THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center

Making Cancer History®

Workplace Charging at MD Anderson Cancer Center—A Brief Overview

Bill Donovan

Manager, Parking & Transportation

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

Why Workplace Charging?

- MD Anderson's Energy and Sustainability Plan
  - Parking & Transportation looked for ways to contribute
  - Workplace charging was approved for study late 2014
- Established Focus Groups of employees to discuss workplace charging
  - Gathered feedback and suggestions
- Approval to move forward granted

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Installation

- Installed two (2) Level 2 PowerPost ESVE charging stations from Telefonix, Inc. in each of our four (4) main employee garages, and one (1) in our smallest garage early 2015

- No charge to employees

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Employee Reception

- Mixed reviews from our employee population
  - Some angry reactions: "Are you going to install gas pumps for me?"
  - Overall, positive reception.
    - "I was on the fence about buying an electric vehicle. Now that I know I can charge at work, I see no reason not to buy one."

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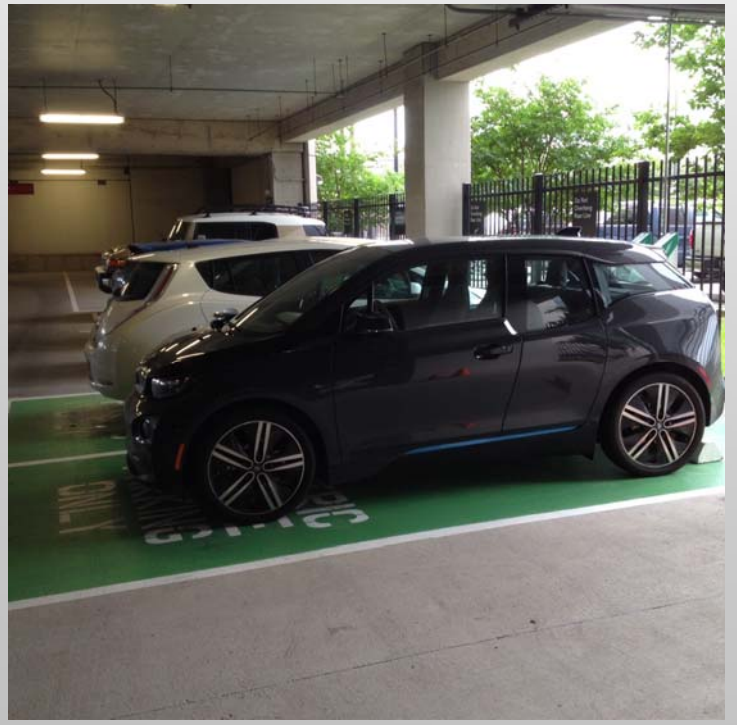
Our Experience

- Need for Workplace Charging Policy
  - Share the charging stations as the number of electric vehicle owners increases
  - Installing additional charging stations a future possibility

- Electricity cost has been negligible; no plans to charge employees

- Developing metrics
  - Kilowatt hours used
  - Electricity costs
  - Reduction in emissions



Questions / Comments

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Establishing Workplace EV Charging Stations

Sponsored by:

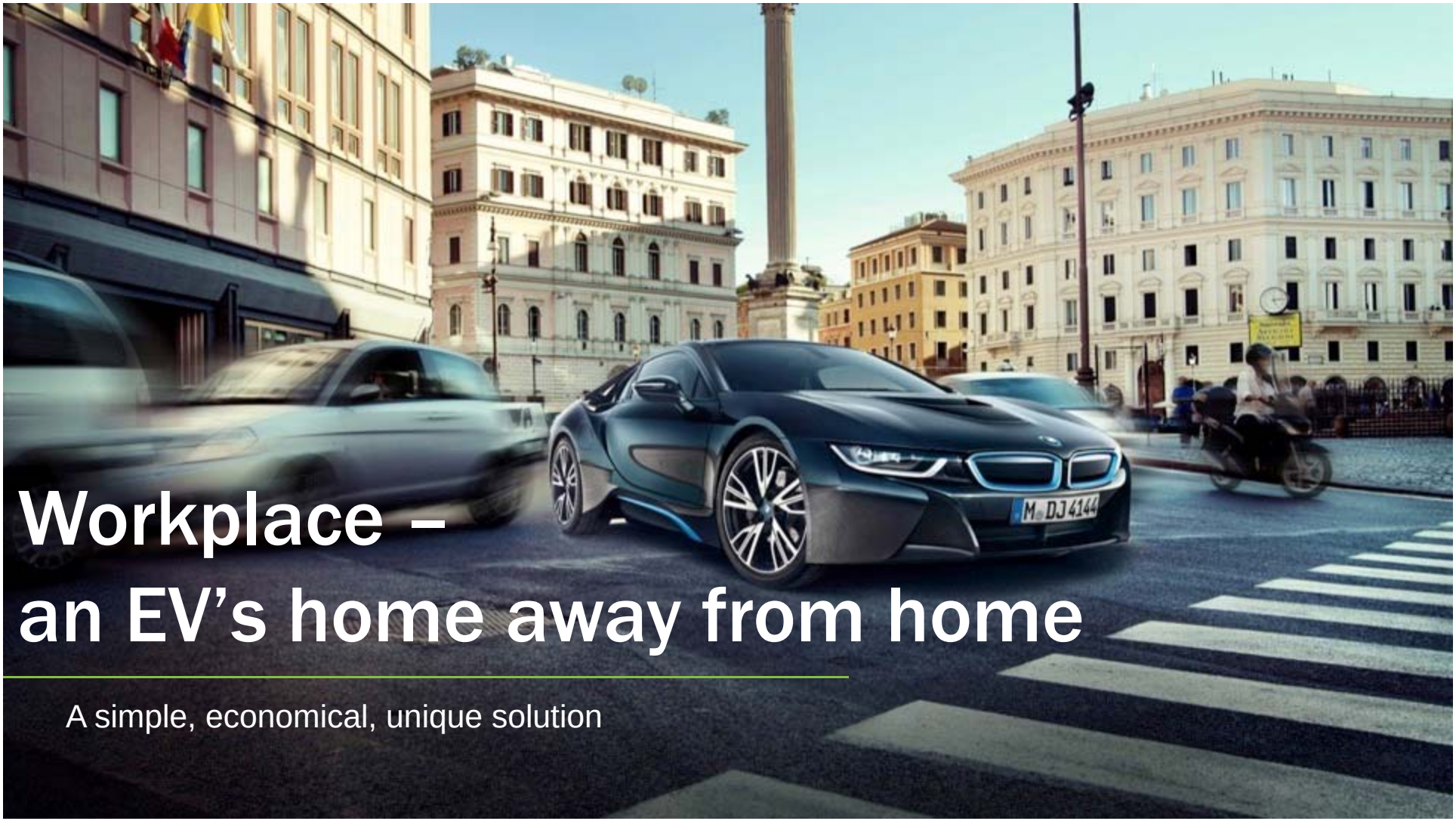
Workshop Participants

Shelley Whitworth: Houston-Galveston Area Council

Bill Williams: Telefonix, Inc.

Bill Donovan: MD Anderson Cancer Center

David Owen: CenterPoint Energy



Workplace – an EV's home away from home

A simple, economical, unique solution

1. **The EV Industry's "State of Charge"**

1. **Who's buying EV's?**

2. **Why are they buying EV's?**

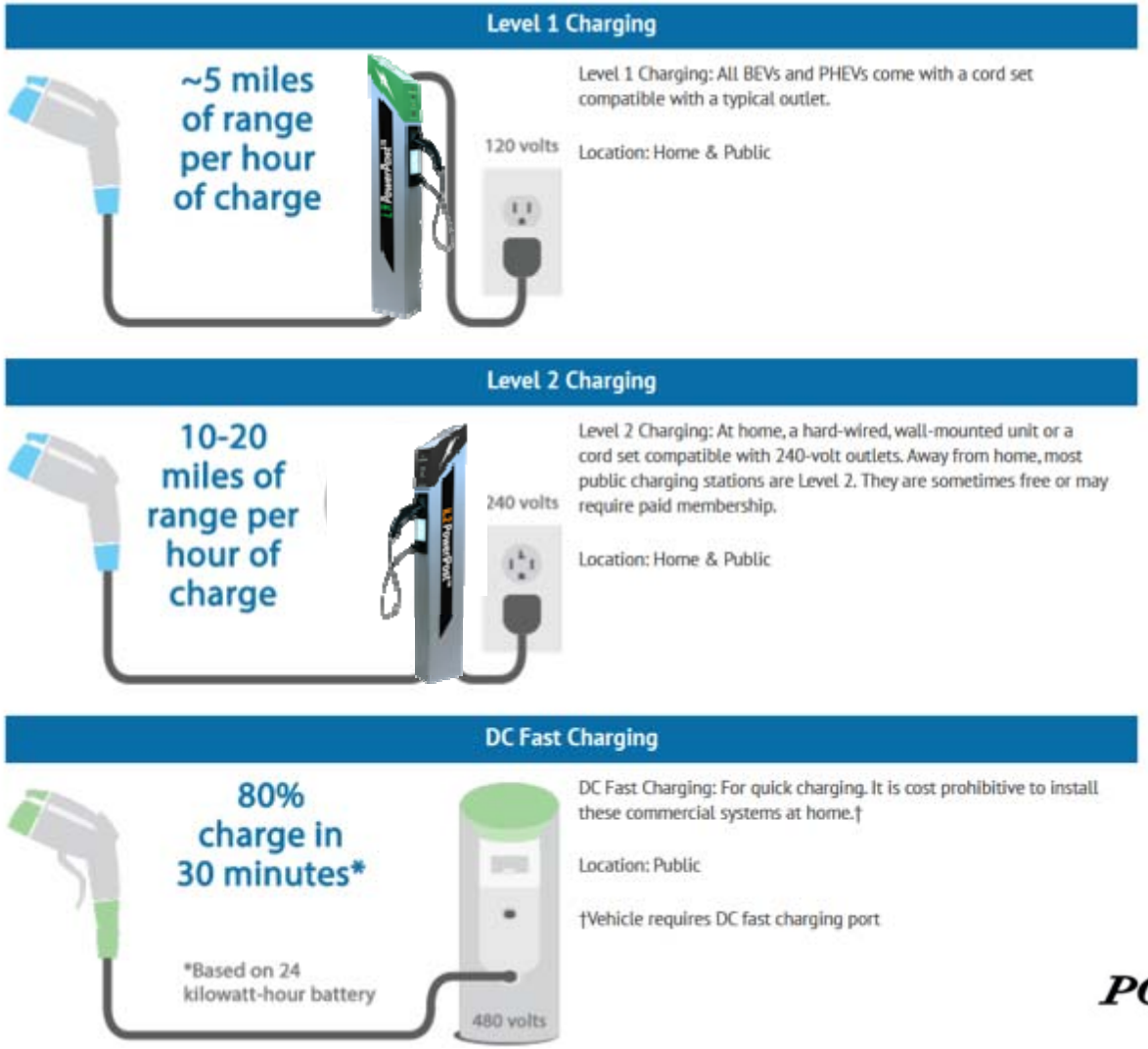
3. **Where do they charge their EV's?**

4. **Workplace Charging**

5. **Why should Coalitions promote workplace charging?**

POWERPost® EVSE technology by telefonix®

Electric Vehicles 101



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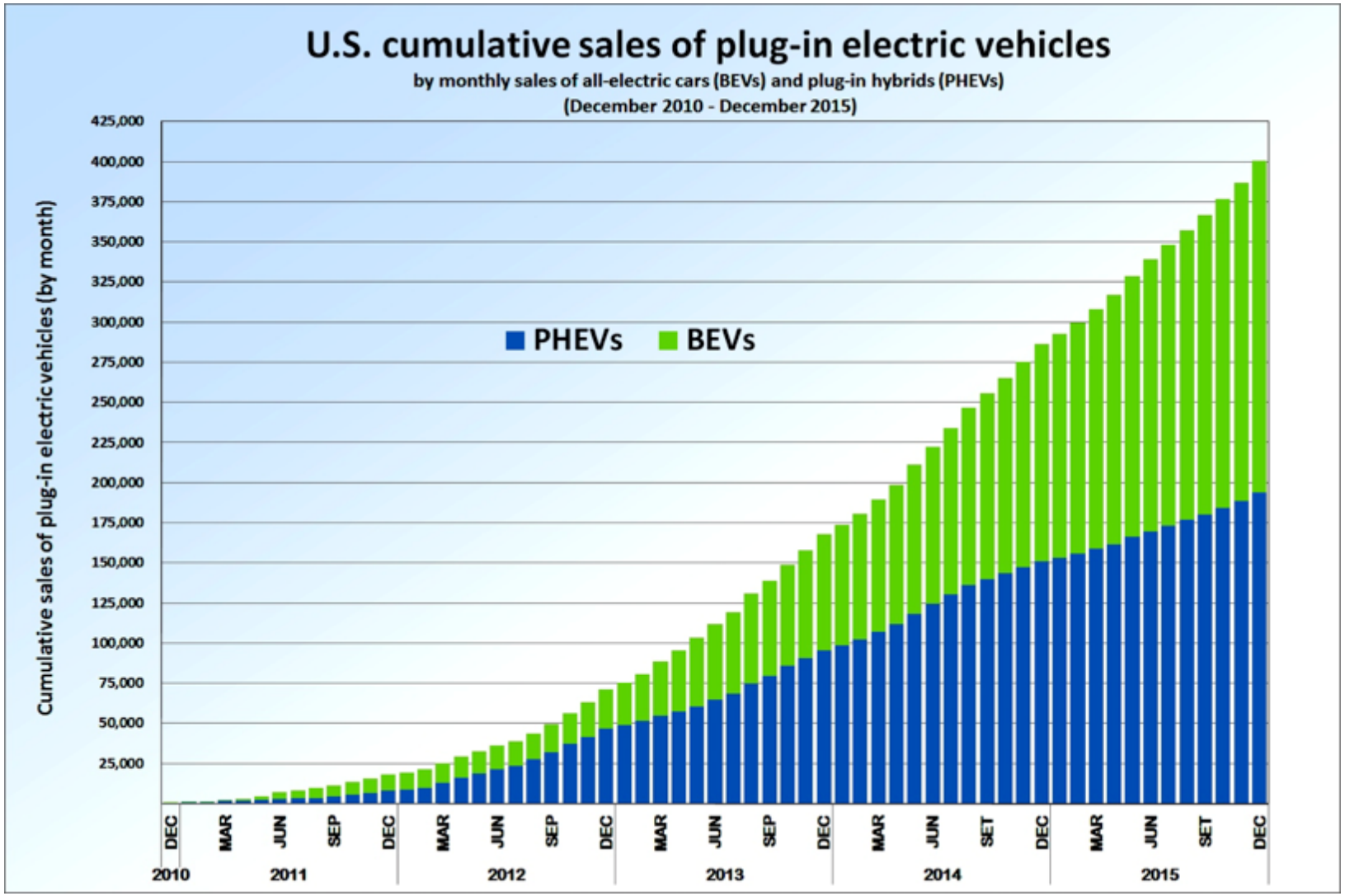
EV Industry's "State of Charge"

POWERPost® EVSE technology by telefonix®


U.S. cumulative sales of plug-in electric vehicles
by monthly sales of all-electric cars (BEVs) and plug-in hybrids (PHEVs)
(December 2010 - December 2015)
Cumulative sales of plug-in electric vehicles (by month)
425,000
400,000
375,000
350,000
325,000
300,000
275,000
250,000
225,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
25,000
PHEVs
BEVs
DEC
MAR
JUN
SEP
DEC
MAR
JUN
SEP
DEC
MAR
JUN
SEP
DEC
MAR
JUN
SET
DEC
MAR
JUN
SET
DEC
2010
2011
2012
2013
2014
2015

2016-US	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Tesla Model S*	850	1,550	3,990	800	1,200	3,700	2,150	3,125					17,365
Chevrolet Volt	996	1,126	1,865	1,983	1,901	1,937	2,406	2,081					14,295
Ford Fusion Energi	581	932	1,238	1,331	1,453	1,700	1,341	1,422					9,998
Tesla Model X*	270	270	1,860	795	1,600	2,145	750	1,850					9,540
Nissan LEAF	755	930	1,246	787	979	1,096	1,063	1,066					7,922
BMW i3	182	248	332	814	696	608	1,479	1,013					5,372
Ford C-Max Energi	350	490	610	607	538	630	755	707					4,687
BMW X5 xDrive40e	181	345	313	655	500	583	649	876					4,102
Fiat 500e**	275	210	455	395	405	480	425	360					3,005
Audi A3 Sprtbk e-tron	327	243	332	326	361	353	349	346					2,637
Chevrolet Spark EV	139	216	252	419	394	359	333	292					2,404
VW e-Golf	328	198	86	326	269	248	344	454					2,253
Hyundai Sonata PHV**	175	200	275	250	235	225	375	235					1,970
Porsche Cayenne S-E	146	172	244	237	191	176	148	197					1,511
Volvo XC90	226	176	178	150	110	166	178	176					1,360
Kia Soul EV	81	60	79	139	120	134	179	153					945
BMW i8	32	54	89	130	146	169	166	145					931
Ford Focus Electric	66	81	110	81	54	54	58	75					579
Cadillac ELR	67	91	104	95	45	94	15	6					517
smart ED	48	54	70	66	75	53	62	55					483
Mercedes B250e	58	37	66	56	49	44	50	57					417
BMW 330e	0	0	19	25	67	26	81	51					269
Porsche Panamera S-E	27	33	23	25	26	22	21	59					236
Mercedes S550H PHV	19	36	12	29	27	27	32	30					212
Mercedes GLE 550e	0	0	0	0	0	19	30	24					73
Mitsubishi i-MiEV	2	5	1	6	2	4	20	25					65
Toyota Prius PHV	10	6	7	4	4	11	4	2					48
BMW 740e								Arrives					
Mercedes C350e									Arrives				
Other *	0	0	1	0	0	0	0						1
InsideEVs	6,191	7,763	13,857	10,531	11,447	15,063	13,463	14,882	0	0	0	0	93,197
2015 Results	6,057	6,951	10,341	9,094	11,540	10,364	8,951	8,972	10,134	9,926	10,070	13,699	116,099
Worldwide*	36,702	37,019	59,510	51,772	56,177	69,170	65,122						375,472

2016-US	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
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Worldwide*	36,702	37,019	59,510	51,772	56,177	69,170	65,122						375,472

400,000 TESLA Model 3 deposits!

Who’s buying EV’s?

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Who's buying EV's?

1. For the conventional **FORD** Focus, buyers average age 46 and have household income of $77,000 a year. The average Focus Electric buyer is age **43 with household income of $199,000**, says TrueCar President John Krafcik**.**

2. The same dynamic was at work with the **Fiat** 500 vs. its electric version, the 500e. Buyers of the conventional version come in at an average of age 47 with $73,000 in household income. The electric attracts buyers average age **45 and $145,000 income**. Fewer, some 52%, were lured by the deal, compared to 67% for the electric.

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Who's buying EV's?

Based on calendar-year 2014 overall EV sales, the study found that:

1. 55 percent of electric vehicle buyers are between **36 and 55 years old**
2. 21 percent have an average household income of $175,000 or more.
3. Additional studies show that EV buyers tend to live in multi-vehicle households, which suggests that EVs are either **used as a second car and or to replace the need for daily commutes via public transit**.

"Electric-Car Buyers Younger And Richer Than Hybrid Owners" FORBES 4/22/14

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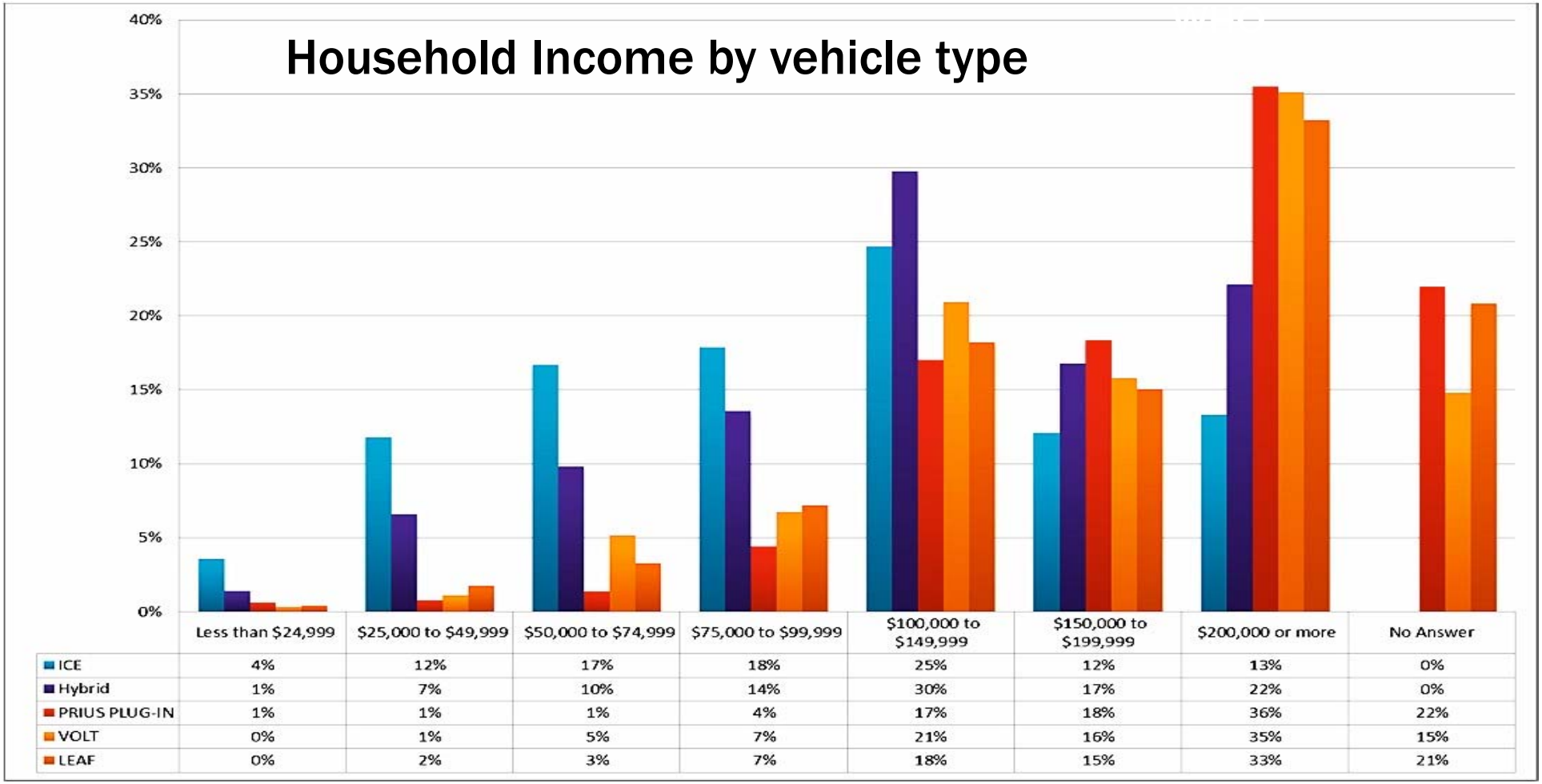

	Less than $24,999	$25,000 to $49,999	$50,000 to $74,999	$75,000 to $99,999	$100,000 to $149,999	$150,000 to $199,999	$200,000 or more	No Answer
ICE	4%	12%	17%	18%	25%	12%	13%	0%
Hybrid	1%	7%	10%	14%	30%	17%	22%	0%
PRIUS PLUG-IN	1%	1%	1%	4%	17%	18%	36%	22%
VOLT	0%	1%	5%	7%	21%	16%	35%	15%
LEAF	0%	2%	3%	7%	18%	15%	33%	21%

EVS27Barcelona, Spain, November 17-20, 2013 Studying the PEV Market in California: Comparing the PEV, PHEV and Hybrid Markets
Gil Tal1, Michael A. Nicholas1 1Institute of Transportation Studies ◦ University of California, Davis 1605 Tilia Street ◦ Davis, California gtal@ucdavis.edu mianicholas@ucdavis.edu

Why are they buying EV's?

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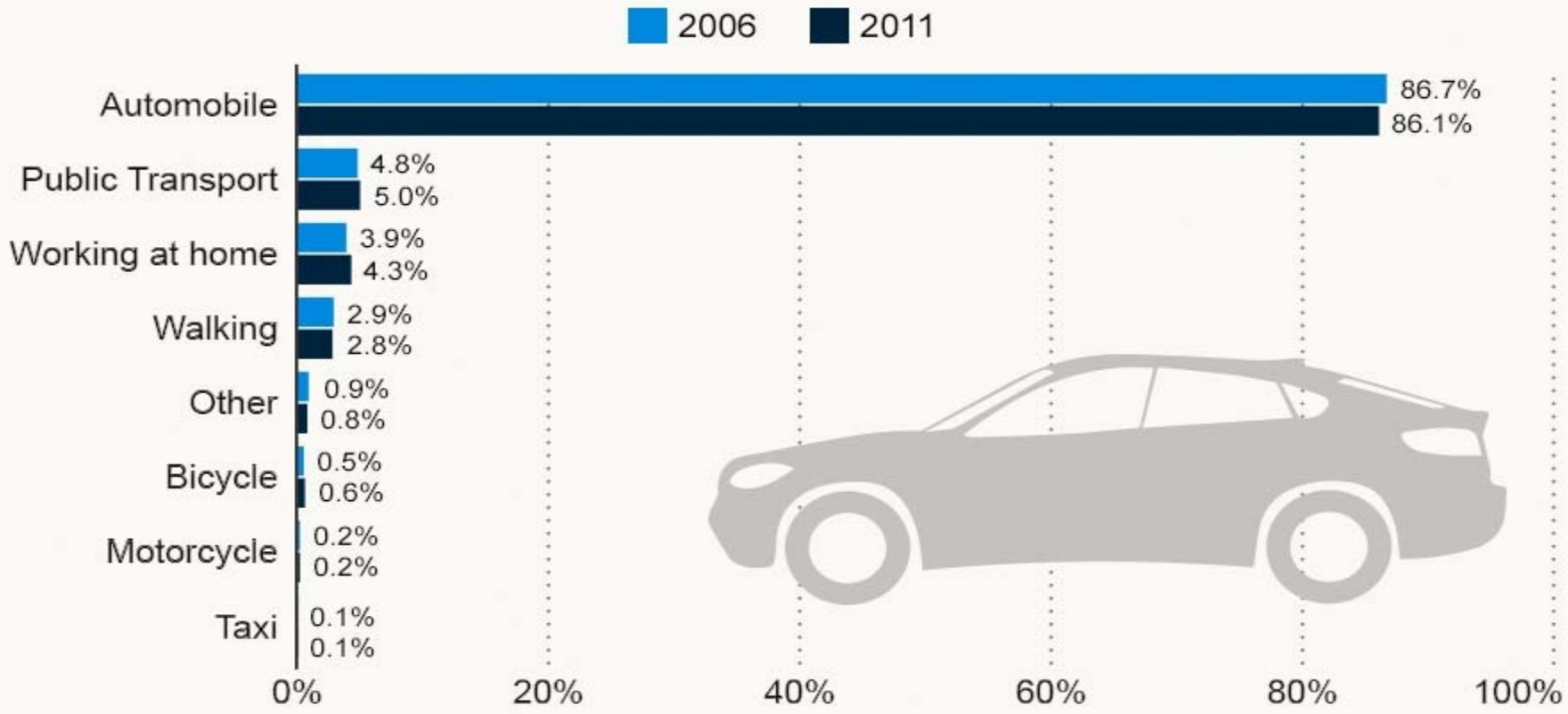
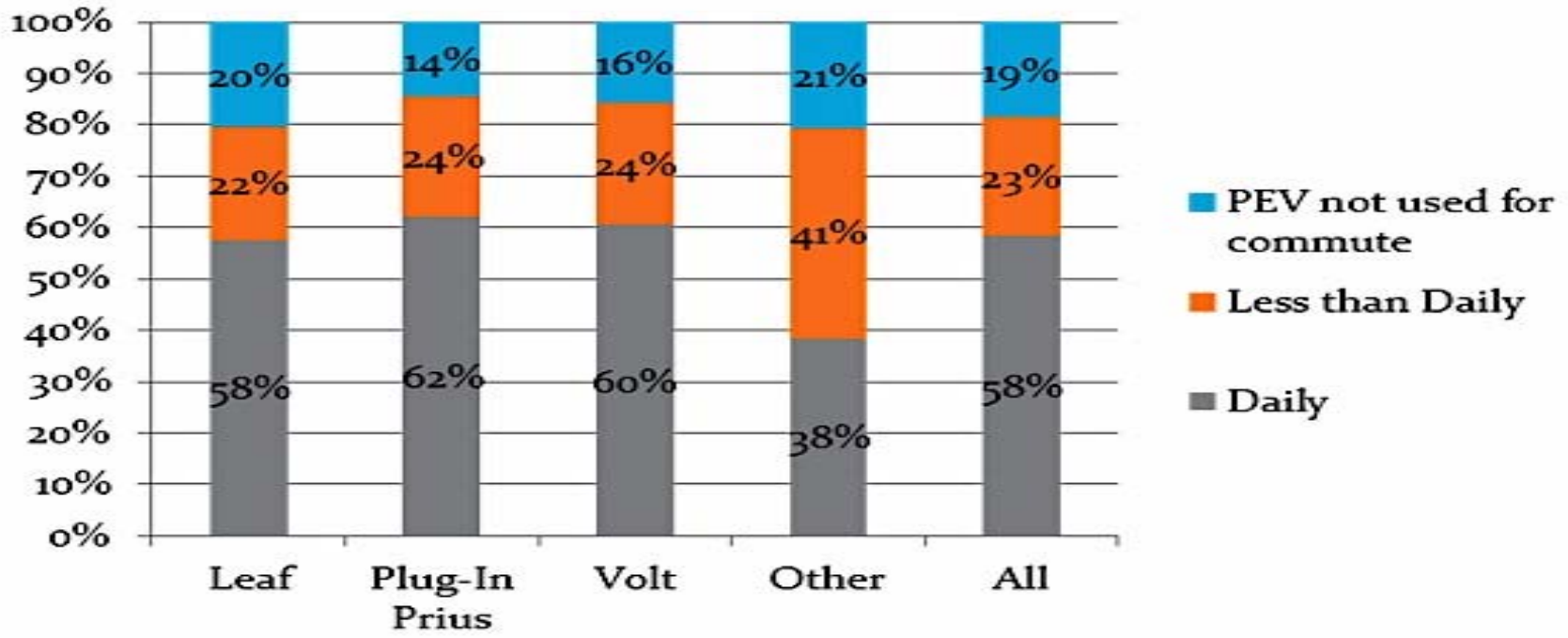
ONLY
LEFT LANE
GETTY IMAGES

Automobile Still King of the American Commute

Percentage of Americans commuting to work by form of transport



Approximately 60% use their PEV for commuting



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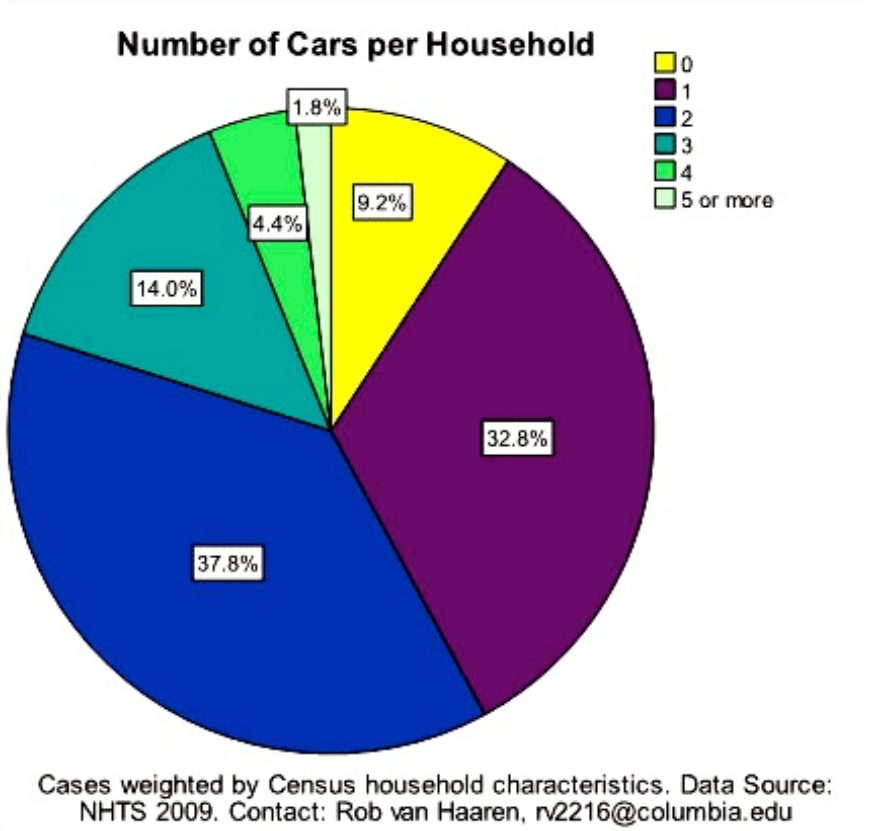
1Institute of Transportation Studies ◦ University of California, Davis 1605 Tilia Street ◦ Davis, California gtal@ucdavis.edu mianicholas@ucdavis.edu

Why did people purchase the Prius?

47% of the Prius buyers owned 2 or more vehicles. This shows that they purchased for a specific use.

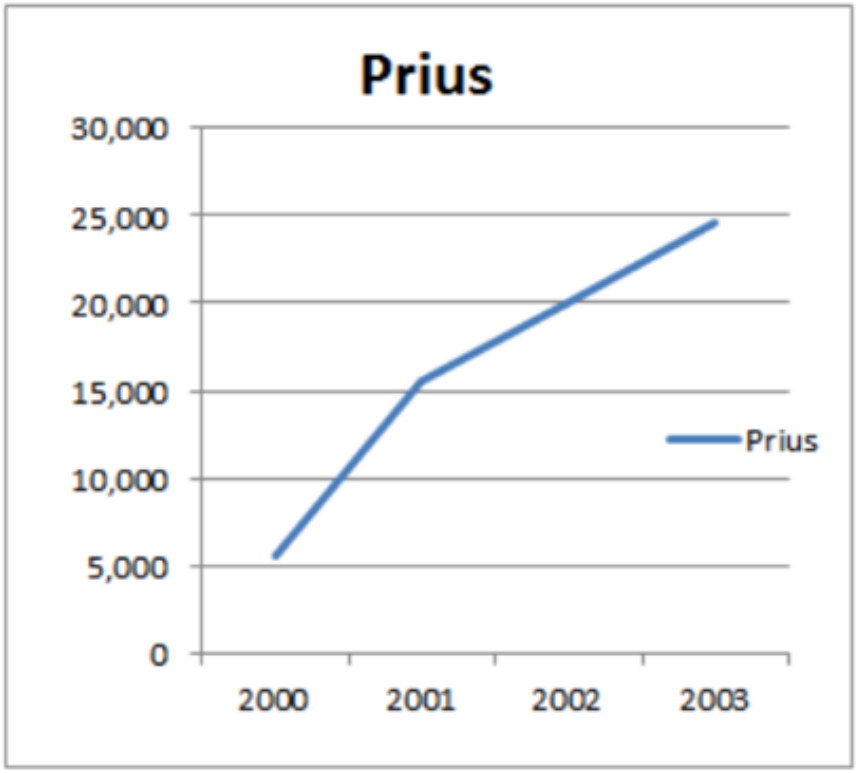
COMMUTING

The majority of households own more than one car. Therefore, the less common longer range trips can be done with the longer range vehicle, and the daily commutes can be done with a lower range EV.



Prius Sales – the first 4 years in the marketplace

	2000	2001	2002	2003
Prius	5,562	15,556	20,119	24,600



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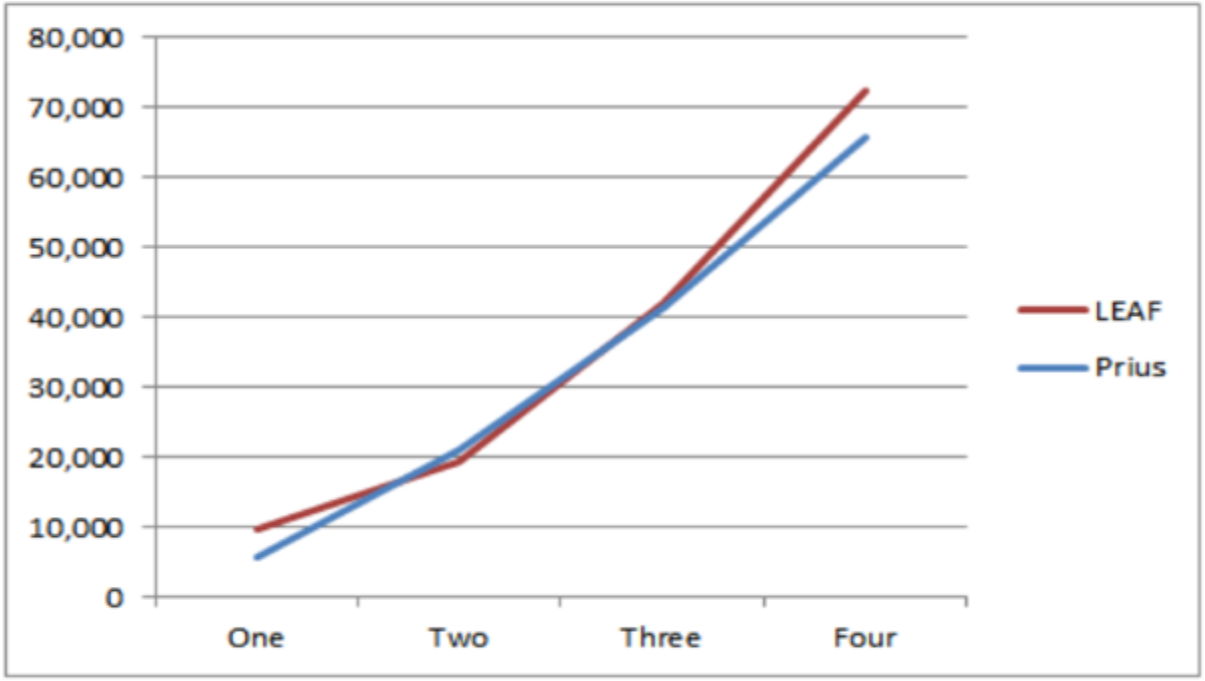
LEAF Sales – the first 4 years in the marketplace

	2011	2012	2013	2014
LEAF	9,674	9,819	22,610	30,200

POWER Post EVSE technology by telefonix

The LEAF is selling at a faster rate than the Prius did in it's first 4 years

Year	One	Two	Three	Four
LEAF	9,674	19,493	42,103	72,303
Prius	5,562	21,118	41,237	65,837



LEAF vs. Prius – First 4 Years

by ERNIE HERNANDEZ *on* JANUARY 9, 2015

POWERPost EVSE technology by telefonix

Seven Models at less that $200/month

- **2015 Fiat 500e ($169 per month, $1,999 down)**
- **2015 Ford Focus Electric ($199 per month, $2,079 down)**
- **2015 Chevrolet Spark EV ($139 per month, no money down)**
- **2015 Smart Fortwo EV ($139 per month, $1,433 down)**
- **2015 Nissan Leaf S ($199 per month, $2,399 down)**
- **2015 Volkswagen e-Golf ($199 per month, $2,349 down)**

Other models, above the $200-per-month ceiling, include:

- 2015 Kia Soul EV ($249 per month, $1,999 down)
- 2015 BMW i3 ($439 per month, $7,500 down)
- 2015 Mercedes-Benz B-Class ($319 per month, $4,113 down)
- 2015 Tesla Model S 70D ($838 per month, $6,553)

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Pre-owned Plugin Facts

1. **The average asking price of a 2011 Nissan Leaf on Autotrader, is just $10,724**

2. **Florida, Washington, Texas, New Jersey, Arizona, and Nevada all sell more used TESLA Model S's than new ones.**

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Where are they charging their EV’s?

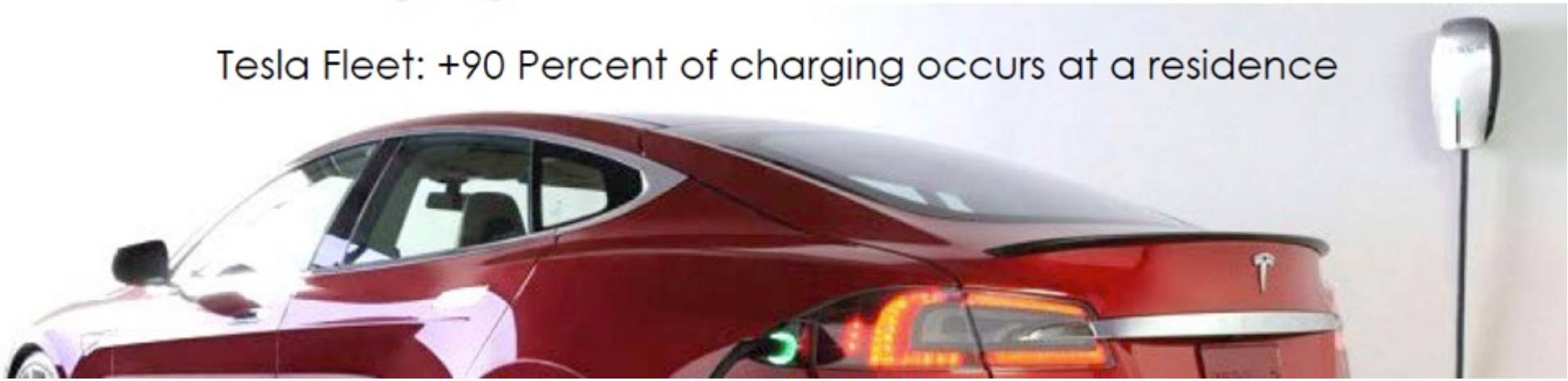
According to Ford research,

95% of EV charging is done at home.

Home Charging

TESLA

Tesla Fleet: +90 Percent of charging occurs at a residence



Plugged In:
How Americans Charge Their Electric Vehicles

Findings from the largest plug-in electric vehicle infrastructure demonstration in the world

September 2015

INL Idaho National Laboratory

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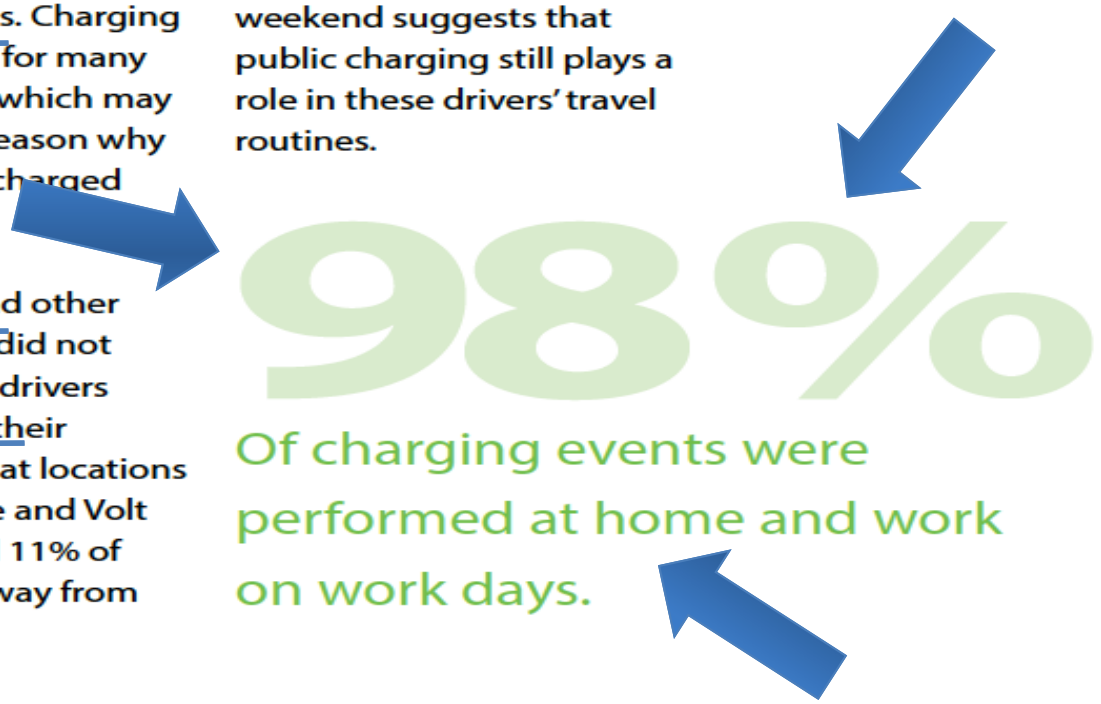
What have we learned about workplace charging?

A subgroup of project participants was identified that had access to both home and workplace charging. Consistent with conventional wisdom, Leaf and Volt drivers with access to home and work charging performed the vast majority of their charging at those locations (see Figure 7).

Considering only days when drivers went to work, the effect is even more pronounced. PEV drivers performed 98% of their charging events either at home or work and only 2% at other locations. Charging at work was free for many of these drivers, which may have been one reason why they frequently charged there.

On weekends and other days when they did not go to work, Leaf drivers averaged 8% of their charging events at locations other than home and Volt drivers averaged 11% of their charging away from home. This increased use of public charging on the weekend suggests that public charging still plays a role in these drivers' travel routines.



98% of the Charging at home and work

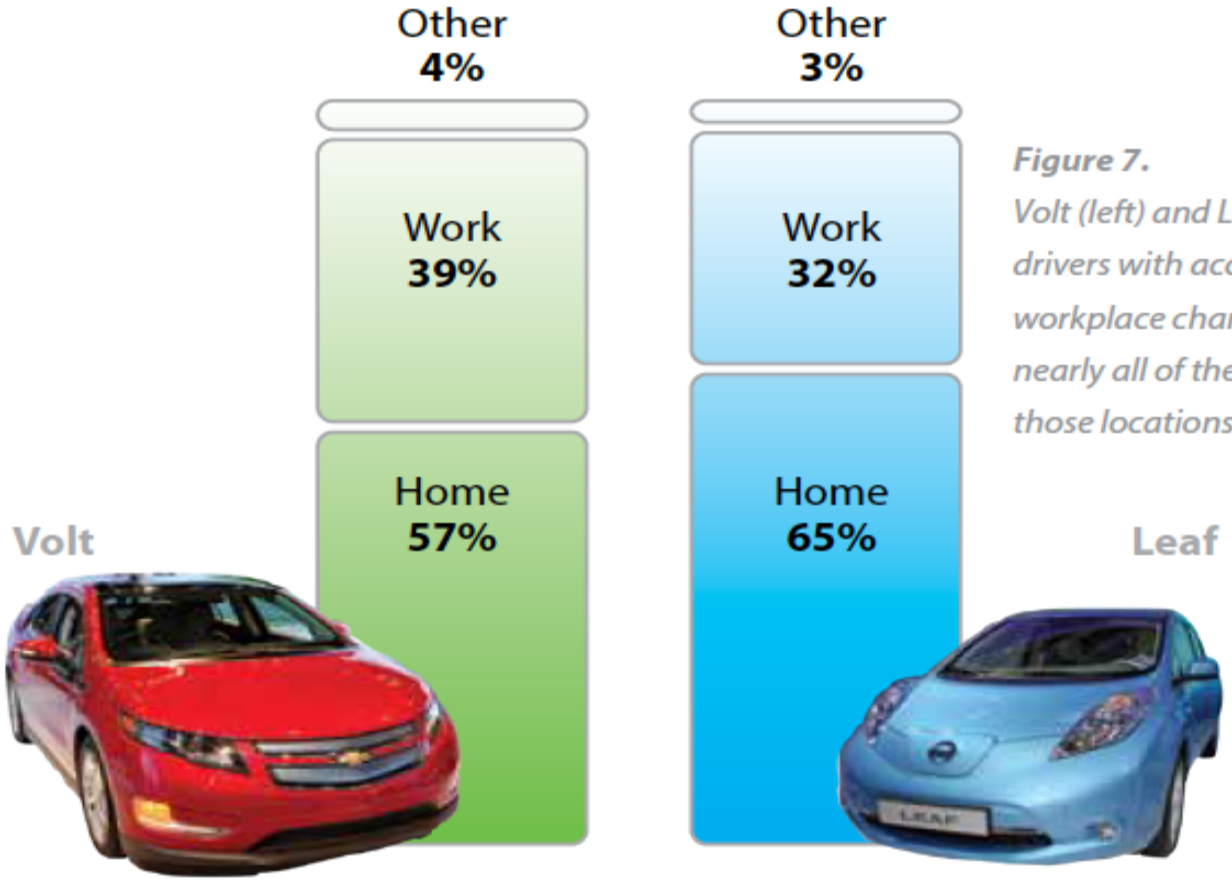


Figure 7.
Volt (left) and Leaf (right) drivers with access to home and workplace charging performed nearly all of their charging at those locations.

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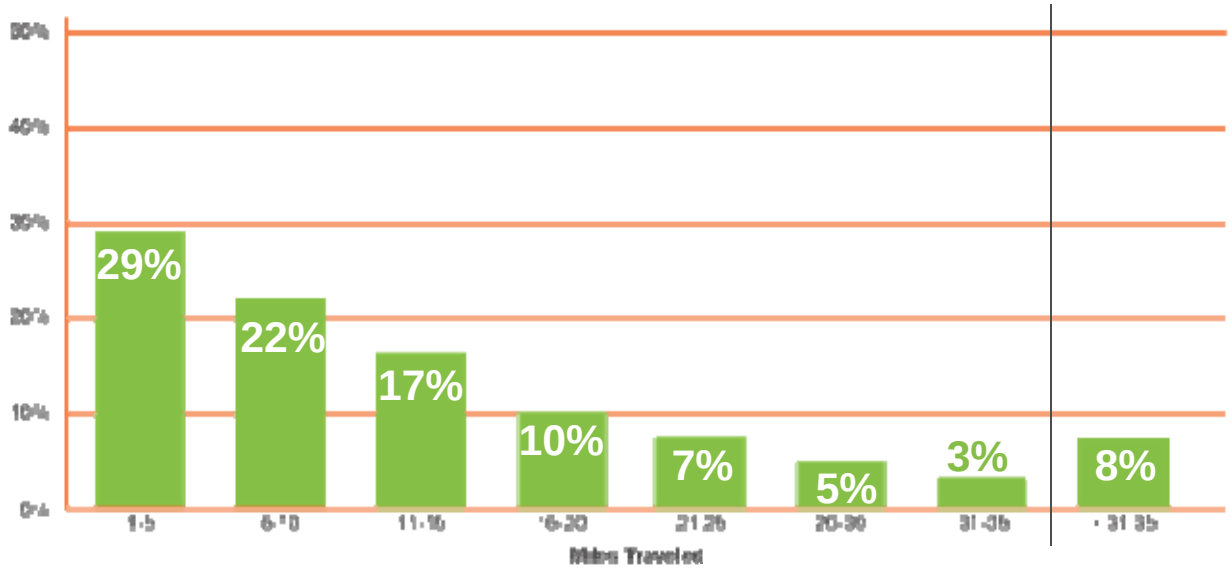
WORKPLACE: Driving Distances

National Average - Distance Traveled One-Way from Home Work

Navy Fleet of Sedans average 7000-8000 annually = 20 miles/day



- 93% of commuters travel less than 35 miles to work
- 78% of commuters travel less than 20 miles
- EV drivers typically leave home fully charged

National Household Travel Survey, US Department of Transportation, Bureau of Transportation Statistics (2014)

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WORKPLACE: Commuter Distances

EXAMPLE – Average Daily commute of 20 miles

WHAT YOU NEED TO KNOW

- **A typical U.S. electricity cost is $0.10/kWh*.**
- **The Nissan Leaf goes about 80 miles with a 24 kWh battery.**
- **Therefore, 20 miles uses about 6 kWh.**
- **The energy cost to recoup 20 miles is about 60 cents:**

  6 kWh x $0.10/kWh = $0.60

Houston is below this at approx. $.07 - $.08

*National average of commercial/industrial eia 10.15 – 6.38 (Cents per Kilowatt-hour)

National Household Travel Survey, US Department of Transportation, Bureau of Transportation Statistics (2014)

POWERPost EVSE technology by telefonix

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Level 1 Electric Vehicle Charging Stations at the Workplace

Margaret Smith, Energetics Incorporated

July 2016

Prepared for the U.S. Department of Energy Vehicle Technologies Office

Workplace Charging Challenge
U.S. DEPARTMENT OF ENERGY

EV Everywhere
U.S. DEPARTMENT OF ENERGY

POWER Post EVSE
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Outlets and Level 1 Charging Stations

Workplace Charging Challenge
U.S. DEPARTMENT OF ENERGY

EV Everywhere
U.S. DEPARTMENT OF ENERGY

POWER Post EVSE
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Level 1 Charging at Work – Department of Energy

- **“If plug-in electric vehicle (PEV) drivers park their cars for 6.5–8 hours each day, they can replenish 30 to 40 miles in one work day”.**

- **“More than 90% of employees in the United States commute less than 35 miles,3 which means that Level 1 charging could adequately replenish the battery capacity used to travel to work”.**

- **“Having access to Level 1 charging at home and at work could meet the charging needs of over 92% of U.S. drivers’ workday travel”.**

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Charging times for employees

Level 1	120V 16A	Charging times
10 miles	Replenished	2 hrs. (or less)
20 miles	Replenished	4 hrs. (or less)
30 miles	Replenished	6 hrs. (or less)
40 miles	Replenished	8 hrs. (or less)

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WORKPLACE CHARGING IMPACT

Recently the Department of Energy's "Workplace Charging Challenge" survey of employers that offer workplace charging, revealed that:

1. Employees that are offered charging at work are **20 times more likely to drive a Plugin Electric Vehicle**.

2. The survey also showed that 80% of these employees **offered this as a benefit** to retain and attract a talented modern workforce, by not charging their employees.

U.S. DEPARTMENT OF ENERGY workplace charging challenge

POWERPost EVSE technology by telefonix

Employer Benefits of Workplace Charging

Employers who offer PEV charging at work can reap the following benefits:

Corporate Leadership

- *Installing workplace charging can be a sign of corporate leadership and innovation, demonstrating a willingness to adopt advanced technology.*

Sustainability

- *Providing PEV charging can enhance corporate sustainability efforts, contribute to a building's LEED Certification, and reduce an employer's indirect emissions from employee commutes.*

Employee Incentive

- *Workplace charging can serve as a valuable employee benefit by helping employees to extend the electric driving range of their plug-in vehicles and thereby reduce their commuting costs.*

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Workplace charging has the biggest influence of EV adoption, other than charging at home.

Houston's Air Quality

CBS NEWS

Top 10 smoggiest cities in U.S.

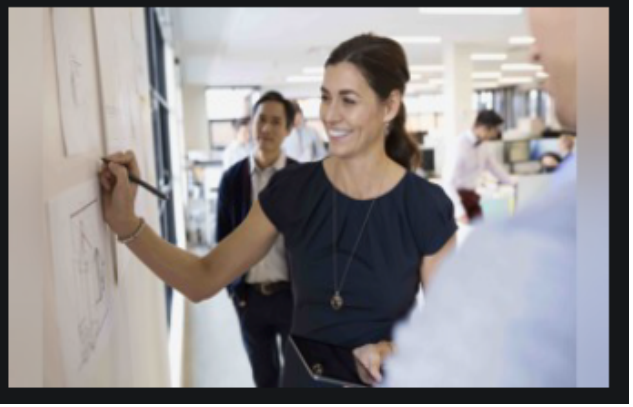
5/12

7. Houston - Baytown - Huntsville, Texas

Population: 6,191,434

Breathing in smog causes adverse chemical reactions that can damage lung tissue, according to the American Lung Association.

CREDIT: *Getty Images*



How Houston Commutes: 15 Things You Didn't Know

- 52% of downtown workers use some form of transportation other than driving alone to commute.
- The average commuting distance for downtown employees is 21 miles.
- The average morning commute is 39 minutes, while getting home takes 43 minutes.
- Most workers leave for work by 7:00 a.m.
- Half leave work to go home between 12:00 p.m. and 5:00 p.m.
- 65% of those surveyed indicated that their employer offered a public transit subsidy, and 22% indicated that their employer covered 100% of bus transit.
- Most people who drive themselves to work alone park very close to their place of employment, with 73% parking within one block and 95% within 3 blocks.
- More than 55% of respondents pay less than $50 for parking per month when including subsidies.
- 36% of those surveyed indicated that their employer provided free parking at their place of employment.
- Those who drive themselves to work alone are more likely to have employers that provide free parking.
- Attorneys are most likely to drive alone (83%), followed by executives (71%), and salespeople (63%).
- Those in technical occupations are least likely to drive alone (40%).
- There is a notable increase in people leaving downtown during the 10:00 p.m. hour.
- More than 25% of those who drive themselves to work alone need a vehicle for work.
- Those who use Park & Ride tend to have the longest commutes by distance.

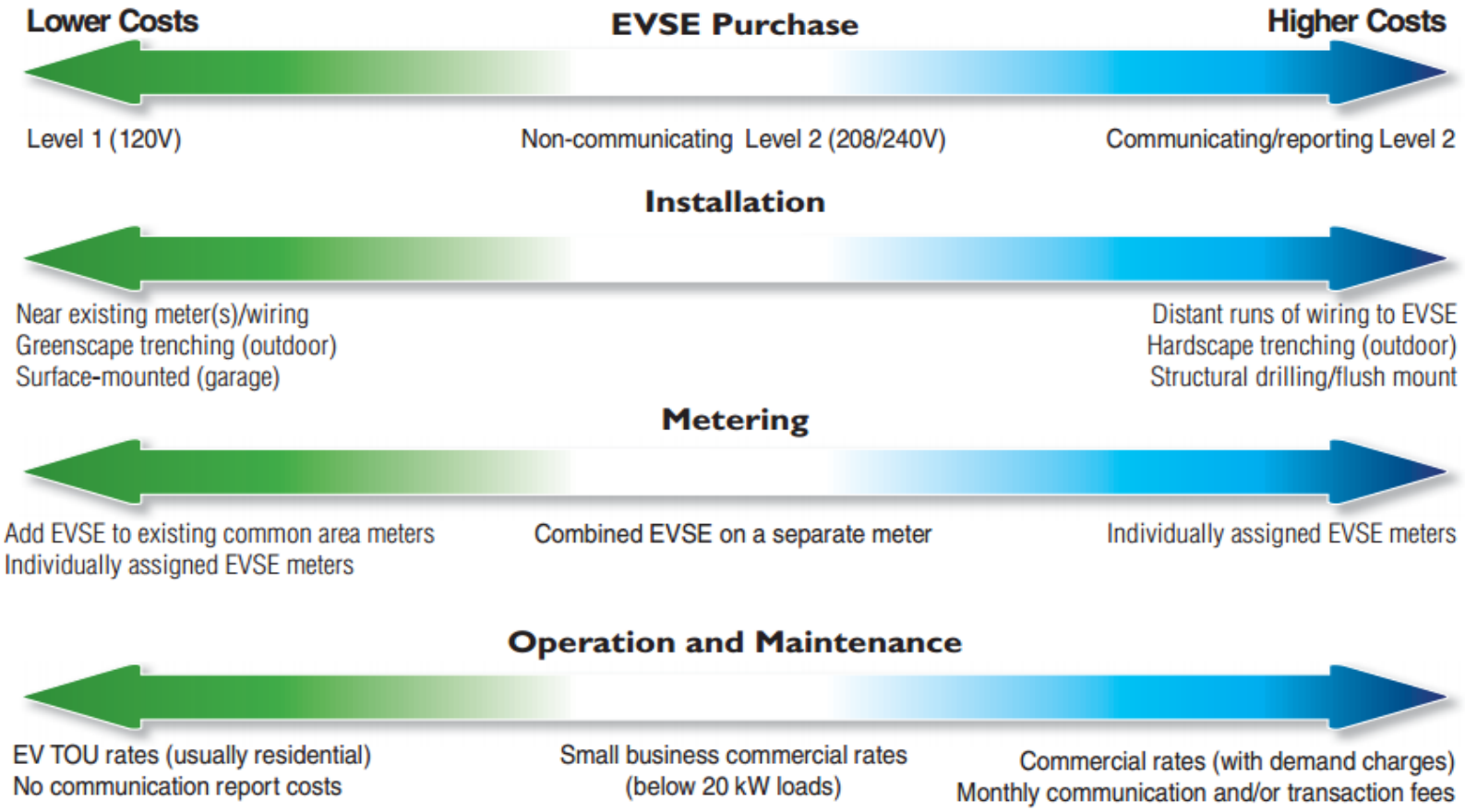
One employee's vehicle makes a difference!

The Electric Power Research Institute (EPRI) has shown that a plug-in hybrid vehicle with a modest 20-mile electric range **could save 300 gallons of gasoline**, **avoiding 6000 pounds of damaging greenhouse gas** emissions and **reducing pollution by 38 percent.**

A pure BEV (battery electric vehicle) would nearly double the pollution reduction.

POWERPost® EVSE technology by telefonix®

EV CHARGERS and INSATALLATION COSTS



POWERPost EVSE by telefonix

Infrastructure planning

DON’T OVER THINK – DON’T OVER SPEND

Excessive and overly complicated technology is unnecessary and costly.

Technology can be expensive to maintain and can duplicate data that is already available from apps and other sources.

Consider integrating EV parking and charging into solutions already in place such as parking payment programs.

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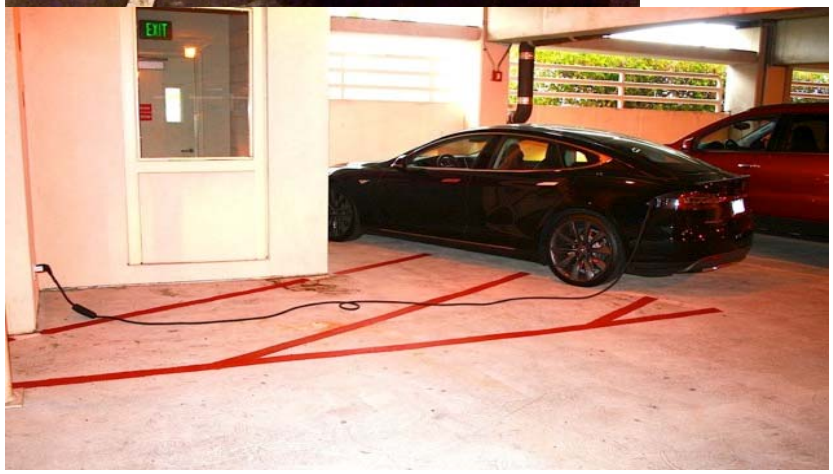
Smart Parking vs Smart Charging

Meter pricing can be a little more for space where charging is offered.

Signage can be a simple way to educate

POWERPost EVSE technology by telefonix

Why the PowerPost?



SIMPLE. ECONOMICAL. UNIQUE.

POWERPost® EVSE technology by telefonix®

Greg Haddow

San Diego Gas & Electric

- 158 workplace EVSE in operation at 18 SDG&E sites
- 185 SDG&E employees driving an EV (out of about 4,000 employees)
- 30 EVs in the passenger fleet (expanding in 2016)

U.S. DEPARTMENT OF ENERGY workplace charging challenge

SDGE A Sempra Energy utility

CALIFORNIA PLUG-IN ELECTRIC VEHICLE COLLABORATIVE

DENVER INTERNATIONAL AIRPORT

POWER/Post® EVSE technology by telefonix®

November 2013

Largest U.S. Airport EV Charger installation!

42 Unit Installation at **Portland International Airport**
– 18 of 42 for employee charging

SIMPLE. ECONOMICAL. UNIQUE.

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SPACEX
EV CHARGING STATION
ELECTRIC
VEHICLE

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

The University of Texas MD Anderson Cancer Center Installs PowerPost Electric Vehicle (EV) Chargers to Encourage EV Proliferation

Waukegan, Illinois (June 24, 2015) Telefonix® Inc., a leading developer of cord reel technology and manufacturer of PowerPost® commercial electric vehicle charging stations (EVSEs), announces the installation of six Level 2 PowerPost commercial electric vehicle charging stations at The University of Texas MD Anderson Cancer Center.

MD Anderson works every day to educate the public about cancer prevention and to help those impacted by cancer. In addition to fighting cancer, MD Anderson is now working to help improve the environment by offering workplace electric vehicle (EV) charging to employees at their Texas facility.

"As our mission is to eliminate cancer in Texas, the nation and the world, we looked beyond our walls and to the environment at large," says Bill Donovan, Manager, Parking and Transportation for MD Anderson. "Electric vehicles help reduce emissions and improve air quality, and we wanted to encourage their proliferation by offering EV charging stations at our center."

After investigating all of the equipment choices and methods of workplace charging, MD Anderson chose the Telefonix PowerPost EVSE. While offering charging as a perk for their employees, they found no need for networking technologies and contracts that can increase the initial and ongoing cost of offering charging at work. They also took advantage of the opportunity to apply their branding on the chargers.

SIMPLE. ECONOMICAL. UNIQUE.

POWERPost® EVSE technology by telefonix®

I want to help!

Bill Williams
Business Development Manager
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PowerPostEVSE.com

U.S. DEPARTMENT OF ENERGY
workplace charging challenge

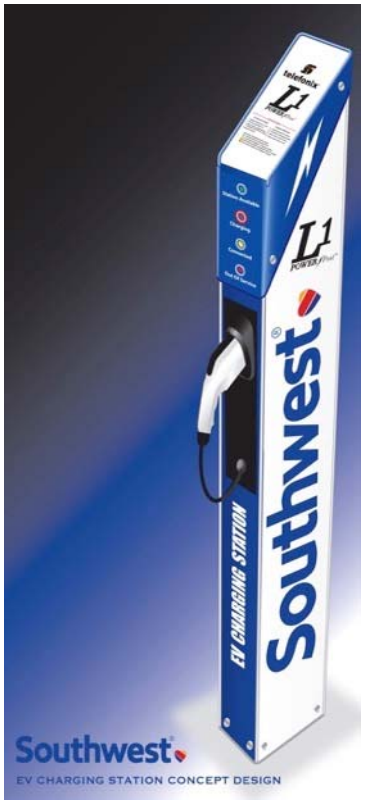
POWER/Post® EVSE
technology by telefonix

Telefonix, Inc. is a proud partner with the U.S. Department of Energy

Alternative Financing

Biggest hurdles with EV infrastructure:

1. Sponsorships and co-branding program
2. Find ways to help with cost of equipment
3. Find ways to help with cost of installations
4. Find ways to help with ongoing maintenance
5. ROI model is not likely to work for EV charging
6. The airport could partner with airlines to pay for the stations!



“Donation Station”

Thank you for driving
A clean Air Vehicle.
Because of your efforts
we can all breathe easier.
The electricity is
compliments IBM.
In return we ask that you
consider supporting the
American Lung
Association by scanning
the code here

AMERICAN LUNG ASSOCIATION®
Fighting for Air

Sponsorship/Partnership/Stewardship

POWER Post EVSE
technology by telefonix

EV Industry: Sales & Growth/Workplace Charging

David Owen

September 15, 2016

DELIVERING
ENERGY, SERVICE
AND VALUE

CenterPoint Energy

Top Ten EV/PHEV States

Rank	State	Q2'15	Q2'16	Change
1	California	154,501	216,435	40%
2	Georgia	20,908	22,180	6%
3	Washington	14,335	18,881	32%
4	Florida	12,428	17,524	41%
5	New York	12,813	15,699	23%
6	Texas	11,802	15,613	32%
7	Michigan	9,049	10,430	15%
8	Illinois	7,652	10,430	28%
9	Oregon	7,011	9,703	38%
10	New Jersey	7,108	9,141	29%

Top Texas Metros

Metro	Q2'15	Q2'16	Change
DFW	4,685	6,219	33%
Houston	2,786	3,725	34%
Austin	2,496	3,294	32%

Top Metros for EV Adoption

CenterPoint Energy

Rank	Metro	Q2'15	Q2'16	Growth
1	LA	69,003	96,761	40%
2	Bay Area	59,458	82,873	39%
3	Atlanta	19,437	20,425	5%
4	NY/NJ/CT	15,187	19,527	29%
5	San Diego	11,391	15,974	40%
6	Seattle	10,684	14,205	33%
7	Chicago	6,494	8,420	30%
8	DC	5,916	7,818	32%
9	Portland	5,625	7,763	38%
10	Detroit	6,471	7,426	15%
11	Miami	4,770	6,978	46%
12	Phoenix	4,720	6,534	38%
13	Dallas	4,685	6,219	33%
14	Boston	4,243	5,594	32%
15	Philadelphia	3,522	5,129	46%
16	Denver	3,739	5,126	37%
17	Houston	2,786	3,725	34%
18	Honolulu	2,691	3,491	30%
19	Austin	2,496	3,294	32%
20	Baltimore	2,637	3,283	24%

EV Models on the Road in US

Plug-In Models

26 Currently Available
with many more coming in 2016

Older BEVs do not have fast charge capability – most new models will have a fast charge option

PHEV


Chevy Volt


Toyota Prius Plug-in


Cadillac ELR


Mercedez S 550


Chevy Volt 2016


Ford Fusion Energi


Ford Focus


Ford C-Max Energi


Volvo XC90


BMW i8


Porsche Panamera


Porsche Cayenne


Audi A3 E-Tron

BEV


smart EV


Toyota Rav4 EV


Honda Fit


Fiat 500 E

BEV with DC Fast Charge


Nissan LEAF


BMW i3


Tesla Model S


Tesla Model X


VW e-Golf


Chevy Spark


Kia Soul EV


Mitsubishi i-MiEV


Mercedes B Class

Many More to be Launched …

CenterPoint Energy

PHEV

TOYOTA Prius Prime

Est. 2016

MINI Countryman PHEV

Est. 2017

KIA Optima PHEV

Est. 2016

MERCEDES E350e

Est. 2016

MITSUBISHI Outlander

Est. 2016

AUDI Q7 e-tron

Est. 2016

VOLKSWAGEN CrossBlue

Est. 2017

HYUNDAI Ioniq PHEV

Est. 2017

KARMA PHEV

Est. 2016

BMW 330e

Est. 2016

BMW 740e

Est. 2016

HONDA PHEV

Est. 2018

BEV

PORSCHE Mission E

Est. 2019

AUDI e-tron Quattro

Est. 2018

VOLKSWAGEN BUDD-e

Est. 2018

JAGUAR E-Pace

Est. 2018

Aston Martin RapidE

Est. 2018

TESLA Model III

Est. 2017

BENTLEY EV

Est. 2018

VOLVO EV

Est. 2019

HYUNDAI Ioniq BEV

Est. 2017

CHEVROLET Bolt

Est. 2016

MERCEDES EVA

Est. 2018

BMW iNEXT

Est. 2020

BYD Qin


McLaren P1 electric

Est. 2018

INFINITI LE


NEXTEV EV

Est. 2018

FORD EV

Est. 2018

HONDA EV

Est. 2018

FARADAY FUTURE EV

Est. 2018

ATIEVA EV

Est. 2018

Charging Levels

	Level 1	Level 2	Express
Voltage	110 – 120 Volts AC	208V – 240 Volts AC	208V/480 Volts DC
Range per hour (RPH)	2-5 miles	10-30 miles	100-200 miles
Charging Time	12 – 18 hours	3 – 4 hours	20 – 30 mins
Connector Standard	3 pronged NEMA 5-15 to SAE J1772	Level 2 charger to SAE J1772	DC Charger to SAE Combo or CHAdeMO
Connector			
Use Case	Residential charging	Full battery charging at home, top-off charging at work, shopping malls, stadiums etc.	Quick charging during short or long distance trips

Networked Charging

- Sometimes referred to as “smart” EVSE.
- Generally refers to equipment that has communications capabilities and provides varying levels of service
  - User Billing
  - Scheduling
  - Charge Status Notification
  - Energy Use Management
- If you want to collect data for your workplace charging program, you’ll likely need some type of networked charging
- In general, networked EVSE is more expensive than non-networked equipment.

Non-Networked Charging

- Sometimes referred to as “dumb” EVSE
- Cheaper and simpler
- Typically, open access for anyone to charge
- Does not accommodate data or fee collection based on usage or time plugged in

Workplace Charging

- **Employees need workplace charging** to commute in their EVs or to switch to one
- **EV Charging is a benefit** that many employers are now offering
- **It drives more EV adoption** – employees are 20X more likely to switch to an EV
- **Helps achieve sustainability goals** and engage your employees in the cause

Benefits for You

- Attract and retain top talent
- Increase employee satisfaction and productivity
- Make your benefits more competitive
- Achieve sustainability goals
- Establish your brand as a green leader

Benefits for Your Guests

- Save thousands of dollars in fuel costs
- Drive their preferred car to work
- Achieve personal sustainability goals

CenterPoint's Workplace Plan

- ✓ Support EEI's EV Employee Education & Adoption Program
- ✓ Sign the DOE Workplace Charging Challenge Pledge
- ✓ Survey employees to determine current and future interest in PEV charging
- ✓ Allow employees with PEVs to charge at no cost where an existing EVSE is installed
- ✓ Require employees to register, provide data from their vehicle, and respond to occasional surveys
- Develop plan to install charging stations at EC/DC and Hyatt Parking Garage

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ACCELERATE THE GOOD

- http://www.goelectricdrive.org/