

Independent Power Providers

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California, for better or worse, is emerging as a leader in PV/Utility and utility deregulation schemes. Utilities and utility regulators across the country are watching and waiting to see where it goes. The utilities, for the most part, are NOT the leaders in implementing new technologies such as residential scale rooftop PV, wind, and microhydro generators. They certainly don't develop new strategies to encourage anyone to generate their own power rather than buy it from them, even if that generation has positive long term effects for the utility, the customer, and the planet.

Unless direct access to the end consumer is achieved, the push must come from energy regulators and legislators mandating positive change. They, in turn, must be pushed or dragged along by energy consumers demanding access to clean, renewably produced power.

Net metering on

Net metering is available now in California. Governor Wilson signed the legislation into law in August. Though net metering does not make PV instantly cost effective, it does provide an important context for the future of customer owned rooftop PV. The success of this project was due to the hard work of CALSEIA, especially staffer Cathy Murnigan, Tom Starrs who crafted the legislation, wide industry support, the many letters from IPP and the support of Southern California Edison. Results like this can come about when everyone works together on a common goal. Hopefully PV4U collaborative in other states can go to work on issues like this that will help commercialize PV. How about some juice from SEIA on the national level?

There is a great deal of constructive work that can be done within the collaborative process that can

accelerate the commercialization of PV. Some of the areas, in addition to net metering, that have been discussed are: technical standards for equipment, financing, promoting end-user and third party ownership of PV and developing a strong and capable service infrastructure. If you have an interest in user owned PV and a strong service infrastructure, you must get involved. Become a member of IPP. Seek out your state energy commissions and other agencies hosting the state collaborative on PV commercialization. Seek alliances with environmental and consumer groups. Too political? Too much time needed? Too bad! If you don't get involved, the other players in this process will determine your future options.

REDI Conference '95

On August 11th, Don & Cynthia and Bob-O & Kathleen traveled to Willits, CA for the Renewable Energy Development Institute 1995 conference. This is a biannual event which coincides with the big Solar Energy Expo & Rally (SEER) every other year. During the REDI only years, such as this one, the focus is on ways and means to promote Renewables. REDI '95 had two main themes: Energy and Transportation. Both conferences ran concurrently so you had to attend one or the other. Don and Bob-O focused on the energy conference and the topics of financing, the ongoing Southern California Edison off-grid and upcoming SCE on-grid pilot projects, and the effects of utility restructuring on renewable energy and energy conservation industries. Michael Hackleman covered the transportation conference for *Home Power*. Look for his report on doin's in HP#50.

Financing

Maureen Senn from the North American Mortgage Co. led off this discussion with a presentation of what her company is looking for to consider lending on an off-grid home. Given creditworthiness of the borrower, her company is willing to stretch the definitions of location, timeframe, and number of turnovers in determining comparable sales or "comps" in the off-grid market. This has very little to do with the encouragement of RE homes (a generator is almost always required by the lender for "backup"), but it is an acknowledgement that RE homes do exist in numbers and quality which are worth the lenders time and effort to pursue. She stressed that the most important aspect of financing is the appraiser's report and most appraisers don't know or understand about RE.

IPPs have faced this problem from the start. One of our long term goals as an organization is to develop or help develop an RE accreditation program for appraisers. Once appraisers understand what RE systems add to a

home in today's marketplace and are comfortable in assessing that real value, the lenders will follow.

Michael Martin of CHEERS (California Home Energy Efficiency Rating System) presented his organization's system for rating the energy efficiency factor of a house. Simply put, if your home uses less energy, you will have to spend less to provide it. This translates into a better income/expenses ratio which means you could either make payments on a larger mortgage or more easily afford a smaller one. While CHEERS does not have a rating system for RE homes per se, RE powered homes are nearly always built with at least electricity efficiency in mind, which gets points under the CHEERS system.

The last financing presenter was Keith Rutledge of the Bank of Willits. Keith is a long time advocate of commercial bank financing for off-grid homes. His bank is a portfolio lender (they keep the loan rather than sell it to the secondary loan market) which has lent money on many RE powered homes. While a portfolio lender has more latitude in financing "non-conforming" homes, the basic rules of marketability (in case of default) still apply. Keith is a strong advocate of compiling a national databank of loans on off-grid homes to provide low cost access to information on comparable properties for appraisers, lenders, and individuals alike. IPP strongly supports his efforts.

SCE's Off-Grid Pilot Project

Wayne Gould, SCE's Manager in charge of PV projects, presented a progress report on their pilot off-grid program. Despite a colorful slide show and his best efforts to put a utility spin on the report, the data was not promising. In the past year, one project was completed and three are pending. Revenues = \$3,000. Outlays = \$271,000. That puts the cost of the program so far at \$268K. Yikes! To his credit, Mr Gould admitted SCE made a big mistake by going into the program with an attitude of completely ignoring the IPPs and their expertise. They've learned far more than they thought they knew. Still, without some serious restructuring AND the support of IPP the project seems doomed.

Don Loweberg presented the IPP view of the program. IPP has maintained from the beginning that SCE's off-grid PV program was a bad idea and it is no surprise that it is failing. We believe they also discounted the IPP willingness to fight for the industry which IPPs created. Don presented the view that the most cost-effective way to implement PV off-grid is for Edison to simply hand a list of Providers to someone asking for an uneconomical line extension. If the customer wishes to take advantage of Edison's financing opportunity,



Above: Don Loweberg addresses REDI '95 in Willits, California. Photo by Bob-O Schultze

they and the Provider can design a cost-effective system and take it to Edison for financing approval.

Effects of Utility Restructuring/Deregulation on Renewables

These subjects were the keynotes of the conference. They will be the subject of conferences for years to come. Just as it happened to the telecommunications industry, utility restructuring/deregulation is going to happen. The questions are only when and how. The basic tenet of restructuring is to separate the three main components of power providing into generation, transmission, and distribution. Once these three factors are "unbundled" and billed to the end-user as separate items, he or she may eventually be able to choose which company generates their power. Transmission costs will be determined by where the provider is located and distribution will, at least for now, be provided by your local utility which owns the wires to your home. According to Jay Morse of the CA PUC, billing for these services may even be taken over by independent accounting firms. This is called direct access or retail wheeling. While direct access may well benefit the RE industry by giving individuals their choice of providers and competition will force the power industry to get lean and mean, it's no free lunch. For example, with less or no cross subsidization of costs in different classes of power users, remote customers may pay more for power than city dwellers due to increased line extension and maintenance

costs. Real time, "Time of Day" pricing will become the standard as prices closely follow costs. Many pundits, Amory Lovins among them, claim that direct access is an illusion and politicians will never let it happen. Never is a long time. If/when it does, the effects on small scale renewable producers could be immense.

On Saturday evening Amory Lovins made a presentation via live teleconference, sharing some of his views about utility restructuring and renewables. He is the originator of the term negawatts and has been a leader in presenting the importance of energy efficiency in economic terms. He stated that restructuring will favor the few largest purchasers of power to the disadvantage of the smaller consumers. Further more, he asserted that Demand Side Management programs are being slashed in spite of their cost effectiveness. Then he shifted direction, stating that competition, wholesale or retail, really was a moot question.

The rapid advances in decentralized generation, photovoltaics and fuel cells, coupled with their "distributed benefits" will make centralized generation less competitive. Coupling distributed benefits with energy efficiency makes this approach five to ten times more valuable than just evaluating bulk power (KWH). As Amory said, "The more rigorous our engineering economics, the faster the power plants, and new storage devices like superflywheels, will shift to our roofs, basements, and backyards. This "withering away of the utility" will then make utilities write-off remaining central power plants—magnificent engineering achievements but no longer competitive. And so Thomas Edison's vision, including his sale of energy services (light and torque, not KW/H), will at last be fulfilled."

Later that evening an informal PV4U meeting was chaired by Mike DeAngelis. We reviewed what had happened since the last REDI conference two years ago. I think most would agree that an amicable atmosphere prevailed. There was some discussion about what the future role of the collaborative should be. The next full PV4U meeting will be held in San Diego, the 14th of September. Future projects for the collaborative will be discussed

Sunday morning the results of the "PV shoot-out" were presented. The shoot-out consisted of a side by side test of several PV modules set up in the REDI parking lot. The test logged the total ampere-hours output over a two day period. The results of the test provided a focus for discussion about the way modules are tested and the significance of the results. My conclusion from these conversations is that module rating is slippery

indeed. Some things I think all would agree on. 1.) The simple parameters; volts, amps, and watts are insufficient measurements when meaningful comparisons between modules are desired. 2.) Most manufacturers try to present their product in the best light, emphasizing the strong points; low light performance, dollars/watt, most ampere hours, good partial shade performance, hot weather output, and so forth while declining to present data on weaker performance items. 3.) A single I-V curve generated by flash testing a module in laboratory conditions at 25°C cannot be used to fully describe the actual performance of a PV module in the real world.

So how can a module be evaluated? Work is going on to define a more meaningful rating system that recognizes some of the real world variables present in using PV modules for different tasks. Some criteria that might be defined are; What are the environmental conditions, high or low temperature, low intensity or high intensity illumination, tracked or stationary mount? What is the application, power point tracking or battery charging? NREL is working on this project and will soon have a report out.

Disinformation, let's tell it like it is!

"Lunch box electricians", "Mom and pop operation", "Cottage industry", "Under capitalized", "Unprofessional", "Schlocko electrician", Sound familiar? These are all terms I've heard attributed to the PV service industry in the last two years. In each case I just sort of let it in. I know that we are a new industry and in some specific cases the comment might have been valid. I am concerned, though, that I perceive a persistent pattern that does not conform to the facts in most cases. If I were to single out a source for these comments, most often it would be the professional cadre of the utilities and DOE. I am coming to regard expressions like these as intentional disinformation. As disinformation it is designed to serve a specific strategy. The strategy, of course, is that the PV service industry is undeveloped and "needs" the expertise and help of the utilities. "Let me help you out", said the spider to the fly.

Access

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