BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Own Motion to Conduct a Comprehensive Examination of Investor Owned Electric Utilities' Residential Rate Structures, the Transition to Time Varying and Dynamic Rates, and Other Statutory Obligations.	RULEMAKING 12-06-013 (FILED JUNE 21, 2012)

SAN DIEGO CONSUMERS' ACTION NETWORK OPENING COMMENTS ON ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGES' JOINT RULING

I. SUMMARY

San Diego Consumers' Action Network (SDCAN) offers the following comments upon the September 20th joint ruling by the ALJ and Assigned Commissioner in this proceeding. SDCAN brings to the Commission over 27-years of ratemaking experience at the CPUC including, most recently, rate design proposals in SDG&E's 2012 General Rate Case.

SDCAN focuses its opening comments on two elements of the Joint Ruling: the Goals and the Rate Design Proposals. SDCAN's Rate Design proposals will likely not align with those of other responding parties because some of the goals identified by the Commission are not appropriate for residential rate design. These include:

- Rates should be based on cost-causation principles
- Rates should encourage reduction of both coincident and non-coincident peak demand;
- Rates should avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals;

As will be explained below, each of these goals are highly problematic in designing rates that will be embraced by residential customers and useful for the state's energy policy objectives. Further, SDCAN submits that the Joint Ruling should add a goal that should serve as the underpinning to any new rate design: To incorporate integrated demand side management (ISDM) cost-effectiveness and principles into any rate-making principles so as to integrate rate design with programmatic initiatives.

In addition to a discussion about the Goals, SDCAN offers five recommended questions to add:

1. How do the proposed rates promote market transformation so that third parties will offer energy management services and promote emerging energy technologies?
2. To what extent do the changes in your rate design reduce incentives for residential customers to conserve energy?
3. How does your rate design address affect real consumption changes thus avoiding free-ridership?
4. Please describe the rate impacts of the proposed rate design on residential customer sub-classes?
5. Please describe the results of your dynamic pricing programs and how the customer response to the pricing and education components informs your rate design proposal?

The first question could well be a goal. SDCAN considered including it as such but believes that as a posed question it will require any proposing party to detail the ways in which the proposed rates will facilitate an important state policy. These proposed questions are discussed in greater depth in Chapter III below.

II. GOALS

As mentioned above, SDCAN recommends the addition of one goal and the excision of three goals contained in the Joint Ruling.

A. Problematic Goals

As to the latter, the Joint Ruling includes three problematic goals:

- Rates should be based on cost-causation principles
- Rates should encourage reduction of both coincident and non-coincident peak demand;
- Rates should avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals;

Only one of these three goals is mentioned in Decision 08-07-045 which identified five "guiding principles": rates should be based upon cost-causation principles. This goal is problematic because it conflicts with two other principles: rates should encourage conservation and reduce peak demand and rates should provide stability, simplicity and customer choice. Indeed, one of the challenges identified by policy makers is how to reconcile competing rate design principles.

The other two goals should not be included or should be given secondary importance. Encouraging reduction of coincident and non-coincident peak demand for residential customers is highly inappropriate as only a small percentage of residential (and small business) customers have demands that are large enough to impose a measureable cost upon the system. Moreover, the methodologies by which such demands would be measured and charged are very complex and will be prone to error given the load demand variety within the residential class.

As to avoidance of cross-subsidies, this is a literal impossibility in residential rate setting. The Commission could spend a tremendous amount of

time attempting to identify, quantify and adjust rates to reduce cross subsidies and the effort will inevitably fail. Nor is it entirely clear that cross-subsidization is undesirable in all circumstances. Energy is one of many industries that have accepted a valuable role in cross-subsidization when serving the residential class. Examples include:

- U.S. Postal Service has one price for first class stamps;
- Grocery stores charge uniform prices for food items throughout a geographic (or even state-wide) area notwithstanding differing operating and transportation costs;
- Basic telephone service has a uniform rate, regardless of usage or location;
- Most retailers generally don't charge customers to park at their places of business even though some customers fail to make a purchase.

These are but a few examples of how both regulated and competitive markets have accepted the role of cross-subsidies, even in the absence of governmental policy considerations. The Commission is ill-advised to create an objective designed to wring out or even disclose cross-subsidies that may serve very useful purposes beyond just supporting state energy policy. As discussed below, free ridership is an issue that involves cross-subsidies. To some extent, the cross-subsidies help reduce complexity, both of rate design and administration. It is only when cross-subsidies become substantial and threaten to seriously skew customer decisions that they need to be addressed and/or identified. This goal paints far too broad a brush upon a very detailed canvass.

The remaining goals contained in the Joint Ruling are largely non-controversial except for one: "rates should encourage conservation and energy efficiency". That goal isn't as controversial as are the means by which that goal will be achieved and balanced against some other conflicting goals. SDCAN gives special attention to this matter in the Rate Design discussion below.

B. An Additional Proposed Goal

The Commission may also wish to amend its list of goals to include an important one: to incorporate integrated demand side management (IDSM) cost-effectiveness and principles into any rate-making principles so as to integrate rate design with other programmatic initiatives.

IDSM is an important but little understood element of rate setting. Its role is to ensure that rate structures are integrated with energy efficiency and conservation, distributed generation, demand response, smart grid deployment and education initiatives also developed by the Commission. As part of the California Public Utilities Commission (CPUC) directive in Decision 09-09-047, the UDC's were directed to explore the development of an integrated approach to the cost-effectiveness of demand-side management programs and projects. The CPUC stated that:

> To effectively integrate DSM program design, a set of internally consistent proposed cost-effectiveness methodologies need to be developed for integrated projects, and for program efforts that seek to combine all of these demand side resource options within an integrated portfolio.[1]

CPUC's Strategic Plan describes the California policy vision: "...energy efficiency, energy conservation, demand response, advanced metering, and distributed generation technologies are offered as elements of an integrated solution that supports energy and carbon reduction goals immediately, and eventually water and other resource conservation goals in the future."[2]

A major challenge for the adoption of an integrated cost-effectiveness framework is overcoming the lack of consistency and accuracy in the policies,

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[1] Advice 2139-E-B/1921-G-B 'Supplemental Filing: Implementation of a Statewide Integrated Demand Side Management (IDSM) Program in Compliance with D. 09-09-047.

[2] California Long-Term Energy Efficiency Strategic Plan, September 2008.

methods and assumptions across the various DSM resource types. Cost effectiveness methodologies have yet to be adopted. The Commission also needs to identify the full set of IDSM measures and estimate the deferred energy and capacity savings of each combination of measures. Utility incentives still need to be fashioned and the UDCs will need to calculate the potential to reduce, and increase, energy costs, distribution circuit costs, capital budget costs, transmission needs, and market opportunities that are available through the California Independent System Operator (CAISO).

SDCAN submits that these measures must be taken concurrently with or prior to the adoption of rate design plans in order to secure the many efficiencies promised by IDSM. This is not an easy goal with which to comply and, yet, SDCAN believes it to be an essential one that should not be overlooked as a goal just because it is a challenging one.

III. RATE DESIGN PROPOSALS

SDCAN suggests the addition of five questions to be posed in the Joint Ruling They are:

1. How do the proposed rates promote market transformation so that third parties will offer energy management services and technologies? Detail how the pricing differentials have been vetted with this industry and are deemed sufficiently attractive to justify their investment.
2. To what extent do the changes in your rate design reduce incentives for residential customers to conserve energy?
3. How does your rate design address affect real consumption changes thus avoiding free-ridership?
4. Please describe the rate impacts of the proposed rate design upon residential customer sub-classes?

5. Please describe the results of your dynamic pricing programs and how the customer response to the pricing and education components informs your rate design proposal?

A. Market Transformation

Revamping rate design for residential customers will have failed if it does not facilitate the deployment of new energy technologies and private energy management service companies providing to residential customers. SDCAN's vision for the emerging real-time price environment is one of making a market for new services available to the residential and small business markets. The way energy is transmitted to consumers, the way consumers receive their energy use data, the technologies used by customers and the role of the consumer in energy management need to change in order for consumers to take advantage of the sizeable investment being made in the Smart Grid investments made by California IOUs. Attendant with these changes will be a rapidly evolving marketplace where third parties will be providing energy and energy-related services that have not previously been available to consumers.

For the residential consumer, whether new rate designs are embraced will be dependent, in large part, upon the availability of energy management services. Third-party companies will need to deploy and likely use net-based applications and/or in-home technologies to permit customers to take advantage of real-time pricing schedules.

SDCAN submits that the Commission is obligated to consider the development of energy management companies servicing residential customers in its rate design goals. Senate Bill 17 states that "by July 1, 2010, the Commission, in consultation with the Energy Commission, the ISO, and other key stakeholders shall determine the requirements for a smart grid deployment plan consistent Section 8360 and federal law, including the provisions of Title XIII

(commencing with Section 1301) of the Energy Independence and Security Act of 2007 (Public Law 100-140).

Section 8360 lists numerous requirements that must be achieved as they are necessary requirements of a Smart Grid. Section 8360(j) requires the "Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services." SDCAN submits that consumers will not adopt these technologies, practices and services unless rate design incorporates this objective.

SDCAN considered including this question as a goal but feels that by offering it as a question, it requires any proposing party to detail the ways in which the proposed rates will facilitate this state policy. Posed as a question it would avoid a likely response by some to the effect of: "economically-based rates will be more effective in attracting market participants." Thus, the question compels parties to explain and verify that the rate design is sufficiently attractive that it will promote investment by third-parties to offer energy technologies and energy management services to what has been a largely overlooked class of customers.

An adjunct to this question that could be incorporated within or established in a separate question is to have proponents identify those services and/or technologies that are available or would soon be available to allow customers to avail themselves fully of any new rate designs. By specifying these necessary enablers, the Commission can be assured that customers can reasonably and affordably take advantage of the price signals.

B. Preservation of Conservation Incentives

The Commission properly includes energy efficiency and conservation as a discrete goal. However, in the questions, it lumps this very important rate design goal in with nine others. SDCAN suggests a separate question to address this

important element. This is because more than any other goal, this particular one will engender the greatest degree of controversy in the design proposals.

As mentioned in the discussion about goals, charging higher energy rates for higher usage customers is a key tool for sending conservation price signals. UDC's have expressed interest in making rates "simple". Up until now, the UDCs' version of "simple" rate design reduces tier price differentials. Reducing or eliminating tiers could have significant implications, including reducing energy conservation signals and reducing the financial viability of solar distributed generation. Multi-tiered pricing at the higher usage levels increases conservation incentives for those customers with the opportunity for reducing the greatest amount of load.

In SDG&E's General Rate Case, SDCAN presented testimony of William Marcus which shows that these higher-usage residential customers tend to have higher incomes than customers with lower usage. (See Attachment A) Mr. Marcus also finds that higher-usage customers typically have load patterns that are more peaked relative to the load patterns of customers with lower usage, and that their loads are concentrated more during the summer hours and during the hour of system coincident peak. As a result, higher-usage customers are likely to be more costly to the system on a per-kWh basis than are customers with lower usage. Mr. Marcus's findings suggest that reducing tiers and price signals for higher-usage customers would not just be backwards from the standpoint of conservation incentives, but would also be regressive and would remove price differentiation that appropriately reflects the cost differentiation between customers in these tiers. It also proves that low-usage customers are paying a relatively substantial cross-subsidy for high-usage customers.

In addition, SDCAN notes that "smart" technologies will provide the opportunity for tiered pricing to work more effectively. As noted above, the recent deployment of smart meters creates the opportunity for customers (and third-party energy management companies) to use real-time data to access

marginal tiered prices. This information will allow customers to make more informed decisions about their consumption levels and patterns. To abandon tiered pricing precisely when new technologies will be allowing customers to better utilize this pricing scheme would be counterproductive. Thus, the Commission should be challenging any and all parties who seek to reduce or eliminate this long-standing and successful conservation incentive.

There has been much discussion amongst parties about the conflict between tiered or volumetric pricing versus flat and/or fixed pricing for electric rates. SDCAN asks the Commission to note that this debate is not unique to electricity. In 2008, the State of California amended Water Code section 370 to promote the use of volumetric rates in water services. AB 2882 directly addressed the water industry's reliance upon fixed charges to recover utility fixed charges. It determined that allocation-based conservation water pricing is the preferable means to promote conservation. The law specifically states:

"The volumetric prices for the lowest through the highest priced increments shall be established in an ascending relationship that is economically structured to encourage conservation and reduce the inefficient use of water"

The Commission has acknowledged this pricing preference and has imposed it upon a reticent water utility industry. [3] The state holds energy efficiency and conservation in a similarly high regard. Indeed, one of the goals in the Joint Ruling affirms that point. However, there is great dispute amongst parties as to how this can be accomplished with some parties (primarily UDCs) seeking to reduce volumetric pricing strategies to support the conservation mandates of the State. Instead, they seek increased revenue recovery via fixed charges

Energy efficiency and renewable generation have long been cornerstones of California's energy policy, and their importance has increased in recent years.

[3] D. 11-05-004, p. 6, 35

California's Energy Action Plan, adopted by the Commission in May 2003, established energy efficiency and demand response as the first resources in the "loading order" of resources used to meet the state's energy demand, followed by renewable resources.[4] These resources are also key to achieving the state's ambitious goals for reducing greenhouse gas emissions. In 2008, California's energy agencies found that energy efficiency is "the most important tool for addressing greenhouse gas emissions in the energy sector."[5] When the Air Resources Board approved the final AB 32 Scoping Plan as a road map to achieving greenhouse gas emission reductions, energy efficiency measures were second only to new standards for light-duty vehicles in the amount of emissions reductions to be delivered. After efficiency, renewable energy measures were next on the list, with additional targeted emission reductions specifically from renewable distributed generation via the Million Solar Roofs program.[6]

It is all but certain that fixed customer charges as will be sought by the UDCs and this will collide with those who view energy conservation goals as preeminent. SDCAN concurs with those who warn that eliminating or reducing tier differentials would make a higher share of costs unavoidable and a smaller share would be tied to energy usage. This would reduce the financial benefit of energy conservation and reduce the cost of increasing energy usage. Making a larger share of costs unavoidable would additionally discourage renewable distributed generation by increasing the payback period for such investments. Customers that already have distributed generation would likewise see reduced benefit under fixed-cost pricing, as their monthly utility bills would increase to cover the higher fixed charge and their net metering savings would fall with the reduction to volumetric rates.

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[4] State of California Energy Action Plan I, page 4,
[5] California Public Utilities Commission with California Energy Commission. *Energy Action Plan Update: 2008 Update*, February 2008, page 6,

The UDC's will seize upon the three proposed goals that SDCAN proposes be removed to justify reduced volumetric rates. They'll claim that their "basic service fee" rate design proposals "will enable customers to make good economic decisions regarding electricity use and the use of new technologies. In fact, in arguing for a basic service fee in this year's General Rate Case, SDG&E stated that: "California's movement toward a low carbon future also calls for SDG&E's transition to a rate structure that assigns utility costs more accurately and fairly."[7] As discussed above, UDC proposals for higher fixed charges may instead lead customers to make poor decisions by reducing the financial benefit of decreasing energy consumption and installing renewable distributed generation. Furthermore, energy management decisions that reduce consumption of grid power are all the more important in the context of the state's greenhouse gas reduction goals. A fixed monthly charge that is not linked to energy consumption and that cannot be avoided or reduced through lower energy use does not promote California's energy efficiency and greenhouse gas reduction goals. On the contrary, it weakens incentives for consumer energy management behaviors that the Commission is seeking to promote.[8]

It is for these reasons that SDCAN suggests that a separate question be posed to rate design proponents that addresses this controversial issue full on and facilitates a clearer discussion of what will be a very controversial element of residential rate design.

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[6] California Air Resources Board. Climate Change Scoping Plan, December 2008. Table 2, page 17, as presented in Attachment D.

[7] SDG&E General Rate Case, Phase 2. Testimony of Chris Yunker (SDG&E-101), page CY-3.

[8] SDG&E indicates that SDG&E's residential customer charge proposal is simply "a step in the direction of implementing more accurate price signals" (SDG&E Testimony of Chris Yunker (SDG&E-101), page CY-5), which implies that SDG&E could seek further increases to the customer charge in years to come. In addition to the financial implications for customers of higher fixed charges, this would further weaken incentives for energy conservation and distributed generation.

C. Addressing Free-Ridership Costs

SDCAN is concerned about peak-shifting rate designs that facilitate free-ridership. The term '"free-riders" is used here in a broad sense to encompass both efficiency-minded consumers who are compensated for energy reductions that would have happened were it not for the program as well as structural benefiters who are compensated for reductions that were not made. Both types of free-ridership increase program costs without increasing program benefits.

SDCAN offers a brief discussion of this issue, why it is important and the kinds of measures that can be included in rate design to address it. In SDG&E's General Rate Case application, SDCAN presented an analysis of SDG&E's proposed residential dynamic pricing rate called Peak Shift at Home (PSH). Under this humdrum-named rate plan, customers pay less for electricity throughout the summer in return for sharply higher prices during "ReduceYourUse " events. The rate reductions are calculated to maintain revenue neutrality with non-PSH rates when nine ReduceYourUse events are called per year and no energy reduction takes place. However, in the event that fewer than nine events are called per year, SDCAN's experts found that PSH customers receive bill reductions in excess of their opportunities for energy reductions. This is a form of free-ridership.

Since the PSH program is optional, it is reasonable to assume that not all customers will opt in. While this reduces the free-ridership anticipated from having fewer than nine PSH events per year, it introduces another form of free-ridership: the cost that arises from structural benefiters opting in to the program while most other customers do not opt in. ("After all," as noted by the Edison Electric Institute in its comments on voluntary dynamic pricing plans, "customers

will tend to switch to the plan that they find most advantageous."[9]) The customers who are likely to be free riders include customers who are generally not home during the ReduceYourUse event period and customers who don't have central air conditioning and as a result have relatively low loads during these periods. For many households, this coincides with the time when residents are typically at work and have very low residential energy consumption. There is a natural free-ridership opportunity for such households, as shifting to the peak-shift pricing tariffs would reduce their energy bills without the need for any behavioral changes. However, these bill savings would likely create a revenue shortfall. SDG&E estimates that out of 1.2 million residential customers, close to 800,000 are potential structural benefiters with a total benefit amount of $30 million.

Moreover, SDCAN's experts found a direct correlation between the size of an adder and the potential revenue shortfalls created by free ridership. Reducing the adders is one way to contain these potential revenue shortfalls, since it reduces the amount of revenue that needs to be collected during peak shift events.

Maintaining strong price signals during the semi-peak period is important also for the dynamic rates. Revenue losses from structural benefiters must be anticipated with any optional dynamic pricing rate scheme since customers are most likely to opt for the rate schedule that provides them with the lowest bill. Reducing the revenue to be collected from the on-peak period in order to maintain higher semi-peak rates mitigates the revenue loss from structural benefiters while at the same time providing these customers with price signals to encourage energy conservation during the semi-peak periods.

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[9] Edison Electric Institute. "Responding to EPAct 2005: Looking at Smart Meters for Electricity, Time-Based Rate Structures, and Net Metering," page 5.
http://sites.energetics.com/MADRI/toolbox/pdfs/background/eei_responding_to_EPAct2005.pdf

This concern over revenue shortfalls from free-ridership should not undermine the peak-shifting rate schemes. The free-rider issue should be thoughtfully considered with the goal of striking a balance between sending strong price signals and reducing the risk of revenue shortfalls. The magnitude of the revenue shortfall will ultimately depend on the number of peak shifting events that are called, the number of structural benefiters, and the extent to which structural benefiters can lower their bills by switching to dynamic pricing rate schedules. Rate design can be used to mitigate these shortfalls by reducing the revenue to be collected during peak shift events and by maintaining strong on-peak and semi-peak rates all summer long.

Even with these modifications the potential for significant cross-subsidies between dynamic pricing and non-dynamic pricing customers should be expressly explored in any proposed rate design that shifts peak usage. Some degree of cross-subsidy is largely unavoidable and may even be desirable in order to prevent large rate swings for a small number of customers.

However, if revenue shortfalls are large and are not offset by demand response benefits (i.e., if much of the revenue shortfalls result from free-ridership rather than from load-shifting), the cost to non-participating customers could be substantial. Revenue shortfalls due to the movement to dynamic pricing, if spread across all customers in the customer class, would increase the bills of non-participating customers. In one case, SDCAN has suggested that if revenue shortfalls meet a pre-determined benchmark any revenue shortfalls due to customers shifting to dynamic pricing be recovered from dynamic pricing participants only (i.e., from among those customers that have received the discounts that created the shortfall). For revenue shortfalls that do not reach the benchmark level, revenue adjustments could be recovered from the entire customer class in order to prevent large dynamic pricing rate swings. Dynamic pricing revenue shortfalls could therefore be spread across the entire customer class (residential or small commercial, as applicable) until revenue shortfalls from

dynamic pricing meet the agreed-upon benchmark. With higher shortfall amounts, the shortfalls should be kept within the group of participating customers in order to prevent large impacts to non-participating customers.

These are just examples of the kinds of steps that warrant the consideration of any party offering a rate design proposal. It should be added to the questions posed by the Commission and considered by parties in presenting their rate designs.

D. Interclass Equity

This could be classified as the "winners vs. losers" question. The question that should be answered by any party offering a rate design is to identify and quantify the load characteristics of customers within the residential class who would expect to see bill increase impacts and which would likely see bill decreases for each rate schedule proposed. As noted above, SDCAN has done a fair amount of analysis both of residential class consumption characteristics (JBS Energy study in Attachment A) and likely beneficiaries of real-time rate schemes. SDCAN has found that the utilities possess data to permit rate design modeling to show customer subclass impacts. Any proponent of a rate design should be required to assess subclass impacts of their proposed designs as a precondition for consideration at the Commission.

E. Voluntary Dynamic Pricing programs results

California is on the verge of commencing a comprehensive experiment in rate setting by offering voluntary real-time pricing rates to residential customers. Customers' responses to those experiments should be evaluated prior to the Commission constructing a set of rate design principles in stone. For dynamic pricing to be successful, it must first be accepted by consumers. As the Edison Electric Institute aptly noted, "There would be little point in investing in a new generation of metering technology if the capabilities of those meters are not taken

advantage of because of political pressures [i.e., lack of customer acceptance]."[10] Customer acceptance is most likely to occur when the consumer experience is incorporated into rate design implementation decisions.

The UDCs historically have focused on one element of the consumer experience, consumer education, to the exclusion of many other important elements of this experience. But failure to use the lessons learned from voluntary pricing schemes in designing mandatory ones will likely result in the same kind of backlash experienced by the Commission in its efforts to implement Critical Peak Pricing for large customers. Notably, these customers had close to a decade of experience with peak pricing programs, but once they were made mandatory, the backlash was significant.

The Commission should be mindful of not imposing a pricing scheme upon unwilling customers. Voluntary rates designed to create a competitive market-building effort for residential energy management services will be the impetus for customers to utilize any benefits for willing customers. Only until customers can understand and capture those benefits should the Commission think about crafting, let alone, imposing a mandatory pricing scheme. To paraphrase the observation by former CPUC Commissioner Nancy Ryan, the real time pricing should be FOR customers and not done to them.[11] Thus, this question ensures that the UDCs' experience in their voluntary rate programs guides their construct of new rate design structures and informs them, as well as the Commission, about the likelihood of customer acceptance and rate design effectiveness.

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[10] Edison Electric Institute. Responding to EPAct 2005: Looking at Smart Meters for Electricity, Time-Based Rate Structures, and Net Metering, page 4. http://sites.energetics.com/MADRI/toolbox/pdfs/background/eei_responding_to_EPAct2005.pdf

[11] Ryan's specific comment was that "Smart Meters do something for you, not to you" http://www.outlookseries.com/N8/Infrastructure/3725_Nancy_E._Ryan_CPUC_Smart_Meters_INDEPENDENT_EVALUATION_PG_E_Structure_Group_Nancy_E._Ryan.htm

CONCLUSION

SDCAN appreciates the opportunity to provide the above opening comments on the scope for this proceeding. SDCAN hopes that the discussion above assists the Commission in shaping the Scoping Memo.

Respectfully submitted, Dated: October 5, 2012

/s/

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ATTACHMENT A
EXCERPT FROM MARCUS TESTIMONY IN SDG&E GRC, PHASE 2

I. Residential Customer Characterization

To provide support to the work by SDCAN witness Laura Norin of MRW and Associates, we are providing information on differences in load pattern by size of customer (from SDG&E's residential load research sample) and on economic and demographic factors that affect customer usage in the SDG&E service territory (from the Residential Appliance Saturation Survey or RASS data base). The work done here is similar to work that JBS Energy has done for all of the California utilities on several occasions, as well as for utilities in Nevada.

Our findings from SDG&E's load research data are that smaller customers have better load patterns than larger ones. This finding is consistent with SDCAN's finding in previous cases dating back to 2000. The RASS analysis shows that usage, while not in lockstep with income, has a significant association with income; in particular that the richest customers on average use more energy. This association arises in part because of strong correlations between income and the square footage and type of dwelling and the presence of energy-consuming equipment such as central air conditioning and swimming pools.

A. Overview

In general, because the mid climate zone using baseline quantities was larger and included portions of cooler CEC climate zones, both the cool zone and mid zone had slightly less energy use per customer because the customers used more than average for the cool zone and less than average for the mid zone. *We stand by the general conclusions presented in testimony but wish to accept SDG&E's help in assuring that this analysis is correct.*

During rebuttal to Mr. Marcus' testimony, SDG&E pointed out that the RASS portion of our analysis used California Energy Commission (C EC) Title 24 climate zones to group customers instead of SDG&E baseline zones, even though SDG&E provided SDGE baseline zones for each customer.

We appreciate SDG&E telling us that a variable for the baseline zones was assigned to each customer, a field that we overlooked in the nearly 800 data fields contained in the dataset, as it was given the name UTILSDGE. The Title 24 Climate zones were identified three times in both sets of consumption data (gas and electric) and additionally in the RASS data using fieldnames such as "T24CZ", and corresponds closely to the baseline zones, so the effect on the results is minimal. The late delivery of the dataset also hurried our initial review.

The following updates the original testimony section titled "Relationship of Usage to Income, Size and Type of Dwelling, and Appliances" beginning on page 29 and the associated "Attachment E: Methodology for Analysis of Residential Appliance Saturation Survey".

B. Relationship of Usage to Income, Size and Type of Dwelling, and Appliances

We next examine the reasons why small customers use less energy and have better load patterns than larger customers. We also examine relationships of consumption, among single-family and multi-family customers by income.

At a high level, consumption is not in lockstep with income. However, there are relatively strong correlations between consumption, size of dwelling, whether the dwelling is single and multi-family, saturation of energy consuming appliances such as central air conditioners and swimming pools, and income. As a result, the proposals by SDG&E will give disproportionate rate breaks to large customers who are more likely to have central air conditioners and swimming pools that contribute to peak loads and who tend – on average - to be more affluent, while raising rates to CARE customers and many other smaller customers who own less peak-heavy equipment.

We divided the SDG&E system into three climate zones groups – Cool, Mid, and Hot, based on the SDG&E baseline zones and associated weather stations that each customer was assigned to. The cool zone was SDG&E zone 1: the coastal baseline zone. The Mid climate group was the SDG&E inland (SDG&E zone 2) and mountain (SDGE zone 4) baseline zones which had similar baseline quantities. The Hot Zone Group was SDG&E baseline zone 3: low desert). We have not reported results for SDG&E's hot zone, due to a statistically insignificant number of RASS survey responses (only 20 respondents).

We broke the customers in each climate zone into groupings based on the average use of the four inner summer months (June-September 2008). Each grouping was roughly based on the average monthly summer quantities in the Cool and Mid zones (less than 130% of average basic baseline, 130-200%, 200-300%, and over 300%) rounded to the nearest 10 kWh per month.

Our definition of which tier group a customer falls into is based on a monthly average of the four peak summer months. In our analysis, a customer is in a

Summer Tier Group if the monthly average of the four summer months' consumption falls within the Summer Tier Group range. These groups roughly correspond to usage in each tier (though there may be some small amounts of spillover into the higher tier in the warmest summer months).

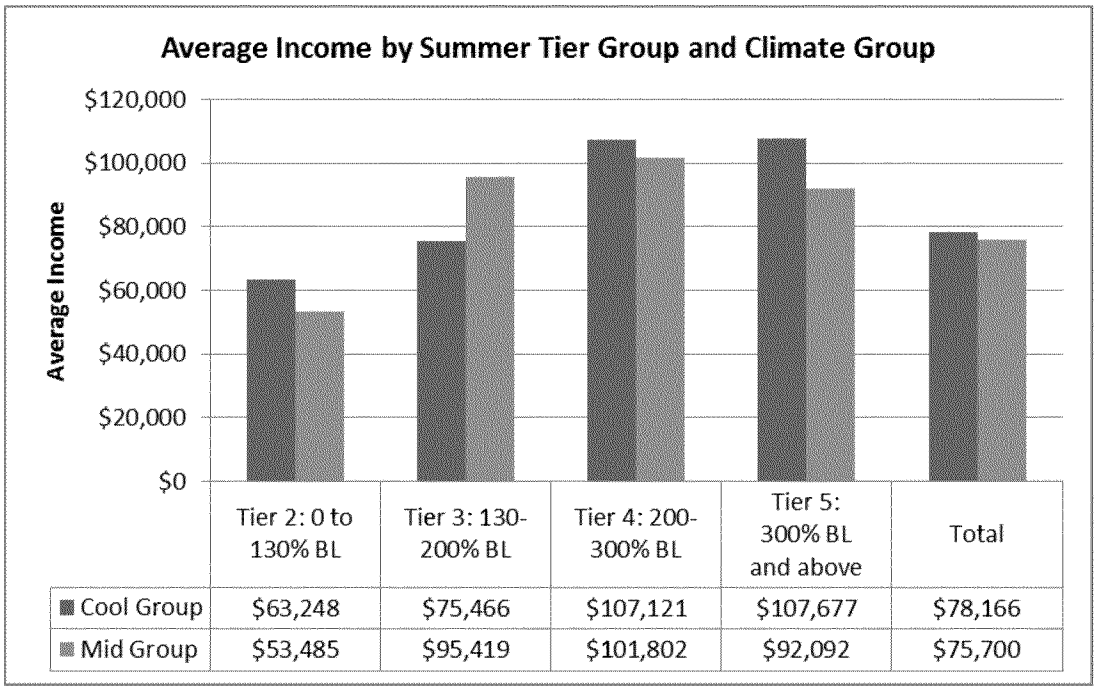
We cross-tabulated and analyzed income by tier grouping, and by whether customers were single-family and multi-family in each of the climate zones. We also analyzed the saturation of central air conditioning and swimming pools by income and by tier grouping and analyzed the relationship of the square footage of dwellings to tier grouping and income.

More methodological information is contained in Attachment E.

1. Income

In the SDG&E zones, usage (measured by Summer Tier Group) increases with income in the cool and mid climate zones.

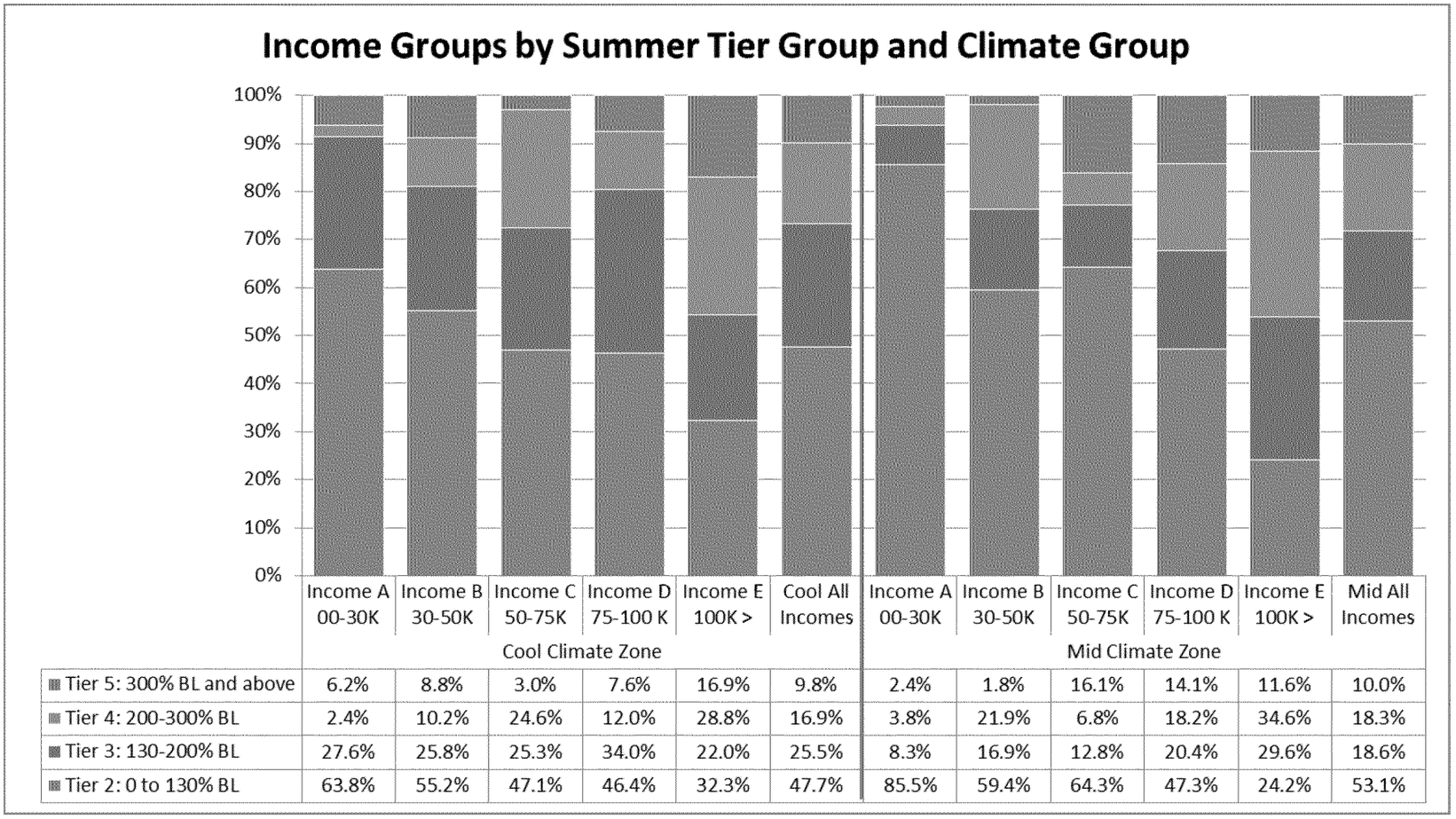
Figure 1: Average Income by Summer Tier Group and Climate Group



	Tier 2: 0 to 130% BL	Tier 3: 130-200% BL	Tier 4: 200-300% BL	Tier 5: 300% BL and above	Total
Cool Group	$63,248	$75,466	$107,121	$107,677	$78,166
Mid Group	$53,485	$95,419	$101,802	$92,092	$75,700

The percentage of customers with income under $30,000 who had Tier 4 or 5 usage (average monthly use above 200% of baseline in those four summer months) was 8% in the cool zone and 6% in the mid zone. By comparison the percentage of customers over $100,000 with Tier 4 use was 41% in the cool zone and 48% in the mid zone.

Figure 2: Income Percentages by Summer Tier Group and Climate GroupSDGE



	Income A 00-30K	Income B 30-50K	Income C 50-75K	Income D 75-100 K	Income E 100K >	Cool All Incomes	Income A 00-30K	Income B 30-50K	Income C 50-75K	Income D 75-100 K	Income E 100K >	Mid All Incomes
	Cool Climate Zone						Mid Climate Zone					
Tier 5: 300% BL and above	6.2%	8.8%	3.0%	7.6%	16.9%	9.8%	2.4%	1.8%	16.1%	14.1%	11.6%	10.0%
Tier 4: 200-300% BL	2.4%	10.2%	24.6%	12.0%	28.8%	16.9%	3.8%	21.9%	6.8%	18.2%	34.6%	18.3%
Tier 3: 130-200% BL	27.6%	25.8%	25.3%	34.0%	22.0%	25.5%	8.3%	16.9%	12.8%	20.4%	29.6%	18.6%
Tier 2: 0 to 130% BL	63.8%	55.2%	47.1%	46.4%	32.3%	47.7%	85.5%	59.4%	64.3%	47.3%	24.2%	53.1%

The reason is clear. Higher incomes are associated with larger dwellings, more saturation of central air conditioning, and more swimming pools, as shown below. We start with an examination of usage, income, and type of dwelling as related to square footage.

2. Single vs. Multi-Family

Multifamily customers use considerably less than single-family customers as shown in the two figures below. Over 70% of multi-family customers use less than 130% of baseline on average while very few use more than 200% of baseline.

Figure 3: Percent of Single-Family and Multi-Family Households within Tier Groups and Climate Zones SDGE

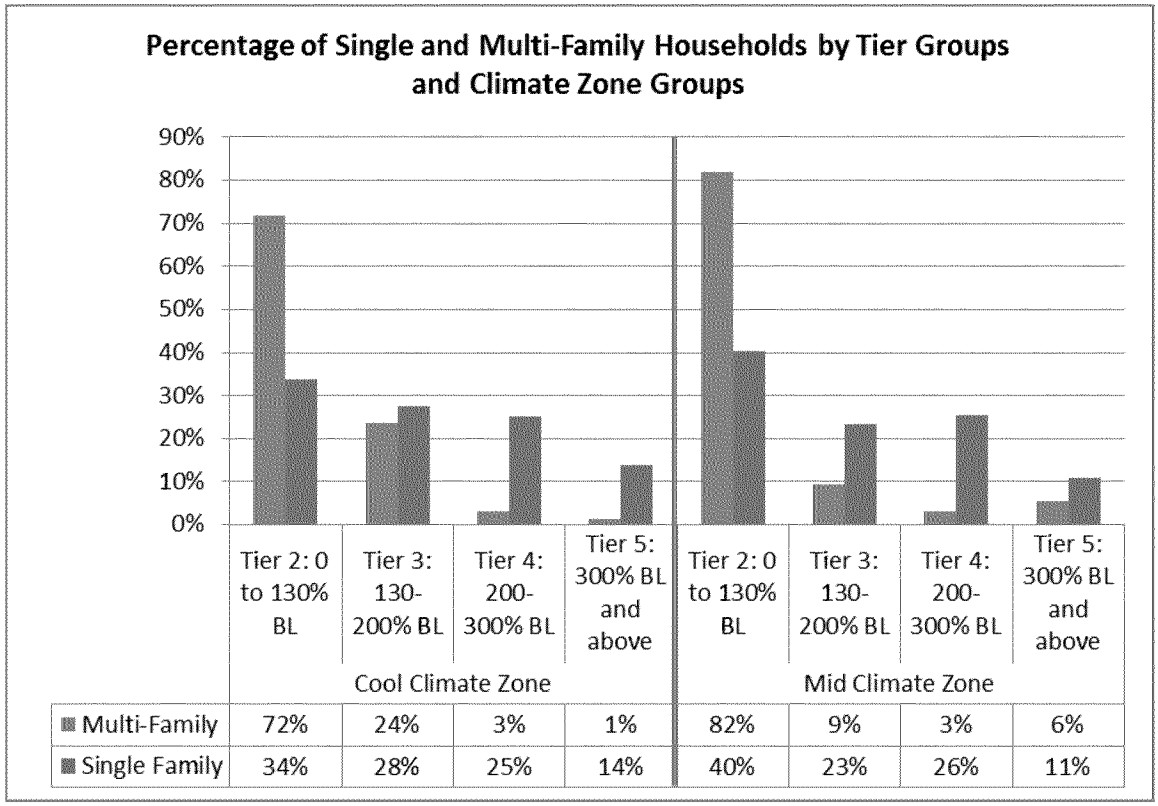
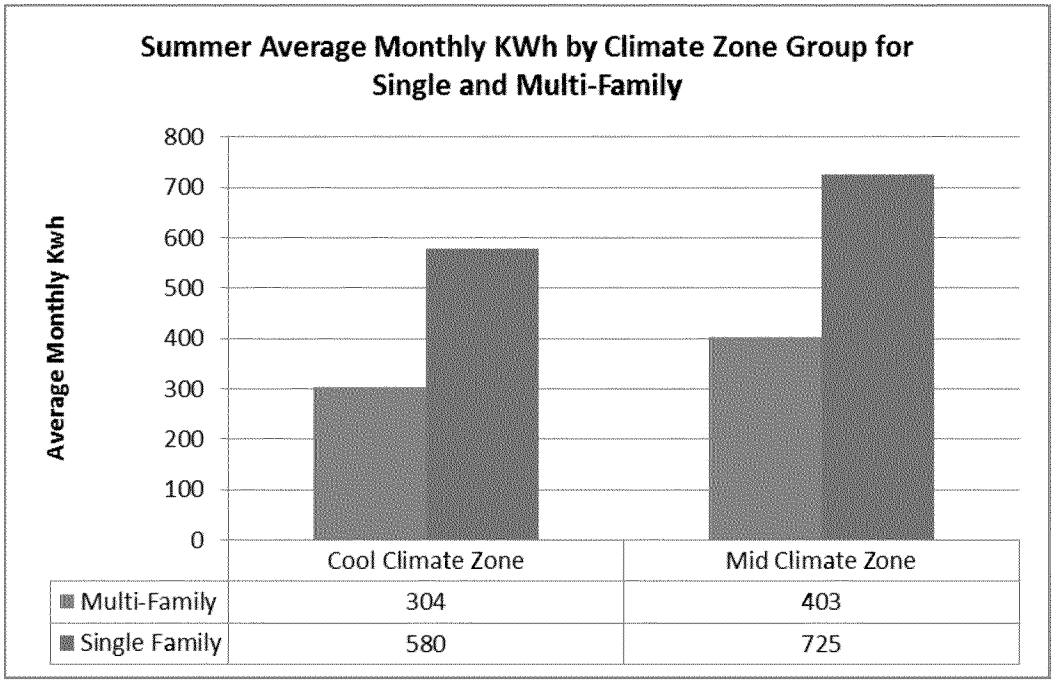


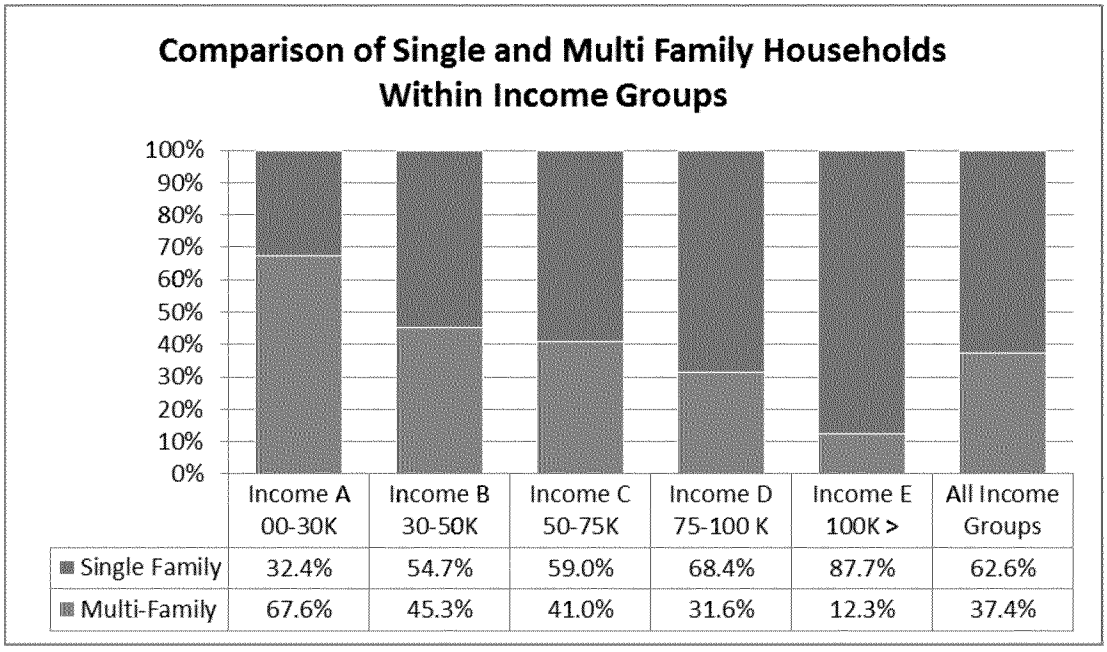
Figure 4: Summer Average Monthly Kwh by Single-Family and Multi-Family Households



Multifamily customers use about 45% to 48% less than single-family customers in both of the major climate zones. This phenomenon can be expected because of the smaller size of the dwellings and common walls that reduce heat gain and loss, as well as income differences that may affect usage.

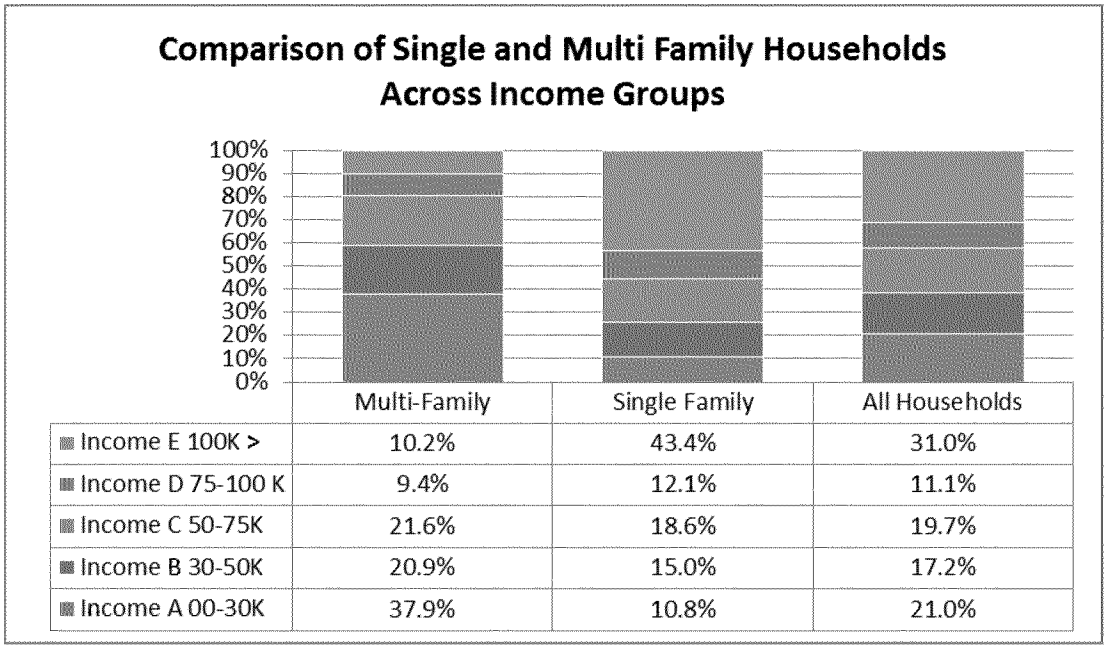
There also are large differences in income between single-family and multi-family dwellers. While a majority of households in all income groups live in single-family dwellings in SDG&E's service area as a whole, the proportion rises from 32% to 87% as income rises.

Figure 5: Percent of Single-Family and Multi-Family Households within Income Groups SDGE



	Income A 00-30K	Income B 30-50K	Income C 50-75K	Income D 75-100 K	Income E 100K >	All Income Groups
Single Family	32.4%	54.7%	59.0%	68.4%	87.7%	62.6%
Multi-Family	67.6%	45.3%	41.0%	31.6%	12.3%	37.4%

Figure 6: Percent of Single-Family and Multi-Family Households across Income Groups SDGE



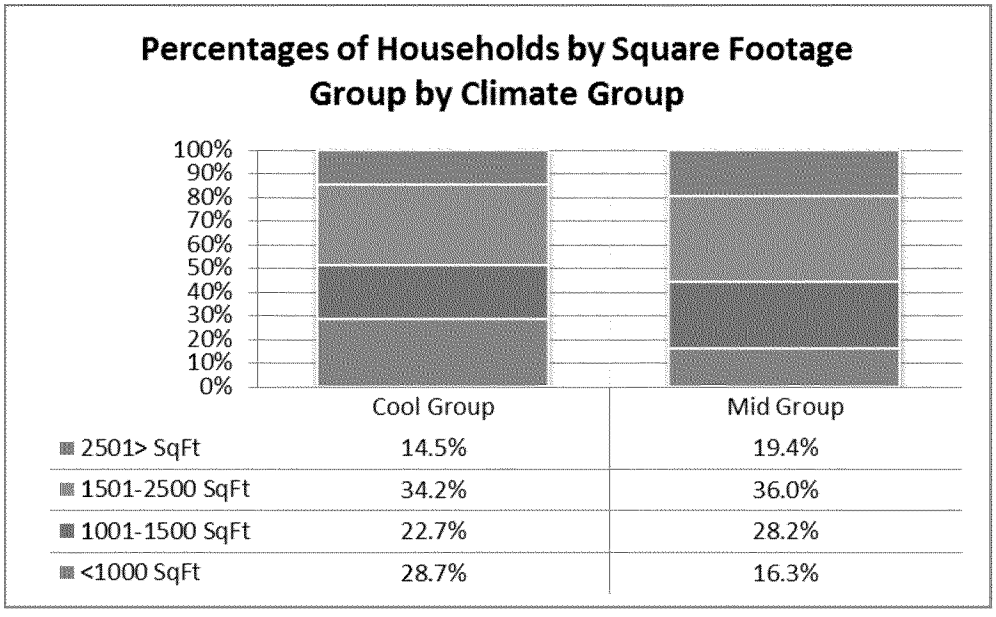
	Multi-Family	Single Family	All Households
Income E 100K >	10.2%	43.4%	31.0%
Income D 75-100 K	9.4%	12.1%	11.1%
Income C 50-75K	21.6%	18.6%	19.7%
Income B 30-50K	20.9%	15.0%	17.2%
Income A 00-30K	37.9%	10.8%	21.0%

On the SDG&E system as a whole, 55% of single-family dwellers earned more than $75,000, compared to 20% of multi-family households. Both climate zones showed a disproportionate percentage of households under $30,000 in multifamily units as expected.

3. Square Footage

Figure 7 shows the percentage of dwellings by square footage. The more urbanized cool area has more dwellings under 1500 square feet than the suburban inland area.

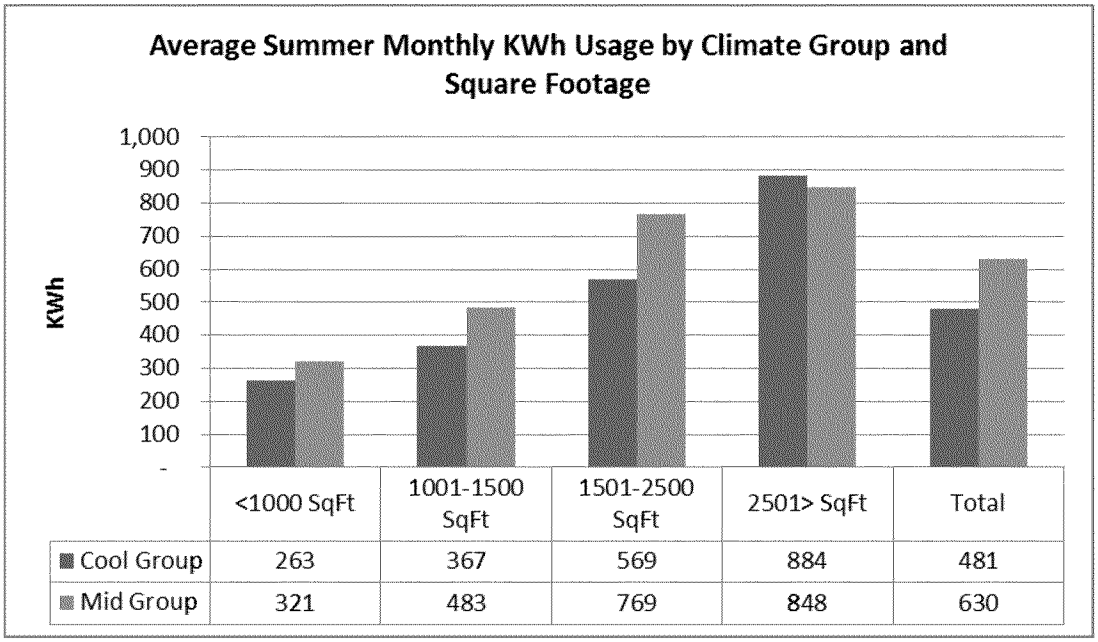
Figure 7: Percent of Households by Square Footage



	Cool Group	Mid Group
2501> SqFt	14.5%	19.4%
1501-2500 SqFt	34.2%	36.0%
1001-1500 SqFt	22.7%	28.2%
<1000 SqFt	28.7%	16.3%

Average usage generally increases with square footage. (Figure 8).

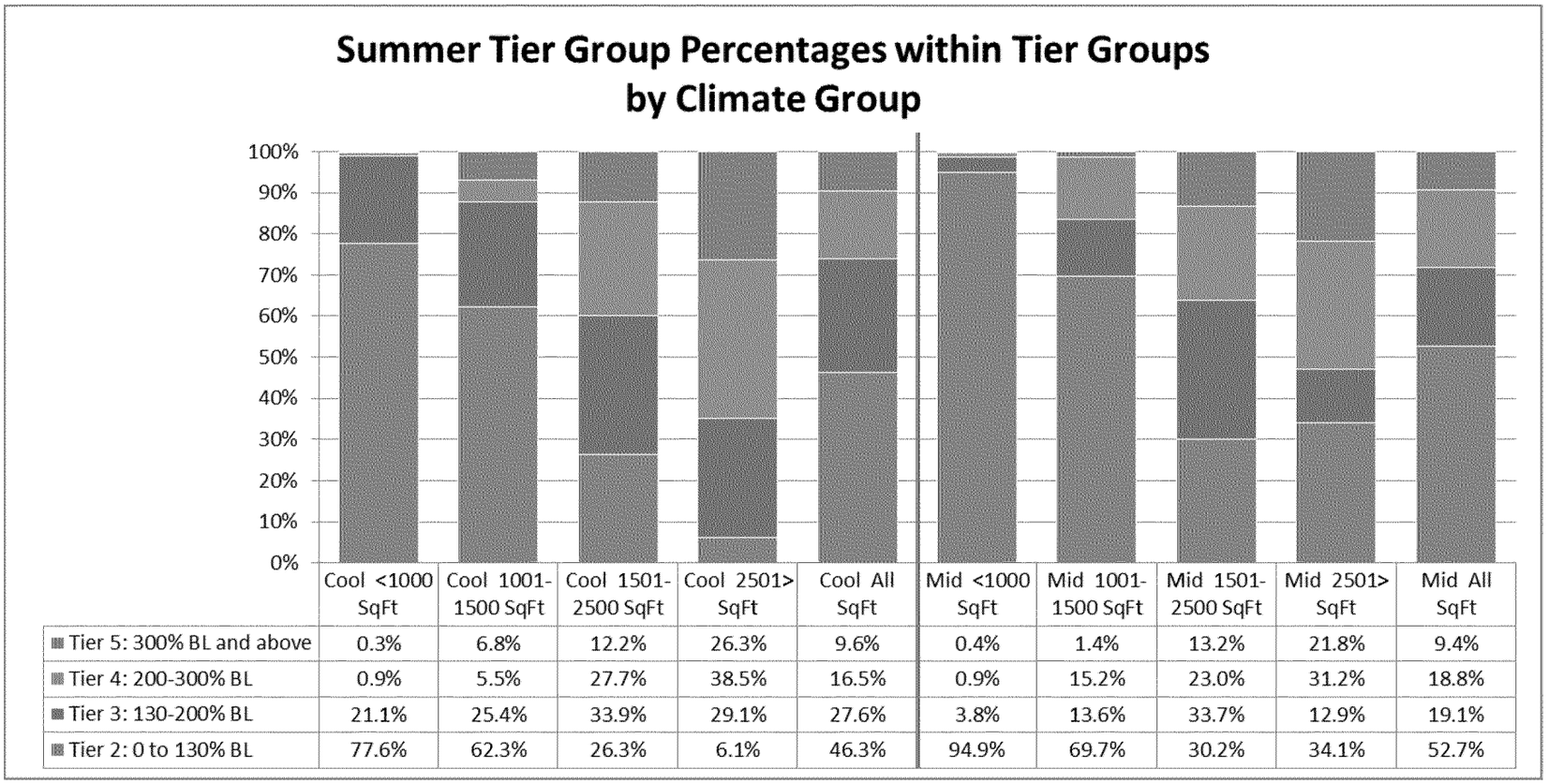
Figure 8: Average Summer Monthly KWh Usage by Climate Group and Square FootageSDGE



	<1000 SqFt	1001-1500 SqFt	1501-2500 SqFt	2501> SqFt	Total
Cool Group	263	367	569	884	481
Mid Group	321	483	769	848	630

Figure 9 computes the percentage of customers with usage in each tier with dwellings of a given size. For those in dwellings less than 1000 square feet, 77% in cool zones and 95% in mid zones were at or below Tier 2 levels. Only 6.1% of those in cool zone dwellings over 2500 square feet and 34% in mid zones were in the Tier 2 range. In these large dwellings, 53% in the mid zone and 65% in the cool zone had average summer usage that fell into Tier 4 or Tier 5.

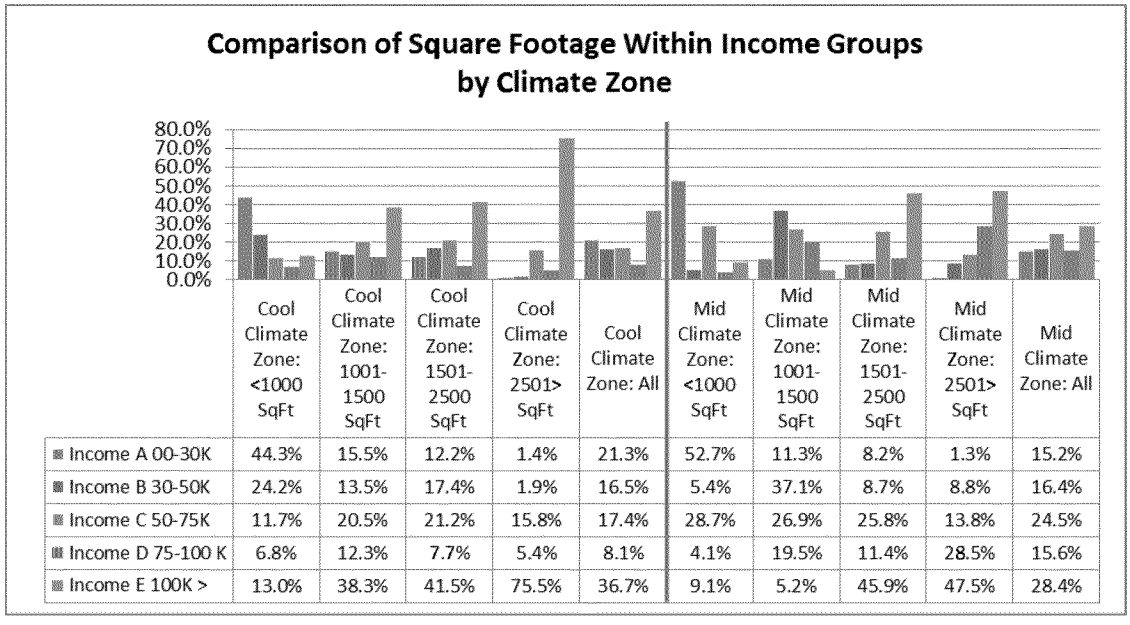
Figure 9: Percentage in Tiers 2-5 (Average Summer Monthly Use) by Square Footage of Dwelling SDGE



	Cool <1000 SqFt	Cool 1001-1500 SqFt	Cool 1501-2500 SqFt	Cool 2501> SqFt	Cool All SqFt	Mid <1000 SqFt	Mid 1001-1500 SqFt	Mid 1501-2500 SqFt	Mid 2501> SqFt	Mid All SqFt
Tier 5: 300% BL and above	0.3%	6.8%	12.2%	26.3%	9.6%	0.4%	1.4%	13.2%	21.8%	9.4%
Tier 4: 200-300% BL	0.9%	5.5%	27.7%	38.5%	16.5%	0.9%	15.2%	23.0%	31.2%	18.8%
Tier 3: 130-200% BL	21.1%	25.4%	33.9%	29.1%	27.6%	3.8%	13.6%	33.7%	12.9%	19.1%
Tier 2: 0 to 130% BL	77.6%	62.3%	26.3%	6.1%	46.3%	94.9%	69.7%	30.2%	34.1%	52.7%

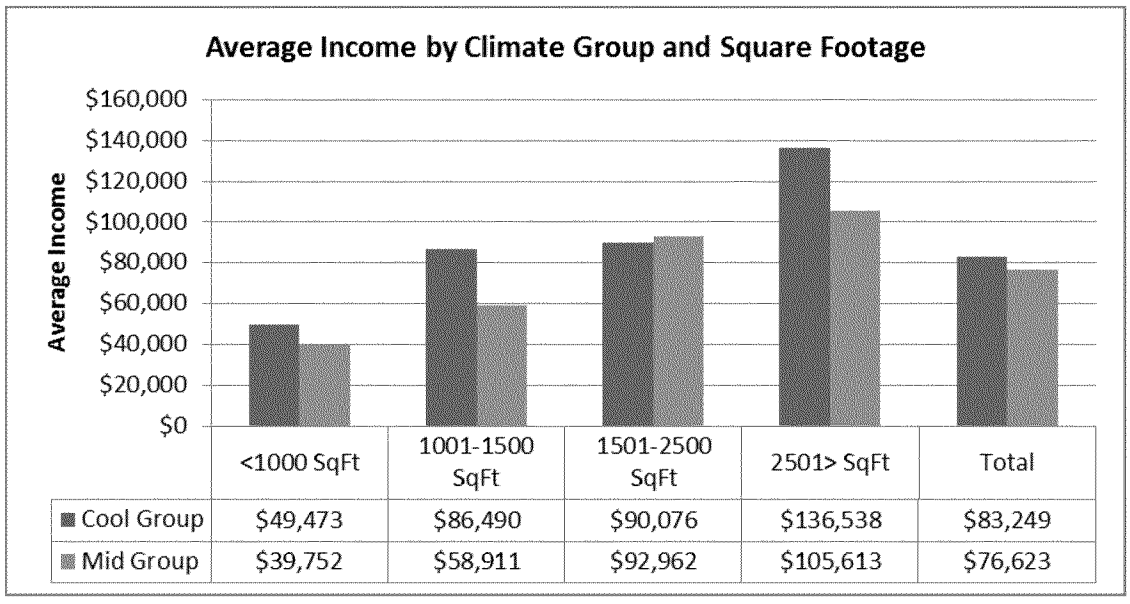
There is a strong correlation between square footage of dwellings and income. Of those in dwellings over 2500 square feet, 47 to 75% (depending on climate zone) earned more than $100,000. Very few people earning over $100,000 lived in dwellings under 1,000 square feet – 13% in the more urbanized cool zone, and 9% in the mid zone (Figure 10).

Figure 10: Square Footage within Income Groups by Climate Zone SDGE E



	Cool Climate Zone: <1000 SqFt	Cool Climate Zone: 1001-1500 SqFt	Cool Climate Zone: 1501-2500 SqFt	Cool Climate Zone: 2501> SqFt	Cool Climate Zone: All	Mid Climate Zone: <1000 SqFt	Mid Climate Zone: 1001-1500 SqFt	Mid Climate Zone: 1501-2500 SqFt	Mid Climate Zone: 2501> SqFt	Mid Climate Zone: All
Income A 00-30K	44.3%	15.5%	12.2%	1.4%	21.3%	52.7%	11.3%	8.2%	1.3%	15.2%
Income B 30-50K	24.2%	13.5%	17.4%	1.9%	16.5%	5.4%	37.1%	8.7%	8.8%	16.4%
Income C 50-75K	11.7%	20.5%	21.2%	15.8%	17.4%	28.7%	26.9%	25.8%	13.8%	24.5%
Income D 75-100 K	6.8%	12.3%	7.7%	5.4%	8.1%	4.1%	19.5%	11.4%	28.5%	15.6%
Income E 100K >	13.0%	38.3%	41.5%	75.5%	36.7%	9.1%	5.2%	45.9%	47.5%	28.4%

Figure 11: Average Income by Climate Group and Square FootageSDGE



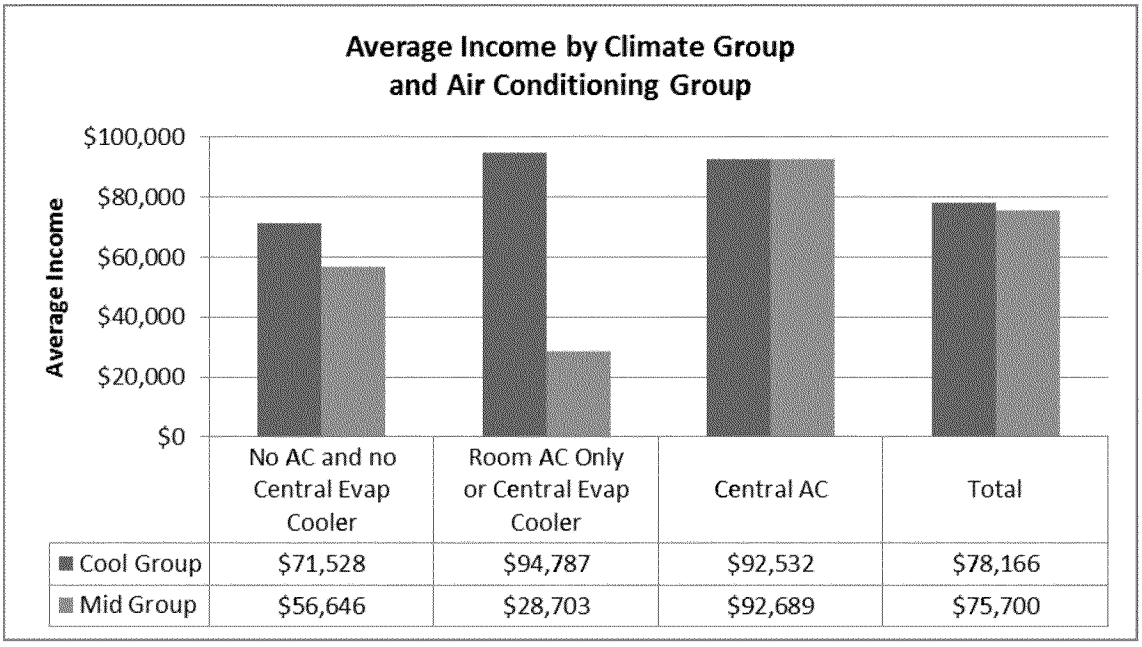
	<1000 SqFt	1001-1500 SqFt	1501-2500 SqFt	2501> SqFt	Total
Cool Group	$49,473	$86,490	$90,076	$136,538	$83,249
Mid Group	$39,752	$58,911	$92,962	$105,613	$76,623

4. Air Conditioning

Appliance such as air conditioners and swimming pools also affect summer peak usage and saturation of these appliances is correlated with income.

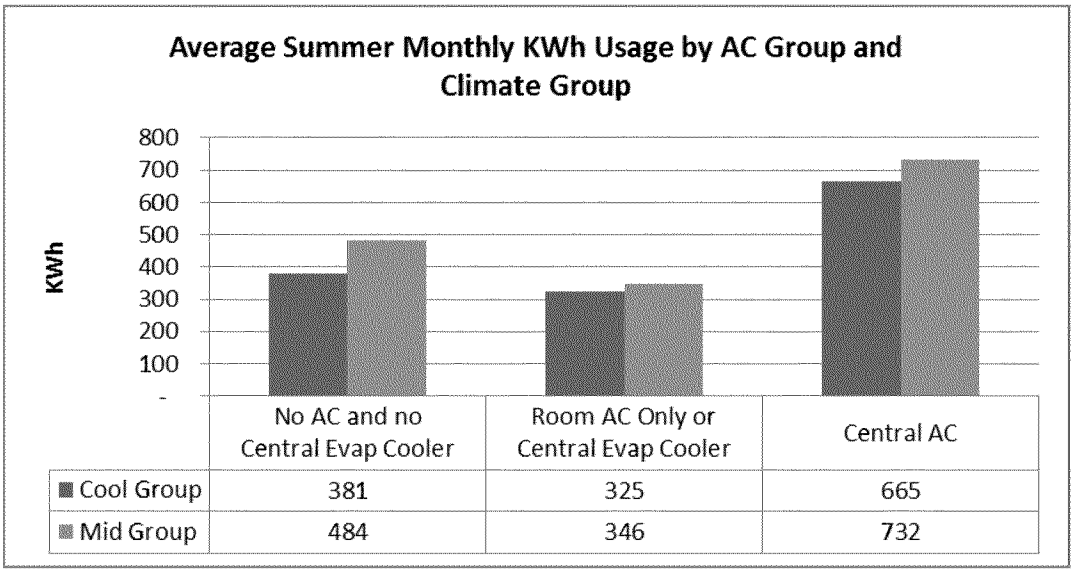
The average income of a central air conditioning user is higher in all climate zones. See Figure 12.

Figure 12: Average Income by Air Conditioner Type and Climate GroupSDGE



Relative to having no air conditioner, a central air conditioner increases average monthly summer usage by 74% in the cool zone (an increase of 284 kWh per month) and about 51% in the mid zone (an increase of 248 kWh per month).

Figure 13: Average Summer Monthly Usage by Air Conditioner Type and Climate Zone Group SDGE

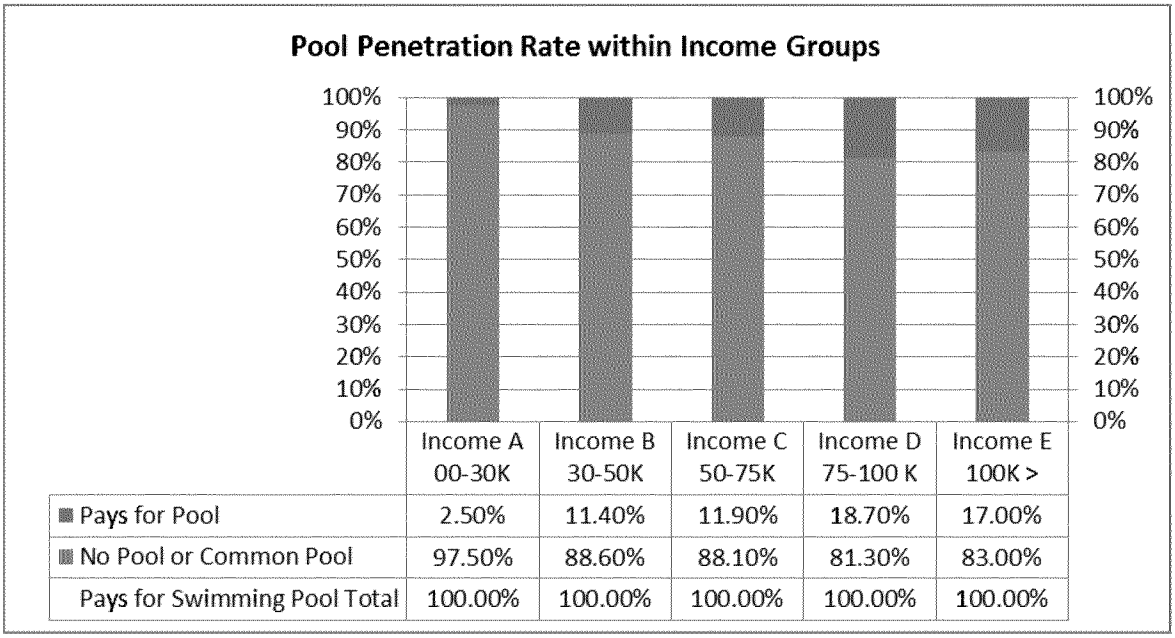


	No AC and no Central Evap Cooler	Room AC Only or Central Evap Cooler	Central AC
Cool Group	381	325	665
Mid Group	484	346	732

5. Swimming Pools

Swimming pools also are correlated with energy use and income. Customers must have *and pay* for the energy it uses before they are counted as having a pool. Pools in common areas are grouped with those without a pool. It should be noted that virtually no one in a multifamily dwelling has a pool. Thirteen percent of households have pools. They use more energy and have higher incomes than other households. Pool users tend to fall into higher tier groups, and their usage is higher.

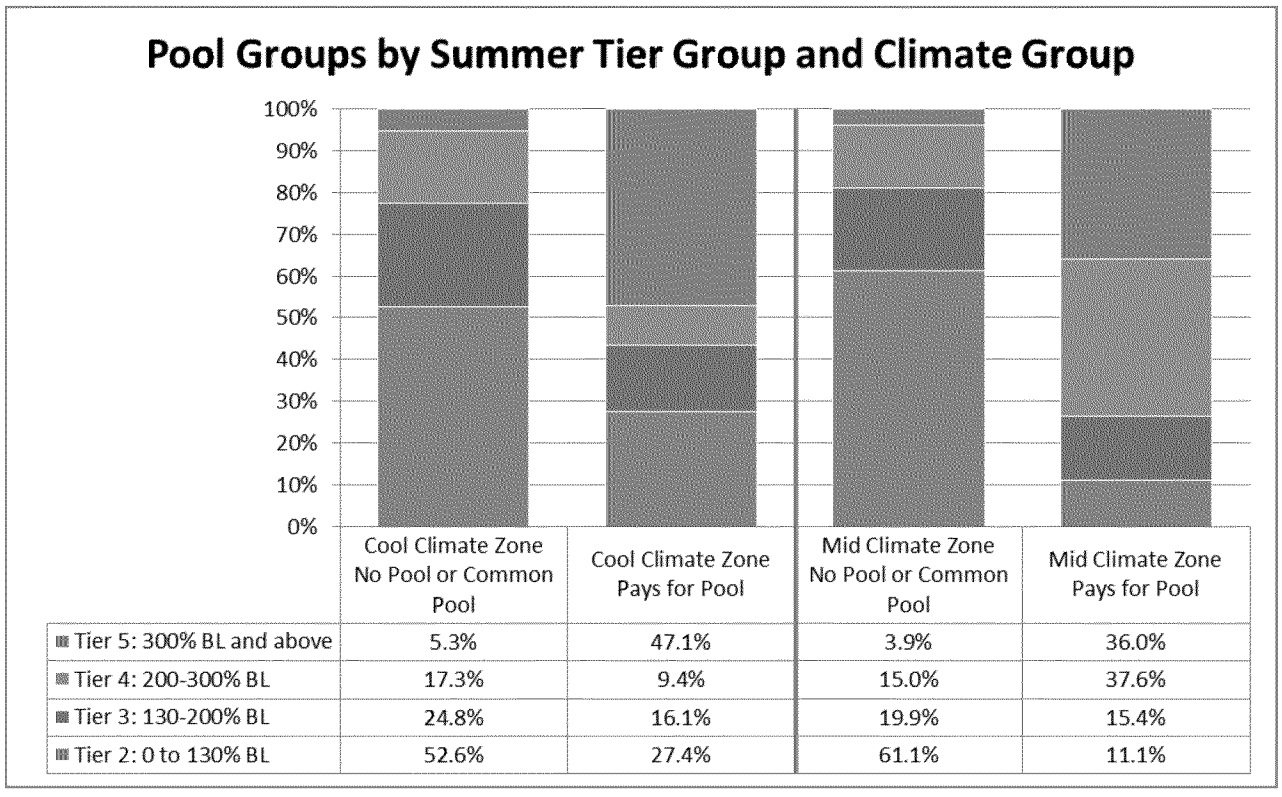
Figure 14: Pool Ownership across Income Groups SDGE



	Income A 00-30K	Income B 30-50K	Income C 50-75K	Income D 75-100 K	Income E 100K >
Pays for Pool	2.50%	11.40%	11.90%	18.70%	17.00%
No Pool or Common Pool	97.50%	88.60%	88.10%	81.30%	83.00%
Pays for Swimming Pool Total	100.00%	100.00%	100.00%	100.00%	100.00%

As expected, there are very few swimming pool owners at the low end of income; it rises to 17-19% for incomes over $75,000.

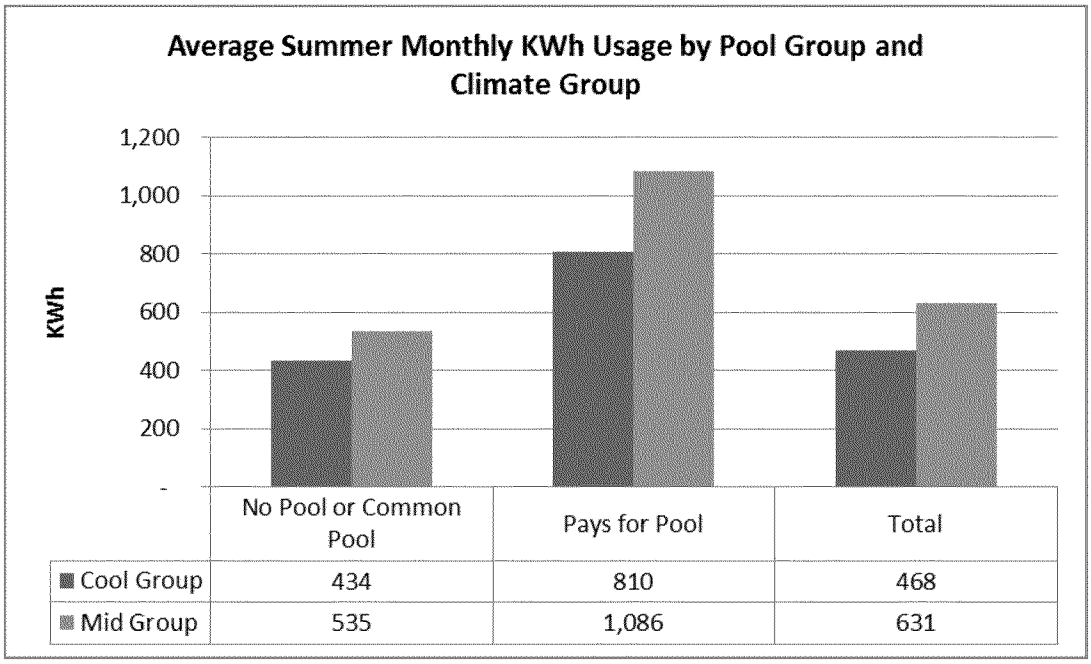
Figure 15: Single-Family Pool Groups by Summer Tier Groups and ClimateGroup SDGE



	Cool Climate Zone No Pool or Common Pool	Cool Climate Zone Pays for Pool	Mid Climate Zone No Pool or Common Pool	Mid Climate Zone Pays for Pool
Tier 5: 300% BL and above	5.3%	47.1%	3.9%	36.0%
Tier 4: 200-300% BL	17.3%	9.4%	15.0%	37.6%
Tier 3: 130-200% BL	24.8%	16.1%	19.9%	15.4%
Tier 2: 0 to 130% BL	52.6%	27.4%	61.1%	11.1%

In the cool to mid climate zones, a pool owner has usage that is 86-103% higher than a household without a pool, an increase of 376 kWh per summer month in the cool zone and 551 kWh per month in the mid zone. (Figure 16) The increase in usage with a swimming pool appears larger than with Edison and may be correlated with other factors.

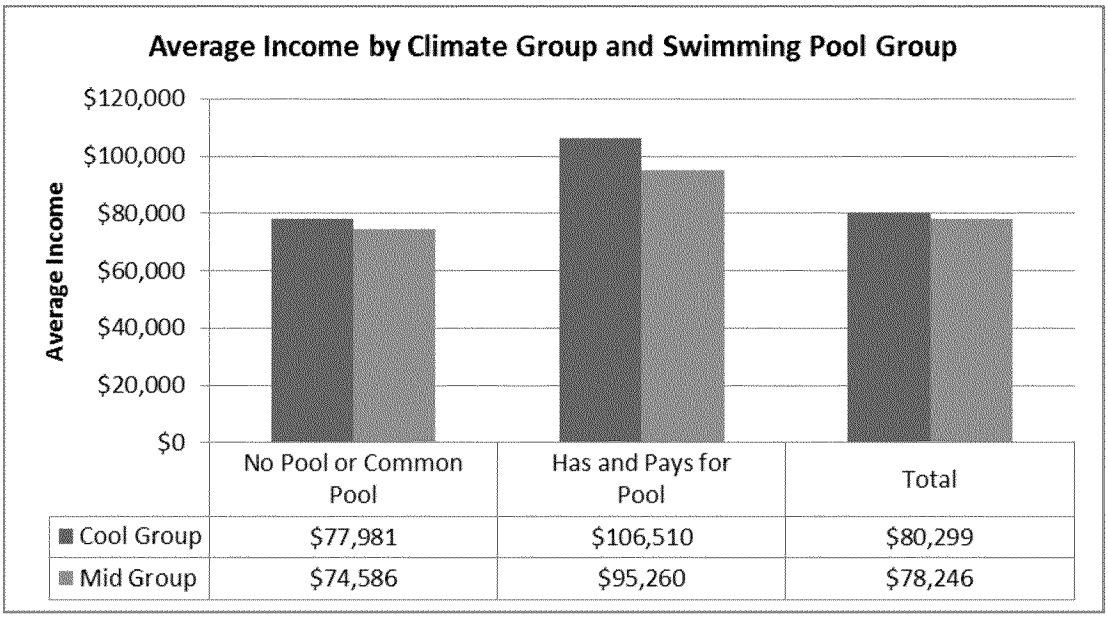
Figure 16: Average Summer Monthly Kwh Usage by Pool Group and Climate Group SDGE



	No Pool or Common Pool	Pays for Pool	Total
Cool Group	434	810	468
Mid Group	535	1,086	631

As shown in Figure 17, average incomes of pool owners are 26-33% higher than of those without swimming pools.

Figure 17: Average Income by Swimming Pool Group and Climate GroupSDGE



	No Pool or Common Pool	Has and Pays for Pool	Total
Cool Group	$77,981	$106,510	$80,299
Mid Group	$74,586	$95,260	$78,246

6. Conclusion

The RASS data provided by SDG&E provides support for the contentions that lower users who will be charged more by a customer charge are of lower

income, are more likely to live in apartments and smaller dwellings in general, and do not have as much peak-oriented energy consuming equipment (central air conditioners and swimming pools).