PV Focus Group Report
Executive Summary

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Introduction

This report summarizes the findings from seven meetings held September 3-25, 2002 throughout Oregon with people involved with the delivery, education and installation of photovoltaic (PV) solar electric systems in the state. These meetings were led by Peter West of the Energy Trust of Oregon with Christopher Dymond of the Oregon Office of Energy.

Purpose

The purpose of these focus groups was to hear from individuals who have been directly involved with the PV industry in Oregon about issues that will affect a program to acquire a PV resource in Oregon, including what the industry believes are the major barriers, market opportunities and requirements to develop a grid-tied PV market in Oregon.

Focus Group Process

Seven focus groups of 6-10 people were assembled in six cities (Eugene, Phoenix, Klamath Falls, Bend, and two in Portland). Meetings were held in coordination with the Energy Trust's "road tour" of the state where they showcased their strategic plan and solicited public input. The list of invitees was developed by Christopher Dymond at the Oregon Office of Energy. Attendance at each focus group was typically about 70 percent of those invited.

Each focus group lasted roughly three hours. The discussion was organized around a PowerPoint presentation that provided: 1) an overall description of the Energy Trust and its intent to launch a PV program in early 2003, 2) the key assumptions under which such a program would be developed, 3) draft program goals, and 4) lessons learned from other PV programs in the U.S. and internationally.

Key Assumptions

- The focus group is the first dialogue, not the last.
- Program design elements presented at the focus groups are DRAFT.
- The intent is to develop an initial program design by December 2002.
- We plan to launch the first programs in Feb/March 2003.

- Stakeholders will have an opportunity to comment by e-mail and through RAC.
- The program will not be able to include everything asked for in the focus groups
- Oregon is small. We do not have major market clout and $$.
- Market transformation means partnerships and change – we need to challenge assumptions and perceptions about the technology and the industry.
- The program will focus on grid-connected systems.

Draft Program Goals

- Expand the near-term market, doubling demand
- Lead to sustainable markets
- Develop high consumer awareness
- Improve quality delivery
- Foster a competitive market
- Make it less technical for the consumer
- Lower delivered costs
- Increase system performance

Lessons Learned from Other Programs

After presenting the draft goals we covered the lessons learned from three studies on PV incentive programs (see Appendix). The first study was commissioned by the Energy Trust to describe innovative practices for renewable energy programs. The second study was conducted by the North Carolina Solar Center on state solar energy incentive programs and the third covered the breakeven turn-key cost of grid-connected photovoltaic systems conducted by the National Renewable Energy Laboratory. The studies are available upon request.

Barriers and Actions to Address Barriers

Participants were then presented with a list of barriers and the potential "actions" that could address these barriers. We asked the groups to comment and provide input. Were these the right barriers? Were the listed actions or "levers" effective in addressing these barriers? Which levers were missing? Which ones were most important? This process provided a fairly uniform method of soliciting responses, opening dialogs, and understanding which 'levers' needed to be included as program elements.

Target Markets

We then talked about target markets. Which markets should be sought first? Which offered the best chances of success and market potential? We wanted to learn from the participants not only what they believed were the best markets to pursue first but WHY. We tried to challenge their responses and to gauge which ones were based on a particular person's "gut" and which were based on demonstrative experience.

Findings

The focus groups reveled how significantly opinions about market development for grid-tied PV varied. Opinions were frequently hard-felt and sometimes were the opposite of what we heard in the previous meeting. Consensus was found on such things as consumer education, training and a need to simplify the path a consumer must take to buy a PV system. Major differences focused on specific program elements, such as types of incentives, equipment performance, standards for equipment and installer guarantees.

Participants were largely focused on how to get the current type of consumer to out quicker. They were less focused on transforming the market. Given the need to work through outstanding issues, the initial timelines for launching a program are extremely ambitious.

Consensus Themes

The following sections extract some of common themes we heard on barriers and effective levers to address those barriers.

1. **Reduce First Cost** – There was broad consensus that initial up-front cost was the biggest barrier facing PV. This consensus broke down when the discussion shifted to what kind of incentive would best address this barrier.
2. **Financing** – A common theme heard was that the financing was difficult to get. The rate was not nearly as important as was easy access and a consistent approach to financing. Several praised utility programs that provide financing with bill payments as especially effective. The concept of a revolving loan fund or leasing was suggested as a possible approach.
3. **Easier Path** – The current delivery of PV systems requires substantial consumer knowledge and patience. There is a need for a clear path or set of “steps” which one can take to learn about and make an intelligent decision when buying a grid-tied PV system. A closely related issue is the need for well-coordinated incentives that do not require multiple phone calls, applications or “hoops” for consumers to jump through.
4. **Professional Training** – All agreed that the program should support the continued development of qualified installers and knowledgeable inspectors.
5. **Quality Installation** – Participants felt that a high quality installer base was essential. The program should support electrical journeymen training on PV systems and the emerging Renewable Energy Technician License. However, this was tempered by the concern that installer certification within the program could be too restrictive.
6. **Consistent Message** – It was clear that potential customers need to hear a consistent message from many sources. Because as one participant put it, “No system is sold for just one reason,” it is important for all customer interfaces to be supportive of the purchase. If a customer hears substantially differing opinions on how to proceed or the merits of a system, the impression left is that he/she should wait until such issues are resolved.

7. **Credible Endorsement** – Many participants repeated examples of how utility programs, state tax credits, and federal tax credits provide valuable endorsements of the technology that increase consumer confidence. The Energy Trust should utilize this leverage. Credible sources may vary depending on the particular market - "word of mouth" marketing through friends, business contacts and neighbors are an essential part of "credible endorsement."
8. **Inspection Streamlining** – The inspection process varies largely by community. In general, vendors in larger population areas experience greater difficulty and time delays with system installation. All felt that workshops and training opportunities should be made available to inspectors and utility staff.
9. **Demonstrations** – There was strong support for demonstration projects. A common message was that the demonstrations should be very market specific and have lasting public relations value. Demonstrations should give potential customers an identifiable example that relates directly to them and provides an opportunity to see and touch the equipment. Inaccessible systems or systems on public buildings were viewed negatively by more than one group.
10. **Tax Structure** – Tax credits programs are valuable and should be heavily leveraged. However, they require some modification to be more effective. The incremental nature of the state residential tax credit for PV makes it hard to sell. The current state and federal tax structure favors commercially owned systems.
11. **Increase Value** – Many understood the need to demonstrate that PV systems have value beyond the electricity they produce. For example, appraisers and realtors could give homes with PV systems added resale value. It was also suggested that Energy Trust marketing to home owners should reinforce pride of ownership, the status and environmental value of a system, and other non-tangible values.

Controversial Elements

We did not hear consensus on the following elements, which raised valid questions that need to be addressed. The pros and cons of each element will need further exploration before final decisions can be made.

1. **Incentives** – The most contentious possible method of reducing the upfront cost of PV systems to consumers was the concept of bulk purchasing of systems. Most vendors felt this would not produce a healthy market for them to operate in nor would it lead to a sustainable market beyond the bulk purchases made for the program. Groups tended to agree that some form of direct rebate or incentive was critical. However they polarized between buy-down and rebate incentives versus performance based incentives paid on the basis of kWh produced annually.
2. **Pre-engineered System Packages** – Generally people believed that grid-tied PV systems could be handled like appliance purchases – self-contained, pre-engineered, and requiring little on-site customization. Participants felt the industry was leading towards standardization and thought this was a positive trend helping to lower costs. The controversy arose around how best to encourage this

market development. Should the Energy Trust endorse only systems that were certified and fully engineered? Who would determine what was approved and how? How would standards change over time?

3. **Installer Certification** – While there was agreement that poor system performance and low-quality installations were a problem, there was concern about how far the Energy Trust should go in pushing the market. The groups were divided between a strong role for the Trust and no role at all. Some felt it was up to the consumer to police the industry.
4. **Guarantees** – Performance and installation guarantees were widely thought of as important; however, the Energy Trust's role in setting these was not. Some felt that the market place would best sort out what an appropriate guarantee would be while others agreed that with incentives should come higher minimum warrantees. In addition there was debate as to how much responsibility the Energy Trust would have if a system failed to perform.
5. **Schools** – A thin majority of participants felt that PV on schools was a good idea. However, when challenged, it was not clear how installing PV systems at schools or public buildings would lead to increased near-term demand for PV systems. The concerns expressed were that such demonstrations give the impression that PV is a "future technology" and best used as an educational tool only.
6. **Green Tags** – Several suggested that the Energy Trust program not hold the rights to the green tags generated by the PV systems it funds. This would allow system owners the opportunity to sell their green tags to further reduce costs. Others felt that the Energy Trust should retain ownership and leverage the green tags as best it can.

Target Markets

We found that for the most part people believed that the residential market held the greatest near-term potential to develop the PV industry in Oregon. However, it appeared that this may be because it is what people are familiar with rather than what was actually better.

1. **Existing Residential** – All groups believed that the existing residential market had the most near term potential and would be the easiest market in which to launch a program. This market is everywhere with excellent potential for "word of mouth" marketing; homeowners can internalize the additional values provided by PV; and, using home mortgage financing is a good value.
2. **Commercial** – Several people believed that because of strong federal and state incentives existed through September 11, 2004 commercial businesses should be pursued early. The program should target specific sub markets; suggestions include newspapers, small retail, or high profile companies. People felt these systems should be visible and hopefully accessible to the public.
3. **New Residential** – New residential construction was frequently mentioned but most thought it should not be a major focus initially. Speculative builders are very unlikely to install PV systems unless the cost and risk to them is dramatically reduced. New construction would likely require longer lead times but has good

potential of reducing the system cost through integration during design and construction. Establishing contacts in this area and gaining the confidence of the developers would be a useful effort in the near term. In the mid term, we need to prove PV creates greater re-sale value.

4. **Agriculture** – This market relies on "word of mouth" marketing. If one farmer can demonstrate a specialty application that shows a reasonable financial return, marketing costs would be fairly low. The Energy Trust should be developing relationships, but not make this sector a prime focus in the first year.
5. **Backup Power Systems** – Niche markets may exist for backup of critical loads (computers, communications, etc.) that would be willing to pay more for the energy provided. These would need to be relatively few and site-specific.
6. **Industrial** – No one we talked to saw this market as a likely early market. Industrial markets should not be excluded, but there were no clear suggestions on how to develop this market.

Next Steps

Following the focus groups, Peter West proposed these next steps:

1. Share the findings of the focus groups with all interested parties in Oregon and solicit feedback on what we heard.
2. Draft an outline of key elements of an Energy Trust PV program for review, and solicit comments on program specifics.
3. Revise program goals and timing based on feedback.
4. Draft a set of principles for review along with an initial cut at first-year target markets.
5. Meet with BPA about the 'Bright Ways' program and the Energy Trust's coordination with BPA and the state's utilities on launching a PV program.
6. Draft a detailed straw proposal for a PV program.

Appendix

PV Studies - Lessons Learned

The following is a list of lessons learned from 3 recent studies of distributed renewable energy programs.

- *"Innovative Practices in Renewable Energy: A Review of Domestic and International Experiences"* Clean Energy Group, 2002
- *"State Financial Incentives for RE: case studies on program effectiveness"* North Carolina Solar Center, 2002
- *"Customer Sited Photovoltaics: State Market Analysis"* Christi Herig, National Renewable Energy Laboratory, 2002

1) There are no panaceas – no one program hit the mark
2) PV market is very hard to transform: many moving parts, little consensus, limited funding, technical nature
3) Program goals should drive design
4) Buy-downs have a spotty history
5) Bulk purchases have been successful
6) System performance is an issue
7) Utility cooperation is essential
8) Quality assurance is essential
   Installers
   Equipment
   Performance
9) All players need to collaborate on marketing and education
10) Customers focus is on kwh, industry focus on kW
11) State experiences are unique
12) Programs need to be flexible
13) Long term stable funding is critical
14) Application process should be quick and easy for the customer
15) Incorporate incentives into an overall infrastructure development strategy
16) Incentives should decrease over time
17) Incentives should not exceed a fixed % of the system cost
18) Available solar resource and local electricity prices are not major factors