

# Disaggregated Load Profiles for Low Income Customers – Project Update

December 11, 2019  
Public Webinar



# Introduction



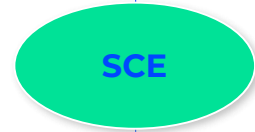
## Project Leads



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# Agenda

- Objectives
- Background
- Aggregated Electric Load Profiles
- The Power of Personalization
- A Look Ahead to Phase 2

## Project Objectives

- Deliver personalized profiles & messaging to low income customers
- Improve program targeting by identifying low income customers who would benefit from specific programs
- Communicate prioritized savings opportunities to low income customers
- Improved Customer Engagement
- Higher Return on Program Investments
- Bill Savings for Low Income Customers

*Improve the Low Income Customer Experience*

Background



## Origin

- Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) shall direct their selected disaggregation vendor, or its subcontracted vendor, to create individual California Alternate Rates for Energy (CARE) Program customer reports that illustrate disaggregated household usage by end use, over time. These reports are to be accessible to Energy Savings Assistance (ESA) Program contractors and customers (barring any privacy restrictions noted in accordance to any privacy requirements specified in Decision (D.) 14-05-016 and Rulemaking 08-09-133) and should be coordinated with the My Energy/My Account platforms. These reports, their analysis and the results should be incorporated into the newly reformatted ESA Program Energy Education component discussed elsewhere in this Decision.
- PG&E, SCE and SDG&E share vendor-developed load profiles with potential Demand Response Auction Mechanism (DRAM) bidders in accordance with customer privacy provisions.

# Project Scope



Time of Use (TOU) Rates



Demand Response Programs



Critical Peak Pricing (CPP)



Load Shifting



Energy efficiency upgrades (ESA)



Energy efficiency programs (behav tips)

Create customized reports for low income CARE customers

Share load profile results with low income customers, ESA contractors and DRAM bidders

Segment the CARE population into groups that would see realized bill savings benefits from load shifting, CPP enrollment, time of use rates, or other demand response programs



## Project Phases

### Phase I (electricity use) Proof-of-concept

- Demonstrate & validate the approach using a subset\* of the IOUs' CARE population

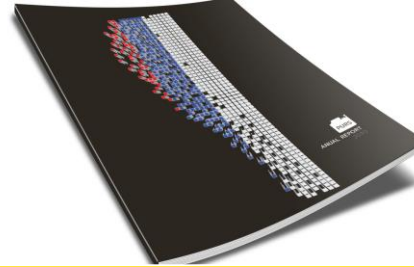
### Phase II (electricity + gas use)

- Integrate results and profiles into online platforms accessible to CARE customers and ESA contractors and share profiles with DRAM bidders

*\*Selected random sample (~20%) of overall CARE population - sample not necessarily representative of overall population*

# Project Deliverables

SEGMENTATION TOOL				
Single Family Home	213015	965092	John Jones	1234 Main St
1,000 Sq. Ft.	290881	737186	Toni Thompson	23 Centre Ave
	339586	929651	Jim Jackson	5567 Meridian Ct
TOU	162795	527693	Slacey Smith	5555 Wellington Ave
CPP	289245	411381	Michelle Myer	88 Yonge St
Load Shifting	128999	456345	Bill Baker	889 Queens St
DR	215795	801966	Dave Davidson	4557 4th St
Higher than average	182215	704945	Wendy Williams	24 Park Ave
Top 15%	310180	591116	Karen Kim	6875 Washington Blvd
Heating & Cooling Incentive	194244	944972	Mary Murphy	303 Elm Rd
Above 5 kWh/month	193998	451608	Charlie Campbell	6 Lake St
Above 500 kWh/month	187677	716169	John Jackson	6531 View Ave
More than average	154545	828724	Katherine King	634 Park Ave
More than average	316363	400908	Larry Lester	65 Maple Rd
	209560	613126	Nick Nelson	3000 Meadow Ct
	279946	669936	Peter Park	25 Madison St



## Customer Profiles / Segmentation File

- CSV file of CARE customer load profiles and associated savings from TOU rates, CPP, load shifting, and DR programs as well as ESA and EE opportunities

## Final Report

- Insights from Customer Segmentation analysis and recommendations for data management and program continuation.

## Customer, Contractor, DRAM Reports

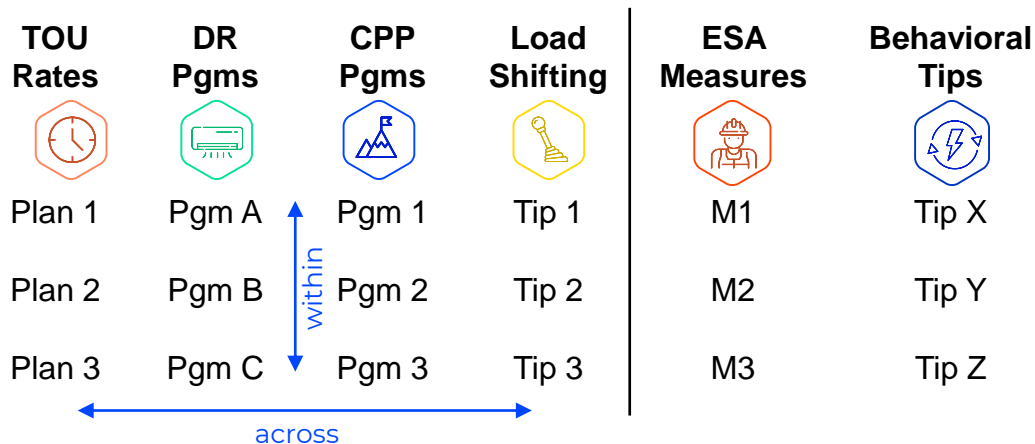
- Develop mock reports in Phase 1
- Produce and make reports available for all audiences in Phase 2

# Approach



# Customer Profiles Underpin Customers' Unique Savings Pathways

- Individual customer profiles can be used to quantify potential savings from different opportunities
- Rank ordering *within* the 6 different opportunities provides first level prioritization
- Rank ordering *across* the different opportunities provided further prioritization

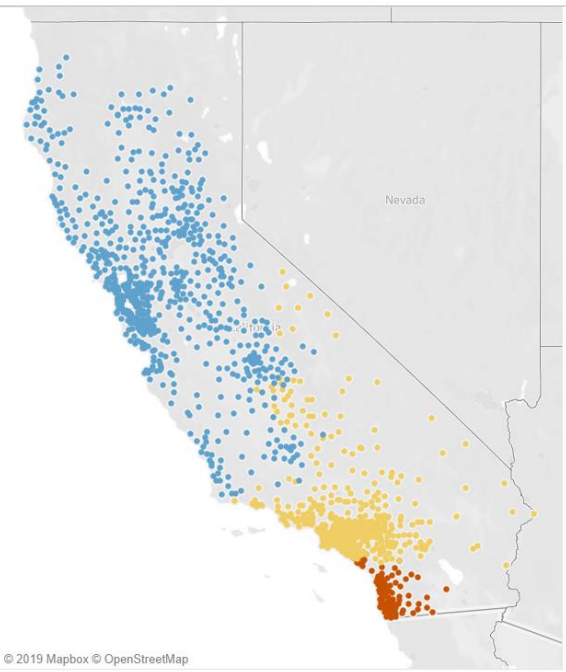


# Aggregated Electric Load Profiles



# Diverse Characteristics Across IOU Samples Before Analysis

Distribution of CARE Customers by IOU

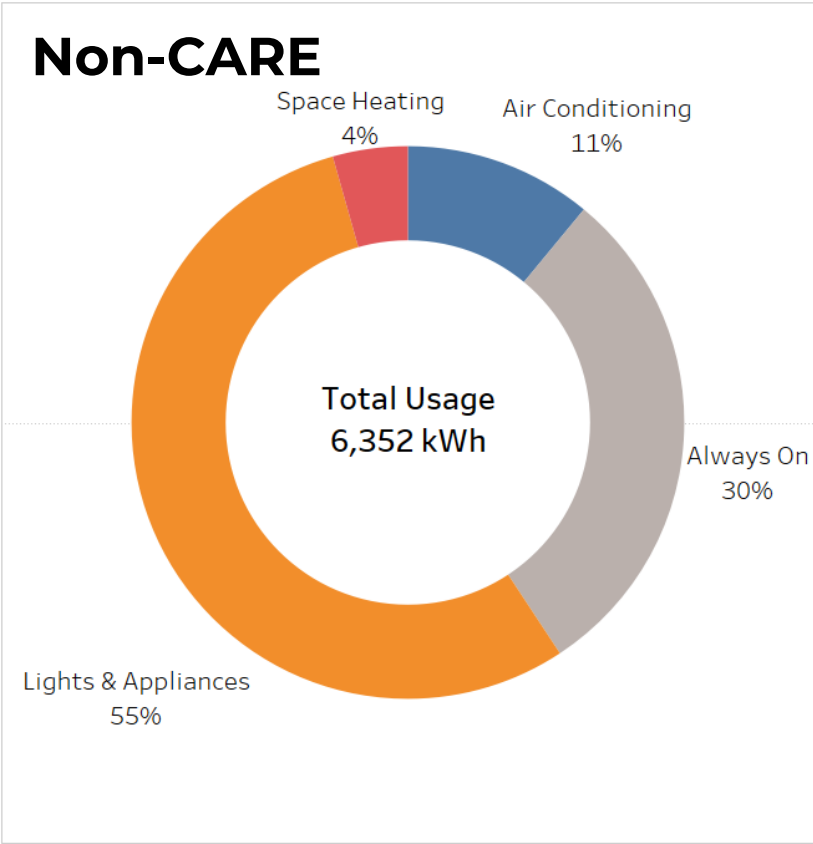
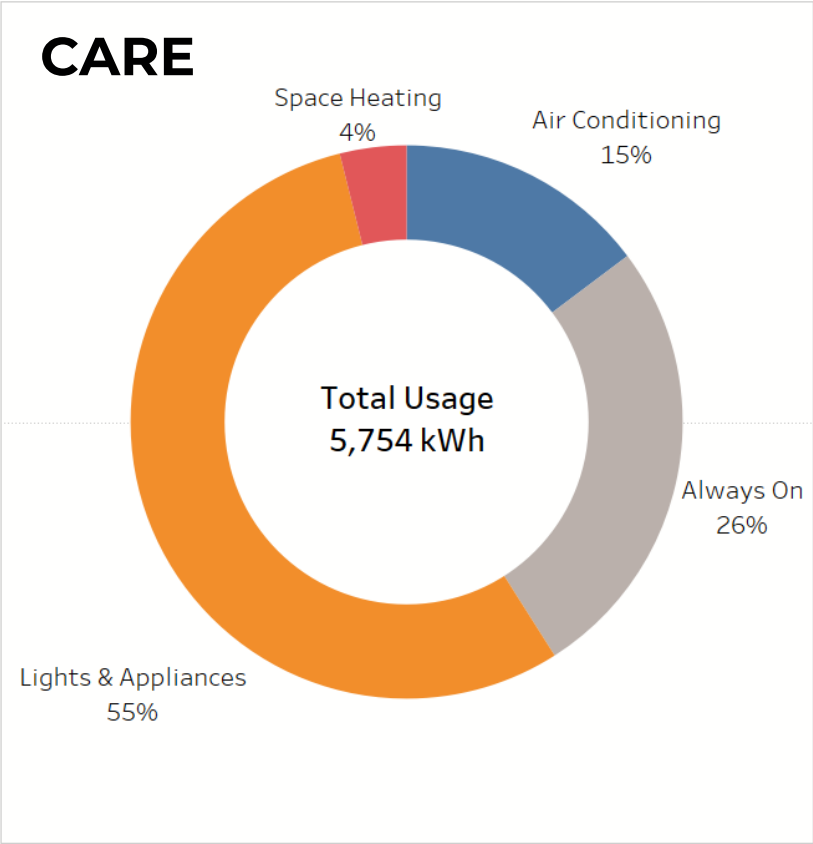


	PG&E		SCE		SDG&E	
	CARE	Non-CARE	CARE	Non-CARE	CARE	Non-CARE
Population Size Analyzed*	274,463	12,284	274,849	11,807	61,461	8,083
Single Family Homes	73%	79%	64%	74%	42%	62%
TOU Rate Plan Enrollment	<1%	<1%	7%	10%	4%	12%
Average Annual Bill	\$927	\$1,568			\$767	\$1,489

*\*Represents total population received. Disaggregated profiles generated for those with 12 month of AMI data available.*

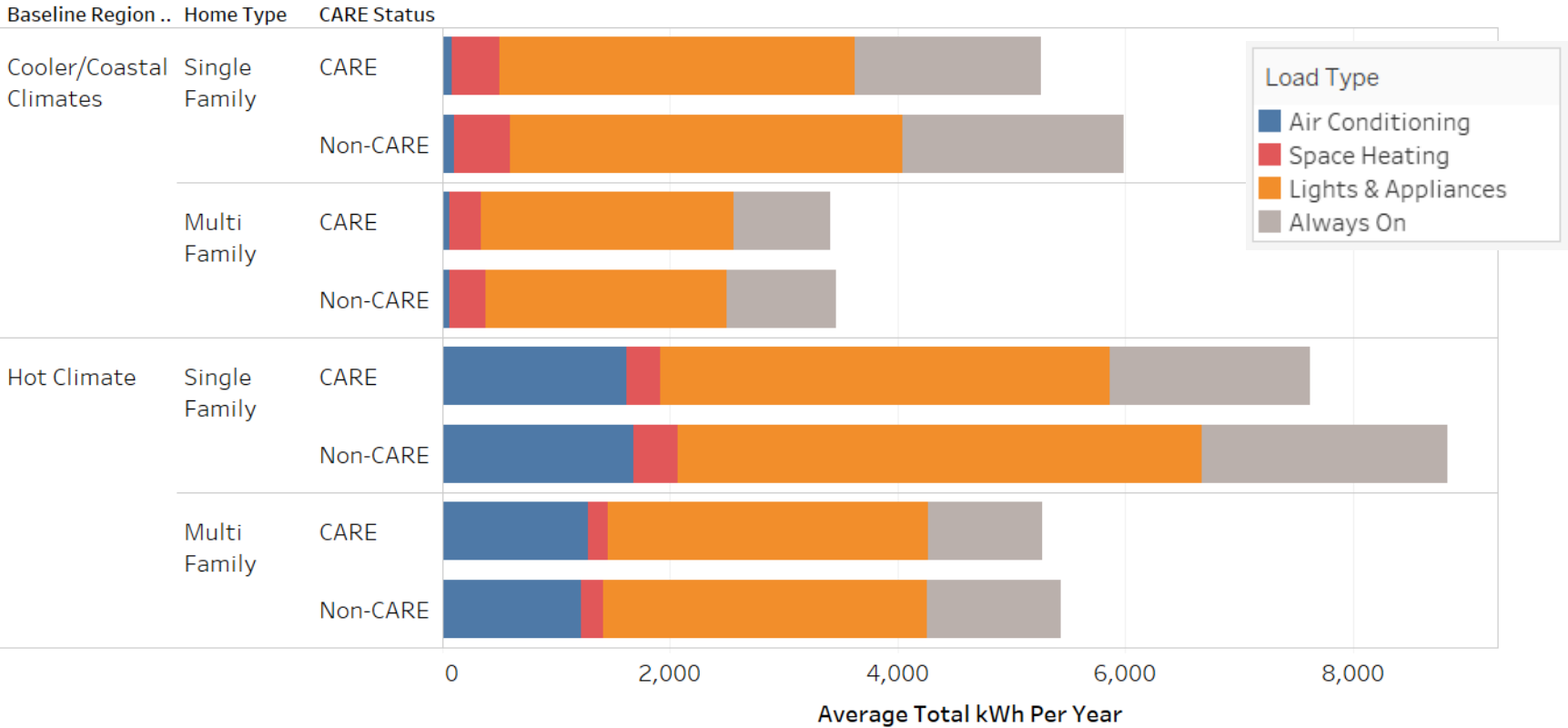
*Selected random sample (~20%) of overall CARE population - sample not necessarily representative of overall population*

# Low Income Customers Analyzed Used Less Than Non-CARE Customers



# Nuances Exist in Subpopulations Too (sample)

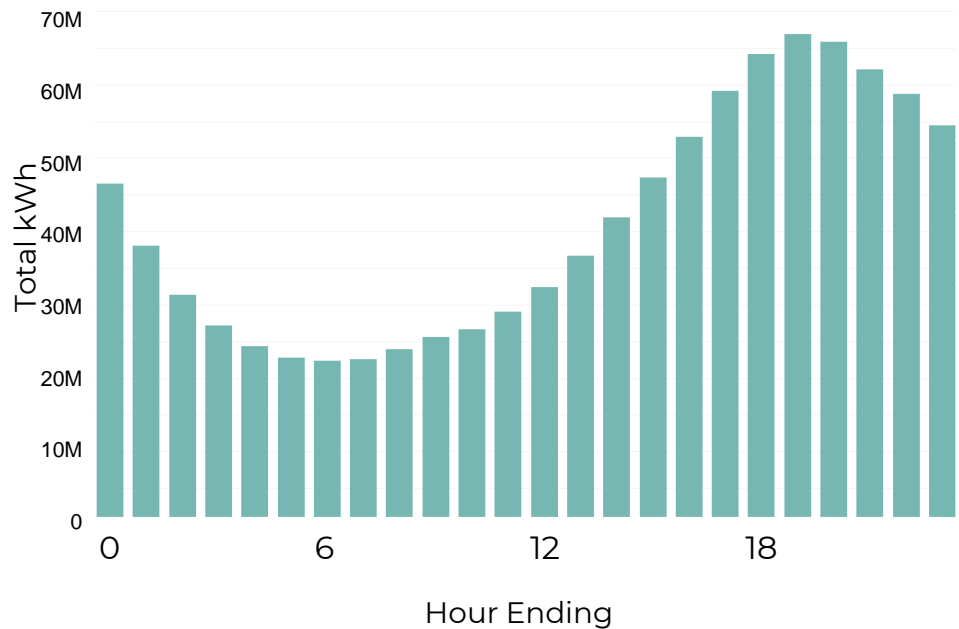
Average annual kWh end uses by baseline region, home type, and CARE population



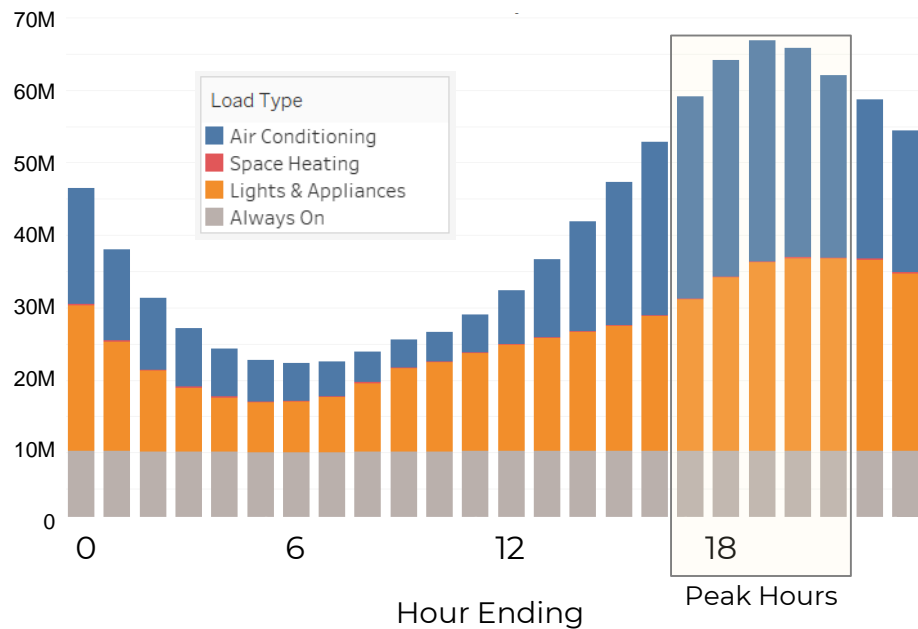


# Application 1 - Target Specific Loads Through Seasonal, Hourly Disaggregation (sample)

Total Summer Weekday Usage by Hour of Day – CARE Population



Total Disaggregated Summer Weekday Usage by Hour of Day – CARE Population



Estimated disaggregated usage based on an analysis of customers' electricity usage

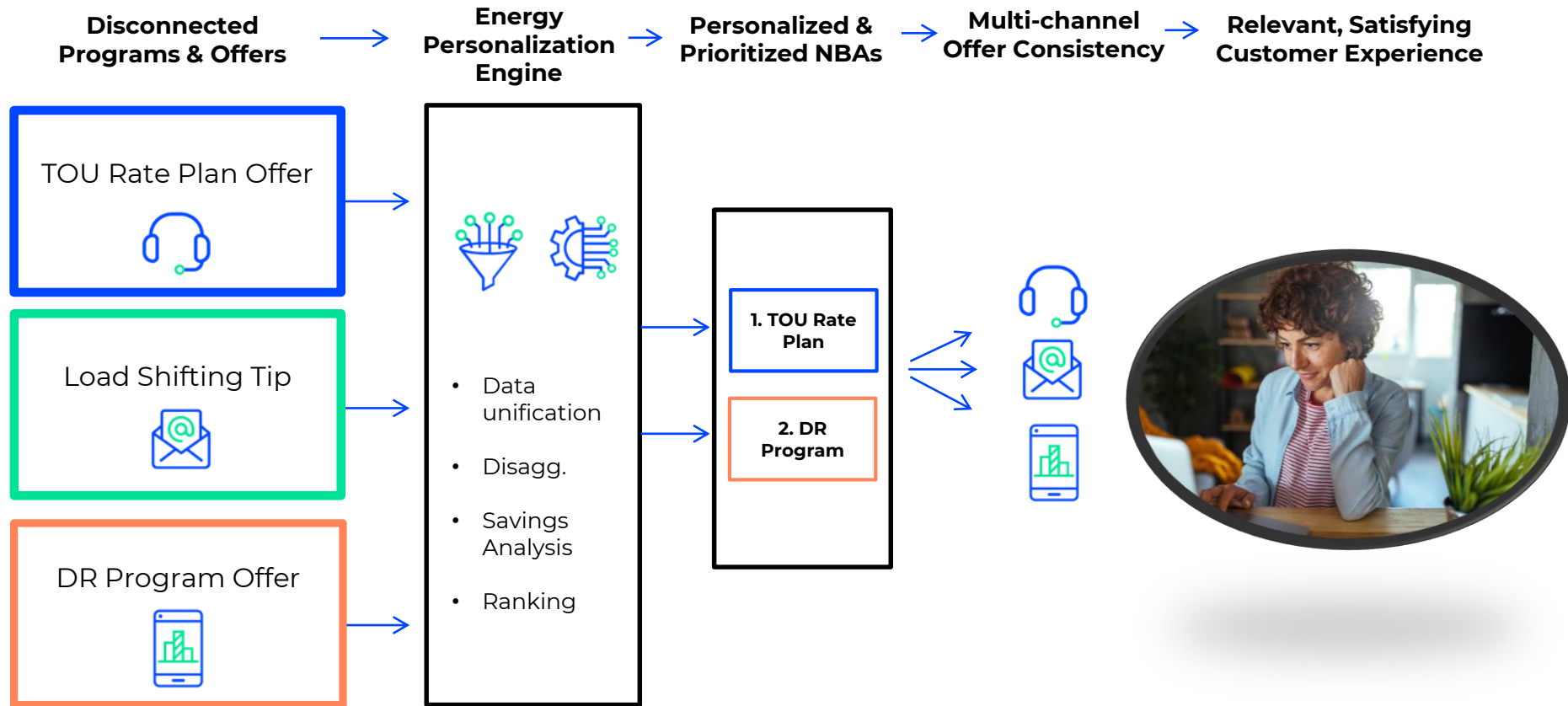
# The Power of Personalization



A blurred photograph of a crowd of people walking, overlaid with a teal and blue bokeh background. The text is centered over the image.

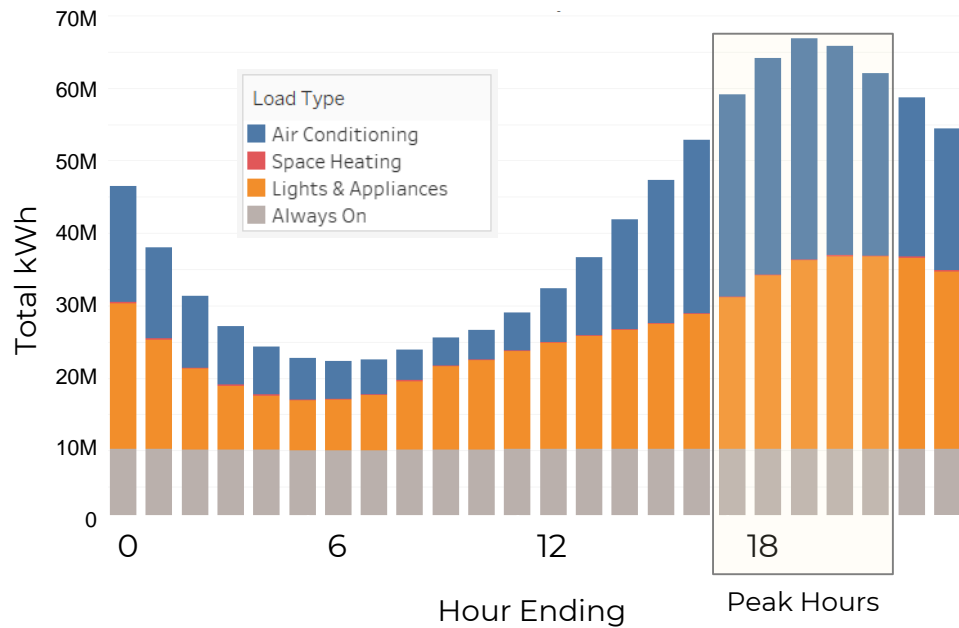
# Disconnected Experiences And Actions Do Not Deliver Modern Customer Experiences

# Personalization creates relevant customer energy experiences

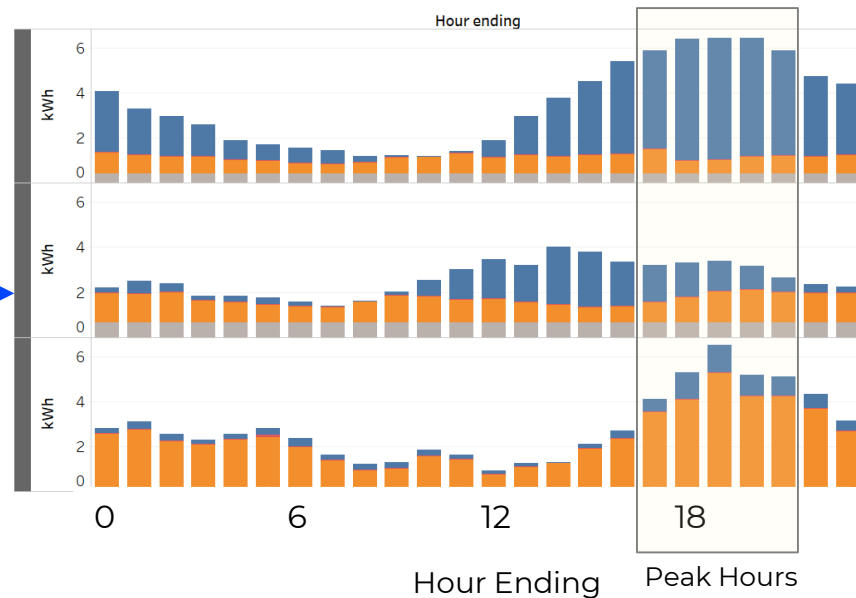


# Nobody is “Average” (sample IOU)

Total Disaggregated Summer Weekday Usage by Hour of Day – CARE Population

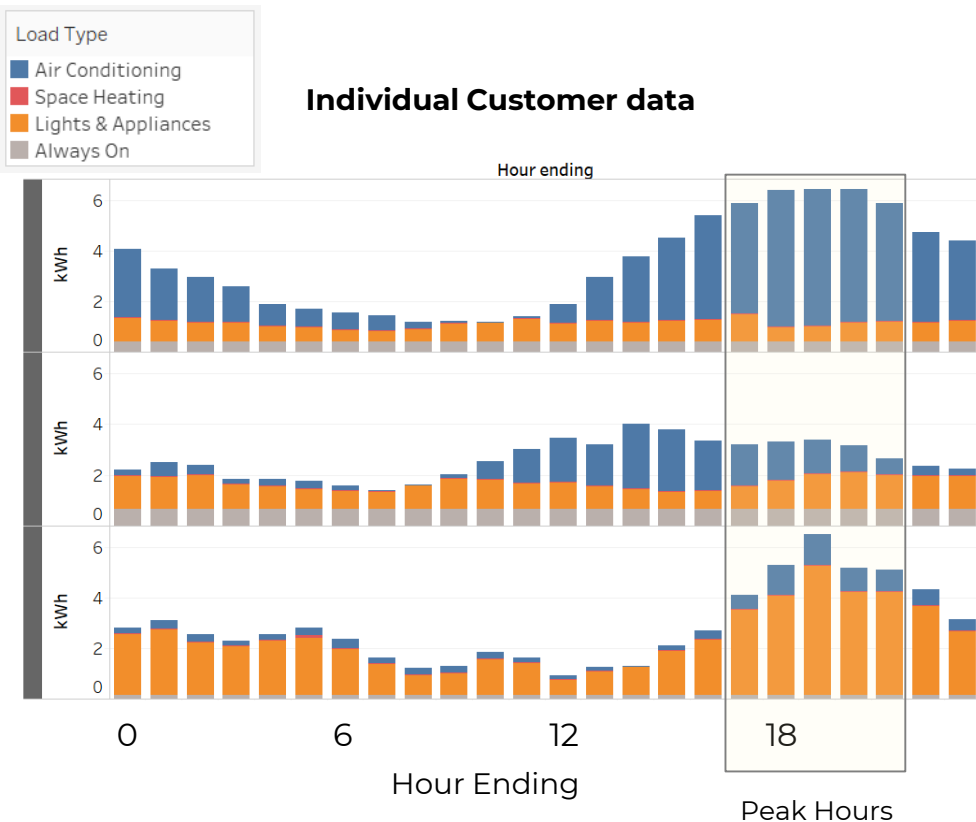


3 Individual CARE Customer Profiles – Summer Weekday by Hour of Day



Estimated disaggregated usage based on an analysis of customers' electricity usage

## Application 2 – Deliver Personalized, Compelling, Cross-Program Savings Recommendations (sample IOU)



### Insights and Actions

#### High peak AC Customer

- Enroll in a CPP program
- Go fan first (Behavioral)

#### High off-peak AC Customer

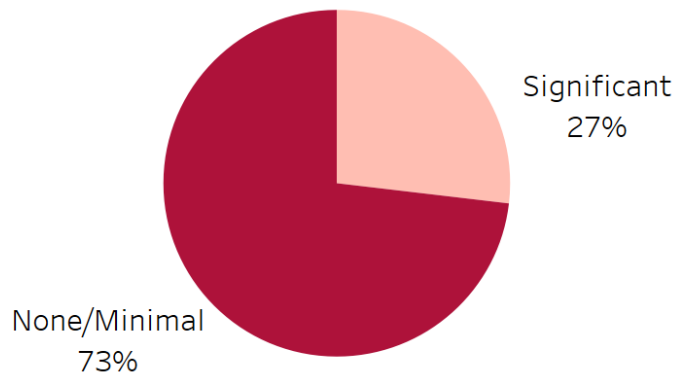
- Switch to a TOU Rate
- Lighting (ESA)

#### High peak Lights and Appliances Customer

- Switch to a TOU Rate
- Delay running dishwasher (Load shift)

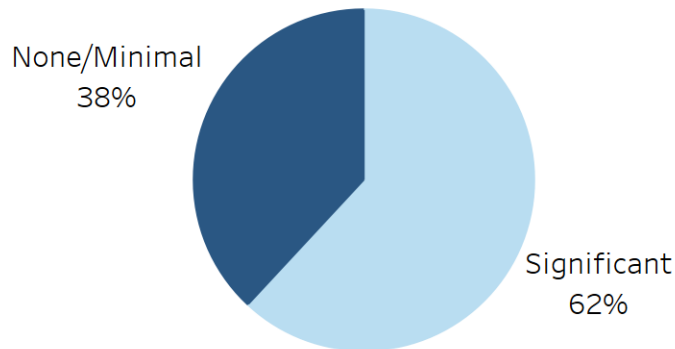
## Application 3 – Target Customers for Improved Health and More Efficient Electric Heating (sample IOU)

Electric Heating in Cooler Areas



**73%** of CARE customers in cooler regions show no/minimal electric space heat load. Once paired with gas profiles, we can identify candidates for comfort heating and higher efficiency electric heating.

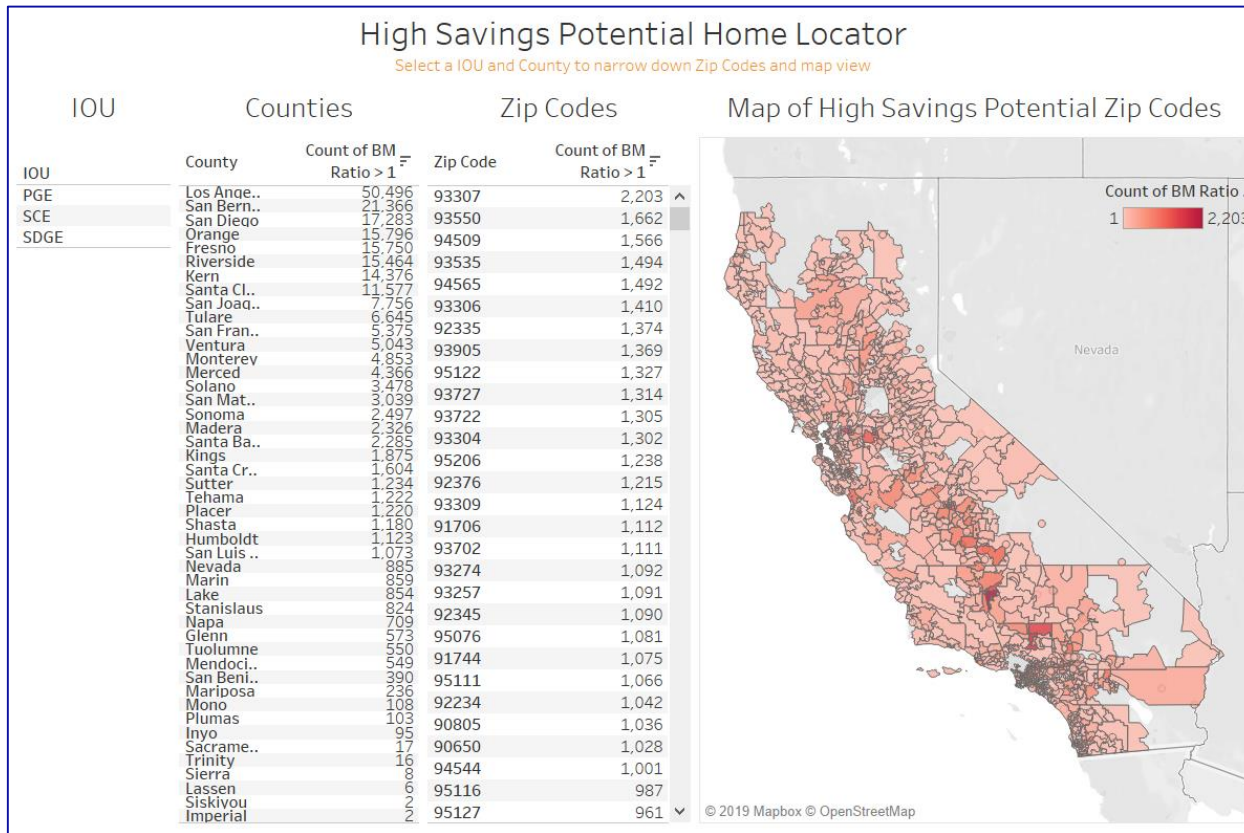
Air Conditioning Use in Hotter Areas



**38%** of CARE customers in hot climate regions show no/minimal AC load. Target candidates for cooling measures to improve comfort & health<sup>1</sup>

<sup>1</sup> Lack of access to AC in California can be linked to higher hospitalization rates  
<https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2017GH000127>

# Application 4 – Target High Potential ESA Customers by Zip Code

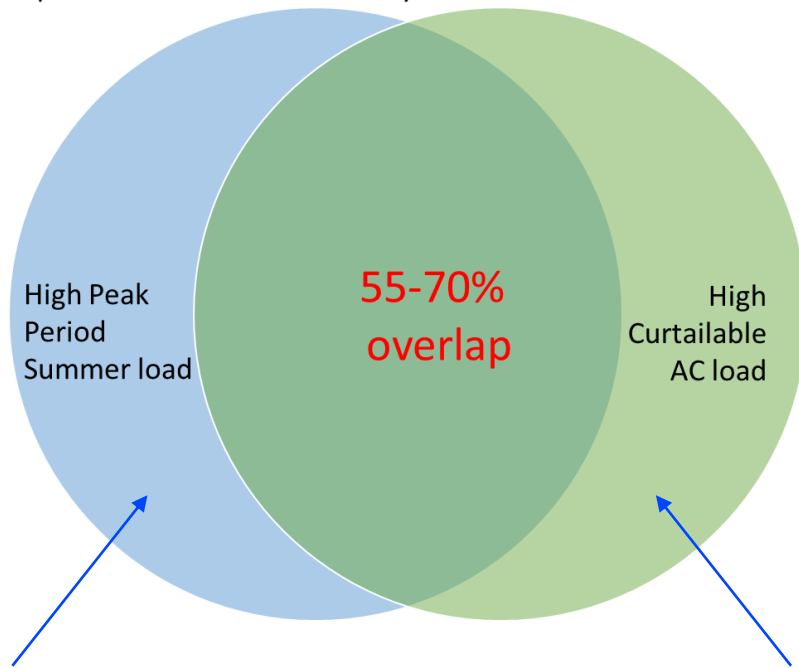


Screenshot of interactive tool where users can focus in on counties and zip codes with high concentrations of “high-savings-potential” homes



# Application 5 – Target DR Program Candidates Based on Personal Disaggregated AC Load

Top 15% of customers ranked by:



Wasted targeting effort and \$

Missed high potential candidates

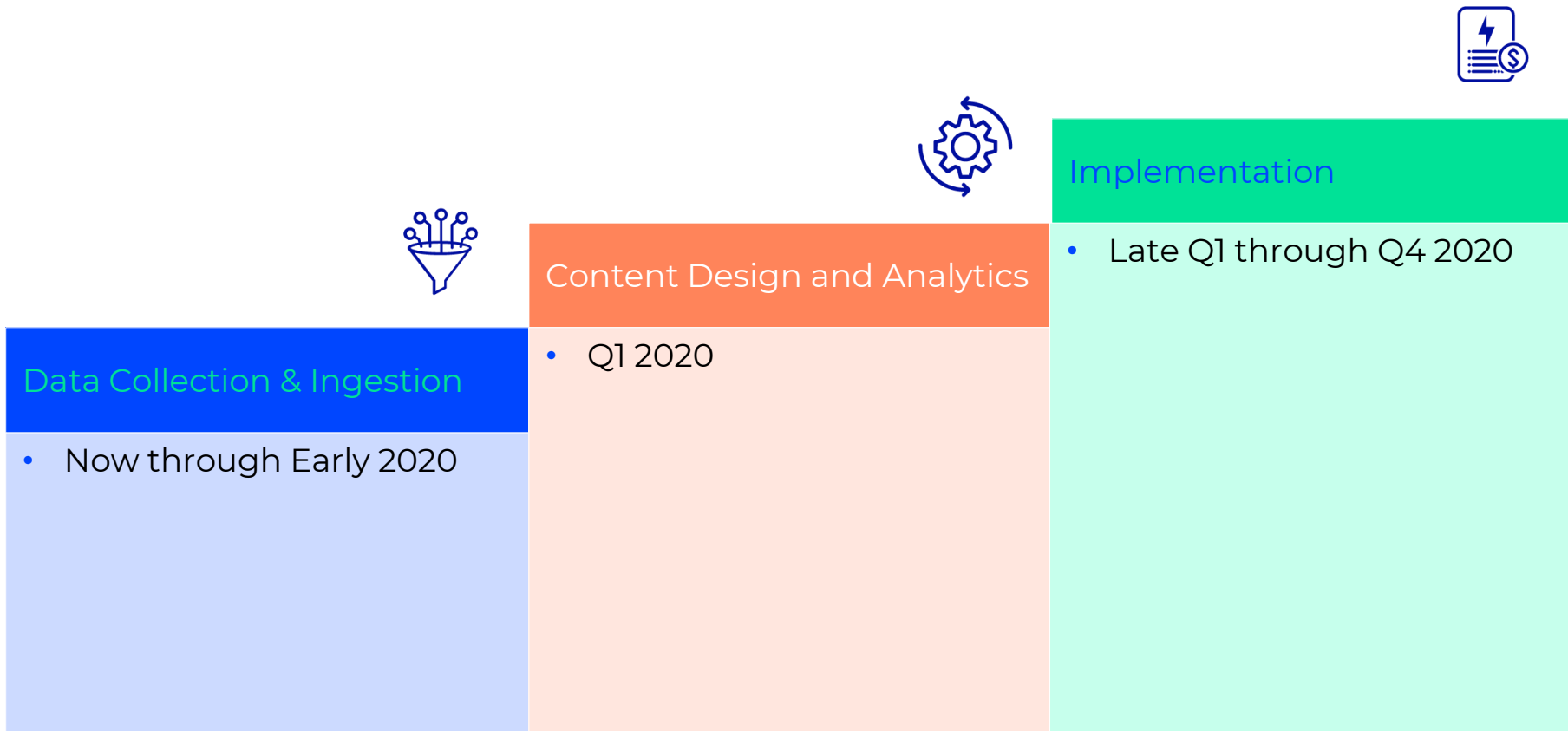
Overlap exists between high summertime peak-period users and those with high curtailable load potential. Ranked list of customers by curtailment potential can drastically improve program targeting and reduce administrative and other program costs\*

*\*Assumes current targeting approach uses total consumption as a criterion*

# A Look Ahead to Phase 2

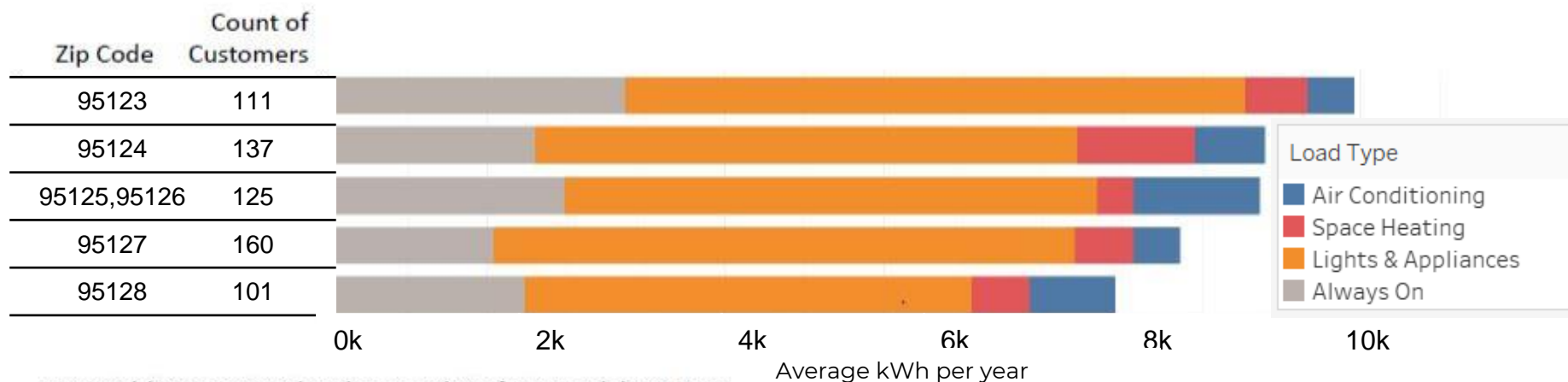


## Phase 2 Timeline



# Provide Report of Average Annual Disaggregated Load Profiles by Zip Code for DRAM Bidders

## Disaggregated Load Profiles – Average Annual Use per Account (kWh) Aggregated to show a minimum of 100 customers per group



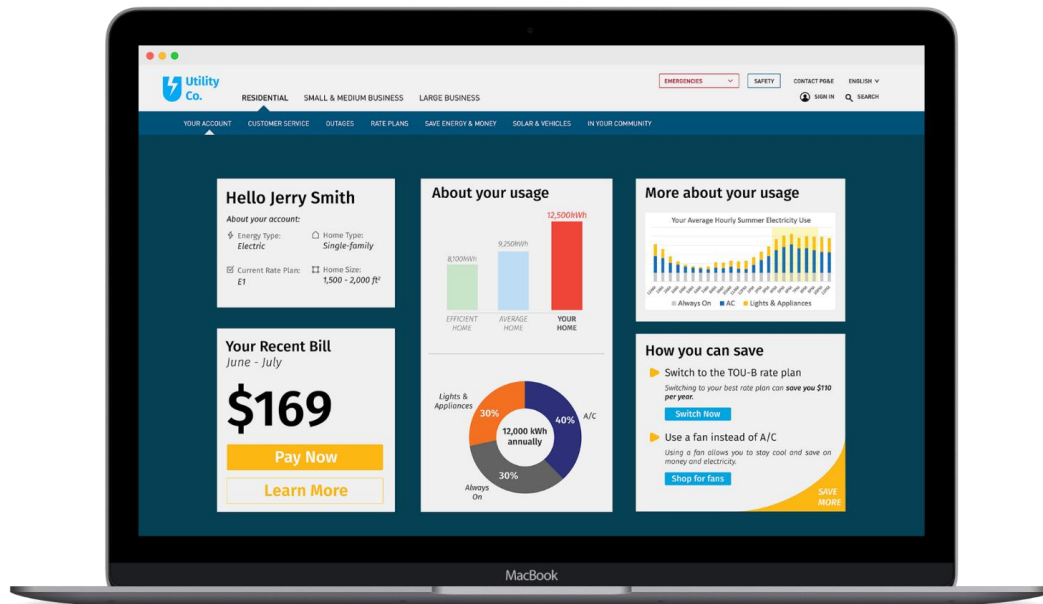
Estimated disaggregation is based on an analysis of customers' electricity use

Test data, illustrative only. Final report content may differ.

# Provide Information in Portal for All CARE Customers

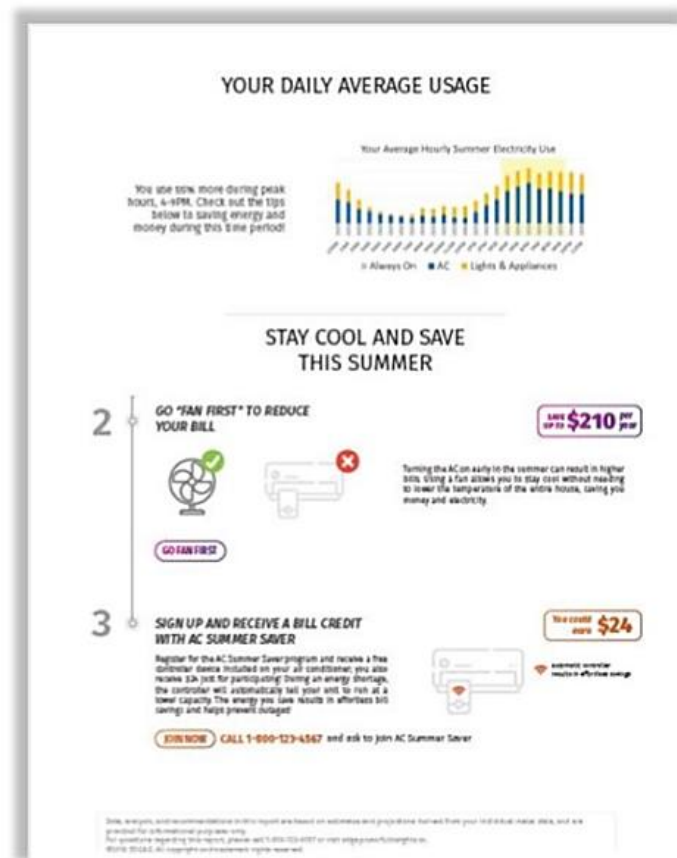
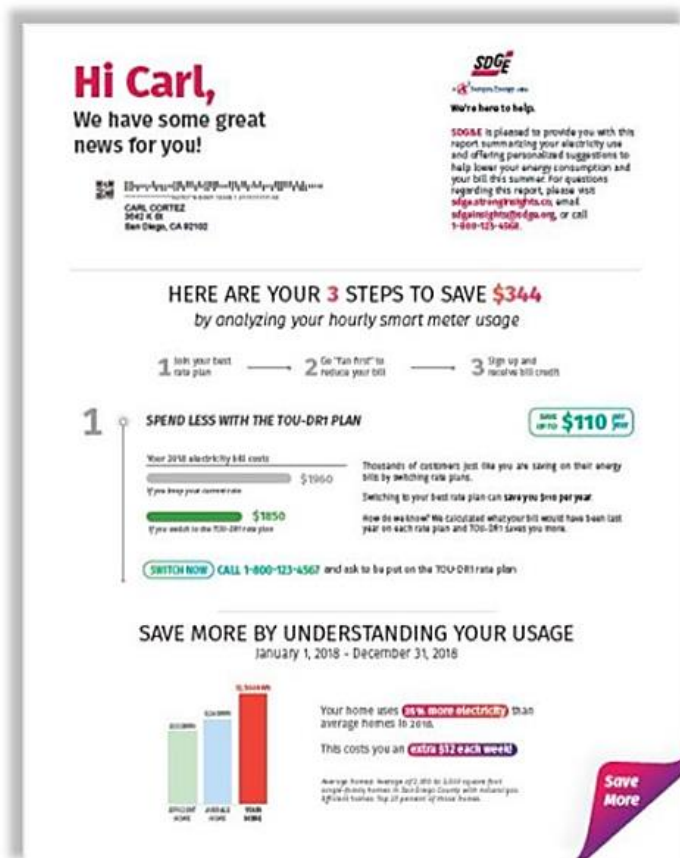


**Provide personalized insights** and a relevant **savings pathway** for all CARE customers.



*Test data, illustrative only. Final report content may differ.*

# Provide Access to Deeper Information in On-Demand PDF



Test data, illustrative only. Final report content may differ.

# Customer Journey



**Maria** is looking for additional ways to reduce her energy costs.

**Expectations:** learn how to decrease energy bills and enroll in available assistance programs

## Consideration / Pre-Engagement

Question if there are more ways to save

## Login & View Information

Log in to My Account and navigate to information on energy usage

## Evaluate Recommendations

Review which savings opportunities are available

## Act

Enroll in a program or adopt a behavior change

# Provide Insights to ESA Contractors



May be able to provide ESA program implementers and ESA contractors with **more personalized and actionable insights** about relevant upgrades and education for each customer.



*Test data, illustrative only. Final report content may differ.*



# Contractor Journey



**Joe** is going to 123 Main Street for his first home visit of the day.

**Expectations:** identify new ESA measures and provide energy education to customer

**Attend /  
Comprehend**

**Home Access**

**Relay / Share  
Information**

**Evaluate**

**Educate**

Download  
contractor  
report

Enter home  
and meet  
homeowner

Help with My  
Account Login

Conduct home  
assessment

Provide  
education to  
home owner

## Next Steps for Phase 2

- Plan for transfer of large, disparate data sets
- Allocate available IOU IT resources for portal integration
- Synchronize messages being sent to customers
- Configure content to be shared with customers, contractors, DRAM bidders
- Ensure contractors are prepared to use new information & streamline info integration into home visits
- Brief marketing teams on how to interpret segmentation results
- Deliver reports

## Recap: Project Objectives

- Deliver personalized profiles & messaging to low income customers
- Improve program targeting by identifying low income customers who would benefit from specific programs
- Communicate compelling savings opportunities to low income customers
- Customer Engagement
- Higher Return on Program Investments
- Bill Savings for Low Income Customers

*Improve the Low Income  
Customer Experience*

# Thank You / Q&A

Please direct further questions to: [BGettig@SDGE.com](mailto:BGettig@SDGE.com)