IREC Interstate Renewable Energy Council

FINAL SCIENTIFIC/TECHNICAL REPORT

Program/Project Identification/Award Number	**#DE-FG36-05NT42401**
Name of Recipient	**Interstate Renewable Energy Council (IREC)** **P.O. Box 1156** **Latham, NY 12110-1156** **www.irecusa.org**
Project Title	**Solar America Initiative: Solar Outreach and Communications**
Principal Investigator	**Jane M. Weissman**
Teaming Members	**North Carolina Solar Center at NC State University** **Keyes & Fox** **Michael Sheehan, PE** **Sherwood Associates** **Brooks Engineering** **Jane Pulaski** **Jerry Ventre** **Barbara Martin** **Hands On Solar** **Patricia Fox** **Richard Michaud**
Program/Project Start Date	**August 9, 2005**
Completion Date	**June 30, 2011**
DOE Field Project Officer	**Yana Rasulova**
Date Submitted	**September 10, 2011**

EXECUTIVE SUMMARY

The purpose of the Solar America Initiative: Solar Outreach and Communications grant was to promote better communications among stakeholders; address infrastructure barriers to solar energy; and coordinate with industry, the U.S. Department of Energy, national laboratories, states, cities and counties. The Interstate Renewable Energy Council (IREC), a non-profit organization formed in 1982, approached this grant project by establishing a wide range of communication and outreach activities including newsletters, workshops, webinars, model practices and publications; by advancing easy and fair hook-up rules to the utility grid; and by upgrading training based on industry competency standards. The *Connecting to the Grid* project and the Solar Codes and Standards Public Hearings project offered communication coupled with technical assistance to overcome interconnection, net metering and other regulatory and program barriers. The Workforce Development Project tackled building a strong workforce through quality training and competency assessment programs. IREC's web site, the semi-monthly state and stakeholder newsletter and the metrics report resulted in better communications among stakeholders. Workshops and phone seminars offered technical assistance and kept stakeholders up-to-date on key issues. All of these activities resulted in implementing sustainable solutions to institutional and market barriers to solar energy and getting the right information to the right people.

Comparison of Goals & Objectives to Accomplishments

The purpose of the Solar America Initiative: Solar Outreach and Communications grant was to promote better communications among stakeholders; to address infrastructure barriers to solar energy; and to coordinate with industry, the U.S. Department of Energy, national laboratories, states, cities and counties.

IREC's grant plan was based on the following objectives:

- Lower both barriers and cost for the installation of solar energy by providing models, best practices and assistance on net metering, interconnection and other related and emerging state rules.
- Focus on quality installation performance and cost by encouraging and coordinating quality training by providing assistance and best practices to educational providers.
- Connect experts with market transformation stakeholders and decision makers.
- Manage and maintain a website that offered easily accessible news, information, tools, best practices and materials.
- Prepare annual reports on solar market trends and impacts regarding interconnection and net metering, training and certification programs, state incentives and other relevant issues.

To accomplish these goals and objectives, there were eight (8) main tasks and 49 subtasks associated with this grant.

Task #1: IREC Web Site
News, articles, and events were reported on the IREC web site covering areas such as interconnection to the grid and net metering, community and national outreach, workforce development - training and certification and other stakeholder information. www.irecusa.org

Task #2. Focused Stakeholder Coordination
IREC coordinated activities with the Department of Energy, industry, states, and all stakeholders; served on planning committees for national solar conferences; spoke at state, regional and national conferences; and attended national meetings on solar market transformation activities.

Task #3. Connecting to the Grid
Eighty-three (83) *Connecting to the* Grid e-newsletters were published. Each newsletter covered state-by-state activities and also discussed a relevant, connecting-to-the-grid topic. There were over 3,600 subscribers. Model interconnection and net metering rules and procedures were published along with two editions of the *Connecting to the Grid* Guide. State-by-State Net Metering & Interconnection Tables were posted to the IREC web site and updated regularly.

Task #4. Workforce Training & Quality Assessment
IREC published best practices for training; worked with educational providers such as Community Colleges, the trades, and training organizations and held faculty development and introductory solar instruction workshops. In addition, instructional workshops were held for code officials and fire personal. A database of solar projects on schools was maintained during the first few years of the grant but discontinued. Training and University Program directories were designed and populated and a Solar Licensing Database was created. The Directories and Database were housed on the IREC web site. A Solar Job Trends Index was updated in February 2006, March 2007, June 2008, and March 2009. The *Recommended Best Practices and Guidelines for Training* was published in September 2008 and updated in February 2010. Work was coordinated with credentialing organizations and an assessment program for training, based on international standards, was maintained.

Task #5. Publications
IREC collected state data on solar installations and published four annual reports on U.S. market trends. Yearly trends and updates reports were published covering regulatory issues, market trends, and workforce activities.

Task #6. Solar Codes and Standards Public Hearings
IREC participated in rulemakings and workshops and filed comments in 35 states dealing with net metering, interconnection, third-party ownership of solar projects and other emerging issues such as community solar and virtual net metering. In addition to creating viable programs where no effective program previously existed, IREC made pronounced efforts to engage in states with strong renewables programs to make existing policies even more robust and push out the boundaries of what is considered to be “best practice” in designing net metering and interconnection programs.

Some Comments from the 2010 DOE Solar Program Peer Review (May 2010)

IREC plays a central role in building the solar future in the United States. Each task they take on is important, and they do it with a high level of competency. Their regulatory work is very important and their role in training and credentialing is key.

IREC is one of the best at reaching out to the right mix of stakeholders at the right time, in a comprehensive way to add value to key issues.

IREC simply delivers, at a very high level of excellence.

Task #7. SAI/MT & State E-Newsletter
There were 147 issues of the semi-monthly IREC State Stakeholders e-newsletters published on the IREC web site and emailed to over 3,500 subscribers.

Task #8. SAI-TD Telephone Seminars
Thirty-two (32) telephone seminars were held. Between 100 and 500 stakeholders attended each webinar.

Project Activities

When this grant began in August 2005, it was under the Million Solar Roofs program. At the end of Fiscal Year 2006, the Department of Energy terminated its Million Solar Roofs (MSR) activity. It was replaced with the Solar America Initiative Market Transformation program. Many of the grant activities remained the same through this transition but with the use of more focused methods to achieve substantial market change. Then, for the last six months of the grant, January - June 2011, tasks were scaled back focusing on state rulemaking.

Connecting to the Grid Project

The Interstate Renewable Energy Council has been publishing the *Connecting to the Grid E*-Newsletter throughout the duration of the grant, providing informed and unbiased information relating to interconnection and net metering policies. Since the enactment of the federal Energy Policy Act of 2005 (EPAct 2005), there has been a groundswell of interest and activity in grid interconnection, which has made IREC's efforts in this arena more relevant and important.

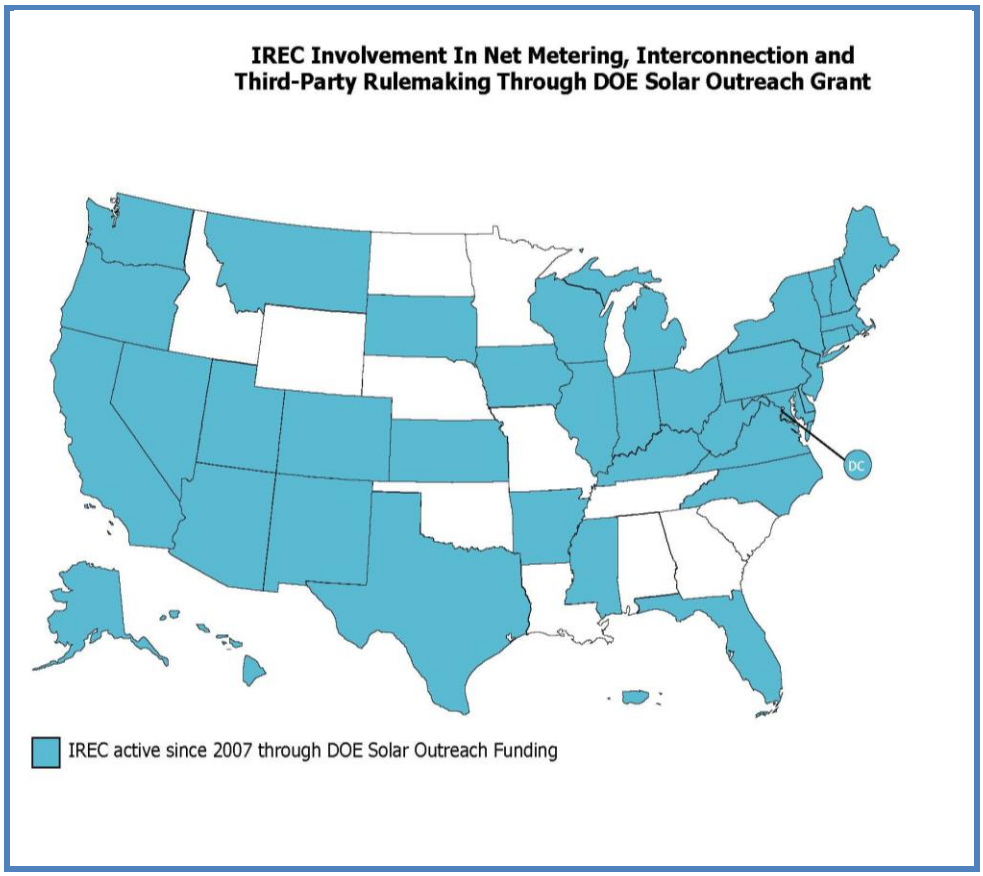
This work has taken the form of many research projects, presentations, newsletters, and other types of collaboration with solar stakeholders, to address the changing landscape in local, state and federal policies. In addition to this research, the project has provided technical assistance to government officials, non-profit organizations, utility executives, home and business owners and industry representatives, among others.

Throughout its tenure, the *Connecting to the Grid* project has been an invaluable asset to solar stakeholders across the country. Through the monthly newsletter, the project has allowed solar developers and advocates to stay abreast of regulatory developments in their state, learn about regional and national trends and better understand the evolution of best practices for net metering and interconnection policies. The newsletter has also provided a featured article to highlight emerging trends and provide background information on complex technical issues. Additionally, *Connecting to the Grid* has been able to provide one-on-one assistance for a wide variety of people across the country, through face-to-face meetings, phone calls, presentations, and email conversations. This level of accessibility, coupled with a wide array of in-depth research, has allowed the *Connecting to the Grid* project to be an influential resource that renewable energy community had come to depend on and respect.

Solar Codes and Standards Public Hearings

Through its contract with the U.S. Department of Energy, IREC has been able to participate in and effect state utility commission rulemakings regarding net metering, interconnection and third-party ownership of onsite PV systems. These are fundamental issues for customer-sited generation.

IREC participated in rulemakings and workshops in 35 states during the period from 2007 to 2011. Comments were filed in 31 of these states, and appearances at hearings and workshops occurred in 26 of them. See the Appendix for a summary of state activity.



Overall progress on establishing state net metering policies can be measured by the number of states receiving grades of A or B in "Freeing the Grid," which has increased from only 13 in 2007 to 36 in 2010 (2011 grades are still being finalized). Grade inflation has not been a factor; in fact, grading has become somewhat more difficult as an increasing number of states have raised the bar on "best practices" by expanding and improving their existing policies.

Many issues associated with interconnection procedure development address paramount issues of safety and grid reliability. These considerations necessitated cautious and deliberative rulemakings. Additional complexity was added by the need to address the nuances of interconnecting different types of generation. Due to the highly technical nature of these

rulemakings, and the length of time involved in the development of detailed interconnection requirements, few entities participated other than utilities and utility commission staff. IREC's participation offered a voice not otherwise presented and often made a substantial difference in the outcome of interconnection procedure development. With more room for improvement in state interconnection procedures than for net metering rules, part of IREC's effort in this area was getting functional interconnection procedures in place in states where no such procedures existed.

IREC also had great success arguing that a third-party owner of a customer-sited generator is not a utility. For the layperson, the argument seems obvious: utilities are entities with wires that disseminate electricity from distant power plants to dispersed customers. By comparison, a rooftop generator simply provides power to the occupants of a building below. Although this may be intuitive to a layperson, the process of determining which types of entities are public utilities under state law often requires recourse to state statutory definitions of "public utility" and case law that has been developed over many decades, long before it became commercially viable to produce electricity from the sun on customers' rooftops.

Following a concerted effort to address this issue in 2008 and 2009, resolution has been reached in almost all states that have substantial incentive programs. In almost all states that have looked carefully at this issue, third-party ownership of onsite generation has been determined to be allowable without subjecting a system owner to regulation as a public utility.

DOE funding also allowed IREC to update its model net metering and interconnection rules to reflect current best practices. IREC held numerous conference calls to update its interconnection model and worked with NREL to establish network interconnection provisions. IREC also received input from participants at the NARUC summer conference in Seattle in July 2009.

During the past five years, IREC has worked to implement successful solar policies and regulatory programs at a state, regional and local level that have greatly expanded solar markets and removed technical and policy barriers to solar PV deployment. IREC has assembled model net metering rules, interconnection procedures, and community solar programs that establish "best practices" for these important solar policies, all helping to allow for expansion of solar power availability and usage throughout the country.

Workforce Training & Quality Assessment

As solar markets grow, workforce development and quality training became critical components for a sustainable industry and solar economy. This grant allowed IREC to view workforce development from a number of perspectives resulting in different project strategies.

IREC worked with many training and educational providers -- Community Colleges, training organizations, industry training programs and others. We offered three levels of guidance: Introductory workshops for schools and organizations planning to begin offering solar training. These introductory workshops used IREC's Best Training Practices and tapped national experts. The second, more in-depth level of guidance, was the convening of faculty development

workshops. The purpose of these workshops was to provide interested faculty not only with a set of photovoltaic curriculum materials but also with expert instruction on how best to use these materials to successfully develop high-quality courses that address current and projected workforce needs. And the third-level was an assessment framework using an international standard for verifying that training was to the right skill sets. Today, IREC continues to use the ISPQ international framework of metrics and standards to measure the quality and consistency of training programs and trainers.

How to Start Instructional Programs in Photovoltaics Workshops

- July 24, 2008, Economic Alliance of the San Fernando Valley, Sherman Oaks, California.
- August 14, 2008, East Los Angeles College, Los Angeles, California.
- October 16, 2008, Miramar College, San Diego, California.
- November 14, 2008, Sierra College, Rocklin Campus in Northern California.
- March 27, 2009, Shasta College, Redding, California.
- April 3, 2009, College of the Redwoods, California.
- August 26, 2009. College of the Sequoias, CA
- September 4, 2009. UC Santa Barbara, CA

PV Faculty Development Workshops

- September 18 and 19, 2008. Diablo Valley College in Northern California.
- January 20-21, 2009. Miramar College, San Diego, California.
- January 22-23, 2009. Santa Monica College, Santa Monica, California.
- June 4-5, 2009. Sierra College, Northern, California.
- July 24, 2009. Florida Solar Energy Center (part of the Solar America Cities Train-the-Trainer Workshop), Cocoa, Florida.
- October 30-31, 2009, Rio Hondo Community College, Whittier, California.
- May 21-22, 2010, California Center for Sustainable Energy, San Diego, California.

IREC also partnered with state and local organizations to offer code official trainings around the country. Training code officials helps to reduce a barrier of project permitting and inspection by officials uneducated in photovoltaics. IREC partnered with state and local fire organizations to offer firefighter safety workshops. Training firefighters is important to make sure that fires on buildings with photovoltaics are fought safely and so that fire safety issues do not become a barrier to the installation of new photovoltaic systems.

Code Official Training

Workshops on National Electrical Code Compliance for Photovoltaic Systems with Bill Brooks of Brooks Engineering, as the instructor.

- Santa Monica, California, March 15, 2007
- Austin, Texas, March 30, 2007
- Phoenix, Arizona, April 17, 2007
- New York, New York, May 18, 2007
- Tangent, Oregon, June 14, 2007
- Stanton, Delaware, June 20, 2007

- Connecticut, March 17, 2008
- Boston, Massachusetts, April 1, 2008
- New York, New York, April 21, 2008
- Phoenix, Arizona, June 19, 2008
- Golden, Colorado, August 28, 2008
- Colorado, March 5, 2009
- Ann Arbor, Michigan, April 20, 2009
- Ventura County, California, May 1, 2009
- Knoxville, Tennessee, May 8, 2009
- Seattle, Washington, May 19, 2009
- San Diego, California, January 21, 2010
- Lakewood, Colorado, February 19, 2010
- Richmond, Virginia, March 29, 2010
- Lakewood, New Jersey, March 31, 2010
- Parsippany, New Jersey, June 10, 2010
- Sandy Utah, August 11, 2010
- Clark, New Jersey
- Vineyard, New Jersey, November 30, 2010

Solar Domestic Hot Water Training for Code Officials
Mark Thornbloom, Kelelo Engineering, and Chris Warfel, Entech Engineering, were the instructors.

- February 25, 2009, Woodbourne, New York, hosted by the Tri-County Chapter of the New York State Building Officials Conference.
- April 27, 2009, San Diego, California, hosted by the California Center for Sustainable Energy.
- April 29, 2009, Phoenix, Arizona hosted by Arizona Public Service.
- June 18, 2009, Waltham, Massachusetts, hosted by National Grid.
- October 20, 2009, Milwaukee, Wisconsin
- October 22, 2009, St. Paul, Minnesota
- January 25, 2010, Santa Rosa, California
- January 26, 2010, San Francisco, California
- May 17, 2010, San Jose, California (Two sessions)
- November 30, 2010, Salt Lake City, Utah

Fire Official Safety Training
Bill Brooks, Brooks Engineering, and Matt Paiss, San Jose Fire Department were the instructors.

- New York Fire Department, New York City, October 4-5, 2010
- Colorado Fire Departments, Thornton, CO, October 19, 2010
- Boulder Fire Department, Boulder, CO, October 20, 2010
- Alexandria, VA, November 1, 2010
- Middlesex County (NJ) Fire Academy, November 3, 2010
- Bergen County (NJ) Fire Academy, November 4, 2010
- Tucson Fire Department, Tucson, AZ, December 6-7, 2010

- Los Angeles County Fire Department, December 16-17, 2010

Webinars (Telephone Seminars)

IREC organized webinars on topics of interest to and suggested by solar stakeholders. Between 100 and 500 stakeholders attended each webinar. The webinars received very high ratings as an unbiased source of information on timely topics. State and local government officials especially appreciated the webinars in a time of difficult travel budgets.

Phone Seminars/Webinars

- Solar in the Energy Bill, September 27, 2005 (Speaker: Rhone Resch, Solar Energy Industries Association)
- Solar for Disaster Response and Recovery, December 8, 2005 (Speakers: John Thornton, National Renewable Energy Laboratory; Bill Young, Florida Solar Energy Center)
- Financing for Public Sector Renewable Energy Projects, February 14, 2006 (Speaker: Wallace G. McOuat, HMH Energy Resources, Inc.)
- Federal Solar Tax Incentives Question and Answer, March 14, 2006 (Speakers: Rhone Resch, Solar Energy Industries Association; Keith Martin, Chadbourne & Parke LLP)
- Photovoltaic Module Supply Issues, May 3, 2006 (Speaker: Michael Rogel, Photon)
- Photovoltaic Impacts on Peak Loads, June 27, 2006 (Speaker: Rob Hammon, ConSol)
- Performance-Based Incentives, September 12, 2006 (Speakers: Tom Starrs, Bonneville Environmental Foundation; Jeanne Clinton and Kurt Johnson, California Public Utilities Commission)
- Solar Renewable Energy Credits, February 28 (Speaker: Jan Pepper, Clean Power Markets)
- Interconnection and Net Metering, March 27, 2007 (Speaker: Christopher Cook, E3 Energy Services)
- What Can the U.S. Learn from European Feed-in Tariffs?, May 8, 2007 (Speaker: Wilson Rickerson)
- Federal Solar Tax Incentives Question and Answer, June 12, 2007 (Speakers: Rhone Resch, Solar Energy Industries Association and Keith Martin, Chadbourne & Parke LLP)
- Photovoltaic Market Trends, July 19, 2007 (Speakers: Travis Bradford, Prometheus Group; Larry Sherwood, Interstate Renewable Energy Council)
- Solar Rights, December 6, 2007 (Speakers: Scott Anders, Energy Policy Initiatives Center; Erik J.A. Swenson, King and Spaulding LLP)
- Utility Rate Design, January 22, 2008 (Speakers: Galen Barbose, Lawrence Berkeley National Laboratory; J.P. Ross, Sungevity)
- State Policy Trends, March 11, 2008 (Speakers: Mark Sinclair, Clean Energy States Appliance; Rusty Haynes, North Carolina Solar Center)
- Fire Safety Guidelines for Photovoltaics, April 30, 2008 (Speaker: Bill Brooks, Brooks Engineering)
- Solar Power Purchase Agreements, June 12, 2008 (Speakers: Jon Guice, AltaTerra Research; Peter Mostow and Wilson Sonsini Goodrich & Rosati)
- Smart Grid and AMI, August 21, 2008 (Speakers: Ethnie Groves, Xcel Energy and Keith McAllister, North Carolina Solar Center)

- Interconnection and Net Metering, September 30, 2008 (Speakers: Jason Keyes, Keyes & Fox and IREC; Kevin Fox, Keyes & Fox and IREC; Michael Sheehan, IREC)
- 2008 Update of the National Electrical Code, November 12, 2008 (Speaker: John Wiles, New Mexico State University)
- Utilities and the Solar Tax Credit, January 26, 2009 (Speakers: Keith Martin, Chadbourne & Parke LLP; Eric Silagy, Florida Power & Light Company; Christopher Cook, SunWorks LLC)
- Solar Markets in Turbulent Economic Time, February 26, 2009 (Speakers: Travis Bradford, Prometheus Group and Mark Crowdis, Think Energy, Inc.)
- Federal Solar Tax Credit Question and Answer, May 4, 2009 (Speaker: Keith Martin, Chadbourne & Parke LLP)
- State Solar Policy and Market Trends, June 23, 2009 (Speakers: Rusty Haynes, north Carolina Solar Center and Larry Sherwood, Interstate Renewable Energy Council)
- Expedited Permit Process, November 12, 2009
- Federal Programs, December 10, 2009
- Connecting to the Grid Guide, January 26, 2010 (Speakers: Gary Nakarado, Regulatory Logic, LLC; Jason Keyes, Keyes & Fox and IREC; Laurel Varnado, North Carolina Solar Center)
- Community Solar Purchases, March 17, 2010 (Speakers: Kevin Fox, Keyes & Fox and IREC; Gwen Rose, Vote Solar Initiative; Andria Jacob, Solar Now!)
- State Solar Policy and Market Trends, July 20, 2010 (Speakers: Justin Barnes, North Carolina Solar Center and Larry Sherwood Interstate Renewable Energy Council)
- Community Solar, September 21, 2010 (Speakers: Joseph Wiedman, IREC and Keyes & Fox LLC and Linda Irvine, Northwest Sustainable Energy for Economic Development)
- *Fire Safety Code Changes*, November 2, 2010 (Speaker: Bill Brooks, Brooks Engineering)
- *Workforce Development*, December 2, 2010 (Speakers: Andrea Luecke, The Solar Foundation; Joe Sarubbi, Interstate Renewable Energy Council; Pat Fox, Interstate Renewable Energy Council)

Instructional Webinars

- Solar Thermal Six-Hour Webinar for Installers. February 27 and March 1, 2007. Bill Guiney, Instructor
- Solar Thermal Six-Hour Webinar for Installers. February 11-12, 2008. Bill Guiney, Instructor
- Solar Thermal Six-Hour Webinar for Installers. August 26-27, 2008. Bill Guiney, Instructor

Other workshops

Early on in the grant, IREC also organized peer-to-peer workshops for partners in DOE's Million Solar Roofs Initiative. These workshops allowed Million Solar Roofs Partners to learn from each others' successes and helped to build a foundation for the Solar America Communities program.

Million Solar Roofs Peer-to-Peer Workshops

- Central, Golden, Colorado, October 18, 2005
- Mid-Atlantic, Philadelphia, Pennsylvania, December 6-7, 2005

- Northwest, Portland, Oregon, February 23-24, 2006
- Northeast, Boston, Massachusetts, March 7, 2006
- Southeast, Atlanta, Georgia, March 21-22, 2006
- Southwest. Albuquerque, New Mexico, April 4-5, 2006

Collect Installation Metric Data
IREC collected state data on solar installations from many state sources. IREC published the compiled data in publicly-available reports and presented the data at conferences and webinars. In addition, IREC responded to inquiries from the media and stakeholders. DOE used the data in reports for the International Energy Agency and in DOE published reports. The data allowed DOE, DOE contractors, states, and other stakeholders to measure progress toward solar installation goals.

IREC communications and data analysis work presented technical information in a form that could be understood and used by stakeholders who can reduce barriers to the installation of photovoltaic systems. In-person workshops, webinars, conference and meeting presentations, and publications were used as appropriate for each stakeholder audience.

Products

Reports, Manuals, Models, and Best Practices

U.S. Solar Market Trends 2007, Interstate Renewable Energy Council, August 2008 - A comprehensive look at installation data for PV, solar heating and cooling, and concentrating solar technologies.

U.S. Solar Market Trends 2008, Interstate Renewable Energy Council, July 2009 - A comprehensive look at installation data for PV, solar heating and cooling, and concentrating solar technologies.

U.S. Solar Market Trends 2009, Interstate Renewable Energy Council, July 2010 - A comprehensive look at installation data for PV, solar heating and cooling, and concentrating solar technologies.

U.S. Solar Market Trends 2010, Interstate Renewable Energy Council, June 2011 - A comprehensive look at installation data for PV, solar heating and cooling, and concentrating solar technologies.

2005 Updates & Trends Report - covering regulatory issues, policies and incentives, installation and market data, and workforce development and training from IREC's team. (October 2005)

2006 Updates & Trends Report - covering regulatory issues, policies and incentives, installation and market data, and workforce development and training from IREC's team. (October 2006)

2007 Updates & Trends Report - covering regulatory issues, policies and incentives, installation and market data, and workforce development and training from IREC's team. (September 2007)

2008 Updates & Trends Report - covering regulatory issues, policies and incentives, installation and market data, and workforce development and training from IREC's team. (October 2008)

2009 Updates & Trends Report - covering regulatory issues, policies and incentives, installation and market data, and workforce development and training from IREC's team. (October 2009)

2010 Updates & Trends Report - covering regulatory issues, policies and incentives, installation and market data, and workforce development and training from IREC's team. (October 2010)

Connecting to the Grid Guide, 5th Edition (2007). Rusty Haynes and Chuck Whitaker. Interstate Renewable Energy Council.

Connecting to the Grid Guide, 6th Edition (2009). Laurel Varnado and Michael Sheehan, published by Interstate Renewable Energy Council - Net metering & interconnection policies are essential pieces of a supportive state-level regulatory policy framework addressing two important aspects of renewable energy development: whether a customer investing in renewable generation can unlock the full value of his or her investment; and how that customer will interconnect his or her generation system to the distribution grid. This guide introduces readers to the issues surrounding policy and technical considerations of grid-integrated, renewable energy development.

Field Inspection Guidelines for PV Systems - The intent of the 2010 Guidelines is to consolidate the most import aspects of a field inspection into a simple process that can be performed in as little as 15 minutes. Explanation and illustrative pictures are provided to instruct the inspector on the specific details of each step. The 2010 edition of the Guidelines is an update from the 2006 edition. *(July 2010)*

IREC Model Interconnection Procedures- IREC first developed model interconnection procedures in 2005 in an effort to capture emerging best practices in this vital area. Since that time, IREC has been an active participant in dozens of state utility commission rulemakings that have focused on the development of interconnection procedures. These updated procedures also include footnotes that explain key provisions and provide information on alternatives that are being practiced in some states. *(October 2009)*

IREC Net Metering Model Rules- On significant points such as size of systems eligible for net metering, program capacity caps, and treatment of annual excess generation, there has been broad variation among states. In an effort to capture this variation, IREC's model rules now include footnotes that discuss the various approaches states have taken on these issues. (October 2009)

The Intersection of Net Metering and Retail Choice: An Overview of Policy, Practice & Issues - In regulated states, net metering is a fairly straightforward process, involving a transaction between a utility and customer. In complex competitive markets, however, retail choice providers and distribution utilities must communicate in order to provide net metering for their customers. Furthermore, every state has a different set of laws and regulations that make it difficult for retail choice companies working in multiple states at once. As a result, restructured

states have yet to see a significant number of retail choice customers with net metered systems, despite the fact that several of these states have some of the best net metering policies in the country. This report provides clarification on how net metering works in these complex environments. (December 2010)

Good Teaching Matters: Five Teaching Practices to Improve the Quality of a Training Course - Sections include: Know Your Students, Write Learning Objectives, Design Test and Evaluation Measures that Promote Transfer, Include Practice and Feedback in the Training, and Create Simple PowerPoint Slides. (December 2010)

Renewable Energy Training: Best Practices & Recommended Guidelines - This report, a detailed review in eight sections, contained recommended training guidelines, training criteria, assessment tools, task analyses, credentialing programs, and other related resources for renewable energy training programs. (September 2008 and Updated February 2010)

Databases

On-line Training Directory – a list and link database of educational providers offering solar and renewable energy training courses and classes. Users can sort by state/technology and easily link to the provider's web page for detailed course information.

On-line University Course Directory - includes information on four-year universities offering undergraduate and graduate courses in renewable energy and energy efficiency. Users can sort by state and technology.

Solar Licensing Database - a web-based resource for policy makers, practitioners, consumers, and anyone else looking for solar licensing information in the U.S. In the database, licensing requirements for installing photovoltaic and solar thermal systems are documented for each state.

Papers

Solar 2008 Conference, San Diego, California, May 2008, American Solar Energy Society, *The Development of Interconnection Standards in Six States In 2007-2008*. Jason B. Keyes.

Solar 2009 Conference, Buffalo, New York, May 2009, American Solar Energy Society, *Net Metering and Interconnection Procedures-- Incorporating Best Practices*. Jason Keyes, Kevin Fox, Joseph Wiedman, Staff at North Carolina Solar Center.

Solar 2005 Conference, Orlando, Florida, August 2005, American Solar Energy Society, *U.S. Solar Market Trends*. Larry Sherwood.

Solar 2006 Conference, Denver, Colorado, July 2006, American Solar Energy Society, *U.S. Solar Market Trends*. Larry Sherwood.

Solar 2007 Conference, Cleveland, Ohio, July 2007, American Solar Energy Society, *U.S. Solar Market Trends*. Larry Sherwood.

Solar 2010 Conference, Phoenix, Arizona, May 2010, American Solar Energy Society, *U.S. Solar Market Trends*. Larry Sherwood.

Solar 2011 Conference, Raleigh, North Carolina, May 2011, American Solar Energy Society, *U.S. Solar Market Trends*. Larry Sherwood.

Solar 2006 Conference, Denver, Colorado, July 2006, American Solar Energy Society, *Analysis of U.S. Net Metering and Interconnection Policy*. Rusty Haynes and Chris Cook.

Solar 2009 Conference, Buffalo, New York, May 2009, American Solar Energy Society, *Community Net Energy Metering: How Novel Policies Expand Benefits of Net Metering to Non-Generators*). James Rose and Laurel Varnado.

Solar 2011 Conference, Raleigh, North Carolina, May 2011, American Solar Energy Society, *Why Bother: Capturing the Value of Net Metering in Retail Choice Markets*). Justin Barnes and Laurel Varnado.

Solar 2006 Conference, Denver, Colorado, July 2006, American Solar Energy Society, *Trends in Practitioner Training for the Renewable Energy Trades*. Jane M. Weissman, Kirk Laflin.

Solar 2007 Conference, Cleveland, Ohio, July 2007, American Solar Energy Society, *Workforce Education For Renewable Energy -- Lessons Learned From A National Gathering Of Educators.* Jane M. Weissman, Adele Ferranti, and Kirk Laflin.

Solar 2009 Conference, Buffalo, New York, May 2009, American Solar Energy Society, *Workforce Development: A Survey of Industry Needs and Training Approaches*. Jerry Ventre and Jane Weissman

Articles

"Solar Booms, Despite Economic Bust," *SOLAR TODAY* Magazine, July/August 2010. Larry Sherwood.

"Utility-Scale Installations Lead Growth," *SOLAR TODAY* Magazine, July/August 2011. Larry Sherwood.

"Investing in Solar as a Community," *SOLAR TODAY* Magazine, March 2010. Dana Hall, James Rose and Laurel Varnado *Magazine*,

“Community Solar: Getting the Policies Right,” *SOLAR* TODAY Magazine, March 2010. Kevin T. Fox.

“Solar Energy With No Money Down,” *SOLAR* TODAY Magazine, September/October 2010. Jason Keyes, Joseph Wiedman, Christopher Cook and Tucker Cottingham.

"Building a Workforce of Solar Installers in the Northeast," *NORTHEAST SUN* Magazine, Spring 2008. Jane M. Weissman

"Credentialing: What’s in a Name? A Lot," *SOLAR TODAY* Magazine, September/October 2009.

Jane M. Weissman

"Renewable Energy Training: Trends and Tremors," *SOLAR TODAY* Magazine, September/October 2010. Jane Weissman and Jerry Ventre

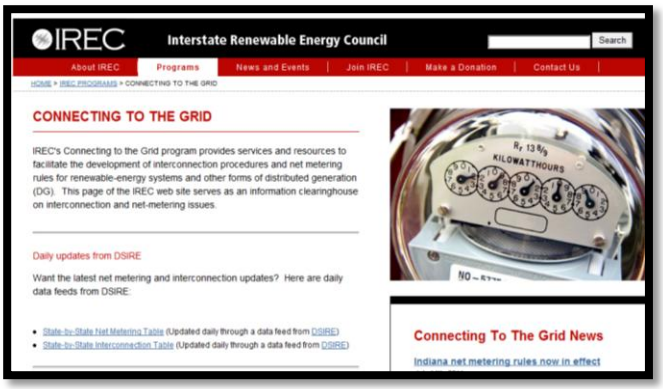
"Opportunities ... but with challenges," American Technical Education Journal, Spring 2010. Jane M. Weissman

Conferences

Over the course of this grant, IREC Team members have attended and made presentations at numerous solar, regulatory, workforce, and related conferences. Conferences included the annual ASES Solar Conferences, the Solar Power International Conferences, Solar America Cities Annual Meetings, PV America, SolarTech Conferences and Summits, SEPA's Utility Conferences, the Workforce Education Conferences, the Good Jobs/Green Jobs Conferences, NARUC Meetings and Conferences, IREC's Annual Meetings, and many other national, regional and state conferences.

Web Site

The IREC web site, www.irecusa.org, evolved over the course of this grant expanding its functionality and content. Two main sections have and continue to be devoted to regulatory and workforce information, news, state tables, and updates. Another section houses all of the reports, manuals and best practices listed above.



Some of the Networks and Collaborations Fostered

Advanced Transportation Technology and Energy Initiative at Miramar College
American Association of Community Colleges - SEED Center
American Solar Energy Society
California Solar Energy Industries Association
Central Vermont Public Service
City of Portland, Oregon
City of Santa Fe, New Mexico
City of Santa Monica, California
Clean Coalition
Clean Energy States Alliance
Colorado Solar Energy Industries Association
Colorado Rural Electric Association
College of the Canyons
Connecticut Clean Energy Fund
Delaware Energy Office

Energy Trust of Oregon
Environmental Defense Fund
Environmental Law and Policy Center
Florida Solar Energy Center
Florida's Solar Energy Industry Association
Hudson Valley Community College
Kentucky Solar Partnership
Lane Community College
Massachusetts Dept. of Energy Resources
Montana's Alternative Energy Resources Organization
Montana Renewable Energy Association
National Renewable Energy Laboratory
Natural Resources Defense Council
National Wildlife Foundation (Alaska)
Network for New Energy Choices
New Jersey Department of Community Affairs
New Mexico Renewable Energy Industries Association
New York City Buildings Department
New York State Energy Research and Development Authority
North American Board of Certified Energy Practitioners
North Carolina Solar Center
North Carolina Sustainable Energy Association (NCSEA)
Partnership for Environmental Technology Education Solar Alliance
Renewable Northwest Project
Seattle City Light
Sierra Club
Solar Alliance
Solar ABCs
Solar America Cities
SolarCity
Solar Electric Power Association
Solar Energy Business Association of New England
Solar Energy Industries Association
Solar Gardens Institute
SolarTech
Solar Washington
Sun Power
Texas Renewable Energy Industries Association
The Solar Foundation
Utah State Energy Office
Utah Clean Energy
Virginia Department of Mines Minerals and Energy
Vote Solar Initiative

A Final Note...

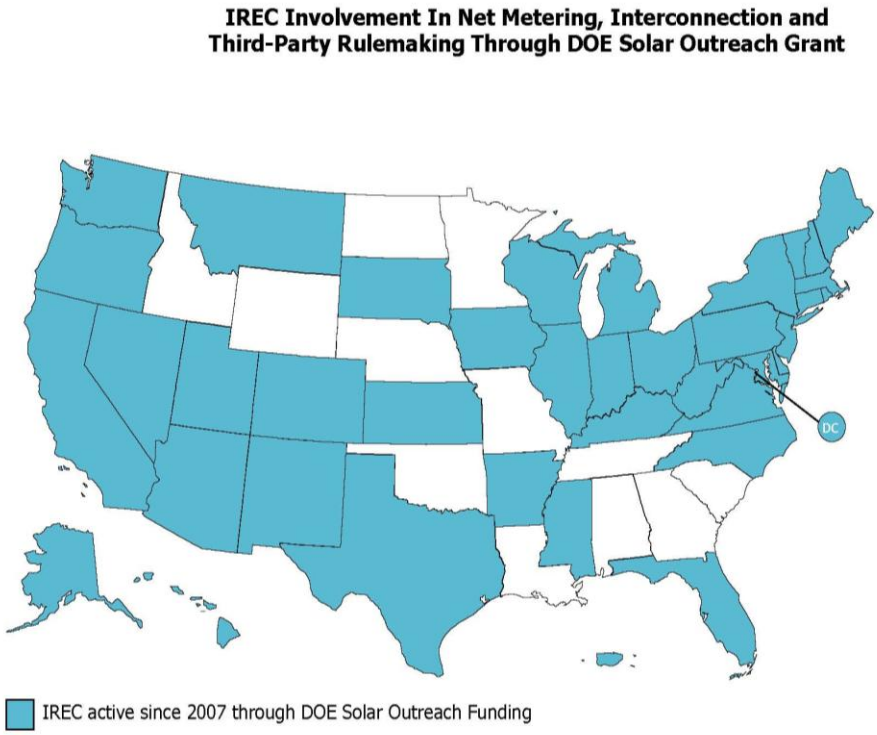
Over the course of this grant, IREC has worked with many people at the U.S. Department of Energy. We extend our deepest thanks for their guidance and dedication to solar energy. We send our thanks to Judith Dyer, Margie Bates, Steve Palmeri, Nancy Kiyota, Yana Rasulova, the late Peter Dryfus, Glenn Strahs, Tom Kimbis, Charlie Hemmeline, Jennifer DeCesaro, Katie Bolcar, and Mark Frickel.

And, with heartfelt thanks and enormous respect, IREC thanks all of the people that worked on this grant. We have amazing people on the IREC Team.

Appendix

State-by-State Activities

Solar Codes and Standards Public Hearings



STATE-BY-STATE REVIEW (listed alphabetically)

ALASKA

From 2008 through 2010, IREC was active in Alaska, working with The Regulatory Commission of Alaska (RCA) in Docket Nos. R-06-005, R-09-001 & 002 regarding net metering and interconnection. Alaska was one of the few states without any net metering law and ultimately adopted net metering with a 25 kW threshold. IREC participated in workshops and submitted comments but did not devote significant resources to the dockets since the potential for net metering in Alaska is limited by Alaska's small population, multiple micro-grids, and poor solar resource in its peak demand months. On October 14, 2009 the RCA voted to allow net metering, removing Alaska from the short list of states without net metering. The rules were a modest start – with a cap of 25 kW and payment at avoided cost for monthly net excess generation – but they had some positive features: no extra costs, a high program cap of 1.5% of average utility load, coverage of all renewable technologies, and applicability to all but the smallest utilities.

Regarding interconnection procedures, IREC provided guidance to active participants and the RCA issued final rules on July 26, 2011. The rules are only applicable to net metered systems, but the fundamental intent to make net metering feasible in the state has been achieved.

ARIZONA

NET METERING

Arizona Corporation Commission (ACC) Staff opened Docket No. RE-00000A-07-0608 and issued draft net metering rules on December 17, 2007. IREC submitted comments on both the original and revised draft rules issued on January 31, 2008 and attended open meetings and offered testimony in March 2008. On March 12, 2008, the ACC approved statewide net metering rules by a 5-0 vote. IREC filed written comments on May 19, 2008, and Mr. Fox provided support for IREC's comments and the ACC's rules at an oral proceeding on June 5, 2008. On March 23, 2009, the ACC filed its final net metering rules with the Arizona Secretary of State after receiving approval for all the salient aspects of the net metering rules from the Arizona Attorney General. The rules became effective May 23, 2009.

The ACC's net metering rules represent a significant step forward for Arizona's distributed generation market. The statewide standard would apply to two of Arizona's three major utilities and all its major co-ops. The standard imposes no cap on the maximum size of a distributed generation system that can be net metered, but systems may not exceed 125% of a net-metered customer's total connected load and must be sized to serve on-site power needs. The standard provided for full retail credit for deliveries to the grid, with monthly rollover for excess generation and avoided cost payments for annual excess. Affected utilities must file net metering tariffs, which may propose a capacity limit on the aggregate total of net-metered systems and additional charges for net-metered systems. Requests for additional charges must be supported by a benefit/cost analysis with utilities carrying the burden of proving that such charges are reasonable.

In addition, Mr. Fox traveled to Phoenix for a meeting on January 5, 2009 to discuss the findings of a study commissioned by Arizona Public Service on the impacts of solar energy on the expectation that the study would impact the structure of net metering in Arizona. These results incorporate many of IREC's suggestions.

PPA USE

IREC also provided significant input regarding the legal arguments put forth in the Solar Alliance's October 2008 Petition for Declaratory Order (Docket No. E-20633A-08-0513) that requested a declaration that solar service providers who sell solar energy to an on-site host under a long-term power purchase agreement are not public service corporations subject to regulation as such.

IREC sent a letter of support to the ACC in November 2008, urging that the Petition be granted. Over two-thirds of commercial solar installations in 2008 were financed under solar PPA arrangements of the sort for which approval was being sought in Arizona. Arizona's two largest investor-owned utilities praised the Petition and stated that they would not oppose it at the ACC.

In December 2008, IREC responded to various discovery requests on this topic and in March 2009 IREC officially intervened in the proceeding in order to productively address some of Staff's concerns regarding the use of solar power purchase agreements in Arizona.

On April 16, 2009, IREC filed comments in response to a March 10, 2009 Staff Report on third-party financing of net metered systems. The ACC Staff had recommended that the Commission hold a wide-ranging series of hearings to discuss connection with customer-sited distributed generation. To help streamline the process, the Solar Alliance filed a request for a procedural conference, which took place in Phoenix on Monday, June 22, 2009, and IREC attended. ACC Chairperson Kris Mayes attended the conference and expressed her belief that the issue should move forward on an expedited basis so that Arizonans looking to invest in solar and companies looking to do business in Arizona have some certainty with regards to available financing options. Unfortunately, despite these efforts, the ACC issued a procedural order on July 6, 2009 requiring hearings to be held in the proceeding.

On July 2, 2009, SolarCity Corporation filed a separate application with the ACC (Docket No. E-20633A-00-0346) seeking adjudication that certain contracts it had entered into with the Scottsdale School District would not subject that company to regulation as a public service corporation by the ACC. This petition was nearly identical to Solar Alliance's, except that the relief requested was limited to providing service to schools, government and nonprofits.

IREC drafted and submitted testimony to the ACC in support of the SolarCity petition and Kevin Fox participated as an expert witness on behalf of IREC in hearings held on October 14-16, 2009. IREC assisted with the drafting of a legal brief that was submitted by SunPower in December to argue for non-regulation of SolarCity and other PPA providers. Mr. Fox also assisted with the drafting of SunPower's reply brief that was submitted on January 15, 2010. This approach allowed IREC to make its points in the docket without the time commitment of formally intervening.

In the second quarter of 2010, the assigned Administrative Law Judge issued a proposed decision that recommended that the ACC regulate SolarCity. Subsequent to that decision, two ACC commissioners issued substantial revisions to the proposed decision that reached the opposite conclusion. IREC filed comments in support of the amendments, and on June 29, 2010, the ACC issued its final decision concluding that SolarCity would not be subject to regulation as a public service corporation.

CALIFORNIA

INTERCONNECTION

On June 20, 2008, Mr. Fox participated in a California Public Utilities Commission (CPUC) workshop to discuss the future of the California's Rule 21 Working Group. Rule 21 is California's interconnection standard for investor-owned utilities (IOUs) although many municipal utilities have also adopted the standard. The Rule 21 Working Group had been meeting for eight years under the leadership of the California Energy Commission (CEC), but in August 2007, the CEC requested that the CPUC take over the CEC's leadership role. On July 14, 2008, IREC filed comments with the CPUC regarding Rule 21 Working Group Open Issues in Docket No. R.08-03-008.

In the absence of an ongoing deliberative process, on August 18, 2009, Pacific Gas & Electric Company (PG&E) submitted Advice Letter 3508-E to the CPUC requesting approval to make changes to its Rule 21 interconnection procedures. PG&E's proposed changes would move that utility away from a clearly defined standard for determining when a system can be interconnected and whether dedicated transformers are needed to a more discretionary standard under which PG&E could deny an interconnection to a distribution line if PG&E believes it is experiencing voltage regulation problems. IREC expected this to be a precursor for issues that are likely to arise as PV penetration increases in certain electric utility service territories. IREC submitted a protest to the proposed changes and requested that PG&E's proposals be vetted through California's Rule 21 Working Group to ensure proper input by interested stakeholders. IREC continued to work with PG&E on this and other modifications to Rule 21 over the last two years.

On December 10, 2009, IREC participated in the CPUC's daylong workshop to discuss challenges associated with high penetration of PV systems and to identify possible ways to facilitate a greater deployment of distributed PV system by improving the PV system interconnection process. In the first quarter of 2010, IREC provided information in response to CPUC Staff requesting suggestions on how to address high penetration and interconnection reform issues. IREC is also working with CPUC Staff to address jurisdictional issues related to interconnection of distributed generation.

In early 2011, IREC filed written comments and participated in stakeholder meetings hosted by PG&E and Southern California Edison (SCE) with respect to the modifications that they proposed to make to the Small Generator Interconnection Procedures (SGIP) in their Wholesale Distribution Access Tariffs (WDATs). IREC, in coordination with other stakeholders in this process including the CPUC Staff, advocated for modifications that would enable small generators to interconnect quickly and cost-effectively, with a particular focus on the Fast Track

and Independent Study Processes (ISP). IREC's work resulted in improvements to both sets of procedures that should help provide improved grid access for distributed generators. The improvements included removing the Commercial Operation Date (COD) hurdle for participation in the ISP, modification and/or removal of the tenth Fast Track screen and an increase in the Fast Track size limit in PG&E's territory.

After initiating a new process for further reform of the Generator Interconnection Procedures (GIP), the California Independent System Operator (CAISO) issued a refined list of topics that it planned to consider and hosted a stakeholder call to discuss the scope of the reforms. In written comments on March 11, 2011 and during stakeholder calls, IREC emphasized that CAISO is obligated by the FERC order that approved the initial GIP reform combining small and large generator procedures to consider and track the impact of reform on small generators. IREC reiterated that the ISP needs to be monitored and modified to ensure that it is a viable option for generators that do not qualify for Fast Track interconnection, but would have previously proceeded under a serial review process before the SGIP was merged into the single GIP procedure. CAISO responded to IREC's comments by including two new items on their list of issues to consider, both of which address the expedited review procedures available for small generators.

IREC also participated in the High Penetration Workshop on March 1-2, 2011 hosted by DOE and the CPUC in San Diego and attended the CPUC's Renewable Distributed Energy Collaborative (Re-DEC) meeting on March 4. As a result of ideas raised by IREC in these various forums, PG&E and SCE agreed to informally adopt our preferred 50% of minimum load screen as an alternate review for circuits where they have minimum load data. They committed to applying it to all Fast Track projects that fail the 15% of peak load screen while the utilities and stakeholders continue to discuss a more aggressive screen of up to 100% of minimum load.

On March 7 and 22, 2011, IREC filed opening and reply comments in the CPUC proceeding 08-08-009 related to the development of the feed-in tariff program required by Senate Bill 32. The statute requires an expedited interconnection procedure available for certain projects under that program. Our comments explained why Rule 21 is not well suited to be the interconnection procedure for SB 32 projects, principally due to the no-export screen and lack of a well-defined study process, and proposed use of improved WDAT procedures instead.

In April 2011, IREC worked with the CPUC staff and other stakeholder groups to help define the agenda for the Rule 21 Working Group, including addressing the question of what the role of Rule 21 should be in interconnecting wholesale systems in California.

IREC had a number of conversations with the CAISO, IOUs and the CPUC regarding the new GIP reform process, and IREC collaborated with a group of stakeholders, including the CPUC, to help develop a cohesive strategy for reforms to the ISP at the CAISO. IREC reviewed the straw proposal that was issued and participated in a stakeholder call on the proposal. We made progress in clarifying the requirements for the ISP and are paying attention to discussion of application of the Fast Track and ISP procedures to expanded projects.

On May 9, 2011, the CEC held a workshop to discuss how to achieve the state's 12 GW goal for

distributed generation. On May 23, IREC submitted comments in response to the issues that the CEC Staff had posed following the workshop. Included in these comments was a discussion of the need to reform the high penetration screens that exist in California's Rule 21 interconnection procedures and the IOU's Wholesale Distribution Access Tariffs to facilitate fast track review of projects that exceed 15% of a circuit's peak load.

During June 2011, IREC continued to monitor the CAISO's GIP reform process by reviewing the latest draft proposal and participating in stakeholder calls. We also worked with the CPUC to follow up on some of the commitments that PG&E and SCE made with respect to their GIP as a result of their filings at FERC. PG&E and SCE posted their first reports following the FERC order approving the modifications to their tariffs that showed the status of the interconnection request queue in more detail. SDG&E posted its first full version of their "preferred location" maps that were required by the CPUC; we have reviewed those maps and provided comments to the CPUC on possible improvements.

(VIRTUAL) NET METERING

IREC filed comments in 2008 supporting the concept of virtual net metering and asking the CPUC to reject a request by PG&E that virtual net metering be limited to a pilot program in the multifamily low-income portion of the California Solar Initiative (CSI). The CPUC issued a decision on October 16, 2008 establishing virtual net metering for the multifamily low-income portion of the CSI, ordering development of tariffs to implement virtual net metering, and requesting further comments on expanding the availability of virtual net metering to all multitenant properties in California.

The decision was somewhat similar to Massachusetts' net metering in that excess generation on one meter point could be assigned to customers on separate meters. However, unlike Massachusetts, California appears to be interested in limiting the allocation of excess generation credits to tenants of multi-tenant buildings. California also does not seem to want to allow the owner of the centralized facility to assess per kWh-based charges or fees in exchange for the allocation of credits.

The second issue of interest to IREC in this docket was the CPUC's implementation of California AB 2466 which allowed municipalities to install centralized renewable distributed generation (DG) facilities and offset load on multiple, dispersed meters.

IREC attended workshops on virtual net metering and AB 2466 implementation on January 8, 2009 and submitted post-workshop comments on January 16, 2009. On February 13, California's three largest IOUs submitted tariffs to implement virtual net metering in the limited context of multi-family, low-income housing units receiving California Solar Initiative benefits.

PV COSTS/BENEFITS

In the first quarter of 2009, IREC also filed comments and reply comments with the CPUC regarding a proposed cost-benefit methodology for distributed generation, which would include net-metered systems. Development of a cost-benefit methodology for distributed generation had been under development for over four years at the CPUC. IREC addressed a number of important issues concerning the CPUC's preliminary determination on the costs and benefits of

DG systems including treatment of lost revenues from foregone commodity and capacity sales, standby charge exemptions, and foregone transmission and distribution revenue.

On June 19, 2009, the CPUC released a Proposed Decision adopting a cost-benefit methodology for distributed generation including net-metered systems. On August 20, 2009, the CPUC adopted Decision No. 09-08-026 that included a number of IREC's suggestions, including a recognition that: (1) inclusion of lost revenue due to California's policy decision to exempt DG from standby charges was not justified, (2) DG provides a diversity benefit that potentially allows the deferral of transmission and distribution expenses, and (3) both grid-side and customer-side DG should be included in the study.

Starting in late 2009, IREC continued to participate in Docket 09-03-008 with funding from a new contract through the Solar America Board for Codes and Standards program on the rate impact of net metering. In the first quarter of 2010, the CPUC issued a long-awaited report that generally showed a minimal rate impact from net-metered solar facilities.

NET METERING

In March 2010, California's IOUs filed proposals in Docket No. R.10-03-001 to implement California Assembly Bill AB 920, which required electric utilities to offer net-metered customers options for using annual excess generation. IREC filed a response to the filings and offered information to the CPUC on approaches used in other states for compensating customers for annual excess generation. IREC also proposed that a reasonable interpretation of AB 920 would allow customers to rollover annual excess as a retail rate credit as is currently done in 13 states. On July 9, 2010, IREC participated in a workshop that allowed parties to discuss their proposals.

ADVANCED METERING INFRASTRUCTURE

In late 2008, IREC began monitoring California's Advanced Metering Infrastructure Docket No. 08-12-009 to that ensure AMI meters are capable of net metering.

COMMUNITY SOLAR

Lastly, during late 2009 and again in early 2011, IREC filed comments in the CPUC's electric vehicle docket (No. 09-08-009) related to net metering of solar energy in homes with separately metered electric vehicle load and household load. IREC's comments noted the importance of allowing virtual net metering in this situation in order to support the sale of solar energy systems with electric vehicles as raised by parties in the docket.

COLORADO

In Decision No. R08-1124-I, the Colorado Public Utilities Commission (PUC) invited comment on the proposed Renewable Electric Standard (RES) Rules released on October 31, 2008 in Docket No. 08R-424E. The proposed RES Rules covered a broad range of renewable energy topics, with wide latitude to comment on net metering and interconnection issues. IREC filed comments on December 22, 2008, reply comments on January 20, 2009, and supplemental comments on February 13, 2009. IREC reached out to a number of parties including the Colorado Solar Energy Industries Association, the Solar Alliance, and the Colorado Rural

Electric Association to coordinate our positions with local stakeholders. Principal issues addressed related to insurance, system size, applicability to cooperatives, dispute resolution, registration of third-party owners, and REC ownership.

On April 22, 2009, the Colorado PUC released a Recommended Decision concerning the Renewable Energy Standard Program Rules. The RES Program Rules contain Colorado's net metering and interconnection standards and IREC was active in the docket since November of 2008 seeking to improve Colorado's rules. IREC filed comments and reply comments in an effort to support what was good in the decision and also to encourage the Commission to take further action towards best practices. IREC continued to reach out to local stakeholders in coordinate responses to the Recommended Decision and address concerns raised by parties and coordinate joint responses on issues of concern including elimination of the requirement that a customer install an utility external disconnect switch at customer expense and issues surrounding circuits with highly seasonal load.

On September 2, 2009, the Colorado PUC adopted a decision finalizing updates to its RES Program Rules. The decision adopted a number of changes to the NEM rules and interconnection procedures that moved Colorado closer to best practices, including removal of the system size cap for net-metered systems. The new size requirement will be 120% of a customer's average annual consumption. The decision also clarified that third-party ownership is allowed for smaller systems (<10 kW) and affirmed that third-party developers are not public utilities as codified in Senate Bill 09-051. Lastly, the decision expanded Colorado's interconnection rules to cover coops, which would support the development of solar energy statewide in Colorado.

In April 2010, the Colorado PUC issued Decision No. C10-0372 opening Docket No. 10R-243E, which was largely focused on updating Colorado's renewable energy standard (RES) rules to conform with the passage of House Bill 10-1001 (HB 1001). On June 1, 2010, IREC filed comments and participated in an open meeting before the Commission encouraging the PUC to make modest improvements to Colorado's interconnection standards. On June 25, 2010, IREC filed post-hearing reply comments responding to other parties' comments. Parties commenting on interconnection were generally supportive of IREC's proposed changes, and Xcel Energy asked that the Commission hold a workshop for stakeholders to cooperatively address IREC's proposed changes.

On August 30, 2010, the Colorado PUC released Decision No. C10-0952. The decision was supportive of continued improvement in interconnection standards in Colorado and asked parties to work together cooperatively to develop a submission to the Commission.

On September 30, 2010, the Colorado PUC issued C10-1061 opening Docket 10R-674E to develop rules related to community solar gardens (CSGs), which were authorized by House Bill 10-1342. IREC submitted comments on October 22, 2010, outlining nine issues within Colorado's current interconnection procedures that should be changed to facilitate the interconnection of community solar gardens and distributed generation generally. We worked closely with numerous stakeholders, including the Vote Solar Initiative, the Solar Alliance, the Solar Gardens Institute, and developer and financing representatives in developing our positions.

IREC also attended a workshop on January 6, 2011, at which IREC presented its concerns for discussion. In general, participants supported IREC's proposals. Using funding from another source, IREC was also active in the proceeding assisting stakeholders in addressing numerous other issues related to implementation of Colorado's legislation, including program design related to net metering and valuation of the net metering credits generated by a community solar garden.

IREC filed further comments on February 18 and March 14, 2011 in the state's rulemaking, addressing interconnection, aggregated net metering, and low-income customer participation. Our reply comments urged the Commission to open a sub-docket or a new docket to notice interconnection issues in order to ensure adequate interconnection procedures that support Colorado's CSG program.

IREC attended a March 18, 2011 CSG hearing at which the need to update Colorado's interconnection standards and establish rules for aggregated metering to support community solar gardens was discussed, as well as how to appropriately calculate the value of net metering credits for community solar garden participants. IREC prepared and filed post-hearing comments on April 8, 2011, which included responses to concerns raised by, Xcel and Black Hills, Colorado IOUs. IREC emphasized the need for further discussion of interconnection in a separate docket or sub-docket, as well as keeping CSG rules flexible to permit diverse business models and approaches.

As part of IREC's continuing efforts to promote the development of solid community renewables programs, IREC reviewed Xcel's proposed 2012 RES Compliance Plan, which outlined that utility's approach to CSGs in its new Solar*Rewards Community (SRC) Program. On June 7, 2011, IREC filed a motion to intervene in the Xcel 2012 RES Compliance Plan docket in order to help ensure that this next step of CSG implementation results in a robust and successful program. We anticipate that the success of Colorado's CSG program will affect IREC's work on community solar around the United States, since Colorado, along with Delaware, is among the first states to implement such a program.

IREC also submitted our first data request to Xcel and drafted the necessary non-disclosure agreement and other documents. Using funding from a private donor, we anticipate preparing testimony and other material to respond to concerns with Xcel's proposed Plan and SRC Program.

CONNECTICUT

On July 21, 2010, the Connecticut Department of Public Utility Control (DPUC) issued a Notice of Hearing in Docket No. 10-03-013 to address whether Connecticut's net metering regulations should be amended to allow for meter aggregation and to address the DPUC's concerns by bringing to bear the information concerning the types of costs that can be avoided when meter aggregation is allowed. IREC submitted comments on August 18, 2010 supporting the DPUC's proposal to allow meter aggregation as a best practice that would support the continued development of solar energy within the state.

DELAWARE

On September 7, 2010, the Delaware Public Service Commission (PSC) opened Docket No. 49 to address the implementation of Delaware's community solar legislation. On November 1, 2010, IREC submitted comments addressing many aspects of implementation including interconnection and net metering. IREC also suggested that the Delaware PSC consider adopting IREC's model interconnection rules for use in Delaware (state law requires the PSC to consider this option). Delaware's largest IOU, Delmarva supported this request. As in Colorado, IREC leveraged DOE support with funding from an anonymous donor to support IREC's participation in the docket beyond interconnection and net metering.

IREC submitted reply comments in January 2011 and attended several technical workshops in February and March 2011. In preparation for those workshops, we worked with stakeholders to develop strategy on the key issues to be discussed, in particular issues related to jurisdiction over community energy facilities (state vs. federal), jurisdictional issues related to treatment of net metering credits, and related facility sizing issues that Delmarva raised.

At a technical workshop on March 24, 2011, stakeholders reached several important agreements related to aggregated net metering and interconnection. Delaware agreed to adopt Maryland's interconnection procedures--a major improvement over Delaware's. Delmarva chose the payment option under the community renewables section of the statute, rather than the NEM credit option. Delmarva agreed to use avoided cost to set its payment and to supplement this with a REC payment, in order to avoid FERC jurisdictional issues, as IREC had advised.

Delaware PSC Staff then issued updated net metering rules with revisions to the sections addressing aggregated net metering and Community Energy Facilities (CEFs). IREC had concerns with regard to certain sections of the rules -- particularly sections related to the valuation of payment for CEF generation and sections related to updating interconnection procedures. We believed that these sections deviated from the parties' consensus at the March 24, 2011 workshop. IREC discussed the proposed rules with other parties and submitted comments highlighting our concerns.

PSC Staff issued an updated version of the rules on April 18, 2011 that integrated some, but not all, of IREC's comments. Formal comments on these rules were filed on June 1 and June 7, 2011. The Delaware PSC approved rules that reflected many of the best practices for which IREC promoted including the appropriate alternative payment amount for excess generation and net metering crediting process. We consider these rules a success, in particular their implementation of a comprehensive community renewables program that is one of the first of its kind in the United States.

DISTRICT OF COLUMBIA

The District of Columbia Public Service Commission (DCPSC) accepted a final round of comments regarding adoption of interconnection standards in April 2008 in Docket No. FC-1050. Although IREC was not previously a party, IREC was asked for suggestions by the Maryland-DC-Virginia chapter of the Solar Energy Industries Association (MD-DC-VA SEIA). IREC took the opportunity to provide MD-DC-VA SEIA with language related to the proposed rule's system-wide sequential queuing provision that would limit the number of larger installations to a handful per year. The comments were filed on April 14, 2008.

On June 11, 2009, IREC attended a meeting with NREL's Mike Coddington and Robert Margolis and members of the DCPSC in response to a request from the DC PSC for technical assistance regarding network interconnection issues. During the meeting, DCPSC commissioners and Staff expressed an interest in obtaining broader input on policies necessary to accommodate an expansion of solar PV integration. In July 2009, IREC assisted Mike Coddington with drafting data requests to the DCPSC to learn more about the extent of the network grid in the District.

FLORIDA

In late 2007, IREC attended the first meeting before the Florida Public Service Commission (FLPSC) to address Governor Crist's Executive Order to implement best practices in the areas of net metering and interconnection. The FLPSC Staff created a draft eight-page document in Docket 070674-EI to cover both subjects that did not cover major substantive areas, but the commissioners were very interested in the guidance offered by IREC, SunEdison, Florida's chapter of the Solar Energy Industries Association, the Florida Solar Energy Center, and others. The Staff later developed a revised draft with very good net metering standards, but which fell short on several interconnection issues. IREC urged addressing the following shortcomings: an insurance requirement, restriction to only customer-owned systems (cutting out the very successful third-party ownership model that can be achieved using "customer-sited" language), and boundless utility discretion in the review of systems over 100 kW.

A later open meeting with Commission Staff advanced IREC's positions, though Staff was unwilling to develop a screening process for interconnection, meaning utilities would have discretion to excessively study installations over 100 kW at the applicant's expense (smaller system studies are at the utility's expense). At the end of that meeting, a discussion of Florida's standby charges brought to light that any savings from renewable energy generation would be matched by standby charges. Prior to a final meeting before the Commission, IREC analyzed the standby charges of Florida's largest utility and in coordination with Vote Solar, filed comments explaining why standby charges should be inapplicable. Commission Staff recommended at the final meeting that standby charges be disallowed, and the final rule adopted by the Commission included this provision.

Following the FLPSC's issuance of a draft rule improved upon by comments from IREC and others in early 2008, a joint filing by Florida utilities necessitated a final FLPSC hearing on March 4, 2008. IREC attended to assure that the draft rule was adopted without changes. The

Commission passed the draft rule and a final order on March 18. The net metering provisions provide for a two megawatt cap, which was raised from one megawatt upon an early recommendation by IREC. Rollover of excess generation for a full year was included, and IREC helped avert damaging standby charge provisions.

Florida's interconnection provisions currently are strong for systems under 100 kW, with rapid approval at low cost and almost no requirements beyond compliance with IEEE 1547. However, larger systems are subject to utility review at the customer's expense, without the benefit of the fast track screening process used by FERC and many states. The FLPSC noted that this could be corrected in the future, and IREC did not object to the Commission's preference for good interconnection standards passed quickly over more comprehensive standards that would have required more deliberation. One very positive feature was Florida's determination that utilities could not require installation of an external disconnect switch for system at or below 10 kW, a result reached in part by the input of IREC's Mike Sheehan.

HAWAII

On February 15, 2010, IREC filed a motion to participate in Docket No. 2010-015, which is the docket through with the Hawaii PUC will consider modifications to Hawaii's Rule 14H interconnection procedures. During March of 2010, participants worked with the Hawaii utilities to come to agreement on a number of modifications that the utilities had proposed to Rule 14H.

In May 2010, parties entered a joint stipulation that identified issues that will need to be addressed during the proceeding and a timeline and process for addressing those issues.

In June 2010, IREC participated in two workshops in Honolulu to discuss open issues. Discussions continued among the parties throughout the second half of 2010. Parties met five times in early 2011 to discuss possible settlement of issues. To assist with that goal, IREC prepared and circulated a comparison of Hawaii's Rule 14H interconnection process against four other common interconnection approaches, including IREC's model interconnection procedures.

At a February 24, 2011 meeting, the Hawaiian utilities expressed openness to having IREC draft revisions to the existing Rule 14H interconnection process and incorporate "best practices" from California's Rule 21 interconnection procedures.

On April 7, 2011, IREC participated in a fifth settlement negotiation in Hawaii. During that meeting, open issues in Hawaii were narrowed to: 1) addressing Supervisory Control and Data Acquisition (SCADA) requirements for systems below 1 MW; 2) allowing remote curtailment of systems with SCADA; 3) determining appropriate voltage and frequency set points for inverters; 4) timeframes to complete interconnection studies; 5) waiver of external disconnect switch requirement for small inverter-based systems; and 6) provisions that would allow a utility to refuse to interconnect a system if a petition is filed at the Hawaii PUC justifying that it cannot be interconnected.

Following that meeting, IREC was contacted by the attorney for the Hawaiian Electric Companies who requested IREC's assistance in moving parties toward a comprehensive

settlement on all issues. IREC reached out to key intervenors to solicit input on additional redlines to Hawaii's interconnection rules. IREC also worked with the solar parties to develop a comprehensive proposal for resolving open issues and moving toward an all-party settlement.

On April 21, 2011, IREC forwarded its proposed redlines and comprehensive settlement proposal to the parties. IREC proposed that parties delay a consideration of SCADA/monitoring requirements for systems below 250 kW in exchange for parties agreeing to lower SCADA requirements on two of the islands to 250 kW. In addition, two utility proposals to insert language related to curtailment of systems would be delayed and taken up in the Reliability Standards Working Group process. Intervenors would also agree to accept language the utilities have proposed allowing them to refuse to interconnect a system if they file a notice at the commission.

On April 28, May 6 and May 10, 2011, the Hawaiian utilities provided additional redlines and proposals regarding Rule 14H modifications. On May 13, the intervenors in the proceeding provided proposed modifications to the Hawaiian utilities. On May 20, the Hawaiian utilities provided their responses to the intervenors' proposals. Importantly, the utilities agreed to two key modifications to the supplemental review process that would allow significantly more systems to bypass the need for an interconnection study unless penetration levels exceed 50% of minimum daytime load (intervenors calculate that this would push penetration levels up to 20% of peak load from the present 15% on most circuits). The intervenors met telephonically to discuss the utility proposals on May 25, and on May 26 the intervenors responded by making several responsive proposals to the utilities in an attempt to trade some of the open issues and thereby narrow the number of open issues significantly.

The Hawaiian utilities provided a favorable response on June 23. If parties are able to resolve all differences on the interconnection process issues, which are addressed in Hawaii Rule 14H, Appendix III, then only a handful of technical requirements will remain open. Parties have agreed to disagree and brief these issues in their final statements of position (FSOP). Parties were, however, able to agree on provisions that will be included in a supplemental review process that will allow PV systems that contribute to penetrations below 50% of minimum daytime load to avoid the need for a full interconnection study. IREC believes this establishes a new "best practice" for interconnecting PV systems.

IREC will be drafting comments to the Hawaii PUC to represent the consensus of all parties with regard to Appendix III and will be preparing a joint set of blacklines for the intervenors to propose to the Commission for Appendix I when FSOPs are filed on August 24, 2011.

ILLINOIS

In late June 2007, IREC participated in a workgroup to develop small generator interconnection standards and subsequently attended a meeting in early July in Chicago. The group did not make significant progress other than declaring that IEEE 1547 would be adopted as the basis of its interconnection standards. Mike Sheehan of IREC was finally able to clear up a

misunderstanding about the cut-out times for inverters specified in IEEE 1547 and remove unnecessary language from the proposed Illinois rule.

The workgroup started with the fairly poor standards under consideration in Maryland at the time, and the utility participants generally sought more utility discretion, higher fees, and longer timelines than those found in the Maryland draft standards. Brad Klein of the Environmental Law and Policy Center (ELPC) supported IREC's views, but the utilities dominated discussions. The working group, which had been discussing the Mid-Atlantic Demand Resource Initiative (MADRI) model at length without preparing any draft revisions or even agreeing that rules are appropriate, finally determined that comprehensive rules were appropriate. Comments were filed by IREC and other parties regarding how the MADRI model could be significantly improved. IREC's involvement in Maryland allowed us to interject that Maryland had made several important changes to the MADRI rule.

IREC attended eleven meetings regarding interconnection procedures in Springfield and Chicago in 2007-2008 and called in to several other meetings, as well as coordinated with ELPC on many occasions. Following seven 2007 workshops in which IREC participated, a draft rule by the Illinois Commerce Commission (ICC) Staff was issued in early 2008 in Docket No. 06-0525. IREC commented on the draft rule and was involved in hearings regarding one Illinois utility's attempt to open a docket just to determine whether there should be a rule and whether the parties had sufficient time to review Staff's draft rule (based on the model the workshops had been considering for over a year). IREC's persistence resulted in the comprehensive and effective procedures for systems up to 10 MVA, adopted by the ICC in August 2008.

The ICC opened a new docket (No. 08-0481) to consider procedures for interconnection of those rare systems over 10 MVA that are state jurisdictional. IREC participated in several calls with the ICC in the fourth quarter of 2008 and provided input for comments filed by ELPC in December 2008. IREC reviewed ELPC's draft comments and tracked the docket. While the ICC decided to create separate rules for facilities over 10 MVA rather than adding provisions to the rules for facilities up to 10 MVA, they are substantively quite similar.

While not an active participant in Illinois' net metering docket, IREC did submit comments. The draft net metering rule contained a cap of 200 net metered customers per year per utility and payment for excess generation by facilities over 40 kW at avoided cost, while the final rule dropped the customer cap, it retained the avoided cost payment provision.

INDIANA

The Indiana Utility Regulatory Commission (IURC) held a series of public forums in June 2010 on whether the Commission should update its net metering and interconnection procedures. IREC attended the June 2, 2010 meeting and made a half hour presentation to the full IURC Board, filed comments on July 6, and met in a one-on-one session with Commission Staff and one Commissioner on July 14. IREC recommended updating Indiana's nation-lagging net metering rules first and provided information on rate impact studies to alleviate concerns of cross-subsidization.

The IURC issued a solid draft rule on August 30, 2010, including a 1% program cap, a one megawatt facilities cap indefinite rollover of excess generation for facilities up to 200 kW, and rollover to the end of the year for facilities above 200 kW. These provisions directly resulted from IREC's discussions with Commissioners and Staff on July 14, 2010 in Indianapolis. After issuance of the draft, IREC participated in a workshop on September 9, 2010. IREC filed comments on September 30, 2010 along with a redline of the draft rule, and coordinated with the other non-utility parties to support the IREC redline.

Indiana revised its net metering rules in 2011 (Rulemaking #09-10). Based on IREC's comments, the IURC offered a number of positive proposed changes including increasing the system size cap from 10 kW to 1 MW, increasing the aggregate cap from 0.1% to 1%, and allowing for indefinite credit rollover. IREC submitted pre-docket comments to the Commission in an effort to help inform these proposed rules and submitted information related to the positive fiscal impact net metering can have. IREC filed opening comments on March 24, 2011 supporting the Commission's efforts to revise Indiana's rules and offering three primary suggestions to improve them: (1) refine the definition of net metering customer to permit third-party ownership arrangements; (2) clarify the ownership of RECs to support the REC market; and (3) revise the definition of resources eligible to participate in net metering.

On May 11, 2011, the Commission issued final rules, and Indiana's net metering program is now the best in its region. The revised rules included a number of changes that IREC supported, such as: an expanded definition of renewable energy resources; an increase in the size of net-metered facilities from 10 kW to 1 MW; an increase in the cumulative capacity limitation from 0.1% to 1% of the utility peak load, reserving only 40% for residential participation; net-metering credit rollover; and exemption of certain local government customers from indemnification requirements. These new rules represent a major improvement for net metering in Indiana, and IREC expects them to bolster regional efforts to expand net metering opportunities in the Midwest.

IOWA

On September 16, 2009, the Utilities Board of the Iowa Department of Commerce (IUB) commenced a rulemaking (Docket RMU-2009-0008) and issued draft rules based on procedures implemented in 2008 in Illinois. IREC submitted comments in late October 2009 and participated in a December 10 public hearing. The most significant issue was insurance provisions in the draft rule that are more onerous than those in Illinois.

IREC submitted additional comments on January 8, 2010 and attended a two-day technical workshop in Des Moines on March 23-24, 2010. The key issues, especially those related to insurance, were addressed thanks to the participation of IREC, NREL and the Environmental Law & Policy Center.

On May 21, 2010, the IUB issued its final order implementing new interconnection procedures that went into effect as of July 21, 2010. Happily, the adopted procedures did not stray far from their origin - the recently instituted Illinois procedures that scored an "A" in "Freeing the Grid

(2010)." The procedures also helped harmonize rules across state lines, making it feasible for installers and developers to more easily provide services in both Iowa and Illinois.

KANSAS

The Kansas Corporations Commission (KCC) invited IREC to speak at a full-day "Solar Roundtable" on March 3, 2009, on the subject of net metering. The KCC attracted an audience of roughly 150 people, including regulatory staff, commissioners, legislators, utility representatives, solar installers and other participants. Kansas is one of the few states to not adopt net metering, and this was an opportunity for IREC to begin a dialogue with the KCC and establish IREC's competence in the subject area.

On June 30, 2009, Staff at the KCC requested informal comments concerning a number of issues with implementation of House Bill 2369, which established a renewable energy standard for Kansas and required the KCC to establish net metering rules and interconnection procedures. IREC responded on July 27, 2009 to assist Staff in implementing net metering rules and interconnection procedures based on best practices. KCC Staff also requested guidance on third-party ownership of renewable systems under HB 2369.

On October 13, 2009, IREC attended a workshop in Topeka concerning development of the net metering rules and interconnection standards required by HB 2369. Topics discussed at the workshop included the overall importance of establishing separate net metering and interconnection standards, establishing interconnection standards that contain technical screens and expedited review paths, and the importance of adopting comprehensive net metering rules and interconnection standards. On December 18, 2009, Commission Staff released a strawman proposal containing rules for net metering and interconnection. IREC filed extensive comments on the strawman proposal on January 4, 2010.

During the first quarter of 2010, KCC Staff released final proposed net metering rules and interconnection standards that fell far short of best practices. IREC coordinated with local stakeholders to seek changes to the proposed regulations and filed targeted comments on June 9, 2010.

KENTUCKY

Kentucky Senate Bill 83 required the Kentucky Public Service Commission (PSC) to modify its net metering rules to allow systems up to 30 kW, provide for rollover, not allow insurance provisions, and to create interconnection rules. The PSC had an initial organizational meeting in June 2008, which IREC attended by phone. The PSC allowed the utilities to craft the first revision. The PSC also provided that interconnection rules would only be created for net metered systems and thus not apply to any systems over 30 kW. The limited scope of the rule and the unlikelihood of a robust market for distributed generation in Kentucky led IREC to conclude that intervention was not a useful expenditure. Kentucky rules require local counsel and allow discovery procedures in rulemakings such as interrogatories, making the process costly. IREC provided support to local non-utility parties such as the nonprofit Kentucky Solar Partnership (KSP) by reviewing the record and drafting language for comments.

On January 8, 2009, the PSC issued its final order, including no cost interconnections for inverter-based systems under 15 kW, dropping insurance requirements, and requiring utility procedures for line worker use of a disconnect switch if the utility requires the switches. These final procedures are significantly better than those proposed by the utilities at the start of the process, and the Kentucky Solar Partnership has stated that IREC's involvement was extremely helpful.

MAINE

On December 5, 2008, the Maine Public Utilities Commission (PUC) issued a draft report to the state's legislature recommending adoption of the IREC interconnection model for use as a statewide standard. IREC submitted comments on January 5, 2009 (Docket No. 2008-186) providing additional background information on the development of IREC's model rules and to endorse the use of IREC's model in Maine.

On July 21, 2009, the Maine PUC, in keeping with its prior recommendation, proposed adoption of the IREC model interconnection rules for use as Maine's statewide interconnection procedures (Docket No. 2009-219). The commission held a hearing on the proposal on August 26, 2009. On September 8, 2009, IREC filed comments in support of the Commission's proposal.

On January 4, 2010, the Maine PUC adopted a slightly modified version of IREC's 2006 Model Interconnection Procedures for use as Maine's official statewide procedures. Highlights: rules are applicable to all state jurisdictional interconnections regardless of size of the generator; all technologies are eligible; like the IREC model, there are four interconnection levels, including a non-export level, and the rules adopt IREC's spot and area network interconnection screens; disconnect switches are prohibited for small inverter-based systems; application fees are $50 for Level 1 and $50 + $1/kW for other levels; engineering fees fixed at $100/hour; insurance levels mirror those in IREC's 2009 model; timelines are the same as IREC model with a couple tweaks; and the rules adopted a flexible approach that allows commission to tailor to the circumstances, including use of informal methods such as teleconferences.

MARYLAND

To meet the needs of an aggressive new renewable portfolio standard adopted in April 2007, the Maryland Public Service Commission adopted very effective interconnection procedures in Docket No. RM 31 in June, 2008. The final hearing prior to adoption occurred in October 2007 after a hearing at which IREC advocated for several provisions adopted by the Commission. As well, in response to IREC's suggestion that disconnect switches are unnecessary for small inverter-based systems, the Commission took the unique but effective approach of accepting the utilities' argument that safety necessitates disconnect switches and added that the utilities would need to show the Commission that procedures are in place to assure the use of the switches and to document their use.

After IREC's initial participation, Maryland adopted net metering provisions in Senate Bill 355 in early 2010. While providing for treatment of annual excess generation, the bill created the

potential for interpretation that monthly net excess generation should be paid for at a utility's avoided cost. IREC participated in three workshops held to implement the new law. Three sets of comments were submitted, all regarding how the Commission can interpret the new law as an expansion of existing policy that includes rollover of excess kilowatt hours.

In August 2010, Commission Staff issued a report of the results of the workshops, and IREC filed comments. Staff issued draft rules on October 9 that do not provide for rollover of excess kilowatt hours at the end of a billing period, which IREC believed was not the intent of the legislation. At the net metering rulemaking before the full Commission on October 26, 2010, IREC presented the joint solar stakeholders' position that the intent of the Maryland legislature in proposing changes to the net metering law was to enhance, not diminish, the value of net metering for solar and other DG customers. IREC argued the statute was unclear and the Commission was therefore vested with the authority to clarify the intent of the law, which was unequivocally to support additional solar installations. Several key legislators indicated they did not understand the detrimental impact on net metering when the law was passed.

The Commission ruled from the bench that the new law was not unclear and that the legislature intended to change net metering from an annual reconciliation to a monthly reconciliation. The Commission ruled this way despite testimony from the Maryland Energy Administration (MEA) that a monthly reconciliation would reduce the value of net metering particularly for customers trying to meet their full annual energy needs. For these solar customers the MEA argued, the net monthly outlay for electricity would increase by over 800 percent. Because monthly excess would only receive PJM interconnection energy clearing prices, the economic value is reduced significantly.

At least in part, IREC's effort resulted in the issue being addressed again by the state legislature, which clarified its intent in H.B. 860, effective June 1, 2011. This bill revives rollover of excess generation, which should be followed shortly by a Commission rulemaking to implement what it claimed a year ago was not the legislature's intent.

MASSACHUSETTS

On July 2, 2008, Massachusetts enacted its Green Communities Act, requiring the Massachusetts Department of Public Utilities (DPU) to adopt rules and regulations necessary to implement provisions relating to net metering. On October 3, 2008, the DPU opened Docket No. D.P.U. 08-75, and IREC filed comments on November 12, 2008. Massachusetts was looking at an expansion of net metering to include systems up to 2 MW and was looking to implement an innovative community solar program. Similar efforts were underway in New Jersey and in California. Community solar was also being discussed in a Colorado docket, and legislation had been proposed in Virginia and Connecticut.

On March 6, 2009, the Massachusetts DPU opened a rulemaking to adopt new net metering rules. The rulemaking followed up on a series of technical conferences and requests for comment held in the third and fourth quarters of 2008. The DPU also issued a set of draft regulations intended to implement the provisions of the Green Communities Act related to net metering and neighborhood net metering. The rules provided for the basic netting within a billing period. Solar

and wind systems up to 1 MW would get a fully bundled retail rate credit for monthly excess. Credits would roll from month to month in perpetuity. Systems between 1 and 2 MW would not get credit for the distribution component. Customers keep all RECs. Standby charges, demand charges and additional liability insurance requirements are prohibited but only for systems up to 60 kW. Overall enrollment was limited to just 1% of utility peak.

The proposed rules were novel in a few ways. First, they would create neighborhood net metering, which would allow a single system to provide rate credits to ten or more residential customers within a neighborhood. The proposed rules defined neighborhood as a community of unique interests within a municipality and ISO-NE load zone. Another novelty was that any customer with a net-metered system could elect to transfer excess generation credits to other customers within the same distribution utility's territory. The DPU's March 6 order required distribution utilities to submit a joint net metering tariff by March 27, 2009. The DPU held a stakeholder meeting on April 7, 2009.

On June 26, 2009, the Massachusetts DPU issued final net metering and neighborhood net metering regulations. The regulations covered solar and wind systems up to 2 MW and provided for perpetual carryover over of monthly excess generation at full retail rate. The regulations also allowed for customer-generators to allocate excess generation to other customers of the same distribution company.

In August 2009, the DPU approved a final joint utility net metering tariff in Docket No. D.P.U. 08-75, along with modifications to the state's model interconnection procedures. Massachusetts' utilities submitted compliance tariffs in September, and hearings on those tariffs were held on October 14, 2009. IREC attended those hearings to ensure utility tariffs complied with the DPU's recently adopted rules. On November 19, 2009, the DPU approved utility net metering tariffs, which became effective December 1, 2009.

Massachusetts held a technical workshop on February 14, 2011 to assess further revision of its net metering rules. IREC participated and provided input on jurisdictional issues that have arisen in Massachusetts and Rhode Island and related concerns regarding the appropriate rate for net excess generation. In addition, the Massachusetts Department of Energy Resources (DOER) requested IREC's assistance in compiling a report on Massachusetts' interconnection procedures.

IREC participated in a third technical workshop on May 16, 2011, focused on the issue of a queuing process for its net metering programs. The workshop entailed two panels of developers and program administrators discussing the approaches to governmental and non-governmental queues, and how each queuing process should work. Similar queuing issues are presently arising in states with strong renewables programs and high renewables penetration, with regard to both net metering and interconnection queues, and Massachusetts is one of the first states to try to address them explicitly in its rules. IREC researched queuing issues in Massachusetts and several other states in order to inform potential revisions to IREC's model interconnection rules.

MICHIGAN

On October 21, 2008, the Michigan Public Service Commission (PSC) issued an Order and Notice of Opportunity to Comment in Case No. U-15803 on the implementation of net metering and interconnection procedures pursuant to recently passed state law which gave the PSC latitude to establish much better procedures than existed in the state. IREC filed comments on November 3, 2008 noting that the draft rules under consideration include insurance and standby charge provisions that would discourage most project developers and homeowners. In December 2008, the PSC contacted IREC directly to arrange for grading of revised rules not yet released, which IREC did using the criteria in "Freeing the Grid (2008)."

In January, 2009, the PSC requested a second grading, having updated its draft rules based on the first round of IREC grading. Michigan's net metering procedures benefitted substantially from this process, though utilities were given a great deal of discretion to formulate interconnection procedures. The PSC then issued its revised draft rules, and IREC submitted brief comments on March 6, 2009 (under new Case No. 15787). The PSC issued its final order on March 18, 2009, including an acknowledgement that it had incorporated IREC's suggested change to the definition of a customer-generator to assure that third-party ownership was not precluded.

On August 3, 2009, the majority of Michigan utilities filed an application at the PSC (Case No. U-15919) requesting adoption of interconnection standards for the group. The proposed interconnection standards were wholly deficient on even a most basic level and not in compliance with recently adopted rules concerning interconnection. On October 16, 2009, IREC filed detailed comments on the rules, explaining key deficiencies. Michigan most recently solicited comments on its interconnection procedures in early 2011 and still does not have comprehensive state procedures. IREC declined to participate due to limited resources.

MISSISSIPPI

IREC, along with The Sierra Club and a local supporter, intervened in Docket No. 2011-AD-2 designed to consider adoption of statewide interconnection and net metering rules, giving particular emphasis to the interest within the Mississippi agricultural sector in developing net metering rules. On March 1, 2011, IREC filed comments, and multiple parties suggested that the Commission consider IREC's models for interconnection and net metering as the starting point for rule development. They also joined IREC in calling for a working group to discuss the substantive issues as part of rule development. IREC, included as an Appendix to its comments, the IREC Model Interconnection Procedures (2009 edition), Net Metering Model Rules (2009 edition), and a copy of "Freeing the Grid (2010)." The Commission has repeatedly stayed further consideration of the proceedings, most recently on July 7, 2011.

MONTANA

In November 2007, IREC attended a preliminary hearing of the Montana Public Service Commission (PSC) to consider the implementation of interconnection rules. The Natural Resources Defense Council (NRDC) requested IREC's participation.

Montana has a renewable portfolio standard and only two investor-owned utilities, and instituting interconnection standards should not have been too complicated. However, given its small population and far northern location, it was inappropriate to make Montana a priority state for IREC.

On February 25, 2010, the Montana PSC issued proposed interconnection standards, requested comments on the rules and set a hearing on the proposed rules for March 31, 2010. The proposed standards were largely based off of IREC's 2005 model rules. IREC felt supporting local stakeholders such as Renewable Northwest Project, Montana Renewable Energy Association, and Montana's Alternative Energy Resources Organization was the most judicious use of its resources and funding. IREC explained the recent changes to our model and assisted stakeholders in formulation of their comments. IREC also filed detailed comments explaining IREC's recent update to the model and proposed changes to the proposed rules that would bring Montana's proposal up to current best practices.

NEVADA

In June 2007, the Public Utility Commission of Nevada (PUCN) opened Docket No. 07-06024 to investigate revisions of its net metering law in accordance with Nevada Assembly Bill 178, and IREC filed its first comments in January 2008. The draft rule failed to clarify that customers retained ownership of renewable energy credits because the related legislation provided for utility ownership of RECs when the utility pays for "all or part" of a facility. At an early April 2008 workshop, this point was clarified as IREC suggested. Also, insurance provisions in a draft net metering agreement draft by Nevada's utilities would have added an onerous provision calling for the utility to be named as an "additional insured" in any insurance policy on a customer's facility.

IREC attended a workshop in Carson City on April 29, 2008. AB 178 covered most of the key net metering provisions, and IREC focused on assuring that REC ownership would stay with the customer, and unfavorable queuing provisions would not be adopted. IREC also argued for development of comprehensive PUCN rules rather than leaving key provisions to tariff filing. However, this was not critical in Nevada because there is essentially one regulated utility in the state (the two utilities, Nevada Power and Sierra Pacific operate jointly, now under the name NV Energy). In late June, the PUCN called for Nevada Power to submit a draft tariff filing, and IREC submitted comments on that draft.

The PUCN expanded the scope of the docket later in 2008 to explicitly consider whether third-party ownership of net-metered systems would be allowed. IREC submitted comments and attended a workshop in late September. PUCN Staff expressed its opinion that third-party owners would fall within the definition of public utilities under Nevada law, and therefore could

not operate in Nevada without violating the franchise of an existing utility. The Commission opined that it did not appear the definition of public utilities would encompass third-party owners and invited comments. Little opposition to third-party ownership was voiced at the September workshop, and the Commission seemed amenable to the concept.

IREC submitted further comments on October 10, 2008 in response to utility positions. On November 17, the PUCN issued its final order declaring third-party ownership of renewable energy systems to be allowable without subjecting owners to PUCN jurisdiction. This was a very positive result, as IREC was confronting the issue in other states.

In 2009, SB 358 was passed and erased what little doubt purportedly existed on the matter of third-party ownership (NV Energy and Commission Staff had voiced this doubt). The PUCN sought comments regarding its proposed rules to implement SB 358. SB 358 is straightforward on the third-party issue, the PUC draft rules would implement SB 358 appropriately, and IREC consulted with parties to the rulemaking before determining not to file comments on this one, narrow issue.

In early 2011 the PUCN requested that a consultant (Navigant Energy) analyze the technical feasibility of interconnecting renewable energy facilities well beyond current levels, resulting in the PUCN's opening Docket 10-04008. In addition to providing an analysis showing that up to 15% penetration of renewable energy is feasible, Navigant went on to provide an analysis of the rate impact of such penetration. The study concluded that the cost of net metering in Nevada outweighed the benefits, but that conclusion was based on the unlikely assumptions that nearly all net metered facilities would be residential and that demand response programs would shift NV Energy peak loads to the evening hours, and therefore solar facilities would provide no capacity benefits. IREC appeared at PUCN workshops in Carson City on January 28 and March 1, 2011 to address these assumptions. While the PUCN acknowledged in the meeting that the Navigant study may be inaccurate, it accepted the study based on its primary findings regarding the technical feasibility of high penetration levels of photovoltaics.

In conjunction with IREC's 2008 involvement, IREC also responded when the PUCN opened a separate Docket (No. 08-03022) in March 2008 as a general inquiry regarding net metering and the possible need for further regulation. IREC submitted comments on May 30, 2008 calling for safe harbor language and meter aggregation. PUCN staff responded it would take legislative direction to make such changes. IREC remained involved primarily to make sure that Nevada's net metering provisions were not negatively impacted in some way. The PUCN did not take further action in Docket No. 08-03022.

NEW HAMPSHIRE

IREC entered Docket No. DE-08-148 in 2009 to support a provision proposed by Commission Staff that would not allow utilities to require an external disconnect switch for net metered facilities up to 100 kW. IREC appeared at a hearing on June 18, 2009 and submitted comments regarding Staff's proposal that utilities be prohibited from requiring an external disconnect switch for facilities up to 100 kW and various timing issues on June 25.

The Commission issued revised rules on July 13, 2009 that adopted the 100 kW threshold for the disconnect switch subject to review by the state legislature. Approval for the July 13 rules was granted by the state legislature, and the new provision became effective on July 18, 2009. This development made New Hampshire second only to New Jersey regarding the disconnect switch and gave IREC further support for its position in other states that the switch is unnecessary.

NEW JERSEY

In September 2007, the New Jersey Board of Public Utilities (NJBPU) issued an order in Docket No. EO06100744 substantially revising the state's solar energy program. To date, most of the related effort had been with respect to the state renewable portfolio standard, but the order called for revisions to net metering and interconnection procedures as well. IREC participated in a workshop on those topics on July 23, 2008.

On November 5, 2008, the NJBPU called for informal comments on a series of questions related to a proposed Community Renewables Program. IREC filed comments on November 21, addressing in particular the allowance for third-party ownership, sizing, and net metering of such systems.

IREC participated in an April 30, 2009 workshop of the NJBPU to establish the scope of the community renewables program. A proposed approach was issued by BPU Staff in late June 2009. Staff continued to contemplate community net metering but expressed a concern that utility compensation may be required for wheeling of energy.

IREC also participated in a July 9, 2009 workshop of the NJBPU to establish the scope of the community renewables program but declined to submit comments. In September 2009, the Staff issued a request for comments on various provisions of its energy rules including lifting the net metering facility size cap. IREC responded on October 15, 2009 regarding the proposal to extend the program to facilities up to 2 MW (later adopted) and to require production metering.

IREC participated in three workshops at the NJBPU in April, May and September 2010 to discuss expansion of the state's pilot project for meter aggregation. There was already a small pilot program allowing a handful of agricultural customers to aggregate meters, but the BPU was considering allowing aggregation of meters much more broadly, though expansion to all customers would have to wait for formal rulemaking in the future. The September 30, 2010 workshop also discussed adopting new standard interconnection agreements for Level 2 and Level 3 interconnections.

IREC submitted comments to the NJBPU on October 18, 2010 and attended a November 3 workshop to discuss the pilot program and to consider future efforts to improve net metering and interconnection procedures and to evaluate the rate impacts of net metering.

On February 16, 2011, at the state's request, IREC provided comments proposing revisions and improvements to New Jersey's net metering rules and interconnection procedures. While New Jersey's procedures were once among the best in the nation, they have been surpassed in recent years. IREC's suggestions included lifting the Level 1 interconnection cap to 25 kW, creating a

simplified process for non-exporting facilities, establishing standardized agreements, clarifying the treatment of net excess generation, and permitting meter aggregation and community solar projects.

On May 2, 2011, New Jersey issued a Notice of Proposed Rulemaking (NOPR) with intent to revise its net metering and interconnection rules. IREC attended the workshop prior to the NOPR release, and New Jersey indicated that it was open to additional comments from IREC related to these issues beyond the proposed revisions. IREC reiterated many of its February 16, 2011 recommendations, including encouraging New Jersey to consider the inclusion of aggregated net metering and community renewables.

In June 2011, IREC attended two solar technical working groups to get up-to-date on solar progress and issues in New Jersey, including state interest in the implementation of production metering and proposed rule revision. The workshops included discussion related to aggregated net metering as a potential future rule update, as well as further revisions to the interconnection rules. IREC also spoke to workshop attendees regarding state vs. federal jurisdictional issues arising in other states and how they might apply in New Jersey. IREC submitted comments in the rulemaking on July 1 and July 8 regarding NJBPU Staff's proposed changes to the existing rules (these documents were largely complete in late June, at the conclusion of this grant). At the July 22 workshop, IREC's comments were a primary focus and were distributed to all parties to solicit comments by mid-August.

NEW MEXICO

In April, May and June 2007, IREC traveled to New Mexico five times to participate in the workgroup that was drafting the state's small generator interconnection standards. In addition to participating in seven full days of meetings, IREC reviewed and edited each new draft in preparation for the next meeting. The New Mexico workgroup put a draft into rule format for submission to the New Mexico Public Regulatory Commission (NMPRC). Typically, the NM workgroup consisted of ten utility representatives, two NMPRC Staff members, a representative of SunEdison, a representative of Western Resource Advocates, and a local residential solar installer, and IREC. PNM, the largest electric utility in the state took the lead on much of the drafting.

PNM came to the first meeting in June 2007 with a "strawman" that combined features of the Colorado and California rules. Five trips to Albuquerque in mid-2007 completed the effort to reach a workgroup consensus on interconnection standards which was presented to the NMPRC.

On February 1, 2008, the Commission held a final hearing to adopt the rules. The draft interconnection rule modified several New Mexico regulations, including one containing the state's net metering rule. Lack of a rollover provision was one glaring deficiency.

NET METERING ROLLOVER (Docket No. 09-00141-UT)
The NMPRC requested comments on whether the state should continue to pay for excess generation at the end of the billing period at utility avoided cost or whether it should switch to

payment at retail rates. IREC submitted comments on June 22, 2009 supporting retail rate payment in concept but suggested that it was better to reframe the discussion as rollover of excess generation without any monetization. IREC filed reply comments on July 6, 2009 and appeared at a hearing on July 15, 2009. While New Mexico allowed net metering of facilities up to 80 MW, it did not permit rollover of excess generation from one month to the next. The PRC closed the rulemaking without reaching a decision; rollover is still not allowed.

THIRD-PARTY OWNERSHIP (Docket No. 09-00217-UT)
On June 16, 2009, the NMPRC requested comments on its proposal to allow third-party ownership of customer-sited renewable facilities. IREC filed its initial brief on July 30, 2009 and a response brief on August 31. IREC worked with several other parties to develop the position that third-party owners of distributed generation are not public utilities. Staff and two of the state's three IOUs contended that third-party owners would be utilities. On October 23, 2009, the Hearing Examiner in the case issued her proposed order, concluding that third-party owners of distributed renewable energy generation serving on-site load would not be public utilities under New Mexico law. Utility parties and PRC Staff then filed Exceptions to the proposed order, and on November 21, IREC and others filed responses to those Exceptions. Public Service Company of New Mexico (PNM), the state's largest utility, requested a public hearing that was held on December 9, 2009 and attended by IREC. On December 30, the NMPRC issued its order allowing third-party ownership.

While IREC was very pleased with the order, PNM threatened to appeal the order to the New Mexico Supreme Court, which would have delayed third-party owned projects for years. To forestall such a move, IREC and other parties entered in discussions with PNM regarding certain provisions that would make the policy acceptable for utilities, largely related to cost recovery. The state's two largest investor-owned utilities ultimately did appeal the decision but offered to agree to drop the appeal if legislation were passed that invalidated the PRC order, allowed third-party ownership and permitted utilities to establish special rates for net metered customers.

IREC participated in numerous calls with parties to the NMPRC docket to reach consensus on bill language that would avert appeal of the order and establish third-party ownership. On March 9, 2010, HB 181/SB 190 was signed into law and the utilities' appeals were dropped. The law stated that rates shall reflect costs and benefits anticipated in the next three years, and the utilities are likely to argue that they have no capacity or Transmission and Distribution (T&D) expansion plans in the next three years, so there is no capacity benefit from net-metered systems. In April 2010, the NMPRC opened Docket No. 10-00046-UT to discuss how to implement rate riders in accordance with the new law.

PNM RATE CASE (Case No. 10-00086-UT)
PNM proposed an onerous monthly standby charge for net-metered customers, using the term New Interconnected Customer Riders (NIC Riders). Specifically, the utility proposed to charge residential customers up to nine cents for every kWh produced and non-residential customers up to three cents per kWh. IREC participated in two workshops held by the NMPRC in April and May 2010 and attended PNM's introductory meeting with intervenors on June 25, 2010. IREC filed interrogatories on August 23, 2010. IREC traveled to Santa Fe for an August 25 hearing to set the schedule and coordinate with other parties and the Governor's office.

IREC filed a second set of interrogatories, traveled to Santa Fe for settlement discussions on October 27, 2010, reviewed strategy for testimony to be filed, arranged for expanded activity by in-state counsel to keep costs down, considered and supported PNM's motion to extend the timeline by a month to pursue settlement, and arranged a settlement discussion with PNM and other parties regarding the rate rider on January 7, 2011. IREC's expert witness identified an important math error in PNM's calculations that almost certainly led PNM to drop the NIC Riders in its settlement with various parties.

On February 3, 2011, PNM, NMPRC Staff, the Attorney General and other parties filed a stipulated settlement with the NMPRC that included a provision negotiated by IREC to remove the NIC Riders from the current rate case. IREC authorized the settling parties to state that IREC supported the settlement's provision dropping the NIC riders, and IREC took no position on the rest of the settlement.

A number of environmental and consumer advocate organizations objected to the stipulation; however, no party objected to the provision that the NIC Riders be dropped. IREC participated in a pre-hearing conference and voiced its continued commitment to prevent any NIC Riders from being imposed if the stipulation is modified or rejected by the Commission. IREC filed direct testimony of its expert on February 24, 2009, demonstrating the benefits of distributed generation to the system outweigh the costs to ratepayers.

The PNM rate case held a hearing on the Settlement Stipulations on May 9, 2011. IREC submitted expert testimony on assessing the benefits and costs associated with net-metered distributed generation to the utility's system, which was admitted into the record without cross-examination. PNM was not able to cross-examine or diminish IREC's testimony because of IREC's ultimate support for the PNM settlement and the hearing examiner's prohibition on "friendly" cross. In its post-hearing briefs, IREC once again put forward its central argument that access fees are not justified because benefits to the system outweigh the costs associated with serving DG customers. IREC asked the Commission to clarify that a future NIC rider would not apply to customers who interconnect prior to PNM's next rate case, a position originally put forward by a witness for Western Resource Advocates. IREC was concerned that customers who may want to interconnect may forgo installing distributed generation if there is a possibility that a rider may apply to them after a future rate case. IREC repeated this call in its reply brief on June 15, 2011 and its Exceptions of July 1, 2011, including a statement that the City of Santa Fe and the Renewable Energy Industries Association of New Mexico concurred in IREC's position.

In its final order on the settlement, the PRC ultimately modified the NIC riders to clear up that the riders would not apply to generators that have a complete interconnection application before a final Commission order. Further, PNM acknowledged in the record that uncertainty about the applicability of riders would not encourage customers to invest in distributed generation, a result PNM said it wished to avoid. Because the final order differs from the settlement agreement reached by PNM and other parties, PNM (at least) must accept the final order for it to be effective. Alternatively, PNM may choose to return to a litigated rate case or appeal the order to the state supreme court; both options are available through early August.

IREC's involvement in this proceeding helped prevent establishment of a $0.08 kWh access fee for DG and avoided a negative precedent on the alleged cost of DG to non-participating customers from taking root in New Mexico. Whether future NIC Riders can be applied to customers installing systems prior to the next rate case should be resolved in the coming month.

NEW YORK

Prior to passage of New York Senate Bill 7171 in 2008, IREC participated in a workshop held by the New York City Council in July regarding interconnection of renewables in the city. With passage of S.B. 7171 in August, the Staff of the New York Department of Public Service (NYDPS) prepared draft changes to New York's Standard Interconnection Requirements (SIR).

IREC attended a workshop in late September 2008 conducted by Staff and submitted informal comments on the proposed SIR changes on October 3. The SIR left a great deal of discretion in the hands of utilities to require studies, and IREC suggested that more effective procedures utilize a screening process for systems up to 2 MW.

Staff revised its draft, and IREC submitted comments on January 5, 2009, specifically to suggest the use of a screening procedure such as FERC's SGIP screens, simplified procedures for systems under 25 kW, and no disconnect switch requirement for systems under 25 kW. The NYDPS issued its final order on February 12, 2009, adopting IREC's suggestions regarding the disconnect switch, web-based applications and simplified procedures, and added a provision that inverter-based facilities up to 200 kW may use the expedited process, and made interconnection on area networks feasible. Third-party ownership was addressed and approved in the order by allowing customers to establish an agency relationship with a third-party for purposes to net metering.

The NYDPS issued a request for comments (Case 09-E-0109) in early 2009 regarding the appropriateness of extending exemptions from standby charges for certain forms of distributed generation. IREC responded on April 6, 2009 that it is not appropriate to apply standby charges to solar energy at all and recommended that the exemption be made permanent for solar. For other technologies, IREC suggested that the exemptions be extended to support the fledgling wind and combined heat-and-power markets. On April 20, 2009, IREC submitted reply comments, and on May 14, the NYDPS approved a six-year extension of the exemption. While IREC supports a permanent exemption, the six-year extension is a favorable result.

NORTH CAROLINA

INTERCONNECTION

In 2007, North Carolina passed legislation that required the North Carolina Utilities Commission (NCUC) to consider standards for the interconnection of renewable energy facilities and nonutility-owned generation with a capacity of 10 megawatts or less. The legislation specifically required the NCUC to adopt the federal interconnection standard, if appropriate.

In September 2007, via Docket Nos. E-100, Sub 101 and E-100, Sub 83, the NCUC requested comments from interested parties as to whether it should adopt federal Small Generation Interconnection Procedures (SGIP) for use in state-jurisdictional interconnections, and if so, what modifications should be made to the federal standard. IREC submitted comments on October 26, 2007 and reply comments on December 4, 2007. IREC, the North Carolina Sustainable Energy Association, and two of North Carolina's three IOUs submitted comments that called on the NCUC to adopt a modified federal standard that incorporates aspects of the existing state interconnection standard that are supportive of distributed generation installations.

In December 2007, the NCUC issued an additional request for comments that asked (i) whether customers with grid-interconnected systems should be allowed to operate in parallel with the distribution system without subscribing to a net metering tariff rider, and (ii) whether customers who do not wish to net meter excess generation should be subject to additional charges and metering requirements. In January 2008, IREC submitted comments in response. Except for one of North Carolina's three IOUs, all parties agreed that interconnecting customers should not have to enter net metering arrangements or be subject to additional metering requirements or charges.

On June 9, 2008, the NCUC issued its Order Approving Revised Interconnection Standard. NCUC's new standard, which applied to all state-jurisdictional interconnections regardless of the size of the interconnecting generator, represented a significant step forward for North Carolina distributed generation. North Carolina's new standard was modeled after the SGIP but retains North Carolina's application fees and insurance requirements, which are superior to those found in the SGIP. The NCUC also prohibited utilities from requiring an external disconnect switch for inverter-based systems less than 10 kW.

On July 9, 2008, Duke Energy Carolinas sought to overturn that part of the decision by filing a motion for reconsideration stating that worker safety and the National Electrical Code require the use of a utility-accessible external disconnect switch. On September 30, 2008 and October 30, 2008, IREC filed comments requesting that Duke's motion be denied on the grounds that the NCUC had already heard and rejected Duke's arguments regarding worker safety and that the National Electrical Code is not subject to enforcement by Duke or the NCUC. On December 16, 2008 the NCUC issued its order, deciding that utilities may require inverter-based systems under 10 kW to install a switch, but they must pay the cost. This was a significant step in line with other states that have decided to prohibit a required disconnect switch for small systems.

NET METERING

The NCUC had established its net metering program through two orders issued in 2005. However, legislation passed in 2007 required the NCUC to consider whether it was in the public interest to raise the eligible system size for net metering from 100 kW to 1 MW. On June 9, 2008, the NCUC issued an Order Establishing Procedural Schedule for the consideration of an expansion of the NCUC's net metering program, requesting comment on a number of issues in addition to a potential increase in the size of systems that may enroll in net metering. The potential changes included an increase in the aggregate cap on net metering, a reconsideration of the types of electric generating facility that may net meter, and whether renewable energy credits (RECS) should be transferred to an interconnected utility as compensation for net metering. The

NCUC had been convinced that net-metered customers are subsidized by other utility ratepayers. IREC submitted initial testimony on September 29, 2008 and attended a public hearing in Charlotte on October 2, 2008.

IREC conducted discovery in October 2008, filed rebuttal testimony in November and a final brief on November 22, 2008. There were a number of issues under consideration, including: (1) an increase in system size to 1 MW, (2) an increase in the aggregate cap to at least 2% of utility load, (3) allowance for retail customers to retain all RECs, and (4) a prohibition on standby charges.

On December 19, 2008, the NCUC issued a favorable ruling on two questions IREC had addressed at the beginning of the year: 1) whether a customer-generator must take service under a rider that accommodates sales of energy, and 2) whether a customer-generator who does not take service under such a tariff may be charged additional metering fees and other charges. The NCUC's order found that a "customer-generator should not be required to subscribe to a separate rider in addition to that for retail electric service if it does not desire to net meter or otherwise seek credit for any excess energy delivered to the utility." This was particularly beneficial to large customer-generators that never export energy, in that they can interconnect and operate in parallel without subscribing to a rate rider that may be loaded up with additional charges.

In March 2009, the NCUC issued a final order in its net metering proceeding. The order was favorable in a number of respects, including: (1) an increase in system size from 100 kW to 1 MW, (2) complete removal of the current aggregate cap on net metering of 0.2% of a utility's peak load, (3) allowance for retail customers to retain all RECs, and (4) retail rate choice for net metered customers. However, customers who chose a retail rate other than a time-of-use demand rate, which is costly for solar PV, must give up all RECs. Second, all systems over 100 kW would be subject to standby charges.

OHIO

On July 23, 2008, in response to Ohio Senate Bill 221, the Ohio Public Utility Commission (OPUC) prepared draft revisions of its rules on issues ranging from the state's renewable portfolio standard, to energy efficiency and demand response programs, to net metering (Docket No. 06-053). Net metering provisions occupied only four pages of the 190-page entry and was not a major issue for most of the parties involved. S.B. 221 did not address an Ohio supreme court case that requires avoided cost payment for excess generation at the end of a month, so the biggest hindrance in Ohio's existing rule could not easily be changed in a rulemaking. IREC submitted comments on August 12, 2008 and reply comments on August 29 and coordinated with other commenters.

OREGON

PPA USE

On June 6, 2008, PacifiCorp and Honeywell International filed a request for a declaratory decision with the Oregon Public Utility Commission (OPUC) requesting that the OPUC make certain determinations regarding the ability of Honeywell, a provider of on-site energy under

solar PPAs, to (1) qualify for net metering, (2) avoid regulation as a public utility or electricity service provider, (3) and make sales to an on-site customer without running afoul of the Federal Power Act (see OPUC Docket No. DR40). IREC filed an opening brief on these issue on June 30, 2008 and reply comments on July 11, 2008.

On July 31, 2008, the OPUC entered Order No. 08-388 finding that Honeywell's customers are eligible to net meter and Honeywell is not a public utility or electric service provider.

NET METERING

In 2011, Oregon began revising its net metering rules largely to allow customers to aggregate meters on different tariffs. Although Oregon already allowed aggregated net metering, it restricted it to meters on the same tariff; the proposed expansion would open the program up to a broader group of customers. IREC attended a workshop on March 9, 2011 and filed comments on March 31, 2011 in support of the proposed revisions. IREC also proposed that the OPUC permit virtual net metering (VNM) in multi-tenant buildings, similar to the Multitenant Affordable Solar Housing (MASH) program in California.

IREC later attended a workshop on April 13, 2011 to support the Staff's proposed modifications. IREC discussed additional options available under Oregon's net metering statute such as virtual net metering of multitenant buildings. Stakeholders at the workshop discussed cost-benefit methodologies for solar including IREC's work on the forthcoming Solar ABCs report.

On May 24, 2011, after speaking with local stakeholders who attended a May 16 hearing, IREC submitted post-hearing comments that responded to concerns raised by OPUC Staff and reiterated key points from our opening comments, including the importance of raising the size cap for facilities using meter aggregation and the possibility of moving to a size limit based on customer historic load rather than a hard capacity limit.

PUERTO RICO

In order to grade Puerto Rico's net metering and interconnection procedures, arrangements were made for a translation of those procedures from Spanish to English. IREC reviewed and edited the translations for posting to www.dsireusa.org in September 2010.

RHODE ISLAND

IREC has been carefully following a 2011 complaint proceeding in Rhode Island that involves a wind generation facility operated by the Town of Portsmouth and questions the legality of virtual net metering practices under federal law. Rhode Island statute allows municipalities to participate in net metering and allocate generation credits among several accounts. The statute also allows a customer to choose the option of receiving a check for the renewable generation credit in lieu of administratively applying the credits to multiple accounts.

The complaint is based on the fact that Portsmouth's arrangement involves a payment by check for generation at the retail rate. The legal basis for the complaint is the argument that a facility

that does not serve on-site load, such as the Portsmouth wind facility, is not a net metering facility under FERC's definitions. Accordingly, the complainant claims that such generators are necessarily wholesale generators, and unless they are QFs, may not engage in sales of electricity without FERC approval, and, if such generators are QFs, they may not be paid in excess of avoided cost.

The challenges in Rhode Island have direct implications on the practice of virtual net metering throughout the country, as FERC's jurisdiction has not previously extended to net metering facilities or practices. IREC is still researching and developing a legal position to counter the argument parties may take in opposing virtual net metering programs.

SOUTH DAKOTA

The South Dakota Public Utilities Commission (SDPUC) opened Docket EL06-018 in 2006 to consider the various revisions to PURPA, requiring state utilities commissions to consider adopting interconnection procedures. In late 2007, the SDPUC began its investigation of interconnection procedures and starting in March 2008, SDPUC Staff held a series of four interactive webcast workshops. IREC participated in all four.

Draft procedures were issued in the third quarter of 2008 that were functional and were later approved. IREC did not submit comments because other parties effectively made the points IREC would have made.

TEXAS

IREC attended a single meeting of the Energy Reliability Council of Texas (ERCOT)'s Retail Metering Workgroup in Austin in July 2007. Legislation in 2007 required the adoption of net metering up to two megawatts, but the workgroup was highly uncertain how to implement net metering in the deregulated electric markets of Texas. It was not clear whether interconnection standards would be addressed as well. In late 2007, IREC attended three more meetings of the Distributed Generation Task Force at ERCOT.

Recognizing that solar facilities will distort the traditional customer load profiles, IREC developed a way for REPs to adjust their settlement with ERCOT to reflect generation from solar facilities sited on their customers' premises. Working with several REPs, IREC advanced this methodology and presented it to ERCOT's Profiling Working Group on January 23, 2008. Solar profiles apply to systems under 50 kW and recognize the value of both reduced daytime load and any outflows of energy put on the grid.

Also in 2007, the Public Utility Commission of Texas (PUCT) opened a proceeding (Project No. 34890) to implement net metering provisions of Texas House Bill 3693. Due to a lack of clarity in House Bill 3693, the PUCT process became bogged down over disagreements as to what net metering meant and how it should be implemented in Texas.

On April 24, 2008, the PUCT issued its order in Phase 1 adopting new Substantive Rule § 25.213 as approved at the PUCT's April 9, 2008 open meeting. The PUCT determined that House Bill

3693 does not require competitive retail electric providers or transmission and distribution utilities to net energy and line charges for net-metered systems. Instead, purchases of distributed generation system outflow will be purely voluntary with the price paid, if any, subject to negotiation between the utility and the customer.

On May 24, 2008, PUCT Staff issued its proposed rules in Phase 2. Proposed rule § 25.217 addressed interconnection, renewable energy credits, and the sale of out-flows for distributed generation. IREC did not file comments in Phase 2 but supported the efforts of parties in Texas who did.

COMMUNITY SOLAR OPPORTUNITIES

Inspired by a report funded by the DOE's National Renewable Energy Laboratory (NREL), IREC moved forward with an exploration of community solar opportunities in Texas, particularly in areas of the state where retail electricity competition has been introduced. The NREL report focused on community solar opportunities available to the City of Houston, but its analysis could apply to any area of the state with retail competition. The report laid out a few different structures that may be possible for community solar, but that require further analysis, particularly with regard to electricity pricing and contracting the Retail Electricity Providers (REPs). IREC's first step was to contact the PUCT in order to get its view of community solar and its promise in the State, and to discuss whom else in Texas IREC should contact.

IREC also had productive conversations with representatives from the Texas Renewable Energy Industries Association (TREIA). TREIA provided valuable information based on its expertise in the Texas market, as well as additional contacts for IREC to pursue. IREC also reached out to a number of other contacts at local renewable energy companies, Texas cities and non-profits. We spoke with a clean energy analyst at Environmental Defense Fund (EDF) that has worked extensively in the space, who explained that the idea of community solar is beginning to come up in various circles in the state and has the potential to be successful. EDF offered to set up meetings with REPs in the state to explore their interest and their power purchasing process.

IREC also connected with other policy analysts and the City of Austin for further meetings. We identified important next steps, including speaking to Texas REPs as well as potential large customers that might be interested in piloting the community solar idea in that state.

UTAH

INTERCONNECTION

The Utah Public Service Commission (UPSC) opened Docket No. 07-999-07 in 2007 to develop interconnection procedures and through a series of workshops, mostly in the first quarter of 2008, Staff reviewed a draft of Oregon's new interconnection procedures. PacifiCorp is the largest utility in both Utah and Oregon and suggested the use of the Oregon rule. IREC was an active participant in three workshops and attended the final workshop in Salt Lake City on April 16, 2008. Staff did not issue draft rules for the PSC's consideration until later in 2008.

For both interconnection and net metering, Utah has greater value than might be immediately obvious. While the state has low cost electricity, limited incentive programs and a legislature that is unlikely to institute generous incentives, there is a great benefit to having solid net metering and interconnection in Utah which could serve as an example in other states.

On October 21, 2008, UPSC Staff requested informal comments on newly issued draft procedures that are generally quite strong. The draft had reasonable timelines and costs, prohibition of a disconnect switch requirement for inverter-based systems under 10 kW, and no special insurance requirements for all but the largest systems. IREC filed comments on November 4, 2008 that were generally supportive, but suggested relatively minor modifications. Most importantly, IREC sought to keep any prohibition of third-party ownership out of the interconnection procedures. Rocky Mountain Power had suggested that third-party owners would be public utilities under Utah law, which was one of the biggest issues in the docket.

IREC participated in a discussion between Salt Lake County and Rocky Mountain Power on February 19, 2009 in Salt Lake City regarding third-party ownership of net-metered facilities and prepared a memo on the subject that was used at the meeting and shared with the Utah Public Service Commission.

In late 2009, draft interconnection procedures developed by UPSC Staff were released in Docket No. 09-R312-01. IREC submitted comments on September 30, 2009. UPSC Staff issued revisions to its strawman in early January 2010 that maintained the strengths of the original draft and adopted a few provisions noted by IREC and others. Minor revisions to the procedures were made, and IREC filed comments and coordinated with Utah Clean Energy to indicate general support for the draft rules. The UPSC adopted new interconnection procedures as of April 30, 2010. The final rules are now among the best in the country, with a simplified Level 1 process extended to 25 kW systems, no insurance requirement for systems under one MW, no external disconnect switch requirement for inverter-based system under 10 kW, a 125% cap on study costs in excess of utility estimates, and generally straightforward procedures based on SGIP.

NET METERING

On September 11, 2008, the UPSC held a technical conference in Docket No. 07-999-08 to consider implementation of net metering provisions enacted in Utah Senate Bill 84. Among the items addressed were the aggregate cap that should be placed on net metering enrollment and value that should be assigned to monthly excess generation. Senate Bill 84 set an initial net metering cap of 0.1% of an electrical corporation's peak demand and established a value for monthly excess at utility avoided cost. However, Senate Bill 84 gave the UPSC authority to raise the aggregate net metering limit and determine a higher price for monthly excess generation. IREC participated in this technical conference and in a workshop in Salt Lake on October 21, 2008 and filed comments on November 26.

On December 18th, the UPSC released proposed modifications to Rocky Mountain Power's (RMP's) net metering tariff. RMP is the only IOU that the Utah PSC oversees so this proceeding was effectively the implementation of that state's net metering requirements. The Commission's proposed modifications were quite strong and included an aggregate net metering cap of 20

percent of utility peak demand. The Commission was also proposing full retail rollover and that RECs stay with the customer-generator.

On January 12, 2009, IREC testified at the Commission hearing regarding RMP's net metering tariff, at which the utility suggested that a one percent cap would be its preference. On February 12, 2009, the Utah Commission released a decision ordering RMP to update its net metering tariff in the following respects: (1) increasing the net metering program cap to 20% of RMP's peak demand; (2) allowing a kWh credit for excess generation from residential and small commercial customers' net metered systems customer's sites; (3) allowing large commercial customers to choose to have their excess generation credited at avoided cost or an alternative rate based on RMP's revenue per schedule divided by kWh sales per schedule; (4) clarifying that RECs stay with system owners. Significantly, the Commission adopted the treatment of commercial excess generation after embracing the view that a per kWh credit would inadequately compensate large commercial customers who face demand charges.

VERMONT

On January 20, 2010, Staff at the Vermont Public Service Board (VPSB) held a workshop to begin discussion of updating Vermont's interconnection standard. IREC attended and discussed its efforts to assist state commissions and other stakeholders in the development of interconnection standards that comport with best practices through the development of a model interconnection standard and state-level proceedings. Staff and numerous stakeholders expressed support for using IREC's 2009 model interconnection standard as a template for updating Vermont's. Stakeholders also expressed a strong interest in working together informally to put forth interconnection standards all stakeholders could support rather than litigate the issue in a formal proceeding. During February 2010, stakeholders submitted a round of informal comments. IREC provided stakeholders with our model and discussed its merits. Stakeholders, including Central Vermont Public Service, continued to express support for using IREC's model.

During May 2010, stakeholders filed proposed model interconnection documents with the VPSB that were developed as part of the stakeholder process and offered comments on those documents. These documents are intended for immediate use in Vermont while parties continue to discuss more substantive changes to Vermont's interconnection standards and associated documents.

On June 11, 2010, IREC filed proposed updated interconnection standards and related documents with the VPSB based on the continuing stakeholder discussions. This set of documents was intended to be a starting point for "on the record" discussions related to updating Vermont's interconnection standard and related documents. Parties, including IREC, filed comments on the documents on June 25, 2010, with reply comments filed on July 16. Given the overall strength of interconnection standards already contained in the proposed document, IREC's comments were very brief and largely focused on addressing remaining concerns of individual parties. To date, the Commission Staff has not released a proposal in response to the last round of comments.

VIRGINIA

NET METERING / COST EFFECTIVENESS

On May 1, 2008, the Virginia State Corporation Commission (VSCC) requested comments in Docket No. PUE-2008-00008 on proposed revisions to the VSCC's regulations governing net energy metering, which were intended to bring the net metering rules into compliance with legislative changes mandated in 2007. These changes included: (1) an increase the allowable total aggregate generation capacity of net metering customers in each utility's Virginia service territory from 0.1% to 1% of the utility's adjusted Virginia peak-load forecast in the previous year; and (2) a requirement that each utility, upon written request of a net metering customer, enter into a contract to purchase the generation that exceeds the customer's own usage for the 12-month net metering period at a rate approved by the Commission, unless the parties agree to a higher rate.

On June 26, IREC submitted comments on the VSCC's revised regulations. On August 7, 2008, the VSCC issued an Order Adopting Final Regulations. As required, the VSCC increased the aggregate generation capacity of net-metered customers to 1% of utility peak load and established an avoided cost rate for annual net excess generation if a customer-generator enters a PPA arrangement with its utility.

On May 20, 2009, a member of the VSCC Staff who oversaw development of the state's interconnection procedures contacted IREC to request guidance on implementing recent modifications to the state's net metering statute. In particular, Staff requested guidance on integrating time-of-use rates with net metering and quantifying a value for RECs purchased from net metering customers. We provided feedback on July 15, 2009 and were then asked to provide additional feedback on a non-public draft of Staff's proposed regulation.

On November 16, 2009, the VSCC requested comments from interested persons on proposed revisions to the Commission's regulations governing net energy metering in Case No. PUE-2009-00105. The proposed revisions would: (1) authorize utilities to elect a capacity limit for participation by nonresidential customers in the net metering program that exceeds the existing limit of 500 kW; (2) permit customers who are served on time-of-use tariffs that have electricity supply demand charges contained within the electricity supply portion of the time-of-use tariff to participate as customer-generators; and (3) provide that a participating customer-generator owns any renewable energy certificates associated with its generation of electricity, and provide for a one-time option for customer-generators to sell certificates to a supplier at a rate established by the Commission. On December 21, 2009, IREC filed comments in support of Staff's proposal. On April 15, 2010, the Commission adopted proposed revisions, which: (1) required utilities to provide net metering to commercial customers with systems up to 500 kW; (2) permitted customers served on time-of-use tariffs that have electricity supply demand charges to participate as customer-generators; and (3) provided that a participating customer-generator owns any renewable energy certificates associated with its generation of electricity; and (4) provided for a one-time option for customer-generators to sell RECs to a supplier at a rate established by the Commission.

Continuing a trend IREC noticed since mid-2010, states are becoming increasingly interested in

studying the costs and benefits of net metering in response to utility assertions that net metering is a subsidy to net metering customers. The Virginia legislature asked the VSCC to draft a report assessing the costs and benefits of net metering to inform legislative proposals to expand Virginia's modest net metering program. IREC assisted the VSCC in developing that report based on the recommendations contained in the Solar ABCs report authored by IREC and also attended two workshops on April 21 and May 6, 2011 to assist Staff in identifying inputs to study for the costs and benefits of net metering.

INTERCONNECTION

On February 26, 2008, in Docket No. PUE-2008-00004, the VSCC issued an Order Establishing Proceeding to consider establishing an interconnection standard for distributed generation. The VSCC's proposed interconnection standard was modeled on the FERC SGIP but incorporated IREC's screens for interconnecting distributed generation to spot and area networks. The proposal also included an abbreviated application and expedited interconnection process for systems up to 500 kW. The proposal would waive interconnection application fees for systems under 500 kW.

IREC submitted comments on the VSCC's proposal on July 21, 2008. On October 27, 2008, Staff released revised procedures. On January 16, 2009, IREC filed comments regarding the Staff's draft interconnection procedures, primarily focused on spot and area network interconnections and disconnect switches for small inverter-based generators.

On May 8, 2009, the VSCC issued a final order adopting a strong set of interconnection procedures. The procedures covered systems up to 20 MW; included a Level 1 "super fast-track" process for inverter-based systems up to 500 kW; incorporated network interconnection screens adopted from IREC's model rules; imposed low insurance requirements for systems under 500 kW; and provided a low cost, informal means of dispute resolution. The procedures did, however, also allow utilities to require an external disconnect switch.

WASHINGTON

Washington S.B. 6170, passed in the second quarter of 2009, established that groups of utility customers may install net- metered, solar facilities on local government property. To secure tax credits and depreciation, potential participants were considering third-party ownership structures. A rulemaking commenced at the Department of Revenue (DoR) in the third quarter of 2009, and IREC had discussions with likely rulemaking participants.

IREC participated in August 13 and September 22, 2009 workshops and submitted comments in mid-October. The program allowed participants to receive a very generous incentive payment of $1.08/kWh for ten years, but there were several unresolved issues.

IREC participated in a January 6, 2010 workshop and submitted comments. A significant limitation was identified: if community solar participants formed a LLC structure to apply for a U.S. Treasury grant, the DoR would not recognize the LLC members as owners who could receive the Washington production incentive. In March 2010, S.B. 6658 was enacted allowing

community solar participants to access both the federal and state incentives, though the new law caps community solar projects at 75 kW.

In the first quarter of 2010, IREC participated in discussions with the DoR and the solar industry regarding likely rulemaking impacts if current legislation modifying the state's community solar provisions becomes law. The community solar provisions are included in the state's solar incentive laws, which have led to year-end-2010 state total of eight megawatts. IREC wanted to assure that any rulemaking did not hamper the rapid market expansion of the past year, and that provisions to facilitate community solar projects were successfully incorporated into administrative rules.

IREC participated in a May 11, 2010 workshop at the DoR and submitted comments on the same day. Final rules were issued on August 5, 2010 that adopted many of the provisions recommended by IREC. Utilities objected to the concept of selling electricity to the host of a community solar project rather than selling the electricity to the utility at avoided cost.

At the request and invitation of the Washington State House Technology, Energy and Communications Committee, IREC appeared at a hearing in early April 2011 to discuss the state's existing net metering and interconnection laws and how they compare with other western states. Primary topics included net metering facility size and program caps and uncertainty about third-party ownership of distributed renewable generation. The state presently has a 100 kW facility size cap and a program cap of 0.25% of 1996 peak load, both of which are among the lowest in the west. However, the state has over 1500 residential installations due to an incentive program targeted at small facilities. There was a work session on July 22, 2011, and IREC filed comments on July 11 addressing third-party ownership of net-metered facilities, the state's low facility size cap and program size cap, and other net metering and interconnection issues (those comments were drafted in late June, under this contract).

WEST VIRGINIA

On February 2, 2010, the Public Service Commission of West Virginia (PSC) promulgated proposed rules for net metering and interconnection. On April 5, 2010, IREC filed comments in support of the proposed net metering rules, which would significantly improve the state's rules and provide a positive example for southern and rural states that contemplate adoption and expansion of net metering and interconnection. One particularly positive aspect of the proposed rules was that they mirrored Pennsylvania's approach to meter aggregation, which allows central PV generation to offset load on meters up to two miles from the generation location.

Although West Virginia's proposed net metering rules were quite strong, the proposed interconnection procedures were only a few sentences long, leaving significant opportunities for improvement. IREC suggested that the Commission consider adopting either FERC's SGIP, IREC's model or Virginia's state interconnection procedures for use in West Virginia.

On May 5, 2010, IREC filed reply comments that largely supported Staff's proposed rules. On June 29, 2010, the West Virginia PSC adopted final rules that moved the state from a "D" grade to an "A" in interconnection under "Freeing the Grid (2008)" guidelines. The PSC also adopted

solid interconnection procedures that waive disconnect switch requirements and impose expedited procedures for systems under 25 kW.

In late December 2010, the West Virginia PSC issued an order seeking comments on an apparent drafting error in its rules that made reference to a portion of IREC's Model that was inadvertently omitted from the final rule. IREC submitted comments on January 26, 2011 urging the Commission to fully adopt IREC Model Interconnection Procedures Article 6, relating to limitation of liability and damage. On May 19, West Virginia issued an order adopting Article 6 of IREC's Model Interconnection Rules, in its entirety, for its Level 2 Interconnection Agreement. The final rules became effective July 18, 2011.

Additional Related Activities

U.S. DEPARTMENT OF AGRICULTURE – RURAL UTILITIES SERVICE

In late 2008, the Rural Utilities Service requested comments regarding basic interconnection procedures it might require co-operatives to develop in order to secure loans from RUS. Roughly 75% of the country's coops seek such funding, so this was a favorable development in some respects because many coops have not established interconnection procedures and are not subject to state procedures. However, the RUS proposed to require disconnect switches and insurance provisions that would hinder distributed generation. IREC submitted comments on October 10, 2008 and subsequently heard from the RUS that preparation of draft rules was not yet scheduled.

FEDERAL ENERGY REGULATORY COMMISSION

On October 15, 2009, the Federal Energy Regulatory Commission (FERC) issued a Notice of Proposed Rulemaking (NOPR) in Docket No. RM09-23-000 to revise certain regulations used in the certification of qualifying facility status for existing or proposed small power production or cogeneration facilities and to remove the contents of FERC Form 556 from the Commission's regulations and replace the regulations with an electronic Form 556. The Commission also proposed exempting generating facilities with net power production capacities of 1 MW or less from the QF certification requirement. IREC filed comments on December 21, 2009 to recommend that FERC (1) raise the threshold for exemption to 2 MW instead of 1 MW; (2) clarify that exempted generators that have previously filed for self-certification of QF status do not need to file self-recertification; (3) clarify that generators installed prior to the promulgation of the final rule are exempt; (4) clarify that exempted generators are nonetheless QFs despite not having filed a QF self-certification; and (5) propose changes to Form 556.

On March 19, 2010, FERC issued final rules that (1) exempt QFs below 1 MW from certification filing requirements; (2) clarify that exempted generators under 1 MW that have previously filed for self-certification of QF status do not need to file self-recertification; (3) clarify that generators installed prior to the promulgation of the final rule are exempt; (4) clarify that exempted generators are nonetheless QFs despite not having filed a QF self-certification; and (5) adopt changes to Form 556.