

Attachment - A

Utah Clean Energy



201 South Main, Suite 2300
Salt Lake City, Utah 84111

May 27, 2009

***VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY***

Public Service Commission of Utah
Heber M. Wells Building, 4th Floor
160 East 300 South
Salt Lake City, UT 84111

Attention: Julie P. Orchard
Commission Secretary

Re: Solar Photovoltaic Incentive Program (Schedule 107) Annual Reports for
Program Years 2007 & 2008

Pursuant to the Commission's order in Docket No. 07-035-T14, Rocky Mountain Power hereby submits for filing an original and five (5) copies of the annual reports for the 2007 and 2008 program years for the Solar Photovoltaic Incentive Program offered through Schedule 107.

It is respectfully requested that all formal correspondence and staff requests regarding this matter be addressed to:

By E-mail (preferred): datarequest@pacificorp.com

By regular mail: Data Request Response Center
PacifiCorp
825 NE Multnomah Blvd., Suite 2000
Portland, OR 97232

Informal inquiries may be directed to Dave Taylor at (801) 220-2923.

Sincerely,

Jeffrey K. Larsen
Vice President, Regulation

Enclosures

cc: Division of Public Utilities
Office of Consumer Services
Utah DSM Advisory Group

Utah Solar Incentive Program

2007 Annual Report

Table of Contents

Background.....	3
Goals of the program	4
Key program elements and design features	4
2007 activity.....	6
Summary of 2007 results	7
Key findings from 2007	8
Recommendations for the next year	10
Program data being collected.....	11
Program performance reporting elements and proposed format.....	12
Appendix- 2007 project detail	16

List of Tables

Table 1. 2007 Installed Capacity and Expenditures.....	7
Table 2. 2007 Applications	8
Table 3. Key data currently being collected	11
Table 4. Levelized cost of Energy	13
Table 5. Results for standard economic tests.....	13

List of Figures

Figure 1. Peak Day Generation and Load Profile (July 30, 2007).....	14
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Background

In Docket No. 06-035-21, Rocky Mountain Power (“RMP” or “the Company”) outlined plans to introduce a Solar Photovoltaic program to gain market based information on the value of distributed solar resources to assist the Company in meeting peak demand requirements. To fund the program an annual revenue requirement adjustment of \$314,500 was included in the Company’s initial application^{1 2}. The case was settled by stipulation and approved by the Commission without specific findings on individual issues. Pursuant to the stipulation, Rocky Mountain Power filed a request with the Utah Public Service Commission for approval of Schedule 107, the Solar Incentive Program on April 4, 2007

On May 2, 2007 the Commission issued a letter suspending the tariff and granting the Division’s request for an extension to file its comments. In addition to the Division several parties or individuals provided comments on the proposed program. On July 13, 2007, Rocky Mountain Power submitted reply comments to respond to concerns or recommendations expressed by the parties. On August 3, 2007, the Commission approved Schedule 107 subject to the comments and conditions summarized below:

- Provide an annual report no later than March 1 of the following year which shall at a minimum contain information on completed projects, program expenditures and recommendations for the following year³.
- Include recommendations on appropriate cost effectiveness criteria for solar programs as required in Docket No. 07-035-T04.⁴

1 Docket No. 06-035-21, Exhibit UP&L___(JTW-1) - Tab 4.14 Solar Photovoltaic Program - This adjustment reflects the estimated annual program costs associated with Pilot Solar Photovoltaic Utility Buy-Down Program that will be co-sponsored by Utah Clean Energy and Utah Power. Approval for this program will be filed under a separate application. This pilot Photo Voltaic project will gather important information on the viability of a solar program funded by participating customers, tax incentives and the Company buy-down. The project will provide technical information on the integration of distributed solar resources into the Utah Power system and demonstrate the ability of solar power to meet growing peak demand. It will also gauge customers’ willingness to participate in this program and provide an investment that will both benefit themselves and the utility system. This pilot program has not yet been approved in the state of Utah. PacifiCorp's continued participation in this program is contingent upon the Commission's approval and the associated costs being included in the Company's revenue requirement.

2 It should be noted that Utah Clean Energy is not a co-sponsor of the program and it is administered solely by Rocky Mountain Power.

3 As noted by DPU, this aspect was not met in the designated time frame.

- Identify data that will be collected and how it will be compiled to produce a useful report for evaluating program design and cost and benefits of a long term program. File this plan within 90 days.⁵

The costs of the Solar Incentive Program are included in Company operating expenses and are not funded from the surcharge revenues collected under Utah Schedule 193, Demand Side Management (DSM) Cost Adjustment.

Goals of the program

The pilot program is designed to gather market based information on the costs and customer participation in a program to integrate distributed solar resources into the Rocky Mountain Power system and the ability of solar power to reduce peak electricity demand.

Goals of this program include:

- Assessment of the benefits
- Assessment of costs
- Program administration logistics
- Rate of consumer installation of photovoltaic systems in Utah.
- Provide experience in working collaboratively with the solar community.

Key program elements and design features

Key program elements and design features reflect the pilot nature of the program, especially the limited funding available. Customer eligibility is limited to customers receiving electric service from Rocky Mountain Power at the project site and they must comply with the requirements set forth in the net metering Utah Schedule 135. This requirement ensures that installations serve loads that would otherwise be served through the Company's electrical system.

⁴ Pursuant to Docket No. 07-035-T04, on April 27, 2009 Rocky Mountain Power filed its report on Utah Demand Side Management and Other Resources Benefit and Cost Analysis Guidelines and Recommendations.

⁵ Also, as noted by DPU, this aspect was not met in the designated time frame. The company would like to note that meaningful data has been collected for 2007 (and 2008) and is analyzed in the program performance section of this report.

To help allocate available funding to the maximum number of installations, incentives are provided for up to 3 kilowatts for residential customers, and 15 kilowatts for non-residential customers (based on rated AC output). Larger systems may be installed, but incentives are provided up to the limit only. Systems that are already installed are not eligible for incentives.

Since the pilot program has capped funds, it was determined that a publicized application acceptance date (the first day applications could be submitted) would be the most equitable way to receive applications and allocate funds. For the 2007 program, this date was September 10, 2007.

To ensure that available funding is available for viable projects and not committed to projects that don't get installed within a reasonable time, projects must be installed by an annual deadline, January 31, 2008 for the 2007 program⁶.

Installations must be performed by Utah licensed electrical contractor (S201, S202 or S215) and a list is provided on the program website. Installations also require that permits be obtained from the local authorities. These requirements ensure safe professional installations, system integrity and help develop electrical contractor and building official expertise.

To minimize administration costs surrounding equipment performance ratings and to leverage work done in other markets, the California Go Solar program list of inverter and module ratings developed in accordance with protocols set by the California Energy Commission (CEC) is used by the program as the list of qualifying equipment. This site is accessible through the program web site. To be eligible for incentives, system components must have the following warranty requirements; panels – twenty years, inverters – five years and installation labor – one year.

⁶ Since the 2007 program commenced in the fall and customers needed to install equipment during the winter, a few customers with approved applications were granted weather related extensions by the program administrator on a case by case basis.

2007 activity

2007 was the first year of the program and formal approval was received in August 2007. Selection of a third party program administrator and final program design were completed in 2007 contemporaneously with the program filing and Commission approval process.

The program administrator, Ecos Consulting was selected through a competitive process and a contract was signed in April 2007 to ensure services would be available shortly after Commission approval. Ecos also administers the Company's new homes program in Utah. To administer this program, they teamed with Larry Burton of Burton Consulting who has experience with the SolarGenerations program offered by NV Energy.

Final program design included development of the final program forms, marketing materials and web site completion. The program was also revised to include changes that occurred during the program filing process, such as the ownership allocation of Renewable Energy Credits (REC)'s⁷. The address for the Company's web site for this program is as follows:

<http://www.rockymountainpower.net/Homepage/Homepage65672.html>.

The site is the primary marketing vehicle and is designed to complement personal selling being done by the solar trade ally community. The site includes general information on how to identify and design appropriate solar applications, specific program requirements, lists of equipment distributors and licensed contractors, a complete list of forms and several ways to contract the program administrator for more information.

⁷ Ownership of RECs in this program is allocated between the customer and RMP in the same percentage as the RMP incentive is to total project costs, i.e., if RMP incentives offset 20% of the costs, RMP would own RECs amounting to 20% of the output of the system. RMP tracks generation output from information provided on the customer attestation certificates. The rules of the third party tracking entity utilized by RMP are new and requirements have been coming out recently. Under the third party tracking rules, RECs are allowed to be sold by one party only. Unless RMP claimed all the credits, RMP would not be able to sell the RECs. Since the output of numerous individual systems would have to be aggregated where the credits are accumulated until the each systems output reach the 1 MWH minimum REC threshold, the administrative costs of doing so would exceed the value of the RECs. RMP is not including these RECs in any third party data base or planning to use them as an offset to Utah rates during the duration of the pilot program. RMP recognizes that the program convention on RECs pre-dates the current net metering docket and will include approved changes appropriate for small projects on a going forward basis.

A short script was developed for Rocky Mountain Power’s call center employees so incoming calls were efficiently re-directed to the program web site. Details of the program were provided to the Solar Working Group at their August 2007 meeting by the program administrator.

Summary of 2007 results

Information in the tables below summarizes expenditures by cost category, installed capacity by customer type eligible for incentives and application data for the 2007 program. Additional information regarding individual 2007 projects is available in the Appendix.

Table 1. 2007 Installed Capacity and Expenditures

	kW	Incentives ⁸	Administration	Expenditures
Residential	54.055	\$108,112		
Non-residential	3.305	\$6,590		
Third party - total			\$26,013	
Utility - total			\$1,947 ⁹	
Total	57.360 ¹⁰	\$114,702	\$27,960	\$142,662

⁸ Incentives based on \$2/watt differ from total incentives displayed here by \$20 total based on rounding of watts and incentive amounts.

⁹ Includes direct labor costs for program management, marketing, analysis. In 2007, Company did not perform additional site inspections beyond those performed by the program administrator. As a result utility labor does not include any site inspection costs. Costs for net meters and associated metering department time is not allocated to the program or reflected in these costs. For the 28 2007 installations, 26 were residential and the cost to upgrade the meter was \$125/site or \$3,250 in total. The two non-residential installations required a programming upgrade only with no additional incremental costs.

¹⁰ Four residential customers installed systems larger than the maximum size eligible for program incentives. Installed capacity beyond the program is an additional 6.927 kW. Total installed capacity for systems receiving program incentives is 64.287 kW.

Table 2. 2007 Applications

Received	43
Completed	28
Denied ¹¹	5
Decided to re-apply in 2008	7
Incomplete/withdrew	3

Key findings from 2007

The section below outlines key findings from the 2007 program and is designed to compare activity and results in relation to stated program goals provided earlier in this report. These findings help inform the recommendation for the next program year.

1. Installed system costs (assessment of costs goal)
 - a. Total reported customer costs were \$664,826 for 64.287 kW(ac) of installed capacity. This includes 6.927 kW beyond the amounts eligible for program incentives listed in Table 1.
 - b. Average cost (based on total installed capacity) was \$10.34/W(ac).
Removing costs and capacity of the highest and lowest cost projects listed below results in an average cost of \$10.78/W(ac)
 - c. Highest system cost was \$22.24/W(ac)
 - d. Lowest system cost was \$5.43/W(ac)
 - e. Net meters required for 2007 installation cost of \$125/residential installation or \$3,250 for 26 installations. The two non-residential applications did not generate any additional net metering costs. Net metering costs are not included in customer or utility costs in Table 1.

¹¹ Equipment already installed was the primary reason for denying applications.

2. Trade allies (experience working with solar community goal)
 - a. Twelve contractors performed the 2007 installations.
 - b. Five contractors performed one installation each.
 - c. Two contractors performed two installations each.
 - d. Two contractors performed three installations each.
 - e. Two contractors performed four installations each.
 - f. One contractor performed five installations.

3. Customers (rate of consumer installations goal)
 - a. Participants were from thirteen unique cities
 - b. Participant count in the top four cities are: Salt Lake City (8), Moab (6), Cedar City (3) and Park City (2). These top four cities accounted for 19 total participants.
 - c. The other nine cities had one participant each.
 - d. Customers were slow to return Attestation certificates

4. Marketing (program administration logistics & solar community goals)
 - a. Primarily personal selling to end use customers by proactive solar trade allies.
 - b. Applications are being completed and submitted by the trade allies as part of the selling process for the end use customers.
 - c. Information on the solar incentive program was sent to the Utah Solar Working group list (over 300 members) and Utah Clean Energy and Utah Solar Energy Association member lists.

5. Equipment availability (program administration logistics & solar community goals)
 - a. Customers and trade allies reported equipment shortages and attendant schedule impacts during 2007.

6. Allocation of program incentives (program administration goal)

- a. The relatively short time between the date applications were first accepted, September 10, 2007 and the installation deadline for the first year of the program January 31, 2008 precluded all the incentive from being allocated to projects.
- b. The shortfall in allocated incentives for 2007 was the most prevalent in the non-residential customer group.

In summary, findings from 2007 indicate costs per installed watt were approximately the same as what was originally estimated. Contractor participation was aligned with experience in other specialty trades with a few contractors performing the majority of the installations. Marketing was as forecast with contractor personal selling and including the program application process as part of the sales process. The short duration between the program approval and the installation deadline led to a shortage of projects that could be approved and built within the available time frame.

Recommendations for the next year

1. Given the late program start date, the “unused 2007 kW allocation” (2.945 kW for residential installations and 46.695 kW for non-residential applications) were added to the 2008 program. To ensure consistent marketing messages surrounding annual kW allocations, the addition will occur as part of the 2008 tracking by the program administrator and will not be included as a specific roll-over amount since it is unlikely to occur in future years¹².
2. Program administrator or Company or joint communication reminder(s) to customers with installed projects to provide completed Attestation Forms.
3. Communication to solar trade ally community on importance of generation data from actual installations and that missing, incomplete or inaccurate Attestation forms are a barrier to complete assessment of program effectiveness.

¹² Since pilot program revenue requirements were established based on five full years of program operation, the re-allocation decision was made to compensate for the short 2007 year. This is expected to be the case for 2007 only.

Program data being collected

Extensive data is currently being currently being collected on customer installations applying for and receiving program incentives. In addition to administering the program, this data will be used in the assessment of program effectiveness, including any recommendations for changes beyond the pilot period. Table 3 is not a list of all data being recorded, but is intended to illustrate that each participant contributes specific data on costs, equipment performance and trade ally activity in support of the program goals.

Table 3. Key data currently being collected

Data	Source
Customer type (residential or non-residential)	Application ¹³
Customer location	Application
Meter/site/account information	Application & CSS ¹⁴
New construction or retrofit	Application
Shading: source and % loss	Site Inspection ¹⁵
Electrical contractor	Application
PV module: manufacturer, model, warranty, CEC rating, quantity, location, tilt angle.	Application
Inverter: manufacturer, model, warranty, voltage, ratings (watts), CEC efficiency, quantity	Application
Estimated watt (ac) output	Application
Estimated annual energy production	Application
Actual energy output – monthly & annual	Attestation ¹⁶
Site sketch (includes orientation)	Application
Installed cost estimate	Application
Final installed costs	Site Inspection
Project photos	Site inspection

The company recognizes that accurate assessment of installation output is essential to assessing performance of both equipment and the program as a whole. As noted in the Recommendations section above, customers have been slow to return the Attestation certificates and this data provides output on a monthly and annual basis, not on an hourly

¹³ Photovoltaic Incentive Application Form

¹⁴ PacifiCorp Customer Service System

¹⁵ Site Inspection Form (used for both pre and post installation)

¹⁶ Non-Energy Attributes Certification and Attestation Form

basis. To better estimate the contribution of the installed systems on Utah's peak load without the expenses of hourly metering on installations the first year, the Company retained the a third party consultant to input the characteristics of the 2007 installed systems (contained in the detail in Appendix One) into the National Renewable Energy Laboratory (NREL) PV Watts calculator available at http://rredc.nrel.gov/solar/codes_algs/PVWATTS/version1/ .

Program performance reporting elements and proposed format

This section describes how these data elements are used in program performance reporting while maintaining a balance between pilot funding and the approved program design deploys the majority of the funds to customer incentives. Program performance reporting for this program will focus collection and analysis of:

- Actual costs (both total customer capital cost and utility cost) for photovoltaic installations.
- Characteristics (size, configuration, new construction, retrofit, etc.) of installation sites.
- Installed system performance/output.
- Ability of solar generation to meet peak load demands.
- Key findings from program operation and solar trade allies.
- Calculation of benefits using economic tests typically applied to renewable resources and/or those agreed to in the cost effectiveness analysis filed by the Company on April 27, 2009.¹⁷ While review of the report is underway, the

¹⁷ Pursuant to Docket No. 07-035-T04 Rocky Mountain Power filed its report on Utah Demand Side Management and Other Resources Benefit and Cost Analysis Guidelines and Recommendations

current analysis will provide a) the levelized cost of energy (LCOE) ¹⁸ and, b) standard economic tests from the California Standard Practices Manual. Both results will be compared to the values from the Integrated Resources Plan. This analysis may be replaced a alternate analysis in subsequent reports

Table 4. Levelized cost of Energy¹⁹

Customer Cost	\$664,826
Incentives	\$114,702
Administration	\$27,960
Meters	\$3,250
Total Annual Generation (MWh)	101.395
Levelized Total Cost (\$/MWh)	\$594.37
Levelized Utility Cost (\$/MWh)	\$124.60
2007 IRP 49% Load Factor Decrement Levelized Cost (\$/MWh)	\$81.57

Table 5. Results for standard economic tests

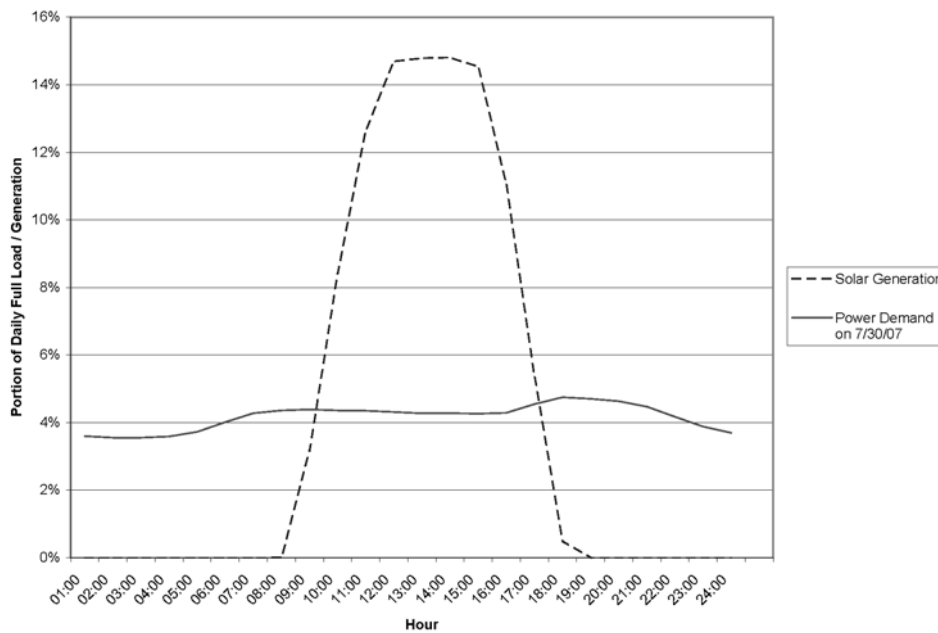
All Measures				AC: IRP 49% LF Decrement	
	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.5944	\$696,036	\$129,652	(\$566,384)	0.186
Total Resource Cost Test (TRC) No Adder	0.5944	\$696,036	\$117,865	(\$578,171)	0.169
Utility Cost Test (UCT)	0.1246	\$145,912	\$117,865	(\$28,047)	0.808
Rate Impact Test (RIM)		\$154,328	\$117,865	(\$36,463)	0.764
Participant Cost Test (PCT)		\$550,124	\$130,556	(\$419,568)	0.237
Lifecycle Revenue Impacts (\$/kWh)				\$0.0000000475	

¹⁸ LCOE is consistent with Company potential study analysis of photovoltaic resources

¹⁹ Levelized at 7.1% discount rate over 25 year estimated life.

The ability of solar resources to meet peak demand in Utah is illustrated in the following table. The shape of the generation output is derived from actual installation data entered into the NREL calculator as described above. The power demand data is from actual company sales for 2007. The day utilized for the comparison was selected as the day with the highest load from the hourly 2007 sales data. The comparison between the two is provided in the graph below.

Figure 1. Peak Day Generation and Load Profile (July 30, 2007)



This analysis indicates the solar generation resources deliver peak output between 1-2 PM and the company system peaks approximately two hours later. Solar resources, while not strictly one hundred percent coincident with system peaks do contribute energy during the high load and high energy cost hours of summer days. Hourly information

used in providing this illustration as well as for each hour of the year is being stored electronically as supporting documentation for the 2007 program.

Subsequent annual reports for the duration of the pilot program will include a program performance section which will help inform a timely set of recommendations sufficiently in advance of the end of the pilot. The Company recognizes that a cumulative program look will be useful for the end of the pilot analysis and will strive to include a cumulative analysis in addition to analysis for the annual period.

In conclusion the company acknowledges the comments regarding the scope and timeliness of this report and believes the revised draft report provided here is an effective balance between analysis effort and available budget. A report on the 2008 program will be prepared following the same format and incorporating the same data elements utilized for this report.

Appendix- 2007 project detail

Project ID	Status	City	State	Zip	Incentive Amount	Total system size (kW)	Applied Residential Installation (kW)	Applied Commercial Installation (kW)	Total System Cost (\$)	\$/kW	\$/W
709100004	Completed	Park City	UT	84098	\$4,686.00	2.342	2.342		\$21,551	\$9,201.96	\$9.20
709100007	Completed	SLC	UT	84103	\$4,490.00	2.245	2.245		\$19,826	\$8,831.29	\$8.83
709100014	Completed	SLC	UT	84103	\$4,256.00	2.128	2.128		\$17,481	\$8,214.76	\$8.21
709100020	Completed	Midvale	UT	84047	\$3,854.00	1.937		1.937	\$22,000	\$11,357.77	\$11.36
709101235	Completed	Eden	UT	84310	\$3,420.00	1.711	1.711		\$38,048	\$22,237.10	\$22.24
709101535	Denied	SLC	UT	84101							
709101537	Re-apply 2008	Eden	UT	84310							
709101559	Re-apply 2008	West Valley	UT	84121							
709111644	Completed	Moab	UT	84532	\$2,736.00	1.368		1.368	\$13,659	\$9,984.36	\$9.98
709111717	Re-apply 2008	Moab	UT	84532							
709120840	Completed	Cedar City	UT	84720	\$5,760.00	2.880	2.880		\$25,281	\$8,778.19	\$8.78
709120922	Completed	SLC	UT	84103	\$6,000.00	5.093	3.000		\$53,713	\$10,546.37	\$10.55
709121301	Completed	Rockville	UT	84763	\$5,100.00	2.550	2.550		\$24,573	\$9,636.44	\$9.64
709121615	Completed	Moab	UT	84532	\$2,736.00	1.368	1.368		\$12,235	\$8,943.65	\$8.94
709121616	Incomplete/ withdrew	Moab	UT	84532							
709131414	Completed	SLC	UT	84102	\$5,242.00	2.621	2.621		\$22,537	\$8,598.77	\$8.60
709131630	Completed	SLC	UT	84103	\$5,532.80	2.766	2.766		\$35,498	\$12,831.96	\$12.83
709141024	Completed	Promontory	UT	84098	\$3,840.00	1.920	1.920		\$21,051	\$10,964.06	\$10.96
709141024	Re-apply 2008	Soldier Summit	UT	84092							
709141126	Re-apply 2008	SLC	UT	84106							
709141126	Re-apply 2008	SLC	UT	84106							
709141148	Completed	SLC	UT	84106	\$5,806.40	2.903	2.903		\$24,936	\$8,589.70	\$8.59
709151533	Completed	Moab	UT	84532	\$2,736.00	1.368	1.368		\$12,247	\$8,952.54	\$8.95

Project ID	System Orientation	System Tilt Angle (Degree,°)	Module Manufacturer	Module Model	Module Quantity	Module CEC Rated Watts Output	Inverter Manufacturer	Inverter Model	Inverter CEC Weighted Efficiency %
709100004	S-SW	22.6	Kyocera	KC175GT	16	154.9	Xantrex	GT3.3-NA-DS-240	94.5
709100007	S	adjustable	Evergreen	ES 190	14	168.8	Xantrex	GT3.3-NA-DS-240	94.5
709100014	S	29-51	Sanyo	HIP-200-BA3	12	188.7	Xantrex	XW 4024	89.0
709100020	S	18	Evergreen	ES 190	12	169.0	Xantrex	GT2.8	93.5
709101235	S	adjustable	Sanyo	HIP-200-BA5	10	188.3	Outback	GFX 3648	91.0
709101535									
709101537									
709101559									
709111644	S	38	Evergreen	ES 180 RL	8	180.0	SMA	SWR 1800U	91.5
709111717									
709120840	S	66	Kaneka	GSA 211 or GSA 60	60	60.0	SMA	SB3800U	94.5
709120922	S-SW	30	Mitsubishi	PV- MF125UE4N	48	111.1	Sunny Boy	6000 US	95.5
709121301	S	adjustable	Solar World	SW 165 mono	12	149.1	Fronius	IG 4000	94.0
709121615	S-SW	38	Evergreen	ES 180 L	8	180.0	SMA	1800 U	91.5
709121616									
709131414	W	25	Kyocera	KC 175 GT	18	154.9	Fronius	IG 3000	94.0
709131630	S	30	Evergreen	ES 190	16	190.0	Outback	GFX 3648	91.0
709141024	S	22	BP	175	12	186.0	Power One	3600	94.5
709141024									
709141126									
709141126									
709141148	S	30	Evergreen	ES 190	16	190.0	SMA	SB 3000 US	95.5
709151533	S	48	Evergreen	ES 180 L	8	180.0	SMA	1800 U	91.5

Project ID	Status	City	State	Zip	Incentive Amount	Total system size (kW)	Applied Residential Installation (kW)	Applied Commercial Installation (kW)	Total System Cost (\$)	\$/ (kW)	\$/W
709161526	Completed	Moab	UT	84532	\$2,736.00	1.368	1.368		\$12,066	\$8,819.96	\$8.82
709170000	Re-apply 2008	South Jordan	UT	84095							
709181056	Denied	Ivins	UT	84738							
709181259	Completed	Moab	UT	84532	\$6,000.00	3.492	3.000		\$18,973	\$5,433.28	\$5.43
709181306	Completed	SLC	UT	84121	\$2,856.00	1.428	1.428		\$15,100	\$10,574.23	\$10.57
709190956	Completed	Moab	UT	84532	\$3,300.00	1.650	1.650		\$12,211	\$7,400.42	\$7.40
710151559	Completed	Ivins	UT	84738	\$2,293.20	1.147	1.147		\$10,000	\$8,718.40	\$8.72
710181244	Completed	Paradise	UT	84328	\$4,060.80	2.030	2.030		\$23,814	\$11,730.89	\$11.73
710221455	Denied	Ivins	UT	84738							
710291431	Completed	Cedar City	UT	84720	\$3,400.00	1.700	1.700		\$18,071	\$10,629.97	\$10.63
710291633	Denied	Orem	UT	84058							
711231501	Incomplete/ withdrew	SLC	UT	84105							
711251337	Incomplete/ withdrew	Moab	UT	84532							
711270820	Completed	SLC	UT	84109	\$3,460.00	1.730	1.730		\$14,910	\$8,618.50	\$8.62
711280918	Denied	Midvale	UT	84047							
711281423	Completed	Milford	UT	84751	\$1,672.80	0.836	0.836		\$11,865	\$14,186.24	\$14.19
712022312	Completed	Park City	UT	84098	\$6,000.00	5.933	3.000		\$57,319	\$9,661.45	\$9.66
712050836	Completed	Cedar City	UT	84720	\$1,682.00	0.841	0.841		\$11,865	\$14,108.63	\$14.11
712051324	Completed	Highland	UT	84003	\$6,000.00	4.408	3.000		\$38,614	\$8,759.87	\$8.76
712141036	Completed	Springdale	UT	84767	\$5,046.00	2.523	2.523		\$55,383	\$21,951.16	\$21.95
Totals					\$114,702.00	64.287	54.055	3.305	\$664,826	\$10,341.60	\$10.34
						6.927				Min	\$5.43
						additional capacity installed				Max	\$22.24
										Average without min and max	\$10.78

Project ID	System Orientation	System Tilt Angle (Degree,°)	Module Manufacturer	Module Model	Module Quantity	Module CEC Rated Watts Output	Inverter Manufacturer	Inverter Model	Inverter CEC Weighted Efficiency %
709161526	E	23	Evergreen	ES 180 L	8	180.0	SMA	1800 U	91.5
709170000									
709181056									
709181259	S	25	Evergreen	ES 180 L	20	180.0	SMA	3800 U	94.5
709181306	S	25	Evergreen	ES 190 RL	9	168.8	Xantrex	GT2.8-NA-240	94.0
709190956	S	39	Evergreen	ES 180 L	8	180.0	SMA	1800 U	91.5
710151559	S	37	Kyocera	GT 130	8	180.0	SMA	2100 U	93.0
710181244	S	tracker	Mitsubishi	PV-MF 180UD4	12	159.0	Fronius	IG 3000	94.0
710221455									
710291431	S	30	Solar World	SW 165 mono	12	149.1	Fronius	IG 3000	94.0
710291633									
711231501									
711251337									
711270820		45	Solar Fun	SF-190-27-M200	10	173.0	Xantrex	GT2.8-240	94.0
711280918									
711281423	S	18	Solar World	SW 165 mono	6	149.1	Fronius	IG 2000	93.5
712022312	S	55-25 adjusted seasonally	Conergy	S 175 MU	40	154.5	Sunny Boy	SB 4000 US	96.0
712050836	S	28	Solar World	SW 165 mono	6	149.1	Fronius	IG 3000	94.0
712051324	S	35	BP Solar	SX 3195	28	173.0	Outback	GVFX 3648	91.0
712141036	S	28	Solar World	SW 165 mono	18	149.1	Fronius	IG 4000	94.0

Utah Solar Incentive Program

2008 Annual Report

Table of Contents

Executive Summary	3
Goals of the program	3
Key dates, data and activities for 2008 program.....	3
Summary of 2008 results	4
Key findings from 2008	5
Recommendations for the next year	8
Appendix- 2008 project detail	12

List of Tables

Table 1. 2008 Installed Capacity and Expenditures.....	4
Table 2. 2008 Applications	5
Table 3. Levelized cost of Energy	9
Table 4. Results for standard economic tests.....	10

List of Figures

Figure 1. Peak Day Generation and Load Profile (August 1, 2008).....	11
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Executive Summary

This report provides information on 2008 program participation for the pilot program available through Schedule 107. Background information on the pilot, funding levels, pilot duration, and regulatory background were provided in the 2007 report. 2008 program requirements for equipment, maximum size of system eligible for incentives, contactor licensing requirements, etc. remain the same as for the 2007 program.

Goals of the program

The goals of the program were provided in the 2007 report and are provided here for reference.

- Assessment of the benefits
- Assessment of costs
- Program administration logistics
- Rate of consumer installation of photovoltaic systems in Utah.
- Provide experience in working collaboratively with the solar community.

Key dates, data and activities for 2008 program

- Application acceptance date (the first day applications could be submitted) was January 6, 2008.
- 2008 installation completion date (the day projects had to be complete) was January 31, 2009.
- 2.945 kW for residential applications and 46.695 kW for non-residential applications were carried over from 2007 to the 2008 program.
- Including the carry over from 2007, a total of 59.945kW for residential and 96.695 kW for non-residential projects were available and allocated to customers during the 2008 program.
- A waiting list for the 2008 program was started. Applicants on this list could be eligible to receive 2008 incentives if an approved 2008 applicant withdrew or cancelled their

project. The current year waiting list does not function as a pre-reservation for the next program year allocation.

- Eleven customers notified the program administrator during 2008 they were not able to complete their projects and would re-apply later. When projects were dropped early in 2008, replacement projects from the waiting list were added. When projects dropped later in the year, replacement projects could not be completed in time. The project with the largest impact on the 2008 program was a 15kW non-residential project which lost both funding and key personnel in late winter and there was no readily available replacement project. As a result of project cancellations, 7.015 kW for residential and 24.245 kW non-residential were carried over from 2008 to the 2009 program allocation.

Summary of 2008 results

Information in the tables below summarizes expenditures by cost category, installed capacity by customer type and application data for the 2008 program. Additional information on individual 2008 projects is available in the Appendix.

Table 1. 2008 Installed Capacity and Expenditures

	kW	Incentives	Administration	Expenditures
Residential	52.930	\$105,864		\$105,864
Non-residential	72.450	\$144,903		\$144,903
Third party - total			\$88,634 ¹	\$86,634
Utility - total			\$3,080 ²	\$3,080
Total	125.380 ³	\$250,767 ⁴	\$91,714	\$342,481

¹ Includes \$33,103 of third party administration for 2007 program

² Includes direct labor costs for program management, marketing and analysis. In 2008, Company did not perform additional site inspections beyond those performed by the program administrator. As a result utility labor does not include any site inspection costs. Costs for net meters and associated metering department time is not allocated to the program or reflected in these costs. For the 24 residential installations in 2008, the cost to upgrade the meter was \$125/site or \$3,000 total. The nine non-residential installations required a programming upgrade only with no additional incremental costs.

³ Ten customers (seven residential and three non-residential) installed systems larger than the maximum size eligible for program incentives. Installed capacity beyond the program is an additional 27.807 kW. Total installed capacity for systems receiving program incentives is 153.187 kW.

⁴ Incentives based on \$2/watt differs from total incentives displayed here by \$7 based on rounding of watts and incentives. Incentives represent those paid or to be paid to customers installed projects in the 2008 program. Actual incentives paid in 2008 are \$180,561. The balance of the 2008 incentives will be paid in 2009.

Table 2. 2008 Applications

Received	48
Completed	33
Denied	0
Dropped/re-apply later	11
Incomplete/not approved	2
Added to 2008 waiting list	2

Key findings from 2008

The section below outlines key findings from the 2008 program and is designed to compare activity and results in relation to stated program goals provided in the 2007 report. These findings help inform the recommendations for the next program year.

1. Installed system costs (assessment of costs goal)
 - a. Total reported customer costs were \$1,489,795 for 153.187 kW(ac) of installed capacity. This includes 27.807 kW beyond the amounts eligible for program incentives listed in Table 1.
 - b. Average cost (based on total installed capacity) was \$9.73 /W(ac). Removing the highest cost and all costs below \$6/W results in an average cost of \$10.46/W
 - c. Highest system cost was \$20.83 /W(ac)
 - d. Lowest system cost was \$2.07/W(ac)⁵
 - e. 2008 average system costs was approximately 94%% of 2007
 - f. 2008 highest system cost was 94% of highest system cost in 2007
 - g. 2008 lowest system cost was 38% of lowest system cost in 2007. See footnote 5 below.

⁵ Three systems were installed utilizing some combination of donated materials and/or labor. The lowest cost system was \$2.07/W. Two other system costs were \$5.89/W and \$5.90/W. These systems were all removed from the revised average cost calculation.

- h. Net meters required for 2008 installation cost \$125/residential installation or \$3,000 for 24 installations. The per-meter cost for 2008 is the same as 2007. The nine non-residential applications did not generate any additional net metering costs, the same as 2007. Net metering costs are not included in customer or utility costs in Table 1.
2. Trade allies (experience working with solar community goal)
- a. Eighteen contractors performed the 2008 installations, an increase of six compared to 2007.
 - b. Eleven contractors performed one installation each.
 - c. Two contractors performed two installations each.
 - d. One contractor performed three installations.
 - e. One contractor performed four installations.
 - f. One contractor performed five installations.
 - g. One contractor performed six installations.
 - h. The 2008 contractor with the highest installation count doubled their installations compared to 2007. The 2008 contractors with the second and third highest installation count performed the same number of installations in 2007.
3. Customers (rate of consumer installations goal)
- a. Participants were from nineteen unique cities, an increase of six from 2007.
 - b. Participant count in the top three cities are: Salt Lake City (6), Moab (5), Ivins (3). Salt Lake City and Moab also had high participant counts in 2007.
 - c. Three cities had two participants. Twelve cities had one participant.
 - d. Customers were slow to return Attestation certificates for all projects including those completed in 2007. This finding is similar to 2007.
 - e. Customers did not submit applications for completed projects. This represents a change from 2007.
 - f. The most commonly cited reason for dropped projects was changes in available funding for both the overall project and in some cases for upgrades such as solar equipment.

4. Marketing (program administration logistics & solar community goals)
 - a. Similar to the first year of the program, proactive trade allies are using personal selling to market the customer to end use customers.
 - b. Applications are being completed and submitted by the trade allies. This is being done as service for customers and is similar to the first year of the program.
 - c. The program funded a sponsorship for the 2008 Utah Solar Tour. This sponsorship included a print ad in the tour magazine.

5. Equipment availability (program administration logistics & solar community goals)
 - a. Customers or trade allies did not report equipment shortages or schedule delays related to equipment availability in 2008.

6. Allocation of program incentives (program administration goal)
 - a. Even with a full year for approved projects to be constructed, changes in customer's available funding throughout the year precluded all of the available capacity and incentives from being fully utilized in the prescribed time frames.
 - b. Annual program allocations pose an on-going administrative burden such as communications, chronological processing requirements, etc.
 - c. Development of a waiting list was a good idea to help maximize yearly installation and compensate for project cancellations, but lead times on waiting list projects and timing of canceled projects both pose challenges to fully allocating annual program incentives.
 - d. The 2008 waiting list added communication challenges, i.e., applicants on the waiting list should not begin a project until the program administrator has provided notification of application acceptance; a spot on the waiting list does not pre-reserve funds for the next year, etc.
 - e. The shortfall in allocated incentives for 2008 was largest in the non-residential customer group which is similar to 2007

In summary, findings from 2008 indicate costs per installed watt were comparable to 2007 when outliers are removed. In 2008 costs per installed watt are skewed by three projects utilizing donated equipment and/or labor. 2008 installed costs are comparable to original estimates of \$10/watt. The number of contractors has increased but a few contractors still account for most of the installations. Marketing continues to be done with contractors utilizing personal selling and including the program application process as part of their sales process. The annual program allocation process driven by limited funding poses administration challenges when approved projects encounter funding or schedule delays and there is not a “good fit” (ready to begin construction and approximately the same size) replacement project with an approved application waiting in the wings. Neither the program administrator nor the Company expected there would be a carry-over from 2008 into 2009 and we certainly didn’t expect the magnitude of the non-residential carry-over.

Recommendations for the next year

1. Carry over the “unused 2008 kW allocation” (7.015 kW for residential installations and 24.245 kW for non-residential applications) to the 2009 program. To ensure consistent marketing messages surrounding annual kW allocations, the addition will occur as part of the 2009 tracking by the program administrator and will not be included as a specific roll-over amount⁶. This is consistent with the way the 2007 program was handled.
2. Add some quantification of “lead time” to waiting list applicants, so replacement projects are a better fit for cancelled projects.
3. Continue the informal program administrator reminder to customers with installed projects to provide completed Attestation Forms. Implement Company branded communication to follow-up.
4. Continue informal communication to solar trade ally community on importance of generation data from actual installations and that missing, incomplete or inaccurate

⁶ Since pilot program revenue requirements were established based on five full years of program operation, the re-allocation decision was made to compensate for the short falls in projects completion from 2007 that rolled into 2008 and short falls from 2008 that are carried over into 2009. In other words, the intent is to deploy five years of funding to acquire the five year program targets even if each year is not exactly twenty percent of the total.

Attestation forms are a barrier to complete assessment of program effectiveness.
 Implement formal program administrator or Company communication to follow-up.

The company recognizes that accurate assessment of installation output is essential to assessing performance of both equipment and the program as a whole. In addition to the information from the Attestation certificates which has been slow to come back to the program administrator, the Company has retained a third party consultant to estimate hourly output of the systems using the National Renewable Energy Laboratory (NREL) PV Watts calculator available at http://rredc.nrel.gov/solar/codes_algs/PVWATTS/version1/ and the information about each system in the 2008 program provided in detail in Appendix One. This is similar to the approach utilized for the 2007 program. Results are provided below.

Table 3. Levelized cost of Energy⁷

Customer Cost	\$1,489,795
Incentives	\$250,767
Administration	\$91,714
Meters (24 installations * \$125/meter)	\$3,000
Total Annual Generation (MWh)	251,667
Levelized Total Cost (\$/MWh)	\$545.14
Levelized Utility Cost (\$/MWh)	\$118.86
2007 IRP 49% Load Factor Decrement Levelized Cost (\$/MWh)	\$81.57

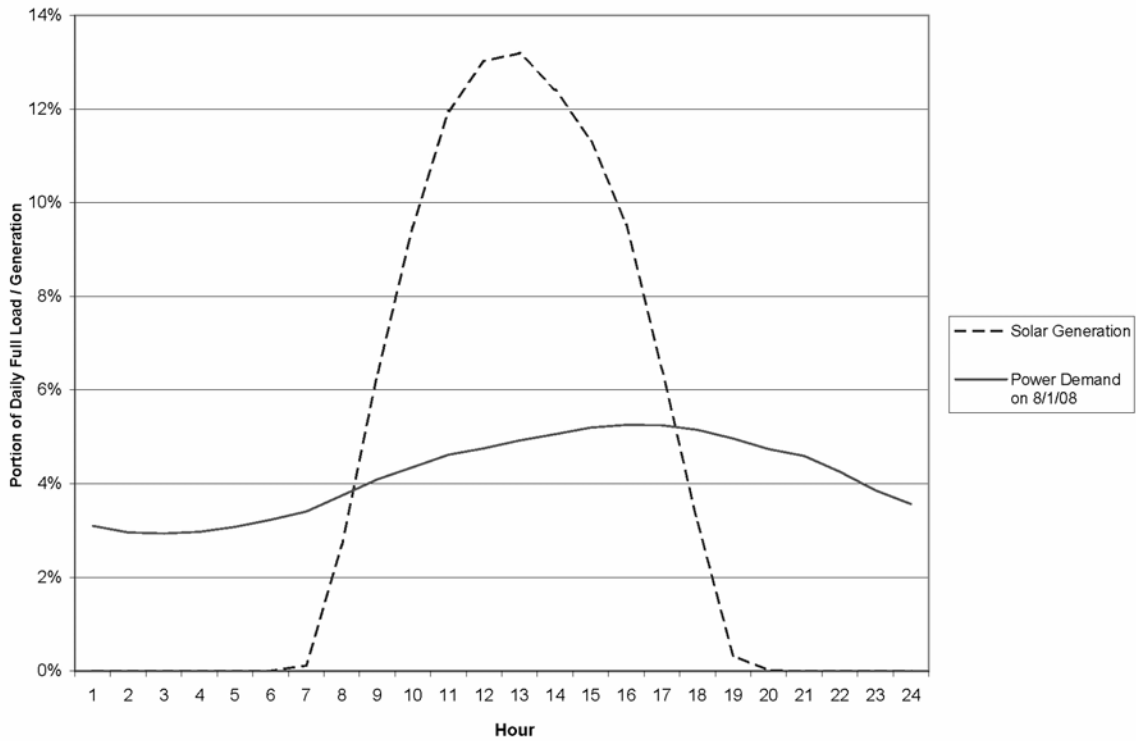
⁷ Levelized at 7.1% discount rate over 25 year estimated life.

Table 4. Results for standard economic tests

All Measures				AC: IRP 49% LF Decrement	
	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.5451	\$1,584,509	\$319,577	(\$1,264,932)	0.202
Total Resource Cost Test (TRC) No Adder	0.5451	\$1,584,509	\$290,525	(\$1,293,985)	0.183
Utility Cost Test (UCT)	0.1189	\$345,481	\$290,525	(\$54,956)	0.841
Rate Impact Test (RIM)		\$366,369	\$290,525	(\$75,844)	0.793
Participant Cost Test (PCT)		\$1,239,029	\$324,045	(\$914,984)	0.262
Lifecycle Revenue Imp (\$/kWh)				\$0.0000000989	

The ability of solar resources to meet peak demand in Utah is illustrated in the following table. The shape of the generation output is derived from actual installation data entered into the NREL calculator. The peak day from 2008 company sales data was utilized to determine the peak day and the output for the systems for that day is displayed in the graph below.

Figure 1. Peak Day Generation and Load Profile (August 1, 2008)



This analysis indicates the solar generation resources deliver peak output between 1-2 PM and the company system peaks approximately two hours later. Solar resources, while not strictly one hundred percent coincident with system peaks do contribute energy during the high load and high energy cost hours of summer days. Hourly information used in providing this illustration as well as for each hour of the year is being stored electronically as supporting documentation for the 2008 program.

Appendix- 2008 project detail

Project ID	Status	City	Incentive Amount	Total System size (kW)	Applied Residential Installation (kW) 57 - 59,945	Applied Commercial Installation (kW) 50 - 96,695	Total System Cost (\$)	\$/kW (system)	\$/watt
801061920	Completed	Moab	\$2,620.00	1.310	1.310		\$9,399.24	\$7,174.99	\$7.17
801061939	Completed	Castle Valley	\$6,000.00	4.446	3.000		\$43,217.52	\$9,720.54	\$9.72
801062305	Completed	Moab	\$2,620.00	1.310	1.310		\$13,858.05	\$10,578.66	\$10.58
801062309	Completed	Highland	\$5,580.00	2.790	2.790		\$26,948.82	\$9,659.08	\$9.66
801062312	Completed	Dammeron Valley	\$6,000.00	3.587	3.000		\$37,500.00	\$10,454.42	\$10.45
801062313	Completed	SLC	\$5,158.52	2.579	2.579		\$27,899.59	\$10,816.90	\$10.82
801062314	Completed	Virgin	\$3,780.00	1.890	1.890		\$19,413.27	\$10,271.57	\$10.27
801062316	Completed	Ivins	\$3,504.00	1.752	1.752		\$20,463.72	\$11,680.21	\$11.68
801062317	Completed	Ivins	\$8,570.00	4.285		4.285	\$41,685.62	\$9,728.27	\$9.73
801062321	Completed	Moab	\$6,000.00	3.760	3.000		\$38,385.89	\$10,209.01	\$10.21
801070702	Completed	SLC	\$3,808.00	1.904	1.904		\$19,708.00	\$10,350.84	\$10.35
801080949	Dropped/re-apply later			0.000					
801081214	Completed	La Sal	\$6,000.00	4.470	3.000		\$26,374.90	\$5,900.43	\$5.90
801090938	Completed	Ivins	\$6,000.00	6.650	3.000		\$64,000.00	\$9,624.06	\$9.62
801141526	Completed	West Valley City	\$30,000.00	19.699		15.000	\$202,727.17	\$10,291.24	\$10.29
801151420	Completed	Morgan	\$5,564.80	2.782	2.782		\$23,598.00	\$8,482.39	\$8.48
801161451	Completed	SLC	\$3,174.00	1.587	1.587		\$13,355.23	\$8,415.39	\$8.42
801181226	Dropped/re-apply later	Morgan			0.000				
801181442	Dropped/re-apply later	Park City		0.000					
801190914	Dropped/re-apply later	Brookside		0.000					
801211002	Completed	Mountain Green	\$4,174.00	2.087	2.087		\$27,532.00	\$13,192.14	\$13.19
801211052	Completed	South Jordan	\$3,864.00	1.932	1.932		\$4,000.00	\$2,070.39	\$2.07
801220730	Completed	Cedar City	\$5,282.00	2.641		2.641	\$25,021.38	\$9,474.21	\$9.47
801221040	Dropped/re-apply later	Leeds		0.000					
801231604	Completed	Moab	\$6,000.00	4.140	3.000		\$25,545.58	\$6,170.43	\$6.17
801240729	Completed	La Verkin	\$5,280.00	2.640	2.640		\$42,923.26	\$16,258.81	\$16.26
801240950	Completed	St George	\$6,000.00	5.357	3.000		\$45,004.19	\$8,401.01	\$8.40

Project ID	% of Sunshine	System Orientation	System Tilt Angle (Degree,°)	Module Manufacturer	Module Model	Module Quantity	Module CEC Rated Watts Output	Inverter Manufacturer	Inverter Model	Inverter CEC Weighted Efficiency %
801061920	100%	S	39	Evergreen	180	8	180.0	KACO	1501xi	94.0%
801061939	100%	S	39	Evergreen	190	26	180.0	SMA	5000 US	95.5%
801062305	100%	S	39	Evergreen	180	8	180.0	SMA	1800 U	91.5%
801062309	100%	S	40	Schott	ASE-270-DFG/50v	12	300.0	Outback	GVFX3648	91.0%
801062312	100%	S-SW	37	Mitsubishi	PV-MF180UD4	12	159.0	Fronius	IG 4000	94.0%
801062313	95%	S-SW	20	Evergreen	ES 190 SL	16	168.8	Xantrex	GT 3.3	94.5%
801062314	100%	S	summer 25, winter 55-60	Evergreen	ES 200	10	200.0	Xantrex	SW 4048	90.5%
801062316	100%	SW	Adjustable	Conergy/SunTec	S 175MU	12	154.5	Fronius	IG 3000	94.0%
801062317	100%	S	30	Sharp	NE-170U1	30	149.9	Fronius	IG 5100	94.5%
801062321	100%	S	39	Evergreen	ES 180	22	180.0	SMA	3000 SU	95.5%
801070702	90%	S	Adjustable 34-52	Evergreen	ES 190	12	168.8	Fronius	IG 3000	94.0%
801080949		S	35	Evergreen	Spruce 190W	18	168.8	SMA	SB3300US	94.5%
801081214	100%	S	22	Evergreen	180 SL or RL	26	180.0	SMA	SB5000US	95.5%
801090938	100%	S	20	Kyocera	KC 175 GT	40	175.0	SMA	SB 6000 US	95.5%
801141526	100%	S	45	Evergreen	ES 190 RL	108	190.0	SMA	SB 6000 US	95.5%
801151420	100%	S	20	Uni-Solar	PVL-136	21	136.0	Fronius	IG 3000	94.0%
801161451	100%	S	42	Evergreen	ES 190	10	168.8	Xantrex	GT 2.8	94.0%
801181226	100%	S	45	Evergreen	ES A 205	16	185.2	Xantrex	XW 4024	91.0%
801181442		S-SW	40	Evergreen	Spruce 190W	6	168.8	SMA	SB 1100U	91.0%
801190914	100%	S	37	Sharp	NE 170 U1	7	149.9	Fronius	IG 2000	95.2%
801211002	100%	S	45	Mitsubishi	PV-MF185UD4	12	185.0	Fronius	IG 3000	94.0%
801211052	100%	W-SW	30	Sharp	142 Watt	16	125.0	Aurora	PVI 3600	94.5%
801220730	100%	S	30	Conergy	S 175MU	18	154.5	Fronius	IG 4000	94.0%
801221040		S	28	Day 4	48MC170	12	151.4	Fronius	IG 3000	95.0%
801231604	100%	S	39	Evergreen 9/22: REC	180 215	24	180.0	SMA 9/22: SMA	4000 US 9/22: 5000 US	95.5%
801240729	100%	S	28	Webel	W1600	18	143.9	SMA Sunnyboy	SB6000U	94.5%
801240950	100%	S	30	Sharp	NE 170 UI	33	142.9	SMA	5000 U	95.5%

Project ID	Status	City	Incentive Amount	Total System size (kW)	Applied Residential Installation (kW) 57 - 59,945	Applied Commercial Installation (kW) 50 - 96,695	Total System Cost (\$)	\$/kW (system)	\$/watt
801241200	Completed	SLC	\$3,680.00	1.840	1.840		\$19,488.00	\$10,591.30	\$10.59
801291606	Dropped/re-apply later	SLC		0.000					
801310813	Dropped/re-apply later	Cedar City		0.000					
802051414	Completed	Hollanday	\$4,129.00	2.064	2.064		\$21,287.46	\$10,313.69	\$10.31
802112225	Completed	West Valley City	\$2,922.00	1.461	1.461		\$17,595.00	\$12,043.12	\$12.04
802140946	Completed	Cedar City	\$5,153.56	2.577		2.576	\$37,768.53	\$14,657.26	\$14.66
802141428	Completed	Circleville	\$1,699.74	0.850	0.849		\$12,692.00	\$14,934.05	\$14.93
802191510	Completed	Moab	\$9,570.96	4.785		4.785	\$66,684.51	\$13,934.76	\$13.93
803031454	Completed	Kearns	\$2,306.00	1.358	1.153		\$8,000.00	\$5,891.02	\$5.89
802261411	Completed	Wanship	\$6,346.00	3.173		3.173	\$66,100.66	\$20,832.23	\$20.83
804010846	Dropped/re-apply later	West Valley		0.000					
804070924	Completed	South Jordan	\$30,000.00	17.960		15.000	\$191,500.00	\$10,662.58	\$10.66
804211043	Completed	SLC	\$30,000.00	23.531		15.000	\$169,849.68	\$1,659.00	\$1.66
805020751	Dropped/re-apply later	Park City		0.000					
805021527	Completed	SLC	\$19,980.00	9.990		9.990	\$80,268.00	\$8,034.83	\$8.03
805061056	Dropped/re-apply later	SLC		0.000					
805090917	Dropped/re-apply later	Diamond Valley		0.000					
806091305	added to waiting list	West Valley City		0.000					
NA	incomplete/not approved	SLC		0.000					
807151330	added to waiting list	SLC							
NA	incomplete/not approved	Syracuse							
Totals			\$ 250,767	153.187	52.930	72.450	\$1,489,795	\$9,725.31	\$9.73
								min	\$2.07
								max	\$20.83
								without max and below \$6	

Project ID	% of Sunshine	System Orientation	System Tilt Angle (Degree,°)	Module Manufacturer	Module Model	Module Quantity	Module CEC Rated Watts Output	Inverter Manufacturer	Inverter Model	Inverter CEC Weighted Efficiency %
801241200	100%	S	30	Evergreen	Spruce 190W	14	168.8	Power One	Aurora PVI-3600	95.0%
801291606		S	22.5	Solar Fun	200 watt panel	84	187.0	Xantrex	GT 5.0	95.0%
801310813		S	25	Sharp	NE 170 UI	18	149.9	Fronius	3000	95.0%
802051414	95%	SW	45	Mitsubishi	PV-MF185UD4	12	185.0	Outback	GVFX3648	93.0%
802112225	100%	S	40	Solar World	SW 165	6	147.3	Sunny Boy	700 U	91.5%
802140946	100%	S	37	Sharp	NE 170 UI	18	149.9	SMA	3000 U	95.5%
802141428	100%	S	18	Solar World	SW 165	6	149.1	Fronius	IG 3000	94.0%
802191510	100%	S	39	Evergreen	ES 190	30	168.8	Fronius	IG 5100	94.5%
803031454	100%	S	45	Evergreen	ES 180	7	180.0	SMA American (Sunny Boy)	SB 1800 V	91.5%
802261411	100%	S	26.5	Evergreen	ES 180	20	168.8	Fronius	IG-4000	94.0%
804010846		S	30	Sanyo	HIP 200 BA 3	56	200.0	SMA	SB7000, SB4000	97.0%
804070924	100%	S-SW	41	Evergreen	ES 190	112	168.6	Xantrex	GT5.0 NA-208	95.5%
804211043	100%	S	10	Sharp	224 W ND 224UIF	110	197.8	SMA	SB7000US	96.0%
805020751		S	41	Solar Fun	SF-190-27-M200	112	176.2	Xantrex	GT5.0 NA-240/208	95.5%
805021527	100%	S	54	Evergreen	190 Watt Panels	54	185.0	Xantrex	GT 2800	94.0%
805061056		SW	40	Evergreen	ES 190	33	167.2	SMA	4000 US	95.5%
805090917		S	25	Sharp	NE 170 UI	10	149.9	Fronius	IG 4000	95.2%
806091305		S	19	Sol Gen/BP Solar	UT 2050 P	14	175.0	PV Powered	PVP2500	95.5%
NA		S	40	Evergreen	Spruce 190W	12	168.8	Xantrex	GT 3.3	95.0%
807151330										
NA										