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HOUSE

L&C

LEGAL SERVICES

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MEMORANDUM

January 17, 2008

SUBJECT: Sectional summary of HB 271 (Work Order No. 25-LS1033\E)

TO: Representative Andrea Doll
Attn: Sudi Hargis

FROM: *TH*
Theresa Bannister
Legislative Counsel

You have requested a sectional summary of the above-described bill. As a preliminary matter, note that a sectional summary of a bill should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents.

Section 1. Adds a new article relating to toxic chemicals in products.

Sec. 18.31.600. Prohibits a person from manufacturing, selling, or distributing certain products containing 0.1 percent by mass of pentaBDE, octaBDE, and decaBDE, or products otherwise prohibited by the Department of Environmental Conservation (DEC) under sec. 18.31.610.

Sec. 18.31.610. Allows DEC to prohibit the manufacture, sale, and distribution of products containing a flame retardant that is not a brominated flame retardant if DEC makes certain listed determinations, if DEC consults with the Department of Health and Social Services, and if the state fire marshal makes a certain determination.

Sec. 18.31.620. Exempts certain products from the prohibitions in sec. 18.31.600.

Sec. 18.31.630. Requires manufacturers of prohibited products to inform retailers in the state of the prohibitions in sec. 18.31.600 and the penalty in AS 18.31.660.

Sec. 18.31.640. Directs DEC to develop a program to help retailers identify prohibited products.

Sec. 18.31.650. Allows DEC to request that the manufacturer of a product that is suspected of being prohibited (1) provide a sworn certificate that the product does not violate AS 18.31.600, or (2) notify retailers that the sale is prohibited and provide DEC with retailer names and addresses.

Sec. 18.31.660. Subjects a violator of secs. 18.31.600 - 18.31.650 to a civil penalty.

Representative Andrea Doll

January 17, 2008

Page 2

Sec. 18.31.670. Directs DEC to review certain hazards and risks of brominated fire retardants, review possible alternatives, and review EPA and European Union findings and rulings related to brominated flame retardants and alternatives.

Sec. 18.31.680. Directs DEC to establish and update (by February 1 of each even-numbered year) a list of persistent bioaccumulative toxic chemicals occurring in or used in products used by human beings.

Sec. 18.31.690. Requires DEC to submit to the legislature (by February 1 of each even-numbered year) (1) a report regarding the regulation of brominated flame retardants, and (2) a comprehensive strategy and action plan to reduce and phase out the sources of the DEC's listed persistent bioaccumulative toxic chemicals.

Sec. 18.31.700. Allows DEC to participate in establishing and using a regional multistate clearinghouse to help DEC carry out its duties under this article and to help coordinate education and outreach activities related to brominated flame retardants.

Sec. 18.31.710. Allows DEC to adopt regulations to implement this new article.

Sec. 18.31.790. Defines terms for this new article.

Section 2. A transition section to allow DEC to adopt its regulations before the Act goes into effect.

Section 3. A transition section indicating when DEC is to (1) establish its first required list of persistent bioaccumulative toxic chemicals, and (2) submit its first required report and its first required comprehensive strategy and action plan to the legislature.

Section 4. Directs the revisor of statutes to make certain technical changes caused by the addition of the new article.

Section 5. Makes sec. 2 effective immediately.

Section 6. Makes the rest of this Act effective January 1, 2009.

If I may be of further assistance, please advise.

TLB:med
08-020.med

State Representative Kurt Olson, Chairman
State House Labor and Commerce Committee
State Capitol, Room 208
Juneau, AK 99801

February 11, 2008

Dear Representative Olson:

There have been articles recently in the Daily News and other publications talking about an effort to ban certain fire retardants.

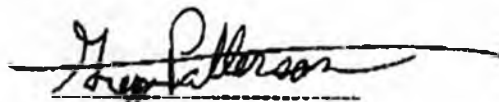
Your committee has a bill before you called House Bill 271 dealing with the banning of these retardants. Because I am interested in human health, the environment and safety this issue has peaked my interest.

After reading the outline of the bill I have some questions.

- 1) Why is the ban to be placed on some products i.e. bedding etc. but at the same time other products are exempt? If it is so dangerous shouldn't it be on all products across the board that could pose a danger?
- 2) The bill states that the department in charge of the enforcement will review the hazards after it becomes law. (They will review the hazards after it becomes law??? I have to scratch my head on this one.) Isn't this putting the cart before the horse? Because the scientific community is still out on the dangers of these retardants shouldn't we wait until the Center for Disease Control has finished its definitive research before making this law? It seems that although well intentioned, the ones who wish to rush this into law are running around screaming that the house is on fire when it might be that it is just someone with a book of matches in their pocket. And without the definitive research how many business's will be disrupted and have to incur the substantial costs of complying only to find out that the benefits of these life saving fire retardants far outweigh the dangers of using them? How many people will be burned if these proven retardants are taken off the market?
- 3) Let us be very clear, the studies of these bio-accumulative toxins do indicate that dangers under "certain exposures and controls" potentially are very bad. If you will go to www.atsdr.cdc.gov/toxprofiles/tp68-c4.pdf you can read the CDC's study. One of the first things that the study states is that "conditions have to be ideal" to enter the environment. The study also states that "exposure has to be acute and repeated."

So Representative Olson, I would urge you to wait until all the data is available. It just isn't clear yet that the way these chemicals are being used meet the standards that actually pose dangers to us. And I am certain that people who are burned and have to go the burn units certainly would prefer not to suffer that agony.

I am sincerely hoping that your deliberations are insightful and that you continue to protect us.

A handwritten signature in black ink, appearing to read "Greg Patterson", written over a horizontal dashed line.

Greg Patterson

Greg Patterson
1513 Kinnikinnick
Anchorage, AK
99508

cc. Labor and Commerce Committee members

**INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS®**

HAROLD A. SCHAITBERGER
General President

VINCENT J. BOLLON
General Secretary-Treasurer

January 26, 2007

Kelly Fox, President
Washington State Council of Fire Fighters
1000 Adams Street, SE
Olympia, Washington 98501-1443

Dear Brother Fox:

The International Association of Fire Fighters, headquartered in Washington, DC, represents more than 280,000 full-time professional fire fighters and paramedics who protect 85 percent of the nation's population. More than 3,100 affiliates and their members protect communities in every state in the United States and in Canada. There are 6,500 IAFF members in the State of Washington. Our union is concerned about health and safety of our members as well as the health and safety of all our citizens. Accordingly, the IAFF believes that the passage of legislation banning brominated flame retardants (Polybrominated diphenylethers (PBDEs) including Penta-, Octa-, and Deca-BDEs) is a step in the right direction for improving the health and safety of our fire fighters and the citizens who are exposed to these

One of the primary applications of PBDE's is as a flame retardant applied onto or in many common household goods (furniture foam; plastic cabinets; computers and small appliance; consumer electronics; wire insulation; and back coatings for draperies and upholstery) to reduce and retard the amount of flame spread. While these chemicals inhibit the formation and spread of flames, they do not completely prevent fires. Unlike other flame retardants, when PBDE's burn they release dense fumes and black smoke that reduce visibility and a highly corrosive gas known as hydrogen bromide. In addition, PBDE's produce highly toxic byproducts of incomplete combustion. Although use of flame retardants saves lives and property, there have been unintended consequences. There is evidence that PBDEs persist in the environment and accumulate in living organisms, as well as toxicological testing that indicates these chemicals may cause liver toxicity, thyroid toxicity, and neurodevelopmental toxicity. Many studies involving fire fighters exposed to these and other toxic gases during active fire fighting, overhaul, and long term exposure from these chemicals penetrating protective gear, have found that fire fighters have a much greater risk of contracting cancer, heart and lung disease, and other debilitating diseases. While we support the concept of flame retardant chemicals, there are alternatives that do not contain bromine or chlorine and are much safer for fire fighters than PBDE's.

Kelly Fox
January 26, 2007
Page 2 of 2

The IAFF salutes those companies that have stopped using brominated flame retardants (such as Dell, Hewlett-Packard and Ikea) and are now using safer alternative fire retardants. These companies demonstrate that alternative flame-retardant technologies for achieving fire safety standards do exist and are readily available for other manufactured products.

Fraternally

Richard M. Duffy
Assistant the General President
Occupational Health, Safety, and Medicine

Cc: Ricky Walsh, IAFF District Vice President
Keven Rojecki, WSCFF

Toxic ingredients, toxic smoke

Our burning homes are firefighters' work sites. The toxic chemicals that we have in our homes not only affect our health and the environment, but when they burn, they can also affect the long term health of firefighters.

The Labour Environmental Alliance Society (LEAS) is a Vancouver-based educational society that has brought together the occupational health and safety skills of leading unions with the research and campaign skills of environmentalists to create a new organization. Over the past six years, we have focussed our activity in dozens of worksites through the province, working with OH&S committees to get cleaning products that contain carcinogens and reproductive toxins out of the workplace and out of schools.

But the risks are not just on the worksite — they're also in our homes and communities. The Canadian Cancer Society estimates there will be a 60 per cent increase in the incidence of cancers across Canada over the next 20 years. That's in addition to the current statistics, which show that one out of every 2.7 women, and one out of 2.4 men have a lifetime probability of developing cancer. And that's not just the result of an aging population — those figures are age-standardized to take that into account.

Cancer is the second leading cause of death in children in Canada, and the incidence of childhood cancer has increased nearly 30 per cent since the 1970s. The incidence of acute lymphocytic leukemia in children is up 62 per cent, while childhood brain cancer is up 50 per cent since the 1970s.

According to the World Health Organization, 25 per cent of cancers are the result of environmental or occupational exposures. Birth defects are also rising, while male sperm counts have fallen significantly in developed countries. Both have been linked to chemical exposure, particularly to endocrine-disrupting chemicals that cause reproductive effects.

Those chemicals show up in dozens of common consumer products, including cleaners, home maintenance products, electronic products and household pesticides.

What are some of the chemicals we're exposed to? The list over the page is not intended to be comprehensive list, but highlights some of the most toxic substances in consumer products.

One out of every 2.7 women and one of 2.4 men can expect to develop cancer over the course of their lifetime.

Canadian Cancer Statistics, 2004

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- ¹⁰⁵ Main KM, Kivirant H, et al. Accepted for print, May 2007, to be published. Flame retardants in placenta and breast milk and cryptorchidism in newborn boys. *Environmental Health Perspectives* doi:10.1289/ehp.9924 Available: <http://dx.doi.org/> [Accessed 31 May 2007].
- ¹⁰⁶ Kuriyama SN, Talsness CE, Grote K, Chahoud I. 2005. Developmental exposure to low-dose PBDE-99: Effects on male fertility and neurobehavior in rat offspring. *Environmental Health Perspectives* 13(2):149-154.
- ¹⁰⁷ Lilienthal, Hellmuth, et al. 2006. Effects of developmental exposure to 2,2',4,4',5-pentabromodiphenyl ether (PBDE-99) on sex steroids, sexual development, and sexually dimorphic behavior in rats. *Environmental Health Perspectives* 114(2):194-201.
- ¹⁰⁸ Schreder E. 2006. Pollution in People: A Study of Toxic Chemicals in Washingtonians. Available: www.pollutioninpeople.org.
- ¹⁰⁹ Hardell L, van Bavel B, Lindström G, Eriksson M, Carlberg M. 2006. In utero exposure to persistent organic pollutants in relation to testicular cancer risk. *International Journal of Andrology* 29:228-234.
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- ¹¹¹ Lilienthal, Hellmuth, et al. 2006. Effects of developmental exposure to 2,2',4,4',5-pentabromodiphenyl ether (PBDE-99) on sex steroids, sexual development, and sexually dimorphic behavior in rats. *Environmental Health Perspectives* 114(2):194-201.

The Chemicals Within

Many common household products contain compounds that could be affecting our health.

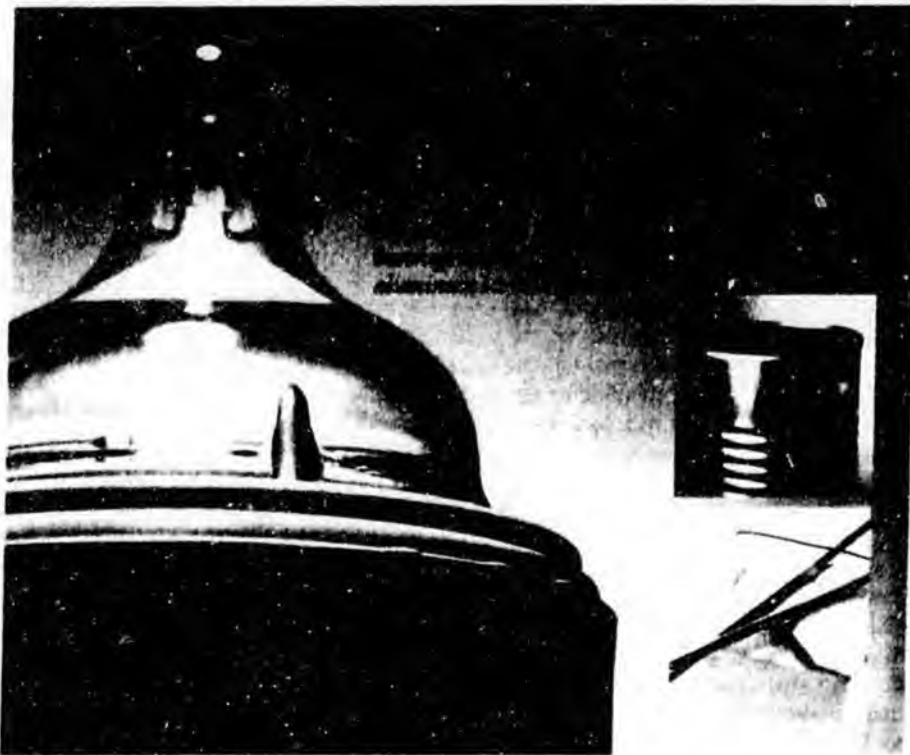
By ANNE UNDERWOOD

AS AN ALASKAN FISHERMAN, Timothy June, 54, used to think that he was safe from industrial pollutants at his home in Haines—a town with a population of 2,400 people and 4,000 eagles, with 20 million acres of protected wilderness nearby. But in early 2007, June agreed to take part in a survey of 35 Americans from seven states. It was a biomonitoring project, in which people's blood and urine were tested for traces of chemicals—in this case, three potentially hazardous classes of compounds found in common household products like shampoo, tin cans, shower curtains and upholstery. The results—released in November in a report called “Is It in Us?” by a coalition of environmental groups—were not reassuring. Every one of the participants, ranging from an Illinois state legislator to a Massachusetts minister, tested positive for all three classes of contaminants. And while the simple presence of these chemicals doesn't necessarily indicate a health risk, the fact that typical Americans carry these chemicals at all shocked June and his fellow participants. As Stephanie Felten, 28, of Aurora, Ill., put it, “Why should chemical companies be allowed to roll the dice on my health?”

Clearly, there are chemicals in our bodies that don't belong there. The Centers for Disease Control and Prevention conducts a large, ongoing survey that has found 148 chemicals in Americans of all ages, including lead, mercury, dioxins and PCBs. Other scientists have detected antibacterial agents from liquid soaps in breast milk, infants' cord blood and the urine of young girls. And in 2005, the Environmental Working Group found an average of 200 chemicals in the cord blood of 10 newborns, including known carcinogens and neurotoxins. “Our babies are being born pre-polluted,” says Sharyle Patton of Commonwealth, which cosponsored “Is It in Us?” “This is going to be the next big environmental issue after climate change.”

The shocking thing to most Americans is that we really don't know the health effects of many chemicals on the market today. Under the Toxic Substances Control Act of 1976, chemicals already in use were

grandfathered in without scrutiny. These include the three classes of compounds targeted in “Is It in Us?”—a plastic strengthener called bisphenol A (BPA), brominated flame retardants known as PBDEs and plastic softeners called phthalates. The chemical industry says these compounds have been used safely for decades, and certainly they do not have the overtly toxic properties of mercury or lead. But in ani-



mal studies and human cell cultures, they mimic hormones, with effects even at minute levels, down to parts per billion. Scientists say we're now awash in a chemical brew of hormone-mimicking compounds that didn't exist 100 years ago. “We've changed the nature of nature,” says Devra Lee Davis, director of the Center for Environmental Oncology at the University of Pittsburgh.

Take bisphenol A. It's a basic constituent of the polycarbonate plastics found in many baby bottles, sippy cups and juice bottles. A highly versatile compound, it is also found in dental sealants, CDs, DVDs and the resin linings of food and beverage containers, including many cans and takeout cartons. But

most scientists say small amounts can leach out—and ultimately find their way into our bodies—when the plastics start to break down under high heat or wear and tear. The CDC has found BPA in 92 percent of Americans age 6 and older who were tested. But the chemical industry says it's safe—and the Food and Drug Administration agrees. “It's not possible to contact harmful levels of it,” says Steven Hentges of the American Chemistry Council, which represents the major chemical companies.

Reproductive biologists aren't so sure. Patricia Hunt of Washington State University was alerted to possible dangers of BPA in 1999 when her mouse study on an unrelated topic suddenly went haywire, with dozens of female mice unexpectedly developing chromosomal abnormalities in

the eggs they carried in their ovaries. As it turned out, a lab worker had used the wrong detergent to clean the animals' cages—one that caused BPA to leach out of the plastic cages and feeding bottles. Hunt tried washing brand-new cages with the same detergent to confirm the source of the problem. She then began studying BPA exposures in unborn rodents, which she followed into adulthood. The results were striking. Almost half the eggs of female mice exposed to low doses of BPA during gestation carried extra copies of chromosomes or were missing chromosomes. No one has replicated the findings.

There are other potential effects. Hundreds of animal and test-tube studies sug-

gest that low-dose exposures, particularly during gestation, may later lead to breast prostatic cancer, abnormalities in the reproductive tract and behavioral problems, among other things. But there is disagreement about the implications for human health. Two groups convened by the National Institutes of Health have reached opposite conclusions. In 2007, advisers to the government's National Toxicology Program found "minimal" cause for concern. Meanwhile, another scientific panel produced a consensus statement saying that, based on animal data, common levels of exposure could pose a problem and that further study was needed. "We can't say there are conclusive data in humans," says Frederick vom Saal of the University of

duckies and vinyl shower curtains to certain medical tubing and IV bags. They are also found in hundreds of personal-care products, including many fragrances, body lotions, nail polishes and shampoos. Again, 30 years of data from institutions like the NIH and EPA point to potential problems in animals stemming from prenatal exposure, including abnormalities in the reproductive tract and a decline of sperm quality. Now there is a smattering of human studies, too. In 2006 Danish researchers found that higher levels of a particular phthalate in mothers' breast milk correlated with lower testosterone in male babies at 1 to 3 months of age. Similarly, Dr. Russ Hauser at Harvard studied roughly 500 men at a fertility clinic and

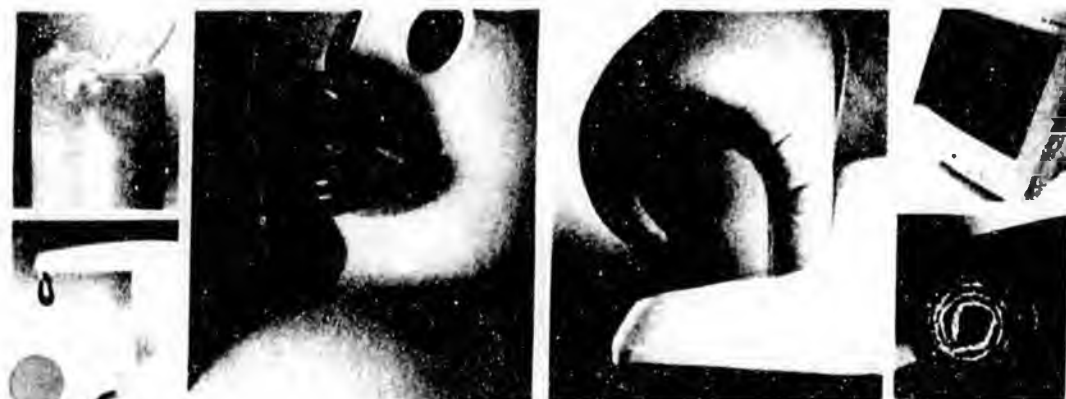
The toy industry contends that phthalates pose no danger, particularly a widely used one called DINP. This chemical "has been well studied here in the U.S. and in Europe and found to be safe specifically for kids' products," says Joan Lawrence, a vice president of the Toy Industry Association. She notes that companies cannot easily replace it because none of the potential substitutes "has its lengthy safety record." Nonetheless, last October, California Gov. Arnold Schwarzenegger signed a ban on the use of six phthalates in children's products sold in the state—though three of them, including DINP, are prohibited only in items that kids under 3 are likely to put in their mouths. In December, Toys "R" Us notified its vendors of its intention to comply with the California ban by Jan. 1, 2009, the date the law takes effect. Mattel is already in compliance.

Finally there are the flame retardants, PBDEs. They turn up in fabrics, upholstery, foam mattresses, circuit boards and the casings of computers and televisions—and apparently escape into indoor air and dust. Animal studies show they can have negative impacts on learning and memory, sperm counts and thyroid functioning in rats and mice. PBDEs tend to linger a long time in the body, and one mixture in particular seems "quite biologically active, especially during development, as we've seen in

studies on rats, mice and fish," says Linda Birnbaum, director of experimental toxicology at the EPA. "If I were nursing my baby, I wouldn't stop because of PBDEs in breast milk, but many of us wish they weren't there." According to the EPA, 11 states—including California, Maine, Michigan and New York—have bans on two major types.

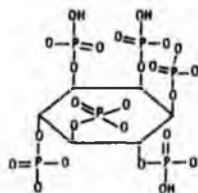
It could take decades to resolve doubts about the safety of all these chemicals, one way or the other. But Timothy June isn't waiting. He's stopped buying tomato sauce in tin cans to avoid the BPA, which scientists say tends to leach out of can linings when the contents are particularly acidic. He's ditched his vinyl shower curtain in favor of a cloth one. And he's considering getting rid of the foam mattress on his fishing boat. "I guess the survey had a bigger impact on me than I realized," he says. Let's all hope the chemicals aren't having an even bigger impact on us.

With ANNA KUCHMENT



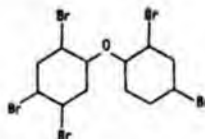
Phthalates

Used to soften plastics, as in rubber duckies, these compounds also help preserve the fragrance in shampoos and lotions.



PBDEs

An important class of flame retardants, these chemicals are often used in upholstery, carpeting and computer monitors.



Missouri, who headed the second panel. "But given the fact that we're seeing irreparable damage in animals, for heaven's sake, let's get this out of products our babies are coming in contact with."

No government in the world has seen the need to do that yet. But two weeks ago, Michigan Rep. John Dingell, chair of the House Committee on Energy and Commerce, sent letters to seven manufacturers of infant formula asking if their cans were lined with BPA and if they had tested their products for it. In 2006 Whole Foods stopped carrying baby bottles made from polycarbonate plastic, which contains BPA. The chain now sells only BPA-free bottles and sippy cups.

Phthalates have also raised concern. The compounds are used to soften the plastics in products ranging from rubber

found that those with higher levels of certain phthalates in their urine had lower sperm counts and sperm motility. A Swedish study of young military recruits, however, found no such correlation. These are all association studies—which by definition cannot prove cause and effect.

Other scientists are starting to look at what happens when these chemicals are combined. L. Earl Gray Jr., a research biologist at the EPA, has tested mixtures of two or more phthalates in animals. He deliberately selected doses of each that were too low to cause effects individually—yet found that as many as 50 percent of male rats who were exposed to the combination in utero developed abnormalities in the reproductive tract. In his latest study, he combined three phthalates with four pesticides and found that at the highest doses, the effects equaled those of a sevenfold dose of a single phthalate. "All the males were malformed," he says.

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A PROJECT ON CHEMICAL CONTAMINATION IN OUR BODIES



What would it feel like to learn you are contaminated with toxic chemicals that permanently damage laboratory animals? What would it feel like to learn those chemicals come from the shampoo, soda cans, baby bottles, and thousands of other products you and your family use every day?

With recent headlines about toxic chemicals in everything from cars and computers to lipstick and children's toys, 35 Americans—including a commercial fisherman in Alaska, a 9/11 first responder from New York, a U.S. naval veteran from Illinois, a Massachusetts minister, a Connecticut Senator, a Michigan seventh grader, and a stay-at-home mom in Minnesota—volunteered to find the answer to one simple question: **If toxic pollution is in products, is it in us? Find out.**

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BY STATE

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Alaska



Diane Benson, 52, is a lifelong Alaska resident. She is engaged in film/video production, and research and public outreach activities, addressing issues concerning violence and recovery, race-relations, and veterans and families. Ms. Benson won the Alaska Democratic Party Primary for the U.S. House in 2006 and is currently campaigning for U.S. Congress. She is active with the Anchorage Chamber of Commerce's Military Appreciation

Committee, Healing Racism Steering Committee, Alaska Native Sisterhood, and National Organization of Women. She has a Masters of Fine Arts in Creative Writing and is working on her Masters in Public Policy. We found four of the five phthalates and nine of the twelve PBDEs in Diane's body. She also had bisphenol A in both her blood and urine. She is one of the few participants to have BDE 197 and 207 in her body.

"The troubling factor is that we and all other life forms now have these chemicals in us. No matter how miniscule the amount, the fact is that they are present. What other contaminants might be in our systems that we don't know about? We have a right to be informed."



Ethan Berkowitz, 45, is a small business owner and past Democratic House Leader for the Alaska legislature. He is currently running for the U.S. House of Representatives. He owns Alaskan Alternative Energy, and serves on the Board of Directors for the Boys & Girls Clubs of South Central Alaska. He is engaged in the Anchorage Youth Court and Institute of the North. Mr. Berkowitz is fond of fishing, traveling, hockey, and

has a great interest in polar policies and programs. He also enjoys reading to his two children. We found four phthalates and ten PBDEs in Ethan's body. Bisphenol A was detected in both his blood and urine. Ethan had some of the higher levels of PBDEs that indicate exposure to penta-BDE.

"This reminds us that these chemicals are everywhere. It doesn't matter where you are on the food chain—whether you are a saint or a politician, they touch everybody. What this highlights is how hard it is to be safe from invisible toxic chemicals."



Timothy June, 54, is a boat builder and commercial fisherman who has lived in Haines, Alaska with his high school sweetheart for 31 years. Tim's teenage experience with cancer in southern California destined him to a life of environmental, social and political activism to advocate for cancer prevention. He co-founded Alaska Clean Water Alliance, has served on numerous statewide advisory and environmental boards, and was policy

advisor to the Governor on oceans, watersheds and subsistence foods. He is presently chairman of the Alaskans for Clean Elections seeking campaign reform. We found four phthalates and eight PBDEs in Tom's body. Bisphenol A was detected in his urine. He was one of five participants that had quantifiable levels of deca-BDE in their blood.

"Tom Brokaw's 'Greatest Generation' failed to protect my generation from the ravages of carcinogens. It is now the responsibility of my generation to protect future generations from the ravages of hormone and endocrine disruptors. Our success or failure will be our legacy."



Cathy Tagnak Rexford, 29, is

Inupiaq/English/French/German of Kaktovik, Alaska and is currently the Alaska Director of Native Movement. She has worked extensively in Native education and language efforts, contemporary Indigenous theatre and film projects. She has focused her writing and work on translating the worldview of the Indigenous peoples of Northern Alaska into creative mediums.

She holds a BA from the Evergreen State College in Native American Studies and a BFA from the Institute of American Indian Arts in Creative Writing. We found four phthalates and ten PBDEs in Cathy's body, and detected bisphenol A in both her blood and urine. She was one of five participants to have BDE-183.

"No individual, corporation or organization has the right to knowingly violate my ability to live in a healthy way. Maybe what these test results show won't shock you, but they are real, undeniable and they are a reflection of what we are doing to our planet, and to ourselves."



Lori Townsend, 48, has worked in journalism for more than 15 years. She is a reporter and host of Alaska News Nightly on Alaska Public Radio Network. She helped co-found the Alaska non-profit broadcast company Native Voice Communications. NVC created the award-winning Independent Native News and many other documentaries and productions. Ms. Townsend has produced news and feature stories nationally and internationally.

She is an avid gardener and counts water skiing, training horses, diving and a welding certification among her interests. We found four phthalates and eight PBDEs in her body, and detected bisphenol A in both her blood and urine.

At her request, this participant was not quoted in the report, because she is preparing a story concerning the project for public radio.

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Protect Public Health HB 271 "Flame Retardants and Toxic Chemicals"

Flame retardants are widely used in a variety of products to prevent and slow the spread of fire. While fire retardancy is important, some flame retardants, known as polybrominated diphenyl ethers or PBDEs, used in electronic and other products are leaving a lasting toxic legacy in people and the environment. With cost-effective and equally fire-safe alternatives available, it's time to phase out PBDEs.

- Polybrominated diphenyl ethers, or PBDEs, are a class of flame retardant chemicals added to many consumer products found in the home, office, automobiles, and airplanes.
- The three mixtures used most widely are penta-BDE, octa-BDE, and deca-BDE.
- Commonly found in electronics, such as the plastic casings of TVs and computers, and used in some furniture foams, textiles, and kitchen appliances, industry voluntarily ended production in the United States of the formulations of penta and octa in 2004 after high levels were found in breast milk.
- Over fifty million pounds of the toxic flame retardant decaBDE continue to be built into TVs, mattresses, and other products annually in North America.
- DecaBDE is a developmental toxin and listed as possible human carcinogen.
- Many electronic companies have found safer substitutes and have phased out the use of PBDEs.

The American Public Health Association and the International Association of Fire Fighters have recommended the phase out of toxic PBDE flame retardants.

ALASKA'S FLAME RETARDANTS AND TOXIC CHEMICALS BILL

Phases out the manufacture and sale of products containing penta- and octa-BDEs by January 1, 2009.

- Phases out the manufacture and sale of electronic products, furniture, textiles, and mattresses containing deca-BDE by 2009. Allows continued use of deca-BDE in wire and cable and other applications.
- Exempts transportation vehicles; products or equipment for industrial and mining use; products or equipment used in a manufacturing process;

electronic wiring; resold items; and items brought into the state before the effective date.

- Empowers Alaska State Department of Environmental Conservation (ADEC) to ban other products containing flame retardants if it is determined that it is harmful to public health or the environment, and if reasonable safe alternatives exist.
- Requires several state departments to complete a review of the risks of PBDEs, possible alternatives, and the findings from other U.S. and European agencies. They will then prepare a report on their findings every two years.
- Requires ADEC to develop a list of "chemicals of concern" that are persistent bioaccumulative toxics, including those that are cancer-causing, mutagenic, developmental or reproductive toxicants, neurotoxic, or endocrine disruptors... ADEC will then develop an action plan to reduce and phase out these products.

WHAT ARE TOXIC FLAME RETARDANTS?

Polybrominated diphenyl ethers, or PBDEs, are a class of flame retardant chemicals added to many consumer products found in the home, office, automobiles, and airplanes. The three most common commercial classes of PBDEs are penta-BDE, octa-BDE, and deca-BDE. PBDEs are also part of a broader chemical class called polyhalogenated aromatic hydrocarbons (PHAHs) which include other highly toxic chemicals such as PCBs and dioxins. PBDEs are intrinsically hazardous because of their chemical characteristics: (1) they are stable, meaning that they are persistent in the environment and do not break down easily; (2) they are lipophilic, meaning that they accumulate in fatty tissues of living organisms; and (3) they have toxic properties, including the potential to act as endocrine disruptors. Their persistence and fat solubility allow them to both bio-magnify and bio-accumulate, meaning that they build up in the bodies of animals and humans...

Increasing Levels

PBDE levels are increasing at an exponential pace, as they are still largely unregulated in the U.S.

- Levels of PBDEs in U.S. women's breast milk are 10-100 times higher than levels in European women.^{1,2}
- Concentrations of PBDEs have increased over the years in marine mammals due to atmospheric transport and bioaccumulation.³

HEALTH CONCERNS

Developmental Effects: Studies in laboratory animals indicate that neonatal exposure to PBDEs permanently damages learning and memory functions, impairs motor activity, and is linked to permanent behavioral aberrations and hyperactivity.^{4,5}

Reproductive Effects: PBDE exposures have been correlated with cryptorchidism, or undescended testes in new born boys,⁶ and permanent impairment of sperm development in laboratory animal studies.⁵ Exposures have also been associated with the delay of puberty in both male and female laboratory animals and alterations in sexual development and gender-specific sexual behavior.⁷

Cancer: One study suggests that *in utero* exposure to PBDEs is associated with an increased risk of testicular cancer in men.⁸ The Agency for Toxic Substances and Disease Registry (ATSDR) lists deca-BDE as a possible human carcinogen based on the development of liver tumors in laboratory animals.⁹

Thyroid Problems: Recent animal studies have shown that PBDE exposure is linked to decreased circulating concentrations of thyroid hormone⁵ and to a decrease in thyroid weight in adult offspring.⁷

SAFER ALTERNATIVES ARE AVAILABLE

Alternatives to the use of PBDE flame retardants are available and cost effective. Alternatives include: product redesign to eliminate the need for added chemicals; use of alternative flame retardant materials such as plastics containing sulfur; and the use of less toxic chemicals such as red phosphorus, ammonium polyphosphate, and aluminum trihydroxide. Self-extinguishing plastics that do not need added flame retardants are now available such as polysulfone, polyaryletherketone, and polyethersulfone.

One commonly used phosphorus-based alternative to deca-BDE, resorcinol bis(diphenyl-phosphate) or RDP meets Underwriters Laboratories recommended fire safety standards for television components.

Many companies are taking the lead in using safer alternatives, including Apple, Dell, Xerox, Ericsson, IBM, Intel, Motorola, Sony, Panasonic, Phillips, and others. Here is what the leading companies are saying about eliminating deca-BDE in their products:

"All virgin plastics presently used by Sony are 'deca-free' (Decabromodiphenyl ether). These products meet all relevant fire safety standards."

-Sony Electronics; March, 2006

"We currently avoid the use of BFRs (brominated flame retardants) by using plastics that can be flame retarded with non-halogenated compounds and by using design strategies that reduce the need to use flame retarded plastics at all."

-Dell Computer Corporation; December 2005

"HP eliminated the use of two brominated flame retardants (BFRs) PBB and PBDE...HP has removed the remaining BFRs from the plastic housings of the vast majority of HP products."

-HP; March 2006

"The use of PBDEs in mattresses today - which is limited already - will likely be voluntarily phased out entirely in the near future."

-International Sleep Products Association; November 2003

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ANC FIRE DEPT TRAIN

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Alaska Fire Chiefs Association
Resolution
2007- 07

A RESOLUTION SUPPORTING A BAN UPON THE SALE OF OR IMPORTATION OF PRODUCTS CONTAINING POLYBROMINATED BIPHENYLETHERS FIRE RETARDANTS WITHIN THE STATE OF ALASKA.

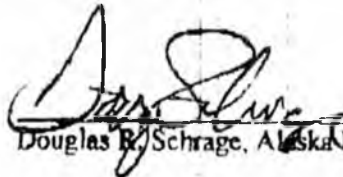
- WHEREAS Alaska Fire Chiefs Association is an organization dedicated to public safety, and
- WHEREAS polybrominated biphenylethers are used as a fire retardant in plastic products but can leach from those products and enter the environment and
- WHEREAS high concentrations of polybrominated biphenylethers have been found in breast milk and fat cells of humans living in North America and
- WHEREAS polybrominated biphenylethers have been linked with neurological development deficits and immunological impairments in children and
- WHEREAS other fire retardants that are effective and less toxic are readily available for use in plastic products,

NOW, THEREFORE, BE IT RESOLVED that:

The Alaska Fire Chiefs Association supports legislative efforts to ban polybrominated biphenylethers containing products from being imported to or sold within the State of Alaska.

Adopted this 6th day of December 2007 during the December teleconference.

Attested by:


Douglas R. Schrage, Alaska Fire Chiefs Association President



Electronic Products Meet Fire Safety Standards without DecaBDE



Clean Production Action, an independent, non-industry funded organization, has been researching the viability and effectiveness of electronic products flame retarded without decabromodiphenyl ether (decaBDE). In 2005, we commissioned the Lowell Center for Sustainable Production to assess the availability of alternatives to decaBDE in electronics and textiles. The Lowell Center's report, *An Investigation of Non-Halogen Substitutes in Electronic Enclosures and Textile Applications*, concluded that alternatives to decaBDE flame retarded plastics are widely available on the market and are used in electronic products today.

One of the most common non-brominated alternatives to decaBDE used in electronic products is a phosphorous-based compound—resorcinol bis(diphenylphosphate) (RDP). Electronic manufacturers are meeting the Underwriters Laboratories (UL) recommended standard for television components (UL 94) of V-0 with RDP. According to a Washington State Department of Health

assessment, RDP is not a persistent bio-accumulative toxic chemical (PBT). DecaBDE is on Washington State's PBT list and a phase-out is being recommended by the Departments of Ecology and Health as long as safer alternatives are available.

RDP allows products to meet strict fire safety standards needed to protect consumers. Manufacturers of decaBDE, who also manufacture phosphorous-based alternatives, are promoting the use of RDP as a viable alternative for use in electronic enclosures. Websites of manufacturers who produce decaBDE and the alternative flame retardants contradict the claims of bromine industry lobbyists that decaBDE-free products may put consumers at a higher risk to fires.

- Chemtura (formerly Great Lakes Chemical) advertises the use of RDP for TV housings and other consumer electronic products.¹

Finally, in lobbying against bans on decaBDE in states, bromine industry representatives have suggested that prod-

ucts using phosphate based flame retardants are not as safe as ones that contain decaBDE. Dell, a leader in phasing out all brominated flame retardants in favor of alternatives, has the following response:

“Dell and other companies who have prohibited the use of deca-BDE have turned to alternative flame retardants for plastics in their products and to design strategies that reduce the need to use flame retarded plastics at all to meet the necessary fire standards and to promote consumer protection against fire exposure.”

— *Tod Arbogast,*
Director, Dell Sustainable Business

For alternative flame retardant chemicals to compete on the market, they must meet the same high level fire safety standards that are necessary for reducing consumer liability for products sold in the United States.

¹ See www1.greatlakes.com — phosphorous-based flame retardant products

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Rep. Kurt Olson and Members of the Committee
House Labor & Commerce Committee
State Capitol
Juneau, AK 99801-1182

February 13, 2008

Dear Chairman Olson and Members of the Labor and Commerce Committee:

Alaska Community Action on Toxics urges your support of HB 271, "*An Act relating to flame retardants and to the manufacture, sale, and distribution of products containing flame retardants; relating to bioaccumulative toxic chemicals; and providing for an effective date.*" Alaska Community Action on Toxics ("ACAT") is a statewide environmental health organization that conducts research and provides educational programs, technical assistance, and training. Thank you for providing the opportunity of a hearing on this bill in the Labor and Commerce Committee on Friday February 15, 2008.

Polybrominated diphenyl ethers, or PBDEs, are a class of flame retardant chemicals added to many consumer products found in the home, office, automobiles, and airplanes. Three mixtures used widely—penta-BDE, octa-BDE, and deca-BDE—made up 14%, 6%, and 80% of the 1999 worldwide production, respectively. They are found in electronics, such as the plastic casings of TVs and computers, and are used in some furniture foams, textiles, and kitchen appliances.

PBDEs are part of a broader chemical class called polyhalogenated aromatic hydrocarbons (PHAHs) which include other highly toxic chemicals such as PCBs and dioxins.² PBDEs are intrinsically hazardous because of their chemical characteristics: (1) they are stable, meaning that they are persistent in the environment and do not break down easily; (2) they are lipophilic, meaning that they accumulate in fatty tissues of living organisms; and (3) they have toxic properties, including the potential to cause developmental harm, damage the nervous system, disrupt thyroid and reproductive function. Their persistence and fat solubility allow them to both bio-magnify and bio-accumulate, meaning that they build up in the bodies of animals and humans. Although the main component in deca-BDE, BDE-209, has a relatively short half-life in people, it has been found to break down into other more persistent and toxic forms of PBDEs.

Due to their widespread use, persistence and bio-accumulative properties, PBDEs have been found in humans at high levels. One study showed that five percent of American women have levels of PBDEs that approach the levels associated with reproductive problems in animals. PBDEs have been found in mothers' breast milk and in the blood of mothers and their babies. People of the Arctic may experience an even greater risk due to their consumption of a traditional diet that is rich in fat from marine mammals.

PBDEs have been linked to numerous adverse health effects, including:

- **Developmental Effects:** Studies in laboratory animals indicate that neonatal exposure to PBDEs permanently damages learning and memory functions, impairs motor activity, and is linked to permanent aberrations in behavior.
- **Reproductive Effects:** PBDEs have been correlated to cause cryptorchidism, or undescended testes in new born boys, and permanent impairment of sperm development in laboratory animal studies. They have also been associated with the delay of puberty in both male and female rodents and alterations in sexual development and gender-specific sexual behavior. Exposure to PBDEs has been linked to birth defects, reduced weight gain during pregnancy, changes in ovary cells, and reduced sperm count.
- **Cancer:** One study suggests that *in utero* exposure to PBDE concentrations is associated with an increased risk of testicular cancer in men. The Agency for Toxic Substances and Disease Registry (ATSDR) lists deca-BDE as a possible human carcinogen based on the development of liver tumors in laboratory animals.
- **Thyroid Problems:** Recent animal studies have shown that PBDE exposure is linked to decreased circulating concentrations of thyroid hormone and to a decrease in thyroid weight in adult offspring.

PBDEs pose a threat to public health. Firefighters are at particular risk because they are exposed to toxic fumes while on the job. When combusted, PBDEs release a highly corrosive gas known as hydrogen bromine. In a letter to Kelly Fox, president of the Washington State Council of Fire Fighters, Richard M. Duffy, Assistant to the General President of the International Association of Fire Fighters (IAFF), on behalf of IAFF writes: "Many studies involving fire fighters exposed to these and other toxic gases during active fire fighting, overhaul, and long term exposure from these chemicals penetrating protective gear, have found that fire fighters have a much greater risk of contracting cancer, heart and lung disease, and other debilitating diseases." In the same letter, Duffy states, "the IAFF believes that the passage of legislation banning brominated flame retardants (Polybrominated diphenylethers (PBDEs) including Penta-, Octa-, and Deca-BDEs) is a step in the right direction for improving the health and safety of our fire fighters and the citizens who are exposed to these."

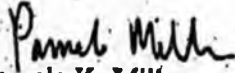
Industry has already voluntarily phased out the use of penta- and octa-BDE, and affordable, less toxic flame retardants are available for all deca-BDE uses. Some alternatives include: product redesign to eliminate the need for added chemicals, and the use of less toxic chemicals such as red phosphorus, ammonium polyphosphate and aluminum trihydroxide. Self-extinguishing plastics that do not need added flame retardants are now available including polysulfone, polyaryletherketone, and polyethersulfone. The most widely-used alternative flame retardant for use in electronics has been shown to be safer than deca-BDE. Resorcinol bis(diphenyl-phosphate) or RDP, the primary flame retardant used in the computer industry, is significantly safer than deca. According to the Washington State Department of Health, RDP "does not appear to persist in the environment, does not tend to bioaccumulate, and poses low toxicity concern for humans..." and meets Underwriters Laboratories recommended fire safety standard for television components. Furthermore, many companies are taking the lead in using safer alternatives, including Apple, Dell, Xerox, Ericsson, IBM, Intel, Motorola, Sony, Panasonic, Phillips and others.

In summary, HB 271 presents a viable tool for protecting the health of Alaskan workers, public health,

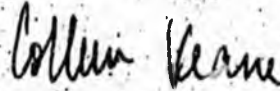
and the environment. We believe that implementation of this bill will not create hardship for local businesses, as there are many viable and economic alternatives.

Thank you for your careful consideration of the merits of this bill. We urge the Committee to ensure its passage.

Sincerely,



Pamela K. Miller
Executive Director
Alaska Community Action on Toxics



Colleen Keane
Environmental Health Organizer
Alaska Community Action on Toxics

CC: Co-Chair Representative Mark Neuman
Representative Carl Gatto
Representative Gabrielle LeDoux
Representative Jay Ramras
Representative Robert L. Buch
Representative Berta Gardner

Department of Public Safety Division of Fire and Life Safety Response to HB 271

With the permission of the Chair, My Name is Kelly Nicoletto; I am the Assistant State Fire Marshal for the Department of Public Safety Division of Fire and Life Safety. For the record, I have 29 years of expertise in the fire service

It appears from multiple sources that polybrominated diphenyl ethers (PBDEs) are a concern to the well being of humans and animals. The fact that PBDE is a persistent organic pollutant, similar to PCBs and DDT, and can remain in the environment for years without breaking down is of major concern. The larger problem is the lack of serious regulation of the chemical industry. If the chemical industry were regulated to the degree of pharmaceutical industry we probably wouldn't be having this discussion. Pharmaceuticals (chemicals intentionally ingested, injected, inhaled by or topically applied to humans) have to be proven safe for humans before they are sold on the open market. In the industrial chemical industry it seems that chemicals are banned only after they are proven harmful to humans or the environment. I see a benefit to this legislation, as long as there is a suitable fire retardant to replace the PBDE's. The lack of fire retardant will kill more people sooner than using PBDE's.

Dell Computers, and HP are leading the way in eliminating the use of PBDE's. Dell is drastically reducing their use of brominated fire retardants. They currently prohibit the use of PBB's and PBDE's (including DecaBDE) for all of their products. HP is following suit. Dell's goal is to eliminate the use of all brominated fire retardants by 2009. They will use different plastics and retardants when applicable, and when possible re-engineer their products so that fire retardants aren't required.

The value of flame retardants in plastics is extremely high. Without them we would have many more fires, exposing firefighters more often, and would not be able to have some of the convenience appliances and products we now enjoy in our homes today. Flame retardants in plastics protect us from low temperature ignition. Fighting structure fires is hazardous. Chemical contamination is just one danger of this occupation. Structural collapse, back-draft, and flashover are hazards that are prevented when the fire doesn't start.

I want to thank Rep. Doll for taking the initiative on this issue and bringing it forward. I also want to thank her for contacting our office and involving the Div. of Fire and Life Safety in the review of the legislation. The division cannot support the legislation at this time because there is not enough empirical evidence established that supports the complete ban of these chemicals, nor are there enough adequate replacements for these chemicals available at this time. While this bill provides an opportunity to discuss this issue and the possibility of a ban in the future, the division feels the measure is premature at this time. I am available to answer any questions relating to the division or our conclusion of the bill. Thank you.

**Testimony of Pamela Miller, Executive Director,
Alaska Community Action on Toxics**

**For a Hearing of the House Labor and Commerce Committee
Concerning HB 271—An Act Relating to Flame Retardants
and Other Bioaccumulative Toxic Chemicals**

February 15, 2008

I would like to begin by thanking Chairman Olson and Members of the Committee for this opportunity to provide testimony on HB 271. My name is Pamela Miller, Biologist and Executive Director of Alaska Community Action on Toxics (ACAT). ACAT is a statewide environmental health organization that conducts research and provides educational programs, technical assistance, and training. Alaska Community Action on Toxics urges your support of HB 271, "*An Act relating to flame retardants and to the manufacture, sale, and distribution of products containing flame retardants; relating to bioaccumulative toxic chemicals; and providing for an effective date.*" Please consider additional information provided in the letter sent to Committee members from Alaska Community Action on Toxics—in this and an accompanying briefing paper, we provide references to the most current scientific and medical literature.

HB 271 is an important measure to protect the health of workers and the general public. The American Public Health Association recognizes the public health threat presented by the prevalence of toxic PBDE flame retardants and passed a resolution stating: "*In light of the emerging science on the inherent toxicity and persistence of PBDEs, evidence of adverse health effects on animals, and the prevalence and rising levels in fish, biota, and human breast milk, immediate action is needed to prevent further environmental contamination and to protect public health. The American Public Health Association urges state and federal governments to require the use of all PBDE flame retardants be phased out in all products manufactured and sold in the U.S. by a date certain.*"

Polybrominated diphenyl ethers or PBDEs are similar in structure to the banned chemicals known as PCBs, polychlorinated biphenyls, and thus can have similar harmful effects on the body. PBDEs are persistent, bioaccumulative, and toxic. People are exposed to PBDEs through contaminated air, household dust, and foods. PBDEs are associated with adverse health effects in animal studies, including: neurobehavioral toxicity, thyroid hormone disruption, and for some forms of the chemical, cancer. PBDEs can impair brain development and the ability to learn. There is growing evidence that these chemicals can cause developmental effects, endocrine disruption, immunotoxicity, and long-term multi-generational harm. Worldwide, people in the U.S. have the highest levels in breast milk, blood serum, and body fat—10-100 fold higher than people in Europe, Asia, and New Zealand. PBDEs can be transferred to the developing baby during pregnancy and to newborns through breast milk. One study suggests that *in utero* exposure to PBDE concentrations is associated with an increased risk of testicular cancer in men. The Agency for Toxic Substances and Disease Registry (ATSDR) lists deca-BDE as a possible human carcinogen based on the development of liver tumors in laboratory animals. PBDE exposures have been correlated with cryptorchidism, or undescended testes in new born boys. PBDEs are persistent and can travel long distances atmospherically—PBDEs are now ubiquitous and found in Arctic air, sediments and wildlife. People of the north are more vulnerable to exposures due to higher levels of consumption of fish and marine mammals.

Dr. Larisa Takser of the University of Sherbrooke, Department of Obstetrics and Gynecology states: "Current regulations do not take into account how sensitive the fetus is to the toxicity of polluting agents." She observed effects at very low doses, at levels that we consume everyday. She concluded that PBDEs can have an impact on a pregnant woman's thyroid gland and could adversely affect the fetal brain. Elevated levels of PBDEs are found in workers who dismantle and recycle electronics, those who repair and maintain computers, and in rubber workers. Firefighters are at particular risk because they are exposed to toxic fumes containing PBDEs from burning building materials, electronics, and furniture.

Safe and economical alternatives are available that do not compromise fire safety. The International Association of Firefighters, representing more than 280,000 full-time professional firefighters and paramedics who protect more than 85% of the nation's population states: "*Many studies involving fire fighters exposed to these and other toxic gases during active fire fighting, overhaul, and long-term exposure from these chemicals penetrating protective gear, have found that fire fighters have a much greater risk of contracting cancer, heart and lung disease, and other debilitating diseases. While we support the concept of flame retardant chemicals, there are alternatives that do not contain bromine or chlorine and are much safer for fighters than PBDEs...Accordingly, the IAFF believes that the passage of legislation banning brominated flame retardants (polybrominated diphenyl ethers (PBDEs) including penta-, octa-, and decabrominated diphenyl ethers (PBDEs) is a step in the right direction for improving the health and safety of our fire fighters and the citizens who are exposed to these.*" Resolutions in states considering similar legislation have been passed by organizations representing fire fighters, including: Professional Firefighters of Maine, Michigan Professional Fire Fighters Union, Minnesota Professional Fire Fighters, and others. The Alaska Fire Chiefs Association "*supports legislative efforts to ban polybrominated biphenyl ethers containing products from being imported to or sold within the State of Alaska (December 2007 Resolution).*"

Viable alternatives exist that are already replacing the need for PBDEs without compromising fire safety. Furniture, plastics, and electronic products can be manufactured to meet fire standards without chemical flame retardants. Electronic products are being designed with lower thermal and voltage generating components, thus reducing the need for flame retardants. Highly flammable plastics are being replaced with inherently flame retardant materials, including plastics such as polysulfone. Non-halogenated flame retardants that are less toxic and safe include phosphorus-based compounds such as RDP (resorcinol bis diphenyl phosphate). Manufacturers of computers and electronics are using safer alternatives, including Apple, Sony, IBM, Intel, Motorola, Panasonic, and Phillips. IKEA furniture, Crate and Barrel, and Eddie Bauer are now using PBDE-free polyurethane foam.

We also support this legislation because it has a provision for the Department of Environmental Conservation to develop a list and phase-out plan for other persistent bioaccumulative toxics that pose a hazard to human health. In summary, we urge you to pass HB 271 in order to protect health; particularly the health of vulnerable populations including pregnant women, developing children, fire fighters and other workers. Thank you.

HB

288



MUNICIPAL LIGHT & POWER
ANCHORAGE, ALASKA

February 5, 2008

Hon. Kurt Olson
Chairman, House Labor & Commerce Committee
State Capitol, Room 408
Juneau, AK 99801

By US Mail and Email: Rep Kurt Olson@legis.state.ak.us
Eleanor Wolfe@legis.state.ak.us

RE: HB 288

Dear Chairman Olson and Members of the Committee:

The Municipality of Anchorage, d/b/a Municipal Light and Power (ML&P) respectfully submits the following testimony related to House Bill No. 288.

A policy like this should not be established by statute

The Alaska Public Utilities Commission Act, AS 42.05 wisely vested in the Alaska Public Utilities Commission (APUC), succeeded by the Regulatory Commission of Alaska (RCA), both the power and the obligation to set just and reasonable rates for regulated public utilities, and to impose reasonable standards of service on those utilities. Presumably, the Legislature recognized that appropriate business practices, service standards and rates are complex matters that are too dynamic to be set by statute. The law therefore established an administrative body, the APUC (later the RCA) that could develop the body of knowledge and understanding necessary to establish appropriate regulations defining the conditions under which utilities provide service to their customers, and appropriate rates that the customers must pay for those services.

House Bill No. 288 would depart from that policy by requiring not only that utilities allow customers to operate generation in parallel with the utility's system, but that the

utilities, in effect, purchase the essentially random output of the customers' generators as if it were worth as much as the retail service provided by the utility.

We advance below that HB 288 will not achieve the benefits claimed and will, in fact, be harmful to the interests of electric utility rate payers, but first we would like the legislature to consider whether it is wise to develop policy of this nature by statute in the first place. HB 288 seems clearly out of place as a new section 045 in Chapter 42 45, which is otherwise entirely devoted to state funded projects, while HB 288 is obviously regulatory in nature. AS 42.45 might be an appropriate place to put a state funded program to promote net metering, but it is not the best place for an unfunded regulatory mandate.

Be that as it may, the legislature cannot know whether it is appropriate to require utilities to allow parallel operation without considering technical questions about feasibility, economy, and safety, nor could it determine what the appropriate value of the output of customer generation would be without knowing important attributes such as whether the output could be relied on in any way. If it turns out that the output is worth a small fraction of the price of retail electric service (and it will) the utilities' other customers will have to subsidize the customer owned generation, so whether all utility customers should be required to subsidize customer owned generation, and if so, to what degree, will be important considerations. The factual aspects of these questions are complex and changeable, and exactly the sort of issue that regulatory commissions are set up to consider.

Net metering would be harmful to the ratepayers

If the legislature believes that it should consider mandating net metering, the threshold question should be whether net metering would be a reasonable means of achieving any purpose. If the purpose of the bill is to promote alternative energy use (by "alternative" we assume that the sponsor means "renewable"), we must wonder why the encouragement should be directed only to micro-scale alternative energy use.

Net metering, as proposed in this bill, would create a very large subsidy for generators of 25 kW or less, that happen to be located on the premises of utility customers. We question why it would be a particularly good thing for renewable generation to be constructed in such tiny increments when there is every reason to believe that the minimum efficient scale for renewable resources is much larger than that. We also wonder why it would be a particularly good thing to require new generation to be located on customers' premises. As anyone who has stood next to a functioning wind generator knows, even renewable power producing machinery almost always produces locally

February 5, 2008

Page 2 of 5

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undesirable environmental effects (photovoltaic power might be an exception to this rule, but of all of the potential renewable power sources, solar power is the least likely to be cost effective in Alaska), so why would we pass a law encouraging these undesirable environmental effects to be concentrated in environments where people live?

We think that the answer to both of these questions may be that the drafters recognize that large scale net metering would be harmful, and the limitations are designed to limit the harm. If that is true, and we think that it is, we hope that the legislature will ask why small scale net metering would not also be harmful, just on a smaller scale.

Net metering amounts to a subsidy, paid by the ratepayers

People interested in net metering should perform the following thought experiment: assume that you have, at your home, a solar array (or wind turbine, or whatever technology pleases you the most) that produces, on average, the same electric energy per month as your home consumes. Assume that your residential rate structure is similar to ML&P's (\$6.56 per month customer charge plus approximately 9¢/kWh, total, for energy). Answer the following questions:

1. What would your total monthly bill be? (Answer: \$6.56 per month)
2. Would you be receiving services worth more to you than \$6.56 per month? (your lights would still work at night and on cloudy days, and you could operate your large loads, like laundry machines, stoves, water pumps, water heaters, welders, etc. at any time)
3. Do you think that the utility would be spending more than \$6.56 per month to provide these services to you?

The experiment could be pushed a level further by assuming that all of the utility's customers were doing the same thing. In that case, a utility like ML&P would see its annual revenue drop from the order of \$100 million to less than \$300 thousand. Ask whether the utility could continue to provide the services that its customers would so obviously need for less than \$300,000 per year.

Of course, the utility would not actually allow its revenue to drop to that level. Instead, it would modify its rates (under the direction of the RCA, if it were an economically regulated utility) to recover its revenue requirement. The point of the experiment, however, is that with the rate structure we have now, net metering is a subsidy to the net metering customer.

February 5, 2008

Page 3 of 5

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It would be one thing if we were talking about a small subsidy designed to give a boost to technologies that were on the verge of cost effectiveness, but net metering, as described in HB 288 would be a huge subsidy. As a rough illustration, ML&P has in its tariff a non-firm power purchase rate that is usually between 2¢/kWh and 2.5¢/kWh. Nonfirm power is not worth any more than this because all it saves the utility is fuel. The utility cannot avoid any investment in generation, transmission, or distribution facilities, and the costs associated with these assets are about 75% of ML&P's total costs. ML&P's residential rate is about 9¢/kWh. Therefore, if ML&P had a net metered customer, ML&P's revenue would be reduced by 9¢ for each kWh produced by the customer's generation, but its costs would be reduced by only a little over 2¢. That is a nearly 7¢ per kWh subsidy.

To put that in perspective, ML&P's *total cost for firm, dispatchable, automatically regulated* power is only about 5¢/kWh. As mentioned above, the value of nonfirm power is less than half of this cost. So, under net metering, the generating customer would receive a subsidy worth more than the total cost of normal utility generation, and several times the total value of the nonfirm power that the customer would be selling.

Subsidies at that level clearly have the potential to seriously distort people's investment decisions. It could be that micro scale renewable generation would be so expensive that even with these enormous subsidies, none of it would be installed, and no harm would be done. There is the risk, however, that micro scale renewable generation would be only two or three times as expensive as similar quality utility generation, and in that case, a 7¢/kWh subsidy could be enough to encourage massive investments in uneconomic net metered generation. This could crowd, among other things, more cost effective utility scale renewable generation out of the market.

It should not be forgotten that the utilities would not absorb the increased costs. Those would be born by the rate payers. As utilities lose revenue, or make payments to customers with net metering, they will recover those losses by increasing their rates.

ML&P supports environmental responsibility, done right

ML&P supports environmental responsibility, but feels there are other ways to be environmentally responsible than requiring ratepayers to provide large subsidies for a type of generation that, even making the highest possible allowances for environmental effects, is not cost effective. If the legislature wishes to reduce our reliance on carbon based fuels, it should do so through a combination of reasonable economic incentives, which should target all uses of carbon based fuels, not just electric generation.

February 5, 2008

Page 4 of 5

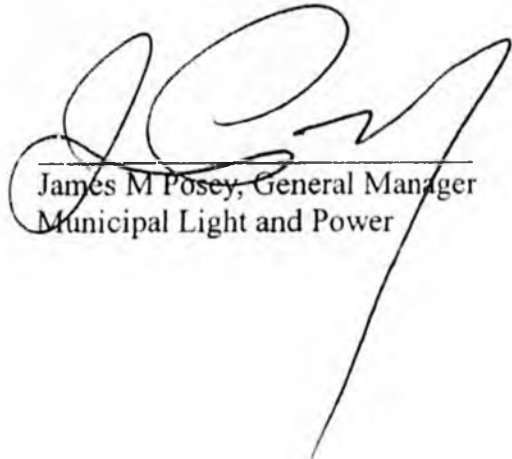
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Appropriate classic economic incentives would be environmental externality taxes and reasonable environmental externality subsidies, and these are the measures most likely to bring the desired results. If, however, the legislature believes that net metering is part of the solution, we would submit that the considerable costs of net metering should be funded from some source other than the pockets of the ratepayers.

Respectfully submitted this 5th day of February, 2008.



James M Posey, General Manager
Municipal Light and Power

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MEMORANDUM

February 1, 2008

SUBJECT: Schools and government buildings in relation to net energy metering (HB 288; Work Order No. 25-LS1178\K)

TO: Representative Paul Seaton
Attn: Louie Flora

FROM: Brian J. Kane *BJK*
Legislative Counsel

You have posed the following question: For the purposes of HB 288, do public school buildings and governmental buildings count as "commercial" or "residential" customers?

While I was unable to locate anything in statute specifically stating whether public schools and governmental entities are considered residential or commercial customers, it would seem that neither counts as being residential or commercial under HB 288.

The key question, it would appear, is who owns the building to which the electricity is being provided? If the building is owned outright by a public school or governmental entity, it is likely that this building would not qualify for participation in the net energy metering program. This scenario envisions the public school or governmental entity as the actual customer, but would not qualify as either residential or commercial. However, if a public school or governmental entity is renting or leasing space from a residential or commercial landlord, then it is likely that net energy metering could be utilized for the building. In this second scenario, the customer is actually the landlord, not the school or governmental entity renting or leasing space.

I did locate, in regulation, a definition for the term "customer." In the definitions found at 3 AAC 52.500 (regulations addressing the operation of public utilities adopted by the Regulatory Commission of Alaska), which are established under authority of AS 05 (Alaska Public Utilities Regulatory Act), the term "customer" means "a person, firm, partnership, association, corporation, municipality, cooperative organization or governmental agency supplied with electric service by a utility." While this does include governmental agency in the definition, there is no further modifier for customer, so I cannot discern how much of a role residential or commercial will actually play. It is likely that describing the customer as residential or commercial, though, will narrow the above definition.

If I may be of further assistance, please advise.

BJK:med
08-074.med

AMENDMENT

OFFERED IN THE HOUSE
TO: HB 288

BY REPRESENTATIVE SEATON

- 1 Page 2, line 10, following "supplier":
- 2 Insert ", or at the avoided-cost rate if the utility is not regulated by the Regulatory
- 3 Commission of Alaska"



February 1, 2008

Members of the Labor & Commerce Committee
House of Representatives
State of Alaska

Re: Testimony of Alaska Village Electric Cooperative re. HB 288

Honorable Committee Members:

There are many good people and organizations who whole-heartedly support net metering and perceive it to be a virtually no-cost way to encourage the development of small-scale renewable energy by homeowners and small businesses. The perception is that utilities cannot or will not do the "right thing" in pursuing renewable energy to displace carbon fuel sources. Six of AVEC's 53 villages now receive some of their electricity from wind and we have another six wind projects under active development as well.

The impetus for net metering emanates from the Lower-48 states, where the overwhelming preponderance of electricity is produced and sold by large investor-owned utilities. In Alaska, we have exactly the reverse situation. 95% of Alaskans get their electricity from a utility that they own – as cooperative members or as municipal residents.

With net metering, a small number of consumers with the financial means to install alternative energy get to use electricity from their local utility at no cost while the unfortunate many relying on the utility for all of their electricity must share the costs that the net generator is not.

Vendors of small wind turbines promote their products as paying for themselves in five to six years, even less where net metering is mandated. Net metering is icing on the cake and serves only to drive the cost of electricity ever higher in communities where Alaskans are struggling with unprecedented costs of energy today.

The Alaska Legislature should support renewable energy development at the utility level, so the greatest number of Alaskans can benefit. Net metering is not the answer.

Thank you for the opportunity to comment.

Yours very sincerely

Meera Kohler
President & CEO

February 1, 2008
HB 288
Comments to House L & C

Peter Naoroz, GM of Kootznoowoo, Inc.

Intro:

Brief description of Kootznoowoo as Angoon's ANCSA Corporation.

Kootznoowoo is currently working on a hydroelectric project know as Thayer Creek. Our plan is to produce electricity for Angoon and because we are not a regulated utility we will sell our power "wholesale" under a power sale agreement to our local utility. HB 288 provides the potential for additional power to come on line and "compete" with our sales. Despite this we support the bill. Kootznoowoo is also a member of IPEC an electric cooperative and we therefore are a part owner of our utility.

We have also been active locally in working on an Energy Policy for the Region and for the State.

We are here today to voice our support for this proposed legislation. It is in the best interest of the State of Alaska and its utility customers to more fully develop its energy resources and encourage market based competition to move our energy policy forward.

Bottom line is that we think this is smart and necessary legislation particularly well suited for Alaska.

In a nutshell, we see net metering as a fair way for small investors to participate alongside the Federal Government, the State of Alaska and its regulated utilities in moving forward to energy independence.

As the Legislature and the Governor establish a State Energy Policy the ultimate decision on Net Metering must be addressed. Net Metering is a fundamental piece of the Energy Policy of 42 other states. Most of these states are served by very sophisticated utilities which understand the benefits of such a program.

From a policy perspective Alaskan's should view Net Metering as positive though it will impact small rural utilities the most given the administrative and regulatory costs and lack of economies of scale associated with existing service providers. We would encourage listening carefully to their management teams as you consider this bill. On balance we believe that net metering will produce favorable policy outcomes. It will increase private investment, reduce our dependence on diesel and more fully develop our natural resources and our economy.

1. Investment Opportunities in Power Generation will increase

This bill will encourage local investment to augment state subsidies – (perhaps even eliminate those in urban areas)

- Should reduce funding requests by utilities of the State as the private sector regulated by the free market will respond to inefficiencies that currently exist.
- Our most expensive power is in rural Alaska where most of the untapped potential exists. By encouraging the free market to tap this potential and bring it to market the cost of power should drop as the economies begin to grow and multiple sources of power become established.

3. Move away from Expensive Diesel Generation and Heating

Move away from diesel – diesel will truly only become a backup in case of emergency --- this is good because:

- The highest and best use of diesel is elsewhere -- e.g. Fishing boats, planes -- (heating our homes and powering our computers should be done primarily with alternative energy sources closer to home.)
- Moving away from diesel addresses very real health concerns

4. Stronger Economies and Utilities will Emerge

- Declining sales of diesel will have its effects and force management teams to become creative as price may incrementally go up in the short term and transportation vendors will loose some volumes. However, over the long term business opportunities will grow as enterprise takes hold and the overall economy will get stronger across all sectors.
- Utility will become more involved in local community and will begin to focus on understanding and investing in energy storage. They will be able to provide "clean, less interrupted power" which is increasingly in demand. They will start to develop local energy partners within communities.

Conclusion

I would like to thank the sponsors of HB 288 for bringing this important energy policy forward and to the Chairman and this Committee for hearing it today. Currently, the State is lucky to have a surplus — this is the ideal time for us to establish an energy policy that will carry us through the tough times that we will likely face as a state and which many of our communities are facing today.

Suggested areas of consideration for Net Metering Rules

Eligible Renewable/Other Technologies:

Make certain all renewables are supported – consider adding natural gas is available locally.

Solar, Thermal Electric, Photovoltaics, Wind, Biomass, Hydroelectric, Geothermal Electric, Solid Waste, Tidal Energy, Wave Energy

Applicable Sectors:

Make certain all sectors are covered:

Commercial, Residential, Nonprofit, Schools, Local Government, State Government, Institutional

Limit on System Size:

Listen carefully to smaller utilities about residential size but make certain that you encourage a much higher number for commercial and institutional accounts.

e.g. Non-residential: 500 kW; residential: 25 kW

Consider a Limit on Overall Enrollment based on peak load forecasts as a way to guide the program

Treatment of Net Excess:

Consider providing a mechanism that excess energy credits which are granted to the utility be used to offset municipal or school account balances.

Utilities Involved:

Make certain that all utility types are covered Investor-owned utilities, electric cooperatives and municipal utilities.

REPRESENTATIVE PAUL SEATON

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ALASKA STATE LEGISLATURE
House District 35

Memorandum

From: Representative Paul Seaton
To: House Labor and Commerce Chair, Kurt Olson
Date: January 22, 2008
Re: HB 288 Hearing Request

I respectfully request a hearing for HB 288 at your earliest possible convenience. HB 288 establishes a net metering policy for Alaska utilities, allowing home and business owners to receive a credit in kilowatt hours for electricity they generate using renewable sources.

Attached please find the following materials:

- HB 288
- Sponsor Statement
- Spreadsheet and graphic of current net metering policies nationwide
- Article on Alaska CO2 emissions from Anchorage Daily News

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ALASKA STATE LEGISLATURE House District 35

Sponsor Statement HB 288

HB 288 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 will receive a credit for any excess monthly energy generation. The credit is in kilowatt hours and is applied against a customers' following electrical bill.

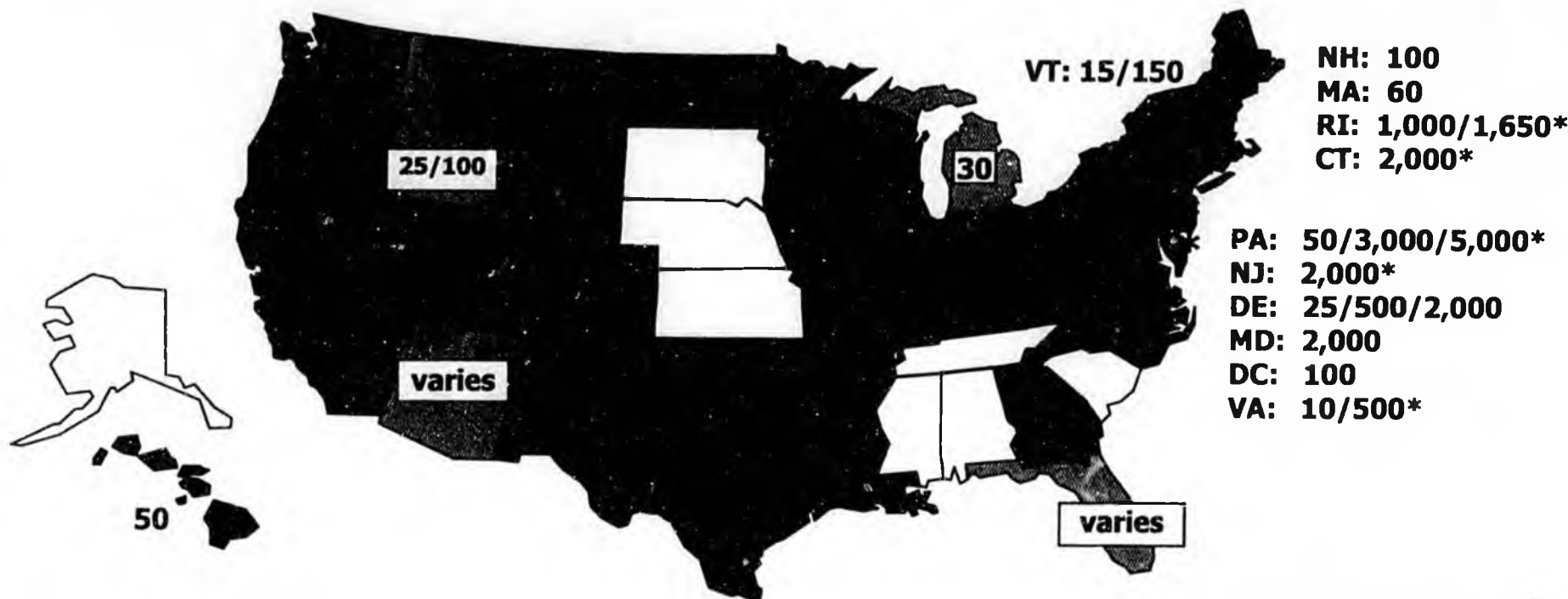
This "carry forward" of credits is appropriate for Alaska renewable energy generation, allowing the customer to harvest energy during peak production times, such as the summer for solar, and benefit from this production during low energy months. A net metering policy makes it possible for customers to amortize the equipment cost through reduction of electrical bills.

Alaska is one of the few states left in the nation without such a policy in place. Net metering is current policy in 42 states and Washington D.C. as mandated by statute, adopted voluntarily by utilities or through administrative rule making.

Alaska utilities also benefit under this legislation. By trading the homeowner a credit for the energy that the homeowner puts back out onto the grid, the utility does not have to generate more electricity to supply other customers. This incrementally decreases the need for a utility to find new large scale carbon fuel power sources. Carbon dioxide emission reduction is therefore achieved by the utility.

HB 288 imposes a cap of 25 kilowatts on residential and commercial system capacity which is modest by national standards. HB 288 exempts from the bill any utility that produces 100% of their power from an alternative energy source such as hydro. Under the terms of the bill a customer is given the option of selling their credits to the utility at its non-firm purchase power rate. This is the rate that the utility pays for generation from a source it does not own, such as Homer Electric Association purchasing power from Chugach Electric Association's Beluga power plant. Unused credits expire two years after they are generated.

Net Metering



Net metering is available in 42 states + D.C.

- State-wide net metering for all utility types
- State-wide net metering for certain utility types (e.g., investor-owned utilities only)
- Net metering offered by one or more individual utilities

(Numbers indicate individual system size limit in kilowatts. Some states' limits vary by customer type, as shown)

SUMMARY OF STATE "NET METERING" PROGRAMS (as of January 2007)

State	Utilities	Eligible Fuel Types	Eligible Customers	Limit on System Size	Limit on Overall Enrollment	Treatment of Net Excess Generation (NEG) ⁽¹⁾	Enacted	Citation / Reference
Arizona	IOUs and RECs (Net billing)	Renewables & cogeneration	All customer classes	≤ 100 kW (≤ 10 kW for AZ Public Service customers)	None	Monthly NEG purchased at avoided cost	1981	AZ Corp. Comm. Decision No. 52345
	Tucson Electric Power Co.	PV & wind	Commercial, Residential	≤ 10 kW	500 kW in TEP territory	Monthly NEG carried forward to next billing cycle; net excess at end of year granted to utility	2003	<u>TEP Pricing Plan PRS-101/102</u>
	Salt River project	PV	Residential	≤ 10 kW	None	Purchased monthly by utility at avg. market price minus a price adjustment of \$0.00017/kWh	2004	<u>Salt River Project Residential Solar Buyback Service Rider</u>
Arkansas	All utilities	Solar thermal, PV, wind, biomass, hydro, geothermal, fuel cells & microturbines using renewable fuels	All customer classes	≤ 25 kW (res); ≤ 100 kW (com)	None	NEG granted to the utility monthly	2001	HB 2325 (enacted April 2001, effective Oct. 2001). <u>AR PSC net metering rules</u>
California	All utilities; munis can permit net or co-metering	PV, landfill gas, wind, solar thermal & anaerobic digestion	All customer classes	≤ 1000 kW	2.5 % of a utility's peak demand (separate limit of 50 MW for SDG&E)	NEG granted to utility annually, also allows bi-directional time-of-use metering, and requires it for wind projects >50 kW	1995	<u>CA Public Utilities Code § 2827</u> , as amended 98, 00, 01, 02, 05 and 06.
Colorado	All utilities subject to renewable energy standard requirements	All utilities: PV; solar thermal electric, wind, biomass, LFG, hydro, fuel cells Ft. Collins, Gunnison: PV & wind	All utilities: All customer classes Ft. Collins: Residential Gunnison: Residential, Commercial	All utilities: ≤ 2 MW; Ft. Collins, Gunnison: ≤ 10 kW; Holy Cross: ≤ 25 kW	All utilities: none; Ft. Collins: first 25 customers Gunnison: first 50 customers	All utilities: NEG credited to following month; at end of annual period any unused credits are purchased by utility at the average hourly incremental cost of electricity over the prior 12 month period Ft. Collins: NEG credited to following month; granted to utility at end of 12-month period Gunnison: Purchased by utility at wholesale rate Holy Cross: NEG reimbursed at avoided cost annually	All utilities: 2004 Ft. Collins: 2003; Gunnison: 2000	<u>CO PUC Docket No. 05R-112E; Decision No. C05-1461. Fort Collins Elec. ; Gunnison County Electric Assoc. Net Metering Program;</u>
Connecticut	IOUs	Solar, wind, biomass, LFG, small hydro, ocean, fuel cells, and MSW	Commercial and Residential (including multi-family residential of 2-4 units)	Fossil tech ≤ 50 kW; Renewables ≤ 100 kW	None	Purchased by utility at spot market energy rate	1998; 2003	<u>C.G.S. 16-243h (Public Act 98-28);</u> <u>Public Act 03-135 (Section 3)</u>

Source: Updated from *Powerful Solutions: Seven Ways to Switch America to Renewable Electricity*, Union of Concerned Scientists, January 1999, available on-line at www.ucsusa.org/clean_energy (tables updated January 2007). Contact: Jeff Deyette at (617) 547-5552 or jdeyette@ucsusa.org.

State	Utilities	Eligible Fuel Types	Eligible Customers	Limit on System Size	Limit on Overall Enrollment	Treatment of Net Excess Generation (NEG) ⁽¹⁾	Enacted	Citation / Reference
Iowa	IOUs only	PV, wind, biomass, hydro & MSW	All customer classes	No limit (special waivers allow MidAmerican Energy and Interstate Power and Light to limit systems to 500 kW)	None	Purchased at avoided cost; MidAmerican Energy and Interstate Power and Light granted special waiver to carry forward NEG for use in future months	1983; 1991	IA Admin Code Section 199 § 15.11(5)
Kentucky	IOUs and coops (Pilot programs also in place for Louisville G&E, KY Utilities)	PV (wind & hydro included in pilot programs only)	All customer classes	≤ 15 kW	0.1% of a supplier's peak load during the previous year	Credited to following month, with no expiration	2002; 2004	KY PSC Case. 2001-00303; 2001-00304 SB 247 (2004) New 2004 law takes affect in 10/04. Pilot programs will remain in place until they expire.
Louisiana	All utilities	PV, Wind, Biomass, Hydroelectric geothermal, fuel cells, micro turbines	All customer classes	≤ 25 kW for res; ≤ 100 kW for comm. & ag.	None	Credited to following month, with no expiration	2003	HB 789 (2003); PSC Docket No. R-27558.
Maine	All utilities	Renewables, fuel cells, MSW, cogen, tidal energy	All customer classes	≤ 100 kW	None	NEG credited to following month; at end of annual period any unused credits are granted to utility without compensation	1987; 1998	ME PUC 65-407 § 313 (1998); ME PUC Docket No. 98-621
Maryland	All utilities	PV, wind, biomass, and anaerobic digestion	Residential, Commercial & schools, local, state and federal govt. (Systems may be owned or leased)	≤ 200 kW, up to 500 kW with PSC approval	34.7 MW or 0.2% of 1998 peak demand	NEG carried over to the customer's next bill until all credit is used or for a maximum of 12 months, whichever is sooner	1997; 2004; 2005; 2006	MD Code: PUC § 7-306 (HB 869, 1997) HB 1269 (2004) HB 1331 (2005) SB 167 (2006)
Massachusetts	All utilities	Renewables, fuel cells, MSW, cogeneration	All customer classes	≤ 60 kW	None	Credited to customer's next bill at average monthly market rate	1982; 1997	DPU/DTE 97-111 M.G.L. ch. 165, Sec. 1(G)(g) (Ch. 164 of the Acts of 1997)
Michigan	Voluntary for all utilities. (11 offer program, accounting for 30% of total state electric sales)	Solar thermal electric, PV, LFG, wind, biomass, hydro, geothermal electric, MSW	All customer classes	≤ 30 kW; utilities can voluntarily increase limit to ≤ 150 kW	0.1% of a utility's peak load or 100 kW (whichever is greater)	NEG credited to following month; at end of annual period any unused credits are granted to utility without compensation	2005	PSC Order. Case No U-14346
Minnesota	All utilities	PV, wind, biomass, hydro, MSW & cogeneration	All customer classes	< 40 kW	None	Monthly NEG purchased at "average retail utility energy rate"	1983	Minn. Stat. § 261B.164(3) Minn. Rule 7835.3300

Source: Updated from *Powerful Solutions: Seven Ways to Switch America to Renewable Electricity*, Union of Concerned Scientists, January 1999, available on-line at www.ucsusa.org/clean_energy (tables updated January 2007). Contact: Jeff Deyette at (617) 547-5552 or jdeyette@ucsusa.org.

State	Utilities	Eligible Fuel Types	Eligible Customers	Limit on System Size	Limit on Overall Enrollment	Treatment of Net Excess Generation (NEG) ⁽¹⁾	Enacted	Citation / Reference
Montana	IOUs; Most of Montana Electric Coop's 26 members	IOUs: PV, wind & hydro; MECA: PV, wind, geothermal, fuel cells & small hydro	IOUs: All customer classes; MECA: Commercial & Residential	IOUs: ≤ 50 kW; MECA: ≤ 10 kW	IOUs/MECA: None	IOUs/MECA: NEG credited to following month; at end of annual period any unused credits are granted to utility without compensation	IOUs: 1995, MECA: 2001	IOUs: MCA 69-8-601 S.B. 409 ; MECA: Interconnection of Small Customer Generation Facilities - Model Policy
Nevada	IOU's	Solar thermal, PV, wind, biomass, hydro & geothermal	All customer classes	≤ 30 kW; although rules allow systems up to 150 kW, unfavorable requirements can be imposed on systems over 30 kW	1% of utility's peak capacity	For systems up to 30 kW, NEG is carried over to the next billing period with no deadline for expiration	1997; 2001; 2003; 2005	Nev. Rev. S. Ch. 704.766-775: AB 429 (June 2003); AB 236 (June 2005)
New Hampshire	All utilities	PV, wind & hydro	All customer classes	≤ 25 kW	0.05% of annual peak	NEG carried over to following month	1998	34 NH RSA 362-A:1 & 9: NH Code of Admin. Rules ch. PUC 900
New Jersey	All utilities	Solar, wind, fuel cells, geothermal, ocean, and methane from landfills or sustainably produced biomass	Residential & Commercial	≤ 2 MW	None	NEG credited to customer at the full retail rate; at the end of a twelve-month period, the utility must compensate the customer at the avoided cost rate	1999, amended 2004	NJ Permanent Stat. § 48-3-87 Sec. 38(e) ("Electric Discount & Energy Competition Act", Bill A16); Subch. 9, NJAC 14:4-9 (2001); N.J.A.C. 14:4-9. Net Metering and Interconnection Standards for Class I Renewable Energy Systems
New Mexico	IOUs & Co-ops	Renewables, fuel cells, MSW, cogeneration & micro turbines	All customer classes	≤ 80 MW	None	At utility's option, for systems under 10 kW customer is credited on the next bill for (1) purchase of NEG at utility's avoided cost; or (2) kilowatt-hour credit for NEG that carries over from month to month. For systems > 10 kW NEG is reconciled at the end of each billing cycle.	1998, amended 1999 and 2007	NMAC Title 17. 9.571 ; 1998 NM PRC Order 2847
New York	All utilities	PV (for res. only). Biogas (for farms only), wind (for res. and farms)	Residential & Agricultural	≤ 10 kW (PV) ≤ 25 kW (res. wind) ≤ 125 kW (farm wind) ≤ 400 kW (biogas)	0.1% of 1996 demand per IOU (PV); 0.4% of 1996 demand per IOU (farm systems); .2% of 2003 IOU demand for wind	NEG credited to following month at retail rate for PV and biomass, at avoided-cost rate for wind; at end of annual period any unused credits are purchased at avoided cost	1997, amended 2002 and 2004	NY Public Service Law § 66 ; S.B. 6592 ; S.B. 4890-E of 2003

Source: Updated from *Powerful Solutions: Seven Ways to Switch America to Renewable Electricity*, Union of Concerned Scientists, January 1999, available on-line at www.ucsusa.org/clean_energy (tables updated January 2007). Contact: Jeff Deyette at (617) 547-5552 or jdeyette@ucsusa.org.

State	Utilities	Eligible Fuel Types	Eligible Customers	Limit on System Size	Limit on Overall Enrollment	Treatment of Net Excess Generation (NEG) ⁽¹⁾	Enacted	Citation / Reference
North Carolina	IOUs only	PV, wind, LFG, biomass, micro hydro	All customer classes	≤ 20 kW for res; ≤ 100 kW for non res.	0.2% of the each utility's previous year in-state peak retail load	NEG credited to following month, but will be reset to once annually at the beginning of the summer season.	2005, amended 2006	<u>NC Utilities Commission, Order Adopting Net Metering, Docket No. E-100, Sub 83; NC Utilities Commission, Order Modifying Net Metering Tariff and Riders, Docket No. E-100, Sub 83</u>
North Dakota	IOUs only	Renewables, MSW & cogeneration	All customer classes	≤ 100 kW	None	Monthly NEG purchased at avoided cost	1991	<u>ND Admin. Code § 69-09-07-09</u>
Ohio	IOUs only; Bowling Green Municipal Utilities (BGMU)	IOUs: Solar thermal, PV, landfill gas, wind, biomass, hydro, fuel cells & micro turbines; BGMU: PV, wind, hydro & fuel cells	IOUs: All customer classes; BGMU: Commercial & Residential	IOUs: ≤ 100 kW (micro turbines), no limit on other sources; BGMU: ≤ 25 kW	IOUs: 1.0% of peak demand for each retail electric provider; BGMU: Not specified	IOUs: NEG purchased at unbundled generation rate, appears as credit on following bill; BGMU: Not specified	1999	IOUs: <u>OH Rev. Code § 4928.67, OAC 4901.1-10-28; Consumer Information</u> BGMU: <u>Electric Distribution Division</u>
Oklahoma	All utilities	Renewables, MSW & cogeneration	All customer classes	≤ 100 kW or annual output ≤ 25,000 kWh, whichever is smaller	None	Monthly NEG is granted to utility or credited to next bill, depending on utility	1988	<u>OK Corp. Comm. Rules 165:35-29-1 through 165:35-2 & 165:40-1 through 165:40-11</u>
Oregon	All utilities; City of Ashland	Solar, wind, fuel cell, hydro, LFG, waste, and biomass Ashland: PV & wind	All customer classes; Ashland: Commercial & Residential	≤ 25 kW, although the PUC may increase this limit; Ashland: None	No less than 0.5% of utility's historic single-hour peak load; beyond 0.5% eligibility can be limited by regulatory authority; Ashland: None	NEG purchased at avoided cost or credited to following month; at end of annual period unused credits shall be granted to low-income assistance programs, credited to customer, or "dedicated to other use" as determined by regulatory authority; Ashland: ≤ 1,000 kWh/month at full retail price	1999 and 2005; Ashland: 1996	<u>OR: OR Rev. Stat. 757.300 (HB3219 of 1999); SB 84</u>
Pennsylvania	IOUs	Solar thermal, PV, wind, biomass, hydro & renewable fuel cells, municipal solid waste, combined heat & power, waste coal, and other distributed generation	All customer classes	≤ 50 kW for res; ≤ 1 MW for nonres.; 2 MW for microgrid systems or available for emergencies	None	NEG purchased by utility monthly at avoided-cost rate	1998, 2006	<u>52 PA Code § 57.34(b)(4); PUC final rules for AEPS customer generators on Net Metering, Dockets No. L-00050174 & No. M-00051865 (2006)</u>
Rhode Island	Narragansett Electric	Renewables, fuel cells, MSW & cogeneration	All customer classes	≤ 25 kW	1 MW in Narragansett territory	NEG credited to following month; at end of annual period any unused credits are granted to utility without compensation	1998	<u>RI PUC Order Docket No. 2710 (1998)</u>

Source: Updated from *Powerful Solutions: Seven Ways to Switch America to Renewable Electricity*, Union of Concerned Scientists, January 1999, available on-line at www.ucsusa.org/clean_energy (tables updated January 2007). Contact: Jeff Deyette at (617) 547-5552 or deyette@ucsusa.org

State	Utilities	Eligible Fuel Types	Eligible Customers	Limit on System Size	Limit on Overall Enrollment	Treatment of Net Excess Generation (NEG) ⁽¹⁾	Enacted	Citation / Reference
Texas	PTB REPs, TDUs & integrated IOUs that have not unbundled in accordance with PURA § 39.051 (Regulated utilities); Austin Energy (AE); San Antonio City Public Service (SA)	Regulated utilities: Renewables, LFG, hydro, fuel cells, microturbines; AE: Solar, LFG, wind, biomass, hydro, geothermal, MSW SA: PV, landfill gas, wind, biomass, hydro, geothermal, tidal or wave energy	Regulated utilities: All customer classes; AE/SA: Commercial & residential	Regulated utilities: ≤ 50 kW; AE: 20 kW; SA: ≤ 25 kW	Regulated utilities/SA: None; AE: None	Regulated utilities: Monthly NEG purchased at avoided cost; AE: Monthly NEG credited to the next bill at the current fuel charge rate, or if the customer participates in the GreenChoice it will be credited at the Green Power Charge; SA: 1.65 cents per kWh (Oct-May) & 2.02 cents per kWh (Jun-Sep)	Regulated utilities: 1986; AE: 2004 SA: 2002	Regulated utilities: <u>PUC Substantive Rule § 25.242(h)(4)</u> ; AE: <u>Ordinance No. 030908-04 Distributed Generation from Renewable Sources Rider</u> ; SA: <u>City of San Antonio Public Service Distributed Generation</u>
Utah	All IOUs and RECs	Solar thermal, PV, wind, hydro & fuel cells	All customer classes	≤ 25 kW	0.1% of 2001 peak demand	NEG credited to following month; at end of annual period any unused credits are granted to utility without compensation	2002	<u>UT Code 54-15-101 to 54-15-106</u> ; <u>HB 7 of 2002</u> Utah Energy Office: <u>Net Metering</u>
Vermont	All utilities	Renewable energy. Biogas, and anaerobic digestion of agricultural products, byproducts and wastes are explicitly included	Residential, commercial, and agricultural	≤ 150 kW for farms ⁽²⁾ ; ≤ 15 kW for others	1% of 1996 peak demand or peak demand during most recent calendar yr., whichever is greater	NEG credited to customer, and must be used within 12 months, or it will be granted to the utility with no compensation	1998, amended 1999, 2002; amended 2006	<u>VT Stat. Ann. § 219a: H. 859 (2006)</u>
Virginia	All utilities	Solar thermal, PV, wind, hydro, sustainable biomass, energy from waste, wave motion, tides & geothermal power	Residential and commercial	≤ 10 kW (residential); ≤ 500 kW (commercial)	0.1% of annual peak demand	NEG is credited to following month; at end of annual period, excess generation is carried over to the next annual period (power purchase agreement is allowed).	1999; 2000; 2004; amended 2006	<u>VA Code Ann. § 56-594a: 20 VAC 5-315-10 through 5-315-90 SB 651 (2004)</u> ; <u>HB 1541 (2006)</u>
Washington	All utilities; Grays Harbor PUD	Solar, wind, hydro, biogas from animal waste, fuel cells, and CHP	All customer classes	≤ 100 kW	All utilities: 0.25% of 1996 peak (increases to 0.5% on 1/1/14), at least half for renewables; Gray Harbor PUD: 1% of 1996 peak load	NEG credited to following month at utility retail rate, at end of annual period any unused credits are granted to utility without compensation; PUD: purchased by the utility at year-end for 50% of the retail rate	1998, amended 2000; amended 2006	<u>WA: WA Rev. Code § 80.60: HB 2773</u> ; <u>PUD: Net Metering: HB 2352 (2006)</u>
Wisconsin	IOUs only. We Energies Experimental Program	Renewables, MSW & cogeneration; We Energies: wind	All customer classes	≤ 20 kW; (We Energies Experimental Program: ≤ 100 kW)	None; (We Energies Experimental Program: up to 25 systems for 10 years)	Monthly NEG purchased at retail rate for renewables, avoided cost for non-renewables	1992; 2006 (We Energies Experimental Program)	<u>Rate Schedules: PSC of WI Order 6690-UR-107</u> ; <u>We Energies experimental program: PSC Order 5-UR-102, Ref #48654</u>

Source: Updated from *Powerful Solutions: Seven Ways to Switch America to Renewable Electricity*, Union of Concerned Scientists, January 1999, available on-line at www.ucsusa.org/clean_energy (tables updated January 2007). Contact: Jeff Deyette at (617) 547-5552 or jdeyette@ucsusa.org.

State	Utilities	Eligible Fuel Types	Eligible Customers	Limit on System Size	Limit on Overall Enrollment	Treatment of Net Excess Generation (NEG) ⁽¹⁾	Enacted	Citation / Reference
Wyoming	All utilities	PV, wind, biomass & hydro	All customer classes	≤ 25 kW	None	NEG credited to following month; at end of annual period any unused credits are purchased by utility at avoided cost	2001; 2003	WY Stat. § 37-16-101 through § 37-16-104; House Bill 195 (2001); Senate File 106 (2003)

⁽¹⁾In all cases, energy generation is netted against energy consumption on an equal basis, down to zero net energy use during the designated period. Treatment of 'net excess generation' is relevant only when total generation exceeds total consumption over the entire billing period, i.e. the customer has more than offset his/her total electricity use and has a negative meter reading.

⁽²⁾The Vermont law was amended to allow Vermont Public Services Board to permit net metering for up to 10 non-farm systems per year that produce more than 15 kilowatts (AC) capacity, but less than 150 kilowatts of capacity. The law was also amended to allow "group net metering," such that farm systems may credit on-site generation against all meters designated to the farm system.

Sources: UCS 2006, Tom Starrs, US DOE (www.eren.doe.gov/greenpower/netmetering/nmtable.shtml), and Database of State Incentives for Renewable Energy (www.dsireusa.org).

State	Utilities	Eligible Fuel Types	Eligible Customers	Limit on System Size	Limit on Overall Enrollment	Treatment of Net Excess Generation (NEG) ⁽¹⁾	Enacted	Citation / Reference
Delaware	All utilities	Solar, wind, hydro, and "other renewables"	Commercial, Residential	≤ 25 kW	None	Varies by Utility	1999	26 Del. C. § 1014(d) (1999 HB10) ; DE Dept. of Adm Services Website
District of Columbia	All utilities	Fuel cells, CHP, Microturbines, renewable resources (not defined)	All customer classes	≤ 100 kW	None	Credited to customer's next bill	2000	D.C. Code § 34-1518 (Final rules have not yet been issued)
Florida	New Smyrna Beach Utilities Commission	PV	All customer classes	≤ 10 kW	None	Credited to following month	2000	UCNSB Electric Load Management Provisions
	JEA (Jacksonville)	PV and wind	Residential	≤ 10 kW	None	Credited to following month	2003	JEA Net Metering Policy
Georgia	All utilities	PV, wind, and fuel cells	All customer classes	≤ 10 kW (residential); ≤ 100 kW (commercial)	0.2% of previous year's annual peak demand for each utility	NEG credited to following month; at end of annual period any unused credits are granted to utility without compensation	2001	O.C.G.A. 46-3-50 through 46-3-56 (SB 93)
Hawaii	All utilities	PV, wind, biomass & hydro	Commercial, residential	≤ 50 kW	0.5% of each utility's peak demand	NEG credited to following month; at end of annual period any unused credits are granted to utility without compensation	2001; Amended 2004, 2005	HI state net metering website , HRS § 269-101 through § 269-111 (Act 272 of 2001 or HB 173) , HB2048 HD1 SD1 (Act 99, Session Laws of Hawaii 2004)
Idaho	IOUs (Avista Utilities; Idaho Power; Utah Power & Light Company)	Avista, Idaho Power: Solar thermal, PV, wind, biomass, hydro & fuel cells; UPLC: Solar thermal, PV, wind, biomass & hydro	Avista, Idaho Power: Commercial, residential, and agricultural; UPLC: commercial & residential	Avista: ≤ 25 kW; Idaho Power/UPLC: ≤ 25 kW (res/small com), ≤ 100 kW (large com/ag)	Avista: 0.1% of Avista's 1996 peak demand or 1.52MW; Idaho Power: 2.9 MW, or 0.1% of peak demand in 2000; UPLC: 0.1% of 2002 peak demand (714 kW)	Avista: Credited to the following month, then granted to the utility at end of annual period with no compensation; Idaho Power/UPLC: Purchased monthly at retail rate (res/small com); Idaho Power: Paid at 85% of Mid-Columbia rates (large com/ag); UPLC: Paid at 85% of Dow Jones index price for non-firm energy (large com/ag)	1980, 1997 Avista 1999; ID Power: 2002; UPLC: 2003	ID PUC Orders No. 16025 (1980); 26750 (1997) Avista Utilities Schedule 62 ; ID Power Schedule ; UPLC Electric Service Schedule No. 135
Illinois	Com Ed only	PV and wind	All ComEd retail customers only	< 40 kW	0.1% of annual peak demand	Purchased at avoided cost, plus an annual incentive payment	2000	ComEd Special Billing Experiment (effective 4/1/00)
Indiana	IOUs only	PV, wind, small hydro	Residential and K-12 schools; other customers at utility discretion	≤ 10 kW	0.1% of summer peak demand	Credited to following month	2004	170 IN Admin Code § 4-4.1-7

Source: Updated from *Powerful Solutions: Seven Ways to Switch America to Renewable Electricity*, Union of Concerned Scientists, January 1999, available on-line at www.ucsusa.org/clean_energy (tables updated January 2007). Contact: Jeff Deyette at (617) 547-5552 or jdoyette@ucsusa.org.

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State plays large role in world's warming**PER CAPITA: Alaska inventory finds jet flights, energy use to blame.**By TOM KIZZIA
tkizzia@adn.com

(01/22/08 00:02:13)

Alaska pumps as much greenhouse gas into the atmosphere as far more populous states such as Oregon and Connecticut, making it one of the top gas-emitting states per capita in the nation.

There are two big reasons for Alaska's output, according to a new state inventory of carbon emissions: big-jet transportation, including international cargo flights through Anchorage, and the huge consumption of energy in the North Slope oil fields.

These are the gases -- mainly carbon dioxide, but also methane, nitrous oxide and others -- that scientists say must be reduced if the planet's atmosphere is to avoid ruinous warming. Alaska is feeling the impacts of warming more than other states because of its northern latitude, with melting ice floes and glaciers and permafrost.

A natural-gas pipeline project would significantly increase North Slope greenhouse gases in the future, according to state estimates. This could be awkward, coming as scrutiny of new emission sources grows. But environmentalists have so far blessed the gas line as a net benefit for the atmosphere, counting on Alaska gas to replace dirtier fuels such as coal in the Lower 48.

Palin administration officials who developed the new inventory say they have no plans to press for emission targets or legal limits like some other states. But Congress is considering mandatory emission-reduction measures for the future, in line with international efforts.

The inventory will help evaluate how proposed legislation would affect Alaska communities and businesses, said Department of Environmental Conservation Commissioner Larry Hartig. The study released this month is a draft, with public comment due Feb. 1.

The DEC study expands on a preliminary inventory released almost a year ago. The new report has nearly the same bottom line -- 52.1 million metric tons of greenhouse gases released in Alaska in 2005, with 61.5 million expected by 2020.

That equals about half the emissions of Washington, a state with 10 times Alaska's population. It comes to about 79 tons per Alaskan, more than three times the national average of 24 tons a year.

What's new in this report is a breakdown of the corporations in Alaska with the biggest emissions. Oil companies top the list.

Leading everyone by an order of magnitude is BP Alaska, whose 10.7 million tons are just over half the industrial emissions in the state.

BP operates most North Slope fields, including the compression plant and central gas facility that together run on more than 1 million horsepower.

"It take a lot of energy to make energy," said BP Alaska spokesman Steve Rinehart.

BP's parent company won worldwide praise a decade ago with its announced commitment to reducing global warming emissions at its operations.

Last week, Rinehart was unable to cite any major investments by the company in Alaska aimed at that goal. But he said future modernization efforts on the Slope would include emission-reduction efforts.

Transportation, No. 2, accounted for 36.5 percent of Alaska's total. That was based largely on jet fuel sold in Alaska, though state officials noted that much of the fuel was burned elsewhere after the jets departed.

Last year's closure of the Agrium fertilizer plant in Nikiski, the third-largest emitter at 1.7 million tons, will keep the state's numbers from growing quite so fast.

One consequence of the state inventory is to make clear how hard it will be for Alaska -- and the world -- to meet carbon reduction targets first set by the Kyoto treaty in 1997. That international agreement, never joined by the United States, called for countries to reduce their emissions to about 5 percent less than their levels in 1990.

Alaska's emissions have now grown 22 percent since 1990, according to the report. By 2020, Alaska will have grown 44 percent since 1990, according to projections. And that's without a gas pipeline, which the report's authors concluded would not be in place until later.

A gas pipeline project would probably generate some 9 million metric tons in additional greenhouse gas emissions from a treatment plant and compressors, according to an estimate developed by the Department of Natural Resources last year for Rep. Paul Seaton, R-Homer.

That's based on an expectation that between 5 percent and 7.5 percent of the line's daily throughput would have to be burned to process and move the gas.

Seaton successfully pushed an amendment in the Alaska Gasline Inducement Act last year that requires companies applying to build the line to present a plan for dealing with carbon emissions.

Find Tom Kizzia online at adn.com/contact/tkizzia or call him in Homer at 907-235-4244.

SOUND OFF: Public comment on the draft of the Greenhouse Gas Emission Inventory Report is due Feb. 1. Mail comment to Clint Farr, Department of Environmental Conservation, 410 Willoughby Ave., Juneau, AK 99811-1800 or e-mail to Clint.Farr@alaska.gov.

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January 28, 2008

Representative Kurt Olson
Chairman, House Labor & Commerce Committee
State Capitol, Juneau 99801

Dear Representative Olson:

Thank you for the opportunity to provide comments on **HB 288, Net Energy Metering.**

Matanuska Electric Association (MEA) is the oldest and second largest electric utility cooperative in the state. MEA serves more than 53,000 customers in the Matanuska-Susitna Valley and Chugiak-Eagle River areas of Alaska.

Currently, MEA's tariff does not allow interconnections that would result in net metering. When MEA sells electricity to a customer, that customer pays the full allocated cost of generating, transmitting, and distributing the electricity purchased.

MEA is obligated to purchase power at avoided cost from certain qualifying facilities if they produce 100 kilowatts (kW) of power or less. The Public Utility Regulatory Policy Act (PURPA) defines a qualifying facility. PURPA regulations can be found in Chapter 16, Section 796, paragraphs 17 and 18, of the United States Code. MEA currently purchases power from one such facility, a small hydro operation at McRoberts Creek.

Under net metering, PURPA qualifying facilities would be allowed to sell electricity to the receiving utility at the same price that the utility is selling electricity to its consumers. Effectively, this allows the PURPA generator to benefit from the utility's investment in transmission, distribution, and back-up generation infrastructure without paying a fair share of the cost for such infrastructure. Based upon MEA's current tariff, net metering would result in the qualifying facility being paid MEA's avoided cost plus roughly an \$.08 per kilowatt hour subsidy.

MEA: HB 288 Net Energy Metering
January 28, 2008

As a non-profit electric cooperative, all of MEA's costs are proportionately borne by members based upon their level of consumption. MEA believes that net metering unreasonably requires other members to subsidize the services provided to PURPA generators, which is contrary to cooperative principles and the principles upon which the avoided cost pricing mechanism in PURPA is based.

The Regulatory Commission of Alaska (RCA), as required by the 2005 Energy Policy Act, is considering whether or not to adopt net metering standards for Alaska (RCA Docket #R06-005). The deadline for final determinations on adopting standards for net metering is August 8, 2008.

While MEA supports the use of renewable energy technologies, we respectfully disagree that net metering should be used as a tool to promote their use. Net metering creates unfair subsidies and is not in the best interest of Alaska's electric utility ratepayers. At a minimum, MEA encourages the House Labor & Commerce Committee to delay the passage of HB 288 until the RCA has made final determinations on net metering in docket #R06-005.

Sincerely,



Lorali M. Carter
Manager of Government & Corporate Communications

cc: Representative Paul Seaton, Sponsor, HB 288

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
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Iowa Utilities Board
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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 megawatts**.

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
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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 further 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 comes 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
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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 known 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.

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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>

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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 1990'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

In response to your request for information, I will attempt to address each point as presented.

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

In discussions prior to implementing our net metering (and the associated interconnection standard) concern was raised by several parties about the safety of the systems being interconnected and the impact to line safety and maintenance/operations practices. Some requirements added to the NC interconnection standard to address these issues are: 1) installation of the generator and all equipment must comply with the latest published editions of IEEE 929 and IEEE1547, 2) the customer's inverter or interconnection protection system must be tested and listed with the latest published edition of UL 1741, 3) the generator must pass the anti-islanding test in UL 1741, 4) inverters or interconnection protection systems must be manufactured after November 7, 2000, 5) specific transformer loading/grounding/balance limitations 6) an accessible, lockable isolation device with clear indication of open circuits, 7) inspection/approval by the local el utility and access to any maintenance records. Our current standard covers only single phase systems. 3 phase systems can be connected, but must be evaluated to a greater extent to identify the interconnection equipment and protective devices required. Our standard also specifies the insurance requirements, limits liability to direct damage incurred, and requires indemnification.

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

I'm not sure we can compare our customer density and potential for distributed generation with Alaska. Our standard did impose rules intended to address those concerns. These included: 1) aggregate capacity of the customer generators shall not exceed 0.2% of the company's retail peak load for the prior calendar year, 2) limited to the lesser of customer's maximum annual kilowatt demand or 20 kW or less for residential, and 100 kw or less for nonresidential customers, 3) provides limits for the given distribution circuit phase to phase voltage and limits transformer voltage imbalance, 4) limits the generator capacity to not exceed (aggregate) the capacity of the facilities installed.

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

I think that this does force the utility to purchase power at a cost greater than the avoided cost. Some of the discussion in development indicated that may be one price we have to pay in order to encourage small renewable generation. This was not seen as a substantial cost or concern based on the projected market penetration. One concern that did arise was that it cost the utility more to generate power at certain times as compared with others (Peak and non-Peak.) Our standard requires the customer to participate in the Time-of-Use rate in order to utilize the net metering option. This ensures the customer displaces on Peak use with on Peak generation and the same for off-peak.

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

I would think that existing purchase power agreements are binding contracts. Unless some relief was granted or either the utility or the customer met some requirement for termination of the agreement it would still be in effect. New customers could be offered the net metering option and customers at the end of a power purchase could opt to participate.

I hope this addresses your questions. If not feel free to contact me for clarification.

Regards,

Kennie Ellis
Engineer-Public Staff Electric
North Carolina Utilities Commission
(919) 733-2267

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-feed or send any type of feed into the system that could damage equipment or injure linemen. Larger systems that do not have inverters, 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 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 want to read through a report from a couple of organization too. The links are below.

<http://www.raporline.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.

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State Energy Program
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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 environment (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 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 onerous, 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.

Safety 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
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FREEING THE GRID

2007 EDITION - SUMMARY

REPORT NO.

02-07

SEPTEMBER 2007



 IREC



Solar Alliance
The PV Collaborative of the States

2007 Edition

FREEING THE GRID

TABLE OF CONTENTS

- 1 Introduction
- 1 What Is Interconnection?
- 2 What Is Net Metering?
- 3 Our Scoring Methods
 - 3 Policy Points: Net Metering
 - 6 Policy Points: Interconnection
- 10 Grading
- 11 Notes for the Future
- 11 Endnotes
- 12 Grades - Net Metering
- 12 Grades - Interconnection

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

Report Summary

www.newenergychoices.org/uploads/FreeingTheGrid2007_ExSum.pdf

Full Report

www.newenergychoices.org/uploads/FreeingTheGrid2007_report.pdf

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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.

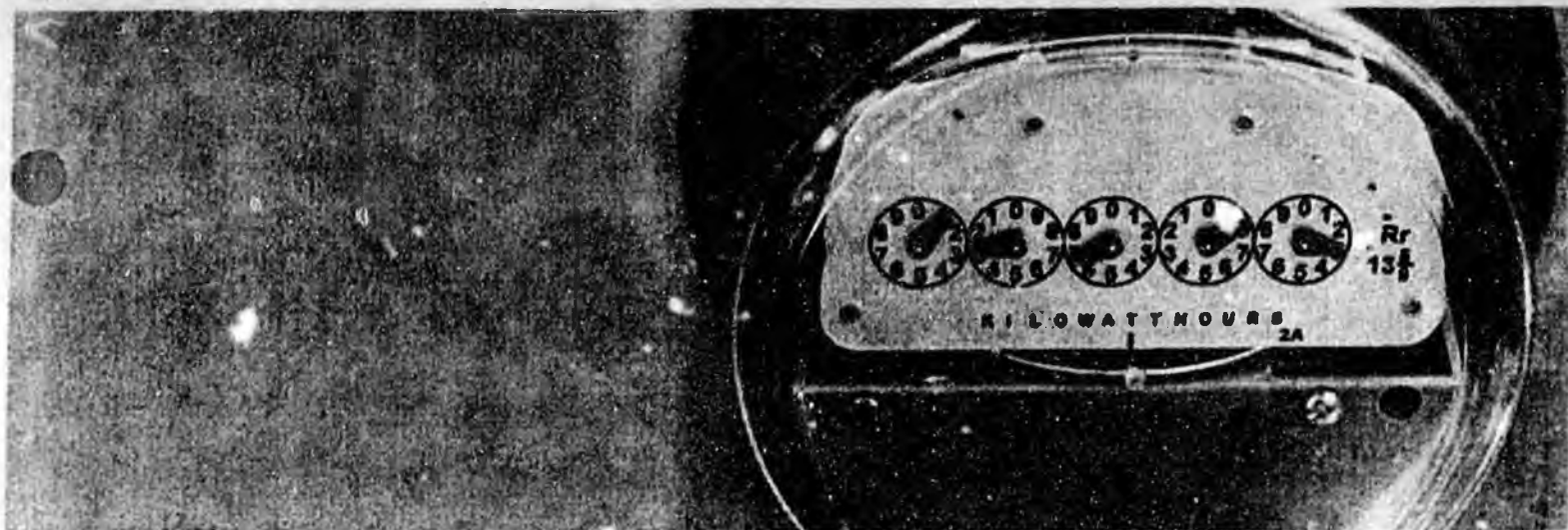


Community Wind

*Supportive Policies, Public Financial
Incentives, and Best Management
Practices*

September 2006

All publications are free for online download, check our website
www.newenergychoices.org for more information.



INTRODUCTION

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

Sunshine Solar Inc.

INVOICE

Solar Panels (2,500 Watts)	\$ 1,700
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

standards, the results can be costly. The impact of these costs on small generators can be significant.

Consider the example above, assume Ray McSolar purchases a 2.5-kW solar system – 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!

WHAT IS NET METERING?

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.

OUR SCORING

METHODS:

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 Points: 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.² 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."³

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.

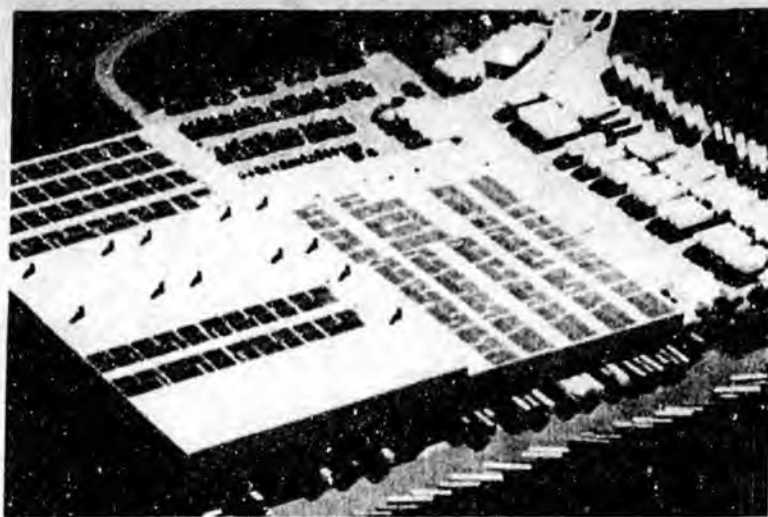
Standby charges are illogical. Some researchers have noted that they are "analogous to assigning standby fees to residential customers who purchase high efficiency air conditioning units,"⁴ because, in theory, utilities would be required to meet increased demand should the air conditioners fail and need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



Policy Points: 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 Process

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.⁹ 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.¹⁰

Requiring additional external disconnect switches is made unnecessary since all inverters that meet IEEE standards have automatic shut-off capabilities integrated with the systems.¹¹ All modern inverters shut down interconnected systems automatically in the event of grid failure.¹²

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

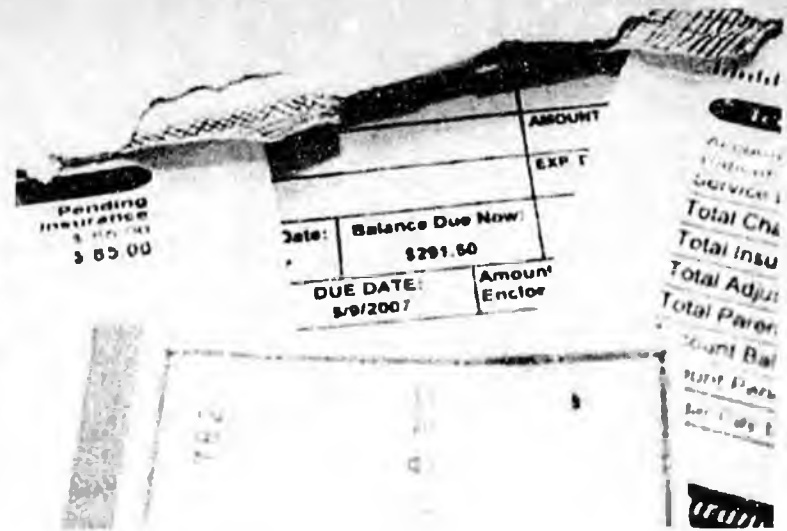
Area Network Interconnection

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.¹³ Renewable energy technologies manufactured and installed in compliance with interconnection standards significantly reduce the risk of potential safety issues.¹⁴ 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.¹⁵

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.)

GRADING

Net Metering

- 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.

Interconnection

- 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.

NOTES FOR THE FUTURE

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.



ENDNOTES

- 1 Oregon Department of Energy. (2006) Net Metering. Comments by Kyle L. Davis of PacifiCorp. July 10, 2006. Page 3. <http://www.oregon.gov/ENERGY/RENEW/docs/ODOENetMeteringPaper-Revisions.pdf>.
- 2 Pacific Gas and Electric Company, Generator Interconnection Services Department. (2006) Pacific Gas and Electric Company's Position on the Net Energy Metering Enrollment Cap.
- 3 Texas State Energy Conservation Office. (2002) An Analysis Working Paper on Net Metering as an Incentive for Fuel Cell Applications. September 10, 2002. http://www.seco.cpa.state.tx.us/zzz_fuelcell-initiative/tciac_mcen_netmeter.pdf
- 4 Wenger, Howard, Tom Hoff, and Jan Pepper. (1996) Photovoltaic Economics and Markets: The Sacramento Municipal Utility District as a Case Study. California Energy Commission. September, 1996. <http://www.energy.ca.gov/papers/000-999/1996-014.PDF>
- 5 The fees here are typically a one time fee or flat monthly fee as differentiated from the much more problematic on-going per kWh production fee.
- 6 A per kWh charge effectively undoes net metering, will be administratively burdensome and requires more expensive metering than simple net metering thus the significant negative score
- 7 Cook, Christopher. (2003) Interconnection of PV Systems to the Grid - The Utility Accessible External Disconnect Switch: Critical Safety Component or Useless Equipment Requirement? Paper A160. ASES Solar 2003, Proceedings of 32nd ASES Annual Conference.
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- 9 National Renewable Energy Laboratory. (2005) Million Solar Roofs Case Study: Overcoming Net Metering and Interconnection Objections. New Jersey MSH Partnership. September. <http://www.nrel.gov/docs/fy05osti/38666.pdf>
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- 11 Institute of Electrical and Electronics Engineers (IEEE). (2003) 1547-2003 IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems.
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- 13 Starrs, Thomas J. (no date) Barriers and Solutions to Interconnection Issues for Solar Photovoltaic Systems. Prepared for the Solar Electric Power Association. <http://www.resourcesaver.com/file/tonlmanager/063f14169.pdf>
- 14 Ibid.
- 15 Starrs, Thomas J. and Robert K. Harmon. (2000) Allocating Risks: An Analysis of Insurance Requirements for Small-Scale PV Systems. http://www.puc.state.pa.us/electric/pdf/NMIC_SunEdison_Comments_Att3.pdf

NET METERING

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	B
New Mexico	B
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

INTERCONNECTION

STATE	Grade
IREC Model	A
New Jersey	B
Arizona	B
California	C
Ohio	C
Texas	C
New York	C
Colorado	C
Oregon*	C
Massachusetts	C
Georgia	C
New Mexico*	C
Vermont	C
Minnesota	D
Rhode Island	D
Wisconsin	D
West Virginia	D
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

A	15+
B	9 - 15
C	6 - 9
D	3 - 6
F	< 3

NOTE: 7.5 points were added to normalize interconnection to net metering.

Detailed and updated scoring for any state is available upon request and will be released with the full report at the National Association of Regulatory Utility Commissioners' (NARUC) Annual Convention, November 11 - 14, 2007.

* OR graded on June 2007 rules. Newly adopted rules appear to be a significant improvement.

* MD graded on workgroup report currently before the Commission; final rules have not yet been adopted.

* NM graded on existing rules. A consensus working group report is expected to significantly improve this grade.

WHO WE ARE

IREC

www.irecusa.org

The Interstate Renewable Energy Council's (IREC) mission is to accelerate the sustainable utilization of renewable energy sources and technologies in and through state and local government and community activities.

IREC focuses on some of the current and often difficult issues impacting expanded renewable energy use such as rules that support renewable energy and distributed resources in a restructured market, connecting small-scale renewables to the utility grid, developing quality credentials that indicate a level of knowledge and skills competency for renewable energy professionals, and getting the right information to the right people.

IREC's members include state energy offices, city energy offices, other municipal and state agencies, national laboratories, solar and renewable organizations and companies, and individual members. In addition, IREC works with many partners including the federal government, national environmental and municipal organizations, regulatory commissions, state-appointed consumer representatives, energy service providers, utility groups, universities and research institutes

Vote Solar Initiative

www.votesolar.org

The Vote Solar Initiative is a non-profit organization with the mission of stopping global warming and increasing energy independence by bringing solar energy into the mainstream.

Stopping global warming is the challenge of this century — and our success will hinge on our ability to transition to renewable energy. Solar energy — clean, homegrown, and reliable — has the potential to play a large part of the solution. While solar is the fastest growing energy source in the world, we've just scratched the surface of its potential.

Vote Solar is working on the key policies necessary to bring solar to scale. Vote Solar works with state governments to build sustainable solar markets, removing regulatory barriers and laying the necessary groundwork for a solar future. And Vote Solar works with cities to build large-scale and cost effective solar projects, building the economies of scale necessary to bring down costs.

Polls show that Americans overwhelmingly want greater investment in solar and other renewable energy sources. We turn that desire into results. Join us, and we'll let you know about opportunities to take action — and help jumpstart the solar revolution.

Network for New Energy Choices

www.newenergychoices.org

The Network for New Energy Choices (NNEC) promotes safe, clean, and environmentally responsible energy options. We advocate for energy conservation, energy efficiency and renewable energy as the solutions to our energy crisis and we work to transform the public consciousness about the way we produce, distribute and consume energy.

Today's energy system relies on polluting and inefficient technologies. This energy model is harming human health and the environment, with potentially catastrophic consequences for the planet's climate.

The nonprofit organization GRACE created the Network for New Energy Choices in 2006 to raise awareness about the problems with our energy system and to empower individuals and communities to choose sustainable energy solutions.

Collaborating with a growing coalition of consumers, grassroots organizations, academics, and policymakers, NNEC uses creative communication, internet advocacy, and public education to bring about a new world of energy choices.

Solar Alliance

www.solaralliance.org

The Solar Alliance is an alliance of leading photovoltaic manufacturers and installers focused on helping legislators, regulators and utilities make the transition to solar power. The Solar Alliance provides the technical and policy expertise that results in programs that best serve the interests of all residential, commercial, and government ratepayers.



Solar Alliance

FREEING THE GRID

2007 EDITION - SUMMARY

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