

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N



Residential Segmentation Research

March 2009



Presentation Outline

- **Objectives & Methodology**
- Results
- Interpretations and Conclusions

Objectives & Methodology

- **The goal of the BPA residential segmentation is to provide the BPA customer utilities localized information about their residential customers. This information will assist the utility in:**
 - ❑ Developing new residential energy programs and services
 - ❑ Improving design of existing programs
 - ❑ Developing more informed marketing strategies
 - ❑ Improving targeting of customer communications

- **To this end, this work done for BPA leveraged the existing retail customer segmentation research conducted for Puget Sound Energy (PSE) in December 2007 on two fronts:**
 - ❑ It used the existing PSE questionnaire as a starting point for a BPA-specific document, which included 90% of PSE's original content.
 - ❑ It used the PSE segments as “starting points” for the development of BPA-specific segments

- **Similar to the PSE research, potential respondents for this research were screened to ensure that:**
 - ❑ Each was 18 years of age or older
 - ❑ Each could respond to the survey in English
 - ❑ The home called was the respondent's primary residence.
 - ❑ The respondent was responsible for, or shared responsibility for, making energy related decisions for their primary place of residence (including for any of the following: lighting, insulation, appliance selection, control of heating / cooling thermostat settings, etc.)
 - ❑ Respondents could not be a customer of an IOU
 - ❑ Respondents were NOT required to know who their electric utility is.
 - ❑ Respondents were NOT allowed to be an employee of an electric or gas utility company

Methodology

- **BPA provided a list of all their utility customers which served as the basis for sampling for this research.**
 - This list of BPA's utility customers included a set of relevant customer zip codes for each utility's service territory as well as a region, urban / rural, and cooling zone designation for each utility.
 - All IOUs were removed from this list provided.

- **Using the zip codes provided in the list of BPA's utility customers, "listed" sample was purchased which provided phone numbers by zip codes.**
 - "Listed" sample was used instead of RDD because RDD sample cannot be ordered by zip code.
 - The sample did not include any contact or demographic information; only phone number.

- **All those that were customers of one of BPA's electric utility customers (excluding IOUs) and primarily or jointly responsible for their household's energy related decisions, were eligible to participate.**

- **A total of 2,001 customers of the utilities in BPA's service territory completed a telephone survey, in English, in September 2008.**
 - Average survey length was 34 minutes and respondents completing the survey received a \$10 Visa cash card.

Methodology

- **A select set of respondent attributes were monitored during fielding using quotas to ensure adequate representation across different household and geographic attributes. Specifically:**
 - Region
 - Urban / Rural regions
 - Cooling zone
 - Gender
 - Home ownership

- **However, for most of these household and respondent characteristics, sampling was done proportional to the population.**

- **However, for Region, a strategy of oversampling in the rural regions was employed to ensure adequate representation for analysis.**

Methodology

- Because BPA's customers were disproportionately sampled by region, the data presented in this report have been weighted to reflect the true proportion of customers by Region.
- Population characteristic data used for weighting was provided by BPA.
- The table below shows the original distribution by Region and the resulting distribution once weights were applied.

	Survey Proportions	Population Proportions	Weights Applied	Weighted Survey Proportions
Region 1	24.99%	34.4%	1.38	34.4%
Region 2	24.99%	21.4%	.86	21.4%
Region 3	24.99%	27.8%	1.11	27.8%
Region 4	25.04%	16.4%	.66	16.4%

Methodology

- As noted, the analysis for BPA used the PSE segments as “starting points” for the development of BPA-specific segments.
- While the hope was that a similar segmentation structure would be found, it was left as a possibility that a completely new segmentation would be required to represent BPA’s customers. To this end, analysis of the BPA data followed this approach:

Step 1:

- The distributions of the segmentation variables were compared between BPA and PSE data
 - Histograms suggested strong similarity in the distributions of these variables. Mean comparison tests also suggested that the means or proportion distributions of a majority (95%+) of these variables are not significantly different.

Step 2:

- The 90% accurate gearbox developed for PSE was used to create a segment variable for the BPA data. This variable was used as a covariate in Latent Class Cluster Analysis to test (1) if the 7 PSE segments existed in BPA data and (2) if BPA data consisted of any segments additional to these 7 PSE segments.
 - Using the segment variable as a covariate in Latent Class Cluster served the purpose of seeding the BPA segment centers with the segmentation solution from PSE data. The segment variables present in both PSE and BPA data were also used as inputs into this Latent Class Cluster analysis.
 - If any of the PSE segments did not exist in the BPA data, a close to zero percent of respondents classified into the segment would have been observed. The Latent Class Cluster analysis results suggested that all 7 PSE segment could be identified in BPA data and the size of these segments are in line with that of the PSE segments.

Step 3:

- Additionally, BPA data produced a stable segmentation solution with one extra segment beyond the original 7 PSE segments.
 - For BPA, segment 5 was broken into two segments, with one giving much lower ratings on nearly all attitudinal items than PSE segment 5 and all other PSE segments.
 - PSE data were re-examined to see if the 8th BPA segment could be identified. The BPA-unique segment was found to be non-existent in the PSE data.

Step 4:

- The above steps were replicated for each of the four regions surveyed.
 - Results suggested that the 8 segment solution was the best option for each of the four regions surveyed such that a single segmentation solution can be used across all regions.

Weights were applied to the segmentation solution after it was derived.