EVERGREEN ECONOMICS

Avista Low Income Rate Assistance Program Rate Discount Pilot Impact and Process Evaluation

Final Report

August 31, 2017

Table of Contents

1 Executive Summary

This report provides the results of the evaluation of Avista Utilities' (Avista) Low Income Rate Assistance Program (LIRAP) Senior and Disabled Customer Rate Discount Pilot program (the Pilot). The Pilot provides a significant rate discount for income-qualified senior citizens and/or disabled customers. The objective of the Pilot was to provide rate relief for senior and disabled customers that are living on a fixed income and for seniors who might not otherwise be reached by Avista's existing LIRAP Senior Energy Outreach Grant program (the Senior Grant). The Pilot was established with four primary goals:

- Keep customers connected to their energy service;
- Provide assistance to more customers than were currently served;
- Lower the energy burden of LIRAP participants; and
- Ensure that LIRAP has the appropriate data to assess Program effectiveness.

The Pilot enrolled 800 senior or disabled customers (700 in Spokane County and 100 in Stevens, Lincoln and Ferry Counties) living on a fixed income between 126 and 200 percent of the federal poverty level. SNAP Energy Assistance (SNAP) in Spokane County and Rural Resources in Stevens, Lincoln and Ferry Counties provided outreach and enrollment services for the Pilot. The Pilot period runs from October, 2015 when enrollment began, through September 30, 2017.

To assess how well the Pilot met the four primary goals, Evergreen conducted a detailed impact and process evaluation of the Pilot to answer the following research questions:

- What is the impact of the Pilot rate discount on participants' energy usage and energy costs?
- How has the rate discount under the Pilot impacted customer disconnection rates, and has the Pilot had significantly different impacts on participant disconnection rates compared to the existing LIRAP Senior Energy Outreach program grant (the "Grant Program")?
- Is the process to qualify customers for the Pilot Program more or less resource intensive compared to the existing Senior Grant Program?
- How effective were the outreach methods?
- What where customer's perception of benefits compared to Pilot expectations?
- Has the Pilot reached new customers enrolled who have not received prior assistance?
- What improvements can Avista and the Community Action Agencies make to the Pilot Program to better serve customers if the Pilot continues?

- How can Avista and Community Action Agencies reduce administrative costs to ensure that more funding is directed toward meeting LIRAP goals?

This evaluation consists of:

- An impact evaluation using statistical analysis of customer billing and payment data, to understand the effect of the Pilot on energy consumption, customer bills, and customer payment habits; and
- A process evaluation consisting of a survey of 106 Pilot customers, and in-depth interviews with program administrators from Avista, SNAP, and Rural Resources.

1.1 Key Findings

Key findings from the evaluation are discussed below.

Demographic Findings

- The Pilot program met its enrollment goals, recruiting 809 total customers (713 SNAP and 96 Rural Resources customers). When enrollment was closed on June 1st 2016, there were 779 Pilot participants (686 SNAP and 93 Rural Resources customers). In May 2017 there were 701 Pilot participants enrolled.
- 82 percent of participating Pilot homes have at least one person over the age of 60.
- Half of all participant homes include at least one disabled household member.
- More than three-quarters of LIRAP participants live in single-family homes, eight percent lie in multifamily homes and 15 percent live in mobile/manufactured homes.
- The primary source of heat for most LIRAP participants is electric (55 percent) or natural gas (42 percent). Only about 1 percent heat with fuel oil and 2 percent heat with wood.
- The average monthly income of the 714 Pilot participants reporting income data is $1,770 ($21,240 annually). This average monthly income would position the average participant home at 180 percent of FPL.
- The average annualized discount Pilot participants received was:
    - $306 for natural gas
    - $403 for electricity

Energy Usage

Based on billing regression results, controlling for the influence of temperature on energy usage and cost:

- On average, participating Avista electric customers increased annual electricity usage by 209 kilowatt-hours (kWh), or about 1.5 percent of their pre-Pilot usage.
- Natural gas customers, on the other hand, did not appear to change their gas consumption in any significant way after enrolling in the Pilot.

Energy Costs

Based on billing regression results, controlling for the influence of temperature on energy usage:

- On average, participating Avista electric customers, despite using more electricity, decreased annual billed electricity costs by $309, or 26 percent of their pre-Pilot cost.
- Natural gas customers saved over $354, or 38 percent of their pre-Pilot natural gas cost.

Program Efficacy

Based on interviews with Agency and Avista staff, as well as an intake survey with 288 Pilot participants and a telephone survey conducted in April 2017 with 106 Pilot participants we find:

- The Pilot provides assistance to disabled customers who previously were not served by any specific Avista programs.
- The Pilot program provided a higher benefit to high-energy users who often struggle to pay their utility bills.
- The Pilot program drove more customers to call the agencies, even if they were not eligible, meaning the agencies were able to refer people to other assistance programs at higher rates.
- The rate discount Pilot appealed to some customers who were eligible for the Senior Grant program but were averse to the program. In particular, many independent minded seniors were averse to signing up for the Senior Grant program because they viewed the Senior Grant as a welfare or "hand out" program, whereas, these customers perceived the rate discount as an offer, or perk, that they felt comfortable taking advantage of.
- 74 percent of the 106 telephone survey customers reported that the rate discount helped them not miss energy bill payments.
- 62 percent of the 106 telephone survey customers reported that the rate discount helped them keep their homes warmer in the winter months.
- 99 percent of the 106 telephone survey customers reported that they would enroll in the program again.

1.2 Conclusions and Recommendations

Based on the analysis and information gathering described in this report, we can conclude that the Pilot has been very successful and has generally met the four primary goals set forth by the originating workshop:

- **Keep customers connected to their energy service** – evidence from the impact analysis indicates that the Pilot resulted in decreases in energy bills that aligned with the original intent of the program. Reduced energy bills lessens the burden on low-income customers resulting in the increased likelihood they will remain connected to their energy service. The bill disconnect analysis conducted as part of this evaluation indicates that Pilot participants are less likely to be disconnected than they were before joining the Pilot, and are less likely to be disconnected than other low-income customers. The evidence from the impact analysis is supported by both reported feedback received by SNAP and Rural Resources staff, as well as information from survey respondents, 78 percent of whom reported that the Pilot helped them to not miss an energy payment.
- **Provide assistance to more customers than were currently served** – evidence from the customer survey, and in-depth interviews with SNAP, Rural Resources, and Avista staff indicate that the Pilot program led to assistance provided to more customers than were previously served. While 162 participants had previously been on the Senior Grant program, and 33 percent of customers in the intake survey reported receiving prior assistance, the Pilot served a significant number of new customers that had not received low-income assistance before. Specifically 647 participants had not been on an assistance program previously. In addition outreach efforts for the pilot led people to contact the agencies at very high rates. Those who were ineligible for the Pilot were directed to other programs where appropriate.
- **Lower the energy burden of LIRAP participants** – evidence from the impact evaluation indicates that there were significant bill savings to Pilot participants, with little to no increase in energy usage. This inherently reduces the energy burden faced by participants. In addition, surveyed customers reported that the Pilot program helped them to heat their homes more in winter (66%)and not miss energy payments (78%).
- **Ensure that LIRAP has the appropriate data to assess Program effectiveness**. As part of this evaluation, Evergreen assessed and utilized the data collected by Avista and the agencies to assess the Program effectiveness. The data provided were of high quality and allowed for robust analysis of the program..

1.3 Recommendations

Based on the findings in this evaluation Evergreen provides the following recommendations:

- An area that was noted as challenging by agency staff was the different eligibility and enrollment requirements for the Pilot program compared with the Senior Energy Outreach Grant program. We recommend that Avista staff and the Agencies work to align Pilot and Senior Grant program eligibility requirements and enrollment processes. Specific differences and recommendations include:
    - **Eligibility period -** Pilot customers were eligible for the entire 2-year pilot period, whereas Senior Grant customers must renew annually. **We recommend that the Pilot and Senior Grant program enrollment periods are aligned, either changing the Pilot discount to a one-year cycle, or changing the Senior Grant to a two-year cycle**. Changing programs to a two-year cycle will significantly reduce administration costs, however, may result in customers continuing to receive benefits in the event their income situation changes and they move outside the eligibility criteria. Changing income situations is less likely for the senior and disabled populations these programs serve than for the general population.

      One possible solution is to require income documentation every two years, and an annual telephone call to customers every other year to obtain a verbal confirmation that there has been no change in their income situation. This would mitigate against keeping ineligible customers enrolled, but still achieve some of the administrative savings of a two-year enrollment period.
    - **Fixed Income Requirement** - Agency staff noted the fixed income requirement as one of the primary challenges of the Pilot program. The fixed income requirement has in practice led to many customers who are between 126% and 200% of FPL being ineligible even if the variable income does not take their total income beyond the eligible income range. **We recommend allowing customers to have a variable income source in the household as long as they remain under 200% FPL.**

  Aligning the Pilot and Senior Grant program eligibility and enrollment requirements will make the programs easier to explain to senior and disabled customers, which is likely to reduce the contact time needed between Agency staff and customers, reducing administrative costs.

- Customer outreach efforts varied in their success rates. Based on responses from customers and interviews with Agency and Avista staff **we recommend future outreach focus on the following channels:**

- **Email notification or "blast". Email outreach was highly successful in driving numerous new customers to the Agencies. The significant influx of customer inquiries did overwhelmed agency staff, so we recommend conducting limited email notification focused on specific geographies (zip codes, or census tracts).**
- **Bill Inserts. Bill inserts were listed as the most common way of learning about the program by surveyed customers, and noted as a successful outreach method by Agency and Avista staff.**
- **Referrals from community organizations – were also noted as a successful outreach method in the customer intake survey and by Agency and Avista staff**

- Agency staff reported that the Discount was difficult to explain to seniors at times, and in particular agency staff are unable to provide an exact discount dollar amount to eligible customers. We understand that there is a tool that is currently not functional, Workbench, which provides Agency staff with customer billing information. **We recommend that part of the enrollment process is a review of customer billing data on Workbench to ensure that the best program is recommended to customers.**
- Agency and Avista staff noted that customers are not always aware that they are receiving the discount. While the rate discount is itemized on the back page of the customer bill **we recommend that the rate discount credit also be itemized on the front page of the customer bill, and a notice be included in the "Your Message Center" section of the bill stating that the customer is receiving a rate discount.**
- While the average rate discount of $306 for gas customers and $403 for electric customers is close to the targeted discount amount, there are outlying customers that are receiving a very large discount. The maximum discount was $2,333 dollars annually. **We recommend that Avista review the discount amounts and potentially cap the discount if this amount is deemed excessive**.
- Evergreen staff reviewed the systems and processes for enrollment, including planning documentation, training materials, screenshots from computer systems, and live demonstrations of the systems. In general we assess that the systems in place were thoroughly planned both at the agencies and Avista, and are now relatively robust and meet the needs of the Pilot program. One concern is reliance on Excel spreadsheet tools and manual uploading and downloading of files to Basecamp. This introduces the opportunity for human error in data entry, or uploading or downloading incorrect files. **We would recommend that Avista and the agencies investigate automating data transfer and moving away from use of Excel spreadsheets to a more robust data entry and storage system that would have built-in quality control mechanisms.**

2 Introduction

This report provides the results of the evaluation of Avista Utilities' (Avista) Low Income Rate Assistance Program (LIRAP) Senior and Disabled Customer Rate Discount Pilot program (the Pilot). Through this Pilot program, Avista provides a significant rate discount for income-qualified senior citizens and/or disabled customers. The objective of the Pilot was to provide rate relief for senior and disabled customers that are living on a fixed income and for seniors who might not otherwise be reached by Avista's existing LIRAP Senior Energy Outreach Program (SEOP). The Pilot served 800 senior or disabled customers (700 in Spokane County and 100 in Stevens, Lincoln and Ferry Counties) living on a fixed income between 126 and 200 percent of the federal poverty level. SNAP Energy Assistance (SNAP) in Spokane County and Rural Resources in Stevens, Lincoln and Ferry Counties provided outreach and enrollment services for the Pilot. The Pilot period runs from October, 2015 when enrollment began, through September 30, 2017.

Avista contracted with Evergreen Economics to evaluate of the effect of the Pilot on the Avista customers the Pilot served. This evaluation consists of:

- An impact evaluation using statistical analysis of customer billing and payment data, to understand the effect of the Pilot on energy consumption, customer bills, and customer payment habits; and
- A process evaluation consisting of a survey of over 100 Pilot customers, and in-depth interviews with program administration staff from Avista, SNAP, and Rural Resources, to

The specific research questions the Pilot evaluation examined include the following:

Impact Evaluation Questions

- What is the impact of the Pilot rate discount on participants' energy usage and energy costs?
- How has the rate discount under the Pilot impacted customer disconnection rates, and has the Pilot had significantly different impacts on participant disconnection rates compared to the existing LIRAP Senior Energy Outreach program grant (the "Grant Program")?
- How does the impact of the Pilot rate discount on participant's energy burden compare to the existing Senior Grant Program?

Process Evaluation Questions

- Is the process to qualify customers for the Pilot Program more or less resource intensive compared to the existing Senior Grant Program?

- How effective were the outreach methods?
- What where customer's perception of benefits compared to Pilot expectations?
- Has the Pilot reached new customers enrolled who have not received prior assistance?
- What improvements can Avista and the Community Action Agencies make to the Pilot Program to better serve customers if the Pilot continues?
- How can Avista and Community Action Agencies reduce administrative costs to ensure that more funding is directed toward meeting LIRAP goals?

This evaluation report follows the following structure. First, the Program Background (Section 3) summarizes the Pilot program development and design. Next, the Evaluation Methodology section summarizes the impact and process evaluation methods. Sections 4, 5, and 6 respectively present the demographic characteristics of Pilot customers, impact evaluation results, and process evaluation results. The report concludes with a section on evaluation conclusions and recommendations.

3 Program Background

Avista provides a range of programs designed to assist low income customers proactively manage their electricity and gas consumption and pay their energy bills. Programs include the:

- **Low Income Home Energy Assistance Program (LIHEAP) –** A federal heating and cooling assistance program for low-income households earning below 125% of the Federal Poverty Level (FPL).
- **Avista Low Income Rate Assistance Program (LIRAP) –** An energy assistance program for low-income customer households funded through electric and natural gas tariff surcharges. LIRAP includes:
    - **LIRAP Heat –** designed to supplement the federal LIHEAP providing heating and cooling assistance for low-income households earning below 125% FPL.
    - **LIRAP Share** - emergency assistance for low-income customers to a maximum of $350.[1]
    - **LIRAP Senior Energy Outreach –** rate assistance for seniors over 60 years of age on fixed incomes at or below 200% FPL who are not eligible for other rate assistance (LIHEAP or LIRAP Heat). The benefit is provided in the form

[1] Avista implemented a temporary exception program, increasing the available assistance under LIRAP Share to $1,550 for customers with extraordinarily high bills and income up to 200 percent of federal poverty line, effective August 8, 2016, to May 31, 2017.

of a one-time annual grant of $400 for heating customers and $100 for non-heating customers.[2]

- **Avista Project Share Program** – funded by charitable donations from Avista customers and staff, the program supplements the LIRAP Share program providing emergency energy assistance to those who have exhausted all other available energy assistance sources.

In 2014 a workgroup comprised of stakeholders including Avista, the Washington Utility Commission, the Public Counsel division of the Washington State Attorney General, Spokane Neighborhood Action Partners ("SNAP"), Rural Resources Community Action ("Rural Resources"), and the Department of Commerce conducted a series of workshops to explore modifications or additions to the Avista Low Income Rate Assistance Program (LIRAP) Program. The Workgroup established four primary goals:

- Keep customers connected to their energy service;
- Provide assistance to more customers than were currently served;
- Lower the energy burden of LIRAP participants; and
- Ensure that LIRAP has the appropriate data to assess Program effectiveness.

Following the workshops, the workgroup filed and received approval to establish the Rate Discount Pilot program.

Program Design

The Pilot began on October 1, 2015, and concludes on September 30, 2017. The targeted population for the Pilot was:

- Limited-income senior over 60 years of age and/or disabled electric and gas customers in Washington. Disabled customers defined as a person with an inability to work as verified by type of fixed income.
- Living on fixed incomes between 126 percent and 200 percent Federal Poverty Level (FPL). A fixed income was defined as a fixed cash benefit amount from state, federal or other source (e.g. private pension) expected to last two years from the date of application where there is no variable income source in the household. Table X below presents the 2015 FPL income categories by family size.

[2] Income is adjusted for non-reimbursed medical expenses. The Senior Energy Outreach annual grant cap increased from $300 to $400 per eligible household, effective October 1, 2016.

Table 1: 2015 Federal Poverty Level Categories by Family Size

Family Size	100%	125%	200%
1	$11,770	$14,713	$23,540
2	$15,930	$19,913	$31,860
3	$20,090	$25,113	$40,180
4	$24,250	$30,313	$48,500
5	$28,410	$35,513	$56,820
6	$32,570	$40,713	$65,140

* Source: U.S. Department of Health and Human Services. https://aspe.hhs.gov/2015-poverty-guidelines

- Limited to 800 Avista customers, 700 from Spokane County, and 100 from Lincoln, Ferry, and Stevens counties.

The workgroup designed the Pilot to deliver an average benefit of $300 per participant, per year, which was similar to the existing Senior Grant program at the time the Pilot was established. The specific rate discounts were a reduction of:

- $0.03153 per kilowatt-hour of electricity
- $0.40663 per therm of natural gas

Dual service customers chose the rate discount for either their gas or electric service; they could not have a rate discount on both fuel sources.

Avista, SNAP, and Rural Resources conducted outreach and enrollment activities, and customers were required to contact either SNAP or Rural Resources for eligibility determination and enrollment.

4 Evaluation Methodology

4.1 Impact Evaluation Methods

The goal of the impact evaluation is to determine the effect of the Pilot rate discount on participant customer energy use, energy costs, and payment habits. We engage in three main analytical tasks to evaluate the effect of the Pilot rate discount:

- **Monthly billing consumption regression** model to estimate the effect of the Pilot rate discount on energy consumption
- **Monthly billing energy cost regression** model to estimate the effect of the Pilot rate discount on customer energy bills
- **Discrete choice model** to estimate effect of Pilot rate discount on disconnection rates

Results of these tasks are provided in Section 6.

4.1.1 Monthly Billing Regression Analysis Methods

As noted above a primary task for the impact evaluation was to develop a billing regression model that estimates the effect of Pilot participation on customer energy bills (both usage and costs). At first pass, a lower rate should lead to lower energy bills (all else equal). However, the lower rate may have encouraged some customers to use more electricity, as energy is now cheaper through the Pilot. A billing regression model helps disentangle these two contrasting effects, in addition to any other external factors that may influence usage such as the effect of weather or an economic downturn.

The billing regression model utilized in this evaluation is based on an initial sample of 704 Pilot participants enrolling between October 1, 2015 and June 1, 2016 that remained in the Pilot through May 30, 2017 (469 electric customers and 235 gas customers). Once all the project and billing data were compiled into a comprehensive dataset, we matched each household with appropriate weather data matched to the exact billing period.[3] We then developed data screens to prepare the data for billing analysis. The primary objective of the data screening was to remove any potentially erroneous billing data from the final

[3] To obtain the most accurate weather data possible, all participating households were first mapped to the geographically nearest weather station, and hourly data were taken from the National Oceanic and Atmospheric Administration's (NOAA) FTP site. Subsequently, all hourly weather data were aggregated into daily values and we developed customized weather data for each billing period and each home, so the data accurately reflected the weather conditions within the specific billing period. In other words, if a billing period ran from January 15th to February 15th, 2016, the weather data would include temperature data from this specific time period, rather than assigning a "monthly" value that reflected the average temperature in the month the bill was issued.

model dataset. The screens used to produce the final modeling dataset removed the following:

- Observations with normalized monthly electricity consumption less than 100 kWh;
- Observations with normalized monthly electricity consumption greater than 10,000 kWh;
- Observations with normalized monthly natural gas consumption less than 0 Therms;
- Observations with normalized monthly natural gas consumption greater than 100 Therms;
- Households with less than 6 months of post Pilot program observations
- Households with less than 6 months of pre Pilot program observations

For each fuel group, electric and gas customers, we estimated two separate billing regression models: a pooled fixed effects model using no comparison group, and a pooled fixed effects model that included a comparison group of homes from the Senior Outreach Grant program. In total we estimated and provide results for four models, two models with a comparison group, and two models without a comparison group.

To obtain a suitable comparison group we conduct a matching exercise where we matched customers from the Pilot group to customers to the Senior Outreach Grant program group based on their monthly energy consumption in the period before participation in the Pilot. To do this we used a matching algorithm that takes a home from the Pilot group and finds the home in the Senior Grant program group that most closely matches its average monthly energy use in the period before the pilot program. The comparison group was selected after the above screens were applied so the resulting comparison group includes an equal number of homes from the Senior Outreach Grant program as from the Pilot group. **Whenever we refer to the comparison group, we are referring to the matched group of Senior Outreach Grant program participants**.

4.1.1.1 Fixed Effects Model Specification

The benefit of a fixed effects model is that it controls for unique characteristics within each household, such as general levels of electricity/natural gas use (e.g. a high usage or low usage household) and household occupancy, which would not otherwise be represented in the model. These types of time-invariant characteristics are the fixed effects that the model controls for with a household-specific constant term.

The general billing model using the fixed effects specification is provided below. Variations on this model were explored during the evaluation, including using a variety of

interaction terms as additional explanatory variables, and including a quadratic temperature variable (e.g. HDD*HDD). These alternative models all provided similar results, and did not improve the fit of the model. The final specification shown below was chosen as it estimated the model of best fit, allowed for the savings estimates to vary with weather conditions, and provided the most robust results.

The pooled fixed effects model with no comparison group specification is as follows:

$$kWh_{it} = \alpha_i + \beta_1 Post_{it} + \beta_2 CDD_{it} + \beta_3 HDD_{it} + \varepsilon_{it}$$

Where:

kWh_{it} = Electricity usage by the i^{th} home in the t^{th} time period

$Post$ = Indicator variable for month in the post-participation period for the Pilot (1 in post, 0 otherwise)

CDD_{it} = Cooling degree days for the the i^{th} home in the t^{th} time period

HDD_{it} = Heating degree days for the the i^{th} home in the t^{th} time period

α, β = Coefficients to be estimated in the model

ε = Random error term

When the comparison group is included in the model, the specification is modified slightly to distinguish between the post-retrofit period for the participants (treatment group) and comparison group:[4]

$$kWh_{it} = \alpha_i + \beta_1 Post_{it} + \beta_2 (Treat_i * Post_{it}) + \beta_3 CDD_{it} + \beta_4 HDD_{it} + \varepsilon_{it}$$

Where:

kWh_{it} = Electricity usage by the i^{th} home in the t^{th} time period

$Post$ = Indicator variable for month in the post-participation period for the Pilot (1 in post, 0 otherwise)

$Treat$ = Indicator variable for treament group participants only

CDD_{it} = Cooling degree days for the the i^{th} home in the t^{th} time period

HDD_{it} = Heating degree days for the the i^{th} home in the t^{th} time period

α, β = Coefficients to be estimated in the model

ε = Random error term

An analogous specification was used to model natural gas savings. In addition to energy consumption, our evaluation was tasked with measuring the effect of Pilot participation on energy costs. To achieve this using the same set of billing data, our team utilized the same model specification but with energy costs as the dependent variable:

[4] The comparison group is a matched group of households from the Senior Outreach Grant program, that includes an equal number of households as the Pilot group.

$$ElecCost_{it} = \alpha_i + \beta_1 Post_{it} + \beta_2 (Treat_i * Post_{it}) + \beta_3 CDD_{it} + \beta_4 HDD_{it} + \varepsilon_{it}$$

Where:

$ElecCost_{it}$ = Electricity cost by the i^{th} home in the t^{th} time period

$Post$ = Indicator variable for month in the post-participation period for the Pilot (1 in post, 0 otherwise)

$Treat$ = Indicator variable for treament group participants only

CDD_{it} = Cooling degree days for the the i^{th} home in the t^{th} time period

HDD_{it} = Heating degree days for the the i^{th} home in the t^{th} time period

α, β = Coefficients to be estimated in the model

ε = Random error term

4.1.2 Disconnection Model Results

In addition to modeling energy consumption and costs, we also conduct a separate discrete choice model in order to estimate the effect of the Pilot on customer disconnections. The model specification used is a binomial (or binary) logistic or "logit" regression model, specified as follows:

$$Disconnect_{it} = \alpha_i + \beta_1 Post_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

Where:

$Disconnect_{it}$ = Indicator variable for disconnect for i^{th} home in the t^{th} time period (1 if disconnected, 0 otherwise)

$Post$ = Indicator variable for month in the post-participation period for the Pilot (1 in post, 0 otherwise)

X = Vector of additional demographic variables

α, β = Coefficients to be estimated in the model

ε = Random error term

The logistic regression model includes a binary (yes or no, zero or one) response variable as the dependent variable and relates that variable to a set of explanatory variables that can theoretically explain the probability or odds of the binary response variable taking a particular value. In this case the binary variable is the instance of a disconnect event in a given billing cycle, i.e. either a home is disconnected, or is not disconnected in a given billing cycle. The main explanatory variable is the indicator of whether a particular month, or billing cycle is in the post participation period for the Pilot program or not. Other variables may be considered including demographic or other variables. Ultimately, the goal is to determine if there is any change in the probability of a disconnect event on average across the homes, related to participation in the Pilot program.

4.2 Process Evaluation Methods

In addition to the more quantitative impact analyses, Evergreen also conducted qualitative interviews and a survey of customers to collect information on the Pilot implementation process, and gather insights from customers and program staff. Results of these tasks are provided in Section 7.

4.2.1 Customer Survey

Evergreen conducted a customer telephone survey with 106 households to obtain a robust analysis sample. Evergreen worked with Avista, SNAP, and Rural Resources staff to develop a survey instrument that included questions such as:

- Have you noticed a difference in your energy bill?
- Have you changed any of your energy use habits as a result of being on the Pilot rate?
- Has participation in the Pilot affected your ability to pay your utility bill?
- Have you noticed any other benefits (beside cost reductions) since enrolling in the Pilot?

The survey instrument is attached in Appendix A.

Once the survey instrument was finalized, evergreen worked with a Computer Assisted Telephone Interview (CATI) firm, CIC Research, to field the survey. Evergreen provided CIC with a randomized list of Pilot participants, stratified by community action agency, SNAP and Rural Resources. Table 2 summarizes the survey completes.

Table 2: Survey Participant Disposition

Agency	Total Participants	Survey Target	Survey Completes	% of Target
SNAP	713	80	83	104%
Rural Resources	96	20	23	115%

4.2.2 In-Depth Interviews with Pilot Program Staff

In addition to the participant survey, Evergreen also conducted three in-person group interviews with Pilot program staff on May 3rd, May 4th, and May 5th, as follows:

- May 3rd – One in-depth group interview with three Avista staff and a second in-depth interview with Avista CARES staff.
- May 4th – One in-depth group interview with five SNAP staff.

- May 5th – One in-depth interview with two Rural Resources staff.

Staff interviewed included staff involved with program planning and implementation, as well as program outreach and recruitment. Interview subjects were advised that their responses would be anonymous and reported in aggregate to ensure confidentiality, and allow for candid responses from interview subjects. Topics discussed during these interviews included the following, and the interview instrument is provided as Appendix B:

- Outreach and recruiting methods and their effectiveness
- Expected customer benefits from the Pilot
- Comparison of processes and resources needed to qualify customers for the Pilot relative to the SEOP
- Perceptions on the advantages and disadvantages of the Pilot relative to the SEOP
- Recommendations for improvement

In addition to the analysis tasks listed above, Evergreen also conducted summary analysis of Pilot program customer participation and demographic data, which is provided in Section 5.

5 Customer Data Analysis

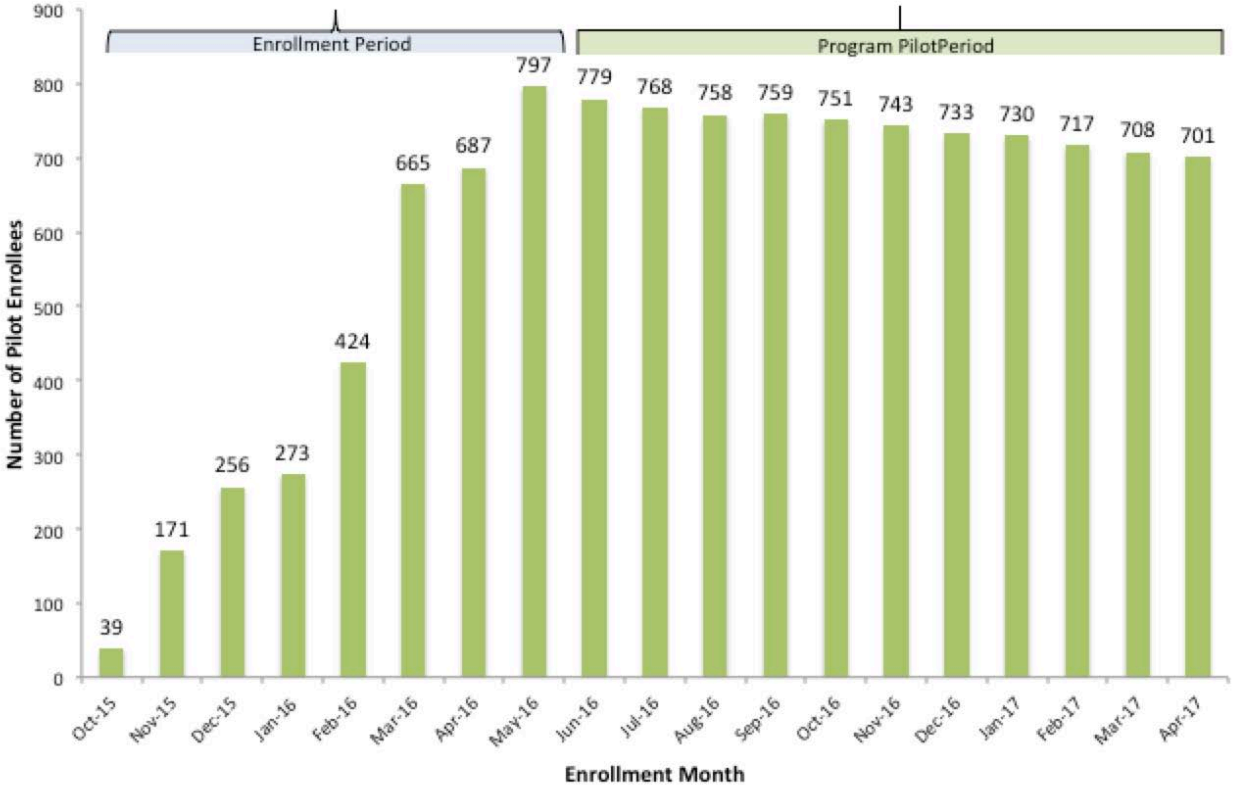
5.1 Participation Data and Program Attrition

In total, 809 customers signed up for the Pilot program from October 1, 2015 through June 1, 2016. However, during the enrollment period multiple customers opted out of the program after being entered. The end result was that when enrollment was closed on June 1st 2016, there were 779 Pilot participants enrolled. This is 97.4 percent of the initial Pilot participation goal of 800 participants that Avista together with SNAP and Rural Resources set prior to program implementation. Table 3 disaggregates this information by agency. Figure 1 presents the number of enrollees by month, showing that once enrollments stopped in June 2016 there has been a slow but steady attrition of approximately eight participants per month leaving the program, or about 1 percent per month. Participants are likely exiting the program due to moving, or in some cases through mortality.

Table 3: Pilot Participation (June 2016)

Agency	Program	Participants (n)
SNAP	LIRAP	686
Rural Resources	LIRAP	93

Figure 1: Pilot Program Enrollment by Month



5.2 Characteristics of Pilot Participant Households

SNAP and Rural Resources provided demographic data for 714 Pilot participants. Nearly half of Pilot participants live alone and another 37 percent live in a two-person household (see Table 4). A relatively small number of households (15 percent) live in a three-person or four-person household and less than 1 percent of participants live in households with more than four persons.

Table 4: Distribution of Participants by Household Size

Persons in Household	Households	Percentage of Total
1	342	48%
2	265	37%
3	54	8%
4	48	7%
5	3	0.4%
6	2	0.3%

* Based on data for both SNAP and Rural Resources participants.

As we would expect, residents in participating homes tend to be older, with 82 percent of homes containing at least one person over the age of 60. Very few participant homes have children under the age of 18 (only 4 percent) and just over one in four homes (27 percent) contain working-age adults 18 to 60 years of age. Half of all participant homes include at least one disabled household member.

Table 5: Age Group and Disability Status of Participants

At Least One Household Member Has…	Households	Percent
Child Under 18	27	4%
Adult 18 – 60	191	27%
Adult Over 60	583	82%
Disabled	358	50%

* Based on data for both SNAP and Rural Resources participants.
Note: proportions do not sum to 100%.

Consistent with the high proportion of participants that are of retirement age and/or are disabled, very few LIRAP participant homes include a household member who is currently working (either full- or part-time) or is seeking employment. Only 4 percent of participating homes include a person currently employed and 6 percent include a household member seeking employment.

Table 6: Work Status of Participants

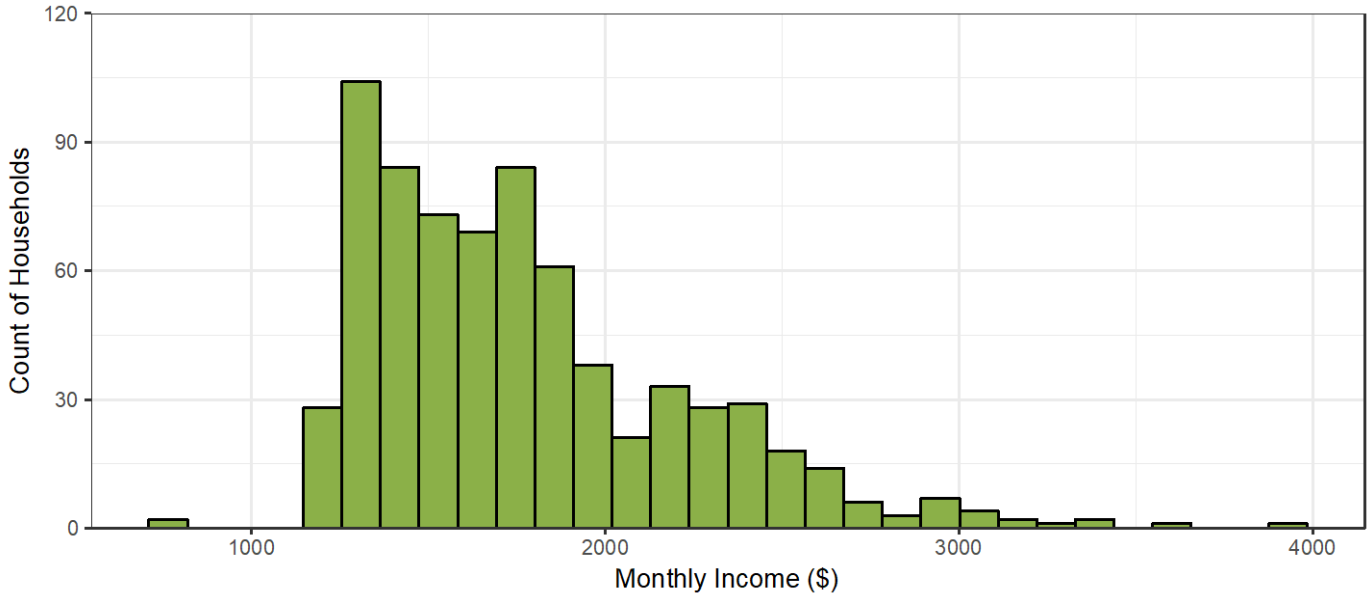
At Least One Household Member…	Households	Percentage of Total
Works Full-Time	7	2%
Works Part-Time	11	2%
Is Seeking Employment	29	6%
Is Not Seeking Work	428	93%

* Based on data for SNAP only; data not available for Rural Resources.
Proportions do not sum to 100 percent.
Note: 170 SNAP participants did not respond to the work status question.

The average monthly income of the 714 participants enrolled in the Pilot is $1,770 ($21,240 annually). This average monthly income would position the average participant home at

180 percent of FPL. The range in income is substantial, with the lowest income participant receiving only $733 per month and the highest earning participant receiving $3,897.[5] A graphical representation of the distribution is shown in the histogram in

Figure 2: Histogram of Pilot Participant Monthly Income



More than two-thirds of participant households receive Social Security retirement income and another 26 percent receive income through Social Security disability (see Table 7). Other common sources of income include pensions (27 percent) and Supplemental Security Income (SSI) at 15 percent.

Table 7: Sources of Non-Work Income

Source of Income	Households	Percent
Pension	196	27%
Social Security Retirement	486	68%
Social Security Disability	185	26%
Supplemental Security Income (SSI)	104	15%
Temporary Assistance for Needy Families (TANF) / General Assistance Unemployable (GAU)	7	1%
Veteran Administration	25	4%
Child Support	1	0%

[5] Household income and household size are highly positively correlated (r = 0.69).

Other Sources of Income	69	10%

* Based on data for both SNAP and Rural Resources. Proportions do not sum to 100 percent.

Medicare is the most common source of health insurance for participants, with 61 percent of households containing at least one member who receives Medicare. The other common source of health insurance for LIRAP participants is Medicaid (30 percent of participants). Medicaid is the primary source of health insurance for poor families and working-age adults who are disabled. In addition, since January 2014, Medicaid is available to working-age adults in Washington who are not disabled and do not have dependent children. A small proportion of participants receive health insurance through another source (e.g. employer), and 5 percent of participants have at least one household member who is uninsured.

Table 8: Insurance Status of Participants

At Least One Household Member…	Households	Percent
Receives Employer-Provided Health Insurance	19	3%
Has Self-Pay Insurance	4	1%
Is Enrolled in Medicaid	188	30%
Has Medicare	386	61%
Receives Washington Basic Health	15	2%
Has No Health Insurance	34	5%

* Based on data for SNAP only; data not available for Rural Resources. Proportions do not sum to 100 percent.
Note: 14 households participating in SNAP receive health insurance from more than one source.

More than three-quarters of LIRAP participants live in single-family homes (see Table 9). The remainder lives in either multifamily homes (8 percent) or a mobile/manufactured home (15 percent).

Table 9: Housing Type of Participants

Housing Type	Count	Percent
Single-Family	545	77%
Multifamily	60	8%
Mobile/Manufactured Home	106	15%

* Based on data for both SNAP and Rural Resources participants.
Note: Housing type was not reported for three participants.

Two out of three participants either own their home or have a mortgage. The remainder rent their homes, with the vast majority of renters doing so without rent subsidy.

Table 10: Home Ownership Status of Participants

Home Owner / Renter	Households	Percentage of Total
Own or Have a Mortgage	415	66%
Rental (Unsubsidized)	194	31%
Rental Subsidized)	22	3%

* Based on data for both SNAP and Rural Resources participants.
Note: 83 participants either refused or did not know the ownership status of their home.

The primary source of heat for most LIRAP participants is electric (55 percent) or natural gas (42 percent). Only about 1 percent heat with fuel oil and 2 percent heat with wood.

Table 11: Source of Primary Heating for Participant Homes

Primary Source of Heat	Households	Percent
Electric	385	55%
Natural Gas	294	42%
Oil	8	1%
Wood	15	2%

* Based on data for both SNAP and Rural Resources participants.
Note: Twelve participants either refused to answer or did not know the primary source of heat for their home.

5.3 Customer Billing Data Analysis

In addition to demographic data, Evergreen also reviewed and summarized billing data for the Pilot and the Senior Grant program to see if there are any noticeable trends. We first looked at the length of time, in months that accounts have been open. As shown in Table 12, Pilot participants have had substantially longer times on the same account than LIRAP participants that receive the Senior Grant, potentially indicating that Pilot participants have lived in their homes on average, for longer.

Table 12: Summary of Number of Months on Account by Program

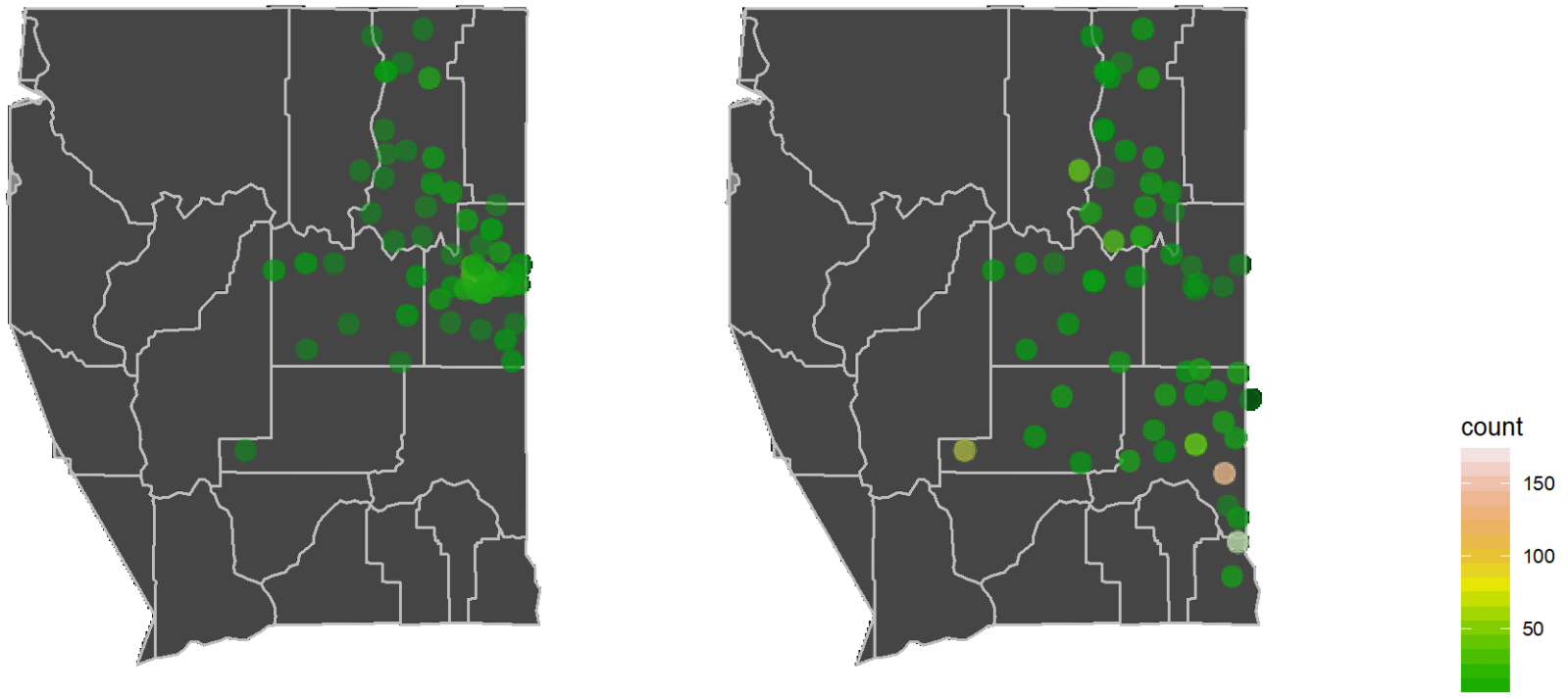
Program	Months on Account Mean	Months on Account Median	Months on Account Std. Dev.	Number of Accounts
Pilot Program	138	80	149	809

Senior Grant Program	85	44	100	1532

Next we analyzed the geographic dispersion of the Pilot program and the Senior Grant program. As we would expect, the Pilot program enrollees are concentrated in and around Spokane County with fewer enrollees in rural areas. The Senior Grant program, on the other hand, has more enrollees outside Spokane County. Figure 3 presents the geographic dispersion of the Pilot (labeled LIRAP) and the Senior Grant program (labeled SEOP) by zip code and county. Each circle represents the geographic center of a zip code and the color of the circle denotes the concentration of enrollees with lighter blue indicating a higher concentration.

Figure 3: Washington County Map Showing Dispersion of Program Enrollees by Zip Code

LIRAP	SEOP



We next looked at energy consumption and energy cost across the Pilot participants, and the Senior Grant program participants. Table 13 and Table 14 respectively show electric and gas consumption and cost for the total billing period, the pre-Pilot period, and the post-Pilot Period. For electricity consumption and costs, the Pilot participants have substantially less consumption on average per year than the Senior Grant program recipients, and their average annual cost is also substantially lower. Looking from the pre-pilot period to the post-Pilot period for the Pilot enrollees, we do not see a large change in consumption, with a slight increase of 24 kWh over the entire year. Costs, however are on average $296 lower, which we would expect given these customers are receiving the discount.

Table 13 Comparisons of Pilot and Senior Grant Programs – Electricity Average Annual Consumption and Cost

	Program	Annual Usage Mean (kWh)	Annual Usage Std. Dev. (kWh)	Annual Cost Mean ($)	Annual Cost Std. Dev. ($)	Number of Enrollees
Total	Pilot	12,832	6,789	937	609	550
	Senior Grant Program	17,578	11,645	1,583	1,013	1,518
Pre-Pilot	Pilot	12,649	6,431	1,089	585	550
	Senior Grant Program	17,746	12,817	1,584	1,153	1,518
Post-Pilot	Pilot	12,673	7,316	793	462	550
	Senior Grant Program	17,579	11,585	1,594	1,070	1,518
Difference	Pilot	+24 (0.1%)	-	-296.00 (-27%)	-	550
	Senior Grant Program	-167(0.9%)	-	-10 (0.6%)	-	1,518

The trend for gas between the Pilot enrollees and the Senior Grant recipients is the reverse of electricity with the Pilot recipients using more gas on average than the Senior Grant recipients. For the Pilot recipients, there was an increase of 55 therms on average between the pre- and post-pilot time period, however their average annual bill cost reduced by approximately $292.

Table 14 Comparisons of Pilot and Senior Grant Programs - Gas

	Program	Annual Usage Mean (kWh)	Annual Usage Std. Dev. ($)	Annual Cost Mean ($)	Annual Cost Std. Dev. ($)	Number of Enrollees
Total	Pilot	812	497	612	417	259
	Senior Grant Program	626	445	671	294	416
Pre-Pilot	Pilot	767	560	754	403	261
	Senior Grant Program	652	499	726	497	416
Post-Pilot	Pilot	814	587	460	272	259
	Senior Grant Program	600	433	629	396	416
Difference	Pilot	+55 (+7%)	-	-292 (-38.7%)	-	261
	Senior Grant Program	-52 (-8%)	-	-97 (-13%)	-	416

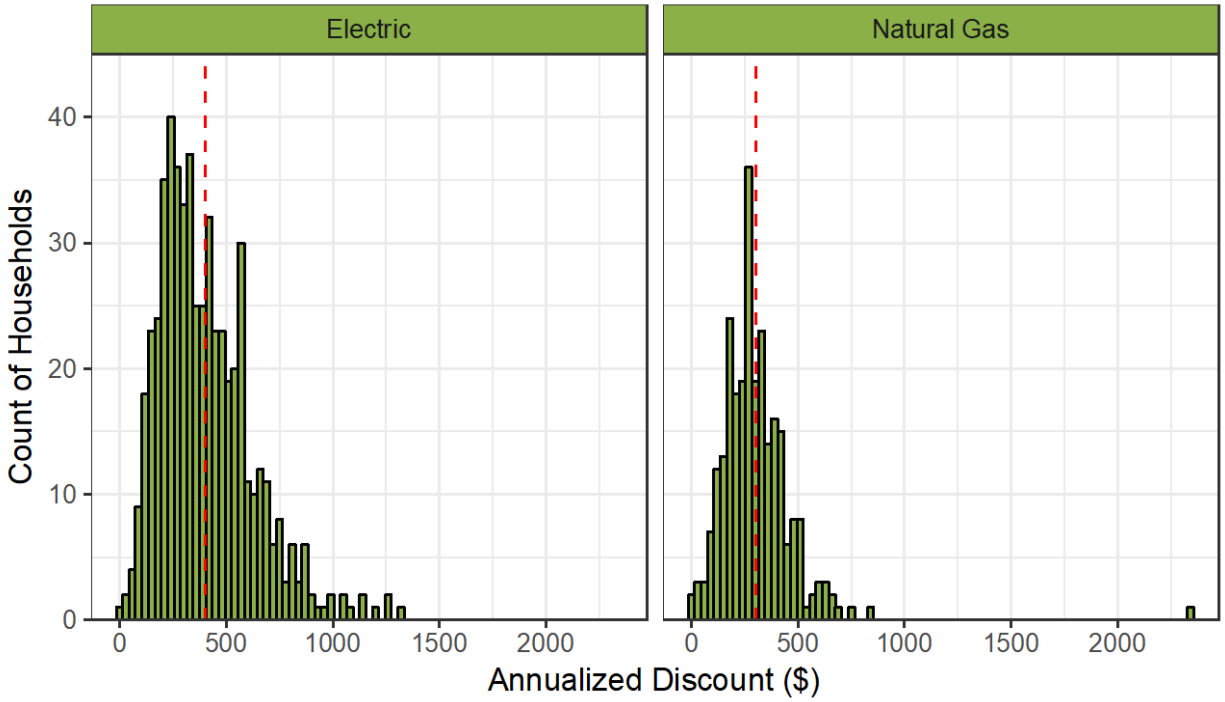
Lastly, we looked at the average annualized discount for the Pilot program enrollees. The annualized discount was calculated by dividing the monthly discount amount by the number of days in the billing cycle to get a daily discount value. We then calculated the average daily value for each account. When multiplied by 365.25 days this gives an annualized discount estimate. The Pilot was designed to provide an average annual benefit of approximately $300 to be comparable with the Senior Grant program. Table 15 presents the average annual discount for natural gas ($306) and electricity ($403).

Table 15 Annualized Pilot Discount by Fuel Type

Program	Annual Discount Mean ($)	Annual Discount Minimum ($)	Annual Discount Maximum ($)
Natural Gas	$305.87	$2	$2,333
Electricity	$402.95	$1	$1,312

There was a wide distribution of annualized discounts with some significant outliers. Figure 4 below illustrates the distribution of annualized discount amount. The red dashed line represents the mean annualized discount amount.

Figure 4: Annualized Discount Histograms by Fuel Type



6 Impact Analysis Results

A key task for the impact evaluation was to develop a billing regression model that estimates the effect of Pilot participation on customer energy bills (both usage and costs). The billing regression model utilized in this evaluation is based on a sample of 714 Pilot participants enrolling between October 1, 2015 and June 1, 2016. At the outset of the evaluation, we planned to estimate two separate billing regression models:

- A pooled fixed effects model using no comparison group; and
- A pooled fixed effects model that included a comparison group of homes pulled from the Senior Outreach Grant Program.

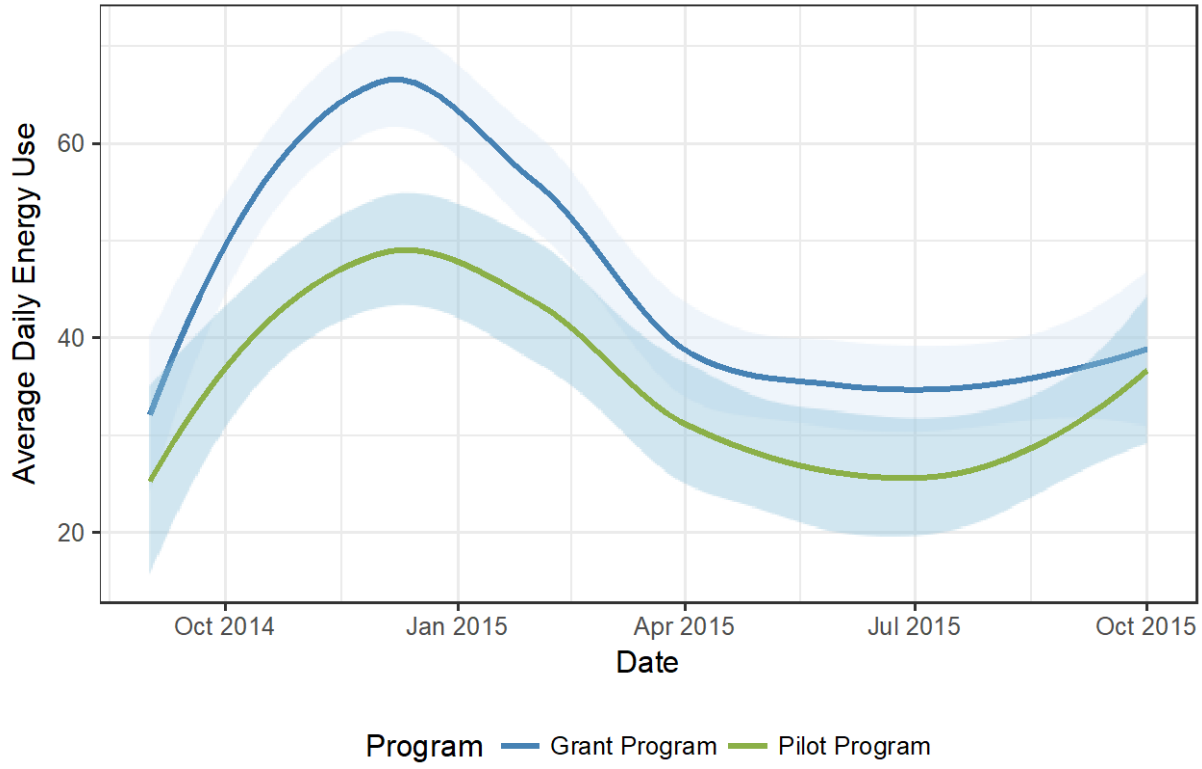
A benefit of using a model specification that includes a comparison group is that it adds stability into the model by controlling for variation in energy usage across households with similar characteristics due to non-program related factors. For example, average household energy use during the program period may have changed significantly due to factors not included in the model, such as improved or worsening economic conditions or changes to the price of energy. A model without a comparison group could attribute these external influences to the program; however, inclusion of a comparison group controls for these factors and therefore is better able to isolate the impact of the Pilot.

While including comparison group in the regression model is theoretically positive, finding an appropriate comparison group, that includes subjects that are similar to the subjects in the treatment group is challenging. Including a comparison group that is not a good match with the treatment group can introduce bias into regression results leading to problematic results. We opted to use the Senior Outreach Grant Program group as a comparison group because they need to meet similar eligibility requirements meaning they are likely to be similar in characteristics such as age, income, and potentially energy consumption habits, meaning we can achieve a more "apples to apples" comparison.

6.1 Comparison Group Selection

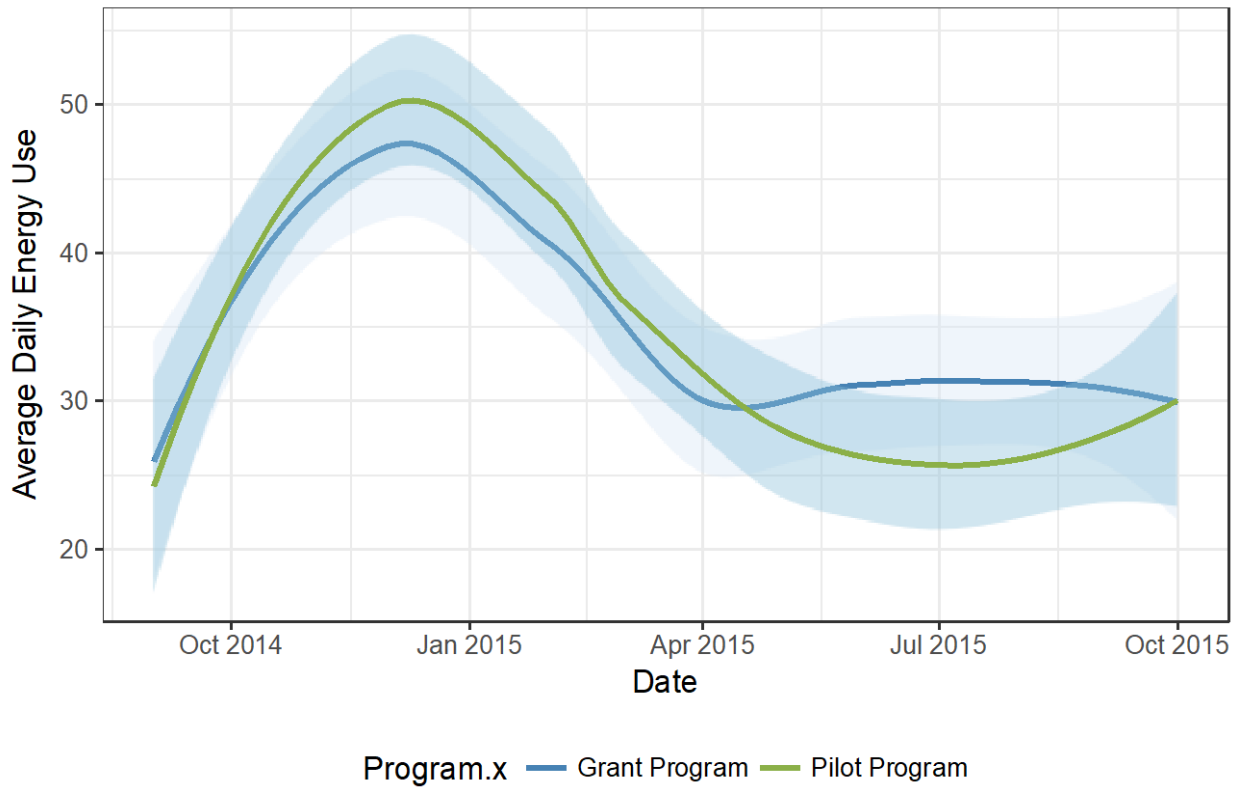
After receiving Senior Energy Outreach Grant Program participant data, Evergreen conducted analysis to determine if the Senior Grant Program group was a good comparison group for the Pilot program participant group. However, as noted in Section 5.3 the Senior Grant Program group had on average substantially higher electricity consumption and somewhat lower gas consumption that the Pilot program participants. This raised concerns that as a group, the Senior Grant Program participants may not be good candidates for a comparison group. Figure 5 below compares the average monthly pre period electricity and gas consumption between the Pilot program and Senior Grant program groups.

Figure 5: Average Daily Pre-Pilot Period Electricity Consumption (Participant vs. Comparison Group with 95% Confidence Interval)



While the entire Senior Grant program group on average is not a good comparison group, a subset of the Senior Grant program group may be as there are three times as many participants in the Senior Grant group. To try to obtain a suitable comparison group we proceeded to conduct a matching exercise where we matched customers form the Pilot group to customers to the Senior Grant group based on their energy consumption in the period before participation in the Pilot. To do this we used a matching algorithm that takes a home from the Pilot group and finds the home in the Senior Grant program group that most closely matches its average monthly energy use in the period before the pilot program. By doing this exercise for each house, if there are sufficient homes, we can develop a matching comparison group that will contain the same number of homes as the Pilot group. After applying the matching algorithm we have a matched group dataset that we will describe subsequently. Figure 6 below compares the average monthly pre period electricity and gas consumption between the Pilot program and Senior Grant program groups.

Figure 6: Average Daily Pre-Pilot Period Electricity Consumption (Participant vs. Matched Comparison Group with 95% Confidence Interval)



6.2 Data Screening

Using the data supplied by Avista, SNAP and Rural Resources, we found billing data and project records corresponding to 550 Avista electric customers and 259 natural gas customers participating in the Pilot.

Once all the project and billing data were compiled into a comprehensive dataset that also included weather data,[6] we developed two data screens to prepare the data for the billing analysis. The primary objective of the data screening was to remove any potentially

[6] To obtain the most accurate weather data possible, all participating households were first mapped to the geographically nearest weather station, and hourly data were taken from the National Oceanic and Atmospheric Administration's (NOAA) FTP site. Subsequently, all hourly weather data were aggregated into daily values and matched to the specific home billing periods, so the data accurately reflected the weather conditions within the billing period.

erroneous billing data from the final model dataset. The screens used to produce this final modeling dataset removed the following:

- Observations with normalized monthly electricity consumption less than 100 kWh;
- Observations with normalized monthly electricity consumption greater than 10,000 kWh;
- Observations with normalized monthly natural gas consumption less than 0 Therms;
- Observations with normalized monthly natural gas consumption greater than 100 Therms;
- Households with less than 6 months of post Pilot program observations
- Households with less than 6 months of pre Pilot program observations

A summary of the data screening process is shown in Table 16.

Table 16: Data Screening Results

Data Description	Participants Removed (n)	Participants Remaining (n)	Participants Remaining (%)
Electric Pilot participants	0	550	100%
Monthly Electricity Consumption >100 kWh and <10,000 kWh	3	547	88%
Post Period Months > 6 and Pre Period Months > 6	**78**	**469**	85%
Billing Analysis Dataset (end)	**81**	**469**	88%
Natural Gas Pilot Participants	0	259	100%
Monthly Electricity Consumption > 0 Therms and <100 Therms	1	258	99%
Post Period Months > 6 and Pre Period Months > 6	**57**	**201**	77%
Billing Analysis Dataset (end)	**58**	**201**	99%

6.2.1 Energy Usage Billing Regression Model Results (Without Comparison Group)

Table 17 shows the detailed regression results for the model using all screened participant data for electric customers. In general, the model results were consistent with expectations.

Nearly all coefficients had statistically significant estimates at the 5 percent level, as evidenced by the low p-values in the right hand column of the table.

The variable of interest is "Post", which represents the change in consumption in the post-enrollment period and, therefore, is a reflection of energy changes resulting from the Pilot. The "Post" variable is equal to one in the post-retrofit period, and zero in the pre-retrofit period.

To calculate the average annual energy change, we simply multiply the "Post" coefficient by the average number of days in a year (365.25). The resulting point estimate of 209 indicates an increase in electricity use equal to 209 kWh per year from the pre Pilot period to the post Pilot period or 2 percent of pre-retrofit annual electricity consumption of 13,097 kWh.

Table 17: Fixed Effects Regression Model Results (Electric)

Mean Daily Consumption (kWh)	36.478
Observations	11,168
Adjusted R-Squared	0.368

Table 18: Fixed Effects Regression Model Results (Electric)

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	0.572	0.287	1,996	5%
HDD_NORM[1]	1.214	0.017	73.000	<1%
CDD_NORM[2]	52.473	1.935	27.114	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

1: Heat degree days are based on a base temperature of 65° Fahrenheit

2: Cooling degree days are based on a base temperature of 65° Fahrenheit

Similarly, for natural gas, we used an identical model specification but omitted the cooling degrees day term ("CDD Norm")–as gas equipment is not used for cooling–and replaced the dependent variable with normalized daily natural gas consumption. The results for this model were inconclusive. The coefficient corresponding to "Post" was not statistically significantly different from zero (i.e. no change in usage). This indicates that once weather

is controlled for there was no significant change in energy consumption as a result of the Pilot program.

Table 19: Fixed Effects Regression Model Results (Natural Gas)

Mean Daily Consumption (Therms)	2.21
Observations	5,974
Adjusted R-Squared	0.704

Table 20: Fixed Effects Regression Model Results (Natural Gas)

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	0.037	0.037	1.449	15%
HDD_NORM	0.124	0.001	119.972	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

6.2.2 Energy Usage Billing Regression Model Results (With Comparison Group)

As discussed, we also utilized a fixed effects model that included a comparison group. The use of a comparison group of customers enabled the model to control for additional external factors that may be affecting energy use.

The fixed effects comparison group utilized the same data screens discussed earlier, and the model estimation results for electric consumption are shown in Table 21.

Table 21: Fixed Effects Comparison Group Model Results (Electric)

Mean Daily Consumption (kWh)	36.42
Observations	23,835
Adjusted R-Squared	0.072

Table 22: Fixed Effects Comparison Group Model Results (Electric)

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	-0.147	0.628	-0.235	81%
POST_TREAT	-0.09	0.871	-0.103	91%
HDD_NORM	1.296	0.026	-0.235	<1%
CDD_NORM	72.800121	3.046	23.903	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

The variables used for calculating Pilot impacts are "Post_Treat". The coefficient on the "Post_Treat" interaction variable (β_2) can be interpreted as the change in normalized daily energy consumption attributable to a household being in the treatment group during the post report period. The coefficients corresponding to "Post" and "Post_Treat" are not statistically significantly different from zero (i.e. no change in usage). The coefficients on these variables are also very close to zero indicating there was potentially little to no change related to the Pilot program in energy consumption.

We repeated this exercise for natural gas customers. Again the results were inconclusive relative to participation in the Pilot program. The Post variable statistically significant, indicating that there was an increase in the Post period experienced by both the participant and comparison groups, independent of the Pilot. The other statistically significant variable was "HDD_Norm", which is not surprising and suggests that cold temperatures are a determining factor in natural gas use.

Table 23: Fixed Effects Comparison Group Model Results (Gas)

Mean Daily Consumption (Therms)	2.02
Observations	12,595
Adjusted R-Squared	0.269

Table 24: Fixed Effects Comparison Group Model Results (Gas)

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	0.154	0.060	2.583	<1%
POST_TREAT	-0.069	0.082	-0.839	40%
HDD_NORM	0.122	0.002	71.5515	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

6.2.3 Energy Cost Billing Regression Model Results (Without Comparison Group)

An analogous set of models that show the effect of Pilot participation on energy costs (rather than energy consumption) is included in this as well as in the following section. The models follow the same pattern as the energy usage models for both fuel types. In general, the model results were consistent with expectations. Many of the coefficients had statistically significant estimates at the 5 percent level or better, as evidenced by the low p-values in the right hand column of

The coefficient estimate of interest in and corresponds to the "Post" variable. The negative sign indicates that Pilot participants are spending less on their energy usage in the post-enrollment period. This finding is significant given that our models above show an increase in electricity consumption and approximately the same level of natural gas usage. The point estimate of -0.938 indicates that, on average, Pilot participants are savings 93.8¢ per day or $342 per year on their electricity bill. This is equivalent to a 24 percent decrease in pre-retrofit annual electricity costs.

Table 25: Fixed Effects Regression Model Results (Electric Cost $)

Mean Daily Energy Cost	3.99
Observations	11,168
Adjusted R-Squared	0.260

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	-0.938	0.232	-40.387	<1%
HDD_NORM[1]	0.063	0.001	46.998	<1%
CDD_NORM[2]	3.257	0.157	20,760	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

Unlike the natural gas usage models the coefficient corresponding to "Post" was highly significant when we modeled billed natural gas costs. The point estimate of -0.984 in Table 26 indicates that, on average, Pilot participants are savings $360 per year on their natural gas bills. This is equivalent to a 44 percent decrease in pre-retrofit annual natural gas costs. This preliminary finding is particularly interesting, as it suggests that natural gas Pilot participants are using approximately the same amount of fuel, but saving a significant amount on their monthly bill and reducing energy burden.

Table 26: Fixed Effects Regression Model Results (Natural Gas Cost $)

Mean Daily Energy Cost	2.22
Observations	5,974
Adjusted R-Squared	0.385

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	-0.984	0.025	-39.243	<1%
HDD_NORM	0.049	0.001	49.096	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

6.2.4 Energy Cost Billing Regression Model Results (With Comparison Group)

Using an identical model specification as the Energy Usage models, the model estimation results for electric costs are shown in Table 27.

Table 27: Fixed Effects Comparison Group Model Results (Electric Cost $)

Mean Daily Energy Cost	3.25
Observations	23,835
Adjusted R-Squared	0.036

Table 28: Fixed Effects Comparison Group Model Results (Electric Cost $)

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	0.019	0.057	0.332	73%
POST_TREAT	-0.994	0.079	-12.509	<1%
HDD_NORM	0.089	0.002	37.407	<1%
CDD_NORM	5.502	0.277	19.813	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

The variable used for calculating Pilot impacts is again "Post_Treat". The coefficient on the "Post_Treat" variable (β_2) can be interpreted as the change in normalized daily energy costs attributable to a household being in the treatment group during the post report period.

Changes in annual energy use are calculated from the model results by multiplying the coefficient estimate by 365.25. Substituting in the coefficient estimates from Table 27, we find that Pilot participants are, on average, decreasing electricity costs by $363 per year, or 31 percent of pre-retrofit annual billed electricity costs, all else equal. This estimate represents a slight decrease in cost savings equal to $20 when compared to the fixed effects model with no comparison group discussed earlier.

We repeated this exercise for natural gas customers, and again found significant cost savings. Our model finds that Pilot participants decreased natural gas costs by $298 per year, or 38 percent of pre-retrofit annual billed natural gas costs, all else equal. Similar to the electricity model, this estimate represents a slight decrease in cost savings equal to $61 when compared to the fixed effects model with no comparison group discussed earlier.

Table 29: Fixed Effects Comparison Group Model Results (Natural Gas Cost $)

Mean Daily Energy Cost	2.14
Observations	12,595
Adjusted R-Squared	0.282

Table 30: Fixed Effects Comparison Group Model Results (Natural Gas Cost $)

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
POST	-0.121	0.034	-3.598	<1%
POST_TREAT	-0.816	0.047	-17.495	<1%
HDD_NORM	0.065	0.0009	67.54	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

A summary of changes in average annual electricity and natural gas usage and costs are provided below in Table 31 and Table 32.

Table 31: Average Annual Fuel Changes by Fuel Type

Model Type	Pre-Retrofit Usage	Post-Retrofit Usage	Annual Usage Change	Annual Usage Change (%)
Pooled FE (Electricity)	13,097.7	13,306.6	208.9	2%
Comparison Pooled FE (Electricity)	13,303.5	13,270.6	-32.9	0%[1]
Pooled FE (Natural Gas)	808.7	822.2	13.5	2%[1]
Comparison Pooled FE (Natural Gas)	781.1	755.9	-25.2	3%[1]

Source: Analysis by Evergreen Economics of data provided by Avista.

[1] The results for these models are not statistically significant.

Table 32: Average Annual Fuel Cost Changes by Fuel Type

Model Type	Pre-Retrofit Cost ($)	Post-Retrofit Cost ($)	Annual Cost Change ($)	Annual Cost Change (%)
Pooled FE (Electricity)	$1,187	$844	$342.60	-29%
Comparison Pooled FE (Electricity)	$1,187	$824	$363.06	-31%
Pooled FE (Natural Gas)	$811	$451	$359.41	-44%
Comparison Pooled FE (Natural Gas)	$782	$484	$298.04	-38%

Source: Analysis by Evergreen Economics of data provided by Avista.

In general, model results were consistent with expectations. Our models show that on average, participating Avista electric customers showed little to no change in kilowatt-hours (kWh) or therms consumption.

Furthermore, our models found that, on average, participating Avista electric customers decreased annual billed electricity costs by $309, or 26 percent of their pre-Pilot cost. Similarly, natural gas customers saved over $354, or 38 percent of their pre-Pilot natural gas cost. These findings are of particular interest as they suggest that Pilot participants are consuming around the same amount of energy, but are saving money on their energy bills, and therefore are likely better off than prior to participation.

6.2.5 Disconnection Model Results

In addition to modeling energy consumption and costs, we also attempted to also conduct a separate discrete choice model in order to estimate the effect of the Pilot on customer disconnections. As noted in the methodology section the logistic regression model includes a binary (yes or no, zero or one) response variable as the dependent variable. In this case the binary variable is the instance of a disconnect event in a given billing cycle, i.e. either a home is disconnected, or is not disconnected in a given billing cycle. The main explanatory variable is the indicator of whether a particular month, or billing cycle is in the post participation period for the Pilot program or not. Our initial expectation is that the Pilot rate discount will lower participant energy costs, and Pilot participants will be able to make more on time payments, thereby reducing service disruptions.

We run two iterations of the binary logit model. The first iteration we include only Pilot program participants and one explanatory variable, the "Post" period indicator. The goal of this model is to understand if there is an increased or decreased likelihood of a disconnect event if a household participates in the Pilot program. Table 33 shows the detailed regression results for the simplified model using all Pilot participants. Model

results were consistent with our initial expectations. The variable we are interested, the "Post" variable, has the expected negative sign indicating that the probability of being disconnected after starting the Pilot program is lower than when households are not on the Pilot program. However, the t-statistic of -0.87 indicates that this result is not statistically significant. This may be because there are very few service disconnects in the Pilot program data, with a total of 12 disconnects over the entire three years of data, with seven occurring gin the period before the pilot and five occurring after the Pilot had begun.

Table 33: Binomial Logistic Regression Model Results

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
INTERCEPT	-7.2211	0.3781	-19.10	<1%
POST	-0.5095	0.5857	-0.87	38%

Source: Analysis by Evergreen Economics of data provided by Avista.

The second iteration of the binary logit model incorporates the Senior Grant program comparison group. By including the Senior Grant program participants, we are now comparing the two program groups and estimating if after starting the Pilot program, the participants are more or less likely that the Senior Grant program group to have a disconnect event. Table 34 presents the results of the regression analysis.

Table 34: Binomial Logistic Regression Model Results

Variable	Coefficient Estimate	Standard Error	t-statistic	Significance Level
INTERCEPT	-5.8824	0.1315	-44.736	<1%
POST	1.196	0.161	7.450	<1%
POST*TREAT	-3.044	0.457	-6.666	<1%

Source: Analysis by Evergreen Economics of data provided by Avista.

The variable of interest is "*Post*Treat*", which takes the value one in the post-enrollment period for the Pilot group participants only, and zero otherwise. The positive coefficient on "*Post*" indicates that all else equal, the probability, in general, of a household getting disconnected is higher in the post Pilot program period. However, the negative coefficient on the "Post*Treat" variable indicates that the Pilot program participants are less likely to have a disconnect event than the comparison group (the Senior Grant program group).

The log-odds given in these results are difficult to interpret. We can transform the log odds to a more easily interpretable odds ratio by using the natural exponential function. Doing this conversion gives us an odds ratio of 0.04. This means that the odds of a Pilot participant having a disconnect event compared to a comparison group member is 0.04:0.96, or alternatively that the comparison group is 24 times as likely to have a disconnect that the Pilot group.

7 Process Evaluation Results

In addition to the quantitative impact analyses, Evergreen conducted qualitative interviews and a survey of customers to collect information on the Pilot implementation process, and gather insights from customers and program staff. In the following sections we will report on the results of these efforts.

7.1 In-Depth Interviews with Pilot Program Staff

Evergreen conducted three in-person group interviews with Pilot program staff on May 3rd, May 4th, and May 5th, as follows:

- May 3rd – One in-depth group interview with three Avista staff and a second in-depth interview with Avista CARES staff.
- May 4th – One in-depth group interview with five SNAP staff.
- May 5th – One in-depth interview with two Rural Resources staff.

Staff interviewed included staff involved with program planning and implementation, as well as program outreach and recruitment. Interview subjects were advised that their responses would be anonymous and reported in aggregate to ensure confidentiality, and allow for candid responses from interview subjects. Topics discussed during these interviews included the following, the interview instrument is provided as Appendix B.

- Outreach and recruiting methods and their effectiveness
- Expected customer benefits from the Pilot
- Comparison of processes and resources needed to qualify customers for the Pilot relative to the SEOP
- Perceptions on the advantages and disadvantages of the Pilot relative to the SEOP
- Recommendations for improvement

7.2 Pilot Program Administration

The Low Income Rate Assistance Program Senior and Disabled Customer Rate Discount Pilot program is administered by Avista Utilities, with outreach, and enrollment services provided through the Spokane Neighborhood Action Partners (SNAP) and Rural

Resources Community Action (Rural Resources). SNAP is a local and regional advocacy organization providing assistance and services for the most vulnerable people living in Spokane. In addition to administering the Pilot program SNAP coordinate and provide assistance including LIHEAP, energy audits, housing assistance and many other services for low income and vulnerable populations in Spokane County. Similarly, Rural Resources is a community action and advocacy non-profit corporation whose mission is to meet the basic social and economic needs of rural communities in Washington. Rural Resources employs over 175 staff and provides a wide range of services in Ferry, Lincoln, Pend, Oreille, Stevens, Lake and other North and Eastern Washington counties. In addition to the Pilot, both organizations have experience working with Avista providing the Senior Outreach program, ad LIRAP Heat among other programs.

Both organizations receive funding for administering low-income projects on behalf of Avista, with 20.7% of funding going to administration costs. During the group interviews we discussed efforts taken by the agencies to reduce administrative costs. SNAP staff noted that they "work diligently to keep administration costs down and to work more efficiently". Specific activities mentioned include:

- Moving the organization to a paperless systems for processing LIHEAP and LIRAP Heat, and senior grants;
- Conduct regular staff meetings to streamline activities;
- Maintain detailed training manuals, training and resources to ensure that staff are adequately equipped to do their jobs;

Rural Resources staff explained that they actively work toward providing efficient administrative services and noted that 95 cents of every dollar provided to Rural Resources is used directly with those in need.

Administrative expenses related to the Pilot program are difficult to quantify. While numerous staff from across the agencies and Avista worked on delivering the pilot, and several noted that at the outset the program was labor intensive, interviewees could not provide solid estimates of actual hours in terms of FTE were required to administer the program. This is in part because all staff had other responsibilities and the agencies and Avista all offer other programs that also take their time. While a concrete estimate of FTE was not provided there are at least fifteen individual staff from across the agencies and Avista that have worked closely with the Pilot.

Overall, the agencies and Avista have a very good working relationship that is collaborative and effective. According to all interviewees the relationship between the agencies and Avista is open and cooperative. Communication between the organizations is strong and there were no reports of information bottlenecks with all interview subjects

noting that they feel comfortable approach their partner organizations to get information or assistance.

7.3 Program Outreach

Avista, SNAP, and Rural Resources (the Program team) engaged in a wide range of outreach activities to promote the Pilot program. At the outset of the Pilot program in October 2015, with 800 customers to recruit, the Pilot staff began promoting the Pilot through a variety of mediums including:

- Bill Inserts
- Flyers at local events and community organizations
- Radio ads
- Print ads
- Outreach letters

Despite the generous program and extensive marketing, over the first few months of the Pilot, the Program team struggled to recruit customers in sufficient numbers. Initially, the goal had been to recruit all customers by the end of December 2015, however at that time there over 500 customers still to recruit. At one point in February 2016, the Program team decided to send an "email blast" to Avista customer lists. The email blast proved to be overly successful with SNAP receiving over 1,000 calls in one day in response. While the email blast was an effective means of outreach, it did place a significant burden on SNAP staff in particular trying to field and return calls. For future email blasts like this, we would recommend targeting specific zip codes in a staggered way to try and avoid overburdening community agency staff.

To understand the perceived effectiveness of the various marketing and outreach efforts, we asked each interview group to rank outreach efforts from most to least effective. The results are presented by organization in Table X below.

Table 35: Pilot Program Outreach Activities

Avista	SNAP	Rural Resources
1) Email Blast	1) Email Blast	1) Email Blast
2) Website	2) Bill Inserts	2) Bill Inserts
3) Community organizations	3) Print ads	3) Letters to customers
4) Agency contacts	4) Flyers at Community events	4) Advertising
5) Bill Inserts		

All interview groups noted that outreach was a particular challenge at the outset of the Pilot program, explaining that there were challenges recruiting customers to the Pilot,

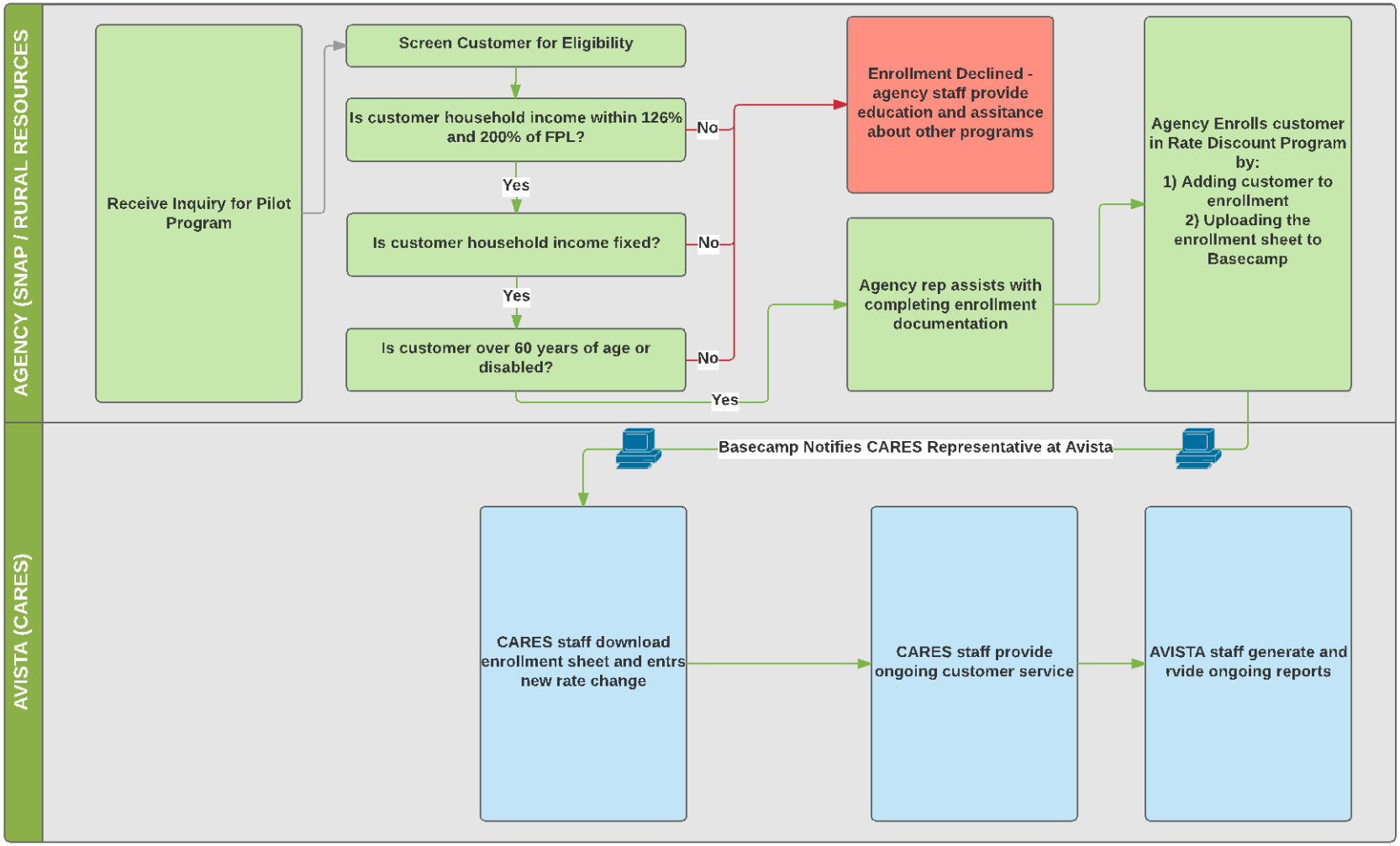
which was unexpected. However, given the success of the email blast, despite it causing substantial stress, this proved to be a highly effective recruiting tool.

Another challenge mentioned by SNAP staff was difficulty engaging and recruiting people with disabilities. SNAP staff explained that they were very happy to be offering a program to people with disabilities however, they had not worked with this community extensively before and found it challenging to find mediums or avenues to reach out and notify this segment about the Pilot. There are numerous resources available with information and strategies for marketing to the disabled community – we have included a list of resources in an attachment in Appendix B.

7.4 Enrollment and Implementation

Program enrollment is the role of SNAP and Rural Resources including verification and enrollment of Avista customers in the Pilot. Once customers are enrolled and their eligibility is verified, notification is sent to Avista Customer Service who activates the rate code discount. The following flowchart (Figure 7) provides a snapshot of the process.

Figure 7: LIRAP Rate Discount Pilot Enrollment Process



The Pilot enrollment process relied heavily on SNAP and Rural Resources staff. As depicted SNAP and Rural Resources staff directly received initial inquiries from Avista customers about the program. Once the agencies received an inquiry, the agency staff member administered a series of screening questions to determine if the customer was eligible for the Pilot program, in addition to conducting their standard intake process, which involves collecting responses to a series of general demographic and other characteristic questions. If a customer is not eligible for the Pilot, the agency staff did provide education about other programs and look for opportunities to connect customers with these programs. For customers that are eligible, the agency representatives provided assistance with completing the required documentation. Finally, agency staff added the necessary customer information to an enrollment spreadsheet that agency staff regularly updated and uploaded to the central Basecamp web portal. CARES staff were tasked with downloading the enrollment spreadsheet, conducting quality control on the reported enrollment information, and finally altering the rate code for the customer to activate the rate discount.

We asked the interview subjects how long the process typically took for an average customer and how well the process worked. Both SNAP and Rural Resources staff explained that, due to the nature of the target population the amount of time spent on each customer could vary significantly, with some customers more assistance than others due to their individual capacity for understanding new information, or navigating program requirements. On average, both agencies estimated that they spent about one hour in total, often across multiple meetings, per customer. On the Avista side, there was a significant time investment in setting up processes and systems to administer the Pilot program. Once these systems were in place and the program was running smoothly the amount of time for each new enrollee was relatively low, estimated at about 10-20 minutes per customer.

Both the agency staff and Avista staff noted that aside from actual time spent enrolling new customers; there was a significant investment in time in planning and developing the systems for administering the program. In general agency staff and Avista staff felt that once the processes and system were in place, and they had worked through some of the challenges or oversights, the overall system worked well.

Evergreen staff reviewed the systems and processes for enrollment, including planning documentation, training materials, screenshots from computer systems, and live demonstrations of the systems. In general we assess that the systems in place were thoroughly planned both at the agencies and Avista, and are now relatively robust and meet the needs of the Pilot program. One concern is reliance on Excel spreadsheet tools and manual uploading and downloading of files to Basecamp. This does introduce opportunity for human error in data entry, or uploading or downloading incorrect files. For example, in the flowchart on the previous page, there are two blue computer icons

representing the points in the process where files are manually uploaded or downloaded to transfer files form the agencies to Avista. These are critical data transfer points where human error could result in lost or altered data. We would recommend that if the Pilot program were to continue as a permanent program Avista and the agencies should investigate trying to automate data transfer and move away from use of Excel spreadsheets to a more robust data entry and storage system that would have in built quality control mechanisms. Such systems already exist, for example the Workbench system could form the bases of this system.

An area that was noted as challenging by agency staff was the different eligibility and enrollment requirements for the Pilot program compared with the Senior Energy Outreach Grant program. Table 36 below presents some of the key differences in process and eligibility between the Senior Grant and Pilot programs.

Table 36: Differences Between Pilot Rate Discount and Senior Grant Program

Rate Discount Pilot Program	Senior Grant Program
Customers eligible for the entire Pilot period or 1 year whichever was longer. Implies potentially two year cycle for enrollment renewal	Customers required to renew enrollment annually
Rolling enrollment period	Set enrollment period in October each year
Fixed income requirement	No fixed income requirement
One month income verification	Annual income verification required

Under the design of the Pilot program customers could enroll one time for the entire two-year Pilot period, or for one year, whichever was longer. Under the Senior Grant program customers are required to re-enroll annually. Among the agencies, there is a perception that the Pilot design implies that an ongoing program would have a biennial enrollment requirement. This was seen as a benefit to the Pilot program because it reduced the administrative burden on the agencies, essentially cutting administration of an individual customer in half.

The Pilot program was designed to have an ongoing enrollment period, which differs from the Senior Grant program that has an annual enrollment window. Agency staff noted that the rolling enrollment period could increase the administrative burden on agencies compared with an enrollment window, because they would have to have dedicated staff year round, rather than being able to "tool up" for the enrollment period. It is difficult to assess if this would in fact be the case or if a rolling enrollment period would distribute the administrative burden across the year rather than concentrating it on a set period of time.

Agency staff noted the fixed income requirement as one of the primary challenges of the Pilot program. The fixed income requirement has in practice led to many customers who are between 126% and 200% of FPL being ineligible even if the variable income does not

take their total income beyond the eligible income range. This is not a requirement of the Senior Grant program.

The Pilot program required less paperwork for income verification and program application, requiring proof of one month of income, rather than annual income verification for the Senior Grant. Agency staff noted this as a benefit of the Pilot program, making enrollment easier and reducing the administrative burden. In addition to the specific differences between the programs, the fact that there are differences is also a challenge for administrators, making the programs more difficult to explain to customers.

If the Pilot program becomes a permanent program, we would recommend that Avista and the agencies work to align eligibility requirements and the enrollment process between the two programs to make program education easier and reduce administrative burden.

7.4.1 Pilot Program Efficacy

In general, SNAP, Rural Resources, and Avista staff all viewed the LIRAP Rate Discount Pilot as a positive addition to the suite of programs available to low-income customers. Specific areas where the program was particularly helpful or effective, according to agency and Avista staff include:

- The Pilot provides assistance to disabled customers who previously were not served by any specific Avista programs.
- The Pilot program provided a higher benefit to high-energy users who often struggle to pay their utility bills.
- The Pilot program drove more customers to call the agencies, even if they were not eligible, meaning the agencies were able to refer people to other assistance programs at higher rates.
- The rate discount Pilot appealed to some customers who were eligible for the Senior Grant program but were averse to the program for certain reasons. In particular, many independent minded seniors were averse to signing up for the Senior Grant program because they viewed the Senior Grant as a welfare or "hand out" program, whereas, these customers perceived the rate discount as an offer, or perk, that they felt comfortable taking advantage of.
- The Pilot program enrollment process was less burdensome in terms of paperwork than the Senior Grant, and also meaning that the agencies could assist and enroll customers over the phone, rather than require in person meetings

Overall, the in-depth interviews were highly informative. In general staff from the agencies and Avista have successfully run and administered the Pilot program, and effectively resolve most challenges and issues they faced in the process. In general, staff perceived the rate discount Pilot as a useful addition to the suite of program offerings for low-income and disabled customers.

7.4.2 Pilot Program Challenges

Specific challenges noted by agency and Avista staff include:

- Customer recruitment was difficult at the outset of the program.
- After conducting an email "blast" to Avista customers, the significant influx of customer inquiries overwhelmed agency staff.
- Agency staff reported that the Discount was difficult to explain to seniors at times, and in particular agency staff are unable to provide an exact discount dollar amount to eligible customers
- The fixed income requirement of the Pilot eliminated some customers who were between 126% and 200% FPL.
- Outreach to disabled customers is not an area of expertise for agencies so they experienced challenges recruiting this population segment.
- The agencies experienced difficulty tracking staff time for recruiting and enrolling customers because there are multiple call-backs and there were additional requirements for the Pilot including the intake survey.

7.4.3 In Depth Interview Conclusions

Overall, the in-depth interviews were highly informative. In general staff from the agencies and Avista have successfully run and administered the Pilot program, and effectively resolve most challenges and issues they faced in the process. In general, staff perceived the rate discount Pilot as a useful addition to the suite of program offerings for low-income and disabled customers.

7.5 Customer Survey

In April and May, 2017, after the primary heating season, Evergreen conducted a customer telephone survey with 106 households that received a rate discount through the Pilot get customer input on topics such as such as:

- Have you noticed a difference in your energy bill?
- Have you changed any of your energy use habits as a result of being on the Pilot rate?
- Has participation in the Pilot affected your ability to pay your utility bill?

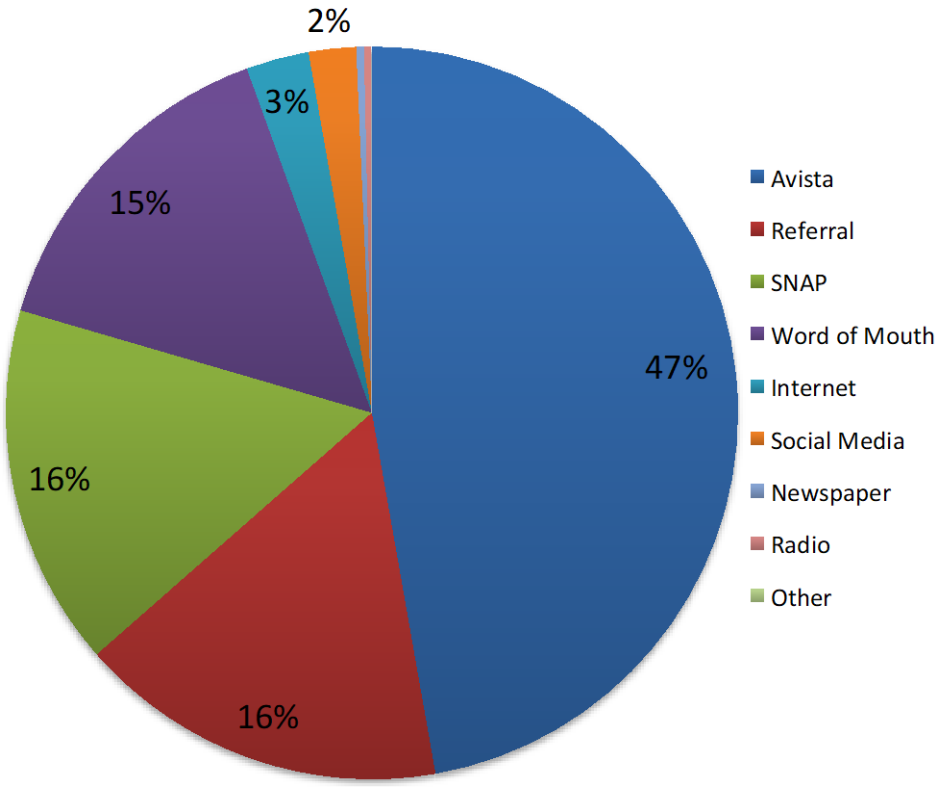
- Have you noticed any other benefits (beside cost reductions) since enrolling in the Pilot?

Overall, the customer feedback was extremely positive, with the vast majority (99%) of survey respondents stating would enroll in this program again.

In addition to the customer survey, SNAP and Rural Resources staff administered a short intake survey to understand how customers found out about the Pilot, why they enrolled in the Pilot, and if they had received assistance before. The following exhibits summarize the results of the intake survey. The intake survey was administered to 288 customers who enrolled in the Pilot program.

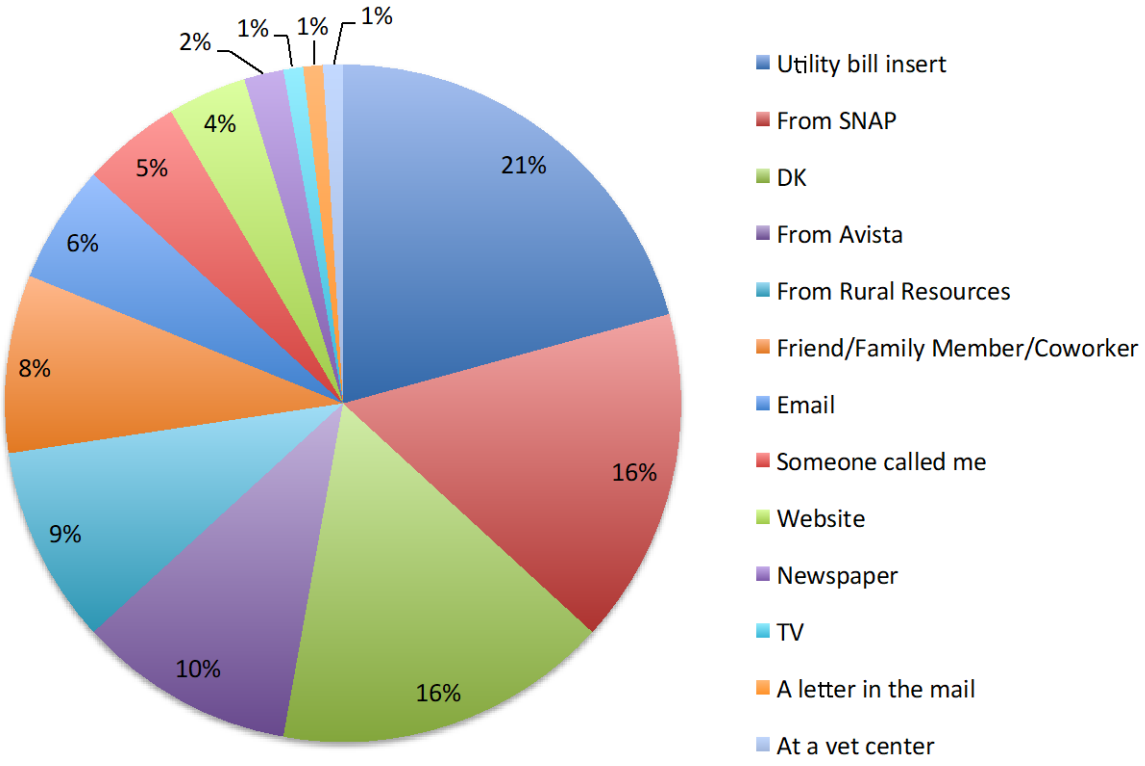
In the intake survey, customers reported how they became aware of the Pilot. Figure 8 shows that 47 percent became aware of the Pilot through Avista, through a bill insert or other media. The least mentioned avenues were newspaper, radio or social media.

Figure 8: How Customers First Became Aware of the Rate Discount Pilot – Intake Survey



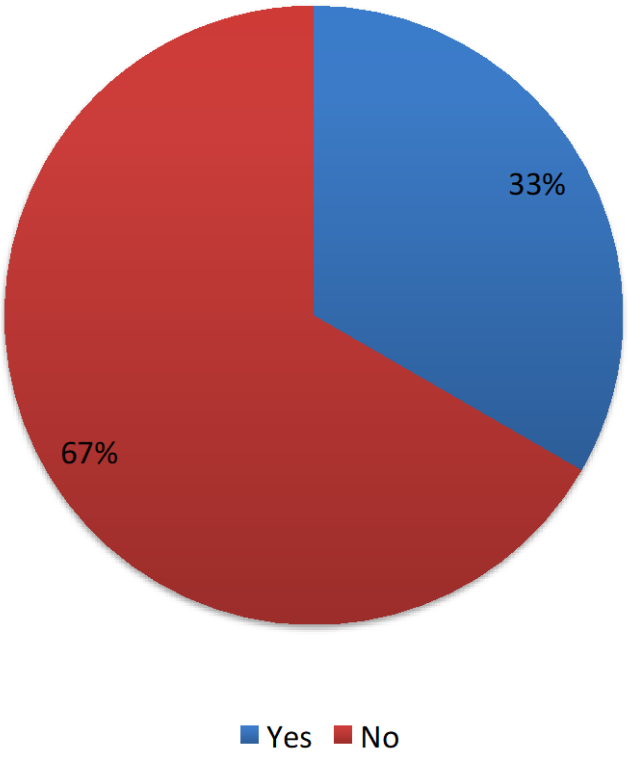
The figure below describes how the 106 survey respondents learned about the new discount program. Utility bill inserts was the most common (21 percent), closely followed by from SNAP (16 percent) and from Avista (10 percent). This aligns with the intake survey responses. A greater proportion of program participants didn't know how they became aware of the discount program opportunity, which is to be expected, given the time lag between the date of enrollment and the survey.

Figure 9: How Customers First Became Aware of the Rate Discount Pilot – Post Program Survey



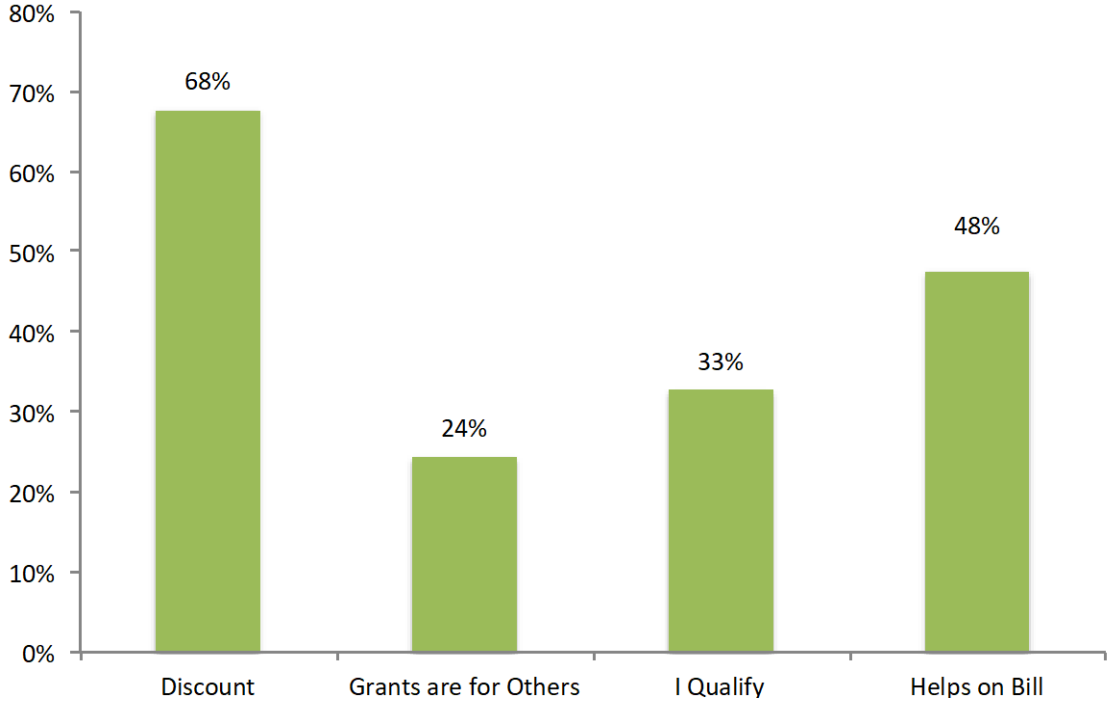
Next the intake survey asked customers if they had ever received assistance from Avista before. Thirty-three percent of respondents said they had received assistance from Avista in the past.

Figure 10: Customers Reporting Previous Assistance



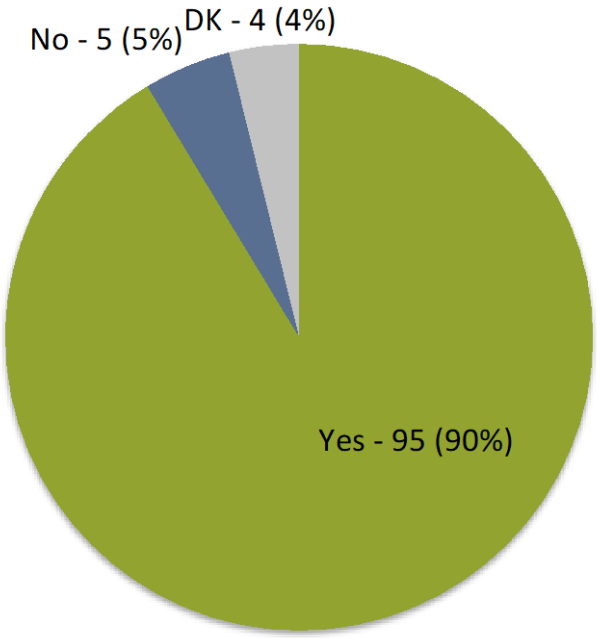
The intake survey next asked customers why they chose to enroll in the Pilot program. Customers were allowed to give more than one answer. Figure 11 below provides a summary of the responses. Interestingly, 24 percent of customers reported that they chose the discount program because "grants are for others".

Figure 11: Reported Reason for Enrolling in Pilot – Intake Survey



The remainder of the exhibits are solely from the telephone survey. The figure below shows that the majority (90%) of survey respondents found the information they received about the discount program was clear and easy to understand. A small percentage (five percent) stated that no, the information was not clear or easy to understand and four percent found that they couldn't remember if the information was clear or not.

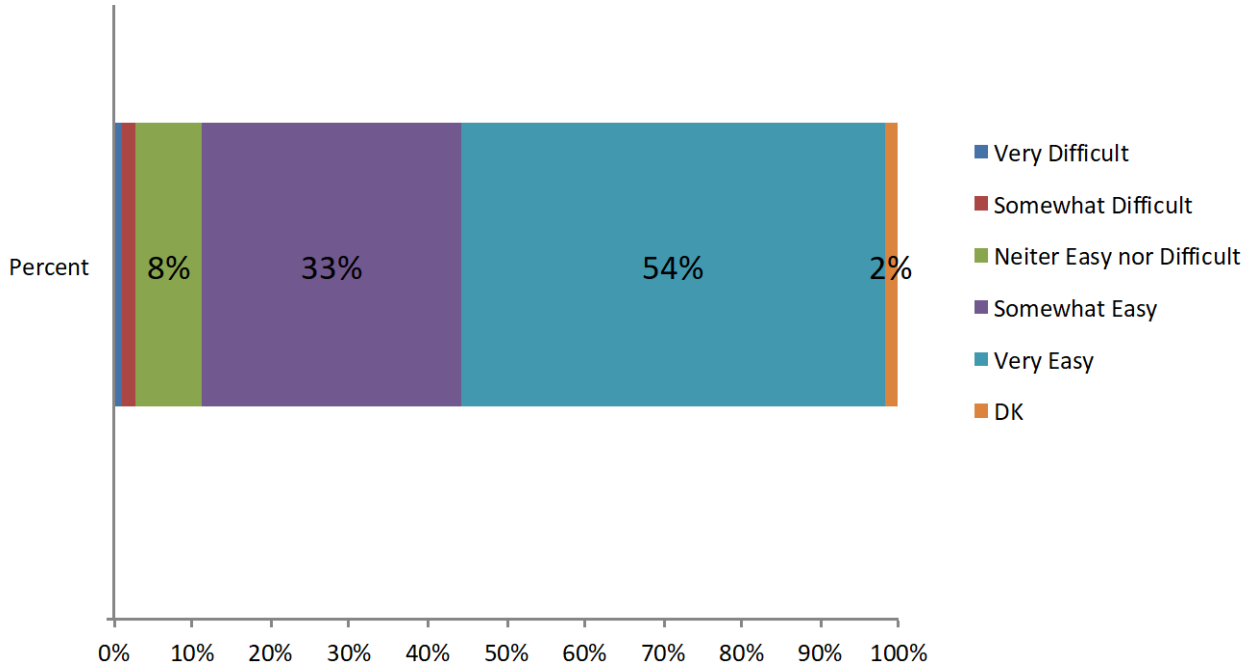
Figure 12: Reported Ease of Understanding Program Information



Of the five percent that thought the information provided about the program was unclear or hard to understand, four participants stated that they didn't receive a thorough explanation and were unable to understand exactly what the program would do for them and the rules that were enforced while receiving the discount. They explained that they either didn't understand the discount as a whole or whether it would apply to just the electric bill and not gas and if they were late on a payment that they would be no longer be eligible for the discount. One also stated that they were not aware that once they got into this program, then they couldn't receive other energy bill payment assistance.

The figure below shows how survey respondents rated the application process for this program. The majority (54%) of participants found the application process to be "very easy," followed by 33 percent of participants finding it to be "somewhat easy." A small percentage (three percent) found the process to be somewhat or very difficult.

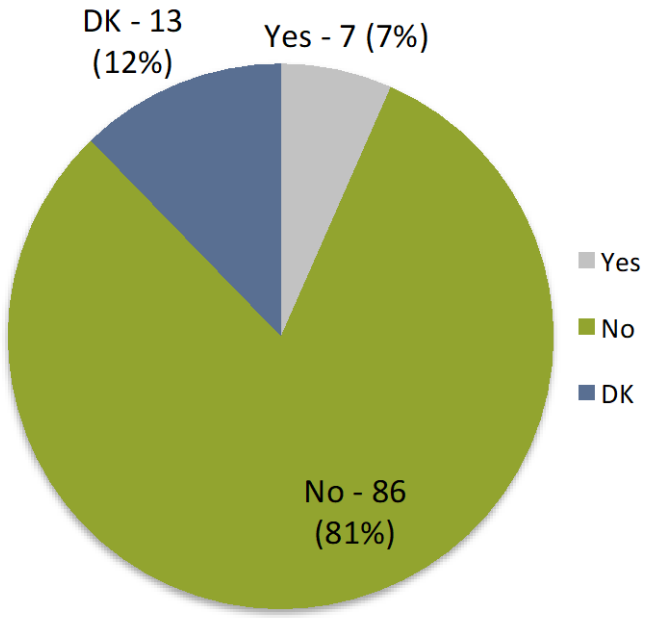
Figure 13: Reported Ease of Application



Of the three percent of surveyed participants that found the application process to be somewhat or very difficult, two participants stated that the questions were difficult to answer and were unable to understand what they were asking. One also stated that the required documents were difficult to obtain due to lack of Internet access.

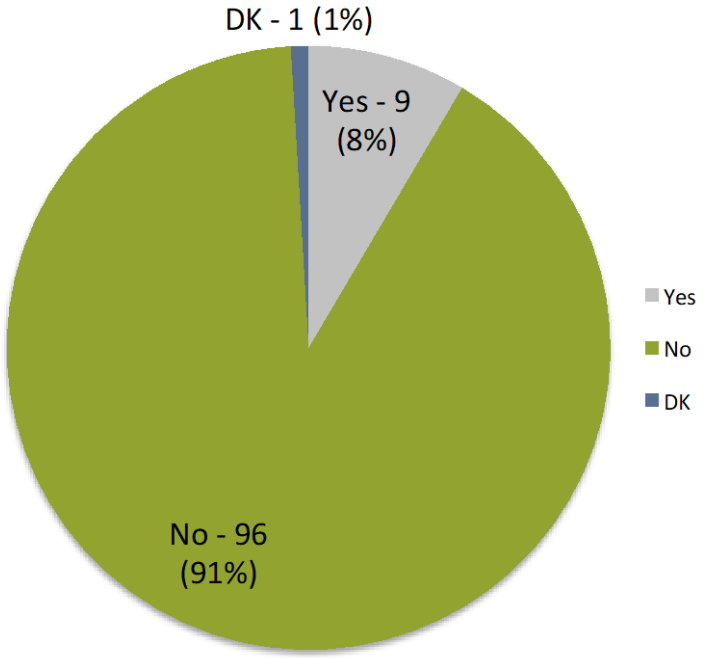
The figure below shows that seven survey respondents do think there are parts of the application process that should be changed. It was commonly suggested that the program information should be easier to understand and all penalties for late or missed payments should be made more clear in the application. Due to personal banking information being provided in the application process, it was also suggested that when the application is received, the program could include a confirmation letter letting the program participant know that the correct individual has received it.

Figure 14:Are There Any Parts of the Application that Should Be Changed?



The figure below shows that the majority (91 percent) of survey respondents are not aware of the Grant Program that provides grant money to help eligible customers pay their gas bills. Only a small portion (eight percent) was aware of this program.

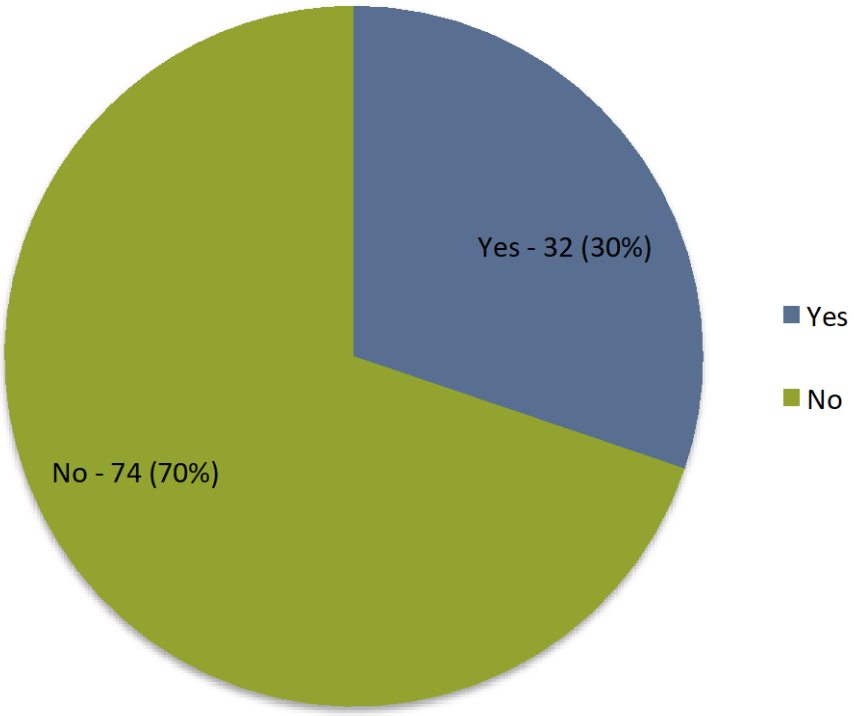
Figure 15:Are You Aware of the Senior Energy Outreach Grant Program?



The eight percent of survey respondents that stated they were aware of the S-E-O-P program were asked what their reason what for choosing to participate pilot rate discount program instead. The main reason provided was that they simply don't have gas in their home. Others either needed help with their energy bill or thought that they would save more money with the new discount program. It was also mentioned that some program participants didn't have a choice and were just switched by the utility and that they didn't know the difference between the two programs.

The figure below shows whether or not the surveyed respondents have changed any of the ways they use energy as a result of being in the discount program.

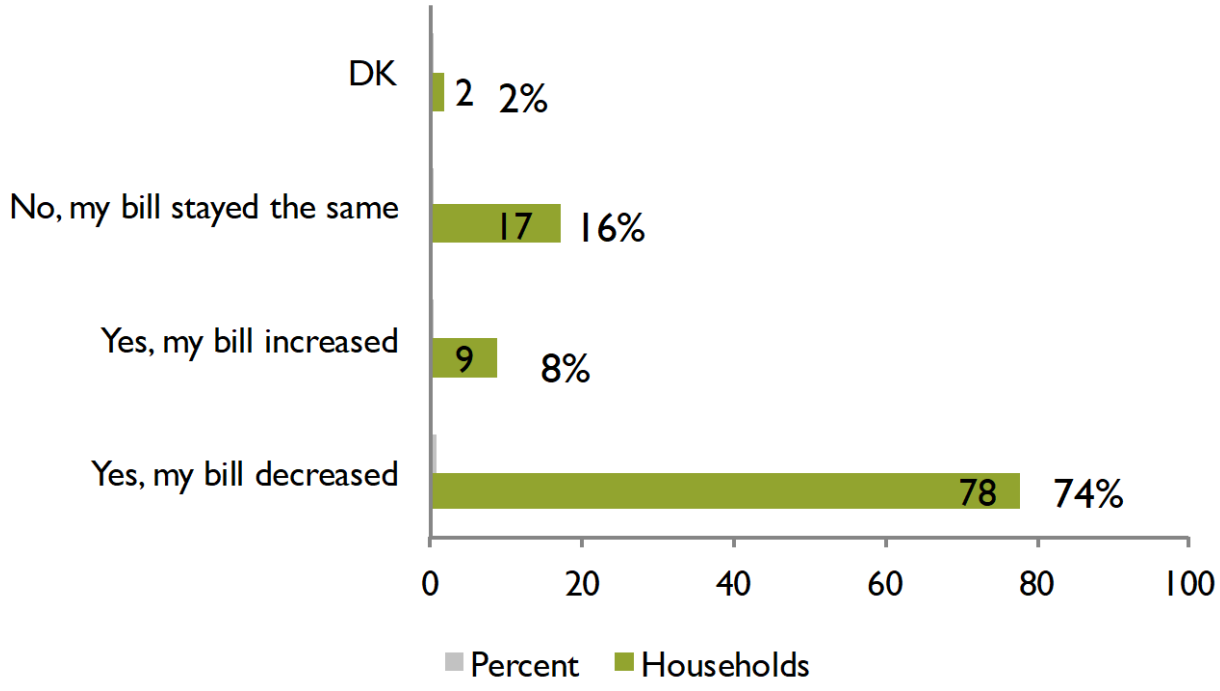
Figure 16:Have You Changed The Way You Use Energy Since Joining the Pilot Program



Survey respondents changed their energy use (of those who did change their energy use) as a result of enrolling in the new discount program. 44 percent did so by turning down the heat or heating their houses by wood fire. 31 percent of survey respondents said that they turned of their lights more often or were able to purchase new light bulbs. 16 percent said they were able to heat their house more frequently or keep their house warmer.

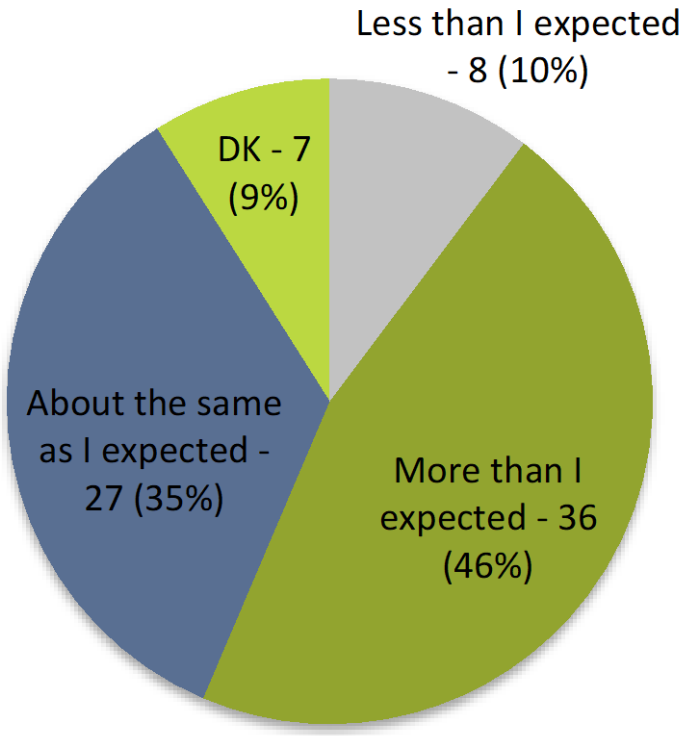
The figure below shows changes in the energy bill based on when program participants enrolled in the new discount program. The majority (74 percent) of program participants found that their energy bill has decreased since they enrolled in the program. 16 percent didn't see a change in their energy bill. Eight percent reported an opposite finding from the majority in that their energy bill had increased since enrollment. Two percent of respondents were not sure if their bill had increased or decreased.

Figure 17: Has Your Energy Bill Changed Since You Joined the Pilot Program?



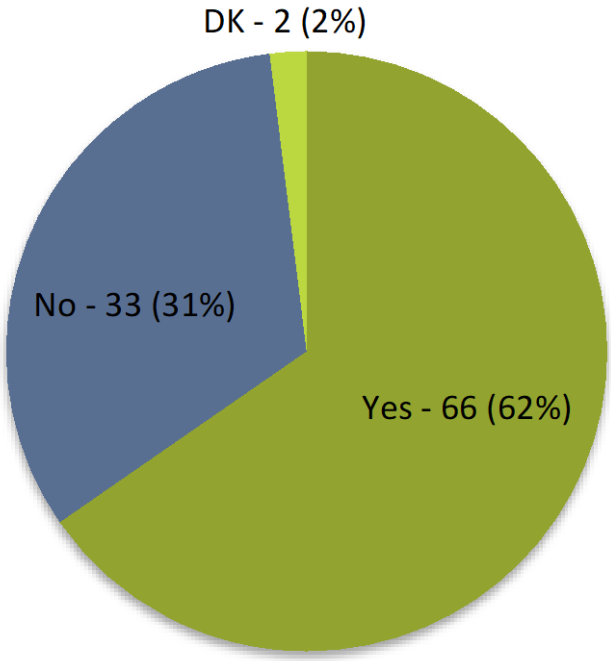
The figure below describes of those that did see their energy bill decrease, were the energy savings what they had expected. 46 percent of respondents found that they saved more on their energy bills than they had originally anticipated. 35 percent felt they saved about the same, as they would have expected. Eight percent thought they would have seen more energy savings on their bills in that they received fewer saving than what they expected.

Figure 18: Did you Save More or Less Than You Expected?



The figure below shows whether or not program participants were able to keep their homes warmer during the winter months due to receiving the discount. The majority (62 percent) of program participants were able to keep their homes warmer during the winter months, while 31 percent stated that no; they were not able to keep their homes any warmer. Two percent didn't know whether or not they were able to keep their homes warmer.

Figure 19: Were You Able To Keep Your Home Warmer During The Winter Months Due To Receiving The Discount?

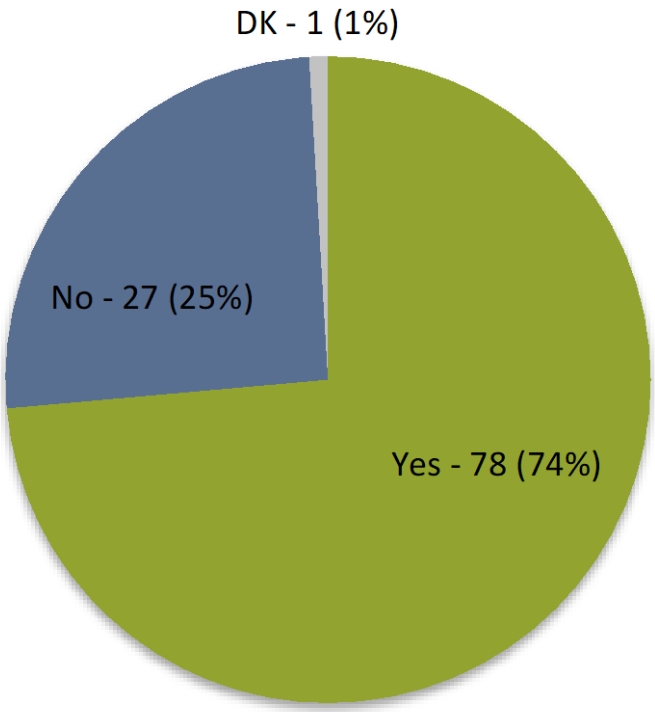


Eighty percent of survey respondents that were able to keep their house warmer because of the discount on their energy bill also said that the rate discount helped them not miss any energy bill payments. Twenty percent stated that although the rate discount didn't help them not miss any energy bill payments, they were still able to keep their house warmer in the winter months. On the other hand, 64 percent of survey respondents who stated no, they were not able to keep their house warmer due to receiving the discounted rate but the rate discount did help them not miss any energy bill payments. There were 36 percent of those surveyed that said they were not able to keep their house warmer during the winter months and the discounted rate did not help them miss any energy bill payments.

Seventy eight percent of those who saw a decrease in their energy bills were also able to not miss any energy bill payments due to the discounted rate, where as 22 percent who saw an decrease in their energy bills stated the discount still wasn't enough to help them not miss any energy bill payments. Seventy eight percent of those who saw an increase in their energy bills still were able to not miss any payments due to the rate discount, where as 22 percent who saw an increase in their energy bills stated the discount still wasn't enough to help them not miss any energy bill payments.

The figure below shows whether or not the rate discount helped program participants not miss any energy bill payments. A large portion of program participants (74 percent) stated said that yes, the rate discount helped them not miss any energy bill payments. On the other hand, 25 percent of participants stated that the rate discount did not help them miss energy bill payments.

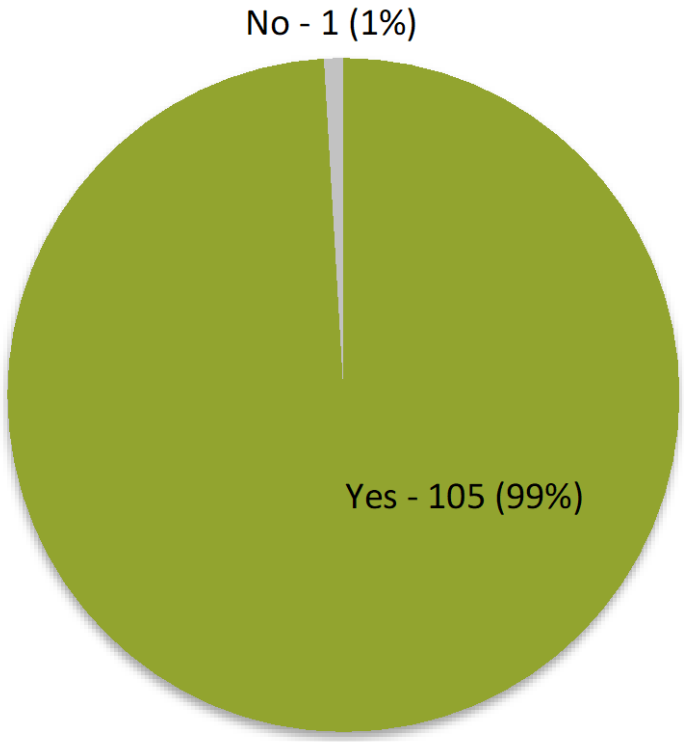
Figure 20: Did the Rate Discount Help Program Participants Not Miss Any Energy Bill Payments



Of all 106 survey respondents, 15 percent of those described other benefits that they've experienced due to the rate discount. Of the 15 percent, 94 percent of the participants stated that they were either able to have "peace of mind" knowing that they could afford not only their energy bills but they were able to put more money towards other bills and everyday living expenses or being able to balance their budget more effectively. Six percent stated that it made them more aware of additional action they can be taking that will help lower their energy bills even further.

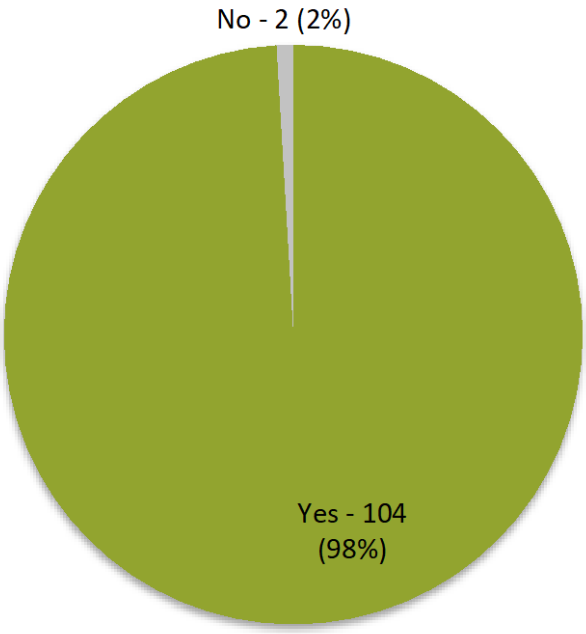
The figure below shows that the vast majority of survey respondents would enroll in this program again, with 99 percent stating yes. Only one percent of respondents said they would not enroll again in the future.

Figure 21:Would you Enroll in This Program Again?



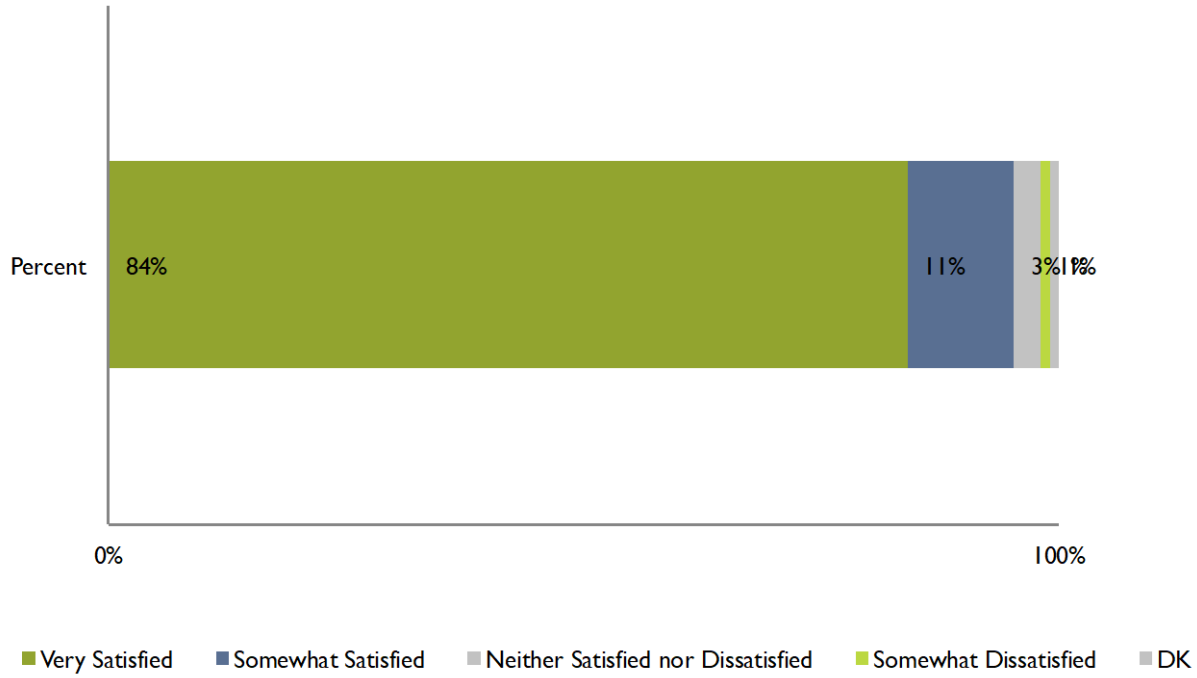
The figure below shows that again, the vast majority (98 percent) of survey respondents would recommend this program to others. Only two percent of program participants stated they would not recommend this program to others.

Figure 22: Would you Recommend This Program to Others?



The figure below shows the satisfaction ratings from survey respondents of the program as a whole on a scale of Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied. 84 percent of surveyed respondents gave an overall rating of "Very Satisfied," followed by 11 percent stating they were "Somewhat Satisfied," three percent stated they were "Neither Satisfied nor Dissatisfied," and one percent stated they "Didn't Know." There were no survey respondents who stated that they were "Very Dissatisfied" with the program.

Figure 23: Overall Program Satisfaction



Some survey respondents also provided ideas on how to improve the program. The most common suggestion among program participants was to provide a larger discount on their energy bills. Also commonly noted was that program information should be more detailed and easier to understand. One participant suggested that for those who are enrolled in this program, if the program could also include ways to help them save on their energy bills that didn't involve giving discounts, they provided the example of sending program staff to help seniors put plastic around their windows in order to keep the heat in.

Based on the survey responses, customer feedback for the Pilot was overwhelmingly positive, with few customers being unwilling to provide positive feedback on the program.

8 Conclusions and Recommendations

Avista's Low Income Rate Assistance Program (LIRAP) Senior and Disabled Customer Rate Discount Pilot Program (Pilot) provides a significant rate discount for income-qualified senior citizens and/or disabled customers. The Pilot began in October 2015 and is scheduled to terminate on September 30, 2017. Based on the analysis and information described in this report, we can conclude that the Pilot has been very successful and has generally met the four primary goals set forth by the originating workshop:

- **Keep customers connected to their energy service –** evidence from the impact analysis indicates that the Pilot resulted in decreases in energy bills that aligned with the original intent of the program. Reduced energy bills lessens the burden on low-income customers resulting in the increased likelihood they will remain connected to their energy service. The bill disconnect analysis conducted as part of this evaluation indicates that Pilot participants are less likely to be disconnected than they were before joining the Pilot, and are less likely to be disconnected than other low-income customers. The evidence from the impact analysis is supported by both reported feedback received by SNAP and Rural Resources staff, as well as information from survey respondents, 78 percent of whom reported that the Pilot helped them to not miss an energy payment.
- **Provide assistance to more customers than were currently served –** evidence from the customer survey, and in-depth interviews with SNAP, Rural Resources, and Avista staff indicate that the Pilot program led to assistance provided to more customers than were previously served. While 162 participants had previously been on the Senior Grant program, and 33 percent of customers in the intake survey reported receiving prior assistance, the Pilot served a significant number of new customers that had not received low-income assistance before. Specifically 647 participants had not been on an assistance program previously. In addition outreach efforts for the pilot led people to contact the agencies at very high rates. Those who were ineligible for the Pilot were directed to other programs where appropriate.
- **Lower the energy burden of LIRAP participants –** evidence from the impact evaluation indicates that there were significant bill savings to Pilot participants, with little to no increase in energy usage. This inherently reduces the energy burden faced by participants. In addition, surveyed customers reported that the Pilot program helped them to heat their homes more in winter (66%)and not miss energy payments (78%).
- **Ensure that LIRAP has the appropriate data to assess program effectiveness**. As part of this evaluation, Evergreen assessed and utilized the data collected by Avista and the agencies to assess the Pilot program effectiveness. The data provided were of high quality and allowed for robust analysis of the program.

8.1 Impact Evaluation Conclusions

Energy Usage

On average, participating Avista electric customers increased annual electricity usage by 209 kilowatt-hours (kWh), or about 1.5 percent of their pre-Pilot usage. Natural gas customers, on the other hand, did not appear to change their gas consumption in any significant way after enrolling in the Pilot.

Energy Costs

Our models found that, on average, participating Avista electric customers, despite using more electricity, decreased annual billed electricity costs by approximately $363, or 31 percent of their pre-Pilot cost. Similarly, natural gas customers saved over $298, or 38 percent of their pre-Pilot natural gas cost. These findings suggest that Pilot participants are consuming more or the same amount of energy, but are still saving money on their energy bills, and therefore are likely better off than prior to participation.

Customer Disconnections

Using a binomial logistic regression model, we found that Pilot participants had no statistically significant reduction in the likelihood of having service interrupted (in the form of a disconnection) after participating in the program, however, the number of overall discounts among participants was relatively low, meaning the model would have trouble detecting any changes with precision. While the results were not statistically significant, the variable of interest had the expected negative sign suggesting that the probability of being disconnected after starting the Pilot program is lower than when households are not on the Pilot program.

8.2 Process Evaluation Conclusions

Is the process to qualify customers for the Pilot Program more or less resource intensive compared to the existing Senior Grant Program?

Agency staff reported that the recruitment and education process was more intensive for the Pilot than the existing Senior Grant program, and the fixed income requirement added additional administrative burden and led to disqualification of customers that were strictly income eligible (between 126% and 200% FPL). However, agency staff reported that the enrollment process was less resource intensive because the program required less documentation for income verification, and the enrollment covered the entire length of the pilot, up to two years, rather than requiring annual re-enrollment that is required by the Senior Grant program.

How effective were the outreach methods?

Outreach methods were effective although there were challenges early in the recruitment period with connecting with eligible customers. Agency and Avista staff reported the most effective outreach methods as email, bill inserts, and print ads. Surveyed customers listed utility bill inserts and referrals as the most common methods they were recruited.

What where customer's perception of benefits compared to Pilot expectations?

Surveyed customers reported very high satisfaction with the Pilot with 99 percent of surveyed customers reporting they would enroll in the program again. Forty-six percent of surveyed customers reported savings more than they expected and 35 percent reported saving about the same as they expected. Sixty-six percent of surveyed customers reported that they were able to keep their homes warmer during the winter months due to receiving the discount. Seventy-eight percent of surveyed customers reported that the Pilot discount helped them to not miss any energy bill payments.

Has the Pilot reached new customers enrolled who have not received prior assistance?

Evidence collected during this evaluation suggests that the Pilot has reached new customers that have not received prior assistance. Agencies reported that 162 of 809 customers who enrolled at some point in the Pilot had previously been on the Senior Outreach Grant program, indicating that there were 647 customers who were receiving rate assistance for the first time. Thirty-three percent of intake customers reported receiving some form of prior assistance from Avista in the past.

While it is not within the evaluation purvey to recommend whether the Pilot should be continued as a permanent program, we can conclude that the evidence collected in this evaluation suggests that the Pilot has met the primary goals of the originating workshop. Based on the finding of this evaluation, we make the following recommendations should Avista and the Commission decide to continue the Pilot as a permanent program.

8.3 Recommendations

Based on the findings in this evaluation Evergreen provides the following recommendations:

- An area that was noted as challenging by agency staff was the different eligibility and enrollment requirements for the Pilot program compared with the Senior Energy Outreach Grant program. We recommend that Avista staff and the Agencies work to align Pilot and Senior Grant program eligibility requirements and enrollment processes. Specific differences and recommendations include:
    - **Eligibility period -** Pilot customers were eligible for the entire 2-year pilot period, whereas Senior Grant customers must renew annually. **We recommend that the Pilot and Senior Grant program enrollment periods**

are aligned, either changing the Pilot discount to a one-year cycle, or changing the Senior Grant to a two-year cycle. Changing programs to a two-year cycle will significantly reduce administration costs, however, may result in customers continuing to receive benefits in the event their income situation changes and they move outside the eligibility criteria. Changing income situations is less likely for the senior and disabled populations these programs serve than for the general population.

One possible solution is to require income documentation every two years, and an annual telephone call to customers every other year to obtain a verbal confirmation that there has been no change in their income situation. This would mitigate against keeping ineligible customers enrolled, but still achieve some of the administrative savings of a two-year enrollment period.

- **Fixed Income Requirement** - Agency staff noted the fixed income requirement as one of the primary challenges of the Pilot program. The fixed income requirement has in practice led to many customers who are between 126% and 200% of FPL being ineligible even if the variable income does not take their total income beyond the eligible income range. **We recommend allowing customers to have a variable income source in the household as long as they remain under 200% FPL.**

Aligning the Pilot and Senior Grant program eligibility and enrollment requirements will make the programs easier to explain to senior and disabled customers, which is likely to reduce the contact time needed between Agency staff and customers, reducing administrative costs.

- Customer outreach efforts varied in their success rates. Based on responses from customers and interviews with Agency and Avista staff **we recommend future outreach focus on the following channels:**
  - **Email notification or "blast". Email outreach was highly successful in driving numerous new customers to the Agencies. The significant influx of customer inquiries did overwhelmed agency staff, so we recommend conducting limited email notification focused on specific geographies (zip codes, or census tracts).**
  - **Bill Inserts. Bill inserts were listed as the most common way of learning about the program by surveyed customers, and noted as a successful outreach method by Agency and Avista staff.**
  - **Referrals from community organizations – were also noted as a successful outreach method in the customer intake survey and from Agency and Avista staff**

In contrast, TV, radio and newspaper advertisements were not listed as methods by which surveyed customers learned about the program.

- Agency staff reported that the Discount was difficult to explain to seniors at times, and in particular agency staff are unable to provide an exact discount dollar amount to eligible customers. We understand that there is a tool that is currently not functional, Workbench, that provides Agency staff with customer billing information. **We recommend that part of the enrollment process is a review of customer billing data on Workbench to ensure that the best program is recommended to customers.**
- Agency and Avista staff noted that customers are not always aware that they are receiving the discount. While the rate discount is itemized on the back page of the customer bill **we recommend that the rate discount credit also be itemized on the front page of the customer bill, and a notice be included in the "Your Message Center" section of the bill stating that the customer is receiving a rate discount.**
- While the average rate discount of $306 for gas customers and $403 for electric customers is close to the targeted discount amount, there are outlying customers that are receiving a very large discount. The maximum discount was $2,333 dollars annually. **We recommend that Avista review the discount amounts and potentially cap the discount if this amount is deemed excessive**.
- Evergreen staff reviewed the systems and processes for enrollment, including planning documentation, training materials, screenshots from computer systems, and live demonstrations of the systems. In general we assess that the systems in place were thoroughly planned both at the agencies and Avista, and are now relatively robust and meet the needs of the Pilot program. One concern is reliance on Excel spreadsheet tools and manual uploading and downloading of files to Basecamp. This introduces the opportunity for human error in data entry, or uploading or downloading incorrect files. **We would recommend that Avista and the agencies investigate automating data transfer and moving away from use of Excel spreadsheets to a more robust data entry and storage system that would have built-in quality control mechanisms.**

Appendix A: Avista Staff and Agency Staff Interview Guide

Background

My first few questions are background questions about you and your organization.

Q 1: Could you give me a sense of the kinds of services and programs [AGENCY NAME / AVISTA] offers?

Q 2: Can you briefly summarize your role in planning or implementing the Pilot program, including how long you have been in this role, and which other organizations you primarily work with?

Q 3: Do you also have experience working with LIRAP Senior Energy Outreach Program (SEOP)? What is your role in planning or implementing SEOP?

Program Outreach

Now I have some questions about program outreach and recruiting.

Q 4: How did [your organization] reach out and recruit customers to the Pilot?

Q 5: How does [your organization] reach out and recruit customers to SEOP? [PROBE: Reasons for differences between outreach efforts, if any.]

Q 6: Did you find that any of the outreach efforts were more effective than others? Can you rank them in order of effectiveness?

Q 7: [IF Differences in outreach between Pilot and SEOP] How about for SEOP, which if the outreach efforts are most effective for SEOP? Which method requires the most resources?

Q 8: Do you have any thoughts or recommendations on how the outreach for the Pilot could be improved?

Program Enrollment

Q 9: Can you please describe for me the process of enrolling a customer in the Pilot from the first contact you have with them to having them enrolled in the Pilot?

Q 10: Is the enrollment process for SEOP different? In what ways?

Q 11: Do you think enrolling customers in the Pilot is more or less resource intensive than enrolling customers in SEOP? In what ways?

Q 12: Do you have any recommendations for improving the enrollment process for the Pilot?

Q 13: Of the customers who enrolled in the Pilot, how many received assistance through SEOP grants? How many were new customers who had not received assistance? [For interviewer – Total enrollment = 900; SNAP = 800; RRCA = 100]

Q 14: Thinking about the new customers, what might be the reasons that they were not enrolled in the SEOP Program?

Q 15: Do you think the availability of the Pilot has changed participation in SEOP? [Probe: Increase or decrease in SEOP participation?]

Q 16: From your interactions with customers ,what reasons did customers give as to why they chose one program over the other given the choice of a Discount or a Grant through SEOP? [Probe: Increase or decrease in SEOP participation?]

Program Implementation

Q 17: Can you please describe for me how the Pilot was implemented after customers were enrolled from the perspective of the customer? Did the customer have to do anything once they were enrolled? What about for SEOP?

Q 18: Can you please describe for me how the Pilot was implemented after customers were enrolled? [PROBE: How did you track participation in the Program? How was customer information delivered to the utility?]

Q 19: Where there any challenges in the implementation of the Pilot? Can you please describe these challenges?

Q 20: Do you have any thoughts or recommendations for improving the implementation of the Pilot?

Program Efficacy

Q 21: Have you had any interaction with customers since they started on the Pilot? (If Yes) What is their feeling about the Pilot, do they think it has benefitted them or not?

Q 22: At the outset of the Pilot program, what were the expectations for how the Pilot would impact customers?

Q 23: Is there evidence that the Pilot has impacted the customers in the expected ways based on the design of the Pilot? Can you please elaborate?

Q 24: Were there any unexpected effects of the Pilot that you observed or heard about from customers?

Conclusions

Q 25: Overall, how would you characterise the effect of the Pilot program? [Probe: Impact on customer burden]

Q 26: Overall, how would you compare the Pilot program with SEOP in terms of effect on customers? [{Probe: ease of enrollment, effect of grant vs. discount, bill savings]

Q 27: Do you have any overall thoughts or recommendations to improve the Pilot program?

Those are all my questions. Before we finish is there anything we haven't discussedabout the Pilot that you would like to comment on?

Thanks very much for your time and great information.

Appendix B: Avista LIRAP Customer Survey

AVISTA LIRAP PILOT SURVEY

Introduction and Finding Correct Contact

Intro. Hello, this is <INTERVIEWER NAME> calling from CIC Research on behalf of your [FUEL TYPE] utility, Avista. This is not a sales call. May I please speak with [CUSTOMER NAME]?

1	Customer on phone	Go to S2
2	Customer not available	Go to S1
88	Refused	Thank & terminate

[IF CUSTOMER NAME NOT AVAILABLE]
S1. Is there someone else I could speak to who knows about your home's energy use and energy bills?

1	Yes (ASK TO SPEAK TO THEM)	Continue with S2 or arrange CB
2	No, customer is best contact	Arrange CB
88	Refused	Thank & terminate

S2. I am calling because our records show that your household is participating in Avista's Rate Discount Program, which means that you receive a discount on your [FUEL TYPE] bill each month. : Are you aware that you are enrolled in this discount program?

1	Yes	**Continue**
2	No knowledge of program	**Thank you and terminate call**
3	No longer in program	**Thank you and terminate call**
88	Refused	**Thank you and terminate call**
99	Don't know	**Thank you and terminate call**

The Avista Rate Discount is a new program offered to just a few Avista customers to see if it helps customers in paying their energy bills. If the program is successful, it may be available to help more customers in the future. Because it is a new program, we are talking to participants like you to see how the program has worked for you. Your opinions are important so the program can be evaluated for future use and we sincerely thank you for your participation.

Survey Questions

Q 1. Just to confirm, our records show that in **[MONTH/YEAR]** your household was enrolled in the Avista Rate Discount program and started to get a discount on your energy bill. Does this sound about right?

1	Yes	**Continue**
2	No	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 2 How did you first become aware of this program?

1	Someone called me	**Continue**
2	Friend/ family member/ coworker	**Continue**
3	Utility bill insert	**Continue**
4	Website	**Continue**
5	Email	**Continue**

6	Newspaper	**Continue**
7	Radio	**Continue**
8	TV	**Continue**
9	Other (specify: _____)	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 3 Was the information you got about the discount program clear and easy to understand?

1	Yes	**Skip to Q5**
2	No	**Continue**
88	Refused	**Skip to Q5**
99	Don't know	**Skip to Q5**

Q 4 What was unclear or hard to understand?

1	Record answer	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 5 How would you rate the application process for the program? Was it Very Easy, Somewhat Easy, Neither Easy nor Difficult, Somewhat Difficult or Very difficult to complete the program application and join the program?

1	Very Easy	**Skip to Q7**
2	Somewhat Easy	**Skip to Q7**
3	Neither Easy Nor Difficult	**Skip to Q7**
4	Somewhat Difficult	**Continue**
5	Very Difficult	**Continue**
88	Refused	**Skip to Q7**
99	Don't know	**Skip to Q7**

Q 6 How was the application process difficult?

1	Record answer	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 7 Are there any parts of the application process that you think should be changed?

1	Yes (Record answer)	**Continue**
2	No	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 8 Avista also offers the S-E-O-P program that provides grant money to help eligible customers pay their gas bills. Are you aware of this program?

1	Yes	**Continue**
2	No	**Skip to Q10**
88	Refused	**Skip to Q10**
99	Don't know	**Skip to Q10**

Q 9 Why did you choose to participate in the new rate program instead of the S-E-O-P program?

1	I would rather have a rate discount than a grant	**Continue**
2	The application process is easier with the new discount program	**Continue**
3	I thought I'd save more on my energy bill with the new discount program	**Continue**
4	Other: _____	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 10 Have you changed any of the ways you use energy as a result of being in the discount program?

1	Yes	**Continue**
2	No	**Skip to Q12**
88	Refused	**Skip to Q12**
99	Don't know	**Skip to Q12**

Q 11 How specifically did your energy use change?

1	I heated my house more / kept house warmer	**Skip to Q13**
2	I took longer showers/ baths	**Continue**
3	I set the thermostat higher	**Continue**
4	I cooked more	**Continue**
5	Other: _____	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 12 During the winter, were you able to keep your home warmer because you were receiving the discount?

1	Yes	**Continue**
2	No	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 13 Did you noticed a change in your energy bill since you enrolled in the program?

1	Yes, my bill decreased	**Continue**
2	Yes, my bill increased	**Skip to Q16**
3	No, my bill stayed the same	**Skip to Q16**
88	Refused	**Skip to Q16**
99	Don't know	**Skip to Q16**

Q 14 Was the decrease in your bill more or less than you expected?

1	Less than I expected	**Continue**
2	More than I expected	**Skip to Q16**
3	About the same as I expected	**Skip to Q16**
88	Refused	**Skip to Q16**
99	Don't know	**Skip to Q16**

Q 15 Why do you think your bill savings were less than you expected?

1	Record answer	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 16 Has getting this discount affected your ability to pay your energy bill?

1	Yes	**Continue**
2	No	**Skip to Q18**
88	Refused	**Skip to Q18**
99	Don't know	**Skip to Q18**

Q 17 How has the discount affected your ability to pay your energy bill?

1	Yes, it has made it easier to pay	**Continue**
2	Other: _____	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 18 Did the rate discount help you at all to pay your bill on time?

1	Yes	**Continue**
2	No	**Continue**
3	Other: _____	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 19 Did the rate discount help you to not miss any energy bill payments?

1	Yes	**Continue**
2	No	**Continue**
3	Other: _____	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 20 Have you noticed any other benefits from the program that we haven't talked about already?

1	Yes (Record details)	**Continue**
2	No	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 21 Would you enroll in this program again?

1	Yes	**Skip to Q23**
2	No	**Continue**
88	Refused	**Skip to Q23**
99	Don't know	**Skip to Q23**

Q 22 Why wouldn't you enroll in this program again?

1	Record answer	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 23 Would you recommend this program to others?

1	Yes	**Continue**
2	No	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 24 Overall, how would you rate your satisfaction with this program? Would you say that you are Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied with the program?

1	Very Satisfied	**Skip to Q26**
2	Somewhat Satisfied	**Skip to Q26**
3	Neither Satisfied nor Dissatisfied	**Skip to Q26**
4	Somewhat Dissatisfied	**Continue**
5	Very Dissatisfied	**Continue**
88	Refused	**Skip to Q26**
99	Don't know	**Skip to Q26**

Q 25 Why were you dissatisfied?

1	Record Answer	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Q 26 Do you have any other ideas on how to improve the program?

1	Yes (Record Answer)	**Continue**
2	No	**Continue**
88	Refused	**Continue**
99	Don't know	**Continue**

Those are all my questions today, thank you very much for your feedback!