Cogeneration—The Small Facility Perspective in Minnesota

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COGENERATION—THE SMALL FACILITY PERSPECTIVE IN MINNESOTA

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I. INTRODUCTION ....................................... 477

II. SMALL FACILITY CONCERNS .................... 484
   A. Purchase Rate .................................. 484
   B. Utility Interconnection Tariff Filings ....... 487
   C. Qualifying Facility Interconnection Plans .... 489
   D. Interconnection Costs .......................... 490
   E. Written Contract ............................... 491
      2. Maintenance, Inspection, and Repair ....... 493
      3. Liability Insurance ........................... 493
      4. Indemnity Agreements ........................ 494
      5. System Emergencies .......................... 495
      6. Termination Notice ........................... 495
   F. Metering ....................................... 496
   G. Lockable Disconnect ............................ 497
   H. Safety, Technical, and Operating Requirements .. 498

III. CONCLUSION ...................................... 499

I. INTRODUCTION

The oil crisis of the 1970’s forced the United States to reduce its dependence on fossil fuels. As a result, public interest and investment1 increased in alternative energy sources2 such as cogener-

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1. See Diamond, Cogeneration Jarsthe Power Industry, N.Y. Times, June 10, 1984, § 3, at 28, col. 3. “It was only after the skyrocketing fuel prices of the 1970’s began to cut into profits that industry began to investigate the virtues of conservation and cogeneration.” Id.
ators and small power production facilities. Currently five percent of all electricity used in the United States comes from cogeneration. Commentators predict that cogeneration will produce fifteen percent of the nation's power by the year 2000. In Minnesota, the target supply for alternative energy development is expected to reach forty percent of end use demand by the end of the century. New tax credits have benefited cogeneration and small power production facilities, but use of these alternative energy sources has only recently become economically viable.

Public utility laws prevent nonutility generating facilities such as cogeneration plants from directly retailing their excess power. Complicated public utility regulatory and ratemaking laws and the necessity of obtaining the required public franchises make cogeneration and distribution of power difficult.


3. Cogeneration is the concurrent production of any two forms of energy, most commonly electricity and process steam. Useful heat and power are produced together "by the sequential use of energy from one fuel source—the reject heat of one process becomes the energy input into a subsequent process." RESOURCE DYNAMICS CORPORATION, *STATE RULEMAKING AND UTILITY PRICING FOR COGENERATION* 1 (1983); see also Cross, *Cogeneration: Its Potential and Incentives for Development*, 3 HARV. ENVTL. L. REV. 236, 236 & n.2 (1979) ( cogeneration conserves energy by increasing fuel-use efficiency); Diamond, supra note 1, at 1 (discussing the increased use of cogeneration by industries).

4. Small power production facilities are small facilities which employ renewable resources such as solar energy, hydroelectric energy, wind energy, geothermal energy, or biomass or waste as a primary fuel. Hamilton, *Standard Contracts and Prices for Small Power Producers*, 11 WM. MITCHELL L. REV. 421 (1985).

5. Diamond, supra note 1, at 1. Diamond predicts that cogeneration will produce seven percent of the nation's electricity in 1984. Cogeneration is also likely to provide "a significant part of our electric power in the future." Id.

6. Id. This amount of power is enough to meet the needs of all of New England, including New York. This is more than is currently produced from nuclear power. Id.

7. 3 MINNESOTA ENERGY AGENCY, *MINNESOTA ENERGY REVIEW, DRAFT 1980 ENERGY POLICY AND CONSERVATION REPORT* 10 (executive summary 1980). A breakdown of the targets of various alternative energy resources is as follows: direct solar energy—8.5%; wind—2.1%; hydro—0.4%; crop residues—6.5%; animal wastes—0.3%; special energy crops including peat—17.9%; urban wastes—0.4%; and district heating—4.2%. Id. "These alternatives could replace 70% of our heating fuel oils, 30% of our gasoline and 39% of our conventional electricity generated by 2000." Id.


some electric utilities are unwilling to encourage the development of competing energy alternatives.\(^9\) Until recently, even if a cogenerator which produced significant quantities of power did manage to sell its excess capacity to a utility, the cogenerator remained generally captive to one particular electric utility and, in some cases, subject to utility-dictated price terms.\(^11\) This reluctance on the part of the utilities to purchase power from the smaller facilities continued to discourage development of cogeneration and renewable energy sources.

In an effort to overcome these difficulties and encourage the use of alternative power sources, Congress passed the Public Utility Regulatory Policies Act of 1978 (PURPA).\(^12\) Section 210 of PURPA, and the regulations of the Federal Energy Regulatory Commission (FERC) implementing PURPA\(^13\) provide the means for cogenerators and small power producers to put their excess power to use.\(^14\) In 1981, the Minnesota Legislature adopted the

\(^9\) Id. at 179-82; see also Cogeneration: Regulation and Economics, 2 WM. MITCHELL ENVTL. L. J. 89, 104-05 (1984) (footnote omitted) [hereinafter cited as Cogeneration].

\(^10\) With the advent of the energy crisis, alternatives to the conventional sources of energy were explored. The established electric utilities had created several institutional barriers to the development of any alternatives. One of these barriers was the regulatory system. Id. at 100.

\(^11\) Id. at 100. One problem is that the utilities do not want to purchase alternative energy power because only small quantities are yielded. Id.


\(^14\) PURPA relieves qualifying facilities (QFs) from treatment as public utilities and provides for interconnection to public utility systems. 16 U.S.C. § 824a-3 (1982). PURPA also requires the purchase of excess power by the connecting public utility or the "wheeling" of that power by the utility to another purchasing utility. This legislation assures the interconnected QF that necessary supportive back-up and emergency power will be supplied by the utility. Id.

Although PURPA and its regulations fail to permit a QF to make sales for purposes other than resale, Id. § 824a-3(a), they do provide a market for excess power generated by QFs. PURPA requires that the purchase rate be "just and reasonable to the electric con-
Minnesota Cogeneration and Small Power Production Act (MCSPPA) to implement PURPA and the FERC rules. The Minnesota Legislature stated MCSPPA's purpose more forcefully than Congress did in section 2601 of PURPA: MCSPPA is in-

sumers of the electric utility and in the public interest” and not “discriminate against qualifying facilities.’’ Id. § 824a-3(b). More specifically, PURPA mandates that the rates set by the FERC rules not exceed the incremental cost to the utility of alternative electric energy. Id. Incremental costs are the costs to the electric utility of the energy which, but for the purchase from the QF, the utility would generate or purchase from another source. Id. § 834a-3(d). Applying marginal cost principles, the upper limit of purchase rate equals the cost of the next unit or units of power which the utility would be required to produce or buy from other sources in the absence of the QF’s power.

PURPA provided the framework for FERC to adopt rules to encourage cogeneration and small power production, and for states to implement PURPA and the FERC rules. See Crespi, Marginal Cost-of-Service Studies: Some Practical Difficulties, PUB. UTIL. FORT., Dec. 4, 1980, at 19; Radford, Marginal Cost Pricing Considered in Recent Electric Rate Cases, PUB. UTIL. FORT., Oct. 9, 1980, at 49. As a result of PURPA, the technology of cogeneration and small power production progressed.

15. Act of May 19, 1981, ch. 237, 1981 Minn. Laws 1022-24 (codified at MINN. STAT. ch. 216B (Supp. 1983)). The Minnesota Legislature recognized the immediate interest in small farm and homestead power production units. Thus, the MCSPPA focuses on QFs having less than 40 kW, and provides those customers certain benefits. MINN. STAT. § 216B.164, subd. 3 (Supp. 1983).


tended "to give the maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayers and the public." Uniform buy-back and purchase rate measures now require all Minnesota utilities, including cooperatives and municipal electric companies, to buy cogenerators' excess power and feed it back into the system.

The MCSPPA affects not only cogenerators and small power producers, but also the public utilities, their ratepayers and in-

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17. Public utility means "persons, corporations or other legal entities . . . operating, maintaining, or controlling in this state equipment or facilities for furnishing at retail natural, manufactured or mixed gas or electric service to or for the public or engaged in the production and retail sale thereof." MINN. STAT. § 216B.164, subd. 2 (Supp. 1983).

18. The original 1981 Minnesota legislation subjected cooperatives and municipals to the cogeneration and small power production provisions only when an interconnection with a QF already existed. Act of May 19, 1981, ch. 237, § 1, subd. 2, 1981 Minn. Laws 1023 (codified at MINN. STAT. § 216B.164, subd. 2 (Supp. 1983)). Except in specific situations or upon petition, cooperative and municipal utilities are deemed to be self-regulating since they are owned and operated by their customers, their members or their citizens. See MINN. STAT. §216B.01 (1982). In 1983, the Minnesota Legislature amended the MCSPPA to make it and the MPUC rules apply to cooperatives and municipals, without regard to whether an interconnection had yet been made. Act of June 8, 1983, ch. 301, § 166, 1983 Minn. Laws 1678 (codified at MINN. STAT. § 216B.164, subd. 2 (Supp. 1983)). The 1983 amendment did, however, permit municipals the opportunity to remain self-governing and free of MPUC control by allowing municipals to adopt their own cogeneration and small power production rules. These rules, however, must be consistent with the MPUC rules. See id. § 171, subd. 9 (codified at MINN. STAT. § 216B.164, subd. 9 (Supp. 1983)).

19. MINN. STAT. § 216B.164, subd. 8 (Supp. 1983).

20. Testimony of QF owners revealed their perception that many utilities have discouraged interconnection of QFs. In the initial MPUC rules hearings in 1982, 134 public witnesses appeared and 119 written exhibits were received from members of the public. In re Proposed Adoption of New Rules of the Minnesota Public Utilities Commission Governing Cogeneration and Small Power Production, Report of the Hearing Examiner, No. PUC-82-063-BC, 1 (Minn. Pub. Util. Comm'n Dec. 30, 1982) [hereinafter cited as 1982 Report of Hearing Examiner]. This report is 76 pages long and includes findings and conclusions derived from thousands of pages of exhibits and transcripts. The testimony includes repeated references to the public perception that utilities resisted the interconnection of small QFs, particularly wind generators. See, e.g., id. at 36 (utilities use unreasonable insurance requirements to discourage cogenerators and small producers). The utilities stated that they supported rules encouraging development of alternative energy sources, but that the proposed rules granted undue preferential treatment to QFs. See In re Proposed Adoption of Rules of the Minnesota Public Utilities Commission Governing Cogeneration and Small Power Production, Comments of Northern States Power Company, No. E-999/R-80-560, PUC-82-063-BC, at 1 (Minn. Pub. Util. Comm'n July 1982); In re Proposed Rules Governing Cogeneration and Small Power Production, Testimony of Dennis R. Eicher, Vice-President, Power System Engineering, Inc., on behalf of the Minnesota Rural Electric Association, No. E-999/R-80-560, at 2 (Minn. Pub. Util. Comm'n May 1, 1982). Mr. Eicher testified that the Association was in general agreement with the proposed rules, but that the Association had several concerns. The Association demanded
vestors, and the regulations in every jurisdiction within which each utility operates. The competing interests of all parties must be accommodated, while serving the basic power conservation purposes of PURPA. The MCSPPA distinguishes between qualifying facilities (QFs) of less than forty kilowatts and those of greater capacity.

Promulgation of adequate safety standards and requirements to insure safe interconnections with QFs, QF output characteristics sufficient to maintain quality service to other member-consumers, and incentive payments not to exceed the true avoided cost so that other member rate-payers are not forced to subsidize the QFs. Id.; see also In re Proposed Adoption of Rules of the Minnesota Public Utilities Commission Governing Cogeneration and Small Power Production, Preliminary Statement of the Minnesota Municipal Utilities Association, No. E-999/R-80-560, PUC-82-063-BC, at 2 (Minn. Pub. Util. Comm'n Sept. 7, 1982) (assertion that proposed rules, absent revisions, do not meet the substantive standards required of agency rulemaking).

Since most, if not all, of the QFs represented in the hearings were "small" power producers, it is evident that utilities in general have not as yet fully taken into account the statutory policy or the limited impact of each QF upon the utility system. In extreme cases, utilities have demanded a FERC order prior to interconnection. See American Paper Inst. v. American Elec. Power Serv. Corp., 103 S. Ct. 1921, 1931-32 (1983) (upholding FERC rule requiring utilities to interconnect without an individual FERC order upon each application for interconnection). Minnesota statutory law requires each utility to interconnect with any QF offering to provide energy. Act of June 8, 1983, ch. 301, § 170, 1983 Minn. Laws 1558, 1680 (current version at MINN. STAT. § 216B.164, subd. 8(a) (Supp. 1983)). Conceivably, arguments of preemption by the federal legislation may still be raised, but utilities covered by the Minnesota statute are directly and specifically required to interconnect. Id.

21. See MINN. STAT. § 216B.164, subd. 2 (Supp. 1983); see also 16 U.S.C. § 2601 (1982). PURPA defines an electric utility broadly as "any person, State agency, or Federal agency, which sells electric energy." Id. § 2602, subd. 4.

22. The interests of both the small facilities and the ratepaying public are taken into account by the state and federal legislation. Although some utilities still resist interconnection, see supra note 20, small power production and cogeneration are clearly encouraged. MINN. STAT. § 216B.164, subd. 1 (1982). The MCSPPA states even more emphatically than PURPA that Minnesota's policy is to provide the "maximum possible encouragement." Id. Balanced against this incentive, however, is the legislative requirement that the program be "consistent with protection of the ratepayers and the public." Id. PURPA and FERC also carefully provide that the rates for purchase from the QF must be "just and reasonable" to the utility ratepayer and "in the public interest." 16 U.S.C. § 824a-3(b)(1); 18 C.F.R. § 292.304(a)(1)(i). To facilitate encouragement of cogeneration and take the ratepayers' interests into account, the QF is treated as a vendor of power to the utility as is any other wholesaler of power or provider of fuel whose terms of sale to the utility are not directly regulated in the normal regulatory process. By way of contrast, when the utility offers to purchase power from the QF, or provides power to the QF for back-up emergency or other purposes, the utility must not "discriminate" against the QF, a more rigorous test. 16 U.S.C. § 824a-3(b), (c); 18 C.F.R. §§ 292.304(a)(1)(ii), .305(a)(1)(ii). In other words, the utility must deal with the QF on a nondiscriminatory basis, as with other ratepayers. 1982 Report of Hearing Examiner for New Rules, supra note 20, at 11. The foregoing rules are particularly necessary for the small QF, because not having the means to bargain with the utility, it relies on fair dealing by the utility and on the regulatory process for protection.

23. The term "qualifying facility" includes both cogeneration facilities and small
It provides a simplified and standardized approach to dealing with the smaller facilities. QFs of forty kilowatts or more are not so favored and generally are left to their own resources and ingenuity when dealing with the applicable broadly stated standards of the MCSPPA. Since 1980, the MSCPPA and the rules of the Minnesota Public Utilities Commission (MPUC rules) have made it easier for small QFs to interconnect with utilities.

This Article addresses the issues faced by an under-forty kilowatt QF in Minnesota seeking to interconnect with a utility under the MCSPPA. Provisions of the MCSPPA and the MPUC rules...
which in part benefit small cogenerators are analyzed, including the uniform statewide contract, billing rate, and attention to fairness. Next, provisions potentially disadvantageous to under-forty kilowatt cogenerators, such as costs of tariff filings and interconnection and particular clauses in the uniform contract, are discussed. Finally, points that remain open for final resolution, including exact metering configurations, interconnection plans, disconnect equipment, and safety and technical standards, are explored.

II. SMALL FACILITY CONCERNS

A. Purchase Rate

The under-forty kilowatt QF encounters a number of problems when seeking interconnection with a utility in Minnesota. Certainly one of the most obvious and principal concerns is the rate paid by the utility for power delivered by the QF. FERC rules interpret the PURPA incremental cost limitation as establishing a complex avoided cost standard. To encourage cogeneration, utilities must pay the QF their full avoided cost. Payment at the full avoided cost meets the terms of PURPA and is important because it provides a significant incentive for the development of cogeneration and small power production. The full avoided cost rate complies with the statutory requirement that rates be “just and reasonable to the electric consumers of the electric utility and in the public interest.” American Paper Inst., Inc. v. American Elec. Power Serv. Corp., 103 S. Ct. 1921, 1928-30 (1983) (quoting 16 U.S.C. § 824a-3(b) (1982)).

The determination of avoided cost is extremely complicated, beyond the reach of this Article, and beyond the practical reach of any single cogeneration or small power producer of less than 40 kW capacity. For a detailed discussion of avoided costs, see Hamilton, supra note 4, at 447-63. The FERC and MPUC rules readily display the complexity of this determination. The authors doubt that it is worth the time and trouble for utilities to calculate, or rather, estimate an actual avoided cost with respect to the limited numbers of under-40 kW QFs that now exist. Certainly, if the purchase rate for the small QF were made only through a complicated avoided cost estimate, the small QF would lack the
determining this rate, however, puts the QF at a disadvantage. The QF is forced to rely on information filed by the utility to determine rates. Even assuming the reliability of the utility filing, the appraisal of the avoided cost determination is beyond the capacity of the typical small QF owner. Despite attempts by the Minnesota Legislature to simplify the billing procedures, the 1984 revisions of the MPUC rules raise additional concerns.

Prior to 1983, the Minnesota legislation provided for net energy billing for QFs under forty kilowatts, but failed to specify the rate to be paid for power purchased by the utility. The MPUC rules originally provided a purchase rate for QFs of twenty kilowatts or less under net energy billing equal to the lowest block of retail energy rate charged by the utility to customers of the same class. For QFs of more than twenty kilowatts but less than forty kilowatts, the rules fixed the purchase rate by reference to the utility’s estimate of avoided cost, or if the utility in its tariff filing did not include an avoided cost schedule, by reference to the utility’s energy rate schedule. The MPUC, in adopting the 1983 rules, found that their determinations provided a fair approximation of avoided cost. Yet this formulation left QFs between twenty kilowatts and forty kilowatts with no assurance of a sufficiently fair, readily understandable, and verifiable method for determination of the purchase rate if a utility filed rates using its complex determination of avoided costs.

In 1983 the Minnesota Legislature, recognizing the importance of simplicity in encouraging maximum small power production, again addressed the issue. It raised the kilowatt level of small QFs entitled to the benefit of a purchase rate fixed by reference to the utility energy rate schedule to those QFs under forty kilowatts. The legislature also adjusted the net energy billing purchase rate, deemed by the MPUC to be an approximation of

resources to challenge the utility estimate, forcing it to accept whatever the utility offered. See 18 C.F.R. § 292.304(b)(2) (1984).
31. Id. pt. 3.0456(B)(3)(b), .0456(C) (recodified as MINN. R. pts. 7835.3300, subp. 3 & 7835.3400 (1983)).
34. Id. § 167(c).
avoided cost, to the "average" retail energy rate, rather than the lowest block.\textsuperscript{35}

Small QFs under forty kilowatts may now elect net energy billing. Net energy billing consists of: (1) a netting out of the amount of power drawn from or sent to the utility by a QF, and (2) application of either the utility energy rate to the net power drawn from the utility, or a purchase rate based on net power delivered to the utility equal to the utility's average retail energy rate\textsuperscript{36} for the particular class of customer involved.\textsuperscript{37} Minnesota's net energy billing approach may not eliminate all controversy over the purchase rate to be paid to small QFs under forty kilowatts, but it presents a practical solution for estimation of avoided cost if fairly applied by the utilities. This approach provides under-forty kilowatt QFs, rather than the utility, the option of using the net energy billing rate method.

In 1984, the MPUC departed from the exact terms of the legislative definition of "average retail energy rate" in amending the rules regarding net energy billing charges to QFs under forty kilowatts. Instead of directly averaging the retail energy rates from the utility schedules,\textsuperscript{38} a method readily verifiable by the small QF, the MPUC prescribed that each utility must establish its average retail energy rates for each customer class by tariff. These rates must be equal to "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" for the most recent twelve-month period available before each tariff filing.\textsuperscript{39}

That change by the MPUC on its face complicates the rate pricing structure and precludes QFs from verifying rates. The QF is dependent on information filed by the utility in determining the

\textsuperscript{35} Id. Section 167(c) provides as follows: "[A]verage retail utility energy rate is defined as the average of the retail energy rates, 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." Id.

\textsuperscript{36} A utility in its annual cogeneration-small power production tariff includes a calculation of its "average retail utility energy rate" on the basis of its last available 12 months of power sale receipts and the number of units of power sold, less any fixed charges included in the energy rates. MINN R. pt. 7835.0650 (Supp. 1984). Average retail utility energy rate is defined in Minnesota Rules pt. 7835.0100, subp. 2(a).

\textsuperscript{37} 1981 MINN. LAWS ch. 301, § 167 (codified at MINN. STAT. § 216B.164(3) (Supp. 1983)).

\textsuperscript{38} The direct averaging is exclusive of special rates based on income, age, or energy conservation. MINN. R. pt. 7835.0100, subp. (2)(a) (Supp. 1984).

\textsuperscript{39} Id.
rates, but that information should be readily verifiable in the event of a dispute, even though verification by the QF will be more costly and time-consuming. The administrative law judge, and in turn the MPUC in acting upon the 1984 rules amendments, found the rules' definition appropriate although deviant from the exact legislative language. The administrative law judge determined that the MPUC definition is a fair, reasonable, and legitimate application of state law consistent with the full avoided cost limitation, which avoids federal preemption and attendant constitutional invalidity. The judge stated that "the monthly service charge and demand charge are generally taken to be fixed, while the energy charge varies with the amount of energy consumed. . . . When such fixed charges are subtracted, the result is an appropriate proxy for a utility's avoided cost." The MPUC adopted the amendments based upon the administrative law judge's finding.

Arguably, the administrative law judge failed to take marginal cost factors and the impact of averaging into account in his assumption that the payment of purchase rates derived from the full retail rate schedule would exceed "full avoided cost." Nevertheless, the net energy billing rates derived under the MPUC definitions and the amended rules may be workable and provide a test to determine whether the rates will provide sufficient financial incentive to encourage small power production.

B. Utility Interconnection Tariff Filings

The MPUC rules require electric utilities\textsuperscript{43} to file an annual cogeneration and small power production interconnection tariff.\textsuperscript{44} Future QF owners should be aware of information included in the

\textsuperscript{40} 1984 Report of Administrative Law Judge, supra note 15, at 6-10; see also Consolidated Edison Co. v. Public Serv. Comm'n, 53 U.S.L.W. 2251, 2252 (N.Y. App. Div. Oct. 25, 1984) (PURPA does not preempt state statute which requires utilities to purchase power at a rate that exceeds maximum rate under PURPA).


\textsuperscript{42} 1984 Order Adopting Amended Rules, supra note 15, at 3-13.

\textsuperscript{43} Municipal utilities are covered by the MPUC rules, MINN. R. pt. 7835.0100, subp. 24(A), and may remain self-governing if consistent rules are adopted. Id. pt. 7835.0100, subp. 24(B). Most municipal utilities' rules incorporate the subject matter required in utility tariff filings. Thus far, a few municipal utilities have accepted the MPUC rules. The authors' review of filings with the MPUC in late July, 1984, prior to the recently adopted rules, indicates that many municipals filed tariffs. Most municipals stated in their filings that they are not presently connected with any QFs, and therefore will comply with the rules when and if they become interconnected.

\textsuperscript{44} MINN. R. pt. 7835.0300 (Supp. 1984). A tariff is a listing or scale of rates or
Utilities file tariffs without notice to the QF or prospective owners.

The tariff contains detailed information relating to utility interconnection rules. The tariff must include schedules determining the purchase rates for power from the QF. This schedule includes a showing of the average retail utility energy rate for net energy billing purposes, and the utility’s claimed avoided cost data for other methods of billing. The tariff must also set forth the utility’s interconnection requirements, including safety standards, required operating procedures, functions to be performed by control and protective apparatus, and the information that the utility must provide to both prospective and existing QFs.

Inherent difficulties exist in the use of tariff filings which in effect expand the requirements QFs must meet to comply with the MPUC rules. First, no public or evidentiary hearings occur before the interconnection tariff takes effect. Utilities file the interconnection tariff with the commission without notice to QFs or prospective QFs under the procedural MPUC rules.

Second, even if the MPUC rules did provide for public or evidentiary hearings, the complication and cost for the QF or prospective QF to intervene in the interconnection tariff filing exceeds the means of the normal QF under forty kilowatts. For example, the cost of a good quality ten to seventeen kilowatt wind generator is approximately $25,000 to $32,000. The investment of legal and expert fees to question a particular utility filing would be out of proportion to the amount invested by an individual small owner.

Finally, future QF owners may not be present or even involved at the time of the filing and effective date of the utility tariff. The prospective owner thus will not realize the significance of vital interconnection tariff terms, or be cognizant of common interconnection problems. Few QFs are presently interconnected with charges for a public utility. WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 2341 (3d ed. 1971).

46. See supra note 28 and accompanying text.
48. Id. pt. 7835.0800.
50. Hamilton, supra note 4, at 437.
utilities, yet the tariff filing is most significant to future QFs because it governs interconnection.

Public regulatory agencies must review tariff filings before the tariff is accepted and placed in effect. The reviewing agency should, in part, act as a proxy for prospective QF owners who may be affected by the tariff. The Minnesota Department of Public Service has conducted such a review. The department has also informally requested comments concerning its review procedure and meetings or hearings with utility and industry representatives are anticipated. Presumably, the department will promulgate guidelines requiring a consistent format for tariff filings. Unfortunately, in the meantime QFs and prospective QFs face tariff filings and interconnection requirements which represent the unilateral position of the utility involved.

C. Qualifying Facility Interconnection Plans

The MPUC rules permit the utility to require the QF to apply in advance for interconnection and furnish an interconnection plan. The result is that QFs must incur additional delay and costs in order to meet these administrative demands. If a utility requires an interconnection plan, the plan may include only the technical specifications of the cogeneration or small power production equipment, a proposed date of interconnection, and projection of net output or consumption by the QF “when available.”

The utilities maintain that the interconnection application assures that the QF follows proper technical and safety procedures before

52. This observation of the authors is based on a review of all tariff filings with the MPUC in late July, 1984.
53. The Minnesota Department of Public Service studied the tariff filings of several utilities. Summary of Department of Public Safety Review Schedules C, D & E Submittals by Qualifying Cogeneration Facilities to Public Utilities Commission (Discussion Draft, undated) [hereinafter cited as Summary of DPS Review]. This study reflects concerns of the Department of Public Safety concerning compliance and problems with tariff filing requirements. The study is based on a review of the tariff filings of the approximately 175 utilities operating in Minnesota, and is “presented to show specific concerns of the Department and emphasize the need for a higher percentage of provisions expressed in common language among the utilities.” Id. at 2.
55. MINN. R. pts. 7835.2900, 4800 (1983). The utility may require the interconnection plan from the QF not more than 30 days before interconnection. Id. pt. 7835.4800.
56. Id. pt. 7835.2900. No other information may be required. Id.
beginning service and operation in parallel with the utility system.\textsuperscript{57}

The MPUC rules, however, fail to prescribe the time the utility has to respond to the interconnection plan, or to delineate the extent of the technical information the utility may demand. Furthermore, the required plan discriminates against small energy producers. QFs coming on line affect the utility little more than an ordinary customer adding load to the utility system. Requiring an interconnection plan is therefore unnecessary and discriminatory because similar plans are not required of those ordinary customers.

Finally, the delay, complication, and expense presented by the interconnection plan may discourage interconnection of small QFs. As a practical matter, however, absent MPUC rules establishing application requirements, the QF owner need only object if the utility is excessive or unreasonable in its application demands.

D. Interconnection Costs

The MPUC rules, consistent with the FERC rules, require the QF to pay net costs incurred in the interconnection.\textsuperscript{58} This is a major concern for QFs because costly or unreasonable utility charges discourage alternative energy production.\textsuperscript{59} Net costs are those in excess of costs otherwise incurred by the utility in providing power service to the same class of customer in the absence of interconnection.\textsuperscript{60} The term "interconnection costs" means the "reasonable costs of connection, switching, metering, transmission, distribution, safety provisions, and administrative costs incurred by the utility that are directly related to installing and maintaining the physical facilities and necessary to permit interconnected operations with a qualifying facility."\textsuperscript{61} Unless the utility and the QF agree to other arrangements, payment must be made at the


\textsuperscript{59} The Minnesota Department of Public Service recognizes this concern. Cf Summary of DPS Review, supra note 53, at 2. There are over 175 various utility interconnection provisions with which QFs must deal. Id. "This presents a significant amount of confusion to the QF and cogeneration industry which could actually discourage cogeneration." Id.

\textsuperscript{60} MINN. R. pt. 7835.0100, subp. 12 (1983).

\textsuperscript{61} Id.
time the costs are incurred by the utility.62

QF owners object to paying interconnection costs because utilities may charge for unnecessary equipment, engineering, or administrative services.63 Utility charges must be reasonable and relate directly to interconnection.64 Unfortunately, the rules provide little direction as to what is reasonable and necessary. In addition, the tariff filings largely leave the determination of interconnection costs to be made by the utilities on a case-by-case basis, whereas uniform provisions are superior when dealing with a "single basic need."65

E. Written Contract

Each QF seeking interconnection must enter into a written contract with a utility.66 The rules specify the form of the uniform statewide contract for under-forty kilowatt QFs.67 The contract details the commitment of the QF to sell power to the utility and the obligation of the utility to buy under a purchase rate selected by the QF.68 The MPUC rules give the basic form of the contract, yet permit considerable variety. The utility may incorporate its unique technical and engineering requirements, operating standards, and guidelines by reference. In addition, the purchase rates and interconnection costs remain distinctive to each utility. The MPUC rules require, however, that the QFs meet the technical

62. Id. pt. 7835.2500.
63. See supra note 59.
64. PURPA and its regulations provide that the interconnection costs shall be nondiscriminatory. 16 U.S.C. § 824a-3(b)(2) (1983); 16 C.F.R. § 292.306 (1984). The Minnesota regulation requires that the costs be reasonable. MINN. R. pt. 7835.0100, subp. 12 (1983). The inclusion of the provision that "costs are considered interconnection costs only to the extent that they exceed the costs the utility would incur in selling electricity to the QF as a nongenerating customer," Id. pt. 7835.0100, subp. 12 (Supp. 1984), serves the purpose of making the rule nondiscriminatory. See supra note 14.
68. See id. pt. 7835.9910, Agreements ¶ 2 (Supp. 1984). The filed rate schedule is included as a part of the contract. Id. The net energy billing rate will be selected by most, if not all, QFs. See supra notes 29-39 and accompanying text. In addition, the QF may elect either simultaneous purchase and sale or time-of-day purchase rates. The time-of-day rates are based on utility avoided cost determinations. See MINN. R. pt. 7835.3500 (1983).
and operating standards for interconnection which the utility has set, as permitted by the rules. The uniform contract also incorporates the requirement that utility terms must be reasonable in their technical and operating specifications for the QF. Several significant contract provisions, derived from other rules, deserve further comment.


The interconnecting QF must comply with the National Electrical Code (NEC), the National Electrical Safety Code (NESC), and all other applicable laws, codes, and ordinances. The NEC basically applies to QF equipment and all other lines and facilities on the QF side of the meter. From the meter to connection with the utility system, the NESC governs. Other laws, codes, and ordinances include local building and zoning codes and any applicable state board of electricity requirements which extend beyond the requirements of the NEC.

These requirements create practical difficulty in some of the utility tariff filings. A number of utilities require that certificates of inspection, confirming compliance with all laws, codes, and ordinances, be delivered by the QF to the utility. These certificates may be impossible to furnish. Local electrical inspectors often inspect only for compliance with the NEC. No systematic governmental inspection presently checks for compliance with the NESC.


73. See, e.g., MINN. R. pts. 7835.6100, .9910, Agreements ¶ 7 (Supp. 1984).

74. But see Summary of DPS Review, supra note 53, at 2-3. "There is no clear provision, consistent among all utilities, for code and inspection requirements. Several require approvals of non-existent entities." Id. at 2.
Inspection certificates may be unavailable, particularly in rural agricultural areas, for compliance with building code and zoning requirements. The QF owner must be alert at the outset of the interconnection negotiation and question the excess nature of any inspection or certificate requirement imposed by the utility.

2. Maintenance, Inspection, and Repair

The MPUC rules require that the QF bear the burden of furnishing, installing, operating, and maintaining in good order and repair all apparatus needed for the proper operation of the QF and its interconnection with the utility. On its face, this requirement appears reasonable, but, relying on this provision, some utilities interject two further requirements for QFs in their tariff filings. First, the utility may assert that larger transformers or other utility equipment are needed because of the particular QF's configuration. QFs vehemently oppose this assertion since under-forty kilowatt QFs have a limited effect upon the utility system.

Second, some utilities demand access to the QF for inspection, including access to portions of the property beyond the meters and point of interconnection. The uniform statewide contract form and the MPUC rules require utility access only if the configuration of the facility prevents disconnection or testing from the utility side of the interconnection. QFs assert that inspections inside the meters at the point of interconnection are unnecessary and subject sophisticated QF equipment to risk of damage by utility personnel. In addition, the privacy rights of QF owners are needlessly violated. Since the utility's only concern is the electrical characteristics of the power being delivered by the QF, the utility need only analyze the power from the utility's side of the interconnection.

3. Liability Insurance

QFs should be aware that utilities may require insurance cover-
age, and may seek to require the QF to name the utility as an additional insured. Once again, the small QF is confronted with costs that may eventually discourage cogeneration. The rules and the interconnection contract permit the utility to require the QF to maintain liability insurance with coverage limits of up to $300,000. The QF may carry higher limits of coverage, but the MPUC rules now prohibit utilities from mandating more than $300,000. The MPUC rules set the $300,000 coverage level based on testimony that such limits are normally available under homeowners coverage without any significant premium increase. No evidence was presented in the rules proceedings to suggest that the utility could be added as an additional insured to homeowners coverage.

The utility is concerned that the QF maintain adequate coverage to protect the utility against liability. The MPUC rules, however, do not require that the utility be added as an additional insured, or that the utility be provided a certificate of insurance, notice of renewal, or amendment of insurance. To require that the utility be named as an additional insured may disrupt the availability of coverage. Yet in some cases, utility efforts requiring certificates and notice provisions are a practical way to evidence maintenance of insurance and may be acceptable if those requirements can be satisfied by the QF without additional charge.

### 4. Indemnity Agreements

Indemnity provisions, required by some utilities, raise concerns for QFs similar to those raised by insurance clauses. The MPUC rules preclude either party from requiring the execution of an indemnity or hold harmless agreement by the other. The MPUC rules state that "nothing in this chapter affects the responsibility,

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85. Some utilities' tariffs include this requirement. See Summary of DPS Review, supra note 53, at Matrix line I, B4-7. The question remains whether naming the utility as an additional insured may disrupt the QF's coverage.
liability, or legal rights of the parties under applicable law or statutes.\textsuperscript{87} The rules also specifically require that the utility remain responsible for its personnel when they enter upon QF property.\textsuperscript{88} Notwithstanding these provisions, some utility tariff filings include QF liability clauses.\textsuperscript{89} The clauses state that the QF shall be liable to the utility for any costs arising out of the interconnection, regardless of the failures, neglect, or power characteristics of the utility.\textsuperscript{90} The alert QF owner should challenge these liability-shifting provisions, because the MPUC rules provide that the parties retain their responsibilities, liabilities, and legal rights under applicable laws and statutes, and neither party may require contractual relief from these obligations.

5. System Emergencies

QFs should be aware that the electric utility may stop sales of electric energy or capacity to the QF under certain circumstances. The utility has the right to cease providing electricity to the QF during system emergencies.\textsuperscript{91} A system emergency encompasses a condition on the utility’s system which is likely to cause a “significant disruption of service to customers or to endanger life or property.”\textsuperscript{92} The utility may also cease purchasing from the QF, with notice as specified in the contract, when necessary for construction, inspection, repair, and installation of equipment or facilities.\textsuperscript{93} Although the ramifications of the right of the utility to cease providing power to the QF are not yet known, the discontinuance of service must not be discriminatory.\textsuperscript{94}

6. Termination Notice

The uniform statewide contract allows either party to terminate

\textsuperscript{87} See id.
\textsuperscript{88} See id. pt. 7835.5400.
\textsuperscript{89} See Summary of DPS Review, supra note 53, at Matrix line VIII, P, Q, T, U, & V.
\textsuperscript{90} But cf Dakota Elec. Ass’n, Farmington, Minn., Cogeneration and Small Power Prod., MPUC Schedule C, at 9, ¶ 2.4 (June 14, 1984) [hereinafter cited as Dakota Elec. Ass’n Tariff]. “The Cooperative does not assume any responsibility for the safety and electrical protection of the Member’s facilities irrespective of the condition of the Cooperative’s facilities. The Cooperative shall not be liable to the Member for any damage to the Member’s facility, including damage caused by disconnection of the QF from the Cooperative’s system by automatic or manual devices or pursuant to the Safety and Operating Standards.” Id.
\textsuperscript{91} MINN. R. pt. 7835.2800 (1983).
\textsuperscript{92} Id. pt. 7835.0100, subp. 15.
\textsuperscript{93} Id. pt. 7835.9910, Agreements ¶ 11.
\textsuperscript{94} Id. pt. 7835.2800.
the contract on thirty days' notice. Yet the MPUC rules do not specify what constitutes default. Thus, it appears that the contract may be terminated at will by either party.

The MPUC rules also provide that contracts between QFs under forty kilowatts and utilities already existing before the effective date of the new MPUC rules may be cancelled and replaced. At the option of either party, the uniform contract may be substituted by giving the other party written notice. "The notice is effective upon the shortest period permitted under the existing contract for termination, but not less than ten nor more than 30 days." It may be argued that this provision unconstitutionally impairs contract rights. Yet, as the administrative law judge determined, "In the instant case, the legitimate policy justifying uniform contractual arrangements between small qualifying facilities and utilities justifies the retroactive application of the rule to pre-existing contracts."

**F. Metering**

Small QFs encounter further costs and uncertainty in undertaking to satisfy the MPUC rules' provisions on metering. Metering by the utility is required for the utility to satisfy the reporting requirements of the rules. The utility will provide the standard meter, or its equivalent, for the measurement of utility service on the same terms as applied to other customers. The QF must pay for a second meter as part of the interconnection costs.

Some metering issues are unresolved. The uniform statewide contract fails to specify the metering configuration. The utility is entitled only to a metering, or determination from metering, of the power delivered by the utility to the QF and the power delivered...
by the QF to the utility.\textsuperscript{103}

Different metering configurations, however, may provide the same results. For example, a standard meter that runs in both directions reads the net power drawn or delivered by the QF. A detent meter only reads in one direction. A detent meter reading the power delivered by the QF to the utility provides sufficient information in conjunction with the standard meter to determine the power delivered by the utility to the QF. This configuration also contains an advantage to the QF: it provides direct reading of the net power delivered to or from the QF during a billing period for net billing purposes. It also avoids the cost to the QF of either acquiring a second detent meter which reads the power delivered by the utility, or adding detent devices to the existing standard meter.

Utilities dispute the accuracy of standard meters, particularly if permitted to run in reverse. Utilities claim that more accurate information can be obtained by the installation of a detent meter to read the power going to the QF from the utility, with a separate detent meter to read the power being delivered by the QF to the utility. Under normal circumstances, however, this type of meter imposes additional expense upon the QF since most utility customers do not have a detent meter.\textsuperscript{104}

Some utilities also assert that a third meter should be required to read the maximum load being served to the QF, since that power will not be represented in the reading of power either drawn or delivered by the QF.\textsuperscript{105} The third meter represents additional costs to the QF, while the intent of the reporting requirements is to measure only utility and facility interaction.\textsuperscript{106} Any additional metering should be at the expense of the utility because the additional meter does not serve the rules' purpose.\textsuperscript{107}

\textbf{G. Lockable Disconnect}

The QF has the responsibility of installing a lockable disconnect which is accessible to the utility for the purpose of isolating the QF from the utility system.\textsuperscript{108} The MPUC rules do not require the QF

\begin{enumerate}
\item[103.] See id. pts. 7835.1400, .2700.
\item[104.] See Summary of DPS Review, supra note 53, at 2.
\item[105.] Mar. 1983 Order Adopting Rules, supra note 15, at 47.
\item[107.] See id. pt. 7835.0200 (such an act would be beyond the scope and purpose of the MPUC rules).
\item[108.] See id. pt. 7835.5200.
\end{enumerate}
to install an automatic disconnect, although this method of disconnection is the most immediate in the event the utility system ceases to operate. This is in part due to the added cost of such a requirement, which does not necessarily result in increased safety.\textsuperscript{109} A few utilities in their tariff filings waive the requirement of a lockable manual disconnect when an acceptable automatic disconnect exists.\textsuperscript{110} Applying the MPUC rules strictly, however, the utility and QF must include the lockable manual disconnect even if they determine that an automatic disconnect is preferable, or risk the possibility that the absence of the lockable manual disconnect may be a source of liability in the case of an accident.

The lockable disconnect must be accessible to and may be locked by the utility.\textsuperscript{111} A double-lock disconnect would be appropriate if the QF desires it,\textsuperscript{112} since the QF may desire to manually disconnect.

\textbf{H. Safety, Technical, and Operating Requirements}

Small QFs may be placed at a disadvantage if the utility mandates excessive requirements concerning various safety standards. The utility may prescribe and include in the contract safety, technical, and operating requirements, including conditions of service.\textsuperscript{113} These prescriptions must be reasonable and related to safety or to avoidance of adverse impact on other customers or the utility service.\textsuperscript{114} The preamble to the uniform contract makes it clear that the utility rules, regulations, and policies imposed on the QF under the uniform contract mean only those applicable to

\textsuperscript{109} Mar. 1983 Order Adopting Rules, \textit{supra} note 15, at 77-80. For QFs possessing only manual disconnects, in the view of the administrative law judge and the MPUC, requiring automatic disconnects would present unreasonable and unnecessary costs because safety would not be significantly increased. Also, the QFs' generating apparatus might be incapable of supporting an automatic disconnect. \textit{Id.} at 79.

\textsuperscript{110} Dakota Elec. Ass'n Tariff, \textit{supra} note 90, at 8-9.

\textsuperscript{111} See \textsc{Minn. R.} pt. 7835.5200 (1983).

\textsuperscript{112} The technical characteristics of the manual disconnect are also significant although not precisely fixed by the MPUC rules. Some very expensive lockable disconnects are available with plexiglass doors which make the disconnect visible at all times. Less expensive devices require the opening of non-transparent doors to view the disconnect. Obviously, the specification by a utility of the most expensive form of device may discourage interconnection.

\textsuperscript{113} \textsc{Minn. R.} pt. 7835.9910, Agreements ¶ 7 (the QF must "conform to the national, state, and local electric and safety codes").

\textsuperscript{114} See \textsc{Minn. Stat.} § 216B.164(1) (Supp. 1984); \textsc{Minn. R.} pt. 7835.0200 (1983) (must provide "maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayers and the public").
technical standards for interconnection authorized by the MPUC.\textsuperscript{115}

Utilities should be precluded from imposing the same technical connection and operating requirements on small QFs as imposed on larger facilities. Assuming that under-forty kilowatt QFs have little or no impact on, and present little or no hazard to, the utility system, the burdensome requirements applied to larger QFs should not be thrust on small QFs. While the Department of Public Service has reviewed utility filings,\textsuperscript{116} each QF owner must itself challenge unreasonable technical, safety, and operating requirements. All technical and operational requirements must, however, be viewed in light of the MPUC rules with respect to maintaining power output,\textsuperscript{117} varying voltage levels,\textsuperscript{118} safety,\textsuperscript{119} separate distribution transformer,\textsuperscript{120} and limiting capacity of single-phase generators.\textsuperscript{121}

The MPUC rules also require that notice of the proposed interconnection be given to telephone utilities and cable television firms,\textsuperscript{122} and that access by the utility for testing be allowed with respect to effects of interconnection upon those communications companies.\textsuperscript{123} This notice is necessary so that coordinated analysis and testing may be conducted.\textsuperscript{124} If a communications facility challenges a QF, the law and rules fail to specify the extent to which the communications facilities have standing to require a QF to prevent an effect on communications. As a practical matter, the impact upon the communications industry of small QFs is negligible.

III. Conclusion

Before formulation and enactment of new state agency rules,
utilities enjoyed a superior bargaining position in dealing with Minnesota cogenerators and small power production facilities. The Minnesota legislation and MPUC rules now grant liberal exemptions from public utility regulations for the interconnection of QFs under forty kilowatts. QF owners may now better appraise what is involved in interconnection of a small facility to a utility, as compared to those larger cogenerators which are dependent on negotiation of a contract and determination of avoided costs.

While the rules primarily protect and encourage the development of alternative energy sources, significant disputes may still arise in the interconnection setting. The primary points remaining for final resolution concern the exact technical and operating standards to be imposed by the utilities on QFs. These differences may be resolved by the accumulation of technical experience as more QFs come into existence. In addition, utilities must make reasonable demands of QFs so that the development of alternative energy sources is given the maximum possible encouragement.