2019 Request for Information (RFI) – Customer Resource Center Addendum 1

Table of Contents

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SVCE Service Territory and Customer Demographics

SVCE uses the demographic information available from the American Community Survey. Responders are encouraged to find this data at https://www.census.gov/programs-surveys/acs, or to use any proprietary data that is more current or accurate.

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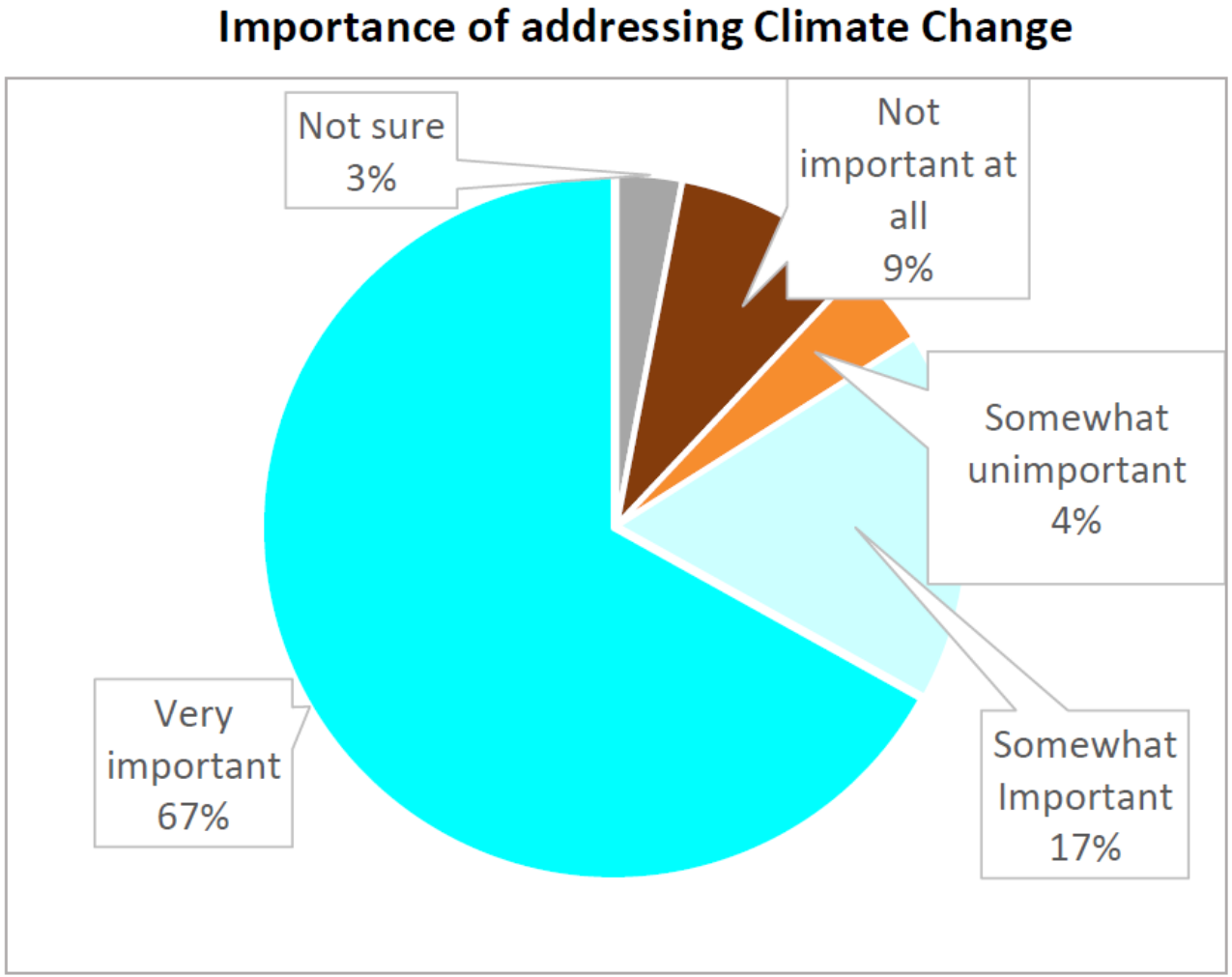
Key Survey Insights

Nichols Research Market Study
September 2017

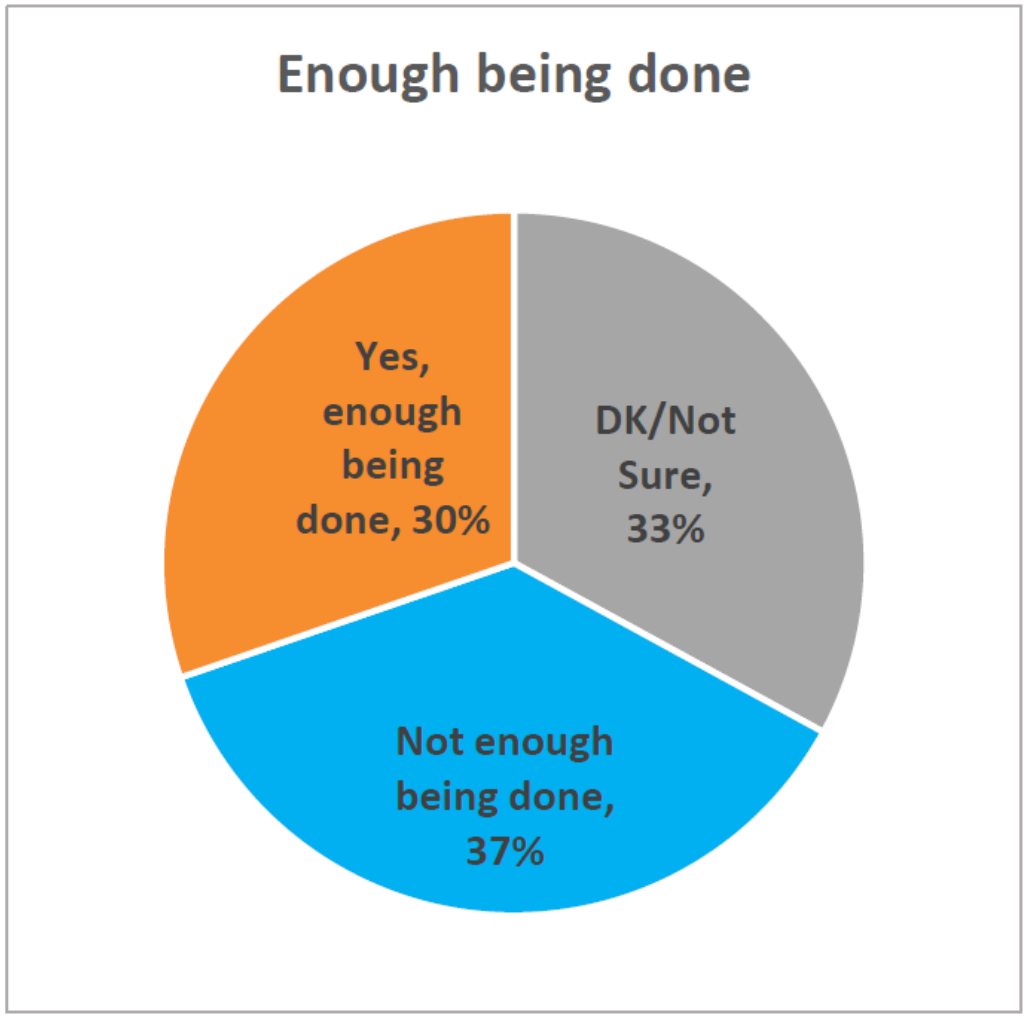
84% feel that addressing Climate Change is important (2/3 very important) to them personally; 9% feel it is not at all important

- Climate Change is a very important personal issue to 2/3 of SVCE customers.
  - It is significantly more likely to be important to females than to males.
  - As well as more important to Asian-Americans than to Whites.
  - Millennials and those ages 40-49 are more likely find the issue extremely important.
  - As do those living in Sunnyvale or Mountain View.
- Those feeling that the Climate Change issue is not important at all are significantly more likely to be over age 50, with the highest concentration over age 64.



Q2 Now, thinking about climate change a an issue in Santa Clara County, do you feel that addressing climate change is very important, somewhat important, somewhat unimportant, or not important at all to you personally.

Only 3 in 10 feel that enough is being done to address climate change in Santa Clara county – and fully 1/3 don't know

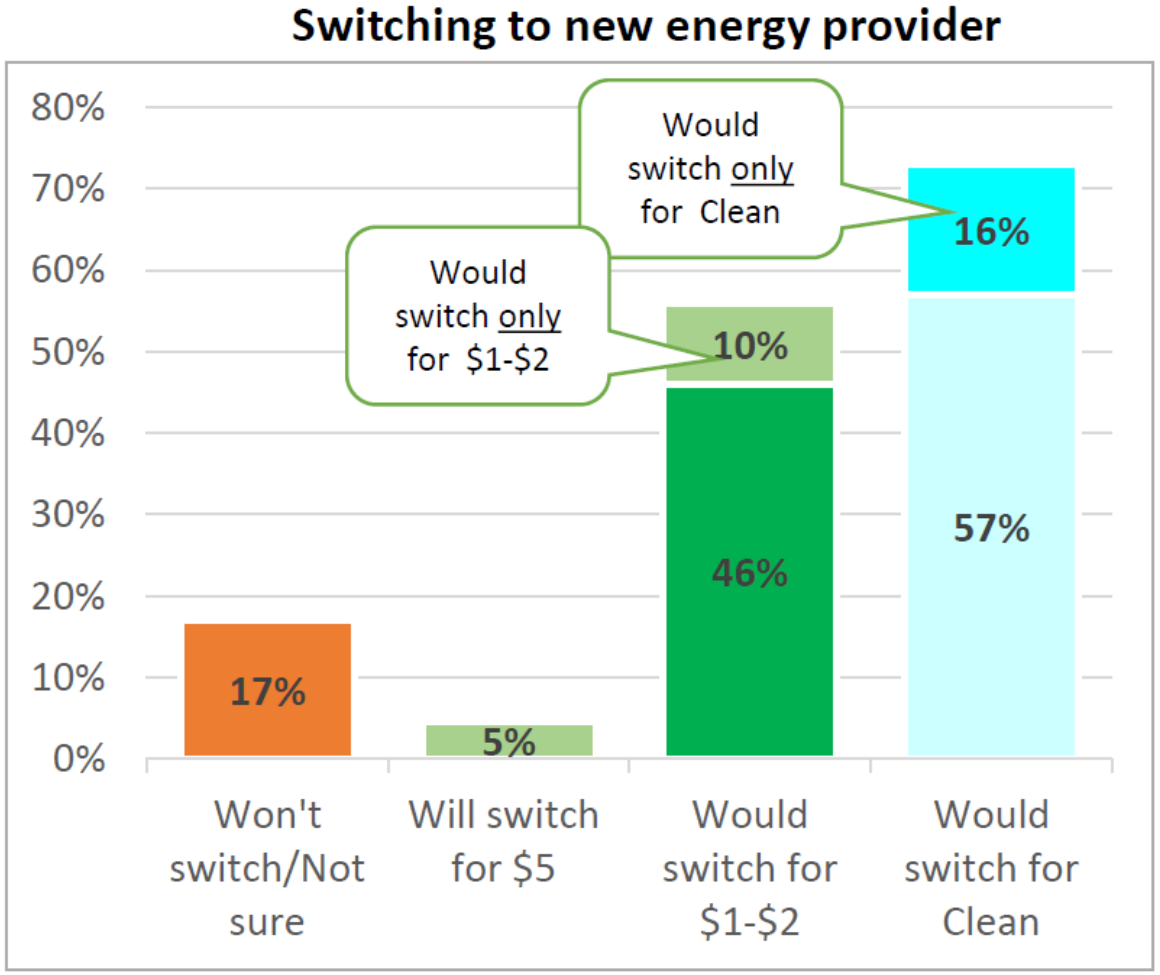


N = 602

- Customers feeling that "not enough is being done" are significantly more likely to be higher income ($150K+) and are more likely to be under age 50 .
  - Significantly more likely to be in age groups 18-30 and 40-49.
  - They are also more likely to be willing to switch provider for clean energy at same cost.
- Those with a favorable opinion of SVCE were significantly more likely to have an opinion, with a significantly higher proportion feeling "not enough is being done" and significantly fewer "not sure."
- Those "not sure" tend to be more likely to come from White and Asian-American ethnic groups; they are less likely have an opinion about or know of SVCE; and Cupertino has a significantly higher concentration.

Q3. Do you feel that enough is being done to address climate change in Santa Clara County.

Overall Market View: Offering small financial incentive appears to be less effective than offering "clean energy at same cost"



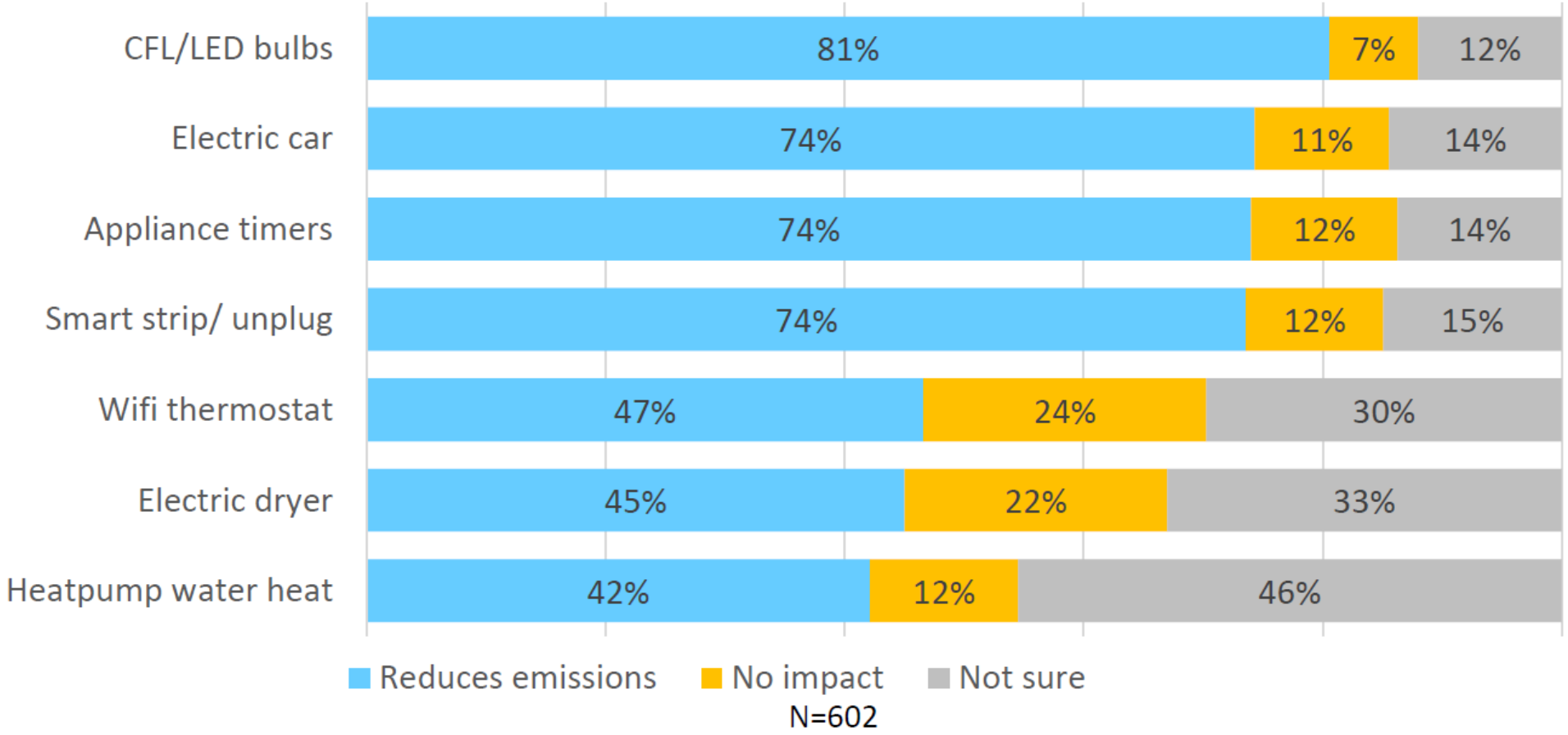
Base = 602

Q.8, 9a and 9b

- Offering Clean Energy at same cost captures majority of market (73%).
  - Many answered yes to both Clean Energy and $1-2 Savings.
- Those who refuse to switch no matter what the offer are more likely to identify as Latin or to be lower income or to be age 65+.
- Offering $5 to those who refuse to switch or are still unsure only converts 5% of the market.
  - The cost/benefit may not be supportable.

At least 3/4 know that modern bulbs, electric cars, appliance timers and smart strips/unplugging act to reduce emissions

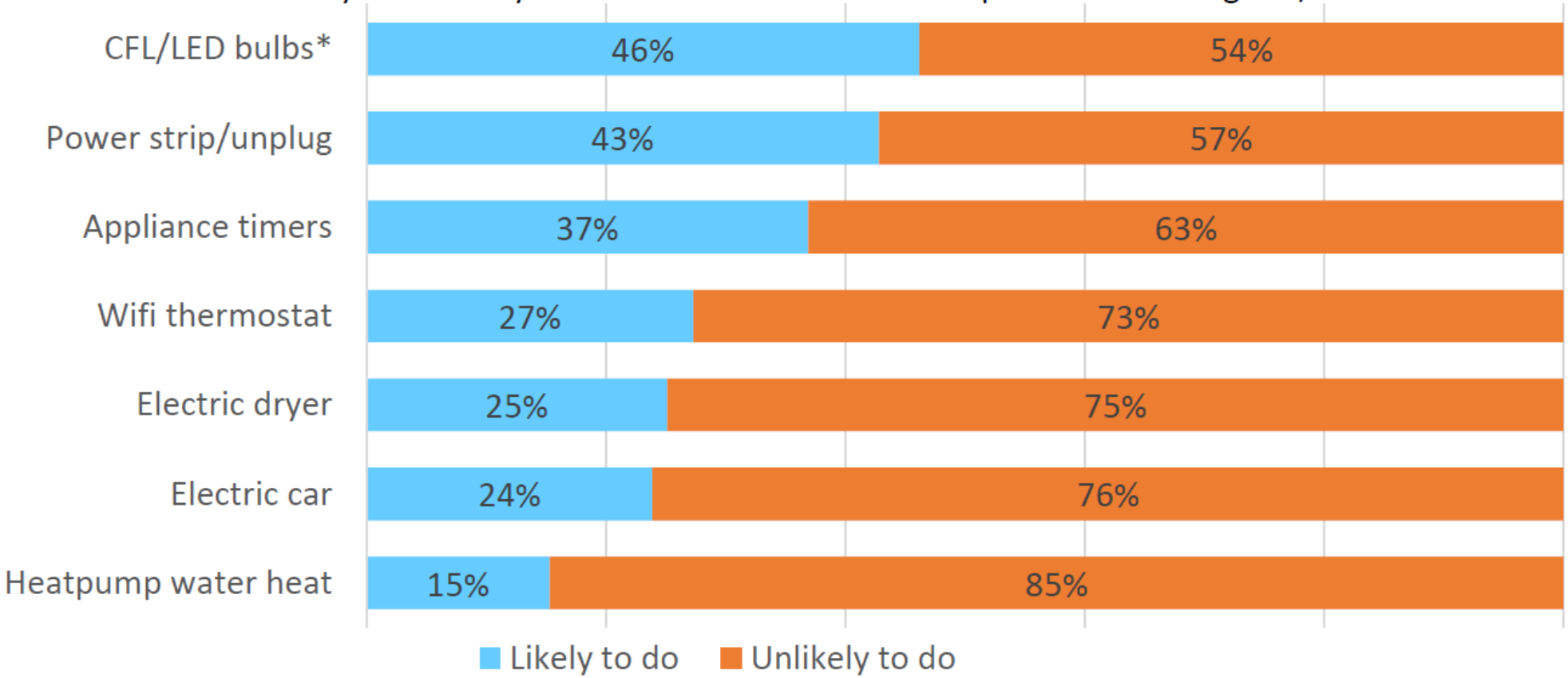
- Young customers tend to be more savvy; older customers (65+) tend to be less sure.



Q. 11a Here is a list of actions you can take to reduce carbon emitting carbon into the atmosphere. For each tell me if you believe that action has an impact on reducing carbon emissions or not?

Likelihood to do in future among those not doing today

- Customers in Cupertino more likely to drive electric car in next 6 to 12 months.
- Whites are significantly less likely to install a heat pump water heater or an energy saving timer or a WIFI thermostat than other ethnic groups.
- Seniors are less likely to take any of these actions with the exception of installing CFL/LED bulbs



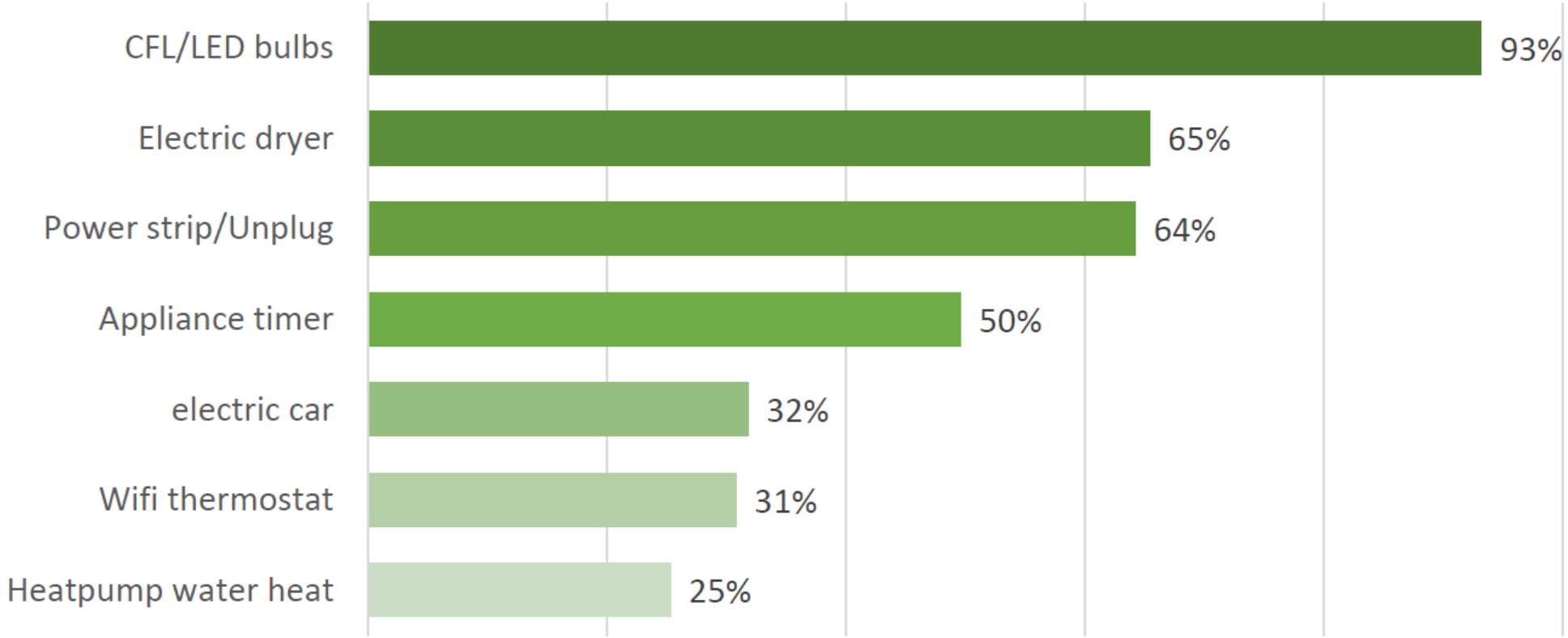
* Caution: very small base size given that 90% have already installed CFL or LED bulbs.

Base = those not already doing or have done

Q. 11c For each item tell me if you would be very likely, somewhat likely, somewhat unlikely or totally unlikely to take this action in the next 6 to 12 months.

Proportion of customers who are "leaning green" – actions they are doing now or have done or are very likely to do in future

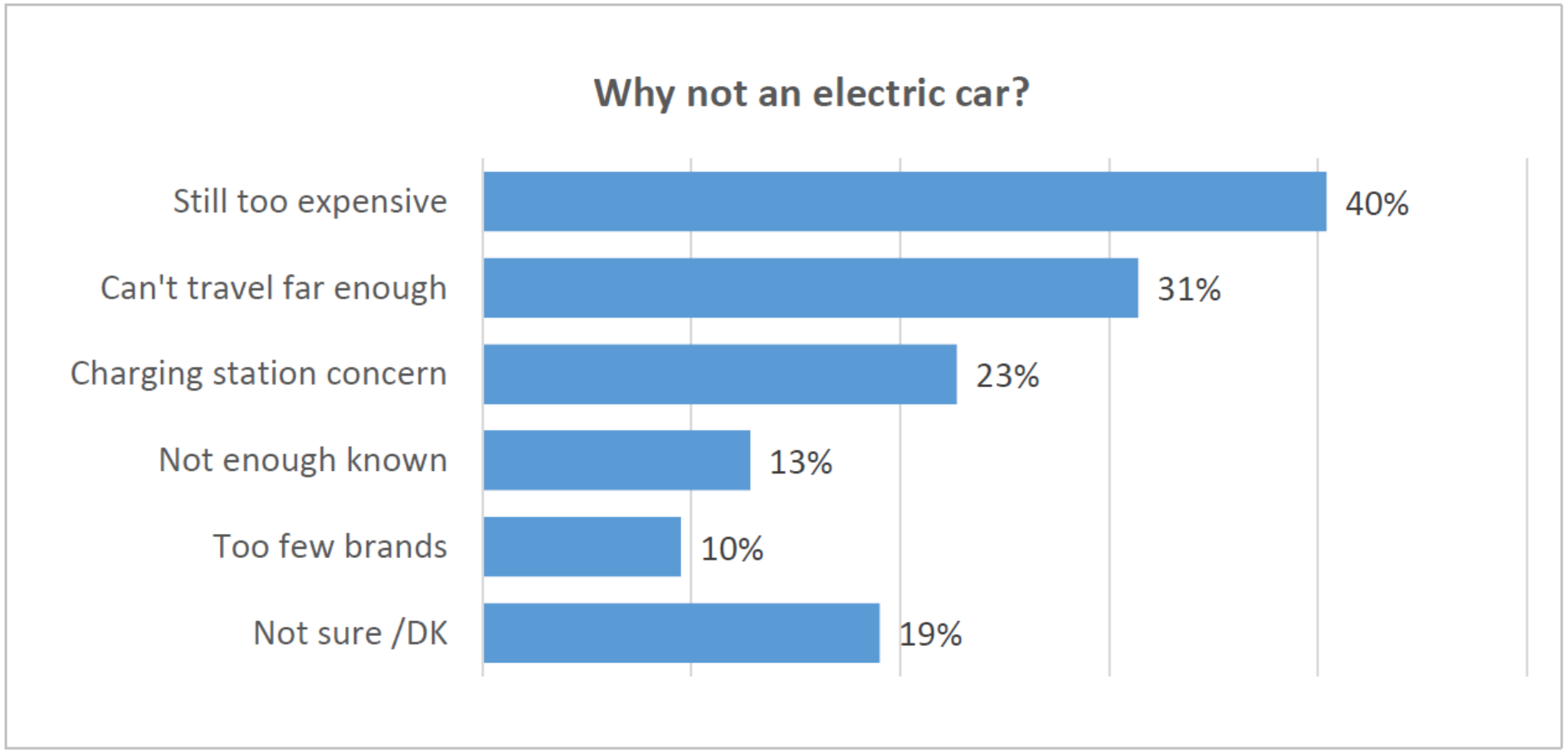
- Cupertino, Mountain View and Sunnyvale are more likely to "lean green."
- Asian-Americans as well as those with higher incomes, are home-owners, or customers age 40-49 also more likely to "lean green."



Base = those who are doing or have done or are very likely to do in next 6-12 months

Q. 11b&c Are you already doing or have done this and if not are you very likely . . . To do this?

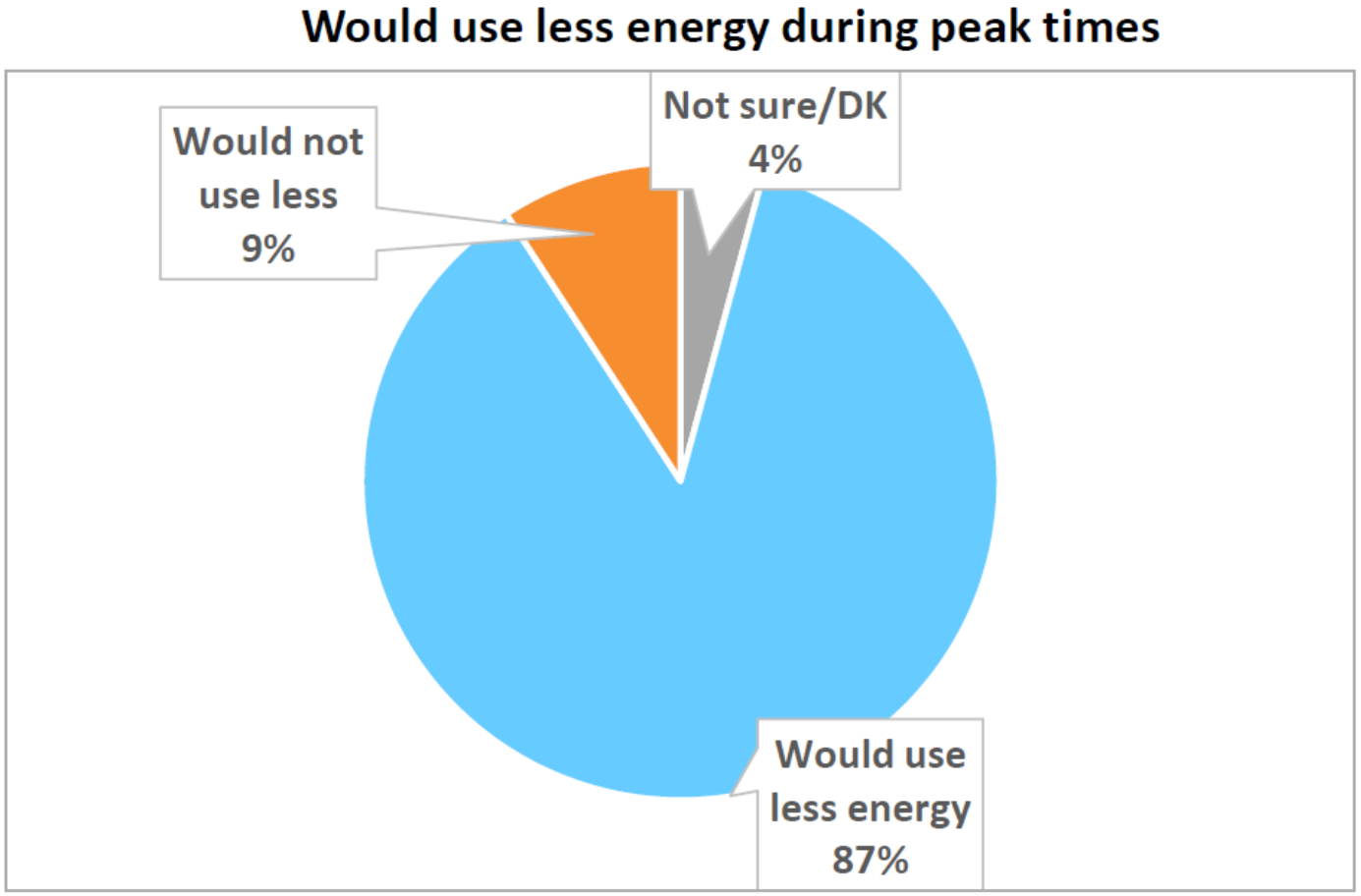
Expense is the top reason offered by customers for why they are unlikely to purchase or lease an electric vehicle



Base = 347 – those who are somewhat or very unlikely to purchase or lease and electric car?

Q. 12 For what reason are you unlikely to purchase or lease an electric car?

Vast majority (87%) say they are willing to use less energy in their homes during peak times



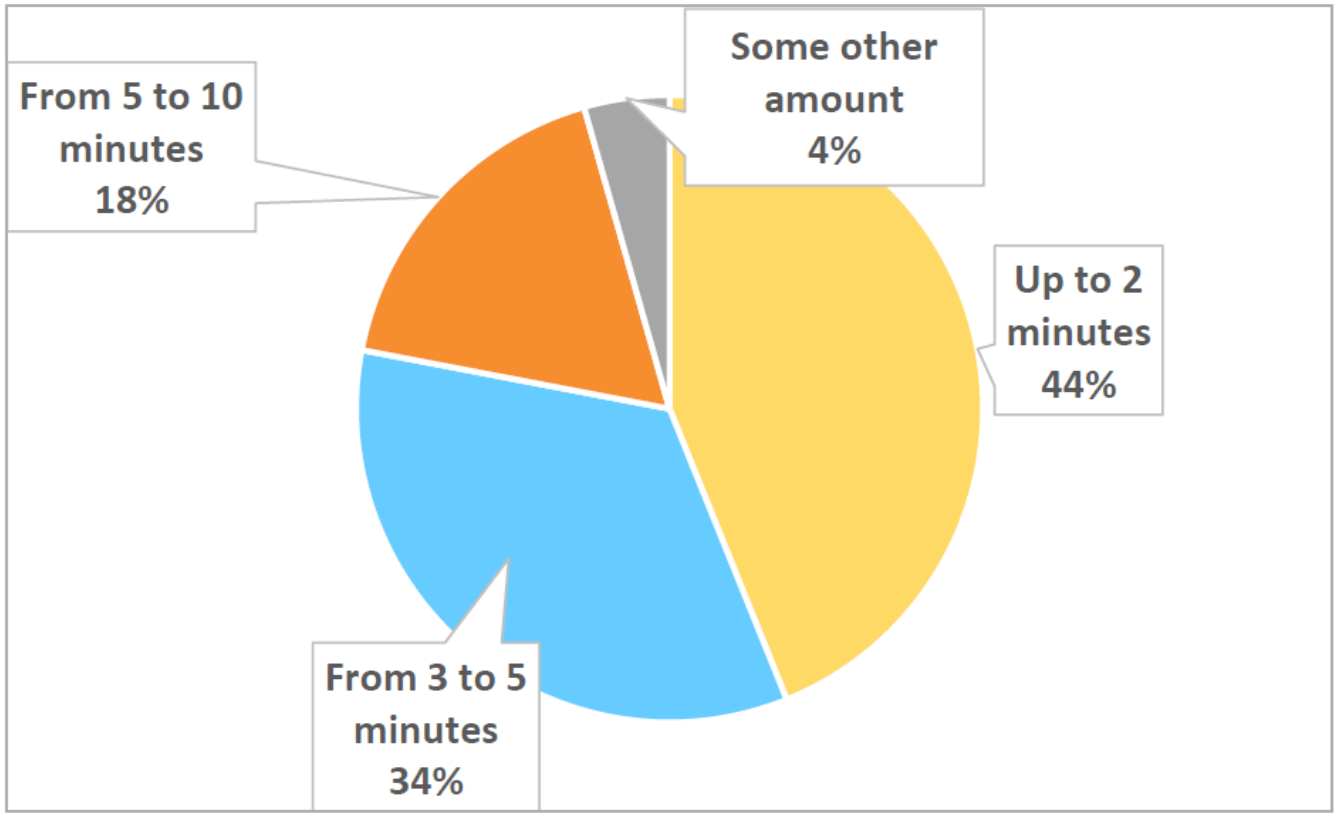
- Those self-identifying as Latin ethnicity are significantly more likely to use less energy during peak times.
- Residents in Cupertino are significantly more likely than those in other cities to be willing to use less energy during peak times.

N=602

Q.13 As you may know, the cost of electricity varies throughout the day with periods of peak usage when electricity is more expensive, and periods of low use when it is less expensive. Knowing this, are you will and/or able to use less energy in your home during peak times in order to reduce your electricity costs?

The majority (78%) say they spend, on average, less than 5 minutes month looking at their utility bill; 44% less than 2 minutes

Time spent looking at utility bill each month



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- Older customers tend to spend more time looking at their bills.
- Residents of Mountain View and Morgan Hill tend to be more likely than those in other cities to spend 3 to 5 minutes looking at their bill.

Q.15 On average how many minutes per month do you spend looking at your utility bill, would you say that you look at your utility bill up to 2 minutes a month, from 2 to 5 minutes a month, from 5 to 10 minutes a month or is there another amount of time in minutes that more accurately reflects how much time you spend looking at your bill?

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SVCE GHG and Energy Asset Baseline Data

Board of Directors Presentation

July 11, 2018

DNV·GL

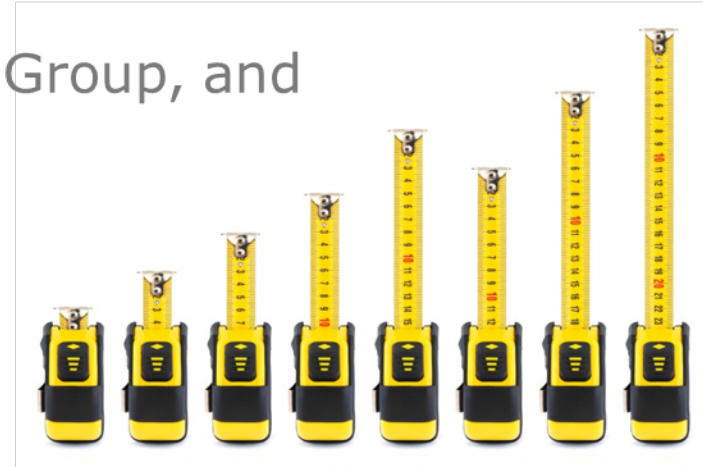
Context and Goals

- GHG emissions reduction core to SVCE's mission

- To guide SVCE goal setting, program development and performance tracking, key datasets have now been established:
  - SVCE service area GHG emissions baseline and update
  - energy asset data
  - selected demographic data

- SVCE has worked closely with the Member Agency Working Group, and resulting datasets are available to all member jurisdictions

- Datasets will be updated annually



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Scope of Analysis, and Key Caveats

- **GHG Emissions Baseline Data: 2015**
  - Two primary sectors – built environment and transportation; excludes water, waste, other
  - Thirteen jurisdictions
- **GHG Emissions – 2017 Update, and Key Trends**
  - Includes impact of SVCE rollout for partial year, across twelve jurisdictions
  - Based on actuals – only projection is a "Full Rollout" impact of SVCE
- **Clean Energy Asset Baseline for 2017, and Target Market Assessment**
  - Energy Use Demographics – building stock, occupancy, usage
  - Distributed Resources – solar, storage, alternative generation
  - Electric Vehicles and EVSE

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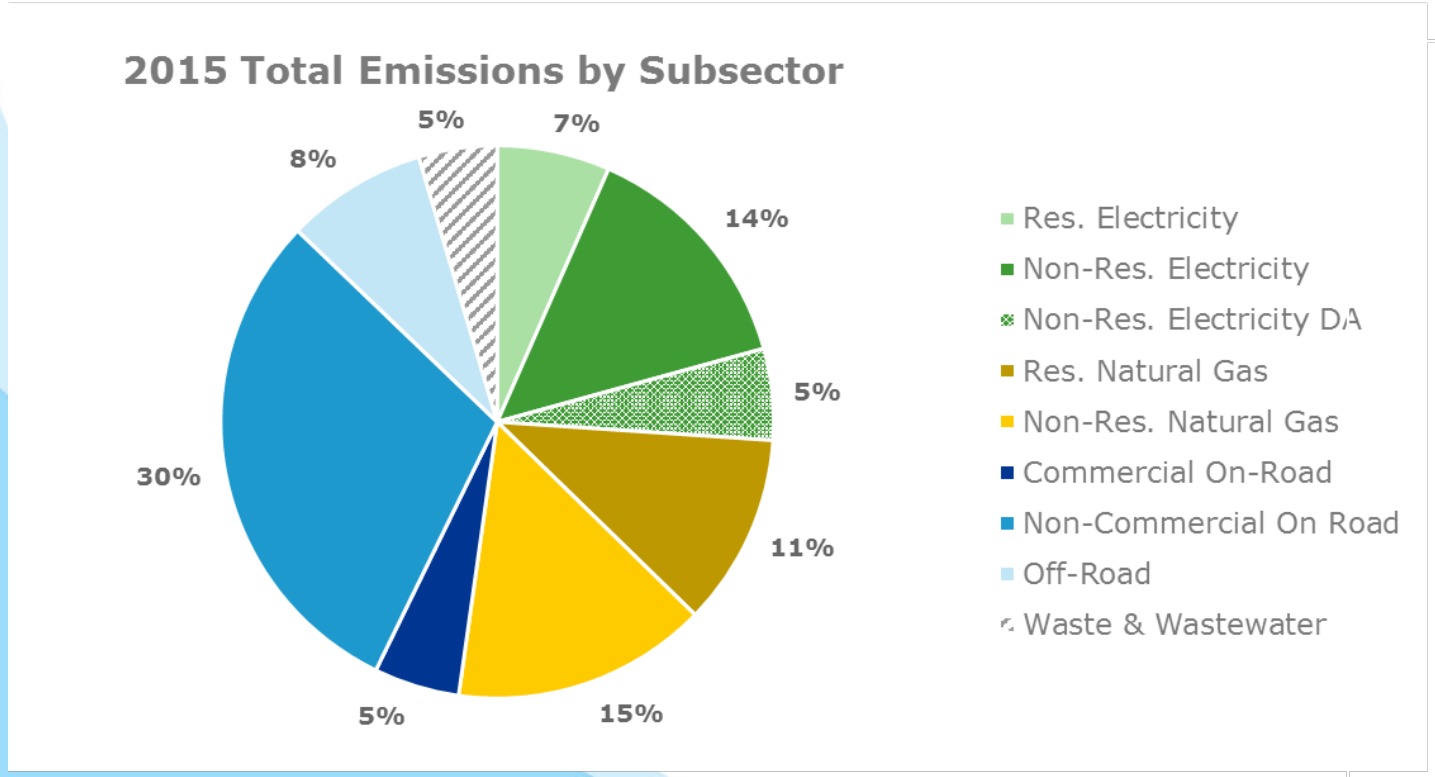
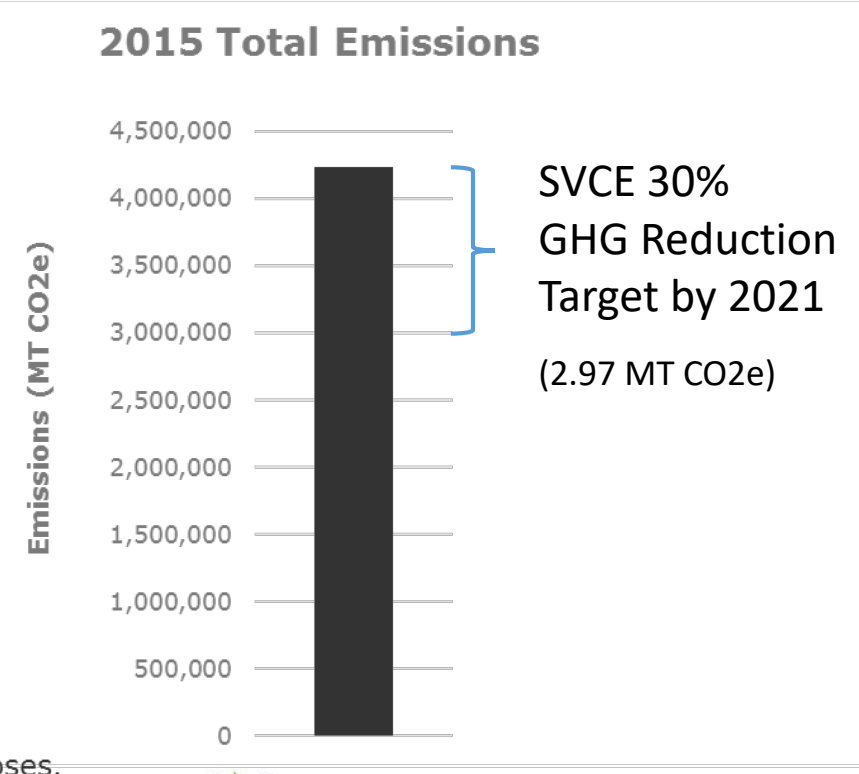
All Sectors

2015 Baseline Emissions Inventory

- **2015 baseline emissions of 4.24 million MT CO2e establishes baseline for SVCE to measure future progress against**





- Waste & Wastewater emissions not calculated. Estimated using typical per capita data for illustrative purposes.

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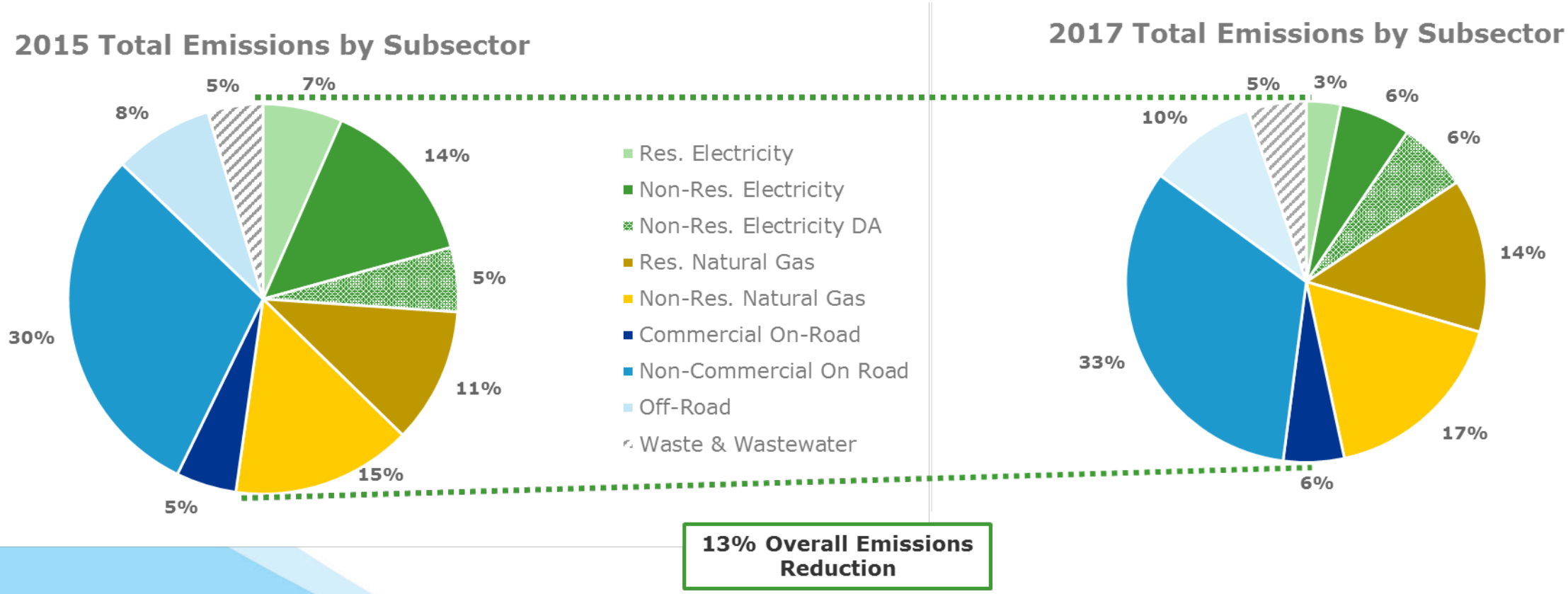
All Sectors

Total Emissions by Sector: 2015 vs. 2017



13% Overall Emissions Reduction

- Waste & Wastewater emissions not calculated. Estimated using typical per capita data for illustrative purposes.

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Built Environment

Electricity Emission Factors by Provider: 2015 vs. 2017

- **The weighted average electricity emission factor decreased 46% between 2015 & 2017**

Provider	2015 Emission Factor (Lbs/MWh)	2017 Emission Factor (Lbs/MWh)
Direct Access	373	373*
PG&E	405	294**
SVCE	N/A	0.25
Weighted Average	**398**	**217**

*Direct Access: 2015 most recent year of data available
**PG&E: 2016 most recent year of data available

How is SVCE's electricity emission factor determined?

- Emission factors calculated using The Climate Registry (TCR)-compliant methodology
- Small amount of emissions from geothermal power

How is the direct access electricity emission factor determined?

- Based on state average emission factor
- Adjusted to account for large, direct access customers in SVCE territory that procure 100% carbon free electricity

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Built Environment

Electricity Consumption: 2015 vs. 2017

- **2.6% decrease in total electricity <u>consumption</u>**
- Cooling Degree Days
  - 2015: 9% above average
  - 2017: 27% above average
- 3.1% decrease in non-residential electricity consumption
- 0.8% decrease in residential electricity consumption

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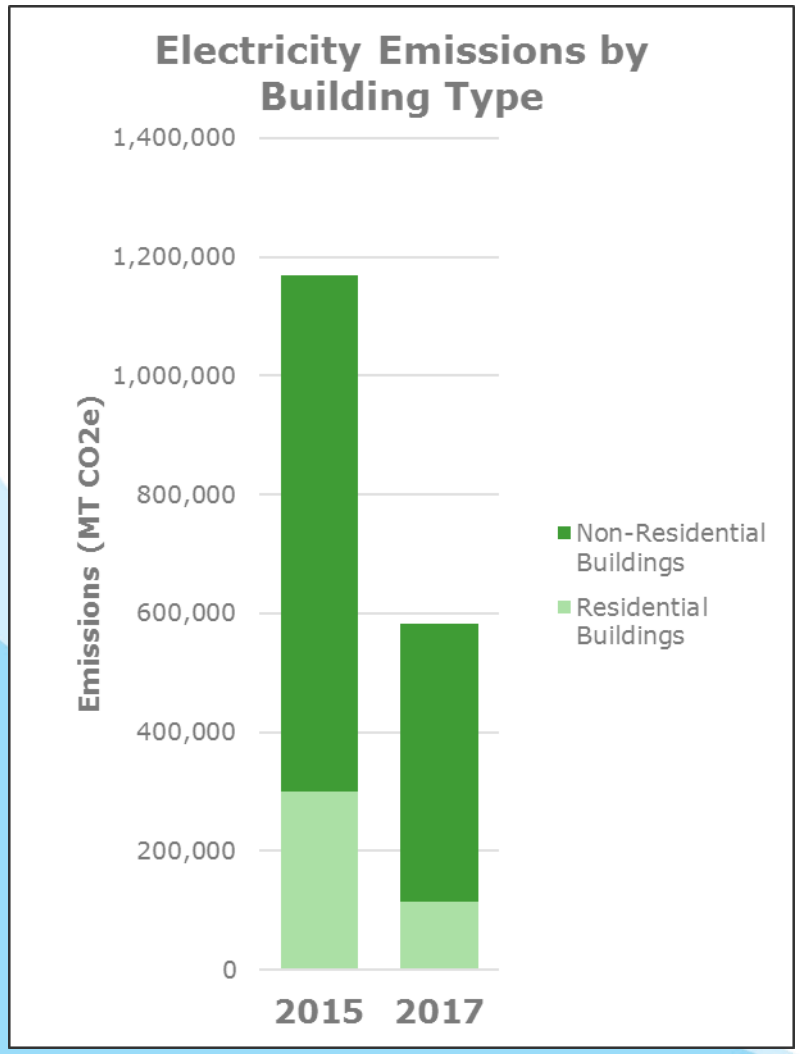
Built Environment

Electricity Emissions: 2015 vs. 2017



- **47% decrease in total electricity <u>emissions</u>**
  - Half of this reduction due to SVCE
  - Half of this reduction due to lower PG&E emission factor + decreased consumption
- 43% decrease in non-residential electricity emissions
- 59% decrease in residential electricity emissions

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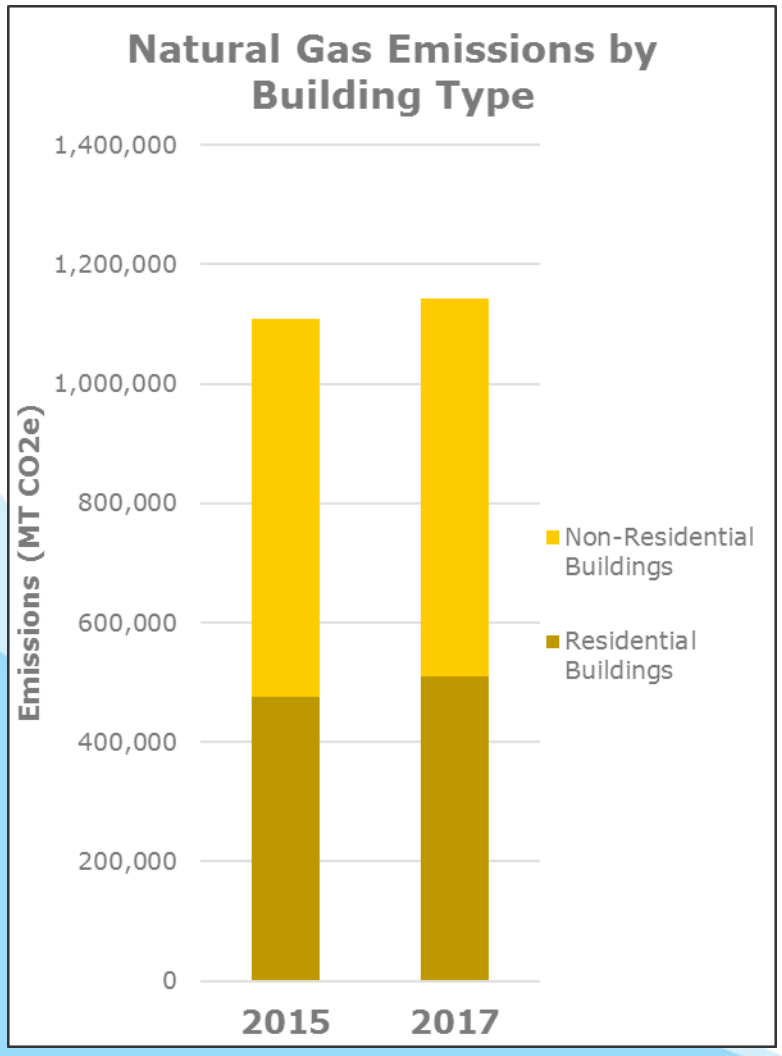
Built Environment

Natural Gas Trends: 2015 vs. 2017



- **3.1% increase in total natural gas <u>consumption & emissions</u>**
- Heating Degree Days
  - 2015: 12% below average
  - 2017: 17% below average
- 0.1% increase in non-residential natural gas consumption & emissions
- 7.2% increase in residential natural gas consumption & emissions

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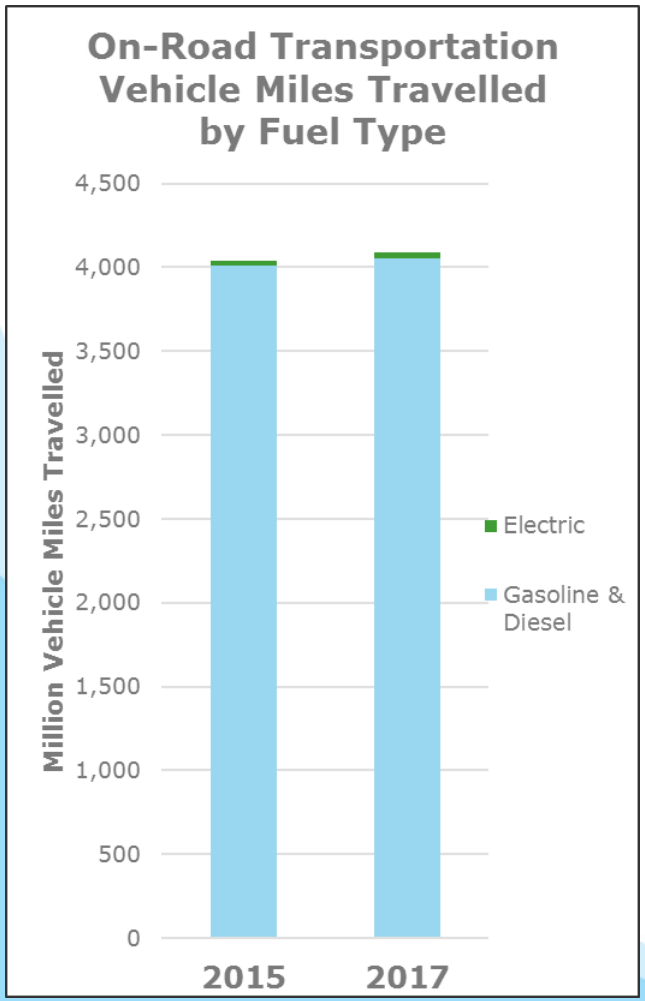
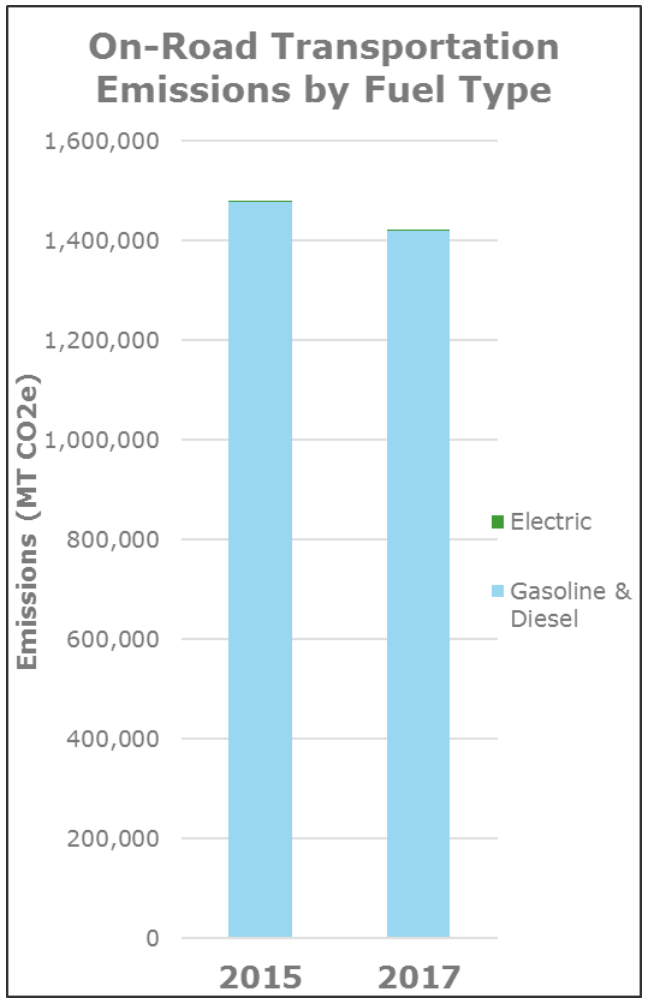
On-Road Transportation Trends: 2015 vs. 2017



- **1.3% increase in total vehicle <u>miles traveled</u>**
- 29% increase in electric vehicle miles traveled



- **3.9% decrease in total <u>emissions</u>**
- 5.2% decrease in emissions per vehicle mile travelled

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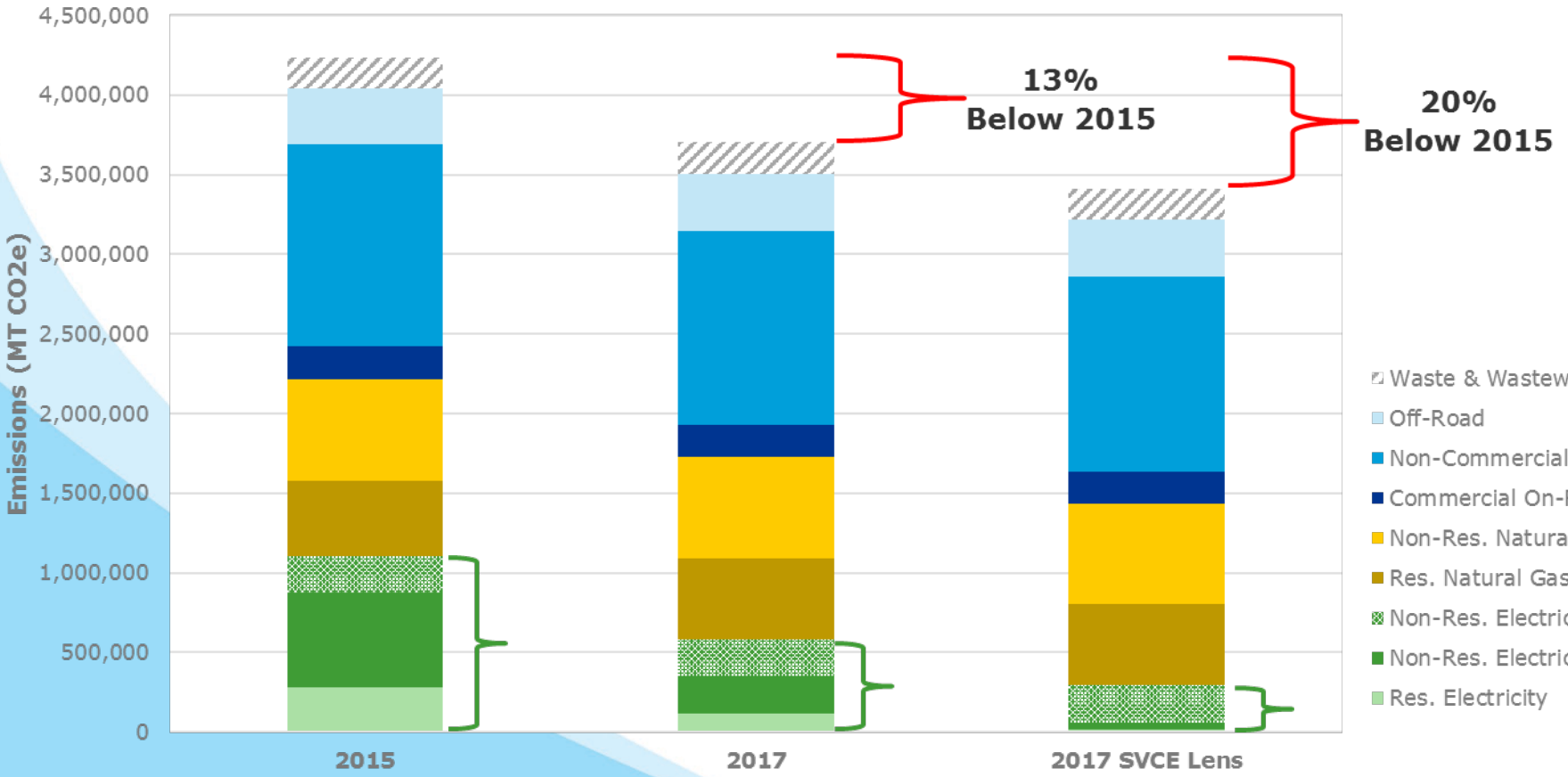
All Sectors

How Will a Full Year of SVCE Impact Emissions?

- **With a full year of SVCE up and running, we should expect a ~20% reduction in total emissions and a ~74% reduction in electricity emissions**



"2017 SVCE Lens":

- Uses 2017 data *except assume*:
  - SVCE was available to all jurisdictions for full year of 2017
  - Milpitas was a member of SVCE for full year of 2017

Electricity Emissions:

- **2017:**
  - 47% below 2015
- **2017 SVCE Lens:**
  - 74% below 2015

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Clean Energy Asset Baseline Study and Target Market Assessment

Energy Use Demographics

- Electricity Consumption by Community
- Building Stock Characteristics

Distributed Resources

- Solar PV
- Storage
- Fuel Cells

Transportation

- Registered Electric Vehicles
- EV Charging

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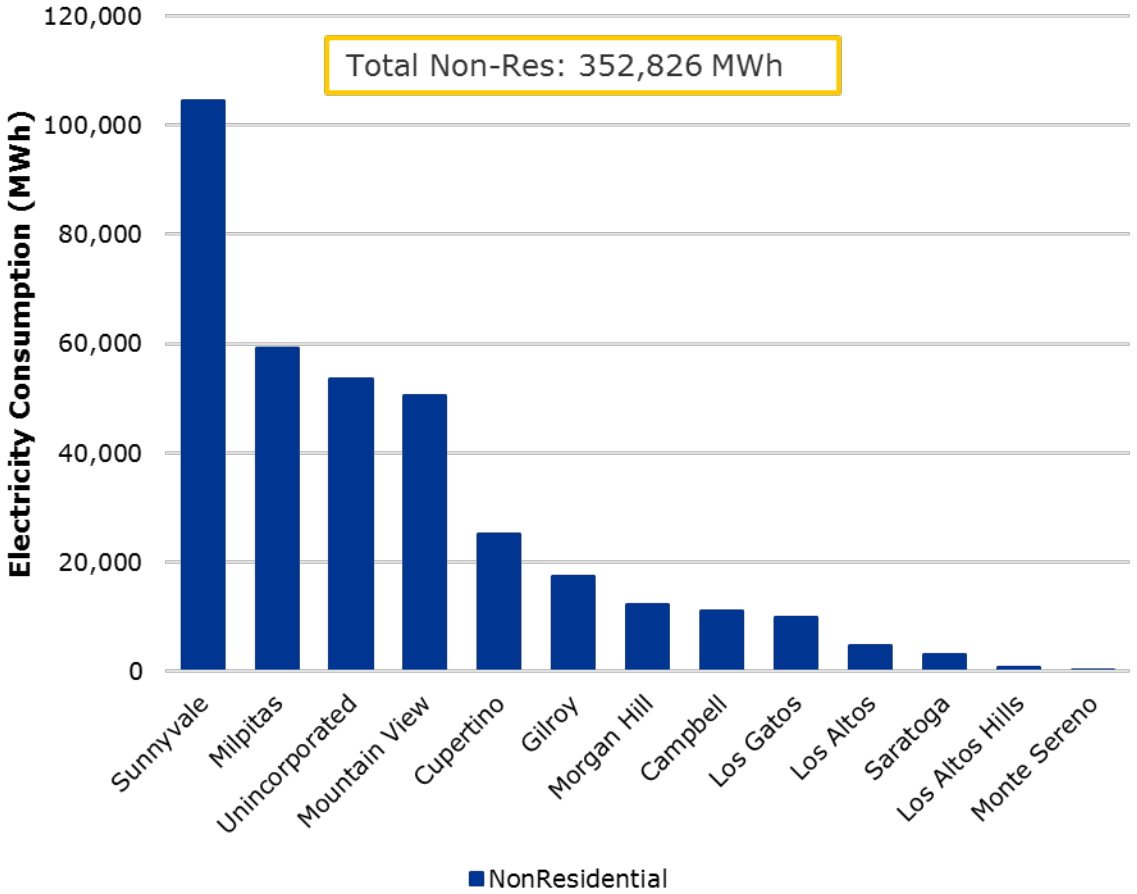
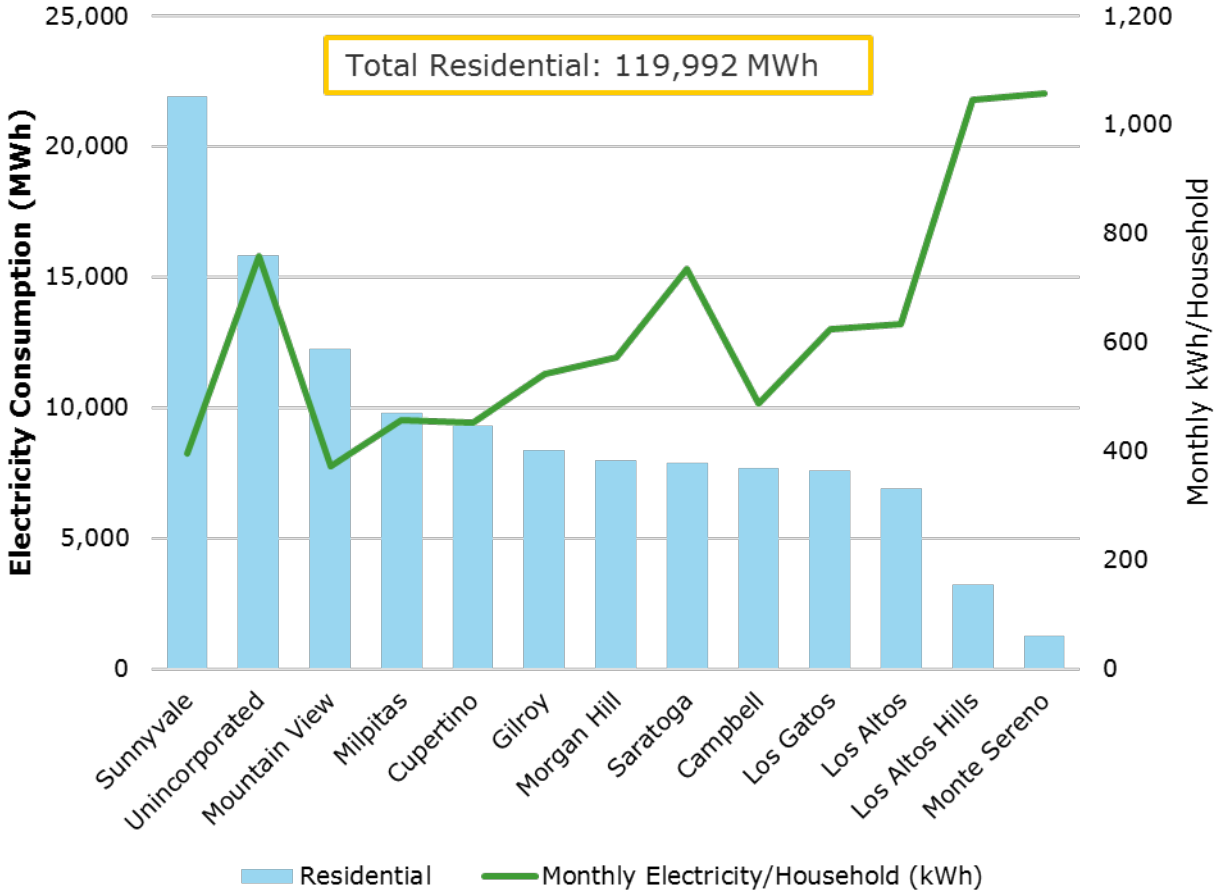
Electricity Consumption by City & Sector

Non-Residential Average Monthly Total Electricity Consumption: 2017



Residential Average Monthly Total and Per Household Electricity Consumption: 2017



Data sources: SVCE, PG&E, Direct Access

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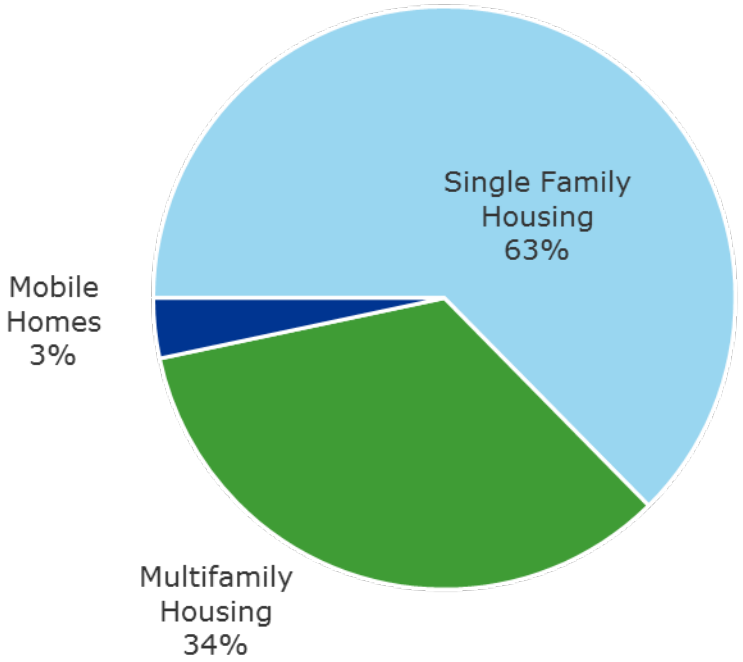
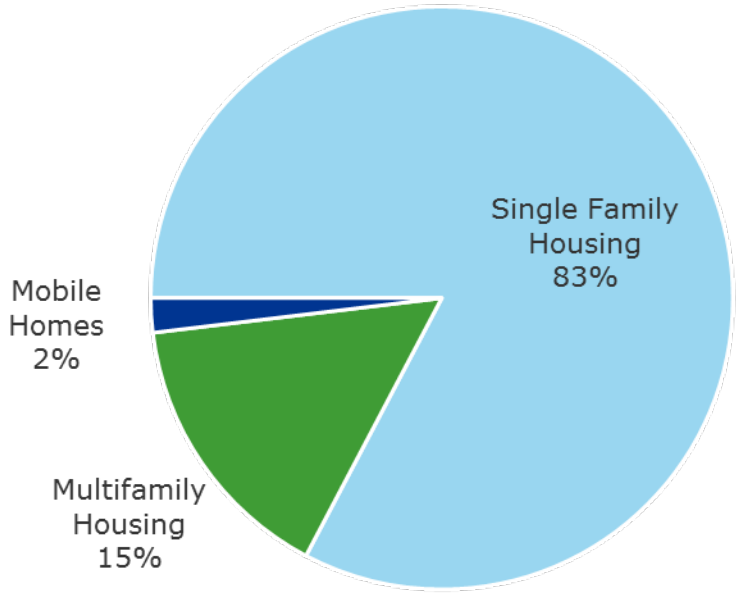
Residential Electricity Consumption by Housing Type

- **Single family homes consume 83% of electricity despite making up only 63% of total housing units**

Total Housing Unit Count by Housing Type



Estimated Residential Electricity Consumption by Housing Type



Property Type	Estimated Electricity Consumption per Housing Unit (Average kWh per Month)
Single Family	634
Multifamily Unit	311
Mobile Home	465

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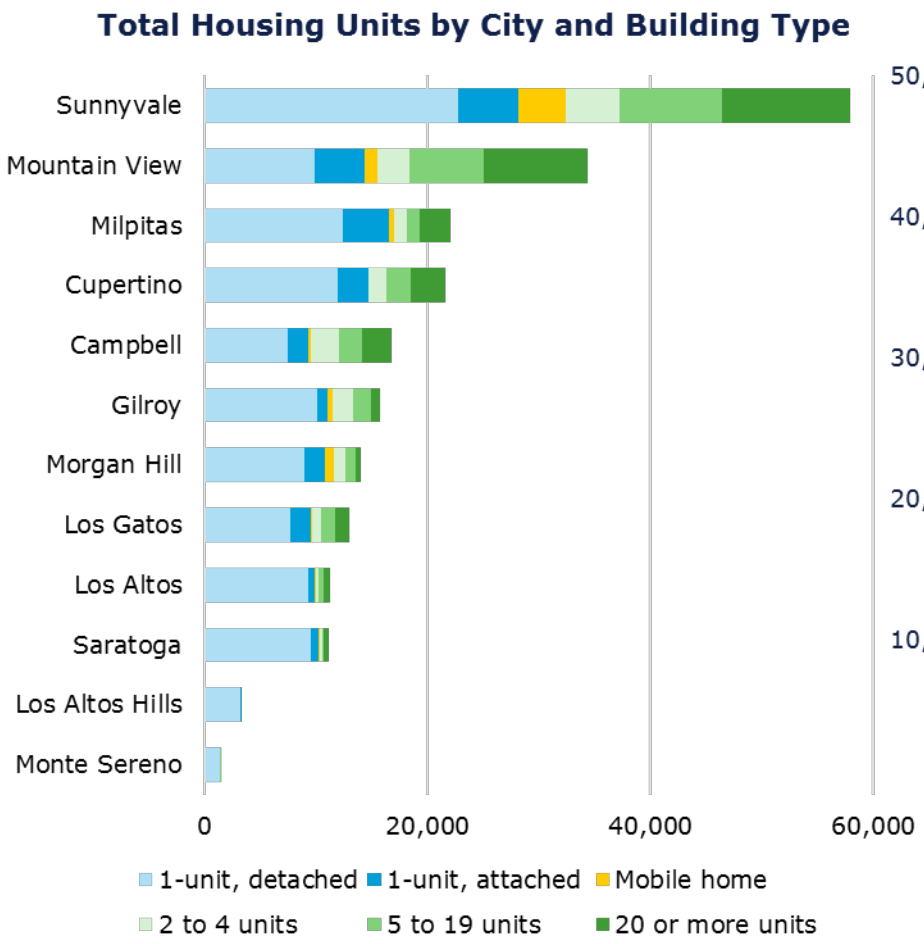
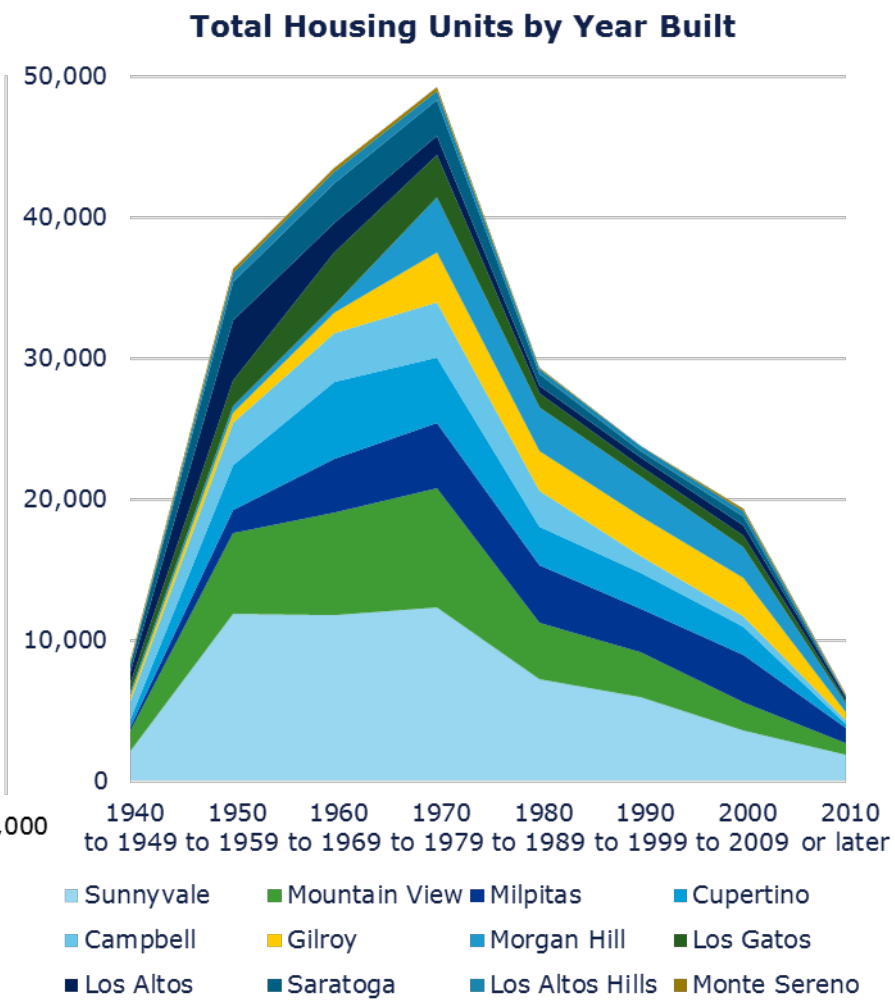
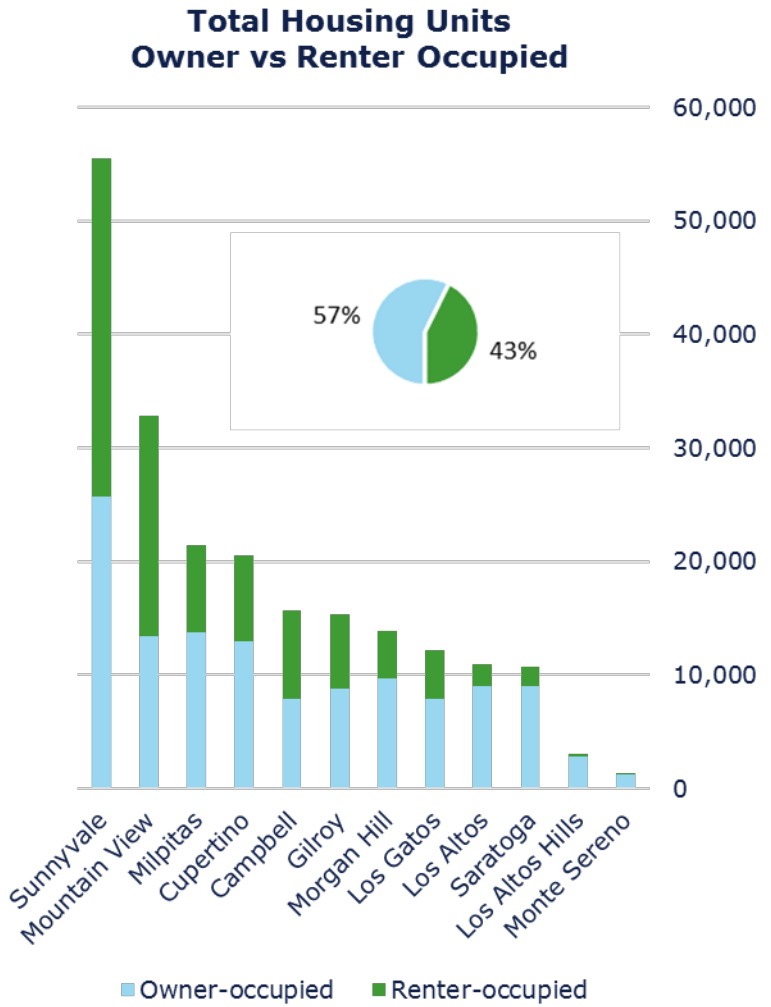
Residential Building Stock Characteristics







Data sources: US Census and American Community Survey

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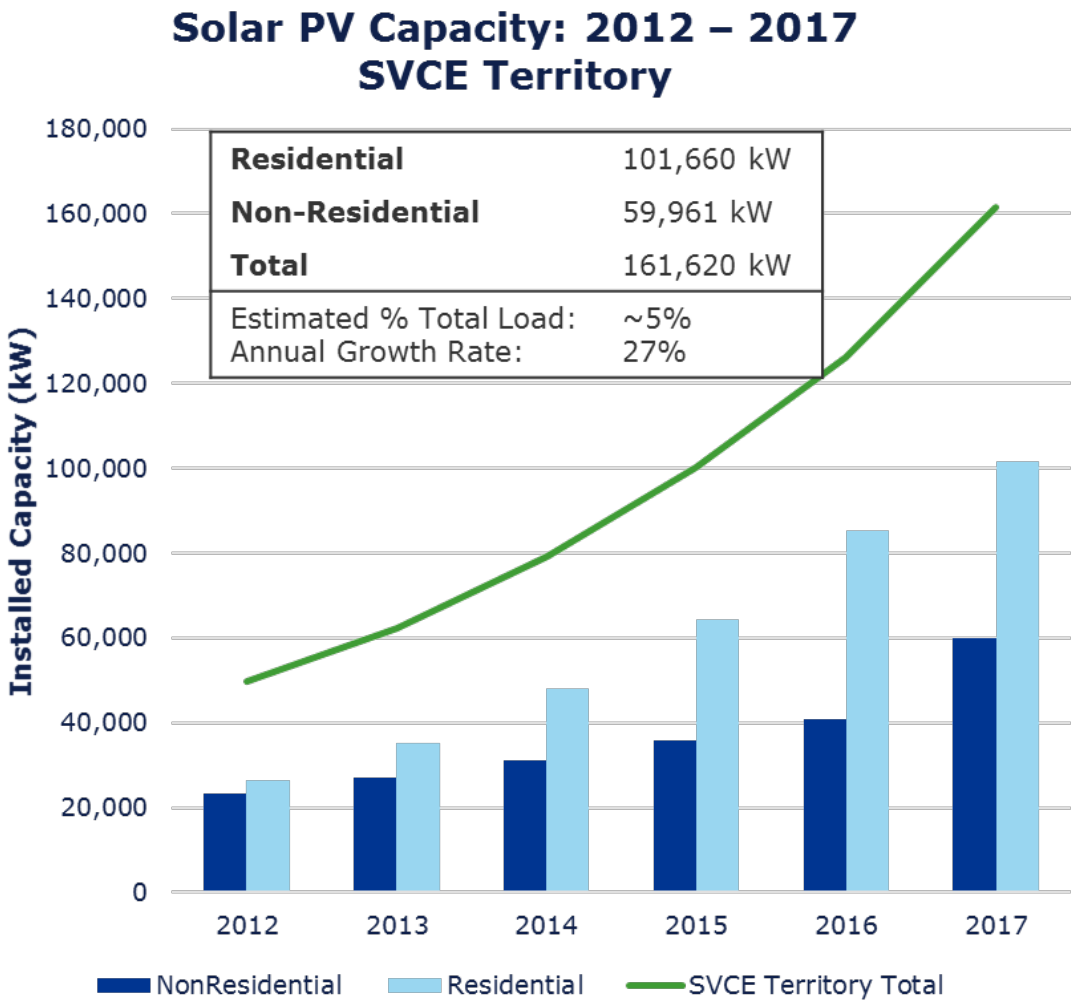
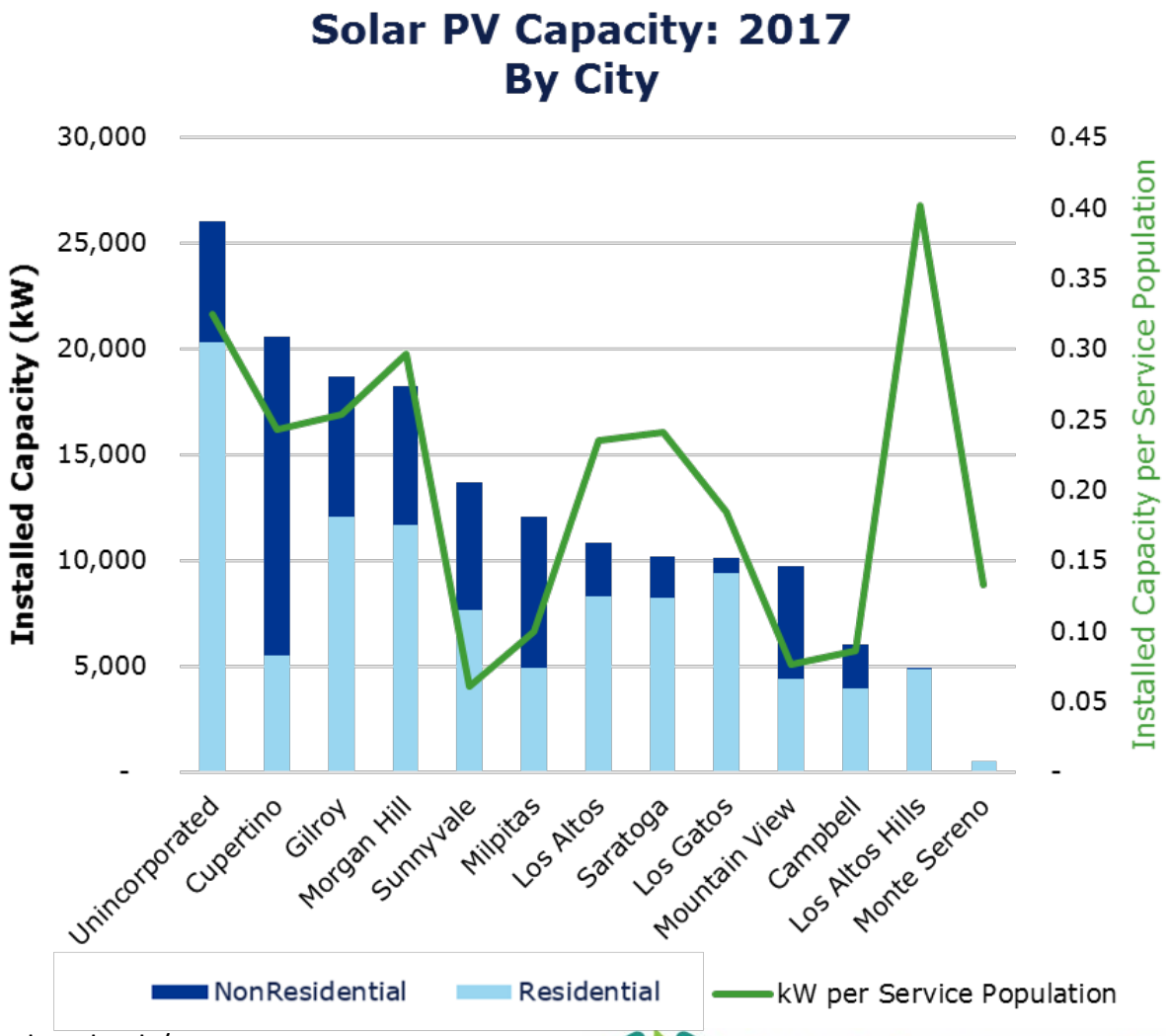
Distributed Solar Photovoltaic Capacity is Growing Rapidly





Data sources: California Solar Initiative Data, https://www.californiasolarstatistics.ca.gov/data_downloads/

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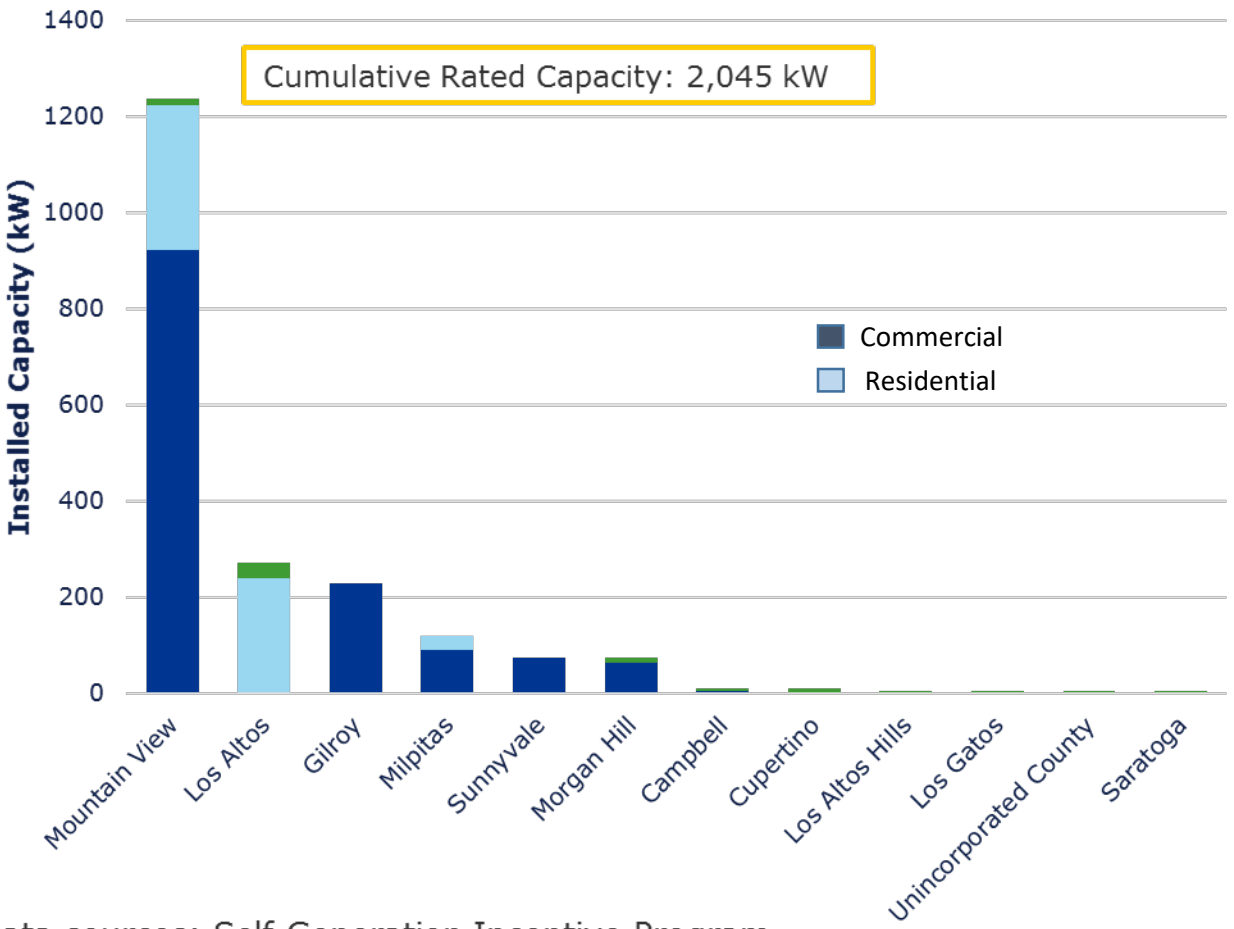
Distributed Resources

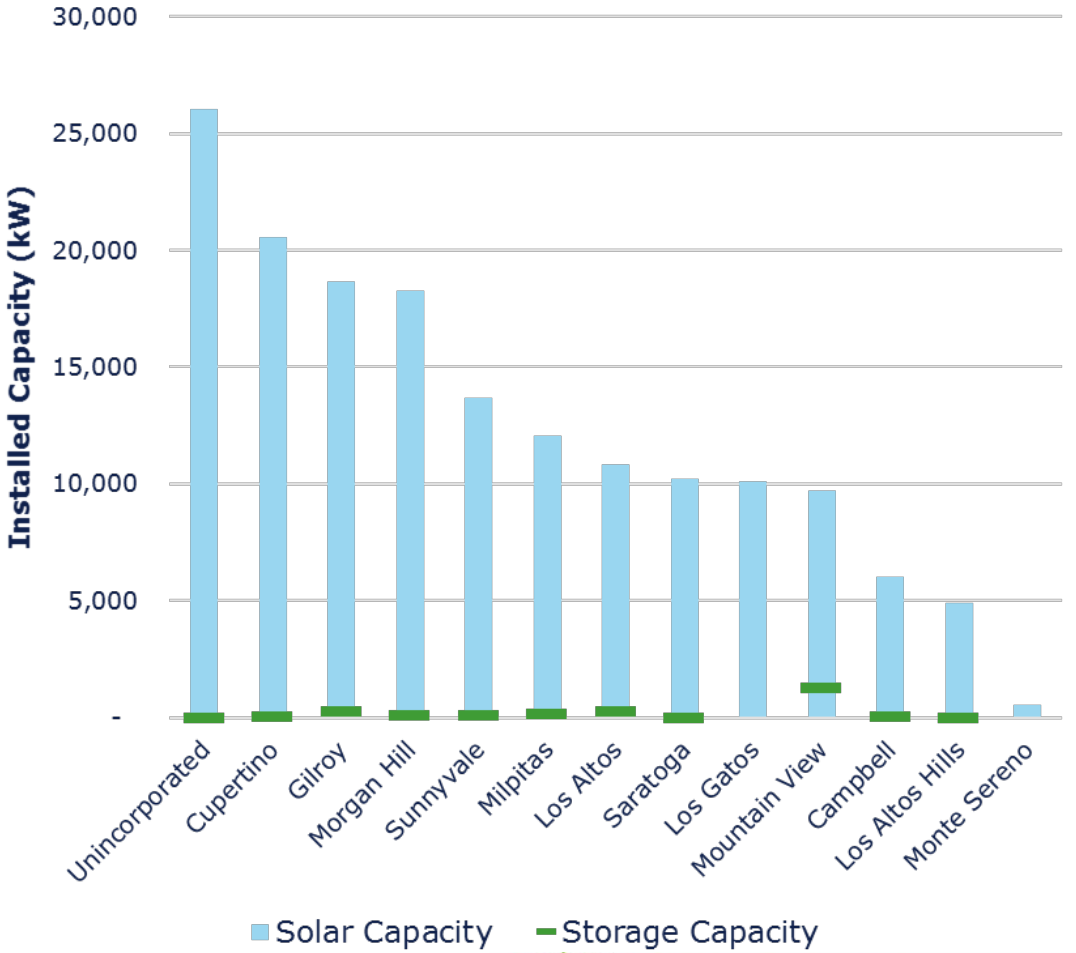
Battery Storage Market is Nascent

Battery Storage Installed Capacity: 2017 by City and Sector



Data sources: Self Generation Incentive Program

Solar PV vs Battery Storage Installed Capacity: 2017 by City



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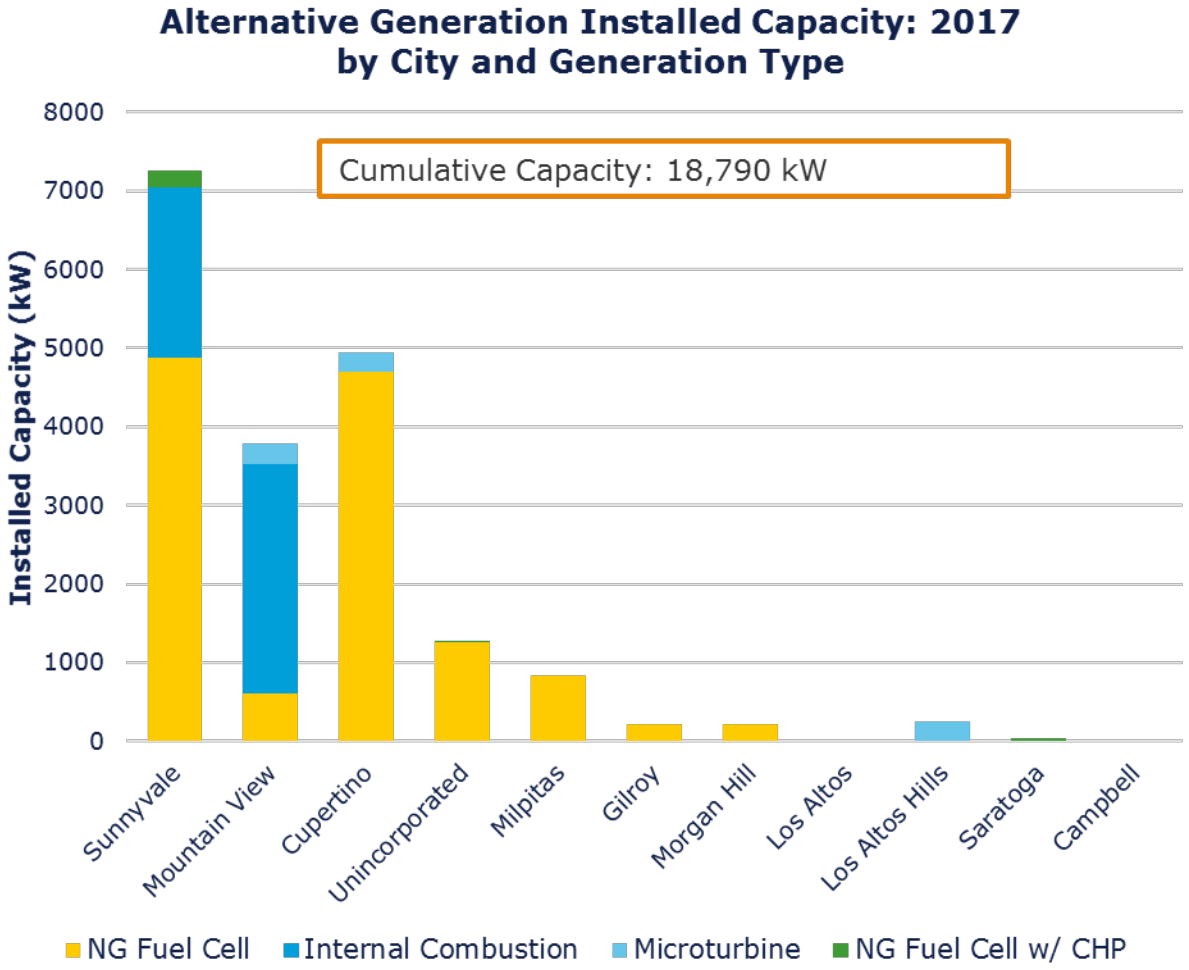
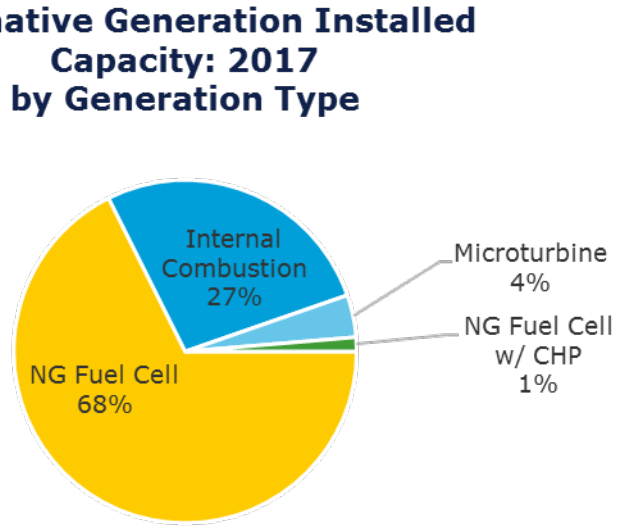
Alternative Generation Predominantly Natural Gas Fuel Cells





Installed Capacity (kW) in SVCE Territory

Generation Type	Rated Capacity [kW]	Count of Equipment Type
Natural Gas Fuel Cell	12,705	20
Internal Combustion	5,085	5
Microturbine	750	6
NG Fuel Cell w/ CHP	250	5
Battery Storage	**2,045**	**44**

Data sources: Self Generation Incentive Program

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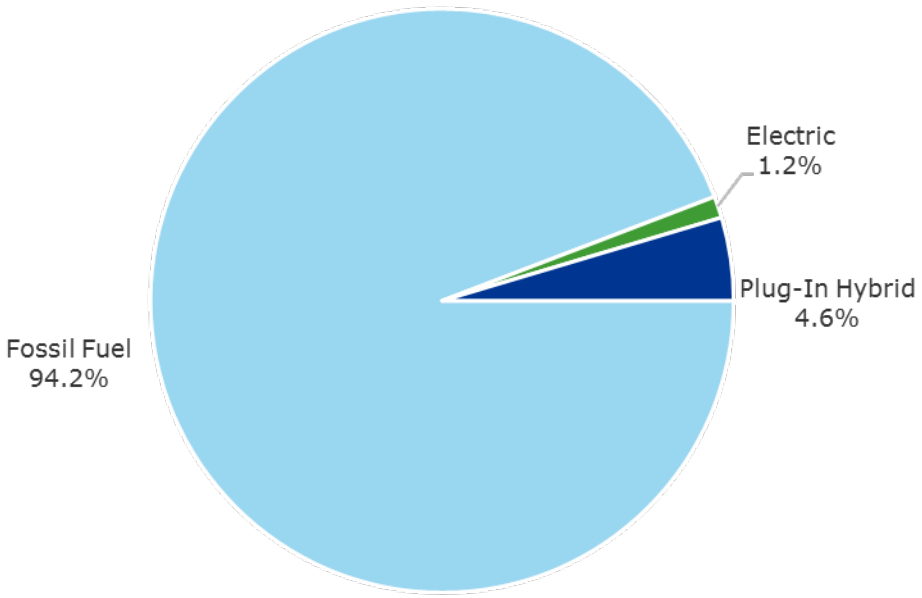
Electric Vehicles Make up Small Portion of Fleet (But Growing!)

Clean vs Fossil Fuel Powered Vehicles: 2017



Auto Registrations	753,846
Commercial Registrations	132,893
Total Registered Vehicles in SVCE Territory in September 2017:	**886,739**

The DMV reports registered vehicle counts in March and September of each year.

- *NOTE: Potential discrepancy in the recording of "Plug-in Hybrid" code with grandfathered Hybrid vehicles.*

Total Clean Vehicles 2017	
Electric	Plug-In Hybrid
14,204	44,568

Data sources: State of California Dept. of Motor Vehicles Motive Power Biannual Report

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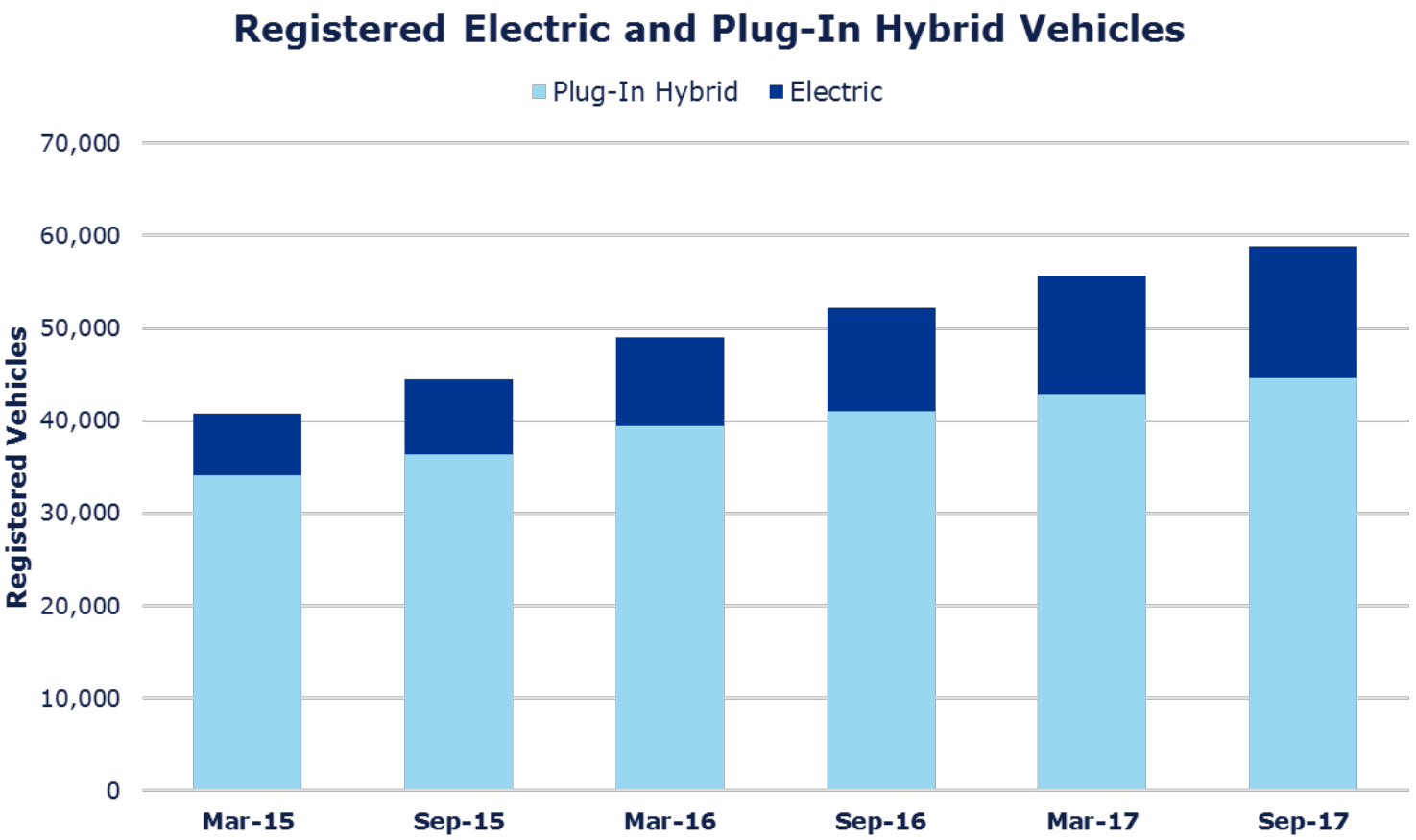
Electric & Plug-in Hybrids Expanding Rapidly



Data sources: State of California Dept. of Motor Vehicles Motive Power Biannual Report

2015-2017 Vehicle Growth Rates

Electric	Plugin
116%	31%

- **Electric Vehicles have a double digit percentage growth rate every 6 months**

Existing PEV Fleet Distributed by *County*

County	New EV Adoption Rates (2012-2016)
Alameda	3.82%
Monterey	0.83%
San Francisco	1.77%
San Mateo	2.59%
Santa Clara	*5.25%*

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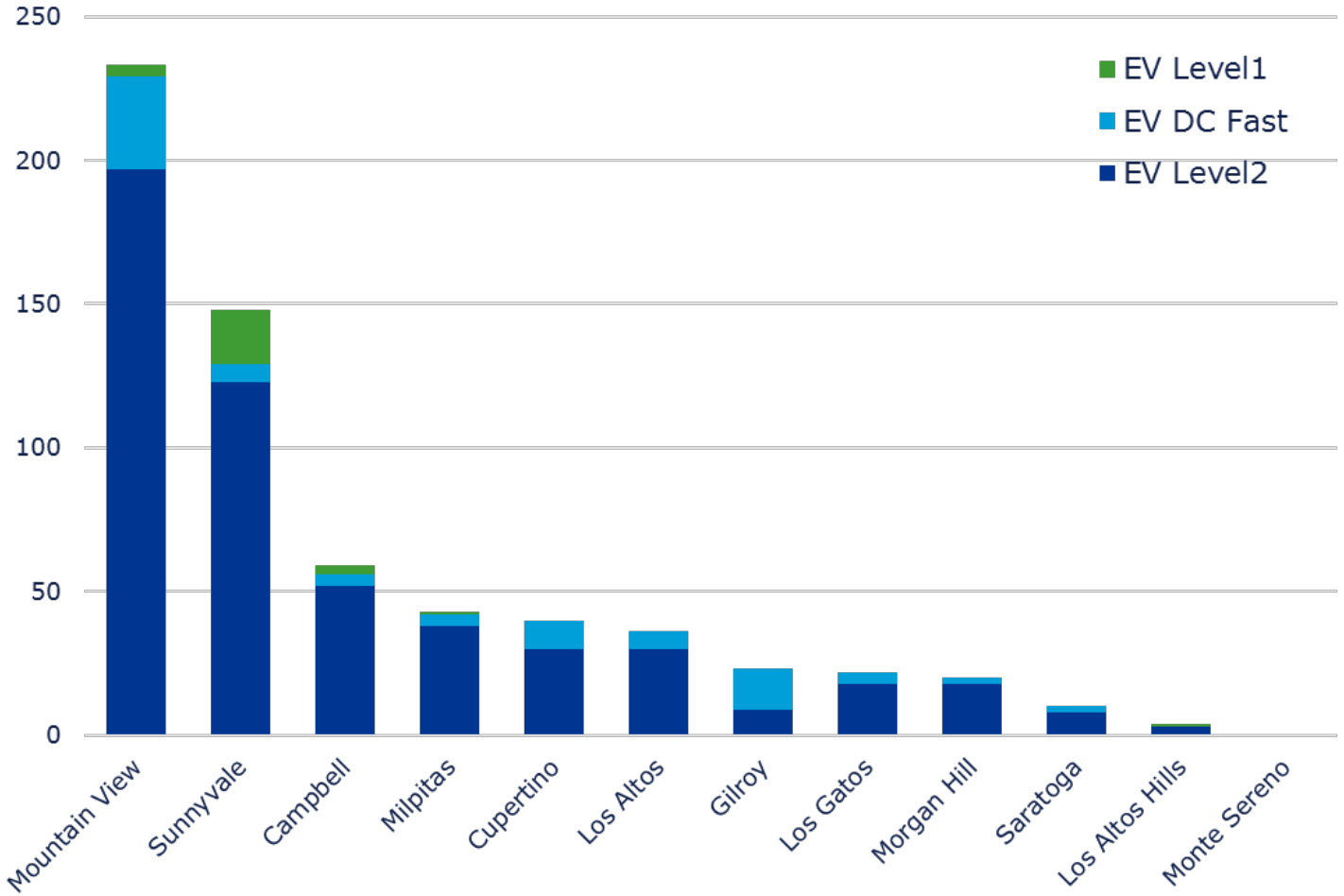
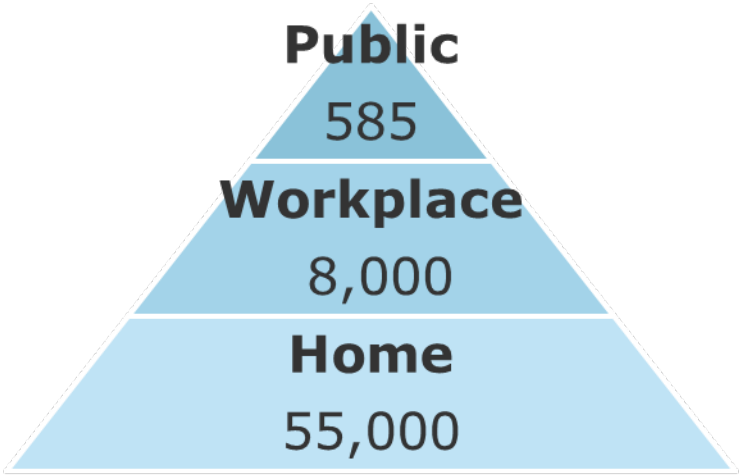
Published Data Underestimates Number of EV Chargers

Published EV Chargers by City: 2017



Estimated Charger Count: 2017



Note:
- EV Charging companies reference only 5-10% of their charging network are published publicly.

Data sources: U.S. DOE Alternative Fuels Data Center (AFDC), ChargePoint, EVgo

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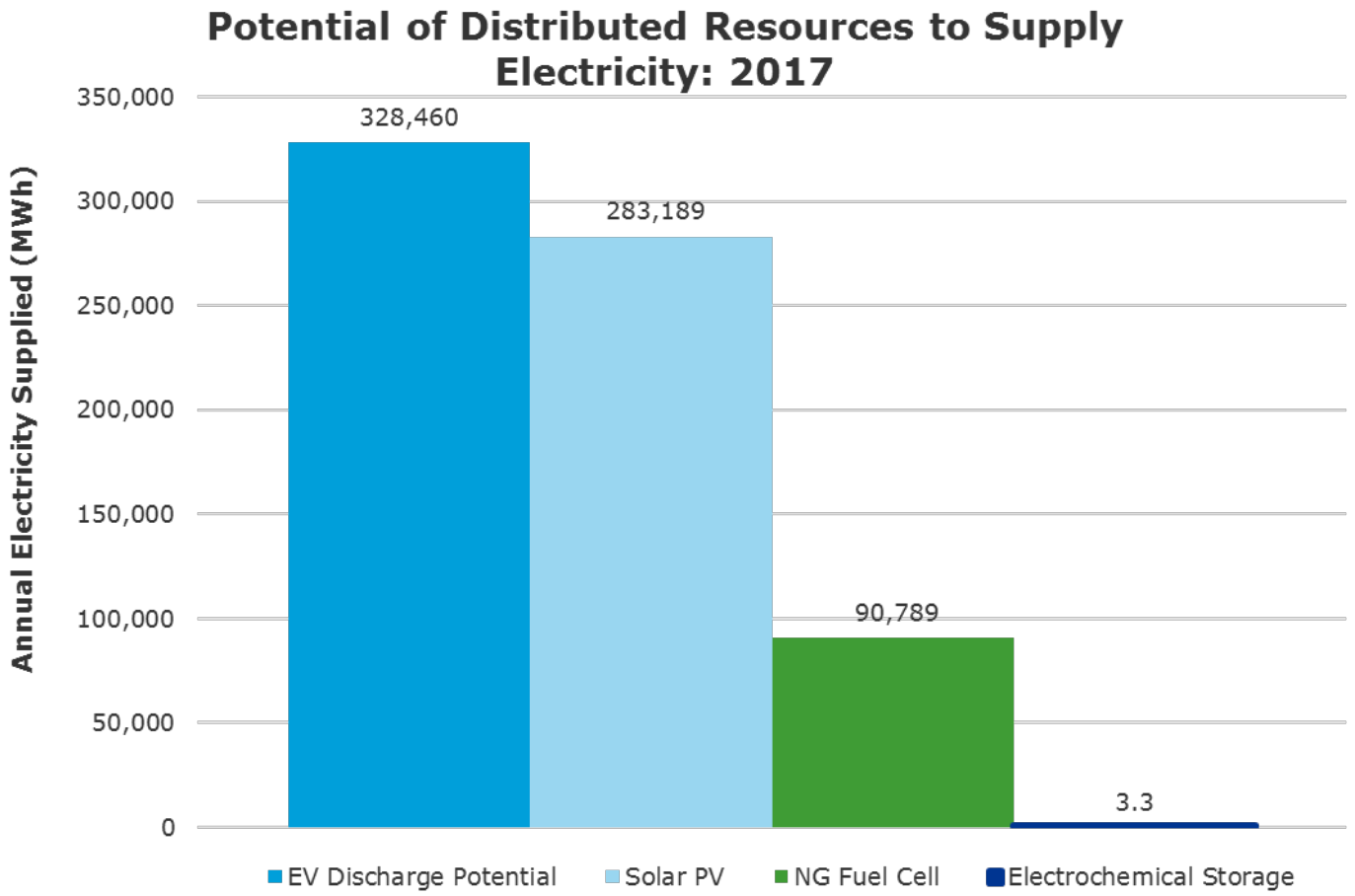
Potential of Distributed Resources to Supply Electricity

- **A comparison of annual electricity consumption vs estimated distributed generation potential is useful to visualize the scale of each technology.**



Data sources: DNV GL

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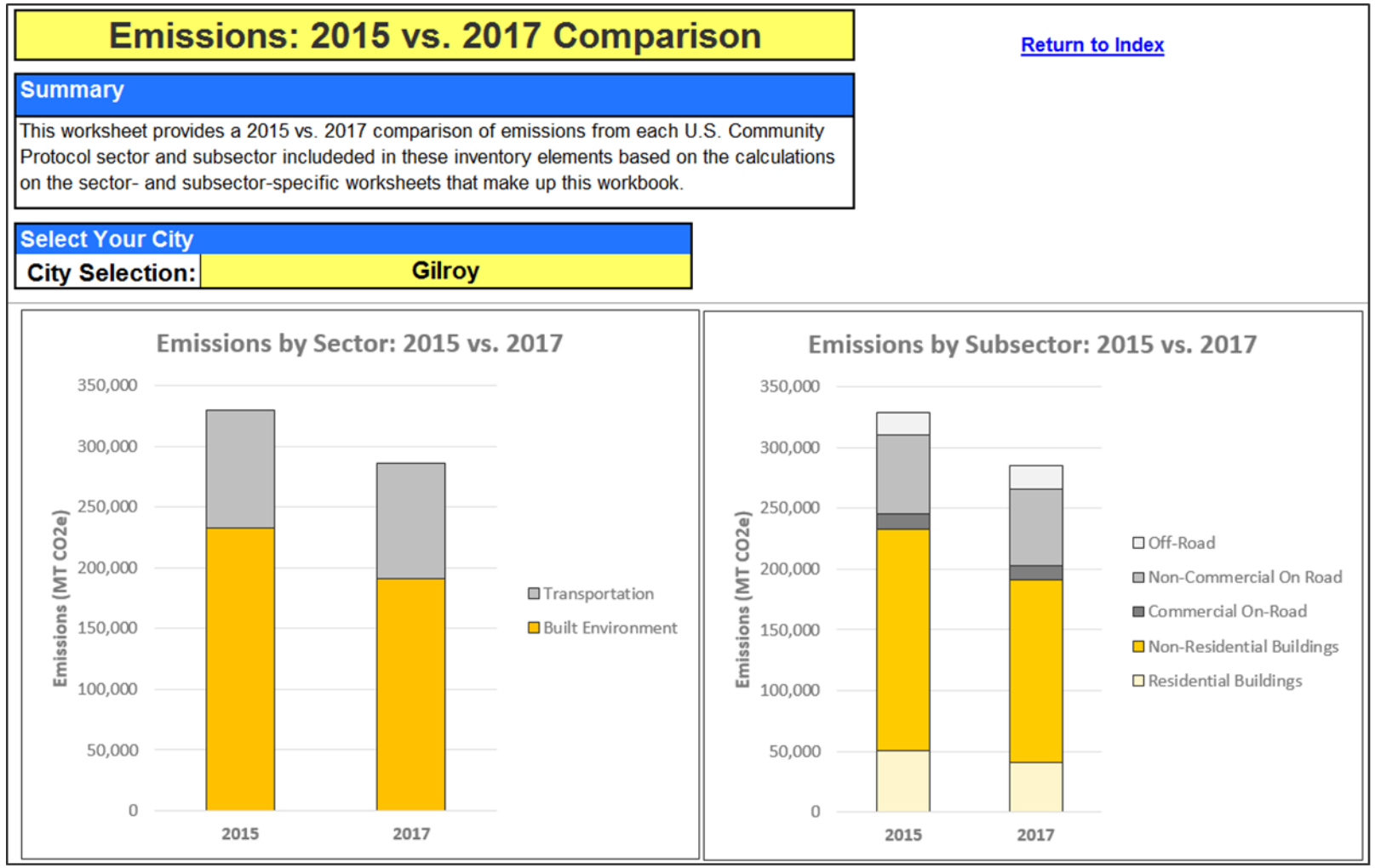
Greenhouse Gas Inventory Elements & Clean Energy Asset Tools



- Centralized databases that track community emissions & clean energy assets on a city-by-city basis
- Available to the public & city staff
- Provide high-level graphs, well-documented methodologies, & calculations

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Learn More:

SVCleanEnergy.org

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