EVERGREEN ECONOMICS

Needs Assessment for the Energy Savings Assistance and the California Alternate Rates for Energy Programs

Volume 2 of 2 (Appendices)

Final Report

December 15, 2016

Prepared for the California Public Utilities Commission, Southern California Edison, Pacific Gas and Electric Company, San Diego Gas & Electric, and Southern California Gas Company

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Appendix A: Telephone Survey Disposition Report and Banner Tables

The survey disposition table below shows the response rates and final dispositions of households sampled for the telephone survey.

The banner tables show weighted responses to survey questions and selected analytical variables for the 905 respondents to the 2016 Low Income Needs Assessment telephone survey. The tables show responses overall and for a variety of customer segments.

We note here that the sample frame on which the survey is based is limited to 7-digit zip codes within IOU territories in California that have a higher percentage of households with incomes that fall below 400 of the FPL. Consequently, results for low-income households (those up to 200 percent of the FPL) and moderate-income households (those up to 400 percent of the FPL) are more robust than those of high-income households (those above 400 percent of the FPL). In all cases, the results reflect responses from respondents in the zip codes that have disproportionate shares of low-income households.

Table 1: 2016 Telephone Survey Disposition Summary

Strata	PG&E		SCE		SCG		SDG&E		Total	Percent of Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
Number not in service	566	20%	299	19%	833	24%	199	20%	1,897	22%
Wrong/blocked number	207	7%	93	6%	284	8%	36	4%	620	7%
Fax/data line	10	0%	9	1%	20	1%	7	1%	46	1%
Business number	43	2%	13	1%	118	3%	10	1%	184	2%
Ineligible – incorrect address	34	1%	7	0%	28	1%	5	1%	74	1%
Hard refusal	1	0%	0	0%	0	0%	1	0%	2	0%
Soft refusal	307	11%	148	10%	297	9%	98	10%	850	10%
Incompletes (partial interviews)	18	1%	8	1%	20	1%	12	1%	58	1%
Unavailable for duration	25	1%	9	1%	47	1%	10	1%	91	1%
Language barrier	24	1%	14	1%	37	1%	13	1%	88	1%
Did no reach (no answer, answering machine, busy signal)	962	35%	665	43%	1,241	36%	409	42%	3,277	38%
Potential callbacks	271	10%	84	5%	247	7%	35	4%	637	7%
Total Not Reachable	2,468	89%	1,349	87%	3,172	93%	835	85%	7,824	90%
Completed Surveys	300	11%	205	13%	250	7%	150	15%	905	10%
Total Sample Provided	2,768	100%	1,554	100%	3,422	100%	985	100%	8,729	100%

Banner tables have been provided and posted separately as a Microsoft Excel file. The remainder of this appendix defines the banner tables found in the Excel file posted separately.

Definition of banner columns

***** All Income Categories *****

All Respondents

Federal Poverty Level (by 100 pt increments)

- 0-100
- 101-200
- 201-300
- 301-400
- 401+

Federal Poverty Level for Hhlds up to 300% (by 50 pt increments)

- 0-50
- 51-100
- ...
- 251-300

CARE income eligibility and enrollment

- income eligible and enrolled
- income eligible and not enrolled

income ineligible and enrolled
income ineligible and not enrolled

***** Low Income Only ****

IOU

PGE
SCE only
SCE&SCG
SCG only
SDG&E
(SCE all)
(SCG all)

Climate Region

Central Valley
Desert/Mountain
North Coast
South Coast
South Inland

Urban / rural county

urban
rural

Aliso Canyon Area

- yes
- no

San Joaquin Valley

- yes
- no

Housing Type & Tenure

- single-family owner
- single-family renter
- multifamily renter
- other

Presence of Senior in Household

- yes
- no

Presence of a Person with a Disability in Household

- yes
- no

Presence of Children

- yes
- no

Language (hhld)

- monolingual English
- monolingual Spanish
- multilingual English & Spanish
- multilingual English, Spanish, & others

Energy Saving Practices

- low
- medium
- elevated
- high

Energy Burden (excluding outliers)

- lowest quartile (show ranges)
- 2nd quartile (show ranges)
- 3rd quartile (show ranges)
- highest quartile (show ranges)

Energy Insecurity

- none
- low
- moderate
- high

Material Hardship

- none
- low
- moderate
- high

Payment Practices

- no final calls or disconnections
- final calls without disconnections
- at least one disconnection

For the rows

All survey questions
All banner columns not included in other row categories

Appendix B: Additional Detail on Research Methods

This appendix provides additional detail on the methods for selected research tasks, including:

- The energy burden metric;
- The modified energy burden metric;
- The energy insecurity metric;
- The material hardship metric; and
- Phone survey sampling approach.

Energy Burden Metric and Caveats to 2013-16 Comparisons

The energy burden discussed in this report is based on a simple division of household energy costs by household income. Results reported for 2016 are based on the inputs and estimates described in Table 1.

Table 1: Energy Burden Inputs

Input	Data Source	Time Period Covered	Methodological Notes
Energy Costs	IOU billing data estimates for second fuel	January 1 2014 – December 31 2015 (SCE, SDG&E, PG&E) January 1 2015 – December 31 2015 (SoCal Gas)	Used 24-month energy costs for IOU associated with sample point to create mean monthly energy costs. If customer served by another IOU for a second fuel, estimated energy costs by imputing value based on the average consumption of homes of the same type in the same climate zone, scaled by known fuel consumption.
Household Income	LINA survey response estimates when unknown	Calendar Year 2015	Used midpoint of income range self-reported by households (91% question response). Estimated income based on income reported in CARE or ESA documentation, or median Census block group income, for households that refused income question.

Caveats Concerning Comparisons of Energy Burdens for 2013 and 2016

There are a number of differences in study methodology and other factors between the 2013 and 2016 LINA studies, which mean a direct comparison of results is not always possible. For example, energy burden analysis was conducted using the same calculations as in the 2013 LINA study, but differences in overall methodologies mean the results are not an apples-to-apples comparison. Each of the many factors listed below may individually have an upward or downward effect on energy burden in 2016 relative to the 2013 LINA study.

The following are reasons that energy burden and other analyses described in this report cannot be compared between the 2013 and 2016 LINA studies:

- Differences in survey sampling approach
  - The 2013 LINA study utilized a random sample of CARE customers within the entire IOU territory
  - The 2016 LINA study utilized a stratified sample and targeted 7-digit zip codes within IOU territory that have a high percentage of the population that falls below 400% of the federal poverty limit
- Difference in length of phone survey, which may result in respondent fatigue and affect survey responses
  - The 2013 LINA phone survey was considerably longer than the 2016 survey
- Difference in survey questions leading up to the question about income
  - The 2013 survey question regarding income was preceded by a series of basic demographic questions
  - The 2016 survey question about income was preceded by questions regarding financial resources and sources of income
- Difference in the structure of the survey question about income
  - The 2016 survey question regarding income was asked in two parts, first determining whether the respondent's household income was above or below the cutoff for 200% of FPL for their household size, followed by a second question that asked them to respond to income ranges that depended on their answer to the previous question.
- Difference in wording of the survey question regarding income
  - In 2013 the question was: "Including income from jobs, pensions, disability payments, social security, and other government programs and income, which of the following best describes the income of all members of your household in 2012? Please stop me when I come to the category for your household. Would you say it is…?"
  - In 2016 the question did not list specific sources of income and simply asked: "Next, I will read different income ranges that might apply to you. Please stop me when I come to the category that best describes your household's 2015 income. Would you say it was…?"

    - The response categories for income in the 2013 and 2016 survey questions were identical
- Differences in the data available to calculate energy bill costs
    - In 2013 we were able to obtain SCE and SCG bills for customers served by both IOUs, allowing us to calculate their total energy cost with actual gas and electric bill amounts.
    - In 2016 we were only able to obtain billing data from either SCE or SCG for customers that are served by both IOUs. We then imputed the bill amount for the other IOU based on income, climate zone, and home type in order to arrive at a total energy cost that included gas and electric bill amounts.
- Changes in the CARE population over time
    - The 2013 CARE population likely differs from the 2016 CARE population as some households leave the rate (by not re-enrolling), some are removed from the rate (due to not responding to or failing to be eligible based on post-enrollment verification requests), and others are added to the rate.

Modified Energy Burden Metric

The modified energy burden is a recomputation of the energy burden described above with an adjustment for selected non-cash resources received by households. Survey responses provided an indication of which respondents received which non-cash benefits. We then adjusted those households' estimated incomes using the valuations of benefits described below.

This remainder of this section of the appendix provides an overview of how we attempted to value resources that would not normally be included in self-reported income to create a modified energy burden.

In addition to asking each respondent for their total household income, the surveyors asked whether they receive benefits from government assistance programs. These programs include

- Social security or disability
- Supplemental security income
- Unemployment compensation
- Housing assistance, such as Section 8 or other subsidized housing
- CalFresh, SNAP, or other food stamps
- Medical assistance from MediCal or Medicaid (not Medicare)
- Other forms of cash assistance for households with financial need, TANF, CalWorks, or AFDC.

We assumed that benefits from social security, disability, supplemental security income, and unemployment were already included in self-reported income because these are cash benefits issued in regular time intervals with predictable values. The remaining benefits received from government assistance programs can have a substantial impact on a household's expenses, but the value of these benefits is likely not accounted for in self-reported income. This has direct implications for our analysis of energy burden. For example, a household receiving $250 worth of food stamps each month is able to put $250 of their income that they would have spent on food towards something else (e.g., utility bills). If two households have the same income and energy costs, but only one is receiving food stamps, the true energy burden experienced by these two households will differ.

The goal of this analysis was to calculate a modified energy burden by adding the value of any government assistance benefits a household receives to their total income. This modified income is intended to be an upper bound, with the true income (and thus energy burden) falling somewhere between this modified income and the original.[1]

Housing Benefits

Housing benefits includes public housing, privately owned subsidized housing, and Section 8 housing choice vouchers. We estimated the value of these benefits using the fair market rent (FMR) approach, which was developed as part of the supplemental poverty measure and is used by the U.S. Census Bureau.[2] This approach takes into account household income and local housing costs.

$$HousingBenefits = (FairMarketRent - 0.3 * Income) * (0.44 * LocalAreaAdjustment + 0.56)$$

Fair market rent is a metric developed by the U.S. Department of Housing and Urban Development (HUD) which is specific to the unit size and location. We applied HUD's maximum occupancy rule of two people per bedroom to determine the minimum number of bedrooms each household would require, and then determined the fair market rent for this size of unit in the county they reside. Income was self-reported in the survey using increments of $5,000. To be generous in our estimates, we used the lower bound of each

[1] For example: A household's income has a substantial impact on the value of housing and other cash benefits (i.e., TANF) they are eligible for. Survey respondents provided their incomes in increments of $5,000, leaving us with a fairly wide range of potential values for their benefits. We chose to use err on the side of caution by creating generous estimates for the value of these benefits, rather than risk underestimating these values.

[2] Johnson, P., Renwick, T., and Short, K., *Estimating the Value of Federal Housing Assistance for the Supplemental Poverty Measure*. 2010. <https://www.census.gov/hhes/povmeas/methodology/supplemental/research/SPM_HousingAssistance.pdf>

income range in this calculation.[3] The local area adjustment is a ratio of local housing costs to the national average. This results in a small decrease in the benefits for areas with unusually low costs and visa versa.

Food Benefits

Food benefits consist primarily of food stamps from CalFresh i.e., the Supplemental Nutrition Assistance Program (SNAP), which have cash value but can only be used to purchase food. Many families with children who are eligible for food stamps also receive food benefits in the form of free lunches through the School Lunch program and vouchers for specific food items through the Women, Infants, and Children (WIC) program.

We estimated the value of all food benefits using data from the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) public use data for 2013-2015. This survey captures detailed information about household income and public benefits received, but also provides estimates for the value of these benefits. We applied filters to the ASEC data to restrict the focus to households in California that received food stamp benefits during the survey year.[4]

To account for household composition, we calculated the benefits of SNAP food stamps per person (including adults), school lunch benefits per child, and WIC benefits per child for each household in the ASEC data. To account for household income, we took the weighted average of these food benefits within each of the household income categories from our survey (e.g. $15,000-19,999). Finally, we applied these averages to the number of children and total number of people in each household to create an estimate for the total value of food benefits specific to that household.

$$FoodBenefits = (SNAP_{PerPerson}) * NPeople + (WIC_{PerChild} + School_{PerChild}) * NChildren$$

Medical Benefits

Our estimated value of medical benefits includes MediCal/Medicaid, but not Medicare. We estimated the value of Medicaid in terms of its impact on out-of-pocket spending (i.e., amount paid by self), rather than its impact on total medical expenditures (i.e., amount paid by Medicaid).

This estimate is based on public use data from the 2013 Medical Expenditure Panel Survey (MEPS), applying filters to restrict the focus to households in the Western Census Region that are low to middle income (i.e., under 400% of the Federal Poverty Line). The

[3] For example, a household reporting their income to be "more than $10,000 but less than $15,000" was assumed to have an income of $10,000 for this benefit calculation.

[4] Note that some households with children received $0 in WIC and school lunch benefits, these were included in the averages to help account for the fact that not all families receiving food stamps also receive these additional food benefits.

difference between the weighted average out-of-pocket spending on medical costs among those without Medicaid and those with Medicaid gives us an estimate of the medical benefits of health insurance benefits per person in the household.

$$MedicalBenefits = (Spending_{NoMedicaid} - Spending_{Medicaid}) * NPeople$$

Other Cash Benefits

Other forms of cash assistance for households with financial need come from the California Work Opportunity and Responsibility to Kids (CalWORKs) program – the Temporary Assistance for Needy Families (TANF) program, originally based on the Aid to Families with Dependent Children (AFDC) program. The value of these benefits depends on the household composition, income, whether the caretakers are disabled, and many other factors.

Our estimates for the value of these cash benefits comes from the data reported by the U.S. Department of Health and Human Services Office of Family Assistance for fiscal year 2014.[5] This data provides the average TANF subsidy issued by the number of children in each household in California. To be generous in our estimates, we wanted to estimate the maximum benefit each household would be eligible for rather than use the average benefits directly. We did this by creating an adjustment factor out of a family of three; this family would has a maximum benefit of $704 per month but the average benefit for families like this only $556. The ratio of this maximum to average benefit is 1.27 (704/556=1.27). Applying this ratio as an adjustment factor to the average benefits by household composition gives us an estimate for the total cash benefits each household is eligible for.

$$OtherCashBenefits = AvgBenefits_{N.Children} * (MaxBenefit_{Family3}/AvgBenefit_{Family3})$$

[5] U.S. Dept. of Health & Human Services Office of Family Assistance. *Characteristics and Financial Circumstances of TANF Recipients: Fiscal Year 2014*. March 2016. <http://www.acf.hhs.gov/ofa/resource/characteristics-and-financial-circumstances-of-tanf-recipients-fiscal-year-2014>

Energy Insecurity Metric

The attached memo to the Low Income Needs Assessment's study team describes the methodology and considerations behind the energy insecurity metric.

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MEMORANDUM

Date: July 25, 2016 *(original memo July 15, 2016)*

To: LINA Study Team

Re: Energy Insecurity Metric

This memo provides a possible approach to defining energy insecurity for our analysis of this year's LINA survey data and some background data. We will discuss this topic on today's study team call and solicit study team input before finalizing the energy insecurity metric. Although we do suggest a particular approach to measuring energy insecurity, the information below is intended to facilitate the discussion. We are interested in hearing the study team's thoughts and information needs.

Background

The previous LINA study had measured energy insecurity based on self-reported practices such as cutting back on food or medicine or borrowing money to pay the utility bill, having received disconnection notices or having been disconnected (self-reports), heating or cooling less to keep the energy bill down, or using a kitchen stove or oven to heat the home. The study also suggested revising the energy insecurity metric. The study team agreed, so we did not repeat the prior question series.

There are multiple ways we could measure energy insecurity this time. We would like to discuss with the study team an approach that would be a significant departure from the prior metric and get feedback, so we can either solidify the metric or develop a new approach entirely.

Suggested Structure

We suggest a structure for the energy insecurity metric that relies primarily on self-reported challenges households face paying energy bills and secondarily on a series of additional indicators that would point to challenges the respondent faces in affording essential energy use. We recommend not using variables that go beyond energy use and measure overall material hardship, as we will examine those issues separately.

The following figure shows this structure visually:

> EI (energy insecurity) = f(self-reported challenge paying the energy bill) $\pm$ adjustments based on indicators of having minimized energy consumption already

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This structure could be implemented as shown in the table below, although the precise scoring would still need to be figured out if we agree on this overall approach and structure:

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Table 1: Possible Scoring System for Energy Insecurity

Step	Based on...	Illustrative scoring
Initial assignment	C5: I'd like to ask specifically about your home's energy bills. Which of the following best describes your situation? 1) Paying the energy bills is not an issue for us 2) We occasionally struggle to pay the energy bills... 3) We often struggle to pay the energy bills 4) We are constantly struggling to pay the energy bills	Assign points based on household response: constantly struggle = 30 points usually struggle = 20 pts sometimes struggle = 10 pts never struggle = 0 pts
Adjustments based on self-reported conservation practices	A19: For each of the statements...please tell me whether you agree, somewhat agree or disagree. b) We only use electricity when it's really needed; there's no way we could cut down. c) We have to conserve energy at home because we can't afford to pay higher utility bills. e) My family's health would suffer if we heated our home any less in the winter. f) My family's health would suffer if we cooled our home any less in the summer.	If agree with both b and c: add 5 points. If agree with either e or f: add 5 points. If disagree with all four: subtract 10 points.

Possible adjustments based on self-reported equipment limitations	A15: How often, if ever, is your home colder than you'd like because your heating system just can't keep up? Does that happen...? 1) never 2) no more than once or twice a year 3) a few times a year 4) often A18: How often, if ever, is your home warmer than you would like because your cooling system can't keep up? Does that happen...? 1) never 2) no more than once or twice a year 3) a few times a year 4) often	If report equipment-related comfort issues (either heating or cooling) that occur often: add 10 points

If we adopt this approach, we would then score each responding household and assign it into an energy insecurity level based on its total energy insecurity points. Those levels might look like this, although we would refine the breakpoints a bit more based on a closer look at the data.

Table 2: Energy Insecurity Indices

Energy insecurity	Points
none	less than 9
low	10 to 19
moderate	20 to 29
high	30 or more

Unused Questions and Data

To facilitate our discussion, we have listed here other questions and data we are not using for the energy insecurity index. Those are:

Table 3: Unused Questions and Data Sources

Question / Data type	Comments
use of a secondary heating system to save money or keep utility bills lower	Our initial look at the data suggested a low incidence of the use of potentially problematic heating approaches, such as the use of kitchen stoves or ovens. The use of localized heating systems may be as much an energy education issue as an energy insecurity issue.
presence of a medical or physical need that requires the home to be heated or cooled more	We assume respondents have already taken temperature tolerance of household members into account when reporting that their family's health would suffer if they heated or cooled any less, which is a question we did include in the suggested metric.
difficulty paying bills and covering basic living expenses in the past three	We are using a variant of this question that focused on energy bills specifically. The question on living expenses overall is more related to overall material

years	hardship than energy insecurity, especially when one considers the relative flexibility with which energy utilities approach payment arrangements compared to mortgage holders, landlords, car loan holders, grocery stores, and other providers of essential services.
cutting back on spending for essential households needs like food and medicine to pay the bills	This year's question asked about cutting back on food and medicine to pay bills generally, not energy bills specifically. This is more of a material hardship metric than an energy insecurity metric.
Energy usage levels	An assessment of energy usage levels could provide a filter to assess whether households' self-reported energy struggles are based on "essential" energy usage or energy consumption that goes beyond the minimum. However, incorporating such data could be complicated (require normalization to geography, housing type, and household size) and require subjective judgments. Energy usage is already incorporated into energy burden calculations.
Payment practices	Use of actual payment practices and disconnections could complement the self-reported struggles to pay energy bills, but they are confounded by prioritization of energy bills to other household costs and general financial choices.

Summary Statistics

We have not yet computed any energy insecurities for survey respondents, preferring to get conceptual agreement on the structure of the metric first. However, we did examine the responses to the questions available to us. We summarize responses to selected survey questions here. (Please note that these summary statistics are based on our working dataset of survey responses and do not yet incorporate all final cleaning. Hence, they should be considered preliminary.)

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Figure 1: Low-Income Households' Struggle with Energy Bills (Self-Reported Frequency, Question C5)

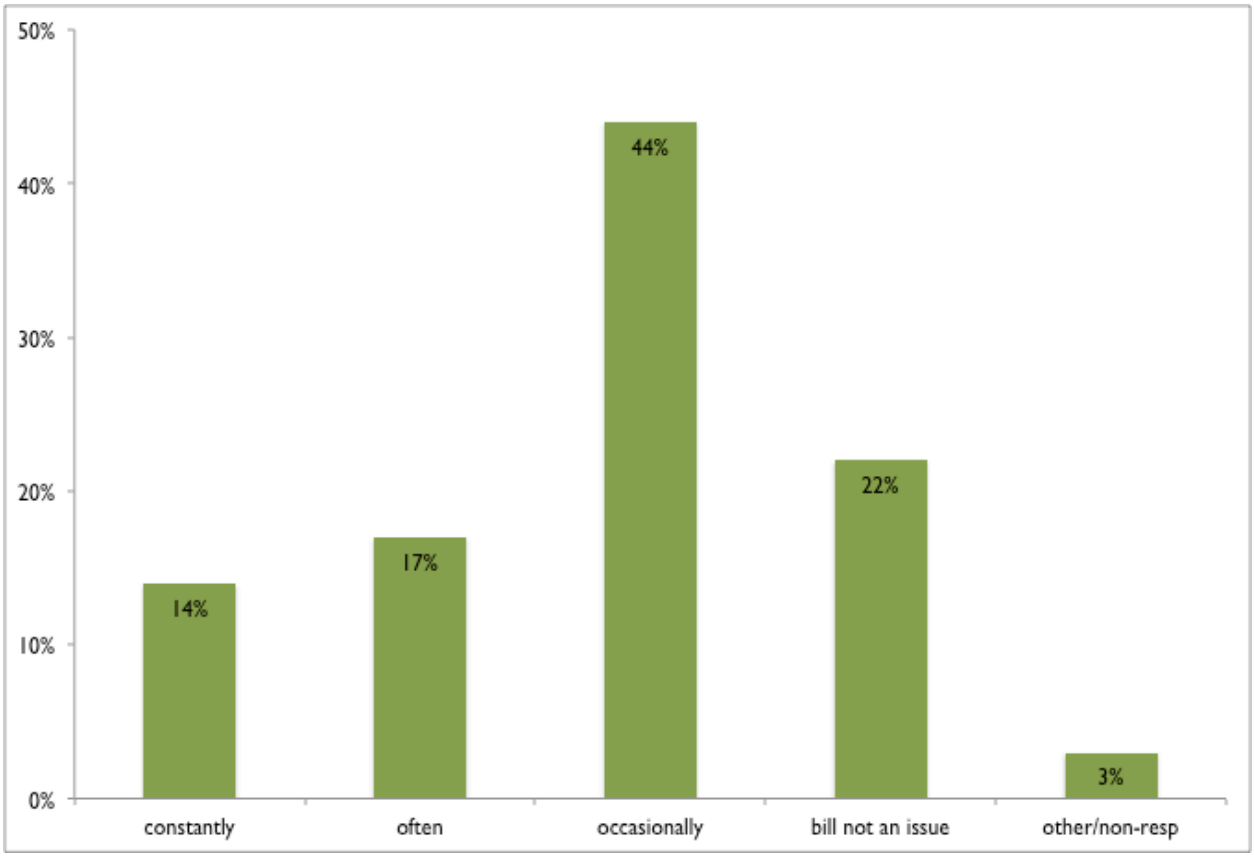

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Figure 2: Low-Income Households' Energy-Saving Practices and Motivations

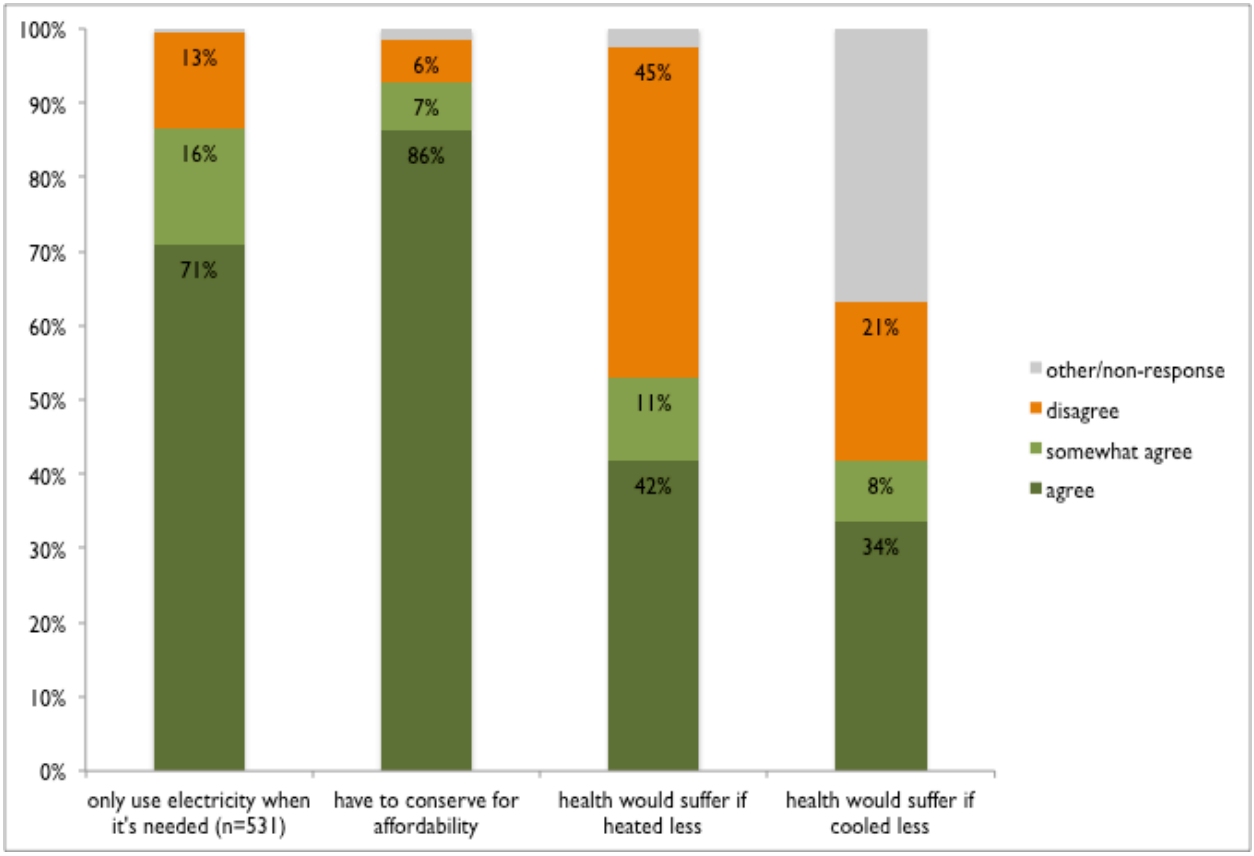
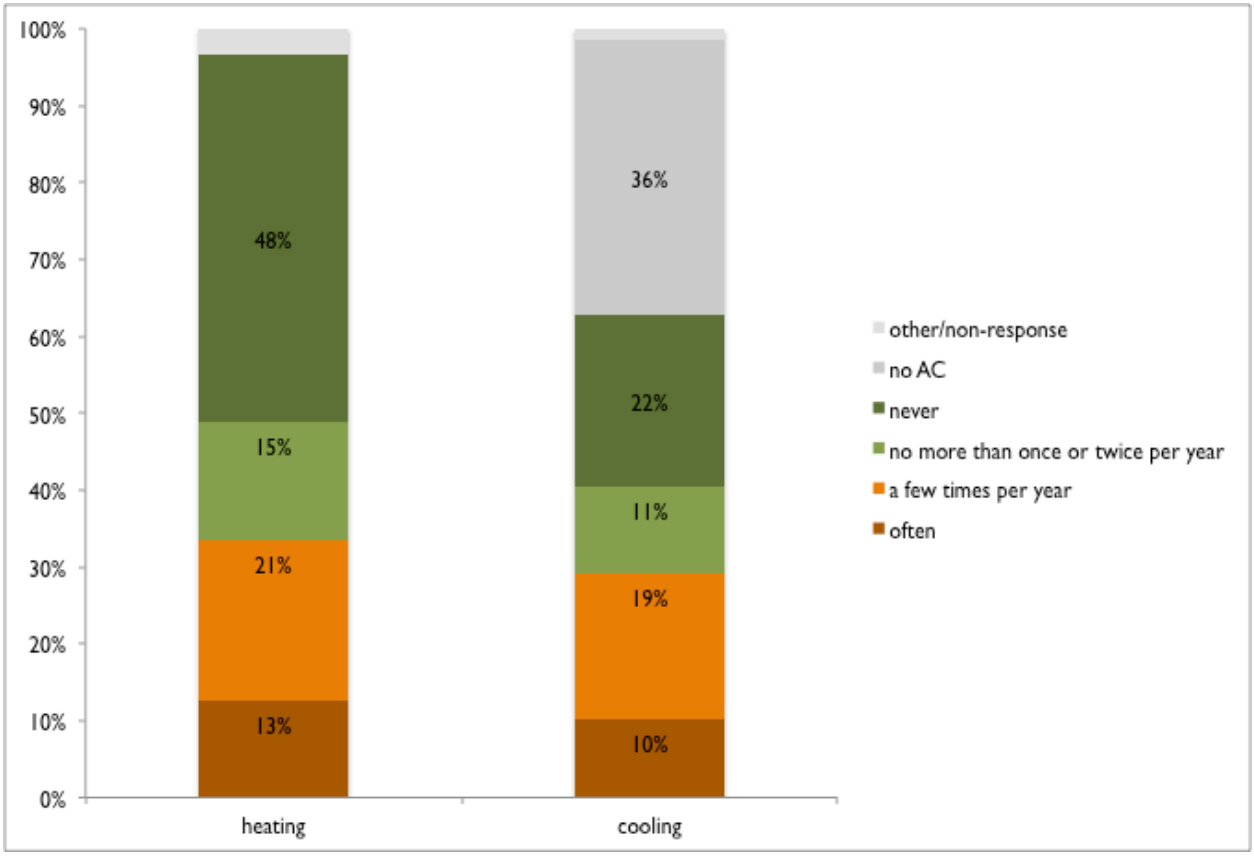


Figure 3: Frequency of Comfort Issues Caused by Inadequate HVAC Equipment (Low-Income Households, n=531)



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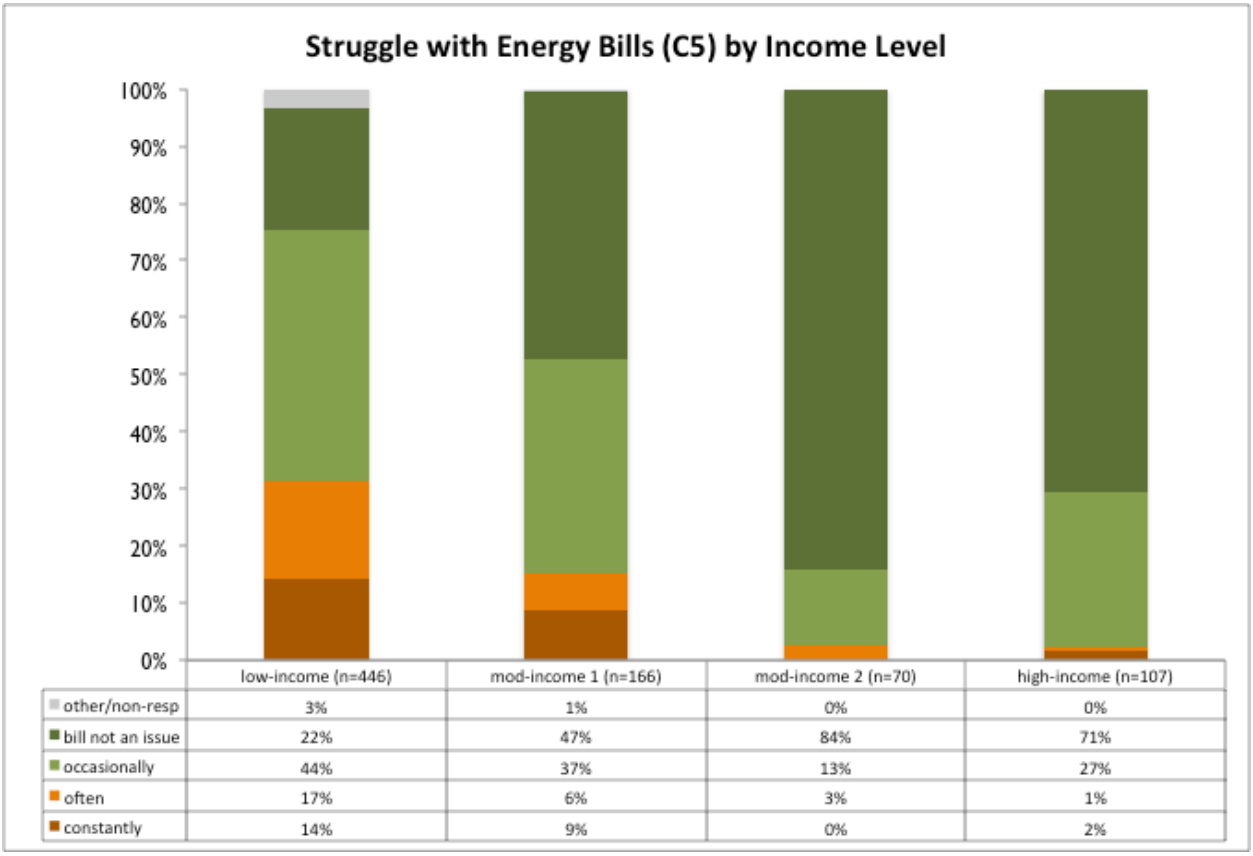
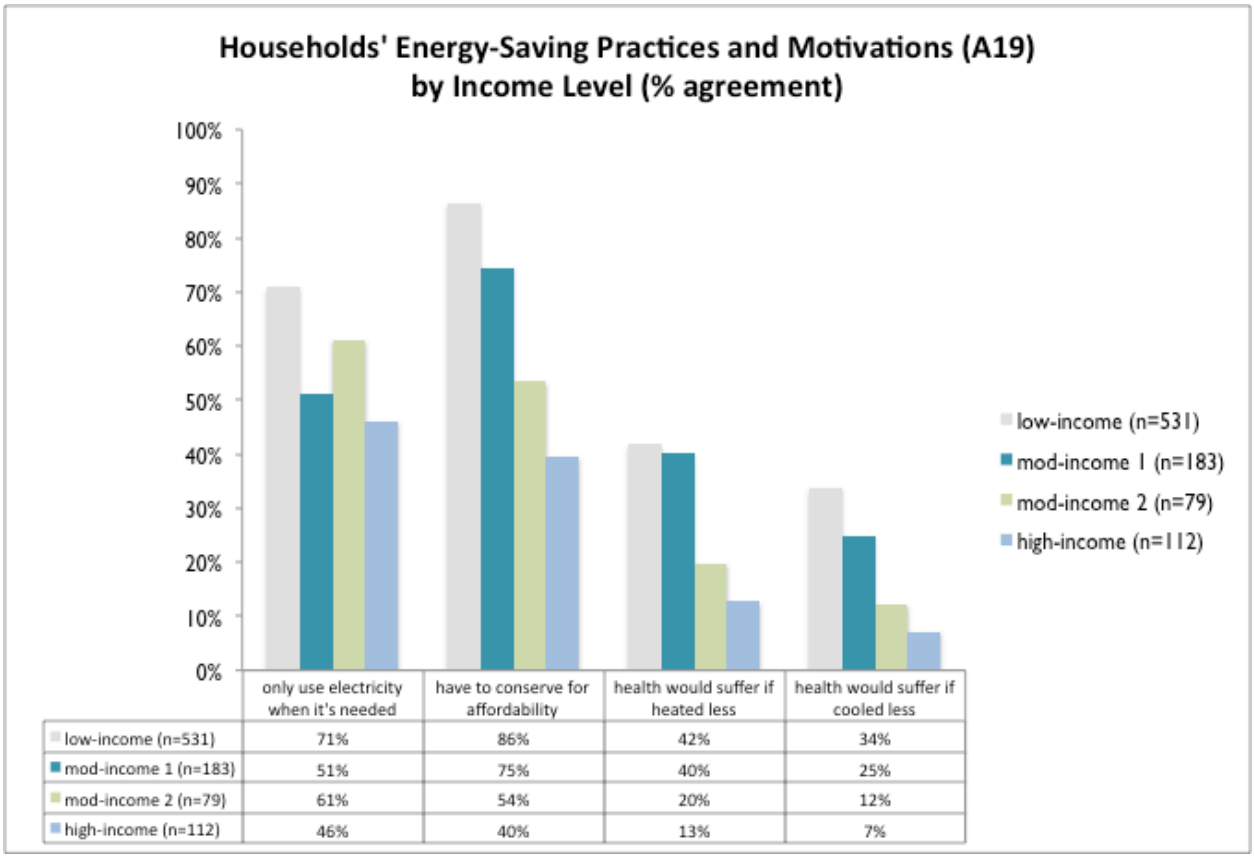
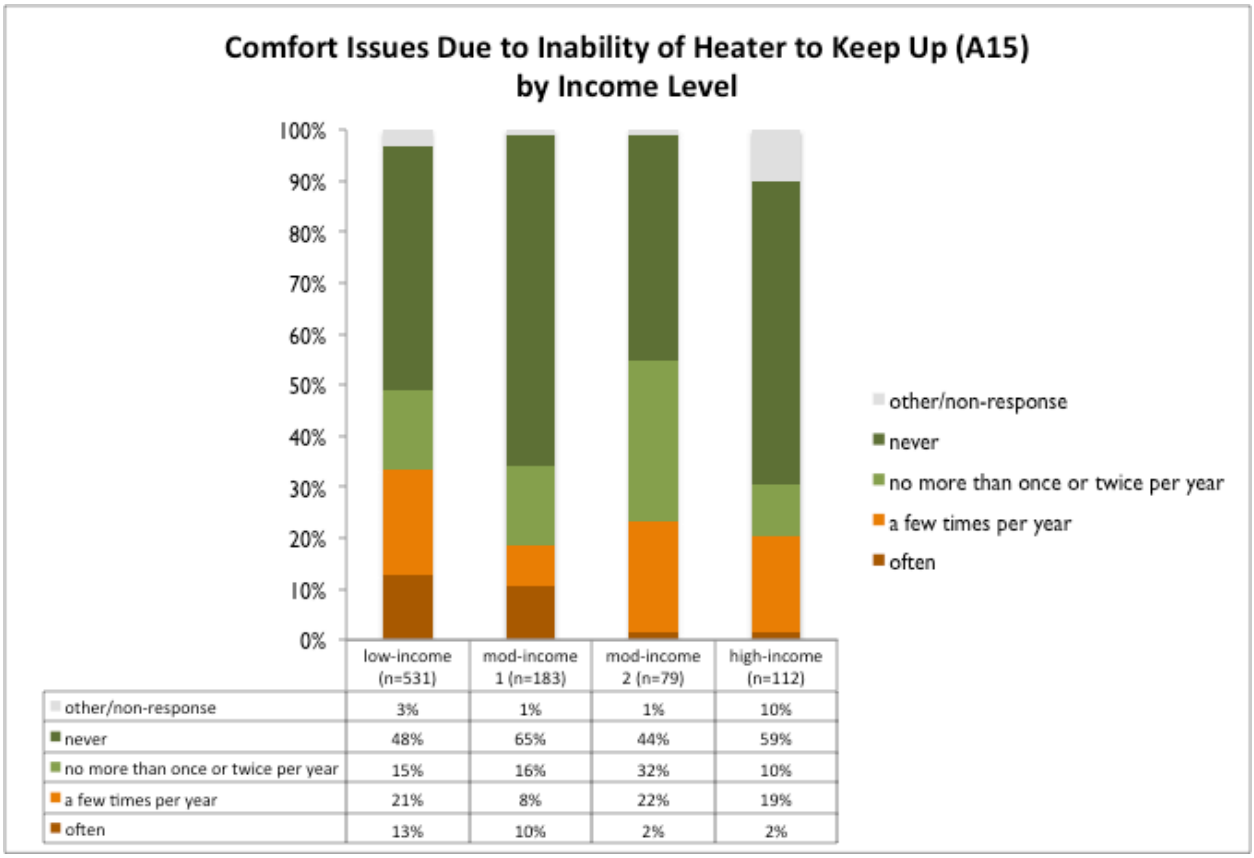
Supplemental Charts



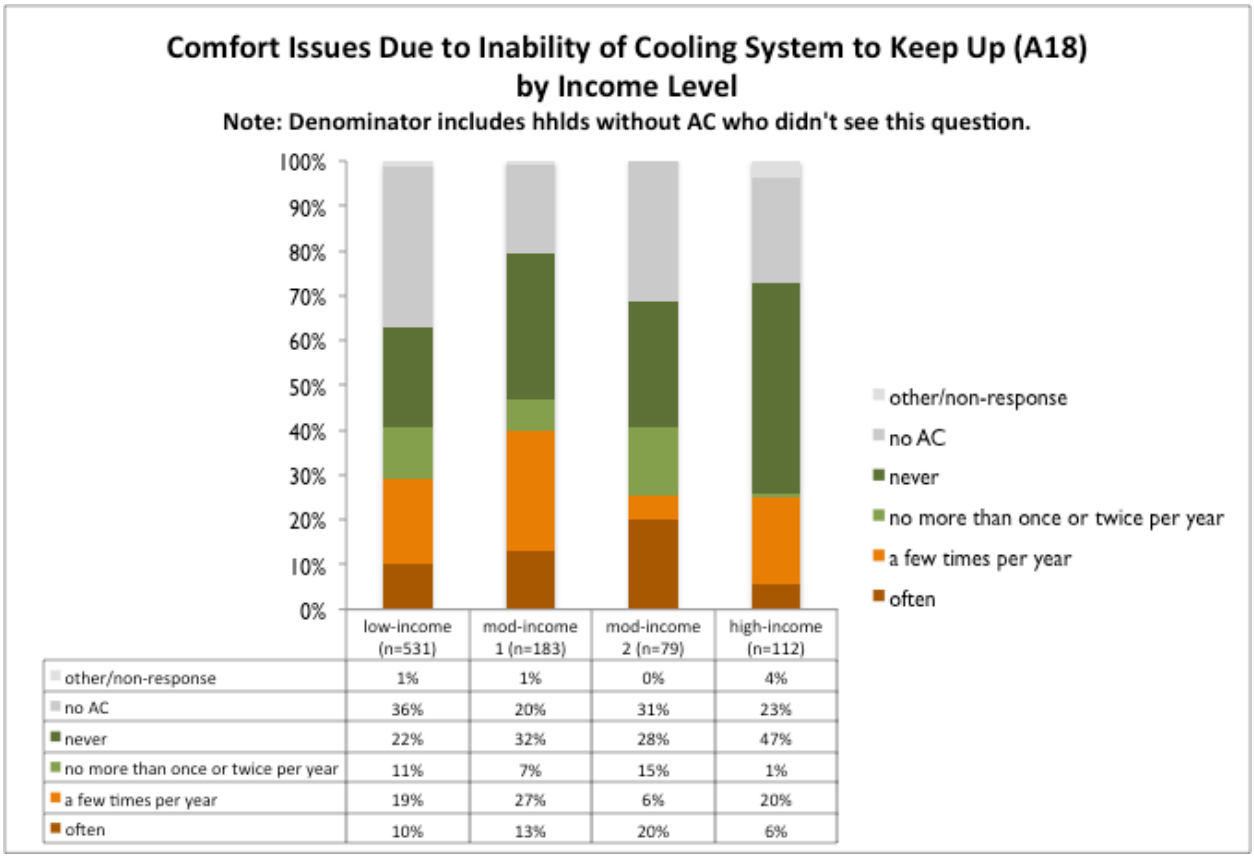
	low-income (n=446)	mod-income 1 (n=166)	mod-income 2 (n=70)	high-income (n=107)
other/non-resp	3%	1%	0%	0%
bill not an issue	22%	47%	84%	71%
occasionally	44%	37%	13%	27%
often	17%	6%	3%	1%
constantly	14%	9%	0%	2%



	only use electricity when it's needed	have to conserve for affordability	health would suffer if heated less	health would suffer if cooled less
low-income (n=531)	71%	86%	42%	34%
mod-income 1 (n=183)	51%	75%	40%	25%
mod-income 2 (n=79)	61%	54%	20%	12%
high-income (n=112)	46%	40%	13%	7%



	low-income (n=531)	mod-income 1 (n=183)	mod-income 2 (n=79)	high-income (n=112)
other/non-response	3%	1%	1%	10%
never	48%	65%	44%	59%
no more than once or twice per year	15%	16%	32%	10%
a few times per year	21%	8%	22%	19%
often	13%	10%	2%	2%



	low-income (n=531)	mod-income 1 (n=183)	mod-income 2 (n=79)	high-income (n=112)
other/non-response	1%	1%	0%	4%
no AC	36%	20%	31%	23%
never	22%	32%	28%	47%
no more than once or twice per year	11%	7%	15%	1%
a few times per year	19%	27%	6%	20%
often	10%	13%	20%	6%

Material Hardship Metric

The attached memo to the Low Income Needs Assessment's study team describes the methodology and considerations behind the material hardship metric.

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MEMORANDUM

Date: October 10, 2016

To: LINA Study Team

Re: Material Insecurity Metric

This memo provides our approach in defining material insecurity for our analysis of this year's LINA survey data. While initial approaches included additional survey analysis on inputs such as households' ability to make "ends meet," increases and decreases in living costs, and sources of financial support, the final approach was simplified to focus exclusively on household federal poverty level (FPL) and household inability to cover basic living expenses. Simplifying the approach allowed us to compare households more directly using a well-established measure of financial challenge and a single self-reported indicator of the ultimate issue we sought to measure (ability to cover basic living expenses) without unduly confounding the analysis with multiple other inputs to which household responses may be based on additional subjective standards.

Background and Structure

The previous LINA study measured energy insecurity and energy burden but did not include a material hardship analysis. The addition of the material insecurity analysis allowed us to measure households' hardships beyond energy-related issues and served as a broader indicator of overall household insecurity levels. Specifically, the structure of the material insecurity metric consisted of a scoring system of the household FPL level and the self-reported frequency in which households struggled to cover basic living expenses such as food or housing.

The following figure shows this structure visually:

> MI (material insecurity) = f(federal poverty level ratio) + frequency of household inability to pay for basic living expenses such as food and housing

Below, Table 1 shows the actual scoring allocation for the two main inputs used in the material insecurity metric. Households were scored on a scale from zero to 60, where zero represents a household that has a FPL ratio 400 percent or higher and never struggles to pay for basic living expenses, and 60 represents a household with an FPL ratio of 100 percent or lower and regularly struggles to pay for basic living expenses.

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Table 1: Material Insecurity Scoring Metric

Step	Based on...	Illustrative scoring
Initial assignment – part A	FPL	Based on FPL ratio… 0-100: 30 points 101-200: 20 points 201-400: 10 points 400+: 0 points
Initial assignment – part B	C2: How often would you say that In the past three years, there has been a time that you were not able to pay all of your bills and cover your basic living expenses for such things as food and housing? Would you say...? 1) NEVER [DO NOT READ] 2) just once or twice 3) a few times 4) regularly / [ACCEPT: "ALWAYS" 8/9) DK/REF	Assign points based on household response: Regularly/always = 30 points A few times = 20 pts Once or twice = 10 pts Never/DK/skipped = 0 pts

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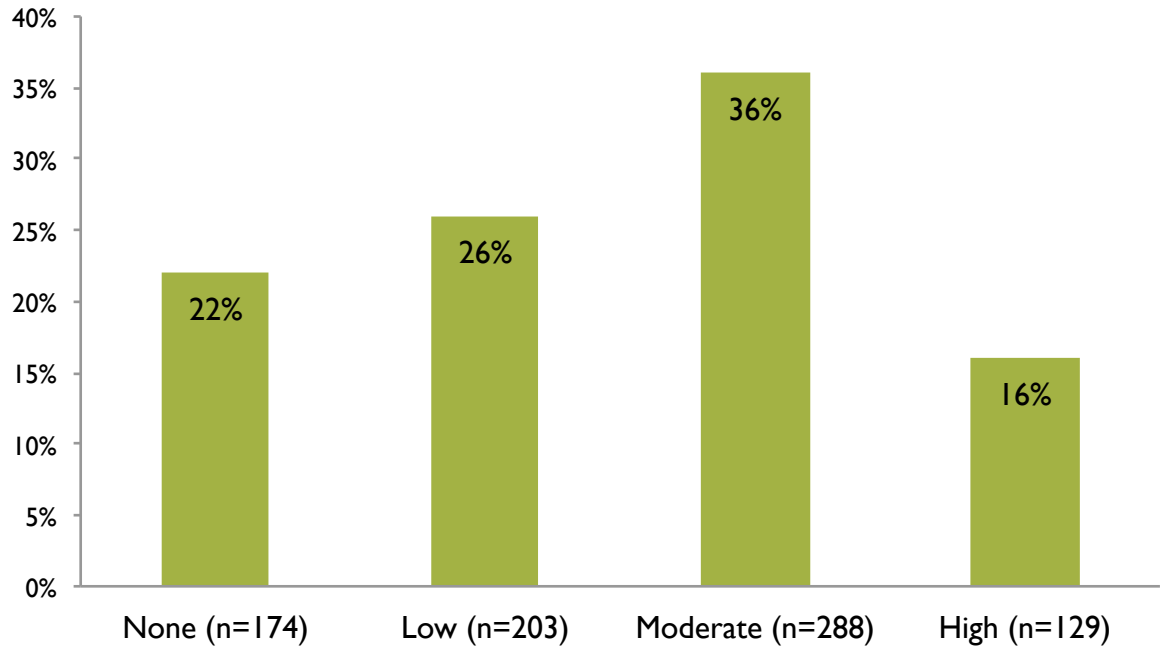
Using this approach, we then scored each responding household and assigned it into a material insecurity level based on the total material insecurity points from Part A and Part B. Table 2 below shows the four levels of material insecurity ranging from "none" to "high." The category break-points were designed to highlight the variety of different possible material insecurity levels and household types. For example, a relatively low income household (FPL 200%) that regularly struggles with basic living expenses would have a material insecurity score of 50 using our method – indicating a high material insecurity level – while another household may have the same FPL of 200 percent but only occasionally or rarely struggles to pay for basic living expenses and thus would have only a moderate level of material insecurity. Additionally, the break-points on the low end between "none" and "low" were designed to separate high income and low income households, even if both households never struggled on basic living expenses, with the assumption that low income households inherently have at least some material insecurities that higher income households do not have to deal with.

Table 2: Material Insecurity Indices

Material insecurity	Points
none	less than 20
low	20 to 29
moderate	30 to 49
high	50 or more

As shown in Figure 1 below, 36 percent of households had a moderate level of material insecurity while 16 percent had a high level of material insecurity. All of the households with high material insecurity levels were low income households (FPL of 200% or lower) while only six percent of households with FPL levels of 300 or greater had low or moderate material insecurity levels.

Figure 1: Material Insecurity Level Distribution



Telephone Survey Sampling Approach

The attached memo to the Low Income Needs Assessment's study team describes the methodology and approach to sampling for the customer phone survey.

MEMORANDUM

February 23, 2016

To: LINA Study Team

From: Tami Rasmussen, Ingo Bensch

Re: LINA Phone Survey Sampling Approach

This memo presents our approach to sampling for the 2016 LINA study telephone survey. The memo begins with an overview of the sampling approach followed by our detailed sampling plan and survey implementation details.

Overview

We plan to complete 900 telephone surveys with low-income and moderate-income IOU customers. We are defining low-income households as those whose income and household sizes place them at up to 200 percent of the federal poverty level (FPL) consistent with the ESA and CARE guidelines, and moderate-income as between 200 and 400 percent of FPL. We utilized Athens Research data to select a stratified random sample of customers from zip codes known to have high percentages of low-income and moderate-income households.

Sampling Plan

Our sample approach is designed to maximize the concentration of low- to moderate-income households, minimize cost and encompass a wide enough geographic area that is representative of the state's low- to moderate-income households. ***We ruled out screening by income via the telephone survey due to concerns about biasing the sample.***[6] After comparison of several sampling approaches in collaboration with the study team, we chose a two-stage sampling approach using CARE participants and zip code-based sampling. This approach draws low-income and moderate-income households from two different sample frames, but keeps the geographic dispersion of the two sample frames uniform across the two samples and supports a better statewide representation.

---

[6] Sample bias occurs and is a problem when characteristics of a group that would tend to self-select themselves into a survey (in this case, be able to answer a required income screening question in order to complete our survey) would cause problems (in this case, fewer respondents who have issues being able to or wiling to report their income.) See De Leeuw/Hox/Dillman: International Handbook of Survey Methodology, 2008.

We first draw the sample of moderate-income households from the population of non-CARE IOU customers using a seven-digit zip code-based sampling approach. The sample allocation is divided into five strata defined by the share of households, in any given seven-digit zip code, that are projected to be at 400 percent of FPL or less.[7] The mechanics of the sample design are as follows. First, we split the IOU service territory seven-digit zip codes into five categories based on the concentration of low- to moderate-income households using Athens Research data.[8] We retain the seven-digit zip codes that comprise the top two categories (with the highest concentration of low- and moderate-income households) for the sample frame. The sample frame includes:

- 53 percent of all seven-digit zip codes served by the IOUs
- 65 percent of all low- to moderate-income households
    - 71 percent of households up to 200 percent of FPL (low-income/CARE-eligible)
    - 61 percent of 200–300 percent (moderate-income)
    - 51 percent of 300–400 percent (moderate-income)

We create five strata based on concentration of low- and moderate-income households (or target households) in the sample frame. The first stratum has the highest concentration of target households, and is comprised of zip codes with 95 percent or more of target households. The next three strata are comprised of zip codes with between 90 and 95 percent, 85 and 90 percent and 80 to 85 percent of target households, respectively. The fifth and final stratum is comprised of zip codes with between 60 and 80 percent of households. We allocate the most sample points to the strata with the highest concentration of low- to moderate-income households and decrease the allocation as we progress down the strata.

We next draw the sample of low-income households from CARE participants in the same proportion, from the same seven-digit zip codes selected in the sample approach described above for moderate-income households. Table 1 shows the sample allocation by strata.

[7] Using 7-digit zip codes for the geographic sampling rather than 5-digit zip codes, gives us greater precision in targeting populations of interest.

[8] Athens Research. *Joint Utilities Low Income Working Group: Documentation For 2014-2015 Estimates Of CARE/FERA/ESA Eligibility and Other Household Size-By-Income Related Parameters.* 2015

Table 1: Sample Allocation by Strata

Strata	Sample Allocation (Non-CARE)	Sample Allocation (CARE)	Total Sample Allocation
Strata 1 (comprised of zip codes with 95-100% concentration of households below 400% FPL)	125	125	250
Strata 2 (90-95% concentration below 400% FPL)	125	125	250
Strata 3 (85-90% concentration below 400% FPL)	75	75	150
Strata 4 (80-85% concentration below 400% FPL)	75	75	150
Strata 5 (60-80% concentration below 400% FPL)	50	50	100
Total	**450**	**450**	**900**

Sampling using this two-stage approach ensures that we:

- Maintain geographic continuity between low-income and moderate-income respondents for our analysis so we can make meaningful comparisons of burden and hardship across the full spectrum of incomes. This approach uses the same geographic areas for each group ensuring that any differences between low-income and moderate-income respondents is due to the populations and not differences in the sampling approach.
- Efficiently target low- and moderate-income households. Including CARE participation data as part of the sampling strategy, and concentrating our focus on seven-digit zip codes with high concentrations of low- and moderate-income households allows us to more precisely target a desired distribution of low- and moderate-income households, while limiting the number of high-income (over 400% FPL) households we interview.[9]

[9] As noted previously, we ruled out screening by income via the telephone survey due to concerns about biasing the sample; therefore, we will include some high income homes in our final surveyed sample, but

Table 2 shows the allocation of survey completes by IOU and income category we expect from using this sampling approach. Note that we are not addressing overlapping IOU service territory in the sample design. We expect to increase the number of completes by IOU (especially for SCE and SCG) once we account for customers that complete the survey and are served by more than one IOU.

Table 2: Expected Allocation of Survey Completes by Income Category and IOU

Income Category	PG&E	SCE	SCG	SDG&E	Total Sample Allocation
Low (up to 200% FPL)	150	100	125	75	**450**
Moderate (200% - 300% FPL)	73	49	61	36	**219**
Moderate (300% - 400% FPL)	35	23	29	18	**105**
High (over 400% FPL)	42	28	35	21	**126**
Total	**300**	**200**	**250**	**150**	**900**

As mentioned previously, the IOUs and the CPUC are interested in obtaining sufficient sample points for disadvantaged communities in the San Joaquin Valley. Our sample will include approximately 66 points for this customer segment, which allows for robust analysis of energy burden and the other study objectives.

Phone Survey Implementation

We plan to address English and Spanish languages, offer a $20 incentive for all respondents and mail out a letter in advance of the survey possibly including a $1 bill to encourage a high response. These techniques are recommended by our team's survey research expert to increase response rates.

this approach limits the number of high income homes interviewed by concentrating on areas with low concentration of high income homes.

We will set quotas for the survey by strata and by CARE/non-CARE designation to ensure that we reach the expected distribution of low-income and moderate-income households. Our survey quotas will be set to match the sample allocation shown in Table 1.

Appendix C: Research Instruments

This appendix provides data collection instruments used in the course of the study. Specifically, we provide the following:

- Telephone survey instrument;
- Moderator's guide for high energy burden focus groups;
- CBO interview guide; and
- Multifamily tenant interview guide.

Telephone Survey Instrument

LINA Survey Instrument

Cell Phone Version

Introduction

Hello, my name is [_____] calling from CIC Research. We are conducting a survey on behalf of the California Public Utilities Commission and [UTILITY]. Have I reached [account holder]?

AA. Did I reach you on a cell phone for this call?
1 Yes
2 No (SKIP TO INTRO BEFORE Z1)
9. DK/Refused (THANK AND TERMINATE)

BB. Are you driving right now?
1 Yes (SKIP TO DD)
2 No

CC. Is this a good time to talk? [IF THERE IS BACKGROUND NOISE THAT SUGGESTS THE RESPONDENT IS IN A PUBLIC PLACE, ADD: I CAN CALL BACK IF YOU ARE OUT AND ABOUT RIGHT NOW]
1 Yes (SKIP TO INTRO BEFORE Z1)
2 No (SAY:) I'll call back another time (TERMINATE)
9 Refused (THANK & TERMINATE)

DD. I'd like to schedule a time to call you back either on this number or on a landline phone number. Which would you prefer?
1 Schedule callback
2 Call back on landline phone (RECORD PHONE NUMBER)
9 Refused (THANK & TERMINATE)

We are conducting a study to help us better understand the lives, experiences and needs of households like yours. As a token of our appreciation, we will send you a $25 gift card . You may have received a letter from the California Public Utilities Commission letting you know that we would be calling.

Z1) Do you remember receiving that letter?
1) yes --> Great. I'm calling to conduct the survey described in that letter.

2) no

[if Z1 = 2]
The Public Utility Commission is asking for your help with a study to help them improve programs and services for the state's residents. As a token of our appreciation, we will send you a $25 gift card.

[ALL]
Please be assured that what you tell me will be kept completely anonymous and will only be used to improve programs and services for California residents.

[IF NEEDED, SCHEDULE A CALL BACK]

[IF NEEDED:

- YOURS IS ONE OF ONLY 900 CALIFORNIA HOUSEHOLDS BEING SURVEYED FOR THIS STUDY. YOU WERE CHOSEN AT RANDOM. IT WOULD BE VERY HELPFUL IF YOU COULD HELP BY COMPLETING THE SURVEY.
- THE SURVEY SHOULD TAKE ABOUT 15 TO 20 MINUTES
- THE QUESTIONS ARE FOR RESEARCH PURPOSES ONLY. WE ARE NOT SELLING ANYTHING, AND WE WILL NOT GIVE ANY OF YOUR SPECIFIC RESPONSES TO ANYONE OUTSIDE THE RESEARCH TEAM. WE WILL ONLY BE PASSING ALONG STUDY RESULTS THAT CANNOT BE LINKED BACK TO YOU IN ANY WAY.
- YOU CAN CALL THE CALIFORNIA PUBLIC UTILITIES COMMISION AT (800) 649-7570 DURING BUSINESS HOURS IF YOU HAVE ANY QUESTIONS ABOUT THIS STUDY.
- WE WILL BE SENDING YOU A $25 GIFT CARD YOUR CHOICE OF WALMART OR TARGET. WE CAN SEND AN ELECTRONIC GIFT CARD OR MAIL IT TO THE ADDRESS LISTED ON YOUR UTILITY ACCOUNT.]

Housing and Energy

I'd like to begin with some questions about your home and utilities.

AA. First, can I confirm that you still live at [address from sample]?
1) Yes
2) No (SAY:) I'm sorry, but I can only interview people who live at the addresses that were randomly selected for the study. Thank you for your time anyway.

A1) Do you own or rent your home?
1) own
2) rent
3) other
8/9) DK/REF

A2) What kind of house or building do you live in? [PAUSE, AND ONLY READ IF NEEDED: Is it a ...?]
1) single family house
2) a duplex, triplex, or fourplex
3) apartment or condo building
4) a mobile home, or
5) something else? – SPECIFY: _____
8/9) DK/REF

[if A2 = 3]
A3) About how many units are in your complex [PAUSE. READ IF NEEDED]
1) 2-4
2) 5-10
3) 11-50
5) 51-150
6) 150 or more
8/9) DK/REF

A4) How long have you lived in your current home? [RECORD]
_____ years
9998/9999) DK/REF

[if electric = 0 (i.e., we don't know who the respondent's electric provider is)]
A5) What company provides the electricity to your home? [READ ONLY IF NEEDED]
1) Los Angeles Department of Water and Power / LADWP
2) Pacific Gas & Electric / PG&E
3) Sacramento Municipal Utility District / SMUD
4) San Diego Gas & Electric / SDG&E / Sempra
5) Southern California Edison / SCE / "Edison"
6) Other – please specify: _____
8/9) DK/REF

[if gas = 0 (i.e., we don't know whether the hhld has natural gas service)]
A7) Do you have natural gas service to your home?
1) yes
2) no
8) DK/REF

[if A1 = 2 and A7 = 2 or 8]
A6) Do you pay your own electric bills or is electricity included as part of your rent?
1) pay electric bills
2) included in rent
3) OTHER – SPECIFY: _____

8/9) DK/REF

A6b) [If A1=2 and (A7=1 or gas=1)] Do you pay the gas and electric bills or are these included as part of your rent?]
1) pay gas and electric bills
2) both included in rent
3) pay gas bills only
4) pay electric bill only
3) OTHER – SPECIFY: _____
8/9) DK/REF

[IF (A7 = 1 OR GAS = 1)]
A9) Who provides your natural gas service? [READ CHOICES 1-3 AND 6 ONLY IF NEEDED]
1) Pacific Gas & Electric / PG&E
2) Southern California Gas / SCG
3) San Diego Gas & Electric / SDG&E
4) "the gas company"
5) Sempra [ASK: IS THAT SoCalGas OR SDG&E? GO BACK & CHANGE ANSWER]
6) other – SPECIFY: _____
8/9) DK/REF

A11) What fuel does your home's primary heating system use? [IF NEEDED, READ LIST]
1) electricity
2) natural gas
3) propane
4) fuel oil
5) wood
6) something else
7) NO HEATING SYSTEM
8/9) DK/REF

[if A11 < 7]
A12) Do you regularly heat your home in any other ways besides your primary heating system?
1) yes
2) no
8/9) DK/REF

[if A12 = 1]
A13) In what other ways do you heat your home on a regular basis? [DO NOT READ. CHECK ALL THAT APPLY.]
a) portable space heaters
b) fireplace
c) oven/kitchen stove
d) OTHER – SPECIFY: _____

response options:

1) checked
2) not checked
8/9) DK/REF TO ALL

[if A12 = 1 and A13 = 1 to 4]

A14) When would you choose to use [insert responses from A13 rolled together]? [DO NOT READ. CHECK ALL THAT APPLY]
1) when needed to save money / keep our utility bill lower
2) when the main heating system doesn't provide enough heat
3) because the main heating system does not work well, smells, makes noise
4) to heat just a limited space or single room
5) other – specify: _____
8/9) DK/REF

[if A11 <> 7]

A15) How often, if ever, is your home colder than you'd like because your heating system just can't keep up? Does that happen...?
1) never
2) no more than once or twice a year
3) a few times a year / [ACCEPT: "SOMETIMES"]
4) often / [ACCEPT: "ALWAYS"]
8/9) DK/REF

A16) Does your home have air conditioning of any sort?
1) yes
2) no
8/9) DK/REF

[if A16 = 1]

A17) What kind of cooling system do you have? Is it...? [CHECK ALL THAT APPLY. READ ONLY IF NEEDED]
1) a central air conditioner (including central cooling systems for multi-family buildings)
2) one or more room air conditioner(s)
3) an evaporative cooler / swamp cooler
4) FANS
8/9) DK/REF

[if A16 = 1]

A18) How often, if ever, is your home warmer than you would like because your cooling system can't keep up? Does that happen...?
1) never
2) no more than once or twice a year
3) a few times a year
4) often
8/9) DK/REF

A19) We are interested in how people think about energy. For each of the statements I will read, please tell me whether you agree, somewhat agree, or disagree. [KEEP ORDER AS SHOWN. SKIP ITEM F IF A16 = 2. IF NEEDED, REPEAT SCALE]

a) Improving our home's energy efficiency is not a priority for us.
b) We only use electricity when it's really needed; there's no way we could cut down.
c) We have to conserve energy at home because we can't afford to pay higher utility bills.
d) It's just not worth putting on more clothes in the winter to try to save a little energy.
e) My family's health would suffer if we heated our home any less in the winter.
f) My family's health would suffer if we cooled our home any less in the summer.

response options
1 agree
2) somewhat agree
3) disagree
8/9) DK/REF

A20) To what extent do you and members of your household do any of the following? Do you never, sometimes, or always...? [PROGRAM TO SKIP ITEM 2 IF A16 = 2. SKIP ITEM 1 IF A11 = 7]

1) turn down or turn off the heat at night or when you leave your home
2) turn down or turn off the air conditioning at night or when you leave your home [SKIP IF NO AC]
3) turn off lights when not in use
4) turn off electronics like TVs and computers when no one is using them
5) limit showers to five minutes or less

response options
1) never
3) sometimes
5) always
6 DOES NOT APPLY
8/9) DK/REF

A21) Does anyone in your household have a medical or physical need that requires your home to be heated or cooled more?

1) yes
2) no
8) DK/REF

[IF A2 <> 3]

A22) Does your household have any energy-intensive appliances or devices not commonly found in most homes? [PAUSE. IF NEEDED: Examples include medical equipment**,** a well or irrigation pump, a heated pool, a Jacuzzi or hot tub, or an electric vehicle.]

1) yes
2) no / don't think so

8) DK/REF

[if A22 = 1]
A23) What are these? [RECORD VERBATIM]

____

8/9) DK/REF

A24) And now just a few questions about your Internet access. Do you have regular access to the Internet at least a couple of times a week?
1) yes
2) no
8/9) DK/REF

[if A24 = 1]
A25) Which do you use more often to access the Internet - - a computer or a mobile device like a cell phone or tablet?
1) computer
2) mobile device (cell phone and/or tablet)
3) USE BOTH ABOUT EQUALLY
8/9) DK/REF

[if A24 = 1]
A26) Do you have a Wifi or wireless Internet connection in your home?
1) yes
2) no
8/9) DK/REF

Changes in Well-Being and Costs

Next, I have a few questions about how things may have changed for you and your household compared to three years ago. Again, the information you give is confidential, and we appreciate your honest answers.

B1) Would you consider your own household's financial situation to be better, worse, or about the same as three years ago? [IF RESPONDENT LIVED IN A DIFFERENT HOUSEHOLD, DIFFERENT FAMILY OR STILL WITH PARENTS, HAVE HIM/HER ANSWER ABOUT HIS/HER INDIVIDUAL ECONOMIC WELL-BEING]
1) better /[accept "higher"]
2) worse /[accept "lower"]
3) same
8/9) DK/REF

B2) And how have your expenses for basic living costs like food, housing, health care, transportation, and utilities changed? Would you say they are much higher, somewhat higher, about the same, somewhat lower, or much lower than they were three years ago?

1) much higher
2) somewhat higher
3) about the same
4) somewhat lower
5) much lower
8/9) DK/REF

B3) Does your household provide *regular* financial support to others who don't live with you, such as family members, friends, or an ex spouse?

1) yes
2) no
8/9) DK/REF

[if B3=1]

B4) Is the financial support you provide voluntary or is it required, such as alimony or child support?

1) voluntary
2) required
3) BOTH VOLUNTARY AND REQUIRED
8/9) DK/REF

B5) And does your household *receive* any regular financial support from others who do *not* live with you, to help you cover your basic needs? .

1) yes
2) no
8/9) DK/REF

[if B5=1]

B6) Is the financial support you receive voluntary or required, such as alimony or child support, or both?

1) voluntary
2) required
3) both
8/9) DK/REF

Bill Payment Practices

We briefly talked earlier about some of your expenses. Next, I'd like to ask you about how your household makes ends meet.

C1) In the past three years, has there been a time that you were not able to pay all of your bills and cover your basic living expenses for such things as food and housing?
1) yes
2) no
8/9) DK/REF

[if C1 = 1]
C2) How often would you say that has been the case in the past three years? Would you say...?
1) NEVER [DO NOT READ]
2) just once or twice
3) a few times
4) regularly / [ACCEPT: "ALWAYS"
8/9) DK/REF

C3) Generally speaking, do you do the following to make ends meet? Do you [FILL]? [IF YES, IMMEDIATELY FOLLOW UP WITH: Would you say you do this once or twice a year, a few times a year, or most of the time?

[AFTER FIRST ONE OR TWO ITEMS, SHORTEN TO: HOW OFTEN DO YOU [FILL]?]

[ROTATE]
a) borrow money
b) put expenses on a credit card that you won't pay off right away
c) tap into savings for regular expenses
d) cut back on spending for things your household needs such as food and medicine
e) leave some of your bills unpaid past the due date
f) try to pick up a little extra work

response options
1) no / never [DO NOT READ]
2) once or twice a year / [ACCEPT: "NOT OFTEN"]
3) a few times a year / [ACCEPT: "SOMETIMES"
4) most of the time / [ACCEPT: "ALWAYS"]
8/9) DK/REF

[if C3e = 3 or 4]

C4a-c) Think back to the last time you needed to make choices among which monthly bills you would be able to pay on time. Which bills did you prioritize and choose to pay first? [PROBE ONCE: ARE THERE ANY OTHERS?] [DO NOT READ. CODE UP TO 3 MENTIONS]

1) rent/mortgage
3) electricity
4) natural gas
5) energy utility - unspecified
6) water
7) utilities - unspecified
8) credit card
9) car payments
10) other loans
11) cable
12) cell phone
2) landline telephone
13) Internet service
11) OTHER – SPECIFY: _____
98/99) DK/REF

[if A1 <> 2 OR (A1 = 2 and (A6 = 1 or (A6b = 1 or 3 or 4)]

C5) I'd like to ask specifically about your home's energy bills. Which of the following statements best describes your situation?
[NOTE TO INTERVIEWER: IF THE RESPONDENT RECEIVES SEPARATE BILLS FOR ELECTRICITY AND NATURAL GAS, WE WOULD LIKE HIM/HER TO CONSIDER BOTH TOGETHER.]

1) Paying the energy bills is not an issue for us
2) We occasionally struggle to pay the energy bills, but usually manage okay
3) We often struggle to pay the energy bills
4) We are constantly struggling to pay the energy bills
8/9) DK/REF

Sources of Income and Assistance

In order to understand how California residents are making ends meet, we'd like to know more about some of the financial resources they rely on. Again, your answers are confidential and will not be able to be linked back to you.

E1) First, I have a question about the ages of the people in your household In what year were you born?

Year _____
8/9) DK/REF

D1. Now please tell me about the other people in your household. How many of them are: [STOP AND COMPLETE WITH 0s IF RESPONDENT INDICATES THAT HE/SHE LIVES ALONE OR THAT YOU HAVE ALREADY CAPTURED EVERYONE IN THE HOME]

a) under 6 years of age [RECORD WHOLE NUMBER BTW 0 AND 10]
b) between 6 and 17 years old? [RECORD WHOLE NUMBER BTW 0 AND 10]
c) between 18 and 64 years old? [RECORD WHOLE NUMBER BTW 0 AND 10]
d) 65 years or older [RECORD WHOLE NUMBER BTW 0 AND 10]

[Note: If respondent refuses to answer D1, skip D4, D5, D6, E3, E4]

D2) Next, I'd like to ask about the kinds of financial resources you rely on to meet everyday living expenses. Does your household...? . . . (FOR EACH "YES," IMMEDIATELY ASK:) Is that a major or a minor source of income for you?
[DO NOT SHOW ITEM G IF D1A+D1B = 0]
a) receive income from work
b) receive social security or disability payments
c) receive unemployment compensation
d) receive support from government assistance programs
e) draw on retirement savings for living expenses
f) use income from investments for living expenses
g) receive financial assistance for child care

response options
1) no / [ACCEPT: "DON'T RECEIVE"]
2) major
3) minor
8/9) DK/REF

(IF B5 = 1)
D3) You mentioned earlier that you receive regular financial support from others such as friends, family members or ex-spouses. Is that a major or a minor source of income for you?
1) Major
2) Minor
8/9) DK/REF

D4) Now, I have two questions about your household's total income in 2015. Was your total income, before any taxes, greater than or less than [insert 200% of FPL for hhld size]?
1) greater / more
2) less
8/9) DK/REF
[Note to programmer: In D4 above, insert the following income levels for 200% of FPL (rounded to nearest $1,000) based on the total number of household members reported in D1

hhld size	income
1-2	$32,000
3	$40,000
4	$49,000
5	$57,000
6	$65,000
7	$73,000
8	$82,000

9+	add $8,000 for each person above 8

[IF D4 = 1 or 2]

D5) Next, I will read different income ranges that might apply to you. Please stop me when I come to the category that best describes your household's 2015 income. Would you say it was…?
[PROGRAMMER: SHOW ONLY OPTIONS THAT ARE POSSIBLE GIVEN RESPONSE TO D4]

1) Less than $5,000
2) $5,000 to $10,000
3) $10,000 to $15,000
4) $15,000 to $20,000
5) $20,000 to $25,000
6) $25,000 to $30,000
7) $30,000 to $35,000
8) $35,000 to $40,000
9) $40,000 to $45,000
10) $45,000 to $50,000
11) $50,000 to $60,000
12) $60,000 to $75,000
13) $75,000 to $100,000
14) $100,000 to $125,000
15) $125,000 to less than $150,000
16) $150,000 or more
98/99) DK/REF

[if D5 < 4]

D6) Just to confirm, your household lived off of less than ($5,000/$10,000/$15,000 from D5]) last year. In a sentence or two, could you describe how you managed to pay for food, housing, and the other basic necessities? [RECORD VERBATIM]

_____

8/9) DK/REF

[if D5 < 13 or D4 = 2]

D7) In 2015, did you receive assistance from any of the following government programs or services? How about...? [ROTATE, ALWAYS READ "E" LAST]

a) Housing assistance, such as Section 8 or other subsidized housing
b) CalFresh, SNAP, or other kinds of food stamps
c) Medical assistance from MediCal or Medicaid [note to interviewer – NOT MEDICARE – be sure to clarify it's MediCAL or MediCAID]
d) Supplemental Security Income or SSI
e) other kinds of cash assistance for households with a financial need, such as from TAN-F, CalWorks, or AFDC

response options
1) yes
2) no
8/9) DK/REF

D8) Did you receive any help from your electric or gas utility in the past year or so? Such as getting energy efficient equipment or help with your energy bills?
1) yes
2) no
8/9) DK/REF

[if D8 = 1]
D9) How did they help you? [DO NOT READ. SELECT ALL THAT APPLY]
1) reduced rates—unspecified
2) CARE - reduced rates through the California Alternative Rates for Energy program
3) FERA - reduced rates through the Family Electric Rate Assistance Program
4) payment arrangements (e.g., bill deadline extensions, reduced payments, etc.)
5) arrearage forgiveness (forgiving past due bills, cover payment for one-time bill or remove past due amount)
6) free appliances or energy saving services (Energy Savings Assistance program)
7) bill credit - unspecified
8) other – SPECIFY: _____
9/10) DK/REF

Demographics

We are almost done with the survey. I just have a few final questions to help us group similar households together when we analyze study results.

E2) What is the highest grade or year of school that you have completed?
1) some primary or secondary school
2) a high school diploma or GED
3) some college
4) a two-year college degree
5) a four-year college degree
6) an advanced degree
8/9) DEF/REF

[if D1c + D1d > 0]
E3) In your household, how many *adults* currently...? [STOP ONCE ALL ADULT MEMBERS ARE ACCOUNTED FOR; ENTER 0 FOR REMAINING RESPONSE ITEMS]
1) have a paying job
2) are not working, but looking for a job
3) are retired
4) are unable to work due to a disability
5) none of the above
8/9) DK/REF

[if D1c + D1d = 0]
E4) Which of the following best describes your working situation? Do you have a paying job, are you looking for work, are you retired, do you have a disability that prevents you from working, or none of the above? [IF RESPONDENT HAS A JOB AND IS ALSO LOOKING FOR A NEW ONE, MARK "HAVE A PAYING JOB"]

1) have a paying job
2) looking for a job
3) retired
4) disabled
5) none of the above
8/9) DK/REF

E5a) Do you or does anyone in your household have a permanent disability, related to mobility, hearing, vision, developmental or psychological conditions, or chronic disease?
1) yes
2) no
8/9) DK/REF

[if E5a=1]
E5b) In which of those categories would you classify the disability. [READ IF NEEDED: Is it...?] [ALLOW MULTIPLE RESPONSES]
a) mobility [IF NEEDED: related to movement or being to get around]
b) hearing
c) vision
d) developmental disability [IF NEEDED: such as autism, downs syndrome or other types of communication or learning disabilities]
e) psychological conditions [IF NEEDED: such as schizophrenia, dipolar disorder, or severe depression]
f) chronic disease
g) OTHER – SPECIFY: _____

response options
1) selected
2) not selected
8/9) DK/REF

E6) What language is primarily spoken in your home? [DO NOT READ]
1) English
2) Spanish
3) Mandarin
4) Cantonese
5) Tagalog/Filipino
6) Korean
7) Vietnamese
8) [intentionally blank]
9) [intentionally blank]
10) [intentionally blank]
11) German
12) Chinese (unspecified or not Mandarin and not Cantonese)
13) Danish
14) Russian
15) Arabic
16) French

17) Japanese
18) Italian
19) Portuguese
20) Farsi
97) Other – SPECIFY: _____
98/99) DK/REF

E7) What other languages, if any, do you or other members of your household speak fluently? [DO NOT READ. SELECT ALL THAT APPLY]
1) None
2) English
3) Spanish
4) Mandarin
5) Cantonese
6) Tagalog/Filipino
7) Korean
8) Vietnamese
9) [intentionally blank]
10) [intentionally blank]
11) [intentionally blank]
12) German
13) Chinese (unspecified or not Mandarin and not Cantonese)
14) Danish
15) Russian
16) Arabic
17) French
18) Japanese
19) Italian
20) Portuguese
21) Farsi
97) Other – SPECIFY: _____
98/99) DK/REF

response options
1) selected
2) not selected
3) NONE
8/9) DK/REF

E8) How would you describe your race? You may give more than one answer. [SELECT ALL THAT APPLY. PROBE WITH LIST ONLY AS NEEDED]
1) White
2) Hispanic/Latino
3) Black or African American
4) Asian
5) Native Hawaiian

6) Other Pacific Islander
7) American Indian or Alaska Native
8) Chinese
9) Filipino
10) Japanese
11) Korean
12) Vietnamese
13) Other Asian
14) Guamanian or Chamorro
15) Samoan

response options
1) marked
2) not marked
3) SOME OTHER RACE – SPECIFY: _____
8/9) DK/REF

[if A1 = 2 and A2 = 3 and D4 = 2 -- until we close this question due to sufficient response]

F1) One last question. Our research team is also conducting brief telephone interviews with renters about energy use and utility programs. They are offering an additional $25 for interviews lasting about 20 minutes. Would you like me to add you to the list of possible renters they might call? [IF NEEDED: YOU CAN DECIDE WHETHER YOU WANT TO PARTICIPATE WHEN THEY CALL TO SCHEDULE A TIME TO TALK.].
1) yes
2) no
3) MAYBE – NEED MORE INFORMATION
8/9) DK/REF

Z2) Those are all of my questions. As a thank you, we can offer a choice of a Walmart or a Target gift for $25. Which would you prefer? And would an e-gift card sent by e-mail be alright, or would you prefer one by regular mail?

1) Walmart gift card sent in the mail (ASK Z2A)
2) Walmart e-gift card (ASK Z2B)
3) Target gift card sent in the mail (ASK Z2A)
4) Target e-gift card (ASK Z2B)

Z2A. Do you want the card sent to your address at [address]?
1) Yes (SKIP TO CLOSING)
2) No (GET ADDESS TO SEND IT TO)

Address_____

Z2B. Can you give me the email address you want the card sent to? (VERIFY; READ BACK ONE LETTER/NUMBER AT A TIME)

_____@_____

Thanks again for your time and participation.

Post Call Coding

Z3) Gender

1) male
2) female
3) not sure

Z4) Language in which the survey was conducted

1) English – fluent respondent
2) English – respondent had some difficulty with the language
3) Spanish – fluent respondent
4) Spanish – respondent had some difficulty with the language

High Energy Burden Focus Group Guide

The attached focus group moderator's guide is the version we used for the Fresno groups. The guide for Riverside was very similar, but accounted for the differences in utilities serving the attendees.

Focus Group Moderator's Guide

Fresno, June 21, 2016

Welcome [0:00-0:15 / 15 mins]

A. Moderator introduction

a. Ingo
b. colleagues – behind glass

B. Purpose & format of the group

a. inform programs and services for California residents – most of the questions we will touch on have to do with your home and energy
b. ask questions of the group (whole group, round robin) and some activities

C. Ground rules

a. one person speak at a time
b. be candid – you represent many other Californians out there
c. allow everyone an equal opportunity to participate in the discussion
d. I might stop a particular discussion if I see that we need to move along so we can finish on time

Participant introductions:
Have participants give their first name, describe the kind of home they live in, one thing they like about it, and one thing they would change if they could. *Listen for issues related to energy, health, comfort, and safety.*

Health, Comfort, and Safety [0:15-0:25 / 10 mins]

Worksheet Exercise: Your Home
Have participants privately rate various characteristics of their home on a rating sheet and turn it in.

Rating sheet questions:

- Does it shelter you from the elements -- cold, heat, wind, and rain?
- Do the key appliances, like the heating system, water heater, and refrigerator work reasonably well?
- Do you feel safe inside your home? ***[Verbally explain that we are not asking about the neighborhood or the outside, but whether they feel secure inside the home. Do the locks work? Are windows secure? Are the appliances safe?]***

- Does it seem like a healthy place to live? ***[Verbally explain that we are asking about such things as indoor air quality, ability to keep livable temperatures, etc.]***

The rating sheet will also ask for the participant's best estimate of their average monthly energy costs for electricity and natural gas in winter and in summer.

If any of you gave low scores to any of those items on the rating sheet, I'd be interested in why. ***[Call on volunteers willing to explain any low responses.]***

Energy bills [0:25-0:50 / 25 mins]

Let's talk about the energy costs you pay for your home...

Awareness of energy costs [0:25-0:35 / 10 mins]

On the sheet you turned in a few minutes ago, I asked you to indicate how much you pay for your home's energy costs on average. I'd like to get a sense of whether that is a cost you know pretty well or whether you had to guess. Please raise your hand if:

- **you think you were in the right ballpark**
- **you guessed and weren't sure at all**

For those of you who weren't sure, tell me more about how your energy bill gets paid.

Probe if needed: Are you on auto pay? Does someone else in the household pay the bill? Something else?

For those of you who were pretty sure, please tell me more of how you track your energy costs. How do you know how much you are spending?

[Fresno] What do you think are the main things that contribute to your energy bill?
[Listen for fixed charges, specific end-uses, specific appliances, and specific practices.]

Probe, if needed: What appliances or other energy uses make up the biggest parts of your bill? In the summer? In the winter? Overall?

[Riverside] What do you think are the main things that contribute to your electric bill? *[Listen for fixed charges, specific end-uses, specific appliances, and specific practices.]*

Probe, if needed: What appliances or other energy uses make up the biggest parts of your bill? In the summer? In the winter? Overall?

[Riverside] What do you think are the main things that contribute to your natural gas bill for those of you who have natural gas service? *[Listen for fixed charges, specific end-uses, specific appliances, and specific practices.]*

Probe, if needed: What appliances or other energy uses make up the biggest parts of your bill? In the summer? In the winter? Overall?

Probe, if needed: What about heating? What about hot water?

Perception of energy costs [0:35-0:50 / 15 mins]

Next, please tell me more about how those energy costs fit into your overall costs of living and how they affect you and your household. Let's start with how they fit with all of your other costs.

Comparison to other costs

Please think about all of your monthly expenses for a moment. If you had to list them from highest to lowest, where would your energy costs fit in (including rent or mortgage payment, food, cable or internet, car payments, medical bills, and so forth)? *[Go around the room and hear from everyone]*

Probe if needed (to guard against overestimating the ranking of energy costs): What monthly costs are higher than energy for your household?

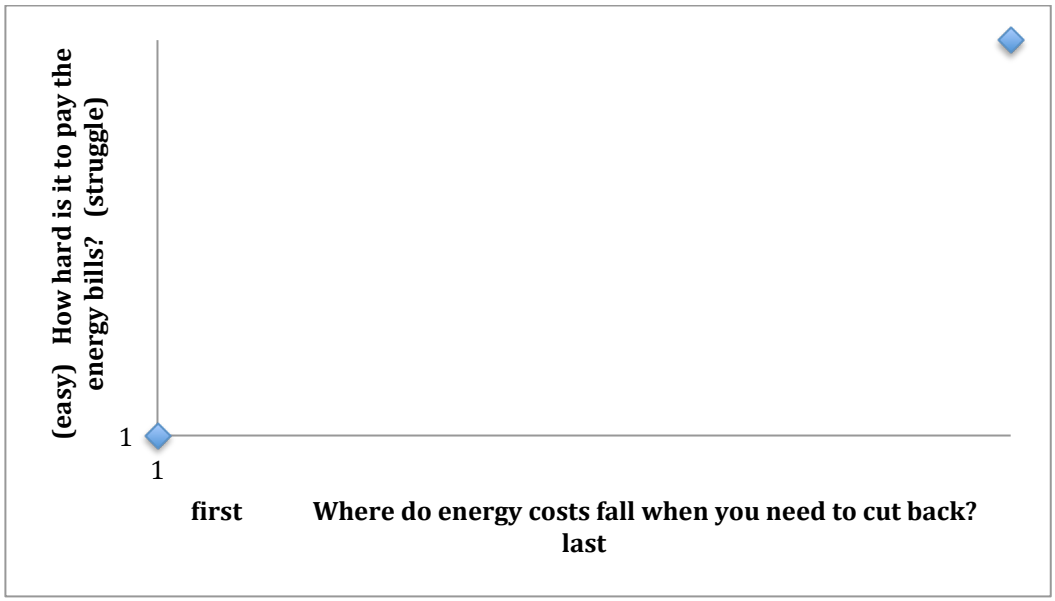
Challenges to pay energy bills

Exercise: Energy Bill Matrix

Now, I'm going to give you a chance to stretch your legs a bit while you answer the next question about what you think of your energy bills and costs...

Have participants place an adhesive dot on a poster board that shows the following matrix where one direction represents where people would rank their energy costs among all their costs of living if they needed to cut expenses for a couple of months and the other direction represents how challenging their energy bills are to pay. Explain the matrix first and place some example dots (in a neutral color). *[For Riverside, we will give people two differently colored dots – one for electricity and one for natural gas.]*

The poster board will look something like this:



For those of you who said it was a challenge to pay the energy bill, how do you manage? What kinds of things do you do to help you be able to pay the bill?

For those of you who ranked energy costs as something you cut back on, tell me more. Why did you rank it where you did?

How about those of you who ranked energy costs as something you don't cut back on?

Self-efficacy and control over energy costs [0:50-1:15 / 25 mins]

Next I'd be curious to hear more about how much control you think you have over energy costs and how interested you are in lowering them.

Let's start with your interest. I'm going to read a statement, and I would like you to tell me if you agree or disagree (by show of hands) with this:

> *[show of hands]* **Improving our home's energy efficiency and reducing our usage is not a priority for us.**
>
> Probe: For any who disagreed, tell me more.

How about this statement...?

> *[show of hands]* **Our energy costs are what they are. I can't really influence them.**
>
> Probe: For any who agreed, tell me more.

Probe: For any who disagreed, in what ways can you influence your energy costs? What can you most easily do?

Let's try this statement...

[show of hands] **We already only use electricity when it's really needed; there is no way we could cut down.**

Probe: For those who disagreed, what could you reasonably do that you aren't currently doing to reduce your electricity usage? What, if anything, makes it hard?

Probe: For those who agreed, what kinds of things do you do to keep your electricity usage down?

How about this statement...for those of you who have natural gas appliances? *[Get a show of hands on who agrees and who disagrees. Keep the discussion shorter if it repeats what we heard for electricity.]*

We only use our natural gas-using appliances when it's really needed; there is no way we could cut down.

Probe: For those who disagreed, what could you reasonably do that you aren't currently doing to reduce your heating, hot water, or other natural gas usage? What, if anything, makes it hard?

Probe: For those who agreed, what kinds of things do you do to keep your heating, hot water, or other natural gas usage down?

Utility Support [1:15-1:35 / 20 mins]

Let's talk about your electric and natural gas utilities for a moment.

[by show of hands] **Who gets their electricity from [PG&E / Southern California Edison}?**

[by show of hands] **Who has natural gas service? Who gets their natural gas service from [PG&E / Southern California Gas]?**

[white board] **What kinds of resources or support are available from your utilities to help you reduce your energy usage or keep your bills down?** *[Record and probe until answers slow. If CARE or ESA described, refer to them by their name.]*

[by show of hands] **How many of you were aware of the CARE rate before you came to this discussion group?**

Where did you hear of it? *[Group answer]*

[by show of hands] **How many of you were aware of the Energy Savings Assistance program before you came to this group?**

Where did you hear of it? *[Group answer]*

Who has participated? *[by show of hands]*

[for aware non-participants] **Could someone who has not participated in this program tell me what you think it does and how it works?**

What's appealing about that?

What is unappealing about that?

How much of an impact on your energy bills do you think the program would have?

[ESA participants] **Could someone who has participated in the program what you thought was beneficial?**

What, if anything, made it difficult to participate or less useful than it might have been?

How much of an impact on your energy bills do you think the program had?

[Get same info from other ESA participants]

You may have heard about this program from multiple places. Is there an organization or person who carries more weight or whose suggestion that you try it would be more likely to prompt you to check it out?

[time permitting] **Other than your utility, what resources, if any, are available to you to manage your energy bills and usage?** *[Group answer]*

Probe:

- Are there services that help you reduce your energy usage?

- Are there services that help you keep up on energy bill payments?
- Are there good information sources that tell you what you can do to keep your energy usage down?

Measure and Program Ideas [1:35-2:00 / 25 mins]

Activity: Advisory Panel – part 1

We've talked about various aspects of energy bills, energy affordability, and energy savings in this group. I'd like to tie it all together by having you pretend you are on an advisory panel to the utilities and the California Public Utilities Commission. You've been asked to think of households for whom energy affordability is an issue. You may even personally know some households that fit that description. You've been asked to nominate one suggestion to the utilities that would help these households with their energy costs and usage.

Anything is fair game except asking the utilities to give away electricity and natural gas at lower rates. You could figure out ways that the utilities can help households use less energy or to use it better. You could think of information people need or ways that makes it easier to manage payments. What would you suggest they consider and why? Please write down your idea on a writing pad in front of you in a sentence or two – or a few words if you'd like. I'll call on you to tell us about your ideas in a moment.

*[**Call on participants to offer their ideas.** As needed, probe on what challenge are you addressing with this? How would this help customers?]*

[If participants make ESA-like suggestions, probe on details ... what measures, services, delivery mode, etc.]

Activity: Advisory Panel – part 2

And, to close out our discussion today, here are some specific energy saving practices utilities could promote and potential offerings they could make available. I'd like to run these by you, the advisory panel. For each one, I'd like to hear from the group what you think of the practice or offering. Do you think utility customers would respond ... and why do you think what you think?

[Show participants the chart below on an easel. Take notes as they weigh in on whether each promotional message or offering is likely to get a positive response from customers and why or why not.]

Utility Activity	Positive Customer Reaction	Negative or No Customer Reaction
Encourage customers to turn down the heat a few degrees at night or when they leave home		
Encourage customers to turn up their AC temperature at night or when they leave home		
Remind customers to turn off lights when not in use		
Remind customers to turn off electronics when not in use		
Encourage customers to limit shower time both to save water and energy		
Offer a discounted smart thermostat that learns household heating and cooling patterns and then sets the temperature accordingly (to save energy)		
Offer usage alerts during the month to let people know if their usage and bills are running high (with tips on how they can save)		

Closing

Those are all the questions I had. Thank you so much for your input and discussion this evening. ***[Provide logistical instructions ... exit, incentives, etc.]***

CBO Research Approach and Interview Guide

The attached memo to the Low Income Needs Assessment's study team describes the methodology for CBO research and provides the data collection instruments used.

MEMORANDUM

Date: March 24, 2016

To: LINA Study Team

From: Martha Thompson, Ingo Bensch, Tami Rasmussen, Evergreen Economics

Re: CBO Interviews and In-Person Research Design and Interview Guides

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This memo expands on the research plan dated February 25 for the CBO interviews and in-person research task as part of the current Low Income Needs Assessment (LINA) study and incorporates information gathered in our in-depth interviews with program staff. In-person work with a total of seven CBOs focused on Asian language groups and undocumented immigrants will provide us with an opportunity to obtain perspectives and insights of professionals who are directly engaged with the population segments we are seeking to study. In this memo we provide:

1. **Research Plan Details:** an expansion of details provided in the research plan. This section also includes an updated version of the research questions map, which includes integration of questions discussed during in-depth interviews with program staff.
2. **Initial Screening Call Guide**: A list of topics to be covered on an initial screening call to make sure CBOs are willing to let us observe efforts in-person, before proceeding with the in-depth interview.
3. **In-depth Interview Guide:** a draft in-depth interview guide for the CBOs.
4. **In-person Research Description:** a description of the in-person work along with prioritized questions for direct interaction with targeted group.
5. **CBO List:** CBOs we will reach out to in the preferred order of who we think would best meet the study needs.
6. **Timeline:** a timeline of all study activities and interim deliverables**.**

Research Plan Details

This section provides additional detail to the research plan sections related to CBO research.

Our preliminary selections for areas of focus for the CBO-based research are shown in Table 1 and Table 2, pending finalization on March 4 once we receive the remaining list of CBOs from the LIOB. The locations are subject to change, with our main focus on identifying CBOs that will lead to the most informative and fruitful research, and a secondary focus on maintaining a good regional balance across the study tasks.

Table 1: Tentative Locations for Asian Language Research

Contractor locations	Languages Covered	IOU
Bay Area	Chinese, Cantonese, Vietnamese, Tagalog	PG&E
Orange County	Korean[10], Chinese, Vietnamese	SCE, SCG
San Diego	Vietnamese, Tagalog, Korean	SDG&E

Table 2: Tentative Locations for Undocumented Immigrant Research

Contractor locations	Description	IOU
San Joaquin Valley	Immigrant farm workers, Spanish speaking	PG&E
San Diego	Recent immigrants, Spanish speaking	SDG&E

The CBO-based research is designed to tap into the experience and expertise of the selected organizations with the targeted customer segments. We are planning for an average of a half day of direct contact with each of the selected organizations, although the length of time will vary based on the opportunities for accompanying the organizations to home visits and other out of office outreach.

[10] SCG program managers have shared a preference for focus on Chinese and Vietnamese as Korean in-language material are rarely used.

We will perform three waves of data collection with each selected organization: an initial screening call, a phone interview and an in person "ride along." The in-person visit will likely occur a couple weeks after the phone interview in order to account for travel arrangements and to find a day that best represents the type of outreach efforts that the organization performs.

The phone interview is primarily meant to gather information that will inform us about how a possible site day could be structured. We also plan to use this call to ask questions regarding beneficial measures, unique customer needs, customer education and knowledge, and income documentation. Once we gather information, we can solidify our in-field approach expanding upon pre-prepared question topics that can be addressed by observed interaction between staff and customers. Beginning with an in-depth interview will assure we are able to use each field day in the most productive way possible.

The in-person research will also allow us to observe the strategies discussed in our in-depth interview and will allow us to see interaction with customers rather than just hear about customer reactions via program staff. Where feasible during in-person research, we will seek opportunities to conduct mini-interviews of members of the targeted customer segments.

Table 3 provides an overview of the topics we will cover during the phone interview and fieldwork. Questions or probes added after in-depth interviews with program staff are presented in italics. Note that some questions are specific to the ESA and CARE programs. Not all CBOs will be familiar with these programs, and in those cases, the questions will be framed more broadly to understand the energy related needs of the served clients.

Table 3: CBO Data Collection Topics

Question or Topic	Phase Addressed	
	Initial Phone Interview	Observation Based: Ride Alongs/Site Visits
Introduction		
Information about organization, who they serve, goals and mission	x	
Unique Customer Needs		
How does the group served differ compared to the low-income population in general? How do these differences guide your interactions? *(Probe on issues of who makes decisions and if it is done alone or together and if there are cultural barriers to accepting assistance)*	x	x
What are the unique needs of this group and how do these unique needs affect: 1. Health/comfort/safety (with a focus on energy-related issues) 2. Energy practices and savings opportunities 3. ESA/ CARE Program participation	x	x
How do CBOs handle non-English speakers (Probe on staff ability to speak necessary language(s))		
How do CBOs handle literacy issues, if present?	x	x
At what point does organization become aware of customers needs (probe on what happens during installation - i.e. identification of fire dangers, need for improved air quality, regulating extreme temperatures)?	x	x
What strategies encourage customer participation in any programs?	x	x
Is outreach done in tandem with other program outreach? What programs pair well with IOU programs? Why? *(probe on concerns related to overwhelming customers with information, and approach)*	Informs in-person research strategy	x
How does organization decide where to do outreach? Where/how do they reach customers?	Informs in-person research strategy	
What messaging works? How does this vary by outreach type or other trait?	Informs in-person research strategy	
Where else do customers ask for assistance or help?	x	

Question or Topic	Phase Addressed	
	Initial Phone Interview	Observation Based: Ride Alongs/Site Visits
How frequently does the organization work with a certain household?	x	x
Beneficial Measures		
What are organization's thoughts on how IOUs can help reduce customer's energy burdens and increase health, comfort, and safety through ESA and CARE? Are there improvements (including measures for ESA) that would help with health/comfort/safety and/or reduce energy burden? (probe on needs specific to this group of people)	x	
Which energy-saving measures offered by ESA resonate most with customers in this group? Why? How do these measures tie to specific health/comfort/safety benefits?	x	x
Which, if any, measures are of lower or no interest or associated with higher barriers to acceptance? Why?	x	x
How do certain measures fit into messaging used when reaching out to customers?	x	x
Customer Perception		
How is information about programs that could help target constituents shared? (*what are preferred methods of communication and do the preferred methods vary by topic?*	x	x
What ESA/CARE offerings resonate with them?	x	x
What ESA/CARE offerings are unpopular or concerning? (probe on: trust of utilities, trust of organization, willingness, ability to provide income documentation)	x	x
[Program specific] Does organization help customers with next steps after interested in CARE/ESA? What barriers exist after participant is interested?		x
Customer Education and Knowledge		
How aware are customers of ESA and CARE before coming in (if at all)? What type of education is provided?	x	x
How do constituents view saving energy? Is it a priority? What are the gaps in knowledge? Do they have awareness of what they can do?	x	x
How much time, if any, is spent educating customers	x	x

Question or Topic	Phase Addressed	
	Initial Phone Interview	Observation Based: Ride Alongs/Site Visits
about energy saving behaviors related to ESA and/or CARE outreach?		
Income Documentation		
How does organization communicate need for income documentation?	x	x
How do customers react to request for income documentation? What steps are needed?	x	x
Are there certain types of documentation of income that are easier or harder for customers to provide?	x	x
Are certain enrollment paths easier for customers than others? (*tax filings, SSN, vouchers attesting to cash income)*	x	x
Have customers had issue with CARE post enrollment verification? What issues exist for customers trying to prove their income or understand what is required of them, if any?		
What role does organization play in helping customers? (probe on types of documents, and preferences for communication) Any suggestions for improving the process to make it easier for income-eligible customers to respond to the request and remain on the rate?	x	x
If using utility materials such as brochures, what feedback do organizations have to improve their effectiveness? (probe on content, approach and mode)	x	x
Logistics		
How does organization interact with customers?	x	x
What events/outreach types offer the most customer interaction?	x	
Can we come and ride along/sit with/observe a time of frequent customer interaction?	Informs in-person research strategy	
Will we need a translator? If so, do you have suggestions?	Informs in-person research strategy	

Initial Screening Call Guide

Below are the main talking points we will use for our initial screening call. These calls will precede the decision to do an in-depth interview and will be used to understand willingness of the CBO to do in-person research, as well as clarify the nature of the group's interaction with target populations.

- Introduction of Evergreen and to the research we are preforming (along with relevant programs)
- Description of what we requesting (to do in-depth interview and in-person research)
- Ask about experience with income documentation for qualifying clients into means-based programs, including for undocumented immigrants
- Ask about experience with energy utility programs (CARE and/or ESA), if any, to get a sense of how questions should be framed for in-depth interview
- If CBO fits what we are looking for and is willing to participate in in-person research, schedule in-depth interview
- Discussion about confidentiality: Express that no customer data will be shared and that the intent of the study is to help utilities better serve their constituents. We will not take any photos or record any personally identifying information. Ask about concerns and limitations of us being on-site and ask how they suggest this is best handled.

In-depth Interview Guide

This section presents a draft of the in-depth interview guide to be conducted with CBOs who are willing to do in-person research and have confirmed that they work with the customer segments we are targeting.

Organization

Can you tell me a bit about your organization, your role within it, and the services you offer?

Probe on:

- Overall mission
- Particular geography or client types they focus on (if not already known)
- How and where they meet with people
- Frequency of working with same household
- What resources people are pointed towards

Who comes to the organization and why?

How are they referred and what are they looking for when they come?

Unique Customer Needs / Customer Education and Knowledge

How do the low-income [Asian/undocumented] households you serve differ from other low-income households (and from each other)? [*If needed: I'm particularly interested in those differences that affect how you work with them as a provider of services to this community.*]

Probe on:

- Most pressing needs
- General awareness of programs and services available to them
- Information sources they use and trust
- Willingness to engage in publicly available assistance programs
- Degree to which this population segment is different from low income households generally
- Energy-related health, comfort, and safety related differences
- How concerns about energy and paying energy bills fits within the other things they are worried about
- Similarities between the households they serve and other low-income households

Does your work involve telling people about utility programs such as ESA or CARE?

Probe on:

- Amount of experience / in what context (i.e. a focus of client interaction or one of many programs mentioned)
- Specific groups or locations this is done
- Process details
- How much a focus is ESA/CARE? How does energy-related support programs / issues fit into their mission?
- Energy efficiency education
- Differences from general low-income population

What do customers generally know about with regards to energy utility offerings (specifically CARE and ESA) *[If provide outreach add "before you talk to them"]?*

Probe on:

- Awareness / knowledge about energy efficiency
- Time spent educating customers about energy saving behaviors
- Gaps in what people perceive the IOUs to offer through ESA and CARE and what they actually offer

Is there anything unique about how this population thinks about energy usage and energy utility companies that we should be aware of?

Probe on:

- Attitudes toward saving energy
- Awareness and perception of CARE and ESA programs
- Specific measures that would be of particular value to the group

What strategies do you use to encourage people to participate in appropriate programs *(energy utility programs (CARE, ESA) and/or others)*? [*Specific to outreach and building awareness*]

If they do not share utility offerings with customers, ask only about the programs they do offer.

Probe on:

- Language issues (staff ability to speak necessary languages)
- Literacy issues
- Best messaging to use
- What resonates with people
- Preferred communication type (especially for more private information)
- Possibility of overwhelming people with too much information
- Pairing of programs (if applicable, with IOU programs)

- Differences from general low-income population

[*If applicable*] **Can you tell me a bit about how you facilitate participation in ESA or CARE after someone has decided to enroll?**

Beneficial Measures and Customer Perceptions

[If they talk to people about CARE and ESA] **Can you tell us a bit more about how you *talk* to people about the CARE and ESA programs? We are wondering how this discussion fits into outreach and what specific program pieces you feature.**

Probe on:

- How these offerings fit into outreach and conversations
- Specific ESA measures discussed (any related to health, comfort and safety?)
- Willingness to participate
- Trust of organization, utility

[If they do not do specific utility outreach] **Do you know if people have availed themselves of various utility programs and services such as ESA and/or CARE? Any others? Which ones have you heard of from customers? Can you tell us a bit about how people perceive those programs?**

Probe on:

- Value of ESA and CARE offerings (what resonates most)
    - Specific to energy-related health comfort and safety
- Willingness to participate
- Issue of trust of organization, utility

With regards to customer needs related to energy-related health comfort and safety, how do you learn about these needs?

Probe on:

- Issues that may not come up until time of installation (if applicable)
- Air quality
- Extreme temperatures

Do you have suggestions for the energy utilities as to how they can help the people you work with in regards to using their energy efficiency programs?

Probe on:

- Measures related to energy-related health, comfort and safety

- Measures that help reduce energy burden
- Barriers to participation that could be overcome if something was changed
- Measures of lower or no interest

Income Documentation

Next I'd like to talk about things that may be a barrier to participation in ESA and/or CARE programs.

Is income documentation (such as pay stubs and income tax documentation) a requirement for some of the services you connect people to?

If yes, probe on:

- Communication of income requirements
- Customer reaction to requests
- Steps for income verification
- Ease of some processes compared to others
- Documents needed (tax filings, SSN, vouchers attesting to cash income)

Have you heard of any issues that people have had with post-enrollment verification for the CARE program? *(Remind organization this is just for a sample of customers that get selected and have to provide documents after they self-certify their income for CARE)*

If yes, probe on:

- Role they play in the process
- Barriers to process (related to specific documents)
- Issues for customers trying to prove their income or understand what is required of them
- Suggestions for improving the process to make it easier for income-eligible customers to respond to the request and remain on the rate

Do you have any feedback for the utilities on the materials (such as brochures) they provide, for enrollment or otherwise, to improve their effectiveness?

Logistics

As we discussed earlier, we are planning on observing a time where you interact with customers frequently. This is a valuable part of our research and will allow us to get a feel for what happens first hand, how people react to outreach, and what is going on at the utility customer level. *Discuss weeks and times that will work best for planned outreach.*

We are performing this effort to help the utilities reach more residents with their programs so the more help we can get in encouraging constituents to feel comfortable

when we are on site, the better. This effort is meant to help the utilities better serve your constituents. Do you have any concerns about the comfort of customers in sharing information with you while we are present?

Will we need a translator? If so, do you have a suggestion or would you be able to help us to understand conversation?

In-Person Research Description

The in-field research will vary based on what we learn in the initial phone interview. We will customize questions and, where possible, we will direct them at served clients. This section covers the types of observation we expect to perform, the topics we will discuss, and our highest priority questions if we are able to interact directly with served clients.

Observation Examples

To fully determine what outreach will look like, we will need to discuss the options with the CBOs that we are speaking with. We would like to accompany CBO staff to observe their interactions with targeted groups in the field including scheduled home visits, outreach at community events, and door to door outreach. If the organization is more likely to have their members/targeted outreach groups come to them (for service requests, low-income assistance, etc.) then we would sit with the staff to observe their work.

Discussion Topics

We will structure our in-person visit to best be able to observe/discuss the following topics. These topics (from Table 3) and the in-depth interview with the CBO will be used to guide any opportunities we have to speak with the customers or to ask any follow up questions we have for the program staff during the ride-along or observation.

- Unique customer needs (literacy, decision making, cultural barriers, etc.)
- Beneficial measures
- Customer perceptions
- Education and knowledge
- Income documentation (we may need to rely on second hand information here for the comfort of the served clients we are observing)

Data Collection

We will use a chart similar to the one below to track observed interactions and discussions by topic during the in-person visit.

Table 4: Data Collection Tool

Research Topic/Area	Observations	Direct discussion with served client
Unique customer needs		
Beneficial Measures		
Customer perceptions		
Education and knowledge		
Income documentation		

Guide for Direct Interaction with Served Client

These are a few standard questions that we will prioritize when we have a chance to do a mini-interview with the person(s) with whom the CBO is interacting. We will cover the topics listed above if we have additional time and opportunities to do so.

- Have you heard of the CARE discount rate for electric and gas bills for income-qualified households?
  - If yes:
    - Can you tell me what you know about this service the utility provides?
    - Do you know if your household has this discount rate applied to your electric or gas utility bills?
    - If not, why not? If yes, how did you hear about it?
- Have you heard of the Energy Savings Assistance or ESA program that provides no cost energy savings items for your home to income-qualified households?
  - If yes:
    - Can you tell me what you know about this service the utility provides?
    - Do you know if your household has received any such (free) services or appliances from your utility? Again, they would be provided through what is called the "Energy Savings Assistance Program." (*Probe to assure interviewee is referring to ESA, not LIHEAP*) If not, why not? If yes, how did you hear about it?

CBO List

The tables below presents the list of CBOs that were collected via research, in-depth interviews with utility program staff, conversations with the LIOB, and the Public Workshop, held on January 28, 2016. We also received input from the Center for Sustainable Energy.

The CBOs are presented in the order we plan to contact them for both the Asian language and undocumented immigrant groups. Those at the top of the list best fit our research needs and are balanced across the areas we are targeting. To decide this order, we looked at what type of work the organization does, which groups they work with, what region(s) they serve, and who was suggested to the study team by multiple stakeholders and program managers.

Table 5: Asian Language CBOs

#	Organization Name	Description	Location	IOU Territory Covered	Utility Program Experience
1	[redacted]	Part of CHANGES and TEAM, dedicated to providing energy assistance for Limited English Proficient clients. Assists the senior community with immigration issues, housing and job placement.	[Bay Area]	PG&E	CHANGES
2	[redacted]	Personal assistance programs, youth education and other activities as well as community events within the Vietnamese community of San Diego.	[Southern CA]	SDG&E	Unknown
3	[redacted]	Provides health, human and economic development support to enable active participation in mainstream society.	[Southern CA]	SCE, SCG	CHANGES
4	[redacted]	Initially focused on Spanish language customers, but has expanded to serve Vietnamese-speaking residents. Provides community resources,	[Southern CA]	SCG, SCE	Unknown

		computer literacy training, and assistance in filling out income taxes.			
5	[redacted]	LIHEAP Provider, Head Start, mental health services and Asian advocacy services.	[Northern CA]	PG&E	CARE
6	[redacted]	Provides health foods, education, and support services to women, infants and children in Mira Mesa.	[Southern CA]	SDG&E	Unknown
7	[redacted]	Works with primarily Latino and Asian clients to enhance health, and social and economic well-being.	[Southern CA]	SCG	ESA/CARE
8	[redacted]	Multilingual staff that works with Asian-Americans and other low-income, isolated populations.	[Southern CA]	SCE, SCG	Unknown

Table 6: Undocumented Immigrants CBOs

#	Organization Name	Description	Location	IOU Territory Covered	Utility Program Experience
1	[redacted]	Conduct outreach; provide information and referrals to local, state, federal and non-profit organization programs.	State-wide	SCE, SCG, SDG&E, PG&E	Unknown
2	[redacted]	Encouraging awareness of Customer Assistance Programs, especially among farmworkers with limited English proficiency. Participates in multiple community initiatives each year.	[San Joaquin Valley]	SCE, SCG, PG&E	Has worked with SCG on Limited English Proficiency.
3	[redacted]	Empowers communities to make social change with the goals of fostering	[Southern CA]	SDG&E	Unknown

#	Organization Name	Description	Location	IOU Territory Covered	Utility Program Experience
		a healthy and sustainable quality of life.			
4	[redacted]	Outreach to residents and customers, primarily farmworkers and persons with limited English proficiency.	[Southern CA]	SCG, SCE, PG&E	Has worked with SCG on Limited English Proficiency.
5	[redacted]	211 program for Kings County, income tax assistance.	San Joaquin Valley	PG&E	Unknown
6	[redacted]	Works to improve the quality of life of farmworkers and other participants by providing services.	San Joaquin Valley and Los Angeles	SCG, SCE, PG&E	Unknown
7	[redacted]	Assists with acculturation and general health education for Asian and Latino/Hispanic populations.	San Joaquin Valley	PG&E, SCE, SCG	Unknown

In addition to the CBOs listed above, we would also like to do the phone interview portion of the research with [redacted] and [redacted]. The second organization on our list is utilized by [redacted] to communicate messaging. These groups are located are outside of the regions within California that we have decided to focus on but could still deliver valuable input to the study team.

Timeline

The table below outlines the schedule for the CBO research task.

	3/14/16	3/21/16	3/28/16	4/4/16	4/11/16	4/18/16	4/25/16	5/2/16	5/9/16	5/16/16	5/23/16	5/30/16	6/6/16	6/13/16	6/20/16	6/27/16	7/4/16	7/11/16
Finalize interview script and CBO ranked list																		
Reach out to CBOs, IDIs																		
Planning for in-field research, review approach with study team																		
In-field visits																		
Analysis and draft report chapter																		

Multifamily Tenant Interview Methodology Memo and Guide

EVERGREEN ECONOMICS

MEMORANDUM

Date: June 14, 2016

To: LINA Study Team

Re: Multifamily Telephone Interview Sampling Plan and Interview Guide

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The 2016 Low Income Needs Assessment project includes a small exploration of issues and opportunities affecting renters in multifamily buildings. This memo outlines our research plans for that task. It includes background information, a sampling plan and interview guide.

This version incorporates prior study team comments. Barring additional input, we will proceed as described below.

Background

Literature and Past Results

Prior research we reviewed includes the 2013 LINA Study and HINER & Partners' segmentation and high usage studies. The goal was to build from the research that has already been done on this segment. Below, we summarize selected takeaways from these reviews.

2013 LINA Study Results

In the 2013 Low Income Needs Assessment report, Evergreen analyzed results by home type. Findings that focused on the multifamily sector are synthesized below.

- **Less need/ less burden**: Multifamily renters have fewer energy needs and a lower energy burden because they have less energy-using equipment, smaller homes and lower energy bills (based on IOU bills and survey self-reports).
- **Landlord approval barrier**: Renters must receive their landlord's approval to participate in ESA (based on program staff interviews / program docs). This requirement proved to be a key barrier to program participation identified by contractors, program staff, and both willing and unwilling participants.
- **Misunderstanding applicability:** In-home visits also revealed the belief that the program was not for renters, and thinking that addressing building and appliance issues is the landlord's responsibility.
- **Lower participation**: All else constant (based on multivariate modeling), multifamily households are less likely to participate in ESA.

- **Benefits of ESA measures greater for people in single-family homes**: Single family renters are more likely to find ESA measures very helpful than multifamily renters or owners of single-family homes (based on survey self-report).

An analysis of 2011 PUMS data (from the U.S. Census) revealed the following ways that low-income households in multifamily housing differ from those in single-family homes:

- Multifamily housing inhabitants are much more likely to be linguistically isolated (25% v. 15%)
- Multifamily (and single-family) renters are much more likely to have a non-white householder (69% v. 55% of SF-own)
- Multifamily households have fewer residents per home (2.6 v. 3 for SF-own and 3.8 for SF-rent)
- Multifamily (and single-family) renters are more likely than SF-owners to have an elderly or disabled household member (45% v. 37%)
- Multifamily households have a lower average annual income ($18k v. $23k)
- Multifamily households' annual average fuel costs are much lower ($918 v. $1,700)
- Multifamily (and single-family) renters have much more turnover (avg. tenure of 6 yrs. vs. 17 yrs for SF-own)

We offered recommendations related to the renter / multifamily sector findings:

> ***Follow-up with renter households that move.*** Renters move around more than homeowners (average tenure of around 6 years compared to 17 years for homeowners), and the IOUs could explore increasing the follow-up with households on CARE that move.
>
> ***Special renter-focused outreach campaign***. Since renters are less likely to read their bill inserts, the IOUs could look into outreach campaigns specifically for renters, or at least bill inserts that are targeted to renters.
>
> ***Special ESA measure offering for landlords***. The program could look at developing a package of measures across the low-income and energy efficiency programs that could be offered to landlords to increase the likelihood of engaging with the ESA program. [This could be coordinated with MFEER and other market-rate programs.]
>
> ***Special ESA measure offerings without landlord approval***. The program could also look at whether it could expand the basic measures that can be installed without landlord agreement. We did not study this program design issue thoroughly, but we did hear anecdotally that at least some IOUs install CFLs and other basic measures, and refrigerators that are owned by the tenant. The program has tried and should continue to strike a balance between helping renters with their energy

burden, but not using ratepayer funds to subsidize improvements to private property owned by non-low income landlords. "

HINER Segmentation Studies

HINER & Partners conducted a segmentation study (*Low Income Energy Efficiency (LIEE) Household Segmentation Research*) for both SCE and PG&E. In the studies, HINER presented eight distinct segments of low-income customers based on cluster analysis conducted on data from focus groups and a telephone survey. These findings helped us to anticipate the types of households we might encounter in our interviews and tailor the guide accordingly.

Findings that relate to multifamily renters in either or both studies are:

- Renters mentioned they were hesitant to contact their landlord about energy-related issues because they don't want to give them a reason to increase their rent (from the SCE focus groups).
- Most renters in general do not want much contact with their landlord, so landlord approval is a barrier to ESA participation (SCE focus groups).
- Many low-income households are interested in reducing their energy usage, but they lack control over their bill and their physical environment, particularly renters. (PG&E focus groups)
- Relative to homeowners, renters are even less willing or able to consider participating in the program or make changes to their home. Renters report the following additional concerns or barriers (PG&E focus groups):

  (1) Being fearful their landlord could raise their rent if they request or receive any improvements.
  (2) A misperception that you need to be a homeowner to participate in a program like ESA.
  (3) A perceptual barrier against changing something that they don't own – to the extent that some are even hesitant to change a light bulb. This is also one of the benefits of being a renter – not having to think about or deal with maintenance, repairs, or even simple upkeep.
  (4) Situations where the landlord paid the bill, so the renter had no incentive to save.

Recommendations that relate to multifamily renters are:

- Develop a marketing campaign focused on renters that addresses their hesitancies about contacting their landlord and about making improvements to a home they do not own. (both studies)
- Add measures that do not require landlord approval, such as plug-in control devices or an enhanced lighting / CFL component. (both studies)

Preliminary Results from the Current LINA Survey

We examined an early snapshot of the first 380 respondents to the LINA telephone survey data to summarize the characteristics of the target population for the multifamily tenant interviews—namely, low-income renters in multifamily buildings. Those data included 81 respondents who met the criteria for the multifamily tenant interviews and suggest that these households:

Have high willingness to participate in a follow-up interview—About 90 percent of respondents in buildings with 11-50, 51-150, and 150+ units said they would complete an interview; willingness was closer to 75 percent for those in smaller buildings.

Generally have both electric and natural gas service and pay both bills – About two-thirds of respondents have natural gas service and mostly pay those bills. Everyone has electric service (not surprisingly) and pays their own electric bills (which is an artifact of our sampling approaching for the LINA telephone survey).

Tend not to struggle to pay their energy bills, but do find the bills more challenging than owners of single-family homes – A third reported that they don't struggle to pay their energy bills at all, and half said they struggle only occasionally. Comparatively, a third of single family renters also said they don't struggle to pay their energy bills at all, while 40 percent struggle occasionally. For single family owners, over half reported that they don't struggle to pay their energy bills at all, with less than 30 percent indicating they struggle only occasionally.

Reported moderate rates of utility assistance, which understates the actual level of utility help—Two-thirds of those on CARE and 15 percent of those not on CARE reported getting help from their utility with energy costs or payments. Hardly anyone reported participation in ESA.

Reported problems with their heating systems at a meaningful number of units—Thirty percent of respondents (and of SF-renters) said their systems could not keep up in winter either sometimes or always, compared to approximately 20 percent of single family owners.

Generally believe they use electricity minimally—Seventy percent agreed that they use electricity only when needed and cannot cut down further. Furthermore, they consistently practice energy-saving practices we included in the survey (again in the 70- 85 percent range), except for keeping shower length to 5 minutes (33 percent). Comparatively, only half of single family renters and 60 percent of single family owners agreed that they use electricity only when needed and cannot cut down further. Single family respondents reported similar energy-saving habits, although single family owners reported turning down the air conditioning at night or when they leave at a less frequent rate (58 percent).

Conserve because they cannot afford higher energy bills—Four-fifth of respondents (and of SF-renters) agreed that ability to afford energy bills leads them to conserve compared to only 60 percent of single family owners.

Research Plan

As noted in the research plan, the telephone interview of tenants are designed to inform us on unique customer needs and beneficial measures that apply to multifamily renters. Furthermore, the utility members of the study team have indicated value in understanding renters' perspectives on utility energy efficiency programs—both low-income and market rate—to better understand how renters feel they benefit from efficiency measures.

The research plan had listed the following topics of inquiry for the interviews. These topics and questions guided our development of the interview guide.

- Opportunities to reach and market to these households (with emphasis on word-of-mouth)
    - Are the renters aware of the ESA program?
    - How did they become aware of it? Have they heard about it from social contacts or neighbors at all?
    - Have participants told others about it? What did or would they tell others?
- Determining what aspects of ESA services and what in-unit measures made the greatest difference (or might do so)
    - What in-unit improvements made the biggest difference for participants?
    - What in-unit improvements did participants wish they would have gotten, but did not?
    - What in-unit improvements do non-participants (those whose units were not treated) think would make the biggest difference in their energy bills?
- Levels of tenant self-efficacy for controlling their energy consumption and opportunities to facilitate renters' ability to control energy use through energy education and energy management tools such as feedback on consumption
    - What, if anything, do tenants think they can do to reduce their energy bills?
    - Do tenants have interest in more real-time and interactive feedback on their energy use, encompassing usage updates and alerts and algorithm-based estimates of end-uses that make up their consumption?

- Value, if any, tenants perceive from common area measures
    - Were the tenants aware of the common area treatments?
    - What, if anything, was communicated to them about the work?
    - Who pays for energy costs and by what mechanism? Have the tenants noticed any change in energy costs since the common area treatments?
    - As far as they know, have the tenants' lease rates changed (or not changed) as a result of the common area treatments?
    - Have the common area treatments changed the comfort or aesthetics of the building in any way?

Sampling and Recruitment Plan

Our sample frame for the interviews of multifamily renters is based on respondents to the LINA telephone survey and further limited to those who:

- rent their home in a multifamily building;
- self-reported as being low-income; and
- indicated during the survey that they would be willing to participate in a follow-on interview.

From this group, we propose to stratify our sample as follows:

> **self-reported ESA participants** -- Eligible households with self-reported participation comprise less than five percent of households in our sample frame; we will interview up to seven of these households (if that many are available) to ensure a share of respondents can discuss programs and measures from a basis of experience.
>
> **self-reported participants in any other utility assistance or rates** – These households comprise about 55 percent of our sample frame; we will interview at least eight of these households.
>
> **households that reported not participating in—or receiving—any utility assistance**, even if they are on CARE – These households comprise about 40 percent of our sample frame; we will interview up to five of these households.

Within each group, we will order eligible households in random order and call potential interviewees beginning with the top of the list. We will track demographic and housing

characteristics to ensure balance and skip potential interviewees on our list if we already have overrepresentation of a particular group. Characteristics we will track are:

> **size of multifamily building** – We will seek a range of building sizes and avoid overrepresentation of buildings with 50 or more units compared to the distribution we see in the full LINA set of respondents.
>
> **utility territory and fuels** – We will seek balance between northern and southern California, as well as inclusion of households that have gas service with a soft target of at least 50 percent of interviewees having a gas account.
>
> **building ownership** – We will look up building ownership and seek to identify buildings owned by housing authorities. We will limit these to no more than five interviews.

We will also track—but not necessarily override the sample for—household size, race and ethnicity, presence of seniors, presence of people with disabilities, income, self-reported energy-saving practices, and self-reported struggle with energy bills.

The tables below show the distribution we would get from an example sample of 20 eligible renters (not stratified) who have agreed to participate in these interviews. (Note: As expected, results differ somewhat from the summary statistics of the full set of eligible respondents.)

A3. About how many units are in your complex?	Estimated quantity in interview sample
2-4	2
5-10	3
11-50	8
51 - 150	4
150 or more	3
Total	**20**

Utility Company	Estimated quantity in interview sample
PG&E	6
SCE	6
SCG	3
SDG&E	5
Total	**20**

*Note that many of the SCE (and some of the other IOUs) customers will also have SCG service, so the actual SCG sample will be higher due to overlap

A7. Do you have natural gas service to your home?	Estimated quantity in interview sample
Yes	12
No	8
Total	**20**

D7a. In 2015, did you receive: Housing assistance, such as Section 8 or other subsidized housing?	Estimated quantity in interview sample
Yes	6
No	14
Total	**20**

C5. Regarding your home's energy bills. Which of the following statements best describes your situation?	Estimated quantity in interview sample
Paying the energy bills is not an issue for us	4
We occasionally struggle to pay the energy bills, but usually manage okay	10
We often struggle to pay the energy bills	3
We are constantly struggling to pay the energy bills	3
Total	20

A15. How often, if ever, is your home colder than you'd like because your heating system just can't keep up?	Estimated quantity in interview sample
Never	10
No more than once or twice a year	4
A few times a year / SOMETIMES	3
Often / ALWAYS	3
Total	20

A18. How often, if ever, is your home warmer than you would like because your cooling system can't keep up?	Estimated quantity in interview sample
Never	6
No more than once or twice a year	2
A few times a year / SOMETIMES	8
Often / ALWAYS	5
Total	20

Draft Interview Guide

Introduction

Hi, this is [name] calling from Evergreen Economics. We are conducting household phone interviews as part of a study of California households for the CPUC and [UTILITY] to help improve their multifamily energy programs. We are contacting you because you told us at

the end of the previous [UTILITY] energy phone survey that you were interested. The calls typically take about 20 minutes and we will send you a gift card for $25 after you complete the interview. Is now a good time to talk or should we set up a call for another time?

[If needed] We are interested in learning more about renters in California and would like to talk to you about your experience living in multifamily housing. In general, our questions focus on your household opinions, perceptions, and experiences, and really have no right or wrong answers. As a reminder, all of your responses will be kept confidential; nothing that you say will be linked to you in our study. Do you have any additional questions about the study before we begin?

Apartment Overview and Length of Tenure (~4 mins)

Let's start with some easy questions about your apartment.

1) How long have you lived at your current address?

2) Looking ahead, how long do you see yourself living there?

   a) [If specific length given] Is there any particular reason you estimate this length of time?

3) I'd be interested in your comfort and satisfaction with certain parts of your unit. Let's start with comfort. Using a 1-5 scale, where 1 is "not at all comfortable" and 5 is "very comfortable", how comfortable would you rate the following qualities of your home [Probe on anything that may/may not be an EE related opportunity vs. behavioral issue]:

   a) Temperature [Probe on any differences between Summer/Winter]?
      a. Why?

   b) Ventilation?
      a. Why?

   c) Air quality?
      a. Why?

   d) Hot water temperature and availability
      a. Why?

4) How about the overall quality of the lighting in your unit? Using the same 1-5 scale where 1 is "poor" and 5 is "excellent," how would you rate your current in-unit lighting? [If needed: For this question, we are focusing on only the lighting found inside your own unit, not counting any porch or other exterior lights]

a) Why? [Minimal probing, if any]

5) How about any hallway and exterior lighting? Using the same 1-5 scale, how would you rate your current common area or exterior lighting in terms of sufficiency and quality for safety, aesthetics, and functionality?

a) Why?

Building upkeep (~4 mins)

Now we have a few questions about the maintenance of your current building

6) Overall, how well maintained would you say your unit is? What about your building ?
   a. What do you consider the most well maintained aspects of your apartment, either in your unit or in the building itself?
   b. What do you consider especially poorly maintained aspects of your apartment, again either in your unit or in the building itself?
7) Since you moved into your current apartment (or in the past five years if the tenant has lived there longer), has there been any major work on the following equipment: [Ask each category first and then back up to ask about details. If multiple systems had work done, ask about details for a couple of them.]

a) Heating equipment

aa) [If yes] Do you have a sense of what they did to the heating system?

ab) [If yes] Do you have a sense of what they were trying to address with the project? [Probe on energy efficiency, regular maintenance, equipment performance, tenant needs, etc.]

ac) [if yes] When did this work take place?

ad) [if yes] Is the heating equipment located in your unit or centrally in the building somewhere?

b) Cooling equipment

ba) [If yes] Do you have a sense of what they did to the cooling system?

bb) [If yes] Do you have a sense of what they were trying to address with the project? [Probe on energy efficiency, regular maintenance, equipment performance, tenant needs, etc.]

bc) [if yes] When did this work take place?

bd) [if yes] Is the cooling equipment located in your unit or centrally in the building somewhere?

c) Water Heater?

ca) [If yes] Do you have a sense of what they did to the water heater?

cb) [If yes] Do you have a sense of what they were trying to address with the project? [Probe on energy efficiency, regular maintenance, equipment performance, tenant needs, etc.]

cc) [if yes] When did this work take place?

cd) [if yes] Is the water heater located in your unit or centrally in the building somewhere?

d) Lighting? [if needed: I am interested in large-scale replacements, not just routine replacements of individual bulbs or single fixtures.]

da) [If yes] Do you have a sense of what they did to the lighting?

db) [If yes] Do you have a sense of what they were trying to address with the project? [Probe on energy efficiency, regular maintenance, equipment performance, tenant needs, etc.]

dc) [if yes] When did this work take place?

e) Other Equipment? [Probe on any aesthetic/cosmetic upgrades to building/unit, appliances, roofing upgrades, any other equipment not directly outlined above]

ea) [If yes] Do you have a sense of what they did to [Q7e]?

eb) [If yes] Do you have a sense of what they were trying to address with the project? [Probe on energy efficiency, regular maintenance, equipment performance, tenant needs, etc.]

ec) [if yes] When did this work take place?

8) Does your building have a process in place for you to approach the landlord, maintenance person or property manager about maintenance issues, possible building upgrades or equipment replacements? [record which they go to]

a. [If yes] Can you describe the process? [Probe on what worked well, what could be improved, how communication between tenant/landlord works]

b. Are there reasons why you would or would not want to pursue maintenance or possible upgrade requests with your landlord or building manager?

9) Were there any appliances or equipment in your home that you wanted to upgrade but were unable?

a) [If yes] Why were you unable to complete the upgrade?

Impact of equipment and lighting work on tenant (if applicable) (~4 mins)

Now we'd like to learn a little bit more about some of the building changes you described before.

10) [If Q7="yes"] Did your landlord have any communication with you about the [FILL] work prior to completing the project?

a) [If yes] What specifically did they communicate to you?

11) [If Q7="yes" and Q7a = "HVAC"] How did the work on your Heating and Air Conditioning equipment change your overall satisfaction and comfort level with regards to your home's heating and cooling?

-

12) [If Q7="yes" and Q7a = "DHW"] How did the work on your water heater change your overall satisfaction and comfort level with regards to your home's hot water?

13) [If Q7="yes" and Q7a = "Lighting"] How did the work on the lighting change your overall satisfaction and comfort level with regards to your building's lighting?

-

14) [If Q7="yes"] Did any of the common area upgrades affect your energy bills?

a) [If yes] How so? [Probe on increase/decrease]

15) [If Q7="yes"] Did any of the common area upgrades affect your rent?

a) [If yes] How so?

16) To the best of your knowledge, are the energy costs associated with the common area equipment factored into your rent or utility bills?

In-unit energy efficiency (both equipment and behavioral) (5-10 mins)

Next, we have some questions about your overall energy use. [Note: Interviewer will have responses to selected telephone survey, actual consumption, and energy burden for use in interpreting responses.]

17) To start, do you control your own heating and cooling with a thermostat in your unit? [If yes, probe on kind of thermostat]

   a. [If not] How is the heating and cooling controlled?

   b. Who in your household generally regulates the temperature?

18) To what extent do you feel you can control your energy costs. Using a 1 to 5 scale where 1 is "no influence at all" and 5 is "complete control", how much influence do you feel you have over your home's energy use and your utility bill?

   a) Why do you say that? [Listen for lack of interest or priority, not knowing what to do, inability to get household members to cooperate, equipment is inefficient (and not the tenants or too expensive to replace), fixed charges on utility bill.]

19) What do you think accounts for the majority of the energy usage included in your utility bill?

20) Are there any appliances or equipment in your home that use a lot of energy and are particularly old or not working properly?

a) Which equipment or appliances?

21) Overall, is limiting your energy use something that you and members of your household pay much attention to?

   a) Why do you say that? [Probe on costs can be a factor, lack of control, not a priority, etc.]

22) Do you and/or members of your household ever actively try to reduce your energy use?

   a) [If yes] How so?

23) [If Q22="yes"] What, if any, do you think are the primary barriers in being able to reduce your current energy costs?) [Listen for landlord permissions, lack of control on energy costs in home, whether they know how to pursue lowering energy costs, etc..]

24) Can you think of any services or equipment that your utility may be able to offer to help customers living in apartments keep their energy costs down? [Probe on program types, appliance type, rebates]

25) Using the 1 to 5 scale, where 1 is "not at all useful" and 5 is "very useful", how useful do you think a smart thermostat would be in helping you monitor and reduce energy consumption?

- a) Why did you rate smart thermostats a [fill rating]?

26) The utility can also provide "usage alerts" to you via email or on your phone. You establish a goal of what you want to use/spend that month and these alerts will tell you where you are based on your goal. Using that same scale, how useful do you think usage alerts from your utility would be?

a. Why did you rate usage alerts a [fill rating]?

b. [If high rating] How would that help you?

Utility energy efficiency programs (time permitting) (3-5 mins)

We're almost finished, I just have a few more questions about some current utility energy efficiency programs

27) Are you aware of any offerings that your utility provides to help renters reduce their energy use / lower bills?

a) [If yes] Do you remember the specifics of the offerings?

28) [If Q27=yes] How did you first learn about the utility offering?

29) [If Q27=yes] Do you think the [offering discussed in Q27] was helpful for multifamily renters? Why or why not?

30) In general, when communicating with your utility company, what is your preferred method of communication? [Probe on letter in mail, email, website, phone call, etc.]

31) Lastly, is there anything about to your energy usage or your energy costs that you think I may have overlooked?

Closing

That is all the questions that I have, thank you again for your participation. Your responses will be very helpful for our research moving forward. We will plan on sending the $25 gift card to you over the next week. Would you prefer a Walmart or a Target gift? And would an e-gift card sent by e-mail be alright, or would you prefer one by regular mail?

5) Walmart gift card sent in the mail (ASK A)
6) Walmart e-gift card (ASK B)

7) Target gift card sent in the mail (ASK A)
8) Target e-gift card (ASK B)

A. Do you want the card sent to your address at [address]?
3) Yes
4) No (GET ADDESS TO SEND IT TO)

Address_____

B. Can you give me the email address you want the card sent to? (VERIFY; READ BACK ONE LETTER/NUMBER AT A TIME)

_____@_____

Appendix D: Additional Figures and Detailed Results

This appendix provides figures that complement the results presented in the findings sections of the report and selected additional results that were not sufficiently pertinent for inclusion in the main report. The figures below are intended to serve as a resource for the low-income program administrators, the CPUC, researchers, and stakeholders.

All results shown in this appendix are based on the 2016 Low Income Needs Assessment telephone survey using the same methodology and definition of metrics and terms described in this report. Results showing payment practices are also based on utility billing data on final notices and disconnections.

Burdens and Hardships by Income

Figure 1: Mean Energy Burden by Annual Household Income (2016 survey; low-income only)

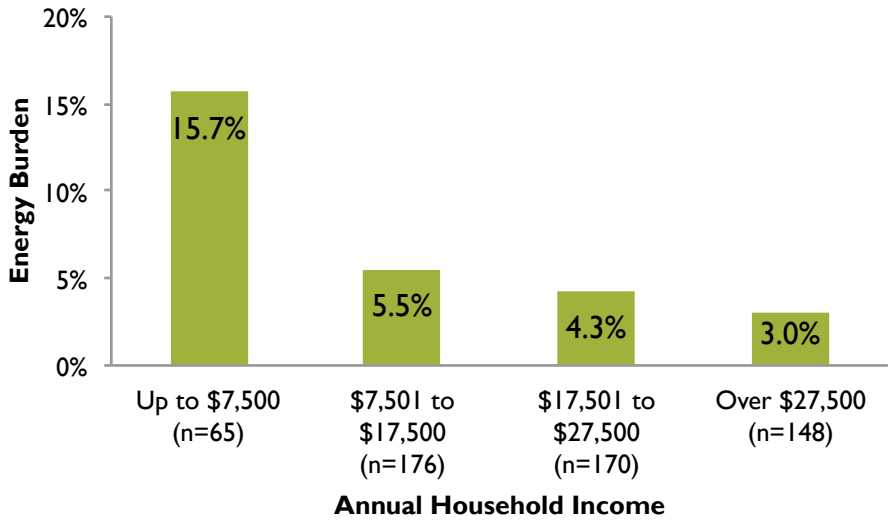


Figure 2: Material Hardship by Income Category (2016 survey; all incomes)

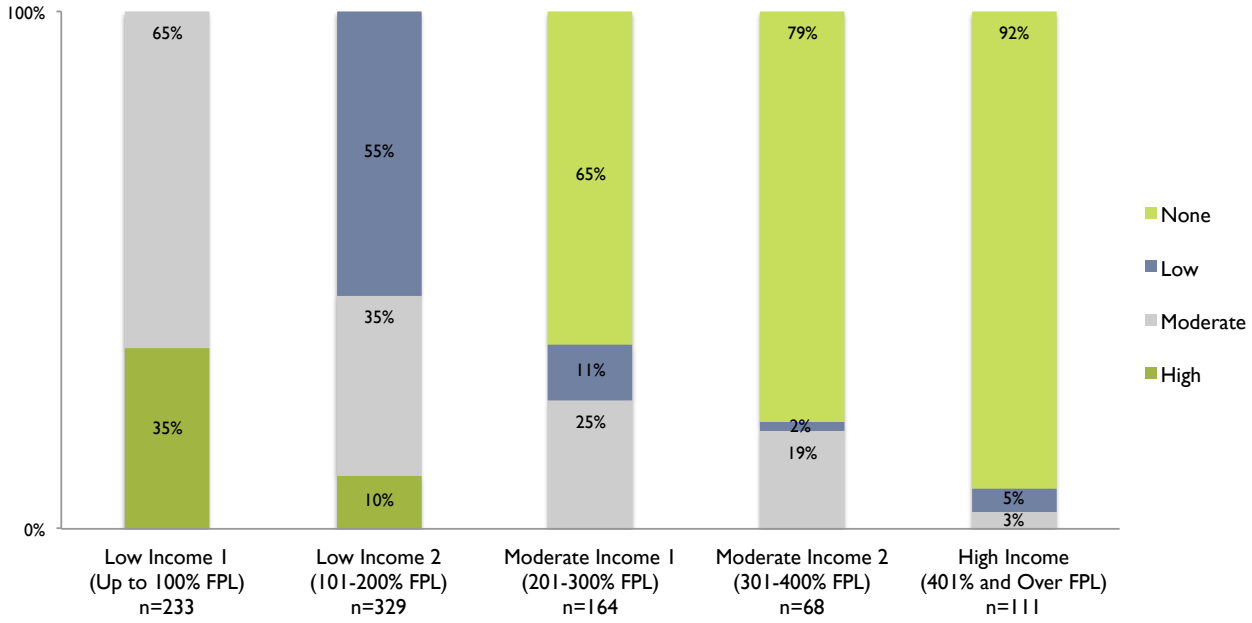
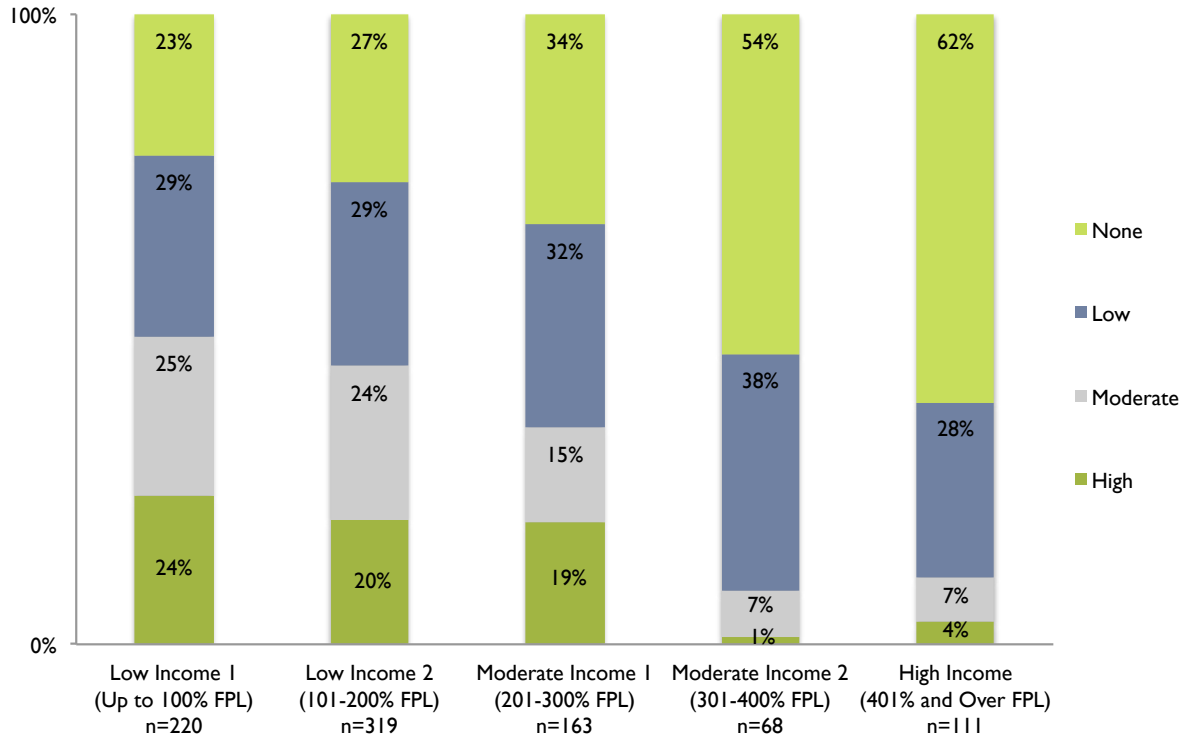


Figure 3: Energy Insecurity by Income Category (2016 survey; all incomes)



Burdens and Hardships by IOU

Figure 4: Mean Energy Burden by IOU (2016 survey; low-income only)

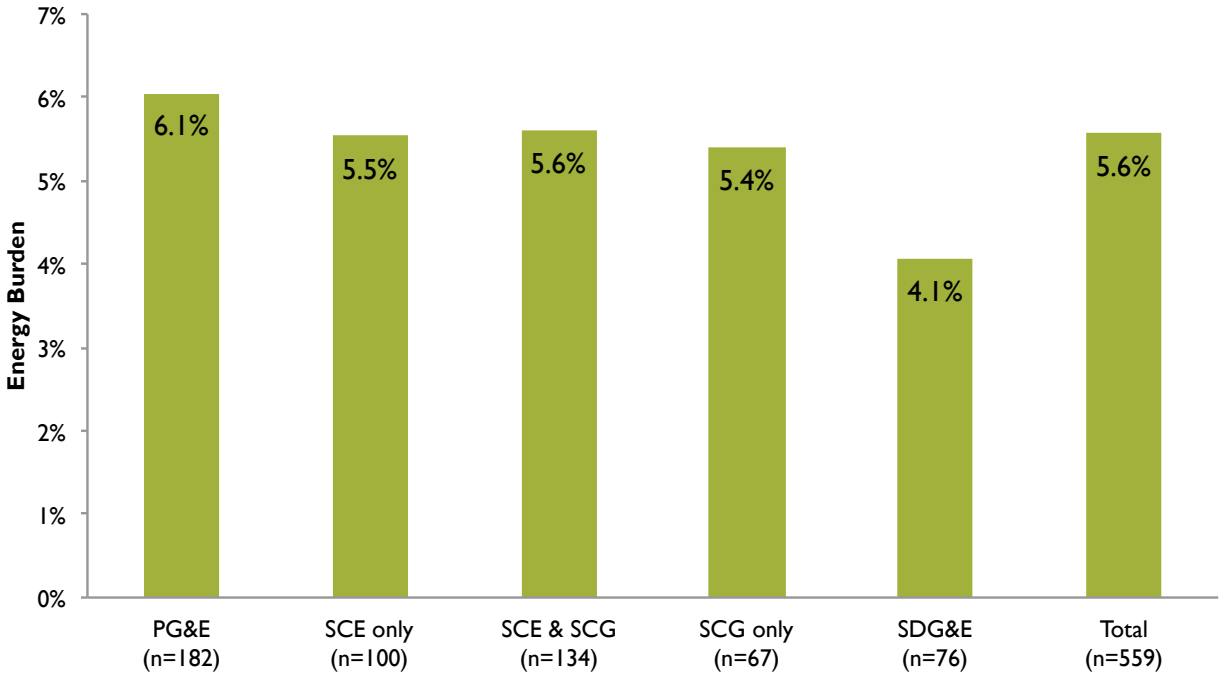


Figure 5: Energy Insecurity Level by IOU (2016 survey; low-income only)

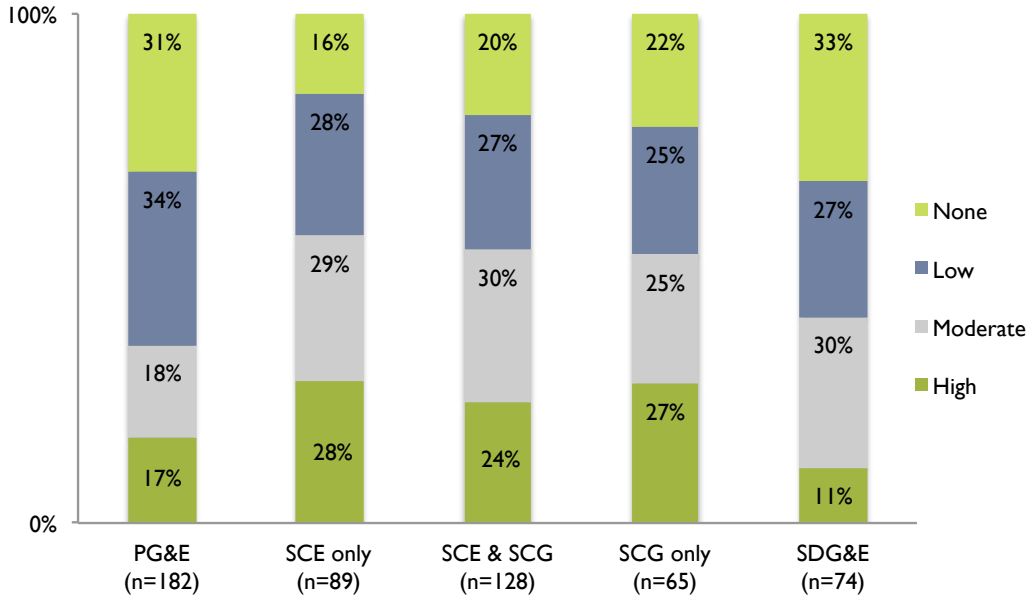
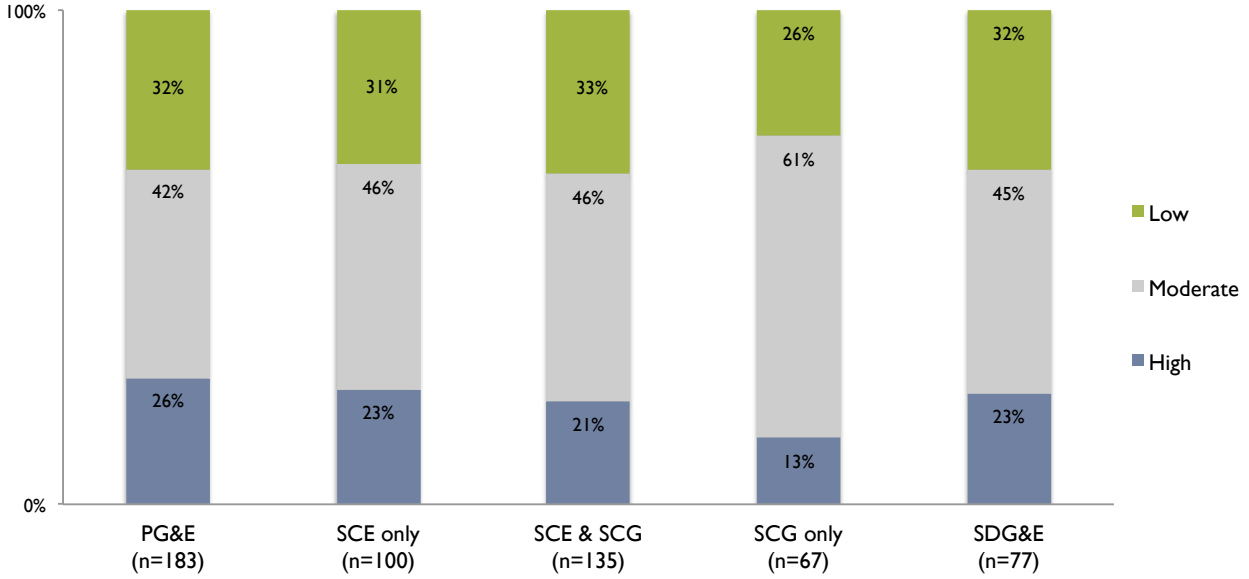


Figure 6: Material Hardship by IOU (2016 survey; low-income only)



Burdens and Hardships by Climate Region

Figure 7: Mean Energy Burden by Climate Region (2016 survey; low-income only)

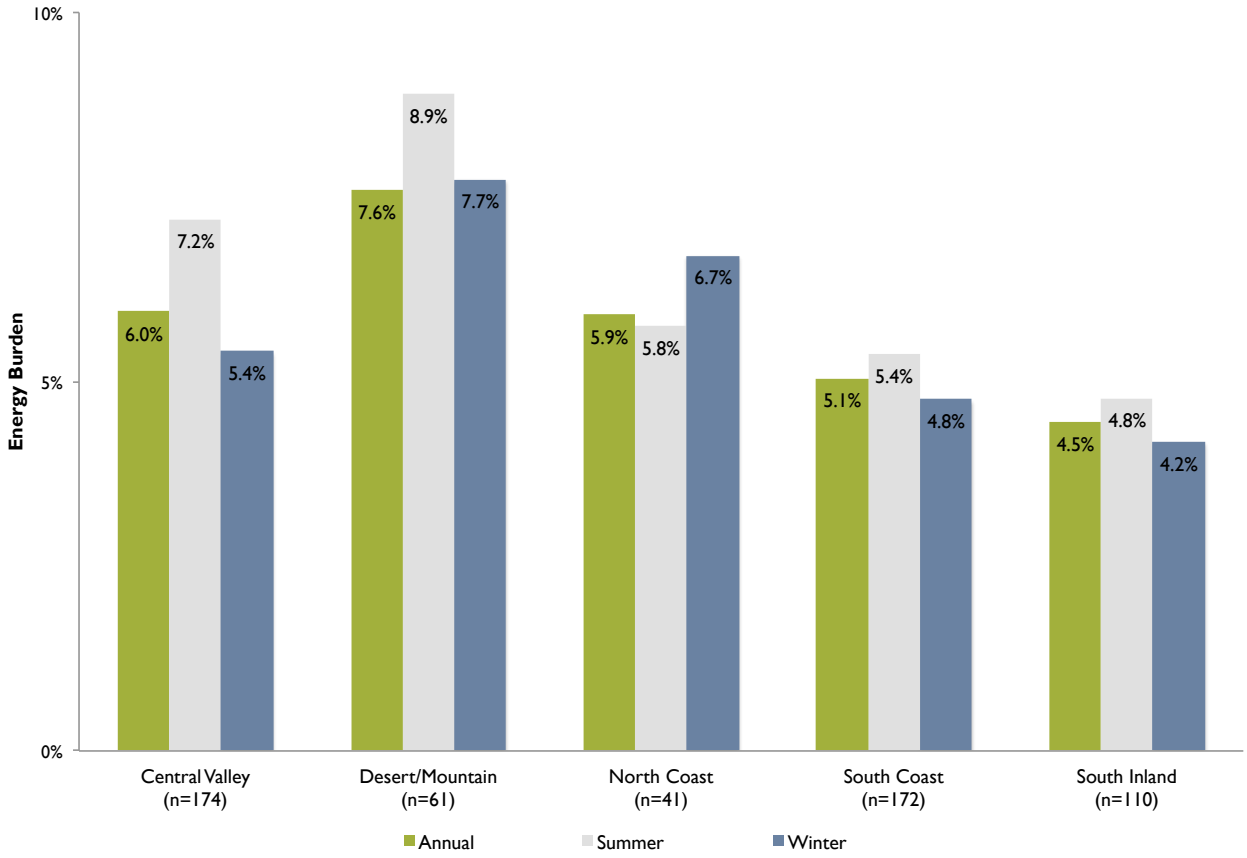


Figure 8: Energy Insecurity Level by Climate Region (2016 survey; low-income only)

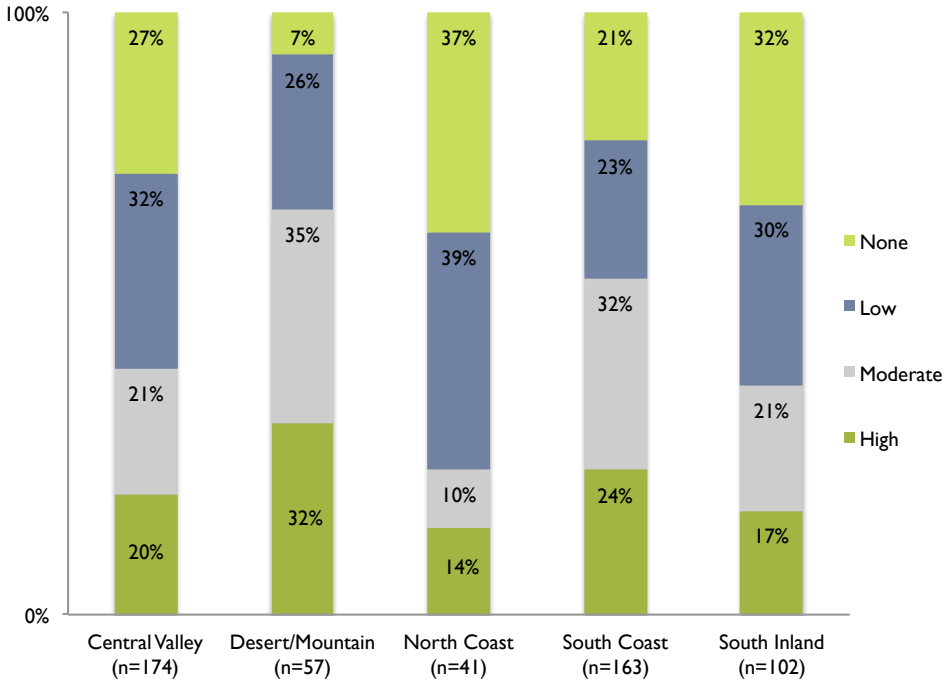
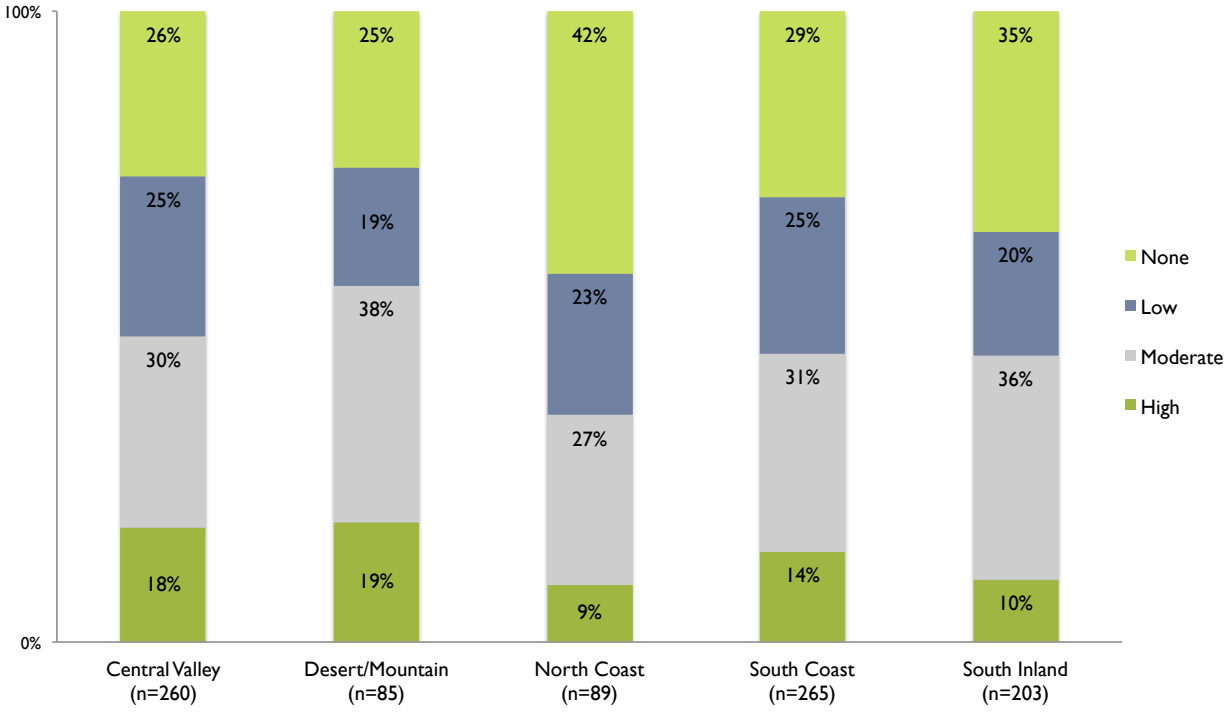


Figure 9: Material Hardship by Climate Region (2016 survey; low-income only)



Burdens and Hardships by Housing Type and Tenure

Figure 10: Mean Energy Burden by Home Type and Tenure (2016 survey; low- and moderate income only)

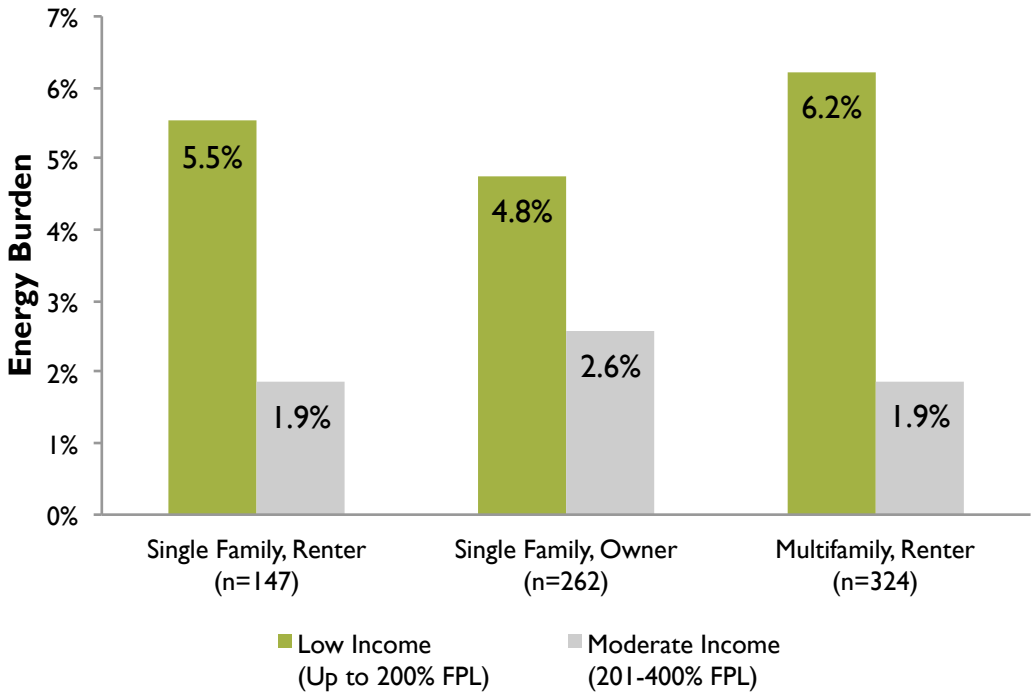


Figure 11: Energy Insecurity Level by Home Type and Tenure (2016 survey; low-income only)

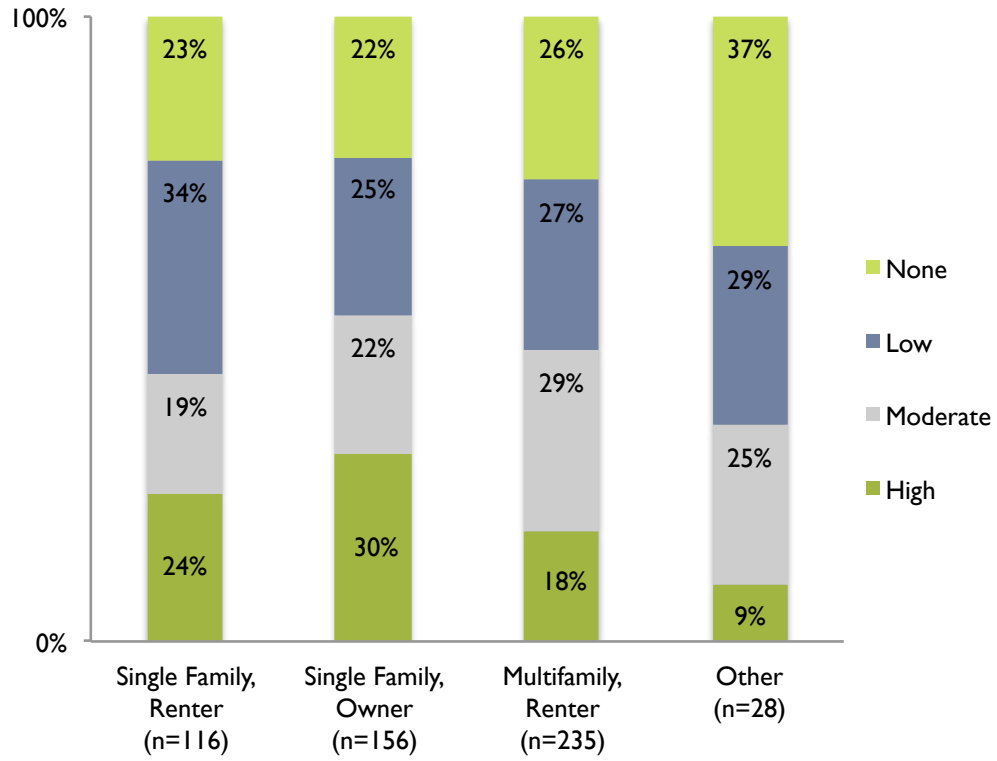
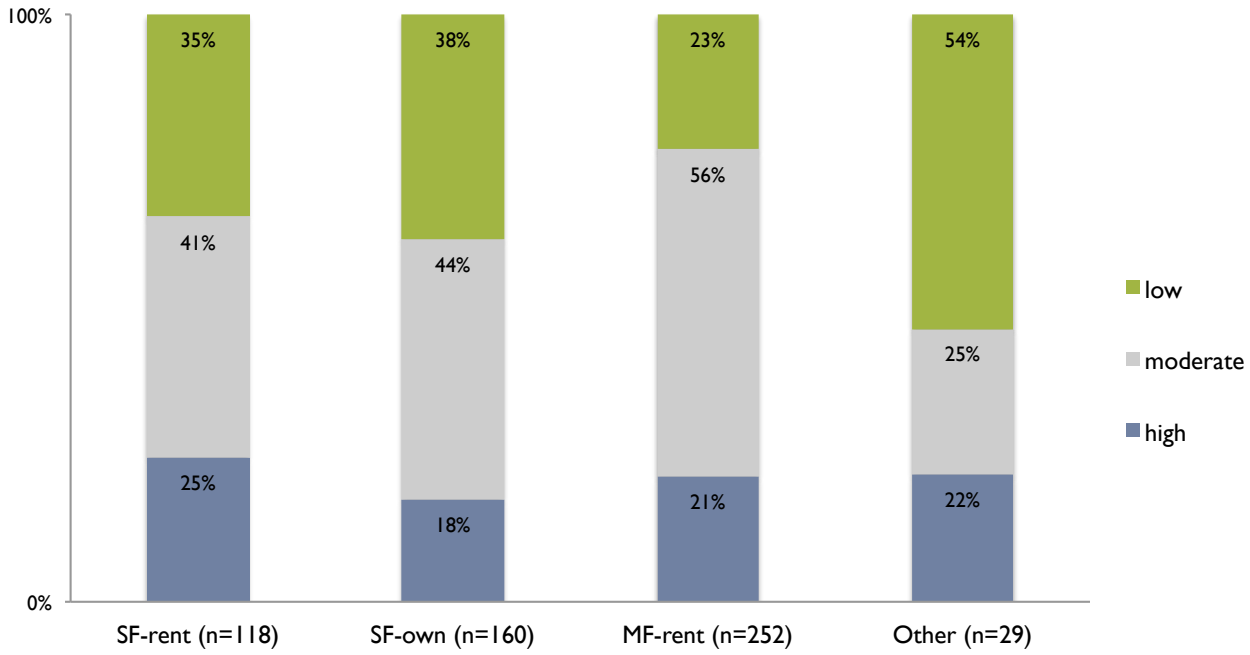


Figure 12: Material Hardship by Home Type and Tenure (2016 survey; low-income only)



Burdens and Hardships by Presence of Seniors or Disabled Residents

Figure 13: Mean Energy Burden by Presence of Seniors in Home (2016 survey; low-income only)

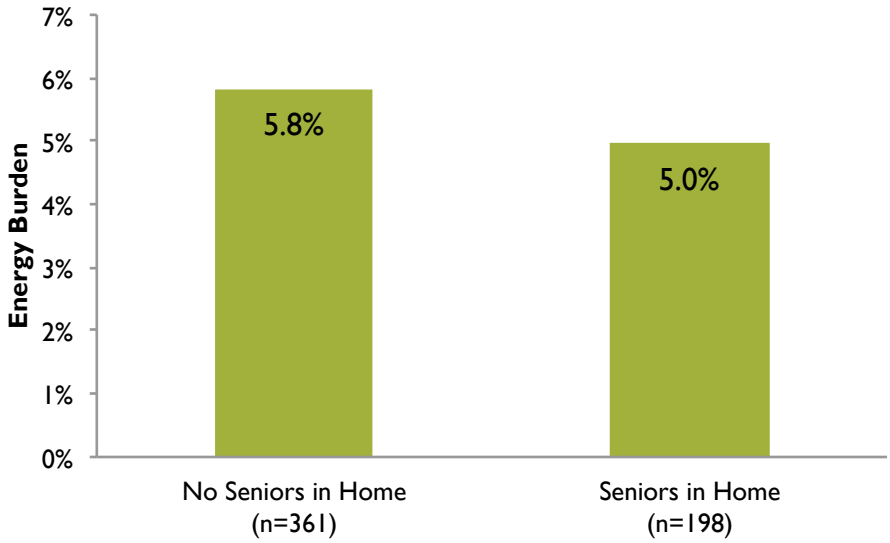


Figure 14: Mean Energy Burden by Presence of Disabled Person(s) in Home (2016 survey; low-income only)

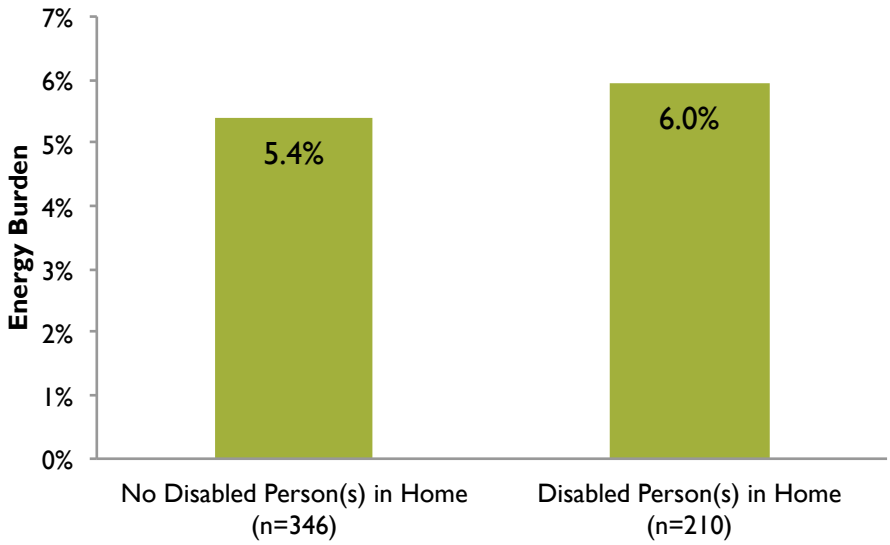


Figure 15: Energy Insecurity Level by Presence of Seniors (2016 survey; low-income only)

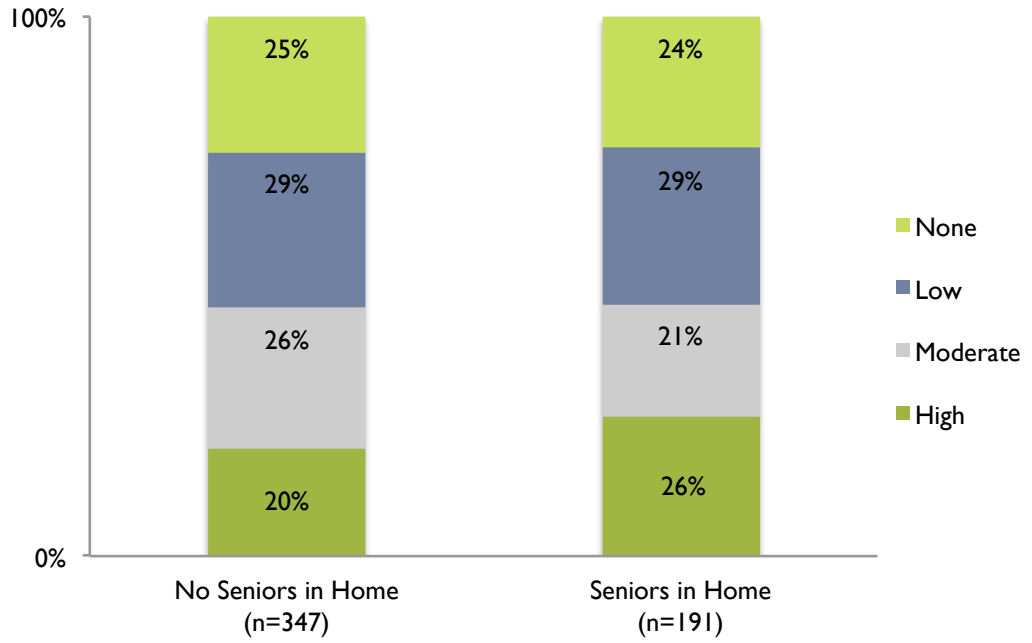


Figure 16: Energy Insecurity Level by Presence of Person(s) with Disability (2016 survey; low-income only)

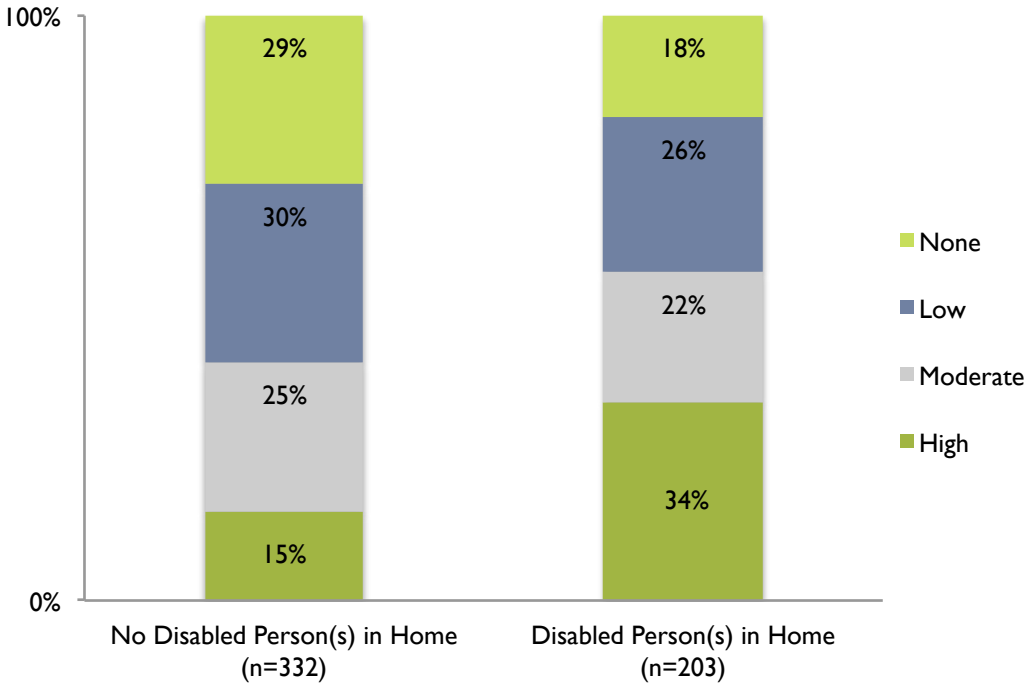


Figure 17: Material Hardship By Presence of Senior(s) (2016 survey; low-come only)

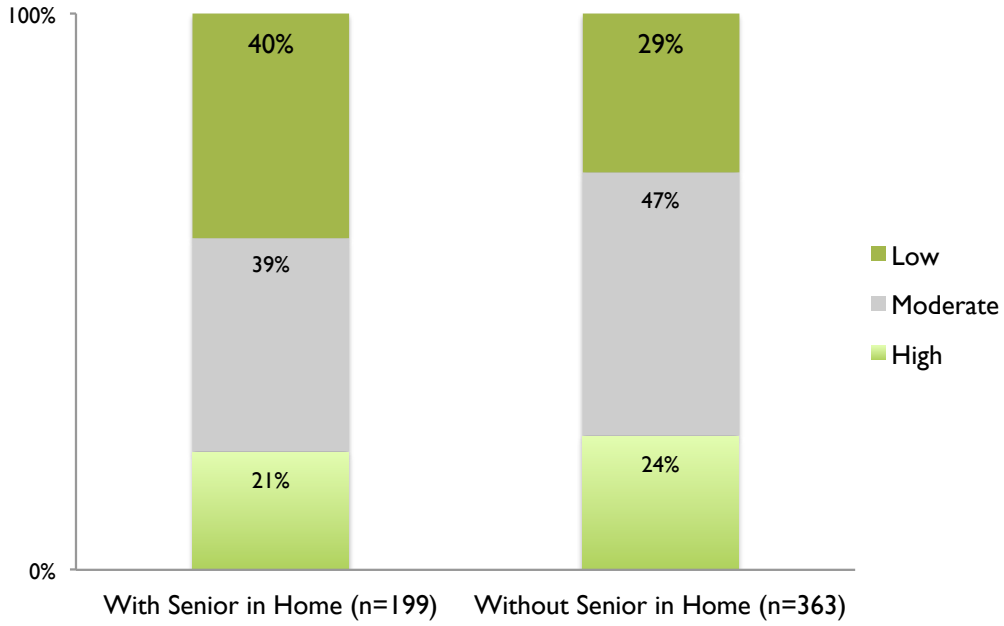
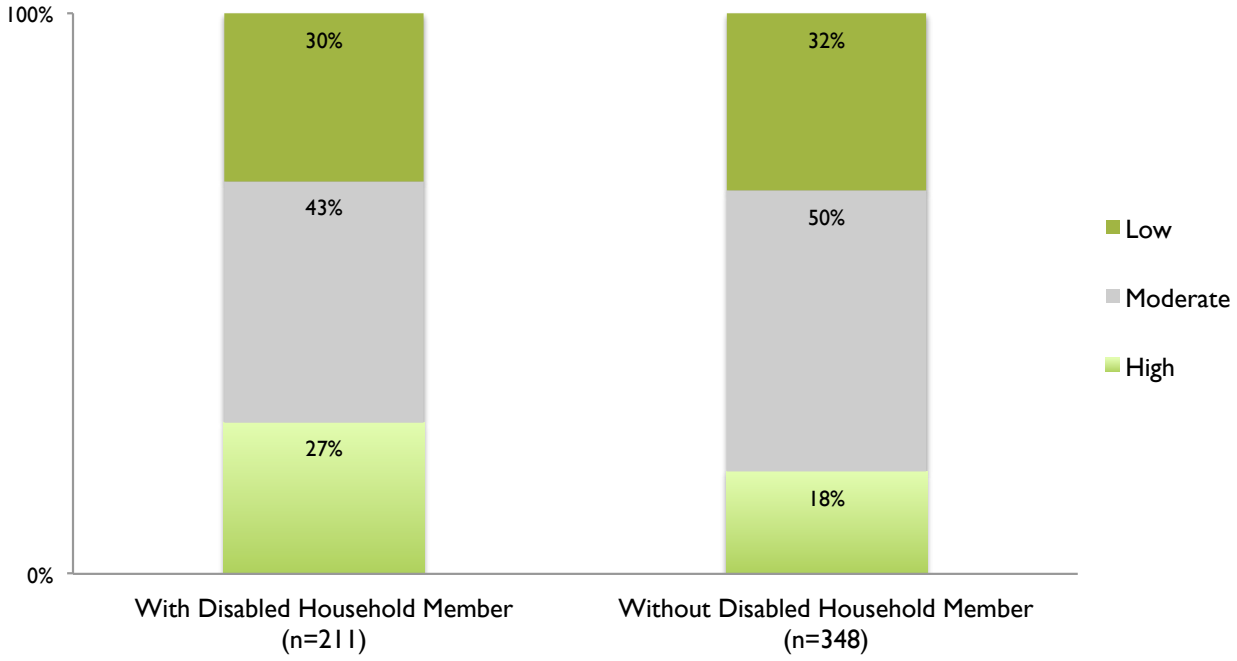
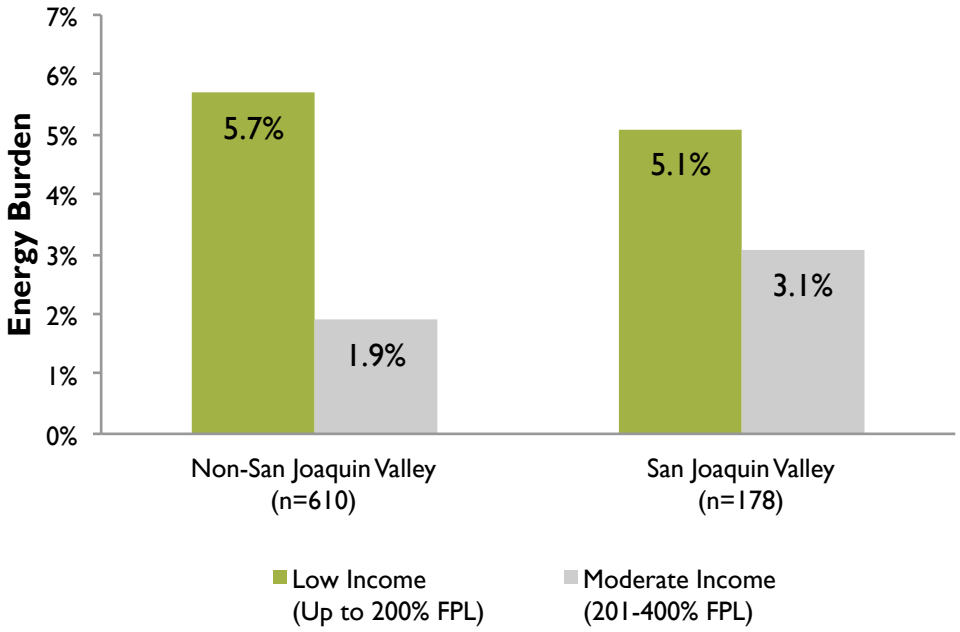


Figure 18: Material Hardship By Presence of Disabled Person(s) (2016 survey; low-income only)



Burdens and Hardships for San Joaquin Valley and Aliso Canyon[11]

Figure 19: Average Energy Burden by San Joaquin Valley Region for Low Income and Moderate Income Customers



[11] The San Joaquin Valley comprises the eight county region of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Tulare, and Stanislaus Counties, while the Aliso Canyon area singled out by our analysis includes all of the Los Angeles Basin and parts of Riverside, San Bernardino, Orange, and Ventura Counties.

Figure 20: Mean Energy Burden by Aliso Canyon Region for Low-Income and Moderate-Income Customers

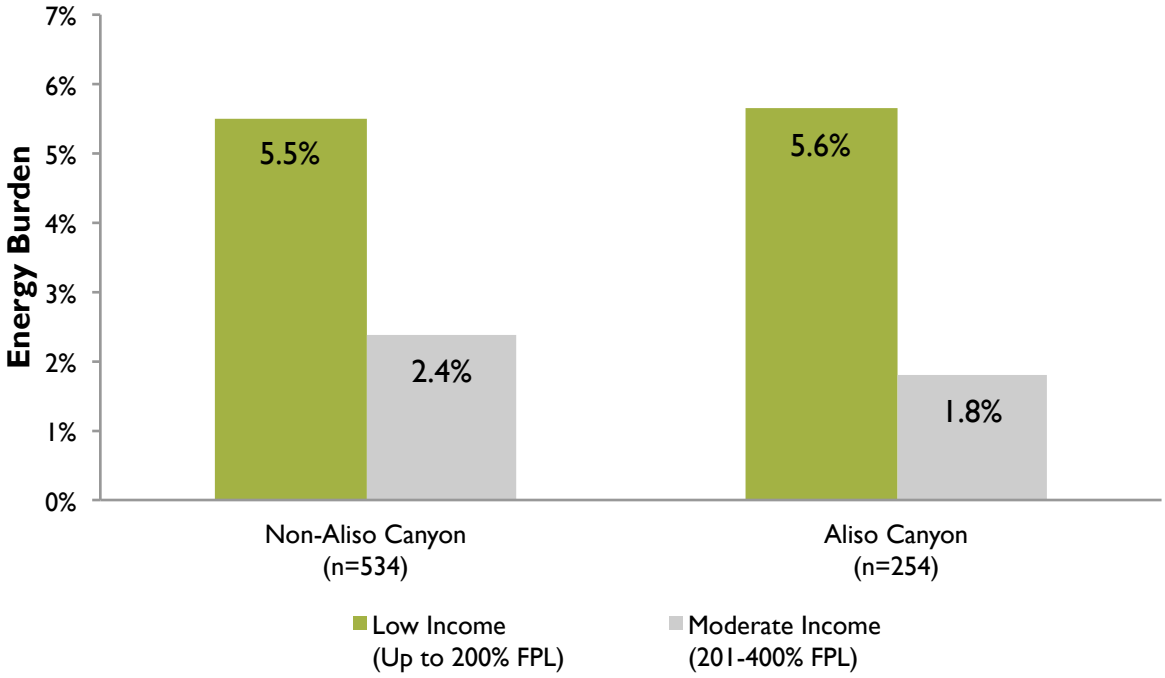


Figure 21: Energy Insecurity Level by Location in San Joaquin Valley (LI Customers only)

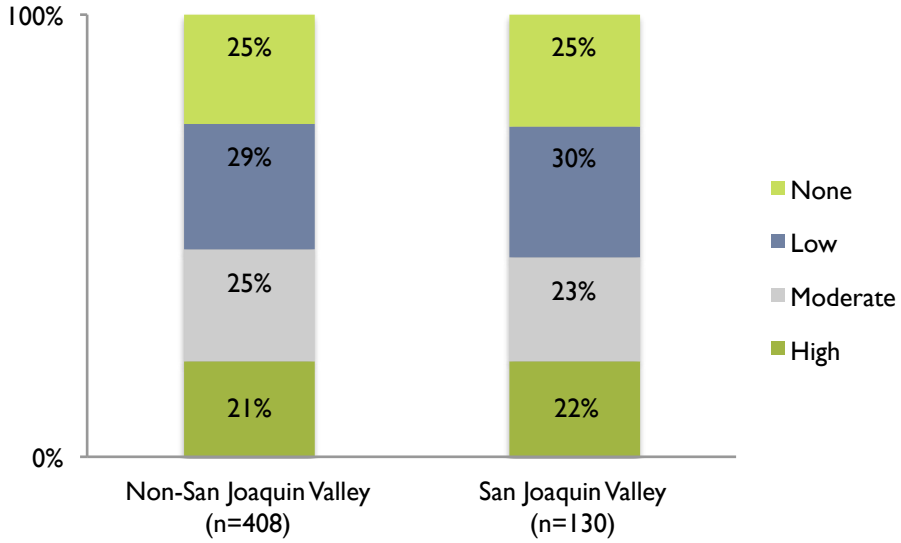


Figure 22: Energy Insecurity Level by Location in Aliso Canyon (LI Customers only)

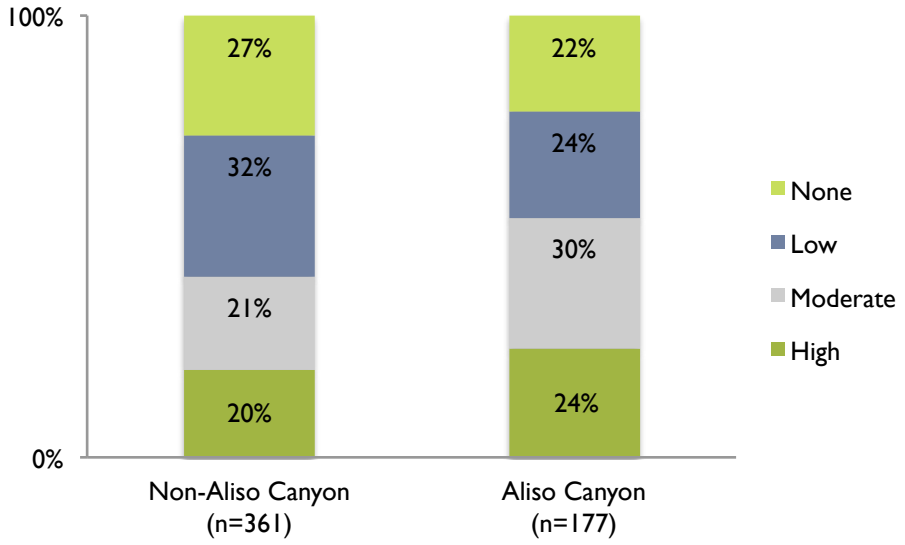


Figure 23: Material Hardship by Location In San Joaquin Valley (LI customer only)

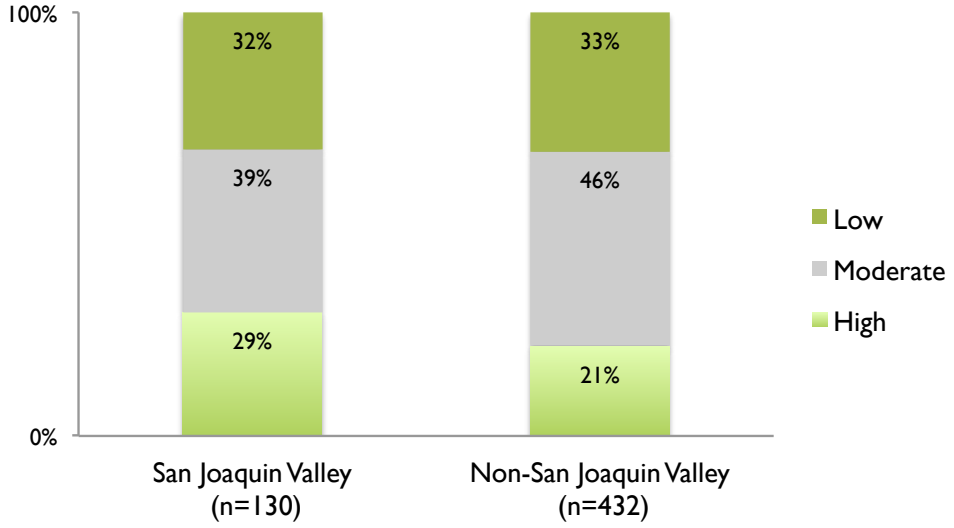
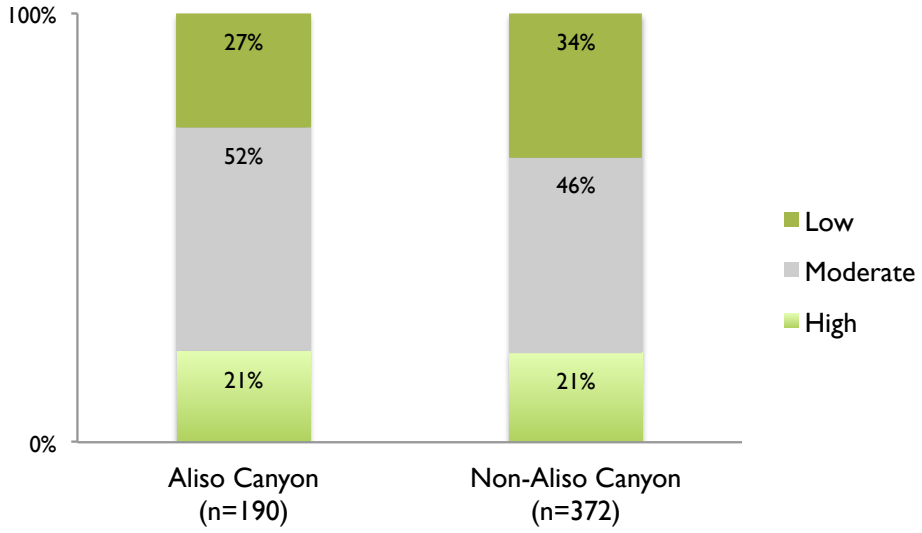


Figure 24: Material Hardship by Location in Aliso Canyon (LI customers only)



Miscellaneous Burden and Hardship Comparisons

Figure 25: Mean Energy Burden by Annual Energy Bill Amount (2016 survey; low-income only)

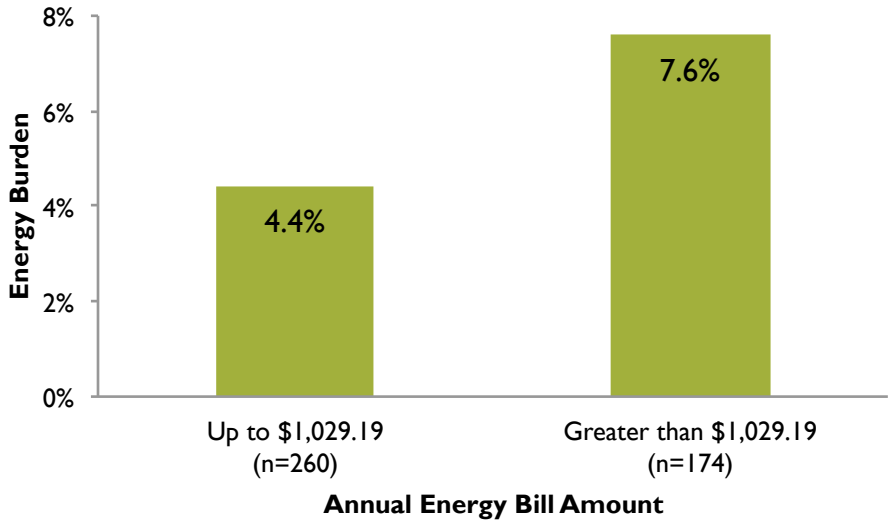


Figure 26: Mean Energy Burden by Household Type (2016 survey; low-income only)

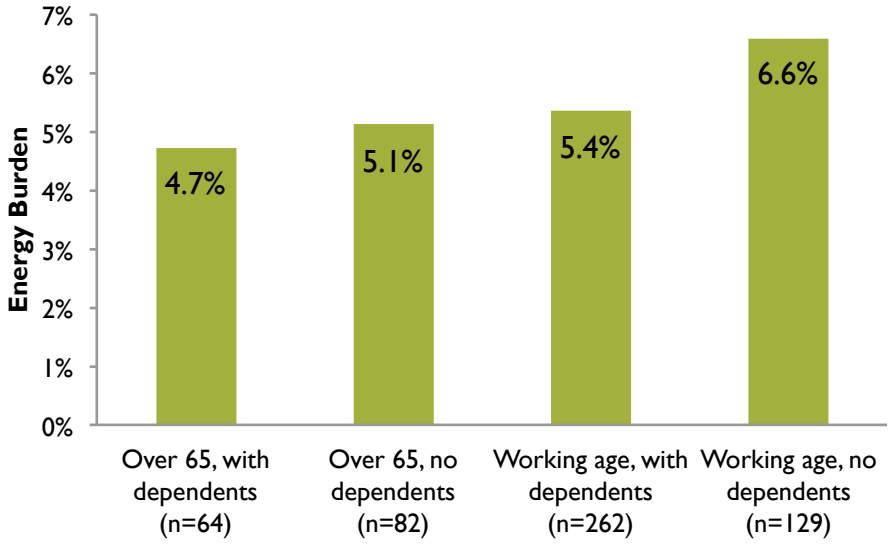


Figure 27: Energy Insecurity Level by Household Type (2016 survey; low-income only)

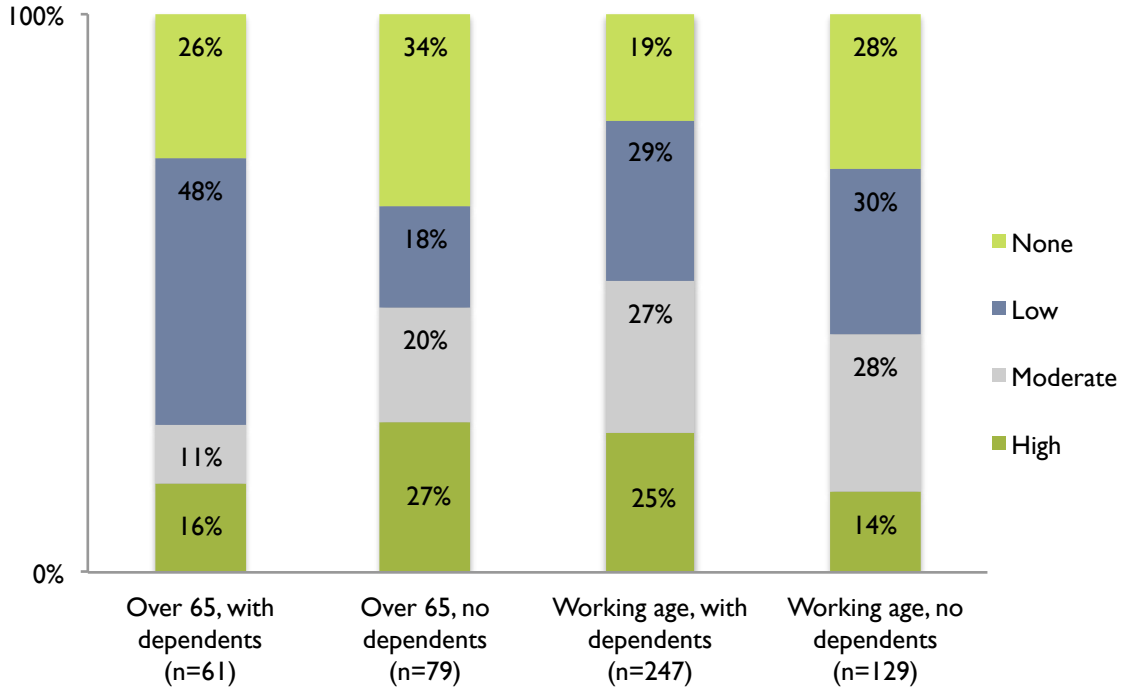
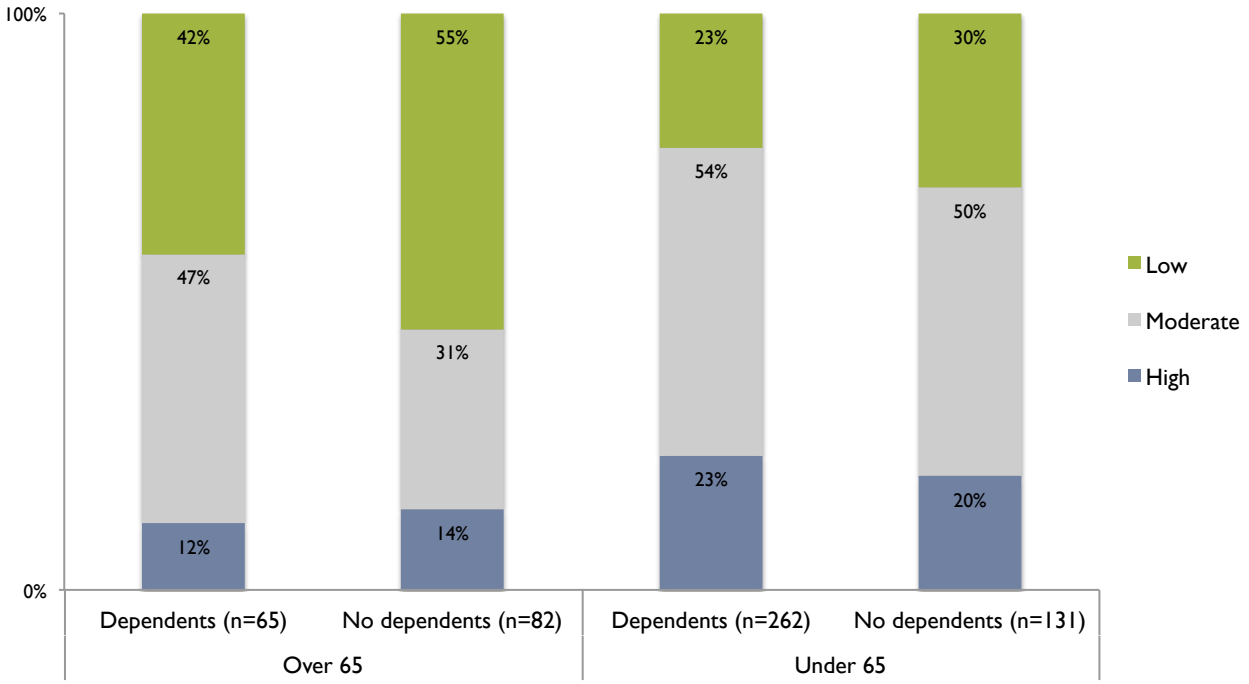


Figure 28: Material Hardship by Household Type (2016 survey; low-income only)



Miscellaneous Comparisons of Resources Households Draw Upon

Figure 29: Major Sources of Household Financial Resources for Everyday Expenses (2016 survey; all incomes)

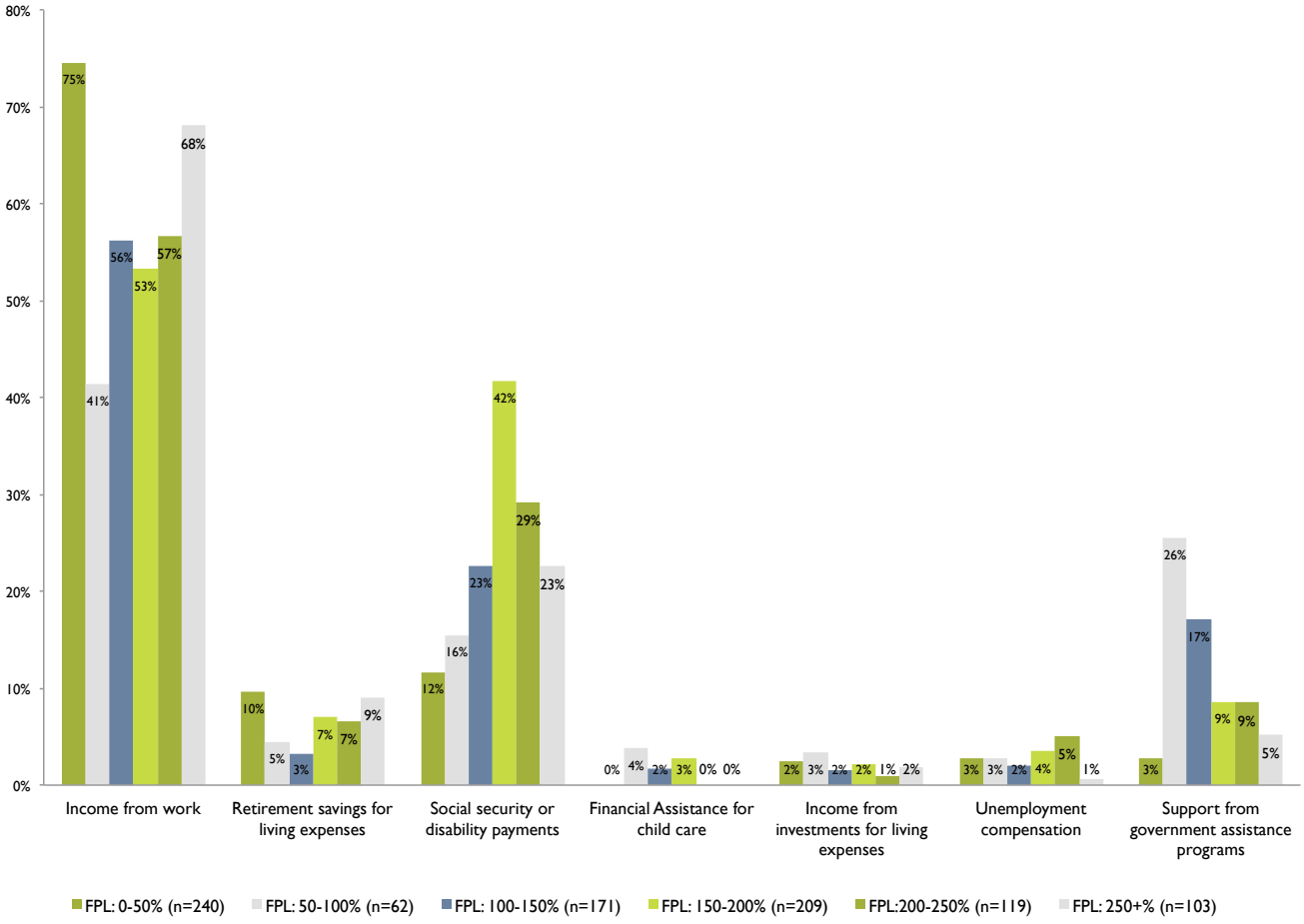


Figure 30: Major Sources of Financial Resources By Household Type (2016 survey; all incomes)

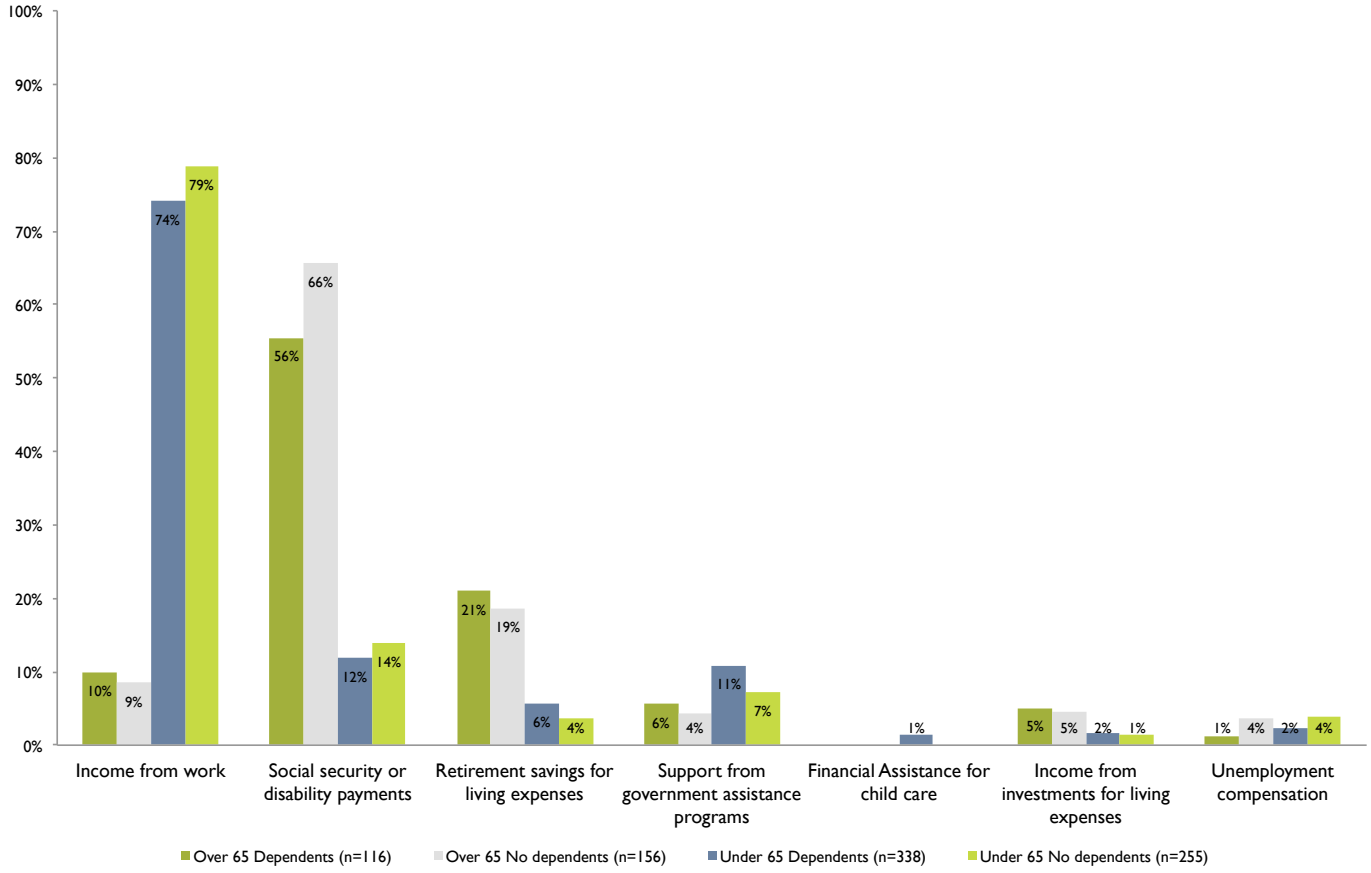


Figure 31: Major Sources of Financial Resources By Household Type (2016 survey; low-income only)

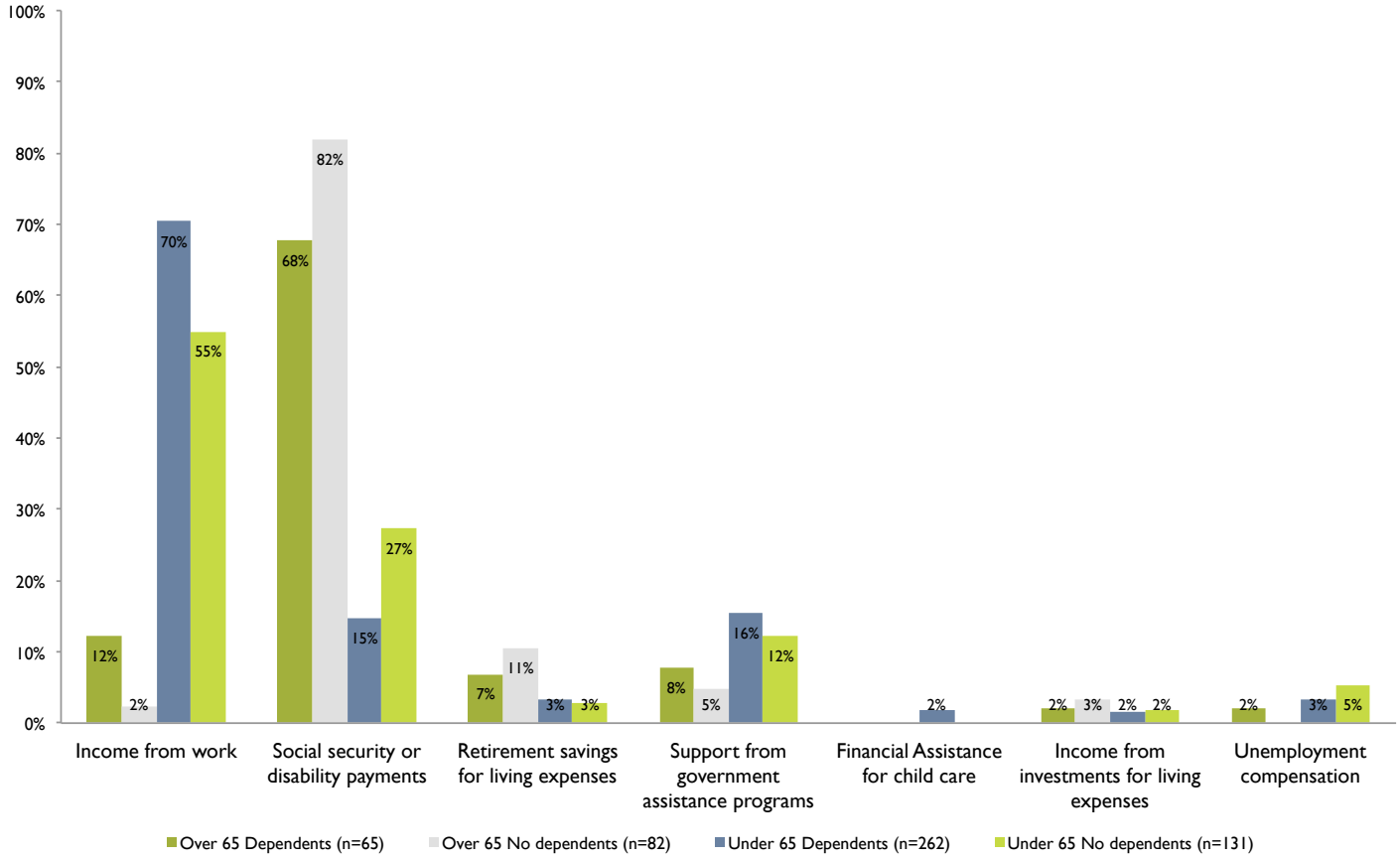


Figure 32: Major Financial Resources by CARE Eligibility and Enrollment (2016 survey; low- and moderate income only)

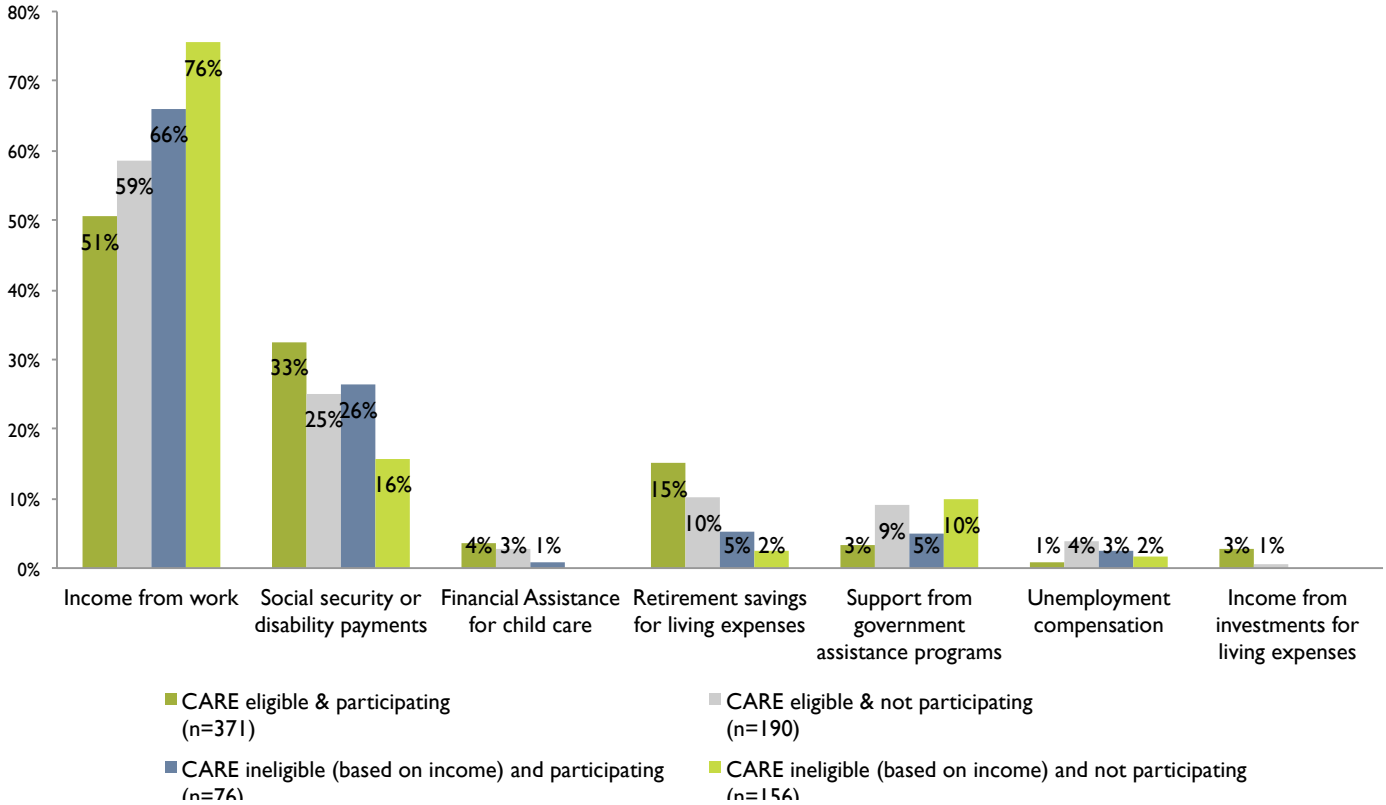


Figure 33: Major Financial Resource Grouping by CARE Eligibility and Enrollment (2016 survey; low- and moderate income only))

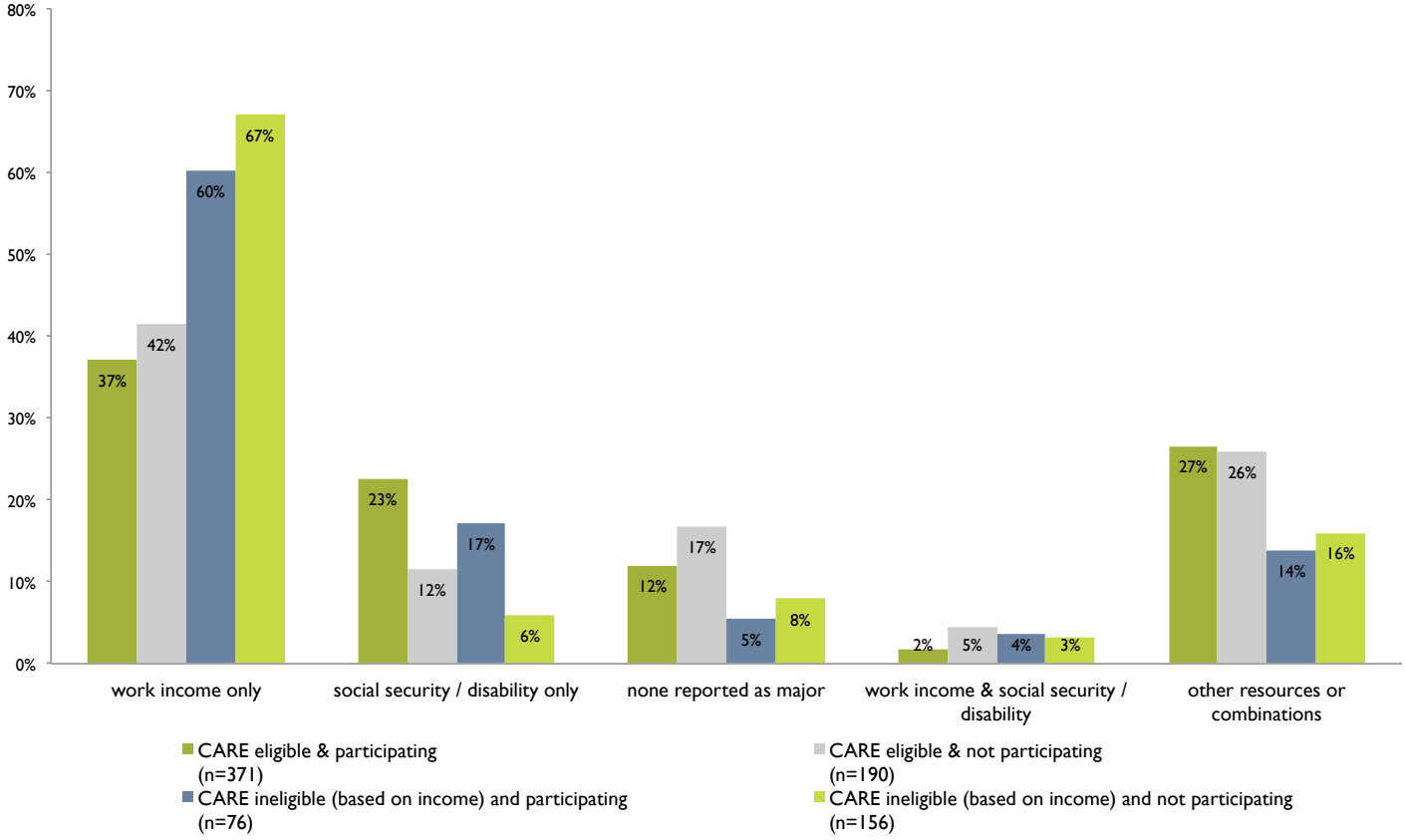


Figure 34: Incidence of Regular Financial Support to Other Households (2016 survey; all incomes)

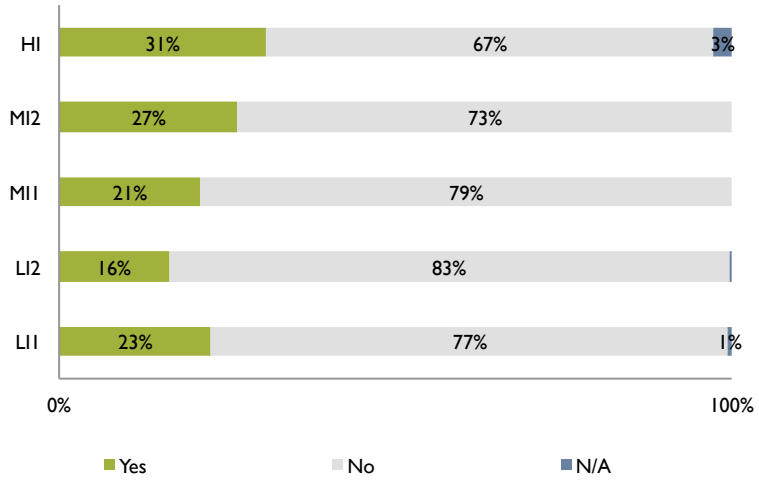


Figure 35: Incidence of Regular Financial Support from Other Households (2016 survey; low-income only)

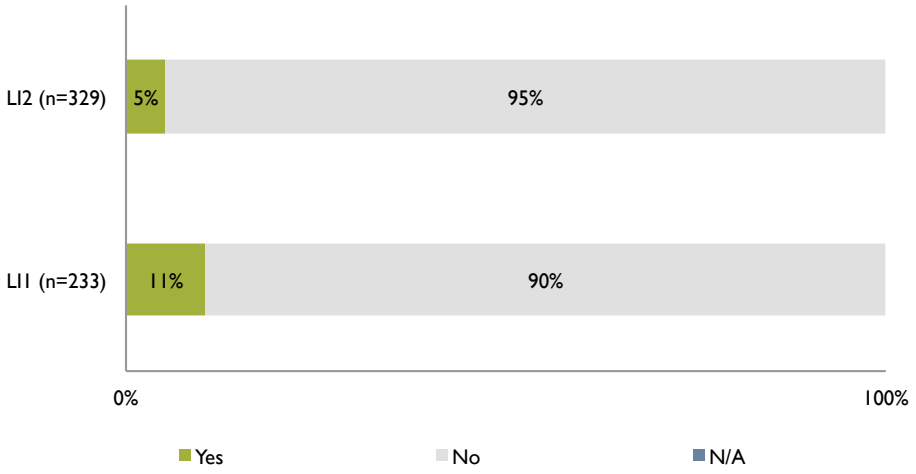


Figure 36: Receipt of Benefits from Government Assistance Programs as a Major Resource (2016 survey; low- and moderate incomes only)

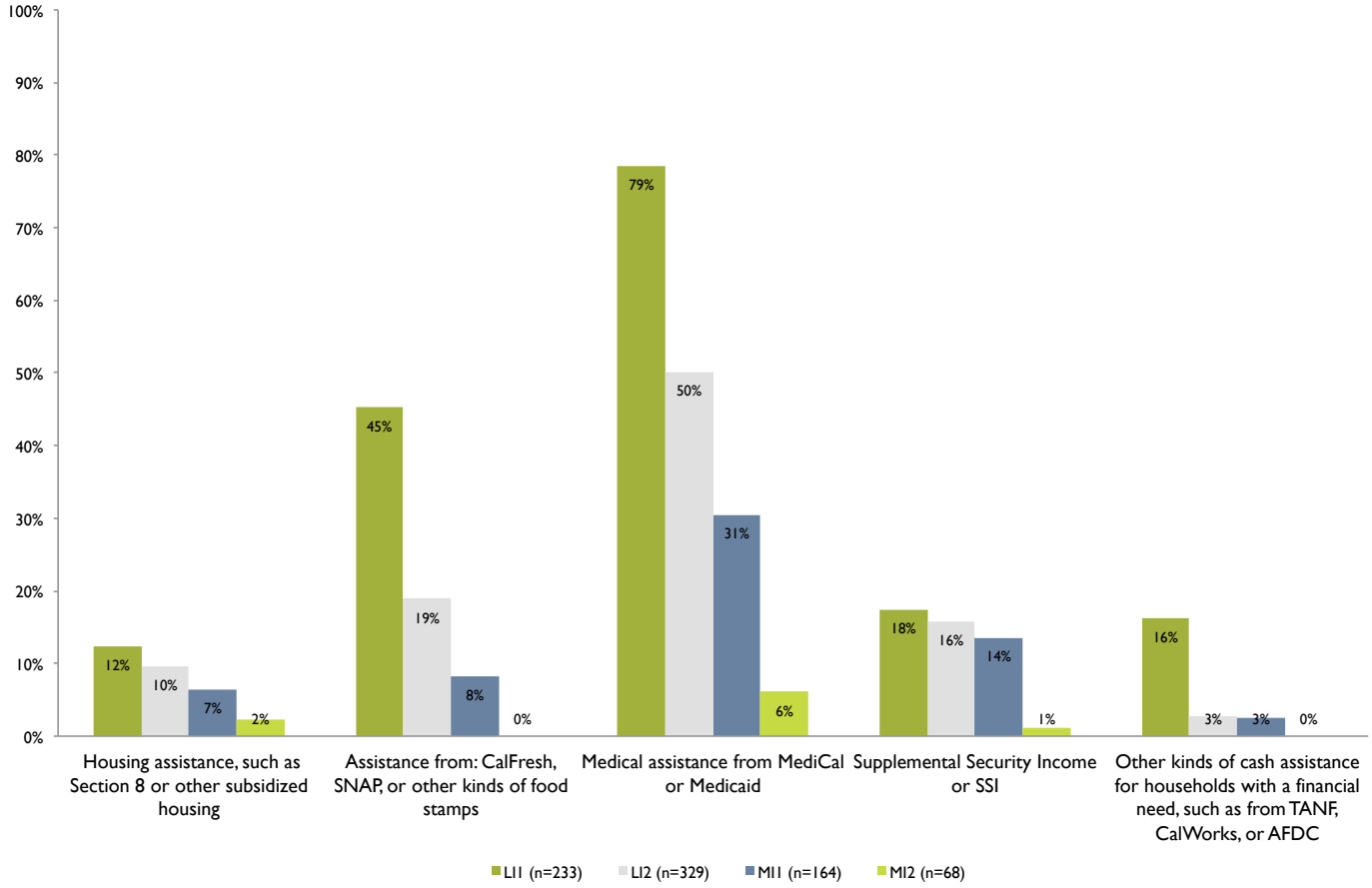


Figure 37: Cost-Related Assistance or Services from Utility Programs (2016 survey; all incomes)

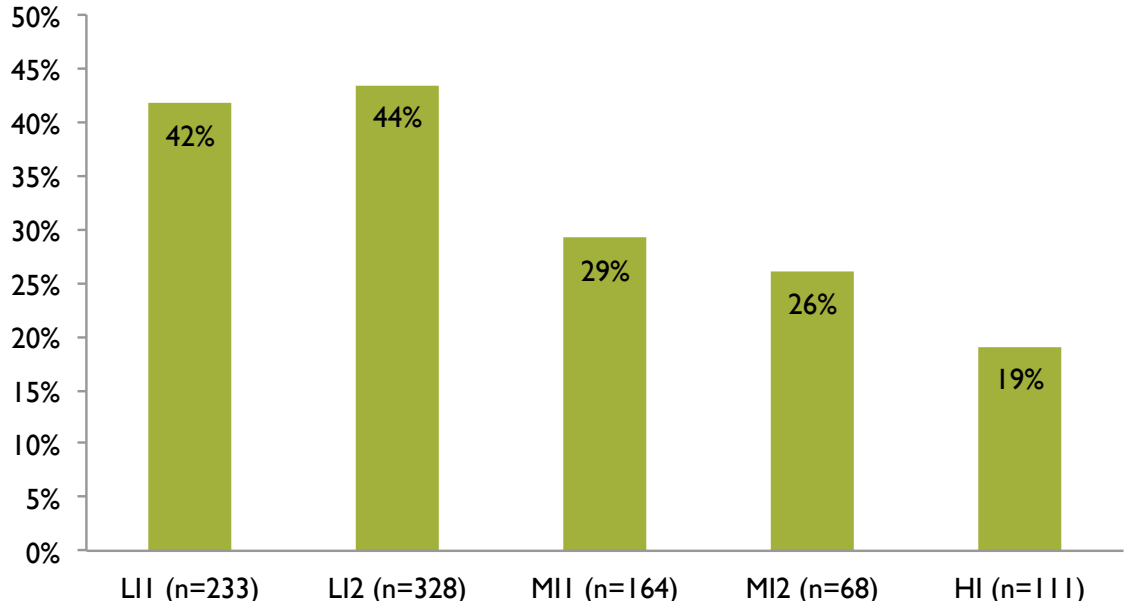
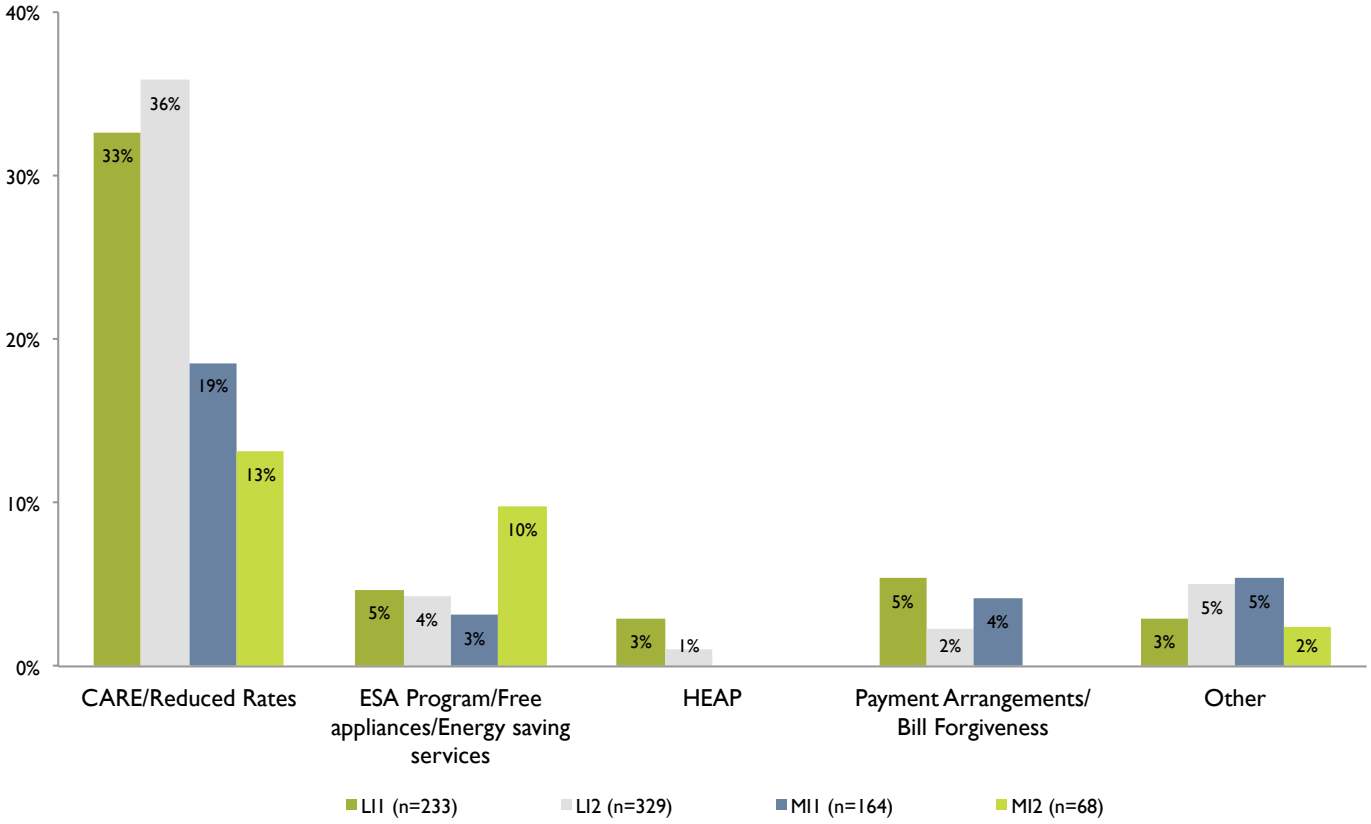


Figure 38: Utility Programs and Services Used (2016 survey; low- and moderate incomes only)



Bill Payment Practices

Figure 39: Payment Practices among Income-Eligible Households by CARE Enrollment (2016 survey; low-income only)

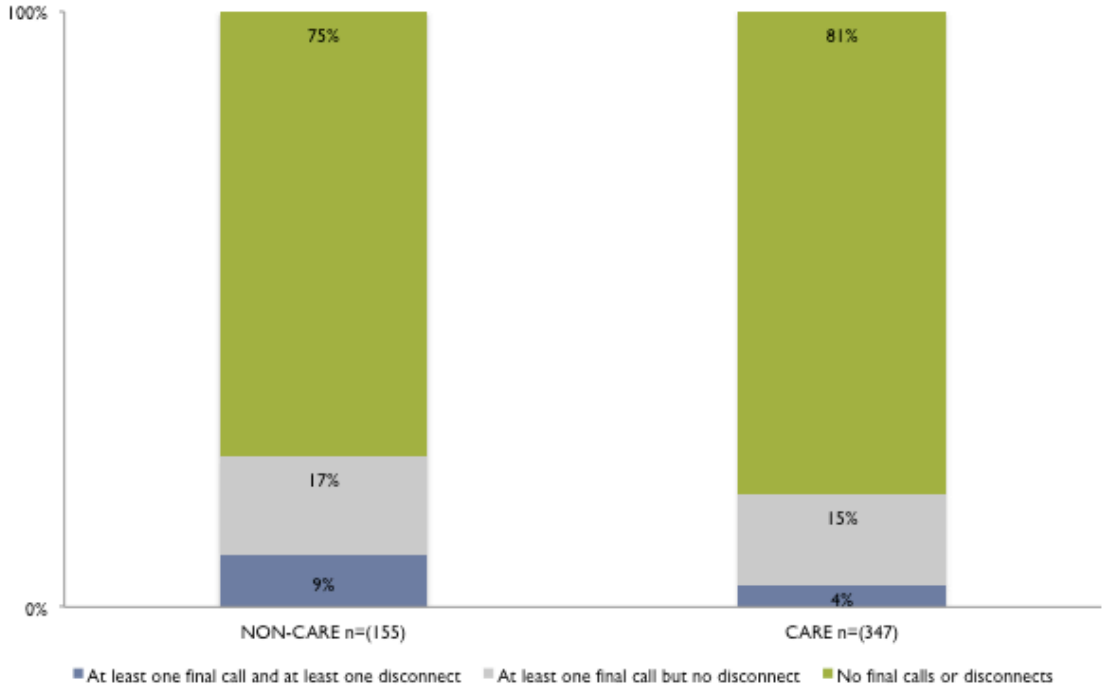


Figure 40: Payment Practices by CARE Enrollment -- Detailed Income Categories (2016 survey; low- and moderate incomes only)

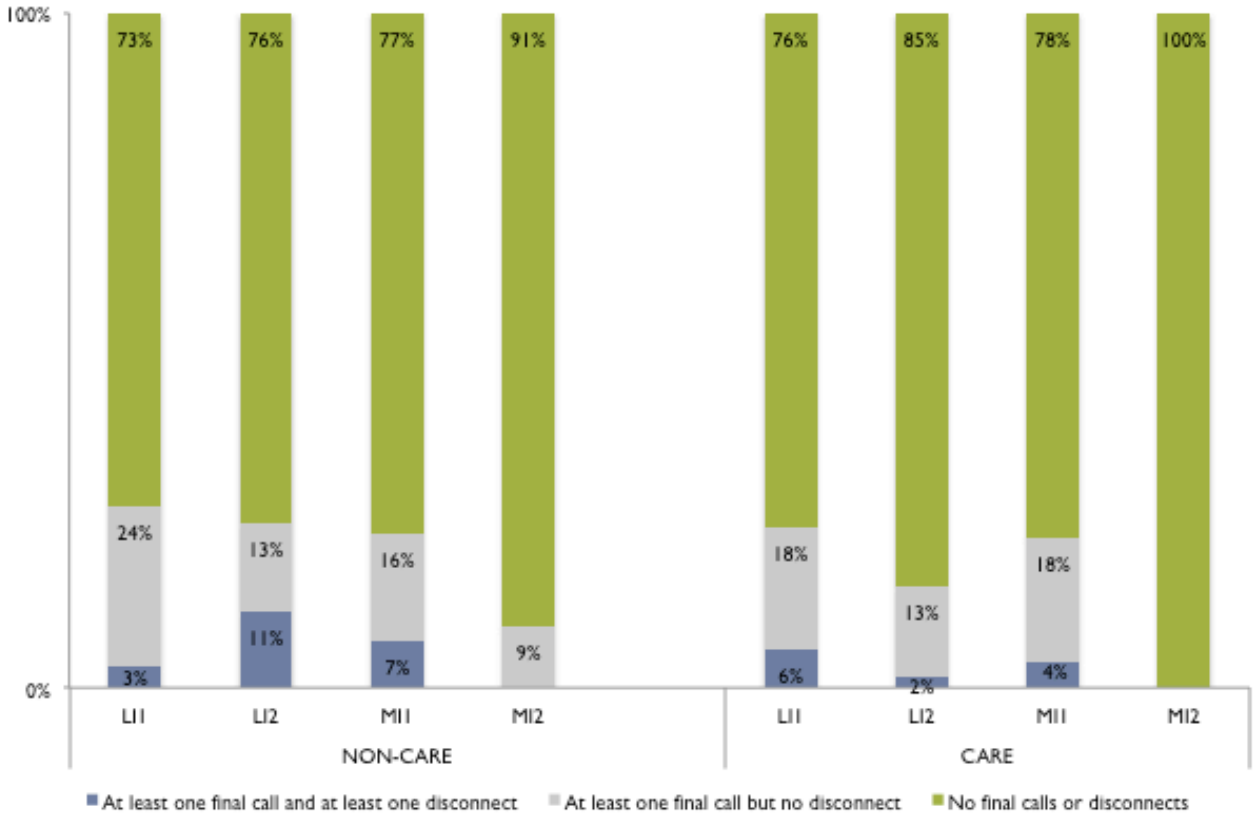


Figure 41: Payment Practices for Households with Seniors (2016 survey; low-income only)

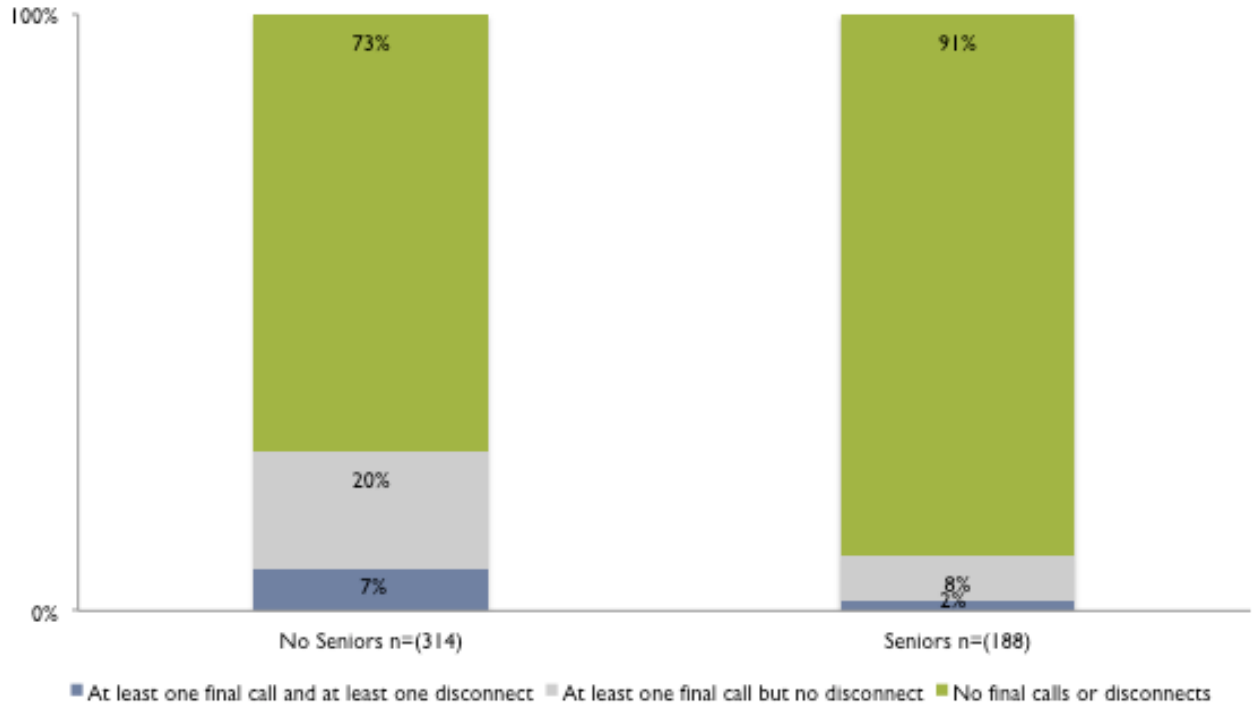


Figure 42: Payment Practices Among Households with a Disabled Person(s) (2016 survey; low-income only)

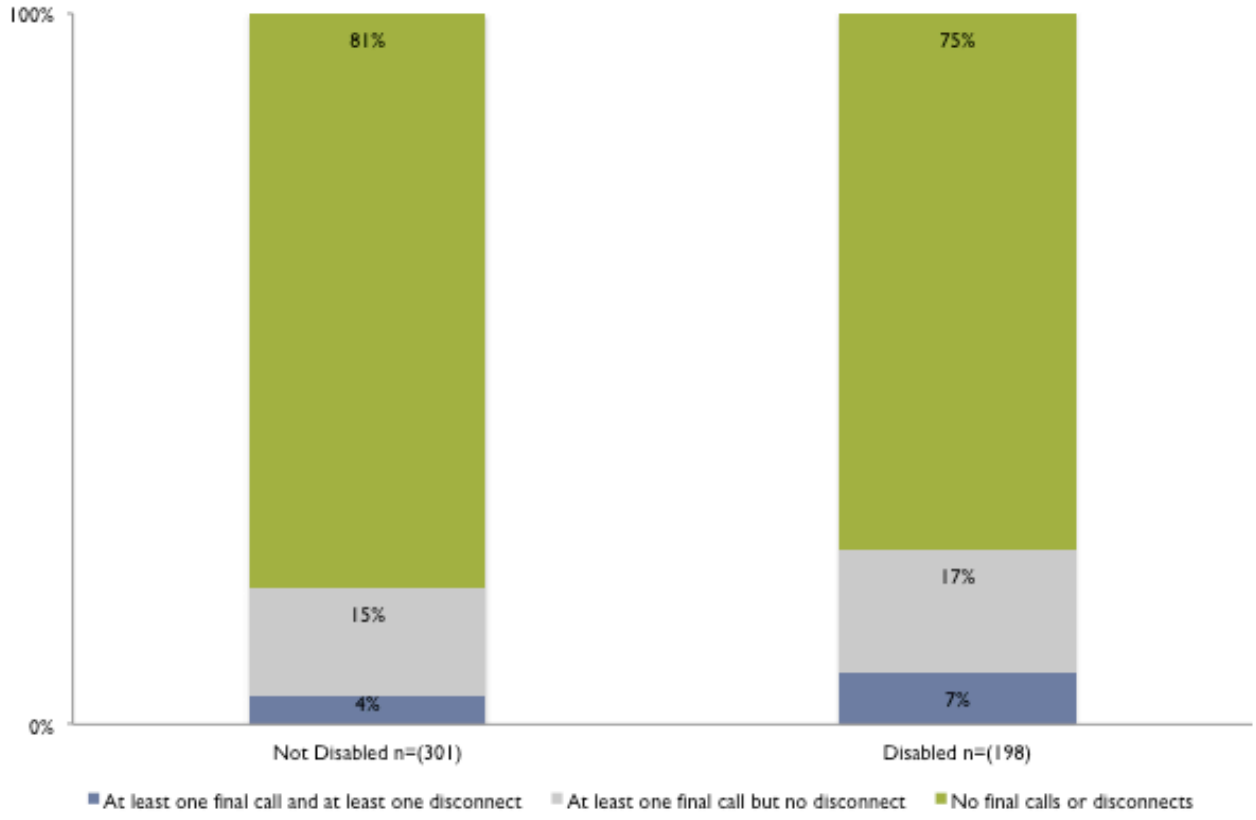
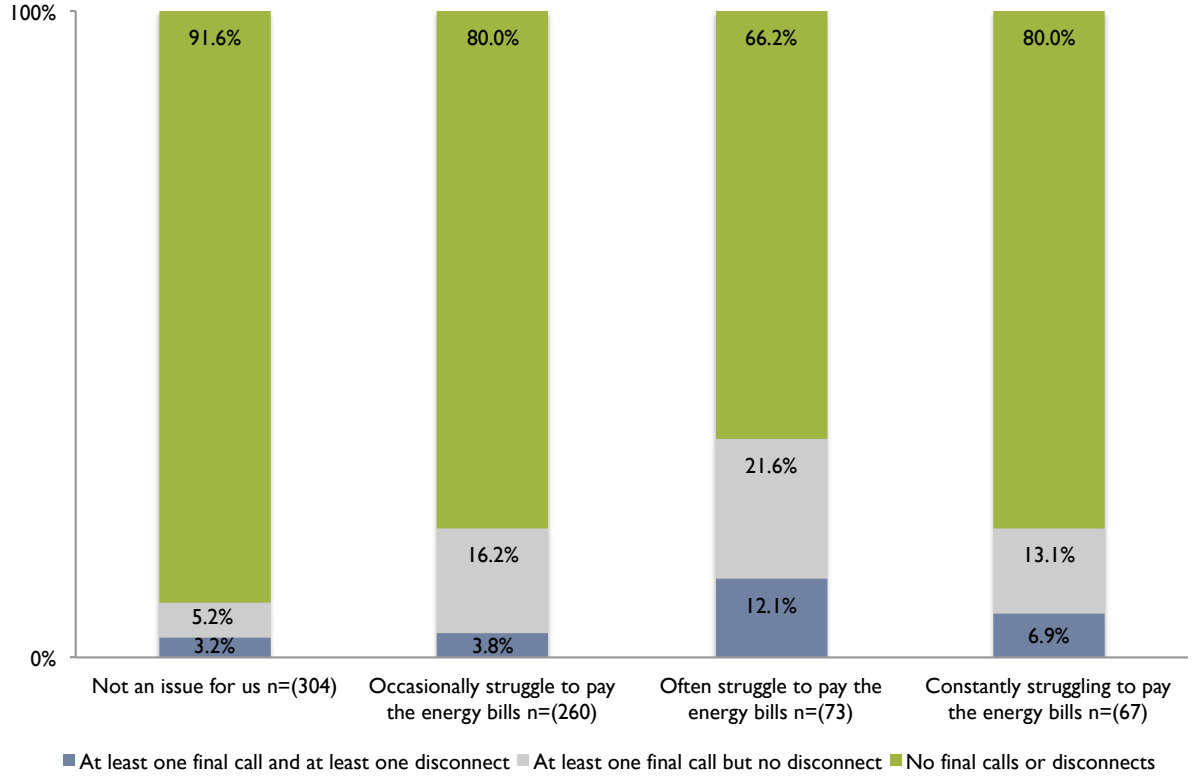


Figure 43: Payment Practices By Reported Difficulty Paying Bills (2016 survey; low-income only)



Selected Comparisons and Characteristics of High Burden Customers (Upper Quartile)

Figure 44: Energy Burden Levels by Income Level (2016 survey; low-income only)

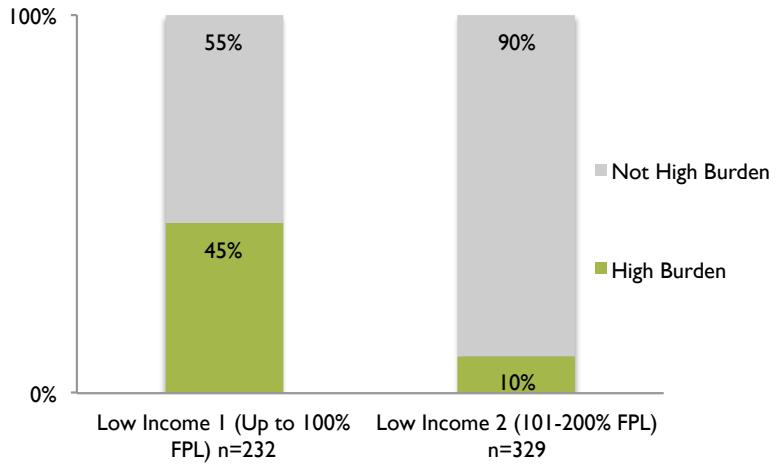


Figure 45: Energy Burden Levels by Climate Region (2016 survey; low-income only)

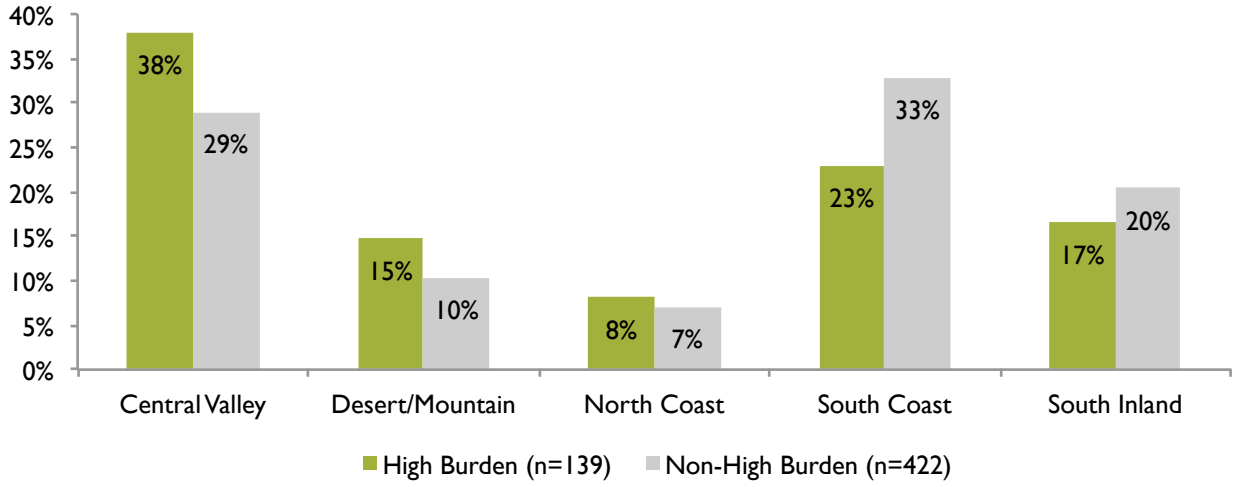
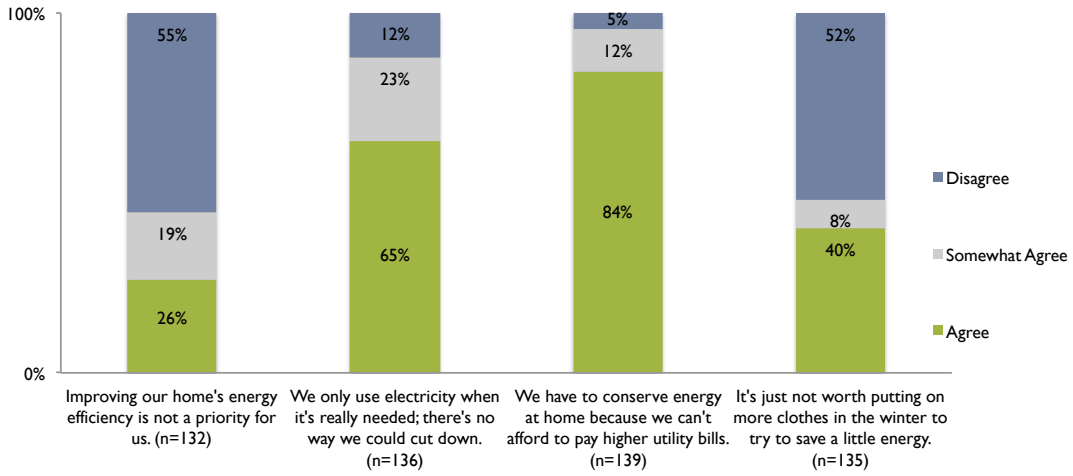


Figure 46: Self-Reported Energy-Saving Attitudes and Motivations (2016 survey; low-income high burden respondents only)



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Appendix F: List of Acronyms

AB	Assembly Bill
ASEC	Annual Social and Economic Supplement
CalWORKs	California Work Opportunity and Responsibility to Kids
CARE	California Alternate Rates for Energy
CBO	community based organization
CFL	compact fluorescent light
CPS	Current Population Survey
CPUC	California Public Utilities Commission
ESA	Energy Savings Assistance
FERA	Family Electric Rate Assistance
FPL	federal poverty level
HI	High Income – refers to households above 400 percent of the federal poverty level (the label is relative and data for this group are drawn from households residing in zip codes that include relatively larger concentrations of low-income households)
IOUs	investor-owned utilities
LI1	Low Income 1 - refers to households in the lower range of low-income (i.e., 0-100 percent of the federal poverty level)
LI2	Low Income 2 – refers to those in the upper range of low-income (101-200 percent of the federal poverty level)
LIHEAP	Low Income Home Energy Assistance Program
LINA	Low Income Needs Assessment
LIOB	Low Income Oversight Board
MEPS	Medical Expenditure Panel Survey
MI1	Middle Income 1 – refers to those in the lower range of moderate-income households (201-300 percent of the federal poverty level)
MI2	Middle Income 2 – refers to those in the upper range of moderate-income households (301-400 percent of the federal poverty level)
PG&E	Pacific Gas and Electric Company
REACH	Relief for Energy Assistance through Community Help

SCE	Southern California Edison
SDG&E	San Diego Gas & Electric
SNAP	Supplemental Nutrition Assistance Program
SoCalGas	Southern California Gas Company
TANF	Temporary Assistance for Needy Families
WIC	Women, Infant, and Children

Appendix G: Future Study Opportunities

We list several potential opportunities for further study for CPUC and IOU consideration based on findings and analyses from this study. These include:

- To the extent a more complex understanding of needs can be translated into policy objectives and program operations, it may be of use to continue to refine the burden metrics. Possible enhancements include:
    - expanding the range of non-cash resources included in the modified energy burden calculations and determining ways in which valuations of these non-cash benefits can best and most practically be incorporated into the metric
    - modifying the energy insecurity metric into a scalar rather than largely categorical variable
    - modifying the material hardship metric to draw upon self-reports of the degree to which households are meeting basic needs.
- Additional analyses of existing data and new primary research to model the impact on energy burden from diverse interventions ranging from small customer-initiated behavior-based conservation to more intensive measure-based interventions that reduce a household's energy bills.
    - For example, a future study could explore steps customers can take for themselves (e.g., behavioral based interventions that may be supported with additional education), or via energy efficiency measures (new or existing), or via rate-related mechanisms that make energy as affordable as possible for low-income households. Such a study could be structured similarly to a potential study, but with energy burden (or modified energy burden) as the primary output. In addition, the model could account for additional relevant factors like utility flexibility in making payment arrangements and the impacts of interventions on household struggles to pay bills.
- Research to examine in more detail what types of disabilities have a direct bearing on energy-related needs and whether more energy-centric differentiation between households with disabilities would enable programs to more effectively serve these customers.
- Additional efforts to link customer-identified measure needs (such as those investigated in this study) with technical savings opportunities for those same households so that both household perspectives and technical opportunities are considered together.
- Further investigation into potential findings that, all else being equal, monolingual Spanish-speaking customers have lower energy costs due to lower energy usage. This result could be verified and, if it holds, an investigation of potential cultural

factors responsible for this tendency could lead to actionable insights for program marketing and energy education.

- Investigation of the extent to which households remain income-eligible for low-income programs for extended periods, cycle into and out of eligibility, or become income eligible for a short duration only. Such an investigation could also examine the extent of program awareness and participation by each of these groups of households for further insight on how these populations are being served.
- Additional research on renters as a single customer segment with distinctions drawn between those in single-family and multifamily buildings. This research could mirror or add on the multifamily renter analysis presented in this study.
- Additional investigation into the extent to which smart thermostats and other home energy management solutions would be a good fit for low-income households. This research could encompass household interest, existence of the needed in-home infrastructure, and actual in-home trials to track how customers would actually use the technology.