

# Year 2 Process Evaluation Report for SolarSaver Pilot Program



**Hawaiian Electric Company**

*Prepared for*

*Hawaiian Electric Company*

*Maui Electric Company*

*Hawaii Electric Light Company*

*Submitted by:*

*Johnson Consulting Group*

*1033 Lindfield Drive*

*Frederick, MD 21702*

*Prepared by:*

Katherine Johnson

301/461-4865

[kjohnson@johnsonconsults.com](mailto:kjohnson@johnsonconsults.com)

[www.johnsonconsults.com](http://www.johnsonconsults.com)



**Johnson**  
CONSULTING GROUP

**October 15, 2009**

**FINAL REPORT**

## Table of Contents

Executive Summary .....	iv
1. Introduction.....	1
1.1 Background on the Pay-As-You-Save Program Model .....	1
1.2 Process Evaluation Background .....	2
2. Document Review.....	4
2.1 Methodology .....	4
2.2 Key Findings.....	4
3. Staff Interviews.....	13
3.1 Methodology .....	13
3.2 Roles and Responsibilities .....	14
3.3 Program Implementation.....	14
3.4 Program Tracking and Administration.....	15
3.5 Areas for Program Improvement .....	18
4. MECO Customer Interviews.....	20
4.1 Awareness .....	20
4.2 Customer Participation .....	21
4.3 Contractor Assessment .....	24
4.4 Free Ridership Findings .....	24
4.5 Customer Satisfaction with the SSP Program .....	25
4.6 Areas for Program Improvement.....	28
4.7 Customer Demographics .....	28
5. Key Conclusions and Recommendations.....	31
5.1 Conclusions.....	31
5.2 Program Recommendations.....	33

### List of Figures

Figure 1: Distribution of Applications Received by Operating Company.....	5
Figure 2: Comparison of Program Results to Program Goals .....	6
Figure 3: Comparison of Program Year 2 Results to Goals by Operating Company .....	7
Figure 4: SSP Application Denial Reasons in PY2 by Operating Company.....	9
Figure 5: Comparison of Total Application Processing Times.....	9
Figure 6: Comparison of Applicant Types Across Program Years .....	10
Figure 7: Percent of Applicants Who Received Previous Bids .....	10
Figure 8: System Size Distribution in PY2.....	11
Figure 9: Comparison of PY2 Average Cost of Systems After Rebates by Operating Company .....	12
Figure 10: Ways Respondents First Became Aware of SSP Program.....	20
Figure 11: Distribution of SSP Program Participant Installations by Year .....	23
Figure 12: Length of Enrollment Process .....	23
Figure 13: Types of Other Financing Options Considered.....	25
Figure 14: Average Satisfaction Ratings With SSP Enrollment Elements.....	26
Figure 15: Comparison of Overall Satisfaction Ratings Among Respondents.....	26
Figure 16: Distribution of Ethnic Background of Respondents.....	29
Figure 17: Distribution of Household Income Levels .....	30
Figure 18: Distribution of Age Range of Respondents.....	30

## List of Tables

Table 1: SSP Program Process PY 2 Evaluation Objectives by Activity .....	4
Table 2: SolarSaver Pilot Program Billing Results Year Ending June 30, 2009 .....	5
Table 3: SSP Program Application Status for PY2 Compared to PY1* .....	6
Table 4: SSP Program Application Status for PY2 Across Each Operating Company .....	6
Table 5: Price Cap Matrix for PY2 by Operating Company.....	7
Table 6: Financing Status for PY2.....	8
Table 7: Reasons for SSP Program Application Denials in PY2.....	8
Table 8: Number of Applicants Who Received Previous Bids by Operating Company .....	11
Table 9: SSP Program Demographics and Characteristics by Operating Company.....	11
Table 10: SSP Program Solar Water Heater System Characteristics by Operating Company .....	12
Table 11: Summary of Staff/Stakeholder Interviews by Staff Type .....	13
Table 12: Evaluation Objectives Addressed in Staff/Stakeholder Interviews .....	13
Table 13: Other Ways Customers Became Aware of the SSP Program .....	21
Table 14: Reasons MECO Customers Decided to Participate in the SSP Program.....	22
Table 15: Month of SWH Installation .....	22
Table 16: Reasons for Recommending This Contractor.....	24
Table 17: Likelihood of Free Ridership for SSP Program.....	24
Table 18: Customers' Perceptions of Changes in Monthly Bill Since SWH was Installed.....	27
Table 19: Customers' Perceptions of Changes in Electric Usage Since SWH was Installed.....	27
Table 20: Reasons for Recommending SSP Program to Others.....	28
Table 21: Ways the SSP Program Could Be Improved .....	28

## Executive Summary

Johnson Consulting Group (JCG) was engaged by Hawaiian Electric Company, Inc. (HECO) to conduct a process evaluation of the second Program Year (PY2) of the SolarSaver Pilot Program (SSP Program)<sup>1</sup>. The evaluation focuses on determining how effective this demand side management program was in “overcoming the barrier of the up-front costs in the residential solar water heating market<sup>2</sup>.” The SSP Program is offered across all three operating companies: Hawaiian Electric Company, Inc. (HECO), Maui Electric Company, Ltd. (MECO), and Hawaii Electric Light Company, Inc. (HELCO), which serve 95% of the state’s 1.2 million residents on the islands of O`ahu, Maui, Hawai`i, Lana`i and Moloka`i.

The SSP Program is a 3-year pilot program (June 30, 2007 – June 30, 2010) designed to overcome the barrier of up-front costs in the residential solar water heating market. The SSP Program was created in order to satisfy the requirements of Act 240 (SB2957), which mandated that the utilities shall establish a “pay-as-you-save” type program similar to the nationally recognized Pay As You Save<sup>®</sup> trademarked financing program. Residential customers participating in the SSP Program will incur no up-front cost and will pay for the cost of the installed solar water heating system over time through the savings in the participant’s electricity bill<sup>3</sup>. The focus of the SSP Program is tenants and landlords and home owners of existing homes requiring water heating retrofits, especially those who have received previous bids for solar water heater (“SWH”) installations.<sup>4</sup>

The SSP Program was mandated by the Hawaii State Legislature based on their understanding of the Pay-As-You-Save (PAYS) model. The goal was to offer a program that would reduce the higher up-front cost of installing energy efficiency improvements so that the energy savings pay for the cost of the installation. HECO program staff testified before the legislature to help guide them in the interpretation of this regulatory order. The program design was also influenced by guidance from the Division of Consumer Advocacy - Department of Commerce and Consumer Affairs, Hawaii Solar Energy Association and Hawaii Renewable Energy Alliance and Kauai Island Utility Cooperative.

Specifically, this report summarizes the findings from the following activities: a review of the program database; in-depth interviews with the staff and program implementers; and customer surveys of MECO customers including those who are currently participating in the program as well as those who have terminated their participation (i.e., program drop outs).<sup>5</sup>

The PY2 process evaluation confirmed many of the findings from PY1 as well as identified additional areas for the HECO SSP program staff to consider as the SSP Program moves into its final year of operation.

---

<sup>1</sup> The principal evaluator, Katherine Johnson, conducted both evaluations for PY1 and PY2.

<sup>2</sup> Rider SSP Program Tariff Sheets, Effective June 30, 2007

<sup>3</sup> The SolarSaver Fee shall be equal to 80% of the estimated monthly energy bill savings for a family of four at the time that the SolarSaver Fee is set by the utility.

<sup>4</sup> HECO SSP Program Request for Proposal

<sup>5</sup> MECO customers were surveyed in PY2 because they were underrepresented during the PY1 evaluation.

- **Program Administration**

- PY2 was a very successful year for the SSP Program with the program receiving a total of 413 applications, exceeding goals by 15 percent. A total of 328 applications were approved and 299 were processed after 29 were cancelled. This is a significant increase in overall application volume compared to PY1.
- To accommodate the increased demand for the program, both HECO and HELCO received permission to tap into PY3 funding. This accelerated the spending of PY3 funds and the program was out of money for the installation of new SWH systems by August 2009 in these two utility service territories.<sup>6</sup>
- Many of the administrative difficulties identified in the PY1 process evaluation have been resolved, as the program staff and implementation team have become more comfortable with the process.
- Application processing is still a labor-intensive process; the major focus on program administration has shifted from processing new applications to managing the existing ones. Currently, there are 477 SSP loan applications that must be reviewed, tracked, and matched up each month with the billing cycles. This continues to be an administrative burden for program staff.
- Overall program responsibilities stayed the same during PY2. HELCO made the transition away from a dedicated full-time SSP and Residential Efficient Water Heating (REWH) Program manager in anticipation of the decreased level of SSP Program activity in PY3 and the transition of the REWH Program to non-utility administration.

- **Program Billing and Collections**

- The amount of time spent on billing and collections is expected to increase in PY3 as the program's focus shifts from processing new applications to monitoring or changing the status of existing participants. Along with fee payment monitoring and collections, during PY2, several loans were either paid off early or subjected to loan subordination, so the utility staff anticipates an increase in the need for clerical support during the remaining years of the loan period.
- There is no easy way to streamline the billing process. This is a challenge for customers who have enrolled in automatic bill payment services for their light and power bill who "forget" to pay their separate SSP monthly bill as well as for program staff. This continues to be a labor-intensive process since the billing staff has to manually track the status and timing of each of the more than 477 SSP loan applications for the life of the loans.

---

<sup>6</sup> On June 10, 2009, HELCO requested approval to carryover unspent PY2 funds to PY3 and to reallocate funds between budget line items to allow systems approved but unable to be installed in PY2 to be installed and paid for in PY3. The request was approved by the Commission.

- Program collections have not yet become an issue for this program, as only a few customers were delinquent in their SSP accounts. However, it was difficult to develop a proper way to identify and manage those few customers. One obstacle was that these customers paid the electric portion of their bills, usually through an automatic bill payment service, but did not pay the separate SSP bill which has been mailed to them. However, because the total amounts of these delinquent bills were usually less than \$100, these were not high priority issues for the collections department. However, as the program continues, collections may become a larger issue for the program even though the delinquent amounts due may be relatively low.
  - The program staff believes that the relatively low rate of collections to date may be due to the credit screening required for SSP Program applicants. However, this may become a bigger issue for the program as these loans are transferred to new electric account holders.
  - The staff is concerned that they may not have enough resources to process these collections for SSP applications. This may also require developing new reports to monitor SSP Pilot applications from the Information Technology Services Department.
- **Free Ridership**
    - Both the staff interviews and customer surveys confirmed that free ridership is not an issue for this program during PY2.
- **Customer/Contractor Satisfaction**
    - The participating customers reported a high degree of satisfaction with both MECO as well as with the SSP Program. Program staff from all three utility companies also reported that they did not receive any customer complaints during PY2.
    - Staff from all three utilities reported that the number of participating contractors had stabilized during PY2. They also reported that overall contractors were pleased with the SSP program operations in PY2, although they were disappointed that the program may be discontinued in the future. Some contractors also voiced their opinions on the system price caps constraining the number and size of the systems that could be installed.
- **Barriers to Program Participation**
    - For MECO, the major barrier to participation continues to be a lack of awareness of the program. While the survey respondents suggested that MECO should increase overall program awareness, this may not be feasible as the program winds down.

- There are still few tenants and landlords participating in the program. A major recommendation from PY1 was to expand outreach to the low income and rental communities. While the utility staff reported they increased awareness among these groups following the request for additional funding to expand the utilities' outreach, once the request for expansion of the program was denied, the utilities scaled back their efforts. Moreover, the funding constraints made it difficult to develop a separate outreach activity just for this community.

## ***Recommendations***

Based on these findings, the PY2 process evaluation led to the following program recommendations:

- Determine an “exit strategy” for SSP Program operations. HECO and HELCO have already exhausted all funds for new SSP Program installations in PY3, therefore the major focus of these activities will be to monitor the status of the current loans, continue billing and collection of fee payments, and respond to requests for early payoffs and loan subordination documents. In addition, there may be other processes that need to be developed as this program moves from a proactive to a reactive state, such as the processing of warranty reimbursements.
- Develop an easier way to communicate to customers the outstanding SSP Program fee amounts due. This was an issue raised during PY2 and the HECO staff is testing a new method of calculating the amounts remaining on the SSP Program bills. This method has been tested and the staff should continue with their plans to change the bill calculation methodology in PY3 and going forward.

# 1. Introduction

Johnson Consulting Group (JCG) was hired by Hawaiian Electric Company, Inc. (HECO) to evaluate its SolarSaver Pilot Program (SSP Program).<sup>7</sup> The SSP Program was offered across all three operating companies: Hawaiian Electric Company, Inc. (HECO), Maui Electric Company, Ltd. (MECO), and Hawaii Electric Light Company, Inc. (HELCO), which serve 95% of the state's 1.2 million residents on the islands of O`ahu, Maui, Hawai`i, Lana`i and Moloka`i. Specifically, this report summarizes the findings from the following activities: a review of the program database; in-depth interviews with the staff and program implementers; and customer surveys of MECO customers including those who are currently participating in the program as well as those who have terminated their participation (i.e., program drop outs). MECO customers were selected for the surveys during PY2 because they were under-represented in the PY1 process evaluation.

## ***1.1 Background on the Pay-As-You-Save Program Model***

The Pay-As-You-Save Program<sup>®</sup> Model was developed by the Energy Efficiency Institute, Inc. (EEI) in 2001, and has been implemented in several pilot programs in New Hampshire. Other utilities, such as Midwest Energy, have implemented their own versions of the PAYS Model.

One appealing aspect of this model is that it focuses on reducing a common market barrier: Split incentives for landlords and property developers<sup>8</sup>. As the EEI explained in its program materials:

PAYS products eliminate any disincentive to invest in energy efficiency for developers and landlords who do not pay the energy bills. With PAYS products, these decision makers can approve installation of measures they know improve the value of their buildings and that will reduce occupants' energy bills without incurring any financial obligation themselves" © 2001, Energy Efficiency Institute, Colchester, VT [http://www.paysamerica.org/PAYSFiling\\_Final\\_.2.pdf](http://www.paysamerica.org/PAYSFiling_Final_.2.pdf)

Two key features of the pilot programs implemented in other utility service territories were that these programs:

1. Specifically targeted the rental housing market and
2. Limited program participation to specific consumer groups.

---

<sup>7</sup> The principal evaluator, Katherine Johnson, conducted both evaluations for PY1 and PY2.

<sup>8</sup> Eliminating Split Incentives. When developers, property owners and managers make equipment purchasing decisions for premises for which they do not pay energy costs, there is a split incentive. The developer, property owner or manager has an interest in keeping his or her costs as low as possible and energy efficiency or life-cycle cost impacts are often not considered, despite the fact that more efficient equipment can result in lower energy costs to the occupants, © 2001, Energy Efficiency Institute, Colchester, VT [http://www.paysamerica.org/PAYSFiling\\_Final\\_.2.pdf](http://www.paysamerica.org/PAYSFiling_Final_.2.pdf)



On October 24, 2006 the PUC opened an investigation to examine issues and requirements raised by, and contained in, Hawaii's Solar Water Heating Pay As You Save Program, Act 240. On June 29, 2007, the PUC issued Decision and Order No. 23531 which approves with modifications, the proposed Solar Water Heating PAYS Program tariffs of HECO, HELCO, MECO and Kauai Island Electric Cooperative.

The legislature found that the "up-front cost of the installation is a barrier preventing many Hawaii residents from installing (SWH) systems and that the 'renewable energy technologies income tax credits and electric utility rebates have not been enough of an incentive to overcome these upfront costs, especially for rental housing and homes in need of retrofit for these important energy saving devices.'"<sup>9</sup>

The D&O also approved of another modification from the original intent of these types of programs by expanding the focus beyond the rental market and opening up the program to all eligible residential home owners.

The SolarSaver Pilot Program . . . is a pilot program designed to overcome the barrier of up-front costs in the residential [SWH] market. Residential customers participating in the [SolarSaver] Pilot Program will incur no upfront cost and will pay for the cost of the installed [SWH] system over time through the savings in the participant's electricity bill. The focus of the [SolarSaver] Pilot Program is on "rental housing and homes in need of retrofit for these important energy savings devices."<sup>10</sup>

While the HECO Companies complied with this modification, they did want to direct program efforts to tenants and those home owners who had previously considered SWH installations. The Commission in its D&O stated that:

The commission finds that the HECO Companies and KIUC may concentrate their pilot program marketing efforts on property owners, but cautions that the HECO Companies should target the entire market of eligible customers.<sup>11</sup>

## **1.2 Process Evaluation Background**

JCG met the SSP Program evaluation objectives by completing a comprehensive yet cost-effective, process evaluation. This approach was based on recognized best-practices for process evaluation such as those recommended in the California Evaluation Protocols.<sup>12</sup> Most importantly, the process evaluation gathered and compared data from a variety of sources, using a process called *triangulation*. This process ensured that the findings are reliable and accurately reflect the true program's benefits and impacts.

---

<sup>9</sup> Commission Docket 2006-0425, June 29, 2007. p. 2.

<sup>10</sup> Commission Docket 2006-0425, June 29, 2007, p. 9

<sup>11</sup> Commission Docket 2006-0425, June 29, 2007, p. 33

<sup>12</sup> California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals, *prepared for* California Public Utilities Commission by The TecMarket Works Team Under Contract with and Directed by the CPUC's Energy Division, and with guidance from Joint Staff, April 2006

***The second year process evaluation objectives are to:***

- Review the program database to quantify key metrics for the second year of operation;
- Review the recommendations from the Year 1 Process Evaluation Report to determine if they were acted upon;
- Identify areas for program modifications and improvement, regarding both the design and implementation;
- Gather more in-depth information regarding program participation among MECO customers, since this group was under-represented in the PY1 process evaluation.

To achieve these objectives, the JCG conducted the following activities:

- Reviewed the current information, including the Program database and all supporting materials;
- Conducted in-depth interviews and surveys with Program management and supporting staff across all operating companies;
- Worked with Ward Research, a Hawaii market research company, to complete surveys with participating MECO customers as well as those customers who have left the program.

Table 1 illustrates the process evaluation approach to answer each specific question or objective as required to meet the evaluation objectives to comply with the legislative order for this evaluation.<sup>13</sup> ***These specific requirements are noted with an asterisk.***

---

<sup>13</sup> Attachment 1: HECO Reply Statement of Position, docket 2006-0425, filed 5-2-2007, pages 30-32 and Attachment 2: Decision and Order 23531, docket 2006-0425, filed 6-29-2007, pages 20-24

**Table 1: SSP Program Process PY 2 Evaluation Objectives by Activity**

Topic Area	Program Documents/ Database	Staff Interviews	Participating Customers	Program Drop Outs
<b>Program Characteristics/Metrics</b>				
Number of program participants*	√	√		
Pilot program cost*	√	√		
<b>Customer Demographics</b>				
Number of owner-occupants*	√		√	√
Number of landlords*	√		√	√
Customer account information			√	√
<b>SWH Demographics</b>				
Average lifecycle savings*	√			
Average cost and system size*	√			
Price quote for SWH installations*	√			
<b>Financing characteristics/metrics</b>				
Number of changes of electric account holders*	√			
Total/average amount financed	√		√	
<b>Default rate (if applicable)*</b>	√		√	
Reasons for loan default	√		√	
Number of defaults (if applicable)	√	√	√	√
<b>Program Impacts*</b>		√	√	√
Barriers to program participation		√	√	√
Number/reasons for applicants' rejection*	√			
Savings assumptions	√			
Savings impacts*	√			
Cost-benefit analysis of loan repayments*	√			
<b>Areas for Program Improvement*</b>			√	√
<b>Free Ridership</b>		√	√	
<b>Customer Satisfaction</b>		√	√	

\* *specific requirements* comply with the legislative order for this evaluation.

## 2. Document Review

### 2.1 Methodology

The first phase of this process evaluation was to review existing program materials. This review included examining the current program database which tracks all relevant program information.

### 2.2 Key Findings

The database reviewed included customer information related to applications submitted during Program Year Two (PY2) July 1, 2008 to June 30, 2009. (The database was provided as of August 28, 2009). The findings in this section describe the PY2 results in terms of solar water heater system costs, application status and the characteristics of the solar water heater (SWH) systems approved for installation during this time period.

## 2.2.1 Program Characteristics/Metrics

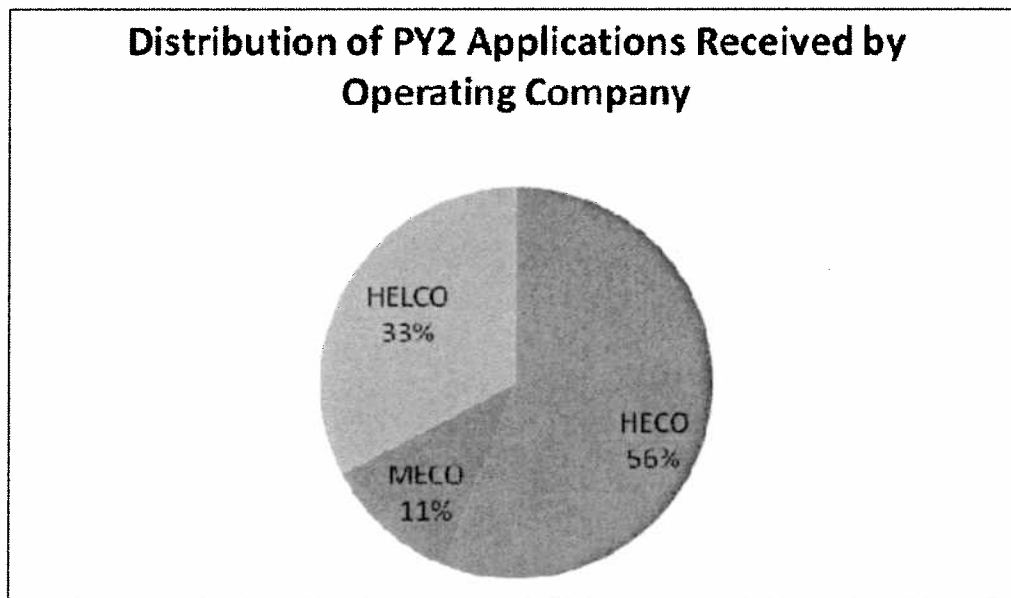
The total amount billed to program participants during PY2 was \$62,753.41.

Due to the lag in time between the approval, installation and billing processes, not all applicants were billed in PY2. HELCO accounts for approximately 18% of the system costs and HECO for 60% and MECO accounted for 22%.

**Table 2: SolarSaver Pilot Program Billing Results Year Ending June 30, 2009**

Results for Program Year 2	HECO	HELCO	MECO
Number of Applications Approved in PY2 that resulted in a system being installed in PY2	185	76	32 <sup>14</sup>
Total amount billed (\$) in PY2 for the applicants approved in PY2	\$ 37,958.79	\$ 11,103.38	\$13,691.24
SSP Program Fund Paid in PY2 for applicants approved in PY2	0	0	0

The SSP Program received a total of 413 applications during the PY2, which was 15 percent above the program goal of 350 applications. Overall, the program processed a total of 299 applications during PY2. HECO customers accounted for the majority of SSP applications received (56%) as shown in Figure 1.



**Figure 1: Distribution of Applications Received by Operating Company**

In PY2, a total of 413 applications were received and 328 approved with the remainder having been either declined or canceled by the *customer or utility* after the initial

<sup>14</sup> Note: Twelve SWH systems, which were approved but not installed in PY1. Therefore the total number of actual SWH systems installed for MECO in PY2 were 44.

screening was complete<sup>15</sup> (see Table 3). Table 4 illustrates these findings across each operating company, while Figures 2 and 3 compare these results to overall program goals.

**Table 3: SSP Program Application Status for PY2 Compared to PY1\***

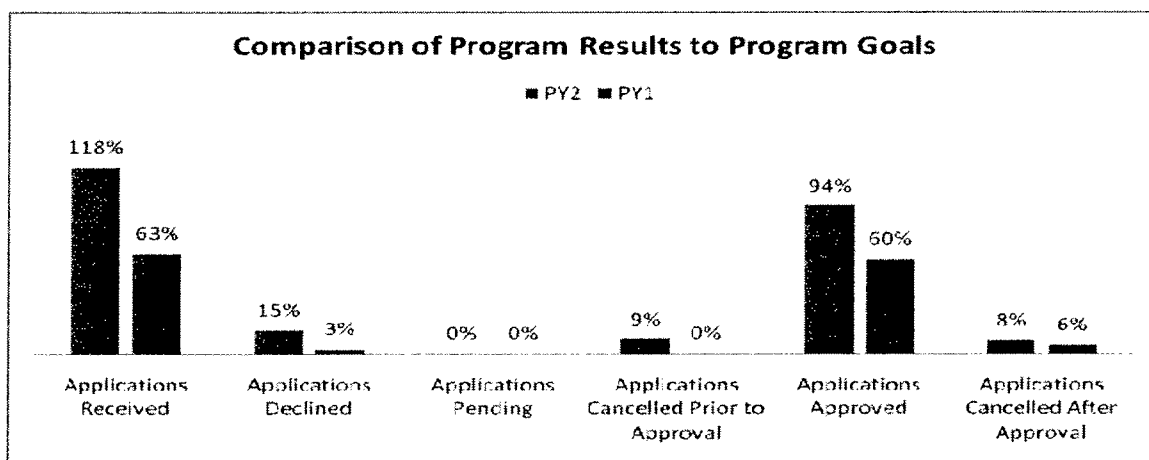
	Year 2 (2008-9)	Year 1 (2007-8)	Total Results to Date
<b>Program Goal</b>	350	200	550
Applications Received	413	222	635
Applications Declined	52	10	62
Applications Pending	0	0	0
Applications Cancelled Prior to Approval	33	1	34
Applications Approved	328	211	539
Applications Cancelled After Approval	29	20	49

\*Source SSP Program Database as of August 28, 2009

**Table 4: SSP Program Application Status for PY2 Across Each Operating Company**

	HECO 2008-9	MECO 2008-9	HELCO 2008-9	Total PY2
Program Goal	200	50	100	350
Applications Received	231	47	135	413
Applications Declined	18	5	29	52
Applications Pending	0	0	0	0
Applications Cancelled Prior to Approval	9	1	23	33
Applications Approved	204	41	83	328
Applications Cancelled After Approval	19	4	6	29

\*Source SSP Program Database as of August 28, 2009



**Figure 2: Comparison of Program Results to Program Goals**

<sup>15</sup> The SSP database tracks the customer application process in several different ways. This reflects the total number of customer applications that were approved but then were eventually discontinued on the part of the customer or companies. Tables 3 and 4 and Figures 1 and 2 display those customer applications that were declined as part of the initial customer qualification process.

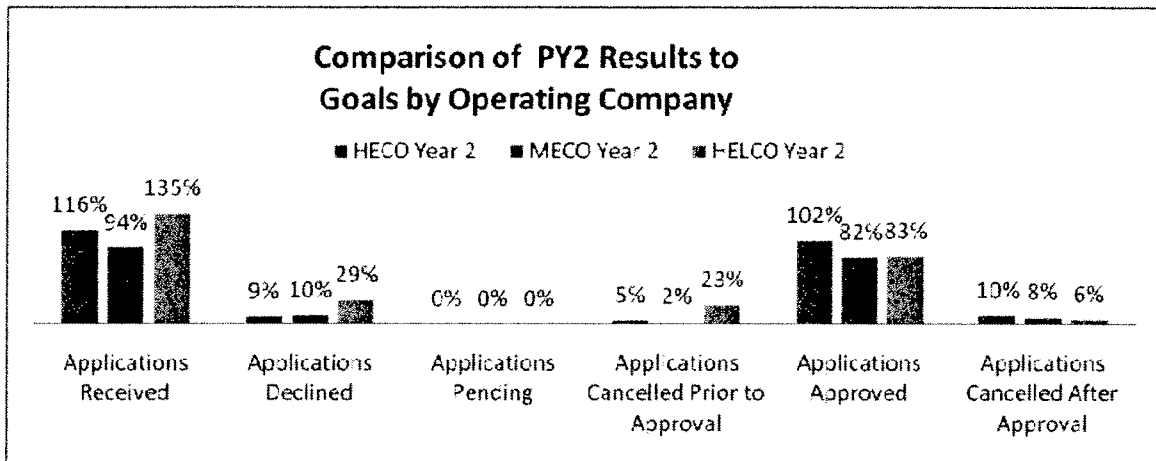


Figure 3: Comparison of Program Year 2 Results to Goals by Operating Company

## 2.2.2 Financing Characteristics/Metrics

Another critical element of this process evaluation is the financing characteristics during Program Year 2. Table 5 summarizes the price caps and monthly payment as determined by each operating company throughout PY2 by quarter.

Table 5: Price Cap Matrix for PY2 by Operating Company

	Q3 2008 <sup>1</sup>	Q4 2008 <sup>2</sup>	Q1 2009 <sup>3</sup>	Q2 2009 <sup>4</sup>
<b>HECO</b>				
Monthly Fee	\$ 44.88	\$ 46.49	\$ 32.06	\$ 25.65
Max SWH System Price Cap**	\$ 6,463.00	\$ 6,694.00	\$4,616.00	\$3,693.00
<b>HELCO</b>				
Monthly Fee	\$ 70.97	\$ 74.71	\$ 57.90	\$ 48.56
Max SWH System Price Cap**	\$10,220.00	\$10,758.00	\$8,337.00	\$6,992.00
<b>MECO (Maui Division)</b>				
Monthly Fee	\$ 67.89	\$ 64.41	\$ 41.78	\$ 36.56
Max SWH System Price Cap**	\$ 9,776.00	\$ 9,275.00	\$6,016.00	\$5,264.00
<b>MECO (Lanai Division)</b>				
Monthly Fee	\$ 78.33	\$ 78.33	\$ 55.70	\$ 48.74
Max SWH System Price Cap**	\$11,280.00	\$11,280.00	\$8,021.00	\$7,019.00
<b>MECO (Molokai Division)</b>				
Monthly Fee	\$ 74.85	\$ 76.59	\$ 60.92	\$ 48.74
Max SWH System Price Cap**	\$10,779.00	\$11,029.00	\$8,773.00	\$7,019.00
Footnote:				
1 - Q3 2008 = July 7 to October 5, 2008				
2 - Q4 2008 = October 6 to January 6, 2009				
3-Q1 2009= January 7 to April 5, 2009				
4-Q2 2009=April 6-June 30, 2009				
** Price Cap reflects POST-rebate system cost				

As Table 6 shows, of the 375 systems that have been installed during PY2, 10 more, which were holdovers from PY1 are now accounted for in the internal billing system.

Eight accounts have been transferred during the second year. There have been no loan defaults for participants approved in PY2.

**Table 6: Financing Status for PY2\***

Status	Total (n=375)	% of Total	HECO (n=232)	% of Total	MECO <sup>16</sup> (n=44)	% of Total	HELCO (n=99)	% of Total
System Installed (Actual)	375	100 %	232	100%	44	100%	99	100%
2nd Approval (DSMIS)	385	103%	237	0%	46	100%	102	103%
Systems Billing	372	99%	234	100%	47	107%	91	92%
Accounts Transferred	8	2.13%	6	2.59%	1	2.27%	1	1.01%
Accounts Paid	7	1.87%	6	2.59%	0	0.00%	1	1.01%

Source: SSP Program Database as of August 30, 2009

\* Demand Side Management Information System (DSMIS)

Most of the application denials (79%) were due to the failure of the applicant to meet the six month “good payment of the light and power bill” history requirement while 19 percent were denied due to the price cap (see Table 7).<sup>17</sup>

**Table 7: Reasons for SSP Program Application Denials in PY2**

Application Declined	Total (n= 52)	% of Total
Denied (price cap)	10	19%
Denied (credit)	41	79%
Denied (other)	1	2%
Total	52	100%

<sup>16</sup> Note: A total of 47 systems are billed in PY2, even though 12 were approved in PY1. Also, one account transferred in PY1 and one account transferred in PY2.

<sup>17</sup> The SSP database tracks the customer application process in several different ways. Tables 3 and 4 and Figures 2 and 3 display those customer applications that were declined as part of the initial customer qualification process.

Figure 4 illustrates the application denial rates across each operating company.

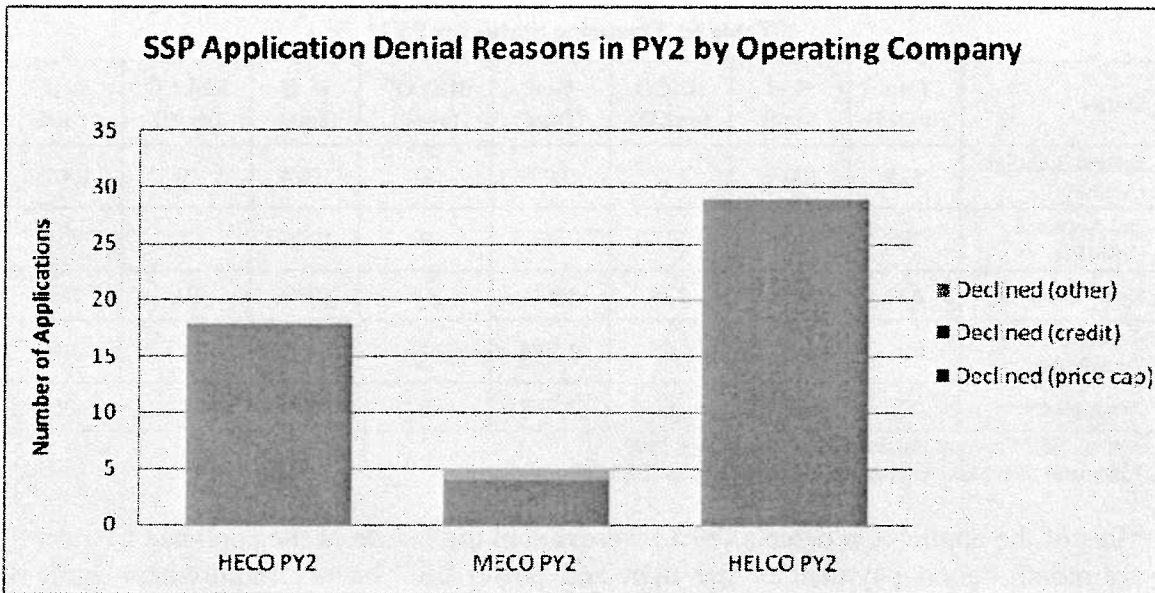


Figure 4: SSP Application Denial Reasons in PY2 by Operating Company

Figure 5 summarizes the length of time it has taken, on average, to move the application through the steps necessary to approve it and enroll the participant into the program during PY2. This figure shows that HECO has reduced application processing time considerably during PY2, while the weighted average for HELCO has increased slightly.

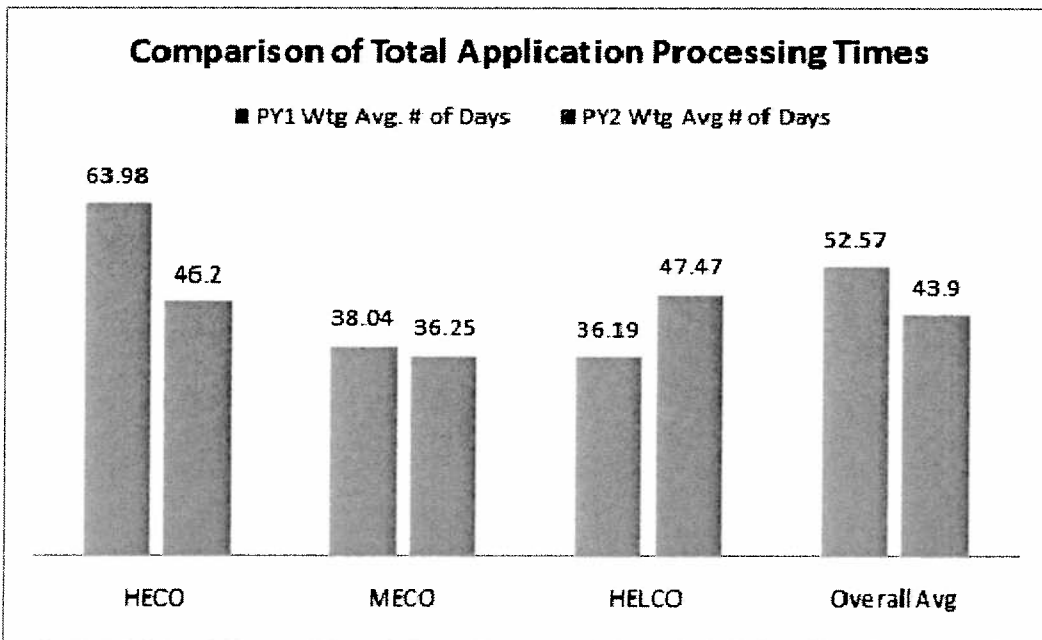
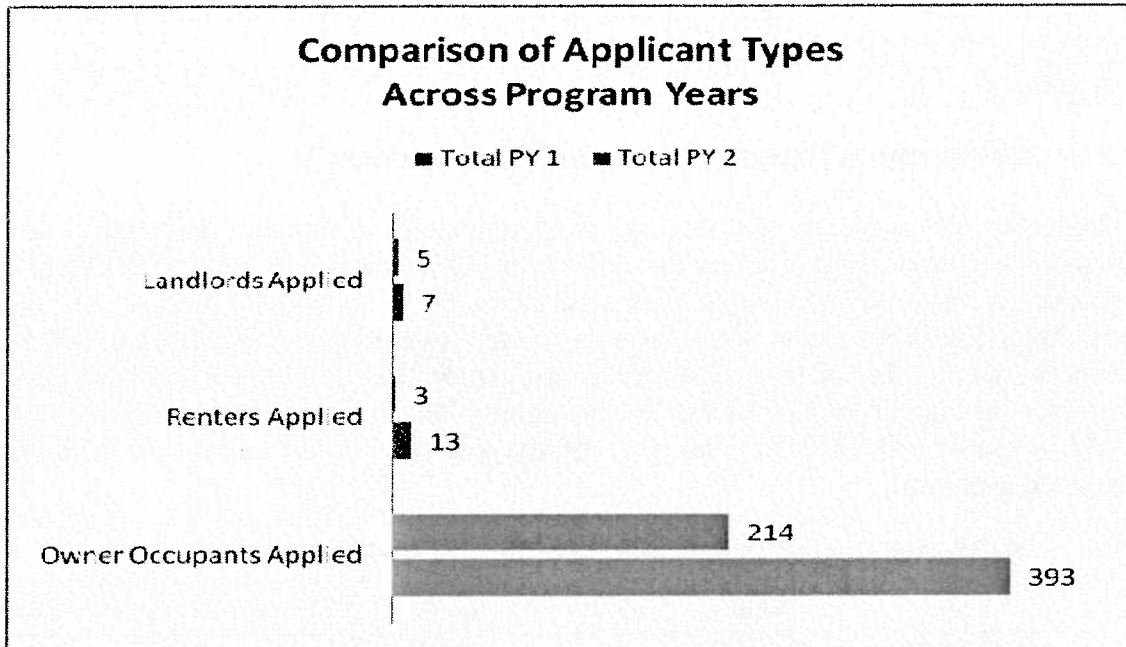


Figure 5: Comparison of Total Application Processing Times

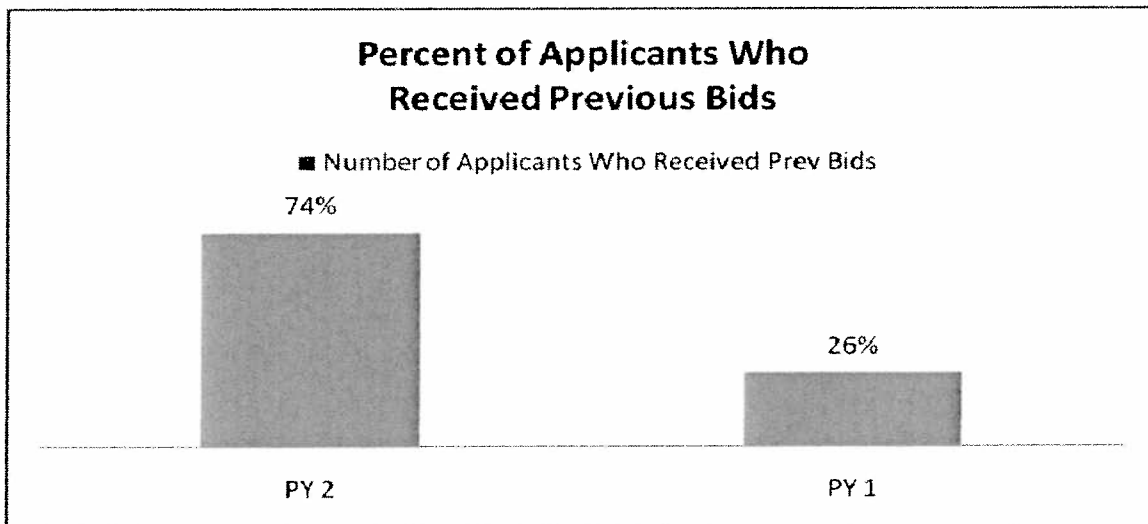


Since a critical component of this program design was to encourage renters and landlords to apply to the SSP, this metric is also tracked in the program database. However, as Figure 6 shows, program participation continues to be dominated by owner-occupants. In PY2, for example, 94 percent of all applications were from owner occupants. This is consistent with the rate in PY1, where 96 percent of all applications were from owner occupants.



**Figure 6: Comparison of Applicant Types Across Program Years**

Another key metric is to determine the number of applicants who received previous bids for the installation of SWH systems. As Figure 7 shows, this percentage has increased significantly from PY1 in that 74 percent of all PY2 applicants received previous bids compared to only 26 percent in PY1.



**Figure 7: Percent of Applicants Who Received Previous Bids**

Table 8 displays these results across all three operating companies, and shows a significant increase in applications who received previous bids in the HECO and MECO service territories.

**Table 8: Number of Applicants Who Received Previous Bids by Operating Company**

	HECO		MECO		HELCO	
	PY 2	PY 1	PY 2	PY 1	PY 2	PY 1
Total Number of Applications	231	115	47	25	135	82
Number Applicants Who Received Previous Bids	73	19	30	8	21	16
% Receiving Bids	32%	17%	64%	32%	16%	20%

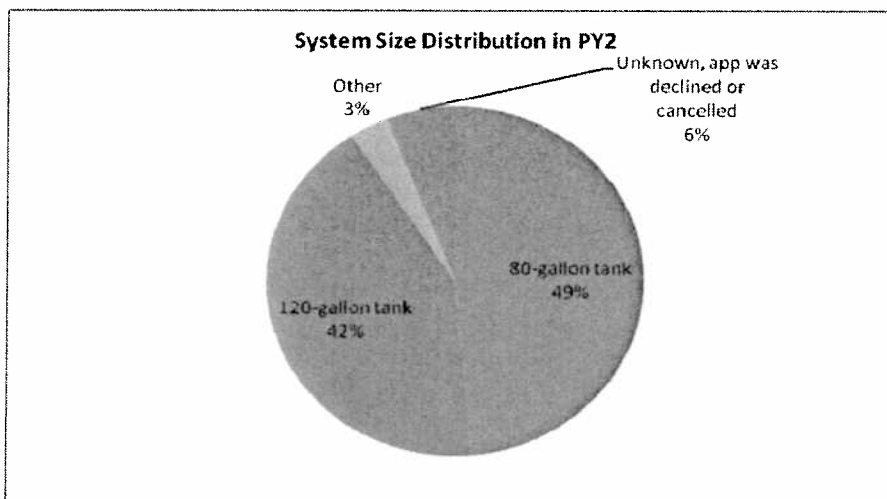
### 2.2.3 SSP Program Demographics and Characteristics

Table 9 provides a summary of the critical demographics of program participants based on the information collected on the SSP Program applications. Most SSP Program participants have approximately four members (3.75 weighted average) in their household. The average cost of a solar water heater system in the SSP Program, which is driven by the number of household occupants, ranges from a low of \$5,698 for HECO customers to high of \$6,135 for MECO customers. This is after reducing the cost of the SWH by the \$1,000 REWH rebate. The average loan term is 117 months (or 9.75 years weighted average).

**Table 9: SSP Program Demographics and Characteristics by Operating Company**

	HECO	MECO	HELCO	PY2 Weighted Program Average
Average Household Size	3.9	3.4	3.6	3.75
Average System Cost (\$)	5,698	6,135	5,913	5,818
Average Term (months)	129	96	103	117

The installation rates for the solar water heaters are nearly equally divided between 80 gallon (49%) and 120 gallon (42%) tanks as shown in Figure 8. Table 10 displays these results across operating companies.

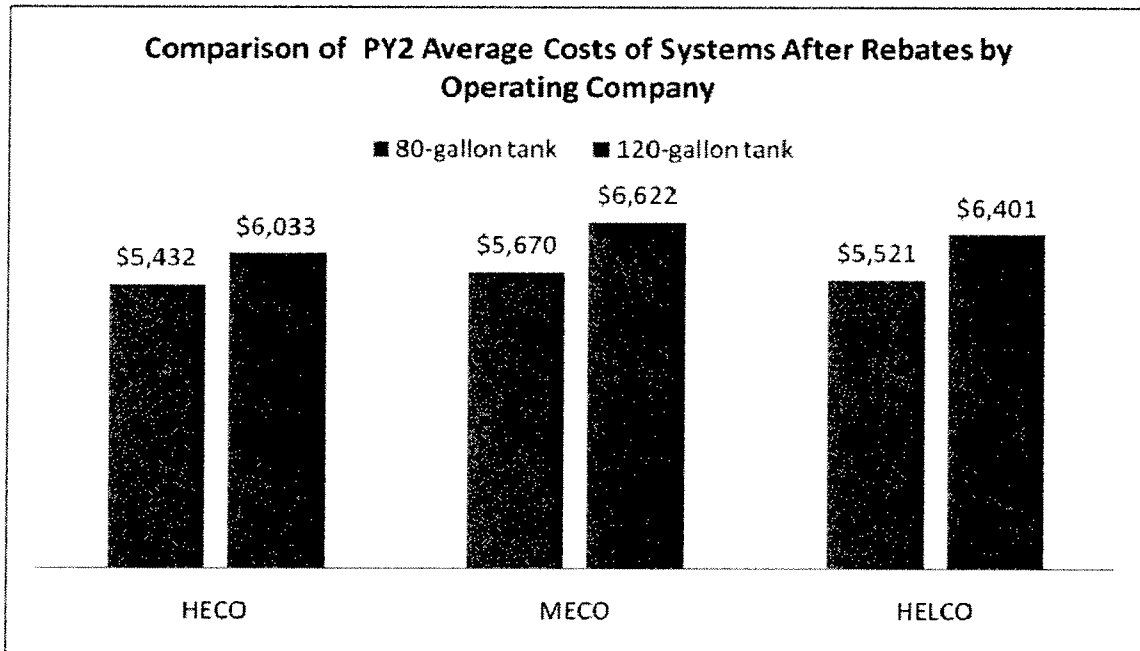


**Figure 8: System Size Distribution in PY2**

**Table 10: SSP Program Solar Water Heater System Characteristics by Operating Company**

System Sizing (defined by size of tank)	HECO	% of Total	MECO	% of Total	HELCO	% of Total
80-gallon tank	120	52%	24	51%	32	38%
120-gallon tank	100	43%	9	19%	44	52%
Other	4	2%	5	11%	3	4%
Unknown, app was declined or cancelled	7	3%	9	19%	6	7%
Total	231	100%	47	100%	85	100%

Figure 9 compares the average costs of the SWH across operating companies, after accounting for the \$1,000 REWH rebate. The price differences were minimal across service territories for each system size.



**Figure 9: Comparison of PY2 Average Cost of Systems After Rebates by Operating Company**

### 3. Staff Interviews

As part of a robust process evaluation, it was necessary to interview the key players involved in program design and implementation. For the process evaluation of PY2, the staff interviews focused primarily on any changes or enhancements that had been implemented during this time period. JCG conducted interviews with utility staff responsible for program implementation, billing, and application processing. These interviews confirmed program flow, database tracking, and assumptions, as well as documenting staff impressions regarding the program operations, areas for improvement, barriers to participation, and free ridership.

#### 3.1 Methodology

JCG completed a total of 10 in-depth interviews with both utility staff and staff from the implementation contractor, Honeywell International. Table 11 summarizes the types of respondents interviewed. The role that the staff and stakeholder interviews played in this process evaluation is displayed in Table 12. These interviews were completed in September 2009.

**Table 11: Summary of Staff and Stakeholder Interviews by Staff Type Across Operating Companies**

	TOTAL	HECO	MECO	HELCO
SSP Program Staff	5	2	2	1
SSP Program Support (billing, collections, land)	3	3		
Implementation Contractor	2			
Total	10	5	2	1

**Table 12: Evaluation Objectives Addressed in Staff/Stakeholder Interviews**

Topic Area	Staff Interviews
Program Characteristics/Metrics	
Number of program participants	√
Pilot Program cost	√
SWH Demographics	
Number of defaults (if applicable)	√
Program Impacts	√
Barriers to program participation	√
Cost-benefit analysis of loan repayment	√
Areas for program improvement	√
Free Ridership	√

## **3.2 Roles and Responsibilities**

During PY2, the utility and program implementation staff reported that their job responsibilities had stabilized. The program staff reported that they were more comfortable in their jobs since they had gained greater experience and confidence in running the SSP Pilot Program.

### **3.2.1 Program Staff Responsibilities**

The HECO and MECO staff reported no major changes in staff responsibilities or duties. They also reported that there have not been any significant changes in either the program design or operation.

At HELCO, the major change in staffing has been the transition of the program management at the end of PY2. HELCO made the transition away from a dedicated full-time SSP and Residential Efficient Water Heating (REWH) Program manager in anticipation of the decreased level of SSP Program activity in PY3 and the transition of the REWH Program to non-utility administration.

Even the employees who joined the utility staff during PY2 adjusted rapidly to their jobs and were able to perform their duties efficiently.

*“The responsibilities are the same as last year. PY1 got off to a slow start but this program year has been pretty good.”(MECO staff)*

*“The duties are the same as last year- but we did have to hire a new staff person to keep up with the anticipated increase in application volume.”(HECO staff)*

*“I joined in June 2008 right after the first year and managed the job. The goal was to get the short form processed and recorded properly.” (HECO staff)*

## **3.3 Program Implementation**

Overall, the staff reported that the program operated very smoothly during the PY2. In fact, customer demand was so high that both HECO and HELCO requested and received permission to accelerate the expenditures of PY3 funds during PY2. This has meant that the program is essentially “out of funds” for the installation of new SWH systems in PY3 for these two utilities.

*“Everyone is more comfortable running the program even though the application volume more than doubled. The processing time is faster because everyone is familiar with it now -- the program managers, contractors, and everyone knows their responsibilities. The process has also been streamlined.” (HECO staff)*

### **3.3.1 Program Results**

The number of approved program applications was slightly higher than expected however, the number of SWH installations was slightly less than expected but did meet the staff expectations.

*“The processing of the applications has been way better and the customers are returning the applications faster and land is processing it faster too...but it has been way better than last year... the contractors are happy.” (HECO staff)*

To accommodate the increased demand for the program, both HECO and HELCO received permission to tap into PY3 funding. This accelerated the spending of PY3 funds and the program was out of money for the installations of new SWH systems by August 2009 in these two utility service territories.

*“We maxed out the funds and we took care of all the customers we could. We were successful in getting the savings impacts.” (HECO staff)*

*“Program Year 3 funds were spent in PY2 to accommodate customer demand and the program funds for new participants are now exhausted. We got more applications than we asked for in Year 2 and we were able to accommodate the customers by using PY3 funds.” (HELCO staff)*

### **3.3.2 Program Changes for PY2**

The program staff has implemented several changes in PY2 to accommodate customer requests for loan subordination and early pay offs. These changes required developing new forms and procedures to accommodate those customers who either wanted to pay off their SSP loans entirely or who were refinancing their homes. However, these changes were somewhat unexpected by program staff as reflected in the following statements.

*“We had to develop a new form for subordination agreement- now we have a template for the subordination agreement that we got from a lending company. It still goes through legal for review and back and forth between the utility company and the lending agency. The first one took 2 weeks because it was new, but now we have a process and a template to use in the future.” (HECO staff)*

*“This was a new wrinkle and we were surprised and didn’t realize that the lending agency would consider the SSP payment a ‘lien.’ It was also unexpected that customers (are) paying off loans earlier and we are working on a strategy to put that together... (HECO staff)*

*“We were receiving funding requests from customers who are doing home improvements and we had to come up with a loan subordination document. And also paperwork if the home is sold or the loan is paid off early. It is easier if the loans just transfer over from one homeowner to the next.” (HECO staff)*

## **3.4 Program Tracking and Administration**

Application processing remains a time consuming task, and it has been further complicated by some recent decisions regarding the proper recording of applications from both the Bureau of Conveyances and the Department of Hawaiian Homelands. The program staff reported that the filing procedures which had been used in PY1 were changed during PY2 by both government agencies. These changes have led to delays in recording the required documents at the appropriate agency however, the recordation delays did not hold up the installation of the SWH systems.

*“All three operating companies handle their own billing and collections.” (HECO staff)*

*“The processing is the same as last year... Honeywell receives an application and screens it for approval. Land does background research to determine the property description, and fill in the blanks, goes to the title company and then is recorded after notarization... All three utilities use the same title guarantee company.” (HECO staff)*

*“Regardless of these issues, the notifications did their job since it was brought to the attention of the lenders and customers who wanted to either subordinate the loans or pay off the full amount. So the legal process worked. The bureau of conveyance issue was a new wrinkle, but these delays did not affect the customers as the applications were still processed and systems installed.” (HECO staff)*

*“We see the applications and track it and if it delayed, they notify the contractor. Overall, we tried to pay the contractors as fast as possible. The average processing time from the first approval to the installation is faster...and the program has been really good for the local businesses.” (MECO staff)*

The billing process still requires generating two separate bills: one for the electricity bill and a separate one for the monthly SSP payment. These bills have to be consolidated into the same envelope every month for all 477 active customer accounts. Unfortunately, the HECO billing staff reported that “there is no easy way to streamline this because of the requirement of keeping the program as ‘on the bill’ financing, so the bills have to arrive at the same time. But this is not the way the billing system was designed.

*“The process is so labor intensive for matching up the bills every month and the workload is such that they have to hire new staff for every 900 applications processed.” (HECO staff)*

### **3.4.1 Collections Process**

During PY2, several SSP customers fell behind in their payments so the HECO program staff had to develop a process to monitor and begin collections procedures. The major issue was that several of these customers paid the electric portion of their bills, usually through an automatic bill payment service, but did not pay the separate SSP bill which has been mailed to them. However, because the amounts of these delinquent bills were usually less than \$100, these were not high priority issues for the HECO collections department. Moreover, since these customers were current with their electric bills, the collections department was reluctant to disconnect customers for non payment of the SSP bill. As the program continues, collections may become a larger issue for the program even though the delinquent amounts due may be relatively low.

*“(Unpaid bills) don’t really become an issue for the collections department until the bill has lapsed for a couple of months—or the total payment due is about \$200 because collections is focusing on those customers who owe more—and have only limited collections agents. ...We do coordinate with the electric light and power side...these customers have often paid their electric bill so we don’t want to cut them off, but we do send out letters, make calls and do follow up ...There were about 5-10 customers that went into collections.” (HECO staff)*

The program staff also believes that the relatively low rate of collections to date may be due to the credit screening required for SSP Program applicants. However, this may become a bigger issue for the program as these loans are transferred to new owners.

The staff is concerned that they may not have enough resources to process these collections for SSP applications. This may also require developing new reports to monitor SSP applications from the IT department.

### **3.4.2 Alternative Program Financing**

MECO offers alternative solar financing programs so many of these contractors use the SSP Program financing only if other financing options are not available to customers. These contractors prefer to promote those financing programs with a shorter payback.

MECO staff attributed the increase in SSP Program applications compared to the other financing programs to the more favorable terms offered by this program. The higher price caps coupled with the elimination of any up-front out-of-pocket payments for the customers made the SSP a more attractive option to MECO customers.

*“The contractors were pushing it because the price caps were higher this year – because of the oil prices- so they were pushing it over the other loan programs we offer. We offer other loan financing programs- but those programs require a down payment and the contractors knew that. Both programs are pretty busy, but one requires a 35% down payment and other one through the credit union offers 0% interest.” (MECO staff)*

### **3.4.3 Contractor Participation Rates**

Staff from all three utilities reported that the number of participating contractors had stabilized during PY2. They also reported that overall contractors were pleased with the SSP program operations in PY2 and were disappointed that the program may be discontinued in the future.

*“The contractors are happy with the program; but sad that it was going away—had no complaints from contractors and the payments are streamlined this time around.” (HELCO staff)*

*“The feedback is good- not heard anything negative at all. Generally the customers are happy. And the contractors get the job started and go through the process.” (HECO staff)*

*“Many HECO contractors voiced their opinions about the price caps not being high enough as the price of electricity dropped. In many cases, the price caps would not accommodate even the smallest SWH system.” (HECO staff)*

### **3.4.4 Free Ridership**

A free rider is defined as a customer who participates in a program but would have done so without the program. Both the findings from the staff interviews and customer surveys suggest that free ridership rates were low in PY2 and therefore not an issue for this program.



### **3.5 Areas for Program Improvement**

The PY1 process evaluation identified several recommendations for program improvement. During these staff interviews, the status and feasibility of these recommendations were revisited. The key findings are summarized next.

1. **Recommendations regarding program design to attract more tenants/landlords.** During PY2, HECO staff requested approval to expand the SSP Program beyond the three year pilot program period and asked for additional funding. The expansion of the program would have allowed the utilities to target tenants and landlords directly. While awaiting a decision on its request, HECO approached several government and private agencies that specifically target renters, low income occupants and lessees to promote the expanded program. However, the request for expansion and additional funding was not approved and therefore HECO was not able to continue to promote the expanded outreach. MECO staff reported promoting the SSP Program at five local events which targeted both landlords and tenants.
2. **Recommendations regarding program administration:** The program staff at all three utilities reported that the application process has been streamlined; payments were made promptly to contractors.

#### **Additional Tracking Improvements**

Additionally, the HECO program staff is also testing a new format for the SSP bills which would show the amount remaining for each SSP customer on the monthly bill. This new format will streamline the process for those customers who wish to refinance their systems and/or pay off their SSP loans earlier. This program has been tested with a few customers and the staff expects to convert all SSP applications to this new format in the next few months.

*“We are continuing to look at improvements in the billing system and now are testing a new way to determine the amount due...This will help the internal staff when a customer calls and wants to know what the remaining balance is...we have been testing it for a few months and we are positive we can convert it over to the full system.” (HECO staff)*

#### **Preparing for Long-term SSP Program Loan Administration**

Overall, the program staff is comfortable with running the SSP program and believes that they have developed a successful infrastructure to process loan payments in a timely manner. Although this was not the utility’s core strength, the staff reports that they have developed the internal resources to successfully administer the SSP program in the long-term.

*“We have the infrastructure in place to accommodate the current loans and track it... but so many things pop up that are unexpected like the subordination. (HECO staff)*

*“It would be a benefit to the customer to have the utility involved in funding this type of loans providing the infrastructure required to process the expanded volume was in place... the commission didn't approve the utility's request to expand the program but rather suggested the third-party administrator provide this type of financing. Not sure how that would work because if don't pay the Solar Saver loan, the utility can cut off electric service. How would you have that type of enforcement powers without the utility?” (HECO staff)*

## 4. MECO Customer Interviews

This section summarizes the findings from interviews with 24 participating MECO customers and two MECO customers who dropped out of the program. MECO customers were selected for the surveys during PY2 because they were under-represented in the PY1 process evaluation. The interviews were conducted via a telephone survey by Ward Research of Honolulu. A complete set of data tables are provided in Appendix C. Since these are small sample sizes, the survey findings provide qualitative (i.e., directional) information.

### 4.1 Awareness

#### 4.1.1 Initial Program Awareness

These MECO customers reported first learning about the SSP Program from their SWH contractor (35%) or from a friend (27%).

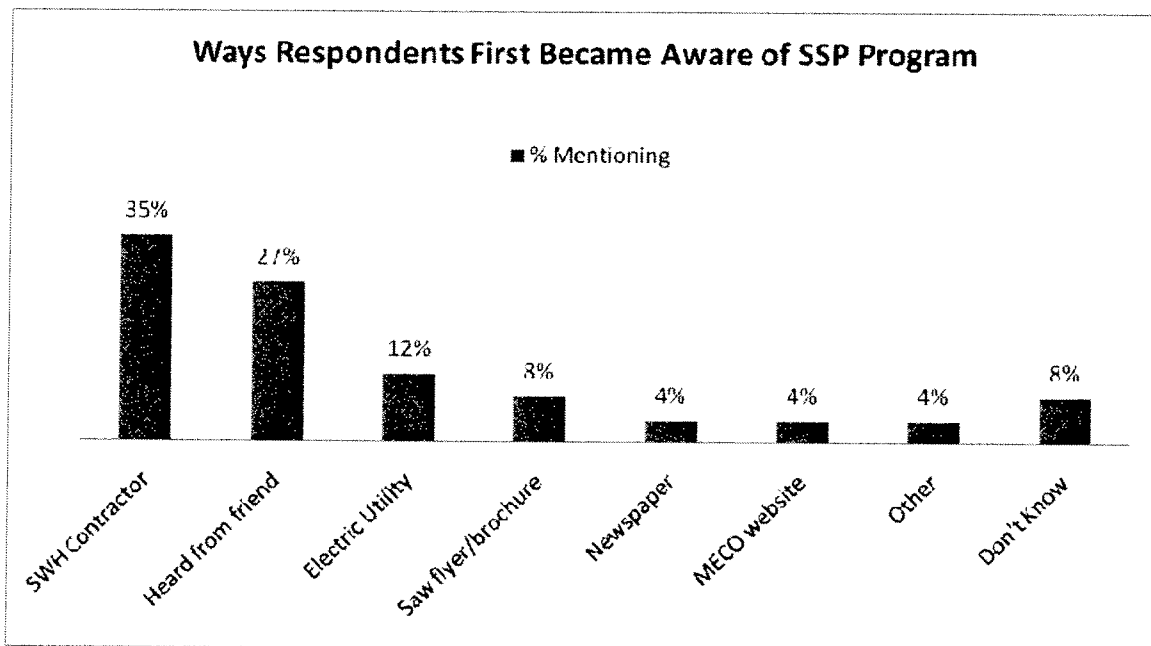


Figure 10: Ways Respondents First Became Aware of SSP Program

### 4.1.2 Other Ways Customers Became Aware of the Program

The customer survey also asked if the participants recalled learning about the program from any *additional* methods, such as the newspaper, website, or program flyers. However, as Table 13 shows, most customers did not recall any other ways (38%). A few customers said they heard about the program from a friend (14%).

**Table 13: Other Ways Customers Became Aware of the SSP Program**

<b>*Method</b>	<b>Number Responding</b>	<b>% Mentioning</b>
No other ways	11	38%
Heard from friend	4	14%
SWH Contractor	3	10%
Newspaper	3	10%
Other	3	10%
Saw flyer/brochure	2	7%
Electric Utility	1	3%
Magazine	1	3%
MECO TV ad	1	3%
Total	29	100%
*Multiple Response Question		

## 4.2 Customer Participation

This section summarizes the reasons MECO customers decided to participate and drop out of the SSP Program. It also examines their experiences with this program and the SWH contractor.

The primary reasons for participating were to save money (35%), take advantage of the SSP financing (17%) and the need for a new water heater (13%). Secondary drivers for program participation included that it seemed like a good deal (11%) and the desire to use renewable energy (11%) (See Table 14).

**Table 14: Reasons MECO Customers Decided to Participate in the SSP Program**

<b>*Reason</b>	<b>Number Responding</b>	<b>% Mentioning</b>
Wanted to save money	16	35%
Zero interest loan	8	17%
Needed a new water heater	6	13%
Seemed like a good deal	5	11%
Wanted to use renewable energy	5	11%
Tax credits/incentives	3	7%
Good for environment	1	2%
Warranty	1	2%
Monthly payment is affordable	1	2%
Total	46	100%
*Multiple Response Question		

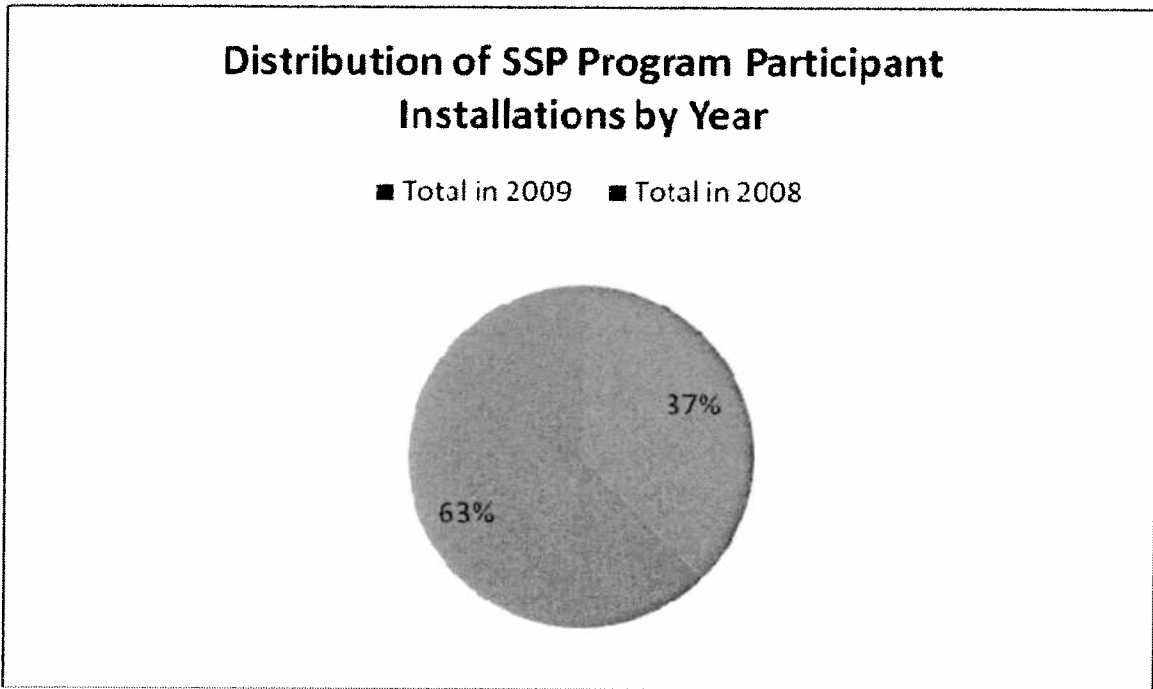
The two program drop outs reported that they decided not to participate in the SSP Program because they “didn’t want to spend the money.”

#### **4.2.1 Customer Enrollment Process**

The SWH installations were fairly evenly distributed throughout 2008 and 2009, with most installations occurring in January, September and December 2008 (13% each, respectively).

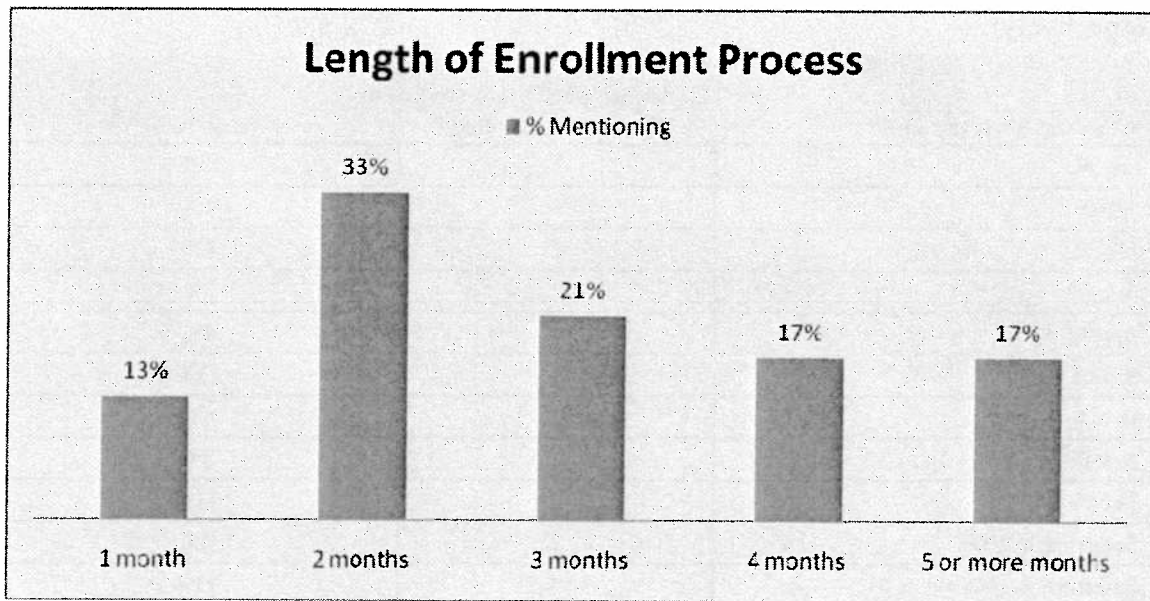
**Table 15: Month of SWH Installation**

<b>When was SWH installed?</b>	<b>Number Responding</b>	<b>% of Total</b>
Jan-09	3	13%
Feb-09	1	4%
Jun-09	1	4%
Aug-09	2	8%
Apr-08	2	8%
Sep-08	3	13%
Oct-08	2	8%
Nov-08	2	8%
Dec-08	3	13%
Sometime in 2009	2	8%
Sometime in 2008	3	13%
Total	24	100%



**Figure 11: Distribution of SSP Program Participant Installations by Year**

All of the program participants, excluding the program drop outs, had their water heater installed and most waited two months or less (46%) (see Figure 12).



**Figure 12: Length of Enrollment Process**

### 4.3 Contractor Assessment

The participating customers were also asked to assess the SWH contractor who installed (or will install) their equipment. All of the MECO program participants said they would recommend this contractor.

Table 16 summarizes the reasons why customers would recommend this contractor. The most commonly mentioned reasons included that the contractors were very nice/courteous (20%), provided helpful information (18%), and did a good job (16%).

**Table 16: Reasons for Recommending This Contractor**

*Reason	Number Mentioning	% of Total
Very nice/courteous	10	20%
Helpful information	9	18%
Good job	8	16%
Professional/easy to work with	6	12%
Fast/efficient/quick installation	5	10%
Good customer service overall	5	10%
Affordable/fair price	4	8%
We/family used them before	3	6%
Total	50	100%
*Multiple Response Question		

### 4.4 Free Ridership Findings

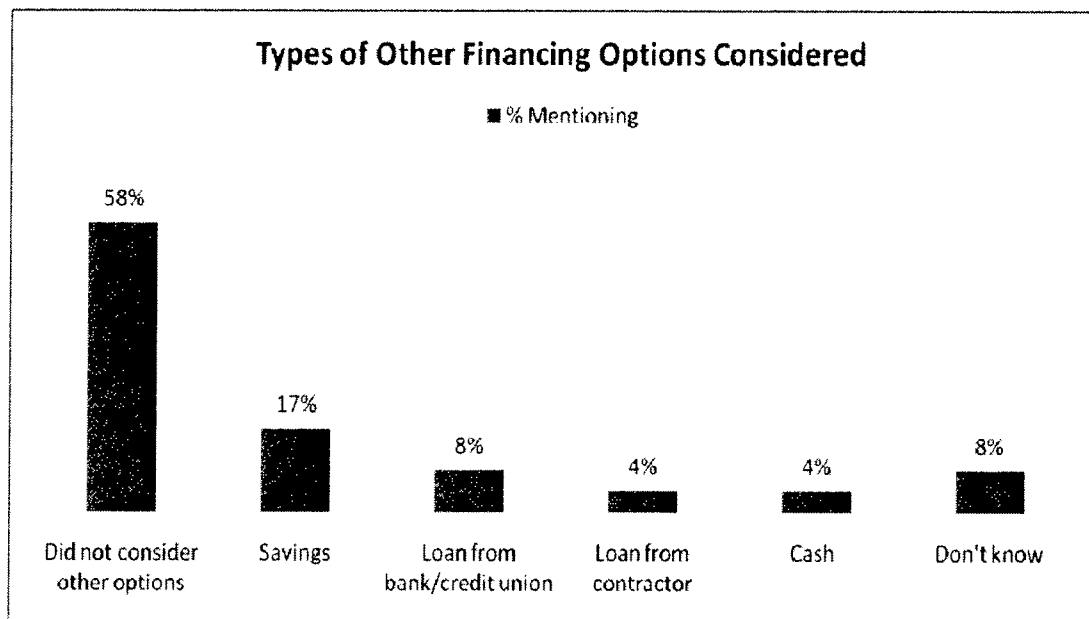
Another key issue of this process evaluation was to determine the likely free ridership levels for this program. Table 17 displays these findings, which suggest that free ridership is low among these MECO customers.

**Table 17: Likelihood of Free Ridership for SSP Program**

How likely is it that you would have purchased a SWH on your own without SSP Program financing?	Number Responding	% of Total
Very Likely (5)	3	13%
4	4	17%
3	4	17%
2	1	4%
Very Unlikely (1)	11	48%
Total	23	100%
Average Rating	2.43	

Another way to gauge free ridership is to examine these customers' intentions. Therefore, the survey asked several questions to determine if they had considered purchasing a SWH prior to participating in this program. Sixty-three percent of these respondents said they did not consider purchasing a SWH system earlier, while 38% said they did. However,

the major reason that prevented these customers from making this purchase was that they did not have the money at the time (89%). Other reasons mentioned by these customers included not thinking the program would save money (33%), they did not want to take a loan out (11%), or they could not find a qualified contractor (11%). As Figure 13 shows, most customers (58%) did not consider other financing options.



**Figure 13: Types of Other Financing Options Considered**

One-third of the customers (33%) reported receiving a previous bid from the program while most did not (66%). On average, these customers received 2.5 bids and the average bid amount was \$6,500.

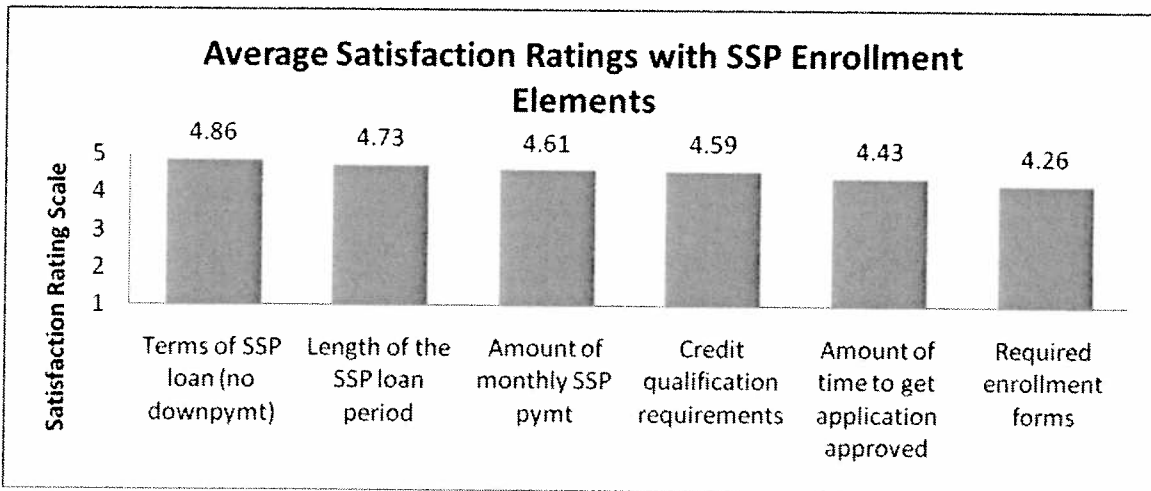
These findings suggest that free ridership for the SSP Program is low, with few customers reporting even considering making this purchase without the SSP Program.

#### **4.5 Customer Satisfaction with the SSP Program**

Overall, the surveyed customers are “Very Satisfied” with the SSP Program as indicated by these relatively high satisfaction scores with an average rating of 4.83 on a scale of “1” to “5” where “1” means “Very Unsatisfied” and “5” means “Very Satisfied.”

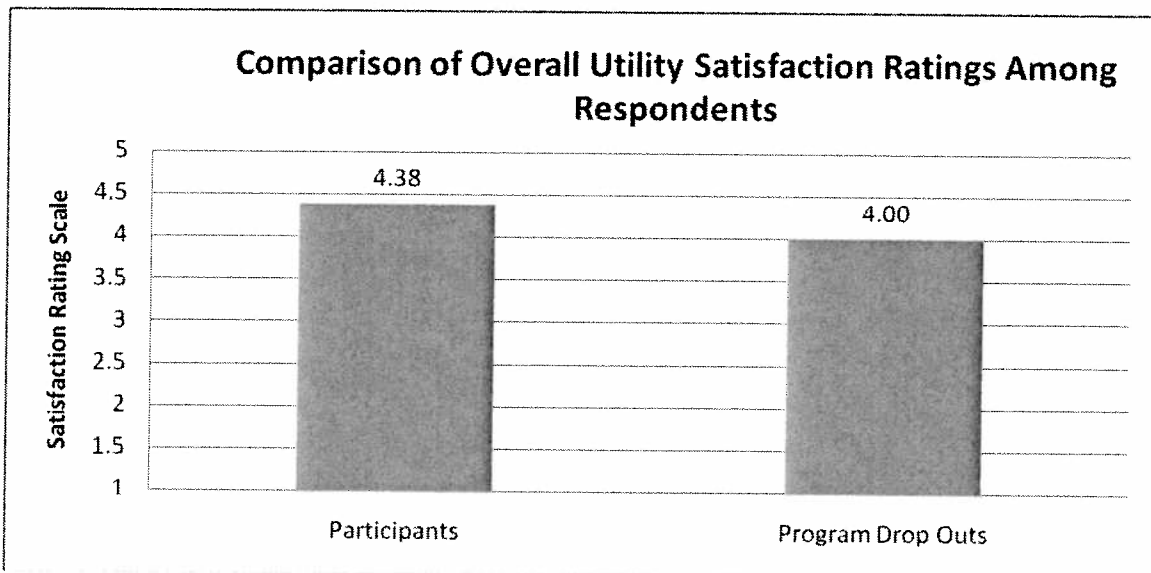
The participating customers were also asked to assess their satisfaction with various components of the SSP Program. Customers reported relatively high satisfaction ratings for all SSP Program components.





**Figure 14: Average Satisfaction Ratings With SSP Enrollment Elements**

Overall, these respondents also provided fairly high satisfaction scores for their local utility, further suggesting that the SSP Program has favorably affected customer satisfaction, as shown in Figure 15.



**Figure 15: Comparison of Overall Satisfaction Ratings Among Respondents**

#### 4.5.1 Customers' Usage

These respondents were also asked to indicate what effect, if any, these SWH had on both their electric bill and monthly kilowatt hour (kWh) usage. While these results have not been compared against the customers' actual bills, it does provide some guidance regarding the customers' perceptions of their electric usage since the SWH have been installed.

As Table 18 shows, over three-quarters (79%) of the customers said they believed their electric bill had decreased since the installation of the SWH while another 13 percent were not sure and only four percent reported an increase in their monthly bill.

**Table 18: Customers' Perceptions of Changes in their Monthly Bill Since the SWH was Installed**

Since the SWH has been installed, has your monthly electric bill?	Number Responding	% of Total
Increased	1	4%
Decreased	19	79%
Stayed the Same	1	4%
Don't Know/Refused	3	13%
Total	24	100%

Customers were also asked if their monthly electric usage, in terms of kilowatt hours, had changed since the SWH was installed. These findings were consistent with the previous results in that 71 percent of customers reported a decrease in their monthly bill as shown in Table 19.

**Table 19: Customers' Perceptions of Changes in their Electric Usage Since the SWH was Installed**

Since the SWH has been installed, has your monthly electric usage (kWh)	Number Responding	% of Total
Increased	2	8%
Decreased	17	71%
Stayed the Same	1	4%
Don't Know/Refused	4	17%
Total	24	100%

#### **4.5.2 Recommend Program to Others**

All of the respondents indicated they would unanimously recommend this program to others. Their reasons are summarized in Table 20.

**Table 20: Reasons for Recommending SSP Program to Others\***

Reason	Number Responding	% of Total
It saves money	11	20%
Monthly payment is affordable	10	18%
Good financing	6	11%
Tax rebates/incentives	4	7%
It's easy to do	3	5%
It's a good deal	3	5%
Good for environment	3	5%
I have recommended it	3	5%
It saves electricity	3	5%
It's a good program	2	4%
More people should have solar	2	4%
Servicing hot water system is included	2	4%
Contractor did a good job	2	4%
Total	55	100%
*Multiple Response		

#### **4.6 Areas for Program Improvement**

These respondents also provided suggestions on ways in which the SSP Program could be improved. The major recommendations were to publicize the program more widely to customers (27%) and make it less expensive (20%), as shown in Table 21.

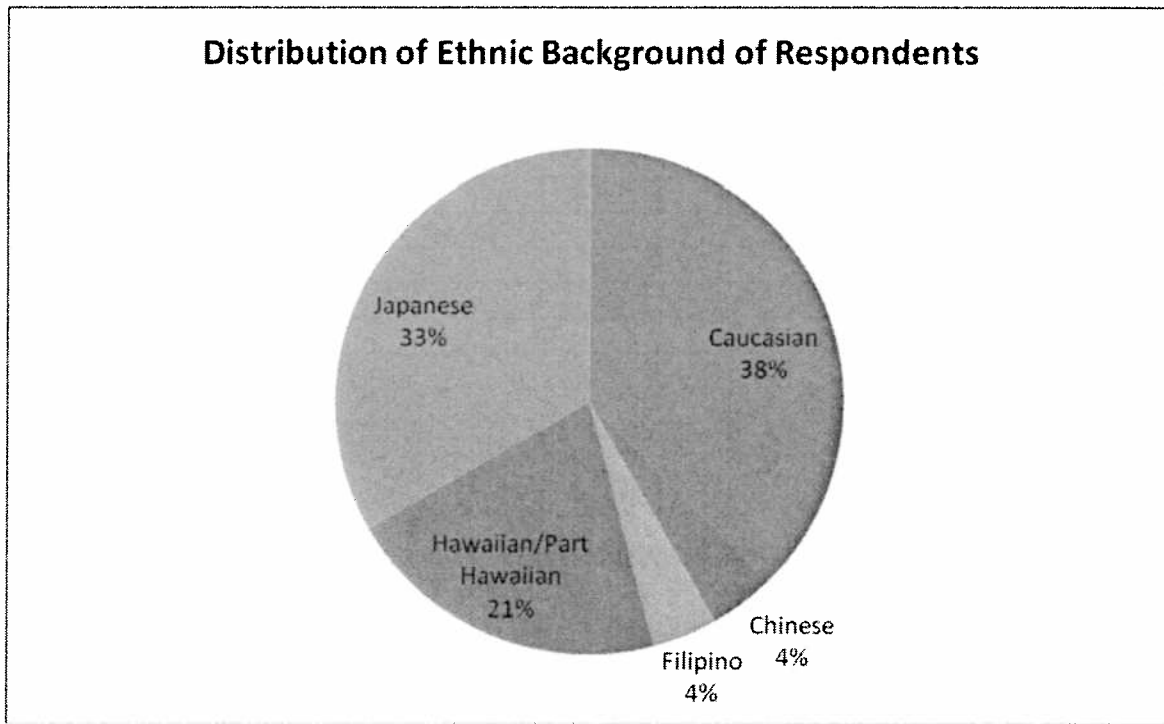
**Table 21: Ways the SSP Program Could Be Improved**

*Reason Mentioned	Number Responding	% Mentioning
More publicity	4	27%
Make it less expensive	3	20%
One bill for both; pay bill electronically	2	13%
Make it available to more people	1	7%
Faster processing of paperwork	1	7%
More tax rebates/credits	1	7%
Have more money available for program	1	7%
Partner with realtors to promote program	1	7%
Broaden it to include solar PV	1	7%
Total	15	100%
*Multiple response question		

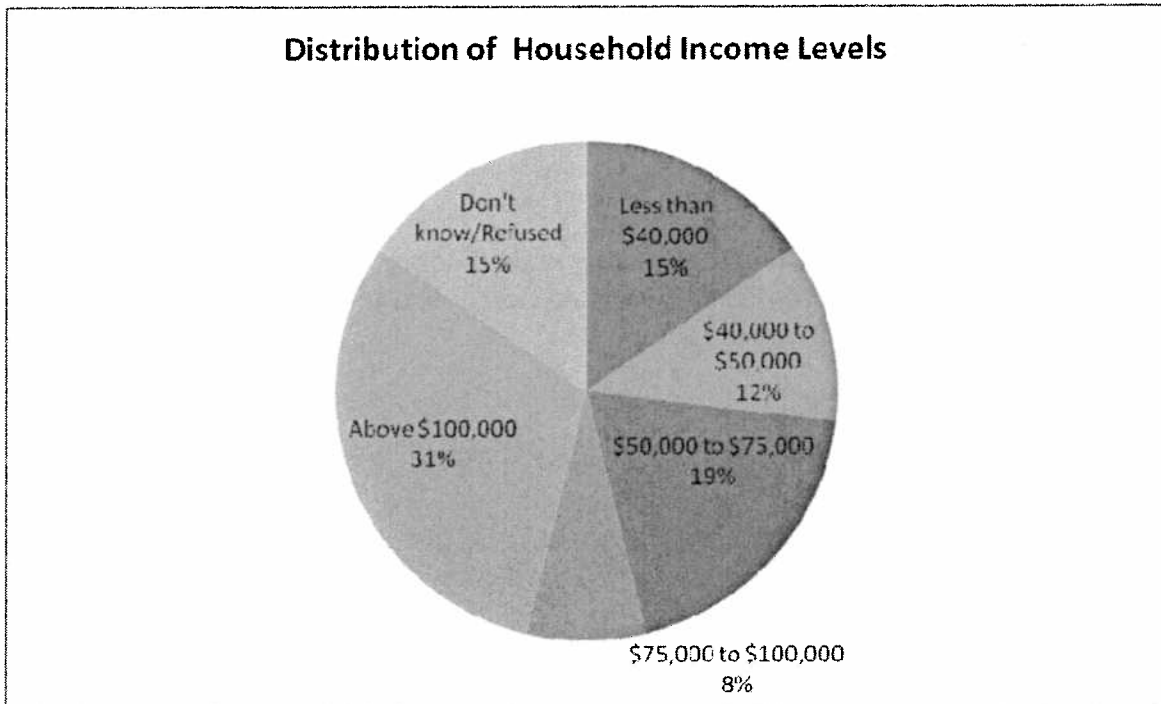
#### **4.7 Customer Demographics**

All of the participants were home owners, with an average of 3.93 residents living in these households. The majority (73%) reported that this number had stayed the same during the past year.

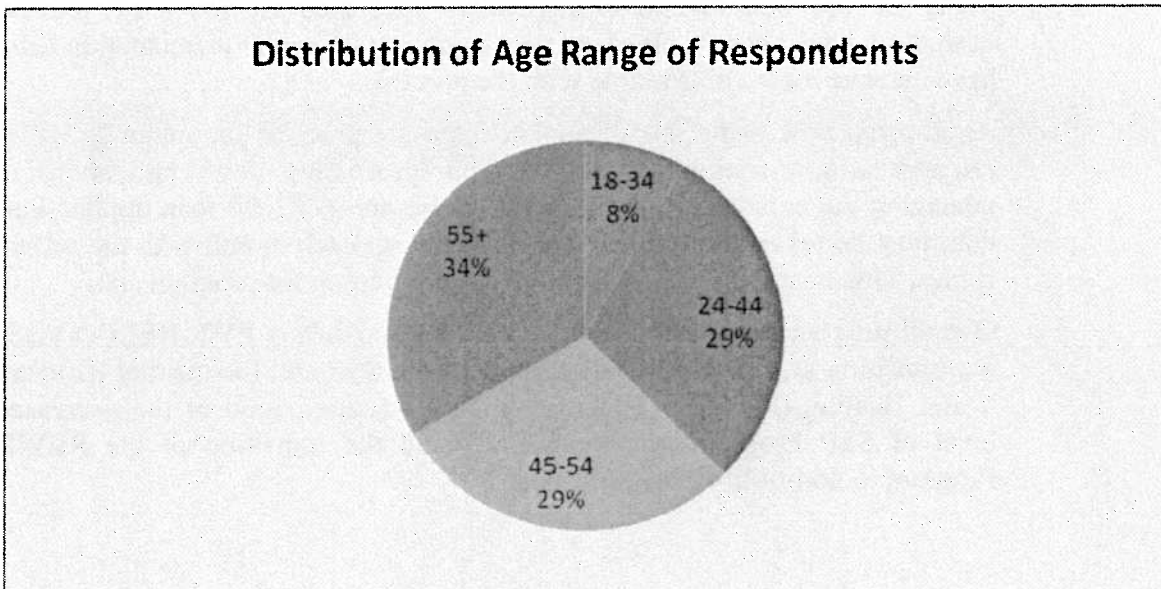
The next three figures summarize the demographic characteristics of these participants, showing that most were Caucasian (38%), had household incomes above \$50,000 (61%) and were 45 years old or more (63%).



**Figure 16: Distribution of Ethnic Background of Respondents**



**Figure 17: Distribution of Household Income Levels**



**Figure 18: Distribution of Age Range of Respondents**

## **5. Key Conclusions and Recommendations**

The results from the document review, and staff, contractor and participating customer interviews have identified the following conclusions and recommendations.

### **5.1 Conclusions**

The PY2 process evaluation confirmed many of the findings from PY1 as well as identified additional areas for the SSP program staff to consider as the SSP Program moves into its final year of operation.

- **Program Administration**

- PY2 was a very successful year for the SSP Program with the program receiving a total of 413 applications, exceeding goals by 15 percent. A total of 328 applications were approved and 299 were processed, a significant increase in overall application volume compared to PY1.
- To accommodate the increased demand for the program, both HECO and HELCO received permission to tap into PY3 funding. This accelerated the spending of PY3 funds and the program was out of money for the installation of new SWH systems by August 2009 in these two utility service territories.
- Many of the administrative difficulties identified in the PY1 process evaluation have been resolved, as the program staff and implementation team have become more comfortable with the process.
- Application processing is still a labor-intensive process; the major focus on program administration has shifted from processing new applications to managing the existing ones. Currently, there are 477 SSP loan applications that must be reviewed, tracked, and matched up each month with the billing cycles. This continues to be an administrative burden for program staff.
- Overall program responsibilities stayed the same during PY2. HELCO made the transition away from a dedicated full-time SSP and Residential Efficient Water Heating (REWH) Program manager in anticipation of the decreased level of SSP Program activity in PY3 and the transition of the REWH Program to non-utility administration.

- **Program Billing and Collections**

- The amount of time spent on billing and collections is expected to increase in PY3 as the program's focus shifts from new applications to monitoring or changing the status of existing operations. Along with fee payment monitoring and collections, during PY2, several loans were either paid off early or subjected to loan subordination, so the HECO staff anticipates an increase in the need for clerical support during the remaining years of the loan period.
- There is no easy way to streamline the billing process. This is a challenge for customers who have enrolled in an automatic bill payment service who "forget" to pay their separate SSP monthly bill as well as for program staff. This continues to be a labor-intensive process since the billing staff has to manually track the status and timing of each of the more than 477 SSP loan applications for the life of the loans.
- Program collections have not yet become an issue for this program, as only a few customers were delinquent in their SSP accounts. However, it was difficult to develop a proper way to identify and manage those few customers. One obstacle was that these customers paid the electric portion of their bills, usually through an automatic bill payment service, but did not pay the separate SSP bill which has been mailed to them. However, because the total amount of these delinquent bills were usually less than \$100, these were not high priority issues for the HECO collections department. However, as the program continues, collections may become a larger issue for the program even though the delinquent amounts due may be relatively low.
- The program staff believes that the relatively low rate of collections to date may be due to the credit screening required for SSP Program applicants. However, this may become a bigger issue for the program as these loans are transferred to new owners.
- The staff is concerned that they may not have enough resources to process these collections for SSP applications. This may also require developing new reports to monitor SSP Pilot applications from the IT department.

- **Free Ridership**

- Both the staff interviews and customer surveys confirmed that the free ridership is not an issue for this program during PY2.

- **Customer/Contractor Satisfaction**

- The participating customers reported a high degree of satisfaction with both MECO as well as with the SSP Program. Program staff from all three utility companies also reported that they did not receive any customer complaints during PY2.

- Staff from all three utilities reported that the number of participating contractors had stabilized during PY2. They also reported that overall contractors were pleased with the SSP program operations in PY2, although they were disappointed that the program may be discontinued in the future.
- HECO staff also reported that many HECO contractors voiced their opinions about the price caps not being high enough as the price of electricity dropped. In many cases, the price caps would not accommodate even the smallest SWH system.

- **Barriers to Program Participation**

- For MECO, the major barrier to participation continues to be a lack of awareness of the program. While the survey respondents suggested that MECO should increase overall program awareness, this may not be feasible as the program winds down.
- There are still few tenants and landlords participating in the program. A major recommendation from PY1 was to expand outreach to the low income and rental communities. While the utility staff reported they increased awareness among these groups, it was done following its request to the expand the pilot program and receive additional funding. The utilities request to expand the program was later denied and this resulted in the utilities discontinuing their expanded outreach.

## **5.2 Program Recommendations**

Based on these findings, the PY2 process evaluation led to the following program recommendations:

- Determine an “exit strategy” for SSP Program operations. HECO and HELCO have already exhausted all funds for new SSP Program installations in PY3, therefore the major focus of these activities will be to monitor the status of the current loans, continue billing and collection of fee payments, and respond to requests for early payoffs and loan subordination documents. In addition, there may be other processes that need to be developed as this program moves from a proactive to a reactive state, such as the processing of warranty reimbursements.
- Develop an easier way to communicate to customers the outstanding SSP Program fee amounts due. This was an issue raised during PY2 and the HECO staff is testing a new method of calculating the amounts remaining on the SSP Program bills. This method has been tested and the staff should continue with their plans to change the bill calculation methodology in PY3 and going forward.



HECO, HELCO, MECO SolarSaver Pilot Program Participants System Costs and Life Cycle Savings Summary  
Program Year 2

**HECO**

	System Size		
	<u>80</u> <sup>1</sup>	<u>120</u>	<u>160</u>
Number of Systems	98	86	1
Average Total System Cost Before Rebate	\$6,453.68	\$7,009.35	\$ 7,463.00
Average Life Cycle Savings (over 15 years)	\$1,979.86	\$3,725.08	\$ 7,712.28

**HELCO**

	System Size		
	<u>80</u>	<u>120</u> <sup>2</sup>	<u>160</u>
Number of Systems	30	47	0
Average Total System Cost Before Rebate	\$6,490.34	\$7,495.74	
Average Life Cycle Savings (over 15 years)	\$5,028.09	\$8,158.81	

**MECO**

	System Size		
	<u>80</u>	<u>120</u>	<u>160</u>
Number of Systems	24	9	4
Average Total System Cost Before Rebate	\$6,669.62	\$7,622.26	\$8,394.00
Average Life Cycle Savings (over 15 years)	\$3,691.53	\$7,143.96	\$2,941.88

**Assumptions:**

Base technology is electric resistance water heater.

Discount rate\* 2.10%

Annual energy cost escalation\* 2.10%

First year electricity rate is effective energy rate for Schedule R, as of January 1, 2009

Tank anode rod replacement at the end of 5th year.

Tank replacement at the end of 10th year.

Anode rod and tank replacement for systems in the SolarSaver Pilot Program are covered by a full (parts+labor) system warranty for 12 years.

**Notes:**

Applications canceled after the program year ended are not included in the average calculations.

\* January 10, 2009 Blue Chip Economic Indicators Forecast for 2009 GDP Consensus Forecast

<sup>1</sup> Includes one (1) 88 gallon system

<sup>2</sup> Includes two (2) 116 gallon systems and one (1) 130 gallon system.



HECO, HELCO, MECO SSP Program Estimated Life Cycle Savings for Program Year 2 Participants

Company	RSSP	Total System Cost *	Total Occupants	Est. Life Cycle Savings	Tank Size
HECO	240	6,309.00	6	\$5,805.09	80
HECO	279	6,463.00	4	\$2,863.46	80
HECO	301	7,015.70	3	\$1,016.30	80
HECO	307	6,050.00	4	\$3,289.20	80
HECO	331	5,235.60	4	\$3,870.95	80
HECO	345	6,400.00	3	\$1,869.79	80
HECO	354	5,468.40	3	\$2,267.68	80
HECO	356	6,400.00	2	\$460.88	80
HECO	357	6,300.00	2	\$541.87	80
HECO	358	5,860.00	1	(\$874.71)	80
HECO	359	5,800.00	3	\$1,992.65	80
HECO	363	6,701.56	4	\$2,673.66	80
HECO	366	7,000.00	2	\$1,173.79	80
HECO	371	6,492.14	4	\$2,840.28	80
HECO	372	6,240.00	2	\$1,779.67	80
HECO	373	7,042.00	3	\$995.81	80
HECO	376	6,190.00	4	\$3,083.94	80
HECO	380	6,500.00	2	\$2,300.58	80
HECO	388	6,500.00	3	\$1,425.12	80
HECO	389	5,728.80	2	\$642.80	80
HECO	394	5,900.00	2	\$501.71	80
HECO	395	5,811.51	3	\$1,983.11	80
HECO	399	6,195.00	3	\$2,432.36	80
HECO	402	5,500.00	3	\$2,241.48	80
HECO	403	5,900.00	4	\$3,319.52	80
HECO	404	6,911.00	4	\$2,507.02	80
HECO	405	6,580.00	4	\$2,770.37	80
HECO	410	6,200.00	2	\$258.00	80
HECO	419	6,963.34	3	\$1,057.11	80
HECO	420	6,156.00	2	\$2,213.01	80
HECO	430	5,900.00	2	\$501.71	80
HECO	433	5,208.50	2	\$1,076.08	80
HECO	444	7,068.06	4	\$2,384.41	80
HECO	445	6,753.92	2	(\$185.82)	80
HECO	448	6,963.34	4	\$2,466.02	80
HECO	449	6,544.50	3	\$1,389.71	80
HECO	450	6,649.21	2	(\$102.51)	80
HECO	454	6,020.94	3	\$1,812.37	80
HECO	455	6,544.50	3	\$1,389.71	80
HECO	456	6,753.92	3	\$1,223.09	80
HECO	457	7,072.00	4	\$2,381.34	80
HECO	466	6,275.00	4	\$3,014.89	80
HECO	467	6,275.00	4	\$3,014.89	80
HECO	468	5,655.00	3	\$3,667.08	80
HECO	469	5,800.00	3	\$3,546.81	80
HECO	478	7,068.06	3	\$975.50	80
HECO	479	7,225.12	2	(\$555.80)	80
HECO	480	6,565.44	4	\$2,781.96	80
HECO	481	7,120.41	3	\$934.71	80
HECO	488	7,463.00	5	\$7,375.89	80
HECO	489	7,463.00	3	\$667.74	80
HECO	491	6,300.00	2	\$1,358.42	80
HECO	501	6,400.00	4	\$2,897.66	80
HECO	517	6,309.00	4	\$2,971.58	80
HECO	518	5,476.50	4	\$3,657.15	80
HECO	519	6,546.80	4	\$2,778.40	80



HECO, HELCO, MECO SSP Program Estimated Life Cycle Savings for Program Year 2 Participants

Company	RSSP	Total System Cost *	Total Occupants	Est. Life Cycle Savings	Tank Size
HECO	541	6,209.42	4	\$3,052.47	80
HECO	546	6,209.42	4	\$3,052.47	80
HECO	549	6,172.77	3	\$1,673.34	80
HECO	550	5,633.50	3	\$2,118.02	80
HECO	553	5,925.65	4	\$3,284.62	80
HECO	557	5,581.15	4	\$5,854.72	80
HECO	559	6,700.00	4	\$2,655.98	80
HECO	560	6,700.00	4	\$2,655.98	80
HECO	563	6,701.57	2	\$979.09	80
HECO	564	6,919.87	3	\$2,031.76	80
HECO	567	5,906.11	1	\$1,378.20	80
HECO	568	7,200.00	3	\$1,397.94	80
HECO	570	6,400.00	2	\$79.84	80
HECO	571	6,350.00	4	\$2,938.27	80
HECO	578	6,570.00	3	\$1,350.65	80
HECO	579	6,335.08	3	\$1,541.49	80
HECO	581	6,195.00	3	\$1,655.28	80
HECO	585	6,649.21	3	\$1,287.48	80
HECO	586	6,858.64	4	\$2,529.76	80
HECO	588	6,200.00	4	\$3,060.13	80
HECO	592	6,100.00	1	(\$1,085.36)	80
HECO	594	7,307.80	2	(\$420.06)	80
HECO	595	6,806.28	4	\$2,571.42	80
HECO	597	7,486.00	3	\$992.52	80
HECO	598	6,700.00	3	\$1,247.07	80
HECO	599	6,000.00	2	\$770.24	80
HECO	601	6,596.85	4	\$2,738.05	80
HECO	609	7,277.48	4	\$2,198.81	80
HECO	610	7,303.66	4	\$2,178.41	80
HECO	612	7,251.30	4	\$2,766.87	80
HECO	613	7,251.30	2	\$543.58	80
HECO	617	7,246.07	2	\$1,963.67	80
HECO	618	7,172.77	4	\$2,280.41	80
HECO	620	6,649.21	NA		80
HECO	621	5,775.95	2	\$1,321.17	80
HECO	623	7,120.41	4	\$2,321.48	80
HECO	625	6,649.21	2	(\$121.43)	80
HECO	631	7,100.00	3	\$1,841.57	80
HECO	633	6,800.00	4	\$2,576.41	80
HECO	682	5,554.97	3	\$2,332.97	80
HECO	752	6,860.20	2	\$2,399.64	80
HECO	400	4,800.00	2	\$3,326.47	88
HECO	256	6,795.00	6	\$5,417.13	120
HECO	281	7,463.00	5	\$3,485.56	120
HECO	304	7,000.00	5	\$6,083.85	120
HECO	320	6,249.60	5	\$4,444.44	120
HECO	324	6,309.00	6	\$5,805.09	120
HECO	327	7,200.00	5	\$3,690.50	120
HECO	328	6,600.00	5	\$4,163.37	120
HECO	351	6,870.00	6	\$5,357.46	120
HECO	352	6,575.00	4	\$2,774.35	120
HECO	355	6,800.00	6	\$5,413.15	120
HECO	361	7,356.02	5	\$3,568.92	120
HECO	362	7,157.07	5	\$3,723.95	120
HECO	378	6,850.00	4	\$2,555.55	120
HECO	383	6,700.00	4	\$4,229.06	120



HECO, HELCO, MECO SSP Program Estimated Life Cycle Savings for Program Year 2 Participants

Company	RSSP	Total System Cost *	Total Occupants	Est. Life Cycle Savings	Tank Size
HECO	385	7,277.48	3	\$812.31	120
HECO	390	6,730.00	5	\$4,972.70	120
HECO	391	7,300.00	4	\$3,757.82	120
HECO	393	7,015.70	5	\$3,834.12	120
HECO	397	7,463.00	4	\$2,076.65	120
HECO	398	7,463.00	4	\$2,076.65	120
HECO	407	7,463.00	6	\$5,259.57	120
HECO	412	6,806.28	5	\$3,999.25	120
HECO	415	5,866.23	5	\$10,397.71	120
HECO	417	7,463.00	5	\$3,485.56	120
HECO	418	6,900.00	1	(\$1,710.96)	120
HECO	422	7,382.19	5	\$3,548.52	120
HECO	424	7,300.00	4	\$2,203.66	120
HECO	426	7,463.00	5	\$3,850.66	120
HECO	427	7,463.00	4	\$4,163.66	120
HECO	428	7,200.00	4	\$2,281.59	120
HECO	429	7,382.19	5	\$3,548.52	120
HECO	435	6,650.00	5	\$4,123.59	120
HECO	438	7,277.48	5	\$3,630.12	120
HECO	439	6,979.06	5	\$3,862.67	120
HECO	442	7,463.00	5	\$3,485.56	120
HECO	463	7,463.00	2	(\$376.07)	120
HECO	470	6,850.00	5	\$3,964.46	120
HECO	471	6,820.00	4	\$2,579.42	120
HECO	483	7,463.00	4	\$4,361.01	120
HECO	487	7,181.14	3	\$2,806.64	120
HECO	490	6,000.00	4	\$3,238.29	120
HECO	494	7,463.00	5	\$3,485.56	120
HECO	497	7,463.00	3	\$667.74	120
HECO	527	6,309.00	4	\$5,574.18	120
HECO	530	6,500.00	4	\$2,998.97	120
HECO	531	7,219.07	4	\$2,244.33	120
HECO	537	6,000.00	3	\$1,814.04	120
HECO	539	6,800.00	4	\$2,576.41	120
HECO	540	7,204.19	4	\$2,621.03	120
HECO	542	7,694.00	4	\$1,874.23	120
HECO	548	7,428.47	4	\$2,081.15	120
HECO	551	6,963.34	5	\$3,855.36	120
HECO	552	7,250.00	3	\$811.32	120
HECO	554	6,973.81	5	\$4,962.08	120
HECO	555	7,172.77	5	\$3,689.32	120
HECO	556	6,850.00	5	\$3,945.54	120
HECO	558	7,590.00	5	\$3,364.18	120
HECO	565	6,418.84	4	\$3,247.46	120
HECO	566	7,692.65	6	\$6,247.26	120
HECO	573	7,694.00	6	\$4,692.05	120
HECO	574	7,474.48	2	\$1,916.42	120
HECO	575	7,570.68	5	\$3,379.24	120
HECO	576	6,820.00	6	\$5,378.32	120
HECO	577	7,267.01	5	\$3,615.88	120
HECO	580	6,958.59	5	\$5,413.30	120
HECO	582	7,280.00	6	\$5,014.67	120
HECO	583	6,950.17	5	\$4,230.94	120
HECO	584	7,172.77	5	\$3,689.32	120
HECO	587	6,800.00	6	\$5,394.23	120
HECO	589	6,800.00	5	\$3,985.32	120





HECO, HELCO, MECO SSP Program Estimated Life Cycle Savings for Program Year 2 Participants

<b>Company</b>	<b>RSSP</b>	<b>Total System Cost *</b>	<b>Total Occupants</b>	<b>Est. Life Cycle Savings</b>	<b>Tank Size</b>
HECO	591	7,000.00	6	\$5,235.10	120
HECO	593	6,365.00	5	\$4,882.65	120
HECO	596	7,610.00	5	\$4,626.46	120
HECO	600	7,360.00	4	\$3,688.67	120
HECO	603	5,275.00	6	\$6,827.92	120
HECO	604	5,275.00	6	\$6,827.92	120
HECO	605	7,068.06	3	\$5,372.48	120
HECO	606	7,120.42	5	\$4,278.04	120
HECO	616	6,732.98	6	\$5,447.55	120
HECO	619	7,015.70	1	(\$1,821.93)	120
HECO	622	7,230.36	6	\$5,053.35	120
HECO	624	7,185.00	3	\$3,558.32	120
HECO	626	6,835.00	6	\$5,366.38	120
HECO	627	7,000.00	4	\$2,417.28	120
HECO	632	7,000.00	4	\$2,417.28	120
HECO	634	6,942.41	4	\$2,463.11	120
HECO	401	7,463.00	8	\$7,712.28	160
HELCO	334	6,200.00	2	\$3,556.63	80
HELCO	336	5,450.00	3	\$7,540.77	80
HELCO	332	6,875.00	2	\$3,864.17	80
HELCO	346	7,740.00	2	\$1,305.21	80
HELCO	348	7,656.27	2	\$1,662.83	80
HELCO	650	5,600.00	2	\$7,078.12	80
HELCO	652	5,450.00	3	\$7,590.73	80
HELCO	653	5,500.00	2	\$7,164.58	80
HELCO	655	5,500.00	2	\$7,164.58	80
HELCO	660	5,860.00	4	\$7,185.21	80
HELCO	664	5,500.00	2	\$7,164.58	80
HELCO	665	7,760.44	3	\$4,722.66	80
HELCO	669	5,460.00	4	\$7,531.06	80
HELCO	679	5,500.00	2	\$7,164.58	80
HELCO	685	7,000.00	2	\$4,748.70	80
HELCO	688	6,095.79	2	\$4,030.51	80
HELCO	689	5,500.00	2	\$7,164.58	80
HELCO	693	6,979.19	2	\$3,258.76	80
HELCO	694	7,500.00	4	\$5,816.96	80
HELCO	695	6,979.18	1	\$2,693.74	80
HELCO	696	6,979.18	4	\$6,244.73	80
HELCO	697	7,760.44	3	\$4,722.66	80
HELCO	702	7,552.10	3	\$4,891.90	80
HELCO	705	7,500.00	2	\$2,862.00	80
HELCO	706	6,979.19	1	\$868.83	80
HELCO	711	5,500.00	2	\$3,003.32	80
HELCO	712	5,550.00	3	\$7,504.27	80
HELCO	718	6,825.00	3	\$3,982.67	80
HELCO	720	6,979.19	4	\$6,244.72	80
HELCO	734	6,979.19	1	\$2,108.68	80
HELCO	521	9,300.00	5	\$8,088.02	116
HELCO	687	9,337.00	3	\$5,301.42	116
HELCO	318	8,000.00	5	\$9,753.16	120
HELCO	319	6,000.00	4	\$10,625.46	120
HELCO	325	8,000.00	2	\$4,962.84	120
HELCO	335	10,200.00	2	\$4,489.22	120
HELCO	330	7,500.00	5	\$10,111.84	120
HELCO	343	8,000.00	6	\$10,074.60	120
HELCO	333	7,500.00	6	\$10,494.76	120



HECO, HELCO, MECO SSP Program Estimated Life Cycle Savings for Program Year 2 Participants

<b>Company</b>	<b>RSSP</b>	<b>Total System Cost *</b>	<b>Total Occupants</b>	<b>Est. Life Cycle Savings</b>	<b>Tank Size</b>
HELCO	347	7,800.00	2	\$1,827.84	120
HELCO	349	7,500.00	5	\$10,111.84	120
HELCO	350	7,500.00	4	\$7,721.90	120
HELCO	353	7,500.00	4	\$7,721.90	120
HELCO	545	7,000.00	4	\$8,126.91	120
HELCO	636	8,000.00	4	\$9,243.58	120
HELCO	637	7,800.00	5	\$9,970.21	120
HELCO	638	7,300.00	5	\$10,225.28	120
HELCO	639	6,400.00	4	\$11,175.84	120
HELCO	648	9,322.94	5	\$8,554.06	120
HELCO	649	7,500.00	3	\$5,434.04	120
HELCO	651	6,500.00	6	\$11,423.05	120
HELCO	658	6,200.00	6	\$11,677.10	120
HELCO	659	7,000.00	1	\$1,425.00	120
HELCO	661	7,300.00	4	\$10,427.41	120
HELCO	662	7,500.00	2	\$3,764.77	120
HELCO	663	6,580.00	6	\$11,355.68	120
HELCO	666	6,260.00	5	\$11,677.32	120
HELCO	670	7,500.00	6	\$10,596.84	120
HELCO	672	7,500.00	3	\$9,095.49	120
HELCO	680	7,500.00	2	\$3,044.11	120
HELCO	684	7,800.00	2	\$4,381.22	120
HELCO	686	6,200.00	5	\$11,728.13	120
HELCO	692	7,000.00	3	\$4,697.67	120
HELCO	700	7,500.00	5	\$10,213.91	120
HELCO	701	7,500.00	3	\$5,434.04	120
HELCO	704	7,500.00	4	\$7,823.98	120
HELCO	707	6,400.00	6	\$11,507.73	120
HELCO	708	7,500.00	6	\$10,596.84	120
HELCO	710	7,500.00	4	\$10,264.94	120
HELCO	713	6,600.00	6	\$11,339.09	120
HELCO	714	7,500.00	3	\$5,434.04	120
HELCO	715	7,000.00	3	\$7,065.02	120
HELCO	716	8,000.00	5	\$9,808.61	120
HELCO	725	7,000.00	4	\$7,947.76	120
HELCO	726	7,500.00	2	\$1,897.24	120
HELCO	731	8,500.00	5	\$7,403.77	120
HELCO	644	8,000.00	4	\$7,418.67	130
MECO	341	7,603.13	3	\$3,137.77	80
MECO	368	8,097.92	3	\$2,950.31	80
MECO	369	5,989.78	3	\$4,903.81	80
MECO	386	7,395.86	3	\$3,088.85	80
MECO	387	6,067.90	3	\$4,836.26	80
MECO	414	7,394.80	4	\$4,099.86	80
MECO	446	8,514.59	4	\$3,172.08	80
MECO	447	8,514.59	3	\$2,161.96	80
MECO	452	5,104.18	3	\$4,864.29	80
MECO	459	7,099.00	2	\$1,125.05	80
MECO	460	8,514.59	2	\$648.73	80
MECO	473	5,364.76	2	\$3,832.02	80
MECO	484	6,067.90	3	\$4,836.26	80
MECO	492	6,067.90	2	\$3,214.57	80
MECO	493	6,030.00	2	\$2,967.16	80
MECO	500	5,500.00	4	\$5,744.81	80
MECO	502	6,978.12	4	\$4,474.41	80
MECO	509	5,208.35	4	\$6,002.27	80



HECO, HELCO, MECO SSP Program Estimated Life Cycle Savings for Program Year 2 Participants

Company	RSSP	Total System Cost *	Total Occupants	Est. Life Cycle Savings	Tank Size
MECO	510	5,800.00	3	\$3,523.82	80
MECO	511	7,238.50	3	\$3,244.76	80
MECO	522	7,082.29	3	\$3,821.96	80
MECO	523	6,873.95	4	\$4,562.62	80
MECO	671	5,312.52	NA		80
MECO	769	6,250.20	NA		80
MECO	339	7,057.52	4	\$7,844.03	120
MECO	413	7,343.99	4	\$7,938.86	120
MECO	431	7,057.52	4	\$7,844.03	120
MECO	451	7,604.41	4	\$7,382.42	120
MECO	503	9,842.70	6	\$6,069.50	120
MECO	514	8,853.13	6	\$6,851.27	120
MECO	515	6,536.67	3	\$7,296.67	120
MECO	533	6,700.00	5	\$6,669.04	120
MECO	543	7,604.41	3	\$6,399.82	120
MECO	486	8,583.64	4	\$3,115.98	160
MECO	504	9,179.00	2	(\$1,244.44)	160
MECO	505	9,179.00	2	(\$1,244.44)	160
MECO	525	8,394.00	8	\$11,140.39	160

\* Total system cost before utility rebate

Note: A negative life cycle savings indicates the total life cycle cost of the base technology (electric resistant water heater) was lower than the life cycle cost of the solar water heater through the SSP Program.

361

245 }  
208 }  

---

859  
113  

---

972

5494  
4069  

---

1425

~~1786~~ 1425