

King County Electric Vehicle Program Update

King County Council
Transportation, Economy, and Environment Committee

Ron Posthuma, Assistant Director
King County Dept. of Transportation
April 30, 2013

EV Program Highlights

- **King County EV charging stations (grant funded):**

- 2012: 45 installed
- 2013: 14 coming

- **King County electric vehicles**

- King County **metropool**

- 20 all-electric vehicles.
- First all-electric vanpool program in the country

- Fleet Administration

- Six all-electric vehicles in King County motorpool



Moving to Electric Vehicles

- **2008** - King County Council affirmed to combat global warming
 - King County Plug-in Hybrid Electric Vehicle Pilot Project
- **2009** - King County awarded \$1m for EV charging stations
- **2010** - King County Council approved charging stations demonstration program
- **2011** - King County begins installing charging stations and purchasing EVs

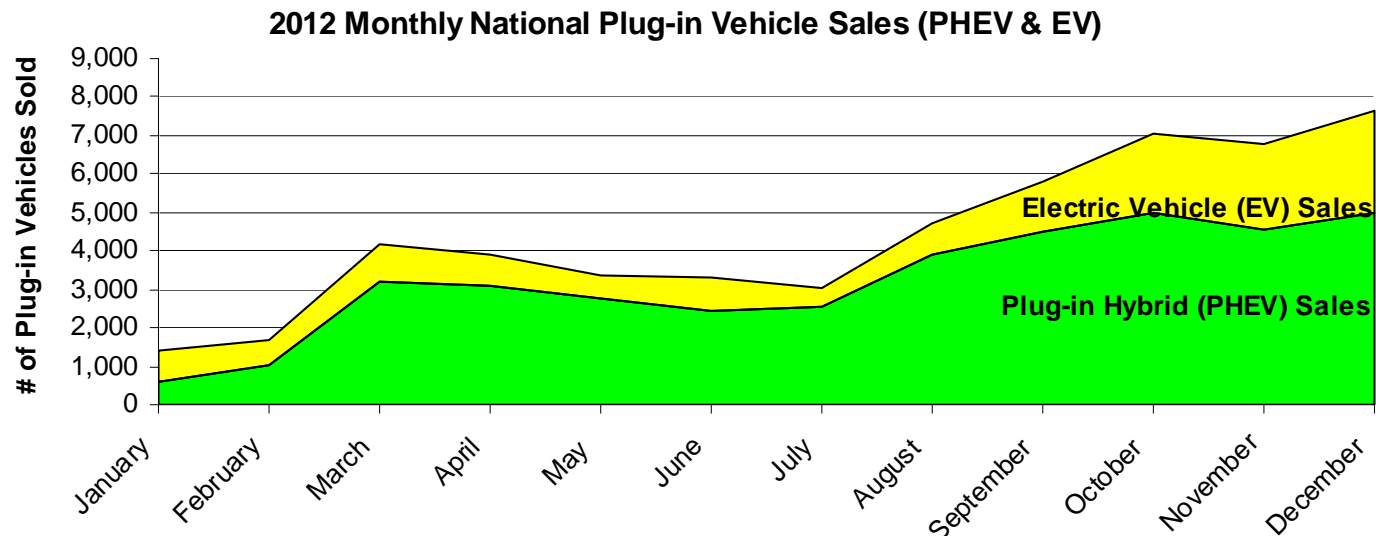
- **2010-2014 King County Strategic Plan**
 - **Environmental Sustainability** - “Invest in alternative fuel transit and fleet vehicles to reduce emissions, fuel use, and fuel costs”

- **2012 Strategic Climate Action Plan:**
 - **County Services Goal:** “King County will... encourage the use of sustainable transportation choices such as public transit, alternative technology vehicles, ridesharing, walking and bicycling.”
 - **County Operations Goal:** “King County will increase the efficiency of its vehicle fleets and minimize their greenhouse gas emissions.”

National Perspective

5,295 publicly available electric vehicle charging stations in the United States

- **210% growth**, future vehicles estimates **130% year-over-year...** *as of 1-22-2013*
- Spurred by:
 - 1) New models and classes; 2) Lower price points/lease offers; 3) Charging network offsetting
- Largest Nissan Leaf Fleets in United States:
 - 1) Seattle 38; 2) **King County 26**; 3) Google 17 *(as of 1-24-13)*
- Highest Regional Distribution of Nissan Leafs in U.S. Markets:
 - 1) SF Region 20.49%; 2) **Seattle Region 11.58 %**; 3) LA Region 10.22% *(as of 1-24-13)*



State Policies & Programs

307 publicly available electric vehicle charging stations in Washington
as of 1-22-2013

- **West Coast Green Highway**
- **Quick charge stations in WA:**

I-5: 6

US 2: 4

I-90: 2

- **State Policies**

- B&O Tax Deduction
- Sales Tax Exemption
- \$100 Electric Vehicle Fee



www.westcoastgreenhighway.com/electrichighways.htm

King County EV Program

158 publicly available electric vehicle charging stations in King County
as of 1-22-2013

- **KC Grant Funding for Charging Stations:**

\$1,094,125

- **Electric Vehicle Purchases:**

- 20 for Rideshare Operations
- 6 for Fleet Administration

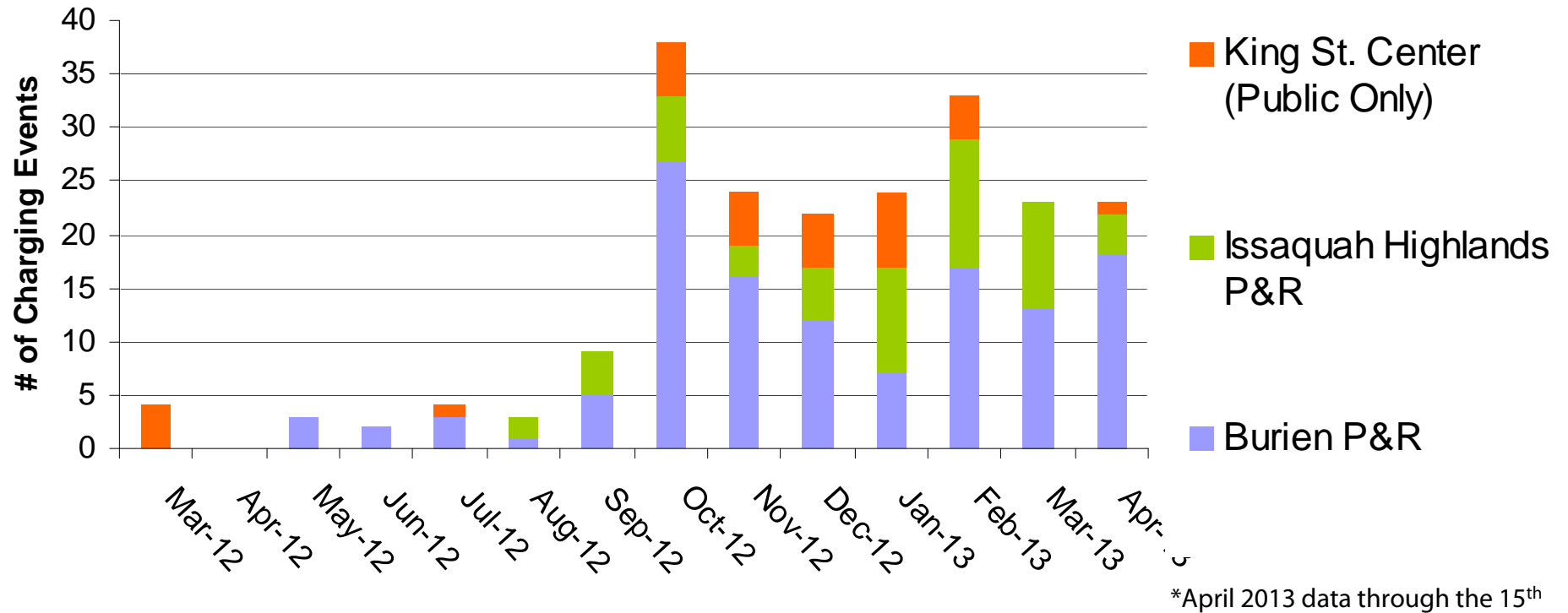
- **Charging Stations:**

- 59 King County owned Stations

	King County Owned Stations	Charging Stations
Fleet / Rideshare	Van Distribution Center	3
	Goat Hill	6
	Airport	1
	Fauntleroy	5
	Roads Maintenance Facility	3
	King St Ctr (Fleet/Rideshare)	8 (shared)
Public	King Street Ctr (Public)	8 (shared)
	Issaquah Highlands	12
	Burien P&R	10
Future	South Kirkland P&R	7
	ST Tukwila Station	4

Use of King County Owned Publicly Available Charging Stations

Public Charging Events at KC Publicly Available Stations



King County Owned Charging Station Data

King County EV Charging Station Summary Data (Mar 2012 to Apr 2013)

Station Site		# of Charging Sessions	Total Elec Consumed (kWh)	Avg kWh per Session	Avg Session Duration (hrs:min)	Total Revenue
Fleet/Rideshare	Van Distribution Center	51	231.85	4.55	16:42	No Rev
	Goat Hill	158	1045.37	6.6	7:38	No Rev
	Airport	32	230.09	7.2	5:46	No Rev
	Fauntleroy	8	0.47	0.1	0:01	No Rev
	Roads Maintenance Facility	4	5.12	1.3	0:21	No Rev
	King St Ctr (Fleet/Rideshare)	221	208.13	0.9	11:13	No Rev
Public	King Street Ctr (Public)	32	23.59	0.9	5:03	\$ 74.00
	Issaquah Highlands	56	575.55	10.3	7:24	\$ 122.00
	Burien P&R	131	1316.40	13.3	3:04	\$ 282.00

Regional Sample Costs for Public Charging

Public Agencies *as of 4-23-13*

Major Destinations *as of 4-23-13*

King County	\$2 per session	Bellevue Square	\$2 per hour
City of Seattle	\$2 for 12 hours	CenturyLink Field	\$2 per hour
City of Bellevue	Free	Safeco Field	\$2 per hour
City of Kirkland	Free	Fred Meyer (Lake City & Ballard)	\$2 per hour
UW Bothell	Free	F5 Networks	\$2 per hour
UW Tacoma	\$3 per hour	Bastyr University	\$3 per session
Mountlake Terrace P&R	85¢ per hour/\$3 max	McClendon Hardware Renton	\$2 per hour
City of Edmonds	\$2 per hour	Ikea	\$2 per hour
City of Renton	\$2 per hour	Tacoma Glass Museum	\$3 per hour
Tacoma Power	\$1.70 per hour	Walgreens (various)	\$2 per hour

King County metropool



metropool had well over 100,000 gas free miles by the end of 2012

20 metropools in service

Annual metropool Green House Gas (GHG) Savings

	Prior Travel Mode	Vanpool Savings by Gas Minivan vs. Prior Mode	metropool Savings by EV vs. Prior Mode:
Gas Consumption (gal)	23,364	9,293	0
Gas Saved (gal)		14,071	23,364
GHG Emitted (metric tons)	213	85	0
GHG Reduced (metric tons)		128	213

2012 estimates based on King County data and EPA calculations for a 20 vehicle fleet comparison

Challenges:

- Employer site charging stations
- Customer demand for metropool

Customer Feedback:

- 43% are 'Satisfied'
- 49% are 'Very Satisfied'

Rideshare Operations – Pre-Purchase Estimated Life Cycle Cost Analysis (Jan 2010) compared to Alternative Commuter Vehicle		
	Dodge Caravan	Nissan LEAF
<i>Initial Purchase Price</i>	\$23,775	\$33,055
<i>Est. Avg. Life-Cycle Cost</i>	\$38,859	\$28,396
<i>Est. Avg. Life-Cycle Cost per Mile</i>	\$0.54	\$0.39

King County Fleet Administration

6 Nissan Leafs in Service

- Assigned customers are accepting : Dispatch customers are wary
- Hesitation was predictable--similar to Prius implementation
- Conducted outreach and education. More outreach needed.



Goat Hill Garage

Fleet Administration – Pre-Purchase Estimated Life Cycle Cost Analysis (Feb 2010) compared to Comparable Vehicle		
	Ford Focus	Nissan LEAF
<i>Initial Purchase Price</i>	\$17,500	\$36,561
<i>Est. Avg. Life-Cycle Cost</i>	\$36,150	\$36,088
<i>Est. Avg. Life-Cycle Cost per Mile</i>	\$0.36	\$0.36

Challenges:

- Chaining multiple unpredictable trips
- Tracking vehicle usage (typically done when fueling)
- Range Anxiety– Why use a Dispatch EV while other gas alternatives exist

Ordinance Guidelines for Charging Station Program Review

*“In three years, the King County council will consider continuation of the program based on **affordability**, usage of the charging stations, cost recovery and whether it has satisfactory returns of public benefit.”*

<p>Affordability (to the user)</p>	<p>Expectation</p>	<ul style="list-style-type: none"> Public charging will cost individual users \$4 per charging session to cover O&M.
	<p>Action</p>	<ul style="list-style-type: none"> Grant funding was used to capitalize most O&M costs for 3 years. KC Council action allowed staff to charge up to \$5 per charging session to cover O&M.
	<p>Result</p>	<ul style="list-style-type: none"> Public charging costs set at \$2 per charging session until 2014/2015, then costs will be re-evaluated. KC was initially one of few agencies to requiring a fee for public charging—now others require a fee.

Ordinance Guidelines for Charging Station Program Review

*“In three years, the King County council will consider continuation of the program based on affordability, **usage** of the charging stations, cost recovery and whether it has satisfactory returns of public benefit.”*

Usage	Expectation	<ul style="list-style-type: none"> • Public stations would see modest, but consistent usage • Fleet/Rideshare stations would see consistent usage
	Action	<ul style="list-style-type: none"> • Stations located at variety of Fleet/Rideshare and public locations • Multiple locations have opportunities for "shared" parking.
	Result	<ul style="list-style-type: none"> • Fleet/Rideshare usage of stations is consistent as expected. • Public use has been lower than expected, but increasing slowly. • Still implementing "shared" parking opportunities.

Ordinance Guidelines for Charging Station Program Review

*“In three years, the King County council will consider continuation of the program based on affordability, usage of the charging stations, **cost recovery** and whether it has satisfactory returns of public benefit.”*

Cost Recovery	Expectation	<ul style="list-style-type: none"> • Grants would cover charging station capital costs • Per session fee would cover O&M.
	Action	<ul style="list-style-type: none"> • \$1m in federal grants was spent on charging stations capital. • Grant was also able to cover 3 years of vendor related O&M at ~\$16.50 per station, per month.
	Result	<ul style="list-style-type: none"> • Few capital costs and minimal O&M until 2014-2015. • Unspent revenue is \$478, and continues to grow.

Ordinance Guidelines for Charging Station Program Review

*"In three years, the King County council will consider continuation of the program based on affordability, usage of the charging stations, cost recovery and whether it has satisfactory returns of **public benefit**."*

Public Benefit	Expectation	<ul style="list-style-type: none"> • Serve P&R EV customers • Share access to Fleet/Rideshare EV stations with public • Test EV technology as part of a greener fleet
	Action	<ul style="list-style-type: none"> • Installed 30 publicly available stations, 7 more planned in 2013. • Installed 26 stations for Fleet/Rideshare EVs, 4 more planned in 2013. • 8 of these stations are "shared" stations with future opportunity for up to 45 more "shared" stations
	Result	<ul style="list-style-type: none"> • 187 P&R customers served since March 2012 • 253 sessions at King St. Center which 32 were by the public • Looking to identify other shared charging sites • Tested Technologies: Multiple station vendors and Nissan Leaf

Future for Electric Vehicles

- Demand for **metropool**
- Fleet Administration Employee Education and Outreach
- No New Grants in Sight, But Expanded Eligibility
- Vehicles Costs are Going Down
- Mapping Continues to be a Challenge
- Plug-in hybrids vs. All-electric Vehicles
- Increase in Vehicle Availability
- Governor's Support

Questions



King County