COMPARISON OF SEGMENTATON PLANS FOR RESIDENTIAL ENERGY CONSUMERS

Submitted to:

Sarah Castor
Energy Trust of Oregon, Inc.
851 SW 6th Avenue, Suite 1200
Portland, Oregon 97204

Submitted by:

Dethman & Associates
Linda Dethman
David Thomley

December 2009

≈ ACKNOWLEDGEMENTS ≈

Many thanks to the immense support form Energy Trust for sponsoring this project, and the particular help from Sarah Castor, Phil Degens, and Brien Sipe. In addition, our utility contacts were most generous in giving their insights and their materials. Thank you Marc Pedersen and Arien Korteland from BC Hydro; Eric Karlson from Sacramento Municipal Utility District; Grant Ringel from Puget Sound Energy; Carol Lindstrom from BPA; Laura McRae from Snohomish PUD; and Nancy Oakley, Cathy Carruthers, and Nora Doyle at Tacoma Power.
.

Sincerely,

Linda Dethman
Dethman & Associates
3600 38th Avenue S
Seattle, WA 98144
(206) 760 1974

This research is dedicated to new ways of thinking about energy consumers. . .

≈ TABLE OF CONTENTS ≈

≈ EXECUTIVE SUMMARY ≈ 6

INTRODUCTION 6

CONCLUSIONS 6

RECOMMENDATIONS 8

≈ SECTION ONE: RESEARCH PURPOSES AND SEGMENTATION BASICS ≈ 10

RESEARCH PURPOSES AND APPROACH 10

SEGMENTATION BASICS 11

A Brief History 11

A Cautionary Note About Segmentation Design and Analysis 12

Incorporating Segmentation Research 13

Steps in the Segmentation/Marketing Process 14

≈ SECTION TWO: SEGMENTATION STUDY PURPOSES AND METHODS≈ 18

INTRODUCTION 18

SEGMENTATION STUDY PURPOSES 19

Summary 19

Expanded Description of Segmentation Study Purposes 20

METHODS 23

Summary 23

≈ SECTION THREE: COMPARISON OF SEGMENTATION VARIABLES≈ 25

SUMMARY 25

Comparison of Key Segmentation Variables 25

≈ SECTION FOUR: COMPARISON OF SEGMENTS ≈ 33

SUMMARY 33

FINDING MEANINGFUL COMPARISONS ACROSS SEGMENTS 33

CONCERN, CAPACITY, CONDITION COMPARISONS 34

≈ SECTION FIVE: APPLYING SEGMENTATION RESULTS≈ 39

SUMMARY 39

SEGMENTATION IN PRACTICE 40

Energy Trust 40

PSE 40

SnoPUD 40

Tacoma 41

BPA 41

BC Hydro 42

SMUD 43

≈ SECTION SIX: LESSONS LEARNED≈ 44

LEVEL OF SUPPORT NEEDED 44
SURPRISES ABOUT CUSTOMERS 44
SIZE OF SAVINGS OPPORTUNITIES AND EARLY RESULTS 44
POWER OF SEGMENTATION 45
POWER OF REGIONAL APPROACHES 45
STEPS THAT FURTHER THE CAUSE 45

APPENDIX A: DETAILED SEGMENTATION DESCRIPTIONS 46

Energy Trust of Oregon's Five Customer Segments (2008) 46
Snohomish PUD's Seven Customer Segments 49
Tacoma Power's Five Customer Segments 49
BPA's Eight Customer Segments (excluding PSA utilities) 50
BC Hydro's Six Customer Segments 51
BC Hydro's Six Customer Segments 51
SMUD's Eight Customer Segments 53

APPENDIX B: EXPANDED METHODS DESCRIPTION 55

APPENDIX C: BPA GEARBOX QUESTIONS 61

80% ACCURACY 61
90% ACCURACY 64

APPENDIX D: EXAMPLE OF A PERSONALIZATION 68

Table of Tables

Table 1 Comparison of Stated Segmentation Puroses 20

Table 2: Comparison of Key Methods Across Studies 24

Table 3 Comparison of ETO 2008 Basis Variables to Presence in Other Studies 28

Table 4 Comparison of Other Key Variables Across Studies 29

Table 5 Comparison of ETO Segments to other segments by concern/capacity/conditions 35

Table 6 Comparison of Other segments not Represented by ETO Segments 36

Table 7 Comparison of Segments By Estimated Low To High Energy Use 37

Table 8 Comparison of NW Segments From Green To Brown Attitudes 38

Table 9 Comparison of NW Segments By Energy Use And Green/Brown Attitudes 38

Table 10 Indicators of Segmentation Use Progress 39

Table of Figures

Figure 1 Incorporating Segmentation Research Into Programs, Marketing, And Evaluaton 14

Figure 2 Energy Trust Of Oregon Customer Segments 46

Figure 3 Puget Sound Energy's Seven Customer Segments 47

Figure 4 Bc Hydro's Six Customer Segments 51

Figure 5 Smud's Eight Customer Segments 53

≈ EXECUTIVE SUMMARY ≈

The good news is that in our analysis, the high priority segments to pursue for energy efficiency appear to make up 50-60% of residential customers.

INTRODUCTION

Market segmentation has been shown to be a powerful tool in speeding customer adoption of products, services, or desired behaviors, from computers and software, to beverages and restaurants, to reducing tobacco use.[1] Consider, for a moment, Apple's Mac strategy to capture the creative thinkers (and their pocketbooks) of the world, first by focusing on educators and graphic artists and then by appealing to other segments who want to "think different." Who doesn't know the "PC" and "Mac" guys, with Mr. PC so bottled up in his suit and haircut and Mr. Mac so relaxed in his jeans and hipness? And who doesn't know about Apple's success?

Segmentation assumes that markets are heterogeneous and require approaches that recognize this diversity. Segmentation schemes divide markets into distinct groups based upon their shared characteristics, needs and preferences. Programs and marketing can then be tailored to reach the groups with the most potential to use services, buy products, or change behavior.

Energy Trust sponsored this investigation because they, and a number of other energy agencies in the western United States (Puget Sound Energy, Bonneville Power administration, Snohomish PUD, Tacoma Power, BC Hydro, and Sacramento Municipal Utility District), have undertaken segmentation efforts with their residential customers in the past five years. We set out to see what might be learned about customer segments and about how seven agencies are conducting segmentation research and putting it into use. We reviewed segmentation materials and interviewed key contacts at the agencies. We also relied on various books and articles on segmentation. This executive summary addresses the conclusions and implications of this research and recommends next steps for Energy Trust to consider for its segmentation efforts.

CONCLUSIONS

- Most segmentation for energy efficiency programs has been based on convenient utility divisions – for instance, residential and commercial or geographical sectors – rather than a nuanced understanding of consumer needs and preferences. The "status quo" marketing and program segmentation approaches, while valuable, do not take advantage of the power of consumer-based market segmentation approaches that are

[1] See, for instance: Steven J. Moss, M.Cubed, "Market Segmentation and Energy Efficiency Program Design," Prepared for CIEE Behavior and Energy Program, November 2008,, p. 6, Malcolm McDonald and Ian Dunbar, "Market Segmentation: How to Do It, How to Profit From it", and Loren Lutzenhiser, "Segmentation Overview," BECC Presentation, Sacramento, CA 2008.

widely used in other industries. The seven segmentation schemes developed by energy agencies in the west that are examined in this study rely on consumer variables – attitudinal, behavioral, and consumptive – and offer the potential for better programs and more savings.

- Agencies using these customer-based schemes say they have fostered new thinking about their residential customers, resulting in new types of program design and marketing and more careful tracking of program response by segment. The agencies furthest along have seen positive results in terms of program uptake and they expect to reap greater savings due to their segmentation efforts.
- Our industry has focused on narrow adoption of more efficient technologies and has assumed most decisions are driven by rational and economic factors. These seven segmentation schemes clearly show that consumers think about and pursue energy efficiency in various, complex, and sometimes inconsistent ways and are influenced by a wider set of factors than a "rational economic man" model suggests. Those interviewed for this project stress, however, that it is hard to overcome the inertia of long-standing operating assumptions about customer thinking and program delivery.
- The segmentation schemes presented in this report vary significantly in purposes, methods, results, and application. Our analysis clearly shows that the variables used to develop the segments greatly affect them and that selection of variables and wording of survey questions is an imperfect process. The most useful approaches appear to incorporate awareness, attitudinal, behavioral, and consumption variables, and to collect a large amount of data which is then winnowed down. Yet sponsors stress that it is the commitment and iterative process of using segmentation, not the perfection of the scheme that is important. They say that if reasonable care and thought are put into segmentation approaches, and they meet basic segmentation criteria, they all provide a stepping stone to a more sophisticated understanding of customers, how to reach them, and how to influence greater energy savings.
- The segmentation process underscores that markets are not monolithic and that customers vary -- by awareness, knowledge, values, attitudes, circumstance, and behaviors. This perspective is useful for changing "business as usual" in energy efficiency agencies. Those who believe in segmentation would also say that such an approach is essential for reaching the remaining substantial, but more challenging, savings opportunities.
- Our analysis across segmentation approaches in this study revealed 10 segments that could be prioritized by their potential; however not all of these segments were in all schemes. Still, this amalgamated approach will hopefully further thinking about useful ways to segment the residential market according to the "concern, capacity, and conditions" framework presented. In addition, in this analysis, the "high priority" segments make up 50-60% of the residential markets – meaning that they offer strong potential for influence and savings if programs and services are targeted to their needs.

- The most robust segmentation situations within the energy agencies are those that have taken a long-term view and that have gathered broad and integrated organizational support. These agencies have allocated adequate resources to do the initial segmentation research, to try out pilot programs using segmentation, to conduct further research with segments, and to collect metrics about results. In addition, the most successful use of segmentation studies also appears to be driven by sponsors who are pursuing very challenging and firm energy savings goals.

- Puget Sound Energy, Tacoma Power, BPA, and SnoPUD collaboration on a "regional approach" to segmentation offers the potential of a common platform for all energy agencies in the Northwest to use. The efforts have resulted in more communication among the utilities about how they are reaching customers and more coordinated approaches. It has generated a good deal of enthusiasm, momentum, and learning for all involved. In addition, they have developed a small set of questions (see Appendix C for BPA's "Gearbox" surveys) that they can use to accurately categorize respondents into the segmentation scheme. (Note: BC Hydro also has developed a shorthand approach for their scheme.)

- Of all the agency efforts reviewed in this study, Energy Trust has made the least use of its segmentation scheme. This is likely due to the segmentation being an "add-on" to the tracking survey that allowed a limited set of variables to be measured in the first attempt and to the low level of organizational buy-in and support prior to the effort. In addition, some segments of the first round of research did not appear viable to evaluators and the scheme was not promoted internally. Comparison of the first scheme to the other segmentation schemes analyzed in this study showed limited overlap of ETO variables with variables in the other studies – especially the basis variables used to assign customers to their segments. The second tracking survey gathered a greater wealth of data for the segmentation analysis, resulting in a more compelling and usable scheme and more consistency with the other schemes.

RECOMMENDATIONS

1. Given the positive regard for and experience with segmentation of the other energy agencies examined in this study, the increased regional and national interest in developing new approaches to save more energy or use more renewables, and the opportunities for increased savings by using customer-based market segmentation, Energy Trust should further its commitment to putting segmentation into practice. It will be helpful to review the steps for successfully incorporating segmentation into program design, marketing, and evaluation, as described in Section 1. This study suggests two avenues for moving ahead:
   - Internally market and champion the scheme they have developed through their own research. Given the current low level of visibility and buy-in so far for using this scheme, overcoming organizational inertia will take time and commitment. Champions from the top down will need to be identified and resources will need to be provided. Still, Energy Trust is known for its innovative programs and pioneering ideas and the

current scheme is available for action now, without further delay. Baby steps could be taken almost immediately, especially by trying out segmentation with pilot programs.

- Internally market and champion joining forces with other utilities in the Northwest to use a common segmentation platform, potentially using the Northwest's regional short-form "gearbox" survey to collect data and to categorize segments. This approach offers the benefit of having a coordinated segmentation scheme in use throughout the region and greater collaboration across agencies with similar interests.

2. If Energy Trust decides to actively use segmentation, they need to review how their market assessment, data tracking, and measurement tools can be used to further the understanding and use of customer segments. This review will likely result in the need for more resources to support qualitative research with individual segments; market assessments or pilot programs that incorporate segmentation; and program surveys that gather segmentation information about program participants.

Energy Trust of Oregon
851 SW Sixth Avenue, Suite 1200
Portland, Oregon 97204

Telephone: 1.866.368.7878
Facsimile: 503.546.6862
energytrust.org

MEMO

Date: April 21, 2010
To: Board of Directors
From: Sarah Castor, Evaluation Project Manager
Subject: Staff Response to the Segmentation Comparison Study

When Energy Trust completed its first segmentation study in late 2008, we were left with several questions: Do these customer types really exist? Are they a figment of our particular segmentation algorithm? How do our results compare with other energy agencies that have conducted segmentation? How can segmentation be use to inform program and marketing?

This report answers many of our questions. We are reassured to know that there is no one perfect way to develop customer segments and that other utilities have found that an iterative process is important. We also found it interesting that some of the segments we identified among our customers are similar to those from other segmentation schemes.

The commitment some agencies have shown to segmentation is impressive and requires a long term planning view. To do so at Energy Trust would require additional organization buy-in to pursue intensive use of segmentation for program development and marketing. Though program and communications staff see the value in this commitment, current activities compete with time and resources to focus on additional segmentation research. On a forward looking basis, projects could be structured to help Energy Trust apply this research and corresponding learning, especially to help strategize ways of reaching underserved and non-urban parts of our customer base.

In the interim, communications staff are planning some use of the research information to develop 2010 marketing materials for segments developed in the 2009 Oregon Residential Awareness and Perceptions Survey. At this time the segmentation component in the 2010 Residential Awareness Study will not be repeated. We will, however, continue to monitor the use of segmentation by others and the results they derive.

≈ SECTION ONE: RESEARCH PURPOSES AND SEGMENTATION BASICS ≈

". . .the market is a seething, disparate, pullulating, antagonistic, infinitely varied sea of differing human beings–every one of them as distinct from every other one as fingerprints. . ." Walter Weir, On the Writing of Advertising, 1960

"Demography is not the only or the best way to segment markets. Even more crucial to marketing objectives are differences in buyer attitudes, motivations, values, patterns of usage, aesthetic preferences, and degree of susceptibility. " Daniel Yankelovich, Harvard Business Review,1964

RESEARCH PURPOSES AND APPROACH

A number of energy organizations in the west (and across the U.S. and around the world) have undertaken segmentation studies with their residential customers in the past few years. While these studies hold a wealth of data and results, limited work has been done to see what intelligence might be gained from looking across them to discover insights about approaches, results, and application of the schemes.

The purpose of this study is to analyze seven recent segmentation efforts that have been conducted by energy utilities and organizations in the west to:

- Compare study purposes, objectives and methods
- Compare customer segments derived from the segmentation research
- Describe how study findings are being applied to program design, marketing, and future research needs
- Provide insights about lessons learned and guidance for subsequent segmentation efforts

We used a wide variety of resources to prepare this report, including segmentation research materials, reports, and presentations from the seven organizations; interviews with key contacts from each of the organizations about their challenges and successes in applying the research and what they have learned along the way; and a variety of books and articles covering the many aspects of segmentation. Still, it's important to note that segmentation of one's customers is a highly complex process and this report is not intended to be a step-by-step guide to designing, implementing, analyzing, or applying this type of research. Rather, we intend it to present general guidance and insights for those considering this approach to understanding customers and markets. It is also important to note that the amount and type of information available across the seven segmentation studies varied, thus requiring some assumptions and "leaps of faith" to be made in comparing them.

In keeping with the scope of work, **Section Two** introduces the seven segmentation efforts and compares their research purposes and methods. **Section Three** compares and contrasts

variables used in the segmentation studies. **Section Four** compares the segments across the studies from three perspectives. And **Section Five** describes how each organization is using their segmentation results and captures the lessons learned about their experiences so far.

SEGMENTATION BASICS

The following sections outline some basics about an endeavor that clearly requires experience, judgment, appropriate research and statistical methods, and organizational commitment.[2] We begin with a brief history of the rationale behind segmentation and how it can be useful for energy organizations, provide a cautionary note about the art and science of segmentation, discuss the need to integrate segmentation research into cycle of activities, and list essential steps in a segmentation process.

A Brief History

Market segmentation has been shown to be a powerful tool in speeding customer adoption of products, services, or desired behaviors, from beverages and restaurants to reducing tobacco use.[3] Given the dates on many resources, the 1960's and 1970's were a heyday for market segmentation. Segmentation assumes that markets (for instance, the residential energy consumer market) are heterogeneous (rather than mass) and that they require targeted marketing and program approaches that recognize this diversity. A segmentation scheme divides markets into distinct groups based upon their shared characteristics, needs and preferences. Programs and marketing can then be tailored to reach the groups with the most potential to use services, buy products, or make behavioral changes. Segmentation is consistent with key marketing principles such as "know your customers" and "put customer needs and preferences first." Successful segmentation moves us closer to the marketing ideal of appealing to a "market of one" where consumers feel the marketing content and messages, as well as the programs offered, speak to their personal needs (even if they are influenced by a larger group of cohorts).

Although energy efficiency organizations have delved into complex consumer segmentation approaches in the past (e.g., PRIZM and VALS), most segmentation in our field has **not** been based in a nuanced understanding of consumer preferences and needs. Rather, we have segmented customers into sectors that serve other purposes for utility services such as type of customer or rate structure (e.g., residential, commercial), geographic location ("east of the mountains") or climate zones, building types (e.g., single family, multi-family), and users of different types of equipment (e.g., washing machine buyers). In some cases, we have added

[2] See, for instance, Beth Horn, Ph.D., and Huang, Wei, "Comparison of Segmentation Approaches," Decision Analyst, Inc, 2009 and Malcolm McDonald and Dunbar, Ian, *Market Segmentation: How To Do It, How To Profit From It*, Elsevier LTD, 2008. Interviews with utilities representatives who are using segmentation research also support this viewpoint.

[3] See, for instance: Steven J. Moss, M.Cubed, "Market Segmentation and Energy Efficiency Program Design," Prepared for CIEE Behavior and Energy Program, November 2008,, p. 6, Malcolm McDonald and Ian Dunbar, "Market Segmentation: How to Do It, How to Profit From it", and Loren Luzenhiser, "Segmentation Overview," BECC Presentation, Sacramento, CA 2008.

demographics and building or business characteristics into the mix. And while we have asked attitudinal and behavioral questions on many surveys, these have generally not been factored into segmentation schemes, although they have been used to craft marketing messages.

In addition, our industry, by focusing on policies and programs that favor technological solutions for energy efficiency (the "physical-technical-economic model" or PTEM[4]), typically targets one type of behavior change – adopting energy efficient technologies over less efficient alternatives – rather than a broader set of behaviors that could influence adoption of a wider conservation ethic. Typically the PTEM approach assumes consumers – whether business or residential – are rational, knowledgeable decision-makers who are primarily influenced by a positive cost-benefit calculation over the life of a product. While programs based on this paradigm have been effective, most efficiency experts would agree that "a significant gap...exists between the level of energy efficiency investment that is economically justified and the level of such investment that is being achieved."[5]

It may be time to revisit and revise the paradigm. Over the past several years, investigating and embracing other factors that influence adoption of energy efficiency have gained more traction in the industry. After 30 years of back-room efforts, the insights from behavioral research are gathering greater influence and visibility[6]. Questioning about "flaws" in our economic theories (contributing to a world-wide economic crisis), as well as the wider realm of marketing and social science research have also supported this trend. The emerging fields of behavioral economics (see, for instance, *Predictably Irrational* by Dan Ariely and *Nudge* by Richard Thaler and Cass Sunstein) and social marketing suggest that many "non-economic/non-rational" factors such as habits, expectations, brain structure, and social norms underlie much of what we do, including our energy use. These fields question even our most basic assumptions about how people think, including how consumers consider costs and incentives.

Consumer segmentation approaches, designed to help us understand, reach and influence energy consumers toward more efficient, smarter resource choices, thus fit in with these burgeoning efforts to widen the net for adopting energy efficiency and making it the stuff of everyday behaviors, from buying appliances to turning off computers.

A Cautionary Note About Segmentation Design and Analysis

Across the board, the utility contacts we talked with said that crafting segmentation variables and questions, choosing the analysis approach, and settling on a set of segments require experience, judgment, science, flexibility, and patience. Several advised choosing a very experienced segmentation firm to guide the effort, but at the very least clear thinking multi-

[4] See, for instance, Loren Lutzenhiser, "Segmentation Overview," BECC, 2008 presentation; Michael J. Sullivan, "Behavioral Assumptions Underlying Energy Efficiency Programs for Businesses" February 2009.

[5] Michael J. Sullivan,"Behavioral Assumptions Underling Energy Efficiency Programs for Businesses," California Institude for Energy And Environment and the California Public Utilities Commission, February 2009.

[6] Note ACEEE's April 2009 testimony on the need to support behavioral research and apply behavioral insights to energy efficiency efforts before the United States House Committee on Science and Technology, Subcommittee on Energy and Environment

talented and persistent people with research design, statistical analysis, and data management need to be on board for the research, as well as program and marketing experts.

As Beth Horn and Wei Huang state when comparing statistical methods for segmentation approaches: "*Although there can be a great deal of sophistication in the analysis stage, segmentation is not a purely scientific pursuit. Sadly, there are no magic buttons to press to generate the "best" segments. Given that the data have been modeled with the most appropriate technique(s) available and that the basics are addressed, category experience and expert judgment are the final guides to the selection of the "best" segmentation solution."* Indeed, since different statistical approaches used on the same data can yield different results, Horn and Huang recommend trying out different approaches and matching approaches to segmentation uses. For instance, they say some approaches are simpler and better for marketing communications (e.g., factor segmentation) and some are better at analyzing patterns of needs, which is more applicable to new product development (e.g., cluster analysis and K-means analysis).

We also heard that even small adjustments to survey instruments can affect segmentation efforts. One utility researcher reported that in their second segmentation survey they added a question about a customer's willingness to give up comfort to conserving energy. This single variable – which they determined not to be a well crafted question – confounded all of the results.[7] When it was removed from the analysis, the previous segments fell neatly into place.

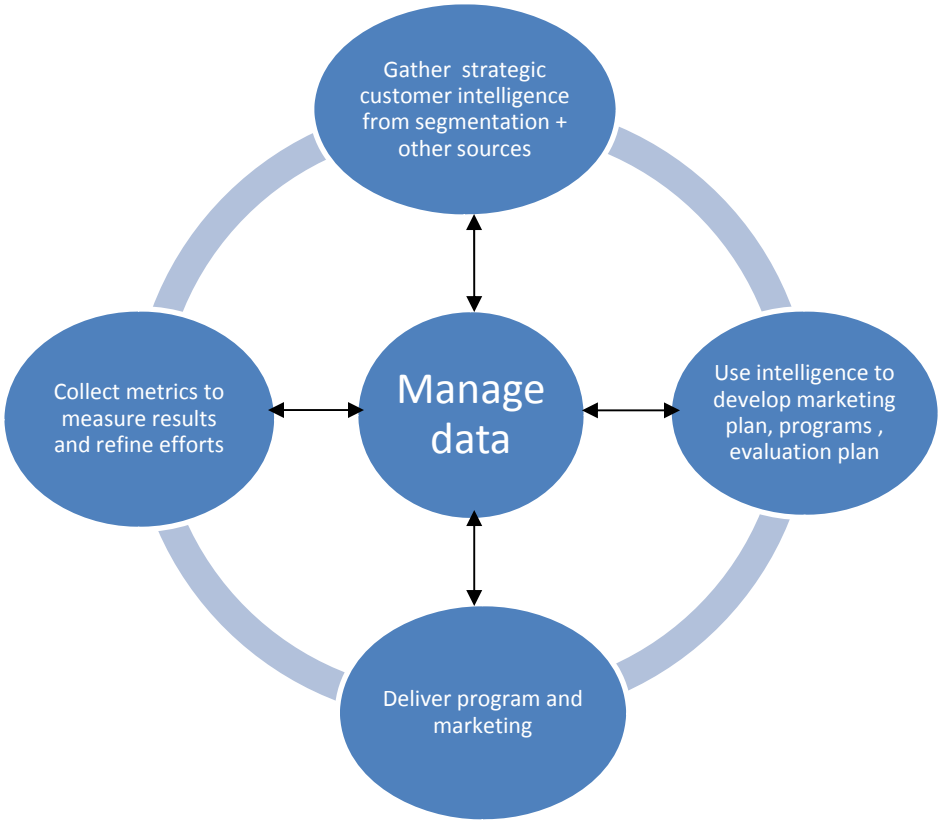
Incorporating Segmentation Research

Sources also agree that conducting and applying segmentation research is an evolving roadmap where customer understanding improves over time, as research is conducts and programs and marketing are designed and tested, as shown in Figure 1 on the next page. Strategic intelligence about customers – based upon segmentation research and other sources, such as past experience and evaluation efforts – needs to be formulated. This intelligence is then applied to program design, marketing, messaging and evaluation plans. As programs are operated and data are collected to measure results, understanding of consumer segments increases and research efforts can be refined.

Segmentation studies are likely to sit on the shelf without this type of concerted process to use them. As one utility contact noted, many utilities and other energy organizations do not begin with customer intelligence; rather they tend to design programs and then try to find customers, so that most activities focus on planning and implementation that's based on "experience and the seat of their pants." He added that taking a customer-based focus and relying on research to make decisions can require difficult changes in thinking and action.

[7] Marc Pedersen, Personal communication, September 14, 2009

FIGURE 1 INCORPORATING SEGMENTATION RESEARCH INTO PROGRAMS, MARKETING, AND EVALUATON[8]



Steps in the Segmentation/Marketing Process[9]

As we've mentioned, effectively conducting and using segmentation research requires broad organizational support and long term commitment. This section outlines the list of essential steps for a marketing/segmentation process to succeed.

1. **Assemble a cross-department team that regularly meets from the start and over the long term.** Top management interest and support also needs to be secured at this time. Six of the seven organizations we interviewed had done this in some form (although not always from the beginning) and it appeared that the earlier the team was formed, and the more inclusive, regular, and integrated it was, the better the progress. The one

[8] Adapted from a presentation by Eric Carlson (SMUD): "Segmentation – Focusing on the Customer," at the E Source Utility Marketing Conference, April 2009. This presentation is available on request from the author of this report.

[9] This process is adapted from the SMUD presentation, the McDonald and Dunbar book previously mentioned, and from reports and interviews with the organizations included in this study.

organization that had not assembled such a team has not yet been able to apply the research.

Depending on the organization and who is involved with understanding and reaching customers, members might represent:

- Evaluation
- Market research
- Marketing and communication (internal and external)
- Program planners and implementers (including contractors)
- Data management
- Research vendors

In addition, one or more of the team members needs to evolve as a champion that will take the lead on fostering continued resources over time; champions need to be at a high enough level to work effectively with top level management.

2. **Develop a research plan.** A segmentation research plan is similar to all research plans, carrying with it the overriding question of "What do we need to know from this research?" The research plan needs to:

    a) **Define objectives:** The research questions must be focused on putting into operation a successful segmentation effort, such as:
        - How large is the target market?
        - How large is each segment?
        - What is the best way to describe each segment?
        - What segments should be the highest priority?
        - What segments fit what program designs?
        - How do program participants fit in the segmentation scheme (e.g., the percent in each segment and how they look)
        - What are the primary needs of each segment?
        - What does each segment value about programs or services offered (e.g., cost savings, environmental benefits, empowerment etc.)?
        - How sensitive is each segment to price?
        - What messages best connect with each target?
        - What channels of communication work the best for each target?

    b) **Decide on approaches, methods, and other issues:** Data gathering may need to include both qualitative and quantitative approaches. Review of experience at other utilities can also be helpful.
        - Qualitative research, such as focus groups, in-depth interviews, and ethnographic observations can help map consumer needs, values, viewpoints, and behaviors. Such research can prevent missing important consumer dimensions in the quantitative research.
        - Quantitative research for segmentation has mostly been done with fairly typical survey questionnaires, often with quite large sample sizes and of

considerable length (30+ minutes). One utility contact also mentioned the idea of trying out a conjoint analysis approach to try to better understand the tradeoffs customers make in their energy-related decisions and feeding these results into a segmentation scheme.

- Other issues that need consideration at this point include how you will collect data (e.g, mail, telephone, internet, combinations); if you will hire an outside vendor for all or part of the research; if you will provide incentives; anticipating the type of statistical approaches you will want to use to develop segments[10]; figuring out the definition of the population, the sample size, and how to sample it; considering what other data you want to link segmentation results to (e.g., customer databases or media); and thinking about the metrics you will use to assess the effectiveness of the segmentation scheme.

c) **Define Quantitative Variables:** This step entails thinking about which dimensions you want to drive the segmentation and which variables will be used to further describe the segments. Taken together, variables might include behaviors, attitudes or values related to energy use (e.g., about the environment, the utility, comfort, costs, empowerment, community well-being), program participation, housing characteristics, media use, sources of energy information, energy use, and demographics.

- "Basis" variables are usually a fairly contained group of variables that are used to put customers into the segmentation "buckets." SMUD, for instance, decided that their basis variables needed to be those that matched information in their customer database, such as program participation and kWh usage. At BC Hydro, however, the basis variables are psychographic, mostly a mix of attitudes and behaviors.
- "Profiling" variables are then added into each of the segments to provide a fuller picture. These will vary depending on the selection of the basis variables.

3. **Develop Survey Instrument and Collect Data:** The final survey instrument will vary upon segmentation purposes, methods, variables, and resources. The segmentation needs to be involved throughout, even if design is primarily in a vendor's hands.

4. **Develop Segments and Apply Profiling Variables:** Whatever statistical approaches and judgments are used to develop the segmentation scheme, the resulting segments need to be:[11]
    - Applicable to customers making the decisions we want to influence – in this case, decisions about energy use
    - Measurable in terms of their characteristics and size

[10] See Horn and Huang's article for a good primer that compares statistical approaches.

[11] This list is a composite based upon several resources already listed and from personal communication with Arien Korteland at BC Hydro who provided a list from De Gouw and Rustenburg, Dutch segmentation experts.

- Large enough to justify spending time and effort to reach and influence them (most schemes have 5-8 segments).
- Reachable through available marketing communications tools
- Homogenous within each segment and unique from one another
- Able to be prioritized
- Aligned with organizational purposes, capabilities, and interests
- Fairly stable over time (at least in terms of characteristics)

5. **Present Findings and Design Strategic Marketing:** Once the segments are in place and well defined in memorable and understandable terms (see Appendix D for an example of a "Personalization" developed for one of PSE's segments), it's time to present the findings to a wider group of top management, planners, program managements, and communications people. The segmentation team will then need to begin work with others in the organization to:
    - Prioritize and select customer segments to target based on their size, their reachability, programs available or planned, media outlets, utilities' priorities, and other factors
    - Develop statements of customer needs and values that align with program design
    - Develop marketing and communications plans, including messaging and media
    - Define how success will be measured and tracked

6. **Implement Program and Communications Campaign:** A key element of program delivery will be to set up ways to track response. For instance, direct mail response cards can be coded; unique phone numbers can be used to monitor incoming calls; website activity can be tracked; programs can have web components where participants fill out "short form" surveys[12] that will show sponsors what segment they fall into; and contact centers can be trained to code incoming calls. If a pilot program is to be launched, market assessment or follow-up surveys can include the short form segmentation questions.

7. **Create/apply metrics and feed results back into next steps (program and communications refinement and further research):** Elements for this step include:
    - Creating a data system that allows easy storage of and access to data and the ability to connect different data sources
    - Creating metrics such as participation rates, segment response, cost per recruited participant, increase in website activity, energy savings, return on investment, cost-benefit analysis etc.
    - Identifying needed customer intelligence, program gaps, and program improvements

[12] See Appendix C for BPA's 80% and 90% "Gearbox" survey instrument.

≈ SECTION TWO: SEGMENTATION STUDY PURPOSES AND METHODS≈

INTRODUCTION

The following seven studies are included in this analysis. We have noted here the study sponsors and the geographic coverage. All studies were based on survey research conducted with residential consumer households.

1. **Energy Trust of Oregon (ETO)** – covered the entire service territory which includes the areas served by four investor-owned electric and gas utilities in Oregon, including most of the metropolitan areas in the state.

2. **Northwest Segmentation (NW)** – taken together, the surveys done with customer from their service territories cover much of Washington, Oregon, Idaho, and western Montana, and limited areas of Nevada, Utah and Wyoming. This segmentation is made up of the four components listed below; the results are separate but can be compared to one another. While the study results have not been combined, study sponsors hope that the approach will foster a more unified understanding of residential customers in the region.

    a. **Puget Sound Energy (PSE)** – covered the entire service territory[13], which includes 11 counties (6,000 square miles) in the Puget Sound area.

    b. **Snohomish PUD (SnoPUD)** – covered the entire service territory of 2,200 square miles, including Snohomish County and Camano Island in Washington State.

    c. **Tacoma Power (Tacoma)** – covered the entire service territory of 180 square miles, including the City of Tacoma, several surrounding cities, and other areas of Pierce County, Washington.

    d. **Bonneville Power Administration (BPA),** covered the entire service territory, excluding the three *Puget Sound Area* (PSA) utilities that had conducted their own studies (PSE, SnoPud, Tacoma) and any customers of electric IOUs. In addition to the whole sample, the study looked at four sub-regions.[14]

3. **BC Hydro (BCH),** covered the entire service territory which includes 94% of customers in British Columbia.

[13] Based on an interview with PSE staff and other sources, BPA, Snohomish PUD, and Tacoma Power all based their segmentation analysis on the same set of variables as those used for the PSE study, which was the first study to be conducted. The PSE segments were then used as "starting points" to develop segments for the other three. However, each sponsor also included some non-segmentation items that were tailored to their needs. In this report the BPA survey instrument was made available and will be used to represent the variables used in the analysis for all four sponsors.

[14] The four regions were Western Washington; Western Oregon; East/Central Washington/Eastern Oregon (and California); and Idaho and West Montana/Nevada/Utah/Wyoming.

4. **Sacramento Municipal Utility District (SMUD)**, covered the entire service territory of 900 square miles and which includes Sacramento County and a small portion of Placer County in California.

Purposes and methods varied across the studies, as did the level of information available. On the one hand, these complexities make it challenging to compare the studies. On the other hand, they make it easier to rise above the differences and try to find some common ground for useful insights. While we present the variation in study purposes and methods, we have chosen to embrace the second point of view when we compare segments and develop insights and conclusions in subsequent chapters.

SEGMENTATION STUDY PURPOSES

Summary

Table 1 is based upon our interpretation of secondary sources, along with some conversations, about the purposes of the seven segmentation studies. Given the vagaries of both written descriptions and interpretation, this table may not entirely reflect the reality of study sponsors. For instance, some studies may have had goals that are not represented or, conversely, didn't pursue the stated purposes. In addition, once data were available, they may have been used for other purposes not documented in the study reports. The checkmarks shown in Table 1 are an informed guesstimate at the relative importance of stated purposes, with a large check reflecting what appeared to be a key purpose, a smaller check reflecting a secondary purpose, and no check meaning we didn't find evidence of that item being a purpose for that study.

As the table shows, the studies had a fair amount of congruity in terms of their purposes, at least at a general level. Most efforts were focused on informing energy conservation program design and outreach/marketing efforts, with some studies more focused on improving current programs and others focused on both current and future programs. Five of the studies were singularly focused on developing segmentation schemes, while two (Energy Trust and BC Hydro) had to balance the needs of the segmentation with other needs for the study, particularly the desire to benchmark and/or track other important data on customers. For Energy Trust in particular, multiple purposes affected how much survey space could be devoted to segmentation questions. The BPA study incorporated some unique purposes in its study since it a wholesale electricity provider to much of the Northwest; it hoped the study could both provide tailored information to its utility customers and be combined with the PSA utility results to achieve a regional view of residential customer segments.

TABLE 1 COMPARISON OF STATED SEGMENTATION PUROSES

	ENERGY TRUST	PSE	SNOPUD	TACOMA	BPA	BC HYDRO	SMUD
Segmentation primary or shared study focus	**Shared w/ tracking study**	**Primary**	**Primary**	**Primary**	**Primary**	**Shared w/ tracking study**	**Primary**
Develop workable segments	✓	✓	✓	✓	✓	✓	✓
Better understand customer motivations	✓	✓	✓	✓	✓	✓	✓
Support/improve current program implementation	✓	✓	✓	✓	✓	✓	✓
Support marketing, messaging, communications	✓	✓	✓	✓	✓	✓	✓
Better target communications channels	✓	✓	✓	✓	✓	✓	✓
Develop new programs	✓				✓	✓	✓
Provide tracking data/ benchmark for future	✓					✓	
Prioritize targets/predict, improve participation	✓	✓	✓	✓	✓	✓	✓
Provide utility customers tailored, local info					✓		
Develop regional "playbook"		Lead the way & persuaded others to join	✓	✓	✓		

Expanded Description of Segmentation Study Purposes

1. Energy Trust (Source: Final Report: 2008 Oregon Residential Awareness and Perception Study and Draft 2009 Oregon Residential and Awareness Study)

Prior to the study included here, Energy Trust gathered information about its residential consumers through evaluation efforts of specific programs and through market research that examined target markets. While useful tools for their specific purposes, the research did not provide an overall view of Energy Trust's residential consumers and the results did not answer many of the questions that policy-makers and program planners had.

This is the first Energy Trust study "aimed at producing research that will help Energy Trust understand its customers' general level of interest and awareness regarding energy efficiency, renewable energy, climate change, and related topics." However, it is important to note that the study served multiple purposes which competed for space in the survey instrument.

Study goals were to produce results that could be used to:

- Help design and support marketing and implementation of current and future Energy Trust programs and campaigns
- Provide a benchmark for future tracking surveys [Note: This goal was less important

for the segmentation aspects of the research.)

- Develop meaningful market segments that were different from one another but that were internally homogenous, so they could be leveraged for Energy Trust's marketing and public relations efforts

2. (2) Puget Sound Energy, (3) SnoPud, (4) Tacoma (Source: Residential Segmentation Research: Summary and Discussion of Results, August 2008 – PowerPoint Presentation)

These studies are grouped together because they used the same survey instrument; PSE conducted the initial study, with SnoPUD and Tacoma Power piggybacking upon their effort. The studies were almost completely focused on developing a segmentation model for residential customers that would let the utilities leverage the differences between customers, so that energy efficiency programs and marketing would be enhanced. As such, it didn't need to compete for space with other project purposes.

The study's goals were to use the results to:

- Identify the best targets for energy efficiency program marketing
- Tweak the design of current programs to make them more attractive to target customers
- Identify the most effective way to position programs to target customers and to reach those customers

5. BPA (Source: BPA Residential Segmentation Research Methodology, March 2009)

Segmentation results were reported across the BPA service territory, excluding Puget Sound area utilities – PSE, SnoPUD, and Tacoma Power. As with PSE, these studies were designed with the segmentation as the primary outcome of the research.

The overall research goal for BPA was two-fold: first, to provide the BPA customer utilities localized information about their residential customers and energy efficiency. A second, broader goal was to be able to use the BPA results in combination with Puget Sound area utilities to capture a picture of the region. From the onset of the project, the sponsors hoped that the various individual segmentation studies would show "residential customers would be similar enough across service territories that a unified segmentation would be possible." The goal was to be able to "work together from a common 'playbook'" to foster energy efficiency.

More specific purposes of the segmentation study were to assist utilities and the region in:

- Increasing the efficiency of marketing activities and increasing program participation rates

- Improving existing program design
- Developing new residential programs and services
- Creating more informed marketing strategies
- Improving targeting of customer communications

The BPA work leveraged the retail customer segmentation research conducted for Puget Sound Energy (PSE) in December 2007 by:

- Using the PSE questionnaire as a starting point for the BPA instrument (including all the same segmentation variables)
- Using PSE segments as placeholders for developing BPA-specific segments

6. BC Hydro (Source: 2007Psychographic Segmentation of Residential Customers' Conservation Ethic)

BC Energy Plan sets an "ambitious target to acquire 50 per cent of BC Hydro's incremental resource needs through conservation by 2020." In large part the corporation expects to meet this goal through aggressively involving its residential customers in thinking about and using energy differently and more efficiently. This has necessitated a "fundamental change" in how BC Hydro influences and empowers its residential customers to save electricity.

To "inform its demand side management strategy, its residential program planning, and its conventional bottom-up, disaggregated approach to modeling and load forecasting," BC Hydro has over the past five years conducted regular quantitative end-use studies with residential customers. These studies have gathered and tracked detailed information about "the characteristics and features of customers' homes, as well as the different ways in which electricity is used in them." In 2006, "customer opinions, attitudes and behaviours relating to electricity and conservation" were gathered. While the segmentation analysis was not the primary purpose of this survey, the scope of the survey was broadened to include items that became useful for the segmentation analysis.

BC Hydro undertook their psychographic segmentation study to guide their work in changing the residential conservation ethic over the next several decades. The segmentation intended to uncover "homogeneous groups of people in terms of how they think and feel – not what they look like, what they have or where they live." A further goal was for BC Hydro to develop strategies and campaigns based on the unique segments. The main purposes of the study were to:

- Segment BC Hydro's residential customers into unique groups based on their attitudes and behaviors toward electricity and conservation
- Profile the segments on their demographics, household characteristics, end-uses, electricity consumption, and other attitudinal and behavioral dimensions and
- Uncover and explore underlying motivations to inform long-term program planning and communications strategies.

7. SMUD (Sources: Various presentations, phone conservations, emails)

SMUD uses more than one segmentation approach in devising programs, services, and marketing for its residential customers. The one we have focused on in this research is what they refer to as their "proprietary segmentation." It made use of both a customer survey and their customer database. The overall purpose of this segmentation was to "leverage market research's efforts to better understand our customer's needs and wants in order to engage customers to use less energy and protect the environment."

Objectives of the segmentation were to create segments that:

- Predict customer interest and participation in SMUD programs
- Are described, in part, by customers' energy-related attitudes
- Classify SMUD's residential customer population into the segments

METHODS

Summary

All the segmentation studies are fairly recent, and two have been repeated this year. Table 2 shows that the segmentation studies varied widely along a number of methodological dimensions, all of which may have affected the segmentation solution. Even the PSE, SnoPUD, Tacoma, BPA studies, which were intended to be alike, had some notable differences in methods. Sampling, while always random, varied considerably. The sample frames varied from RDD samples to listed samples to samples from customer rolls. The sample sizes varied from 800 to more than 4,000. Different methods of contact were used, including telephone, mail, and on-line approaches; most used just one method of contact, but BC Hydro and SMUD used a mix. Survey length also varied, although most surveys took over 30 minutes, with the Energy Trust survey being the notable exception at 19 minutes. Some studies offered incentives and some did not.

All studies used high level statistics as part of their analysis; while the specific statistical methods varied, some studies used more than one approach. Energy Trust, the PSA utilities, and BPA relied strongly on outside consultants to conduct the segmentation studies, while BC Hydro and SMUD used both internal resources and consultants. The resulting number of segments ranged from 5 to 8. Further information on the methods used for the seven segmentation studies can be found in Appendix B.

TABLE 2: COMPARISON OF KEY METHODS ACROSS STUDIES

	ENERGY TRUST	PSE	SNOPUD	TACOMA	BPA	BC HYDRO	SMUD
Year Fielded	2008 (also 2009)	2007	2008	2008	2008	2006 (also 2009)	(also 2003) 2007
Sample Size	1,205 (904)	1,002	800	800	2,001	4,338	3,629
Method of Contact	Phone	Phone	Phone	Phone	Phone	Mail and on-line	Phone & On-line + Customer Database
Survey Length	19 minutes	34 minutes	34 minutes	34 minutes	34 minutes	30+ minutes	30 minutes
Included Energy Use	Yes	No	No	Yes	No	Yes	Yes
Special Notes	RDD by zip code, and purchased renter list Quotas	Utility-drawn Sample Quotas $10 incentive	Utility-drawn Sample Quotas $10 incentive	Utility-drawn Sample Quotas $10 incentive	Listed Sample Quotas Oversampled rural $10 incentive	Utility-drawn Sample weighted by housing type Over 14,000 surveys sent—31% response Rs entered in $500 drawing as incentive	Utility-drawn Sample weighted by age and ethnicity
Segmentation Statistical Approach	Factor Analysis, Regression, Two-step Cluster Analysis	Latent Class Cluster Analysis	Latent Class Cluster Analysis	Latent Class Cluster Analysis	Comparison to PSE distributions Latent Class Cluster Analysis	Principal Components Analysis (like Factor Analysis) Cluster Analysis	Latent Class Cluster Analysis
Segment design	Consultant	Consultant	Consultant	Consultant	Consultant	In-House + consultant	Consultant plus In-House
Number of Segments	5 (6 in 2009)	7	7	5	8	6	8

≈ SECTION THREE: COMPARISON OF SEGMENTATION VARIABLES≈

SUMMARY

Across the seven studies we looked at, hundreds of different variables, and variations of variables, were used as part of the segmentation research. This section shows that many variables overlap in different ways across the studies, but that there are significant gaps as well. This is part of setting the stage for confirming what may be obvious: that there is no one best segmentation solution. Research methods (see Section Two), goals, and the variables selected for measurement can produce quite different segmentation solutions (see Section Four) and they all might be quite useful. Table 3 looks at the 11 "basis" variables (i.e., variables that form the segments) that ETO used in its 2008 study to see how well they match variables from the other segmentation schemes. It reveals that none of ETO's basis variables were used as basis variables in the other studies, although some were used as "profile" variables (i.e., variables that are cross-tabbed with or laid over the segments to provide more in-depth descriptions). Table 4 compares the presence or absence in the 2009 ETO study of 50 other key variables and helps to pinpoint some important variables that ETO may want to include in the future.

Comparison of Key Segmentation Variables

Tables 3 and 4 on the next pages are large tables that can be read at various levels, but which have an overall purpose of demonstrating the many types of variables used in these segmentation studies and the differences in basis variables and profiling variables These tables underscore that different segmentation goals, variables, and approaches do indeed result in different segments, allowing us to match segments up only at a fairly general level. While it may seem like overkill to present the variables in such detail, we have found in the process of this study that it is only at a more granular level that one can begin to understand the complexity of these schemes and that the choices that researchers make do change the outcomes. When the variables are lumped together in general themes, the reasons for differences do not stand out as well.

Table 3 lists the 11 basis variables used in ETO's 2008 study and shows whether or not they were included as either basis or profiling variables in any of the other six studies. Except for energy use, participation in energy efficiency programs, home ownership, and type of home heat source, none of ETO's basis variables in 2008 matched the basis variables in any other study. In addition, all the "basis matches" were with variables in the SMUD study, with not a single match for PSE, SnoPUD, Tacoma, BPA, or BC Hydro. If the ETO basis variables existed for these utilities, they were either used as profile variables, or were not included in the study. The largest difference appears between ETO and BC Hydro: 6 of ETO's 11 variables were not represented at all in the BC Hydro segmentation scheme.

These disparities may be due to some overriding goals of the segmentation approaches. ETO's approach wanted segments to predict energy use, relied largely on awareness and behaviors, and didn't use attitudes at all. SMUD's approach wanted segments that could be applied to their customer data base and to predict program interest and participation. The other four studies appeared to put greater emphasis on marketing themes, messaging, and in-depth descriptions of customers, so they gathered and used a wider range of attitudes, beliefs, and behaviors to form their segments (their basis variables are shown in Table 4).

Table 4 compares about 50 other key variables across the studies. Key variables used in other studies but not included in both the 2008 and 2009 ETO studies are shaded in two ways. The pink shading shows ETO variables that were not in the 2008 ETO study but were included in 2009; this comprises 14 variables. These variables fell into two groups:

- Attitude questions that better indicated how interested and committed respondents were to conserving and protecting the environment, and
- Perceived efficacy questions – that is, the worth of pursuing a variety of behaviors because they have positive environmental impacts, such as using mass transit and recycling.

The blue shading shows an additional 18 key variables – most of them basis variables in at least one other study – that were not included in either ETO study, as follows:

- **Attitudes:**
    - Moral obligation to save
    - We can make a big difference if we all save
    - Willingness to pay more for environmentally friendly products
    - Think about local energy issues and how they affect them
    - Would pay more if never asked to conserve
    - Would do my part if it reduced imports
    - Utility should encourage EE programs
    - Utility should supply renewables
    - Utility should have environmentally friendly operation
    - Interest in EE programs (tailored)
- **Habits**:
    - Full dishwasher/air dry dishes
    - Leave water running when washing hands
    - Donate to environmental causes
    - Reduce temperature in unused rooms
    - Dress warmer, keep thermostat at 68 degrees
    - Leave windows open for ventilation in winter

- Check and re-seal air leaks each fall

In addition, we have added a "stable homeowner" variable that one utility contact said they have determined to be a key predictor of customers who participate in their programs. These customers are established in their homes and plan to stay there.

Based upon this list, the key themes that could further illuminate ETO's current approach include questions about:

- **Values and beliefs** – whether conserving is part of personal morality and if people believe they can take actions that make a difference to the well-being of their community or to other larger goals like self-sufficiency or maintaining lifestyles
- **A wider range of habits and behaviors** to be able to better detect differences
- **Ancillary green activities** that may predict responsiveness to environmental efforts, like contributing to environmental causes
- **Perceptions of ETO** and how they should operate as a business (e.g., advancing renewables, being a green organization)
- **Stability and ability of the household to take action with low barriers to action** – this would be a measure of whether the household is concerned, believes it possible to act, and, lives in amenable conditions to act (concern+capacity+conditions – see Section 4 for an expansion of this idea)

TABLE 3 COMPARISON OF ETO 2008 BASIS VARIABLES TO PRESENCE IN OTHER STUDIES[15]

VARIABLES (ETO BASIS VARIABLES ARE NUMBERED 1-11)	ENERGY TRUST 2008 11 BASIS VARIABLES	PSE	SNOPUD	TACOMA	BPA	BC HYDRO 33 BASIS VARIABLES – 10 KEY DRIVERS + 23 OTHERS	SMUD 3 TYPES OF BASIS VARIABLES
		20 OF BPA'S 90% GEARBOX[16] ITEMS USED AS BASIS VARIABLES; TACOMA REPORT FOR PROFILERS					
Energy Use	**Profile (segments predict use)**	Not included	Not included	Profile	Not included	Profile	Basis
1. Aware of ETO/Aware of sponsor's EE programs	**Basis**	Profile	Profile	Profile	Profile	Not included	DK
2. # of EE programs R aware of	**Basis**	Not included	Not included	Not included	Not included	Not included	DK
3. Aware of OR Tax Credit	**Basis**	Not applicable	Not applicable	Not applicable	Not included	Not applicable	Not applicable
4. Know where to get renewables info	**Basis**	Not included	Not included	Not included	Not included	Not included	DK
5. Participate in EE programs/get rebates	**Basis**	Profile	Profile	Profile	Profile	Not included	Basis
6. Energy Star/EE appliance purchase(s)	**Basis**	Profile	Profile	Profile	Profile	Not included	DK
7. CFLs in home (presence/#)	**Basis**	Profile	Profile	Profile	Profile	Profile	DK
8. Number of CFLs installed	**Basis**	Profile	Profile	Profile	Profile	Profile	DK
9. Home ownership	**Basis**	Profile	Profile	Profile	Profile	Profile	Basis
10. Home heat source	**Basis**	Profile	Profile	Profile	Profile	Profile	Basis
11. Households w/children	**Basis**	Profile	Profile	Profile	Profile	Profile	Profile

[15] This table analyzes basis variables from ETO's point of view. It does not show the profile variables used for the ETO analysis or other basis and profiling variables used in other studies. Please see Table 4 for a comparison of other key variables.

[16] The BPA "Gearbox" is a short set of 24 variables that can predict with 90% accuracy in what segment a customer belongs. Based on the Tacoma full findings report, we classified 20 of these variables as basis variables; the 4 remaining gearbox questions and other descriptive variables were classified as profile variables.

TABLE 4 COMPARISON OF OTHER KEY VARIABLES ACROSS STUDIES[17]

PINK SHADING	**Variables not included in Energy Trust's 2008 survey but added in 2009**						
BLUE SHADING	**Variables not included in either Energy Trust survey**						
Variables	**Energy Trust**	**PSE**	**SnoPUD**	**Tacoma**	**BPA [18]**	**BC Hydro[19]**	**SMUD**
Habit: Turn off/use minimum lights	Profile	Profile	Profile	Profile	Profile	Basis (2 Key Drivers)	Specific information was not available on survey items. Basis variables included quarterly energy use, dwelling characteristics, and program participation. Profiling variables included attitudes, media use and demographics.
Habit: Use Programmable Thermostat (at night/no one home)	Profile	Profile	Profile	Profile	Profile	Basis (2 Key Drivers)	
Habit: Turn off water heater if away	Profile	Profile	Profile	Profile	Profile	Basis (Key Driver)	
Attitude: Level of concern about energy, conservation	Similar Q - Profile	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Basis (Key Driver)	
Attitude: Define self as active conserver	Not included (Similar Q In 2009)	Not included	Not included	Not included	Not included	Basis (Key Driver)	
Attitude: Think about ways to save energy/control energy cost	Not included (Similar Q in 2009)	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Basis (Key Driver)	
Attitude: Moral obligation to save	**Not included**	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Basis (Key Driver)	
Attitude: We can make a big difference if we all save	**Not included**	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Similar Q - Basis	Basis (Key Driver)	
Attitude: Pay more for environmentally friendly products	**Not included**	Not included	Not included	Not included	Not included	Basis (1 of 23 others)	
Habit: Wash full loads/use cold water	Profile	Not included	Not included	Not included	Not included	Basis (2 of 23)	

[17] This table does not reflect all the variables collected from the surveys, but it is out best effort to list all basis and key profiling variables. In a number of cases it was difficult to surmise if a variable was a basis or profile variable.
[18] 20 Of 24 BPA's 90% Gearbox Items Used As Basis Variables. Profile Variables From Tacoma report.
[19] 33 Basis Variables – 10 Key Drivers + 23 Others

PINK SHADING	Variables not included in Energy Trust's 2008 survey but added in 2009						
BLUE SHADING	**Variables not included in either Energy Trust survey**						
Variables	**Energy Trust**	**PSE**	**SnoPUD**	**Tacoma**	**BPA [18]**	**BC Hydro[19]**	**SMUD**
Habit: Turn Off Plug-Ins (e.g., computer turn off/sleep)	Profile	Profile	Profile	Profile	Profile	Basis (3 of 23)	Specific information was not available on survey items. Basis variables included quarterly energy use, dwelling characteristics, and program participation. Profiling variables included attitudes, media use and demographics.
Habit: Full dishwasher/air dry dishes	**Not included**	Not included	Not included	Not included	Not included	Basis (2 of 33)	
Habit: Leave water running when washing hands	**Not included**	Not included	Not included	Not included	Not included	Basis (1 of 23)	
Habit: Donate to environmental causes	**Not included**	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Habit/Attitude: Too busy to save	Not included (Similar Q in 2009)	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Habit: Reduce temperature in unused rooms	**Not included**	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Habit: Dress warmer, keep thermostat at 68 degrees	**Not included**	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Habit: Leave windows open for ventilation in winter	**Not included**	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Habit: Check and re-seal air leaks each fall	**Not included**	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Habit: Regularly review energy use	Screen for energy decision-maker	Basis	Basis	Basis	Basis	Implied by some basis Qs	
Knowledge: Know about ways to save energy	Similar Qs - Profile	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Attitude: Think about local energy issues and how they affect them	Not included	Not included	Not included	Not included	Not included	Basis: (1 of 23)	Specific information was not available on survey items. Basis variables
Attitude: Opportunity to conserve/ importance of conservation	Not included	Not included	Not included	Not included	Not included	Basis: (1 of 23)	

PINK SHADING	Variables not included in Energy Trust's 2008 survey but added in 2009						
BLUE SHADING	**Variables not included in either Energy Trust survey**						
Variables	**Energy Trust**	**PSE**	**SnoPUD**	**Tacoma**	**BPA [18]**	**BC Hydro[19]**	**SMUD**
	(Similar but reversed in 2009)						included quarterly energy use, dwelling characteristics, and program participation. Profiling variables included attitudes, media use and demographics.
Attitude: Strength of link between efficiency and environment	Not included (Similar but reversed in 2009)	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Attitude: Would pay more if never asked to conserve	**Not included**	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Attitude: Would do my part if it reduced imports	**Not included**	Not included	Not included	Not included	Not included	Basis: (1 of 23)	
Attitude: Would do my part if new generation delayed/concern about power plants/environment	Not included (Similar Q In 2009)	Basis	Basis	Basis	Basis	Basis: (1 of 23)	
Attitude: Threat of global warming real/results from high energy use	Profile (Part of energy concern factor in 2009)	Basis	Basis	Basis	Basis	Not included	
Attitude: Using energy supplies too fast	Not included (Part of energy concern factor in 2009)	Not included	Not included	Not included	Not included	Not included	
Shopping: Import of cost savings from EE	Profile	Basis	Basis	Basis	Basis	Similar Q - Profile	
Shopping: Import of positive environmental effects	Profile	Basis	Basis	Basis	Basis	Similar Q - Profile	Specific information was not available on survey items. Basis variables included quarterly energy use, dwelling characteristics, and program
Shopping: Import of incentives	Similar Q – Profile	Basis	Basis	Basis	Basis	Similar Q - Profile	
Water heating fuel	Profile	Profile	Profile	Profile	Profile	Profile	
Perceived Efficacy: Use mass transit	Not Included (In 2009)	Basis	Basis	Basis	Basis	Profile	

PINK SHADING	Variables not included in Energy Trust's 2008 survey but added in 2009						
BLUE SHADING	**Variables not included in either Energy Trust survey**						
Variables	**Energy Trust**	**PSE**	**SnoPUD**	**Tacoma**	**BPA [18]**	**BC Hydro[19]**	**SMUD**
Perceived Efficacy: Recycle	Not Included (In 2009)	Basis	Basis	Basis	Basis	Profile	participation. Profiling variables included attitudes, media use and demographics.
Perceived Efficacy: Set thermostats for efficiency	Not Included (In 2009)	Basis	Basis	Basis	Basis	Not included	
Perceived Efficacy: Drive hybrid/electric car	Not Included (In 2009)	Basis	Basis	Basis	Basis	Not included	
Perceived Efficacy: Replace major appliances w/EE ones	Not Included (In 2009)	Basis	Basis	Basis	Basis	Similar Q – Basis – 1 of 23	
Perceived Efficacy: Replace bulb/fixtures w/EE ones	Not Included (In 2009)	Basis	Basis	Basis	Basis	Not included	
Efficacy: Install insulation or windows	Not Included (In 2009)	Basis	Basis	Basis	Basis	Similar Q - Profile	
Utility should encourage EE programs	**Not included**	Basis	Basis	Basis	Basis	Not included	
Utility should supply renewables	**Not included**	Basis	Basis	Basis	Basis	Not included	
Utility should have environmentally friendly operation	**Not included**	Basis	Basis	Basis	Basis	Not included	
Interest in EE Programs (tailored)	**Not included**	Profile	Profile	Profile	Profile	Not included	
Other Dwelling Characteristics (water heat fuel, size of home, dwelling type – varied by study)	Profile	Profile	Profile	Profile	Profile	Profile	
Demographics (age, income, education, number in HH)	Profile	Profile	Profile	Profile	Profile	Profile	
Sources of Information for EE Products/Services/Programs	Profile	Profile	Profile	Profile	Profile	Profile	
"Stable" homeowners (years in home, expect to be In home etc)	**Not included**	Not included	Not included	Not included	Not included	Not included	Identified as key factor in participation

≈ SECTION FOUR: COMPARISON OF SEGMENTS ≈

"Let's be blunt. . .We must stop searching for the sparkly magic bridge that simply leads from values to action, or from attitudes to behavior. People's behaviors, attitudes, values, and awareness are all different and linked in complicated ways—if they are linked at all." – Futerra, New Rules: New Game

SUMMARY

Across the 7 studies, 28 segments emerged, with some general similarities by type, but with many differences as well. This section compares the segments on three fronts: their priority as a target for conservation programs, their relative rankings in terms of energy use, and the "green to brown" attitudinal rankings used for the four NW utilities. These comparisons suggest 10 broad types of customer groups and shows – yet again – that attitudes often have little to do with a customer's level of energy use. However, understanding attitudes and values are important for communicating effectively with customers.

FINDING MEANINGFUL COMPARISONS ACROSS SEGMENTS

Not surprisingly, finding a way to compare the 28 segments present in these segmentation schemes has proven to be a challenge. Three types of comparisons are discussed in this section:

- Comparisons of segments by their "targetability" – that is, how high a priority they should be for energy conservation efforts, based on whether the segments appear to have enough (see Tables 5 and 6):
    - **Concern about** and interest in taking action[20]
    - **Capacity** for savings
    - **Conditions** that permit action

  The idea is that in order for people to take positive conservation actions, they need all three of these pre-requisites in place. All of the studies collected data that allows analysis of these segments through this lens. Applying these criteria helps to prioritize which segments are good candidates for targeting and suggests marketing themes that can be tested for their appeal with those segments.
- Comparisons of segments by estimated low to high energy use (see Table 7). This ranking could not be precise because we lacked consistent and comparable data about energy use across all the segments. Still, it seemed important to try this comparison since affecting energy use is the ultimate goal of energy efficiency program.

[20] Adapted from a theory by Kunkle, R., L. Lutzenhiser, S. Sawyer, and S. Bender. 2004, as discussed in. "New Imagery and Directions for Residential Sector Energy Policies." *In Proceedings of the ACEEE 2004 Summer Study on Energy Efficiency in Buildings.* Washington, D.C.: American Council for an Energy Efficient Economy.

- The four NW studies ranked segments from "green" to "brown" by their attitudes, and since is an importance way that these utilities think about their segments, it is presented here (Table 8). In addition, we took those segments and ranked them from low to high energy use to emphasize the point that green attitudes do not do the best job of predicting use (Table 9).

CONCERN, CAPACITY, CONDITION COMPARISONS

Table 5 describes ETO's six 2009 segments and matches them with any other segments that appear similar. While each segment does not have a counterpart in all of the other schemes, five of the six segments have at least one counterpart, with the "Show Me" segment appearing to be unique. Notably, and consistent with prior findings, ETO's segments do not overlap at all with the BC Hydro segments.

Table 6 describes the 15 segments from the other schemes that did not match any of ETO's segments. As shown, strong matches occurred among these segments, with just two segments appearing to be unique: "Affluent Conservers" from the NW Segments and "Tuned Out and Carefree" from BC Hydro. Looking across both of these tables, it is possible to reduce the customer types with at least one match from another scheme to ten broad types of customers[21]. The list below corresponds to the numbering in Tables 5 and 6. The good news is that in our analysis, the high priority segments to pursue for energy efficiency appear to make up 50-60% of residential customers.

1. **The Usual Suspects – High priority.** Stable, affluent, homeowners who are very concerned about green issues, who have taken energy saving steps – including participation in utility programs -- but who have high use and can save more.
2. **The Average – High priority.** Stable, less affluent homeowners who have little concern for green issues and have taken few steps to save. Most can cut use and they want to save money.
3. **The Too-Busy – Medium priority.** Stable low-to-mid-income homeowners with families who have some concern for being green but don't have time to do much more than keep up with their other obligations.
4. **Tomorrow's Suspects – Low-medium priority.** Younger lower-income renters with strong green leanings who can't do much now but want to.
5. **The Young and Clueless – Low priority.** Younger lower-income renters with low environmental concern and interest.
6. **The Well Intentioned – High priority.** Stable mid-income homeowners with high green concerns that do not match their actions.
7. **The Value-Driven – Medium priority.** A mix of older stable homeowners with various levels of income whose values push them to strong efficiency actions; their energy use is already low.

[21] We hesitate to add more segment monikers, but we've done our best to make them as clear as possible as to their key element.

8. **The Comfort-Driven – Medium priority.** Stable affluent homeowners interested in home improvement and comfort but not energy efficiency or being green.
9. **The Cost-Driven – Low- Medium Priority.** While often stable homeowners and driven by cost savings, they have very low energy use.
10. **The Disinterested – Low priority.** While this group offers savings, it is made up of both stable homeowners and mid-aged to older renters who do not care about green or energy efficiency.

TABLE 5 COMPARISON OF ETO SEGMENTS TO OTHER SEGMENTS BY CONCERN/CAPACITY/CONDITIONS

2009 ETO Segments (6)	All NW Segments (8 – number varied by utility)	BC Hydro (6)	SMUD (8)
1. Willing and Able – 24% • Older homeowners, higher incomes, strong green concern and actions, higher energy use, high program participation, good capacity for savings, few barriers • **High Priority , emphasize green**	**Practical Idealist – 18-24%** • Very similar to **Willing and Able**	**No Counterpart**	**Boomers, Buyers, Browsers – 6%** • Similar to **Willing and Able** • Believe they can save w/out giving up comfort
2. Main Street Oregonians – 19% • Older homeowners, non-urban, lower incomes, weak green concern and action, variable energy use, good capacity to save, some barriers • **High Priority, emphasize $ savings**	**Standard Sounder/Follows Crowd/ Cost-Conscious Conserver – 15-25%** • Similar to **Main Street** but: • More urban, higher incomes, a bit younger • Clear focus on saving money	**No Counterpart**	**No Counterpart**
3. Hands Full – 18% • Middle-aged homeowners, lower incomes, larger families, some green concern but less action, variable energy use , some savings capacity, some barriers • **Medium priority, emphasize convenience?**	**No counterpart**	**No Counterpart**	**Young Families – 21%** • Similar to **Hands Full** but: • Most similar in busy "life stage"
4. Maybe Later – 15% • Young renters, low incomes, strong green concern but limited action, lower energy use, low capacity to save now but may change status, pragmatic barriers • **Lower-medium priority – bring along?**	**No Counterpart**	**No Counterpart**	**Green Echoes – 21%** • Very similar to **Maybe Later**
5. Strugglers – 13% • Young renters, low income, low green concern and actions, low energy use, low capacity to save, perceived and pragmatic barriers • **Low Priority**	**No Interest, No Action – 18-24%** • Similar to **Strugglers** but even less concern with energy use	**No Counterpart**	**No Counterpart**
Show me – 11% • Older eastern OR homeowners, middle income, low green concern and action, low energy use, low savings capacity, perceived and real barriers • **Low priority**	**No counterpart**	**No Counterpart**	**No Counterpart**

TABLE 6 COMPARISON OF OTHER SEGMENTS NOT REPRESENTED BY ETO SEGMENTS

2009 ETO Segments	Remaining NW Segments	All BC Hydro Segments	Remaining SMUD Segments
No Counterpart	**6. Green Idealists – 10-25%** • Middle-aged, mostly homeowners, lower incomes, green concern but actions don't match ideals, variable energy use, good capacity to save, some barriers • **High priority, emphasize money savings and convenience?**	**Stumbling Proponents – 20%** • Similar but: • Higher incomes	**No Counterpart**

No Counterpart	**No Counterpart**	**7. Devoted Conservationists – 26%**
		• Older homeowners with lower incomes with high green concern and action, see saving as moral obligation, have low use and small savings capacity, minimal barriers
		• **Medium priority but target as leaders**
			Green Boomers (7%)/Senior Savers (9%)
			• Most similar to Devoted Conservationists but:
			  • Green Boomers are younger with higher incomes
			  • Senior Savers like comfort, have higher use

No Counterpart	8**. Comfort is King – 9-12%** • Middle-aged homeowners with large homes, high incomes, high comfort needs, lower concern and action, high on home improvement but not efficiency per se, high energy use, strong capacity, some barriers • **Medium priority – emphasize comfort and home improvement?**	**Comfort Seekers – 9%** • Similar but: • A bit younger	**Big Toys/Big Spenders – 4%** • Very similar to **Comfort is King**
No Counterpart	**Affluent Conservers – 5 - 10%** • Middle-aged homeowners, larger homes, highest incomes, low green concern but more actions, like cost savings, higher use, strong capacity, some barriers • **Medium priority, emphasize cost savings?**	**No Counterpart**	**No Counterpart**
No Counterpart	**No Counterpart**	**9. Cost-Conscious Practitioners –22%** • Middle-aged homeowners, middle income, low green concern but want to save money and feel morally obligated to save, low energy use, some barriers • **Low-medium priority – emphasize cost savings**	**Money-minded Strivers – 20%** • Similar but: • Younger, fewer homeowners, lower income, moral obligation not measured
No Counterpart	**10. Educated but Disengaged – 7-8%** • Middle aged homeowners, larger homes, higher incomes, low green concern and action, higher use, strong capacity, high barriers • **Low priority unless hook can be found** • **NOTE: Some similarity to BPA's Eco-Rejecters (5%)**	**No Counterpart** • **Entrenched Libertarians** may fit in with these groups but it is pretty unique	**Uninvolved Achievers – 12%** • Similar to **Educated but Disengaged**

2009 ETO Segments	Remaining NW Segments	All BC Hydro Segments	Remaining SMUD Segments
No Counterpart	**No Counterpart**	**Tuned Out & Carefree** • Young to mid-aged renters and homeowners, male, high incomes, low concern and action, highest use, high capacity, high barriers • **Low priority unless hook can be found**	**No Counterpart**

Table 7 compares the segments by estimated level of energy consumption from low to high. It shows that each level of use contains different types of customers with varying needs and at varying priority levels for conservation efforts. For instance, the lowest users range from young renters who are interested in being green (Maybe Later, Green Echoes), to young renters who don't have green or efficiency on their radar screens (No Interest, No Action), to the most dyed-in-the-wool true believers (Devoted Conservationists).

TABLE 7 COMPARISON OF SEGMENTS BY ESTIMATED LOW TO HIGH ENERGY USE[22]

Estimated Energy Use	ETO (6 in 2009)		NW Region	PSE (7)	SnoPud (7)	Tacoma (5)	BPA (8)	BC Hydro (6)		SMUD (8)	
Lowest	*Maybe Later*	21%	No Interest, No Action	21%	18%	21%	24%	Devoted Conservationists	27%	Green Echoes	21%
	Strugglers	17%								Money Minded Strivers	20%
	Show Me	11%						Cost-Conscious Practitioners	22%	Green Boomers	7%
Medium	*Main St. Oregonians*	27%	Standard Sounder etc.	18%	20%	25%	15%			Senior Savers	9%
	Hands Full	18%	Green Idealists	14%	15%	25%	10%	Stumbling Proponents	20%	Young Families	21%
			Practical Idealist	24%	21%	18%	23%				
			Educated but Disengaged	8%	8%	n/a	7%	Entrenched Libertarians	5%	Boomers, Buyers, Browsers	6%
			Eco Rejecters	n/a	n/a	n/a	5%				
			Affluent Conserver	5%	10%	n/a	6%	Comfort Seekers	9%	Uninvolved Achievers	12%
Highest	*Willing & Able*	17%	Comfort is King	10%	9%	12%	9%	Tuned Out & Carefree	17%	Big Toys, Big Spenders	4%

Tables 8 shows how the NW segments are grouped from those who are receptive to "green" issues to those who are more neutral to those who have "brown" attitudes. Table 9 further reminds us that while the green to brown continuum tells part of the story, it doesn't match up all that well with each segment's level of energy use, emphasizing that both dimensions need to be considered in program design and marketing.

[22] The studies varied in how well they captured energy use, with ETO, Tacoma, BC Hydro, and SMUD having the clearest indication of the level of use.

TABLE 8 COMPARISON OF NW SEGMENTS FROM GREEN TO BROWN ATTITUDES[23]

		PSE	SnoPUD	Tacoma Power	BPA
Green	Green idealists	14%	15%	25%	10%
	Practical Idealists	24%	21%	18%	23%
	Affluent Conservers	5%	10%	n/a	6%
	"Greens" Totals	43%	45%	43%	39%
	Standard Sounder/Follows the Crowd/Cost-Focused Conserver (Tacoma)	18%	20%	25%	15%
	Educated but Disengaged or Just Disengaged Consumers	8%	8%	n/a	7%
	No Interest, No Action	21%	18%	20%	24%
	Comfort is King	10%	9%	12%	9%
Brow	Eco Rejecters	n/a	n/a	n/a	5%
	"Browns" Totals	39%	35%	32%	45%

TABLE 9 COMPARISON OF NW SEGMENTS BY ENERGY USE AND GREEN/BROWN ATTITUDES[24]

Level of Energy Use		PSE	SnoPUD	Tacoma Power	BPA
Lowest	No Interest, No Action	21%	18%	20%	24%
Medium	Standard Sounder etc	18%	20%	25%	15%
	Green idealists	14%	15%	25%	10%
	Practical Idealists	24%	21%	18%	23%
	Educated but Disengaged	8%	8%	n/a	7%
	Eco Rejecters	n/a	n/a	n/a	5%
	Affluent Conservers	5%	10%	n/a	6%
Highest	Comfort is King	10%	9%	12%	9%

[23] From "Residential Segmentation Research in the Northwest," April 30, 2009 by Momentum Market Intelligence (Power Point); percentages may not equal 100% due to rounding.

[24] We relied on the energy use information from Tacoma, which included energy use, to do this rating. However, since Tacoma had 5 segments (compared to 8 for BPA) we had to make some best guesses based on home owners, size of home, etc. Please note this ranking does not match Green/Brown scheme.

≈ SECTION FIVE: APPLYING SEGMENTATION RESULTS≈

SUMMARY

This section summarizes how segmentation work is progressing at each of the seven sponsoring organizations and the lessons that have been learned so far. As with much consumer and market research, segmentation results can languish on the shelves if high level management does not embrace them, if there are not internal champions, and if there are not additional resources to try out the scheme in marketing and programs. To date, as shown in Table 10, it appears that PSE, BC Hydro, and SMUD – who, not coincidentally, have been pursuing segmentation the longest period -- have high level support, strong champions, and are going strong on all fronts. This has lead to an integrated approach of using the data to help formulate marketing and programs and then collecting data during program operation to feed back into segmentation work. SnoPud and BPA are also moving ahead with a variety of efforts, while Tacoma and Energy Trust have faced more challenges and are less far along.

TABLE 10 INDICATORS OF SEGMENTATION USE PROGRESS

	ENERGY TRUST	PSE	SNOPUD	TACOMA	BPA	BC HYDRO	SMUD
Organizational Buy In?	Low	Strong champion, high level support, sold on it	Good high level support	No clear champion, limited high level support	Strong champion and good high level support	Strong champion, good high level support	Strong champion, high level support, sold on it
Organizational Use/Usefulness So Far?	None	Ongoing and active integration	Ongoing and evolving integration	Some integration with marketing	Much in the works/Affects BPA and Utility Customers	Ongoing and active	Ongoing and active
Time Involved	2 years	3 ½ years	3 years	3 years	3 years	3 ½ years	6 years
Integration with Customer Database/Other Data?	Low	Some and working hard to develop	None yet due to data issues; new database coming	Low though sample included use	Low	High	High
Used in Marketing?	No	Yes	Yes	Yes	In process	Yes	Yes
Used in Program Design/ Implementation	No	Yes, some	Yes, some	No	In process	Yes	Yes
Used for Further Research and Refinement?	Refined segments in 2009 study	Yes, focus groups, survey panel, surveys	Yes, focus groups, will use w/ survey panel	No	Segmented utilities, more to come	Yes, focus groups, surveys	Yes, focus groups, surveys
Short Form Questionnaire?	No	Yes	Yes	Yes	Yes	Yes	DK

SEGMENTATION IN PRACTICE

Energy Trust

Among the seven segmentation sponsors, ETO is the newest and also least far along. Its genesis was integrated with a tracking study where space to gather variables was limited and the segmentation analysis was somewhat of an afterthought. It had a strong goal of having the segments predict energy use but some of the 2008 segments mixed highly disparate levels of energy use. It also included few attitudinal questions. A cross-departmental team was not actively involved in developing the variables used in the segmentation, there is no obvious champion or high level support, and despite some effort to proceed to the next steps, it hasn't yet taken hold. An ETO source noted that it would require a huge shift in their marketing approach from more blanket marketing to targeted marketing and clearly understood it would take long term commitment and effort for segmentation to be used. Still, in 2009 they repeated the tracking study and added attitudinal variables, which resulted in a "cleaner" set of segments.

PSE

PSE had some rudimentary segmentation research from the mid-90's but more recently had had a very aggressive agenda to update consumer research. They realized they needed to become better marketers so that they could better support efficiency work. They were the first of the NW utility group to pursue segmentation research and urged others to join so that they would have a regional perspective on customers.

PSE says that although they are not fully using its capabilities, they have traveled many miles and that it is a regular part of program planning and marketing, as well as other uses, such as communities within their service territories being able to segment customers for community-based programs.

Like others in the NW group, they have a short-form "Gearbox" with 12-14 questions that allows highly reliable segmentation of customers. They have used this in a survey to gauge a demand response marketing and program effort, have launched an on-line focus group that has completed the Gearbox, and they are developing a consumption chart by segment. They see a big opportunity going forward to do a study where they compare using their traditional marketing approach with one based on segmentation.

SnoPUD

SnoPUD hoped, at the start of the segmentation work, to gain insights into the attitudes of their customers regarding energy efficiency, sustainability, and the environment. While they do a lot of customer research, they needed more information about how customers received them and what types of messages worked best with what types of customers. They recently have added a lot of staff, are more aggressively pursuing efficiency, and are trying to take a more strategic approach to their energy efficiency marketing and programs.

SnoPUD reports that so far using the segmentation has been mixed. It has been good for customer insights and marketing plans but not as useful (yet) for implementation. This is in part due to their lack of ability to apply the segments to their customer information system and that they, at the moment, have no way to vary their bill stuffers. They are developing a new customer information system that they hope will improve this situation.

SnoPUD says the segmentation helps to keep them "honest" – rather than relying on assumptions about customers. They have pursued further research using the short-form "Gearbox"; they have used this for focus groups and plan to use with a survey panel.

Tacoma

Tacoma hoped that the segmentation research would further their understanding of different types of customers and how to reach them with better messages and media. They also hoped they could use the segmentation for program planning, in terms of better understanding which segments are already participating and which ones are likely to be interested in new programs. For the most part, they report that the segments tended to confirm what they know about their different types customers, but that having the more formal segmentation is helpful.

Tacoma marketing staff have incorporated the segmentation scheme into their latest energy efficiency program marketing plans to prioritize target markets, craft messages and tools, and choose communication strategies. They clearly have embraced the differences among the segments in how they think about energy efficiency. Tacoma has had less opportunity to use the segmentation research for program design because they were already ramping up programs before the research was completed. Moving forward, they hope to incorporate the segmentation ideas. They also hope to do research that would allow them to track how well programs are attracting targeted segments.

BPA

BPA wanted to improve its understanding of residential customers, understand the best messages to use, and plan better programs. In addition, they wanted to develop a "regional playbook" and better serve the energy efficiency program and marketing needs of their wholesale utility customers so that they would hopefully participate more. BPA mentioned that utilities tend to thinks that "no one knows our customers like we do" and they wanted to see what regional differences emerged.

They had a big "aha" moment when the results showed that the segments, across the whole region and within the geographic areas surveyed, weren't that different, although there were some variations in the size of the segments and the number of segments ranged from 5 to 8 (see Table 8). For instance, they were the only utility to have "Eco-Rejecters." The segmentation did reveal that in some eastern parts of their service territory that a "tree hugger" message wouldn't work well, but that everyone could respond to a message that "we're all in this together and you can help your community."

While they distributed results to their utility customers, they knew it wasn't actionable. They realized that they needed to take more steps to help them use the information. They are working on both internal branding, developing guidelines to help their customers apply the segmentation to messaging and program design principles, and supplying sample creative materials. They are looking forward to getting a matrix that ties their programs with messages.

They are piloting a demand response program with utilities that incorporates the segmentation and uses the Gearbox to categorize participants and to track response.

BC Hydro

In 2006, BC Hydro's evaluation group began to "think outside the box" about how they could add attitudinal and behavioral dimensions to residential customer understanding – particularly to inform thinking about what motivates customers to take action. This work occurred just before BC's new and ambitious energy plan and dovetailed with the utility's recognition that they needed to do more to promote behavior change to gain greater savings. They added about 60 variables to their large 2006 and 2008 End-Use Surveys to develop their psychographic segmentation. The evaluation group initially drove the work; other parts of the organization were not involved nor were they relying on it.

In 2007, a program manager hired to look at behavioral change program options gave the segmentation results more traction with their business groups. This person came from a non-utility marketing background and understood how to use segmentation as a marketing tool. BC Hydro sponsored qualitative research to confirm the viability of two high priority segments and sponsored a year-long behavioral change pilot program that made use of the segmentation. The segmentation scheme is also being embraced on a wider basis among residential program staff and there is considerable coordination across programs.

BC Hydro is now a leader in their commitment to and use of residential customer segmentation of various types. The contacts at BC Hydro stressed that in addition to the segmentation scheme covered in this report, they use other types of customer segments as relevant to their needs and programs. However, they say that the psychographic segmentation has added strongly to their strategic understanding of their customers. One early and important finding was that individual segments didn't cluster in any particular geographic areas. While this disappointed program people – since geographic mapping by postal codes is often used for marketing efforts – it underscored the diversity of their customers and the need to find better ways to reach target segments.

The utility developed "Team Power Smart" to be a behavioral change program with a strong on-line presence and social marketing underpinnings, which asks participants to commit to reducing use by 10%. Any customer joining the program completes a questionnaire that allows the utility to categorize them by segment, and metrics are collected as part of their participation. Many aspects of the program are geared to the needs of the Stumbling Proponents segment who are interested in and have potential for savings but need to overcome concerns about inconvenience, comfort, and cost. The program provides a warm approach, easy steps, unusual rewards (such as a contest for Olympics tickets), feedback, and a

sense of “exclusivity.” The current introductory web page for the program concentrates on benefits and is simple to follow.

BC Hydro is also developing a volunteer program targeted to using the Devoted Conservationist segment to be ambassadors for energy efficiency. They continue to do research to expand the understanding of their segments.

SMUD

SMUD has been refining its segmentation approaches the longest and, like BC Hydro, is a leading proponent of using various types of segmentation to design and market efficiency programs. Their original research resulted in an “attitudinally-based” set of segments, which they found useful for messaging. However, like BC Hydro they encountered the challenge of how to reach segments based on this approach, given that most of their marketing is direct mail and a small amount of more local radio and TV rather than use of broad media campaigns. Thus they decided to map the segments to variables that existed in their customer database such as energy use, dwelling characteristics, and program participation (their basis variables), and add more attitudinal information over time through research and program experience. This more “behaviorally-based” segmentation scheme better suits their purposes and abilities, but they also value the attitudinally-based insights. In particular, the attitudinal approach emphasizes the complexity of their customers and what motivates them to act.

SMUD – again like others – has found segmentation marketing to be a strong departure from the usual utility marketing. Resistance to change and inertia have been barriers to progress. However, over time the usefulness of a consumer-based segmentation approach has been demonstrated through an integrated process of up-front strategic research, application of that research to program planning, and designing feedback loops that allow metrics to be collected on the “back-end” so that they better understand which segments are responding to which programs (for instance, they track response by segment to different types of program offerings). They also invest in qualitative research and plan to revisit their segmentation research every 3-5 years.

≈ SECTION SIX: LESSONS LEARNED≈

LEVEL OF SUPPORT NEEDED

Almost every utility contact said that segmentation was not for the faint of heart and that it required more commitment and work than they had ever imagined. Support and buy-in for the long-term needs to be built throughout the organization, including top management, inter-departmental involvement (especially data management), resources for ongoing research and tracking efforts, and publicizing and integrating program results and consumer insights. One utility added a person to be the liaison that makes sure that segmentation is considered in developing program designs and in evaluation plans. This returns us to the need to adopt a more integrated approach, as suggested in Figure 1.

Even those who were well underway said they had a long way to go or still could be surprised at the resistance to certain efforts. For instance, one utility said they had undertaken a branding effort – in part based on the segmentation research – to change some basic utility imaging and messages. They had done a great deal of research which was then developed and implemented a successful campaign. However, it has been difficult to get top management to follow-through with this brand change on a long term basis.

SURPRISES ABOUT CUSTOMERS

Several utilities said it is easy to be myopic about your customers and to rely on anecdotal, habitual, and "seat of the pants" approaches to reaching them, rather than on carefully trying out approaches and measuring the results. They say the type of segmentation research described in this report makes that harder to do, because it continually emphasizes the complexity of customers and in some cases violates assumptions. For instance, some were surprised to find out that many with green attitudes hadn't done much to conserve. Others were surprised to find brown groups that conserved just as much as green ones but for different reasons. Still others said it helped them see holes in their program offerings, such as the limited help for renters. So, seeing the sizes, contradictions and opportunities of the segments were eye-opening moments, both in terms of how to communicate with and reach customers and in terms of the level of savings that are still available.

SIZE OF SAVINGS OPPORTUNITIES AND EARLY RESULTS

It seems worth repeating that our amalgamated segments contained several large, high priority targets where substantial savings can be had. In addition, agencies have had encouraging results. For instance, SnoPud has launched two programs – one to promote solar energy and another to solicit energy pledges to reduce use by 10% – and both are doing better than predicted. BC Hydro and SMUD have also seen strong response to programs using segmentation and PSE has used it for marketing and to assess markets for new programs.

POWER OF SEGMENTATION

Those who have been heavily pursuing the use of their segmentation have become more and more sold on it because it empowers them to think about customers in new ways, to try out more innovative approaches to achieving savings, and to track difference response rates by segment. No one claims to have the perfect segmentation solution or that there is a perfect, overarching set of segments. As one person put it "segmentation is not a scalpel, but it gives you broad strokes on the market" that can be refined over time. Still, at its most basic segmentation forces a customer-based approach to marketing – a precept that is at the heart of any marketing guidebook but which is often forgotten. Its supporters believe that with more commitment and research, the results in energy savings will support the investment.

POWER OF REGIONAL APPROACHES

Those who are involved in a regional approach say that this is especially powerful because it provides consistency and a common language for talking about customers. It allows them to leverage their efforts and learn from one another, so that a more unified, regional understanding of consumers can be developed over time.

STEPS THAT FURTHER THE CAUSE

Most agencies are doing more research as part of developing programs or marketing campaigns. For instance, BC Hydro has done segmentation focus groups, used the scheme in a pilot program, and implemented Team Power Smart, an on-line, interactive program where participants answer the key segmentation questions as part of the participation process. PSE and SnoPUD have on-line research panels that also completed the short-form "gearbox" questions. BPA is developing a toolkit and training to help their utility partners apply the segmentation. SMUD is following the precepts as shown in Figure 1. Some utilities have added staff that, in part, help ensure the segments are considered in all marketing, program, and evaluation decisions and to make sure the data are well managed. And Energy Trust completed a more robust segmentation study which resulted in some different but more usable segments.

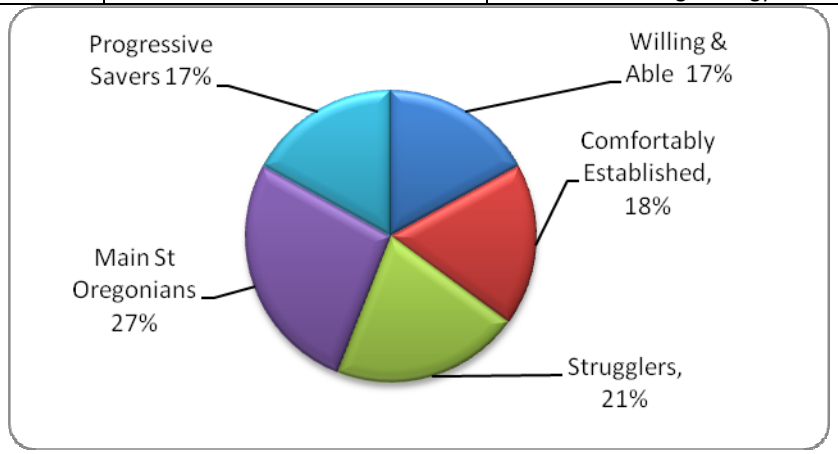
APPENDIX A: DETAILED SEGMENTATION DESCRIPTIONS

The following segment descriptions were used to write the summary and construct Table 6; they supply greater detail.

Energy Trust of Oregon's Five Customer Segments (2008)

FIGURE 2 ENERGY TRUST OF OREGON CUSTOMER SEGMENTS

Strugglers 21%	Progressive Savers 17%	Willing & Able 17%	Main Street Oregonians 27%	Comfortably Established 18%
Behaviors • No participation in ETO programs • Least informed re energy efficiency issues • Need more CFLs Demographics • Renters • Electricity for heating • Low income • Less educated • Older or younger than average HH • Scattered across state Energy Use • Low energy use	Behaviors • Most informed about general energy efficiency issues • Low participation in ETO programs Demographics • Mix of renters and owners • Electricity for heating • Middle income • Varied level of education • Younger householders Energy Use • Low energy consumption	Behaviors Most informed about general energy efficiency issues High information awareness level Demographics Mix of owners and renters Natural gas for heating Higher income Varied level of education Younger householders Energy Use Both low and high energy consumption (may be related to owners vs. renter)	Behaviors • Average information awareness level • Some participation in ETO programs Demographics • Homeowners • Electricity for heating • Higher concentration in non-urban area, South in particular • Middle income • Varied education level • Older householders Energy Use • Both low and high energy use	Behaviors • Average information awareness level • High participation in ETO programs Demographics • Mix of owners and renters • Natural gas for heating • High income • Well educated • Older householders Energy Use • Very high energy consumption



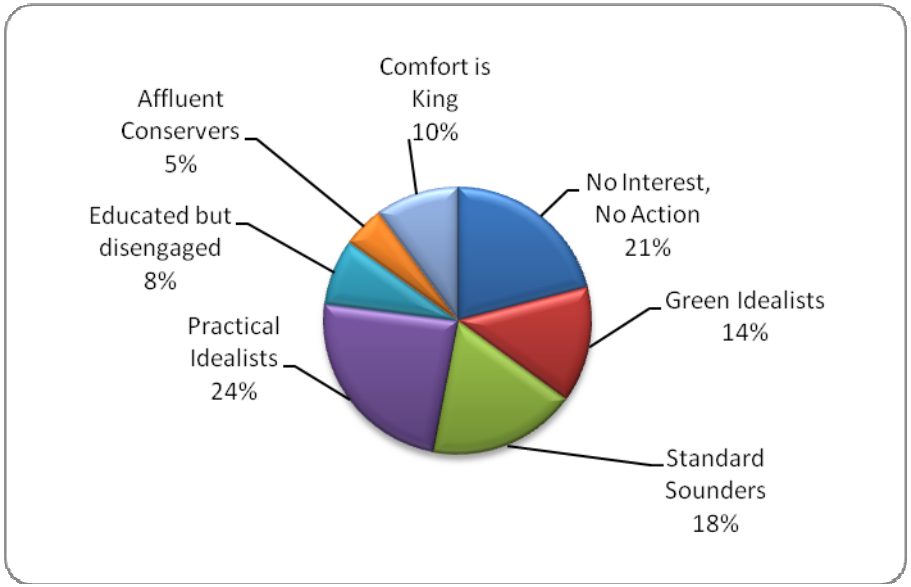
PUGET SOUND ENERGY'S SEVEN CUSTOMER SEGMENTS

FIGURE 3 PUGET SOUND ENERGY'S SEVEN CUSTOMER SEGMENTS

No Interest, No Action 21%	Green Idealists 14%	Standard Sounders 18%	Practical Idealists 24%	Educated but Disengaged 8%
Attitudes and Behaviors • Least concerned w/controlling energy use/ costs and the environmental impact • Least likely to notice impact of changes • Does not strongly connect between energy conservation and environment • Conservation activities lowest • Not worth paying more for EE appliances • Want utility to keep costs low as possible, not to be "green" Demographics/Characteristics • More young customers • Lower income than most • Lowest % home owners • Smallest homes • Fewer EE actions but small rented homes, low incomes • Least educated • Low % natural gas use Estimated Energy User • Low	Attitudes and Behaviors • Most concerned re conserving, controlling use and costs, the environment, and environmental impact of energy use • Very aware of connection between conservation activities and protecting the environment • A "green" utility is very important • Conservation actions don't match "green" ideals; activities similar average customer Demographics/Characteristics • Majority are women • Lower income • Smaller homes than most • EE actions not as high as ideals • Low % natural gas use Estimated Energy Use • Low	Attitudes and Behaviors • Saving money, controlling costs very important, some enviro concern • See recycling as having biggest environmental impact, transportation; energy choices less important • Take some energy saving actions – less than active "green" segments; more than "brown" segments • Cost savings more important than enviro issues in driving EE actions • "Green" utility is much less important than for most segments Demographics/Characteristics • Slightly more women • Incomes match the average • Most home owners, modest 3 BR SF homes • EE actions on par with population Estimated Energy Use • Low-Medium	Attitudes and Behaviors • Very concerned re conserving, controlling energy use/costs, the environment and impact of energy use (just below Green Idealists) • Very aware of connection btwn conservation and its role in protecting the environment (slightly less than Green Idealists) • "Green" utility very important • Conservation closely matches their "green" ideals; largest use of CFLs Demographics/Characteristics • Larger % home owners • Homes larger than most • Slightly higher EE action levels • Greater % use natural gas Estimated Energy Use • Medium	Attitudes and Behaviors • Controlling energy costs and environmental concerns don't drive thinking or behavior • Efficiency not important for buying appliances • Least likely to connect saving energy, recycling, transportation options and protecting the environment • Actual conservation activities about average compared to all customers • "Green" utility less important • Would like more online options Demographics/Characteristics • Mostly home owners • Slightly larger homes • EE action level on par with population • Most educated Estimated Energy Use • Medium

PSE Segments Continued. . . .

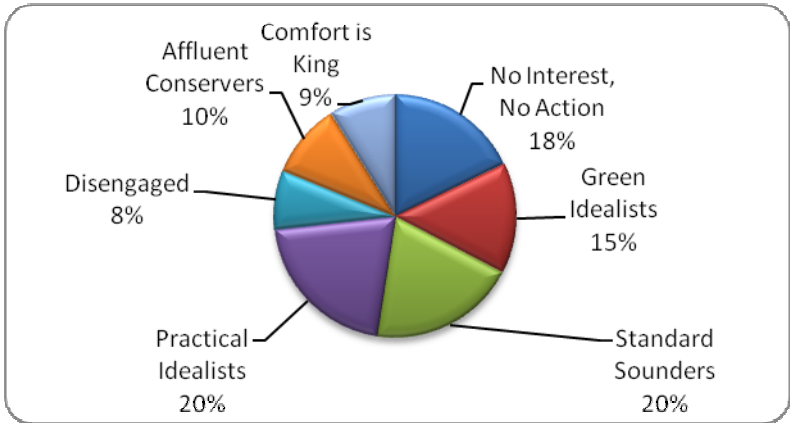
Affluent Conservers 5%	Comfort is King 10%
Attitudes and Behaviors • Least concerned /lowest awareness among the "green" segments with conserving, energy costs, and protecting the environment • Still engage in conservation actions lower awareness/ concern • Cost savings strong factor for EE appliances not enviro benefits • More interested in "green" utility Demographics/Characteristics • Most affluent • All home owners • Second largest homes on average • EE actions somewhat higher • Higher proportion using natural gas Estimated Energy Use • Medium high	Attitudes and Behaviors • Low concern with saving or controlling energy use/costs • Low concerned with environmental impacts of energy use • Least interest in Green Power and EE programs • Still, % buying EE appliances, CFLs, awareness and participation is programs similar to customers as a whole • Cost/performance drive appliance buys Demographics/Characteristics • More affluent • Nearly all home owners • Largest homes • EE Actions on par with population Estimated Energy Use • High



Snohomish PUD's Seven Customer Segments

Notes:

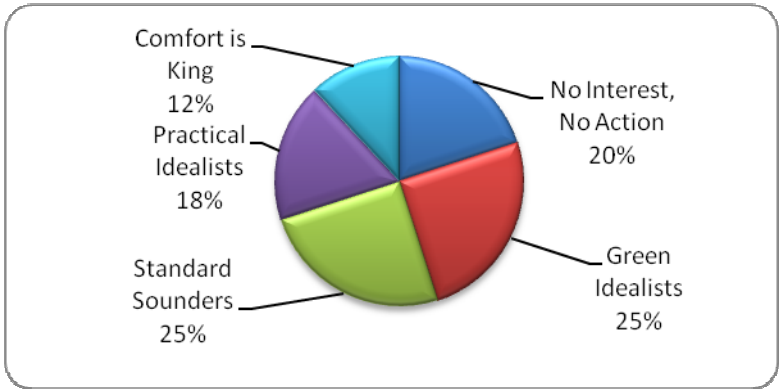
- Did not find Eco Rejecters (BPA only)
- Disengaged were not more educated
- A few segements quite different in size from other service territories (for example, more Affluent Conservers)



Tacoma Power's Five Customer Segments

Notes:

- Did not find Eco Rejecters
- Did not find Disengaged Consumers
- Did not find Affluent Conservers
- "Standard Sounders" in other schemes become "Cost-Focussed Conservers"
- A few segments quite different in size (for example, Green Idealists)



BPA's Eight Customer Segments (excluding PSA utilities)

Notes:

- "Follows the crowd" segment similar to Puget Sound area utility "Standard Sounder"
- Only one to have "Eco Rejecters" (described below)

Eco Rejecters 5%

Attitudes/Behaviors

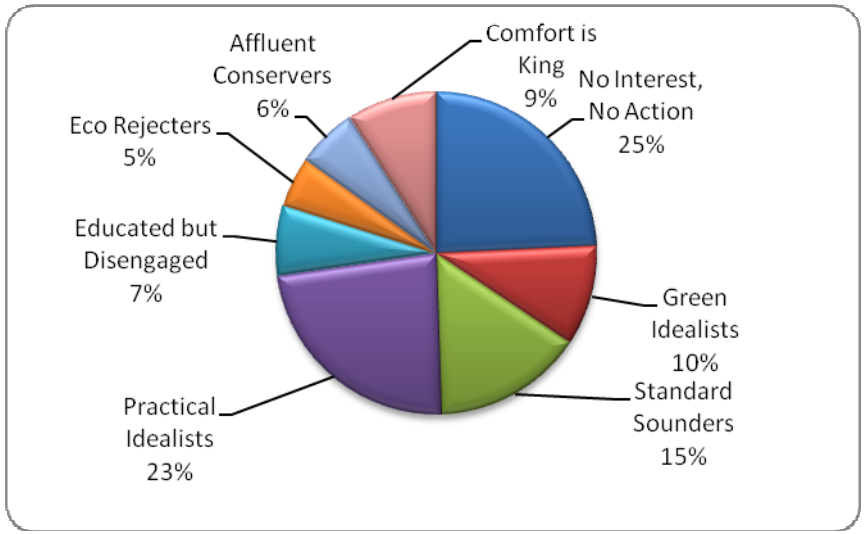
- Energy-use decisions mostly made by males
- Least concerned with conserving/controlling energy use/costs
- Unlikely to connect personal actions and protecting environment
- Least likely to have CFLs or recycle.
- Yet, ¾ of appliance purchasers bought EE appliances.
- Lowest satisfaction with utility.
- Yet, tended to say utility provides good value

Demographics

- Some of the largest families, many more with young children
- Above average household income

Estimated Energy Use

Medium High



BC Hydro's Six Customer Segments

FIGURE 4 BC HYDRO'S SIX CUSTOMER SEGMENTS

Devoted Conservationists (DC) 26%	Cost-Conscious Practitioners (CCP) 22%	Entrenched Libertarians 5% (EL)	Stumbling Proponents (SP)20%
Attitudes & Behaviors • Think about energy issues more • Know most about conserving • Active energy conservers • Conserving moral obligation, makes a difference, connected to environmental issues • Willing to reduce further if larger goals met like less imported energy, delay of new plants • Energy use important when buying appliances • Most likely to buy environmentally friendly products • Consistent conservation habits Demographics • Significantly older -- 1/3 over 65 • Lowest household income, many likely retired • Less likely to live in the Lower Mainland Energy Use Profile • **Lowest energy consumption** • Primarily gas heat • Lowest dishwasher, laundry loads/week • More low-flow showerheads. • Higher CFL use • More programmable thermostats & LEDs • Fewer large TVs or entertainment systems • Wider use of media for new products	Attitudes & Behaviors • 4th for desired attitudes re energy/conservation BUT more likely to report actions • Like CDs & SPs, majority think conserving is moral obligation • Most likely conserve to save money • Among least likely -- save for enviro reasons • Among least likely to donate time/money to environmental causes Demographics • This group most closely reflects the profile of the overall population • Somewhat more likely to be female. • Lowest % college grads. Energy Usage Profile • **Second lowest electricity use** • Very similar to overall population in use of heating fuels and water usage. • Have the highest penetration of double-glazed regular glass windows, and lowest penetration of singled-glazed windows. • Tied w/DCs and SPs--programmable thermostats	Attitudes & Behaviors • Think about energy issues – Less than some, more than others • Disagree conservation is a moral obligation • Few willing to reduce use to reduce imports or delay plants • Favorable conservation habits and behaviors • Resist being told what to do • 2nd most likely to donate to environmental causes • Least likely to always look for best price for products/services Demographics • Most likely to live in single detached houses • Skewed slightly toward females, 35-54 • Spread of education • Almost exclusively English speaking Energy Use Profile • **In the middle third for annual energy use** • **Lowest consumption if in apartments, condos** • Highest use of electricity as main fuel • Highest use of baseboards as main heat system • Highest average of dishwasher loads • Most likely -- top-load washers, dishwashers, manual defrost refrigerators • Highest % large TVs, entertainment systems	Attitudes & Behaviors • Very positive attitudes/opinions about energy and conservation • Think about issues more frequently than Comfort Seekers, Cost-Conscious • More likely than Cost-Conscious to donate to environmental causes • Pay more for environment-friendly products. Demographics • High incidence of single detached homes, duplexes, row houses, and townhouses • Most likely to have a college degree • Second highest household earnings Energy Usage Profile • **In top third in terms of annual consumption** • More natural gas heat w/ electricity as second fuel • More likely to use dishwashers 1+ time/week • Most likely to use fluorescent/halogen bulbs, but also has 2nd highest CFL penetration. • Highest LED penetration. • Tied w- DCs, CCPs for programmable thermostats • Highest home computer penetration • Less likely to use media for info re new products

BC Hydro segments continued. . .

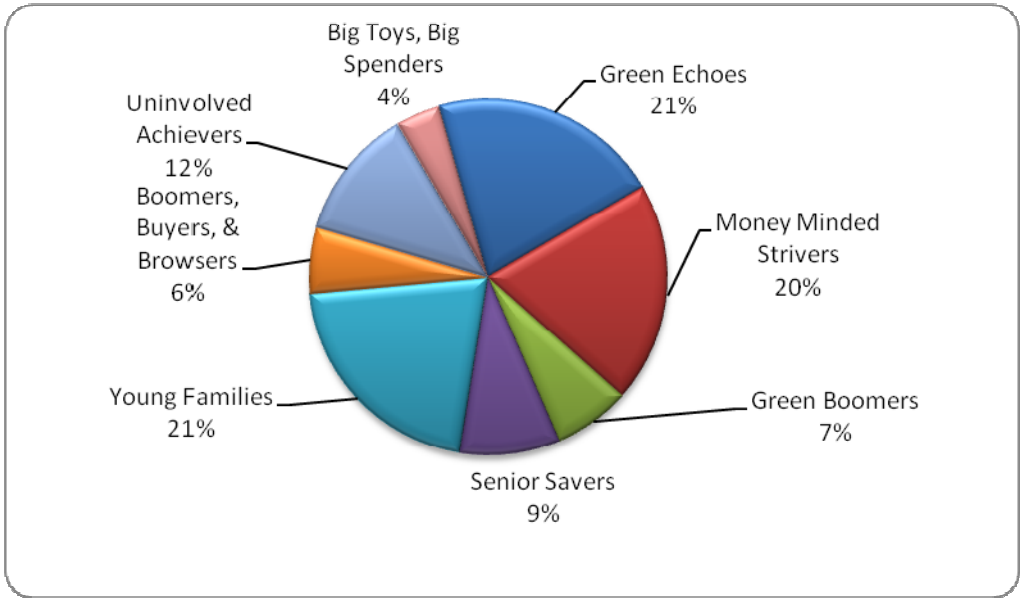
Comfort Seekers 9% (CS)	Tuned Out & Carefree (TO) 13%
Attitudes & Behaviors • More likely to think about how to save energy, say energy use important for appliance buying, and pay more for enviro-friendly products. • Rarely use programmable thermostat or turn down the heat • Less likely to save energy by turning up thermostat if have A/C Demographics • Highest incidence of 25-44 yr olds • More likely to have kids and 3+ in household • Most ethnically diverse • Most live in SF homes, but highest level of apt/condo dwellers Energy Use Profile • **Middle to high third in annual energy use** • Least likely -- electricity as secondary heat • Least likely -- electric base boards as main or 2ndary system • Least likely -- top-loading clothes washers Among least likely -- low-flow shower heads, LEDs • Most likely -- instant hot water taps, auto defrost refrigerators • Less likely -- programmable thermostats • More likely -- digital TV, cable/satellite, PCs/printers • More likely – rely on TV info re new products/services	Attitudes & Behaviors • Least active energy conservers. • Energy consumption, appliance size not important purchase decision attributes. Demographics • 65% male • Live in Lower Mainland • Majority at least 45 years old, but much lower than most segments • Less likely to be homeowners • Highest household earnings Energy Usage Profile • **Highest electricity consumption** • Least likely - low-flow showerheads • Most likely - single-glazed windows • Least likely - CFLs or LEDs • Least likely - programmable thermostats • More likely -- LCD/rear projection TV • More likely --- cable/satellite subscription. • Least likely -- use media for info about new products and services.

SMUD's Eight Customer Segments

FIGURE 5 SMUD'S EIGHT CUSTOMER SEGMENTS

Green Echoes 21%	Money-Minded Strivers 20%	Green Boomers 7%	Senior Savers 9%	Young Families 21%
Attitudes and Behaviors • Green attitudes • Higher interest in SMUD programs but very low participation • Suspect low incomes and use stop them from taking action Demographics • Young, often single • Most live in apartments • Some married w/kids • Lowest incomes Energy Use • Lowest(?)	Attitudes and Behaviors • Attitudes similar to population • Too busy to think about electricity use • Price sensitive • High interest in SMUD programs • Below average participation Demographics • 2nd lowest income • 2nd youngest segment • Larger households • Half rent, half own • More transient • Highest non-English speakers Energy Use • Below average, especially multi-family dwellers	Attitudes and Behaviors • Greenest of all segments • High interest in green programs backed up by high participation in Geenergy, rebates, ACLM Demographics • Middle aged (45-65) • 1-2 person households • Average income • Higher than average education • Live in mid-size SF homes Energy Use • Below average (?)	Attitudes and Behaviors • Actively conserve • Above average green attitudes • Like comfort • Average participation in SMUD programs Demographics • Older • Married • 2-person households (or widowed) • Live in older homes for many years Energy Use • Moderate energy use	Attitudes and Behaviors • High interest in SMUD programs • Below average participation rates Demographics • Best described by life-stage – 30-44, married with children • High proportion (22%) Hispanic • Mostly English-speakers • Live in modest, newer SF homes Energy Use • Higher than average

Boomers, Buyers, Browsers 6%	Uninvolved Achievers 12%	Big Toys, Big Spenders 4%
Attitudes and Behaviors • Tech friendly • Premium buyers • Believe they can save energy without giving up comfort • Highest % rebate and home improvement program participation • Highest % asking SMUD for advice Demographics • High income • High education • ½ 45-64, 25% 65+ • Live in larger homes Energy Use • High energy use	Attitudes and Behaviors • Not actively conserving • Not concerned about the future Demographics • Middle-ages, married with children • Living in large, newer SF homes • Higher income Energy Use • Second highest use	Attitudes and Behaviors • High priority on being comfortable • Premium buyers • Not into active conservation • Above average interest in EE • Above average interest in home-related concepts • High participation in SMUD home-related programs Demographics • Highest income • Mostly 45-64 • Mostly married, 3+ households • Live in largest homes Energy Use • Highest energy use



APPENDIX B: EXPANDED METHODS DESCRIPTION

1. Energy Trust

Energy Trust hired Research Into Action to design, oversee fielding, and analyze the 2008 Oregon Residential Awareness and Perception Study. AbtSRBI conducted the fielding from July through September 2008, a telephone survey of 1,205 residential customers across Oregon. Research Into Action's report devotes an entire chapter (Appendix G) to the analytical steps used in their segmentation process; this study is by far the clearest explanation we have of methods. As the report states:

> ***"We used factor analysis, regression, and clustering techniques to segment the sample population. . . Factor analysis was used to explore the structure of the dataset by grouping the variables into factors, and regression analysis was chosen to test if the derived factors and the demographic variables were significant predictors of household energy consumption behavior. We input all significant variables and factors in the regression model into the two-step clustering algorithm. . .We further explored the derived segments through crosstab chi square procedures. We used SPSS algorithms for all of these analyses. . ."***

While we do not have a similar depth of methodological details for all studies, the ETO study appears to be unique among the segmentation projects in its focus on identifying variables for its segments that significantly predicted levels of household energy consumption. (Note: BC Hydro and SMUD also use energy consumption as part of their segmentation scheme, but it was not the driver of those schemes. The Puget Sound area utilities and BPA did not use energy consumption as a variable.) Including consumption data provides the benefit of segment definitions that are rooted in a composite behavior – energy use – that frames all energy efficiency efforts. In addition, unlike the other four Northwest studies, ETO's questions focused on awareness, knowledge, and actions reported and not attitudes. [25]

Specific research topics included:

- Awareness of Energy Trust
- Participation in energy efficiency programs (especially Energy Trust)
- Motivations and barriers to program participation
- Awareness of energy efficiency
- Assessment of energy efficiency's importance
- Awareness of renewable energy (renewables not represented in other studies)
- Use of energy/energy using equipment
- Decision-making about energy efficiency and renewables
- Views about global warming/environment
- Preferred information sources

[25] However ETO's 2009 study included attitudinal data.

- Household characteristics
- Customer demographics
- Customer consumption (a subgroup)
- Availability for future research and contact

Notably, a relatively small number of survey variables passed the hurdle of being actual energy consumption predictors. This is the list of the elements that went into building the segment definitions:

I. Information Awareness Factor, consisting of eight variables:

1. ENERGY STAR® purchase – yes or no
2. Number of energy programs that the respondent is aware of
3. Knowing where to obtain information about renewable energy – yes/no
4. Aware of Energy Tax Credit from State of Oregon – yes/no
5. Number of CFL bulbs installed
6. ETO awareness – yes/no
7. CFL presence in home – yes/no
8. ETO participation – yes/no

II. Home Ownership- Owning vs. Renting
Owning a home increased energy consumption compared to renting.

III. Home Heat Source- Electricity vs. Natural Gas
Contrary to expectations, natural gas as a heat source increased energy consumption. The study suggests this could be due to larger house sizes among gas heat customers.

IV. Households (Children and without Children)
Households with children used less energy per person than households without children.

2. (2)PSE, (3) SnoPud, (4) Tacoma, (5) BPA

The same company performed the analysis for all these studies. BPA has published fairly detailed information about methods but limited methods information is available for the other studies.

The approach used for the PSE study, as noted, lead the way for the subsequent studies with SnoPUD, Tacoma Power, and BPA. For PSE (and we assume SnoPUD and Tacoma Power), Momentum Market Intelligence first used factor analysis to identify key themes from the survey data. Topics covered in the research included (based on the BPA questionnaire)

- Participation in utility's energy efficiency programs
- Motivations and barriers to program participation
- Assessment of energy efficiency's importance
- Use of energy/energy using equipment (wider set than Energy Trust)
- Decision-making about energy efficiency
- Views about global warming/environment (much wider set of questions than Energy

Trust)
- Preferred information sources
- Household characteristics
- Customer characteristics and demographics (included measuring level of decision-making for various energy decisions)

The primary variables chosen for the segmentation were based on their ability "to differentiate past and potential EE behaviors." Then the segments were more delineated using selected attitudes, energy uses, and demographics. This resulted in 7 segments being developed.

As noted previously, the analysis for BPA used the PSE segments as "starting points" for the development of BPA-specific segments. The first step was to compare distributions of the segmentation variables between PSE and BPA. The next step was to test to see if the PSE segments existed in the BPA data and if there were any additional segments that surfaced. This analysis shows all 7 PSE segments were present and that the size of the segments was "in line with that of the PSE segments."

In addition, the analysis identified an extra segment for the BPA data, with Segment 5 being broken into two segments, with one giving much lower ratings on nearly all attitudinal items than PSE segment 5 and all other PSE segments. The PSE data were re-examined to determine if the 8th existed for PSE customers, but the analysis showed it was unique.

For the BPA data, the analysis was replicated for each of four regions covered in the study. The results showed the 8 segment solution was the best option for each of the four regions. Weights were applied to the segmentation solution after it was derived.

6. BC Hydro

In June 2006, BC Hydro mailed 14,015 surveys to the billing contact at the service addresses of customers across the province who are metered on the standard residential rate. The survey package included a survey booklet, a cover letter and a postage-paid return envelope. Two weeks later, a follow-up postcard was mailed to all sampled households to remind customers to complete and return the survey form (if they had not done so).

BC Hydro offered customers two ways to participate in this study: (1) Fill out and return by mail or (2) complete and submit the survey on-line. As an incentive, respondents were given the chance to be entered into a drawing for one of four $500.00 home improvement gift certificates. If they completed the survey on-line, respondents were offered an additional entry into the drawing. In all, 4,338 surveys were included in the sample – 2,995 returned via the mail and 1,343 completed on-line. Data were weighted by housing type to align the sample to the population.
Key research topics included: *[Need to double check this list]*

- Participation in energy efficiency programs

- Motivations and barriers to program participation
- Assessment of energy efficiency's importance
- Use of energy/energy using equipment
- Decision-making about energy efficiency
- Preferred information sources
- Household characteristics
- Customer demographics
- Customer consumption

Segmentation – Dimensions Used

Thirty-three (of about 60) attitudinal and behavioral dimensions were selected as being suitable for inclusion in the segmentation algorithm based on various criteria, including their direct relevance to electricity, conservation and the environment. The remaining dimensions were later used to further profile the segments; energy consumption was also added to the profiles after the basic segmentation was developed.

General Attitudes

1) Extent Rs think about energy issues in BC and how Rs are affected?
2) Level of concern about energy and conservation.
3) Opportunity to conserve and import of conserving over the long run.
4) Importance of individual conservation to "making a big difference"
5) Moral obligation to conserve, regardless of impacts.
6) Strength of linkage between energy efficiency and being environmentally responsible.
7) It is worth it to pay MORE for energy in order to NEVER be asked to conserve.
8) I would be willing to do my part of reducing my usage of electricity if it allows the province to reduce importing electricity into BC.
9) I would be willing to do my part of reducing my usage of electricity if it allows the province to delay the construction of new electricity generation projects.
10) I am knowledgeable about ways to save electricity around my home.

Lighting Habits

1) Turn off lights when no one is in the room.
2) Only have the minimum number of lights on in a room for what I am doing.

General Habits & Behaviours

1) I am an active energy conserver who looks for opportunities to save energy in everything I do.
2) When buying a new appliance, energy consumption is an important consideration in the decision.
3) Donate time or money to environmental causes.
4) Think about ways to save energy.
5) Pay more for products that are environmentally friendly.
6) I am always on the go with little time to research ways to save energy in the home.

Plug-In Device Habits

1) Turn off TV when no-one in the room or actively watching the program.
2) Turn off computer and printer when not in use.

3) Unplug cell phone chargers when not in use.

Dishwashing Habits

1) Only turn on dishwasher when it is full.
2) Air dry the dishes in the dishwasher rather than use the dry cycle.

Laundry Habits

1) Only do laundry with full loads.
2) Use cold water wash & rinse when doing laundry.

Space Heating/Cooling Habits

1) Use a programmable thermostat or manually turn down the heat at night.
2) Use a programmable thermostat or manually turn down the heat when no one is home.
3) Reduce temperature in unused rooms by closing vents or turning down thermostats.
4) Dress more warmly in cold weather and reduce the thermostat to 20 degrees Celsius (68 degrees Fahrenheit) or below.
5) Leave windows ajar for ventilation in winter.
6) Check and re-seal air leaks in the house each fall.

Water Habits

1) Turn off the water heater when no one is in the house for more than 2-3 days
2) Leave water running when washing hands.

Following the above description, BC Hydro describes the procedures they used to analyze the selected dimensions. BC Hydro used ClustanGraphics statistical software. They first used Principal Components Analysis, a technique that is similar to factor analysis, which reduced the 33 dimensions above to 25 factors, followed by a clustering program to identify the segments. Use of the clustering program became a highly iterative process. Three clusters were initially identified. It was determined through further iterative analysis combined with a group decision-making process that a 6-segment solution would be both the most statistically sound solution and provide the most explanatory power in terms of the segments being 'measurable, substantial, accessible, differentiable and actionable.' Also included is an interesting chart showing an initial four- segment solution with descriptions, and how it evolved into a six-segment solution.

Following the methodology, each of the six segments is profiled. Here are the elements that go into each profile:

- Attitudes and Behaviors
- Energy consumption
- Demographic profile
- Home and Hot Water Heating Fuels
- Water Usage
- Outside Doors, Windows, and Window Frames
- Adoption of Energy Efficient Products-CFLs, SLEDS, and Programmable Thermostats.

- Household Appliances
- Electronic Items
- Sources of Information for New Products and Services

7. Sacramento Municipal Utility District (SMUD)

HINER & Partners completed a 30-minute survey among 3,629 SMUD residential customers

- 1,696 interviews completed by telephone using a randomly generated SMUD customer list
- 1,800 interviews completed by Internet (using a list of customers who segmentation from two directions: (1) survey, and (2) customer database
- Survey: Similar to 2002 KEMA segmentation method. Created 6 segments based on customer energy-related attitudes measured in the survey.
- However, segments are not differentiated on variables that exist in SMUD's customer database (e.g., usage, program participation, census-based demographics, etc.), so segment membership cannot be determined for each customer in the population.
- **Customer database: Created 8 segments based on (1) quarterly energy usage, (2) dwelling characteristics, and (3) program participation.**
    - Segments are differentiated on survey variables including attitudes, media use, and demographics.

Customer database segmentation was selected because it meets all the objectives.

- Segmentation solution is based on survey respondents
- Customer population then scored using discriminant function analysis[26]

[26] Discriminant function analysis is a statistical approach used to find which variables discriminate between two or more naturally occurring groups – for instance, those who take a particular energy saving action and those who don't. When analyzing just two groups, it is analogous to multiple regression. When analyzing more than two groups, it has similarities to factor analysis. "The basic idea underlying discriminant function analysis is to determine whether groups differ with regard to the mean of a variable, and then to use that variable to predict group membership (e.g., of new case.)"case." (http://www.statsoft.com/textbook/stdiscan.html)

APPENDIX C: BPA GEARBOX QUESTIONS

80% ACCURACY

QS5. Do you own or rent your home?

1. Own / buying
2. Rent / lease
3. Don't know
4. Refused

Q33. What is the primary fuel used to heat your home?
[READ CODES 1-6 IF NECESSARY]

1. Electricity
2. Natural gas
3. Oil
4. Propane
5. Wood
6. Something else **[SPECIFY]**
7. Don't know
8. Refused

Q36. Is your home's water heater electric, natural gas, propane, or something else?
[IF MORE THAN ONE SELECTED, ASK REGARDING HOME'S MAIN OR PRIMARY WATER HEATER. THIS DOES NOT INCLUDE SMALL UNDER-SINK ELECTRIC WATER HEATERS THAT PROVIDE "INSTANT" HOT WATER FOR A SINGLE FAUCET.]

1. Electric
2. Natural gas
3. Propane
4. Something else **[SPECIFY]**
5. Don't know
6. Refused

Q42. How many bedrooms are there in your home? **[ASK AS OPEN END]**

1. One
2. Two
3. Three
4. Four
5. Five or more
6. Don't know
7. Refused

Q2. Now we'd like to understand how you think about using energy at your home. Using a 10-point scale where '1' means you strongly disagree, and '10' means you strongly agree, please indicate how much you disagree or agree with each of the following statements. Remember, disagree is a lower number, agree is a higher number.

How much do you agree that: ?

[RANDOMIZE ORDER OF STATEMENTS A-M.]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS VERY IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR EVERY ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

b. It is very important for you to find ways to control your energy costs.

e. You are very concerned about the environmental effects of electricity generating power-plants.

g. You regularly review your home's energy usage

j. You pay a lot of attention to energy-related issues because they affect both your home and the country as a whole

m. The long-term threat from global warming and climate change is real, and potentially catastrophic.

Q20. Now, I'd like to ask you how important some different factors are when you shop for energy-related products and services for your home.

Please use a scale of 1 to 10, where '1' means that factor is not at all important and '10' means that factor is extremely important when you are selecting which appliance, electronic device, or other energy-related product or service to purchase for your home.

How important are each of the following:[INSERT ITEM]

[RANDOMIZE ORDER OF ITEMS A-F]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS VERY IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR EVERY ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

a. cost savings you might get from reduced electricity usage?

c. purchase discounts that might be offered for purchasing energy efficient devices?

Q23. I'm going to read a list of different actions that people can take. Using a 10 point scale, where '1' means that action makes no contribution toward protecting the environment at all and '10' means that action makes a major contribution toward protecting the environment please tell how much impact you think each action has.

How much of a contribution does [INSERT ITEM] make toward protecting the environment?

[RANDOMIZE ITEMS A-I]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS VERY IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR EVERY ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

a. Using mass transit instead of driving

b. Recycling paper, cans, bottles and plastics

d. Driving an electric or hybrid gas-electric vehicle

g. Replacing regular light bulbs and fixtures with energy efficient ones

h. Installing additional or upgraded insulation or windows

Q29. Using a 10-point scale, where '1' means not at all important, and '10' means extremely important, please indicate how important it is to you that your energy utility company do the following things, even if that meant that you had to pay a little more in order for the company to pursue these types of initiatives?

[RANDOMIZE ORDER OF STATEMENTS A-D]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS VERY IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR EVERY ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

a. Actively encourage its customers to participate in energy and cost saving programs.

c. Operate its business in a completely environmentally friendly manner.

90% ACCURACY

QS5. Do you own or rent your home?

1. Own / buying
2. Rent / lease
3. Don't know
4. Refused

Q33. What is the primary fuel used to heat your home?
[READ CODES 1-6 IF NECESSARY]

1. Electricity
2. Natural gas
3. Oil
4. Propane
5. Wood
6. Something else **[SPECIFY]**
7. Don't know
8. Refused

Q36. Is your home's water heater electric, natural gas, propane, or something else?
[IF MORE THAN ONE SELECTED, ASK REGARDING HOME'S MAIN OR PRIMARY WATER HEATER. THIS DOES NOT INCLUDE SMALL UNDER-SINK ELECTRIC WATER HEATERS THAT PROVIDE "INSTANT" HOT WATER FOR A SINGLE FAUCET.]

1. Electric
2. Natural gas
3. Propane
4. Something else **[SPECIFY]**
5. Don't know
6. Refused

Q42. How many bedrooms are there in your home? **[ASK AS OPEN END]**

1. One
2. Two
3. Three
4. Four
5. Five or more

6. Don't know
7. Refused

Q2. Now we'd like to understand how you think about using energy at your home. Using a 10-point scale where '1' means you strongly disagree, and '10' means you strongly agree, please indicate how much you disagree or agree with each of the following statements. Remember, disagree is a lower number, agree is a higher number.

How much do you agree that: ?

[RANDOMIZE ORDER OF STATEMENTS A-M.]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS VERY IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR EVERY ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

b. It is very important for you to find ways to control your energy costs.

d. You believe it is socially responsible to limit your use of electricity.

e. You are very concerned about the environmental effects of electricity generating power-plants.

g. You regularly review your home's energy usage

j. You pay a lot of attention to energy-related issues because they affect both your home and the country as a whole

m. The long-term threat from global warming and climate change is real, and potentially catastrophic.

Q20. Now, I'd like to ask you how important some different factors are when you shop for energy-related products and services for your home.

Please use a scale of 1 to 10, where '1' means that factor is not at all important and '10' means that factor is extremely important when you are selecting which appliance, electronic device, or other energy-related product or service to purchase for your home.

How important are each of the following:[INSERT ITEM]

[RANDOMIZE ORDER OF ITEMS A-F]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS VERY IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR EVERY ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

a. cost savings you might get from reduced electricity usage?

b. positive effects on the environment that might result from reduced energy usage?

c. purchase discounts that might be offered for purchasing energy efficient devices?

Q23. I'm going to read a list of different actions that people can take. Using a 10 point scale, where '1' means that action makes no contribution toward protecting the environment at all and '10' means that action makes a major contribution toward protecting the environment please tell how much impact you think each action has.

How much of a contribution does [INSERT ITEM] make toward protecting the environment?

[RANDOMIZE ITEMS A-I]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS VERY IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR EVERY ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

a. Using mass transit instead of driving

b. Recycling paper, cans, bottles and plastics

c. Setting heating or cooling thermostats to use less energy

d. Driving an electric or hybrid gas-electric vehicle

f. Replacing major appliances with more energy efficient ones

g. Replacing regular light bulbs and fixtures with energy efficient ones

h. Installing additional or upgraded insulation or windows

Q29. Using a 10-point scale, where '1' means not at all important, and '10' means extremely important, please indicate how important it is to you that your energy utility company do the following things, even if that meant that you had to pay a little more in order for the company to pursue these types of initiatives?

[RANDOMIZE ORDER OF STATEMENTS A-D]

[RECORD NUMBER 1 – 10] [11=Don't know, 12=Refused]

[INTERVIEWER: REPEAT THE SCALE AS NECESSARY.]

[INTERVIEWER: IT IS <u>VERY</u> IMPORTANT THAT EACH RESPONDENT PROVIDE A 1-10 RATING FOR <u>EVERY</u> ITEM. IF THE RESPONDENT SAYS "DON'T KNOW", PROMPT AGAIN FOR A 1-10 RATING, REPEATING SCALE AND/OR ITEM AS NECESSARY.]

a. Actively encourage its customers to participate in energy and cost saving programs.

b. Do everything possible to supply renewable, clean energy

c. Operate its business in a completely environmentally friendly manner.

APPENDIX D: EXAMPLE OF A PERSONALIZATION

Green Idealists

Jennifer lives in Bellingham, in Whatcom County. She lives in a quiet community with her 13-year-old daughter, 10-year-old son and her husband of 15 years. They bought their mid-70's three-bedroom home about five years ago. Both Jennifer and her husband José work for Whatcom Middle School – she is a math teacher for grades 7-8 and he is a mechanic. Life is great for Jennifer and her family and she's happy to know that their future is secure.

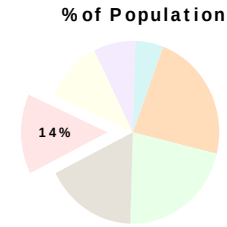
Jennifer loves living in the Pacific Northwest and is especially proud of the region's environmental bent. Jennifer has considered herself something of an environmentalist since the time she spent at the University of Oregon getting her Bachelor of Science degree and she's proud to incorporate those ideals into her everyday life and even into her classroom when she can. Recently she had her students try to calculate their "carbon footprint" as a special homework project.

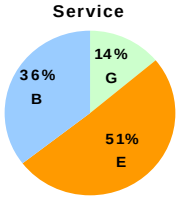
Jennifer and her husband both love their jobs and wouldn't want to work anywhere else, but it does mean they have to get creative sometimes to make the dollars stretch. José is pretty handy so home improvement projects they do themselves to save a little money.

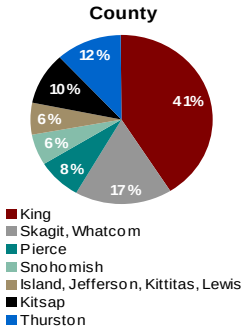
They also try to do what they can to keep their energy use down and conserve where they can because the environment is very important to both of them, a value they have tried to instill in their children. Both Jennifer and José try to do the everyday things like going around and making sure the lights and TV are turned off and take their own bags to the grocery store to be as "green" as possible and save some money too – and their efforts seem to pay off when they look at their electricity bill every month.

When they can, they tackle bigger projects and they hope they'll be able to convert their heat to natural gas before next winter. They need to upgrade their insulation as well, but need to save a bit more money before they'll be ready to tackle that project. Some of their appliances need upgrading, like their washer and dryer, and when they are finally ready to buy some new ones Jennifer plans to research their options very carefully in order to make the "greenest" possible purchase even though she knows it may mean paying a bit more. She understands change starts with each of us. Jennifer had read something recently about the impact of installing low-flow showerheads in homes and since it was relatively inexpensive to do she insisted José take care of that as soon as possible.

Another option her and her husband have considered is signing up for their utility's Green Power program. She wants to do everything she can, but has some questions about just how much more expensive it is (she can't completely forget her family's budget) and how the program works generally. She is unsure who to call though to get these questions answered and thus far has found it difficult to take time out of her busy days as a working mom to figure it all out. In any case, it's *very* important to her that her utility offer programs like these and she's very proud that she lives in an area that is served by one of the "greenest" power providers in the country!







Green Idealists

Energy-Use Actions and Attitudes

Actions Perceived to Be MOST Impactful

- Recycling paper, cans, bottles and plastics
- Setting heating or cooling thermostats to use less energy
- Using mass transit instead of driving
- Replacing regular light bulbs/fixtures with EE ones
- Installing additional or upgraded insulation or windows
- Replacing major appliances with more EE ones
- Driving an electric or gas-hybrid vehicle
- Participating in a Green Power rates program to buy renewable energy

Actions Perceived to Be LEAST Impactful

- None

Energy-Use Attitudes – MOST Agree

- Conserving natural gas is just as important as conserving electricity
- It is socially responsible to limit your use of electricity
- It's very important to find ways to control energy costs
- Global warming and climate change are real / potentially catastrophic
- Pay a lot of attention to energy-related issues because they affect my home and the country as a whole
- Very concerned about the environmental effects of electricity-generating plants
- Regularly review home's energy usage and look for new ways to save

Energy-Use Attitudes – LEAST Agree

- None

Communication

BEST Way to Hear About EE Programs

- Information included with PSE bill
- Newspaper, radio or TV advertising
- Other promotional mailing

How Learned About EE Programs

- Information included with PSE bill
- Salesperson at store

Local Events Attended in Last 12 Months

- Neighborhood or community events
- Concerts, plays or operas
- Benefits or charity events
- Home and garden shows or sportsman's shows

My Utility Company

MOST Important Utility Company Functions

- Actively encourage customers to participate in energy and cost savings programs
- Do everything possible to supply renewable, clean energy
- Operate business completely environmentally-friendly

LEAST Important Utility Company Functions

- Provide more online options for you to conduct business at the utility's website

Shopping Habits and Attitudes

MOST Important When Purchasing New Appliance

- Positive effects on the environment that might result from reduced energy use
- Cost savings from energy-efficiency
- Purchase discounts

Stores Shopped Most in Past Month

- Home improvement stores (like Home Depot)
- Discount department stores (like Target)
- Member discount stores (like Costco)