2008 Solar Annual Review Meeting

Session: Cross-cutting MT and Support Activities

Southwest Region Experiment Station

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FY08 Progress Report

Southwest Region Experiment Station

Systems Engineering Core Competencies

a) PV System field testing (includes: array, inverter, BOS)
b) Codes and standards (development, inspection, training)
c) Instrumentation and performance monitoring
d) Data analysis (performance, economics)
e) Component testing (modules, inverters, BOS)

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Southwest Region Experiment Station
2007/8 Activity Matrix

Market Transformation	Solar America Cities Solar America Showcases	Tucson, Pittsburgh, Austin Forest City, San Jose Smithsonian National Zoo
Test and Evaluation	PV system test, rating, code compliance, safety Stage gate testing	Measure, analyze, report: cost, performance, reliability
Codes and Standards	Codes development Codes training Codes inspection	IEEE SCC21, NABCEP Exam Committee, NEC Article 690, UL STP's
Systems Engineering	System design reviews Product development Procurement support	Various activities

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1. Market Transformation: Solar America Cities and Showcases

a) Tiger Team Lead: Tucson (Solar America City)

1) Tested five PV city-owned systems (*Mar 2008*)

2) *Comparative Financing* Report, Jason Coughlin/NREL (*Apr 2008*)

3) With CH2MHill, team delivered RFP for 1-5 MW PV system (*Mar/Apr 2008*)

b) Tiger Team Lead: Santa Rosa, CA (Solar America City)

c) Member: Austin, Pittsburgh, New York (Cities)

1) Austin: participated in the tiger team SOW development

2) Pittsburgh: developed 3 day solar training on PV, regulations, and financing

3) New York: technical support for NYC code officials 2010 NYC Code (*Feb 2008*)

d) Member: Forest City, San Jose (Showcases)

1) Forest City: Three Major PV performance and economics reports; procurement support for 100 kW PV system purchase (*Dec 2007 – Mar 2008*)

2) San Jose: Developed solar radiation distribution maps for San Jose, inspected and ranked eight candidate locations for future PV installation

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2. SWRES Test & Evaluation

a) TPP Support:

1) 7 hour PV/NEC workshop presented to engineers, scientists, and managers at GE working on their PV inverter design (*Mar 2008*)
2) Participate in the T&E working group effort to establish procedures, instrumentation, protocols for testing (*Feb 2008*)
3) Sandia and SWRES will be conducting stage gate testing of two Amonix concentrator modules (*Apr 2008*)

b) Non SAI Test & Evaluation

1) Field and acceptance PV system tests for Federal, state, and municipal agencies, utilities, private industry. Recent example: 1 MW PV system test for the city of Rohnert Park, CA
2) Performing long term testing of six residential inverters (SWRES, SNL, SERES) for performance and reliability (One unit recently removed for comparison with failed units from FL)
3) SWRES, SNL, SERES will be resuming module long term exposure testing program in 2008 (activity highly requested by industry).

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3. SWRES Codes and Standards (Non-SAI)

c) Codes and Standards

1) SWRES provided critical Review of all 2007 Solar Decathlon entries for code compliance (*Sep/Oct 2007*)

2) Support ongoing developments of: NEC Article 690, IEE SCC 21, NABCEP exam committee, UL Standard Technical Panels for 1703 and 1741)

3) Provide professional training for code officials, system installers, designers:

Over the last 12 months, SWRES engineers have presented approximately *30 major NEC Fundamentals workshops* to over *1800 PV professionals (installers, designers, inspectors, college/vocational programs)*.

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4. Systems Engineering

a) Design Reviews

1) From 4 to 10 PV system designs are received by SWRES every month for review. We've experienced a **greatly increased number of requests** for assistance in the last 12 months. (Experienced and inexperienced designers)

2) We do this ad hoc, on request, and all information is treated as proprietary.

b) Product Development Support

1) There are many (many) newcomers to PV manufacturing right now who request basic technical support with design and specifications for junction boxes, cables and connectors, sizing of fuses and diodes, and *text for manuals*.

2) Note: For major requests, we require an engineering services contract (roughly 1/3 of our operating budget comes from non-DOE contract sources)

c) Procurement Support

1) RFP preparation and bid reviews for state, municipal, and Federal agencies.

Future Activities and Obstacles

5. SWRES FY09

a) Anticipated Activities:

1) Solar America Cities, Showcases: Continue as Tiger Team Lead for two cities and as team participant in from four and six additional cities and showcases
2) Continue to provide SAI TPP support for Stage gate testing, module and system developmental tests both at our facility and offsite
3) Other Test & Evaluation: Support the development of *Accelerated Aging* methodologies by obtaining specific performance data sets from fielded systems and components for model verification and validation (strong need for this identified at the Accelerated Aging Workshop two weeks ago).
4) Codes and Standards and other Systems Engineering: Continued support activities at all levels of U.S. PV stakeholders

b) Issues and Concerns (and potential Obstacles)

1) SWRES is currently hiring, but qualified candidates are few
2) Present SWRES/SERES contracts terminate in Dec 2008.

Thank You