HB

66

<target><bill>HB 66</bill><subject>HB
66</subject><comm>HENE26</comm></target>

REPRESENTATIVE PAUL SEATON

SESSION ADDRESS
State Capitol Building
Juneau, Alaska 99801-1182
(907) 465-2689
Fax: (907) 465-3472
1-800-665-2689

INTERIM ADDRESS
345 W. Sterling Highway
Homer, Alaska 99603
(907) 235-2921
Fax: (907) 235-4008
1-800-665-2689

ALASKA STATE LEGISLATURE
House District 35

Memorandum

From: Representative Paul Seaton
To: House Energy Co-Chair, Representative Charisse Millett
Date: January 30, 2009
RE: HB 66 Net Energy Metering bill hearing request

I respectfully request a hearing for HB 66 Net Energy Metering in the House Energy Committee. HB 66 creates a Net Metering policy for Alaska. Net Metering is a policy that allows a home or business owner to decrease their electric bills through on-site renewable energy generation.

http://www.RepPaulSeaton.com
Email: Rep_Paul_Seaton@legis.state.ak.us

Comments of Peter McKay on HB-66

Heard in the House Special Committee on Energy, Labor, and Commerce March 31, 2009.

I would like to thank Representative Seaton for bringing this bill forward (again). It reflects a lot of effort on his part, and that of his staff especially Louis Flora. The supporting documentation is extensive – and in my opinion - irrefutable. There is no valid reason not to pass this bill. I really appreciate the effort that Representative Seaton's office has taken to contact so many states with net metering and interconnection standards in place to solicit responses that counter the typical arguments against net metering/interconnection that Alaskan utilities have used. Great work!

As much as I support this bill, I urge the Committee to consider an amendment to strike section "G", found on Page 3, Line 25 thru Page 4, Line 1. This "opt-out" provision for smaller utilities is unnecessary. The stability and security of smaller grids is ensured with 1) the small system size limits, and 2) the small (1%) penetration limit for interconnected customer/generator systems. The "opt-out" provisions of section "G" will not pass a legal challenge when a customer/generator seeking to interconnect to a smaller grid is denied and protests that he is being discriminated against because of where he lives, the size of the utility company, or whether his retail electric supplier is organized as a municipal, co-operative etc. Small utilities may only allow a few interconnections to meet the 1% limit – but this should be done on a first-come/first-serve basis throughout the state. This is an issue of fairness and equity.

I strongly support HB-66. I urge the Committee to approve the measure and move it along. This bill is much more comprehensive than HB-31 heard by this committee last week. I use the same recommendation for this bill as I did in testimony last week. **Work cooperatively with the Regulatory Commission of Alaska on these issues.** The RCA Commissioners and Staff are very talented and well informed on this issue. They have worked very hard to progress these standards and have been inclusive in their approach to these issues. The public has been very active in these issues. Please do not let the issue fall between the cracks – saying that it is the RCA's job to move this alone. This year... the Regulatory and Legislative (and perhaps the Executive branch) need to work this thru to completion. Alaska needs Net Metering and Interconnection standards.

Thank you for considering my opinion.

Respectfully

Peter McKay – 55441 Chinook Rd. Kenai, AK 99611

AMENDMENT

OFFERED IN THE HOUSE
TO: HB 66

Page 3, lines 23 and 24

Delete: "an alternative energy system, as that term is defined in AS 46.11.900."

Insert "alternative energy as identified in section 1 of this act."

AMENDMENT

OFFERED IN THE HOUSE
TO: HB 66

Page 2, line 25

Delete: "annual peak energy usage"

Insert: "peak demand"

AMENDMENT

OFFERED IN THE HOUSE
TO: HB 66

Page 2, after line 21:

Insert:

(d) A customer-generator owns the tax credits associated with the equipment and renewable energy credits associated with the electricity it generates.

"Renewable energy credit" is a tradable instrument that includes all renewable and environmental attributes associated with the production of electricity from a renewable energy generation system.

REPRESENTATIVE PAUL SEATON

SESSION ADDRESS
State Capitol Building
Juneau, Alaska 99801-1182
907) 465-2689
Fax: 907) 465-3472
1-800-665-2689

INTERIM ADDRESS
345 W. Sterling Highway
Homer, Alaska 99603
907) 235-2921
Fax: 907) 235-4008
1-800-665-2689

ALASKA STATE LEGISLATURE
House District 35

Sponsor Statement HB 66

HB 66 promotes alternative energy use by establishing a Net Metering policy for Alaskan utilities. Net Metering is the measurement of the difference between electricity purchased from a utility and electricity produced from a customer's private generating equipment. Home and business owners who install renewable energy equipment such as solar panels or windmills get to use their own electricity and will receive a credit for their excess energy generation. The credit is in kilowatt hours and reduces the customers' electrical bill in following months.

This "carry forward" of credits from Alaska renewable energy generation allows the customer to harvest excess energy during peak renewable production times, such as the summer for solar, and benefit from this production during low energy months. A Net Metering policy encourages private investment by allowing customer/generators to calculate the pay-down of their equipment cost through the calculation of their potential annual solar, wind or hydro production.

Alaska utilities also benefit under this legislation. By trading the homeowner a credit for the energy that the homeowner puts onto the grid, the utility does not have to generate more electricity to supply other customers. This can decrease the need for a utility to find new large scale power sources. Carbon dioxide emission reduction is also achieved and net metering can help the utility meet renewable energy standards. It is generally recognized that utilities gain about 10% in sales from distributed generation as there is little line loss to the point of sale.

http://www.RepPaulSeaton.com
Email: Rep.Paul.Seaton@legis.state.ak.us

HB 66 provisions and rationale

- A Net Metering customer may have a renewable energy system size to up to 25kW, but individual utilities may allow systems with a higher kilowatt rating. *Testimony from utilities is that the cost of systems under 25kW and complexity of the interconnection of these systems is much less than larger systems, making it a good break-point.*

- Net Metering participation can reach up to 1% of retail system peak demand before a utility disallows new participants. However, a utility may voluntarily adopt a higher percentage. *A 1% threshold will allow for the growth of renewable generation along the Railbelt, while simultaneously addressing concerns of small utilities that a large renewable producer would come in and negatively impact the grid with excessive power.*

- A utility may limit Net Metering installations due to special circumstances related to engineering constraints on the portions of the distribution system affected by the proposed installation. *This also addresses concerns raised by small utilities.*

- If a customer generates more electricity than they consume, they receive a kilowatt hour credit. Credits roll over from month to month for up to one year. At the end of a year any excess credits are donated to the utility customer base. *Donation of excess credits allows the utility consumer base to directly benefit from net metering customer and eliminates the potential for paperwork from small potentially taxable transactions.*

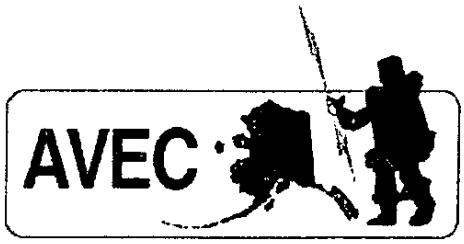
- Customers of a small utility may vote to exempt the utility from the provisions of the bill.

- A default uniform statewide utility interconnection standard is established. *Interconnection standards should be adopted simultaneous with net metering rule. Standardization of clear interconnect standards is an important component of Net Metering.*

- HB 66 prohibits additional fees for Net Metering. *The financial benefits of Net Metering can easily be outweighed by fees and charges, decreasing a customer's ability to amortize the cost of renewable generation equipment.*

- Nothing in HB 66 prohibits a utility from concurrently offering a SNAP program that a customer/generator can choose instead of or in combination with Net Metering. *SNAP is not Net Metering and it would not be precluded under HB 66. If a utility chooses to adopt Sustainable Natural Alternative Program (as offered in Alaska by GVEA and HEA) it is free to offer this in addition to Net Metering.*

- Nothing in HB 66 prohibits a utility and a customer from negotiating an individual power purchase agreement for excess customer generation. *This allows existing and future large scale renewable generation projects to go forward under separate individual agreements with the utility.*



March 31, 2009

Re: Alaska Village Electric Cooperative Testimony re HB 66

Dear Co-Chairs and Members of the House Energy Committee:

HB 66, which would mandate net metering in Alaska, is well intended but is not appropriate in Alaska today.

Why not? First and foremost, because we are a "public power" state. This means that almost all Alaskans who receive power from their serving utilities actually own those utilities. So when a member receives electricity from the utility that he is not paying for (via a "net meter") then all the other members are going to be paying a little more for their electricity, or will receive a little less patronage capital. In other words, the unfunded mandate will be paid for by the remaining customers of the utility.

The next major problem with HB 66 is the figure of 25 kW that was identified as the limit on a member's generation sources that would be allowed to receive net metering. This number may appear to be appropriate to certain regional Alaskan standards but, in reality, this number would blow the socks off more than a hundred generating utilities in our state.

In AVEC's 53 villages, for example, the largest annual sales we enjoy is in St. Mary's, where our members use about 2.8 million kWh - an average load of 320 kW. In the Lower-48, the staunchest renewable energy supporters do not recommend allowing more than 0.5% of consumer produced energy into the local grid. That would translate to about 1.6 kW in St. Mary's. In our average village, where we sold about 1.3 million kWh last year, the average load is less than 125 kW. I'm sure you can envision what an uncontrolled, intermittent power source of 25 kW can do to such a system.

Net metering is a concept that is heavily promoted by individuals who are better equipped financially than many others to consider installation of alternative energy sources for their personal use, as well as by the vendors of products that those consumers might use. In Alaska, a net metering mandate will result in inappropriate burdens being placed upon consumers who are not part of the elite self-generation group and whose interests are not being represented by those who are promoting net metering. It will also place further financial and operational constraints on the member owned utilities that are struggling to keep the lights on under circumstances more onerous than any that have ever been experienced before in this state's history.

4831 EAGLE STREET * ANCHORAGE, ALASKA * PHONE (907) 561-1818 * FAX (907) 562-4086

Rather than considering a bill such as HB 66 that will benefit perhaps 50 – 100 Alaskans and a few vendors, please consider instead providing additional funds to the State Renewable Energy Fund to develop alternative energy projects that will serve all of a utility's customers into the foreseeable future. Developing renewable energy sources comes at prohibitive costs.

Alaska's legislature should not be promoting special interest legislation such as net metering, but should rather be partnering with Alaska's publicly owned utilities to bring the benefits of renewable energy to all Alaskans. If net metering is to be implemented in some fashion in Alaska, it is best left to the Regulatory Commission of Alaska to determine when, where and how such a program might be initiated so as to bring maximum benefit and least harm to Alaskans. Rural Alaskans are particularly vulnerable to harm from an imprudently applied net metering requirement and the RCA is best equipped to address this.

Yours very sincerely,

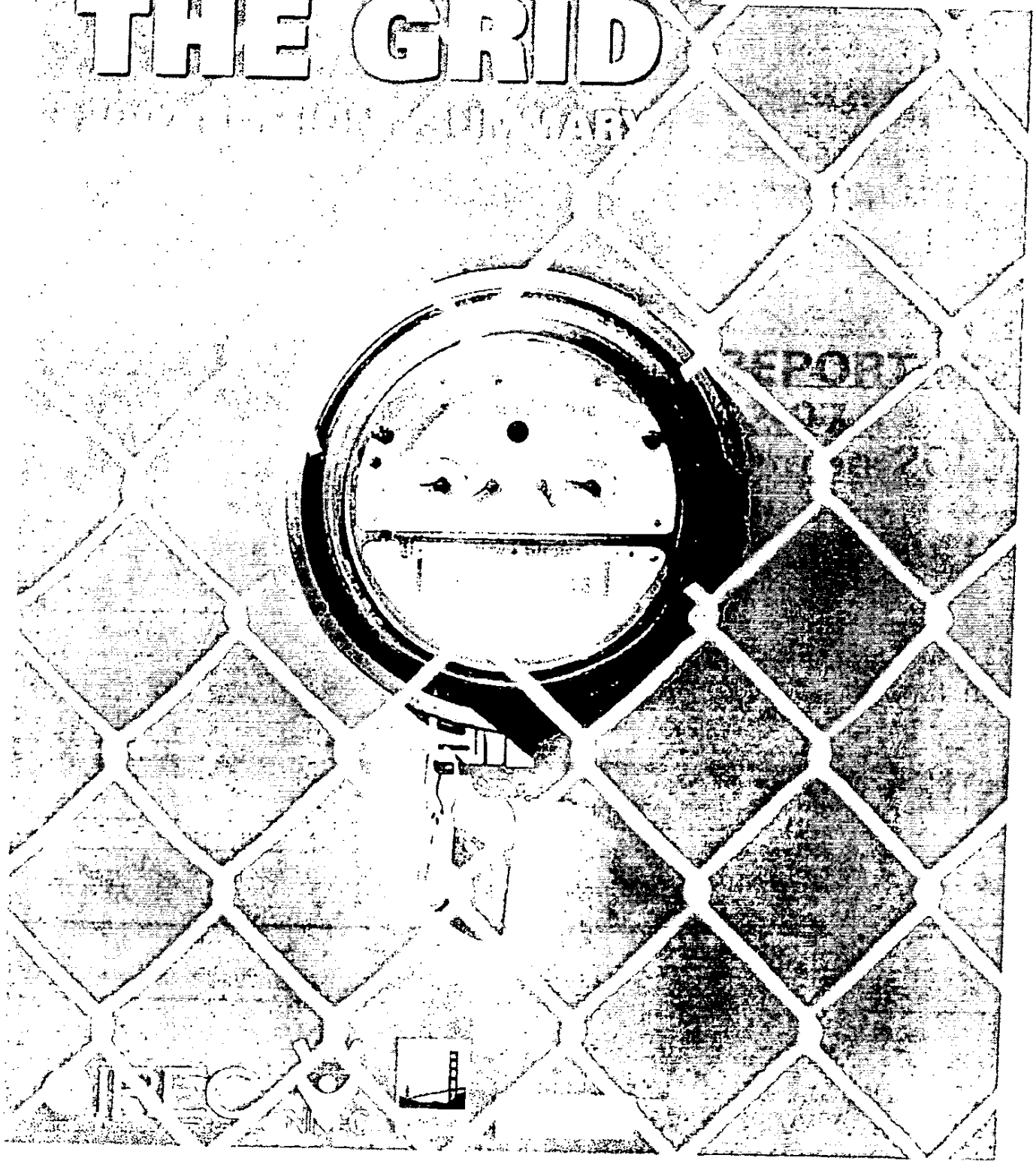
Meera Kohler
President and CEO

4831 EAGLE STREET * ANCHORAGE, ALASKA * PHONE (907) 561-1818 * FAX (907) 562-4086

FREEING THE GRID

REPORT NO. 02-07

SEPTEMBER 2007



2007 Edition

This document is in advance of a larger update to **Freeing the Grid**. The full updated report will be released at the National Association of Regulatory Utility Commissioners' (NARUC) annual convention, November 11 - 14, 2007.

Available for Online Download

Freeing The Grid
How Effective State Net Metering Laws Can Revolutionize U.S. Energy policy

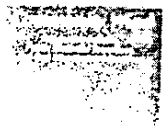
NO 01-06 Nov. 2006
Forward By Michael Dworkin
Professor of Law and Director of the Institute for Energy & the Environment
Vermont Law School

Renewing America:
The Case for Federal Leadership on a National RPS

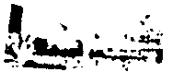
NO 01-07 Jun. 2007
Christopher Cooper,
Senior Policy Strategist
Dr. Benjamin Sovacool,
Senior Research Fellow
Forward By Marilyn Brown
National Commission on Energy Policy

The Rush to Ethanol:
Not All Biofuels Are Created Equal

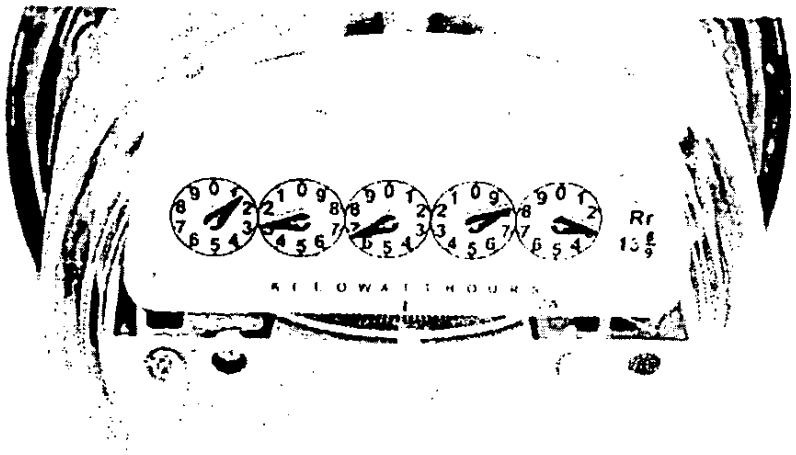
July 2007
A report by Food & Water Watch, the Network for New Energy Choices, and the Institute for Energy and the Environment at Vermont Law School provides comprehensive analysis and recommendations for U.S. biofuels and transportation policies.



Community Wind
Supportive Policies, Public Financial Incentives, and Best Management Practices
September 2006



215 Lexington Avenue, Suite 1001, New York, NY 10016
tel: 212 991 1831 fax: 212 726 9160
info@newenergychoices.org
www.newenergychoices.org



Since the 2006 edition of **Freeing the Grid**, there have been great strides in bringing more clean energy to the grid. Many states have taken the lead by reforming their clean energy policies and goals. But we are still far from conquering the "Energy Trilemma" – an energy world constrained by the three forces of financial goals, environmental concerns and security risks. In this 2007 edition, the Network for New Energy Choices teamed up with the Solar Alliance, the Vote Solar Initiative, and the Interstate Renewable Energy Council to bring the most up to date analysis of statewide interconnection and net metering rules. In our study, we graded each state based on its progress towards the goals of smoother interconnection and favorable net metering standards.

What Is Interconnection?

An interconnection standard is the set of rules under which a customer-generator interfaces with the electricity grid. Generally, the distribution utility must study and approve the generator within a framework established by the state utilities commission. Therein lays the conflict. Utilities that may perceive customer-generators as a threat to their financial bottom line have the authority to decide how many systems may connect to the grid, and under what circumstances. This situation can result in a significant barrier, as utilities either apply to a two-kilowatt (kW) residential solar generator a set of procedures better suited to a two-gigawatt nuclear power plant; or impose steep fees, redundant safety requirements, or other preventative measures.

While the underlying engineering standards and requirements are well-known (generally, the Institute for Electrical and Electronics Engineers' (IEEE) 1547 standard covers all the bases), an engineering standard is not a complete procedure. A full procedure must address fees, timelines, insurance requirements and indemnification, forms and certain other issues, to provide a comprehensive procedure that supports investment in small generation – either by individuals or by project development investors.

Wherever the standard is unclear, or where redundant or unnecessary tests or steps are piled on the existing national standards, the results can be costly. The impact of these costs on small generators can be significant.

Sunshine Solar Inc.

Solar Panels (2,500 Watts)	$	11,700
Racks, Wiring, and Hardware	$	1,250
Inverter	$	1,950
Installation Labor	$	1,650
Redundant Disconnect + Labor	$	400
Interconnection Forms & Fees + Labor	$	1,000
Total Cost	$	17,950

Consider the example above, assume Ray McSolar purchases a 2.5-kW solar s ystem – more expensive per watt than a larger solar roof, but enough for his needs. His state's interconnection rules force him to endure lots of testing, pay big fees to the electric company, and install an external disconnect switch.

With $48.50 earned for electricity produced each month, he'll be running that system for more than two years just to pay off the red tape!

Imagine the simplest possible metering arrangement: a single, 1950s-standard electromechanical meter. Now imagine that a residential customer, Ray McSolar, added a rooftop solar-electric system to his home, on his side of this meter.

Ray wakes up pretty early for his job; on most days, he's up and out of the house before the sun rises. In these dark morning hours Ray makes his coffee and breakfast, while watching some morning news on the TV. In this case, the meter spins forward as Ray is consuming electricity from the grid.

As the sun rises, Ray heads off to work. Making sure not to waste a drop of electricity, he shuts off all his appliances. The meter spins in reverse as the solar panels churn out electricity - electricity Ray sends back to the overstressed grid.

When Ray returns at night to cook dinner and relax in front of the TV, the meter spins forward again while he consumes electricity.

The result? Ray's bill will show only his net consumption of electricity from the grid. Should it be a hot sunny month (the sort of months when the grid needs the most help), or a month in which Ray's electricity use is low, he can carry any excess electricity his system generated to the next bill, just as he might roll over excess cell phone minutes.

The result of net metering is to allow for the production of electricity that a strained grid did not have to produce. This is, in fact, exactly the same result Ray would get if he had installed a more efficient refrigerator. The only way his utility would know the difference between the use of more efficient technologies (like that refrigerator) and the use of on-site generation (e.g. solar panels) is if it installed a costly additional meter at Ray's home and underwent the expense of reading both meters and billing Ray for the results.

In effect, net metering is the simplest possible billing arrangement for customer-sited distributed generation. Without exception, significant deployment of clean, customer-sited distributed generation occurs only in states with modern interconnection and net metering policies.

Interconnection and Net Metering: *What's the Difference?*

Interconnection – the technical rules for customers to "plug in" to the grid.

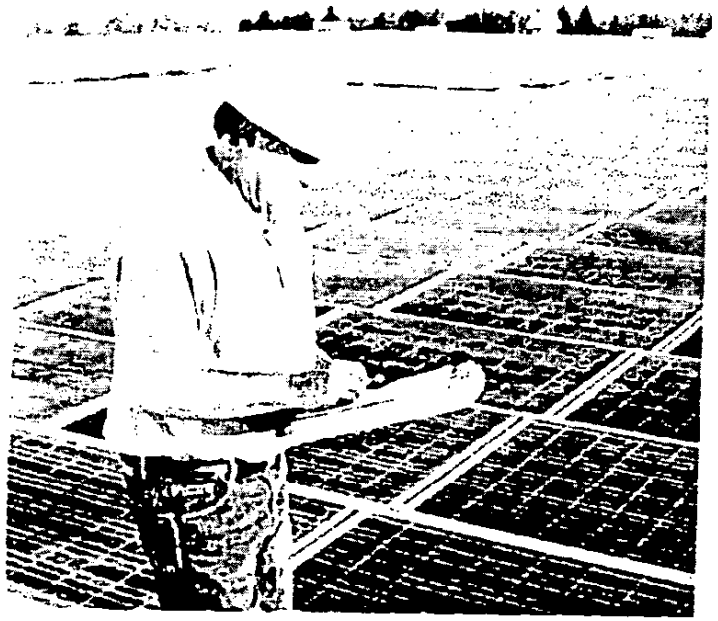
Net Metering – the billing arrangement by which customers realize savings from their systems, where one kilowatt-hour (kWh) generated by the customer has the exact same value as one kWh consumed by the customer.

In our evaluation of statewide interconnection and net metering programs, we developed an index that rewards program elements that promote participation, expand renewable energy generation, or otherwise advance the goals sought by net metering. Conversely, the index assigns demerits to program components that discourage participation or limit renewable energy generation.

We measured program components and assigned numerical values to each. Negative values represent factors that undermine the effectiveness of the net metering program. Positive values represent additional incentives that contribute to program effectiveness.

Applying these numerical values to program components allows us to plot (separately) the effectiveness of each interconnection and net metering program, and to assign a letter grade to each.

An analysis of the provisions of many state programs demonstrates a distinctive distribution: perhaps a dozen "best practices" states where the framework is more or less standardized and small-scale generation is already flourishing or about to begin surging; a large undifferentiated middle where development is limited; and a few states where customer generation is actively discouraged or impossible outside of isolated demonstration projects.



Policy Point: Net Metering Individual System Capacity

In certain cases, statutory limitations on the size of eligible technologies prevent customer-generators from correctly sizing a system to meet their own demand.

Uniform size limits reduce regulatory confusion while promoting the broadest population of renewable energy generating systems. Increasing the eligible facility size for non-residential systems also could encourage participation in net metering programs by large investors. It is no longer uncommon to see renewable energy systems in the 100 kW to 2 megawatts (MW) range. Several project developers in Oregon, for example, argued that the transactional cost of systems less than 100 kW are too great to interest large investment partners.[1]

There is no policy justification for limiting system size to an arbitrary level. Customer load and demand should determine the system design parameters, and it is simple to prevent "oversizing" without recourse to arbitrary distinctions that may exclude the most cost-effective projects.

While the most progressive state standards embrace this concept, many are converging on a consensus level of 2 MW.

Points	Largest
+5	Greater than 1 MW
+4	Between 750 kW and 1 MW
+3	Between 500 kW and 750 kW
+2	Between 100 kW and 500 kW
+1	Between 50 kW and 100 kW
0	Not greater than 50 kW
-1	Residential systems capped below 20 kW
Notes	Some permit up to 80 MW on very large loads (such as a military base or corporate headquarters campus)

Total Program Capacity Limits

In a nod to utility concerns that on-site generation represents lost revenues (an intuitive but short-sighted view of the arrangement), many states have limited the total capacity eligible for net metering either statewide or for any given utility.

It makes little sense to limit the total amount of clean energy that customers may generate and contribute to the electricity grid. Utilities do not have an inherent right to charge for electricity that customers could otherwise generate more efficiently and more cleanly on their own. Capacity limits artificially restrict the expansion of on-site renewable generation and curtail the market for new renewable energy distributed generation (DG) systems. They may also prove incompatible with aggressive targets for renewable energy deployment set by several states.

Capacity limits, based on a percentage of peak demand, create uncertainty for new customers considering net metering. Since customers have no way of knowing when capacity limits will be met, they cannot effectively plan for future DG installations.[7] This regulatory uncertainty inhibits renewable energy investment.

Points	Total Program Limit as Percentage of Peak Demand
+2.5	> 5% or no limit
+2	Between 2% and 5%
+1.5	Between 1% and 2%
+1	Between 0.5% and 1%
+0.5	Between 0.2% and 0.5%
0	Between 0.1% and 0.2%
-0.5	Less than 0.1%
Bonus +1	For excluding generators that don't export electricity, or measuring based on energy produced instead of total capacity.

Restrictions on "Rollover"

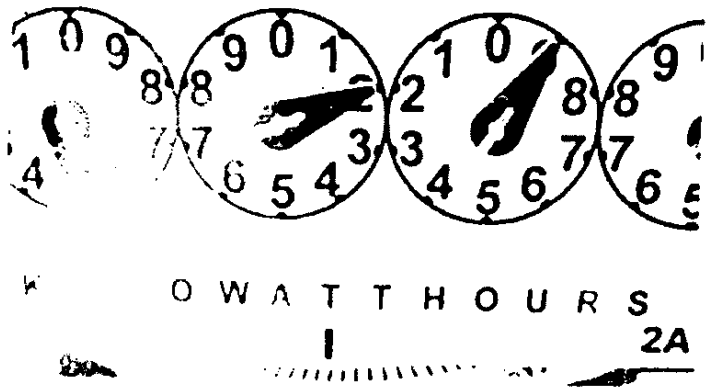
When customers generate more electricity during a monthly billing period than they consume, some states allow customers to "roll over" the excess generation. The utility carries forward any excess generation until it is used up. Some of the least effective programs allow zero rollover, granting the utility excess electricity generated by customers each month. In these states, customers undersize their systems so that the system is less than the customer's monthly minimum load. Other states limit the time over which rollover can be used.

Restricting rollover to a single month is more a function of utility billing cycles than public policy. In fact, it is very easy for the administrative costs associated with paying for small amounts of excess generation (withdrawing bills, hand-billing, etc.) to overwhelm any saved revenue for the utility. To be successful, a net metering program must facilitate rollover so that customer-generators can receive credit for excess energy generated during the seasons when renewable output is highest and apply it toward their consumption when output is lowest, striving towards a zero bill.

In the worst possible case, a so-called net metering tariff could actually require customers to pay utility transmission and distribution fees even on generation they never rolled over – paying the utility a fee in exchange for not using their services.

Remember Ray McSolar and his 1950s meter? That's the best implementation of rollover – to read this meter annually is to provide the lowest administrative cost and best equity for the customer.

Points	Rollover Provisions
+1.5	Indefinite rollover at retail rates.
+1	Monthly rollover for one year, annual payment at retail rates. (It is key to limit payout in this case so that customers do not oversize their generator beyond their own needs. Indefinite rollover is easier.)
+0.5	Monthly rollover for one year; annual payment at wholesale or avoided cost.
0	Monthly rollover for one year; excess energy donated to utility annually.
-2	Monthly payment at wholesale or avoided cost.
-4	No rollover permitted; excess energy donated to utility monthly.



Metering Issues

Requiring customer-generators to pay for additional meters adds no value to the customer-generator or the utility. Once again, if a customer could save 20% of their usage with a better air conditioner, would it be reasonable to meter the savings and compensate them differently?

Some states compel customers that choose to net meter to switch to a time-of-use (TOU) rate, where they pay differing amounts depending on the time of day. This can either reflect the reality of the grid (and reward generators who produce during constrained peaks), or disadvantage customers.

Points	Metering Provisions
+2	Single meter
+1	Dual meters or dual registers – utility pays for the additional meter
0	Dual meters or dual registers – customer pays for the additional meter
Points	**Metering Provisions Under Time of Use**
+2	TOU meters with time bin carryover
+1	TOU meters with segregated time periods
-1	Fixed TOU rate disadvantages small generators

Renewable Energy Credit Ownership

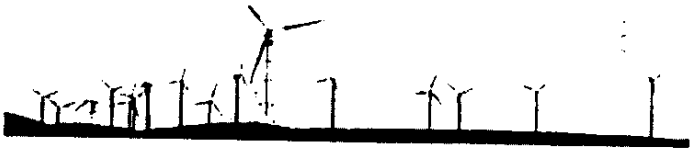
Customer-generators that install renewable resources have done so with their own investment of money and effort. Often these generators qualify for renewable energy credits (RECs) that can be used for marketing purposes or to meet legal renewable energy targets. Utilities that have simply permitted these customers to reduce their net usage from the grid should not be permitted to seize these credits without paying for them.

Points	REC Ownership
+1	Owned by customer
-5	Transferred to utility

Eligible Technologies

Subject to appropriate interconnection standards, there is no reason to exclude any type of renewable customer-generators from net metering; some states even permit non-renewable generators to address particular local concerns.

Points	Eligible Technologies
+1	All renewable and zero-emission technologies
+0.5	Solar and wind included, one or more other renewables excluded
+0.5	All renewables, plus one or more non-renewable technologies
0	Solar only
-0.5	Solar excluded from standard



Eligible Customers

Some state net metering rules restrict the customer classes that are eligible to participate. Some state rules exclude commercial customers who may have the most substantial effect on reducing demand on the strained grid, and who often enjoy the lowest costs for installed systems.

The Texas State Energy Conservation Office has noted, "It would make more sense to limit the eligibility of a technology for a period of time, say five or ten years, in order to give the technology a period in which it has the opportunity to become commercially viable, than to limit the size of the initial market, when the goal is creating a critical mass of market demand."

Allowing commercial and industrial customers to be eligible for net metering is essential to jump-starting new renewable energy markets.

Points	Largest Permissible Customer-Generator
+2	No eligible class restrictions
+1	Commercial at overall net metering limits, and residential larger than 10 kW permitted
0	Residential only, larger than 10 kW permitted
0	Commercial only
-1	All other restrictions

Bonuses for additional net metering provisions

Points	Reason for Bonus
+1	One customer can aggregate net meter within contiguous property.
+1	Utility provides a meter change if needed at utility cost.
+3	"Safe harbor language" protects customers from unspecified additional equipment, fees, requirements to change tariffs, etc.

Standby Charges or Other Fees

Many utilities claim that, in the event that net metered systems fail, the utility is required to meet the resulting customer demand. As a result, many states allow utilities to impose a "standby charge" on net metered customers.

Standby charges are illogical. Some researchers have noted that they are "analogous to assigning standby fees to residential customers who purchase high efficiency air conditioning units,"[4] because, in theory, utilities would be required to meet increased demand should the air conditioners fail and need to be replaced by more conventional units.

In some cases, standby charges are equal to or even exceed rates for full electrical service, in effect creating an economic disincentive for customers to install renewable energy systems.

Standby charges are particularly burdensome to small generators. Utilities only need to provide a negligible amount of back-up power for these customers. Nevertheless, standby fees may be so costly that they diminish most, if not all, of the economic incentive net metering was intended to offer smaller generators.

There are a variety of other idiosyncratic fees and charges that can render net metering unworkable.

Points	Fees
-1	Minor additional fees for net metering
-5	Significant additional charges or fees[5]
-5	Per kWh fee on all production (in addition to other fees)[6]

Utility Power Interconnection

Eligible Technologies

While public policy may suggest an emphasis on renewable energy, the system and engineering impacts of a system should be evaluated solely on their own merits. To do otherwise introduces complexity and may restrict innovation. If a generator complies fully with the relevant technical standards, there is no operational or safety justification to deny it interconnection.

Points	Customers that Qualify
0	All customer generators qualify.
-1	Only renewable generators permitted.

Individual System Capacity

Technical standards can and should become significantly more stringent as system sizes increase. However, they should also permit systems that are sized to meet even large onsite loads. Office parks, prisons, or college campuses can potentially accommodate installations of two megawatts or more just to serve a portion of native load, and increasingly, forward-thinking states facilitate this option.

Points	System Capacity
0	Generators from 2 MW to 20 MW permitted
-1	1 MW to 2 MW
-2	500 kW to 1 MW
-3	100 kW to 500 kW
-4	Less than 100 kW
Notes	Larger generators generally fall under federal jurisdiction and don't need to be considered here.

"Breakpoints" for Interconnection Processes

Many technical considerations and studies become relevant only for relatively large generators. It is most efficient to break a single overall interconnection process into separate "tracks" based on generator capacity, relieving complexity for the smallest systems while preserving conservative and thorough studies for larger installations.

The emerging consensus is to fragment applicants at 4 breakpoints: 10 kW, 2 MW, 10 MW (non-export), and 20 MW.

Points	Levels
1	Four levels
0	Three levels
-1	Two levels
-2	No breakpoints; one process for all generators regardless of size.
Bonus +1	Progressive standards that allow larger systems in any category.

Timelines

Time is money, and for a device like a rooftop solar generator, (where physical installation may take just two working days) paperwork and permits represent the single largest obstacle to quick installation.

The Federal Energy Regulatory Commission (FERC) adopted a model interconnection standard (Order 2006) establishing a timeline for each step of the application process, for each type of generator. There is room for improvement in these guidelines, and some states have elected to trim the amount of time allowed – for instance, for the read-through of the application of the very simplest small generators using pre-certified equipment.

Points	Timelines
+1	Timelines Quicker than FERC's
0	Timelines the Same as FERC's
-1	Timelines Longer than FERC's

Interconnection Charges

Interconnection processing and study fees can easily add up to "death by a thousand cuts." Fees of $100 here and $250 there quickly add up for small systems. What's more, uncapped or unknown fees can make it impossible to obtain financing for larger projects, as their total cost may be under the control of a hostile utility.

Again, we refer to the FERC process, which established reasonable fee levels through an extensive compromise and negotiation process.

Points	Fees
+1	Fees lower than FERC's
0	Fees the same as FERC's
-1	Fees greater than FERC's

Engineering Charges

An interconnection standard may require engineering review; where it does, it is key that the fees associated with that review are known beforehand.

Points	Fees
+1	Engineering Fees Fixed
0	Engineering Fees Not Fixed

External Disconnect Switch

In theory, a customer-generator presents a safety hazard if the grid goes down and an interconnected system continues to produce power without the utility's knowledge (a situation utilities call "islanding"). Potentially, line workers could come into contact with an unexpectedly energized line. Many utilities cite these safety concerns to require that net metered customers install and test external disconnect switches on any interconnected system. However, the practical effect is that, like hidden interconnection fees, requiring additional external disconnect switches only adds unnecessary costs and discourages customers from investing in renewable energy systems.[7]

It is important to note that not one accident resulting from the islanding of net metered renewable energy systems has been reported.[8] More importantly, utility workers are trained to treat all lines as live, and a variety of other safety precautions are required as part of standard operating

procedures." An external disconnect switch represents a fourth or fifth level of redundancy that is only relevant if a utility worker ignores his or her training. If a worker is following proper protocol, none of the levels of safety preceding an external disconnect switch will ever be needed, much less the switch itself.

Requiring additional external disconnect switches is made unnecessary since all inverters that meet IEEE standards have automatic shut-off capabilities integrated with the systems." All modern inverters shut down interconnected systems automatically in the event of grid failure."

Points	Requirement
+1	Redundant External Disconnect Switch Prohibited
0	Redundant External Disconnect Switch Not Addressed
-1	Redundant External Disconnect at Utility's Discretion
-2	Redundant External Disconnect Switch Required

Certification

The electrical safety and operation of the grid must be a primary concern in the development of any interconnection procedure, and must remain an engineering standard, not a policy determination.

The relevant standards have been developed jointly by utilities, equipment manufacturers, national laboratories and testing facilities, and governmental representatives.

While some states have provided for additional options (e.g. the reuse of certification on equipment individually type-tested by utilities), others have used conflicting technical standards – a critical flaw that may in fact impact the safety and security of the grid. Still others have added idiosyncratic or unspecified "blanket" clauses that introduce uncertainties. Potential purchasers or investors in these systems do not know when such a clause might arise to disqualify them.

Points	Standard
+1	UL 1741 / IEEE 1547 standards used in addition to other options (e.g. self-certification)
0	UL 1741 / IEEE 1547 used
-1	UL 1741 / IEEE 1547 not used, or modified elements of IEEE 1547
-4	Standard used in conflict with or in excess of IEEE 1547

Technical Screens

Every interconnection is different, but all interconnections share some fundamental characteristics. These relate to, among other things, the size of the generator relative to the section of the grid to which the generator connects, and the ratings of the protective equipment installed. These factors determine how complex the interconnection process needs to be.

FERC Order 2006 provides a thorough set of technical screens that has been copied by many jurisdictions; any significant revision of these guidelines introduces difficulties to the process (and may increase system expense, as configurations or programming must be changed to differ from these widely-used benchmarks).

Points	Screen
0	FERC screens used
-1	Partial adoption of screens
-2	No screens used or utility discretion
Penalties:	Used more conservative screen than FERC = -1 for each
Bonus:	Dropped one or more FERC screens that do not affect safety or used more liberal screen element that does not affect safety = +1 for each

Spot Network Interconnection / Area Network Interconnection

A "spot network" might be designed to serve a large single location (such as a corporate campus or high-rise building); an "area network" describes the power distribution system in an area dense with users (such as a downtown area).

Either increases reliability by creating more potential paths from generation to load. However, the types of systems that can be connected are usually restricted, as these networks are much less tolerant of any export.

Some jurisdictions have extended this concern to ban these types of interconnections completely. However, the very area networks that jurisdictions aim to protect are those most in need of the relief that distributed generation can bring. More appropriate is to create more stringent technical standards for these types of systems, or simply require that they install specified high-speed equipment that disconnects systems in case of any outage.

Spot Network Interconnection

Points	Terms
1	Allowed for all systems with a single customer, or systems above 50 kW allowed
0	Allowed, but limited to 50 kW
-1	Not allowed
Bonus:	Separate standards for one customer vs. multi-customer spot networks – with single customer more liberal than FERC standard = +1
Bonus:	Systems allowed provided they install high-speed network protectors = +1

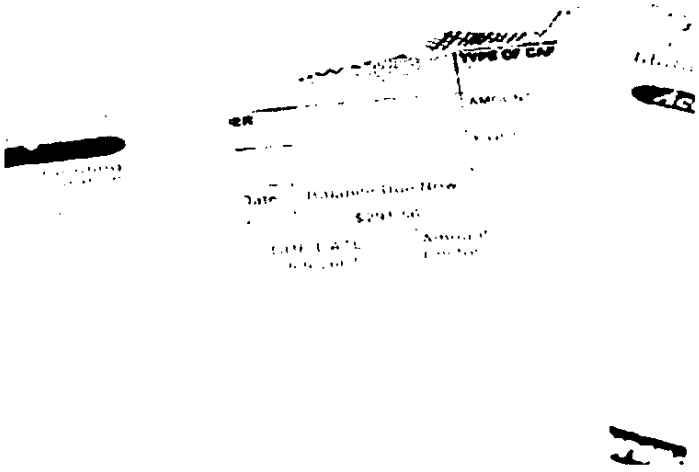
Area Network Interconnection

Points	Terms
1	Allowed for systems 500 kW or greater and 10% minimum load
0	Not addressed or allowed but at utility discretion or only after study
-1	Not allowed
Bonus:	Allowed for systems that do not export power = 1

Standard Form Agreement

The point where the "rubber meets the road" in any interconnection framework is the agreement. Without a standard agreement, the interconnection process is immediately more complex. If the standard is overly complicated, or includes clauses hostile to the customer such as requiring the customer to indemnify the utility for a broad list of potential liabilities, with no equivalent protection from the utility - then the standard loses much of its value.

Points	Form Style
+1	Standard agreement with friendly clauses
0	Standard agreement with standard clauses
-0.5	No standard agreement
-1	Standard agreement with excessively complex or hostile clauses



Insurance Requirements

Because of potential personal injury and property damage liability risks associated with interconnection, many states allow utilities to impose liability insurance requirements on customer-generators. Some states want customer-generators to carry $100,000 or more in coverage to protect utilities from being held financially responsible for problems caused by interconnected systems.

However, to our knowledge there has never been a documented case of a small-scale net metered system causing electrical failure or creating potential personal injury or property damage liabilities for a utility.[7] Renewable energy technologies manufactured and installed in compliance with interconnection standards significantly reduce the risk of potential safety issues.[8] Product liability insurance carried by equipment manufacturers, as well as the ability of these manufacturers to indemnify customers or utilities, further negates the need for additional insurance.[9]

Excessive insurance requirements only serve to discourage customers from investing in renewable energy systems and participating in net metering programs. Requiring customer-generators – especially those with relatively small systems – to obtain and maintain million-dollar insurance policies is impractical. The high premiums associated with these policies will likely exceed the economic benefits of participating in net metering programs.

Points	Requirements
+1	Insurance requirements prohibited
+0.5	Insurance required, but not more than typical customer would carry
0	Not addressed
-2	Additional insurance required

Dispute Resolution

Inevitably, some requests for interconnection will result in disputes. The best standards provide a low-cost means of accessing an expert judgment (for instance, through a telephone call to a technical master employed by the state utility commission). Others are more administratively burdensome or complex.

Of course, if the standard explicitly states that all disputes will be resolved through or by a utility's discretion, the standard becomes less reliable in the eyes of counter-parties.

Points	Dispute Process
+2	Process in place (low or no cost, quick)
0	Not addressed or costly or administratively burdensome
-1	Utility discretion

Miscellaneous

Adverse system impact check needed on 2-MW expedited interconnections - -1 (This study addresses the potential impact of a customer-generator on the transmission network. It should not be applied to very small generators.)

Certificate of completion required without addressing local code official refusal -1 (Some states require that a local code official sign or certify documentation associated with the interconnection process. Since these officials do not generally certify documents other than their own inspections, they can be resistant to do so, delaying or complicating the process.)

Interconnection process is significantly different from FERC standards -1 (The overall framework of the FERC process is well-understood and should be the basic underpinning of any standard.)

[illegible]

[illegible]

A. Full retail credit with no subtractions. Customers protected from fees and additional charges. Rules encourage use of Distributed Generation (DG)

B. Generally good net metering rules with full retail credit but there may be certain fees or costs that detract from full retail equivalent value. There may be some obstacles to obtaining net metering.

C. Adequate net metering rules, but there may be some significant fees or other obstacles that undercut the value or make the process of net metering more difficult.

D. Poor net metering with substantial charges or other hindrances. Many customers will forgo an opportunity to install DG because net metering rules subtract substantial economic value from the DG system operation.

F. Net metering rules that hamper customer use of DG.

[illegible]

A. No restrictions on interconnection of distributed generation that meet safety standards. Rules "encourage" customer-generator interconnection and represent most or all state best practices.

B. Good interconnection rules that incorporate many best practices adopted by states. Few to no customer-generators will be blocked by interconnection barriers. There may remain some defects in the rules, such as, lack of standardized interconnection agreements and expedited interconnection to networks.

C. Adequate for interconnection although generators incur higher fees and longer delays than necessary. There are likely a few generators that will be precluded from interconnection because of remaining barriers in the interconnection rules.

D. Poor interconnection rules that leave many needless barriers to interconnection in place. A few state best practices included but many best practices options excluded. A significant number of generators will experience delays and high fees to be interconnected and a sizable percentage may be blocked from using DG because of these rules.

F. Interconnection rules retain many barriers to interconnection. Few to no generators will experience expedited interconnection and few to no state best practices are adopted. Many to most DG systems will be blocked from interconnecting because of the rules.

We observe that despite the developments and in some cases vast improvements in the interconnection and net metering rules and regulations in several notable states, New Jersey continues to maintain a leadership role among all states in both of these critical policy areas. This is not to say that the New Jersey rules cannot be improved upon or that there are not state rules that have indeed improved upon the New Jersey rules in certain discrete areas. In several areas the state has adopted policies that go beyond the simple removal of barriers to actual encouragement of the use of distributed generation by customers. In order to advance the use of clean and renewable distributed generation, we encourage states to improve upon the best practices in New Jersey that is, to incorporate those rules as a starting point and adopting the best practices developed in more recent state rulemaking proceedings.

As states continue to discuss and implement new interconnection and net metering rules there will invariably be improvements in standard practice that were not anticipated when the point and grading scale used for this report was developed. As those improvements arise, the grading and point scale we use will be modified to accommodate them. Conversely, the standard may also need to be revised to appropriately downgrade a limited number states that erect unforeseen new barriers. In sum, the grading and point scale is subject to ongoing revision to address evolutions and devolutions in the interconnection and net metering policy arena. Of course, best practices have a way of becoming commonplace, and this, too, will require a scoring adjustment. For example, as we approach more than a dozen states with a 2 MW system capacity limit, this once aggressive policy stance will be regarded as commonplace, and only larger limits will obtain maximum points.

STATE	Grade
IREC Model	A
Colorado	A
New Jersey	A
Pennsylvania	A
Maryland	A
California	A
Oregon	B
Delaware	B
Iowa	B
Connecticut	B
Ohio	C
New Mexico	C
Arkansas	C
New Hampshire	C
Rhode Island	C
Hawaii	C
Maine	C
Louisiana	C
Virginia	C
Minnesota	C
North Dakota	C
Massachusetts	C
Montana	C
Vermont	C
Missouri	C
Washington	D
New York	D
Texas	D
Kentucky	D
Michigan	D
Wyoming	D
Oklahoma	D
Indiana	D
West Virginia	D
Utah	F
D.C.	F
Georgia	F
North Carolina	F
Wisconsin	F

STATE	Grade
IREC Model	A
New Jersey	A
Arizona	A
California	A
Ohio	A
Texas	A
New York	A
Colorado	B
Oregon*	B
Massachusetts	B
Georgia	B
New Mexico*	B
Vermont	B
Minnesota	B
Rhode Island	B
Wisconsin	B
West Virginia	C
Arkansas	D
New Hampshire	D
Virginia	D
Iowa	D
Maryland*	D
Montana	D
Michigan	D
Indiana	D
Pennsylvania	D
Connecticut	D
North Carolina	F
D.C.	F
Wyoming	F
Louisiana	F
Delaware	F
Hawaii	F
Utah	F
Washington	F
Missouri	F

15+

9 - 15

6 - 9

3 - 6

< 3

Our office has recently pre-filed legislation to require utilities statewide to offer the option of net metering to utility customers that generate electricity on-site through the use of alternative power sources (our particular legislation puts a cap on home generation at 25 kilowatts, and credits the customer-generator for their generation by applying a kilowatt hour credit against their following months bill). Below I have listed some of the concerns that our office has heard on the issue of net-metering in general. I would like to get some feedback from other states or cities that have implemented net-metering rules, code or legislation so that we can address the issues as the bill moves forward in the Alaska Legislature.

If you have a moment, please take a look at the concerns listed below, and let me know if your state has heard such complaints and if they have been borne out.

Thank you.

Louie Flora, Staff

Rep. Paul Seaton

Net Metering:

- **Dangerous to Linemen and the public**
  - **no back-feed protection**
  - **no phasing protection**
  - **no fault protection**
- **devastating to small utilities with a low customer density**
- **forces a utility to buy higher cost power**
  - **No margin for revenue generation allowed if we must purchase it at the same cost as we sell it for.**
  - **Increases cost to all customers**
- **Would force some Utilities to violate existing power purchase agreements**

IOWA

Regarding your net metering issue list below:

1. Dangerous to linemen and the public: a) no back-feed protection; b) no phasing protection; c) no fault protection.

These issues would be addressed in the context of Iowa's interconnection standards (Rule 15.10 -- see: http://www.legis.state.ia.us/Rules/Current/iac/199iac/19915/19915.pdf), rather than the net metering rule (Rule 15.11(5)).

2. Devastating to small utilities with a low customer density.

This issue has not arisen in Iowa, perhaps because Iowa's net metering rule applies only to rate-regulated utilities, only one of which is a small utility. All other small electric utilities in Iowa are non-rate-regulated (i.e., municipal utilities and electric cooperatives).

3. Forces a utility to buy higher cost power: a) no margin for revenue generation allowed if we must purchase it at the same cost as we sell it for; b) increases cost to all customers.

This issue was generally resolved by allowing the rate-regulated utilities to limit net metering to 500 kW of capacity for each individual system. Again, Iowa's net metering rule applies only to rate-regulated utilities.

4. Would force some utilities to violate existing power purchase agreements.

This issue has not arisen in Iowa, probably because the Iowa rule describes net metering as a metering arrangement, rather than a purchase and sale arrangement (Rule 15.11(5) -- see: http://www.legis.state.ia.us/Rules/Current/iac/199iac/19915/19915.pdf).

John Pearce
Utility Specialist
Iowa Utilities Board
350 Maple Street
Des Moines, IA 50319
(515)281-5679
John.Pearce@Iowa.gov

Virginia

Virginia went through the same issues back in 1999 when we were going through our net metering proceedings. I have attached two documents that may be helpful in answering some or all of the issues you addressed below. One issue that probably won't be addressed is the issue of how "devastating" net metering will be to small utilities. Obviously this was an unknown at the time - but I can safely say that 7 years later - none of our utilities have gone bankrupt, and our rules have slowly evolved. Originally only solar, wind and small hydro were allowed. Now ALL renewable technologies (ocean/tidal, biomass, etc) are allowed. Originally non-residential systems were capped at 25 kilowatts. This limit has been raised to 500 kW. Third-party ownership of systems is now allowed, and the total system-wide capacity has been increased from 1/10% up to 1% of peak load.

Bottom line (in my opinion) is that the utilities scream and complain and put up roadblocks - because that's what they're supposed to do to maintain status quo. The reality is, however (again - my opinion) that once they get used to it - they grudgingly admit it was and is not that big a deal - especially with limits like 25 kW. This has proven to be the case in Virginia where with a residential limit of 10 kW and non-residential of 500 kW - we have to date less than 250 **KILOWATTS** total statewide net metered generation compared to a total utility generating capacity of around **23,000 megaw**atts.

I hope this somewhat dated info is helpful. Please feel free to contact me if you would like additional information.

Ken Jurman
Virginia Department of Mines,
Minerals and Energy
(804) 692-3222
(804) 692-3238 (fax)
www.dmme.virginia.gov

Pennsylvania

In Pennsylvania we heard relatively the same arguments against Net Metering and Interconnection standards that were required by legislation referred to as the Alternative Energy Portfolio Standards. You may view our regulations at: http://www.puc.state.pa.us/electric/electric_alt_energy.aspx. If you have futher questions, please contact me. Good luck!

Cal Birge
cbirge@state.pa.us

West Virginia

I am with the West Virginia PSC. Our Commission adopted net metering tariffs last year after considering the issue pursuant to the provisions of the Federal Energy Policy Act of 2005. During the course of that proceeding, all parties reached a consensus not only regarding net metering provisions but also on rules for the interconnection of distributed generation. Two of the largest electric utilities in the nation - American Electric Power and Allegheny Energy were parties to the case.

Regarding the concerns you identify, my comments would be as follows:

Safety issues, danger to linemen, etc. - This is basically a non-issue provided that the state adopts industry standards like IEEE 1547 and the National Electric Code. Some utilities continue to play the safety card because they still resist distributed resource interconnections. Safety issues have been covered in excruciating detail in the provisions of industry standards like IEEE 1547 and the NEC. Further, when it somes to renewable generators less than 25kW in capacity it is even less of an issue because most if not all of those types of generators utilize UL-certified static inverters to interconnect to the utility's distribution system.
For single-phase generators (like residential applications) phasing protection is not an issue.

Financial Impact on Distribution Utilities - This will depend largely on the level of customer participation in net metering in your state. Utilities must be able to recover costs necessary to properly operate their distribution systems and I feel that net metering customers should help pay for that system because they use it. One mechanism is a fixed "customer charge" that allows the utility to recover non-variable fixed costs associated with distribution expenses. On the other hand, there are benefits that distributed resources provides to the utility which can be quantified in terms of "avoided costs".

Energy Rate - I think the level of participation and customer eligibility has to be considered. For example, if you limit participation to residential customers with renewable sources then the financial impact will be much less than if larger users participate. It also must be weighed against how long the customer can bank the credits and whether or not the state allows customers to go above a net-zero balance (i.e., make money by selling power back to the utility). In West Virginia we hold the customers to a "zero balance limit" on energy charges, but they still pay a customer charge for the utility fixed costs.

Alleged Violation of Existing Purchased Power Agreements - I think this is a legal issue that will depend on how the state laws or regulations governing net metering are constructed.

Increased Cost to all Customers - For programs that are geared toward small residential applications, I do not see how this can be the case, provided that the state commission has rules in place that fairly allocate costs to those who should pay them. There are several models for interconnection and net metering rules that provide reasonable solutions. Examples are the NARUC Model and the IREC Model. I recommend that you take a look at these model standards, I used them in developing the rules for West Virginia.

Hope this helps! Good Luck!!

Jim

James W. Ellars, P.E.
Chief Utilities Manager
Engineering Division
Public Service Commission of West Virginia
PO Box 812
Charleston, WV 25323
(304) 340-0331

Connecticut

We have had net metering for twenty years. It is a subsidy to promote renewables. But the impact to date is minimal. There have not been and technical or safety problems. 25kW is very small. I wouldn't worry about it.

Mark Quinlan
Ct. DPUC
860-827-2691

North Carolina

Keith McAllister and Joan Ward manage the Interstate Renewable Energy Council's "Connecting to the Grid" project, which collects and analyzes information -- especially state-level information -- related to interconnection standards and net metering. I'll provide you with some thoughts regarding your questions below (see embedded comments). For additional information, follow up with Keith and Joan, who are copied on this message.

Rusty

>
> Net Metering:
>
> * Dangerous to Linemen and the public
>
> * no back-feed protection
> * no phasing protection
> * no fault protection

*** Net metering is not dangerous. It is an economic and legal arrangement, not an engineering arrangement. Interconnection is not hazardous if the procedure and equipment meet IEEE 1547 and UL 1741 standards. This study should help dispel concerns about the safety of interconnected PV systems: www.e3energy.com/Extdisc.doc. More significantly, the National Renewable Energy Laboratory (NREL) is about to publish a similar study with similar conclusions. Notably, there are no know safety incidents related to the tens of thousands of interconnected, customer-sited renewables currently installed in the United States. It might be useful to contact the California Public Utilities Commission about this. There are more than 20,000 customer-sited, interconnected renewable-energy systems currently operating in CA.

Additional related resources are available here:
www.solarabcs.org/interconnection/panels/interconnect_net_metering_resources.htm

>
> * devastating to small utilities with a low customer density

*** This is not proven to be true. If this is a legitimate concern, cap the aggregate capacity of all net-metered systems operating in a utilities' service territory. And then require utilities to prove that net metering has clearly adversely affected revenue. If they can't, then raise the aggregate limit. Note that CA has a 2.5% aggregate limit, and NJ has no aggregate limit.

> * forces a utility to buy higher cost power

*** There are countless public policy trade-offs involved. Significantly, more than 40 states clearly believe that the collective benefits of promoting net metering outweigh the argument that utilities are "forced to buy power at a higher cost." (For that matter, several utilities offer net metering voluntarily.) Utilities are regulated monopolies in most states, after all. This does not mean they hold a monopoly on making decisions that involve the public's best interest.

>
> * No margin for revenue generation allowed if we must purchase it at the
> same cost as we sell it for.

*** See above comment.

> * Increases cost to all customers

*** This is not proven to be true. One could easily argue that net metering increases benefits to all customers in the form of reduced air pollution and GHG emissions, increased peak power generation (in the case of PV), and a host of other benefits.

>
> * Would force some Utilities to violate existing power purchase agreements

*** Offhand, I don't believe that utilities would be "forced" to violate contracts. I'm not sure how other states have addressed this. This might be another good question for the CA PUC.

Rusty Haynes
N.C. Solar Center
N.C. State University
Raleigh, NC 27695
(919) 513-0445
www.dsireusa.org

Oregon

The Oregon Public Utility Commission issued rules in 2007 for the state's two largest investor-owned utilities (Portland General Electric and Pacific Power, accounting for about three-quarters of the state's load) that I believe addresses these concerns. The 2005 Oregon Legislature gave the Commission authority to raise the net metering facility size limit for these two utilities, from the mandatory level of 25 kilowatts for all Oregon utilities since 1999 (ORS 757.300).

Among other provisions, the Commission's new rules:

* Provide for net metering up to 2 megawatts for non-residential customers (residential customers remain at 25 kilowatts)

* Provide uniform, streamlined interconnection standards for net metering facilities, while maintaining safety and reliability protections through specified requirements

* Provide for netting of a customer's generation against consumption for all kilowatt-hour related charges on the bill over an annual billing cycle. Any "excess" credit remaining at the end of the annual cycle goes toward Commission-approved, low-income energy assistance programs pursuant to statutory intent that net metering is primarily to offset customer load. Thus, systems are not significantly oversized relative to load, helping to mitigate concerns about cost shifting from non-participants to cover fixed utility costs.

We had the utilities' full support for the 2005 legislation, as well as the proposed rules, with minor exceptions in the case of one utility.

The Commission's order summarizes the arguments and the Commission's rationale and includes the final adopted rules (last section): http://apps.puc.state.or.us/orders/2007ords/07-319.pdf

Lisa Schwartz

Senior Analyst
Oregon Public Utility Commission
503-378-8718
lisa.c.schwartz@state.or.us
www.puc.state.or.us

New Jersey

If you have not done so already, I recommend you review the report titled "Freeing the Grid",
issued by NNEC and IREC (Interstate Renewable Energy Council) et al. Here is a link to the report,
http://www.newenergychoices.org/index.php?page=publications&sd=no

Your first concern listed under "net metering issues" below is more an interconnection issue. But NJ does deal with net metering and interconnection in the same set of rules, N.J.A.C. 14:8-4 and since the larger set of rules are undergoing re-adoption, they are currently available at
http://www.bpu.state.nj.us/bpu/pdf/rules/20071018energychapters4and8.pdf

Your subsequent concerns are also dealt with pretty effectively in the report described above. And I believe the final bullet pertaining to PURPA contracts could be dealt with in your rules.

Scott

B. Scott Hunter
Renewable Energy Program Administrator
Office of Clean Energy
New Jersey Board of Public Utilities
Two Gateway Center
Newark, NJ 07102
www.njcep.com

Michigan

Michigan has a voluntary net metering program that was established in 2005. As of June 2007, there are 23 customers of regulated utilities participating. (The MPSC regulates investor owned utilities and cooperative utilities. It is possible that some municipal utilities have net metering programs.)

Over the last year we have had a net metering investigation proceeding. We have heard comments from net metering advocates and utilities. Basically the issues you mentioned below were discussed at some time during the proceeding. Staff issued a report on October 1 and the first 32 pages cover net metering issues.

Here is a link to report webpage: http://www.michigan.gov/mpsc/0,1607,7-159-16377_47107_47112---,00.html
(The report is the top link in the Documents box in the middle of the page.)

Julie Baldwin, Staff Engineer
Electric Operations Section
Operations & Wholesale Markets Division
Michigan Public Service Commission
(517) 241-6115

North Dakota

ND has had a rule since the early 1900's requiring jurisdictional electric utilities (IOUs) to offer net energy billing for PURPA QFs with 100 kW or less of generating capability. There has been only limited usage as the jurisdictional IOU's mostly serve towns where most wind generators are not allowed under local zoning, etc. ND rural electric cooperatives are not PSC jurisdictional so the rule does not apply to them.

Therefore, we have not substantially addressed any of the drawbacks you have listed. Please let me know if you want to discuss further. Thanks.

Jerry Lein
Public Utility Analyst
701 328-1035

Minnesota

Wow—as the state with the oldest net metering law, I can say that we haven't had safety issues that resulted from net metering. Interconnection is a simple process. We have a standard state net metering contract.

I am on another project, but if you don't get the help you need, I could refer you to our largest utility, Xcel Energy. They have established a replicable model for interconnection among utilities here in Minnesota.

Good luck,

Stacy A. Miller
State Programs Administrator
Renewable Energy and Advanced Technologies
State Energy Office
85 7th Place East, Suite 500
Saint Paul, MN 55101
651-282-5091
stacy.miller@state.mn.us

Maine

Maine has had net billing rules since the early 1980s. Although I was not around when the rules were first adopted, over the last 15 -20 years, utilities in Maine have not made the "danger" argument and there have no reports of any damage or injury resulting from net billing. We have heard some concerns recently from very small utilities (e.g. municipal utilities/Co-ops) that a revenue loss from net billing might be a problem—but to date, the number of net billing customers have been relatively small and have not caused any revenue loss problem. We have not heard that arguments that net billing forces utilities to buy higher cost power or that it might require the violations of existing power purchase agreements. Maine's utilities do not like net billing and they correctly argue that its transfer cost responsibility to other customers. However, in Maine the number of net billing customers has always been very small—so it has never been a real issue. However, to address the utilities revenue loss concerns, Maine's net billing rule states that the PUC will review whether net billing should continue if the cumulative capacity of net billing generation facilities reaches 0.5% of the utility's peak load.

Please let me know if I can be of further assistance.

Mitch Tannenbaum
Deputy General Counsel
Maine Public Utilities Commission
(207) 287-1391

Illinois

Use of UL 1741 listed inverters addresses concerns of utilities regarding back feed issues and power quality. A grid-connected photovoltaic or wind power system will need an inverter to convert the direct current power to alternating current and sync with utility power. An inverter that meets UL 1741 will shut down when utility power is lost, thus preventing any back feed. UL 1741 inverters are also designed to shut down if the voltage or frequency of the power is outside a set range, thus protecting power quality.

Our utility requires small wind and photovoltaic customers to use UL 1741 listed inverters and install an accessible disconnect on the AC side. This satisfies our safety requirements.

Maryl Freestone
Wind and Photovoltaic Programs
ComEd Energy Delivery
3 Lincoln Center
Oakbrook Terrace, IL 60181
1-800-825-5436
(630) 576-6353 fax

North Carolina Public Utilities Commission

- Dangerous to Linemen and the public
  - no back-feed protection
  - no phasing protection
  - no fault protection

- devastating to small utilities with a low customer density

- forces a utility to buy higher cost power
  - No margin for revenue generation allowed if we must purchase it at the same cost as we sell it for.
  - Increases cost to all customers

- • **Would force some Utilities to violate existing power purchase agreements**

Utah

Please feel free to contact me if you have further questions. My comments are below.

Dangerous to Linemen and the public

- **no back-feed protection**
- **no phasing protection**
- **no fault protection**

Regarding the point on line protection. Dangers of line feedback are a misnomer. Most distributed generation (DG) systems like solar, wind, and micro-hydro require inverters to tie in to the grid. Grid-tied inverters now have safety features built in, so they will not back-fee or send any type of feed into the system that could damage equipment or injure linemen. Larger systems that do not have indenters, i.e. co-gen systems, should require safety equipment to prevent issues like this. Utah's net metering law or the Utah's utility net-metering rules cover these issues.

• **devastating to small utilities with a low customer density**

I have not heard of a net-metering law that is devastating to a utility. Currently, due to the high cost of DG systems, a utility will not have a large percentage of DG on its system. In addition, the DG customers may be generating at a time that the utility pays a high cost for power, thus it may save the utility money. A few of the Co-Ops in Utah charge an additional fee to make up for the lost revenue, but I do not think this is should be required. Even in California, a place Net-Metering is considered very successful, DG only equates to 3% of the states generating capacity.

Our munis and Co-Ops are not concerned with this issue.

- **forces a utility to buy higher cost power**

This is only true if you craft a law or rule to require that the utility credit the customer at a set rate that is higher. Many DG systems produce power when energy costs are above what the customers purchase it for. I assume that hydro may be a big DG producer for your state. If so, I would consider time of use rates or one lower flat rate.

  - **No margin for revenue generation allowed if we must purchase it at the same cost as we sell it for.**

Net metering is more of an economic incentive for the DG owner, not the utility. Although it can benefit the utility by reducing demand on their system. It can save the utility money, but it may not.

  - **Increases cost to all customers**

Again Net-Metering is such a small portion of most systems, (0.5%-3% are often the aggregate limits for utilities) that it doesn't affect a utilities to the point to where they have to raise costs. That is why a net metering law or a PSC rule or utility rule will have an aggregate limit on net-metering capacity. Utah's aggregate limit is about 3,000kw for our major IOU utility.

Would force some Utilities to violate existing power purchase agreements
Again, net-metering is not significant enough to affect this point.

I would say that it would be important to have a solid interconnection law/rule for your state to protect the utilities from DG systems as well as making it easier for DG owner to tie-in to the grid. Utah is currently working on creating rules for interconnection.

"Our office has recently prefiled legislation to require utilities statewide to offer the option of net metering to utility customers that generate electricity on-site through the use of alternative power sources (our particular legislation puts a cap on home generation at 25 kilowatts, and credits the customer-generator for their generation by applying a kilowatt hour credit against their following months bill). "

25kW is more than enough for residential net-metering, but will suggest that a larger amount be considered for commercial systems. Many states are now going to much larger caps for net metering due to the fact that it is more common for DG systems to be larger. For example the city of Logan, Utah just increased their net metering to 250kW for commercial systems. This will allow more companies with larger energy loads to net-meter.

I hope this helps.

You may wnat to read through a report from a coupole of organization too. The links are below.

http://www.raponline.org/

freeing the Grid is also a good review of what other states are doing regarding net-metering. It also debunks the myths about DG.

Thanks,

Jason

RAP is a great organization that can help you on issue dealing with net-metering.

Jason Berry
Renewable Energy Coordinator
State Energy Program
Utah Geological Survey
801-538-5413
Fax:801-538-4795

jasonberry@utah.gov
geology.utah.gov/sep

New Hampshire

NH has had net metering in place since the 1980s. It's part of our rules, see Puc 900 rules on our website (http://www.puc.nh.gov/Regulatory/Rules/puc900.pdf) for details although they are getting updated to incorporate some changes in legislation passed in 2007. The primary change increases the eligible installed generation from 25 kW to 100 kW as well as increasing the utility's overall amount of net metering load from 0.05% to 1%. We have never come close to meeting that amount. Excess generation can be carried over.

As far as safety is concerned, NH hasn't experienced any problems that I'm aware of. It is important that anyone installing on-site generation notify their utility and follow the applicable interconnection process.

We have no evidence that small utilities have been harmed by net metering though, as I said, it has not been widely adopted in NH.

Under a restructured environment, the distribution company purchases "default" power for its customers on an all requirements basis based on competitive bid process. There is no "profit" margin built into default power for the distribution company. Whether the competitive power supplier takes the load of net metering into account as part of its bid strategy is unknown, but I doubt ranks too high in the list of risks it does take into account. At least, not until the level of net metering shows some significant growth. Does it increase cost to other customers? It would depend on the load characteristics of the classes as well as the type of regulatory enviroment (i.e., is the distribution company operating under traditional COS or some alt reg variety?). In general though, you are offsetting all costs of service with the value of generation produced on-site. The effect will usually be to shift costs to others, but it that effect is very small.

We're not aware of any existing power purchase contracts that were violated. Certainly, that wouldn't be a problem for new contracts entered into after a net metering law or rule went into effect.

Tom Frantz
Director - Electric Division
New Hampshire Public Utilities Commission
21 S. Fruit Street
Concord, NH 03301
603.271.2431

Idaho

Idaho does not have a net metering law. However, all three of the investor-owned utilities serving in our state (Idaho Power, Avista, PacifiCorp) have had net metering tariffs for many years, some since the early 80s. The net metering tariffs for each of these three utilities can be found on their websites. There are also several coops and municipal utilities in Idaho, but because the Idaho PUC does not regulate them, what they do with regard to net metering is completely up to them. Over 80 percent of customers in Idaho are served by regulated utilities; however.

Despite net metering being available to customers in Idaho for many years, extremely few have chosen to participate. There are a couple dozen net metering installations, with a collective capacity of about 200 kW. The total amounts paid by utilities to purchase from net metering projects is only about $30,000 per year. The impact on the utilities and on non-participating customers is almost negligible. Nevertheless, nothing seems to generate as much controversy and debate as net metering. We've argued over most of the usual issues, but in the end, the arguments have always been far bigger than the issues we've had to resolve. The claims made by both sides have always been greatly exaggerated.

Regarding the issues you list:
Dangerous to Linemen and the public: We allow each utility to prescribe whatever interconnection and protection equipment they believe is necessary for safety. The PUC has not received complaints from any participants that the utility requirements are onerus, but some net metering advocates who are not participants sometimes still like to claim that they are.

devastating to small utilities with a low customer density: We've never heard this contention before, but none of the three utilities we deal with are considered "small." Given the extremely low participation rate, however, it seems unlikely that net metering could be devastating to a utility of any size.

forces a utility to buy higher cost power: We believe this is definitely true, however, because there are so few kWh under net metering, the cost impact on the utility is negligible. If there was far more participation, this is an issue we would probably have tried to resolve.

Would force some utilities to violate existing power purchase agreements: We have never heard this argument before.

Rick Sterling, Idaho PUC

Oregon

Net metering has no more impact on revenue than people choosing to turn off . . .fill in the blank. We limited net metering to 0.5% of the connected load. This is smaller than the actual meter bases are accurate.

Saftey concerns have been addressed, with the exception of how to deal with urban spot and area networks.

Long term revenue impact will be addressed as the amount of solar energy applications rise beyond 0.5%.

Oregon has a 2MW net metering law, a 50% tax credit and a 25% by 2025 RPS (above the 44% hydro already in place).

My recommendation is to start small and start soon. One of my favorite examples for solar is that there are many locations in Alaska where it is more cost effective than in Phoenix. That's because the cost for remote generation (non-hydro) is more than 2x times the cost of Power in Phoenix, whereas the amount of sunlight (annually) in Alaska is only half that of Phoenix.

Alaska has many places where solar offers quicker payback than Phoenix.

That is if you had net metering.

Christopher Dymond
Senior Energy Analyst
Oregon Department of Energy
625 Marion St NE Salem OR 97301-3742
(503) 378-8325
www.energy.state.or.us

Kentucky

There have been several replies to your request, most of which I could easily repeat, but I'll try not to be redundant. The concern about net metering being dangerous to linemen is not a valid argument. Being a lineman is a hazardous occupation which requires an individual doing the job to have proper training and experience and to follow the appropriate safety codes, procedures and practices. When properly approached a net metering installation should not present any greater safety concern than what might be encountered on the job anyway. Just because there are laws and regulations allowing net metering interconnections, does not require the utilities to make dangerous and unsafe interconnections and they don't. Most of this equipment is supplied commercially with interface controllers that make these installations safer than having portable individual backup generators connected and used during power outages; how many times does that situation exist with nobody's approval or knowledge except the owner.

The other complaints are economic and are not as valid as they would seem, since as others have stated, there are usually limits on the number and impact of these connections compared to the size of the servicing utility. These utilities typically don't really want net metering, so they will think up any and every excuse they can to keep from facing the issue. And as the previous responses have indicated, the participation of customers in net metering installations is very limited. I believe it would be a rare instance for net metering installations to truly be economically justified in most locations; at least, I've never come across one in Kentucky. Individuals tend to pursue an interest in net metering for reasons other than economic.

John Shupp
Electric Branch Manager, Engineering Division
Kentucky Public Service Commission
(502) 564-3940 Ext. 421

New Mexico

I have added comments in italics to the questions you posed:

Net Metering:

- **Dangerous to Linemen and the public**
  - **no back-feed protection**
  - **no phasing protection**
  - **no fault protection**

  It is my understanding that systems currently on the market have addressed these issues in their designs.

- **devastating to small utilities with a low customer density**

  As Texas has deregulated generation and energy sales, utilities have become transmission/distribution companies. Their revenue comes from fees for transmission/distribution rather than from energy sales directly. In formulating the new rules for net metering and distributed renewable generation, we will be mindful of the potential for erosion of revenues for T&D companies.

- **forces a utility to buy higher cost power**
  - **No margin for revenue generation allowed if we must purchase it at the same cost as we sell it for.**
  - **Increases cost to all customers**

  The statute (HB 3693) in Texas provides for the sale of excess energy to be at a rate negotiated between the generation system owner and his/her Retail Electric Provider.

- **Would force some Utilities to violate existing power purchase agreements**

  In Texas, these agreements are between wholesale generators and Retail Electric Providers. The REP would need to balance purchases from customer and wholesalers to meet total customer load.

I hope this is helpful. Please call with any further questions.

I must apologize that I had not responded to your request for information. In a short answer the NMPRC has two rules which relate to net metering. One is specific to GOVERNING COGENERATION AND SMALL POWER PRODUCTION, and the second is NET METERING OF CUSTOMER-OWNED ENERGY RESOURCES.

Links to those rules are:
http://www.nmcpr.state.nm.us/nmac/parts/title17/17.009.0570.htm

http://www.nmcpr.state.nm.us/nmac/parts/title17/17.009.0571.htm

I believe all of the concern that you listed are valid and the responses for the other commission have addressed those concerns. The NMPRC is applied these two rule to help stream-line customers ability to net meter. The purpose of rule 571 is to simplify the interconnection requirements for Qualifying Facilities of 10kW or smaller and encourage the use of small-scale customer-owned renewable or alternative energy resources in recognition of the beneficial effects the development of such resources will have on the environment of New Mexico.

This information is getting to you late but I hope it might help in some way.

Jim Brack, Economics Bureau Chief
Utility Division, New Mexico Public Regulation Commission
224 E. Palace Avenue
Santa Fe, NM 87501

505-827-6982

Jim.Brack@state.nm.us

HOUSE COMMITTEE REPC Γ

4.1.09

(7)
Date Referred to Committee: March 2, 2009 **FURTHER REFERRALS: Finance**

Date of Committee Action: MARCH 31, 2009

The HOUSE SPECIAL COMMITTEE ON ENERGY considered: **HOUSE BILL NO. 166**

"An Act relating to the Southeast energy fund."

HB 166 SOUTHEAST ENERGY FUND

Recommends it be replaced with [ ] HCS *or* [ ] CS *for* _____(_____)
For Senate Bills with new title: [ ] Technical Title [ ] New Title: HCR_____ **[ ] Same Title [ ] New Title**

[ ] attach amendments
[ ] add new referral to _____Committee
[ ] Letter of Intent_____Committee

List of Abbrev for Depts.:
ADM
CED
COR
CRT
EED
DEC
DFG
GOV
DHS
LWF
LAW
LEG
MVA
DNR
DPS
REV
DOT
UA

***NEW* FISCAL NOTES**
*Assigned by Chief Clerk's Office

List by Dept(s):	*FN#	Fiscal	Indet.	Zero
CED	1			X

***PREVIOUS* FISCAL NOTES**

List by Dept(s):	FN#	Fiscal	Indet.	Zero

Signing with recommendations	Printed Last Name	DP 5	DNP	NR	AM
Peterson	Peterson	X			
Ivan Ivan	Ivan	X			
Johansen	Johansen	X			
Chair: Bryce Edgmon	Edgmon	X			
CO Chair: Melissa Millett	Millett	X			

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