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ChargePoint, Inc.

May, 17, 2013

Project ID #: ARRAVT073

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Overview

chargepoint

Timeline

- Start – May 2010
- Finish – Dec 2013
- % Complete
  - Infrastructure – 100%
  - Data Collection – 80%

Budget

- Total Project Funding
  - DOE: $15,001,287
  - Contractor: $15,102,385
- Funding received in FY 2010
  - $1,168,635
- Funding received in FY 2011
  - $8,549,564
- Funding received in FY 2012
  - $4,870,020
- Funding received in FY 2013
  - $113,480

Barriers

- EVs & Cost of EVs
- High Installation Costs
- HOAs
- Approvals & Permits

Partners

- BMW
- Coda
- Fisker
- Ford
- Ford Transit Connect
- GM
- Nissan
- Smart
- Tesla
- Think

ChargePoint America Overview - Relevance

- Department of Energy Award DE-EE0003391 $ 30M Project ($15M DoE)
- 10 Metro Areas
- Approximately 4,600 stations Public and Private Level 2: SAE-J1772
- Two Phases
  - Deployment phase is almost complete
  - Data analysis phase ends 12/31/2013

ChargePoint America Overview - Relevance

- Accelerate the development and production of electric vehicles to substantially reduce petroleum consumption, reduce greenhouse gas production, and create jobs.
- Demonstrate the viability, economic and environmental benefits of an EV charging infrastructure
- Roll out an infrastructure for EV drivers to facilitate a rapid increase in the use of Electric Vehicles
- Coordinate Stakeholders and OEM EV deployments to maximize charging station infrastructure usage
- Provide EV charging stations for public, commercial and residential locations to encourage consumers to buy Electric Vehicles
  - Residential stations via OEM partners
  - Public/Commercial stations via ChargePoint and Partners
- Collect data from the project (analyzed by INL) to help formulate national EV policies and best practices. The information will be used to understand charging information, such as utilization, charge frequency, duration etc. This information can be used to better understand the infrastructure needs and benefits. Ex. Help Kohl's understand utilization at their stores and benefits to them (encourage people to visit their store, etc.)

ChargePoint America - Relevance

Regions

New York Metro
Washington DC/Baltimore
Orlando/Tampa
S. Michigan
Boston
Central Texas
LA Metro
Sacramento
SF/SJ Bay Area
Bellevue/Redmond

CPA Stations - Relevance

Relevance – INL CPA EVSE Charging Data

ChargePoint ®America Vehicle Charging Infrastructure Summary Report

Report through February 2013

Charging Unit - By Region	Residential	Private Commercial	Public	Not Specified	Charging Units Installed to Date[1]	Number of Charging Events Performed[2]	Electricity Consumed (AC MWh)
Boston Area (Massachusetts and Rhode Island)	34	8	116	-	158	17,886	148.7
D.C. Area (District of Colombia, Maryland, Virginia)	54	30	143	-	227	33,907	224.7
Florida	68	14	262	1	345	36,357	221.8
L.A. Area	567	11	255	4	837	262,421	1,887.3
Michigan	331	9	185	-	525	143,378	987.5
New York Area(Connecticut,New Jersey,New York)	100	73	168	-	341	68,581	516.4
Sacramento/San Francisco Area	520	41	449	7	1,017	271,661	1,965.7
Texas	72	8	241	-	321	38,893	257.9
Washington	17	-	127	-	144	21,866	145.1
Total	1,763	194	1,946	12	3,915	894,950	6,355.2

Relevance – INL CPA EVSE Charging Data

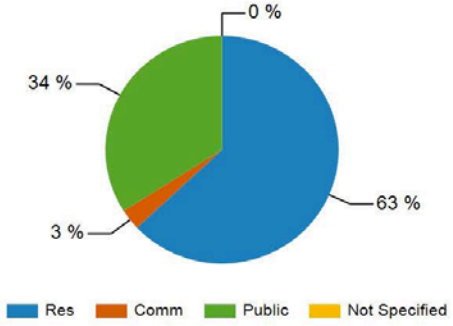
ChargePoint® America Vehicle Charging Infrastructure Summary Report

Report period: January 1 - February 25, 2013

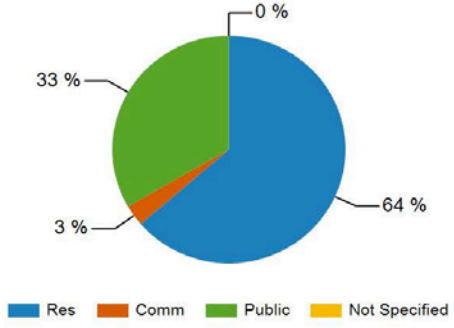
Region: All

Charging Unit Usage - By Type	Residential	Private Commercial	Public	Not Specified	Total
Number of charging units[1]	1,575	134	1,594	7	3,310
Number of charging events[2]	80,271	3,594	42,587	139	126,591
Electricity consumed (AC MWh)	598.36	31.35	316.91	0.78	947.40
Percent of time with a vehicle connected	48%	27%	11%	19%	29%
Percent of time with a vehicle drawing power	9%	6%	5%	3%	7%

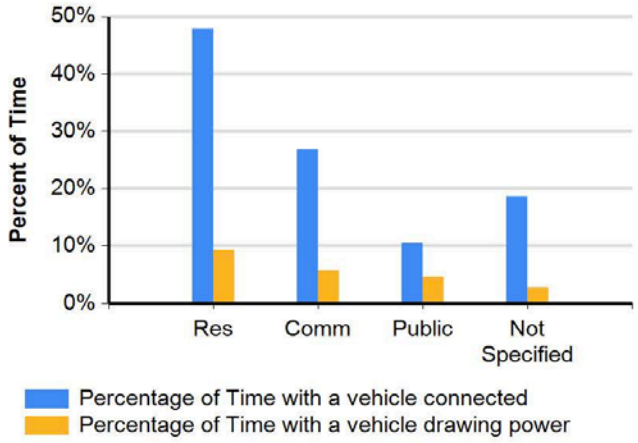
Number of Charging Events



Electricity Consumed



Charging Unit Utilization



Relevance – INL CPA EVSE Charging Data

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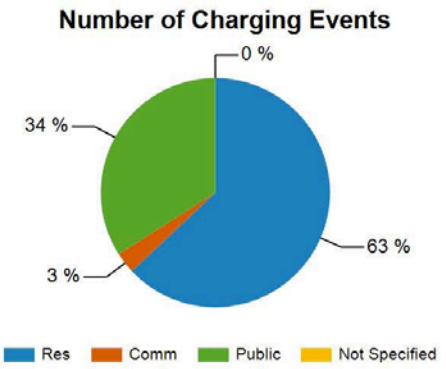
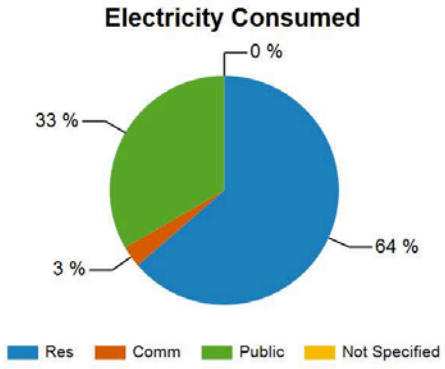
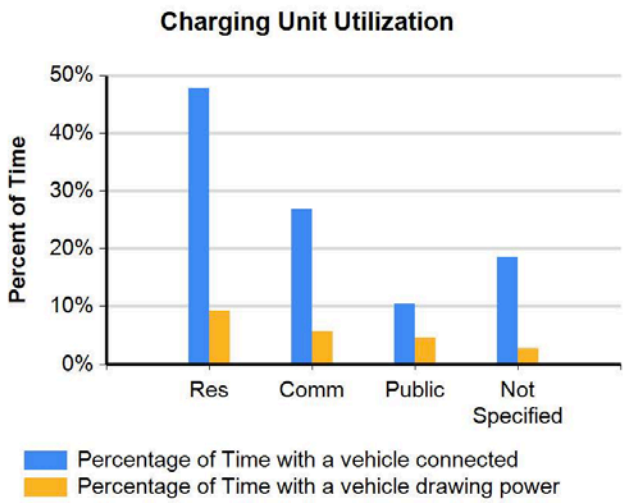




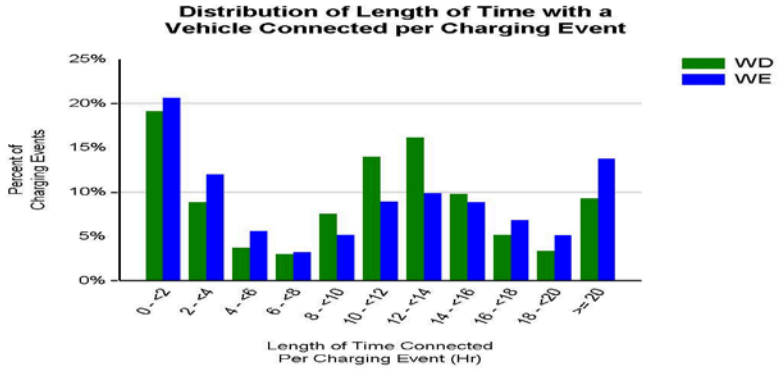


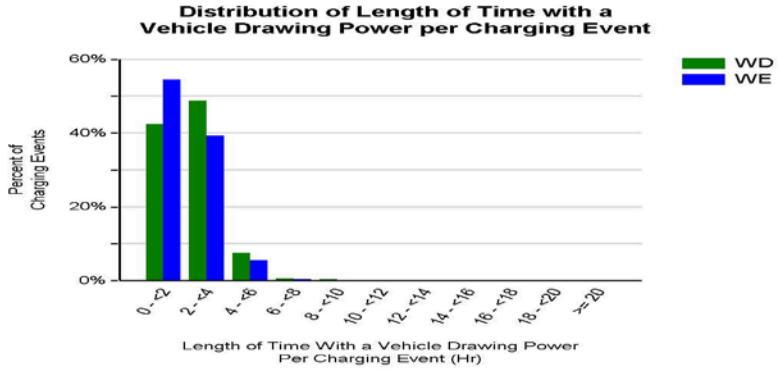
Relevance – INL CPA EVSE Charging Data

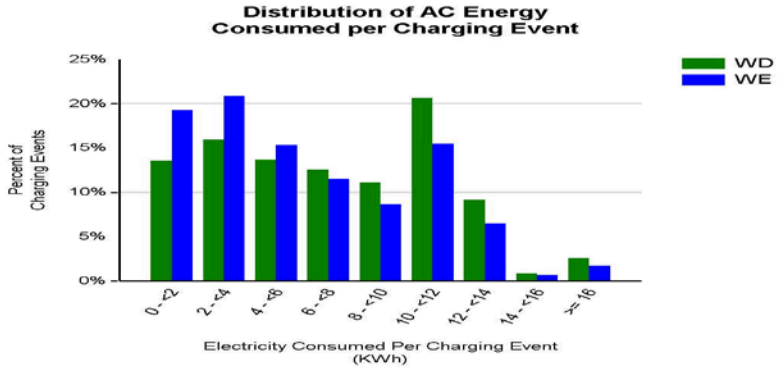
Residential Electric Vehicle Supply Equipment (EVSE)

Report period: January 1 - February 25, 2013
Region: All

Individual Charging Event Statistics	Weekday	Weekend	Overall
Average length of time with a vehicle connected per charging event (hr)	12.5	12.9	
Average length of time with a vehicle drawing power per charging event (hr)	2.5	2.2	
Average energy consumed per charging event (AC KWh)	7.80	6.53	0.00







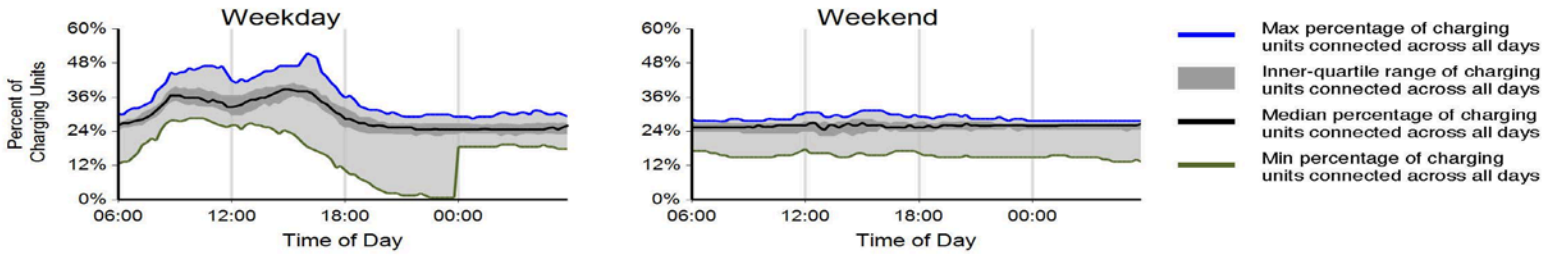
Relevance – INL CPA EVSE Charging Data

Commercial Electric Vehicle Supply Equipment (EVSE)

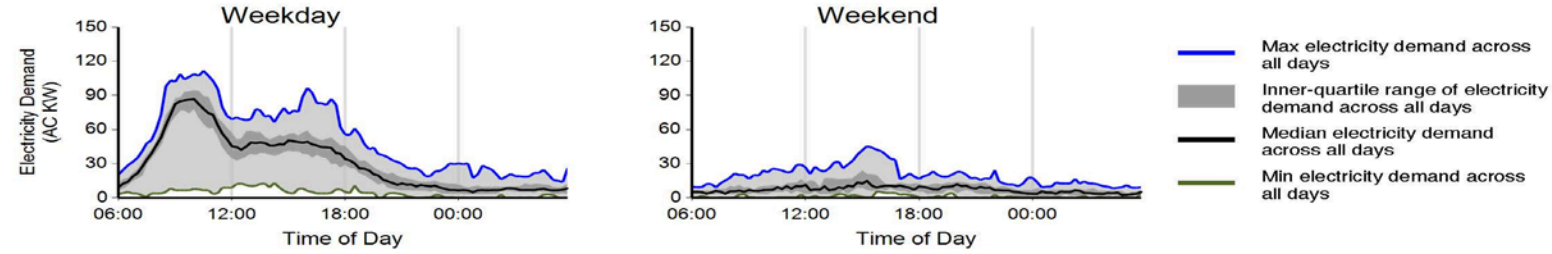
Report period: January 1 - February 25, 2013
Region: All

EVSE Usage	Weekday	Weekend	Overall
Number of charging events[2]	3,265	329	
Charging energy consumed (AC MWh)	28.6	2.7	
Percent of time with a vehicle connected to EVSE	27.8%	24.2%	26.8%
Percent of time with a vehicle drawing power from EVSE	7.3%	1.6%	5.7%
Average number of charging events started per EVSE per day	0.61	0.15	

Charging Availability: Range of Charging Units with a Vehicle Connected versus Time of Day Percentage



Charging Demand: Range of Aggregate Electricity Demand versus Time of Day

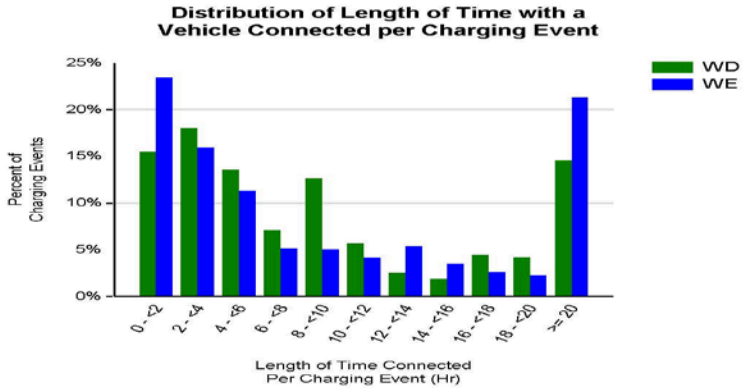


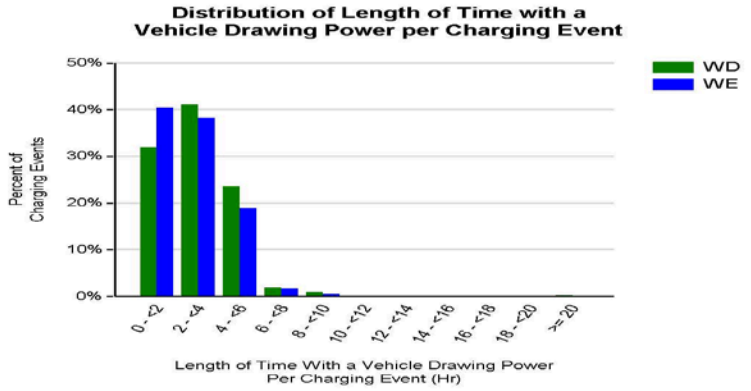
Relevance – INL CPA EVSE Charging Data

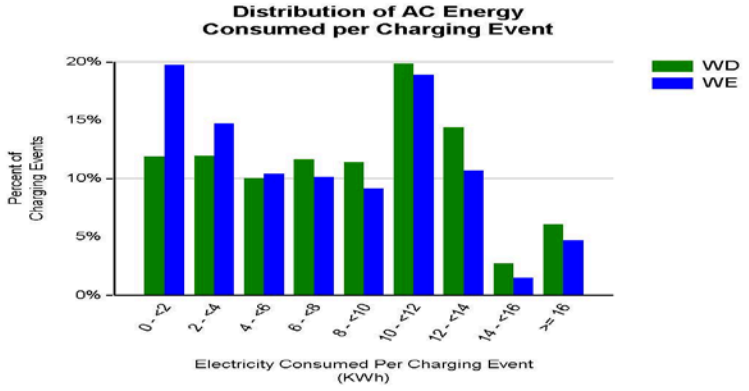
Commercial Electric Vehicle Supply Equipment (EVSE)

Report period: January 1 - February 25, 2013
Region: All

Individual Charging Event Statistics	Weekday	Weekend	Overall
Average length of time with a vehicle connected per charging event (hr)	13.5	12.1	
Average length of time with a vehicle drawing power per charging event (hr)	2.9	2.6	
Average energy consumed per charging event (AC KWh)	8.77	8.30	0.00







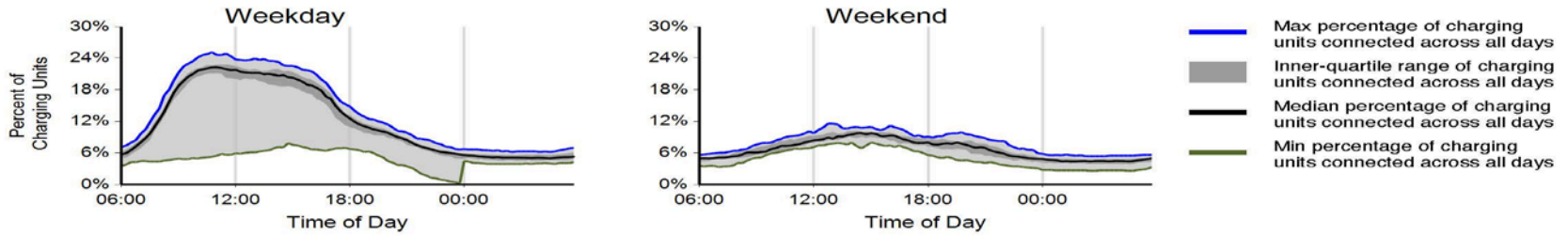
Relevance – INL CPA EVSE Charging Data

Public Electric Vehicle Supply Equipment (EVSE)

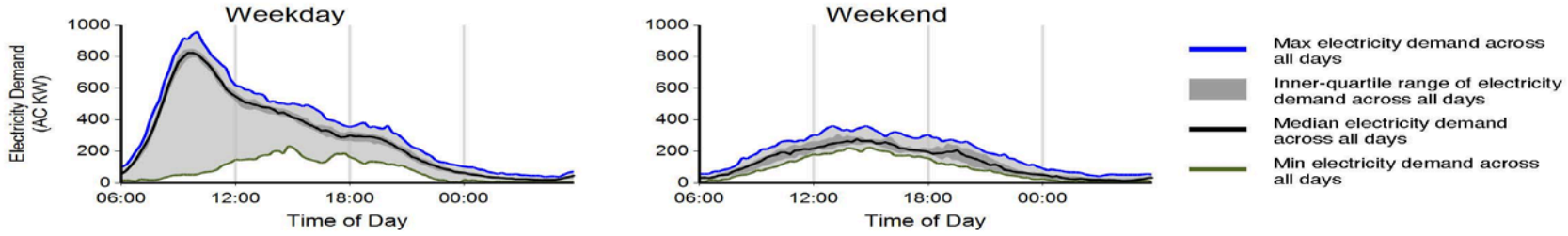
Report period: January 1 - February 25, 2013
Region: All

EVSE Usage	Weekday	Weekend	Overall
Number of charging events[2]	35,010	7,577	
Charging energy consumed (AC MWh)	266.2	50.7	
Percent of time with a vehicle connected to EVSE	12.0%	6.7%	10.5%
Percent of time with a vehicle drawing power from EVSE	5.4%	2.4%	4.6%
Average number of charging events started per EVSE per day	0.55	0.30	

Charging Availability: Range of Charging Units with a Vehicle Connected versus Time of Day Percentage



Charging Demand: Range of Aggregate Electricity Demand versus Time of Day

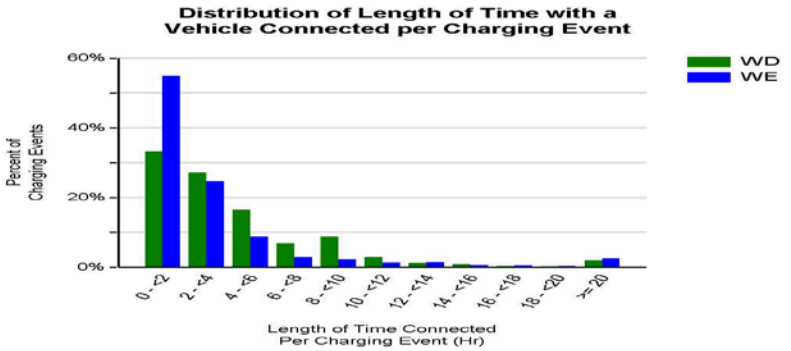


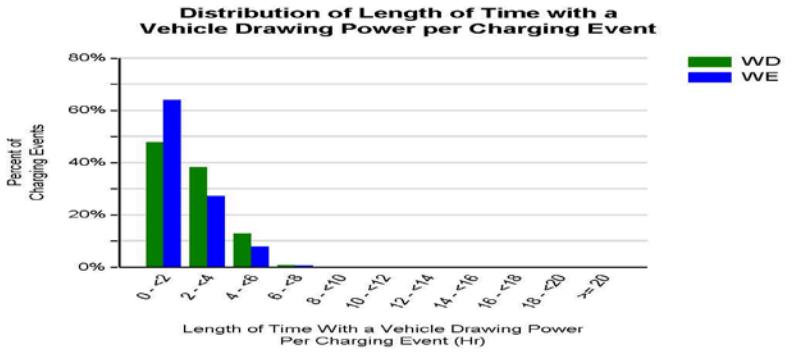
Relevance – INL CPA EVSE Charging Data

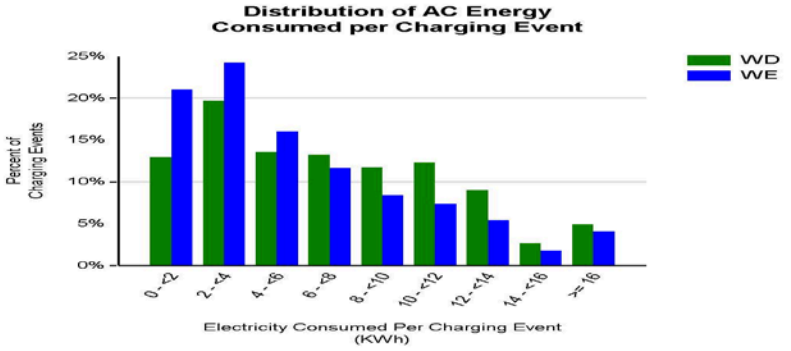
Public Electric Vehicle Supply Equipment (EVSE)

Report period: January 1 - February 25, 2013
Region: All

Individual Charging Event Statistics	Weekday	Weekend	Overall
Average length of time with a vehicle connected per charging event (hr)	5.4	4.4	
Average length of time with a vehicle drawing power per charging event (hr)	2.4	2.0	
Average energy consumed per charging event (AC KWh)	7.60	6.69	0.00







[1] Includes all charging units that were in use during the reporting period and have reported data to the INL
[2] A charging event is defined as the period when a vehicle is connected to a charging unit, during which period power is transferred

Observations - Approach

- Installations taking longer than expected due to issues with: permitting, customer project management, changing requirements post award, etc.
- No one area represents more than 20%
- Excellent distribution of stations for different type of sites (Public Parking Garages, cities, workplace, retail, utilities, airports, public parking lots, educational institutions)
- Residential
  - Availability of EV's
  - Permit
  - High installation costs
  - Cost of EV's

Observations - Approach

- Commercial:
  - Installation costs vary significantly. Bollard installs the most costly. Dual station installs more cost efficient. Range for under $1,000 to over $15,000 (curbside). Second meter should not be necessary.
  - Be careful about committing too many stations to one location: panel upgrades/demand charges likely.
  - Permitting easier than expected. Some small pockets caused trouble, but not a general problem.
  - Good site surveys critical – Especially relative to signal strength for network
  - Customers who used their own installer usually had multiple problems:
- Multi Dwelling Unit (MDU):
  - Deeded & assigned parking: Proximity to panel, EVSE ownership
  - Common-area placement…but limited, individual use
  - Liability concerns of building or HOA
  - Electrical capacity
  - Panel location vis-à-vis parking
  - Older buildings – Inspection phobia

Program Update – 2012 Merit Review

- Deployment underway since 2010
- EVSE Unit shipments happening daily
- Shipped over 3200 units
- Installed over 2200 units
- Developed and released CT2021 & CT2025 products
- Commercial Program
  - Units fully allocated
  - Stopped accepting applications since Nov 2011
  - Deployment to be completed by June 2012
  - Waitlist for commercial stations
- Residential Program
  - In-progress
  - Deployment to be completed by June 2012
  - Accepting applications, application Process
    - Customer applies through www.ChargePointAmerica.com

Program Update (2012-2013) – Progress to date

- Deployment underway since 2010
- Completed Shipment and installation of over 4600 EVSE charging ports
- Shipped over 4600 charging ports
- Installed 4629 charging ports
- 100% installations completed
- Commercial Program
  - All ports shipped
  - Stopped accepting applications since Nov 2011
  - All charging ports installed
- Residential/MDU Program
  - All ports shipped
  - All charging ports installed

Accomplishments

- ChargePoint is proud of our accomplishments and the progress with the program
  - Completed shipment of all home and commercial charging ports
  - Hundreds of stations installed every month putting people to work
  - Installed 4629 ports, done with deployment phase
- ChargePoint is incentivizing private industry: putting people to work.
  - Good for auto industry. Good for Americans. Good for economy
  - Every station installed puts 3 people to work for a day 2 people to build it and one to install it
  - Matching grant subsidizes the cost of the charging stations to businesses and consumers and, in turn, stimulates matching funds.
  - Good paying jobs are generated
- We are laying the groundwork to reduce our dependence on foreign oil in our nation
  - You can see the results of this grant today in every region of the US where these charging stations are installed.
  - Consumers know their community is committed to this new form of transportation.
  - Dramatic network commercial usage increases to 623 MWh power consumption and 6048 charging sessions a day

OEM Partners - Collaborations

- Charger deployment will match OEM vehicle flow
  - BMW
  - Coda
  - Fisker
  - Ford
  - Ford Transit Connect
  - GM
  - Nissan
  - Smart
  - Tesla
  - Think
- Home installations through National and Regional installers
- Commercial installations through distributors and direct

CEC - Collaborations

- California Energy Commission – $3.4M Grant
  - Residential
    - Residential installation rebate provided for charging stations
  - Commercial
    - Installation rebate for cities and other organizations
  - MDU
    - Charging Station and Installation rebate

CEC - Collaborations

- Scope
  - Association of Bay Area Governments (ABAG)
  - $47.5K grant
  - Deploy 19 charging ports in MDU's
  - Station provided by DOE grant
  - Installation funding for charging stations
- Status
  - 19 charging ports installed

Future Work

- Data Collection

Summary

- Done with deployment phase
- Collect data and upload the data to INL until Dec 31, 2013