

## San Diego REVI

April 18, 2013

### The EV Project: Initial Findings On Charging Behavior



City	Issued	Fee
San Diego	514	408.00
Carlsbad	64	385.48
Encinitas	59	348.67
Escondido	47	226.00
Chula Vista	35	409.23
Poway	32	239.00
La Jolla	31	239.00
Oceanside	30	385.48
San Marcos	30	226.00
El Cajon	28	226.00
Vista	22	226.00
Del Mar	20	239.00
La Mesa	18	226.00
Ramona	15	226.00
Rancho Santa Fe	15	239.00

### Permits

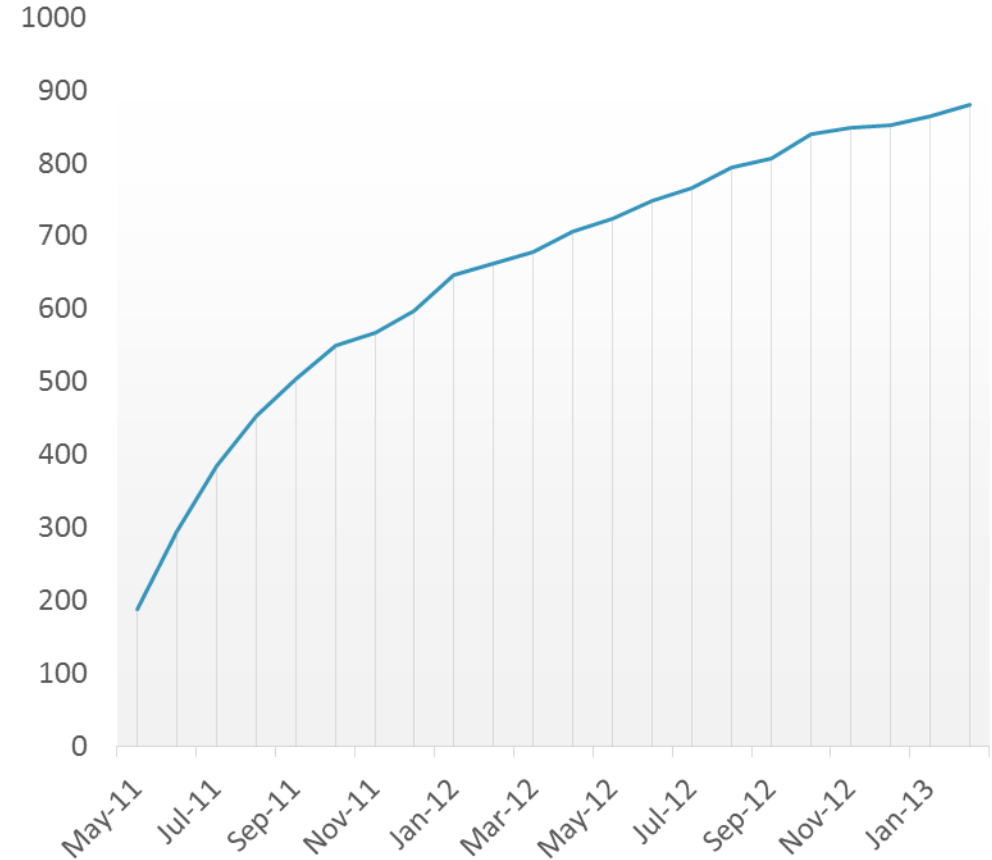
- ✓ Over 1,052 Permits Issued
- ✓ To Date Permit Costs \$142,932.02
- ✓ Median Permit Cost \$226.00

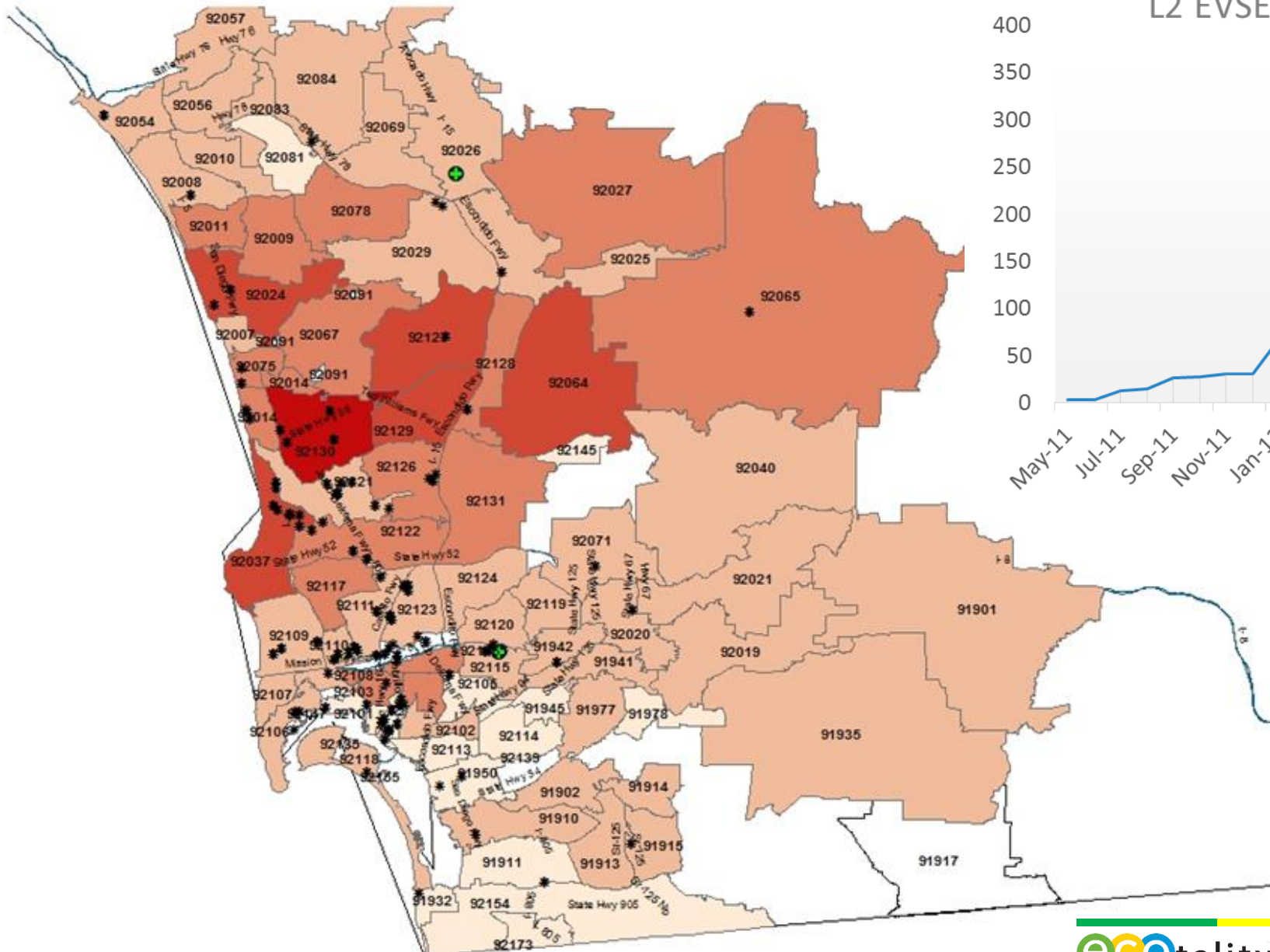
### Notes

- ✓ Residential Permitting is straight forward, with little difficulty

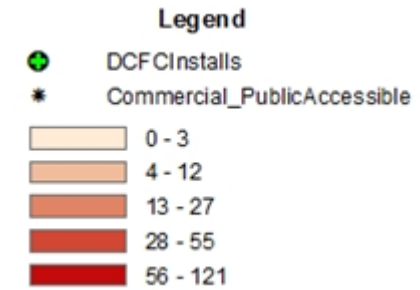
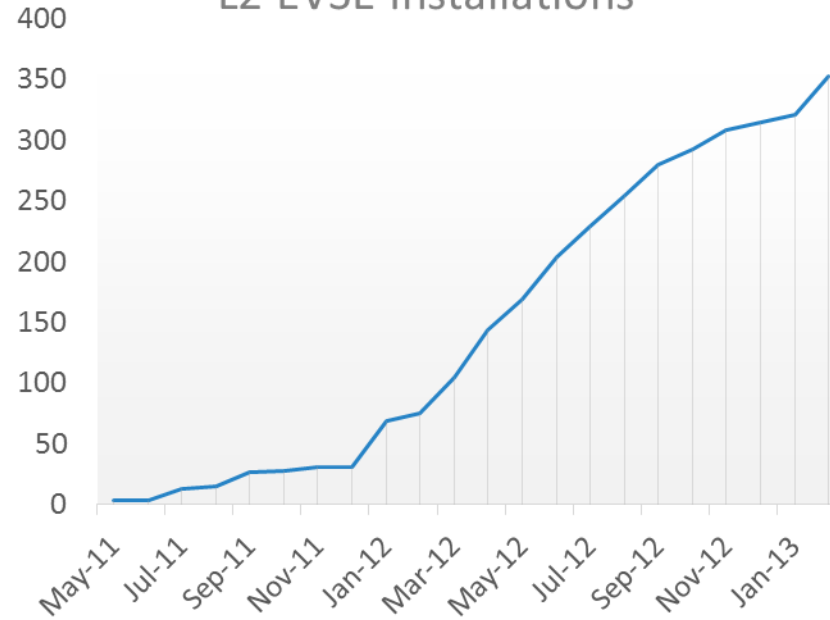
Compared with  
 LA: Median \$65.00  
 SF: Median \$119.00

### Residential EVSE Installation



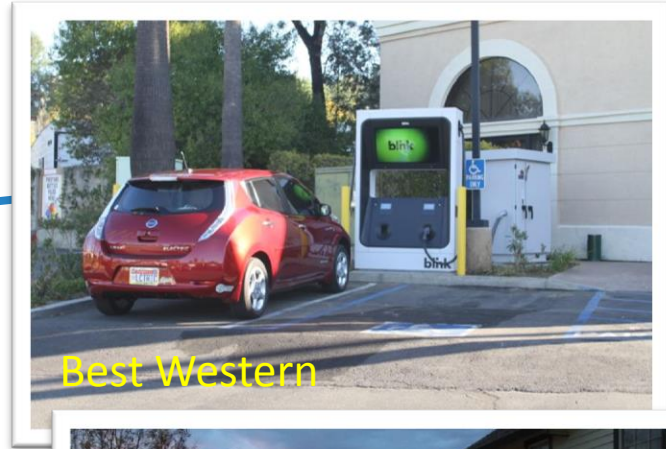
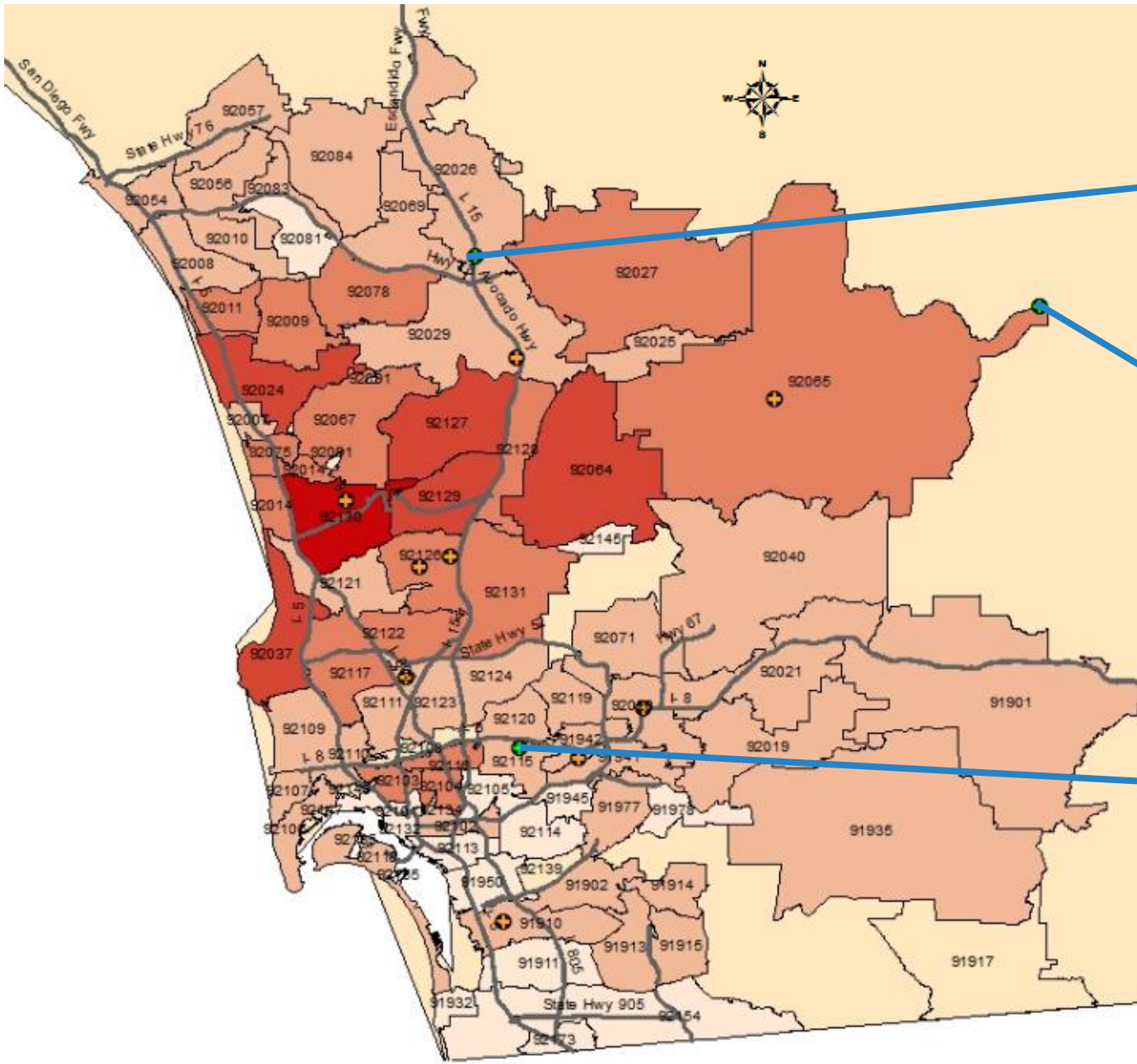


L2 EVSE Installations

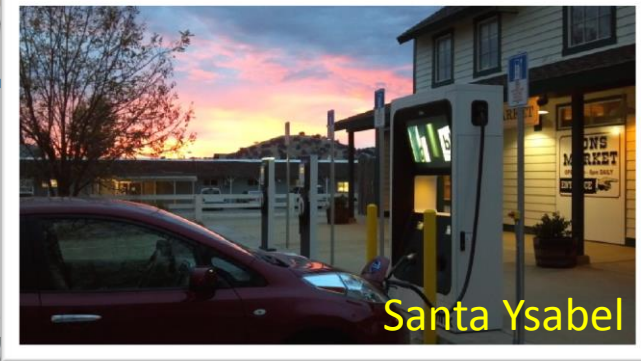


L2 Publically Accessible

Deployment



Best Western



Santa Ysabel



SDSU

Deployment

DC Fast Charging

## Workplace

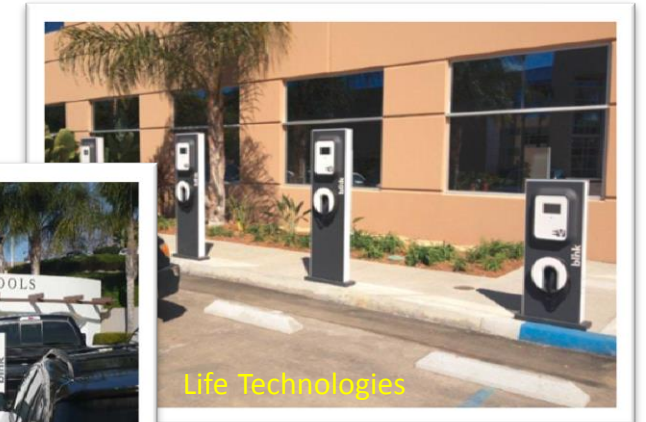
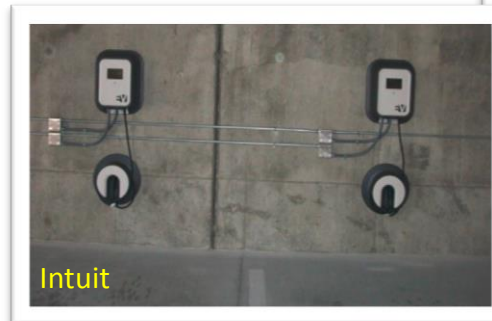
- Kyocera
- Life Technologies
- Clarion Partners
- Hologic Gen-Probe
- Northrup Grumman
- Qualcomm – 5 sites
- Intuit
- Santa Fe Christian Schools
- San Diego County Water Authority
- California Center for Sustainable Energy
- Kilroy Realty
- Irvine Company
- Sharp Healthcare
- ACE Parking
- Sony Online Entertainment
- Salk Institute

## Higher Education

- San Diego Community College District
  - 5 campus locations
- San Diego State University
  - 6 locations on campus
- University of California at San Diego
  - 5 locations and increasing on campus
  - 2 hospitals off campus
- University of San Diego
  - 4 locations on campus
- California State San Marcos
  - 1 location on campus

## Fleet

- San Diego Gas & Electric
- University of San Diego California
- Car2Go – 30 units in C2G Charging Depot
- Enterprise Rent-a-Car
- Relaxx Dry Cleaning

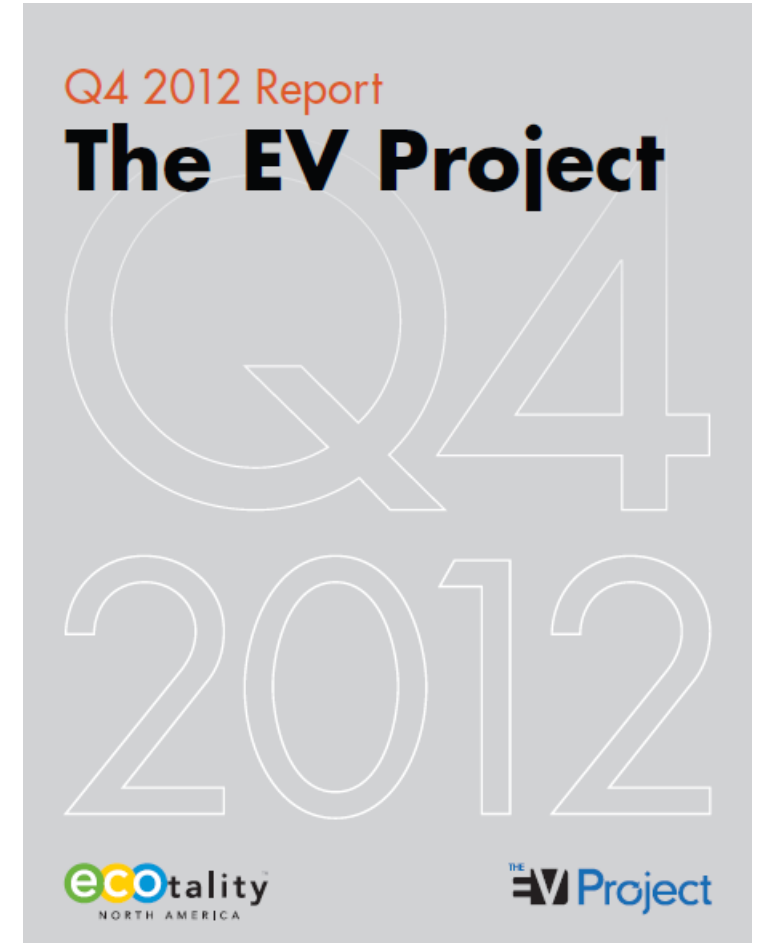


## Data Highlights

<http://www.theevproject.com/documents.php>

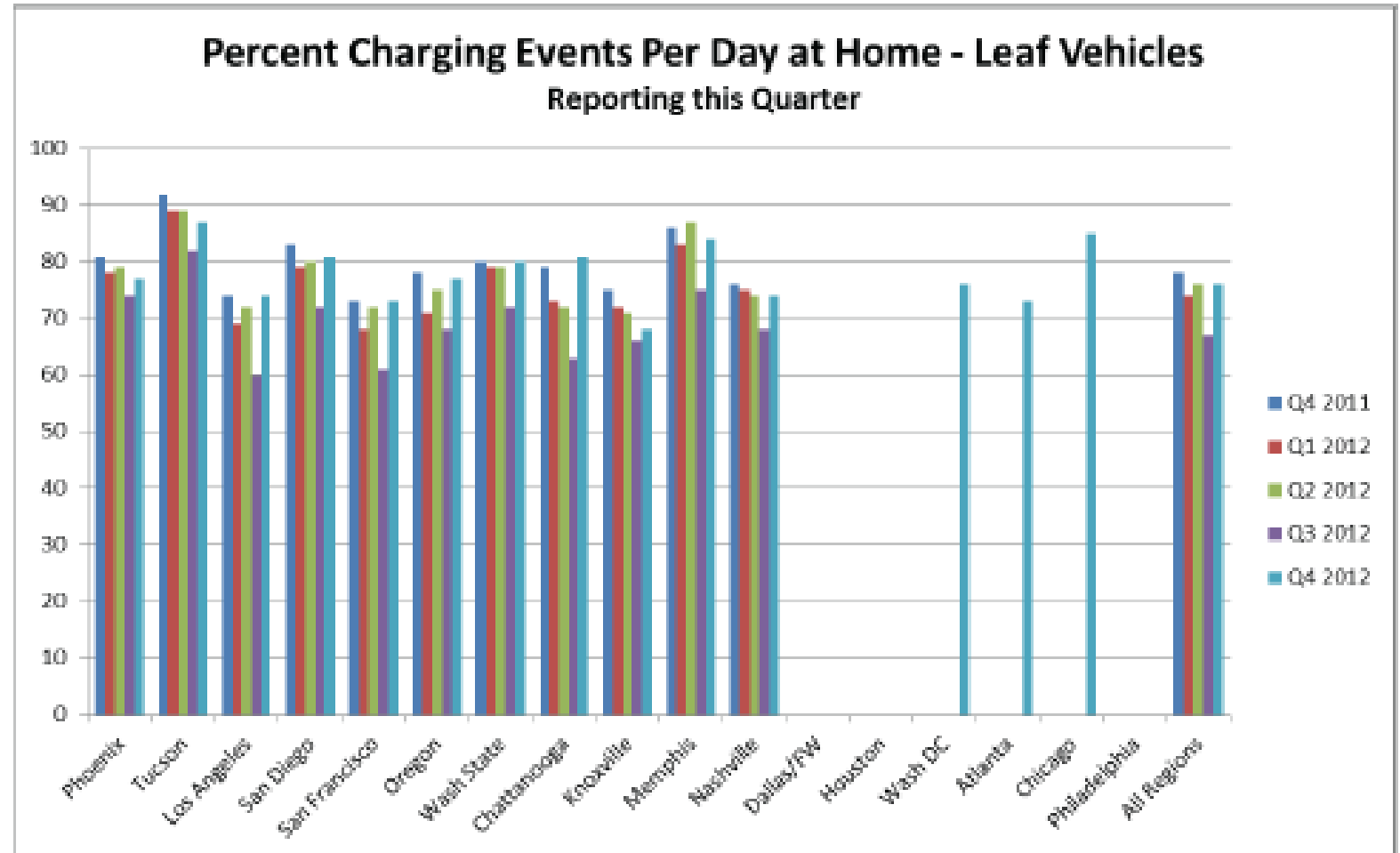
Deciphering the EV Project Quarterly Reports:

- 130 Page report
  - 8 page Overview (always at beginning)
  - 5 pages on San Diego EVSE (p36 – p40)
  - 1 page LEAFs in San Diego (p105)
  - 1 page Volts in San Diego (p119)
- Data reported here and in the reports are observations and not definitive results or conclusions



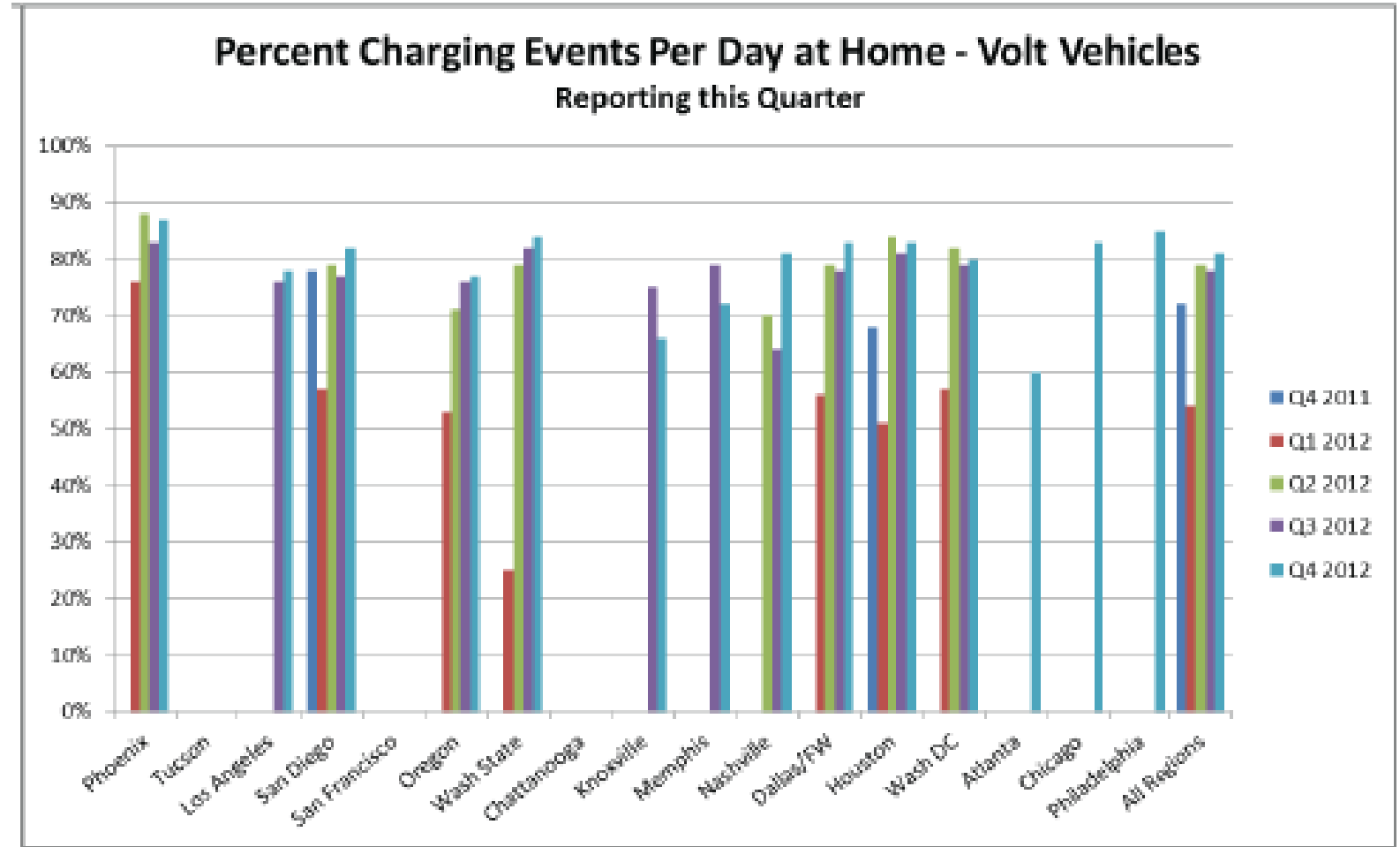
# Data Highlights

76% at home charging Q4 for LEAF with 1.1 average charge events per day



# Data Highlights

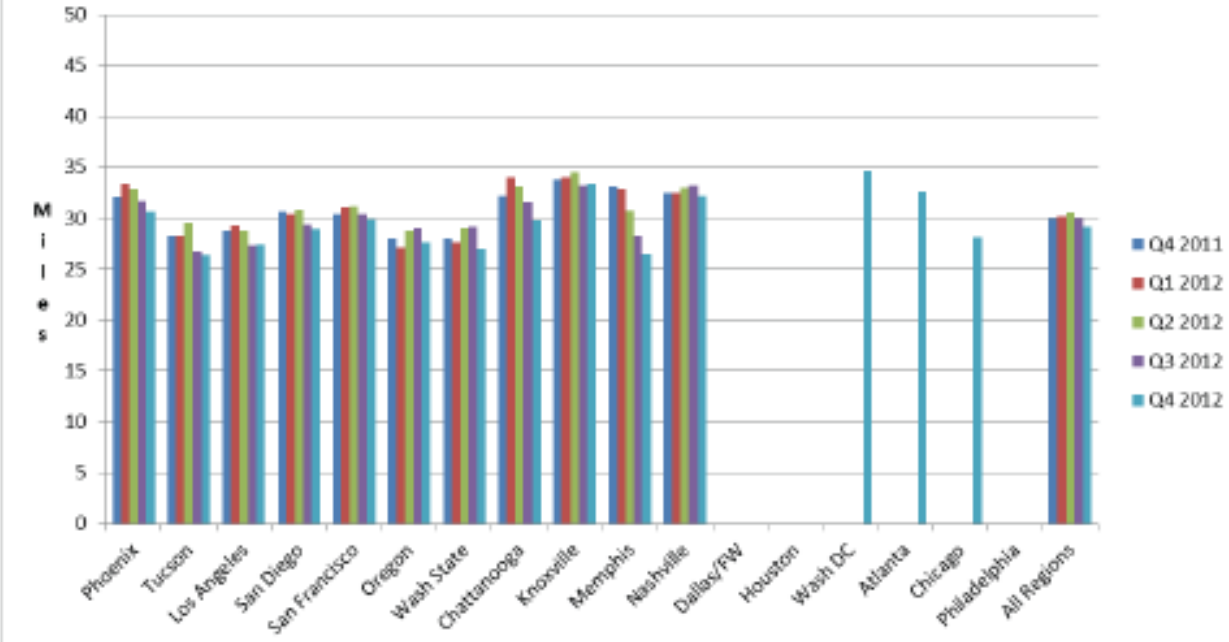
81% at home charging Q4 for Volt with 1.4 average charge events per day



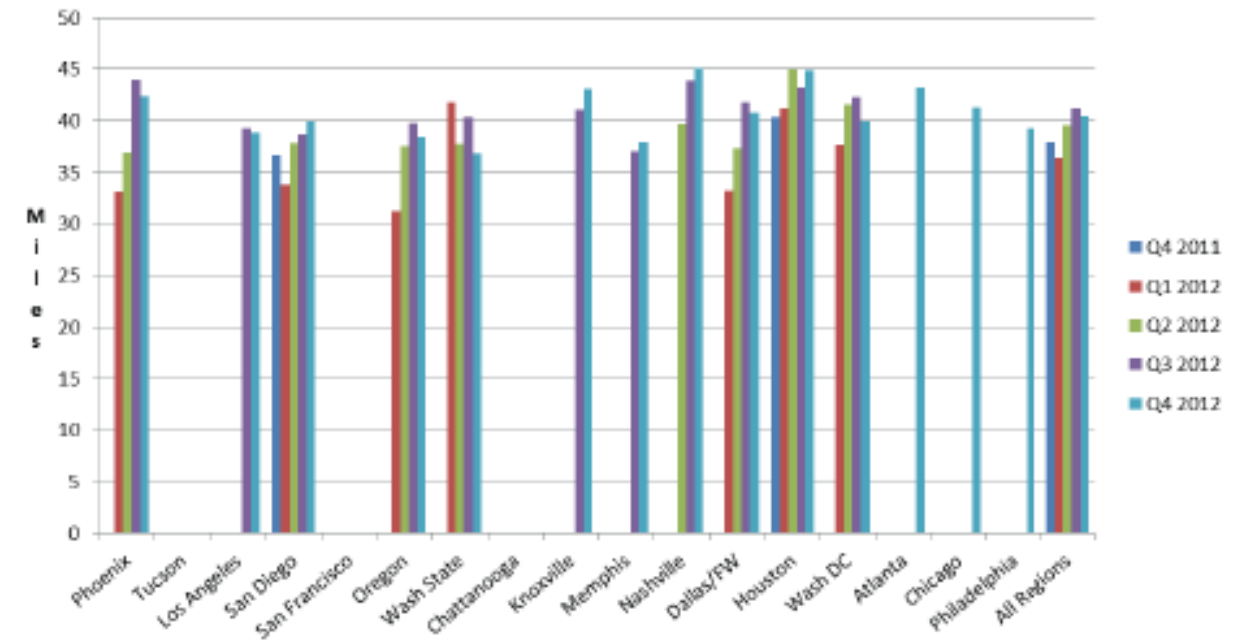


# Data Highlights

## Average Distance per Day when Driven - Leaf Vehicles Reporting this Quarter



## Average Distance per Day when Driven - Volt Vehicles Reporting this Quarter



# Data Highlights

## LEAF Summary

### Vehicle Usage

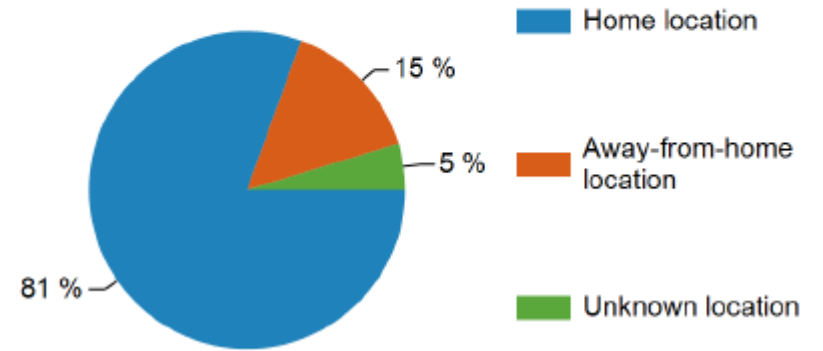
Number of trips <sup>1</sup>	133,950
Total distance traveled (mi)	925,415
Avg trip distance (mi)	6.9
Avg distance traveled per day when the vehicle was driven (mi)	28.9
Avg number of trips between charging events	3.9
Avg distance traveled between charging events (mi)	26.7
Avg number of charging events per day when the vehicle was driven	1.1

## Volt Summary

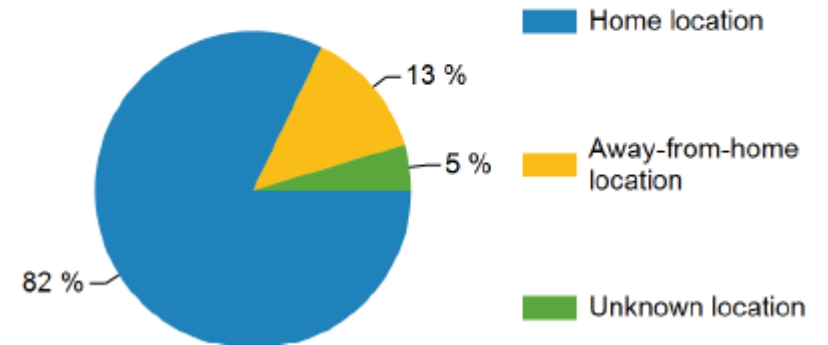
### Vehicle Usage

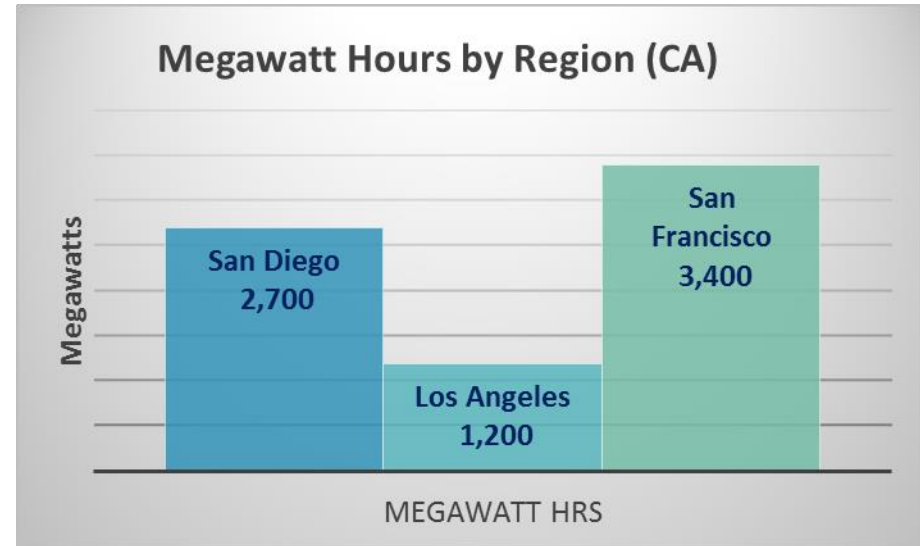
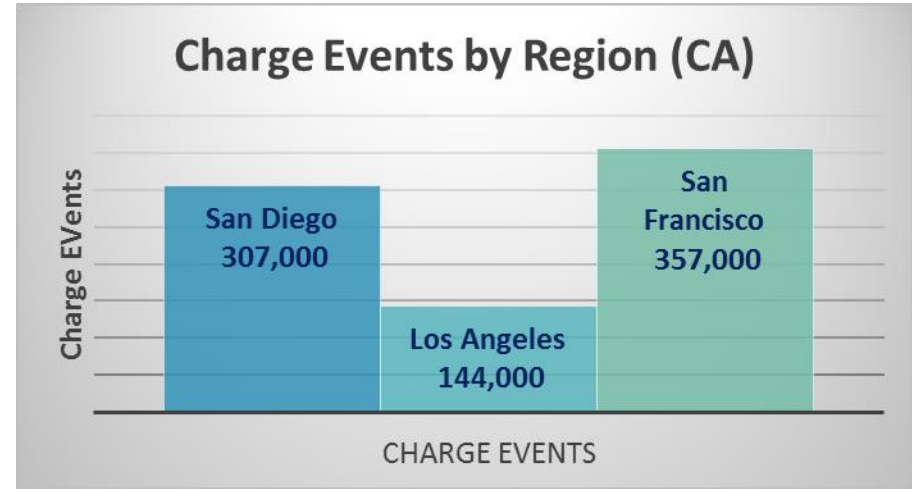
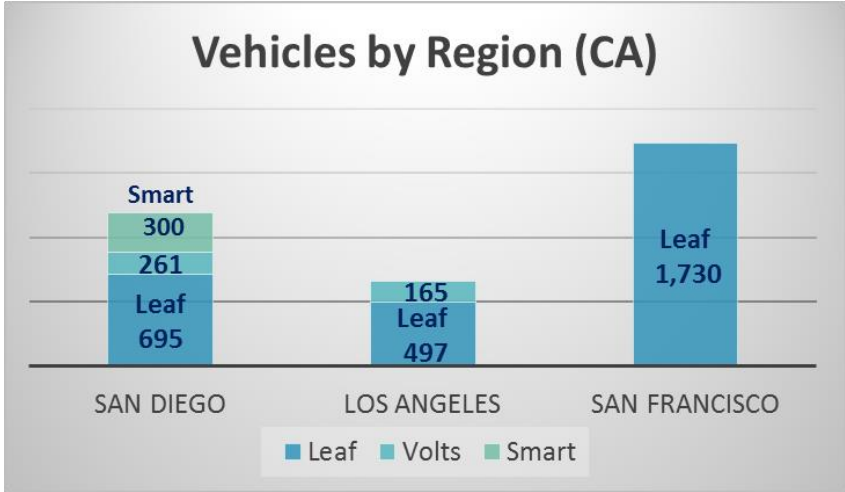
Overall fuel economy (mpg)	125
Overall electrical energy consumption (AC Wh/mi)	224
Number of trips <sup>1</sup>	51,003
Total distance traveled (mi)	404,346
Avg trip distance (mi)	7.9
Avg distance traveled per day when the vehicle was driven (mi)	40.0
Avg number of trips between charging events	3.8
Avg distance traveled between charging events (mi)	30.0
Avg number of charging events per day when the vehicle was driven	1.3

Frequency of Charging by Charging Location



Frequency of Charging by Charging Location

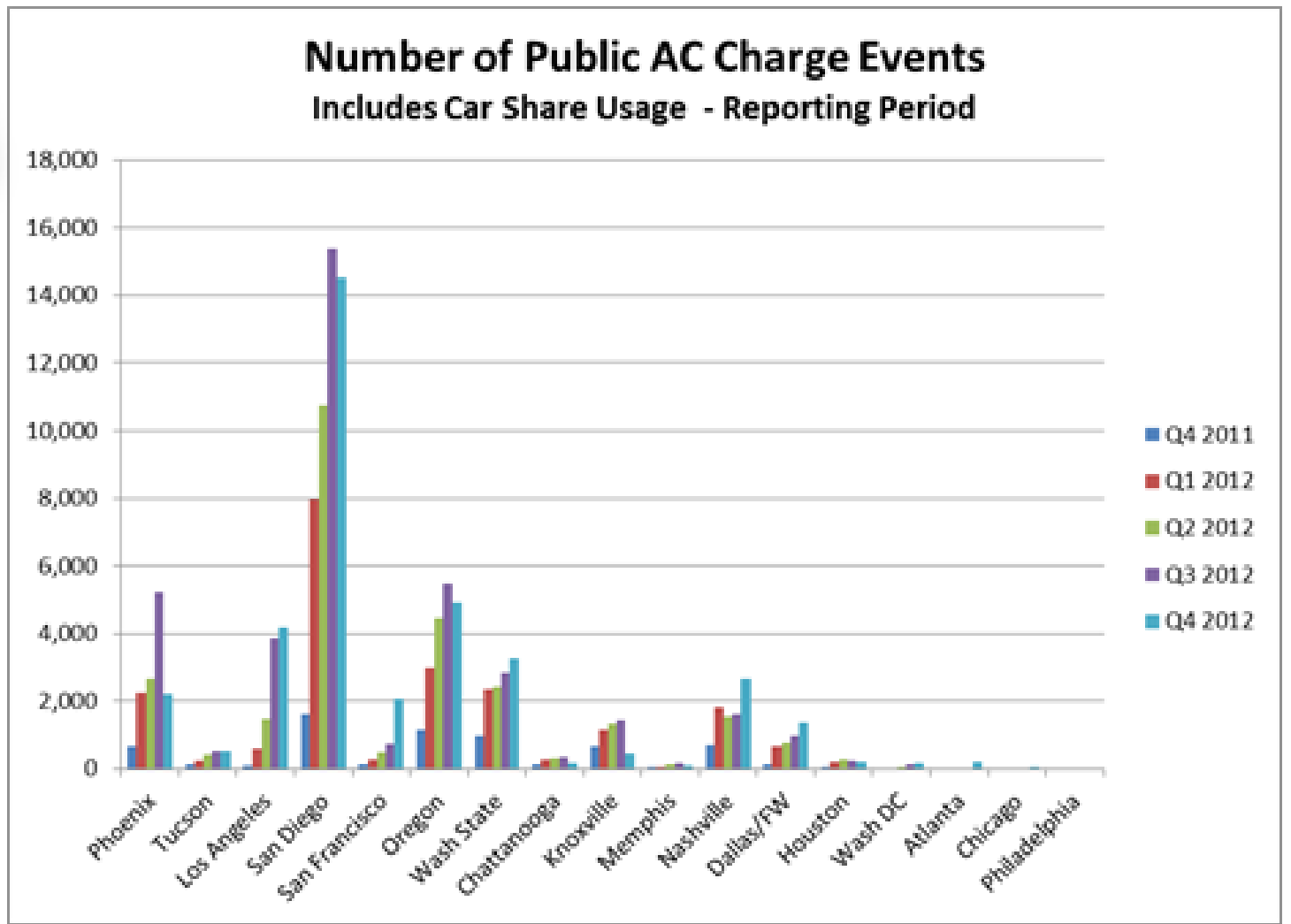




# Data Highlights

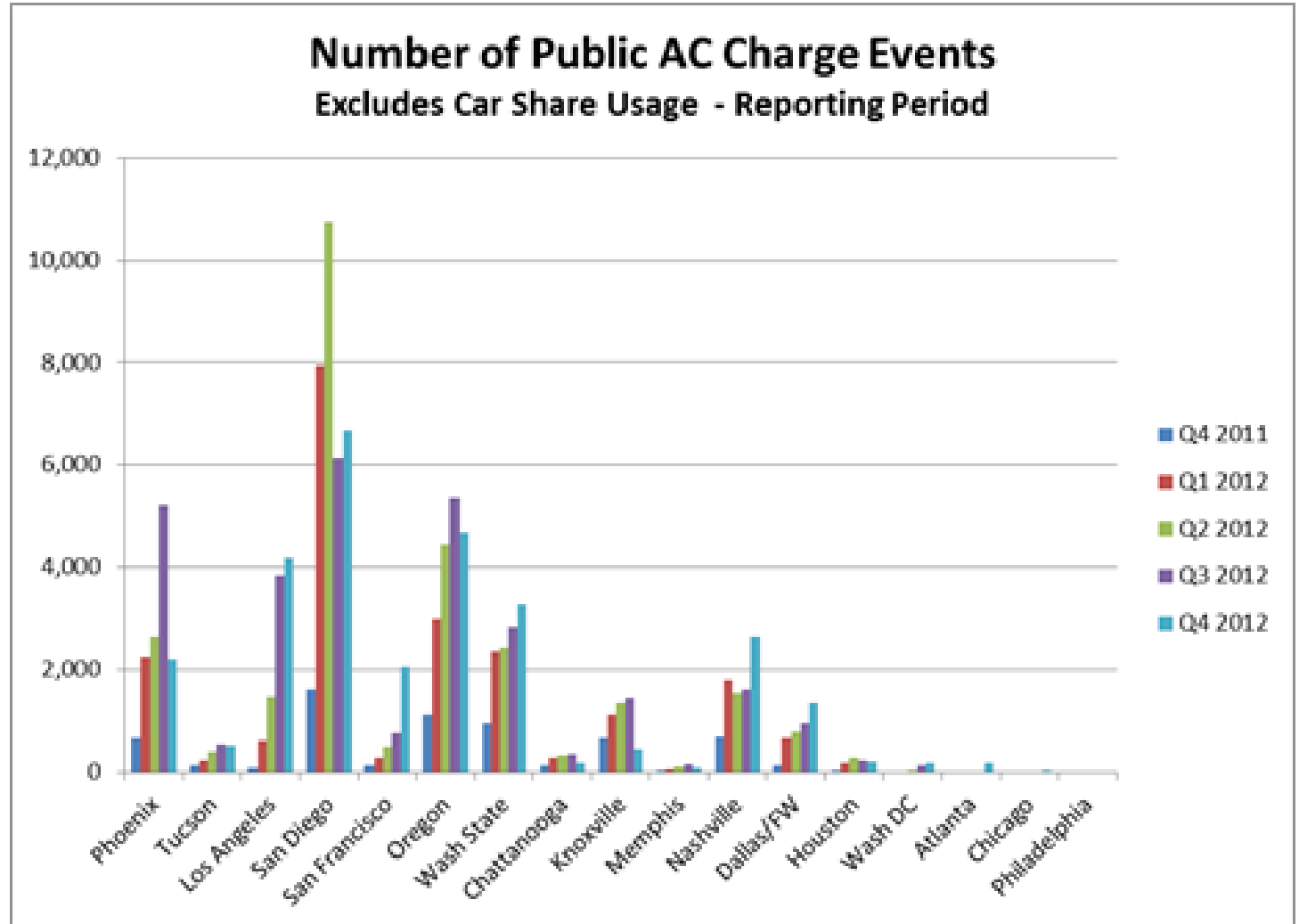


- San Diego has the highest number of non-residential charge events in The EV Project.



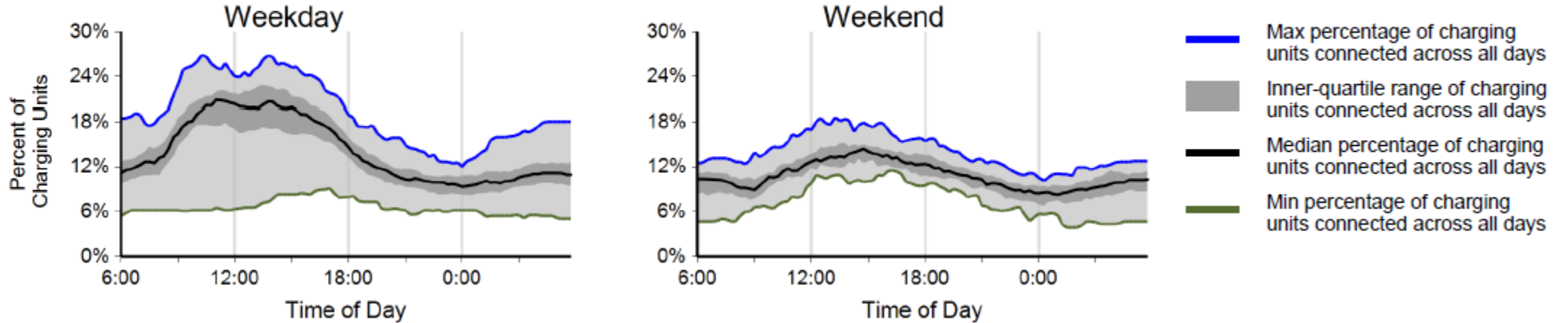
# Data Highlights

- With Car2Go usage, there were a total of 14,500 non-residential charge events in San Diego.
  - Eliminating the Car2Go connects, that number is 6,700. This is still higher than any other EV Project regional area.
- **Greatest use of AC Level 2 EVSE Public Infrastructure this past quarter:** San Diego (52.8 events per EVSE), San Francisco (44.0 events per EVSE), Los Angeles (19.8 events per EVSE).

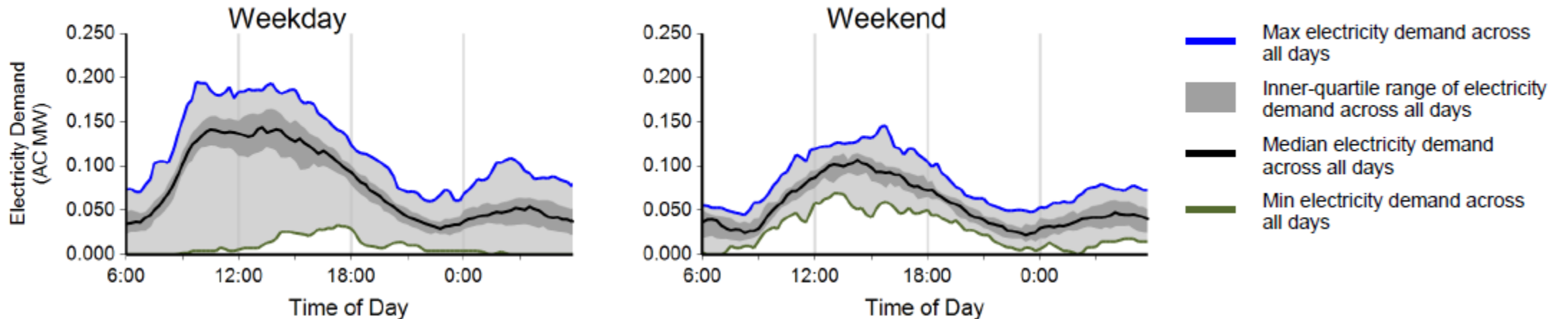


# Data Highlights

## Charging Availability: Range of Percent of Charging Units with a Vehicle Connected versus Time of Day<sup>3</sup>



## Charging Demand: Range of Aggregate Electricity Demand versus Time of Day<sup>4</sup>



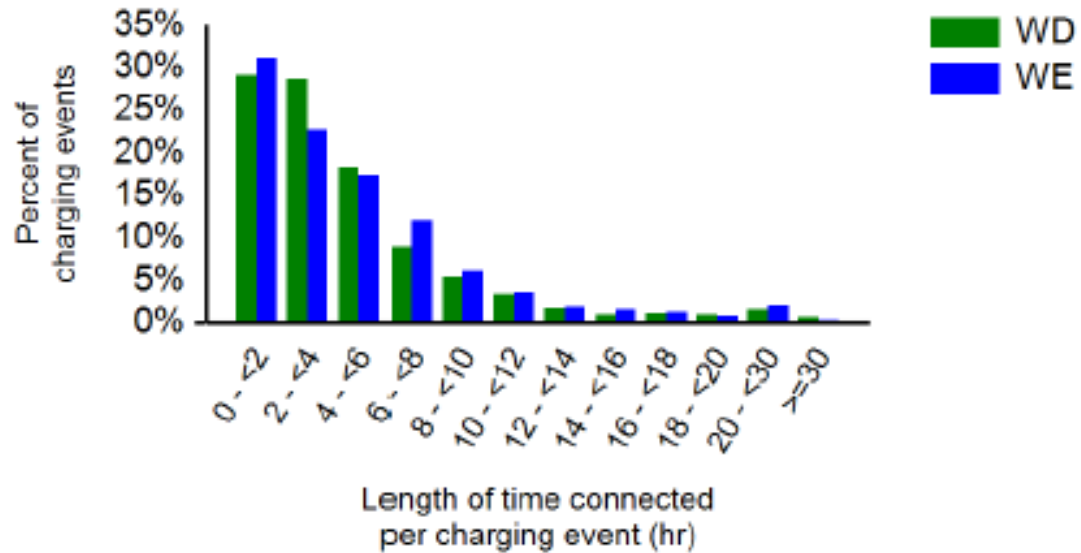
Publicly Available Level 2 AC

# Data Highlights

## Individual Charging Event Statistics

	Weekday (WD)	Weekend (WE)	Overall
Average length of time with vehicle connected per charging event (hr)	5.2	5.0	5.2
Average length of time with vehicle drawing power per charging event (hr)	3.0	3.2	3.0
Average electricity consumed per charging event (AC kWh)	10.4	11.6	10.7

**Distribution of Length of Time with a Vehicle Connected per Charging Event**



Publicly Available Level 2 AC

# Data Highlights

Venue	Number of Sites	Lowest Events/Wk	Highest Events/Wk	Average of events/wk
Retail, Big Box, National Accounts	62	0.79	1112.43	23.50
Business Office	61	0.09	113.75	6.89
Malls	22	0.03	27.1	5.33
Utilities	39	0.09	12.28	4.67
Parking lots & Garages	152	0.05	73.21	4.53
Retail, Small Business, Local	127	0.03	155.5	4.03
Educational Services	70	0.05	24.86	3.68
Healthcare/Medical	49	0.05	41.12	3.53
Arts & Entertainment	42	0.03	22.5	3.21
Hospitality/Travel	107	0.05	105.04	3.02
Restaurants	85	0.01	52.12	2.96
Non-profit	18	0.04	15.4	2.38
Automotive	42	0.11	13.1	2.19
Professional & Technical Services	20	0.16	6.32	1.98
Govt/Public Admin	92	0.03	10.44	1.90
Multi-family	16	0.15	9.42	1.66
Parks & Recreation	9	0.24	4.27	1.07
Military	1	0.12	0.12	0.12
Fleet	34	0.02	51.33	5.26
Workplace	44	0.06	71.93	8.01

- Average connect events per week by venue classification
  - Only one factor (venue classification that can affect utilization
  - Looking at only one factor see significant variation (low to high) within same venue type