Exhibit No. ___ (MSK-5)

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

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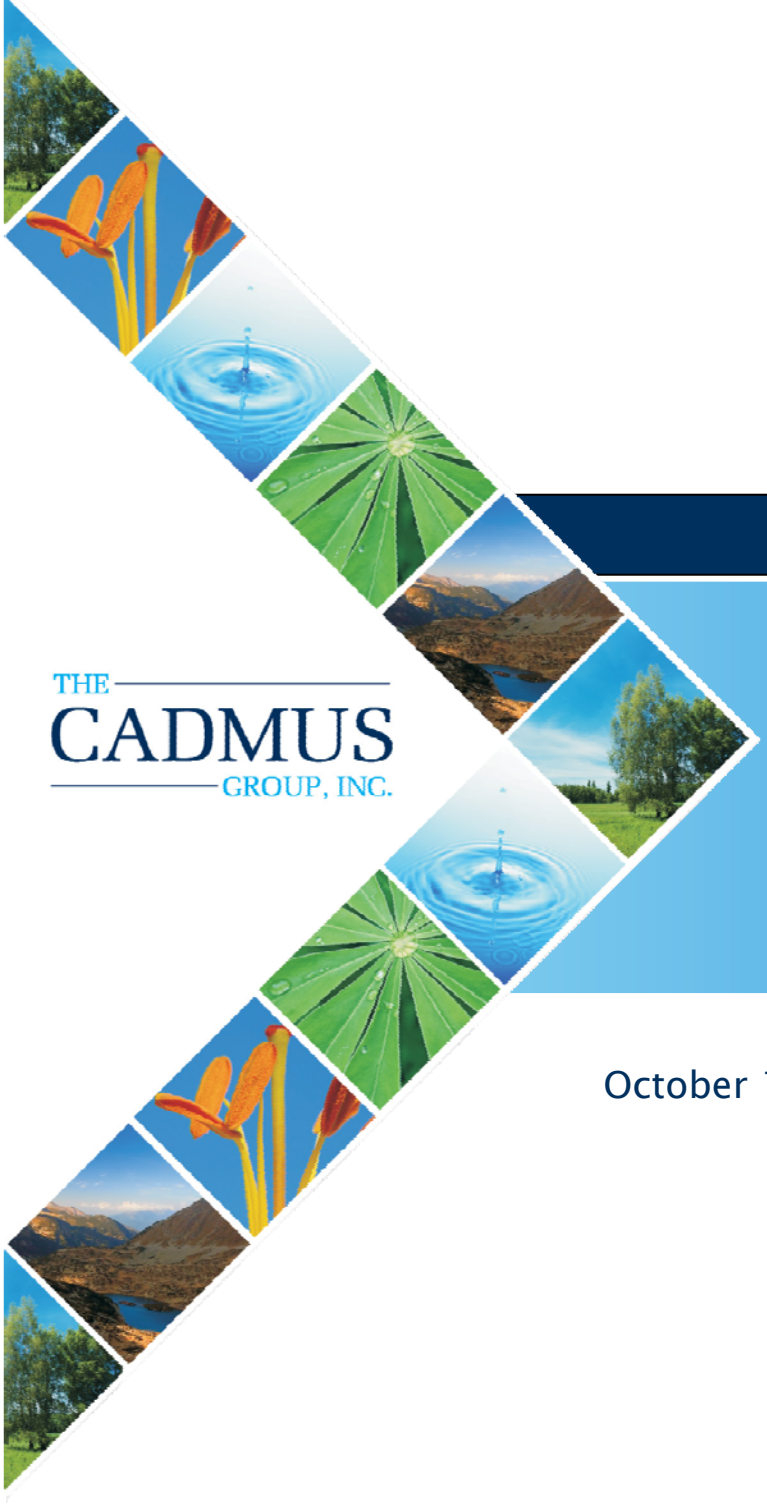
EXHIBIT NO._____(MSK-5)

DR. M. SAMI KHAWAJA

REPRESENTING

THE CADMUS GROUP, INC.



THE CADMUS GROUP, INC.

Avista 2010 Multi-Sector Process Evaluation Report

October 12, 2011

Prepared by:

The Cadmus Group, Inc. / Energy Services
720 SW Washington Street, Suite 400
Portland, OR 97205

503.228.2992

Prepared for:

Avista Corporation

Prepared by:

Danielle Kolp, MESM
Kate Bushman
Dan Groshans
Kathryn Thomsen
Jamie Drakos
Scott Reeves
M. Sami Khawaja, Ph.D.

The Cadmus Group, Inc.

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Portfolio Executive Summary

Avista Corporation contracted with The Cadmus Group, Inc., to perform a portfolio-wide evaluation for the 2010 demand-side management programs. The evaluation entailed process and impact components. Process evaluation examines program delivery, while impact evaluation produces estimates of program achievements. This report presents the process evaluation findings.

Evaluation Activities

Table ES-1 summarizes the process evaluation activities.

Table ES-1. Process Evaluation Activities

Activity	Residential	Nonresidential	Low-Income
Avista Staff Interviews	✓	✓	✓
Participant Surveys	✓	✓	✓
Non-Participant Surveys	✓	✓	
Contractor Interviews	✓	✓	
Implementer/Agency Interviews	✓	✓	✓
Assessment of Tracking Databases	✓	✓	✓
Review of Program Documentation	✓	✓	✓
Review of Marketing Materials	✓	✓	
Examination of Stakeholder Reports	✓	✓	✓

Portfolio Level Considerations

Portfolio Goals and Unverified Savings

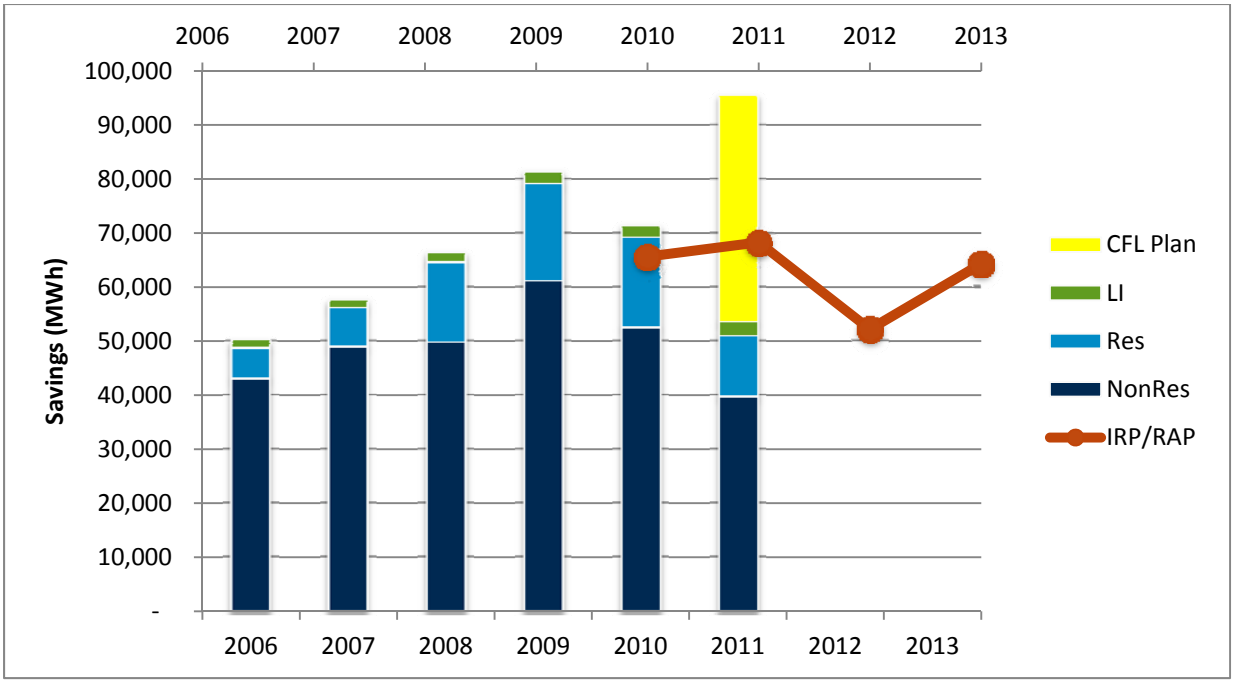
Figure ES-1 below shows the unverified reported electric savings trends for each of the sectors between 2006 and 2010, and estimated for 2011. The demonstrated large drop in savings from 2010 to 2011 is due in part to the end of Stimulus funds.

The 2011 portfolio is still underway and, as such, the figure uses our projections based on the first 8 months of the program year. In addition, the 2011 portfolio savings will depend to a significant degree on the savings associated with the just-launched compact fluorescent light (CFL) contingency campaign. Avista is in the process of mailing 350,000 packages containing eight CFLs. The potential savings of this program is expected to be between 42,000 and 89,600 MWh. The figure below assumes the low end of the estimate to be conservative. The orange line illustrates overall portfolio-level goals for years 2010 through 2013. 2010 and 2011 goals are based on IRP filings, whereas 2012 and 2013 are the realistic achievable potential (RAP), which represent the lower limit of the range of savings goals from Avista's conservation potential assessment (CPA).

The 2010 portfolio's unverified reported savings surpassed the IRP goal by around 5,000 MWh. The impact evaluation will determine the final savings that Avista can claim. Without the contingency plan, meeting the 2011 goals would have been unlikely, and Cadmus expects that meeting future goals will be challenging, since this kind of contingency plan can only be used

once. Furthermore, the CFL Contingency Plan is likely to have an effect on the Simple Steps upstream CFL program performance in the coming years.

Figure ES-1. Unverified kWh Savings by Sector and Portfolio Goals



Program Implementation

Utilities often use a mix of in-house and third-party program implementation. Table ES-2 below shows the programs that are implemented by third parties for Avista for each sector. All other programs are administered directly by Avista.

Table ES-2. Third Party Implementation

Sector	Program	Implementer
Low-Income	All programs	CAP Agencies
Nonresidential	EnergySmart Grocer	PECI
Nonresidential	Green Motors Rewind	Green Motors Practices Group
Residential	Appliance Recycling	JACO
Residential	Simple Steps	Fluid Marketing Strategies

There are advantages and disadvantages to utilizing third party implementers. It is our opinion that Avista has thus far selected the appropriate programs to contract to implementation firms. In general utilities maintain direct implementation of programs that require intimate knowledge of unique customers (e.g., large commercial and industrial customers). Programs that can benefit from a uniform approach that has been tried successfully elsewhere, involve national accounts, or require certain market expertise available from a third-party firm can benefit from being contracted out.

As savings goals increase and the "low hanging fruit" of energy-efficiency measures are exhausted, it may be advantageous for utilities to consider increasing the utilization of third party implementers for certain programs. Avista may wish to consider the following questions as they plan programs in the coming years:

- Does the program's success depend heavily on the utility's relationship with the customer or institutional knowledge?
- Do third-party implementers bring specialized knowledge or skill sets that exceed that of Avista?
- Do third-party implementers have established relationships with upstream distribution channels, trade allies, or customers that could increase program success?
- Does the third party have greater flexibility than the utility for things such as delivery capacity or market intervention strategies?
- Are the implementers willing to take on some of the risk of not meeting goals?

As mentioned above, Cadmus feels the current split of delivery mechanisms is appropriate. We have found no strong evidence indicating the need for sweeping changes. That said, we believe that two programs ought to be considered in the coming two years for potential outsourcing: the residential ENERGY STAR Products program and components of the Heating and Cooling Efficiency program. We believe that Avista could benefit from concentrating on the delivery of programs involving larger customers.

Sector Conclusions and Recommendations

The section below lists the key conclusions and recommendations for each of the sectors, broken out by major evaluation topic area for each sector.

Residential Conclusions and Recommendations

Program Participation

Conclusions

- Residential portfolio reported strong achievement of savings and participation goals in 2010.
- Expected decline in 2011 participation may affect ability to reach savings targets in future program years.
- High ENERGY STAR market share for dishwashers signifies that high freeridership is likely for this measure and further market transformation through rebate is unlikely.
- Perception of difficulty of participation may be a barrier.

Recommendations

- Research market saturation and participation to track achievement of potential. Using the *Avista Electric Conservation Potential Assessment Study* completed in August 2011, along with available data sources such as ENERGY STAR and additional primary research, Avista should track the residential portfolio's progress toward capturing projected realistic achievable potential. This effort will inform program planning and design decisions to allow for the long-term success of the residential portfolio.

- Discontinue rebate for ENERGY STAR dishwashers. ENERGY STAR data show that 78 percent of dishwashers sold nationally are ENERGY STAR models. Therefore, this measure is likely to suffer from high freeridership, and the Avista rebate is unlikely to affect market transformation.
- In order to address the nonparticipant perception that program participation may be difficult, Avista should emphasize the ease of participating in residential marketing.

Program Design

Conclusions

- Organization of programs may be unnecessarily complex.
- Two third-party implementers (JACO and FMS) provide advantages.
- Trade allies favor contractor rebates over customer rebates.

Recommendations

- Simplify and document program organization structure. Cadmus recommends grouping programs in logical clusters, in order to reduce complexity of documentation and tracking. While streamlining program organization, Avista should also document institutional knowledge of programs to avoid loss of continuity.
- Assess viability of redesigning some programs to include contractor rebates. Avista should consider the suggestion from HVAC trade allies to provide rebates direct to contractors. Other utilities have seen success with this model, which reduces the administrative burden on customers, allows for batch processing of rebates by Avista, and ensures close communication with trade allies. Anti-fraud provisions (such as requiring customer information and signature on rebate forms, or conducting site visits to verify installation) may be included in any such program adaptation.

Data Tracking

Conclusions

- Program data are tracked adequately for internal purposes, but improvements could enhance evaluability.
- Areas for improvement in tracking include consistency and detailed tracking of audit participation and follow-through

Recommendations

- Consider enhancing uniformity of program tracking by standardizing data formats. Wherever possible, Avista should develop tracking methods that support consistent analysis across programs. For example, a standardized format for customer address data across separate databases would ease database combination or integration.
- Track follow-through on audit recommendations. In planning for future Audit program implementation, Avista should consider additional tracking of customer follow-through on recommendations, both through other Avista rebate programs, and independently without rebates.

Marketing and Outreach

Conclusions

- Residential marketing is strong, contributing to high program awareness even among nonparticipants.
- Participants learn of programs through variety of channels, with Avista representative and contractor outreach being key methods.
- Opportunities exist for expansion of marketing efforts to counteract declining participation.

Recommendations

- Continue pursuing diverse marketing and outreach strategies. Avista should maintain its multi-faceted approach to reaching a broad range of customers, while targeting difficult-to-reach customers where appropriate.
- Continue enhancing social media marketing. Since Avista reported that younger customers can be more difficult to reach, the marketing team should continue to enhance its social media marketing efforts.
- Ensure contractors have adequate information to disseminate. Since trade allies were one of the commonly reported ways that participants learned about the program, Avista must focus on providing trade allies with adequate and accurate information. This can be achieved by distributing updated materials regularly, holding trainings for contractors, or formalizing the trade ally network to ensure frequent communication. For example, Avista should consider providing printable online information sheets that trade allies can print and disseminate to their customers.

Participant Experience and Satisfaction

Conclusions

- Participants are highly satisfied with all programs and rebates.

Recommendation

- Continue emphasizing good customer service and offering customer-friendly programs. These areas should be maintained as priorities in future program planning and implementation.

Effectiveness of Implementers

Conclusion

- High participation levels in the Simple Steps, Smart Savings program indicate potential for program expansion.
- Future evaluation activities may require retailer cooperation.

Recommendations

- Consider expanding offerings of Simple Steps program. Avista should consider the benefits of adding measures to the Simple Steps program. Additional measure offerings may increase potential participation and savings.

- Require FMS to ensure evaluators have access to retailers. Upstream program evaluation often requires access to retail locations, for shelf-stocking studies and in-store intercepts, for example. In order to ensure future evaluability of the Simple Steps program, FMS should require participating retailers to grant such access to evaluators when necessary.

Trade Ally Participation and Satisfaction

Conclusion

- HVAC contractors value program, contribute significantly to program outreach, are willing to engage more directly with Avista, and would appreciate additional marketing support

Recommendation

- Enhance and formalize trade ally network. Avista should offer additional training and informational materials to contractors who serve the HVAC program, to ensure high-quality program information reaches customers, and to encourage program promotion through contractors.

Residential Portfolio

Conclusion

- As programs mature, opportunities for program expansion or modification will arise due to factors such as market transformation and new regulations.

Recommendation

- Consider various opportunities for expansion. Avista should regularly assess the viability of expanded program and measure offerings. Avista may consider various possible expansions including behavioral programs and energy education programs.

Nonresidential Conclusions and Recommendations

Overall, the nonresidential programs are working well and operating as designed. Many of the programs are meeting or exceeding energy reduction targets. Highly qualified, dedicated, and long-term staff ensures quality control and efficient operations of the many prescriptive and site-specific programs. Commercial and industrial (C&I) customers and trade allies report strong satisfaction with the programs.

Program Documentation

Conclusion

- Although program overview, goals, and implementation plans are located in the 2011 DSM Business Plan, documented operational procedures were not easily accessible. Therefore, it is difficult to link the EM&V policies found in the high level planning documents to the program's operational management.

Recommendation

- Developing a program manual, with implementation plans, operational procedures, marketing strategies, and verification protocols aggregated into a single program handbook, could help to establish this link.

Customer Feedback

Conclusions

- Overall, customers proved very satisfied with all program elements. The majority of survey respondents did not encounter program participation challenges.
- However, customers felt there was a lack of information about program offerings.

Recommendations

- Enhance outreach and communication efforts for participants, nonparticipants, and partial participants.
- Develop additional printed program materials to educate customers about program opportunities.
- Consider regularly scheduled online Webinars to assist customers with questions about program incentives, eligibility, and application processing.

Trade Ally Feedback

Conclusions

- Avista's informal network of trade allies works well, through updates to the mailing list, word of mouth, and strong communications between contractors and Avista's customers, program staff, and account representatives.
- Although trade allies expressed strong satisfaction with program components, they also requested additional program guidance and greater opportunities for direct communication with Avista.
- Although the mailing list serves as an informal network for nonresidential programs, limited information has been documented about trade allies, the markets they serve, and their areas of specialization and qualifications.

Recommendations

- Provide regular trade ally communications through targeted outreach efforts, such as a Website, monthly e-mails, or a newsletter. A Website dedicated for trade allies could enable registration, thereby providing a method for compiling (and updating) trade ally profiles and contact information.
- Consider providing additional promotional materials that would highlight various program technologies available to customers. This would not require that Avista endorse any one contractor.
- Explore ways to leverage strong working relationships forged between customers and contractors within the community by sponsoring additional program working sessions, luncheons, or Webinars that provide guidance for trade ally outreach efforts.

Application Processing and Data Tracking

Conclusions

- Overall, application forms and program databases work well for tracking nonresidential participants and projects.

- Some customers and trade allies expressed confusion about prescriptive program requirements listed on the forms, and requested more help in filling out the site-specific forms and worksheets.

Recommendations

- Offer site-specific application forms online. Although it would be ideal to enable submission of forms online, simply making the forms downloadable and mail-in would provide a good first step. In addition, consider including guidelines for completing site-specific forms.
- Gather additional feedback from customers and trade allies about how site-specific form enrollment and processing could be streamlined.
- Gathering more detail about program and project measures in the participant database would enable a better understanding of the kinds of projects done in the past (by different types of customers and end-uses). Additional information could be used to market specific types of projects to other customers who have the same end-use equipment.

Marketing and Outreach

Conclusions

- Although a marketing budget had not been allocated before 2011, Avista's nonresidential marketing and outreach strategy has worked well, and includes the Website, customer E- newsletter, and outreach efforts of the key account managers. However, lack of knowledge about the effectiveness of nonresidential marketing approaches could result in reduced understanding of target markets for meeting future program goal requirements.

Recommendations

- Ensure allocation in future marketing budgets dedicated for nonresidential program marketing and outreach efforts.
- Develop additional marketing materials targeted specifically for trade ally outreach to customers. These materials would enable Avista staff to leverage existing trade ally relationships in the community. Make them available at a trade ally website for printing.
- Conduct marketing surveys, and targeted marketing research that would gather additional information about customer facilities and technology end-uses.
- Conducting targeted marketing research of largest 100 customers with hourly demand data. Use such data to analyze demand patterns, identify opportunities, and provide account executives with needed intelligence to market energy efficiency measures.

Quality Assurance and Verification

Conclusions

- Procedures for QA of data tracking, savings estimation, project approval, and inspection have been well-documented for site-specific projects.
- Although Avista uses a risk-based approach to pre- and post-inspections for prescriptive programs, guidelines or standardized procedures for this approach have not been documented.

Recommendations

- Consider developing a verification protocol to document pre- and post-inspection procedures for prescriptive programs, and ensure data tracking for project installation. In addition, protocols should highlight any differences in verification procedures used for prescriptive and site-specific programs.

Low-Income Conclusions and Recommendations

Program Delivery

Conclusions

- Avista's low-income weatherization program has been successfully implemented, without significant delivery barriers.
- Avista homes weatherized by agencies without Avista funding may represent opportunities to claim "non-programmatic" savings.
- Periodic review of agency funding disbursements may allow for midstream reallocations.

Recommendation

- Work with agencies to track non-programmatic savings.

Communication

Conclusion

- Opportunities exist for Avista to increase its involvement in the program by accompanying CAP agency staff and state administrators in ridealongs and monitoring.

Recommendation

- Continue to coordinate with state and agency staff to participate in ridealongs and monitoring.

Program Tracking

Conclusions

- Current participant and measure data are not being used consistently or effectively to calculate robust expected savings estimates.
- Agencies are willing to provide additional building and measure details for Avista to incorporate into an improved expected savings calculation.
- Two key criteria that with implications on estimated savings are currently not being collected: 1) primary heating source reported by the homeowner, and 2) whether equipment is non-functioning upon replacement.
- While agencies reported no major problems in complying with reporting requirements, removing preapproval requirements and electronic reporting procedures may help streamline the program.

Recommendations

- Ensure consistency and accuracy of data collected for expected savings calculations.

- Work with CAPs for more detailed data collection.
- Eliminate preapproval requirements for refrigerators, natural gas furnaces, and water heater replacements.
- Continue to communicate with agencies regarding opportunities for automating reporting.

Cost-Effectiveness Considerations

Conclusions

- While state resource portfolio requirements remain unclear in regard to holding low-income weatherization to the same cost-effectiveness standards as other DSM programs, a ruling on this issue will allow Avista to consider options for changing the design and delivery of their low-income weatherization program.

Recommendations

- Work with stakeholders to get clarity on whether low-income weatherization is held to the same cost-effectiveness requirements as other DSM program offerings

Quality Assurance and Control

Conclusions

- QA/QC protocols, implemented by both state monitors and agency staff, appear sufficient for guaranteeing completion of all work identified by the agency auditor and for confirming quality installation of the work completed.
- Reviewing inspection reports from state monitors will give Avista a better understanding of reoccurring issues or areas for concern with regard to agency implementation and quality installation of weatherization measures.

Recommendations

- Consider leveraging state resources for additional oversight.
- Request inspection reports from state monitors for Avista customer homes.

Participant Findings

Conclusions

- As about 12 percent of participants use non-electric or gas sources as their primary means of heating, Avista's expected savings estimates may not be accurate if assuming electric or gas heating systems in its savings calculations. This especially applies to shell measure savings calculations.
- As 28 percent of participants reported changing how they heat their homes following weatherization work, estimated savings for these participants may not be accurate, given Avista's deemed savings estimates.
- Low reported take-back levels indicated increases in consumption did not likely occur due to increased occupants moving into a home, increase occupancy of rooms within a home, or changes to thermostat set-points.

Participant Energy Education

Conclusions

- The program's energy-saving educational component appears to lack standardization across agencies; however, it appears to operate successfully, based on participant responses, high rates of reviewing materials, and reported energy-saving behavior changes.
- The energy education curriculum and delivery could focus more on actions saving the most energy.

Recommendations

- Focus energy education on actions resulting in high energy savings (e.g., reducing heating setpoints and how water use).

Non-Energy Benefits

Conclusions

- Participants reported additional benefits (e.g., increased comfort, improved health, reduced forced mobility) beyond cost-savings associated with reductions in energy consumption.
- An opportunity exists for Avista to quantify more non-energy benefits associated with this program.

Recommendation

- Consider funding additional research of non-energy benefits, in particular those benefits that can be added to the Total Resource Cost (TRC).

Participant Satisfaction

Conclusions

- Participants reported high satisfaction levels with Avista's low-income weatherization program overall.
- Participants also expressed satisfaction with measure installations, with the majority indicating either "excellent" or "good" ratings for each measure type.

Recommendations for Future Research

This process evaluation identified multiple areas worthy of future research for the 2011 and future evaluations, including:

Residential

- Analysis of multiple rebates, including the heat pump and gas furnace combination. Since over 25% of 2010 participants received more than one rebate, Avista should study the patterns of multiple-measure participation. This could provide insight into marketing possibilities, and inform impact analysis and future program planning.
- Market research on program penetration. Avista's residential programs may affect the market for high-efficiency equipment in its service territory, and these effects should be documented. Studies could include quantifying nonparticipant spillover, examining market saturation of

rebated equipment, and using the 2011 Conservation Potential Assessment Study to assess participation trends and program plans.

- Assessment of implementation costs. Examination of program costs, either through cost-effectiveness analysis or through process evaluation, can provide insight into the relative efficiency of implementation practices.

Nonresidential

- Conducting targeted marketing research of largest 100 customers with hourly demand data. Use such data to analyze demand patterns, identify opportunities, and provide account executives with needed intelligence to market energy efficiency measures.
- Examining historical trends for nonresidential program technology end-uses in comparison with future savings targets and technology potential.
- Analyzing market penetration by rate class, commercial and industrial sector, and technology types.
- Examining individual program processes (selected and prioritized by Avista's program managers) for potential improvements to efficiency and cost effectiveness.
- Conducting more in-depth research about nonparticipant spillover resulting from installation of energy-efficiency equipment outside of the program.
- Investigating potential improvements to TRC valuation resulting from nonresidential program non-energy benefits.

Low-Income

- Revise the participant survey to collect more detailed information in particular areas of interest. Three such areas may include: 1) additional non-energy benefits from the participant perspective; 2) specific changes to customer heating and cooling behaviors occurring after weatherization; and 3) non-functioning equipment prior to replacement.
- Consider identifying non-programmatic savings resulting from low-income weatherization performed on Avista customer homes using other funding sources.
- Assist with Washington Utilities and Transportation Commission hearings and data requests regarding cost-effectiveness requirements for low-income programs.
- Work to determine non-energy benefits and to prioritize benefits to be pursued with further research.
- Consider funding a market assessment to identify: the geographic breakout of eligible participant populations; historical participation; whether any target markets have been historically underserved; and additional targeting opportunities (e.g., energy burdens).

1 2010 Residential Process Report

1.1 Executive Summary

The residential process evaluation focuses on 11 Avista residential programs during the 2010 program year (PY 2010). Cadmus prioritized these programs, shown in Table 1-1, conducting additional, in-depth research on those achieving the greatest savings (in bold).

Table 1-1. PY 2010 Residential Programs

Residential Gas and Electric Saving Programs
ENERGY STAR Appliance Rebate
ENERGY STAR Homes
Heating and Cooling Efficiency
Weatherization and Shell Measures
Water Heater Efficiency
Home Energy Audit Pilot
Residential Electric-Only Programs
Geographic Saturation Events
Shade Tree
Second Refrigerator and Freezer Recycling
Space and Water Conversions
Simple Steps, Smart Savings (CFLs)

1.1.1 Evaluation Activities and Objectives

The evaluation sought to assess the following research areas for each program:

- Customer participation;
- Trade ally participation;
- Effectiveness of program design and delivery; and
- Opportunities for improvements.

In assessing these topics, Cadmus relied on three main data collection efforts: a document review; in-depth interviews; and telephone surveys of participants and nonparticipants.

The document review included the following information sources, provided to Cadmus by Avista:

- Tracking databases;
- Business plans;
- Marketing materials; and
- Cost-effectiveness analysis spreadsheets.

In-depth interviews with program and implementation staff provided detailed insights into design and delivery processes, and allowed clarification of gathered information. In staff interviews, as

well as in selecting implementer and trade ally interviewees, Cadmus focused on the high-savings programs such as HVAC and Simple Steps, Smart Savings.

Table 1-2. PY 2010 Residential Interviews

Role	Number of Completed Interviews
Avista Program Staff	15
Simple Steps Implementers	2
HVAC Contractors	10

Cadmus designed and analyzed participant and nonparticipant telephone surveys, which were implemented by Discovery Research Group. The participant survey sampling plan was based on multiple factors, including feasibility of reaching customers, program participant population, and research topics of interest. Cadmus did not conduct participant surveys with Simple Steps, Smart Savings customers, because this—as an upstream program—did not track participant contact information. Similarly, for ENERGY STAR New Homes, Cadmus did not survey residential customers purchasing rebated homes, because rebates were paid to the builders, not end-use customers. For Refrigerator Recycling, a larger sample was surveyed to provide sufficient precision and confidence for the estimation of net-to-gross ratios, which will be reported in the forthcoming 2010 Electric Impact Evaluation. Table 1-3 shows achieved sample sizes and absolute precision at the 90 percent confidence level for the participant survey.[1]

Table 1-3. Participant Survey Sample Sizes and Precision Estimates by Program

Program	Total Program Participants	Survey Respondents	Absolute Precision at 90% Confidence
ENERGY STAR Appliance Rebate	17,397	73	±9.7%
Heating and Cooling Efficiency	7,681	72	±9.7%
Weatherization and Shell Measures	7,775	70	±9.9%
Water Heater Efficiency	1,362	20	±19.1%
Home Energy Audit Pilot	268	64	±8.0%
Second Refrigerator and Freezer Recycling	1,729	133	±6.6%
Space and Water Conversions	250	43	±10.7%
Overall	36,462	475	±3.7%

The study selected nonparticipants by using screening questions to identify customers purchasing items or taking actions that could have been eligible for rebates, but not participating in the rebate programs. These included customers purchasing standard-efficiency versions of rebated measures. Nonparticipant surveys results have been reported in aggregate to reflect behaviors and attitudes of all Avista nonparticipant residential customers. The achieved sample size of 70 sufficiently produces significance at the 90 percent level, within no more than a ±10 percent confidence interval for the nonparticipant population.

[1] Precision values in Table 1-3 represent the least favorable possible precision given the sample sizes, and were calculated by assuming a reported proportion of 50 percent. Precision for most reported results is better than values shown in the table.

1.1.2 Conclusions and Recommendations

The conclusions and recommendations summarized below are described in greater detail in the final section of this report (1.4 Conclusions, Recommendations, and Future Research Areas).

Program Participation

Conclusions

- Residential portfolio reported strong achievement of savings and participation goals in 2010
- Expected decline in 2011 participation may affect ability to reach savings targets in future program years
- High ENERGY STAR market share for dishwashers signifies that high freeridership is likely for this measure and further market transformation through rebate is unlikely
- Perception of difficulty of participation may be a barrier

Recommendations

- **Research market saturation and participation to track achievement of potential.** Using the *Avista Electric Conservation Potential Assessment Study* completed in August 2011, along with available data sources such as ENERGY STAR and additional primary research, Avista should track the residential portfolio's progress toward capturing projected realistic achievable potential. This effort will inform program planning and design decisions to allow for the long-term success of the residential portfolio.
- **Discontinue rebate for ENERGY STAR dishwashers.** ENERGY STAR data shows that 78 percent of dishwashers sold nationally are ENERGY STAR models. Therefore, this measure is likely to suffer from high freeridership, and the Avista rebate is unlikely to affect market transformation.
- **Emphasize ease of participation in marketing**. In order to address the nonparticipant perception that program participation may be difficult, Avista should emphasize the ease of participating in residential marketing.

Program Design

Conclusions

- Organization of programs may be unnecessarily complex
- Two third-party implementers (JACO and FMS) provide advantages
- Trade allies favor contractor rebates over customer rebates

Recommendations

- **Simplify and document program organization structure.** Cadmus recommends grouping programs in logical clusters, in order to reduce complexity of documentation and tracking. While streamlining program organization, Avista should also document institutional knowledge of programs to avoid loss of continuity.
- **Assess viability of redesigning some programs to include contractor rebates.** Avista should consider the suggestion from HVAC trade allies to provide rebates direct to

contractors. Other utilities have seen success with this model, which reduces the administrative burden on customers, allows for batch processing of rebates by Avista, and ensures close communication with trade allies. Anti-fraud provisions (such as requiring customer information and signature on rebate forms, or conducting site visits to verify installation) must be included in any such program adaptation.

Data Tracking

Conclusions

- Program data are tracked adequately for internal purposes, but improvements could enhance evaluability.
- Areas for improvement in tracking include consistency and detailed tracking of audit participation and follow-through

Recommendations

- **Consider enhancing uniformity of program tracking by standardizing data formats.** Wherever possible, Avista should develop tracking methods that support consistent analysis across programs. For example, a standardized format for customer address data across separate databases would ease database combination or integration.
- **Track follow-through on audit recommendations.** In planning for future Audit program implementation, Avista should consider additional tracking of customer follow-through on recommendations, both through other Avista rebate programs, and independently without rebates.

Marketing and Outreach

Conclusions

- Residential marketing is strong, contributing to high program awareness even among nonparticipants
- Participants learn of programs through variety of channels, with Avista representative outreach and contractor outreach being key methods
- Opportunities exist for expansion of marketing efforts to counteract declining participation

Recommendations

- **Continue pursuing diverse marketing and outreach strategies.** Avista should maintain its multi-faceted approach to reaching a broad range of customers, while targeting difficult-to-reach customers where appropriate.
- **Continue enhancing social media marketing.** Since Avista reported that younger customers can be more difficult to reach, the marketing team should continue to enhance its social media marketing efforts.
- **Ensure contractors have adequate information to disseminate.** Since trade allies were one of the commonly reported ways that participants learned about the program, Avista must focus on providing trade allies with adequate and accurate information. This can be achieved by distributing updated materials regularly, holding trainings for contractors, or formalizing

the trade ally network to ensure frequent communication. For example, Avista should consider providing printable online information sheets that trade allies can print and disseminate to their customers.

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- Participants are highly satisfied with all programs and rebates

Recommendation

- **Continue emphasizing good customer service and offering customer-friendly programs.** These areas should be maintained as priorities in future program planning and implementation.

Effectiveness of Implementers

Conclusion

- High participation levels in the Simple Steps, Smart Savings program indicate potential for program expansion
- Future evaluation activities may require retailer cooperation

Recommendations

- **Consider expanding offerings of Simple Steps program.** Avista should consider the benefits of adding measures to the Simple Steps program. Additional measure offerings may increase potential participation and savings.
- **Require FMS to ensure evaluators have access to retailers.** Upstream program evaluation often requires access to retail locations, for shelf-stocking studies and in-store intercepts, for example. In order to ensure future evaluability of the Simple Steps program, FMS should require participating retailers to grant such access to evaluators when necessary.

Trade Ally Participation and Satisfaction

Conclusion

- HVAC contractors value program, contribute significantly to program outreach, are willing to engage more directly with Avista, and would appreciate additional marketing support

Recommendation

- **Enhance and formalize trade ally network**. Avista should offer additional training and informational materials to contractors who serve the HVAC program, to ensure high-quality program information reaches customers, and to encourage program promotion through contractors.

Residential Portfolio

Conclusion

- As programs mature, opportunities for program expansion or modification will arise due to factors such as market transformation and new regulations.

Recommendation

- **Consider various opportunities for expansion**. Avista should regularly assess the viability of expanded program and measure offerings. Avista may consider various possible expansions including behavioral programs and energy education programs.

1.2 Introduction

1.2.1 Program Overview

The residential process evaluation focuses on 11 programs Avista offered to residential gas and electric customers during the 2010 program year (PY 2010). Cadmus prioritized these programs, shown in Table 1-4, conducting additional, in-depth research on those achieving the greatest savings (the table shows these high-priority programs in bold).

Table 1-4. PY 2010 Residential Programs

Residential Gas and Electric Saving Programs
ENERGY STAR Appliance Rebate
ENERGY STAR Homes
Heating and Cooling Efficiency
Weatherization and Shell Measures
Water Heater Efficiency
Home Energy Audit Pilot
Residential Electric-Only Programs
Geographic Saturation Events
Shade Tree
Second Refrigerator and Freezer Recycling
Space and Water Conversions
Simple Steps, Smart Savings (CFLs)

This report's following sections briefly describe each program examined through this process evaluation.

ENERGY STAR Appliance Rebate

This program offers direct financial incentives to motivate customers to use more energy-efficient appliances. The program indirectly encourages market transformation by increasing demand for ENERGY STAR products.

ENERGY STAR New Homes

This program offers builders incentives to construct single-family or multifamily homes complying with ENERGY STAR Homes criteria.
One incentive targets Avista electric or Avista electric and natural gas for space heat and water heat, and a lower incentive targets homes using only Avista natural gas (for both hot water and space heating).

Heating and Cooling Efficiency

This program offers four incentive categories for electric and gas customers seeking to purchase:

- High-efficiency natural gas furnaces or natural gas boilers;
- High-efficiency air-source central heat pumps;
- Ductless heat pumps; and

- Primary heating systems incorporating a variable speed motor.

Weatherization and Shell Measures

This program incents three measure categories, available to residential electric and gas customers with homes heated by an Avista fuel:

- Ceiling and attic insulation (both fitted/batt type and blown-in);
- Floor and wall insulation (both fitted/batt type and blown-in); and
- Upgrades of windows with low u-factors (available only through April 1, 2011).

Water Heater Efficiency

Through this program, Avista offers incentives to gas and electric customers installing a qualifying, high-efficiency water heater. To qualify, water heaters must meet specified efficiency standards.

Home Energy Audit Pilot

This pilot program, launched in May 2010, seeks to determine home energy audits' cost-effectiveness for capturing electric and gas savings. Eligible Avista customers must reside in single-family homes, duplexes, and manufactured homes located in the Spokane area. The program offers energy audits, conducted by Building Performance Institute-certified auditors, at reduced costs to eligible customers. An Energy-Efficiency Community Block Grant, under the American Recovery and Reinvestment Act (ARRA), partially funded this program.

Geographic Saturation Events

Targeting Washington and Idaho electric and gas customers, this program promotes energy-efficiency measures in homes by providing energy-efficiency education, distributing measures (such as compact fluorescent lamps [CFLs] and weatherization products), and promoting options and rebates available through Avista and state programs.

Shade Tree

This program seeks to reduce energy consumption required for cooling by strategically planting large-growing deciduous trees that shade homes from the sun. With a partnership between Avista and Spokane County Conservation District, the program is available to Avista electric customers owning eligible homes in approved geographic areas within Spokane County.

Second Refrigerator and Freezer Recycling

This program, applying to Washington and Idaho electric and electric/gas customers, provides financial incentives to customers recycling refrigerators and freezers. The program seeks to reduce energy consumption by recycling up to two inefficient secondary refrigerators or freezers per home. JACO Environmental, Inc., is the implementation contractor responsible for scheduling, pickup, recycling, rebate payment, and data tracking.

Space and Water Conversions

This program offers incentives for two types of fuel conversion:

- Replacement of electric straight resistance as a primary heat (either electric forced air furnaces or electric baseboard heat), with central, natural gas heating systems or central heat pumps; and
- Replacement of electric water heaters with new, natural gas water heaters.

Simple Steps, Smart Savings Program (CFLs)

Avista sponsors an upstream, buy-down CFL program, administered by the Bonneville Power Authority and implemented by Fluid Market Strategies (FMS). The program, available to electric customers in Washington and Idaho, offers discounted twist and specialty CFLs at most big-box stores.

1.2.2 Process Evaluation Objectives

The residential process evaluation sought to assess the following research areas for each program evaluated:

- Customer participation;
- Trade ally participation;
- Effectiveness of program design and delivery; and
- Opportunities for improvements.

1.2.3 Evaluation Methodology and Information Sources

Cadmus' approach to this portfolio-wide process evaluation relied on three, primary data collection efforts: a document review; in-depth interviews; and telephone surveys of participants and nonparticipants.

Document Review

Cadmus first conducted a document review, consisting of reviewing existing program documentation to develop an understanding of program design, status, and delivery processes. Additionally, this review allowed Cadmus to identify topics of interest for greater focus during the in-depth interviews.

The document review included the following information sources, provided to Cadmus by Avista:

- DSM Business Plans (2010 and 2011).
- EM&V Framework and EM&V Plan (2010 and 2011).
- 2010 DSM Annual Process Report and other key reports (such as PPA Ecotope summary).
- Organization charts.
- Marketing materials
    - Sample newsletters, brochures, information sheets, and other advertising
    - DSM tracking survey results

- 2010 cost-effectiveness analysis spreadsheets.

Program Staff, Implementer, and Trade Ally Interviews

In-depth interviews with program and implementation staff provided detailed insights into design and delivery processes, and allowed clarification of gathered information. In staff interviews, as well as in selecting implementer and trade ally interviewees, Cadmus focused on the high-savings programs such as HVAC and Simple Steps, Smart Savings.

Table 1-5. PY 2010 Residential Interviews

Role	Number of Planned Interviews	Number of Completed Interviews
Avista Program Staff	Approximately 10	15
Simple Steps Implementers	1	2
HVAC Contractors	10	10

Cadmus interviewed 15 members of Avista's program staff, including:

- Demand-side management (DSM) program managers and engineers;
- Planning, Policy and Analysis team members; and
- Marketing team members.

Cadmus conducted these interviews in person and by phone, using a structured interview guide. Where necessary, Cadmus requested clarifying information via phone or e-mail. Topics covered through staff interviews included the following:

- Goals;
- Program design;
- Implementation:
    - Marketing
    - Target markets
- Tracking; and
- QA/QC.

Cadmus also interviewed two implementation staffers at Fluid Market Strategies, the company implementing Simple Steps, Smart Savings. Conducted by phone, these interviews also followed a structured interview guide. Main topics included:

- Goals;
- Implementation processes; and
- Tracking.

To gather information from trade allies, Cadmus conducted a series of telephone interviews with residential HVAC contractors that installed rebated equipment during PY 2010. Over a period of

two weeks, Cadmus contacted a total of nineteen contractors and vendors from Avista's trade ally mailing list. Of these, one refused an interview, and eight were unavailable at the time of the call. Cadmus interviewed 10 contractors, using a structured interview guide. Contractor interview data, while not statistically representative of all participating contractors, provided broad anecdotal insights into contractors' experiences by asking questions of multiple contractors. Contractor interviews sought to procure data addressing the following topics:

- Program awareness:
  - Contractor awareness
  - Customer awareness
- Effect of rebates on sales;
- Contractor marketing/outreach; and
- Satisfaction.

Telephone Surveys

Cadmus contracted with market-research firm Discovery Research Group (DRG) to conduct surveys with participants and nonparticipants. To minimize response bias, DRG called customers during various hours of days and evenings (including weekends), and made multiple attempts to contact individual participants. After six unsuccessful calls, contacts were removed from the sample. Cadmus monitored survey phone calls to ensure accuracy, professionalism, and objectivity.

Participant Surveys

Participant telephone surveys offered important insights into program experiences for seven residential programs, exploring the following topics:

- Sources of awareness;
- Satisfaction;
- Awareness of energy efficiency;
- Participation barriers;
- Freeridership and spillover; and
- Customer characteristics.
- Within each program sample, measure distribution proportionally reflected the 2010 program's participant population.[2] Table 1-6 provides details on residential participant survey calls.

[2] For participants installing more than one measure, Cadmus designated one, randomly-selected measure, upon which survey questions focused.

Table 1-6. Residential Participant Details and Survey Sample

	Number of Participants
Total Participants	36,462
ENERGY STAR Appliance Rebate	17,397
Heating and Cooling Efficiency	7,681
Weatherization and Shell Measures	7,775
Water Heater Efficiency	1,362
Home Energy Audit Pilot	268
Second Refrigerator and Freezer Recycling	1,729
Space and Water Conversions	250
Eligible Participants in Call List	16,453
Screened out due to change in occupancy or bad phone number	58
Screened out due to unreachable primary decision maker	273
Completed Surveys	475
Number of Calls Required to Achieve Sample	3,485
Response Rate*	14%
Cooperation Rate**	30%
Sample Size for Analysis	475

* Response rate: the number of customers completing a survey, divided by the number of calls made.

** Cooperation rate: the number of customers completing a survey, divided by the number of customers reached by phone.

Cadmus designed participant survey sample sizes to yield significance at the 90 percent confidence and ±10 percent precision levels in most cases, for program-level survey results. The participant survey sampling plan was based on multiple factors, including feasibility of reaching customers, program participant population, and research topics of interest. Cadmus did not conduct participant surveys with Simple Steps, Smart Savings customers, as this is an upstream program and therefore does not track participant contact information. Similarly, for ENERGY STAR New Homes, Cadmus did not survey residential customers purchasing rebated homes, because the rebates were paid to the builders, not the end-use customers. In the case of Refrigerator Recycling, a larger sample was surveyed to provide sufficient precision and confidence for the estimation of net-to-gross ratios, which will be reported in the forthcoming 2010 Electric Impact Evaluation. As the Water Heater Efficiency Program accounted for a relatively small amount of savings, Cadmus surveyed a smaller sample of its participants, planning for a ±20 percent precision at the 90 percent level.

Table 1-7 shows the number of surveys achieved, and the resulting absolute precision for each program. The precision values listed in these tables were calculated assuming that the reported proportion was 50 percent, so the results reported in this evaluation have at least this level of confidence and precision.

Table 1-7. Participant Survey Sample Sizes and Precision Estimates by Program

Program	Total Program Participants	Survey Respondents	Absolute Precision at 90% Confidence
ENERGY STAR Appliance Rebate	17,397	73	±9.7%
Heating and Cooling Efficiency	7,681	72	±9.7%
Weatherization and Shell Measures	7,775	70	±9.9%
Water Heater Efficiency	1,362	20	±19.1%
Home Energy Audit Pilot	268	64	±8.0%
Second Refrigerator and Freezer Recycling	1,729	133	±6.6%
Space and Water Conversions	250	43	±10.7%
Overall	36,462	475	±3.7%

Cadmus combined residential survey data files from each program to produce overall results for the portfolio of residential programs with surveys conducted. As each sample represented program populations of different sizes, we developed a weighting scheme, resulting in the combined residential data file representing the portfolio as a whole.

Established design weights for each program accounted for under- or overrepresentation by weighting respondents up or down, based on their program; so the combined residential data file represented each program proportionately to its representation in the overall participant population. Table 1-8 shows the weighting scheme, applied only when reporting combined results (not when reporting program-level results).

Table 1-8. Participant Survey Sample Design Weights by Program

Program	Proportion of Total Participant Population	Proportion of Total Survey Respondents	Program Weight
ENERGY STAR Appliance Rebate	48%	15%	3.10
Heating and Cooling Efficiency	21%	15%	1.39
Weatherization and Shell Measures	21%	15%	1.45
Water Heater Efficiency	4%	4%	0.89
Home Energy Audit Pilot	1%	13%	0.05
Second Refrigerator and Freezer Recycling	5%	28%	0.17
Space and Water Conversions	1%	9%	0.08

Nonparticipant Surveys

Cadmus conducted telephone surveys with Avista residential customers not participating in the programs with the nonparticipant survey call list including randomly selected gas and electric customers not participating in programs during 2010 or 2011. Nonparticipant surveys collected the following information:

- Program awareness;
- Participation barriers;
- Awareness of energy efficiency; and
- Customer characteristics.

- The study selected nonparticipants by using screening questions that identified customers purchasing items or taking action that could have been eligible for rebates without applying for one. This included customers purchasing standard-efficiency versions of rebated measures. Table 1-9 details residential nonparticipant survey results.

Table 1-9. Residential Nonparticipant Details and Survey Sample

	Quantity
Eligible Participants in Call List	2,256
Screened due to changes in occupancy or bad phone numbers	71
Completed Surveys	70
Number of Calls Required to Achieve Sample	1,748
Response Rate*	4%
Cooperation Rate**	8%
Sample Size for Analysis	70

* Response rate: the number of customers completing a survey, divided by the number calls made.

** Cooperation rate: the number of customers completing a survey, divided by the number of customers reached by phone.

Nonparticipant surveys results have been reported in aggregate to reflect behaviors and attitudes of all Avista nonparticipant residential customers.

1.2.4 Organization of Key Findings

The Key Findings section is organized into the following major topic groups:

- Program Participation (Section 1.3.1)
- Program Design (Section 1.3.2)
- Data Tracking (Section 1.3.3)
- Marketing and Outreach (Section 1.3.4)
- Participant Experience and Satisfaction (Section 1.3.5)
- Effectiveness of Implementers (Section 1.3.6)
- Trade Ally Participation and Satisfaction (Section 1.3.7)

The Key Findings discussions report objectively on research findings, while a separate final section summarizes Cadmus' conclusions and recommendations.

1.3 Key Findings

The following sections present key 2010 residential process evaluation findings. Each section focuses on a particular topic, and draws from multiple data sources, as noted in the text.

1.3.1 Program Participation

For this part of the analysis, Cadmus used several of the data sources listed above. Specifically, Cadmus used Avista's *2010 DSM Business Plan* to define each program's goals, and a summary

of 2010 results,[3] comparing actual participation to those goals. Additional information about participants and nonparticipants derived from customer surveys.

Savings and Incentives

Table 1-10 provides unverified savings reported for each program, comparing those savings to Business Plan targets. This does not include the Home Audit program, as savings from that program have been included in other programs' totals.[4]

Table 1-10. Reported Savings and Comparison to Business Plan Goals

Residential Program*	2010 Reported Results (Annual Report Summary)		Reported Results / Business Plan		
	Savings kWh	Savings Therms	Savings kWh	Savings Therms	Incentive
Simple Steps / CAL	8,010,982		167%		191%
Weatherization (Shell)	6,359,099	553,783	126%	116%	111%
HVAC Efficiency	6,157,826	483,975	77%	135%	115%
Fuel Conversion	1,802,454		84%		125%
Energy Star Appliances	1,785,477	44,400	168%	166%	172%
Refrigerator Recycling	1,140,936		56%		53%
Geographic Saturation	433,240		135%		104%
Energy Star Home	406,011	32,822	110%	198%	159%
Water Heating	175,812	12,010	148%	167%	173%
Total	26,271,837	1,126,990	110%	167%	122%

* Note: This does not show the Shade Tree program (planning estimate of 100 trees at approximately 2,088 kWh in savings). Results were not included in the Annual Report. The participant database showed 77 trees plantings achieved.

As shown on the "Total" line, according to program-reported results, the residential programs exceeded Business Plan goals for kWh and Therm savings. Most energy benefits accrued from just a few programs. For example, of total kWh savings, the Simple Steps, Weatherization, and HVAC Efficiency programs delivered 78 percent. Similarly, the HVAC and Weatherization programs resulted in 92 percent of Therm savings.

As savings and incentives closely correlate for residential programs, it was not surprising most programs had higher incentive costs than planned. For kWh savings, a few exceptions stood out, such as the HVAC Efficiency program and the Fuel Conversion program, with incentive payments over 100 percent and kWh savings below 100 percent.

For the HVAC program, original per-unit kWh savings estimates for some heat pump measures were reduced significantly. Consequently, average savings per measure over the entire HVAC program dropped by 33 percent (from 2,435 kWh to 1,642 kW per HVAC measure). Similarly, Avista reduced per-unit kWh savings for conversion from an electric to a gas furnace by more

[3] Avista provided the summary spreadsheet: *2010 annual report 8_31_11 version 1.xls*

[4] Because savings are unverified, drawn from Avista's annual cost-effectiveness reporting, this analysis serves only to examine relative scale and general performance issues, rather than definitively to assess achievement of goals.

than 50 percent. Savings and incentives also did not move in tandem for the lighting programs—Geographic Saturation and Simple Steps. Although Cadmus did not have the measure detail required to analyze these results, we did not consider this as an issue in evaluating the program processes at this point. The 2010 electric impact evaluation will perform further analysis of these programs.

Three programs—Refrigerator Recycling, Home Audit, and Shade Trees—which did not achieve their savings or measure quantity goals are discussed in the review of measure participation, below.

Measure Quantities

Table 1-11 provides measure quantities reported for each program, and compares them to Business Plan targets. Similarly to results for savings and incentives, most residential programs exceeded Business Plan goals.

Table 1-11. Reported Measure Quantities and Comparison to Business Plan Goals

Residential Program	Reported Measure Quantity	Reported Results / Business Plan
Energy Star Appliances	17,398	172%
Energy Star Home	203	166%
HVAC Efficiency	7,684	124%
Weatherization (Shell)	7,770	125%
Water Heating	1,362	145%
Fuel Conversion	250	150%
Geographic Saturation	18,150	182%
Simple Steps / CAL	358,151	239%
Shade Trees	77	77%
Refrigerator Recycling	1,843	53%
Home Audit (E)	268	13%

In the case of the HVAC efficiency program, two measures—variable speed motors and high-efficiency gas furnaces—exceeded original targets by 398 units (or 21 percent) and 1,010 units (or 35 percent), respectively. These two measures comprise nearly all of the 1,500 units by which the program exceeded its 2010 objective.

JACO Refrigerator Recycling, Home Audit, and Shade Trees did not reach plan participation targets. Of these, only the JACO program was expected to deliver significant savings in 2010; so its performance raised concerns, from both process and impact perspectives. Avista identified these 2010 performance issues, and worked with JACO to set an achievable target for 2011. They also developed plans for additional marketing activities, designed to increase participation.

In 2010, the Home Audit program was a pilot. The program's substantial *2010 Business Plan* targets included: 2,000 participants; 3.9 million kWhs; 94,000 Therms; and a $450,000 incentive budget. Avista described these as placeholder values, not intended to be actual objectives. Cadmus also identified some issues with tracking audit program results, discussed in Section 1.3.3.

Given its small size, no further evaluation effort has been directed toward the Shade Tree program, a local partnership.

Multiple Rebates

Besides looking at total measure quantities, we analyzed the participant database to determine how many Avista customers applied for and received multiple rebates. Table 1-12 shows the results, which exclude participants in the lighting and Refrigerator Recycling programs. Analysis indicates 25 percent of participants received two or more rebates.

High-efficiency furnaces and variable-speed motors were the measures most frequently combined (1,133 instances). The next most common combinations were refrigerators and dishwashers (415 instances), and high-efficiency furnaces and heat pumps (387 instances). The latter measure combination proved to be of special interest, as gas and electric savings resulting from these measures installed *together* may differ from savings resulting from the measures installed on their own. Understanding common measure combinations may also allow for more effective marketing and training of trade allies.

Table 1-12. Number of Measures Installed

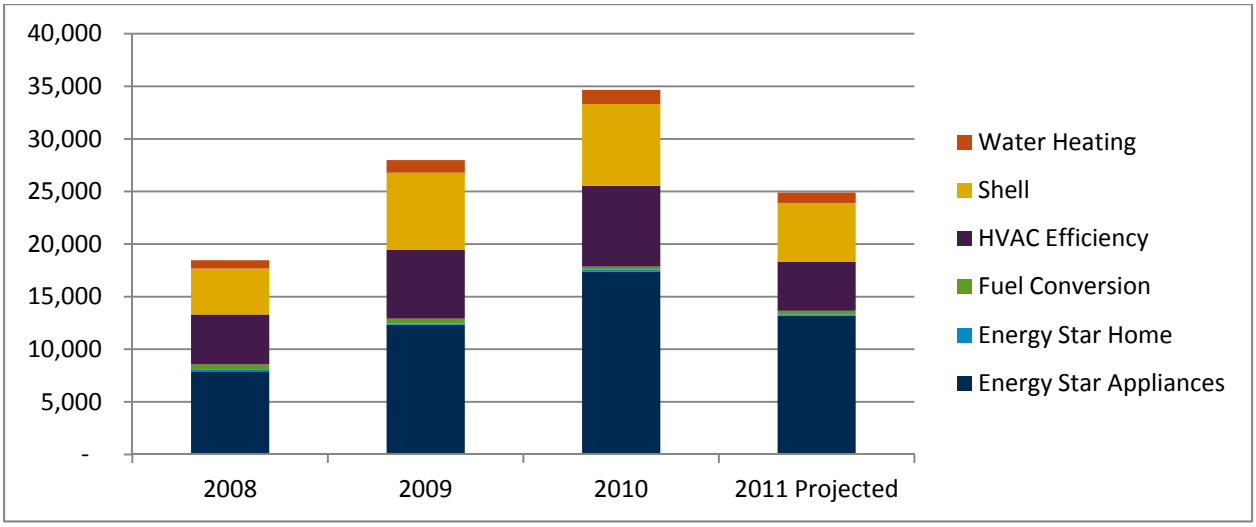
Total Number of Measures	Participants
1	19,076
2	4,415
3	1,304
4 or more	504
Total Participants	25,299

Participation Trends

At the program level, Cadmus combined historical participation data from 2008 through the first eight months of 2011.[5] These data, shown in Figure 1-1, clearly indicate increased participation from 2008 to 2010, with somewhat lower projected participation levels in 2011.

[5] Cadmus projected full-year participation for 2011 by assuming a linear participation trend for the remaining four months of the year.

Figure 1-1. Reported Number of Rebates by Program: 2008—2011



While several explanations may account for the 2011 participation decline, Avista staff reported a major driver of the change was the expiration of Federal and State tax credits for energy-efficiency renovations and high-efficiency appliances offered under the American Recovery and Reinvestment Act of 2009. Staff members reported these tax credits prompted increased participation in 2010, and 2011 participation slowed without that influence. This effect appeared particularly noticeable in the ENERGY STAR Appliance rebate program, HVAC program, and weatherization measures.[6] Cadmus collected survey data on the factors motivating participants to purchase their rebated equipment, and less than 1 percent of respondents reported tax credits as a primary motivator in 2010. While this finding does not indicate tax credits had a primary influence on participation, participants may have been influenced by multiple factors, including availability of tax credits.

Cadmus collected additional data to examine the natural turnover rate in certain appliances, as presented in Table 1-13. Though these data were insufficient to characterize the appliance market with any precision, they provided a rough approximation of how much potential remained for these three appliance rebate programs in 2010. Cadmus estimated the potential annual turnover of each appliance type assuming that each of Avista's 317,443 residential customer households owned each of these appliances. By dividing number of households by measure life, and assuming that all appliances are replaced on burnout with a new appliance, Cadmus arrived at the estimated turnover. Using number of 2010 participants divided by potential annual turnover, Cadmus estimated a participation rate.

[6] This trend has also been reported in other jurisdictions in the United States.

Table 1-13. Potential Annual Appliance Turnover and 2010 Participation*

Appliance	Measure Life*	Potential Annual Turnover**	Number of 2010 Rebates	Participation Rate	ENERGY STAR Market Share***
Clothes Washer	14	22,675	7,533	34%	30%
Dishwasher	12.3	25,808	4,466	18%	78%
Refrigerator	20	15,872	4,919	31%	34%

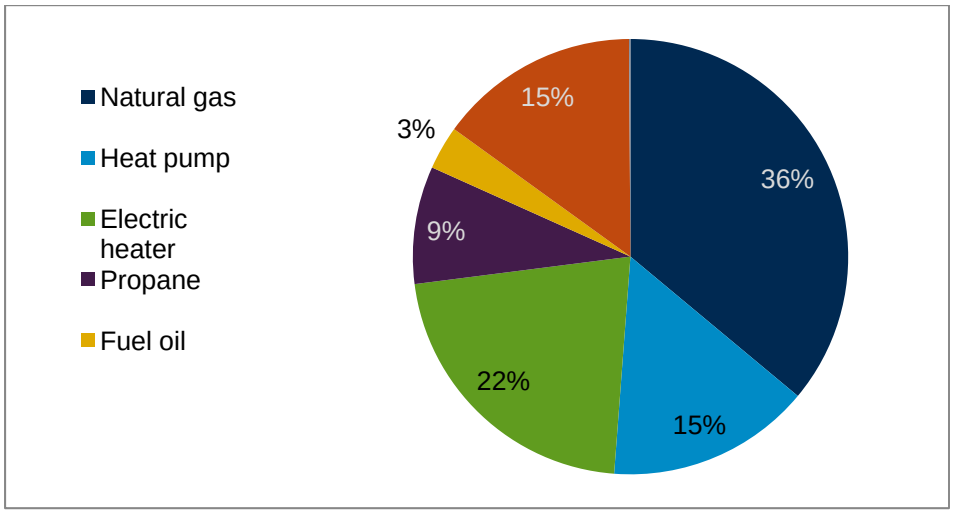
*Measure lives from Regional Technical Forum.
**Potential Annual Turnover based on 317,443 Avista residential customers in Washington and Idaho.
***ENERGY STAR annual market share from www.energystar.gov

ENERGY STAR dishwashers showed very different market characteristics compared to the other two measures. The high market share of ENERGY STAR dishwashers, combined with the relatively low 18 percent participation among customers who presumably replaced a dishwasher in 2010, indicated only a small portion of customers bought non-ENERGY-STAR dishwashers. This is consistent with national market trends, given that very few non-ENERGY-STAR dishwashers are available. This finding implies that freeridership for this measure is likely to be very high. It also shows that Avista's rebate is unlikely to affect market transformation for this measure.

Participant Characteristics

Weighted overall participant survey responses indicated 88 percent of program participants lived in single-family homes, while 11 percent lived in mobile or manufactured homes, and less than 1 percent lived in apartments or condominiums. Ninety-three percent owned their properties. When asked to describe the areas where they lived, 50 percent of participants said rural, 29 percent said suburban, and 21 percent said urban.

Figure 1-2. Participant Primary Heating Type (n=462)



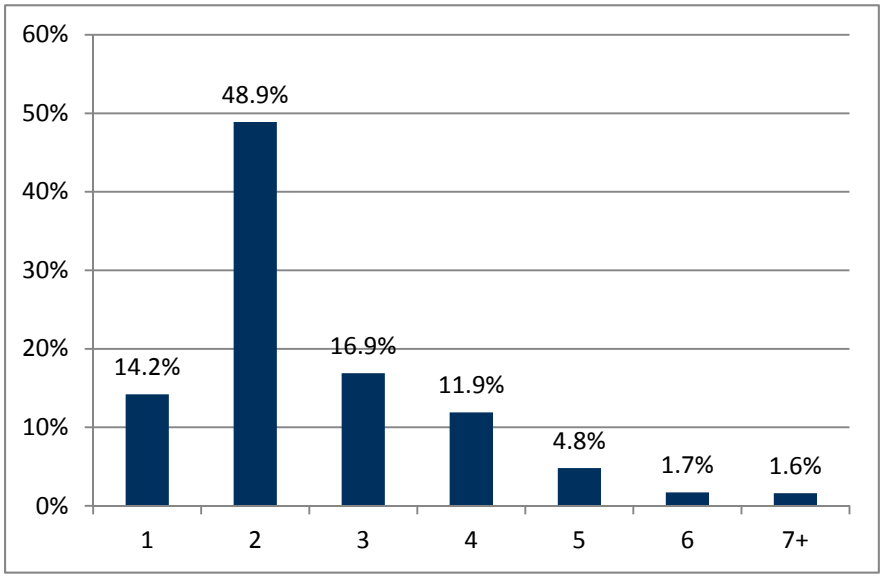
As shown in Figure 1-2, 36 percent of participants primarily heated their homes with natural gas, 22 percent with electric heaters, 15 percent with heat pumps, and 15 percent with wood. Forty five percent said they did not use additional heating. Of those using additional heating, 39

percent used electric heaters, 20 percent used wood, 14 percent used propane, 13 percent used natural gas, and 8 percent used heat pumps.

Participants asked how they cooled their homes most commonly cited central air conditioning (37 percent), followed by opening windows in the mornings and evenings (22 percent).

The survey asked respondents how many people lived in their households, with nearly half of participant survey respondents (49 percent) reporting two-person households. As shown in Figure 1-3, the other most common responses included: three people (17 percent), and one person (14 percent).

Figure 1-3. Participant Household Size (n=450)



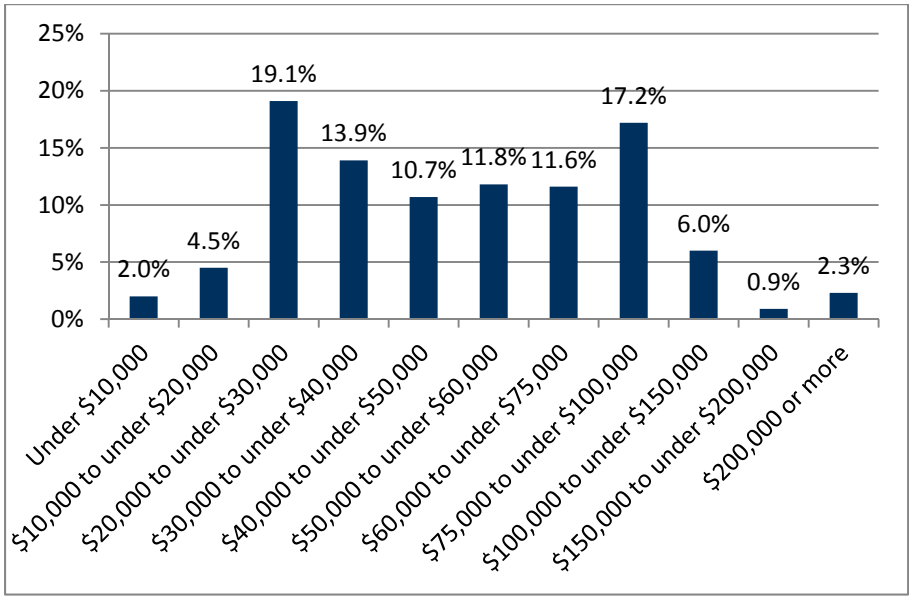
As shown in Table 1-14, respondents described the ages of the people living in their households, with 65 percent having at least one person between the ages of 19 and 60, and 47 percent having at least one person over 60. Fewer households had children or teenagers, with 20 percent having one or more persons between six and 18, and 14 percent having at least one child under six years old.

Table 1-14. Participant Household Composition by Age Category (n=319)

Age Category	Percent of Respondents with at Least One Member
Under 6	14.4
Between 6 and 18	19.6
Between 19 and 60	65.2
Over 60	47.4

For 2010, 49 percent reported their 2010 pre-tax household income at less than $50,000, while 51 percent reported their pre-tax income at $50,000 or above. Figure 1-4 shows a more specific range of respondents' incomes.

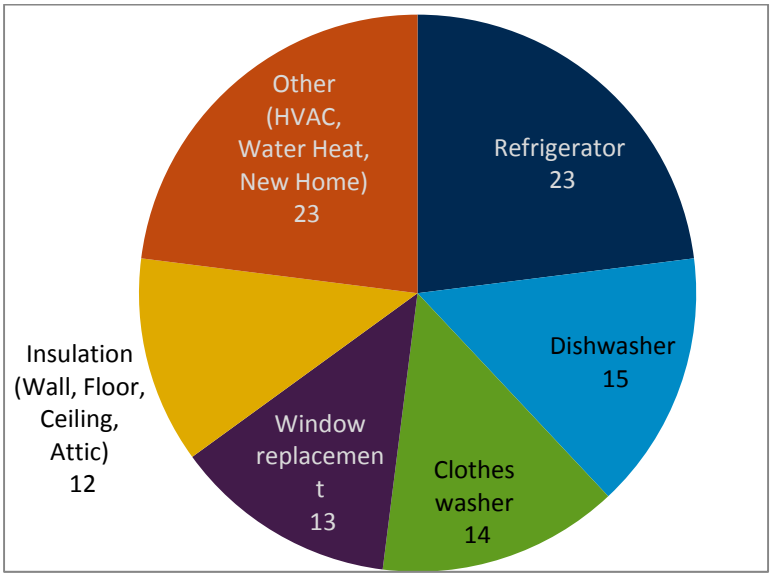
Figure 1-4. Participant Household Income (n=384)



Nonparticipant Characteristics

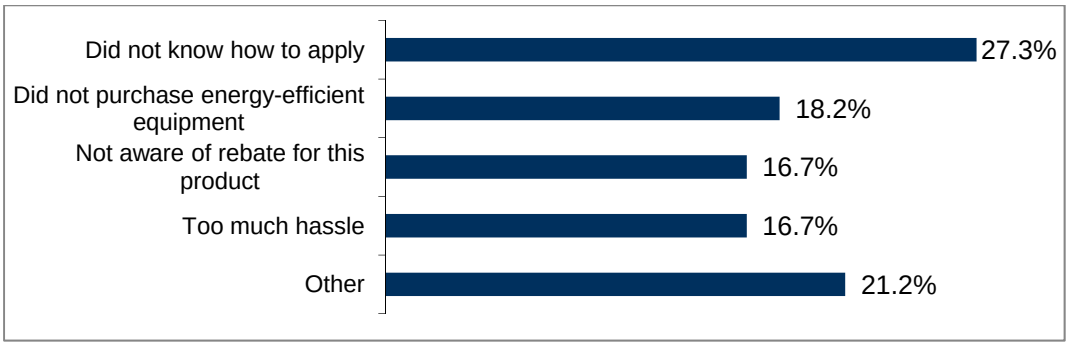
Figure 1-5 shows distributions of measures among surveyed nonparticipants, resulting from randomly dialing Avista residential customers, and reflecting the rate at which such purchases occurred without intervention from Avista. Appliances made up approximately half the measures installed, aligning with high participation in the ENERGY STAR appliance rebate program. Following appliances, weatherization and HVAC measures were the measures most commonly installed.

Figure 1-5. Measures Installed by Nonparticipants (n=70, multiple responses allowed)



Nonparticipant survey data indicated 67 percent of nonparticipants were aware Avista offered rebates for purchasing and installing energy-saving equipment. When asked why they did not apply for energy-efficiency rebates, respondents listed not knowing how to apply as the number one reason (27 percent, n=18), followed by not purchasing any energy-efficient equipment (18 percent, n=12), and not being aware of the rebate (17 percent, n=11). Figure 1-6 shows these results.

Figure 1-6. Reasons for Nonparticipation (n=66)

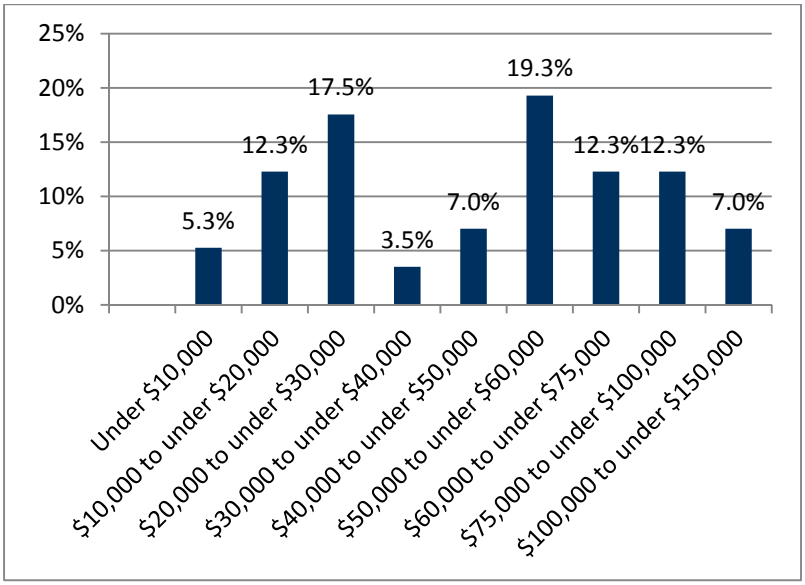


Fourteen respondents gave other reasons for not participating in the rebate program. These included: being too late to apply for a rebate (n=2); not thinking what they bought qualified for a rebate (n=2); having all appliances included when they bought a new house (n=2); and being the owner of their house (n=2).

Seventeen percent (n=12) of nonparticipant respondents said they had received Avista rebates previously, and 54 percent (n=38) thought they would apply for energy-efficiency rebates in the near future. The 27 respondents who said they did not think they would apply for energy-efficiency rebates in the near future listed several reasons, though mainly that they did not need or had no plans to buy new appliances (n=16), and that they could not afford new appliances (n=3).

Demographic data about nonparticipant household size and age composition yielded similar results for the participant population. Data collection on income, however, showed a slightly different pattern, as shown in Figure 1-7. Compared to participants, a smaller percentage of nonparticipants earned between $30,000 and $50,000. Likewise, a smaller percentage of nonparticipants earned more than $75,000.

Figure 1-7. Nonparticipant Household Income (n=54)



Program Participation Findings Summary

- Participation, in terms of reported savings and measure quantities, exceeded 2010 Business Plan goals for the overall residential program group. Three programs—Simple Steps, Shell, and HVAC Efficiency—delivered 78 percent of kWh savings, and two—HVAC and Shell—were responsible for 92 percent of Therm savings.
- The HVAC Efficiency and Conversion programs exceeded their measure quantity goals, but fell short of their kWh savings goals due to significant reductions in expected savings per unit for some measures during the program year. According to Avista's reported savings, the HVAC program exceeded its Therm savings goals.
- Participation in the JACO Refrigerator Recycling program fell significantly below Business Plan objectives. Avista has reviewed this with JACO, and has taken actions to increase future participation, including an increase in marketing activity.
- Twenty-five percent of program participants installed multiple measures. Combinations most frequently occurring included: gas furnace/variable speed motor; refrigerator/ dishwasher; and gas furnace/heat pump.
- Overall annual residential participation increased steadily from 2007 to 2010, but 2011 participation is projected to be lower than 2010.
- Sixty-seven percent of nonparticipants knew of Avista's energy-efficiency rebate programs.

1.3.2 Program Design

Overview

This section discusses our observations regarding design of the Avista residential programs.[7] These observations focused on the definition and organization of programs, the logic model, and the implementation approach.

Overall, we found the residential programs' design worked well. As evaluators, we could quickly and easily understand each individual program and the aggregate portfolio. Avista clearly documented the residential programs in the 2010 Business Plan, reporting results in the participant database and cost-effectiveness files. Avista program staff, EM&V staff, and trade allies also could discuss each program with us. As noted in the review of Avista's reported participation, above, most programs significantly exceeded 2010 goals. In all these areas, the programs operated smoothly, with few major issues.

One program design issue became apparent as we worked on this evaluation: the definition of programs composing the residential portfolio. As various Cadmus staff worked to understand the portfolio, the portfolio varied, depending on perspectives or purposes of documentation. Table 1-15 shows several examples of such variations. Though not a major problem, this required some effort to understand and reconcile the various descriptions.

Table 1-15. Alternative Descriptions of Residential Programs

Document / Context	Description
Business Plan	11 General Programs, 2 Multifamily, 1 Distributed Generation, 1 Schools
Avista management	3 Managers, 5 Program Groupings
Marketing	5 Programs: Home Improvement, New Homes, JACO, Simple Steps, Audit
Internal tracking	6 Programs / 36 Measures X 2 States (CONV, ESH, ESP, HVAC, WH, WZN)
2010 Residential Electric CE	19 Programs (9 Programs X 2 States) + HEA
2010 Residential Natural Gas CE	10 Programs (5 Programs X 2 States)

Logic Model and Process Flow

Cadmus developed two logic models to describe the residential programs, presented in Figure 1-8 and Figure 1-9.

[7] Other topics studied for this evaluation also provide insight into program design, as discussed elsewhere in the report. For example, participation and customer satisfaction reflect the effectiveness of program design, but the report includes these findings in standalone sections.

Figure 1-8. Residential Electric-Only Program Cluster Logic Model

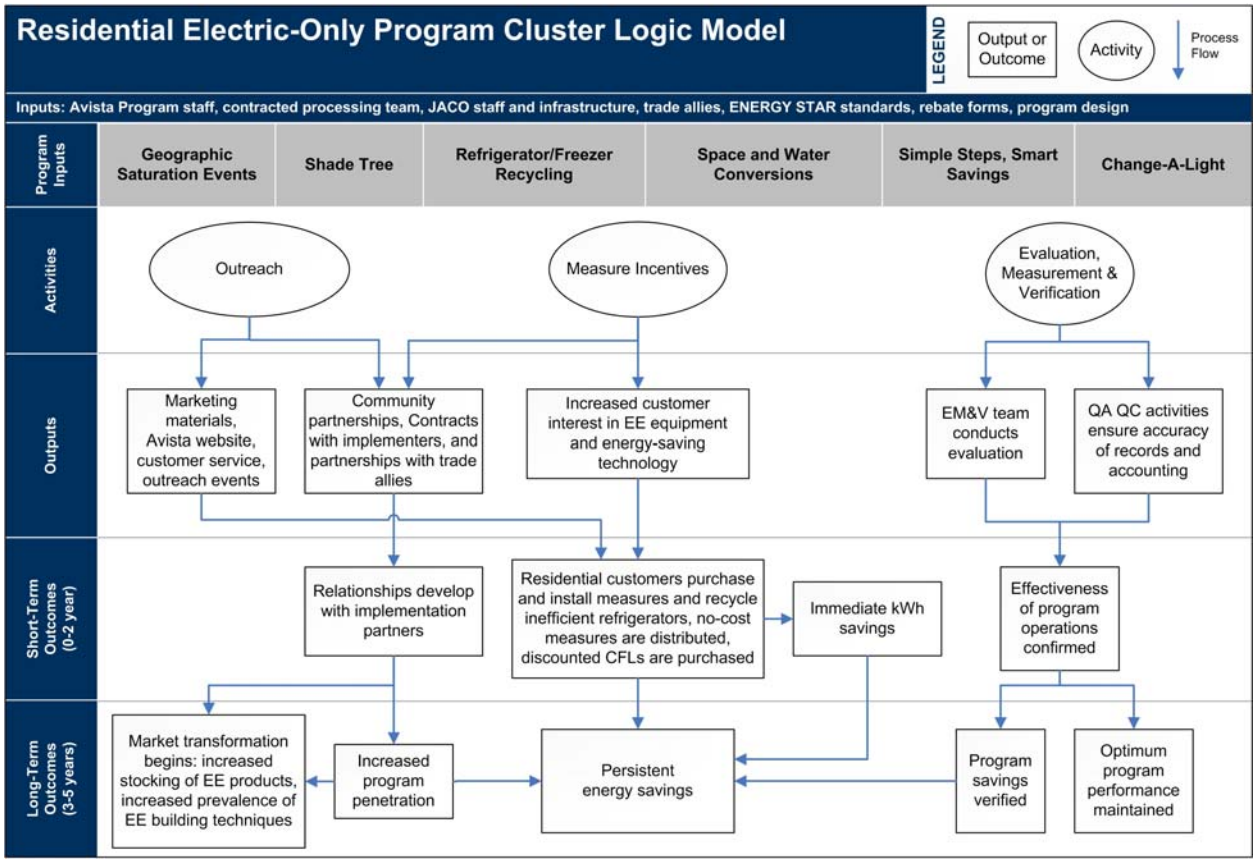
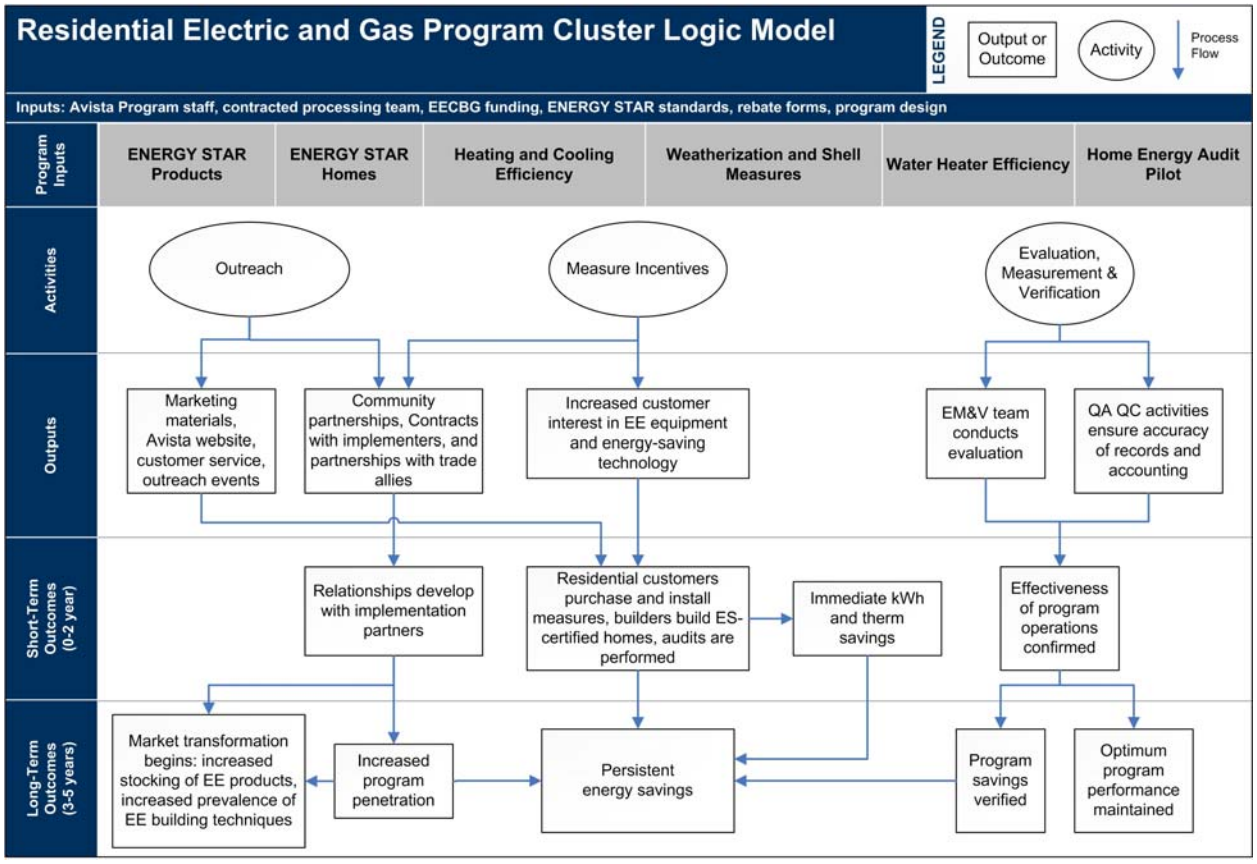
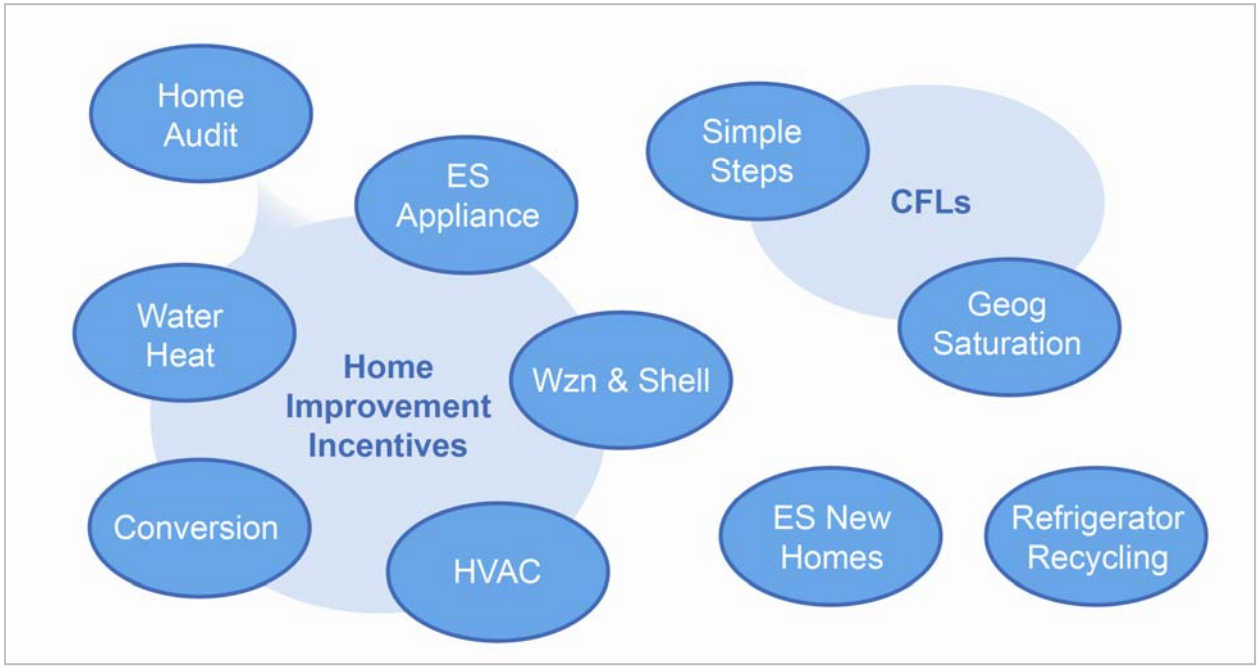


Figure 1-9. Residential Gas and Electric Program Cluster Logic Model



While the logic models show programs grouped by primary fuels saved (natural gas or electricity), Cadmus identified an alternative method for grouping programs, which may prove useful for future evaluations or reorganizations of residential programs. As shown in Figure 1-10, these groupings have been based on each program's delivery strategy and type of service provided to customers.

Figure 1-10. Functional Program Groupings



The first main grouping includes the Home Improvement Incentives (including heating and cooling, weatherization, water heat, and conversion measures) and the ENERGY STAR Appliance Rebates. These programs, while tracked individually, provide similar services to customers, offering rebates for purchases of efficient equipment for residential homes. The Audit program relates to this grouping, since it refers customers to Home Improvement Incentives.

The second grouping includes the two major CFL programs: Simple Steps, Smart Savings; and Geographic Saturation Events. These programs employ different delivery mechanisms (upstream buy-down vs. direct giveaway), but both endeavor to transform the residential lighting market by encouraging customers to use CFLs rather than incandescent light bulbs.

The two programs functioning externally to these groupings—Refrigerator Recycling and ENERGY STAR New Homes—have distinctly different delivery mechanisms and goals, setting them apart from the rest of the residential portfolio. (The Refrigerator Recycling program provides customers with a used appliance pick-up service, and the New Homes program targets homes builders, rather than residential customers.) For those reasons, they can be regarded as independent programs, rather than programs functioning as part of a group.

The Shade Tree program has been excluded from this portrayal because Avista plans to discontinue the program.

Implementation Approaches

The evaluation also examined Avista's implementation approach. The residential portfolio includes programs Avista administers, programs third-party firms administer, and programs operated as partnerships. This section summarizes our observations regarding Avista's implementation decisions for each residential program.

Avista administers most of the residential programs, including five in the Home Improvement group, the ENERGY STAR Homes program, Geographic Saturation, and Home Audit. Avista values its direct control over these programs, most of which, as noted, exceeded business objectives in 2010. As Cadmus did not study Avista's costs in administering these programs, this report does not address their relative efficiency. Though the programs could be outsourced, no compelling reason has emerged for Avista to consider making such changes at this time.

Avista does outsource two programs: the Simple Steps upstream CFL program and the Refrigerator Recycling program. The CFL program is outsourced to FMS, a firm engaged by the Bonneville Power Administration (BPA) to manage this program for regional utilities choosing to participate. BPA independently evaluates this program, and Avista should have access to its reports in this regard. Avista is able to leverage the regional coordination that FMS and BPA provide, offering a stronger negotiating position with lighting manufacturers than that achieved by a single utility. Administration costs also should be lower, as FMS/BPA can spread expenses over several utilities.

Avista outsources the Refrigerator Recycling program to JACO, a vendor implementing this program for many utilities throughout the U.S. and Canada (including PacifiCorp, in areas adjacent to Avista's service territory). Many evaluations (including some by Cadmus) of JACO-implemented programs for other utilities, have found they have unique expertise and effectively market and administer these appliance recycling programs.

Avista does much of the work necessary to support the Home Audit program, the larger of two community partnerships—funded in part by an Energy Efficiency Community Block Grant (EECBG), and operated with Spokane County and the City of Spokane Valley. Although this program requires significant staff resources, Avista has gained valuable experience through its administration. The smaller community partnership, Shade Trees, operates as a partnership with the City of Spokane. Due to its modest size, this evaluation does not address it in detail.

Program Design Findings Summary

- Overall program design works well to deliver a range of end-use measures to residential gas and electric customers.
- The number and description of programs in the Avista residential portfolio varies, depending on the documentation's perspective or purpose.
- From a functional perspective, programs can be organized into five distinct groups: Home Improvement, Lighting, Community Partnerships, Refrigerator Recycling, and New Homes.
- Avista's reported program results supported implementation decisions. Most programs administered by Avista exceeded 2010 participation goals. Simple Steps and Refrigerator Recycling, outsourced to firms with specialized expertise, realized some economies of scale.

1.3.3 Data Tracking

Avista provided Cadmus with tracking data for each residential program evaluated. These data derived from four separate mechanisms:

- Internal, multiprogram tracking database;
- Home Energy Audit tracking spreadsheet;

- JACO Refrigerator Recycling database; and
- Simple Steps, Smart Savings reporting.

Cadmus examined each database to determine data tracked, and to assess the data-tracking processes' effectiveness. The assessment also sought to identify potential evaluability barriers presented by contemporary tracking processes.

Data Tracking Summary

The internal, multiprogram tracking database included participant, measure-level data for the following programs:

- Space and Water Conversions
- ENERGY STAR New Homes
- ENERGY STAR Products
- HVAC
- Water Heat
- Weatherization and Shell

The extract examined contained 26 variables, containing the following five kinds of information:

- Measure and program designation (*code, measure, fuel, program*).
- Payment and savings (*rebate, kWh, Therms, cost*).
- Customer information (*account, customer, dir, house#, street, st sfx, unit, rural, city, state, zip*).
- Process date-stamps (*entry date, pmt date*).
- Customer phone numbers (day area code, day phone ext, day phone#, home area code, home phone).

The internal, multiprogram database serves as the electronic repository for customer data collected from program application forms, including data for programs Avista implements internally (excepting the Home Energy Audit Pilot Program, which is tracked in a separate database).

The Home Energy Audit Pilot Program tracking spreadsheet contained the following variables, providing limited information on participating customers:

- *AuditPrefix*
- *Audit #*
- *Customer Name*
- *Address*
- *Zip*

- *Phone*
- *Account #*
- *Audit Date*
- *E-mail Address*

The Home Energy Audit database format differs from the internal, multiprogram database. For example, in the Home Energy Audit database, the address field contains participant home addresses, but the address formatting does not appear standardized. This limits the data's usefulness, as nonstandardized addresses can be difficult to match to standardized addresses (such as those tracked in the multiprogram database). The Home Energy Audit data provided did not contain tracking of testing performed, recommendations, direct installation measures, or follow-through installations.

JACO, the implementer of the Refrigerator Recycling Program, also collected data on participating customers, their pickup orders, and refrigerators and freezers recycled through the program. These data are provided in three separate, integrated spreadsheets, allowing comprehensive tracking of customers' and units' movements through the program. Avista provided Cadmus with unit and customer data. The customer data contained addresses in a nonstandard format, similar to that of the Home Energy Audit database.

Finally, Cadmus received data on the Simple Steps, Smart Savings program. This program tracks monthly reporting from FMS. Both Avista and FMS noted monthly reporting for this program often involved delays and adjustments, caused by difficulties in obtaining sales data from retailers in a timely manner. FMS monthly invoices contained detailed data at the measure level, reporting adjustments to previous months, and current monthly sales at each participating retailer by Stock Keeping Unit code (SKU). Each monthly invoice included two spreadsheets, Sales Data Adjustments and Sales Data, containing the following, multiple data fields:

- *Store*
- *Address*
- *Manufacturer*
- *SKU*
- *PTR Code*
- *Allocation*
- *Sales Month*
- *Sales Adjustment*
- *Prior Month Unreported Sales*
- *kWh Savings*
- *Incentive Amt*
- *Admin Fee*

- *Total*

Aggregated into a final annual report, these data showed adjustment totals, made after the program year's close. Neither Avista nor FMS provided an aggregated year-end database of measure-level data.

Data Tracking Findings Summary

- Avista and its implementers tracked 2010 program data for all 11 programs Cadmus evaluated.
- Cadmus identified inconsistencies in formatting (e.g., customer addresses formatted differently) and detail levels between the four main tracking mechanisms.
- The 2010 Home Energy Audit Pilot Program database did not include data on measure installation.
- Simple Steps, Smart Savings data tracking and reporting involved multiple revisions, and year-end reporting did not contain aggregated, measure-level data.

1.3.4 Marketing and Outreach

Avista marketed its residential programs through multiple channels during the 2010 program year. Cadmus' examination of marketing materials included reviewing information available online as well as examples Avista provided of print and other media pieces. Further, Cadmus interviewed marketing team members to understand processes, approaches, areas of achievement, and possibilities for improvements.

Marketing Approaches and Processes

Avista pursued the following marketing channels to promote residential programs in 2010:

- Direct mail
- Bill inserts
- Newspaper advertisements and articles
- Television and radio advertisements
- Billboards
- Online advertisements
- Website
- Brochures
- Newsletters
- Events
- Social media outreach

The Every Little Bit campaign, launched in the fourth quarter of 2007, is a broad-based marketing and outreach campaign, raising customer awareness of energy-efficiency and the

availability of rebates. The campaign was launched after Avista conducted a residential baseline survey to identify barriers to purchasing efficient equipment. Marketing efforts included program-specific messages as well as more general messages about energy conservation.

In addition to these efforts, Avista engages in various community and public relations outreach activities, including:

- News segments: "Test Your Energy IQ";
- Movie theater advertising;
- Energy education program in elementary schools;
- College outreach;
- Every Little Bit video competition in high schools; and
- Energy education for seniors through community programs.

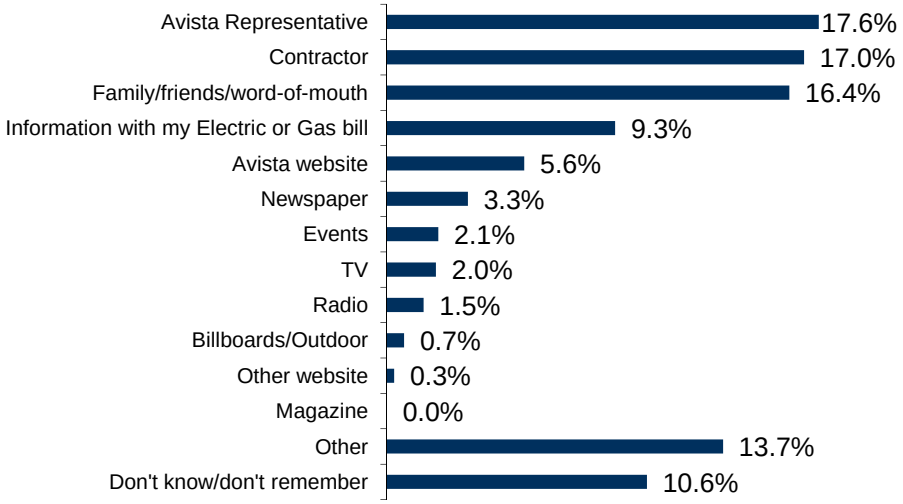
The approach targets broad marketing and outreach, covering many different types of customers. Marketing team members reported that, while awareness increased over time, some age groups proved easier to reach than others. Awareness among customers aged 45 to 55 ran high, while reaching younger customers proved more challenging.

The marketing team reported working closely with program managers and senior management, including presenting new marketing pieces and soliciting feedback from program managers. The team also reported working very closely with DSM engineers to ensure all numbers cited in marketing materials were correct.

Sources of Participant Awareness

The participant survey asked respondents how they first learned of the Avista program in which they participated. The results, summarized in Figure 1-11, show most participants reported learning about the programs through direct communication with Avista representatives, contractors, or friends and family.

Figure 1-11. How Respondents First Heard of Program



Within individual programs, information provided with electric or gas bills proved an especially important source for the Refrigerator Recycling Program (26 percent, n=35) and Audit program participants (20 percent, n=13), though less important for the other programs. The Refrigerator Recycling and Audit programs also achieved high response rates through the Avista Website and through newspapers. The 72 HVAC primary program participants most frequently (33 percent, n=22) learned of the program through contractors, and retailers served as a major source for the 73 ENERGY STAR Appliance participants (16 percent, n=12). Respondents indicated word-of-mouth, contractors, and Avista representatives across categories.

After weighting the responses, 35 percent of respondents felt "very knowledgeable" regarding energy efficiency and saving energy in the home, and 59 percent felt "somewhat knowledgeable Eighty-one percent expressed familiarity with the ENERGY STAR standard for appliances and other products, and 84 percent looked for the ENERGY STAR label when buying new products.

The survey asked 171 respondents to recall messages or themes of advertisements they saw. After weighting these responses, 41 percent said they did not recall, with the other top responses being generic, such as: rebate program (24 percent); energy conservation (16 percent); and flyers in statements or bills (11 percent). Two percent of participants cited the "Heat" television spot; one respondent cited the "Nickel Buyback" program; and another participant cited "Every Little Bit."

Fifty-one percent of respondents knew of Avista's other energy-efficiency rebates, though not at a consistent rate across all programs. HVAC, ENERGY STAR Appliance, and Refrigerator Recycling participants' awareness rates all ran about 50 percent; for the Audit, Conversion, Water Heater and Weatherization programs, at least 60 percent of participants knew of other rebates.

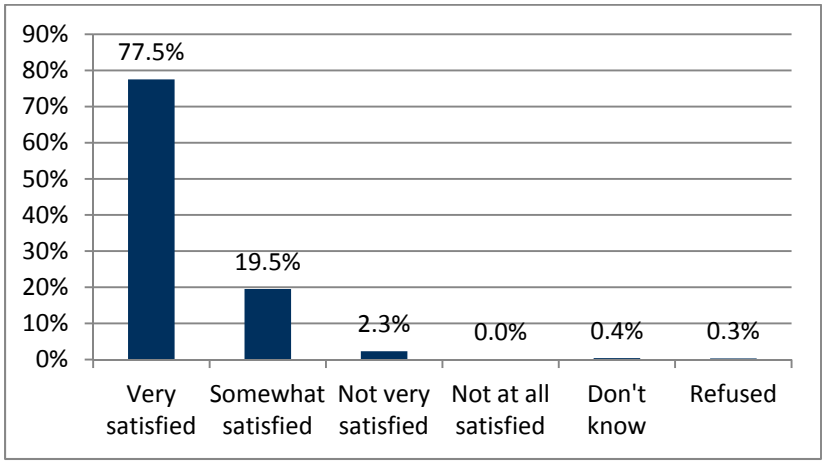
Marketing and Outreach Findings Summary

- High awareness among nonparticipants indicates that the overall marketing approach has been effective in awareness-building, but the messaging has not overcome participation barriers.
- Since 2007, Avista has promoted residential rebate programs through the Every Little Bit campaign, and the 2010 residential marketing approach included varied marketing and outreach channels, seeking to reach a broad range of customers.
- Survey results showed Avista representatives served as the most common source for participants learning about the rebate program.
- Contractors were the second most frequently reported source of program information for participants, indicating that trade allies play a key role in program marketing.
- Participant awareness of Avista's other rebate programs was higher among Audit, Conversion, Water Heater, and Weatherization programs.

1.3.5 Participant Experience and Satisfaction

Cadmus asked surveyed participants to rate their overall satisfaction with the program as well as their satisfaction with various program aspects. As shown in Figure 1-12, overall satisfaction with the residential programs ran high, with 97 percent of participants surveyed describing themselves as very or somewhat satisfied with the program in which they participated.[8] Satisfied respondents cited reasons such as rebate amounts they received and few difficulties in obtaining rebates.

Figure 1-12. Weighted Average Participant Satisfaction for All Programs



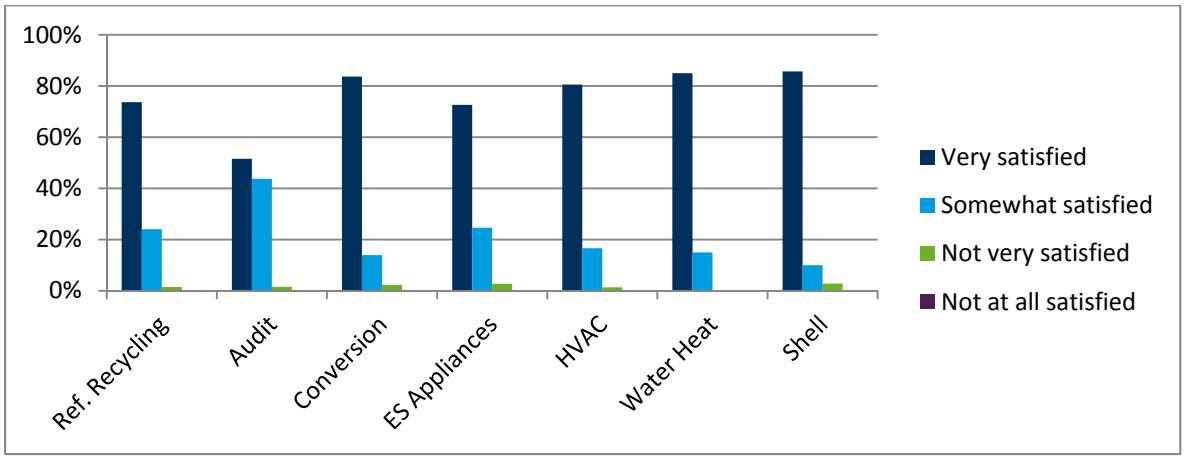
Four of the nine individuals saying they were not very satisfied had been denied rebates or were uncertain if they would receive one, and two expressed unhappiness with the rebate's amount, while another expressed unhappiness that some previously available rebates had been canceled.

[8] Overall participant survey data have been reported as weighted averages, accounting for variations in sample sizes and program participation among programs studied.

These results compare favorably to another multimeasure, residential rebate program in the Pacific Northwest: 95 percent of participants in the comparison program reported being very or somewhat satisfied. However, only 56 percent of that program's participants were very satisfied, compared to satisfaction rates for nearly 78 percent of Avista's residential program participants.

Program-level results, displayed in Figure 1-13, showed that satisfaction was high across all programs. Results for the Audit program showed that a comparatively lower percentage (52 percent) of Audit participants reported being very satisfied. This difference, as well as other programs' detailed results, are reported in greater detail in Appendix A.

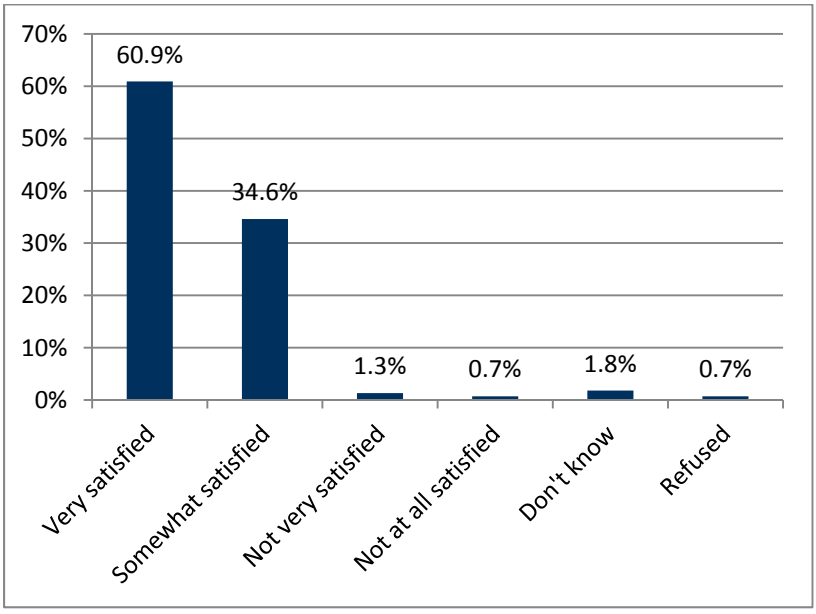
Figure 1-13. Participant Satisfaction by Program



Rebate Amount and Promptness Satisfaction

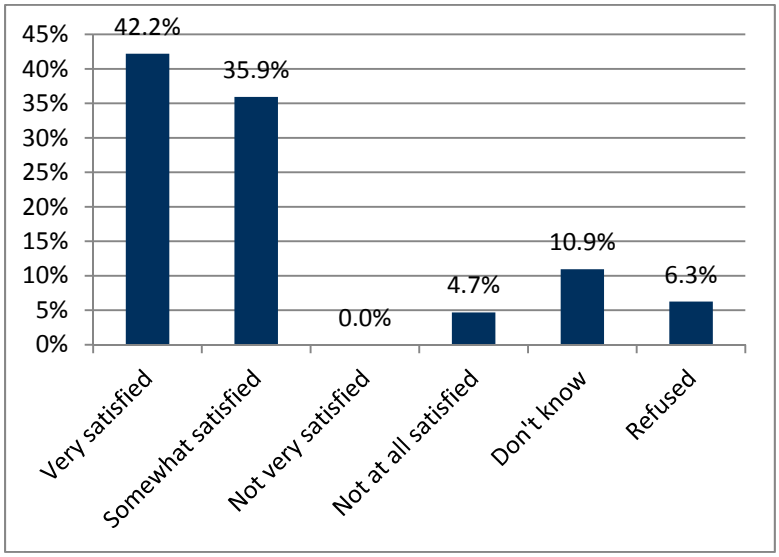
As shown in Figure 1-14, survey respondents reported slightly lower satisfaction levels with rebate amounts than with the overall program.

Figure 1-14. Weighted Average Rebate Amount Satisfaction for All Programs (n=475)



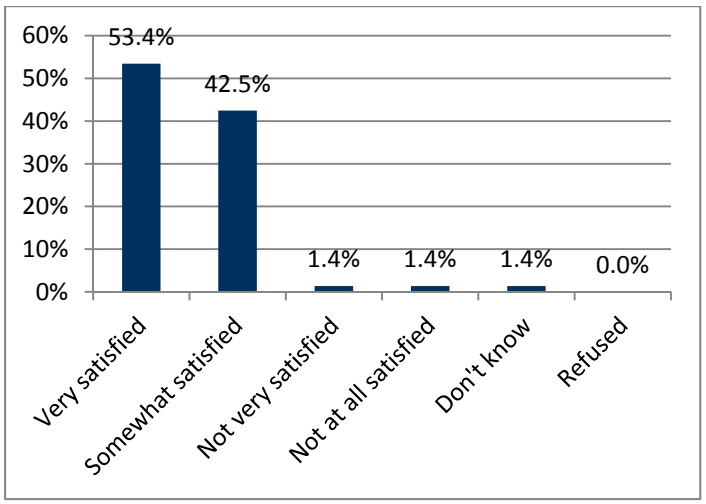
A shown in Figure 1-15, the Audit program's rebate satisfaction level had a lower number of very satisfied respondents than other programs, at 42 percent (n=27), and a higher percentage of respondents somewhat satisfied (36 percent, n=23) and not at all satisfied (5 percent, n=3). Those not at all satisfied reported rebates as so small they did not impact decision making, and they received neither rebates nor information that they would receive rebates for improvements. Most somewhat satisfied respondents wished for larger rebates. Verbatim comments indicated audit participants expressed their opinions about all Avista rebates in some cases, rather than on the audit's discounted cost.

Figure 1-15. Audit Rebate Level Satisfaction (n=64)



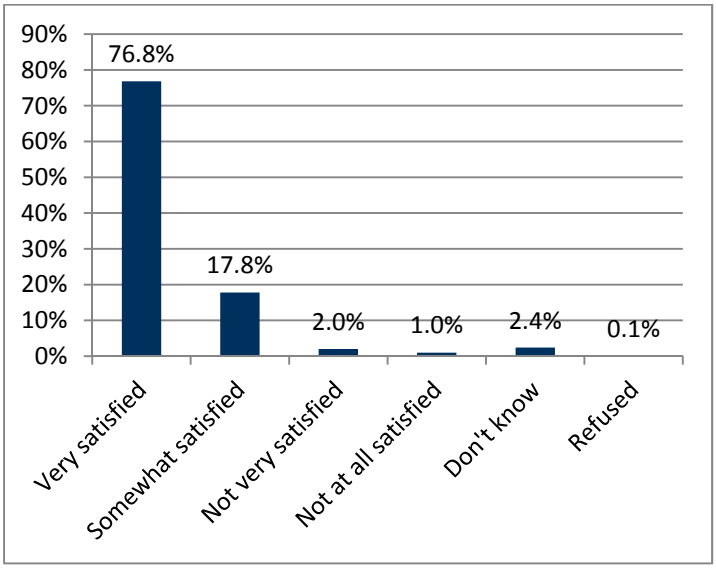
As shown in Figure 1-16, the Appliance Program also received lower very satisfied response rates regarding rebate amounts: 53 percent (n=39) reporting being very satisfied; and 43 percent (n=31) reporting being somewhat satisfied. Several people describing themselves as very satisfied did not even realize rebates were available; so receiving one came as a pleasant surprise. Somewhat satisfied respondents' feedback mainly consisted of wishing for a larger rebate, especially relative to the appliance price.

Figure 1-16. ENERGY STAR Appliance Rebate Amount Satisfaction (n=73)



The survey also asked respondents to rate their satisfaction with how quickly they received rebate checks.

Figure 1-17. Weighted Average Rebate Promptness Satisfaction for All Programs (n=475)



For the most part, respondents expressed satisfaction with how quickly they received their rebates, with 77 percent of participants saying they were very satisfied, and only 3 percent describing themselves as not very satisfied or not at all satisfied. Comments from less satisfied respondents included: waiting a long time to receive the rebate (sometimes 10 weeks to a year); not receiving a rebate; and not receiving the rebate for which the individual believed they were entitled. Although differences occurred, ratings did not vary greatly by program. Audits had the lowest percentage of participants reporting as very satisfied (63 percent, n=40), and the highest number reporting as not at all satisfied (3 percent; n=2).

Measure Satisfaction

The survey asked respondents participating in appliance, HVAC, water heater, or weatherization programs how they rated rebated products. Overall, 61 percent rated products as excellent, and 31 percent rated them as good. Three individuals rating measures as poor cited reasons such as: workmanship; appliances not cleaning dishes well; and appliances costing more to operate than previous units.

Table 1-16. Measure Satisfaction Rating by Program*

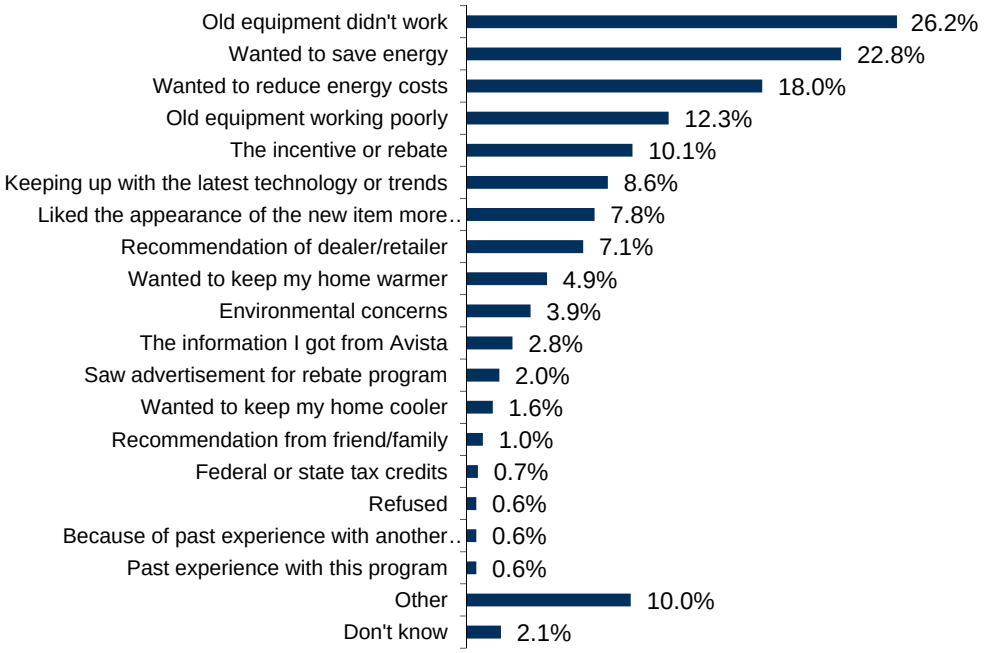
Rating	Percentage of Program Respondents				
	Conversion	ES Appliances	HVAC	Water Heater	Weatherization
Excellent	58.1	58.3	63.2	70.0	65.2
Good	25.6	33.3	30.9	30.0	27.5
Fair	4.7	2.8	1.5	0.0	1.4
Poor	0.0	1.4	1.5	0.0	1.4

*Program columns do not add to 100% due to respondents not knowing what rating to give, refusing to answer the question, or not installing the measure in question.

Motivation for Measure Purchases

Twenty-six percent of participants listed old, nonworking equipment as a primary factor motivating their purchases; 23 percent cited wanting to save energy; 12 percent cited old equipment working poorly, and 10 percent cited the rebate or incentive (respondents could offer multiple answers for this question). Only 1 percent of participants cited federal or state tax credits as a motivating factor. Several "other" responses noted the product's price and value.

Figure 1-18. Weighted Average Motivation for Purchasing Measure



Forty-eight respondents offered mostly positive additional comments, with many complimenting the program and asking that it continue. Some people thought advertising should be increased to inform more of the program, and one would prefer submitting rebate applications online rather than by mail.

Participant Experience and Satisfaction Findings Summary

- Participants in all programs expressed high levels of satisfaction with the program overall, as well as with the rebate amount, and the promptness of payments.
- Participants in the Audit program were slightly less satisfied than participants in other programs, though still showing high satisfaction. Rebate amounts were slightly less satisfactory to Audit and Appliance participants, compared to other programs' participants.
- Ninety-two percent of participants rated their installed measure as either good or excellent.
- The most common motivations for purchasing the rebated measures were that the old equipment did not work or worked poorly, and that customers wanted to save energy or reduce energy costs. Ten percent of participants mentioned the rebate as a motivator.

1.3.6 Effectiveness of Implementers

The evaluation's research into program processes included implementers'[9] performance, with two firms identified for the residential portfolio:

- JACO, implementer of the refrigerator recycling program.
- FMS, implementer of the Simple Steps upstream lighting program.

Section 1.3.2 discussed reasons behind using these implementation firms. As noted in Section 1.3.1, performance in 2010 for the refrigerator recycling program fell below original business plan targets. Avista's program manager described 2011 plans as follows:

> The goal is to remove and incentivize 2,500 units, with 1,447,500 kWh savings, for 2011. We have never met this goal, but have increased marketing promotion to encourage Avista residential electric customers to participate. There are no plans to change program design. The majority of the marketing is done through a JACO subcontractor. JACO markets through use of their Website, newspaper, contests (TV collaborative) and value-pack coupons. Avista has provided marketing through Avista Websites, bill inserts, connections articles, contests, and at events.

As Avista has taken these steps to address performance issues, more in-depth evaluation of the program processes was not necessary.

FMS Implementer Profile

According to FMS Website: "Fluid is a mission-driven consulting firm that provides management, marketing and education services to our clients, including energy services with an emphasis on efficiency and renewable technology programs, sustainability consulting and carbon management services."

Based in Portland, Oregon (although acquired by CLEAResult of Austin, Texas, in August 2011), FMS implements Simple Steps, Smart Savings, an upstream lighting program sponsored by the BPA. For a number of years, Avista has participated in BPA-sponsored lighting programs.

Cadmus met with the FMS program manager and program associate to learn more about program functions and work conducted for Avista. While Cadmus did not collect data directly from retailers in this evaluation, retailer research, including on-site data collection, may be necessary for future evaluations.

Program Design

FMS works with lighting and showerhead manufacturers to allow these energy-efficient products to be offered at reduced prices at area retail stores. Lighting products offered include: general purpose "twist" and specialty CFLs from at least five manufacturers (Earthtronics, Feit, G.E., Maxlite, and TCP). FMS signs a Memorandum of Understanding with each manufacturer, specifying products, incentive amounts, and retail price ranges for each product. FMS field representatives visit stores monthly to verify that retail prices are in the specified range for each

[9] Cadmus defines implementers as subcontractors providing significant operational support to one or more utility programs.

product. Though Avista can set funding limits to manage total spending on the program, it did not set a specific limit in 2010, and the program sold over 358,000 CFLs, or 239 percent of the 2010 goal to sell 150,000 lamps.

FMS consolidates monthly reports from all program retailers, dividing product sales between participating utilities, based on retailer locations. This process results in a monthly report to Avista, allowing program unit sales and savings to be tracked.

Though FMS can also implement direct mail and direct-install programs to deliver/install CFLs, showerheads, and faucet aerators to residential customers, these direct programs generally form a small component of the overall Simple Steps program.

Marketing and Outreach

FMS reaches out to potential program retailers, and markets the products to end-use customers. Field sales representatives support both of these activities. Field staff work with electric and plumbing department managers to ensure appropriate display of point-of-purchase (POP) materials in stores.

For most utilities, FMS completes 100 percent of in-store marketing. More than any other utility, Avista stays involved in this area, with the Avista program manager providing quality assurance on POP materials through frequent in-store checks and by directly contacting nonparticipant retailers. FMS described the program manager as "a kind of a third field rep" and "very active in stores." After the project manager identified stores missing POP material several times, FMS provided the project manager with a supply, solving the problem on the spot. FMS reported Avista's activity directly resulted in its field representatives checking area stores more frequently.

Communication and Coordination with Avista

FMS and Avista generally communicate in two ways: formal reporting and informal coordination.

FMS formally communicates with Avista through monthly sales reports. After the program's 2010 launch, FMS experienced issues with reports expected from participating retailers, partly due to requiring generation of monthly reports shortly after each month ends. These issues have been addressed, and a very robust audit process now supports reporting.

Regarding informal communications, FMS program staff acknowledged communications with Avista could be challenging during 2010, given marketing expectations initially not being well-defined. FMS reported these issues have been resolved, and now communicates with Avista through an effective, open dialogue. The FMS manager suggested occasional face-to-face meetings could further improve coordination.

Market Barriers and Possible Solutions

When asked about obstacles limiting sales or use of program products, FMS identified knowledge of CFLs as a primary obstacle. They felt more education about ranges and performance of current offerings might overcome consumers' confusion and misperceptions about CFLs.

FMS also suggested stronger marketing could improve the program, particularly in terms of retail POP placement and refreshing. They suggested their program should try to avoid requiring a utility staffer working in the field.

The current product list, consisting entirely of general purpose and specialty CFLs, also presents a barrier to greater program success. To address this, FMS suggested considering the following products:

- Energy-efficient showerheads. This product can most easily be added to Avista's program, as the overall Simple Steps program already includes it. FMS believes this provides an especially good fit, as Avista could recognize gas and electric savings through showerhead sales.
- LED downlights. These products, replacing conventional recessed lighting, have been offered through the program in Oregon. FMS is considering making this product more widely available.
- Smartstrips. These powerstrips offer new functions, not generally associated with power strips, including remote computer control and time-of-day programming. Major manufacturers already offer products through energy-efficiency programs in Wisconsin and New York.

Effectiveness of Implementers Findings Summary

- As Avista has worked with JACO to address gaps between 2010 goals and results, minimal evaluation was required. No known process issues exist at this time.
- The Simple Steps program design works to make CFLs available to Avista customers at reduced costs and greatly exceeded participation goals.
- Simple Steps program marketing has been well-supported in Avista's territory, where the program manager has provided an effective quality assurance function.
- Communication between Avista and FMS consists of monthly sales reports, and informal, as-needed communication between FMS program staff and the Avista manager.
- FMS has identified energy-efficient showerheads as the best opportunity for expanding the program in the immediate future, with LED lighting and smartstrips as additional products for future consideration.

1.3.7 Trade Ally Participation and Satisfaction

The evaluation's research into program processes included trade allies'[10] roles, specifically with two ally groups:

- Home Audit field auditors
- HVAC contractors

[10] Cadmus defines trade allies as organizations playing key roles in program operations, but not paid directly by program's sponsoring utility.

For the Home Audit program, Avista supplies auditors with: leads (potential audit customers); financial help; and information about Avista programs reducing homeowners' costs. As Home Audit was a pilot program in 2010, and Avista staff worked very closely with approximately four auditors, we did not interview auditors for this report, relying on Avista's program manager for information about auditors as trade allies. Research did not identify significant issues.

For the Heating and Cooling Efficiency Program, contractors played a crucial role, as nearly all homeowners used contractors to install measures such as furnaces or heat pumps. Consequently, these contractors influenced customers' equipment choices (program participation) and their training on and usage of the equipment (program satisfaction).

Avista maintains mailing lists of contractors and vendors involved with Avista's programs. Over two weeks, Cadmus contacted 19 contractors and vendors drawn from this list, assessing satisfaction, communication, and areas for improvements. Reaching interview target numbers proved challenging, as most contacts were busy and requested multiple callbacks. In total, 10 HVAC contractors completed interviews, as summarized in this section.

HVAC Contractor Profile

A fairly consistent profile emerged for contractors interviewed. All installed a range of HVAC equipment, including nearly all program measures. Most had annual volumes between 50 and 200 residential projects. Contractors generally reported 40 to 60 percent of these projects included Avista program rebates.

All trade allies felt Avista rebates played very important roles in a customer's decision-making process when considering energy-efficient technologies. In fact, they said, without the rebates, customers might have made different decisions concerning their equipment purchases. Most trade allies (eight of 10) said they always recommended program-qualifying equipment.

Program Participation

Interviews collected data about contractors' involvement with Avista's programs.

Awareness

Of eight respondents remembering where they first learned of Avista's rebate programs, sources cited included: Avista's outreach efforts (four of eight); or involvement in the HVAC industry (four of eight). Avista's outreach efforts included: contacts by Avista representatives, receipt of marketing materials, or Avista's Website. Those familiar with Avista programs through industry involvement reported previous relationships with Avista as well as contacts with professional organizations and equipment manufacturers.

Program Benefits

As shown in Table 1-17, all respondents believed their companies received value from Avista's programs.

Table 1-17. HVAC Trade Ally Responses

What value do Avista's programs bring to your company?	Respondents
Increase product/service sales	8
Use of program as a marketing tool	4
Help customers save on electric bills	2
Program helps get more business	2
Development of good customer relations	1

Program Satisfaction

All trade allies working with Avista's customers expressed being very satisfied with the residential rebate programs as well as with Avista's program staff and account representatives. When asked if program aspects could be improved, only two respondents offered comments:

- After installation of efficient equipment, one customer did not qualify for a rebate, as they had recently moved into a new house, and had not lived there long enough. Avista could have clarified qualifying parameters, or could have made arrangements with the customer.
- Trade allies recommended higher rebates to encourage greater participation.

Avista Outreach to Trade Allies

When we asked how contractors obtained information about the program, they cited multiple channels:

- Checked Avista's Website (four);
- Contacted an Avista representative for program questions or concerns (two);
- Checked with equipment manufacturers (one); and
- Compared equipment AHRI information with Avista's eligible equipment parameters (one).

Generally, most respondents (nine of 10) found Avista's trade ally outreach adequate. One respondent thought Avista could increase contractors' involvement more, as they had little contact with Avista. Another trade ally echoed this, suggesting Avista send more e-mails to better inform contractors of program offerings and changes.

Surveys asked trade allies about types of materials provided to contractors and satisfaction with these materials. More than half of respondents (six of 10) said they received some kind of program materials, including program updates (five of six) or rebate forms (four of six). Those receiving program materials reported being very satisfied or somewhat satisfied with the materials. Two respondents suggested regular program updates—including specific details about changes—would be helpful in keeping trade allies informed, while another thought brochures for customers would be helpful.

Trade Ally Outreach to Customers

All contractors actively promoted the Avista programs to their customers, using the methods shown in Table 1-18. Two respondents promoted Avista's rebate programs (through online and newspaper advertising) to inform customers of available rebates and to increase business.

Table 1-18. "How does your company promote the Avista rebate program?" (n=10, Multiple Responses Allowed)

Promotion of Avista Rebate Program	Respondents
Include Incentives in Customer Cost Proposal	7
Word of Mouth	6
Provide Rebate Forms	4
Customer Education	1
Help Customers Fill Out Paperwork	1

Trade ally surveys included questions about customer awareness and types of information typically requested. Trade allies found most customers (eight of 10) very or somewhat aware that Avista offered rebate programs, though some (four of eight) noted customers did not know of rebate details or how they could be accessed. Two respondents said customers were somewhat or very unaware of Avista rebates, and one recommended Avista send informative mailers to customers. Typical information most requested by customers addressed incentive levels (four), technology (two), and participation requirements (one).

Application Process

Trade allies typically participated in the application process. Most (nine of 10) completed application paperwork, leaving customers to complete personal information and to submit applications to Avista. When asked whether they encountered difficulties in completing forms, two respondents reported the new rebate forms asked for more information about customers' homes (i.e., square footage, year of home construction, secondary heating sources, and water heat), meaning they expended greater effort, involving customers more in the application process.

Market Barriers and Possible Solutions

Contractors identified equipment costs as the primary obstacle to customer installation of energy-efficient equipment. This applied more to general HVAC equipment costs, as three respondents noted rebates almost covered entire cost differences between efficient and non-efficient equipment. The issue next most frequently cited was compatibility of equipment with existing homes.

When asked how Avista could help customers overcome these obstacles, contractors recommended the following:

- Raise rebates; if rebates covered all upgrade costs, decisions would be simple. (three)
- Provide utility-sponsored financing, allowing customers to make payments through their monthly bills. (three)
- Direct rebates to contractors, reducing customers' upfront costs. (two)

When asked to recommend technologies to be added to Avista's rebate programs, contractors suggested ground source-heat pumps and tankless water heaters. These measures are already offered through Avista's programs, indicating some of the contractors may not be well-informed about program offerings.

Trade Ally Findings Summary

- HVAC contractors reported 40 to 60 percent of their residential projects included Avista program rebates. Most contractors always recommended program-qualifying equipment. They also thought rebates influenced customers' selection of energy-efficient equipment.
- HVAC contractors generally learned about rebate programs through Avista outreach efforts, or from industry sources, such as professional organizations and equipment manufacturers.
- Most contractors reported the program increased product sales, and about half used the program as a marketing tool.
- Contractors expressed strong satisfaction with the program and Avista's communications. They suggested more e-mail communication and regular program updates would help contractors stay better informed about program offerings and changes. They also suggested brochures for distribution to customers would be helpful.
- Suggested improvements included: utility-supported financing; direct rebates to contractors; and additional products.
- Some contractors may have been unaware that Avista offers rebates on ground-source heat pumps and tankless water heaters.

1.4 Conclusions, Recommendations, and Future Research Areas

1.4.1 Program Participation

Conclusions

Cadmus found, through reviewing program documentation, that the residential portfolio as a whole reported strong achievement of savings and participation goals in 2010. Although this assessment is based on Avista's reported, unverified 2010 results, it is clear that most programs performed well in terms of participation.

Trends over time show that program participation increased from 2008 through 2010, but year-to-date numbers for 2011 indicate that a decline in participation is expected. This may be due in part to the discontinuation of Federal and State tax credits for energy-efficiency retrofits. The expected participation decline in the 2011 program year may affect Avista's ability to reach load reduction targets mandated by Washington State Initiative 937.[11]

Assessing participation data in light of ENERGY STAR market saturation showed that the ENERGY STAR Appliance program may have had a market transformation effect, though further research is necessary to confirm. Furthermore, with a large market share of ENERGY

[11] http://www.sos.wa.gov/elections/initiatives/text/i937.pdf

STAR dishwashers and relatively low participation, it is likely that this measure suffers from high freeridership.

Program awareness among nonparticipants is good. However, some nonparticipating customers perceive that participating is difficult. This perception may be a barrier to participation.

Recommendations

- **Research market saturation and participation to track achievement of potential.** Using the *Avista Electric Conservation Potential Assessment Study* completed in August 2011, along with available data sources such as ENERGY STAR and additional primary research, Avista should track the residential portfolio's progress toward capturing projected realistic achievable potential. This effort will inform program planning and design decisions to allow for the long-term success of the residential portfolio.
- **Discontinue rebate for ENERGY STAR dishwashers.** ENERGY STAR data shows that 78 percent of dishwashers sold nationally are ENERGY STAR models. Therefore, this measure is likely to suffer from high freeridership, and the Avista rebate is unlikely to affect market transformation.
- **Emphasize ease of participation in marketing**. In order to address the nonparticipant perception that program participation may be difficult, Avista should emphasize the ease of participating in residential marketing.

1.4.2 Program Design

Conclusions

2010 residential programs achieved strong participation, indicating that program design adequately served customer needs. Organizationally, however, Avista's designation, management, tracking, and documentation of programs contain a high level of complexity. Avista groups programs together in multiple ways for different purposes, which can cause confusion for evaluators or other external parties.

Avista's programs made use of two third-party implementers, both of which were selected for the specific advantages they confer: JACO Environmental provides expertise and infrastructure for appliance recycling, while the Simple Steps, Smart Savings implementer, Fluid Market Strategies (FMS), allows for a regional approach, which is appropriate to an upstream program.

Trade allies in the HVAC program noted, though they are satisfied with the current program design, they may favor contractor rebates over customer rebates. Since the program relies on trade allies for proper installation of equipment, as well as some outreach to customers, the relationship with trade allies is a key factor in the program's success.

Recommendations

- **Simplify and document program organization structure.** Cadmus recommends grouping programs in logical clusters, in order to reduce complexity of documentation and tracking. While streamlining program organization, Avista should also document institutional knowledge of programs to avoid loss of continuity.

- **Assess viability of redesigning some programs to include contractor rebates.** Avista should consider the suggestion from HVAC trade allies to provide rebates direct to contractors. Other utilities have seen success with this model, which reduces the administrative burden on customers, allows for batch processing of rebates by Avista, and ensures close communication with trade allies.[12] Anti-fraud provisions (such as requiring customer information and signature on rebate forms, or conducting site visits to verify installation) must be included in any such program adaptation.

1.4.3 Data Tracking

Conclusions

Cadmus' review of Avista's residential data tracking showed that program data are adequately for internal purposes, but improvements could enhance evaluability. Two areas for improvement were identified:

- Inconsistencies in format and level of detail between separately tracked programs make portfolio-level analysis challenging.
- The lack of tracking of follow-through for audit participants prevents thorough assessment of spillover and detailed assessment of efficacy of audits.

Recommendations

- **Consider enhancing uniformity of program tracking by standardizing data formats.** Wherever possible, Avista should develop tracking methods that support consistent analysis across programs. For example, a standardized format for customer address data across separate databases would ease database combination or integration.
- **Track follow-through on audit recommendations.** In planning for future Audit program implementation, Avista should consider additional tracking of customer follow-through on recommendations, both through other Avista rebate programs, and independently without rebates.

1.4.4 Marketing and Outreach

Conclusions

Residential marketing for 2010 was strong, informing customers about programs through multiple media and outreach channels and contributing to high program awareness even among nonparticipants. Customers reported outreach by Avista representatives as the most common method for learning about programs, followed by outreach by contractors. Given the declining participation foreseen for 2011, opportunities may exist to expand current efforts in order to bolster program awareness and encourage additional participation.

[12] One such utility also showed increased program participation in years where contractor rebates were offered, as compared to years in which only customer rebates were offered.

Recommendations

- **Continue pursuing diverse marketing and outreach strategies.** Avista should maintain its multi-faceted approach to reaching a broad range of customers, while targeting difficult-to-reach customers where appropriate.
- **Continue enhancing social media marketing.** Since Avista reported that younger customers can be more difficult to reach, the marketing team should continue to enhance its social media marketing efforts.
- **Ensure contractors have adequate information to disseminate.** Since trade allies were one of the commonly reported ways that participants learned about the program, Avista must focus on providing trade allies with adequate and accurate information. This can be achieved by distributing updated materials regularly, holding trainings for contractors, or formalizing the trade ally network to ensure frequent communication. For example, Avista should consider providing printable online information sheets that trade allies can print and disseminate to their customers.

1.4.5 Participant Experience and Satisfaction

Conclusions

Participants reported high levels of satisfaction with all programs, and with rebate amounts and timeliness. This indicates that Avista's residential portfolio served its customers well in 2010, providing good customer service (such as quick rebate processing), and customer-friendly program offerings (such as convenient appliance recycling).

Recommendation

- **Continue emphasizing good customer service and offering customer-friendly programs.** These areas should be maintained as priorities in future program planning and implementation.

1.4.6 Effectiveness of Implementers

Conclusion

The Simple Steps program, implemented by FMS, greatly exceeded participation goals in 2010. Given the healthy rate of participation, FMS has identified energy-efficient showerheads as the best opportunity for expanding the program in the immediate future, with LED lighting and smartstrips as additional products for future consideration.

Recommendations

- **Consider expanding offerings of Simple Steps program.** Avista should consider the benefits of adding measures to the Simple Steps program. Additional measure offerings may increase potential participation and savings.
- **Require FMS to ensure evaluators have access to retailers.** Upstream program evaluation often requires access to retail locations, for shelf-stocking studies and in-store intercepts, for example. In order to ensure future evaluability of the Simple Steps program, FMS should require participating retailers to grant such access to evaluators when necessary.

1.4.7 Trade Ally Participation and Satisfaction

Conclusion

HVAC contractors reported that they value Avista's rebate program for its support of their businesses. Most contractors reported promoting the program and encouraging customers to install high-efficiency equipment. The participant survey results corroborated these reports, showing that contractors were a common source of information about the program. HVAC contractors also reported a willingness to engage more directly with Avista and with the program.

Recommendation

- **Enhance and formalize trade ally network**. Avista should offer additional training and informational materials to contractors who serve the HVAC program, to ensure high-quality program information reaches customers, and to encourage program promotion through contractors.

1.4.8 Residential Portfolio

Conclusion

As Avista continues to offer residential programs, the needs of this customer segment will change. Factors such as market transformation and program maturation can affect participation levels and program cost-effectiveness, and opportunities for program expansion or modification will arise.

Recommendation

- **Consider various opportunities for expansion**. Avista should regularly assess the viability of expanded program and measure offerings. Avista may consider various possible expansions including:
    - Adding showerheads to Simple Steps
    - Additional cost-effective measures in HVAC program
    - Behavioral programs, energy education programs

1.4.9 Future Research Areas

During this process evaluation, Cadmus identified multiple areas worthy of future research, including:

- **Analysis of multiple rebates**, including the heat pump and gas furnace combination. Since over 25% of 2010 participants received more than one rebate, Avista should study the patterns of multiple-measure participation. This could provide insight into marketing possibilities, and inform impact analysis and future program planning.
- **Market research on program penetration.** Avista's residential programs may affect the market for high-efficiency equipment in its service territory, and these effects should be documented. Studies could include quantifying nonparticipant spillover, examining market

saturation of rebated equipment, and using the 2011 Conservation Potential Assessment Study to assess participation trends and program plans.

- **Assessment of implementation costs.** Examination of program costs, either through cost-effectiveness analysis or through process evaluation, can provide insight into the relative efficiency of implementation practices.

2 2010 Nonresidential Process Report

2.1 Executive Summary

Avista's nonresidential programs have operated for a number of years, encouraging energy-efficiency retrofits for commercial and industrial customers throughout Idaho, Washington, and Oregon. In 2010, the nonresidential incentive programs provided energy-efficiency incentives for replacing existing electrical and gas equipment with an ambitious list of high-efficiency options and eligible measures for customer buildings and facilities. Prescriptive measures have included: lighting, HVAC, demand control technologies, efficient motors, building shell, plug loads, and grocery refrigeration. Incentives for prescriptive measures vary by incremental unit of savings.

Participants qualifying for the site-specific program may receive incentives of up to 50 percent of incremental project costs for custom energy-efficient retrofits. Site-specific programs are comprised of electric and gas measures including appliances, compressed air, HVAC, industrial process, motors, shell, and custom lighting projects that do not qualify for the prescriptive lighting program. Site-specific programs must demonstrate kWh or therm savings based on project-specific information, and provide the largest portion of energy savings to the overall energy efficiency portfolio.

As part of a larger, energy-efficiency program evaluation in progress, Avista commissioned The Cadmus Group, Inc. (Cadmus) to conduct a process evaluation of its commercial and industrial energy-efficiency programs in Idaho and Washington. The primary process evaluation goals include informing Avista about how well individual programs operate, and helping Avista better plan, integrate, implement, and evaluate its entire portfolio of commercial and industrial (C&I) energy-efficiency programs.

This assessment of the nonresidential program has been based on: interviews with program staff; reviews of program materials; and surveys with program participants, nonparticipants, and trade allies. As part of the process evaluation, Avista also requested Cadmus provide recommendations based on industry best practices for energy-efficiency programs. Where possible, Cadmus has drawn upon internal knowledge of best practice research to provide these recommendations.

2.1.1 Conclusions and Recommendations

Overall, the nonresidential programs are working well and operating as designed. Many of the programs are meeting or exceeding energy reduction targets. Highly qualified, dedicated, and long-term staff ensures quality control and efficient operations of the many prescriptive and site-specific programs. Commercial and industrial (C&I) customers and trade allies report strong satisfaction with the programs.

Cadmus identified the following conclusions as a result of 2010 process evaluation activities:

Program Documentation

Although program overview, goals, and implementation plans are located in the 2011 DSM Business Plan, documented operational procedures were not easily accessible. Therefore, it is difficult to link the EM&V policies found in the high level planning documents to the program's operational management. Developing a program manual, with implementation plans, operational

procedures, marketing strategies, and verification protocols aggregated into a single program handbook, could help to establish this link.

Customer Feedback

Overall, customers proved very satisfied with all program elements. The majority of survey respondents did not encounter program participation challenges. However, customers felt there was a lack of information about program offerings.

For improvements to program delivery consider the following recommendations:

- Enhance outreach and communication efforts for participants, nonparticipants, and partial participants.
- Develop additional printed program materials to educate customers about program opportunities.
- Consider regularly scheduled online Webinars to assist customers with questions about program incentives, eligibility, and application processing.

Trade Ally Feedback

Avista's informal network of trade allies works well, through updates to the mailing list, word of mouth, and strong communications between contractors and Avista's customers, program staff, and account representatives. Although trade allies expressed strong satisfaction with program components, they also requested additional program guidance and greater opportunities for direct communication with Avista. Although the mailing list serves as an informal network for nonresidential programs, limited information has been documented about trade allies, the markets they serve, and their areas of specialization and qualifications.

Cadmus recommends a more formalized network that would incorporate the following elements:

- Provide regular trade ally communications through targeted outreach efforts, such as a Website, monthly e-mails, or a newsletter. A Website dedicated for trade allies could enable registration, thereby providing a method for compiling (and updating) trade ally profiles and contact information.
- Consider providing additional promotional materials that would highlight various program technologies available to customers. This would not require that Avista endorse any one contractor.
- Explore ways to leverage strong working relationships forged between customers and contractors within the community by sponsoring additional program working sessions, luncheons, or Webinars that provide guidance for trade ally outreach efforts.

Application Processing and Data Tracking

Overall, application forms and program databases work well for tracking nonresidential participants and projects. Some customers and trade allies expressed confusion about prescriptive program requirements listed on the forms, and requested more help in filling out the site-specific forms and worksheets.

Consider the following improvements to application forms and data tracking:

- Offer site-specific application forms online. Although it would be ideal to enable submission of forms online, simply making the forms downloadable and mail-in would provide a good first step. In addition, consider including guidelines for completing site-specific forms.
- Gather additional feedback from customers and trade allies about how site-specific form enrollment and processing could be streamlined.
- Gathering more detail about program and project measures in the participant database would enable a better understanding of the kinds of projects done in the past (by different types of customers and end-uses). Additional information could be used to market specific types of projects to other customers who have the same end-use equipment.

Marketing and Outreach

Although a marketing budget had not been allocated before 2011, Avista's nonresidential marketing and outreach strategy has worked well, and includes the Website, customer E- newsletter, and outreach efforts of the key account managers. However, lack of knowledge about the effectiveness of nonresidential marketing approaches could result in reduced understanding of target markets for meeting future program goal requirements.

Consider the following improvements to future marketing strategies:

- Ensure allocation in future marketing budgets dedicated for nonresidential program marketing and outreach efforts.
- Develop additional marketing materials targeted specifically for trade ally outreach to customers. These materials would enable Avista staff to leverage existing trade ally relationships in the community. Make them available at TA website for printing
- Conduct marketing surveys, and targeted marketing research that would gather additional information about customer facilities and technology end-uses.

Quality Assurance and Verification

Procedures for QA of data tracking, savings estimation, project approval, and inspection have been well-documented for site-specific projects. Although Avista uses a risk-based approach to pre- and post-inspections for prescriptive programs, guidelines or standardized procedures for this approach have not been documented.

Consider developing a verification protocol to document pre- and post-inspection procedures for prescriptive programs, and ensure data tracking for project installation. In addition, protocols should highlight any differences in verification procedures used for prescriptive and site-specific programs.

2.2 Introduction

2.2.1 Program Overview

This report provides findings and recommendations drawn from a process evaluation of Avista's nonresidential energy-efficiency programs. These programs encourage commercial and industrial customers to install more energy-efficient equipment in their facilities. To accomplish this, Avista offers cash incentives for installation of qualifying energy-efficient equipment. Incentives are organized by energy-efficiency measures, grouped into approximately 15 individual programs. A program may be a single measure type or a group of measures. Eligibility of prescriptive programs is based on installation of qualifying equipment. Energy-efficiency measures falling outside of prescriptive applications are considered under the site-specific program, based on their project-specific information. With the exceptions of the EnergySmart Grocer program and Green Motors program, which are implemented by third-party contractors, Avista implements all of its rebate programs.

2.2.2 Process Evaluation Objectives

This process evaluation primarily seeks to: (1) document and analyze how the program works in practice; and (2) ascertain important influences on its operation and achievements. Evaluation objectives include:

- Documenting and assessing program components and processes;
- Gathering opinions and program experience responses from customers and program partners;
- Reviewing primary data, reviewing secondary program information, and reporting on findings;
- Comparing program information to best practices; and
- Providing conclusions and actionable recommendations.

2.2.3 Evaluation Methodology and Information Sources

This process evaluation analyzes both primary and secondary program data. Primary data have been gathered through interviews with: program staff involved in daily operations; program participants and nonparticipants; and market actors involved in promoting and implementing the programs. Secondary data have included program materials used to enroll participants and guide operations, marketing materials, reports for external stakeholders, and information about best practices.

2.2.4 Report Organization

This report contains the following sections:

- Introduction (Section 2.2)
- Key Findings (Section 2.3)
    - Program Planning and Design (Section 2.3.1)
    - Program Documentation (Section 2.3.2)
    - Customer and Trade Ally Feedback (Section 2.3.3)

  - Application Processing and Data Tracking (Section 2.3.4)
  - Marketing and Outreach (Section 2.3.5)
  - Program QA/QC and Verification (Section 2.3.6)
- Conclusions and Recommendations (Section 2.4)
  - Future Research

2.3 Key Findings

2.3.1 Program Planning and Design

Program Logic Models and Process Flows

Avista's nonresidential energy-efficiency programs can be grouped into three main clusters, based on their delivery mechanisms. These program cluster groups have been designed and implemented with similar operational procedures, from enrollment to project eligibility and verification. The site-specific or custom program makes up the first cluster group. Avista's prescriptive program, the second cluster-level group, is composed of individual prescriptive measures or groups of measures. The third cluster group, EnergySmart Grocer, operates through an external implementer, Portland Energy Conservation, Inc. (PECI).

EnergySmart Grocer program is Avista's only commercial and industrial (C&I) program delivered by a third party implementer. PECI, the implementer, has designed and delivered identical programs successfully throughout the Northwest. Typically the largest C&I programs are handled internally, as utilities prefer to maintain control over relationships with largest customers.

In the initial stages of evaluation planning, Cadmus developed preliminary logic models for each program cluster, helping to guide evaluation research and discussions with program staff and implementers. Program logic models offer a comprehensive means to identify and measure progress toward program goals. In planning stages, logic models can be used to identify program activities leading to expected outputs required to accomplish program goals and anticipated short and long term outcomes. While outputs are under the control of the program sponsor, outcomes are not. The logic model can be used to clarify program design elements, ensuring all operate properly for achieving a program's ultimate goals and anticipated outcomes.

Setting the groundwork for the nonresidential program process evaluation, this section describes each program cluster, and presents a logic model for each to help identify program inputs, anticipated outputs, and outcomes. Based on results from the process evaluation, feedback from staff, and reviews of program documents, Cadmus revised and finalized logic models to better reflect program operations in practice. At the end of each cluster description, we discuss program process flows as a preliminary step towards developing process flowcharts that can be used to map operational steps.

Site-Specific Program

The site-specific program is offered to all commercial, industrial, or pumping customers receiving electric or natural gas service from Avista, and choosing to undertake cost-effective,

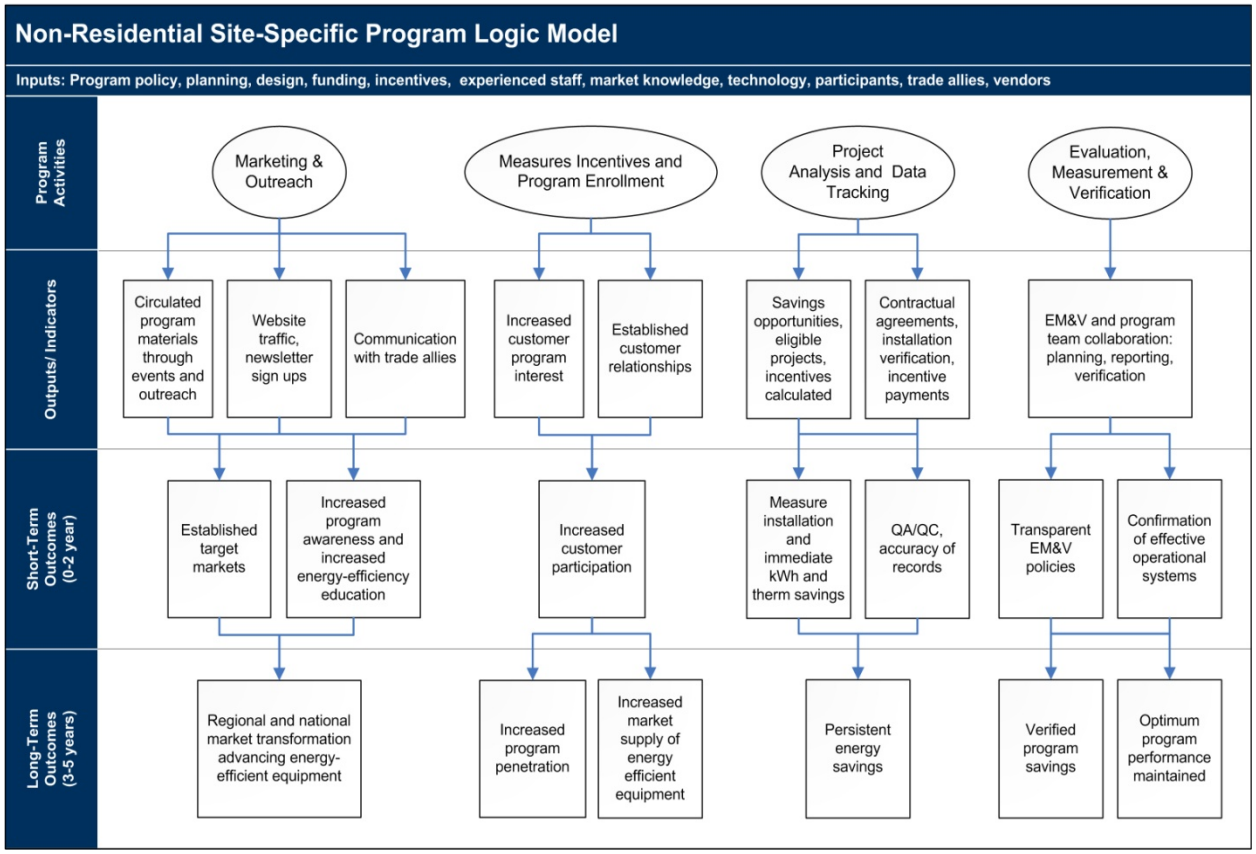
energy-efficiency improvements to their businesses. Based on their project-specific information, site-specific measures generally do not lend themselves to prescriptive applications. For measures to be considered, it must have demonstrable kWh or therm savings.

The site-specific measures currently consist of electric and gas-saving measure technologies, including:

- Appliances
- Compressed air
- HVAC
- LEED
- Industrial process
- Motors (HVAC Variable Frequency Drive Program)
- Shell
- Multifamily
- Custom lighting projects

The site-specific program logic model shown in Figure 2-1 demonstrates the four key program activities required to produce desired outputs and anticipated outcomes. Due to the customized nature of site-specific programs, extensive project analysis and contractual arrangements are required to determine project eligibility and ensure persistent energy savings.

Figure 2-1. Site-Specific Program Logic Model



Site-Specific Program Operational Work Flow

The steps involved in administering and implementing the site-specific program differ from Avista's prescriptive programs by: size of project, incentive amounts, complexity of project-specific information and energy savings calculations, amount of paper work required for enrollment, and eligibility requirements.

The following steps describe program operational flows, from marketing and outreach to rebate payments:

- Marketing and outreach:
  - Account executives communicating opportunities to customers through e-mails, phone calls, and on-site visits.
  - Marketing flyers distributed at events.
  - Customers offered access to business Websites, including Efficiency Avenue.
  - Customer signing up to receive Energy Solutions bimonthly E-newsletter.
- Preapproval or preinspection requirements for most projects:
  - All large or site-specific projects go through account executives.

  - All site-specific projects require preapproval.
  - Engineer reviews projects to determine the extent of preinspection.
- Project submittal:
  - Calculation forms sent in with customer contract.
  - Account executives enter information into participant and project tracking databases (Sales Logix and Tracker).
- Application processing:
  - Engineers work up an inspection report and bid, which is sent to the customer.
  - Account executives check application requirements and obtain additional information from customer, as needed.
  - Calculating total project costs (materials and labor) and recording these in application forms.
  - Account executives provide contracts and evaluation reports to customers.
- Installation verification:
  - Site-specific projects receive post-inspection (with some exceptions).
  - Account executives and engineers take responsibility for determining high-risk projects for post-installation.
- Rebate processing:
  - Program coordinators check analysis details between customer agreements and database, and update information, as needed.
  - Program managers check documents for signatures, invoices, measurements, and post-verification reports.
  - Upon completion, document information is uploaded and payments processed.
  - Account executives deliver payments.

Prescriptive Programs

Prescriptive programs considered for the 2010 process evaluation have been grouped by: electric-only, and gas or both gas and electric.

Electric only measures include:

- Green Motors Rewind Program
- Prescriptive LED Traffic Signal Program
- Prescriptive Lighting Program
- Prescriptive Premium Efficiency Motors Program
- Prescriptive Power Management for PC Networks
- Prescriptive Side-Stream Filtration Program

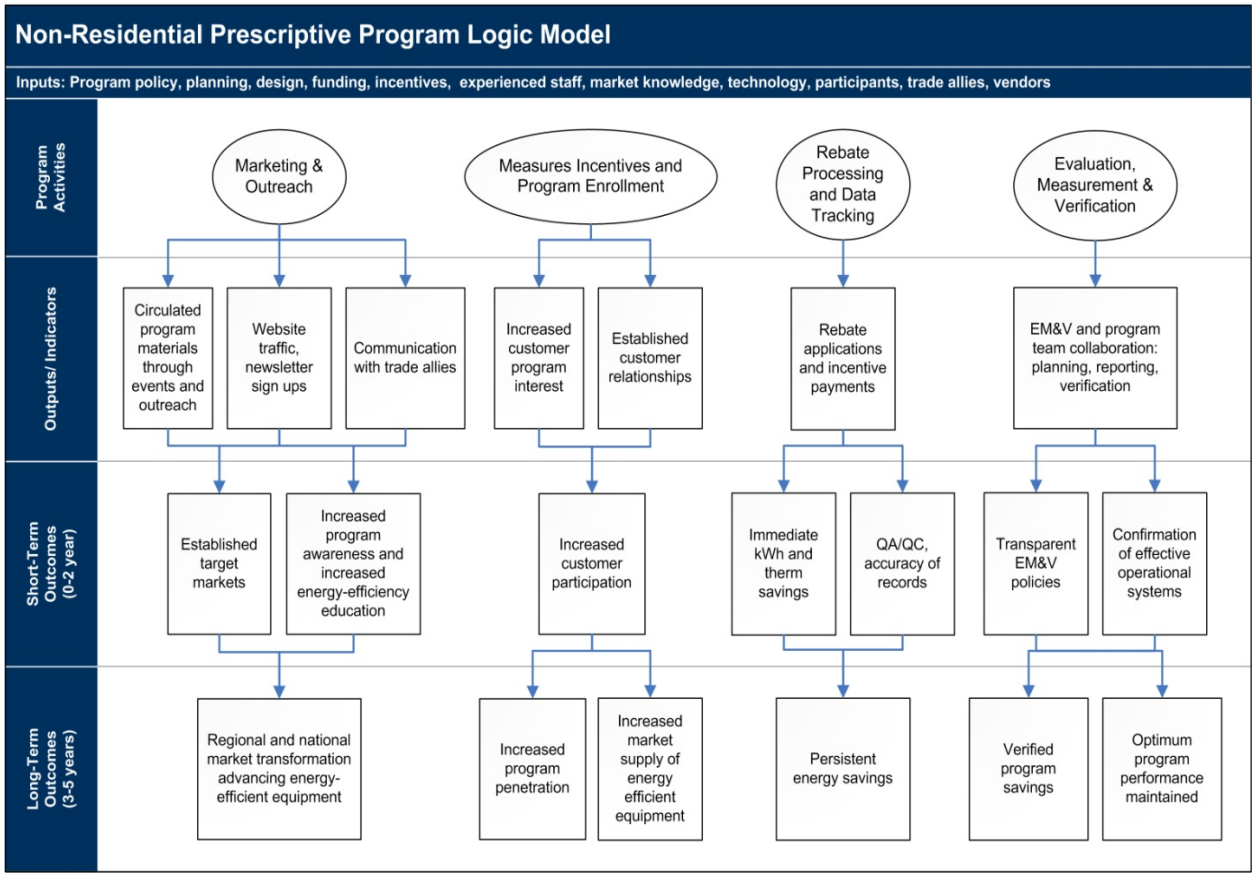
- HVAC Rooftop Maintenance Pilot Program

Gas-only or both gas and electric measures include:

- ENERGY STAR Residential Products
- Prescriptive Commercial Clothes Washer Program
- Prescriptive Demand-Controlled Ventilation (DCV)
- Prescriptive Food Service Equipment Program
- Prescriptive Refrigerated Warehouse Program
- Prescriptive Steam Trap Replacement Program

The prescriptive program logic model, shown in Figure 2-2, demonstrates the relationships between the four key program activities, outputs, and intended outcomes. Compared to the site-specific program, the prescriptive programs require fewer rebate processing activities. For example, customers apply for rebates based on application requirements without lengthy project analysis and contractual arrangements.

Figure 2-2. Prescriptive Program Logic Model



Prescriptive Program Operational Work Flow

The prescriptive programs take the following operational work flow, from marketing and outreach to rebate payments:

- Marketing and outreach:
  - Access to Avista's business Website (including Efficiency Avenue).
  - Bi-monthly E-newsletter (Energy Solutions).
  - Marketing flyers distributed by account executives at events.
  - Indirect outreach through contractors and vendors.
- Preapproval/Preinspection:
  - Required only for select programs (for example, Steam Trap and Side-Stream Filtration, and Demand Control Ventilation[13]).
  - Information and requirements provided on rebate forms.
  - Equipment must be purchased and installed before payments can be authorized.
- Enrollment and application processing:
  - The majority of projects (about 60 percent) are submitted through contractor bids.
  - Following application submittal, program managers check forms and invoices to verify requirements have been met, and collect additional information from the customer, as needed.
  - Program managers calculate project costs, and enter customer data into a database (Sales Logix).
- Rebate processing:
  - Agreement scanned, payback calculated, additional information input into database (Sales Logix).
  - Program managers verify rebates, prints vouchers, and obtains signatures.
  - Small checks are sent to customers; account executives deliver large rebate checks.
- Installation verification:
  - Inspection requirements based on random sampling and risk levels.
  - Program managers determine risk.
  - Program managers check forms, requirements, and calculations match customer claims.

Prescriptive Electric Programs

This section provides short descriptions of each electric-only, gas-only, or combined gas and electric prescriptive program, examined through the 2010 process evaluation.

[13] These programs will be discontinued as prescriptive for 2011 and moved to site-specific program.

Green Motors Rewind

Operated in partnership with the Green Motors Practices group, this program provides education to foster organization and promotion of member motor service centers to commit to energy-saving shop rewind practices for motors ranging from 15 to 500 HP. Through promotion of continuous energy improvement and motor-driven system efficiency, this program seeks to achieve kWh savings.

Prescriptive LED Traffic Signal

This program targets nonresidential electric customers (primarily municipalities) that own traffic signals, offering them incentives to replace incandescent with high-efficiency LED signals, designed for use in pedestrian signals, red-yellow-and-green traffic signals, and traffic arrows. As market saturation has nearly been reached, this program closes at the end of 2011.

Prescriptive Lighting

As significant opportunities exist for lighting improvements in commercial facilities, this program offers direct financial incentives to customers increasing the efficiency of their lighting equipment. The program offers rebates to existing commercial or industrial facilities, with electric service provided by Avista and rate schedules 11 or above. Predetermined incentive amounts can be paid for a total of 38 individual measures, including:

- T12 to T8 fluorescents.
- High-bay, high-intensity discharge lighting, T5 or T8 fluorescents.
- High-bay, high-intensity discharge lighting to induction fluorescents.
- Incandescents to compact fluorescents or cold cathode fluorescents.
- Incandescents to LEDs.
- Incandescent exit signs to LED exit signs.

Prescriptive Premium Efficiency Motors

This program provides an incentive for nonresidential electric customers purchasing premium-efficiency motors over standard motors. The incentive pays approximately 50 percent of incremental costs of buying premium-efficiency motors—specifically upon purchase. To qualify for incentives, motors must meet the listed premium efficiency National Electrical Manufacturers Association (NEMA) standards.

Prescriptive Power Management for PC Networks

Computers remaining in a full-power state when idle can waste significant energy for customers operating numerous PCs. This program, available to nonresidential electric customers, provides incentives to install a network-based power management software solution for simplifying the process of implementing power management in large numbers of networked PCs.

The program offers a $10 incentive per controlled PC meeting the following criteria (in addition to making a commitment that the software will remain in operation for a minimum of three years):

- Able to provide regular energy-use reports.

- Able to control every available level of power management offered by the PC.
- Able to reset user override capabilities.
- Provides a minimum average savings of 120 kWh annually per PC.
- Able to provide usage data before control installation (a baseline setting)

Prescriptive Side-Stream Filtration

This program provides incentives to nonresidential electric customers installing permanent side-stream filtration systems on their new or existing open-loop evaporative cooling tower/chiller systems. With program incentives paid at $18 per ton—or 50 percent of the installed cost, whichever is less—these systems help the equipment operate more efficiently between normal cleanings and inspections.

HVAC Rooftop Maintenance Pilot

This pilot program is the latest in a series of Avista programs encouraging nonresidential electric customers to perform maintenance regularly on their rooftop HVAC units. As the most recent program was flagged for savings reevaluation, this pilot program was designed to determine whether the program should be reinstated or terminated.

To accurately determine energy savings of regularly maintained HVAC units, the program compares energy use of like rooftop units (one maintained and one not) on one rooftop. The decision to implement this program will be made after all data are analyzed; so the program has no associated savings goals at this time.

Prescriptive Gas or Combined Gas and Electric

ENERGY STAR Residential Products

This program is available to nonresidential customers using residential-grade appliances in a small business application.

Prescriptive Commercial Clothes Washer

To encourage customers to select high-efficiency clothes washers, this program targets nonresidential electric and natural gas customers in multifamily or commercial Laundromat facilities. The program's streamlined prescriptive approach has been designed to reach customers quickly and effectively in promoting ENERGY STAR or CEE-listed units.

Prescriptive Demand-Controlled Ventilation

Under this program, nonresidential electric and natural gas customers receive direct incentives to install demand-controlled ventilation (DCV) in existing buildings. This ventilation measures the approximate number of people occupying a space—based on carbon dioxide levels—and resets outdoor air intake rates for occupant ventilation in accordance with this measurement. To qualify for the program, temperatures of conditioned spaces must remain between 65 and 75 degrees during operating hours. Controlled conditioned space must also have a minimum of 2,000 square feet.

Incentives pay 25¢ per square foot, with a cap of 2,500 square foot per sensor. If the space has portable walls, each room must be controlled separately, and the controlled space must meet a minimum of ASHREA 62 standards.

Prescriptive Food Service Equipment

Applicable to nonresidential electric and gas customers with commercial kitchens, this program provides direct incentives to customers choosing high-efficiency kitchen equipment. The equipment must meet ENERGY STAR or CEE Tier levels (depending on the unit) to qualify for incentives. Measures available for rebates include:

- Fryers
- Steam cookers
- Hot food holding cabinets
- Refrigerators and freezers
- Vent hood controls
- Ovens
- Griddles
- Char-broilers
- Hot water heaters
- Dishwashers
- Ice machines

Prescriptive Refrigerated Warehouse

This program offers nonresidential electric customers a direct incentive for efficiency improvements in refrigerated warehouses. Although this program has a limited customer base, significant opportunities exist for energy savings from the program's measures. Qualifying measures include:

- Fast-acting doors
- Dock seals
- Variable frequency drives (VFDs)
- Fan motors
- Bi-level lighting

Prescriptive Steam Trap Replacement

This program offers rebates to nonresidential gas customers repairing or replacing failed steam traps on steam distribution lines of boiler heating systems. Key criteria for the steam trap replacement program include: 1) the replacement must be a new working steam trap of the same duty; 2) each repair or replacement is eligible for rebate once every five years; and 3) repaired or replaced traps must include a strainer. A minimum of 95 percent of steam generation must be provided by Avista retail natural gas.

Rebates amounts include:

- $120 for 1/2-inch pipe
- $140 for 3/4-inch pipe
- $165 for 1-inch pipe
- $200 for 1-1/4-inch pipe
- $270 for 1-1/2-inch pipe
- $350 for 2-inch pipe

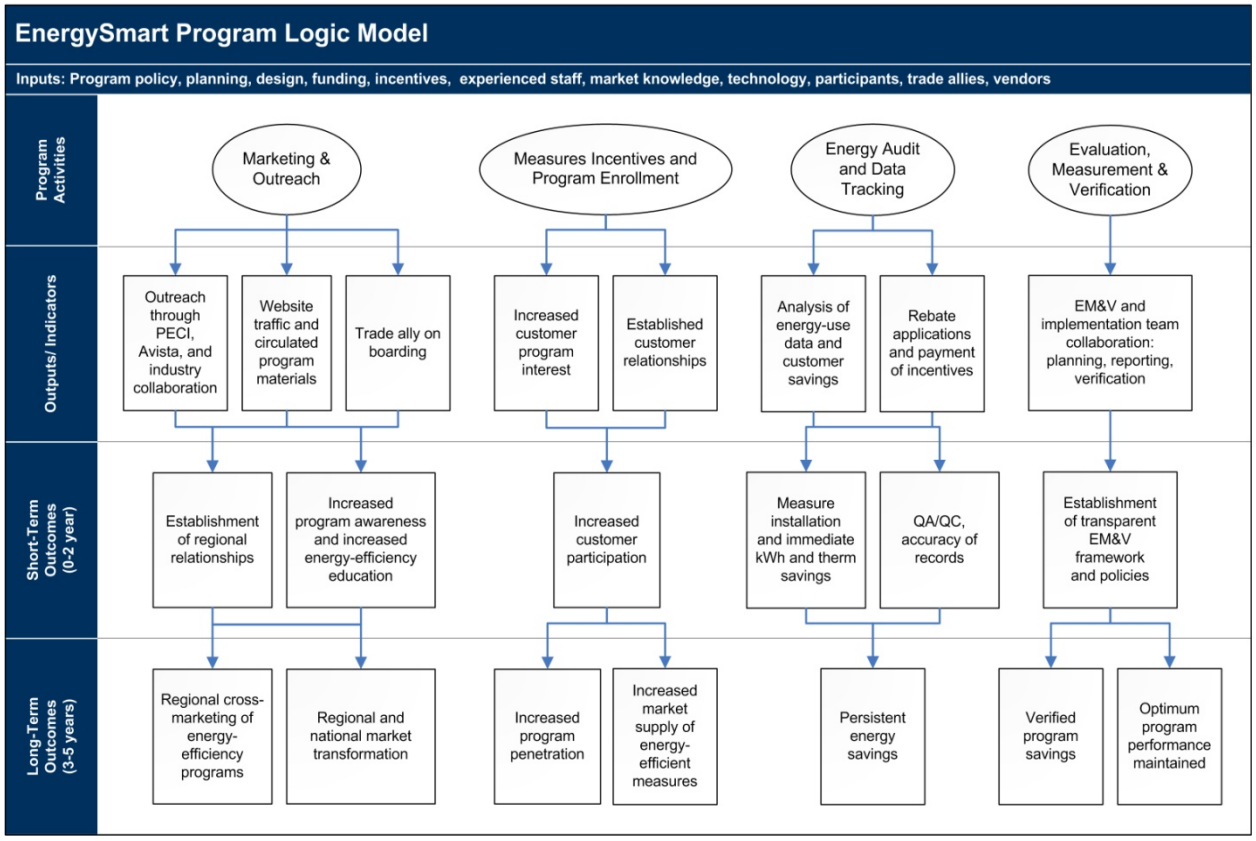
EnergySmart Grocer Program

The EnergySmart Grocer program offers a variety of energy-savings grocery and refrigeration equipment for nonresidential electric and gas customers, particularly grocery stores. The program assists customers with technical aspects of their refrigeration systems, while providing a clear view of achievable savings. A field energy analyst provides customers with technical assistance, produces a detailed energy savings report regarding potential savings for their facility, and guides customers from enrollment to incentive payments for the following qualifying equipment:

- Auto closers, gaskets, and strip curtains
- Cases
- Case lighting
- Compressors and condensers
- Controls
- Motors
- Night covers
- Suction line insulation
- Vending machine controllers
- Automatic flue dampers
- Domestic hot water (DHW) tank insulation
- DHW heat reclaim

Activities and resulting outputs for the EnergySmart Grocer program logic model, shown in Figure 2-3, differ slightly from Avista's other programs. PECI implements the program to participating utilities throughout the region. An industry-wide goal of the program is market transformation. Therefore, activities and key outputs focus on collaborative outreach and training efforts, trade ally enrollment, and customer education through energy auditing.

Figure 2-3. EnergySmart Grocer Program Logic Model



EnergySmart Grocer Program Operational Work Flows

Key operational work flows for the EnergySmart Grocer include collaborative industry outreach activities, free energy audits, and trade ally networking. The following steps describe program operational flows, from marketing and outreach to rebate payments:

- Marketing and outreach:
  - PECI conducting outreach through industry networking.
  - PECI and account executives referring customers and distributing flyers at events.
  - PECI offering customers Website access to Avista's business Website, and EnergySmart Grocer Program Website.
- Preapproval or audit requirements for most projects:
  - All interested customers receive a free energy audit.
  - PECI field energy analyst performs walk through facility audit and discusses energy-efficiency opportunities with customers.
  - Energy analyst reviews contractor bid to verify that it meets incentive criteria.
- Project submittal:

  - If agreed, customer submits audit report and required documentation to PECI field analyst who works with registered trade allies to establish a bid.[14]
  - Contractors provide bids to customer and PECI field analyst.
- Application processing:
  - Customer submits rebate application to PECI.
  - PECI checks application requirements and obtains additional information from customer, as needed.
- Installation verification:
  - PECI conducts post-inspection on a sample of completed projects.
  - PECI coordinates inspection with Avista's program managers with focus on large projects.
- Rebate processing and data tracking:
  - PECI provides Avista with a monthly report and tracking data summarizing program activity.
  - PECI submits monthly rebate processing and payment requests to Avista.
  - Avista program manager checks reports, documentation, and enters rebate processing information into participant database.
  - Avista sends payments to PECI who then sends rebate checks to customers.

2.3.2 Program Documentation

To evaluate operational procedures of Avista's nonresidential programs from a process perspective, Cadmus reviewed available program documents, and interviewed staff involved in the programs on a daily basis. This section discusses results derived from review of the documented operational procedures.

Research Objectives

Research objectives for the review of the nonresidential energy efficiency program's operational procedures sought to obtain a comprehensive understanding of the programs, enabling Cadmus to document and assess the following key program components:

1. Program theory, design, and goals.
2. Marketing plan.
3. Trade ally program.
4. Enrollment and rebate processing.
5. Quality control and verification procedures.

[14] PECI works with contractors to help them become trade allies.

The materials review sought to help evaluators identify management and operational procedures used to guide staff in implementing nonresidential programs. Interviews with Avista program staff helped the evaluation team attain a complete picture of program operations, from marketing to rebate payments. Through the interviews, Cadmus gathered feedback on overall program delivery and solicited recommendations for program improvements and other opportunities. The interviews also helped to refine the content and presentation of the program logic models, and to solidify key researchable issues examined through other data collection activities.

Methods

For the program documentation materials review, Cadmus requested program manuals, operational guidelines, process flowcharts, enrollment procedures, marketing plans, and staff and trade ally training materials. Initial materials provided included several high-level documents, such as a business plan, an EM&V framework, and various internal process reports. In addition to the initial sets of materials provided by Avista staff, operational documents sent to Cadmus included:

- DSM Business Plans (2010 and 2011).
- EM&V Framework and EM&V Plan (2010 and 2011).
- 2010 DSM Annual Process Report and other key reports (such as PPA Ecotope summary).
- A trade ally training presentation and workshop attendance list.
- Organization charts.
- Program data collection procedures for prescriptive lighting and site-specific programs.
- A sample monthly report for prescriptive lighting.

Avista staff were interviewed in person and over the phone throughout the evaluation's course. We spoke with program and policy managers, support staff, engineers, account managers, and the marketing team, in interviews lasting 30 to 60 minutes. These interviews were primarily conducted in group settings, in-person interviews, or one-on-one interviews over the phone.

Research Results

Avista provided several comprehensive, high-level policy and planning documents, describing the EM&V framework and plan, and DSM portfolio methodologies, tariff requirements, and strategies for energy resource acquisitions. Avista's 2011 DSM Business Plan contains numerous appendices documenting strategies, tariffs, and schedules. Appendix G contains individual program plans, with overviews, target markets, goals, budgets, and implementation plans, using a couple pages per program.

Although reviewing these policy and planning documents enabled evaluators to eventually piece together an understanding of the programs, this proved to be challenging given the number, and to some extent the complexity, of the nonresidential programs. Operational procedures and guidelines were not clearly identified in the policy and planning documents. To fill in the missing elements of the program procedures, it was necessary for the evaluation team to consult

with Avista's program staff, engineers, and account executives on several occasions, through follow up emails and phone calls.

2.3.3 Customer Feedback

One process evaluation key task was to conduct primary research using surveys of Avista's program participants and nonparticipants. These groups included:

- Customers receiving rebates through the nonresidential energy-efficiency programs; and
- Customers choosing not to participate in the programs.

This section discusses research objectives, methods, and results of surveys and interviews conducted for the 2010 process evaluation.

Participant and nonparticipant surveys enabled the evaluation team to gain insight into different customer perspectives, while gathering feedback about program areas working well and areas for improvements. Information gathered can also be compared across customer groups in areas of enrollment and outreach, awareness, satisfaction, potential participation barriers, and decision-making patterns.

Nonparticipant surveys included two customer groups:

- *Nonparticipants without program association:* A random selection of Avista nonresidential customers having no association with the energy-efficiency programs. (Survey questions for this group focused on understanding how Avista might better identify and target this untapped nonparticipant market, determine market segments not being reached, and identify potential missed opportunities for program savings.)
- *Partial participants:* Nonresidential customers expressing interest in the program after being approached by an Avista account executive. (For the 2010 process evaluation, this group can be considered partial participants, which may have dropped out of the program during the application process, or chose not to apply for rebates during initial contact stages. Survey questions focused on understanding why this group declined to follow through with program participation.)

Research Objectives

Participants

Cadmus designed the participant survey to inform evaluation objectives discussed and agreed to during planning and kickoff meetings with Avista staff. Research questions (and areas of interest) emerged from interviews with Avista's implementation team, engineering staff, account executives, and policy and planning team members. Primary research objectives for participant surveys included:

- Compiling profile information about Avista's commercial and industrial target markets.
- Identifying participants' perceptions of market barriers, incentive levels, and program delivery.
- Determining participant satisfaction with key program components.

- Identifying potential areas for program improvements and future offerings.
- Understanding participant equipment decision-making processes.

Nonparticipants and Partial Participants

Surveys with program nonparticipants (those without program association) and partial participants (those expressing initial interest in the program) provided information about participation barriers, and levels of awareness among surveyed respondents. Understanding interests and motivations for these customer groups (who were sampled to be representative of the overall nonparticipating customer population) could provide a means to reach untapped markets for energy-efficiency resources. Further, the surveys collected information enabling comparisons between target markets for participants, nonparticipants, and partial participants.

Primary research objectives for nonparticipants and partial participants included:

- Determining characteristics and levels of program awareness.
- Identify nonparticipation reasons (for those aware of the program).
- Identify nonparticipants' perceptions of program participation barriers.
- Understand commercial and industrial customers' equipment decision-making processes.
- Identify perceptions regarding market barriers, incentive levels, and program delivery.

Survey Methods

Discovery Research Group (DRG)—a survey firm regularly working with Cadmus on similar evaluation projects—conducted the participant, nonparticipant, and partial participant surveys. To reduce respondents' time requirements, surveys, designed to last 10 to 15 minutes, were conducted by the phone.

To streamline survey delivery, most questions utilized standardized, closed-ended responses. However, to capture subtle nuances and differences in decision-making patterns, the surveys included open-ended "other" response options.

Participant Survey Instrument

To meet the impact evaluation report's expedited timeline (be delivered several months in advance of the process evaluation), nonresidential participant surveys were conducted in two waves: first for gas and dual-fuel customers, and second for electric customers. Process evaluation survey questions did not depend on customer fuel types. However, to coordinate with data collection efforts for the overall evaluation, some questions were included to assist with the impact evaluation's program measure verification.[15]

To ensure surveying respondents from programs with low participation levels, the survey team prioritized and contacted strata with low numbers of unique contacts first. Each participant was contacted once per day, until a final disposition (e.g., complete, refusal, ineligible) could be achieved. Each contact received up to eight attempts before termination of the survey effort, approximately after two weeks of calling for gas and electric participant surveys.

[15] The Cadmus Group. August 2, 2011. *Avista 2010 Multi-Sector Gas Impact Evaluation.*

Although the administration of Avista's commercial incentive programs makes prescriptive and site-specific distinctions internally, these differences proved insufficiently significant from participants' perspectives to warrant separate surveys for each program type. Therefore, the process evaluation team used a single participant survey instrument, including a few specific questions designed to capture unique aspects from customers participating in site-specific, prescriptive lighting, Green Motors, and EnergySmart Grocer programs.

Program participant questions addressed the following topics:

- Participant characteristics (heating fuel type, number of employees, leasing versus ownership, and square footage of heated and cooled space).
- Primary sources of program awareness.
- Satisfaction with program elements (or reasons for dissatisfaction).
- Decision-making influences.
- Program benefits experienced in addition to energy efficiency.
- Market and program participation barriers (pre-participation and post-participation).
- New program offerings desired.

Participant Survey Sampling

For the survey sample, Avista provided a customer participant list, drawn from the program tracking database. Cadmus designed both gas and electric participant survey samples to represent reported savings by program and measure type. Survey targets were adjusted to account for numbers of survey respondents available.[16]

Table 2-1 shows numbers of completed surveys and original targets. Numbers of unique contacts in the cluster sample may differ due to multiple participation within programs.

Table 2-1. Participant Survey Summary of Details

Program – Fuel Type	Total Number of Participants*	Total Number of Projects	Survey Targets	Survey Completes
Prescriptive Electric	747	1,204	80	140
Prescriptive Gas & Dual Fuel	19	41	14	7
Site Specific Electric	196	298	80	43
Site Specific Gas & Dual Fuel	168	398	104	76
EnergySmart Grocer Electric	66	309	44	20
Total	1,196	2,250	322	286

*For customers participating in multiple programs, the customer was categorized by the measure yielding the highest savings.

[16] Taking into consideration recent Net-to-Gross surveys (conducted at the end of 2010), and other evaluation efforts requiring site visits and surveys with large commercial customers, Avista requested that some participants be removed from the sample set to prevent potential survey fatigue.

Across the program clusters, 286 participant surveys were completed, (89 percent of target sample size). Despite the apparent differences in the achieved versus targeted samples, statistical tests conducted post sampling revealed sufficient representation.[17]

Nonparticipant and Partial Participant Survey Instrument Design

Nonparticipant and partial participant surveys sought to inform key research topics and help Avista identify potential untapped markets for additional energy-efficiency resources. To compare nonparticipant and partial participant customer groups, the same topic areas and similar questions were used, when applicable.

The survey included questions to assess the following:

- Program awareness and how respondents heard about the program.
- For customers aware of the program:
    - Reason for not participating.
    - Satisfaction with various program components or reasons for dissatisfaction.
- Installation of energy-efficiency measures outside of the program.
- Influences on decision-making regarding energy-efficiency equipment.
- Participation barriers.

Nonparticipant Sample Selection

To represent customer interests and decision making for small and large energy users, Avista selected a stratified random sample by rate schedules and geographical regions (by state). Table 2-2 shows samples and targets for each stratum.

[17] Cadmus performed a chi-squared goodness-of-fit test to check for representativeness of the sample to the population of participants. Representativeness was tested by location and measure type using a chi-squared test.

Table 2-2. Nonparticipant Survey Summary*

State and Rate Schedule	Electric/Gas	Number of Contacts in Sample	Survey Targets	Surveys Completed
ID_011	Electric	996	5	8
WA_011	Electric	1,294	5	7
ID_021	Electric	299	16	23
WA_021	Electric	623	16	31
ID_031	Electric	167	2	2
WA_031	Electric	247	2	2
ID_032	Electric	8	1	1
WA_032	Electric	20	1	1
WA_025	Electric	11	1	0
ID_111	Gas	13	5	1
WA_111	Gas	30	6	4
WA_121	Gas	6	0	0
	Total	3,714	60	80

* The following Websites provide Avista nonresidential customer rate class definitions, by state: WA: http://www.avistautilities.com/services/energypricing/wa/elect/Pages/default.aspx; http://www.avistautilities.com/services/energypricing/wa/gas/Pages/default.aspx; ID: http://www.avistautilities.com/services/energypricing/id/elect/Pages/default.aspx

Partial Participant Sample Selection

Avista provided a list of about 200 customers initially contacted by account representatives, but declined to participate in the program. SalesLogix tracked these customer leads by contact information and program interest. Table 2-3 shows the sample and number of surveys completed for each program.

Table 2-3. Partial Participant Survey Summary

Program	Number of Contacts in Sample	Surveys Completed
Appliances	6	
Compressed Air	3	2
Energy Smart-Audit	2	
HVAC Combined	27	6
HVAC Cooling	5	3
HVAC Heating	15	4
Industrial Process	3	1
LEED Certification	1	
Lighting Exterior	11	1
Lighting Interior	21	3
Motor Controls HVAC	2	
Motor Controls Industrial	1	
Motors	1	
Multifamily	1	
Prescriptive Food Service	1	
Prescriptive Lighting Exterior	1	
Prescriptive Lighting Interior	8	2
Prescriptive PC Network Controls	1	
Shell	35	4
Total	145	26

The pool of participants shrank from 200 to 145 unique contacts. This was due to duplicate entries (with some individual customers tracked by measure), and some of the customers identified as past participants in the 2010 database. An additional nine respondents were identified as participants during survey screening. This small sample size made it difficult to reach the targeted number of 60 completes.

Research Results

This section groups participant, nonparticipant, and partial participant survey results, providing results for similar topic areas. For similar results from identical questions (for example, customer profiles), results are shown side-by-side for all survey groups. Where questions and topics differed (for example, nonparticipant awareness or reasons for nonparticipation), results are distinguished by customer type within each topic area.

Where respondents answered "don't know," "not applicable," or refused to answer, responses were removed from the total, unless a high number of respondents resulted in this category (for example, above 10 to 15 percent). In such cases, "don't know" and "refused" responses have been included as meaningful indicators for the question. Individual sections discuss instances where uncertainty represented a high percentage of the overall response. Tables providing more detailed survey results are located in Appendix B.

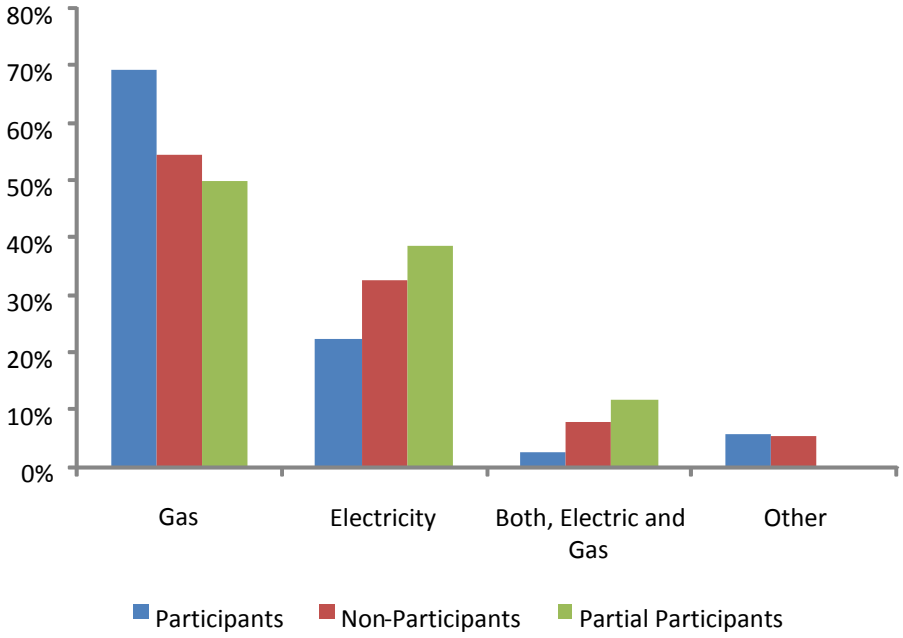
Customer Profile

Several questions across participant, nonparticipant, and partial participant surveys sought to identify typical facility characteristics, including: square footage of heated and cooled spaces; fuel types used to heat spaces; numbers of full-time employees; and ownership status. Profile (or

firmographic) questions added to the surveys helped identify differences in customer groups, indicating how these characteristics may have affected program participation.

The following short summary demonstrates similarities in facilities of the three customer groups examined. Many had facilities 5,000 square feet or less,[18] predominately owned their own facilities, and used gas to heat facilities. Figure 2-4 illustrates fuel use by customer survey group.

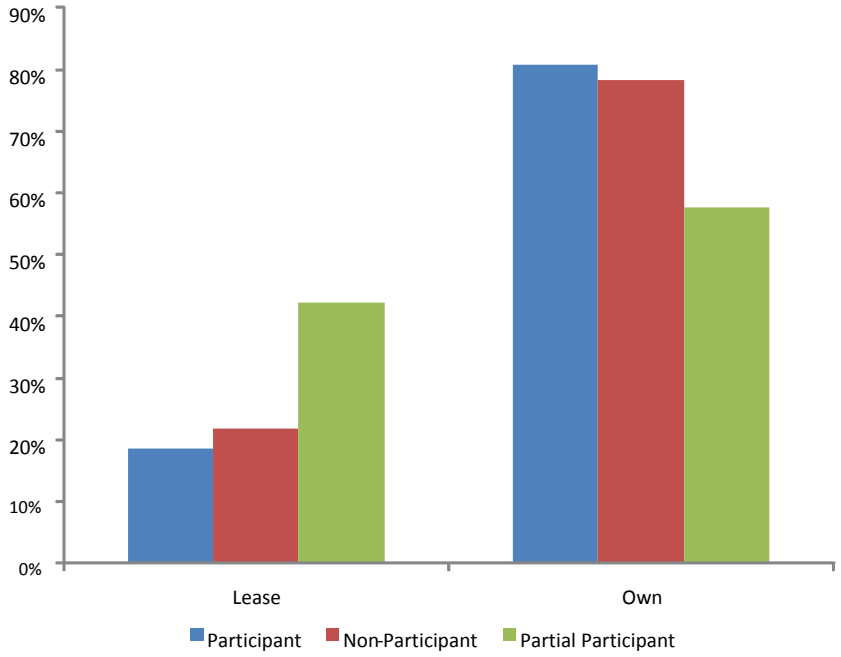
Figure 2-4. Fuel Use by Customer Group



Participants had the highest percentage of owned spaces. Figure 2-5 shows percentage ownership distributions between survey groups.

[18] Survey respondents with less than 5,000 square feet of facility space included 53 percent of participants, 44 percent of nonparticipants, and 24 percent of partial participants.

Figure 2-5. Percentage Ownership by Customer Facility



Understanding differences in customer profiles may help Avista develop more targeted marketing efforts, and could lead to additional energy-efficiency opportunities for nonresidential programs.

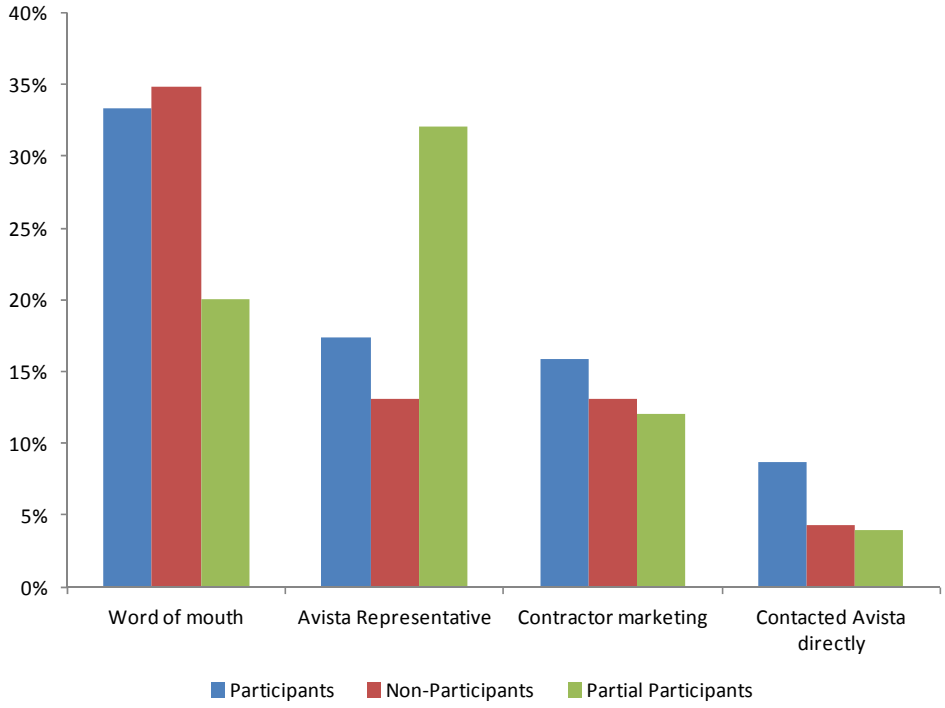
Program Awareness

Participant, nonparticipant, and partial participant surveys included questions identifying levels of customer awareness about Avista's energy-efficiency rebates, asking participants and partial participants how they learned of the programs. Nonparticipant questions included: 1) whether respondents had heard about the program; and 2) how they learned of the program. This section discusses results by customer type.

How Participants, Nonparticipants, and Partial Participants Learned of Programs

Participants and nonparticipants most frequently learned of the programs through: word-of-mouth, account executives, and contractors or vendors. However, there were slight variations between the customer groups. Results, by percentage of each customer group, are shown in Figure 2-6.

Figure 2-6. How Respondents Learned of the Programs



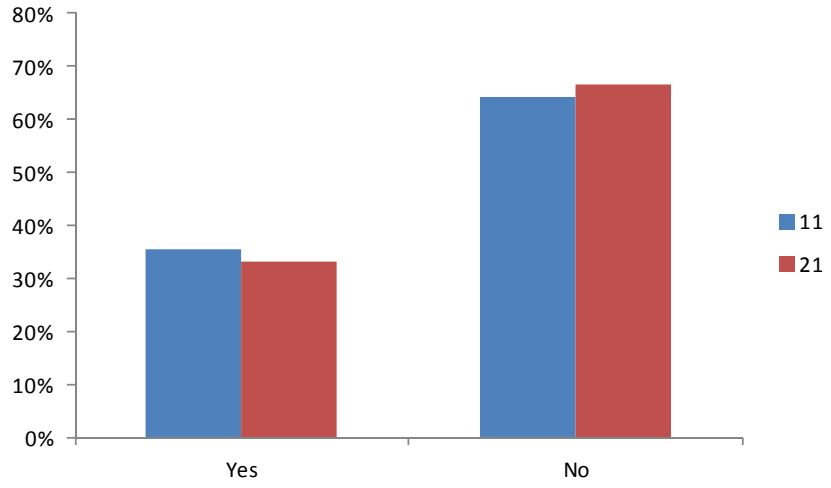
While participants and nonparticipants learned of the program primarily through word of mouth,[19] partial participants learned more frequently from Avista representatives. This is not surprising given that, according to account representatives, many partial participants resulted from customer leads.

Nonparticipant Awareness

Nonparticipant surveys revealed that the majority (66 percent) did not know of the program. The nonresidential customer's rate class helps distinguish customers by size, business type, and energy usage. As Avista assigns account executives to large customers, one might expect larger customers to be more aware of the program. To investigate this theory, the evaluation team analyzed the awareness percentage within each rate class, comparing the small nonresidential general service customers (rate class 11) to the largest general service customers (rate class 21). Figure 2-7 indicates that there is no difference in awareness by customer size.

[19] In the survey, word of mouth is differentiated to respondents as hearing from a business colleague, family, friend, or neighbor.

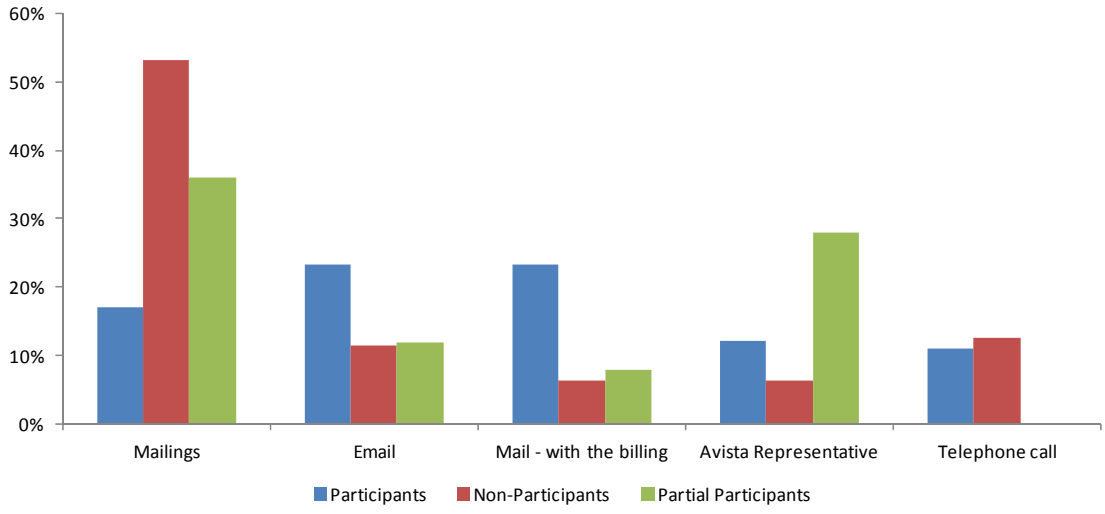
Figure 2-7. Nonparticipant Program Awareness, Comparing Schedule 11 and 21



Most Effective Ways to Inform Participants, Nonparticipants, Partial Participants of Program Opportunities

Surveys asked respondents how they wished to be informed of program opportunities. While participants reported the most effective way to reach them as e-mail, over half of nonparticipants (53 percent) and one-third of partial participants (36 percent) preferred through direct mail. Figure 2-8 illustrates respondents' preferred channel for learning about the program.

Figure 2-8. Most Effective Way to Reach Customers



Purchase Patterns and Decision Making

Surveys included questions to identify Avista customers' major influences and motivations for energy-efficiency equipment decision making and purchases. Purchase patterns and decision-making questions included:

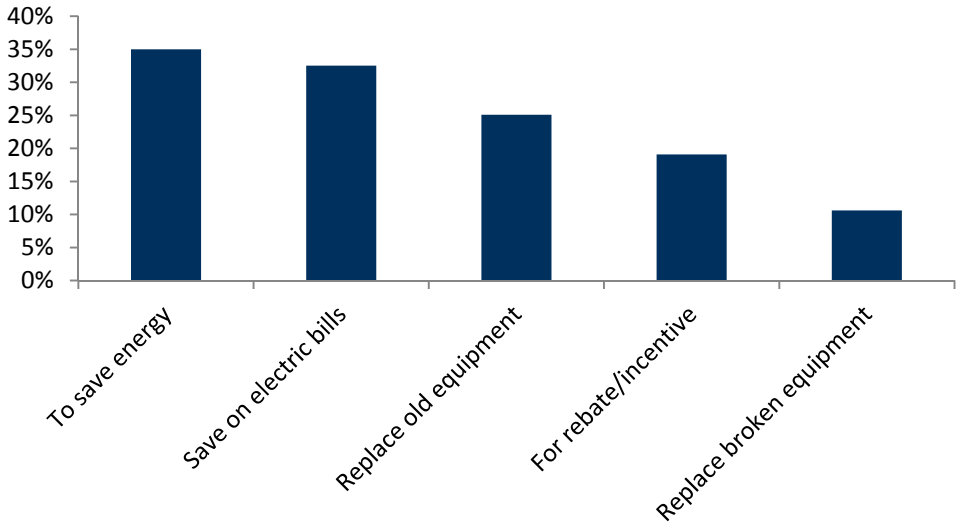
- Factors influencing installation of efficient equipment for participants;
- Reasons nonparticipants or partial participants chose not to apply for Avista's energy-efficiency rebates; and
- Whether nonparticipants or partial participants installed equipment outside of the program.

The following sections briefly summarize results for these questions.

Factors Influencing Participants' Installation of Efficient Equipment

Participants were asked what factors influenced them to install energy-efficient equipment. Figure 2-9 illustrates the top five most influential factors.

Figure 2-9. Most Influential Factors for Equipment Installation



Nonparticipant and Partial Participant Energy-Efficiency Equipment Installation Outside the Program

We asked respondents whether they installed equipment outside of the program. The majority of nonparticipants (80 percent) had not. For the 15 nonparticipants who had installed outside of the program, only eight were aware of program offerings. Half installed lighting measures.

Alternatively, more than half of partial participants (56 percent) had installed energy-efficiency equipment. For the 14 who had installed outside of the program, five installed lighting.

Respondents were asked why they had installed equipment. None attributed the installation directly to Avista's programs. Top reasons for installing energy-efficiency equipment included:

1) saving money; 2) having better quality products (or problems with previous products); and 3) replacing broken or malfunctioning units.

Reason for Nonparticipation

The survey asked nonparticipants aware of Avista's nonresidential rebate programs (26 of 80 total respondents) why they did not participate in the rebate program. Though the questions resulted in open-ended, varied responses, the majority (88 percent) listed reasons outside of Avista's control such as:

- They were not eligible.
- They leased and did not have authority to change equipment.
- They did not need new equipment.
- Their facility was reasonably efficient.
- They had just moved into the facility.

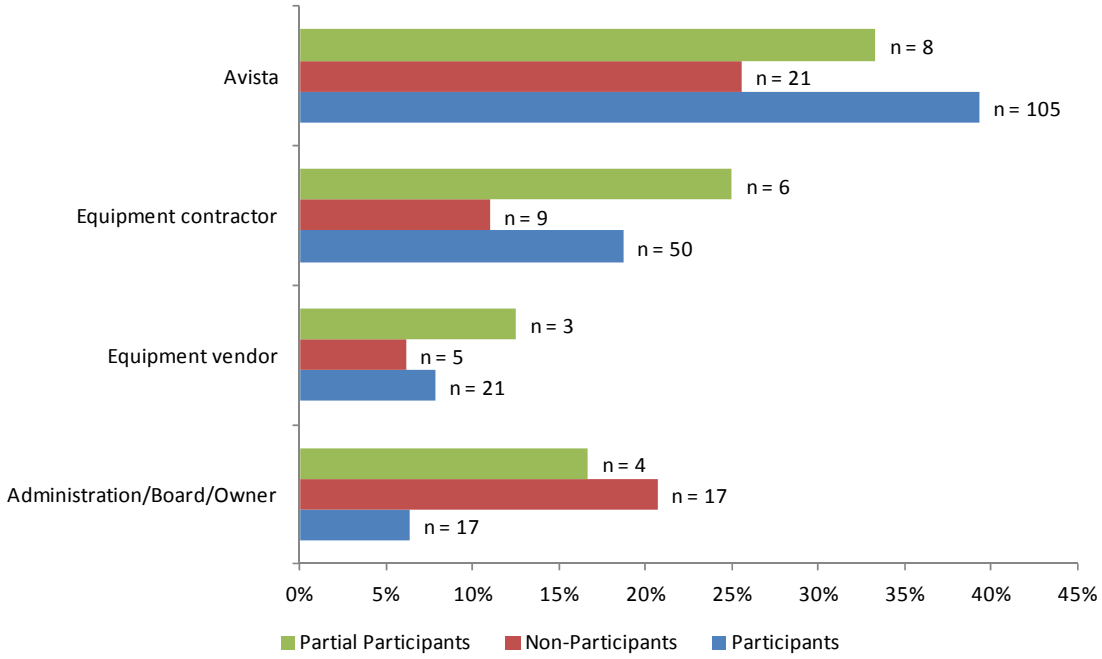
The remaining (3 respondents) said that they did not have sufficient information about the programs.

Forty percent (8 of 20 respondents) of partial participants reported installing measures through the rebate program in the past and still considering installation. Over one-third of partial participants (7 of 20 respondents) reported funding challenges, ranging from budget cuts, project costs, and the economy. One respondent said the rebate was not worth the time to fill out the paperwork. Remaining respondents did not cite reasons for nonparticipation. Future research will investigate potential spillover benefits from nonparticipant and partial participant customers.

Who Customers Talk to About Energy Efficiency

To better understand where customers learn about improving energy efficiency, the survey asked participants, nonparticipants, and partial participants who they would talk to about improving energy efficiency at their facilities. Ten percent of participants and thirteen percent of non-participants did not know. Figure 2-10 demonstrates sources mentioned most frequently. All respondents listed Avista as their first source. While participants and partial participants list equipment contractor as their second source of information, nonparticipants cite administration.

Figure 2-10. Who Customers Talk to Most About Energy Efficiency

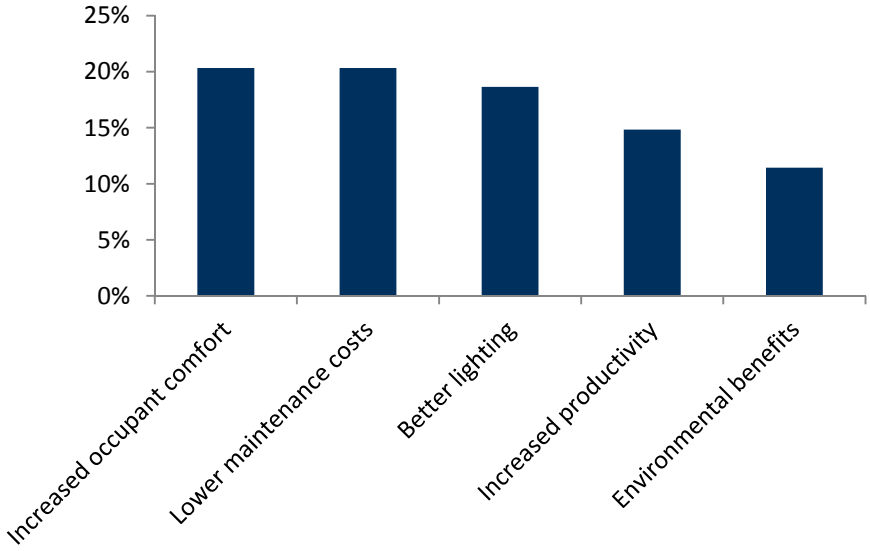


Program Barriers and Benefits

Participant Benefits

To better understand motivating factors in addition to energy savings, the survey asked program participants whether the rebated energy project provided benefits beyond energy savings. Seven percent did not know, and of the remaining 264 respondents 75 percent believed participation offered key benefits in addition to energy savings. Top non-energy benefits cited in Figure 2-11 include: increased occupant comfort, lower maintenance costs, better lighting, and increased productivity. Given the high incidence of non-energy benefits, Cadmus believes it is important to try to quantify these benefits in future TRC values.

Figure 2-11. Benefits Beyond Energy Savings

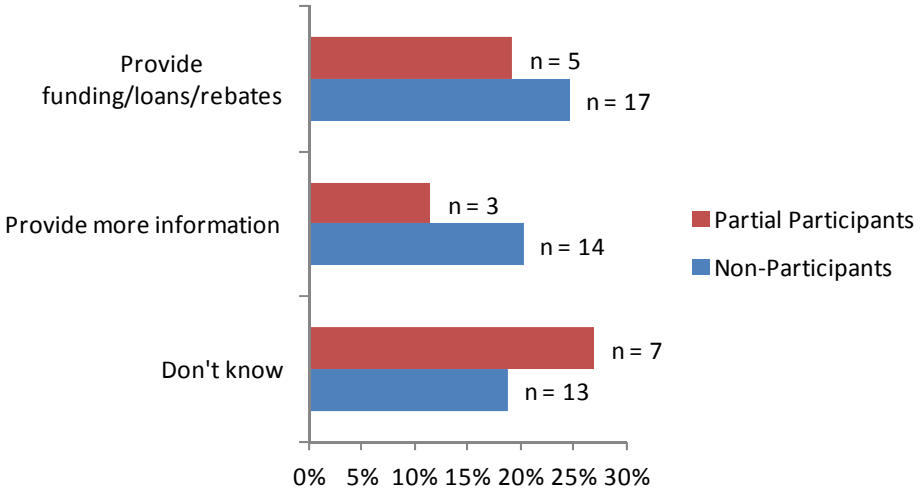


Participation Barriers

Surveys asked all customer groups what they saw as the most significant obstacles to installing energy-efficiency equipment for their company. The overwhelming majority (68 percent for participants and 69 percent for nonparticipants and partial participants) replied high first-costs as the most significant obstacle. Many did not know the most significant obstacle (10 percent of participants, and 19 percent of nonparticipants).

Surveys also asked nonparticipants and partial participants what Avista could do to help their companies overcome these obstacles. Top results are shown in Figure 2-12.

Figure 2-12. Barriers to Installing Energy Efficient Equipment



Participant Sources of Outside Funding

The participant survey included several questions about the influence of outside funding sources on their decisions to participate in the program. When asked whether their company utilized other sources of outside funding, a majority of non-lighting program participants (88 percent) reported they did not. For the 16 respondents who did use outside funding, all but one indicated outside funding sources proved very important, or somewhat important in their decisions to install measures through the program.

Questions on the survey also included specifically asking lighting participants whether their company applied for tax rebates for lighting installed, in addition to rebates received through Avista's lighting program.

Of 157 lighting respondents, surveys revealed:

- 22 percent utilized the tax rebate.
- 54 percent did not utilize a tax rebate.
- 24 percent did not know.

Of lighting participants applying for tax rebates, 91 percent indicated the tax rebate influenced their decision to install measures through the program. Of the total lighting participants, however, only about 20 percent said tax rebates were important indicating that when gone, they are likely to have little effect on the program.

Program Satisfaction

To provide insights about satisfaction with various program components, surveys asked participants (and nonparticipants or partial participants who had heard of the program) to rate the program in several areas.

For participants, topic areas included: 1) marketing materials and the Website; 2) rebate amounts and measure offerings; 3) communication; 4) contractors and vendors; 5) application and rebate processing; and 6) Avista staff. If participants had experience with external implementers, energy audits, or pre- and post-verification, they were asked to rate satisfaction with these program elements.

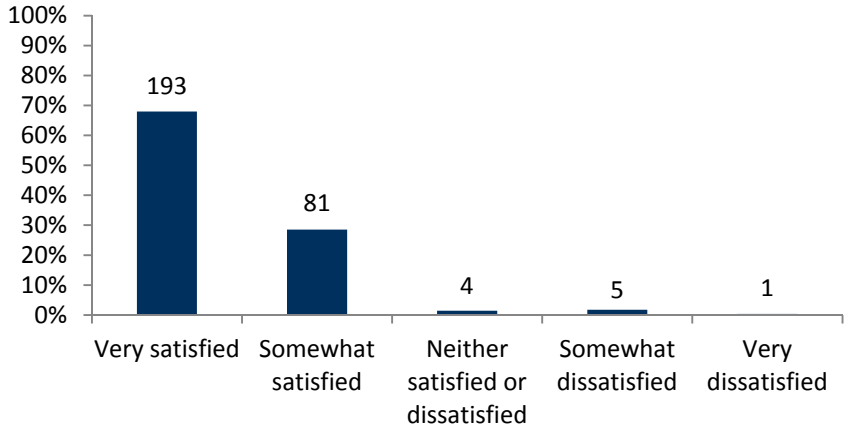
Surveys asked nonparticipant and partial participants aware of the programs to rate a smaller list of program components, focusing on impressions with marketing and outreach, program measures, contractor experiences, the application process, and Avista staff.

Survey respondents rated their satisfaction on a five-point scale, ranging from very satisfied to very dissatisfied, with a midpoint of neither satisfied or dissatisfied. If respondents responded somewhat or very dissatisfied, they were asked why they gave that rating, and what Avista could have done to improve their experience. Not applicable response types were excluded from the analysis.

Participant Program Satisfaction

Overall, participants proved very satisfied with the program and its various components. Almost all (97 percent) answered somewhat satisfied or very satisfied with the program overall. Figure 2-13 shows the number of respondents, and how they rated satisfaction with the program.

Figure 2-13. Participant Satisfaction with the Program



Program areas conveying strongest participant satisfaction were:

- Avista staff and account executives (82 percent);
- Measure installed (78 percent); and
- Speed in which rebate was received (73 percent).

Nineteen of the 20 EnergySmart Grocer program participants reported being either very or somewhat satisfied with the program. Sixteen of these respondents also reported being satisfied with implementer, PECI, while the remaining four respondents did not have enough contact with PECI to respond.

Program areas that participants reported being dissatisfied with most often included the program materials, the speed with which the rebate was received, and Avista's program offerings.

Sixteen of the 226 participants who were familiar with the program materials reported being dissatisfied with them. Common reasons for dissatisfaction with program materials included:

- Program materials seemed confusing.
- They had not received printed program materials.
- They were not sure about the different program opportunities.

Ten of 105 participants were dissatisfied with either the speed in which the rebate was process or the amount of rebate.

A very small percentage of participants (ranging from one to five percent) were dissatisfied with other program elements. These include:

- Avista's program offerings.
- Speed the rebate was received.
- Energy savings realized.
- Application forms.

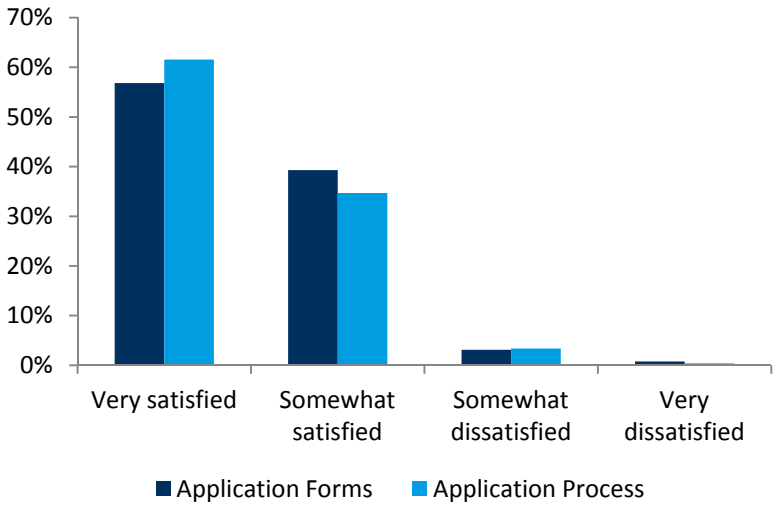
- Application process.

Participant Satisfaction with the Application Process

Overall, participants, nonparticipants, and partial participants proved very satisfied or somewhat satisfied with application forms and the application process.

Figure 2-14 shows participant satisfaction with the application process.

Figure 2-14. Participant Satisfaction with Application Process



Participant Satisfaction with Contractor or Vendor

The survey asked participants to rate their satisfaction with contractors and vendors (for those who had experienced working with them). If the customer indicated dissatisfaction, they were asked to provide reasons.

Of participants responding to this question, the majority used a contractor (171 of 215). Nearly 80 percent reported being very satisfied with the contractor service, while 15 percent reported being somewhat satisfied. Only 5 percent were somewhat dissatisfied or very dissatisfied. Three respondents expressed dissatisfaction due to poor engineering and installation.

Nonparticipant Satisfaction

Nonparticipants aware of the program and partial participants also expressed strong satisfaction with program elements they experienced. The nonparticipants and partial participants were asked to rate their satisfaction with the Website, rebate amounts offered, Avista's program offerings, program materials, application forms, application process, and program staff or account executive at Avista. As many respondents did not have experience with different program elements, surveys recorded a high number of "not applicable" responses, which were removed from analysis.

Although nonparticipants reported satisfaction, their satisfaction levels ran slightly lower for most program elements than those of participants. Nonparticipants highly ranked their satisfaction with Avista's program staff and account executives, with 83 percent of

nonparticipants surveyed very satisfied or somewhat satisfied with Avista staff. A few nonparticipants and partial participants were somewhat or very dissatisfied with program elements including rebate amount offered, program materials, and the application process.

2.3.4 Trade Ally Feedback

Over several years Avista has accumulated and maintained a mailing list of contractors and vendors providing services to Avista's residential and nonresidential energy-efficiency program customers. Avista uses this mailing list to inform trade allies of energy-efficiency program opportunities, changes, or upcoming events.

As such, the trade ally program serves as an informal network of participating contractors and vendors, who anticipate learning about Avista's energy-efficiency program incentives, benefit from the business opportunities provided by the program, and interact with Avista's energy-efficiency program participants.

Avista also sponsors periodic technical training sessions (about once a year) for lighting contractors through the Northwest Trade Ally Network (NW TAN), informing contractors and vendors of new program offerings.

Research Objectives

The trade ally research sought to gather opinions and feedback from a representative sample of trade allies, both active or inactive, for Avista's nonresidential energy-efficiency programs. Process evaluation objectives for the trade ally research included:

1. Gathering information about the contractor and vendor target market.
2. Assessing awareness, experiences, and satisfaction with program design, enrollment processes, outreach, and communication.
3. Identifying whether the program evidenced challenges, barriers, or possible improvements.

Methods

In assessing Avista's trade ally program, Cadmus:

- Reviewed promotional and training materials;
- Discussed the trade ally program's structure with Avista staff; and
- Conducted interviews with participating trade allies.

Program materials reviewed for evaluation included:

- Trade ally mailing list.
- Technical training presentations.
- Sample handout about program updates.
- Record of NW TAN training attendance.

Promotional and training materials specifically targeting Avista's trade allies contained information regarding program updates, and sought to provide technical information about new program measures.

Drawing from a mailing list of contractors and vendors dealing with Avista's prescriptive and site-specific programs, we contacted Avista's program managers by phone, seeking to highlight the key commercial program contractors and lighting vendors on the list.

The evaluation plan targeted 30 to 40 interviews over a two-year period (2010 and 2011). Due to the trade ally program's informal structure, nonparticipating trade allies could not be identified for the 2010 evaluation. Therefore, the evaluation targeted 20 interviews with participating trade allies.

Over a two week period, Cadmus contacted 64 contractors and vendors from Avista's nonresidential trade ally mailing list. Of the trade allies who were called, nine had limited to no involvement with the rebate programs, two refused interviews, and one number had been disconnected. The remaining contacts were busy, requested more than one call back, and consequently could not be reached. Ultimately, 20 trade allies were interviewed. These contractors or vendors either sold or installed equipment to business customers receiving rebates through Avista nonresidential energy-efficiency programs.

The interview guide included 35 questions, with topics ranging from program awareness, satisfaction, marketing and outreach, market barriers, and recommendations for improvements.

Research Results

Participating trade allies provided insights into many program components, highlighting strengths and weaknesses from their direct experience with the nonresidential programs. This section summarizes trade ally interviews results. The observations do not distinguish PECI and the Green Motors Practices Group, which implement Avista's EnergySmart and Green Motors programs, respectively, as external agents from the utility.

Trade Ally Profile

Trade allies provided services to a mix of customers, serving a variety of project sizes and types. More than half the respondents completed 10 or fewer projects incentivized through Avista's nonresidential programs. Only lighting market companies had greater than 20 projects incentivized by Avista in 2010.

Cadmus' effort to contact trade allies in varying fields sought to capture an overall picture of Avista's trade ally network. Table 2-4 identifies trade allies interviewed, as a portion of the commercial energy savings by program type, demonstrating that the respondents are representative of the program.

Table 2-4. Trade Ally Respondent Comparison

Trade Ally Program Type	Number of Respondents	Portion of Interview Respondents*	Portion of 2010 Portfolio Savings Represented**
Lighting	7	39%	35%
HVAC	5	28%	25%
Industrial	1	6%	6%
Motors	1	6%	3%
Shell	1	6%	10%
Rebate Coordinators	2	N/A	N/A
Energy Smart Grocer	2	11%	14%
Green Motors	1	6%	0%
Total	20	100%	93%

* Rebate Coordinators are not included as a percent of the total respondents because they promote various measure types.

**Trade allies were not contacted for the measure categories that account for the remaining 7% of the savings. Therm savings were converted to kWh for this comparison.

Awareness

Of 15 respondents remembering where they first learned of Avista's rebate programs, a majority (9 of 15) attributed their knowledge to Avista's outreach efforts. These efforts included contacts by Avista representatives or receipt of program or marketing materials. The remaining individuals (6 of 15) learned of Avista's programs through industry contacts or trade associations.

Most respondents (15 of 18) found Avista's trade ally outreach adequate. Two responded that Avista could provide better outreach to trade allies and provided these recommendations:

- Reach out to specific businesses rather than leave materials for contractors to pick up at electrical supply houses.
- Expand the range of equipment eligible for prescriptive rebates to encourage additional participation.

Program Benefits

Almost all trade allies (18 of 20) believed the programs brought value to their companies. As shown in Table 2-5, most trade allies provided multiple responses about the type of value.

Table 2-5. Value Avista's Programs Provide

Statement	Number of Responses
Increase product/service sales	14
Program helps get more business and enhances company value to customers	14
Use of program as a marketing tool	5
Helps customers save on electric bills	5
To receive portion of incentive	3
There is a market for products that save businesses energy and money	2
Development of good customer relations	2
To offer higher quality products/service	2
Total	47

This question provided insights outside the anticipated responses. In addition to increased business, one contractor suggested Avista's programs may spur additional hiring in the region by expanding anticipated project opportunities. Another contractor suggested Avista's programs may help to level the playing fields between large and small businesses, providing additional resources and Return on Investment opportunities for smaller, independent customers.

Program Satisfaction

As shown in Table 2-6, the majority of trade allies (15 of 20) working with Avista's customers expressed strong satisfaction with the nonresidential rebate programs. A few respondents (3 of 20) were somewhat satisfied, and one respondent was somewhat dissatisfied.

Table 2-6. Satisfaction with Avista's Rebate Programs

Program Satisfaction	Respondents
Very Satisfied	15
Somewhat Satisfied	3
Somewhat Dissatisfied	1
Don't Know (DK)	1
Total	20

The majority of trade allies were very satisfied with Avista's program staff and account representatives. One respondent was somewhat dissatisfied with the program and staff, citing lack of program promotion and follow-through with applications.

More than half of trade allies (13 of 20) had some experience with other utilities' similar programs. Trade allies offered the following pros and cons regarding Avista's nonresidential programs:

Pros:

- Quick turnaround times.
- Easy to work with, limited amount of paperwork, user-friendly programs.
- Less restrictive programs.

Cons:

- Limited quantity or choice of efficient technologies through the prescriptive program (for example LEDs and digital HID).
- Project approval processes can be slow.

Avista Communications with Trade Allies

Trade allies learned of the program through a variety of approaches. Particularly for site-specific projects, trade allies felt they received information directly from their Avista representatives, and, as such, maintained good working relationships with key account managers. Nineteen respondents used the following communication methods to learn about eligibility, program changes, or new measures:

- Twelve reported they contacted Avista representatives for questions or concerns about project eligibility.
- Four checked the Website before calling Avista representatives.
- The three remaining respondents expected customers to do additional research beyond that available on the customer Website or handouts.

In addition to direct contact with Avista representatives, trade allies suggested e-mail as the most effective way to notify them of program opportunities and updates. Table 2-7 lists preferred modes of contact.

Table 2-7. Most Effective Way to Notify Trade Allies of Program Offerings and Changes

Method of Contact	Number of Responses
Email	13
Mailing	5
Website	5
Seminar	1
Total	24

Generally, most respondents felt Avista conducted adequate outreach for trade allies. Many characterized outreach as "great," "user friendly," and "Avista is always available to help." However, a few respondents provided the following observations:

- Though outreach to contractors is adequate, trade allies noted sometimes not being sure who to talk about rebate opportunities. This type of information could be included in bill inserts.
- It is not enough to simply leave materials at electric supply houses and hope the information will spread.
- Avista does not promote the program as much as they should; they could do more.

When asked how communications or interactions with Avista might be improved, just over half of respondents (11 of 20) stated current communications worked fine. However, recommendations for improvements to overall communications between Avista and trade allies included the following:

- Meet personally with trade allies (for example lunch meetings) to review program materials.
- Increase program promotion to trade allies.
- Regularly send out program materials and information about types of incentives.
- Send out monthly e-mails, summarizing the rebate programs, including changes or updates.
- Work more with trade allies to help them better understand the program and assist with promotion to customers.
- Provide a specific Website targeted for trade allies.
- Streamline the lighting program: for example, break the prescriptive program into indoor and outdoor programs.
- Site-specific programs sometimes took up to six weeks, which could "kill" a project.

When asked, trade allies expressed satisfaction about materials received from Avista. However, although more than half of respondents (12 of 20) received some program materials most could not recall what they received. Three respondents suggested regular program updates would be helpful to keep trade allies informed. For those receiving program materials, all were very satisfied or somewhat satisfied with the materials.

Trade Ally Communications with Customers

A majority of trade allies (18 of 20) promoted Avista programs to customers, with most (16 of 20) actively promoting materials often or always. Two respondents only promoted rebates occasionally, depending on customer project types. Two contractors did not promote Avista programs, as one left EnergySmart outreach efforts to PECI field staff and the other reasoned Avista responded slowly to applications.

Trade allies promoted the program through the following means:

- Over half (11 of 20) promoted the program through word of mouth.
- Nearly one-third (6 of 20) promoted the program by including Avista's program incentives in customer cost proposals.
- One trade ally reached out directly to commercial customers that could potentially qualify for Avista rebates.

When asked what types of energy-efficiency program benefits trade allies promoted to customers, respondents offered the following, top three responses:

- More than half (13 of 20) cited reduced energy costs.
- Nearly half (9 of 20) promoted the incentives and ROI.
- Almost one-third (6 of 20) promoted reduced energy use.

Trade allies answered questions about perceived customer awareness and types of information typically requested. Per trade allies, most customers (18 of 20) were very aware or somewhat aware that Avista offered rebate programs, though some trade allies (4 of 20) noted customers were unaware of rebate details or how to access them. One respondent commented that smaller

businesses particularly did not know about Avista programs. Typical of information most requested by customers addressed incentive levels, technology, and participation requirements. Appendix C includes survey response details about customer awareness and typical types of information customers requested.

Barriers to Program Participation

When asked to identify perceived obstacles Avista customers face when installing energy-efficiency equipment, trade allies most often cited the availability of capital (13 of 20). Appendix C includes detailed responses about types of market barriers trade allies experienced.

When asked how Avista could assist trade allies and customers in overcoming obstacles to financing energy-efficiency projects, trade allies recommended:

- Raising rebates;
- Expanding prescriptive program to include certain commonly accepted site-specific technologies;
- Offering up-front incentives to decrease initial project costs;
- Providing a newsletter to customers; and
- Providing incentives to contractors promoting the program more and having more contact with customers.

Most trade allies (15 of 20) felt, although significant market barriers exist, Avista rebates proved a very important element in customers' decision-making processes when considering energy-efficient technologies. Over one-third (8 of 20) asserted most of their projects would not have been completed without Avista's nonresidential program incentives. Appendix C provides detailed responses about the importance of Avista rebates.

When asked if they had recommendations for technologies to be included in Avista's rebate programs, nearly half of trade ally respondents provided recommendations. Table 2-8 lists some additional technologies that trade allies would like Avista to consider.

Table 2-8. Energy Efficiency Equipment Avista Should Consider Offering Rebates for

Energy Efficient Equipment	Number of Responses
Digital HID	2
LEDs	4
Green Pump Repairs	1
Air Conditioning	1
Tankless Water Heaters	1
Total	9

2.3.5 Application Processing and Data Tracking

To enroll in nonresidential programs, customers must fill out application forms or contractual agreements to apply for prescriptive and site-specific rebates. The number and type of required application forms and documents vary, depending on the program type, eligibility requirements,

and types of measure installed. This section describes forms used for enrollment and tracking procedures.

Prescriptive Forms

For projects eligible for a prescriptive rebate, customers complete and submit one application for each measure type, following the project's completion. Avista provides measure-specific rebate forms on its Website (downloadable as PDFs), each providing instructions and specifying eligibility requirements, payment amounts, payment procedures, and terms and conditions. Some prescriptive measures requiring extra verification outline the supplementary materials.

Typically, except for prescriptive projects requiring additional verification, enrollment forms provide Avista customers with the information needed to successfully complete a program-qualifying project. Upon project completion, customers submit rebate applications with necessary materials, outlined in the forms.

Site-Specific Forms

In contrast to prescriptive program requirements, customers receive site-specific forms once contact has occurred between an account executive and a customer to determine eligibility for program rebates before project completion. Site-specific projects are usually more complex and require supplemental forms, such as calculation worksheets and customer contracts. Avista's business home Website provides basic, site-specific program information to customers, including incentives and eligibility requirements. Customers must contact an account executive before engaging in program-related procedures.

Avista determines site-specific project eligibility after a customer submits a preliminary site-specific form. Once the customer submits the form, Avista uses measure-corresponding incentive calculators to determine eligibility, energy savings, and rebate amounts. If both parties agree to move forward, Avista signs contracts with the customer, delineating rebate agreements. After project completion, a customer submits a completed site-specific form with proof of installation. This documentation varies by project.

Participant Tracking Databases

Avista maintains two primary databases for tracking participants and projects: Sales Logix tracks program participant activity; and Tracker follows site-specific projects through the pipeline, from eligibility, installation, and inspection. Program staff use Sales Logix to enter customer participant information, following engagement in the enrollment process.

Both account executives and program engineers use Tracker to follow site-specific projects through its various installation stages, from prequalification to post-installation inspection. As a site-specific projects move through the pipeline, Tracker facilitates communication between account executives and engineers.

Research Objectives

During initial kick-off meetings and follow-up interviews, Avista's implementation team and account managers indicated they wished to learn more about the ease of enrollment processes from the program participant perspective. Therefore, the application form and database review sought to achieve the following objectives:

- Assess the ease of use of program enrollment forms and data processing;
- Assess completeness, accuracy, and consistency of forms and the data tracking database; and
- Assess the ability to provide useful information for tracking and evaluation.

Methods

Methods used to assess the application processing and data tracking components for the nonresidential energy-efficiency programs included: review of application forms and data tracking systems; and collection of feedback from staff interviews, participant and nonparticipant surveys, and interviews with trade allies.

To better understand and assess the enrollment forms and data tracking procedures, the evaluation team reviewed the following materials:

- Prescriptive rebate applications;
- Site-specific contracts and worksheets;
- Database participant extracts;
- Screenshots of databases and terminology; and
- Samples of monthly payment records.

Research Results

Staff Interviews

During interviews with Avista staff, program managers and account executives requested examinations into applications and enrollment processes, to identify whether customers or contractors experienced challenges with the forms. Several staff believed, based on customer feedback, the site-specific forms, in particular, could be streamlined. For the 2010 evaluation, Cadmus included satisfaction question options to identify specific issues with the forms. Results indicated some participants and trade allies did experience challenges that are discussed below.

Participant Surveys

Participants did experience a few challenges with the application form and application process. These include:

- The information was hard to find online, or difficult to access.
- The application process seemed confusing and difficult to understand.
- The forms were too long.
- The application process was not easy and could be simplified.
- It was hard to access the forms and difficult to understand.

Trade Ally Interviews

Trade allies reported they typically helped customers fill out applications. Most (16 of 20) completed the application paperwork, leaving customers to complete personal information and submit applications to Avista. When asked whether they encountered difficulty with completing

forms, three respondents reported some difficulty with site-specific related paperwork. In these instances, however, Avista representatives provided assistance, solving outstanding issues efficiently.

One trade ally in particular reported dissatisfaction with Avista's application process, after experiencing a great deal of difficulty in submitting an application for LED lighting. He said Avista lost the paperwork on multiple occasions and was nonresponsive to the trade ally's concerns.

Trade allies did not report customer complaints or challenges with the application process, though, when asked for recommendations to enhance the application process, three interviewees provided the following observations:

- How the prescriptive lighting worksheet requested information about fixtures replaced proved to be confusing. The trade ally suggested accounting for total wattages replaced rather than numbers of fixtures and bulbs replaced, as fixtures have varying numbers of bulbs. Prescriptive rebate forms did not always clearly designate documentation needed. Avista could provide standards or samples of material requested.
- As some commonly installed measures had to undergo the site-specific process, filling out the site-specific paperwork could be cumbersome, as had to be done by hand. Providing forms that could be submitted online could expedite the application process.
- Some difficulty emerged in providing information necessary through the site-specific program. Open-ended information was often requested, making it difficult to determine necessary materials. Additional instructions could help clarify documentation needed for the application process.

Database and Evaluability Assessment Checklist

Cadmus has developed a simple approach to determine how well participant datasets can be evaluated based on information that is available and can be collected. Based on a review of evaluation assessments (from our internal database), we have identified criteria for data tracking and evaluation. To document the evaluability of Avista's application processing and data tracking, Cadmus determined how customer and project information was collected, stored, and communicated through Avista's various databases.

The review sought to ensure necessary information existed in the forms and databases to: enable accurate tracking of participant projects; enable quality control; and ensure necessary information has been collected from program participants and projects. We compared data fields in prescriptive and site-specific rebate forms with data found in Sales Logix screen shots and Avista data extracts.

The table below was used as a checklist to identify information found in program rebate and application forms, Sales Logix screen shots, and database extracts. The first column lists kinds of data typically needed to enable a comprehensive evaluation. The second, third, and fourth columns indicate whether the data field was requested in the application forms, and whether data appeared to be consistently collected in the database extracts received throughout the evaluation. Inconsistencies are found in data tracking when the first and second columns do not match.

Table 2-9. Prescriptive and Site-Specific Data Tracking

Data for Tracking and Evaluation		Sales Logix	Field in Extract Database	Collected in Prescriptive Forms	Collected in Site Specific Forms
Customer Acct Number		No	Yes	Yes	Yes
App Number		Yes	Yes	No	Yes
Tracker Number		Yes	No	N/A	N/A
Business Name		Yes	Yes	Yes	Yes
Business Mailing Address		No	No	Yes	Yes
Project Site Address		No	No	Yes	Yes
Contact Name (first, last)		No	Yes	Yes	Yes
Phone		No	Yes	Yes	Yes
Email Address (Fax on some)		No	Yes	Yes	No
Fuel Type		Yes	Yes	Yes	When applicable
Program Type		Yes	Yes	Rebate Forms are specific for each measure	Rebate Forms are specific for measures, Asks for description
Project Type		Yes	Yes		
Measure Type		Yes	Yes		
Measure Description		Yes	No		
Measures Quantity Installed		No	No	Yes	Yes
Equipment Details (Manufacturer, model…)		No	No	Yes	Yes
Type of Facility		No	No	When applicable	When applicable
Total square feet affected by measure		No	No	When applicable	When applicable
Occupancy		No	No	When applicable	When applicable
Site verified/inspected		Yes	No	No	No
Account Executive		Yes	Yes	No	No
Tech Lead		Yes	Yes	N/A	N/A
kWh/Therm		Yes	Yes	No	No
Incentive Electric/Gas		Yes	Yes	No	No
Measure Cost		No	Yes	Yes	Yes
Incentive Cost		Yes	Yes	Yes	No
CE Cost		Yes	Yes	N/A	N/A
Phase		Yes	Yes	N/A	N/A
Measure Life		Yes	Yes	N/A	N/A
Program Participation Year		No	No	No	No
Customer Signature		No	No	Yes	Yes
Installation/Completion Date		Yes	No	Yes	Yes
Site-Specific Information only	Rate Schedule	No	Yes		Yes
	Tier	No	No		Yes
	Existing Equip Details	No	No		Yes
	Contractor Name	No	No		Yes
	Contractor Contact	No	No		Yes
	Taxpayer ID No.	No	No		Yes
	Contract No.	Yes	No		Yes

From the review of application forms and databases, interviews with staff, and survey results, the evaluation team observed the following areas for improvements:

- The evaluability checklist highlights a few missing fields. These included business address, program type, measure descriptions, and measure quantity. Inability to identify specificity of program and measure detail created challenges in identifying unique participants for survey sampling.

- Participant and tracking databases exhibit a lack of integration. Though Avista is moving toward integrating these databases over the next few years, program staff currently use different databases to track participant and project information. Use of separate databases may result in increased chance of error during data transfer and reporting.
- Some inconsistencies were found in the participant data tracking sheets including merged cells and duplicate entries.

2.3.6 Marketing and Outreach

In 2010, Avista's marketing and outreach efforts for nonresidential customers focused on program promotion through Avista's business Website,[20] account executives, marketing flyers, and a bimonthly E-newsletter, e-mailed to customers who sign up online. In addition, the Every Little Bit residential program campaign provided a platform to promote the Efficiency Avenue Website,[21] a virtual business park, highlighting energy-efficiency rebate opportunities for business customers, and organized by commercial and industrial sectors.

Research Objectives

Research objectives for the marketing and outreach component included gathering information about how programs are promoted to nonresidential customers. Research included the following objectives:

- Identifying marketing strategies.
- Identifying how accessible customers and trade allies found the program.
- Identifying marketing and outreach efforts for leveraging the existing supply chain.
- Determining marketing strategy's ability to target commercial and industrial audiences.
- Gaining insights into marketing efforts contributed to removing participation barriers and facilitating customer communication.

Methods

For the evaluation, we reviewed marketing materials, Websites, the E-newsletter, and other outreach communications. The evaluation team conducted interviews with program staff, account executives, and the marketing team. In addition, we gathered feedback through interviews with trade allies, and surveys with program participants and nonparticipants.

Reviewed marketing and media materials included:

- Program marketing handouts.
- Business customer Websites.
- Efficiency Avenue Website.

[20] Avista's business home Website: http://www.avistautilities.com/business/pages/default.aspx;
[21] Efficiency Avenue: http://www.everylittlebit.com/EfficiencyAvenue.aspx

- Energy Solutions newsletter.
- Questline Electronic Business Services Control Console (screen shot).

Research Results

Marketing Strategy and Research

Though nonresidential programs had no dedicated marketing budget in 2010, Avista dedicated a marketing budget and resources in 2011. As a result, Avista's marketing team, in collaboration with nonresidential program managers and account executives, are developing a broad-reaching nonresidential marketing campaign, which will profile a series of customers through case studies, and will be launched at the customer Power Breakfast in October. The 2011 process evaluation will explore the marketing campaign in greater detail.

Marketing research has not been explicitly conducted to identify the effectiveness of the nonresidential program marketing and outreach efforts. However, the marketing department reports customer retention as high, tracked through the Website and participation in the E newsletter. The marketing team reports 130 leads have been tracked through the Efficiency Avenue Website.

Program Marketing Handouts

The marketing and outreach review examined promotional flyers used for nonresidential energy-efficiency programs in 2010 and 2011. During events, Avista's key account executives utilize these flyers for outreach. The 2010 promotional handout used was a simple, two-page flyer with program descriptions. In 2011, the flyer expanded to include more information about Avista's commercial program services and benefits. The flyer includes the business home Website address.

Business Customer Website

Avista's nonresidential energy efficiency program Website provides extensive resources, dedicated for business customers and featuring Webpages, links to informational resources, and key contact information, including information about the following:

- Account executives contact information, by region;
- Energy-efficiency incentives, by state;
- Prescriptive program application forms;
- Site-specific program information;
- Project case studies;
- Energy pricing, energy conservation tips, and business and builder services;
- Energy Solutions newsletter sign-up and login; and
- Links to Every Little Bit residential Website and Efficiency Avenue.

Efficiency Avenue Website

Interviews with the marketing team revealed Efficiency Avenue was launched in 2009, providing an interactive online tool for businesses. At Efficiency Avenue—a feature of the Every Little Bit residential program campaign Website—customers can tour an imaginary business park, and click on pop outs demonstrating energy-efficiency opportunities and rebates by sector (for example, mixed use, agricultural, industrial, warehouses, and schools). Although Efficiency Avenue's features are not prominently placed anywhere on the main business Website, links are placed on the Every Little Bit Website and on a secondary Webpage containing information about energy-efficiency incentives.

Efficiency Avenue enables Avista to market by segment, directing customers to energy-efficiency projects and rebates available for their business types. The site provides relevant information about rebates, case studies, and prescriptive program application forms.

Avista's account executives reported Efficiency Avenue as an additional resource, reducing some outreach time commitments by answering basic customer program questions, and providing a way to leverage marketing dollars.

E Newsletter

According to the marketing team, Energy Solutions, an E-newsletter, reaches business customers twice each month. Many customers sign up for the Energy Solutions newsletter through the business home Website of Efficiency Avenue. The E newsletter provides a forum for answering typical business questions, features promotions, and informs customers about program changes and upcoming events.

Questline Electronic Business Services administers the E-newsletter. Promotional buttons and Website links inserted within the newsletter articles direct customers to typical business queries. Questline provides a Control Console report, incorporating metrics that can be viewed by Avista staff. Although we could not view the annual metrics, we understand, through a screenshot, these metrics include customers' subscriber status, activity, retention, and interests.

2.3.7 Program QA/QC and Verification

Avista's verification and inspection procedures differ by program type. Prescriptive programs have no specific requirements for pre- or post-inspections. Rather, inspections are conducted based on the project's perceived risk. In contrast, site-specific projects require preapproval and inspection. Most site-specific and large projects require installation verification. Account executives and the engineering team determine inspection requirements, based on project information identified and flagged in the project database.

Tracker, the project database, tracks projects through the pipeline, while ensuring quality assurance (QA) and quality control (QC) of the data collection, project, and savings estimations. Specifically, Tracker provides a standard procedure for project review, inspection, approval, and reporting.

Research Objectives

Reviewing Avista's QA and verification procedures sought to determine the extent and documentation of systems used to track and verify program savings. Research objectives included:

- Identifying and documenting procedures for determining program eligibility.
- Identifying and documenting procedures for pre- and post-project inspections.
- Identifying and documenting procedures or systems for QA and QC of data collection, data entry, and rebate processing.

Methods

For this research, the evaluation team interviewed Avista program staff and engineers, and reviewed program documentation. In addition to the 2011 DSM Business Plans, we reviewed specific materials outlining QA and verification procedures, including:

- Energy Solutions DSM Portfolio Process Analysis and other reports;[22]
- E-mail communications from staff, discussing verification requirements and procedures;
- Tracker screen shots and reports; and
- Installation documentation template and report samples.

Materials Review and Interviews with Avista Staff

Cadmus reviewed a third-party evaluation report of Avista's data tracking and rebate processing, conducted by Most Adams last year.[23] The evaluation report's recommendations focused on QA of data tracking and rebate payments.

According to interviews with Avista program staff and engineers, the Moss Adams' recommendations resulted in additional, documented policies and procedures, designed to strengthen the consistency of project approval, reporting, and communications through Tracker.

Avista's QA and verification procedures for data tracking and entering projects for site-specific programs or large prescriptive programs are outlined for the Dual Fuel Incentive Calculator (DFIC) and overall estimation of project savings. The *Energy Solutions DSM Portfolio Process Analysis,* compiled by Avista's engineering and auditing teams, outlines policies. Procedures include:

- Documented communication between Avista staff to inform project updates and issues.
- A task-approval request function requiring more than one engineer to review a project.
- A notification system, noting and avoiding conflict of interest issues.
- A reporting guideline ensuring inclusion of necessary information in reports.

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[22] Evaluation Report Quality Assurance Process Analysis (contained in the 2010 Evaluation, Measurement, and Verification Highlights)

[23] Data Management Review for Demand Side Management Programs, May 2011. Avista Utilities and Moss Adams.

Cadmus reviewed an installation verification template and sample reports to assess the inspection protocol for site-specific projects. Although the inspection template was a simple, one-page outline of procedures (without date of version control), it was apparent from sample reports that Avista follows a comprehensive approach to project inspections. The comprehensive reports included project photos, locations, times of inspection, and findings.

Avista staff indicated procedures for prescriptive programs pre- and post-inspection have not been documented. Further, prescriptive rebate forms provide notifications to customers that inspections may be randomly conducted. Prescriptive verification procedures focus on the efficiency ratings of technologies, spot checks, and risk levels, determined by the project size, type, and information provided by the customer.

2.4 Conclusions and Recommendations

2.4.1 Program Documentation

Conclusions

Avista programs are working well and meeting or exceeding reported energy savings goals in 2010. Highly qualified, dedicated, and long-term staff ensure quality control and efficient operations of the many prescriptive and site-specific programs. Although program overview, goals, and implementation plans are located in the 2011 DSM Business Plan, documented operational procedures were not easily accessible. Therefore, it is difficult to link the EM&V policies found in the high level planning documents to the program's operational management.

Recommendations

To ensure that long term staff memory becomes institutional memory, Cadmus recommends aggregating operational procedures and implementation plans into a comprehensive program manual or handbook. Centralizing operational documentation would also improve program implementation.

To provide Avista with specific recommendations about material that could be contained in a comprehensive program manual, Cadmus consulted our database of utility evaluations and best practice research of commercial and industrial programs. Best practice research and reports are available at the Best Practices Benchmarking for Energy Efficiency Programs Website.[24] The best practice Website is a comprehensive study, publicly available online, identifying excellent practices among nationally-recognized, energy-efficiency programs throughout the United

[24] Best Practices Benchmarking for Energy Efficiency Programs; http://www.eebestpractices.com/index.asp
Study managed by Pacific Gas and Electric Company, under the auspices of the California Public Utility Commission and in association with the California Energy Commission, San Diego Gas and Electric, Southern California Edison, and Southern California Gas Company.
Nonresidential Large Comprehensive Incentive Programs Best Practices Report (custom programs)
http://www.eebestpractices.com/Summary.asp?BPProgID=NR5
http://www.eebestpractices.com/pdf/BPSummaryTable_NR5.PDF
Nonresidential Lighting and HVAC Best Practices Reports
http://www.eebestpractices.com/Summary.asp?BPProgID=NR1
http://www.eebestpractices.com/pdf/BPSummaryTable_NR2.PDF

States. Best practices are based on detailed analyses of the design, marketing, operation, and implementation of programs identified as exemplary.

Through assessment of the best practice nonresidential program research, Cadmus identified some key program areas to be considered for inclusion in a comprehensive program manual. These include (but are not limited to): program overview, goals, logic models, process flowcharts, staff roles and responsibilities, roles of program partners (e.g. trade allies and implementation partners), enrollment and data collection procedures, marketing plans and strategies, specified target markets, QA procedures, and verification protocols.

2.4.2 Customer Feedback

Conclusions

Overall, customers proved very satisfied with all program elements. The majority of survey respondents did not encounter program participation challenges. Survey respondents, however, did suggest ways to improve program delivery. Customers felt there was a lack of information about program offerings.

Recommendations

Given research results gathered through the participant, nonparticipant, and partial participant surveys, the evaluation team offers the following recommendations:

- Enhance outreach and communication efforts for participants, nonparticipants, and partial participants, including:
- Continue program outreach through account executives, mailings, bill inserts, and e-mail updates.
- Develop additional printed program materials to educate customers about program opportunities.
- Consider regularly scheduled online Webinars to assist customers with questions about program incentives, eligibility, and application processing.

2.4.3 Trade Ally Feedback

Conclusions

Avista's informal network of trade allies works well, through updates to the mailing list, word of mouth, and strong communications between contractors and Avista's customers, program staff, and account representatives. Trade allies express strong satisfaction with program components, though they requested additional program guidance and greater opportunities for direct communication with Avista.

Most trade allies actively promote Avista's nonresidential rebate programs due to the enhanced business opportunities it offers. Interview results indicate that nearly 16 percent of participants found out about the program through contractor outreach efforts, demonstrating that trade allies are working on behalf of Avista's interests. Although the mailing list serves as an informal network for nonresidential programs, limited information has been documented about trade

allies, the markets they serve, and their areas of specialization and qualifications. Consequently, Avista may be missing opportunities to leverage this efficient use of resources.

Recommendations

Based on evaluation program observations and research gathered through trade ally interviews, Cadmus recommends a more formalized network that would incorporate best practices for commercial energy efficiency programs. Best practices for trade ally programs might include regular training and education, online registration, and easily accessible program guidance:[25]

For improvements to the trade ally program, Cadmus recommends the following:

- Provide regular trade ally communications through targeted outreach efforts, such as a Website, monthly e-mails, or a newsletter. A Website dedicated for trade allies could enable registration, thereby providing a method for compiling (and updating) trade ally profiles and contact information.
- Consider providing additional promotional materials that would highlight various program technologies available to customers. This would not require that Avista endorse any one contractor.
- Explore ways to leverage strong working relationships forged between customers and contractors within the community by sponsoring additional program working sessions, luncheons, or Webinars that provide guidance for trade ally outreach efforts.

2.4.4 Application Processing and Data Tracking

Conclusions

Overall, application forms and program databases work well for tracking nonresidential participants and projects. Prescriptive forms include instructions, terms and conditions, and other key information to guide participants through the rebate process. Site-specific forms, by nature, are more complex, and require more information from participants. Some customers and trade allies expressed confusion about prescriptive program requirements listed on the forms, and requested more help in filling out the site-specific forms and worksheets.

In addition, while developing survey samples, the evaluation team found additional information could be collected to enhance customer participant tracking. The evaluability assessment checklist revealed several fields in the database that could be more consistently tracked.

Recommendations

Application Forms

- Consider offering site-specific application forms online. Although it would be ideal to enable submission of forms online, simply making the forms downloadable and mail-in would

[25] Best Practices Benchmarking for Energy Efficiency Programs; http://www.eebestpractices.com/index.asp Study managed by Pacific Gas and Electric Company, under the auspices of the California Public Utility Commission and in association with the California Energy Commission, San Diego Gas and Electric, Southern California Edison, and Southern California Gas Company.

provide a good first step. In addition, consider including guidelines for completing site-specific forms.

- Consider gathering additional feedback from customers and trade allies about how site-specific form enrollment and processing could be streamlined.

Data Tracking

- Gathering more detail about program and project measures in the participant database would enable a better understanding of the kinds of projects done in the past (by different types of customers and end-uses). Additional information could be used to market specific types of projects to other customers who have the same end-use equipment.
- To improve sampling precision levels for customer surveys, consider ways to improve tracking of nonresidential customers and program participants. For example:
    - Tracking additional fields (or more consistent entry) in the database including:
        - Program type (e.g., site-specific and prescriptive).
        - Measure descriptions.
        - Measure quantities.
    - Follow up and track partial participants' interest in the program.
- Continue plans for linking participant and tracking databases. Integrating databases could reduce potential errors, due to data transfers and improve efficiency of participant tracking information.

2.4.5 Marketing and Outreach

Conclusions

Although a marketing budget had not been allocated before 2011, Avista's nonresidential marketing and outreach strategy has worked well, and includes the Website, customer E- newsletter, and outreach efforts of the key account managers. However, lack of knowledge about the effectiveness of nonresidential marketing approaches could result in reduced understanding of target markets for meeting future program goal requirements.

Recommendations

Consider the following improvements to future marketing strategies:

- Ensure allocation in future marketing budgets dedicated for nonresidential program marketing and outreach efforts.
- Consider development of additional marketing materials targeted specifically for trade ally outreach to customers. These materials would enable Avista staff to leverage existing trade ally relationships in the community. Make them available at TA website for printing
- Consider conducting marketing surveys, and targeted marketing research that would gather additional information about customer facilities, technology end-uses, and other targeted research to identify:

- Effectiveness of existing outreach efforts and future marketing campaigns.
- Effectiveness of outreach through existing partners and supply chain channels.

2.4.6 Quality Assurance and Verification

Conclusions

Procedures for QA of data tracking, savings estimation, project approval, and inspection have been well-documented for site-specific projects. Documents indicate Avista follows a standardized protocol for inspection of site-specific projects, in particular. Though Avista uses a risk-based approach to pre- and post-inspections for prescriptive programs, guidelines or standardized procedures for this approach have not been documented.

Recommendations

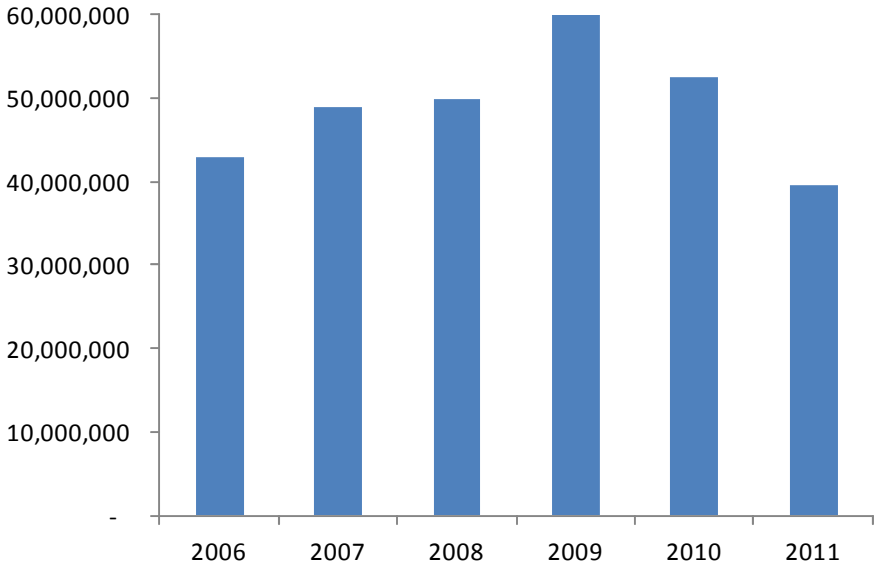
Consider developing a verification protocol to document pre- and post-inspection procedures for prescriptive programs, and ensure data tracking for project installation. In addition, protocols should highlight any differences in verification procedures used for prescriptive and site-specific programs.

2.4.7 Future Research Areas

Research methods for the 2010 process evaluation focused on analyzing and documenting how the nonresidential programs work in practice, while identifying important influences on its operation and achievements. As a first year process evaluation, the analyses established a framework for evaluation efforts, while gathering a wide net of information and potential areas for improvement about program planning, design, organizational structures, and implementation effectiveness.

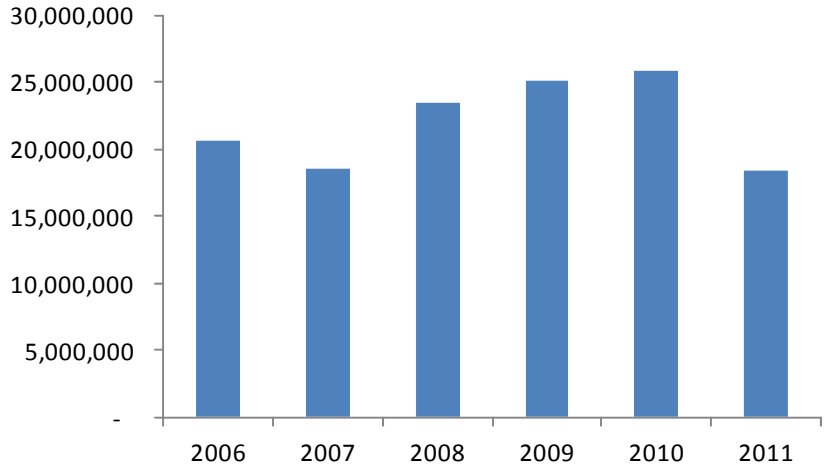
In 2011 and subsequent year process evaluations, Avista may consider delving deeper into program elements that may require more comprehensive research. As a starting point, Cadmus looked at the long term savings horizon in the context of historical trends for Avista's nonresidential programs. Figure 2-15 illustrates historical savings trends between 2006 and 2011. Overall program savings peaks in 2009 and 2010, and declines in 2011.

Figure 2-15. Total Sector kWh Savings Trends



Lighting customers surveyed during the 2010 process evaluation indicated that about 20 percent of participants relied on tax rebates for purchase decisions. However, discontinuation of ARRA funding in 2011 is expected to contribute to a decline in lighting program participation. Figure 2-16 demonstrates a peak in lighting participation for years 2009 and 2010 and a dip in 2011, supporting survey results. Research indicates that Avista may consider additional marketing strategies to negate this anticipated drop in program participation.

Figure 2-16. Total Sector kWh Trends for Lighting



Some additional examples of focused research efforts in 2011 may include:

- Conducting targeted marketing research of largest 100 customers with hourly demand data. Use such data to analyze demand patterns, identify opportunities, and provide account executives with needed intelligence to market energy efficiency measures.

- Examining historical trends for nonresidential program technology end-uses in comparison with future savings targets and technology potential.
- Analyzing market penetration by rate class, commercial and industrial sector, and technology types.
- Examining individual program processes (selected and prioritized by Avista's program managers) for potential improvements to efficiency and cost effectiveness.
- Conducting more in-depth research about nonparticipant spillover resulting from installation of energy-efficiency equipment outside of the program.
- Investigating potential improvements to TRC valuation resulting from nonresidential program non-energy benefits.

3 2010 Low-Income Process Report

3.1 Executive Summary

3.1.1 Program Overview

Avista's Washington and Idaho low-income weatherization program seeks to lower its customers' energy consumption and utility bills. At no cost to income-qualified customers, the program provides a complete home energy audit, installation of energy-efficient upgrades and health and safety measures, and energy-saving education.

3.1.2 Evaluation Activities and Objectives

Cadmus' process evaluation included two primary data collection activities: stakeholder interviews and participant surveys. We performed a telephone survey of 123 program participants, capturing their feedback concerning:

- Satisfaction with the program;
- Education provided on ways to save energy; and
- Participant household and behavioral characteristics.

We also performed in-depth interviews with utility staff, community action program (CAP) agency managers, and state-level administrators. These interviews elicited insights on program design and delivery, and identify bottlenecks, barriers to effective implementation, best practices, and opportunities for improvements.

3.1.3 Process Conclusions and Recommendations

Program Delivery

Conclusions

- Avista's low-income weatherization program has been successfully implemented, without significant delivery barriers.
- Avista homes weatherized by agencies without Avista funding may represent opportunities to claim "non-programmatic" savings.
- Periodic review of agency funding disbursements may allow for midstream reallocations.

Recommendation

- Work with agencies to track non-programmatic savings.

Communication

Conclusion

- Opportunities exist for Avista to increase its involvement in the program by accompanying CAP agency staff and state administrators in ridealongs and monitoring.

Recommendation

- Continue to coordinate with state and agency staff to participate in ridealongs and monitoring.

Program Tracking

Conclusions

- Current participant and measure data are not being used consistently or effectively to calculate robust expected savings estimates.
- Agencies are willing to provide additional building and measure details for Avista to incorporate into an improved expected savings calculation.
- Two key criteria that with implications on estimated savings are currently not being collected: 1) primary heating source reported by the homeowner, and 2) whether equipment is non-functioning upon replacement.
- While agencies reported no major problems in complying with reporting requirements, removing preapproval requirements and electronic reporting procedures may help streamline the program.

Recommendations

- Ensure consistency and accuracy of data collected for expected savings calculations.
- Work with CAPs for more detailed data collection.
- Eliminate preapproval requirements.
- Continue to communicate with agencies regarding opportunities for automating reporting.

Cost-Effectiveness Considerations

Conclusions

- While state resource portfolio requirements remain unclear in regard to holding low-income weatherization to the same cost-effectiveness standards as other DSM programs, a ruling on this issue will allow Avista to consider options for changing the design and delivery of their low-income weatherization program.

Recommendations

- Work with stakeholders to get clarity on whether low-income weatherization is held to the same cost-effectiveness requirements as other DSM program offerings

Quality Assurance and Control

Conclusions

- QA/QC protocols, implemented by both state monitors and agency staff, appear sufficient for guaranteeing completion of all work identified by the agency auditor and for confirming quality installation of the work completed.

- Reviewing inspection reports from state monitors will give Avista a better understanding of reoccurring issues or areas for concern with regard to agency implementation and quality installation of weatherization measures.

Recommendations

- Consider leveraging state resources for additional oversight.
- Request inspection reports from state monitors for Avista customer homes.

Participant Findings

Conclusions

- As about 12 percent of participants use non-electric or gas sources as their primary means of heating, Avista's expected savings estimates may not be accurate if assuming electric or gas heating systems in its savings calculations. This especially applies to shell measure savings calculations.
- As 28 percent of participants reported changing how they heat their homes following weatherization work, estimated savings for these participants may not be accurate, given Avista's deemed savings estimates.
- Low reported take-back levels indicated increases in consumption did not likely occur due to increased occupants moving into a home, increase occupancy of rooms within a home, or changes to thermostat set-points.

Participant Energy Education

Conclusions

- The program's energy-saving educational component appears to lack standardization across agencies; however, it appears to operate successfully, based on participant responses, high rates of reviewing materials, and reported energy-saving behavior changes.
- The energy education curriculum and delivery could focus more on actions saving the most energy.

Recommendations

- Focus energy education on actions resulting in high energy savings (e.g., reducing heating set points and how water use).

Non-Energy Benefits

Conclusions

- Participants reported additional benefits (e.g., increased comfort, improved health, reduced forced mobility) beyond cost-savings associated with reductions in energy consumption.
- An opportunity exists for Avista to quantify more non-energy benefits associated with this program.

Recommendation

- Consider funding additional research of non-energy benefits, in particular those benefits that can be added to the Total Resource Cost (TRC).

Participant Satisfaction

Conclusions

- Participants reported high satisfaction levels with Avista's low-income weatherization program overall.
- Participants also expressed satisfaction with measure installations, with the majority indicating either "excellent" or "good" ratings for each measure type.

3.2 Introduction

The process evaluation research assessed the following:

- Program design and delivery;
- Participant characteristics and satisfaction;
- Bottlenecks in program delivery;
- Program successes; and
- Opportunities for improvements.

3.2.1 Program Overview

As listed in Table 3-1, the low-income weatherization program consists of five components. Local Community Action Program (CAP) agencies within Avista's Idaho and Washington service territories implement the low-income programs. CAP agencies conduct a comprehensive audit of participant homes to determine any energy-efficient measures that can be applied to decrease a home's energy usage. Simultaneously, agency auditors determine if any measures are necessary to improve health and safety in a participant's home. The agency staff then determines the appropriate mix of measures to install in the home, based on audit results, the household needs, and expected energy savings, compared to expenses. Agencies leverage and combine funding from different programs to install the measures in the homes.

Table 3-1 describes measures installed under each program component, along with counts of measures installed in PY 2010 for both states combined.

Table 3-1. PY 2010 Measure Installations by Program Component

Low-Income Program Component	Measure Description	Measure Installations
Shell/Weatherization	Insulation (ceiling, floor, wall, duct); window/door installation; air infiltration	943
ENERGY STAR® Appliance	High-efficiency refrigerator replacement	132
Fuel Conversion*	Electric furnace and water heater replacement with gas units	216
Hot Water Efficiency	High-efficiency water heater replacement	14
HVAC Efficiency	High-efficiency gas furnace replacement	43

3.2.2 Process Evaluation Objectives

Cadmus' telephone survey of 123 customers sought to assess participants' experiences (including: satisfaction, energy education, and participant household and behavioral characteristics). We also performed in-depth interviews with utility staff, CAP agency managers, and state-level administrators, seeking greater insights into program design and delivery, identifying bottlenecks, barriers to effective implementation, best practices, and opportunities for improvements.

3.2.3 Evaluation Methodology and Information Sources

To determine participant's perspectives, gauge awareness, and satisfaction with measures and the overall program, Cadmus surveyed 123 participants from the 2010 program population. This was

accomplished by randomly selecting participants from Avista's program participant database, and identifying a starting sample of 481 unique participants with valid name and telephone number information. Table 1-6 details the participant population, breaking out participation based on the Avista-funded measures installed by fuel type, and providing the survey's final sample size.

Table 3-2. Low-Income Participant Details and Survey Sample

	Quantity
Total Participants	557
Received electric measures	329
Received gas measures	104
Received both Electric and Gas Measures	124
Eligible Participants in Call List	481
Screened out due to change in occupancy or bad phone number	76
Completed Surveys	123
Number of Calls Required to Achieve Sample	1,238
Response Rate*	10%
Cooperation Rate**	40%
Sample Size Goal	120

* Response rate defined as: the number of customers completing a survey, divided by the number of eligible participants in the call list.

** Cooperation rate defined as: the number of customers completing a survey, divided by the number of customers reached by phone.

To address potential nonresponse bias, Cadmus conducted calls at different times during weekdays and weekends. After six unsuccessful calls, contacts were removed from the sample. Survey respondents' geographic distribution proportionally reflected the 2010 program's participant population.[26] Survey respondents were also evenly distributed across areas with program participants.[27]

For stakeholder interviews, Avista provided names and contact information for representatives from state administrators and the four CAP agencies delivering 2010 program services. Table 3-3 provides agencies and administrators delivering the program, and numbers of participants the agencies and administrators served.

[26] In 2010, Idaho had a total of 500 incented measures installed, and Washington had 1,006. Survey respondents represented a total of 54 incented measures in Idaho and 194 in Washington.

[27] The 2010 program population represented unique 77 zip codes, with a respondent population representing 40.

Table 3-3. Low-Income Weatherization Stakeholder Organizations

State	Organization	Role	2010 Participants Served
WA	SNAP	CAP agency	299
ID/WA	Community Action Partnership	CAP agency	197
WA	Rural Resources Community Action	CAP agency	32
WA	Community Action Center (CAC of Whitman County)	CAP agency	29
WA	Opportunities Industrialization Center (OIC) of Washington	CAP agency	0
WA	Washington Gorge Action Program (WGAP)	CAP agency	0
WA	Washington Department of Commerce	State administrator/monitor	n/a
ID	Community Action Partnership Association of Idaho (CAPAI)	State administrator/monitor	n/a

3.2.4 Report Organization

The process report first presents key findings across the different topic areas researched through the evaluation. These findings reflect the objective results determined through participant survey analysis and reported through stakeholder interviews. Sections on conclusions and recommendations follow, providing Cadmus interpretation of these findings and our recommendations for addressing key issues going forward.

Key finding topic areas are outlined in the following sections:

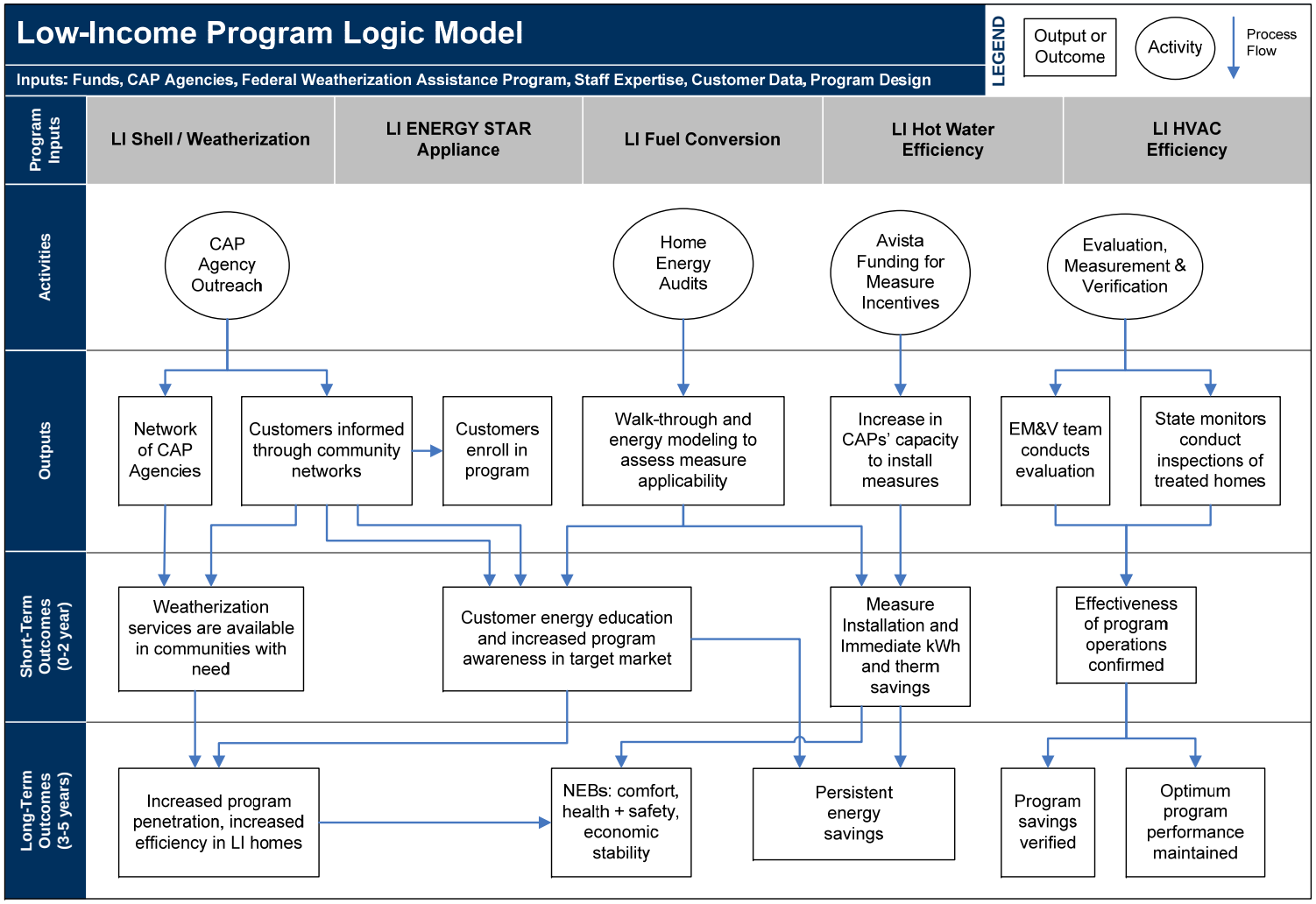
- Logic Model and Process Flow (Section 3.3.1)
- **Error! Reference source not found.** (Section 3.3.2)
- Communication (Section 3.3.3)
- Program Tracking (Section 3.3.4)
- Cost-Effectiveness Considerations (Section 3.3.5)
- Quality Assurance and Control (Section 3.3.6)
- Participant Findings (Section 3.3.7)
- Participant Energy Education (Section 3.3.8)
- Non-Energy Benefits (Section 3.3.9)
- Participant Satisfaction (Section 3.3.10)

3.3 Key Findings

3.3.1 Logic Model and Process Flow

Figure 3-1, below, shows the logic model for the low-income weatherization program, describing process flows involved in program implementation.

Figure 3-1. Low-Income Weatherization Program Logic Model



Key Indicators:
Outreach – Number of participating customers, length of CAP waiting lists, participant awareness of Avista funding
Home Energy Audits & Measure Incentives – Number/type of measures installed, energy savings, incentive amounts
EM&V – Process findings, program modification, impact analysis results, net-to-gross ratio, cost-effectiveness analysis results

3.3.2 Program Delivery

Program Overview and Design

Avista offers its low-income weatherization program in Washington and Idaho, via five CAP agencies (see Table 3-3). Measure offerings resemble those of typical residential programs, but are offered to eligible Avista customers at no cost.

The agencies perform audits for eligible customers, determining cost-effective measures that have the greatest benefits to households. Agencies follow participant prioritization and cost-effectiveness protocols for installing measures aligned with state and federal program requirements. Although the process of determining cost-effectiveness slightly differs across each state and agency, the standard procedure requires measures to meet a savings-to-investment ratio (SIR)[28] of 1 or greater.

The program leverages agency experience and technical skills to evaluate low-income homes and to identify the most appropriate combinations of measures. To ensure quality delivery, all weatherization and fuel conversion work undergoes multiple checks, with on-site and documentation audits conducted by agency staff. State-level monitors also perform inspections and review records for a sample of completed projects each year.

Agencies allocate funding from different sources to pay the complete costs of energy-saving measures and health and safety installations in a home. For eligible measures, Avista pays 100 percent of the measure costs. The agency also charges Avista a 15 percent administrative fee. In addition, Avista provides up to 15 percent of the total program budget for health and safety measures. Based on measure costs paid for by Avista for their 2010 projects, the average project cost per home paid by Avista (including both health and safety expenses and administration costs) is about $3,000 in Idaho and $3,500 in Washington.

Interviews with the four CAP agencies indicated very high satisfaction with the current program. Each agency expressed satisfaction with Avista's rebate structure and funding level. A few agencies praised Avista for funding measures not always available under traditional streams, such as window replacements. One agency indicated Avista's rebate structure simplified administrative processes, as they did not require as much mixing and matching with other funding sources. Furthermore, as Avista funding helped pay for additional health and safety measures (not always covered by alternative funding sources), it prevented agencies from having to preclude providing services to some homes. Two agencies indicated this proved particularly significant, with one agency saying they could not remain in business without Avista funding.

Home Energy Audits

After participant homes are selected from the waiting list and approved for weatherization, a Building Performance Institute (BPI) certified agency representative performs home energy audits. These audits are used to identify appropriate measures for installation. This section explores the audit tools agencies use in each state, information collected through audits, and criteria used by each agency to determine which measures to install.

[28] A SIR provides the present value of energy savings (from a particular measure) with respect to the cost (to install the measure).

Audit Tools

Individual agencies vary in their methods for determining measures for installation in homes, how measures are prioritized, and how they provide this information to Avista. Of the agencies delivering Avista's program, the three methods are primarily used for determining measure installations: 1) Targeted Retrofit Energy Analysis Tool (TREAT) audit software; 2) the state preapproved measure list; and 3) Energy Audit 4 (EA4, Idaho only). Table 3-4 provides a summary of the audit tools used by each agency that was interviewed.

Table 3-4. Audit Tools Employed by Agency

State	Agency	Audit Tools			Notes
		TREAT	Preapproved List	EA4	
WA	SNAP	X	X		TREAT used primarily for multifamily and special projects
ID/WA	Community Action Partnership	X	X	X	TREAT used primarily for multifamily projects; EA4 used in Idaho only
WA	Rural Resources Community Action		X		
WA	Community Action Center (CAC of Whitman County)	X	X		TREAT only used for Avista projects

The TREAT model incorporates building-specific information with auditing information to provide expected savings estimates, and to perform SIR calculations to determine measures appropriate for installation. TREAT can also incorporate historical consumption data (e.g., 12 months of electricity or natural gas usage from the utility), allowing model calibration and more accurate savings estimates.

Two agencies interviewed use TREAT, with one using it for all projects, and the other using it only for Avista projects (understanding it to be a utility requirement). One agency reported the state did not require the use of TREAT, except for estimating savings in multifamily buildings or determining cost-effectiveness for measure installations not covered on the state's preapproved measure list. Neither agency integrates historical consumption data into TREAT calculations. However, one indicated they were conducting training in this regard, and expected to begin incorporating these data soon.

The state of Washington developed the preapproved measure list, based on measures that, on average, can be cost-effectively installed. State-level preapproved lists are generally approved by DOE to allow agencies to easily determine measures to install in homes without having to run individualized cost-effectiveness tests. Since agencies cite DOE requirements as their most stringent funding source, they believe the preapproval list should satisfy the needs of other funders as well.

Three agencies use the state preapproved measure list, though one agency reports to Avista using TREAT (running all Avista projects through this tool, while using the state preapproved measure list for all projects with other funding). The two agencies using only the state preapproved measure list report to Avista using a spreadsheet, developed by the utility, to calculate expected savings for each project. The spreadsheet is submitted to Avista as documentation of completed work and information required for invoicing. For each measure, agencies input project-specific

details associated with installations, and the spreadsheet generates a savings estimate using Avista calculations. Based on discussions with the utility, expected savings calculations do not incorporate historical consumption, home square footage, primary heating system, or interaction effects.

In Washington, agencies must follow the state preapproved measure list or provide evidence of cost-effectiveness for measure installations using TREAT. Washington policy allows individual agencies to choose their methods for determining measure installations. Idaho requires a standard methodology, where all agencies model expected savings and cost-effectiveness testing using the Energy Audit 4 (EA4), an audit tool based on the National Energy Audit Tool (NEAT) auditing software, and developed specifically for Idaho agencies.

The one agency serving in Avista's Idaho territory uses EA4 for their Idaho projects and primarily uses the state preapproved list for their Washington projects. However, the agency will occasionally use TREAT in Washington for multifamily buildings or in special circumstances to provide evidence of cost-effectiveness for work outside of the preapproved list.

Measure Determination

All agencies begin work by reviewing customer eligibility, and by conducting an initial audit or home energy assessment. For agencies using TREAT and EA4, all measures in a home together must achieve an SIR value of one or greater to be eligible for a program rebate. The two agencies using state preapproved measure list defer to its preapproved measures in determining measures authorized for installation.

Agencies expressed satisfaction with Avista offering fuel-conversion measures, with a common response that participants seem to like these measures and that they appear to reduce the costs of customer energy bills.

Delivery Changes

Agencies indicated the only significant changes in program delivery have been in Avista staff overseeing the program. All agencies indicated these changes did not represent a burden, and program implementation has not been negatively impacted.

Agencies indicated the introduction of Recovery Act funding—and its requirements—affected program delivery, as this introduced stricter administrative procedures, implementation requirements, and training protocols. The Recovery Act also increased the number of homes to be weatherized by agencies, sometimes by 500 or 600 percent, with a strict deadline of March 2012. To meet increased output, agencies increased staff or hired additional contractors to help with internal management and program delivery. There was a great influx of new staff, and agencies required all new contractors to meet certification levels of existing staff.

Delivery Challenges

While agencies did not appear to face specific limitations integrating Avista funding for weatherization, a few barriers prevented more Avista homes from being weatherized or presented administrative challenges for agencies.

Tracking All Avista-Customer Weatherization

Agencies indicated not every weatherized Avista-customer home received Avista funding. Thus, the utility does not track these homes nor claim savings. Given staggered schedules for funding sources' contract year-end dates, agencies may have to push to exhaust single sources before their expiration. In some cases, agencies use these funds exclusively for Avista customer homes, without an investment of Avista funding.

Agencies, however, did not report a definite approach for ensuring Avista funding would always touch every Avista customer. One agency suggested Avista could request lists of additional homes not currently tracked—a request that agency would gladly provide.

Invoicing Structure

Several agencies reported invoicing Avista for weatherization work required more time-intensive administrative effort than did funding from other sources. Such sources provide agencies with funds upfront, while Avista requires individual invoices for every home weatherized, for which they then reimburse 100 percent of approved expenditures. This setup requires agencies to pay for weatherization work using other funding sources, and reallocating funding until Avista pays for the work. While all agencies cited Avista as very responsive and consistently paying invoices on time, a few agencies indicated that, in a "perfect world," upfront provision of Avista's funding would ease some administrative burdens in managing funding and paying for completed work.

Avista Preapproval Requirement

One agency noted Avista requires preapproval for certain efficiency measures before their installation. For example, the agency indicated they first had to report information on existing refrigerators to Avista (e.g., make/model, metering data), and then, once approved, could complete installation. The agency saw this as an extraneous check, given auditors and inspectors reviewed the work on-site, and Avista ultimately reviewed every invoice. Another agency indicated Avista had to preapprove all window installations as well. However, Avista staff reported this was not a program requirement.

Potential for Funding Reallocation

Due to agency capacity constraints and mandates to expend Recover Act dollars, some agencies could not exhaust Avista funding for weatherization in a given year. In 2010, at least one agency under contract to deliver weatherization using Avista funding did not invoice Avista for any projects.

Other agencies, however, did not have problems spending utility funds. One administrative agency indicated that, despite the influx of Recovery Act funding, they made a concerted effort to continue spending utility funding along with federal dollars. Upon expiration of Recovery Act funding, agency staff and the state believe utility funding will play an even greater role in low-income weatherization work.

One agency suggested Avista consider reviewing agency expenditures at various points throughout a program year, reallocating funding when agencies could not expend all available Avista funding. Reallocating funding to agencies with available capacity could help exhaust all available Avista funding before the program year's end.

3.3.3 Communication

Agencies reported regular and satisfactory communication with Avista. Most agencies indicated monthly interactions with Avista during invoicing, as well as through in-person meetings several times during the year. Agencies also cited Avista staff visiting their home offices and accompanying them to project sites, though a few agencies noted these visits have become less frequent over the past few years. Two agencies would welcome additional interaction with Avista, such as ridealongs with agency staff to project sites. Avista staff indicated that in 2011, they have been visiting the agencies more frequently and accompanying them into the field more regularly.

State administrators interacted with Avista a few times a year. They both deemed the frequency satisfactory, though welcomed and encouraged Avista to take a larger role in joining them on ridealongs for home inspections. One administrator also said Avista was the only utility that did not request inspection reports on homes where they provide funding.

Avista also interacts with state administrators through its role on the Weatherization Policy Advisory Council (WxPAC) in Washington and the Weatherization Policy Advisory Committee in Idaho, which meet semiannually to discuss issues pertaining to regional weatherization policy.

3.3.4 Program Tracking and Reporting

Overview

Avista requires agencies to provide some detailed information on projects completed. Generally, invoicing occurs monthly, and includes itemized breakouts of measures installed and measure costs.

Avista staff indicated that all agencies must submit the Avista-provided invoice spreadsheet. This form collects costs and measure information (e.g., square feet of insulation), for which Avista calculates expected savings for their program database. Avista staff indicated that agencies may provide copies of output from TREAT, or other auditing tools, but that the Avista's invoicing spreadsheet is the only form that is required.

The two agencies using TREAT modeling submit outputs from this program, which provides estimates for expected energy savings and SIR calculations for each measure installed.

Agencies employing state preapproved measure lists report using a spreadsheet developed by Avista for invoicing and program tracking. These agencies populate spreadsheets with cost and measure details for each installation (e.g., existing conditions, square feet of installed insulation). They do not include SIR calculations, as the state preapproved measure list does not require their calculation. Avista's reporting spreadsheet uses built-in savings calculations that automatically generate expected savings once an agency enters measure-specific inputs.

Avista requires preapproval for certain measures (such as refrigerator replacements). Agencies provide Avista with a list of measure details (e.g., make/model, metering results) for approval prior to on-site installation.[29]

[29] In 2010, Avista required preapproval for gas furnaces, gas water heaters, and refrigerator replacements as well as "other" measures not included in Avista's approved energy-efficiency measure list.

All agencies believed providing supporting documentation (including measure savings) for each project funded with Avista dollars was reasonable, and did not represent an excessive burden. A few agencies expressed an openness to provide Avista with more detailed information on completed projects (e.g., primary heating) upon Avista's request.

Primary Heating Fuel Tracking

Correct specification of a participant's primary heating system is a critical component in accurately calculating expected savings associated with weatherization upgrades. Primary heating refers to the predominate source used by a resident, and not necessarily the obvious system present in a home (e.g., use of electric room heaters or wood heat, rather than a central furnace).

While interviews revealed auditors discussed these heating preferences with occupants during initial home energy assessments, primary heating usually was not reported. One agency using TREAT indicated they would likely enter heating equipment identified on-site into their modeling calculations, rather than specifying the source customers regarded as their primary means of heating. The extent that primary heating sources may deviate from a household's apparent primary heating equipment (e.g., electric base boards, central furnace) could not be determined. Accurately specifying customer heating, however, impacts the results of expected savings calculations.

During initial audits, two agencies talked to homeowners about their primary heating equipment, as this could determine service priorities (for example, a broken heating system, such as a furnace, would advance a customer's priority on weatherization waiting lists). Agencies, however, did not explicitly or uniformly collect or report this information.

Suggestions for Improvements

Although all parties seemed satisfied with tracking requirements and processes, a few improvement opportunities emerged.

First, while standardized reporting across all agencies could be burdensome, Avista must collect all relevant measure information required for robust savings calculations. Cadmus's work on the *Avista 2010 Multi-Sector Gas Impact Evaluation Report* revealed Avista's expected savings calculations did not incorporate primary heating systems and square footage—two inputs agencies could provide.

Interviews largely revealed hand-written data tracking (rather than electronic entries). One state administrator noted a statewide push to standardize electronic reporting across all agencies.

Additionally, one agency reported the preapproval process Avista required for certain measures appeared excessive, as staff often internally checked off measure installations, and Avista ultimately would receive such information on through invoices. Though the agency readily complied, they suggested Avista might consider removing this redundancy.

3.3.5 Cost-Effectiveness Considerations

Overview

Under the Initiative 937 (I-937), Washington utilities are required to develop DSM program portfolios to pursue all available energy-conservation measures that are cost-effective. Similarly,

Idaho utilities are also required to run cost-effective energy-efficiency programs. There has been recent debate across different states regarding whether low-income programs should be exempt from the cost-effectiveness requirements of DSM resource programs and portfolios.

By design, low-income weatherization programs are not delivered as cost-effective from the TRC perspective. While the TRC standard is fairly common requirement for states in considering utility program cost-effectiveness, the bulk of low-income weatherization program funding (e.g., HHS, DOE) require a SIR standard for considering the overall project cost-effectiveness. The SIR approach compares the energy cost savings over the lifetime of the package of weatherization materials to the cost of administration, labor, and materials associated with a project. Essentially, the SIR approach is inconsistent with the TRC, for which the later also accounts for changes to the utility supply cost.

While Avista is required to have a cost-effective program portfolio, individual programs do not necessarily need to perform cost-effectively from a TRC perspective. While the total portfolio benefits may be sufficient to absorb potentially non-cost-effective programs like low-income weatherization, the overall cost-effectiveness for the portfolio is decreased by individual programs that do not pass the TRC test.

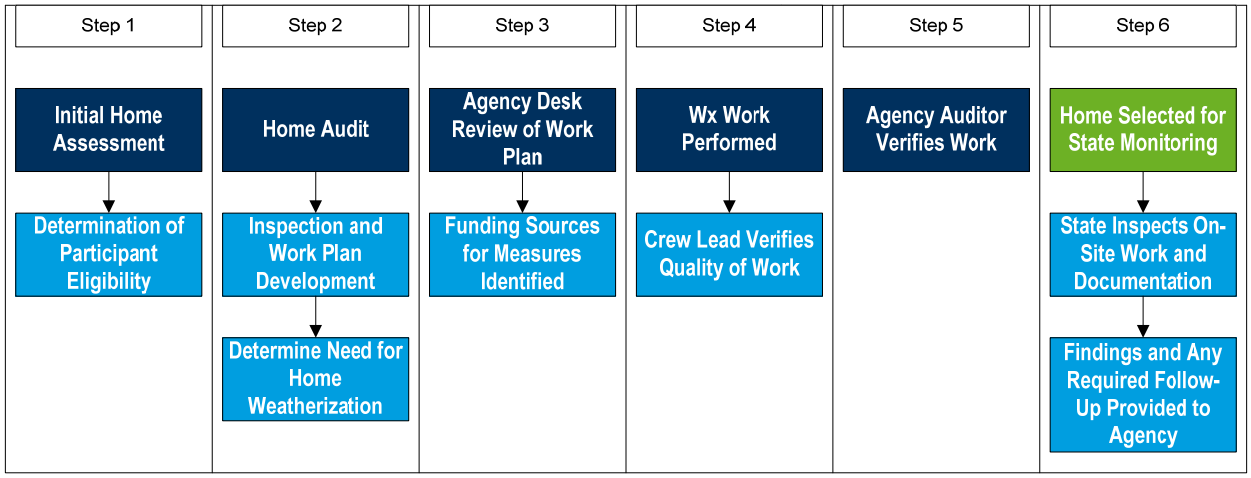
Another example of how the inherent design of low-income weatherization programs highlights the discontinuity between agency and utility perspectives is in the participant prioritization. Federal funding sources require agencies to prioritize eligible participation to focus first on households with elderly occupants, people with disabilities, or families with children. From a resource perspective, utilities are more likely to be interested in targeting eligible participants with the highest energy usage or arrearage. While these are not incompatible, high usage/arrearage customers have not historically been targeted given that the federal prioritization takes precedence and is more closely aligned with the mission of providing a welfare program, rather than an energy-saving program. Targeting eligible high usage/arrearage participants will likely result in higher cost-effectiveness from a TRC perspective, given the greater potential for energy savings, arrearage reduction, and the associated benefits.

3.3.6 Quality Assurance and Control

Overview

Low-income weatherization programs require rigorous, multistage quality assurance and control protocols, ranging from agency-level inspections and documentation reviews to state-level monitoring efforts. Interviews with agencies and state administrators indicated every project received multiple points of review, including work in progress, upon completion, and, potentially, through state monitoring. State monitors also reviewed 5 to 20 percent of jobs completed in each state. Figure 3-2 outlines a typical approach to delivery and the inspections occurring at each stage by agency staff and state monitors.

Figure 3-2. Low-Income Weatherization Delivery and Quality Assurance Flow



1. Initially, an agency assessor visited homes for a first walk-through, to determine whether auditing and weatherization was required. On this visit, one agency indicated the assessor provided one-on-one energy education with occupants, and provided a bundle of low-cost energy-savings measures, such as CFLs.
2. Once approved and scheduled for audit, agency auditors performed whole-house audits to determine measures needed. This process could include air flow testing (such as blower-door and duct blaster tests), checking insulation levels, and equipment inspections.
3. Agency office staff reviewed audit documentation, including every purchase order, confirming the proposed invoice matched the bid and included measures eligible for funding.
4. Work in the home was completed based on the auditor's prescription. Most agencies performed all auditing and shell-measure installation themselves, and often hired local contractors for electrical, plumbing, and some HVAC work. As work was performed on the home, the crew lead ensured work was completed to specification.
5. Upon work completion, an agency auditor supervisor performed a final inspection of completed work. Most agencies indicated final inspections were performed by different auditors than those conducting the initial audit, though agencies noted this was not always possible, due to scheduling and limited capacities. (The concept of using a different auditor remains open to debate: some agencies believing the initial auditor would be better placed to confirm specific problem areas had been addressed, while others believing a fresh perspective preferable.)
6. Upon agency work completion, homes could be selected for review by state auditors, which involved on-site reviews of work as well as documentation reviews. Monitored agency projects each received a summary report, detailing findings and recommendations for improvements.

Agency Inspections

Each agency interviewed conducted some internal inspections of processes for identifying measures to be installed as well as for quality and completion of installations. One agency staff

member indicated that, after completion of the initial audit, all funding allocations for the proposed work were reviewed to ensure appropriate use of funds across the measures to be installed.

The agency indicated two quality checks were performed on a proposed project:

- The lead contractor responsible for performing the installations reviewed the initial audit to identify additional work required or work improperly specified.
- An auditor performed a final inspection following completion of all work by contractors, with the agency preferring this inspection performed by an auditor different from the one performing the initial home inspection (as noted, this was not always possible due to staffing and scheduling constraints).

Two other agencies outlined a similar approach, but stressed the importance of a desk review. Once the initial audit was performed, at least two different office staff reviewed the work plan to verify the measures' appropriateness, the calculations' accuracy, and funding allocations.

State Monitoring

State monitors visited homes, verified projects were appropriate, and determined work had been performed correctly. The state monitors delivered reports to the agencies for projects where monitoring occurred; reports concerning Avista participants are available to the utility upon request. Idaho and Washington state monitors did not indicate identification of significant or systemic issues.

Partly due to increases in completed homes resulting from the influx of Recovery Act funding, and partly due to increased new agency hires necessary to complete the work, state administrative agencies increased the volume of homes receiving on-site inspections. One state administrator indicated they increased inspections from 5 percent of completed homes to over 20 percent.

Inspection and Monitoring Results

When asked if agency or state audits identified systematic issues, all four agencies indicated quality assurance audits identified some discrete issues, but these were minor, isolated incidents. One agency found changes in protocols surrounding the use of Recovery Act funding resulted in a few instances where new procedures were not followed (e.g., CO sensors were installed without digital displays), though this same agency stressed most of its field staff, having worked with the agency for over five years, were very experienced.

Ultimately, participant homes will have been visited between three to six times.[30]

Changes in Quality Assurance and Control

Avista has expressed an interest in taking a larger role in verification of rebated weatherization work. Interviews with agencies and state administrators indicated this would be welcome and beneficial. Idaho and Washington respondents felt quality assurance protocols were sufficient, and would be glad to include Avista staff in future monitoring visits.

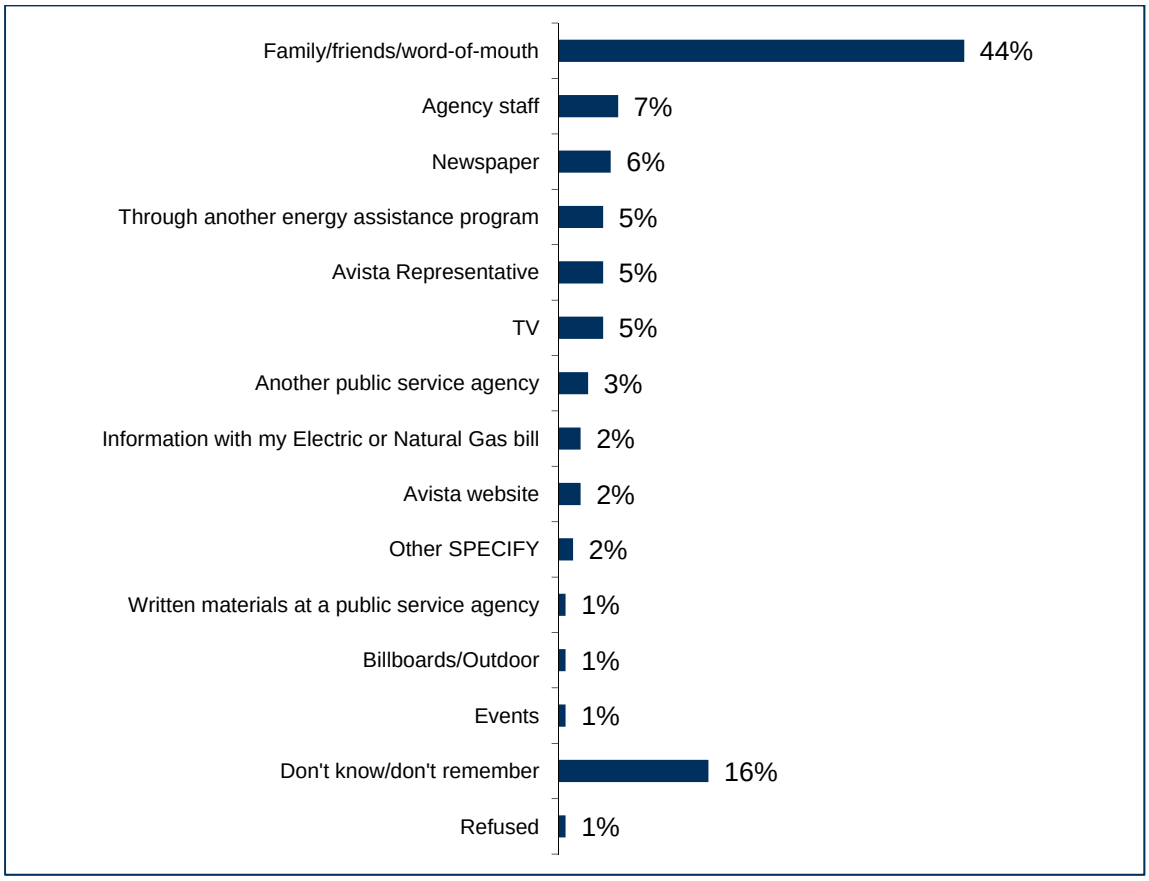
[30] Including a potential final visit by third-party evaluator.

3.3.7 Participant Findings

Participant Awareness

As shown in Figure 1-11, respondents learned of the program through multiple sources.

Figure 3-3. How Respondents First Heard of the Program (n=123)



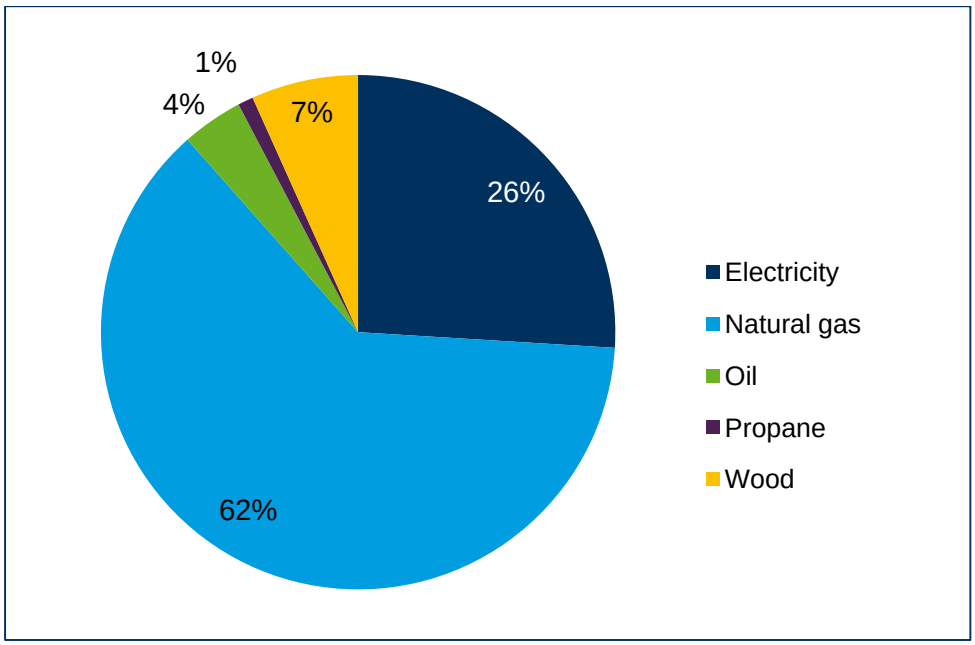
Respondents most commonly learned of the program through family, friends, and word-of-mouth (44 percent [n=54]).

Fifty percent of respondents (n=59) knew Avista helped pay for the weatherization program.

Participant HVAC Equipment

Figure 3-4 illustrates the distribution of primary heating systems reported by respondents.

Figure 3-4. Low-Income Participant Distribution of Primary Heating Fuel (n=104)*



* In presenting results, "don't know" and "refused" responses have been removed from calculation of percentages, unless otherwise noted.

As shown, most respondents (n=65) reported heating their homes with natural gas, while 26 percent (n=27) used electricity, and 1 percent (n=1) used propane. The remaining 11 percent used alternative sources, such as wood, oil, or a combination of these.

Table 3-5 provides the distribution of weatherization measures installed through the program, relative to the primary home heating type reported by survey respondents.

Table 3-5. Distribution of Weatherization Measures by Primary Heating Type

	Electric (n=27)		Gas (n=65)		Other * (n=12)		Total (n=104)	
Measure	n	%	n	%	n	%	n	%
Refrigerator	6	22%	15	23%	9	75%	30	29%
Insulation	15	56%	33	51%	2	17%	50	48%
Air Sealing	12	44%	27	42%	3	25%	42	40%
Furnace Repair/ Replacement	0	0%	0	0%	0	0%	0	0%
Furnace Conversion	0	0%	0	0%	0	0%	0	0%
Windows	10	37%	17	26%	2	17%	29	28%
Water Heater Conversion	2	7%	17	26%	1	8%	20	19%
Thermal Door	7	26%	21	32%	3	25%	31	30%
Water Heaters	1	4%	2	3%	0	0%	3	3%

* "Other" heating corresponds to non-electric and non-natural gas primary heating, specified above in Figure 3-4.

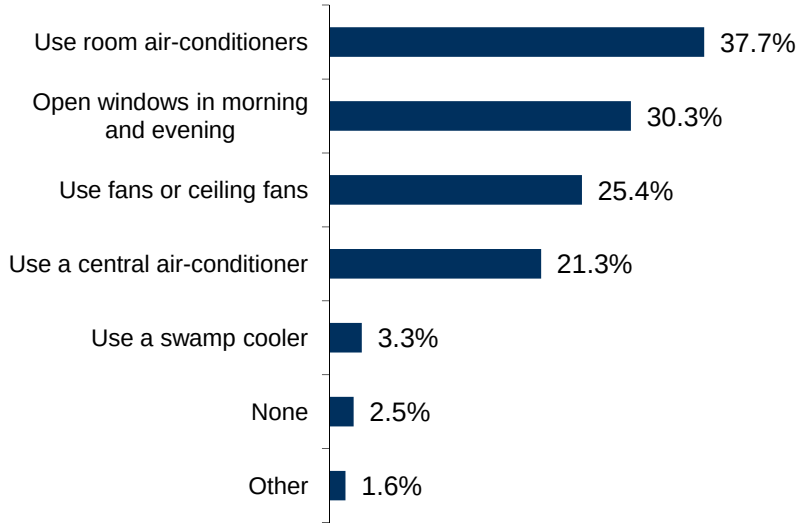
The above comparison reveals a higher percentage of refrigerator replacements occurred for participants using non-electric or gas primary heating; however, a few of these respondents (n = 3) still received shell measures, for which savings estimates were tied directly to fuel savings

corresponding to heating and cooling systems. The estimated savings for these three customers may explain a portion of the low realization rate observed in the impact evaluation.

Thirty-three percent of respondents (n=40) supplemented their primary systems with additional heating sources, the most common of which included electric space heaters (n=23) and wood heat (n=16).

Figure 3-5 illustrates the distribution of cooling methods reported by respondents. Respondents could provide multiple answers to this question.

Figure 3-5. Low-Income Participant Distribution of Cooling Methods (n=149)



Respondents most often cooled their homes using: room air-conditioners (37 percent, n=46); central air-conditioners (21 percent, n=26); fans or ceiling fans (25 percent, n=31); and opening windows in the morning and evening (30 percent, n=37). Additionally, 26 respondents used electric fans to supplement other cooling systems.

Take-Back

The survey asked participants several questions designed to identify take-back effects, including changes in usage patterns or household activities.

Fifteen percent of respondents (n=17) increased temperature settings on their thermostats; 40 percent (n=46) decreased this setting; and 45 percent (n=51) left it the same. While some participants increased their heating consumption after weatherization, twice as many reported decreasing their consumption through lowering their thermostat settings.

Respondents indicated very little change in the number of people present in the home and the number of rooms used. Seven percent of total respondents (n=9) had family or roommates move in after the work's completion, and 6 percent (n=7) had family or roommates move out. Four percent of respondents (n=5) used more rooms in their house after work was performed, while another 4 percent (n=5) used fewer rooms.

Twenty-eight percent of total respondents (n=35) reported they changed the way they heated their homes following program work's completion. Some of these respondents turned up their heat (n=5), while others reported turning down their heat (n=4). One respondent reported using more wood, while two respondents indicated using less wood.

3.3.8 Participant Energy Education

Overview

During the home audit or the initial walkthrough for preapproval, agencies provided some degree of energy-saving education to participants. While dialogues with homeowners about home energy savings generally occurred during the initial assessment, agencies indicated a recent drive to standardize the energy-savings education curriculum and information conveyed to homeowners. In most cases, agency staff discussed the audit with the participant as it was performed, and provided energy-savings tips relative to the particular home. Some agencies also provided energy-saving educational materials (e.g., pamphlets), and, in a few cases, provided a kit containing low-cost measures (e.g., CFLs, weather stripping, or smoke detectors).

Participant Response

Most respondents reported receiving energy-saving tips and pamphlets. Eighty-three percent (n=91) said contractors offered energy-saving tips. Of this group, 73 percent (n=66) said they received much information, 23 percent (n=21) said they received some information, and only 3 percent (n=3) said they received very little information.

Seventy-three percent of respondents (n=83) remembered a contractor providing them with a booklet or pamphlet about energy savings. Of this group, 71 percent (n=77) reported reading or looking at the pamphlet after the contractors left. Sixty-one percent of respondents (n = 69) implemented some energy-saving tips. Most frequently reported tips included:

- Using CFLs (18 percent);
- Lowering thermostat set points (13 percent);
- Covering windows with plastic (11 percent); and
- Lowering water heater set points (9 percent).

Benchmarking

To provide points of comparison, other evaluations of low-income weatherization programs show similar levels of participant recollection, and average levels of participant action regarding implementing tips they remembered.

In Quantec's 2003 evaluation of Ohio's Home Weatherization Assistance Program (HWAP), 76 percent of respondents recalled receiving energy education. Sixteen percent of participants reported turning down the heater thermostat, and three percent indicated turning down the water heat temperature.

Quantec's 2004–2006 Oregon REACH (Residential Energy Assistance Challenge) program evaluation isolated the effect of energy education among program participants. The report identified the following percents of participant action, along with associated energy savings (shown in Table 3-6):

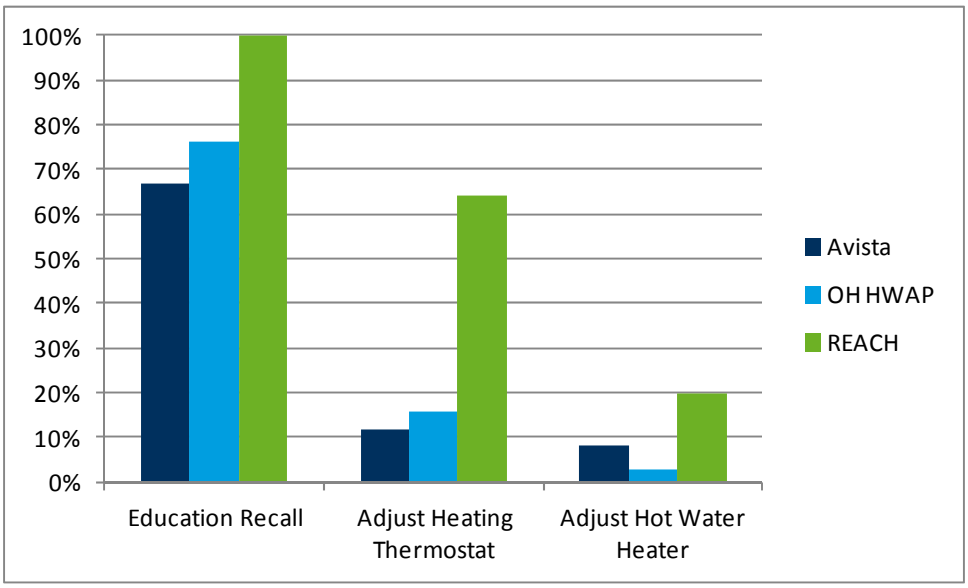
Table 3-6. OR REACH Evaluation Impacts of Energy Education

Education Impact	Installation Rate	Electric Savings (kWh)	Gas Savings (therms)
Adjust Hot Water Heater	20%	32.3	0.1
Adjust Heating	64%	210.6	0.8
Adjust Air Conditioning	4%	0.7	N/A
Decreased Shower Time	25%	96.8	0.2
Reduce Hot Water Use	41%	67.1	0.1

Participants in the OR REACH program reported higher percentages than Avista participants for adjusting both heating and hot water. In particular, reducing the set point for heating thermostats were shown to reflect significant savings potential for both gas and electric customers.

Table 3-7 provides a comparison of Avista findings to the OH HWAP and REACH studies mentioned above. Specifically, recall of receiving energy-education and two tips common to each study are included below.

Table 3-7. Energy Education Comparison



While Avista participants were average regarding the adjustment to hot water heat, both comparison studies resulted in higher levels of education recall and thermostat adjustment, which ranks among the highest energy-savings behavioral changes imparted through energy education.

3.3.9 Non-Energy Benefits

Overview

Non-energy benefits are program impacts, outside of direct energy savings, that provide additional benefits from different stakeholder perspectives (e.g., participant, utility, society). These benefits are not always as easily quantified or monetized as energy impacts. For this

evaluation, Cadmus included a few questions in the participant telephone survey to collect information on non-energy benefits from the participant perspective; however, additional non-energy benefits associated with low-income weatherization programs may include:

- Economic impacts;
- Environmental impacts;
- Payment impacts (arrearage reduction);
- Reduced disconnections/reconnections; and
- Improved property values.

The participant survey included questions addressing ancillary participant benefits, including increased comfort, improved health, and reduced forced mobility.

Research Results

The sample's 59 respondents receiving air sealing or insulation were asked about non-energy benefits from work completed in their homes. Survey questions specifically targeted these respondents due to applicability of certain non-energy benefits, such as health and comfort benefits, associated with shell measures.

Eighty-five percent (n=50) of respondents found their home more comfortable to live in following the work.

Fifty-one percent said, following the work's completion, their electric bills became more affordable.

Fifty-nine percent said the work affected their health. Survey participants offered several, positive reasons for this, with a more comfortable home the most common response (n=12), and fixing a gas leak (n=2) the second most common. Other reasons cited included: reducing dust, eliminating mold, and decreasing fireplace soot.

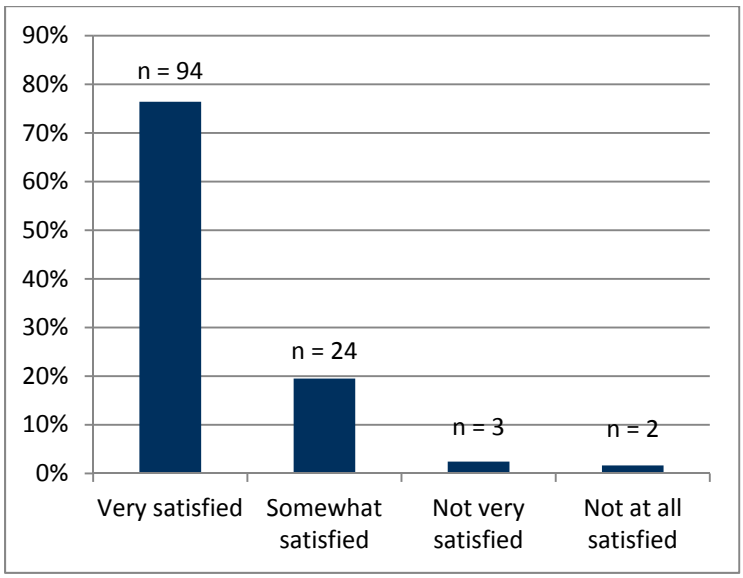
Weatherization programs have been associated with helping participants stay in their homes and reducing forced mobility. This helps avoid moving costs, helps keep children in the same schools, and helps participants retain their jobs. Forty-six percent (n=26) of 57 responding participants stated they were less likely to move in the near future upon the work's completion. Fifty-four percent (n=31) saw no change in their likelihood of moving.

3.3.10 Participant Satisfaction

Overall Program Satisfaction

Figure 3-6 summarizes participants' distribution of responses regarding overall program satisfaction.

Figure 3-6. Participants' Overall Satisfaction with Services Provided (n=123)



Seventy-six percent of respondents reported being very satisfied with program services, and 20 percent reported being somewhat satisfied.

Ninety percent of respondents thought program staff very courteous, with the remaining 10 percent finding agency staff somewhat courteous. Eighty-eight percent of respondents understood, prior to staff arrival, the work agency staff would conduct.

Weatherization Work Creating Additional Problems

Forty-nine respondents (83 percent) said the work did not create problems for them, but 10 respondents said it did. More serious issues cited included: a stove vent leaking when it rains; a hose breaking after it was moved to install a hot water heater, flooding a basement and ruining a carpet on stairs; and a heating system that "sounds like there is a train running through" the room. One respondent expressed displeasure with their new doors, saying they were too small, not installed properly, and the contractor took the screen doors, which they did not have permission to do.

Less serious complaints included the remodeling being inconvenient and less basement storage space. Three of the 10 respondents reported issues resolved to their satisfaction, while seven said they were not. Suggestions for different actions included putting a cover on a noisy heating system.

Suggestions for Program Improvements

Participants were asked for suggestions to improve the program. Many respondents could not think of ways to make the program better, though a few suggested better funding or better advertising to reach more people and provide additional services.

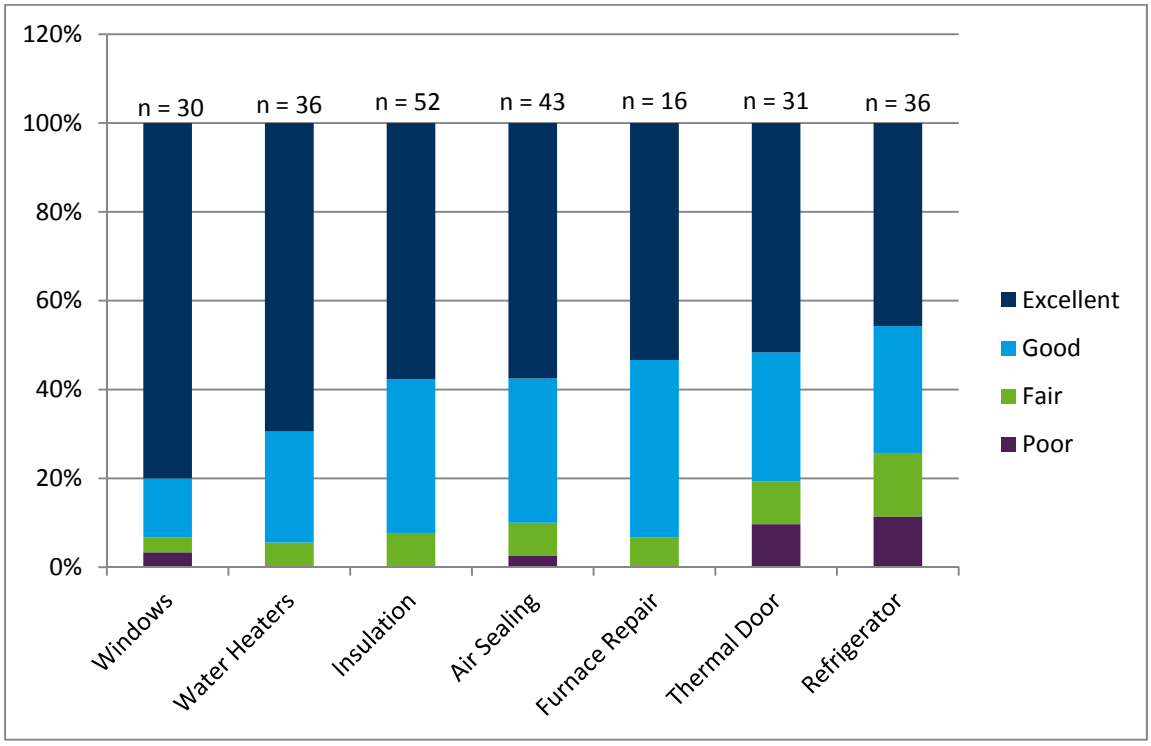
Six customers complained about contractors' insufficient follow-up on problems or customer wanting to speak to contractors' managers. Additionally, a few respondents wanted a better understanding of the work to be done and when it would be completed, regarding both the general timeframe and precisely when the contractors would be at their homes.

Seventy percent of respondents (n=86) knew who to call if experiencing problems. During the survey call, a phone number was provided to those who did not know who to contact.

Measure Satisfaction

The survey asked customers to rate different measures installed in their homes. Figure 3-7 presents measure-specific satisfaction ratings, with response data detailed in the sections that follow.

Figure 3-7. Measure Satisfaction Ratings



Refrigerators

Thirty-five individuals surveyed reported receiving a new energy-efficient refrigerator. Of this group, 74 percent (n=26) rated their new appliances as excellent or good. Eleven percent (n=4) rated their new refrigerators as poor. One respondent reported by Avista as having received a refrigerator indicated they had not received one.

When asked why they chose their appliance rating, respondents cited: the appliance worked (n=6); the refrigerator or freezer was a good size (n=6); and they needed a new refrigerator or freezer (n=6). Negative ratings resulted from: the refrigerator being too small (n=4); the appliance not keeping food at the right temperature (n=2); simply not liking it (n=3); and the appliance stopped working (n=1).

Forty-eight percent of respondents (n=16) said their old refrigerator worked fine prior to being replaced, and 48 percent said it worked, but had problems. One respondent said their refrigerator had not worked at all before replacement.

Insulation

Ninety-two percent (n=48) of 52 total respondents receiving new insulation rated it excellent or good. Four respondents rated it fair. Respondents offered no negative ratings.

When asked why they chose these ratings: 32 percent (n=15) said the insulation lowered their electric bills; 32 percent (n=15) said it kept their house warmer or cooler; 17 percent (n=8) said their house became more comfortable; and 17 percent (n=8) said the contractor did a nice job (respondents could give more than one reason). Although there were no negative ratings, 6 percent (n=3) said the insulation was insufficient to keep their house warm.

Air Sealing

Of 43 people reporting window frames or cracks sealed where outside air used to leak in (i.e., air sealing), 84 percent rated the measure good or excellent. One respondent rated it as poor, while three said they had not received air sealing services resembling the description provided.

When asked why they chose their rating, 35 percent of 34 respondents (n=12) indicated the contractor did a nice job; and 15 percent (n=5) cited keeping the house warmer or cooler. Another 12 percent of respondents (n=4) said it kept their house more comfortable. Although three respondents said the contractor did not finish the job, not enough information was available to assess the validity of these claims.

Furnaces

Fourteen of the 15 people with furnaces replaced or repaired rated the work good or excellent; none rated it as poor.

Six respondents said the contractor did a nice job, while four respondents said their homes were more comfortable or the new furnace kept the house warmer.

Four respondents said their furnace had not worked at all before its replacement or repair, while seven said it worked, but had problems. These statements may have implications on overall energy impacts associated with the program, as repair or replacement of heating systems not working prior to the weatherization would result in a net increase in energy usage for this measure.

The survey asked customers whether they noticed changes in their utility bills following work on their furnace. Over half of the respondents (n=8) said their utility bills became more affordable since receiving the new furnace, and no respondents said their heating bills increased.

Twelve furnace recipients had electric heating systems replaced with gas furnaces. When asked their opinion regarding the conversion from electric to gas, nine respondents liked their new gas furnace very much, while the other three liked it somewhat.

Windows

Thirty respondents had work done on windows, with 83 percent (n=25) receiving newly installed windows, and 17 percent (n=5) having some windows replaced and some repaired. Of 29 responding participants, 52 percent (n=15) remembered having broken or cracked glass in the windows prior to repairs or replacement, and 48 percent (n=14) remembered the glass being intact.

Ninety-three percent of respondents (n=28) rated the work completed on windows as good or excellent, while one respondent rated it fair, and one as poor. When asked for reasons for their ratings, respondents most commonly answered the contractor did a nice job—given by 40 percent of respondents (n=12). Nineteen percent of respondents (n=5) indicated they needed a new window or repair. Only a few respondents (n=4) offered negative comments, including they did not like the way the window worked and that their home was not as secure.

Doors

Of 31 respondents having a new door installed, 81 percent rated it good or excellent. However, 10 percent of respondents (n=3) rated it as poor. Twenty-five percent (n=7, out of 28 respondents) did not like the way the new door worked, and 18 percent (n=5) said the contractor did not finish the installation. One respondent reported the contractor made mistakes and had to come back to fix them (stoop was too high initially), but that the door ultimately worked really well.

A majority of respondents cited positive reasons for their ratings, including:

- The house was more secure/safer (five respondents, 18 percent).
- The contractor did a nice job (seven respondents, 25 percent).
- They liked the way the door looks (five respondents, 18 percent).

Water Heaters

The 36 respondents receiving new water heaters offered positive feedback, with 94 percent (n=34) rating it good or excellent, and none rating it poor.

Common reasons for the ratings included: the water heater worked (n=13), and it kept water at the right temperature (n=15). Respondents offered only five negative comments, including the water heater being too small, and it not keeping water at the right temperature. Sixty percent of respondents (n=21) said their old water heaters was functional prior to replacement, while 37 percent (n=13) said it worked, but had problems.

Thirty-three of the participants converted from electric to gas water heat. Sixty-nine percent (n=22) of these respondents reported liking their gas water heater very much, and, overall, 88 percent (n=28) liked it more than their old water heater. Only one respondent reported not liking it at all.

3.4 Conclusions and Recommendations

Based on the research findings determined through the process evaluation, this section outlines conclusions and recommendations, identified by topic area.

3.4.1 Program Delivery

Conclusions

- Avista's low-income weatherization program is being successfully implemented, with no significant barriers to delivery.

- Avista homes weatherized by agencies without Avista funding may represent opportunities to claim "non-programmatic" savings. A few agencies indicated they would be glad to provide Avista with information on their customer homes receiving weatherization without Avista funding.
- Periodic review of agency funding disbursement may allow for midstream reallocation. By shifting available funding from agencies not able to spend their allocation to agencies with additional capacity, more Avista expenditures can be made, and more projects can be completed.

Recommendations

Work with agencies to track non-programmatic savings.
Avista has an opportunity to track additional savings occurring through low-income weatherization where Avista funding did not touch their customer's homes. We recommend working with agencies to determine the best approach for identifying such homes and weatherization work performed.

3.4.2 Communication

Conclusions

Avista has the following opportunities to increase their involvement in the program:

- Coordinating ride-alongs with CAP agency staff to achieve a better understanding of each agency's implementation process (e.g., initial walk-through, audit, and inspection processes);
- Joining state administrators in monitoring completed Avista projects; and
- Leveraging state resources for monitoring additional Avista-customer projects.

Recommendations

Continue to coordinate with state and agency staff to participate in ridealongs and monitoring.
At the time interviews were performed, agency staff expressed satisfaction with the level and quality of communications with Avista, though they noted increased involvement (e.g., office visits, ridealongs) would be welcome. According to Avista staff, they have recently increased their involvement through ridealongs with agency staff. We recommend Avista continuing to engage agency staff in this regard, and to work with the state to participate in their monitoring efforts.

3.4.3 Program Tracking

Conclusions

- Current participant and measure data are not being used consistently or effectively to calculate robust expected savings estimates. As identified in the *Avista 2010 Multi-Sector Gas Impact Evaluation Report*, Avista overestimated expected savings per measure and did not appear account for key criteria in their savings calculations, including historical consumption, square footage, interaction effects, and primary heating system. Additionally,

expected savings calculations appeared to be different between states and agencies. Avista should be able to account for these criteria and develop a consistent approach for applying improved expected savings calculations.

- While it appears unlikely that Avista could influence standardization of agency auditing and reporting processes across agencies and states, agencies were willing to provide additional building and measure details for Avista to incorporate into an improved expected savings calculation.
- Out of 15 survey respondents that reported receiving furnace installations, four indicated that their furnace did not work prior to weatherization. Additionally, of the 10 respondents that reported primarily heating their homes with non-electric or gas fuel, three received shell measure installations paid for by Avista (i.e., insulation, infiltration, windows, doors). The implication of both issues is that Avista will have overestimated savings for these participants by not tracking 1) whether the equipment was non-functioning at the time of replacement, and 2) primary heating fuel reported by the customers.
- While agencies reported no major problems in complying with reporting requirements, revamping these requirements may help streamline the program:
    - Removing preapproval requirements would eliminate additional time and paperwork required by the agencies. Other delivery process points appear to make these requirements redundant (e.g., agency audit, internal review, ultimate Avista invoice reimbursement).
    - Electronic reporting would help to automate and streamline reporting procedures, potentially reducing agency and utility time spent working with handwritten reports.

Recommendations

Avista to ensure consistency and accuracy of data collected for expected savings calculations.
Data collected through CAP agencies should be used to consistently in calculating more robust measure-level expected savings estimates.

Work with CAPs for more detailed data collection.
As agencies serve as direct contacts for program participants, opportunity exists for them to collect information critical to understanding energy impacts, and for correctly specifying appropriate savings algorithms. We recommend Avista identifies additional information to aid its savings calculations (e.g., primary heating/cooling systems) and to work with agencies to begin collecting and reporting these data to the utility.

Eliminate preapproval requirements.
Current program design requires preapproval for some measures. Eligibility of these measures must then be reported a second time, when the CAP agencies invoice Avista for projects. As preapprovals for such measures are almost always granted, this step appears redundant; we recommend Avista review the appropriateness of this step, and consider completely eliminating this requirement.

Continue to communicate with agencies regarding opportunities to automate reporting.
Electronic reporting should streamline the program, reducing the time and resources the agencies and Avista require to deal with paperwork. However, additional effort may be required to set up a system for coordinating reporting across different agencies. We recommend continuing to explore this option and to discuss potential solutions with stakeholder groups.

3.4.4 Cost-Effectiveness Considerations

Conclusions

By design, low-income weatherization programs are based on objectives (e.g., welfare provision) that are inconsistent with utility objectives (e.g., cost-effective energy savings). In particular, low-income weatherization run by agencies uses an SIR approach to considering cost-effectiveness (at the program-level), while Avista is required to provide cost-effective programs from a TRC perspective (passing cost-effectiveness at the measure and portfolio levels).

The issue of whether low-income weatherization programs should be held to the same cost-effectiveness standards as other DSM programs is unclear under state resource portfolio requirements. Eliciting a strict ruling on this issue will allow Avista to consider options for changing the design and delivery of their low-income weatherization program.

Recommendations

Work with stakeholders to get clarity on whether low-income weatherization programs are held to the same cost-effectiveness requirements as other DSM program offerings.
Cadmus recommends Avista coordinate with other utilities and stakeholder groups to request that the utility regulatory commissions in their territory states come to final resolutions on this issue.

If low-income programs are required to be cost-effective, Avista could consider the following options to continue supporting the program while achieving a higher cost-effectiveness ratio:

- Include additional analysis for non-energy benefits that can be included as program benefits under the TRC.
- Work with agencies to prioritize customers with high usage or arrearages.
- Only offer measures with the highest SIR. Some utilities have asked agencies working on their behalf to only use their dollars on measures with a SIR of 1.5 or above.
- Limit the list of measures eligible for utility funding to a very few with generally high cost-effectiveness levels.

Though these suggestions could be implemented if utility commissions required program cost-effectiveness, agencies will face difficulty in making this transition, which would put a greater burden on federal funding sources that are significantly smaller than they has been in the past few years. Weatherization program changes should always be discussed and considered in concert with delivery agencies and their advocates.

3.4.5 Quality Assurance and Control

Conclusions

- QA/QC protocols, implemented by both agencies and state monitors, appear sufficient for guaranteeing completion of work identified by the agency auditor and confirming quality installation of work completed.
- State administrators welcomed Avista to request inspection reports for Avista customer homes that receiving state monitoring. These reports will give Avista a better understanding of reoccurring issues or areas for concern with regard to agency implementation and quality installation of weatherization measures. In the case for one state, the administrator cited that Avista was the only utility that did not request this information.

Recommendations

Consider leveraging state resources for additional oversight.
Given Avista's initial concerns regarding installations' quality, the utility should consider leveraging the existing state infrastructure to pay for additional monitoring of Avista projects. As reported, the state will accept funding to perform additional inspections of projects in Avista territory and will provide monitoring reports directly to the utility.

Request inspection reports from state monitors for Avista customer homes.
Cadmus recommends that Avista begin requesting inspection reports from state administrators for those Avista customers that receiving monitoring. As state administrators indicated that they will gladly provide these materials to utilities, Avista should request these materials to be aware of monitoring issues identified by the state that affect program delivery and may impact energy savings for their customer's homes.

3.4.6 Participant Findings

Conclusions

- As about 12 percent of participants use non-electric or gas sources as their primary means of heating, Avista's expected savings estimates may not be accurate if they assume electric or gas heating systems in their savings calculations. This especially applies to shell measure savings calculations.
- Through the participant survey, Cadmus identified three participants (two electric customers, one gas customer) that reported receiving shell measures also reported using a primary heating source other than natural gas or electricity provided by Avista. Expected savings reported for these customers associated with heating and cooling savings (attributed to insulation, infiltration, windows, and doors) will have overestimated actual savings, since these installations would impact a non-electric or gas heating source, not provided by Avista.
- As 28 percent of participants reported changing how they heated their homes after weatherization work had been performed, estimated savings for these participants may not be accurate, using Avista's deemed savings estimates.

- Low take-back levels were reported, indicating increases in consumption likely did not occur due to increased occupants moving into a home, increased occupancy of rooms within a home, or changes to thermostat set-points.

3.4.7 Participant Energy Education

Conclusions

- Though the program's energy-saving educational component does not appear to be standardized across agencies, it appears to operate successfully, based on participant responses, high rates of reviewing materials, and reported energy-saving behavior changes.
- The energy education curriculum and delivery could focus more on actions saving the most energy.

Recommendations

Focus energy education on actions resulting in high energy savings.
While energy-saving education occurs through provided materials or agency staff performing initial inspections and home audits, participants must take away information about actions resulting in high energy savings. Cadmus recommends placing a greater emphasis on reducing heating set-points and reducing hot water use. These recommendations typically result in most households realizing higher savings levels.

3.4.8 Non-Energy Benefits

Conclusions

- Participants reported increased comfort and positive health impacts through weatherization work performed on their homes. Additionally, almost 50 percent indicated they were less likely to move as a result of work performed. Each of these findings represents additional benefits to participants beyond cost-savings associated with reduced energy consumption.
- An opportunity exists for Avista to quantify more non-energy benefits associated with this program. As low-income weatherization typically does not prove cost-effective in utility resource portfolios, non-energy benefits can be quantified to represent additional benefits attributed to the program and can be monetized for inclusion in cost-effectiveness calculations. Additional analyses include estimating: environmental impacts, economic impacts, changes in payment behavior, arrearage reductions, reduced disconnections/ reconnections, reduced mobility, and other participant ancillary benefits (e.g., comfort, health, safety).

Recommendations

Consider funding additional research of non-energy benefits.
Additional research can help Avista identify different non-energy benefits associated with low-income weatherization and their relative impacts on different stakeholder groups. This research can help quantify and monetize program-specific, non-energy benefits, which can be added into program cost-effectiveness testing from different cost-test perspectives. Cadmus recommends Avista consider funding additional non-energy benefit studies.

3.4.9 Participant Satisfaction

Conclusions

- Participants reported high levels of satisfaction with Avista's low-income weatherization program overall.
- Participants were also satisfied with the measure installations, with the majority indicating either "Excellent" or "Good" ratings for each measure type.

3.4.10 Future Research Areas

In light of 2010 process evaluation findings, Cadmus recommends Avista consider the following research areas for the 2011 evaluation period and future evaluations:

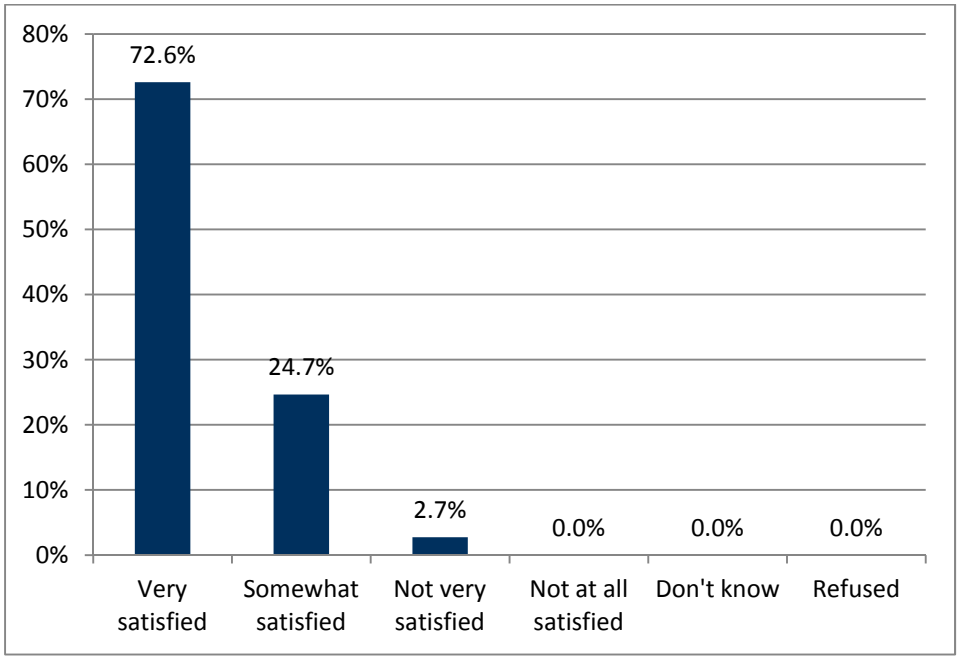
- Revise the participant survey to collect more detailed information in particular areas of interest. Three such areas may include: 1) additional non-energy benefits from the participant perspective; 2) specific changes to customer heating and cooling behaviors occurring after weatherization; and 3) non-functioning equipment prior to replacement.
- Consider identifying non-programmatic savings resulting from low-income weatherization performed on Avista customer homes, but not tracked by the utility.
- Assist with Washington Utilities and Transportation Commission hearings and data requests regarding cost-effectiveness requirements for low-income programs.
- Work with Avista to determine non-energy benefits and to prioritize benefits to be pursued with further research.
- Consider funding a market assessment to identify: the geographic breakout of eligible participant populations; historical participation; whether any target markets have been historically underserved; and additional targeting opportunities (e.g., energy burdens).

Appendix A: Residential Program Satisfaction Survey Results

ENERGY STAR Appliance Rebate Program Satisfaction

As shown in Figure A-1, 73 percent (n=53) of ENERGY STAR Appliance Rebate Program participants reported being very satisfied, while 25 percent (n=18) reported being somewhat satisfied, and 3 percent (n=2) reported being not very satisfied.

Figure A-1. ENERGY STAR Appliance Rebate Program: Overall Satisfaction (n=73)

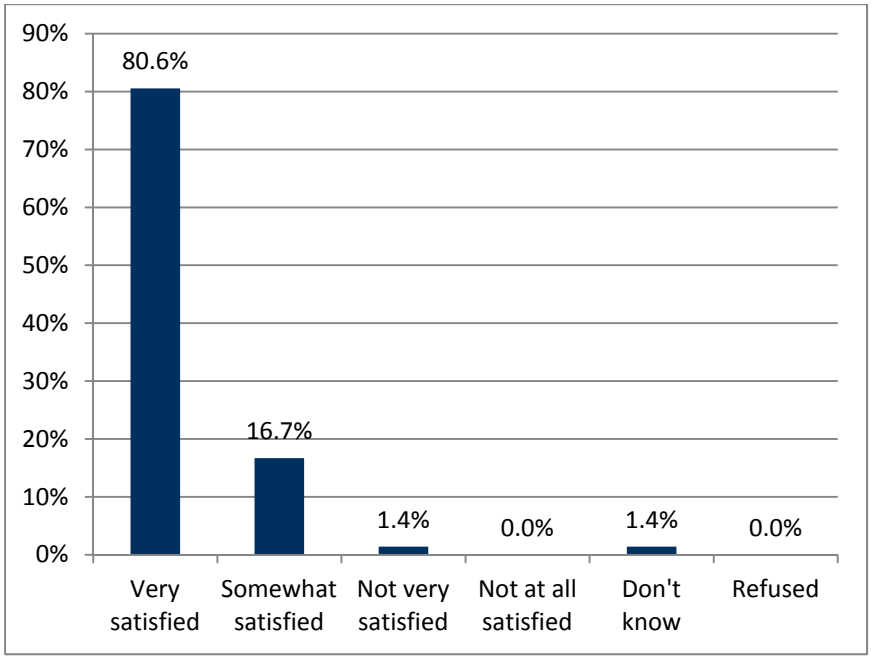


Comments from less-satisfied customers included: the rebate not being large enough; and being denied the rebate, despite being told they would qualify.

Heating and Cooling Efficiency Program Satisfaction

As shown in Figure A-2, participant satisfaction ran very high among Heating and Cooling Efficiency participants.

Figure A-2. Heating and Cooling Efficiency Program: Overall Satisfaction (n=72)

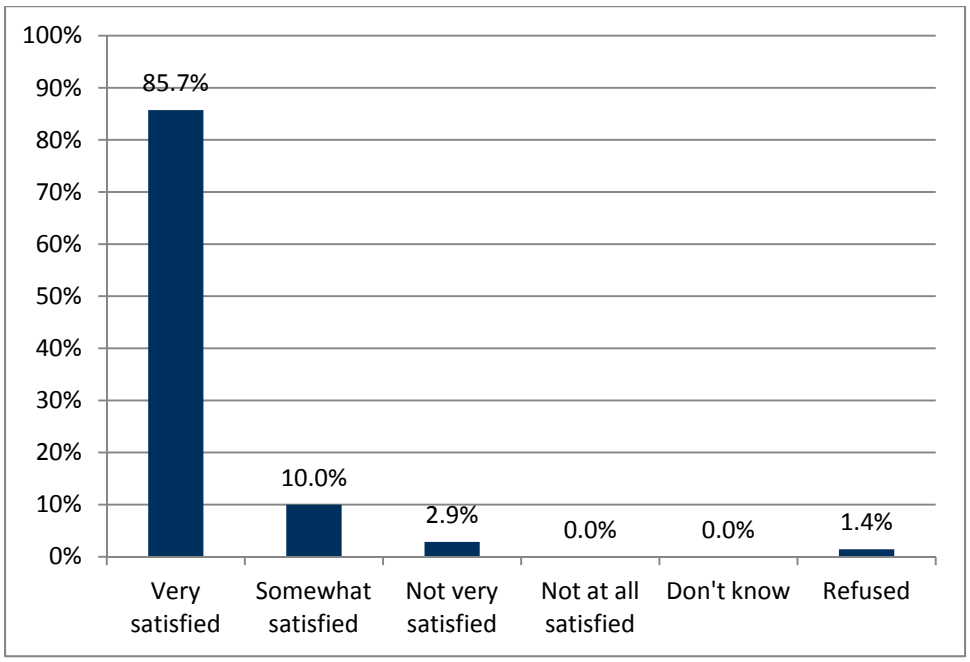


Generally, respondents expressed being very happy with the Heating and Cooling Efficiency program, with 81 percent (n=58) saying they were very satisfied. The rebate's size pleased respondents, per their feedback, as did the rebate's promptness and easy sign-up process. Somewhat satisfied respondents' comments included unhappiness that they could not receive a water heater rebate upon receiving a furnace rebate (seeming to stem from a misunderstanding of program requirements), and needing to fill out rebate paperwork four times before receiving rebates. One respondent reported being not very satisfied, saying the rebate was much lower than that received through another utility (Inland Power Company).

Weatherization and Shell Measures Satisfaction

As shown in Figure A-3**Error! Reference source not found.**, an overwhelming majority of weatherization participants expressed being very satisfied with the program.

Figure A-3. Weatherization and Shell Measures: Overall Satisfaction (n=70)

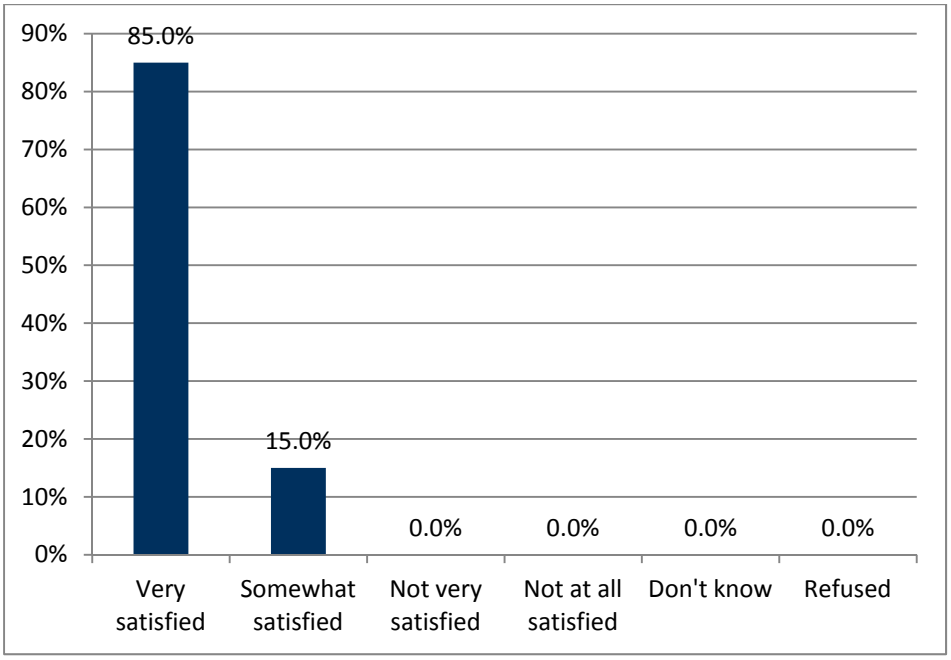


Weatherization and Shell Measures had the highest proportion of participants describing themselves as very satisfied, at 86 percent (n=60). Feedback from these respondents cited the helpfulness of people involved, the ease of the rebate process, and the rebate's size, which helped some afford the improvement. Somewhat satisfied customers (10 percent, n=7) said advertisements for the program lacked information, and timelines for returning the paperwork were unclear. Two respondents reported being not very satisfied, with one adding they installed windows, while expecting to receive a rebate, which they did not receive, and the other citing uncertainty regarding whether they would receive a rebate.

Water Heater Efficiency Program Satisfaction

As shown in Figure A-4, a large majority of respondents expressed being very satisfied with the Refrigerator Recycling program.

Figure A-4. Water Heater Efficiency: Overall Satisfaction (n=20)

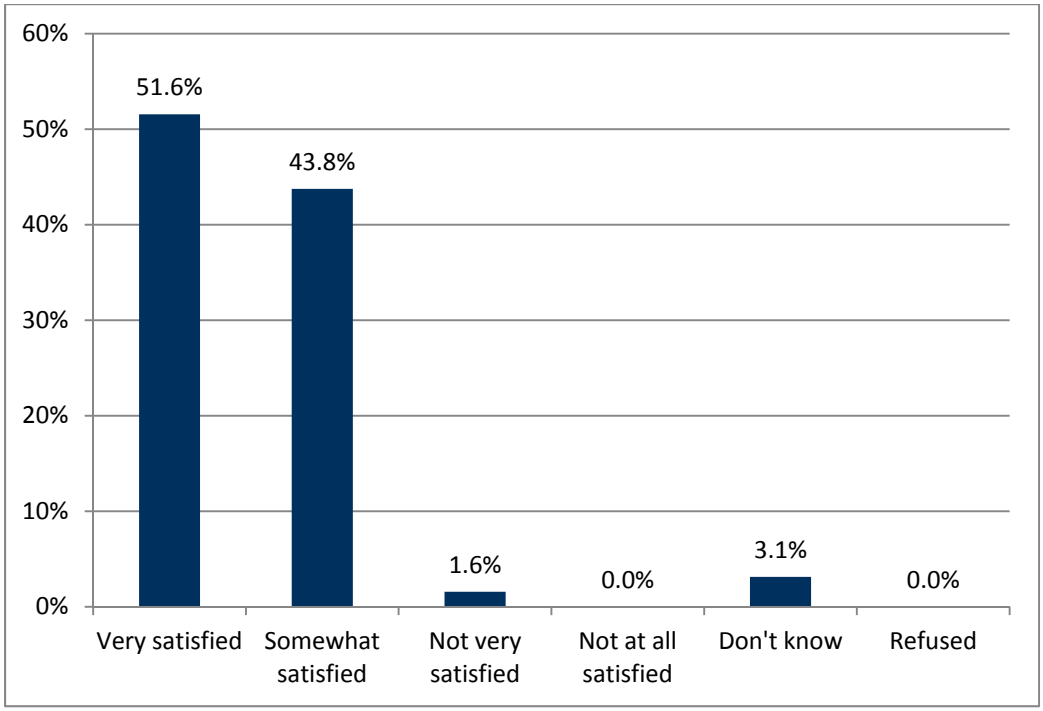


Seventeen respondents reported being very satisfied with the water heater program, while three reported being somewhat satisfied. None said they were not very satisfied or not at all satisfied. Very satisfied respondents cited the process as smooth and timely, and those involved as very helpful.

Home Energy Audit Program Satisfaction

Satisfaction among Home Energy Audit participants, while generally high, was less outstanding than that of other programs, reflecting the program providing a service very different from the other rebate programs. In all other programs surveyed, participants received cash rebates, while the Home Energy Audit program provided a paid service at a discounted rate. This difference could account for comparatively lower satisfaction levels for this program. The survey asked additional questions, summarized below, providing more detailed insights into customers' experiences with the program.

Figure A-5. Home Energy Audit Program: Overall Satisfaction (n=64)



As shown in Figure A-5, the audit program experienced the lowest percentage of very satisfied participants. While over half of participants described themselves this way, 44 percent (n=28) expressed being only somewhat satisfied. Comments from somewhat satisfied respondents included: wishing the discount was larger; and wanting the audit to be more in-depth and explained more clearly to customers. One respondent reported being not very satisfied, commenting the rebates were small relative to improvement costs, and, because they had a newer home, most rebates did not apply. This customer seemed to refer to Avista's other rebates, rather than the audit's discounted cost.

The survey asked additional questions of Audit program participants. Fifty-eight percent (n=37) rated the energy audit as excellent; 33 percent (n=21) rated it as good; and 9 percent (n=6) rated it as fair. Of 62 responding participants, 66 percent (n=41) cited auditors as excellent, 29 percent (n=18) described them as good, and 5 percent (n=3) described them as fair.

Most respondents thought auditors provided sufficient information: 69 percent (n=44) expressed being very satisfied; and 28 percent (n=18) expressed being somewhat satisfied (n=18). Two respondents (3 percent) described themselves as not very satisfied.

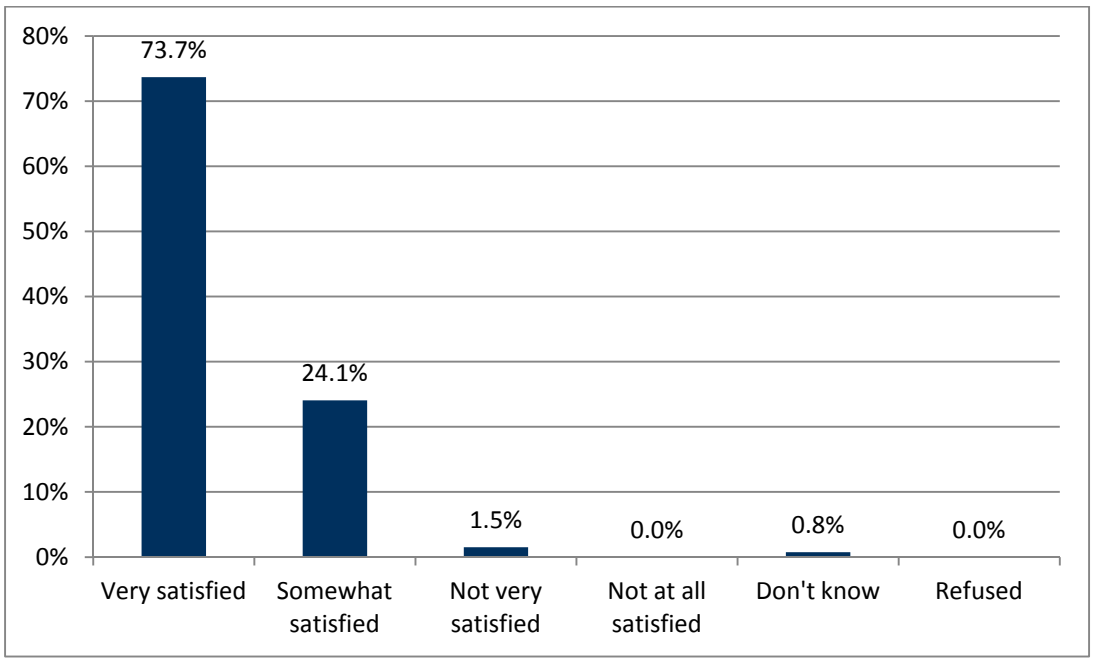
All but one of the 64 participants understood the auditors' recommendations for improving participant homes' energy-efficiency. Only 42 percent (n=27), however, installed or purchased new equipment or appliances. Improvements listed included: insulation, new windows, caulking and sealing, and new furnaces. One participant installed a photovoltaic array, while another installed a 15 kW wind turbine. Sixty percent (n=15) of responding participants received an Avista rebate for their improvement, and 54 percent received a tax break.

For participants not installing or purchasing new equipment, reasons cited included: not needing new appliances; not having the money; and auditors not making such recommendations. Eighty-six percent (n=32) of these respondents knew rebates or tax breaks might be available for some energy-saving measures.

Refrigerator Recycling Program Satisfaction

As shown in Figure A-6, respondents expressed satisfaction with the Refrigerator Recycling program.

Figure A-6. Refrigerator Recycling Program: Overall Satisfaction (n=133)

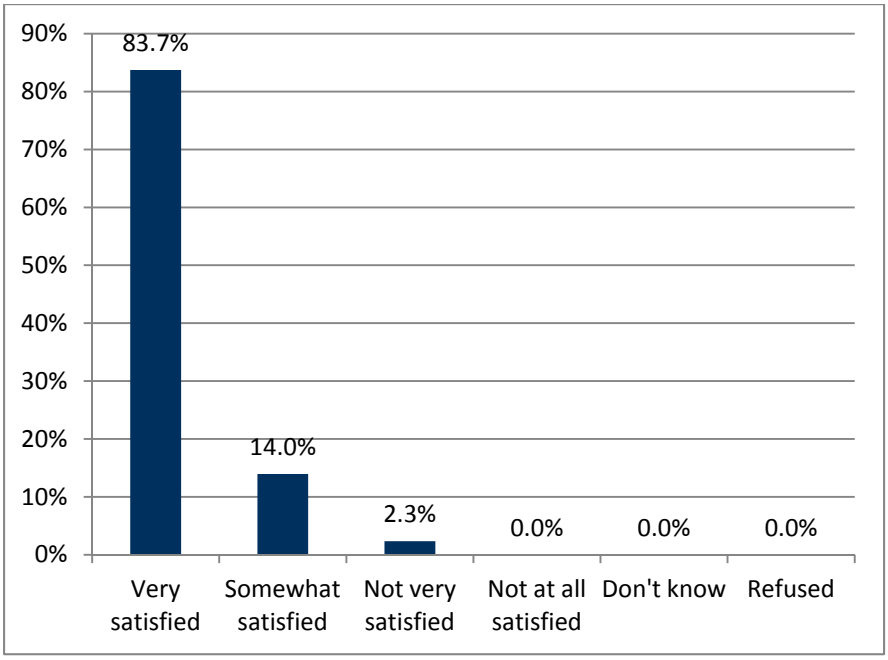


Specific feedback from respondents included: the process being efficient and prompt; and they were pleased to receive rebates. The few negative comments included: the rebate was not large enough; difficulties with application and program requirements; and a desire that Avista's program would accept all appliances for recycling.

Space and Water Conversion Program Satisfaction

As shown in Figure A-7, Conversion program participants were generally satisfied with the program, with 84 percent (n=36) rating themselves as very satisfied. Respondents expressed pleasure with how easy and fast the process was, and appreciated the rebate and energy bill savings. The Conversion program also received the highest percentage of very satisfied respondents (72 percent, n=31) regarding satisfaction with the rebate amount.

Figure A-7. Space and Water Conversion Program: Overall Satisfaction (n=43)



Appendix B: Additional Nonresidential Survey Detail

Customer Profile

Table B-1. Ownership by Customer Facility Table

Own/Lease	Participant		Nonparticipant		Partial Participant	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Own	231	81.1	61	78.2	15	57.7
Lease	53	18.6	17	21.8	11	42.3
Manage	1	0.4	0	0.0	0	0.0
Total	285	100.0	78	100.0	26	100.0

Table B-2. Fuel Type by Customer Facility

Heating Fuel Type	Participants		Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Gas	193	69.4	42	54.5	13	50.0
Electricity	62	22.3	25	32.5	10	38.5
Both, Electricity and Gas	7	2.5	6	7.8	3	11.5
Oil	3	1.1	1	1.3	0	0.0
Propane	3	1.1	1	1.3	0	0.0
Not Applicable (space not heated)	2	0.7	2	2.6	0	0.0
Heat reclaim	2	0.7	0	0.0	0	0.0
Space heated	1	0.4	0	0.0	0	0.0
Diesel	1	0.4	0	0.0	0	0.0
Steam	1	0.4	0	0.0	0	0.0
Natural gas	1	0.4	0	0.0	0	0.0
Waste fill	1	0.4	0	0.0	0	0.0
Wood	1	0.4	0	0.0	0	0.0
Total	278	100.00	77	100	26	100.0

Program Awareness

Table B-3. How Respondents Heard About the Program

How did you first hear of the program	Participants		Non-Participants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Word of mouth	88	33.3	8	34.8	5	20.0
Avista Representative	46	17.4	3	13.0	8	32.0
Contractor marketing	42	15.9	3	13.0	3	12.0

Contacted Avista directly	23	8.7	1	4.3	1	4.0
Internet/Avista website	20	7.6	0	0.0	0	0.0
Electrician/Electric company	18	6.8	0	0.0	0	0.0
Printed materials	12	4.5	2	8.7	3	12.0
Trade organization	10	3.8	0	0.0	2	8.0
Received a rebate before	7	2.7		0.0	2	8.0
Another company	3	1.1	3	13.0	0	0.0
Previous experience with Avista	3	1.1		0.0	0	0.0
Electronic monthly newsletter	2	0.8	1	4.3	0	0.0
Prior knowledge	0	0.0	2	8.7	0	0.0
Television	1	0.4	0	0.0	0	0.0
Supplier – not electric	1	0.4	0	0.0	0	0.0
Program sponsored conference/trade show/workshop	0	0.0	0	0.0	1	4.0
Other	0	0.0	0	0.0	1	4.0
Total	264	-	23	-	25	-

Table B-4. Nonparticipant Program Awareness by Rate Class

Response	11	Percent	21	Percent	31	Percent	32	Percent	111	Percent
Yes	5	35.7	18	33.3	1	25.0	1	50.0	2	40.0
No	9	64.3	36	66.7	3	75.0	1	50.0	3	60.0
Total	14	100.0	54	100.0	4	100.0	2	100.0	5	100.0

Table B-5. Most Effective Way to Reach Customers

Most effective way to reach customers about program opportunities	Participants		Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Mailings	31	17.1	42	53.2	9	36.0
Email	42	23.2	9	11.4	3	12.0
Mail - with the billing	42	23.2	5	6.3	2	8.0
Avista Representative	22	12.2	5	6.3	7	28.0
Telephone call	20	11.0	10	12.7	0	0.0
Advertisements/Flyers	14	7.7	1	1.3	0	0.0
Contractors/Vendors	9	5.0	2	2.5	0	0.0
Word of mouth	9	5.0	1	1.3	1	4.0
Website/Internet	9	5.0	1	1.3	1	4.0
Electronic Newsletter	0	0.0	4	5.1	1	4.0
Newspaper	4	2.2	0	0.0	0	0.0
Television	3	1.7	0	0.0	0	0.0
Magazine	3	1.7	0	0.0	0	0.0

Radio	2	1.1	0	0.0	0	0.0
Audit/Tax incentive	2	1.1	0	0.0	0	0.0
Trade association	1	0.6	1	1.3	0	0.0
Commercial outlet	1	0.6	0	0.0	0	0.0
Do not need anything	1	0.6	0	0.0	0	0.0
Social media	1	0.6	0	0.0	0	0.0
Public Service Announcements	1	0.6	0	0.0	0	0.0
Not Bill inserts	1	0.6	0	0.0	0	0.0
Personal visit	0	0.0	1	1.3	0	0.0
Fax	0	0.0	1	1.3	0	0.0
Other - Unspecified	0	0.0	0	0.0	1	4.0
Total	181	-	79	-	25	-

Purchase Patterns and Decision Making

Table B-6. Nonparticipant and Partial Participant Energy Efficiency Equipment Installation Outside of the Program

Was Energy Efficient Equipment Installed in Facilities	Non-Participants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
No	60	80.0	14	56.0
Yes	15	20.0	11	44.0
Total	75	100.0	25	100.0

Table B-7. Installed Energy Efficient Equipment

Energy Efficient Equipment Installed	Non-Participants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Lighting	5	26.3	8	53.3
HVAC units/Furnace/Heater	3	15.8	2	13.3
New thermostats	2	10.5	0	0.0
Variable frequency drives	1	5.3	0	0.0
Heat recovery system	1	5.3	0	0.0
Air conditioning unit	1	5.3	1	6.7
New windows	1	5.3	0	0.0
New doors	1	5.3	0	0.0
Lasers	1	5.3	0	0.0
Occupancy sensors	1	5.3	0	0.0
Motors	1	5.3	0	0.0
Cooler/Refrigerator/Freezer	1	5.3	3	20.0
Equipment - Unspecified	0	0.0	1	6.7
Total	19	100.0	15	100.0

Table B-8. Reasons for Installing Efficient Equipment

Reason for Installing Energy Efficient Equipment	Non-Participants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Save money	6	40.0	5	35.7
Better quality product	0	0.0	3	21.4
Problem with previous product	3	20.0	2	14.3
Need new product	2	13.3	0	0.0
Federal initiative	1	6.7	0	0.0
Want rebate	1	6.7	1	7.1
Previous product no longer available	1	6.7	0	0.0
Other - Unspecified	1	6.7	3	21.4
Total	15	100	14	100

Table B-9. Factors Influencing Installation of Efficient Equipment

Factors that Influenced Decision to Pursue Energy Efficient Equipment	Participants		Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
To save energy	99	35.0	6	40.0	5	35.7
Save on electric bills	92	32.5	7	46.7	7	50.0
Replace old equipment	71	25.1	2	13.3	1	7.1
For rebate/incentive	54	19.1	0	0.0	0	0.0
Replace broken equipment	30	10.6	0	0.0	1	7.1
To acquire the latest technology	18	6.4	0	0.0	0	0.0
Part of a broader remodeling	15	5.3	0	0.0	0	0.0
Tax credit or rebate	10	3.5	2	13.3	0	0.0
To reduce maintenance costs	10	3.5	1	6.7	0	0.0
Contractor recommendation	8	2.8	0	0.0	0	0.0
Better lighting	6	2.1	0	0.0	0	0.0
To help protect the environment	4	1.4	0	0.0	0	0.0
Participation in other Avista rebate programs	3	1.1	0	0.0	0	0.0
Need new equipment	3	1.1	0	0.0	0	0.0
Cost of equipment	2	0.7	0	0.0	0	0.0
Quality/more efficient	2	0.7	0	0.0	0	0.0
Sales Rep	1	0.4	0	0.0	0	0.0
Good business decision	1	0.4	0	0.0	0	0.0
Improve comfort	0	0.0	1	6.7	0	0.0
Had to	0	0.0	1	6.7	0	0.0
To follow the standards of the business	0	0.0	0	0.0	1	7.1
Total	283	-	15	-	14	-

Table B-10. Who Customers Talk to About Energy Efficiency

Who Respondents Would Talk to About Improving Energy Efficiency	Participants		Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Avista	105	39.3	21	25.6	8	33.3
Equipment contractor	50	18.7	9	11.0	6	25.0
Don't Know	27	10.1	11	13.4	0	0.0
Equipment vendor	21	7.9	5	6.1	3	12.5
Administration/Board/Owner	2	0.7	15	18.3	3	12.5
Director/Manager	15	5.6	2	2.4	1	4.2
Myself	12	4.5	4	4.9	1	4.2
Electrician/Electric company	9	3.4	0	0.0	0	0.0
Maintenance crew	2	0.7	5	6.1	0	0.0
Friend/Associate/Individual person mentioned	6	2.2	0	0.0	0	0.0
Internal employees	4	1.5	0	0.0	0	0.0
Engineering	3	1.1	0	0.0	1	4.2
Facility management	3	1.1	0	0.0	0	0.0
Refused	2	0.7	1	1.2	0	0.0
Power company	1	0.4	2	2.4	0	0.0
Corporate office	0	0.0	2	2.4	1	4.2
Internet	2	0.7	0	0.0	0	0.0
Retail supplier	1	0.4	0	0.0	0	0.0
Local government	1	0.4	0	0.0	0	0.0
Architects	1	0.4	0	0.0	0	0.0
Depends on location	0	0.0	1	1.2	0	0.0
Landlord	0	0.0	1	1.2	0	0.0
County fairgrounds	0	0.0	1	1.2	0	0.0
BPA	0	0.0	1	1.2	0	0.0
Other	0	0.0	1	1.2	0	0.0
Total	267	100	82	100	24	100

Barriers and Benefits

Table B-11. Barriers to Participation

Most Significant Obstacles to Installing Energy Efficient Equipment	Participants		Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
High first cost	174	68.2	46	69.7	18	69.2
Don't know	26	10.2	13	19.7	0	0.0
Lack of staff time to dedicate to pursuing energy efficiency upgrades	15	5.9	3	4.5	3	11.5
Funding competition for other investments/improvements within organization	17	6.7	1	1.5	2	7.7
Lack of technical knowledge about energy efficiency	9	3.5	4	6.1	2	7.7

equipment						
Nothing, no obstacles	8	3.1	2	3.0	1	3.8
Time/Availability	10	3.9	0	0.0	0	0.0
Long return on investment	6	2.4	1	1.5	1	3.8
Installation	6	2.4	0	0.0	0	0.0
Lack of corporate support for energy efficiency investments	3	1.2	3	4.5	0	0.0
Funding	5	2.0	0	0.0	0	0.0
Refused	3	1.2	1	1.5	0	0.0
Regulations/Criteria/Deadlines	3	1.2	0	0.0	0	0.0
Having proper equipment	0	0.0	3	4.5	0	0.0
Finding contractor/installer	2	0.8	0	0.0	0	0.0
Size and complexity of project	2	0.8	0	0.0	0	0.0
Lack of need	0	0.0	2	3.0	0	0.0
System compatibility	0	0.0	1	1.5	1	3.8
Age of equipment	1	0.4	0	0.0	0	0.0
Own research	1	0.4	0	0.0	0	0.0
Economy	1	0.4	0	0.0	0	0.0
Resources - unspecified	1	0.4	0	0.0	0	0.0
Size and complexity of project	1	0.4	0	0.0	0	0.0
Installation	1	0.4	0	0.0	0	0.0
Building owner	0	0.0	1	1.5	0	0.0
Amount of downtime to customer	0	0.0	0	0.0	1	3.8
Too much of a hassle	0	0.0	0	0.0	1	3.8
Total	255	-	66	-	26	-

Table B-12. Ways to Overcome Barriers to Participation

What Avista Could do to Help Overcome these Obstacles	Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Don't know	13	18.8	7	26.9
Provide more information	14	20.3	3	11.5
Provide funding/loans/rebates	15	21.7	0	0.0
No obstacle/nothing	9	13.0	0	0.0
Lower cost/rate	8	11.6	0	0.0
Sales rep visit/call	5	7.2	0	0.0
Other	0	0.0	5	19.2
Increase rebate/cover cost	0	0.0	5	19.2
Continue with the rebate programs	0	0.0	3	11.5
No need to replace equipment, so nothing	2	2.9	0	0.0
Pay for more	2	2.9	0	0.0
Approve rebates	0	0.0	2	7.7
Be more compatible across systems	1	1.4	0	0.0
Extend time limits	0	0.0	1	3.8
Total	69	100	26	100

Table B-13. Participant Sources of Outside Funding

Did Participants Access Other Funding Sources	Participants	
	Number of Respondents	Percent
No	112	88.2
Yes	16	12.6
Total	127	100.0

Table B-14. Importance of Outside Funding

Importance of Other Funding Sources in decision to Participate	Participants	
	Number of Respondents	Percent
Very important	11	73.33
Somewhat important	4	26.67
Total	15	100.00

Participant Non-Energy Benefits

Table B-15. Presence of Non-Energy Benefits

Has the Program Rebated Project Provided Benefits Beyond Energy Savings	Participants	
	Number of Respondents	Percent
Yes	199	75.38
No	65	24.62
Total	264	100.00

Table B-16. Type of Non-Energy Benefits

Benefits Experienced Beyond Energy Savings	Participants	
	Number of Respondents	Percent
Increased occupant comfort	48	24.1
Lower maintenance costs	48	24.1
Better lighting	44	22.1
Increased productivity	35	17.6
Environmental benefits	27	13.6
Less waste	9	4.5
Increased technical knowledge	5	2.5
Upgrade equipment	5	2.5
Improve safety	4	2.0
Save energy/usage	3	1.5
Aesthetics	3	1.5
Water savings	2	1.0
Reliability/quality of new equipment	2	1.0
Marketing tool	1	0.5
Total	199	-

Program Challenges

Table B-17. Presence of Challenges

Were Aspects of the Program Challenging	Participants	
	Number of Respondents	Percent
Yes	39	13.8
No	244	86.2
Total	283	100.0

Table B-18. Description of Challenges

Aspects of the Program that were Challenging	Participants	
	Number of Respondents	Percent
Installation	9	24.3
Rebate/paperwork process	8	21.6
Information concerning program	4	10.8
Initial cost	4	10.8
Selection/identification of machine	3	8.1
Finding contractor/installer	2	5.4
Getting used to new product	2	5.4
Scheduling/timeframe	2	5.4
Matching dollars needed	1	2.7
Making the decision	1	2.7
Rebate/paperwork process	1	2.7
Not receiving the rebate within a reasonable timeframe	0	0.0
Time dedication necessary	0	0.0
Not receiving help in the process	0	0.0
Total	37	100

Program Satisfaction

Table B-19. Participant Program Overall Satisfaction

Satisfaction with the Program Overall	Participants	
	Number of Respondents	Percent
Very satisfied	193	68.0
Somewhat satisfied	81	28.5
Neither satisfied or dissatisfied	4	1.4
Somewhat dissatisfied	5	1.8
Very dissatisfied	1	0.4
Total	284	100.0

Table B-20. Rebate Amount Satisfaction

Satisfaction with Rebate Amount Received	Participants	
	Number of Respondents	Percent
Very satisfied	189	67.7
Somewhat satisfied	80	28.7
Neither satisfied or dissatisfied	5	1.8
Somewhat dissatisfied	2	0.7
Very dissatisfied	3	1.1
Total	279	100.0

Table B-21. Realized Energy Savings Satisfaction

Satisfaction with Energy Savings Realized	Participants	
	Number of Respondents	Percent
Very satisfied	119	47.4
Somewhat satisfied	108	43.0
Neither satisfied or dissatisfied	14	5.6
Somewhat dissatisfied	7	2.8
Very dissatisfied	3	1.2
Total	251	100.0

Table B-22. Rebate Speed Satisfaction

Satisfaction with the Speed Rebate was Received in	Participants	
	Number of Respondents	Percent
Very satisfied	199	72.6
Somewhat satisfied	62	22.6
Neither satisfied or dissatisfied	1	0.4
Somewhat dissatisfied	8	2.9
Very dissatisfied	4	1.5
Total	274	100.0

Table B-23. Commercial Offerings Satisfaction

Satisfaction with Avista's Offerings for Commercial Customers	Participants	
	Number of Respondents	Percent
Very satisfied	147	55.3
Somewhat satisfied	100	37.6
Neither satisfied or dissatisfied	6	2.3
Somewhat dissatisfied	10	3.8
Very dissatisfied	3	1.1
Total	266	100.0

Table B-24. Installed Measure Satisfaction

The Measure Installed	Participants	
	Number of Respondents	Percent
Very satisfied	222	78.4
Somewhat satisfied	57	20.1
Neither satisfied or dissatisfied	1	0.4
Somewhat dissatisfied	2	0.7
Very dissatisfied	1	0.4
Total	283	100.0

Table B-25. Application Form Satisfaction

Satisfaction with the Application Forms	Participants	
	Number of Respondents	Percent
Very satisfied	146	55.1
Somewhat satisfied	101	38.1
Neither satisfied or dissatisfied	8	3.0
Somewhat dissatisfied	8	3.0
Very dissatisfied	2	0.8
Total	265	100.0

Table B-26. Application Process Satisfaction

Satisfaction with the Application Process	Participants	
	Number of Respondents	Percent
Very satisfied	165	60.0
Somewhat satisfied	93	33.8
Neither satisfied or dissatisfied	7	2.5
Somewhat dissatisfied	9	3.3
Very dissatisfied	1	0.4
Total	275	100.0

Table B-27. Program Staff or Account Executive Satisfaction

Satisfaction with the Program Staff or Avista Account Executive	Participants	
	Number of Respondents	Percent
Very satisfied	199	81.9
Somewhat satisfied	32	13.2
Neither satisfied or dissatisfied	6	2.5
Somewhat dissatisfied	4	1.6
Very dissatisfied	2	0.8
Total	243	100.0

Nonparticipants

Table B-28. Rebate Amount Offered Satisfaction

Satisfaction with Rebate Amount Offered	Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Very satisfied	3	23.1	5	22.7
Somewhat satisfied	6	46.2	11	50.0
Neither satisfied or dissatisfied	1	7.7	1	4.5
Somewhat dissatisfied	2	15.4	1	4.5
Very dissatisfied	1	7.7	4	18.2
Total	13	100.0	22	100.0

Table B-29. Commercial Offerings Satisfaction

Satisfaction with Avista's Offerings for Commercial Customers	Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Very satisfied	2	18.2	8	33.3
Somewhat satisfied	4	36.4	10	41.7
Neither satisfied or dissatisfied	5	45.5	1	4.2
Somewhat dissatisfied	0	0.0	1	4.2
Very dissatisfied	0	0.0	4	16.7
Total	11	100.0	24.0	100.0

Table B-30. Application Form Satisfaction

Satisfaction with the Application Forms	Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Very satisfied	1	9.1	7	31.8
Somewhat satisfied	7	63.6	11	50.0
Neither satisfied or dissatisfied	1	9.1	2	9.1
Somewhat dissatisfied	2	18.2	1	4.5
Very dissatisfied	0	0.0	1	4.5
Total	11	100	22	100

Table B-31. Application Process Satisfaction

Satisfaction with the Application Process	Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Very satisfied	2	15.4	8	34.8
Somewhat satisfied	8	61.5	9	39.1
Neither satisfied or dissatisfied	0	0.0	2	8.7
Somewhat dissatisfied	2	15.4	2	8.7
Very dissatisfied	1	7.7	2	8.7
Total	13	100.0	23	100.0

Table B-32. Program Staff or Account Executive Satisfaction

Satisfaction with the Program Staff or Avista Account Executive	Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent
Very satisfied	7	58.3	14	60.9
Somewhat satisfied	2	16.7	6	26.1
Neither satisfied or dissatisfied	2	16.7	1	4.3
Somewhat dissatisfied	1	8.3	1	4.3
Very dissatisfied	0	0.0	1	4.3
Total	12	100	23	100

Satisfaction with Website and Marketing Materials

Table B-33. Website Satisfaction

Satisfaction with Information on Avista's Website	Participants		Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Very satisfied	92	46.7	1	14.3	5	26.3
Somewhat satisfied	89	45.2	6	85.7	8	42.1
Neither satisfied or dissatisfied	9	4.6	0	0.0	4	21.1
Somewhat dissatisfied	6	3.0	0	0.0	0	0.0
Very dissatisfied	1	0.5	0	0.0	2	10.5
Total	197	100	7	100	19	100

Table B-34. Printed Materials Satisfaction

Satisfaction with Printed Program Materials	Participants		Nonparticipants		Partial Participants	
	Number of Respondents	Percent	Number of Respondents	Percent	Number of Respondents	Percent
Very satisfied	91	40.3	5	26.3	9	45.0
Somewhat satisfied	112	49.6	13	68.4	5	25.0
Neither satisfied or dissatisfied	7	3.1	0	0.0	3	15.0
Somewhat dissatisfied	10	4.4	0	0.0	2	10.0
Very dissatisfied	6	2.7	1	5.3	1	5.0
Total	226	100.0	19	100	20	100.0

Satisfaction with Contractor or Vendor Outreach

Table B-35. Satisfaction with Contractor's Service

Satisfaction Level with Contractor	Respondents	Percent
Very satisfied	171	79.5
Somewhat satisfied	32	14.9
Neutral, do not read Neither satisfied or not satisfied	2	0.9
Somewhat dissatisfied	7	3.3
Very dissatisfied	3	1.4
Total	215	100.0

Table B-36. Participant Reasons for Contractor's Service Satisfaction

Reason For Dissatisfaction with Contractor	Respondents	Percent
Misengineered/poor installation	3	37.5
Supplied with poor lights	1	12.5
Pushy salesman	1	12.5
Time completing job	1	12.5
Poor communication	1	12.5
Poor service	1	12.5
Total	8	100.0

Appendix C: Nonresidential Trade Ally Feedback

Trade Ally Profile

Table C-1. Number of Employees at Trade Ally Companies

Number of Employees	Respondents
1-10	4
11-20	4
21-30	4
31-40	1
41-50	1
>50	5
Refused	1
Total	20

Table C-2. Avista Nonresidential Program Projects Completed by Trade Allies in 2010

Number of Completed Projects	Respondents
1-10	11
11-20	4
21-30	1
41-50	1
>100	3
Total	20

Table C-3. Type of Materials Trade Allies Received from Avista

Program Materials Received	Respondents
Brochures	3
Rebate Forms	3
Program Updates	2
Avista Contact Info	1
Marketing Materials	1
Home Improvement Worksheets	1
Qualifying Product List	3
Do Not Know (DK)	4
Total	18

Trade Ally Communications with Customers

Table C-4. Benefits Promoted to Customers

Benefits of EE Equipment	Respondents
Reduced Energy Use	6
Reduced Energy Costs	13
Improved Productivity	2
Improved Comfort	4
Lower O&M Costs	2
Incentives from Avista	9
Environmental Benefits	3
Good Investment (ROI)	9
Better Equipment Quality/Warranty	2
Total	50

Table C-5. Customer Awareness of Avista Rebate Program

Customer Awareness	Respondents
Very Aware	6
Somewhat Aware	12
Somewhat Unaware	2
Total	20

Table C-6. Type of Information Customers Typically Request

Customer Information Requests	Respondents
Incentive Levels	9
Participation Requirements	4
Technology Information	4
Return on Investment Information	2
Energy Savings	1
Total	20

Barriers to Program Participation

Table C-7. Most Significant Obstacles to Installing Energy Efficient Equipment

Market Barriers	Respondents
Lack of Technical Knowledge	1
Availability of Capital	13
Uncertainty of Savings	2
Not Enough Time	1
None	2
Barrier is Service Center/Paperwork	1
Labor & Industry Codes in WA	1
Do Not Know (DK)	2
Total	23

Table C-8. Importance of Avista Rebates

Importance	Trade Ally Comments	Respondents
Very Important	Initial Driving Force of Sale	1
	Sales Would Not Occur Without Rebates	8
	Most Important Factor	1
	Encourages Customer to Upgrade Sooner	1
	Helpful but Does Not Affect Sales	1
	No Reason Provided (NR)	3
Somewhat Important	Helpful, Especially When Coupled with Tax Incentive	1
	Helpful When Makes Up Difference in Competitive Pricing	2
	Helpful Along with Return On Investment (ROI) Calculation	1
	No Reason Provided (NR)	1
Neither Important or Unimportant	No Reason Provided (NR)	1
Total		21