[394] and would therefore be inconsistent with the purpose of the federal avoided cost requirement.[395] O&R further argued that the ap-

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cern about what it described as consumer overpayments resulting from application of the six-cent rate in excess of avoided cost. According to the commission, the avoided cost for most major New York utilities will not exceed six cents per kilowatt-hour until around 1994-1995. The New York Commission adopted a policy providing several options for future purchases from Qualifying Facilities. The commissions stated that it would consider for approval only (1) contracts for the greater of the purchasing utility's avoided cost or the six-cent rate; (2) contracts for the greater of the purchasing utility's avoided cost or the six-cent rate, as long as the contract was otherwise consistent with the purposes of PURPA and of the New York program; and (3) long-term contracts at the six-cent rate when payments would equal the purchasing utility's avoided cost over the contract period. 43 F.E.R.C. ¶ 61,067, at 61,186 n.3.

390. *Id.* at 61,186-87 (stating that petitioners rely on *Middle S. Serv., Inc.*, 24 F.E.R.C. ¶ 63,119, at 65,209 (1983), *modified*, 33 F.E.R.C. ¶61,408 (1985) (contending that the six-cent rate is invalid as applied to a multistate utility system).

391. 43 F.E.R.C. ¶ 61,067, at 61,187 (1998).

392. *Id*. at 61,185.

393. *Id.* at 61,185. One operating company each is located in New York, New Jersey, and Pennsylvania. Orange & Rockland, the New York entity, owns and operates all generation stations and supplies full requirements service to its sister companies. *Id*. at 61,186.

394. *Id.* at 61,187. Costs were allocated 70% to the New York entity, 29% to the New Jersey entity, and 1% to the Pennsylvania entity.

395. *Id*. Avoided cost is defined as the cost to the electric utility of the electric energy which, but for the purchase from such cogenerator or small power producer, such utility would gener-

plication of the six-cent rate would require the O&R system to pass on the excess costs to its customers or to allow its financial position to decline, either of which would be inconsistent with Congress' intent that PURPA not result in consumer subsidies of QFs.[396]

O&R contended that FERC has exclusive jurisdiction and that PURPA does not permit the states to impose rates in excess of avoided cost on purchases from federal certified QFs.[397] O&R reasoned that PURPA only authorizes the states to implement PURPA's avoided cost rules and that, except for the states' limited authority under PURPA, the states have no authority to regulate the sale of energy at wholesale in interstate commerce.[398]

In response, intervenors supporting the New York Public Service Commission decision (*hereinafter* "New York intervenors") contended that the six-cent minimum rate was a valid exercise of state power to enact laws that encourage the development of cogeneration and small power production facilities.[399] This is the same policy rationale that is advanced for net metering. New York intervenors relied on the regulatory preamble and section 210(e) of PURPA to support its view that states had and could exercise authority independently of PURPA to impose rates exceeding avoided cost.[400] Founded on this belief, New York intervenors contended that the six-cent rate does not conflict with PURPA and is therefore not preempted under the Supremacy Clause.[401]

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ate or purchase from another source. *See* 16 U.S.C. §§ 824a-3(a), (b), (d) (1982); 18 C.F.R. § 292.101(b)(6) (1987).

396. Orange & Rockland relied on the legislative history of PURPA, which provided that § 210 "is not intended to require the ratepayers of a utility to subsidize cogenerators or small power producers." 43 F.E.R.C. ¶61,067, at 61,187 (1998) (citing Joint Explanatory Statement of the Committee of Conference, H.R. Rep. No. 95-1750, at 98 (1978), *reprinted* U.S.C.C.A.N. 7797, 7832).

397. 43 F.E.R.C. ¶ 61,067, at 61,187 (1998). Orange & Rockland conceded the validity of the six-cent rate as applied to a utility located exclusively within New York, but contended that the six-cent rate is invalid as applied to an integrated multistate utility system such as theirs.

398. *Id.* at 61,187.

399. *Id.* at 61,189 (the briefing in support of this contention was done by another intervenor, Occidental Chemical Corporation, a manufacturer and operator of a cogeneration facility).

400. *See* FERC Statutes and Regulations, Regulations Preambles 1977-1981 ¶30,128, at 30, 875 (declaring that the Commission specifically recognized that PURPA leaves the states free to impose rates higher than avoided cost to provide greater encouragement of alternative energy technologies). Intervening parties supporting the New York Public Service Commission decision also relied on the commission's holding in *Consolidated Edison Co. of N,Y., Inc. v. Public Serv. Comm'n of N.Y.* , 472 N.E.2d 981, 986 (N.Y. 1984) (holding that a state has interests in encouraging alternative energy sources).

401. 43 F.E.R.C. ¶ 61,067, at 61,189 (1988) (describing Occidental Chemical Corporation's arguments for their interest in the legality of the six-cent minimum and their contention that the

New York argued that if a state program such as theirs were to provide that electric utilities must purchase power from QFs at a rate higher than the utility's avoided cost, a QF might seek to obtain the benefits of that state program. Thus the higher rates would be based on state authority to establish such rates and not on FERC's rules. Alternatively, New York intervenors argued that O&R could avoid the multistate effect of the six-cent rate simply by localizing the costs of purchases from QFs.[402]

The petition presented a very narrow question as to state jurisdictional power to regulate a particular aspect of multistate utility operations. Another New York utility was granted permission to intervene before FERC. By its intervention it raised the broader question of whether a minimum power purchase rate above avoided cost is permissible on any grounds.[403] The petitioning utility objected to the expansion of the issue and stipulated to the validity of a six-cent minimum rate applied within state boundaries.[404]

FERC agreed to consider the broader question raised on intervention. The Commission found no genuine issues of fact requiring a hearing, and disposed of all issues on the pleadings.[405] FERC held that New York could not impose a rate on future purchases that exceeds actual avoided cost. This is a direct reversal of PURPA regulations and is contrary to the noncommittal position taken by FERC less than a month before in its notice of proposed rulemaking on avoided cost.[406] The decision broadly prohibits any state from establishing a

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six-cent rate does not conflict with PURPA and is therefore not preempted under the Supremacy Clause, U.S. CONST. art. VI, cl. 2).

402. *Id.* at 61,189 (citing Consolidated Edison Co. of N.Y. v. Public Serv. Comm'n of N.Y. 472 N.E.2d 981 (N.Y. 1984), *appeal dismissed,* 470 U.S. 1075 (1985) (upholding New York's six-cent rate as applied to purchases by a utility exclusively within New York)); *see also* Middle S. Serv., Inc., 24 F.E.R.C. ¶ 63,119, at 65,209 (1983) (holding that a state can impose a system avoided cost determination on a multistate system and that, in response, a multistate system can localize the effect of the avoided cost determination by allocating the cost of purchases from Qualifying Facilities to the purchasing utility).

403. *Id.* at 61,188 (describing Niagara Mohawk Power Corporation's intervention, based on an interest in the legality of the six-cent minimum rate imposed on it as a New York utility, even though it could purchase power at a lesser rate from QFs in Pennsylvania).

404. *Id*. at 61,190, 61,193 (stating that petitioners do not challenge the validity of New York's six-cent rate, but rather, question whether the rate can be applied to their purchases). The petitioners objected to this broadening of the issue beyond that raised in their petition. Petitioners did not contest the application of the precedent of *Consolidated Edison Co. of N.Y., Inc. v. Public Serv. Comm. of N.Y.,* 472 N.E.2d 981 (N.Y. 1984).

405. 18 C.F.R. § 385.217 (allowing summary disposition of issues of law).

406. *Compare* 43 F.E.R.C. ¶ 61,067, at 61,196 (1998) *with* FERC, Notice of Proposed Rulemaking RM88-6-000, in *FERC Statutes and Regulations* ¶ 32,457 (1988).

rate in excess of avoided cost on any wholesale power purchase in interstate commerce. However, the decision was stayed and never enforced by FERC, or elsewhere, until 1995.

FERC also found that the Federal Power Act precludes all state regulation of interstate wholesale transactions.[407] FERC held that prior to the enactment of PURPA, states were preempted under the Federal Power Act from setting wholesale rates in interstate commerce.[408] This decision was intended to limit the effect of the exemptions under section 210(e), thus reinstating the preemptive effect of the Federal Power Act on all state regulation.

This decision precludes the exercise of state authority to set wholesale rates in interstate commerce exceeding avoided cost on purchases by either multi-state utilities, such as O&R, or utilities that operate exclusively in one state under authority alleged to be independent of PURPA.[409] Under FERC's position, neither New York nor another state can impose a rate exceeding avoided cost on any QF or other wholesale power purchases in interstate commerce.[410] The commission held that a sale to O&R for distribution to O&R's affiliates in other states is a sale in interstate commerce, thereby rejecting New York's argument that they could avoid the multistate effect of their minimum rate.[411]

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407. 43 F.E.R.C. ¶ 61,067, at 61,195 (1988) (finding that, independent of PURPA, the Federal Power Act precludes the exercise of state authority setting wholesale rates in interstate commerce, thus preempting wholesale rates in interstate commerce which exceed avoided cost). In a footnote, FERC qualifies the scope of the impact of its order:

"We take no position herein as to what independent authority, if any, states have in the absence of the Federal Power Act, and the extent to which they would be barred by the Commerce Clause from setting QF rates which affect interstate commerce. Our opinion here is directed at interpreting the statutes under which the commission operates, not these broader issues." *Id.* at 61,195 n.10.

408. *Id.* at 61,195 (finding that the Federal Power Act preempts states from setting wholesale rates in interstate commerce).

409. *Id.* at 61,196 (clarifying that "[u]nder [FERC's] new position, states cannot in the future impose rates exceeding avoided costs on purchases by either multistate utilities such as the O&R system or utilities that operate exclusively in one state."). FERC eliminated any possibility that the states can impose rates exceeding avoided cost on wholesale purchases in interstate commerce stating that "[i]t is beyond dispute that the states cannot impose rates exceeding avoided cost in implementing the FERC's rules under 210(a) of PURPA." *Id.* at 61,194.

410. *Id.* at 61,194 (holding "that New York may not impose a rate exceeding avoided cost on future purchases by [O & R]"); *see also* Fed. Power Comm'n v. Fla. Power & Light Co., 404 U.S. 453 (1972) (holding that a sale of electricity is in interstate commerce if the electricity is transmitted through an interstate transmission grid).

411. 43 F.E.R.C. ¶ 61,067, at 61,195 (citing Fla. Power & Light, Co., 404 U.S. 453 (1972) for the proposition that "a sale of electricity is in interstate commerce if the electricity is transmitted through an interstate transmission grid").

The commissioners of FERC were sharply divided. FERC Commissioner Anthony G. Sousa concurred with the majority position, and in a strongly worded opinion argued that the states have never had, nor could be given by the commission, the authority to set rates above avoided cost for wholesale purchases in interstate commerce.[412] Commissioner Sousa argued that the New York rates were merely a subsidy for cogenerators and small power producers and to promote this would thwart the congressional objective in PURPA of preventing consumer subsidies of QFs.[413] In his opinion, Commissioner Sousa quickly closed any doors to the possibility of state involvement in QF wholesale rates.[414] Commissioner Sousa argued that PURPA authorizes the commission to delegate to the states the authority to set rates for purchases from QFs, but that authority is federal authority delegated to the states, and not any inherent state authority.[415] Finally, Commissioner Sousa addressed the unacceptability of the position that § 210(e) gave the commission both the authority to enable states to regulate interstate wholesale rates above

412. *Id.* at 61,197-61,199 (Sousa, Anthony G., Commissioner, concurring) (arguing that F.E.R.C. does not have discretion to allow states to set rates higher than costs avoided). Commissioner Sousa relies upon *Middle South Services, Inc.*, 33 F.E.R.C. ¶ 61,408, at 61,788 (1985), stating that:

> PURPA authorizes the Commission to delegate to the states the authority to set rates for purchases from QFs. But that authority is federal authority delegated to the states; and not any inherent state authority. In sum, if states have any authority to set rates exceeding avoided costs for QF purchases that authority must derive from PURPA. And it doesn't. Nowhere does PURPA either explicitly or implicitly give the states that authority.

43 F.E.R.C. ¶ 61,067, at 61,197 (internal citations omitted).

413. *Id.* at 61,199 (arguing that the New York regulations were in conflict with the congressional intent of PURPA to prevent consumer subsidies of QFs). Commissioner Sousa believed it was clear that rates exceeding avoided cost thwarted the congressional objective of PURPA to prevent consumer subsidy to QFs. *Id.* at 61,199. Sousa based this position on the belief that this was a purely legal question (as opposed to a policy decision) of interpreting PURPA and the Federal Power Act. *Id.* at 61,197

414. *Id.* at 61,197 (citing H.R.REP. NO. 95-1750, at 98 (1978), *reprinted in* 1978 U.S.C.C.A.N. 7797, 7832 for the conclusion that the commission is "obligated to be faithful to the objective of Congress that utility ratepayers not be required . . . to subsidize cogenerators or small power producers"). Commissioner Sousa relied on the Conference Committee Report that the legislative history of PURPA supports the conclusion that the avoided costs limit "is meant to act as an upper limit on the price at which utilities can be required under this section to purchase electric energy". 43 F.E.R.C. ¶ 61,067, at 61,198 (arguing that the states may not set wholesale QF rates).

415. *Id*. at 61,197 (citing Nantahala Power Co. v. Thornburg, 476 U.S. 953 (1986), for the conclusion that the commission has exclusive jurisdiction under the Federal Power Act to regulate wholesale rates and extrapolating that without PURPA "states would not have authority to set rates for wholesale QF transactions in interstate commerce").

the avoided cost limit and then, in the same section, decided to give the commission the discretion to undo that limit.[416]

In Commissioner Charles Stalon's concurring opinion, he argued that Commissioner Sousa's course of action was too strict; Stalon would allow a looser interpretation based on a policy decision.[417] The basis for this decision was Stalon's belief that in 1980, the rationale for FERC's decision had two distinct goals regarding section 210(e): (1) to promote QFs by creating an obligation on the utilities to purchase QF power at rates that would encourage QF development but would also be "just and reasonable" to the utility's customers and (2) to exempt QFs in whole or in part from utility regulation.[418] Stalon believed that the priority of these goals had shifted as the QF industry came of age and no longer needed the competitive advantage of further subsidies.[419]

Commissioner Charles Trabant dissented from the Commission's decision as both a matter of policy and as a matter of law. Commissioner Trabant's dissent argued that the majority's decision would set a generic national precedent affecting many state laws substantially similar to the New York statute without having to go through the proper procedural approach.[420] Trabant concluded that the congres-

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416. *Id.* at 61,198 (arguing that section 210(e) did not give the Commission authority to enable states either to regulate interstate wholesale rates independent of PURPA or to set rates above the avoided cost limit and that holding otherwise would be holding that Congress established the avoided cost limit and then gave the Commission the discretion to repeal that limit "in the same breath"); *see also* Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83, 90 (1927) (holding that under the Commerce Clause, the states have no authority to regulate interstate wholesale rates, thereby restraining state regulation of interstate commerce even in the absence of federal regulation).

417. 43 F.E.R.C. ¶ 61,067, at 61,199-61,199-17 (Stalon, Charles G., Commissioner, concurring). Commissioner Stalon argued that the basis for his decision not to allow the New York minimum rate was founded on the belief that the industry condition in 1988 did not warrant permitting the sort of blanket subsidies for all forms of QF power that the commission had found appropriate in 1980. Stalon argued that its decision does not preclude the commission at some future time from permitting blanket subsidies of QFs again, should it believe such subsidies were warranted by changing circumstances, e.g., an urgent national need to bring on more QF power in a hurry. *Id.* at 61,199-16,199-17.

418. *Id.* at 61,199-4, 61,199-5 (Stalon, Charles G., Commissioner, concurring) (stating that the promulgation of rules under § 210 gave the Commission two distinct tasks: ensuring a viable market for QFs through a regulatory guarantee and exempting QFs in whole or in part from the public utility regulations).

419. *Id*. at 61,199-12 (Stalon, Charles G., Commissioner, concurring) (discussing the policy behind § 210 and arguing that, regardless of the need for QF subsidies in 1980, they were unnecessary in 1988).

420. *Id.* at 61,199-200 (Trabandt, Charles A., Commissioner, dissenting) (stating "I object to the obvious intent of the order in this complaint proceeding to set a generic national precedent applicable to many state laws substantially similar to the New York statute preempted here.").

sional exemption authority permitted the commission to declare that cogenerators and small power producers would not become utilities, with all the regulatory burdens that non-utility status would bring, simply because they took advantage of PURPA. Commissioner Trabant believed that section 210(e) has nothing to do with the question at hand; thereby eliminating the preemptive issue for the states and allowing them to raise rates that would exceed the utility's avoided cost.[421]

By broadly prohibiting any state from imposing a rate exceeding avoided cost on any wholesale power purchase in interstate commerce, the *Orange & Rockland Utilities, Inc.* decision radically altered the states' perceived power to determine the avoided cost for the utilities under their jurisdictions. However, less than two months later, FERC stayed its decision pending judicial review and completion of a rulemaking proceeding initiated to address the issue of QF pricing, FERC never enforced the *Orange & Rockland Utilities, Inc.* decision.[422] In 1989, the New York legislature repealed the state subsidy statute, thus making appeal to the Second Circuit moot and leaving the issue of QF pricing unsettled.

Subsequently, *Orange & Rockland Utilities, Inc.* has been cited approximately a half-dozen times, receiving negative treatment in both the federal and state courts.[423]

Commissioner Trabant argued that the proper procedural approach would be in a Notice of Proposed Rulemaking (NOPR) subject to comment under the Administrative Procedures Act. *See id.* (stating "[i]f the Commission is persuaded that such generic impact on similar state laws is appropriate . . . the proper procedural approach would be in a Notice of Proposed Rulemaking (NOPR) . . .").

421. *Id.* at 61,202-03 (arguing that § 210(e) or PURPA authorizes the Commission to use regulations to exempt QFs from the Federal Power Act, the Public Utilities Holding Company Act, and state laws respecting rates or financial or organizational regulation of electric utilities in order to encourage cogeneration and small power production). "[N]owhere did Congress address the preemption question in considering the commission's exemption authority. Congress dealt with the much narrower problem of how not to fetter QFs by subjecting them to the rigors of utility regulation." *Id.* at 61,203.

422. 43 F.E.R.C. ¶ 61,547 (1988) (staying the decision in Orange & Rockland, 43 F.E.R.C. ¶ 61,067 (1988) pending judicial review or until the Commission determines that a stay is no longer necessary). In February 1989, the Second Circuit dismissed an appeal of the FERC decision on the grounds of ripeness pending conclusion of the FERC rulemaking. Orange & Rockland, 43 F.E.R.C. ¶ 61,067 (1988), *appeal dismissed sub nom*. Occidental Chem. Corp. v. F.E.R.C., 869 F.2d 127 (2d Cir. 1989).

423. *See, e.g.,* State ex. rel. Utilities Comm'n v. North Carolina Power, 450 S.E.2d 896 (N.C. 1994).

b. Connecticut Light & Power Co.

FERC subsequently reached the issue of a state forcing a utility to purchase wholesale power at its retail rate, which is what is presented in the net metering issue. In January 1995, in *Connecticut Light & Power Co.*, FERC clarified the limits of state authority under PURPA.[424] In fact, FERC in *MidAmerican* purported to rely on *Connecticut Light & Power Co.* to ground its policy. The analysis undertaken above reveals a different precedent.

The Connecticut legislature had enacted the Municipal Rate Statute that required utilities to purchase electric energy generated by a resource recovery facility owned or operated by or for the benefit of a municipality "at the same rate the electric [utility] charges the municipality . . . for electricity".[425] The statute applied only to municipally-owned facilities and gave preferences only to resource recovery facilities.[426] The Connecticut Department of Public Utility Control ruled that Connecticut Light & Power Company (CL&P) was required to purchase the electricity generated at the Preston Facility at a rate that is the same as CL&P's retail rate.[427] CL&P appealed the Connecticut Commission's rate determination to the Connecticut Supreme Court, which held that since the Preston Facility is a municipal resources recovery facility under the Municipal Rate Statute, CL&P is required to purchase the facility's electric energy at the same rate the electric utility charges the municipality.[428]

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424. Conn. Light & Power Co., 70 F.E.R.C. ¶ 61,012 (1995) (concluding "[i]n sum, as explained above, insofar as the Municipal Rate Statute at issue here may require rates for sales by QFs . . . at wholesale that exceed avoided costs, the statutes is to that extent preempted.").

425. *Id.* at 61,024 (citing CONN GEN. STAT. § 16-243e). "A resource recovery facility is defined as "a facility utilizing processes aimed at reclaiming the material or energy values from solid wastes." *Id.* at 61,024 n.22 (citing CONN. GEN. STAT. § 22a-260(11).

426. Only 70% of the municipal solid waste at issue for the Preston resource recovery facility came from municipalities served by Connecticut Light & Power Company, the utility which would purchase the electricity generated by the facility. Thirty percent of the trash for the facility came from communities outside of the utility's service territory. *Id.* at 61,025 (citing Conn. Light & Power Co. v. Dep't of Pub. Util. Control, 554 A.2d 1089 (Conn. 1989)). Thus, while the facility was owned by a municipality in the service territory of the purchasing utility, the waste was not generated exclusively from communities in that service territory. *Id.* at 61,025. Therefore, the utility was paying a generous rate to assist communities not within its service territory, because of the peculiarities of the Preston Facility waste stream. *Id.* at 61,025.

430 *Id.* at 61,024.

428. *Conn. Light & Power Co.*, 554 A.2d at 1093 (finding "[T]he special rate to be paid by the electric company . . . is the same rate that it charges the municipality for electricity."); *see also* Conn. Light & Power Co., 70 F.E.R.C. ¶ 61,012, at 61,025 (1995) (discussing the Connecticut Supreme Court's decision).

CL&P requested that the U.S. District Court for the District of Connecticut issue a declaratory order that the Connecticut statute was preempted by section 210 of PURPA because the rate that the statute prescribed exceeded CL&P's avoided cost. The District Court refused to hear CL&P's petition and ruled that the preemption issue should be decided by FERC.[429] CL&P then filed for a declaratory order by FERC.

FERC decided that pursuant to the Federal Power Act, it, and not the states, had exclusive jurisdiction over QF power sale prices.[430] FERC then delegated to the states the authority to approve the exact price for QF power sales.[431] State authority is subject to federal law and regulations and limited to implementing QF prices.[432]

In *Connecticut Light & Power Co.*, FERC held that Connecticut's Municipal Rate Statute overstepped traditional state jurisdictional boundaries, and was preempted by §210 of PURPA.[433] FERC clarified numerous issues in this opinion. First, it certified that it would not entertain requests to invalidate preexisting contracts between the utility and any QF. However, "if parties are required by state law or policy to sign contracts that reflect rates for QF sales at

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429. Conn. Light & Power Co. v. Southeastern Conn. Reg'l Res. Recovery Auth., 822 F. Supp. 888, 890-92 (D. Conn. 1993) (holding that under the doctrine of primary jurisdiction, the matter should be referred to F.E.R.C. because it is "'beyond the conventional experience of judges'") (citations omitted).

430. 70 F.E.R.C. ¶ 61,012, at 61,027 (1995) (holding "[f]or QFs, jurisdiction over rates for sales at wholesale is vested in this Commission. PURPA expressly directed this Commission, and not the states, to prescribe rules governing QF rates."). In the *Connecticut* matter, the price had been deliberately set above the full avoided cost.

431. *Id.* at 61,027-28 (holding that "PURPA gave the states responsibility *only* for 'implement[ing]' the Commission's rules. That is, a state may prescribe a particular per unit charge *only* if it does so in accordance with the Commission's rules.").

432. *Id.* at 61,027-28.

433. *Id*. at 61,031 (concluding "[i]n sum . . . the Municipal Rate Statute . . . may require rates for sales by QFs . . . at wholesale that exceed avoided cost, [and] the statute is to that extent preempted.").

> In determining whether the Municipal Rate Statute is preempted by federal law, we [the Commission] must distinguish among the different facilities and sellers to which the statute may apply: (1) QFs; (2) public utilities; and (3) entities that are neither QFs nor public utilities (including states and their subdivisions, agencies, authorities, instrumentalities, etc.). . .In the case of QFs, the Commission has authority under PURPA to regulate how rates for QF sales at wholesale will be determined.

Id. at 61,027 (holding "[f]or QFs, jurisdiction over rates for sales at wholesale is vested in this Commission").

"Although states may set the ultimate per unit (kW and/or kWh) charges for QF sales at wholesale, they may do so only in accordance with this Commission's regulations." *Id.* at 61,027-28 (holding that "PURPA gave the states responsibility *only* for 'implement[ing]' the Commission's rules. That is, a state may prescribe a particular per unit charge *only* if it does so in accordance with the Commission's rules.").

wholesale rates that are in excess of avoided costs, those contracts will be considered void *ab initio*."[434] Second, *Connecticut Light & Power Co.* firmly reinforced the *Orange & Rockland Utilities, Inc.* decision by upholding the supremacy of FERC to control the avoided cost purchase rates, and the premise that PURPA preempts state efforts to establish QF rates at higher than the utility's avoided cost.[435]

FERC also defined some of the limits of its jurisdiction, stating that some wholesale sales in interstate commerce—those made by states or their subdivisions or agents—do not fall under FERC jurisdiction.[436] Finally, the commission held that wholesale QF rates cannot both be capped by full avoided cost and exceed the avoided cost cap.[437]

The *Connecticut Light & Power Co.* decision established FERC's preemption preeminence with regard to the issue of state efforts to implement QF rates higher than a utility's avoided cost. FERC acknowledged that it did not have authority over facilities that are not selling at wholesale.[438] Nonetheless, *Connecticut Light & Power Co.* essentially presented the net metering situation. Unless CL&P's forced sale to the utility can be distinguished from a net metering forced transfer to a utility, *Connecticut Light & Power Co.* would seem to have prevented the practice. It undercuts rather than supports FERC's net metering position.

Connecticut Light & Power Co. has been cited approximately a dozen times in a number of federal and state courts, receiving both positive and negative treatment.[439] Positive treatment supports both

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434. *Id.* at 61,030.

435. *Id.* at 61,027-61,028 (asserting that the Commission has exclusive jurisdiction over setting QF wholesale rates and noting that PURPA "sets full avoided cost as the maximum rate the Commission may prescribe.").

436. *Id*. at 61,027 (1995) (stating:

> [i]n the case of facilities that are not QFs, but where the capacity and energy is sold by public utilities at wholesale in interstate commerce, the Commission has exclusive authority to set the rates. With respect to facilities that are not QFs and where the capacity and energy is sold by non-public utilities, this Commission does not have authority to set rates.).

437. *Id.* at 61,028 (stating "[t]he commission's regulations, in turn, expressly provide that '[n]othing in [the Commission's regulations] requires any electric utility to pay more than the avoided cost for purchases" (citing 18 C.F.R. § 292.304(a)(2) (1994)); *accord* Williams Natural Gas Co., 47 F.E.R.C. ¶ 61,308, at 62,103 and n.9 (1989).

438. 70 F.E.R.C. ¶ 61,012, at 61,030 (stating that "facilities and sellers that are neither QFs nor public utilities selling at wholesale in interstate commerce . . . rates for such sales are not within this Commission's authority"). The commission did not reach the question of QF sales at retail since the Municipal Rate Statute applied only to sales for resale and not to sales at retail.

439. *See, e.g.,* Niagara Mohawk Power Co. v. F.E.R.C., 162 F. Supp. 2d 107, 117-18 (N.D.N.Y. 2001); Rosebud Enters. v. State PUC, 917 P.2d 766 (Idaho 1996).

the affirmation of preexisting contracts and the preemption of states imposing rates in excess of avoided cost.[440] However, the negative treatment clarifies state roles in determining and setting terms of QF purchase and sale agreements[441] and the setting of avoided costs prices.[442]

c. Independent Energy Producers

In February 1994, the Ninth Circuit Court of Appeals issued its pivotal decision in the *Independent Energy Producers Assoc.* case.[443] This case addressed the issue of state discretion to regulate QF wholesale power sales. State authority was preempted.

The challenge was brought by the Trade Association of Independent Power Producers against the California Public Utilities Commission (CPUC) to prevent the Commission from delegating to the utilities authority to enforce federal operating and efficiency requirements of PURPA and FERC regulations. The district court granted summary judgment and held that federal law did not preempt the CPUC's program.[444]

The court of appeals reversed the district court's decision and held that the CPUC's program, authorizing electric utilities to monitor QFs and make QF status determinations intruded into an area of exclusively federal regulation and was preempted under the Federal Power Act.[445] The CPUC's program to allow the utilities to disconnect

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440. *In re* Megan-Racine Assocs., 102 F.3d 671 (2d Cir. 1996) (finding that FERC reaffirms that the agency recanted – federal law does preempt states from setting rates higher than the utilities' avoided cost but declined to enforce this order retroactively).

441. *See, e.g.,* W. Penn Power Co., 71 F.E.R.C. ¶ 61,153, at 61,495 (1995):

> It is up to the States, not the Commission, to determine the specific parameters of individual QF power purchase agreements, including the date at which a legally enforceable obligation is incurred under State law. Similarly, whether the particular facts applicable to an individual QF necessitate modification of other terms and conditions of the QF's contract with the purchasing utility is a matter for the states to determine.

442. *See, e.g.,* Niagara Mohawk Power Corp., 74 F.E.R.C. ¶ 61,179, at 61,629 (1996) (holding that states can impose procedures for determining rates for QFs, thus circumventing PURPA-imposed avoided costs caps on QF rates and asserting that, although a tax is acceptable, any attempt to force utilities to pay more than avoided costs would be unacceptable).

443. Indep. Energy Producers Ass'n v. Cal. Pub. Utils. Comm'n, 36 F.3d 848 (9th Cir. 1994).

444. *Id.* at 850. The California Public Utilities Commission program contained three separate issues; (1) the California Public Utilities Commission program authorized electric utilities to monitor PURPA QFs for compliance with the federal operating and efficiency standards; (2) the program also enabled utilities to disconnect from parallel operation QFs not in compliance with the federal operating and efficiency standards; and (3) the California Public Utilities Commission program required PURPA QFs to submit for monitoring, operating date to electric utilities. *See id.* at 852-853 (discussing the CPUC programs).

445. *Id. at 849; see also* Federal Power Act, 16 U.S.C. §§ 791a-828c (2000). 16 U.S.C. §§ 824a and 824e provide that any person who owns or operates facilities used to transmit or sell electric

from the non-complying QFs was held to violate PURPA. With the CPUC's designation of a QF as "non-complying," the QF received an "alternative" avoided cost rate equal to only 80% of the utilities' avoided cost for short term economy energy. This denied QFs one of the benefits to which they are statutorily entitled under PURPA, resulting in the effective de-certification of the QF. The court held that QFs are entitled to receive the full-avoided cost rates, and not a rate that is less than full.[446]

However, the third CPUC program that required QFs to submit monitoring and operating data to electric utilities was not preempted by PURPA. The court of appeals agreed with the district court that PURPA delegates to the states broad authority to implement section 210 of the statute.[447] The court's holding attempts to clarify both the federal and state roles by setting out clear areas where state authority remains under PURPA. In *Southern California Edison, Co.,* discussed below, FERC attempted to do the same.

Taking *Independent Energy Producers Assoc.* forward reveals that this decision has been cited twenty-five times in non-FERC federal and state decisions not related to that case, receiving basically positive treatment.[448] Courts have consistently upheld the conclusions found by the court of appeals restricting state discretion and preventing state-authorized payments to generators that exceed avoided cost.[449]

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energy in interstate commerce at wholesale is subject to the jurisdiction and regulatory power of the commission. In 1978, Congress enacted PURPA, which amends the Federal Power Act.

446. *Indep. Energy Producers Ass'n*, 36 F.3d at 854-55 (holding "QFs are entitled to receive the *full* avoided cost rates provided in the QF's standard offer contract, 18 C.F.R. § 292.304, and not a rate that is 80% (or less than 80%) of the full avoided cost rate) (emphasis in original). In other words, the state may set the actual charge for power sale, as long as it does so in accordance with the full-avoided cost FERC rule. *See id.* Full-avoided cost is the "maximum rate that the Commission may prescribe." Am. Paper Inst., Inc. v. Am. Elec. Power Co., 461 U.S. 402, 413 (1983).

447. Indep. Energy Producers Ass'n, 36 F.3d at 856 (holding that "the states play the primary role in calculating avoided costs and in overseeing the contractual relationship between QFs and utilities operating under the regulations promulgated by F.E.R.C.").

448. *See, e.g.*, Freehold Cogeneration Ass'n, L.P. v. Bd. of Regulatory Comm'rs of N.J., 44 F.3d 1178 (3d Cir. 1995) (citing and following *Indep. Energy Producers Ass'n* positively); N. Am. Natural Res., Inc. v. Strand, 252 F.3d 808, 815 (6th Cir. 2001) (distinguishing *Indep. Energy Producers Ass'n.*).

449. *See, e.g.,* N.Y. State Elec. & Gas Corp. v. Saranac Power, 117 F. Supp. 2d 211, 237 (N.D.N.Y 2000) (citing *Indep. Energy Producers Ass'n* for the proposition that "QFs are entitled to 'lock in' energy sales at an avoided cost rate calculated at the time the contract is signed, even if the utilities' costs are lower than estimated at the time the energy is delivered.").The court recognized that at times the avoided cost might be higher or lower than the contract price.

d. Southern California Edison Co.

In June 1995, FERC issued its *Southern California Edison Co.*[450] order. The issue before FERC was whether the CPUC could require utilities to purchase significant amounts of unneeded QF power. In this decision, FERC responded not only to the legal issue analogous to net metering, but also attempted to define areas of state authority.

FERC attempted to clarify its views on the scope of state authority, both under and outside of PURPA. FERC held that "[a] state may not . . . set avoided cost rates or otherwise adjust bids of potential suppliers by imposing environmental adders or subtractors that are not based on real costs that would be incurred by the utilities."[451] FERC held that the California commission failed to consider all sources of generation capacity in determining the avoided cost of the purchasing utilities, thereby setting a rate for renewable energy projects exceeding the utility's true avoided cost and violating PURPA.[452]

FERC suggested that the states have a number of ways to encourage renewable technologies other than causing utilities to pay in excess of their avoided cost. One alternative FERC proposed is for the state, through legislation, to order the utilities to build renewable generators or simply purchase renewable generation.[453] FERC also

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See id. (stating "QFs are entitled to rely on purchase rates in long term [power purchase agreements] even if they violate PURPA's long term rate cap.").

450. S. Cal. Edison Co., 71 F.E.R.C. ¶ 61,269 (1995).

451. *Id.* at 62,080. In its decision, FERC never defined a "real" environmental cost to a utility. FERC does, however, provide an example of how to increase the utilities' avoided cost: "[A] state may impose a tax or other charge on all generation produced by a particular fuel, and thus increase the costs which would be incurred by the utilities in building and operating plants that use that fuel." *Id.* at 62,080.

452. *Id.* at 62,075 (summarizing that "the California Commission, by failing to consider all sources of generation capacity in determining the avoided cost of purchasing utilities, violated the directives of section 210 of PURPA and this Commission's implementing regulations"). The California Commission's process in determining avoided costs for electric utility's involved a three-step process:

> First, following the latest projections of energy and capacity needs of California utilities made by the California Energy Commission, the utilities filed a resource plan identifying potential resource additions. The California Commission. . .determined what new resources the utilities would add. Second,. . .the California Commission determined the utilities' assumed costs, known as 'benchmark prices,'. . .and determined which of these resource additions could be avoided. Third, QFs were then allowed to bid against the utilities' benchmark prices for each of the avoided resources. The winning bidders were paid the price bid by the second lowest bidder with respect to each avoided resource.

Id. at 62,075.

453. This is done with more than a dozen states enacting renewable portfolio standards or trust funds. *See* FERREY, *supra* note 53, § 10:109 (stating "[a]s of 2000, 15 states had adopted either or both of the system benefit charge/trust fund and/or the renewable energy portfolio

suggested that the states can encourage renewables by altering their tax structures to provide a tax on fossil fuel generators or a tax incentive to the utilities to buy renewable energy. Each of these is a non-rate mechanism.

FERC then alluded to the possibility that states may have some flexibility in establishing the avoided cost rate. In its decision, FERC stated, "a state may account for environmental costs of all fuel sources included in an all source determination of avoided cost."[454] "This means that environmental costs, if they are real costs that would be incurred by utilities, may be accounted for in a determination of actual avoided cost rates."[455]

This federal court precedent is important for declaring wholesale rates in excess of actual avoided cost as impermissible tools to further renewable energy. *Southern California Edison Co.* has been cited seventeen times in both federal and state decisions and generally has received approval.[456] Most of its citation deals directly with states' attempts to adjust avoided cost rates not in accord with PURPA.[457]

FERC is aware that net metering results in a higher valuation of the power transfer (to the utility) transaction than that embodied in the wholesale avoided cost rate. FERC conceded in *MidAmerican* that avoided costs normally are less than retail rates, citing *Cuero Hydroelectric, Inc. v. City of Cuero, Texas*,[458] *North Little Rock Co-*

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standard"). For a discussion of options available to the states for the promotion of renewable energy and demand-side management after deregulation of retail service options. *See id.* at §§ 10:93-10:138.

454. *See* S. Cal. Edison Co., 70 F.E.R.C. ¶ 61,215, at 61,676 (1995).

455. S. Cal. Edison Co., 71 F.E.R.C. ¶ 61,269, at 62,080.

456. *See, e.g., In re* Megan-Racine Assoc., 198 B.R. 650, 656 n.6 (N.D.N.Y. 1996), rev'd and remanded *sub nom.* Fed. Deposit Ins. Comm'n v. Niagara Mohawk Power Corp. *(In re:* Morgan-Racine Assoc.*)*, 102 F.3d 671 (2d Cir. 1996) (citing, *inter alia*, S. Cal. Edison, Co., 71 F.E.R.C. ¶61,269 (1995), for the proposition that:

> F.E.R.C. has cast doubt on two aspects of the Con-Ed holding that PURPA preempted states from imposing rates in excess of avoided cost but declining to enforce this order retroactively. Indicating *in dicta* that states can require utilities to purchase power from alternative energy facilities that are not QFs.).

457. S. Cal. Edison Co., 71 F.E.R.C. ¶ 61,269 (1995) has also been cited in a law review article. *See* Rudy Perkins, *Note: Electricity Deregulation, Environmental Externalities and the Limitations of Price,* 39 B.C. L. REV. 993, 1023 n. 240-42 (1998) (discussing *S. Cal. Edison Co.* and its effect on the California Public Utilities Commission's policy decisions). In FERC's decision, it noted that PURPA set the utilities' incremental or avoided cost at the maximum rate at which a utility would be required to purchase power from a QF. To use environmental adders equaling rates exceeding the incremental costs to the utility is in violation of PURPA. FERC did not object, however, to states using numerous other ways external to PURPA.

458. In *Cuero Hydroelectric, Inc. v. City of Cuero, Tex.*, 77 F.E.R.C. ¶ 61,114 (1996), the commission found that the city was correct in basing the rate it pays QF (Cuero Hydro) on the

generation, L.P. and Power Systems, Ltd. v. Energy Services, Inc., and *Arkansas Power & Light Company*.[459] Avoided costs include only the wholesale acquisition costs of the electric commodity. Net metering reverses the retail meter, which registers the fully loaded commodity cost, transmission and distribution expense, any stranded costs,[460] and various taxes and surcharges.

Analyzing the cases cited by FERC to support these premises, none offers the support for which FERC cites them. FERC insists that net metering does not involve a "sale," yet the QF or other power producer can send excess power to the utility without the utility's consent or control as to time or amount, which certainly constitutes a forced exchange. If electricity were so tangible as to be capable of storage, like natural gas and oil, this would not be an issue: A gallon of fuel today has the same energy content and fungibility as a gallon of fuel tomorrow.

However, electricity is unique: Electricity cannot be stored efficiently. If not consumed instantly, it is grounded and lost.[461] It has no shelf life. Its value fluctuates dramatically by more than 200% across the hours in a typical day.[462] Therefore, a QF or other seller exchanging power *to* the utility after midnight, when that power has its least value and may not be capable of resale and thus valueless, does not have the same market value as a QF taking power *from* a utility at noon when the marginal cost of power is high. Yet, net metering values each transaction at the same rate. In either direction through the

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rate it pays its full requirements supplier (Lower Colorado), which is avoided cost. The case states that the "avoided cost of an all-requirement utility should be adjusted to reflect the avoided cost of the supplying utility," which could very well be below retail rates. *See id.* at 61,442-43 (quoting City of Longmount, Colo., 39 F.E.R.C. ¶ 61,301, at 61,974 (1987)).

459. In *North Little Rock Cogeneration, L.P. and Power Systems, Ltd. v. Energy Services, Inc., and Arkansas Power & Light Company*, 72 FERC ¶ 61,263 (1995), the petitioners argued rates in an existing power sale agreement were unreasonable and discriminatory. *Id.* at 62,170. The city operated its own hydro unit, but purchased the remainder of power needed from another supplier. *Id.* The petitioner was not selected as supplier and filed suit challenging the agreement between the city and Arkansas Power because the agreement provided a rate that was "discounted," and the QFs were unable to compete with lower rates. *Id.* FERC dismissed the complaint, finding the rates reasonable.

460. *See generally*, Steven Ferrey, *Exit Strategy: State Legal Discretion to Environmentally Sculpt the Deregulating Electric Environment*, 26 HARV. ENVTL. L. REV. 109 (2002) (discussing stranded cost).

461. *See* STEVEN FERREY, ENVIRONMENTAL LAW: EXAMPLES & EXPLANATIONS, 491-495 (2d. ed. 2001) ("If not used immediately surplus electricity warms the transmission lines, is grounded, or overloads the circuits, but it does not work.").

462. *See, e.g.,* www.iso-ne.com (last visited October 7, 2003) (showing the hourly price fluctuations across any day in the New England Power Pool).

retail meter, the electrons are accounted at the retail sale rate. To call this transfer of electrons to the utility not a "sale" is to ignore the fact that power is an instantaneous commodity with an ever-changing marginal market value.

VI. THE MODEL OF ELECTRIC FEDERALISM: HANDS ON THE SWITCH

The substantive issue at the core of the net-metering debate is whether or not net metering transactions are "sales." In addition to the substantive issue, there is a critical issue of whether the transactions are subject to federal or state jurisdiction. If the transaction is wholesale or in interstate commerce, it is subject to federal jurisdiction and the states have no control. If the transaction is retail or solely intrastate in nature, it is within state jurisdiction. While the determination of whether or not a "sale" occurs is critical for future on-site distributed energy policy, the decision of whether federal or state regulation governs has profound implications for those who will sculpt future energy policy.

Here, somewhat ironically, in addressing this issue the state court system declared it had no authority and the federal regulatory agency, FERC, declared the federal government would stand back and allow state law to control.

A. *The Federal Power Act and Precedent*

FERC regulates entirely wholesale power transactions. The Federal Power Act defines "sale of electric energy at wholesale" as any sale to any person for resale.[463] FERC also regulates power generation to a limited degree,[464] regulates power transmission in interstate commerce,[465] and regulates interstate power sales.[466] "FERC's jurisdiction is plenary and extends to all . . . sales in interstate commerce."[467]

FERC does not regulate the local distribution of power, power solely in intrastate commerce, or the self-generation and use of power.[468] Section 212 of the Federal Power Act, as amended by the

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463. 16 U.S.C. § 824(d) (2000).

464. 16 U.S.C. § 824(a) (stating that federal regulation extends only to those matters which are not subject to regulation by the states).

465. *Id.*

466. *Id.*

467. *N. States Power Co. v. Minn. Pub. Util. Comm'n*, 344 N.W.2d 374, 378 (Minn. 1984).

468. *See* Conn. Light & Power Co. v. Fed. Power Comm'n, 324 U.S. 515, 523 (1945) (citing Section 201(b) of the Federal Power Act as amended in 1935); City of Batavia v. F.E.R.C., 672

Energy Policy Act of 1992, addresses retail sales of electricity. It contains a prohibition on FERC orders inconsistent with any state law that governs the retail marketing areas of electric utilities.[469]

Thus, the most common basis for FERC jurisdiction is a transaction in interstate commerce. Section 201(c) of the Act defines electric energy transmitted in interstate commerce as energy "transmitted from a State and consumed at any point outside thereof . . . ."[470] However, this provision has consistently been interpreted to mean that FERC has jurisdiction when the system is interconnected and capable of transmitting energy across the state boundary, even though the contracting parties are in fact in one state. Similarly, the transmission of power over a utility transmission grid that is used in interstate commerce is subject to FERC jurisdiction, even when all parties to the transaction are located within the same state.[471]

The legal meaning of "interstate commerce" is broad.[472] Sales of power that appear to be intrastate or local in character may be considered interstate for purposes of FERC jurisdiction. A utility, even if it sold its power first to an intermediate utility that then places the power in interstate commerce, may be regulated by FERC.[473] FERC jurisdiction can extend from the point of the power's origin on the basis that the entire sale "affects [interstate] commerce."[474] There is no statutorily or judicially imposed threshold amount of interstate sale of power, which triggers FERC jurisdiction. Although the amount of power an electric utility may place in interstate commerce is *de minimis* compared to the same utility's sales in intrastate commerce,

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F.2d 64, 68 n.2 (D.C. Cir. 1982) (stating that FERC regulates wholesale transactions and states regulate retail transactions).

469. 16 U.S.C. § 824(b)(1).

470. 16 U.S.C. § 824(c).

471. *Fed. Power Comm'n v. Fla. Power & Light Co.,* 404 U.S. 453, 475 (1972), (stating that federal jurisdiction attaches even if the utility has no direct connection with another utility outside the state but is interconnected with another utility that in turn has interstate connections with other utilities).

472. *See* 16 U.S.C. § 824(c) (stating "electric energy shall be held to be transmitted in interstate commerce if transmitted from a State and consumed at any point outside thereof").

473. Fla. Power & Light Co. v. Fed. Power Comm'n, 430 F.2d 1377, 1385 (5th Cir. 1970), *rev'd on other grounds*, 404 U.S. 453 (1972) (stating that the burden is on FERC to assert and prove jurisdiction).

474. *See* Jersey Cent. Power & Light Co. v. Fed. Power Comm'n, 319 U.S. 61, 70-72 (1943) (holding that where a New Jersey electric company transmitted the electricity through its line to another company which transmitted the electricity to a New York company in interstate commerce, the flow of electricity from the New Jersey company would be subject to federal regulation as affecting interstate commerce).

FERC may assert its regulatory authority over such a utility.[475] If a small amount of interstate power is commingled with intrastate power, the entire amount becomes "interstate" for purposes of vesting FERC with the authority to exercise jurisdiction.[476] Once FERC exercised jurisdiction over a utility, the entire wholesale structure of the entity's operations becomes subject to FERC regulation.

Section 201(a) of the Federal Power Act prohibits infringement of federal regulation on matters subject to regulation by the states. Until now, the states have typically regulated bundled retail transmission services. First, a public utility's facilities used to deliver electric energy to a wholesale purchaser are subject to exclusive FERC jurisdiction.[477] Second, a public utility's facilities used to deliver electric energy from the wholesale purchaser to the consumer are local distribution facilities subject to the rate jurisdictions of the state.

It is clear that FERC has no jurisdiction "over facilities used in local distribution or only for the transmission of electric energy in intrastate commerce, or over facilities for the transmission of electric energy consumed wholly by the transmitter."[478] Thus, if an entity transmits electricity from its own facility to itself, it should be subject only to state jurisdiction. The Federal Power Act defines electricity

475. Fed. Power Comm'n v. S. Cal. Edison Co., 376 U.S. 205, 209 n.5 (1964) (holding that the fact that any out-of-state energy was de minimis in amount would be relevant only to the of question whether Edison was a public utility over which the Federal Power Commission could, in its discretion, assume jurisdiction); Ark. Power & Light Co. v. Fed. Power Comm'n, 368 F.2d 376, 384 (8th Cir. 1966) (holding that the fact that the volume of interstate energy may be small is a factor which Congress has left to the discretion of the Commission in determining whether to exercise its jurisdiction).

476. United States v. Public Util. Comm'n of Cal., 345 U.S. 295, 300 (1953) (stating that "the fact that this electricity is transmitted across the state boundary over lines owned by the Navy and by the County" is irrelevant); Pa. Water & Power Co. v. Fed. Power Comm'n, 343 U.S. 414, 419 (1952) (finding that the sales were in interstate commerce notwithstanding that 83% of its sales were made to intrastate customers); Cincinnati Gas & Elec. Co. v. Fed. Power Comm'n, 376 F.2d 506, 508 (6th Cir. 1967) (stating that the commingling of interstate and intrastate generated electricity that flowed through the CG&E system was enough to sustain the FERC's jurisdiction); Pub. Serv. Co. of Ind. v. Fed. Power Comm'n, 375 F.2d 100, 103 (7th Cir. 1967) (finding that interstate energy entered all of the sales in question and commingled with PSCI-generated energy); *Ark. Power & Light Co*., 368 F.2d at 394 (holding that the fact that the volume of interstate energy passing over Arkansas' transmission lines may be small compared to its intrastate generated energy is a factor for FERC to determine whether to exercise its jurisdiction); Wis.-Mich. Power Co. v. Fed. Power Comm'n, 197 F.2d 472, 477-78 (7th Cir. 1952) (finding that out-of-state energy does not shed its interstate commerce garb when, after arrival in Wisconsin, it is continued in transmission and commingled with relatively larger quantities of Wisconsin generated energy).

477. This jurisdiction is established by Sections 205 and 206 of the Federal Power Act. 16 U.S.C. § 824(d)-(e).

478. 16 U.S.C. § 824(b)(1).

transmitted in interstate commerce as electricity "transmitted from a State and consumed at any point outside thereof; but only insofar as such transmission takes place within the United States."[479]

U.S. Supreme Court case law establishes that FERC jurisdiction results when electricity flows into or out of a state, and therefore in interstate commerce, regardless of whether technically there is "sale" in interstate commerce.[480] The Court concluded that a utility, Jersey Central Power & Light Co., had facilities that were utilized for transmission of electric energy across state lines and therefore, that Jersey Central Power & Light Co. was a public utility within the meaning of Section 201(e) of the Federal Power Act.[481]

Therefore, FERC has jurisdiction only over transmission facilities used in interstate commerce which are not facilities used in local distribution. This is a two-part test: The facilities must be used in interstate commerce and must not be local distribution facilities. While establishing the principle, the Court did not define "local distribution facility."[482] Where a utility operates two or more divisions in two or more separate states and commingles energy that it supplies, it transacts power in interstate commerce, and FERC has jurisdictional authority over its facilities and rates.[483]

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479. 16 U.S.C. § 824(c).

480. Jersey Cent. Power & Light Co. v. Fed. Power Comm'n, 319 U.S. 61, 71 (1943) (citing 16 U.S.C. § 824(c)).

481. Conn. Light & Power Co. v. Fed. Power Comm'n, 324 U.S. 515, 536 (1945) (stating that Congress has left to the FERC's sound administrative discretion to determine whether or not to assert its authority in the situations where only about .2% of all the energy received and generated by the Company was transmitted out of the State). Even where the distribution systems of the utility normally operate with intrastate transmission, just a few transactions make the transmission system of the utility one which is engaged in interstate business. This establishes FERC jurisdiction over the accounts of the utility. However, FERC jurisdiction does not extend to utility lines used for local distribution; they are exempt from federal jurisdiction. *Id.* at 531. Regardless of what the original source is for electric energy carried by local distribution facilities, they are exempt under the Federal Power Act from FERC jurisdiction.

482. *See* United States v. Pub. Util. Comm'n of Cal., 345 U.S. 295, 316 (1953) (stating that facilities supplied 'local distribution' only after the current was subdivided for individual consumers); Ark. Power & Light Co. v. Fed. Power Comm'n, 368 F.2d 376, 383 (8th Cir. 1966) (stating that there is no ground for the position that local distribution includes any transmission occurring before the wholesaler who sells at retail is reached).

483. Wis.-Mich. Power Co. v. Fed. Power Comm'n, 197 F.2d 472, 476 (7th Cir. 1952) (stating that the jurisdiction attaches when the transmission from one state to another and sales in interstate commerce occur). The court rejected any notion that energy changed its form or character for legal purposes when it was stepped down in voltage before reaching the wholesale purchasers. *Id.* at 474. Instead, the court focused on the character of the transmission transaction—whether it was wholesale or retail. There is some authority for this in the legislative history. *See* H.R. REP. NO. 1318, at 7, 8, 27 (1935). This opinion equates the transmission of electric energy in interstate commerce with the sale of energy at wholesale in interstate commerce. The FERC

Where facilities are used only in intrastate distribution, they may not be regulated by FERC: "matters largely of a local nature, even though interstate in character, should be handled locally and should receive the consideration of local [officials] familiar with the local conditions in the communities involved."[484] Where a regulated utility's transmission and distribution system is solely within the borders of one state and does not directly connect with any out-of-state utility, it still may be deemed to be transmitting electric energy in interstate commerce.[485]

FERC Rule 888 provides seven indicators, but hardly a "bright line," to distinguish between federally regulated transmission and locally regulated distribution of energy. According to FERC, local distribution facilities normally sit close to retail customers. Power flows into a local distribution system and rarely, if ever, flows out. Power entering a local system is used in a relatively small area.

However, even FERC is willing to concede that the transmission from the utility in closest proximity to the end-user involves some local distribution subject to state jurisdiction. This is, in part, because some of these facilities will have been used for local retail distribution, regardless of whether legal elements change to make these transactions wholesale transactions due to the changing nature of electricity supply options in the future. Here, the technical characteristics of the historic use of the line, as well as the functional legal re-

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would disagree with such a definitional merger. FERC believes that it has separate jurisdiction over either electricity transmitted in interstate commerce or electricity sold in interstate commerce. FERC relies on legislative history that it has jurisdiction over all interstate transmission lines whether or not there is a sale of energy carried by those lines.

484. Duke Power Co. v. Fed. Power Comm'n, 401 F.2d 930, 936 (D.C. Cir. 1968) (quoting testimony of the F.P.C. Commissioner Seavey before the Committee on Interstate and Foreign Commerce, regarding the Federal Power Act). In this matter, Clemson University used facilities of Duke Power Company to distribute electricity off-campus to customers in two counties who were primarily university personnel. This involves seven miles of distribution line and 418 service connections. Notwithstanding these retail connections within the service territory of a regulated utility, these were deemed to be local distribution. This is an important decision in establishing state jurisdiction over local distribution facilities.

485. Fed. Power Comm'n v. Fla. Power & Light Co., 404 U.S. 453, 475 (holding that even the indirect connection makes the transmission facilities of the ultimate utility in interstate commerce because of the indirect interconnection where a utility connects with another utility which is connected in interstate commerce). Effectively, power commingles in the bus that interconnects these utilities. *See* City of Oakland, Cal. v. F.E.R.C., 754 F.2d 1378, 1378-79 (9th Cir. 1985) (stating "there is no dispute that the electricity sold to the Port Department flows interstate" where the Port Department purchased its electricity from the Pacific Gas & Electric Company and resold 69% to airport tenants); Alexander v. F.E.R.C., 609 F.2d 543, 552 (D.C. Cir. 1979) (Wilkey, J., concurring) (suggesting that facilities transmit power for local distribution only after current is subdivided for individual consumers).

alities, are given effect. The result is not a "bright line" test; a case-by-case determination must be made by the utility transmitter.[486]

B. *Preemptive Federal Regulation of Power Sales and Terms*

Does FERC jurisdiction preempt state regulation of wholesale power transactions and prices? Where federal law occupies the field and there is evidence of a pervasive federal scheme in a given area, by inference, courts will find state or local legislation preempted.[487] The federal government does not have a pervasive need for national uniformity nor does it demonstrate pervasive federal interest in the area of environmental regulation.[488] "A federal decision to forego regulation in a given area may imply an authoritative determination that the area is best left *un*regulated, and in that event would have as much preemptive force as a decision to regulate."[489] Even where there is no congressional intent evident to federally occupy a field, the conflict principle requires that a court strike inconsistent state or local law.[490] State regulation is not allowed to veto the regulatory scheme of a su-

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486. Utilities classify their lines differently. One utility may classify a 69kv line as a transmission facility, while another may classify it as a distribution facility. This depends on the size of the utility, the size of its transmission facilities, and the size of traditional end use customers. FERC would apply the following factors in determining on a case-by-case basis whether the facilities are transmission or distribution:

Local distribution facilities are normally in close proximity to retail customers;

Local distribution facilities are primarily radial in character;

Power flows into local distribution systems, it rarely, if ever, flows out;

When power enters a local distribution system, it is not reconsigned or transported on to some other market;

Power entering a local distribution system is consumed in a comparatively limited geographical area;

Meters are based at the transmission/local distribution interface to measure flows into the local distribution system; and

Local distribution systems will be carrying reduced voltage.

Id. at 285. While there is no *bright line* test, FERC has noted that facilities operating at greater than 30kv are typically transmission and that facilities operating at less than 40kv typically are distribution facilities. *Id*.

487. City of Burbank v. Lockheed Air Terminal, Inc., 411 U.S. 624, 633 (1973) (stating federal government occupied field of noise regulation for aircraft).

488. *See* Milwaukee v. Illinois, 451 U.S. 304, 327 (1981) (holding that "nothing in the Act shall preclude States from adopting and enforcing limitations on the discharge of pollutants more stringent than those adopted under the Act").

489. Ark. Elect. Coop. v. Ark. Pub. Serv. Comm'n, 461 U.S. 375, 384 (1983).

490. *See* Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 230 (1947) (stating that Congress may, by the choice of selective regulatory measures, have left the police power of the States undisturbed except as the state and federal regulations collide); *See also* Hill v. Florida ex rel. Watson, 325 U.S. 538, 541-42 (1945) (holding that Section 4 of the Florida Act is repugnant to the National Labor Relations Act regarding collective bargaining).

perior level of government.[491] Correspondingly, courts hold that where state and federal laws complement each other, there is no preemption.[492]

Where the area of regulation is one traditionally reserved for local or state police power, courts must exercise a strong presumption against implied federal preemption in the absence of evidence of a "clear and manifest purpose of Congress." The Court will not presume that merely because Congress regulates in an "intricate and complex" manner, even where that regulation is broadened repeatedly over the years, that preemption is implied by the legislature.

If a utility or independent power producer is subject to FERC jurisdiction and regulation, state regulation of the same operational aspects is preempted as a matter of federal law.[493] Principles of preemption require a state regulatory agency to accept and pass through in retail rates all cost items deemed by FERC to be "just and reasonable," and which are otherwise allowed.[494] Therefore, a FERC determination regarding any aspect of a wholesale price is universally binding.

The so-called "filed-rate doctrine" holds that state utility regulatory commissions may not second-guess or overrule on any grounds a wholesale rate determination made pursuant to federal jurisdiction.[495]

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491. *See* Granite Rock Co. v. Cal. Coastal Comm'n, 768 F.2d 1077, 1082-83 (9th Cir. 1985) (holding that an independent state permit system to enforce state environmental standards that would undermine the Forest Service's own permit authority is preempted).

492. *See* New York State Dep't of Soc. Servs. v. Dublino, 413 U.S. 405, 421 (1973) (holding no preemption where complementary state and federal statutes exist); Merrill Lynch, Pierce, Fenner & Smith, Inc. v. Ware, 414 U.S. 117, 140 (1973) (upholding state policy absent conflict with federal scheme). For some courts, even where the federal act is pervasive, local regulation is permitted. *See* Huron Portland Cement Co. v. City of Detroit, 362 U.S. 440, 447 (1960) (holding that the fact that steam vessels were federally licensed to operate in navigable waters did not preclude the city from enforcing as to such vessels its local smoke abatement ordinance).

493. *E.g.*, Ark. Power & Light Co. v. Fed. Power Comm'n, 368 F.2d 376, 384 (8th Cir. 1966) (stating that federal regulation of sales for resale under Section 201 of the Federal Power Act precludes concurrent state jurisdiction); Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 967 (1986) (holding that the North Carolina Utilities Commission action in allocating more low-cost "entitlement power" than the amount allocated by the FERC in a wholesale rate-making proceeding was preempted by federal law); *In re* New England Power Co., 424 A.2d 807, 812 (N.H. 1980) (stating that "Congress clearly expressed an intention to preempt the field of regulation of rates charged in the interstate transmission of electricity").

494. *In re* Sinclair Mach. Prods., Inc., 498 A.2d 696, 699 (N.H. 1985).

495. Fed. Power Comm'n v. S. Cal. Edison Co., 376 U.S. 205, 216 (1964) (holding that Congress, in enacting the Federal Power Act, intended to vest exclusive jurisdiction in the FERC to regulate interstate wholesale utility rates);. Narragansett Elec. Co., v. Burke, 381 A.2d 1358, 1361 (R.I. 1977) (recognizing federal preemption of state discretion on retail rate passthrough of wholesale rated established pursuant to federal jurisdiction); Spence v. Smyth, 686 P.2d 597, 600

The Supreme Court in 1986 and again in 1988 upheld the filed-rate doctrine.[496] The filed-rate doctrine extends to non-rate matters as well.[497] States, whether regulating QFs, independent power projects, or public utilities, must defer to any validly exercised FERC regulation.

According to the U.S. Supreme Court, "a federal agency acting within the scope of its congressionally delegated authority may preempt state regulation" and otherwise negate state and local laws.[498] The Federal Power Act precludes all state regulation of interstate determination reserved exclusively to federal authority, as articulated by the U.S. Supreme Court in *FERC v. Mississippi*.[499]

To what degree can state authority control power transactions and swaps in the deregulated power market? It is clear that the state can regulate non-price aspects of the power sale market within state boundaries.[500] This discretion covers supply planning and energy conservation elements of the resource portfolio. The U.S. Supreme Court has held that power needs, economies of scale, feasibility determina-

(Wyo. 1984) (relying on *N. States Power Co. v. Hagen*, 314 N.W.2d 32, 38 (N.D. 1981) (stating that the North Dakota Public Service Commission has no direct jurisdiction over interstate wholesale rates)). A state court in Pennsylvania announced the so-called "Pike County" exception, allowing states to review the prudence of utility wholesale purchases or allocations and deny passthrough of FERC-approved wholesale costs. Pike County Light & Power Co. v. Pa. Pub. Util. Comm'n, 465 A.2d 735, 738 (Pa. 1983) (holding that nothing in the federal legislation preempts the PUC's authority to determine the reasonableness of a utility company's claimed expenses).

496. Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 963 (1986) ("This Court has held that the filed rate doctrine applies not only to the federal-court review at issue in Montana-Dakota, but also to decisions of state courts."); Miss. Power & Light Co. v. Mississippi *ex rel*. Moore, 487 U.S. 354, 371-72 (1988) (holding that filed rate doctrine applies without exception to state regulation of interstate holding companies). The *Mississippi* decision casts some doubt on the vitality of the Pike County exception because it preempts a state prudency determination on nuclear facility cost allocation to a subsidiary of an integrated multistate holding company, even though FERC did not engage in such a prudency determination. The *Mississippi* decision may be factually limited to the situation of multistate holding companies.

497. N. Natural Gas Co. v. Kan. Corp. Comm'n, 372 U.S. 84, 90-91 (1963) (extending the filed rate doctrine generally to include most aspects of federal-state utility regulation); Nantahala, 476 U.S. at 966-67 (stating that the filed rate doctrine is not limited to "rates" per se: "our inquiry is not at an end because the orders do not deal in terms of prices or volumes of purchases.")

498. La. Pub. Serv. Comm'n v. FCC, 476 U.S. 355, 369 (1986).

499. F.E.R.C. v. Mississippi, 456 U.S. 742, 765 (1982) (holding that it raises no problem when the two challenged Titles simply condition continued state involvement in a preemptible area on the consideration of federal proposals).

500. *See* Pac. Gas & Elec. Co. v. Cal. Energy Res. & Dev. Comm'n, 461 U.S. 190, 205 (1983) ("[T]he States retain their traditional responsibility in the field of regulating electrical utilities for determining questions of need, reliability, cost and other related state concerns.").

tions, and services are traditionally areas of state regulation.[501] Within this general authority, states have regulated what can be sited, where they can be sited, controlling environmental standards of plant operation, and the mix of demand-side and supply-side resources.

VII. CONCLUSION

"It took me four days
To hitchhike from Saginaw
I've come to look for [Mid]America[n]"[502]

It is an odd journey to look for *MidAmerican*. Initially, the Iowa courts ruled against Iowa, finding that state authority was federally preempted. Thereafter, FERC ruled against the assertion of its federal jurisdiction, thereby upholding one of the most important renewable energy policies in the country.[503] This policy has now swept into thirty-eight states, and is the most potent renewable energy subsidy in the nation.[504]

On the surface, this is a classic battle between federal and state authority over different aspects of electric power transactions. The federal government regulates all wholesale power sales, transactions in interstate commerce, and transmission of power. The states regulate retail sales of power and basic terms of provision of retail service.

At what point does net metering and billing involve the sale of electricity? The amount of power that can be transferred is a function of state laws and regulations limiting type, size, and generator source. There is no doubt that power physically is transferred to the local utility, often at times when it does not wish to take the power, cannot use the power, and/or must ground or dispose of the power. An actual physical transfer or exchange of generated electrons and electric current from the generator to the utility occurs at the discretion of the generator. The utility takes title, pays for the electrons (or nets them against others sold in the opposite direction to the generator), commingles the electrons in its system, and resells them to other third parties or disposes of them as it can.

Whether one deems electricity to be matter or energy, both a physical and legal transfer has occurred having all the attributes of a

501. Pac. Gas & Elec. Co. v. Cal. Energy Res. & Dev. Comm'n, 461 U.S. 190, 205 (1983).

502. Paul Simon, *America*, *on* BOOKENDS (Columbia Records 1967) (with modification).

503. *See supra*, Section II.

504. MARK BOLLINGER, ET AL., CLEAN ENERGY FUNDS: AN OVERVIEW OF STATE SUPPORT FOR RENEWABLE ENERGY vii (April 2001), *available at* http://eetd.lbl.gov/ea/EMS/reports/47705.pdf.

legal transfer in fee simple. Given that a contract or tariff amount is required to be paid, netted, or bartered by the utility for such power, this would seem to resemble a sale of either goods or services (depending upon which a particular state deems electricity to be).[505] When physical, legal, and financial transfer occurs, a "sale" occurs under analogous precedent and definitions of "sale" provided by the U.C.C., the general common law applied to services, and the Federal Power Act. There also is no doubt that the transaction in dispute occurs at the wholesale level, although it is netted against a retail sale.

However, FERC took a contrary position in *MidAmerican*, holding that no sale technically occurs. Without a wholesale sale, FERC does not have jurisdiction. In essence, FERC held states could not recognize as a transaction what occurs on an instantaneous, hourly, daily, or even weekly physical basis. Rather, it ruled that it is within state authority only to recognize, through a single or dual meter(s), once per billing period (typically monthly or quarterly), the net result of the transfer of power to and from a distributed generator and a local utility as a positive or negative retail sale. In other words, it is legally permissible to take a snapshot on periodic occasion of the net transactions between these two entities, and treat these snapshots as the only point of "sale." Put in proverbial form, if an electron is transferred and no one records it, has it really been transferred? The peculiar element in this holding is that FERC allows states to make the "netting" decision, which at its core is a determination to recharacterize instantaneous wholesale sales (FERC jurisdiction) as retail sales (state jurisdiction). If FERC announced this in a generic rulemaking, this would be understandable policy. To do so on the *MidAmerican* facts is awkward, at best.

FERC embeds the above proverb in its *MidAmerican* decision in a leap of faith from a supposed springboard of precedent that does not exist. It relies on precedent that does not support the general propositions for which it is cited, and does not in any fashion address net metering. Analyzing these decisions upon which FERC directly relies in *MidAmerican*, as well as their own respective precedent, lays even less foundation for the FERC decision. In fact, two decades of FERC and federal court precedent prior to *MidAmerican* seems to prescribe to the contrary; that states cannot cause a utility to take

505. For a discussion of the goods versus services distinction, *see* FERREY, *supra* note 53, § 10:76; FERREY, *supra* note 375, Ch. 12.

power at the retail rate, which is several times more costly to the utility than the wholesale.

Most of the entities now allowed by the thirty-eight states to engage in net metering, are or could be QFs if they choose to certify their projects, and are functionally equivalent to QFs in size, technology, and sale of output to the utility. FERC has exclusive jurisdiction over all wholesale transactions, whether by QFs under PURPA, or by independent power projects under the Federal Power Act. Two decades of precedent regarding renewable energy projects selling power to their utilities was created around QFs under the federal PURPA statute and applied to any entities making a wholesale transaction in a deregulated setting. The precedent suggests that a "sale" occurs in a power exchange to a utility.

That said, there are various rationales to support renewable and decentralized power at the state level. FERC could have taken a more straightforward position and announced via a generic rulemaking that it was choosing to forge or clarify new metering policy. It has done this recently in rulemakings that establish a variety of new paradigms for restructuring and deregulating the electric power industry.[506] This would have been a more transparent and less confusing approach. To the contrary, FERC stretched precedent beyond its obvious application to support a contrived conclusion. Ultimately, this will lead to more confusion and less precision, and perhaps reversal in a case with different facts, undercutting continuity of FERC decisions in the federal courts.

Net metering and billing policy is the most important of four national policies supporting the renewable energy industry initiatives in the United States.[507] In addition to net metering and billing, more than a dozen states, among the approximately twenty states that have deregulated their electric power sectors, have elected to establish renewable portfolio standards and/or system benefit charges that support renewable energy trust funds.[508] These two programs force retail electric suppliers to include a proportion of renewable energy in their supply mixes, and directly subsidize and underwrite renewable energy projects at the state level, respectively.[509] The fourth alternative policy is the exemption of self-generation and cogeneration from so-called

506. *Id.*

507. *See generally* BOLLINGER, supra note 504 (surveying state action on renewable energy sources).

508. See FERREY, *supra* note 53 §§ 10:95, 10.96.

509. *Id*.

"exit fees" in many of the states.[510] This provides a regulatory and financial advantage to renewable energy or cogeneration projects that seek to self-generate power.

However, among these four state-level renewable energy policy initiatives, net metering and billing is not only the most pervasive (adopted in thirty-six states) but also provides the most significant financial advantage to generators.[511] Net metering and billing guarantees total electric output sale or netting and resultant revenue for an eligible on-site generator, typically at two-to-four times the wholesale price that it would otherwise receive for output sold to a utility pursuant either to PURPA or the Federal Power Act. This guaranteed net metered revenue stream trumps the impact of a one-time trust fund subsidy, the avoidance of a one-time "exit fee," and the requirement that a small percentage of renewable power be included in each retail supplier's portfolio of power. Net metering and billing immediately and constantly delivers substantially escalated bottom-line power sale revenues directly to the eligible project.

Moreover, net metering implementation is achieved not by raising taxes or creating a new line item charge on the utility bill, but merely by establishing an accounting practice for power producers that is invisible to the typical ratepayer, no doubt accounting for its popularity with state lawmakers. Net metering and billing works by causing the regulated utility to pay or credit more than the established wholesale price for power, even if it does not need power at that time of day. No retail consumer ever sees this transfer payment except the individual customer/generator who benefits from it.

If electricity were any other energy form, such as natural gas or oil, its energy value could be saved and conserved. Oil and gas can be stored in the system without significant diminution. However, electricity is a unique energy form: It cannot be stored or conserved with any efficiency. Therefore, electricity has substantially different value at different hours of the day, different seasons of the year, and at different places in the utility system.

Contrary to this physical reality, net metering and billing treats all power as being tangibly storable and having equal value, when in fact it is not and does not. By ignoring interim actual physical transfers of power occurring at all the minutes and hours of the month, and recognizing only the net balance of the transactions at the end of the

510. Ferrey, *supra* note 453*, 136*-38.

511. BOLLINGER, *supra* note 504, at 45.

month or quarter, net metering assumes all electricity generated and transmitted has equal value. This is not accurate at the wholesale level, it is not the case with power trading, and it is not the case in those twenty states where retail competition has been promoted with deregulated competitive retail markets. In deregulated states, power is differentially valued and priced each hour of each day of the year. The market and regulatory reality is contrary to the *MidAmerican* premise.

It is possible even to "game" the system with net metering—selling power to the utility at the netted average retail price in off-peak late evening hours when the customer/generator has no need for the power (because the lights are off or the factory is not running a working shift) and the utility has surplus power. To the extent that power is taken from the utility at average price during peak hours when most factories operate and when most residential and commercial consumption occurs, the customer is able to buy below actual value and sell higher than actual value in the market. Other utility ratepayers will be left to make up the revenue deficit that occurs.

Having said all of this, significant renewable subsidies are an important, and many would say critical, bridge to a renewable energy future. Only with these subsidies can certain smaller scale technologies at distributed locations become viable. As long as the fragile *MidAmerican* decision prevails against subsequent attack, the net impact on society may be positive, as America transitions to renewable resources over the next generations. However, FERC has created a policy by a solitary case decision, relying on precedent that cannot withstand scrutiny. Such a policy would most appropriately be fostered by a rulemaking, taking notice and comment, and announcing policy.