



Demand Management for Plug in Vehicle Charging



EVIC Meeting – Interim Report Overview

Presented by: Barbara M. Gonzalez
February 19, 2015

Agenda

- Introduction & Background
 - Maryland's Efforts
 - Our Program
 - Rates & Options
- 2014 Interim Report – Overview
 - Preliminary Results
- Next Steps
- Q & A

Maryland's Efforts

Maryland Senate Bill 179

Goals

- Increase reliability & efficiency of the electric distribution system
- Lower electricity use at time of high demand (peak)

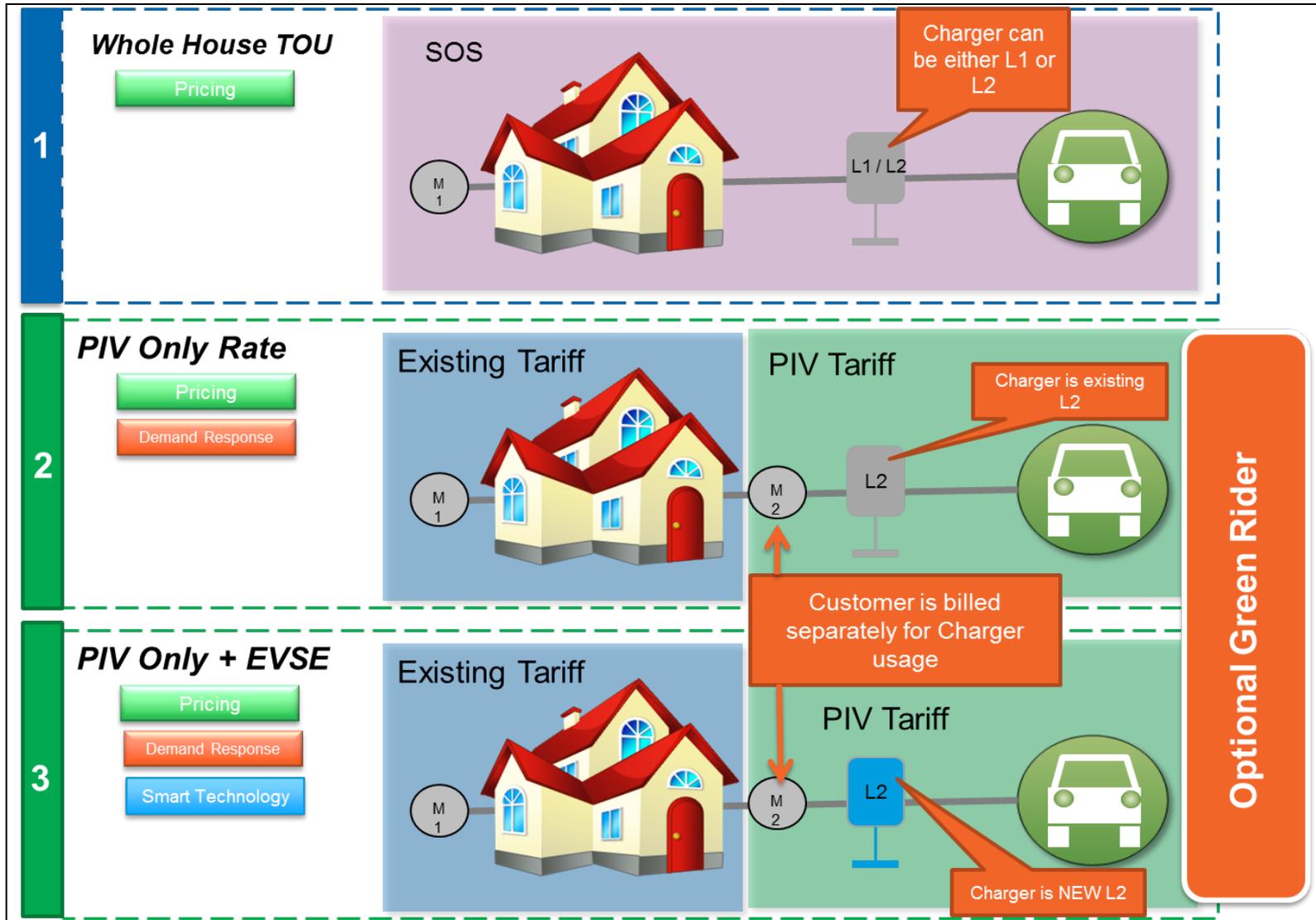
Incentives

- TOU Pricing
- Credits on Distribution Charges
- Rebates on the Costs of Charging Systems
- Demand Response Programs
- Other Programs as approved

Maryland PSC Case No. 9261

- Created a Working Group with major stakeholders
- Issued the Final Report (Feb 13, 2012)
- Focused on reliability and promoting “off peak” charging
- Developed consensus for desirable elements of a pilot (Pilot Framework)

Our Program In a Picture



Rates

- Whole House Time of Use (R-PIV)
- PIV Only – Time of Use rate for the PIV
- PIV Green – Renewable Energy Adder for PIV Only

	PIV Only 1/		Whole House	
	Summer	Winter	Summer	Winter
On-Peak	\$0.18822	\$0.17063	\$0.18230	\$0.17063
Off-Peak	\$0.07860	\$0.06673	\$0.11720	\$0.10007

PIV & Whole House TOU :

Peak: 12:00 PM – 8:00 PM

Off-peak: 8 PM – 12 PM; and all hours weekends and holidays

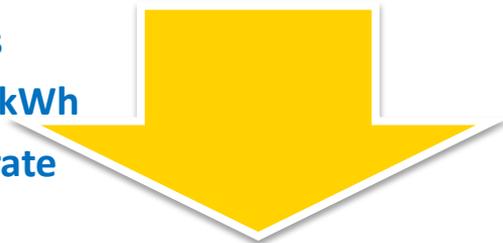
Rates are designed to be revenue neutral

¹PIV Only Rate will require the installation of a separate AMI meter to measure the charger consumption

Renewable Adder to PIV Only Rate

	PIV Only	
	Summer	Winter
On-Peak	\$0.18822	\$0.17063
Off-Peak	\$0.07860	\$0.06673

Adds
\$0.0179/kWh
to PIV rate



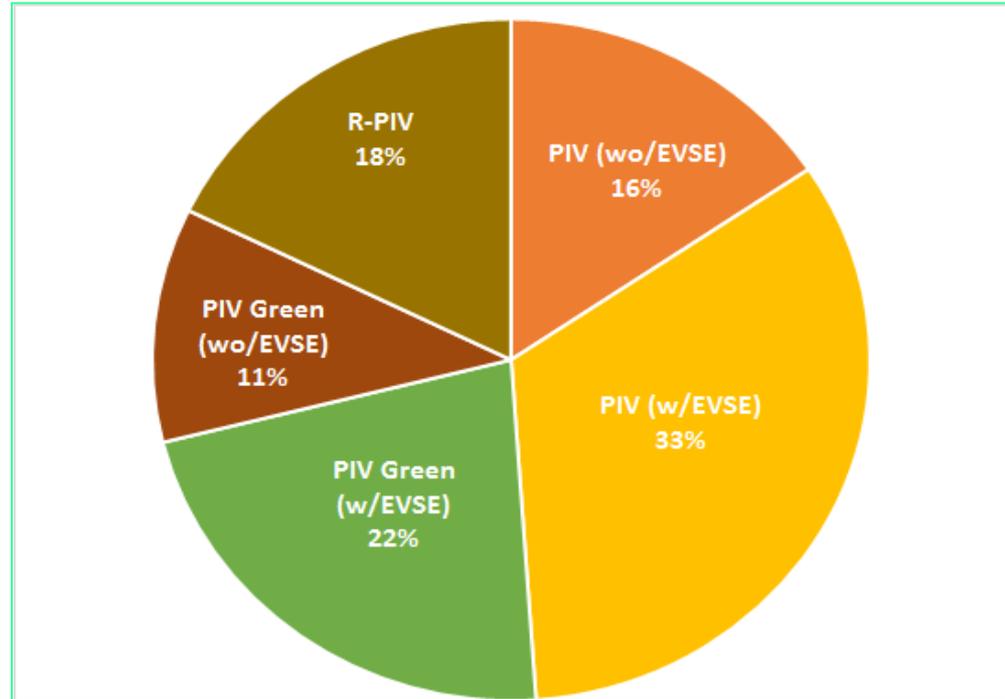
- The purpose of this option is to test whether customers will be willing to apply savings to claim zero tailpipe emissions
- It will reduce annual savings by \$25 - \$35

	PIV Green	
	Summer	Winter
On-Peak	\$0.20612	\$0.18853
Off-Peak	\$0.09650	\$0.08463

Preliminary Results

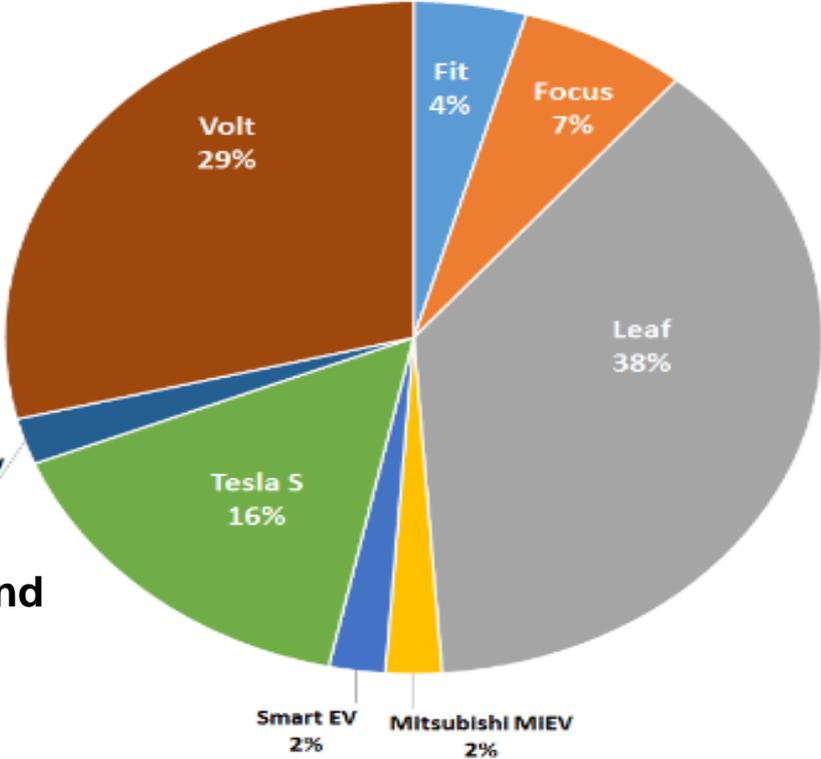
- Customers took advantage of the off-peak rates
- 90% of the time charging took place during off peak showing that rate incentives can control peak demand
- Average kWh/day variability exists between seasons, weekdays/weekends, and different customers.
- Most vehicles charge at 3.3kW or 6.6kW with some customers with Tesla charge at 10kW and 19kW
- Embedded meters reading are very similar to second meters and therefore could potentially be used for monitoring and billing PIV consumption in future
- During a period of high demand, Pepco can reduce the demand by controlling the level of charge of the smart EVSE's while giving the customer "Opt Out" options.

Customers (43)



Data Categories	Pepco Rate	# of Customers
Not Enrolled in Pilot Program	SOS	57
R-PIV	Whole house TOU	8
PIV w/EVSE	PIV	15
PIV wo/EVSE (smart EVSE)	PIV	6
PIV Green w/EVSE	PIV	9
PIV Green wo/EVSE (smart EVSE)	PIV	5

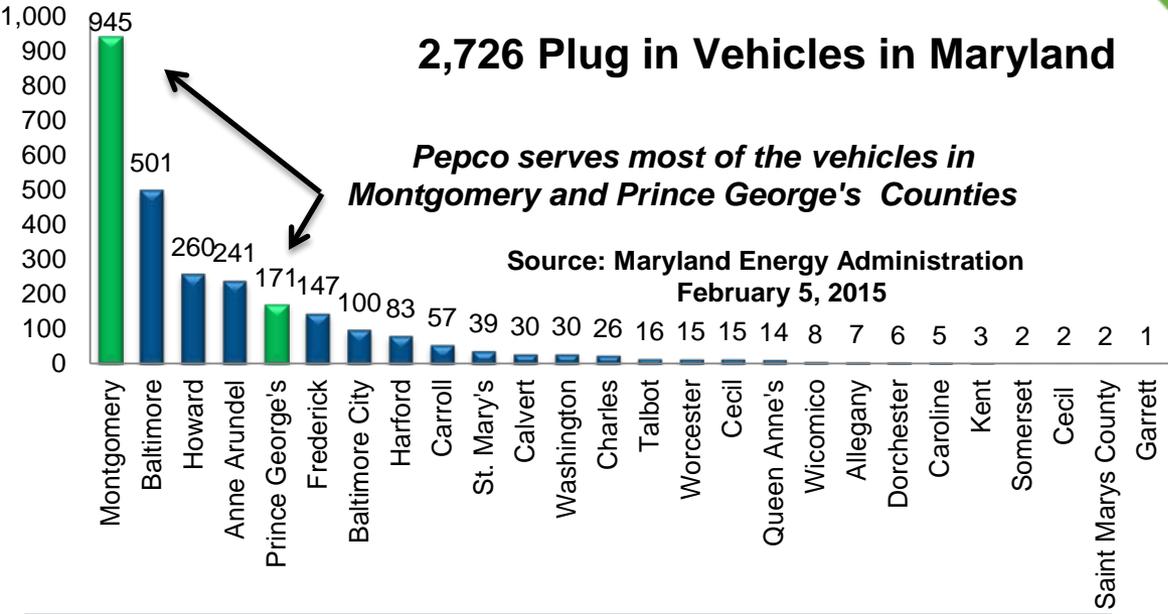
Our customers vehicle



2,726 Plug in Vehicles in Maryland

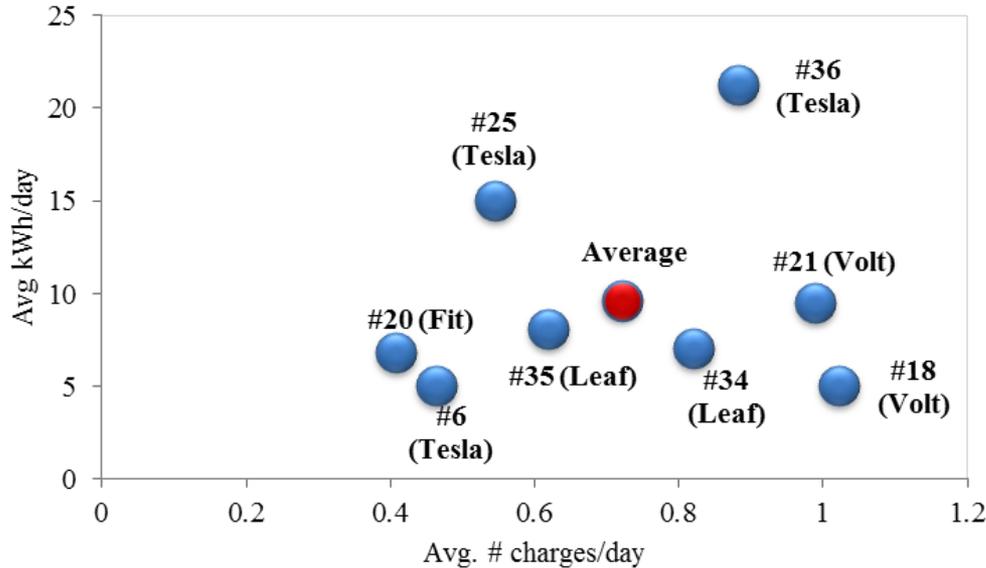
Pepco serves most of the vehicles in Montgomery and Prince George's Counties

Source: Maryland Energy Administration
February 5, 2015



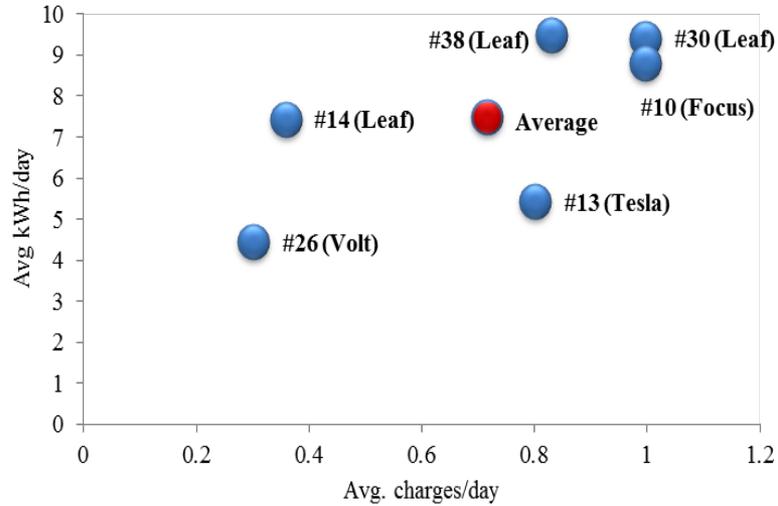
Expect to continue to increase by 30% each year

Customers (existing EVSE and PIV green)

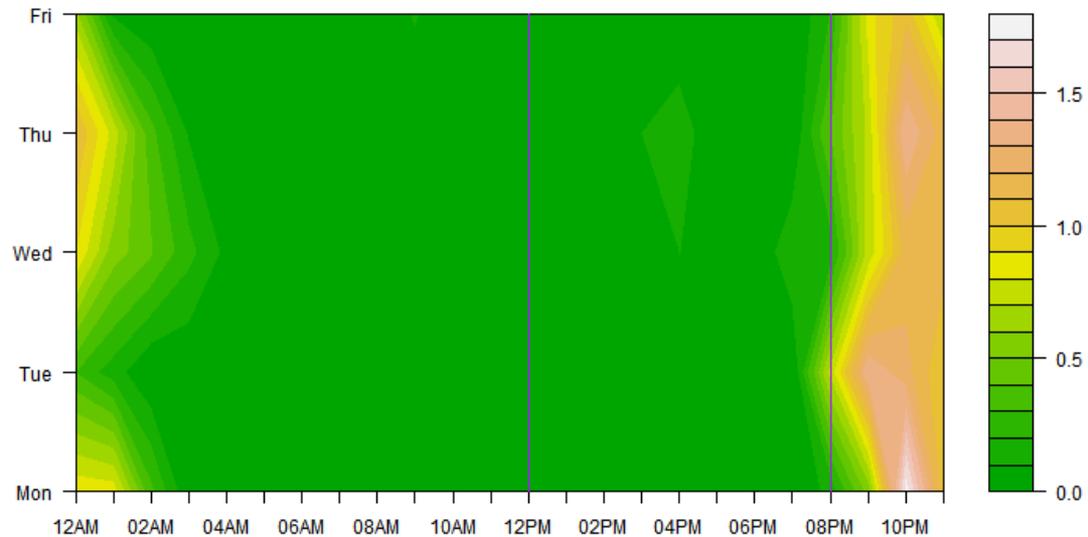


Customer #	Overall kWh	Overall On-peak kWh	Overall Off-peak kWh	%overall On-peak	%overall Off-peak
	6	4047.26	16.71	4030.56	0.41%
18	806.07	43.72	762.35	5.42%	94.58%
20	813.65	152.88	660.77	18.79%	81.21%
25	629.26	59.77	569.49	9.50%	90.50%
34	592.64	125.01	467.63	21.09%	78.91%
35	380.00	0.00	380.00	0.00%	100.00%
40	466.43	0.05	466.38	0.01%	99.99%
21	1371.63	0.49	1371.14	0.04%	99.96%
Average	1138.37	49.83	1088.54	4.38%	95.62%

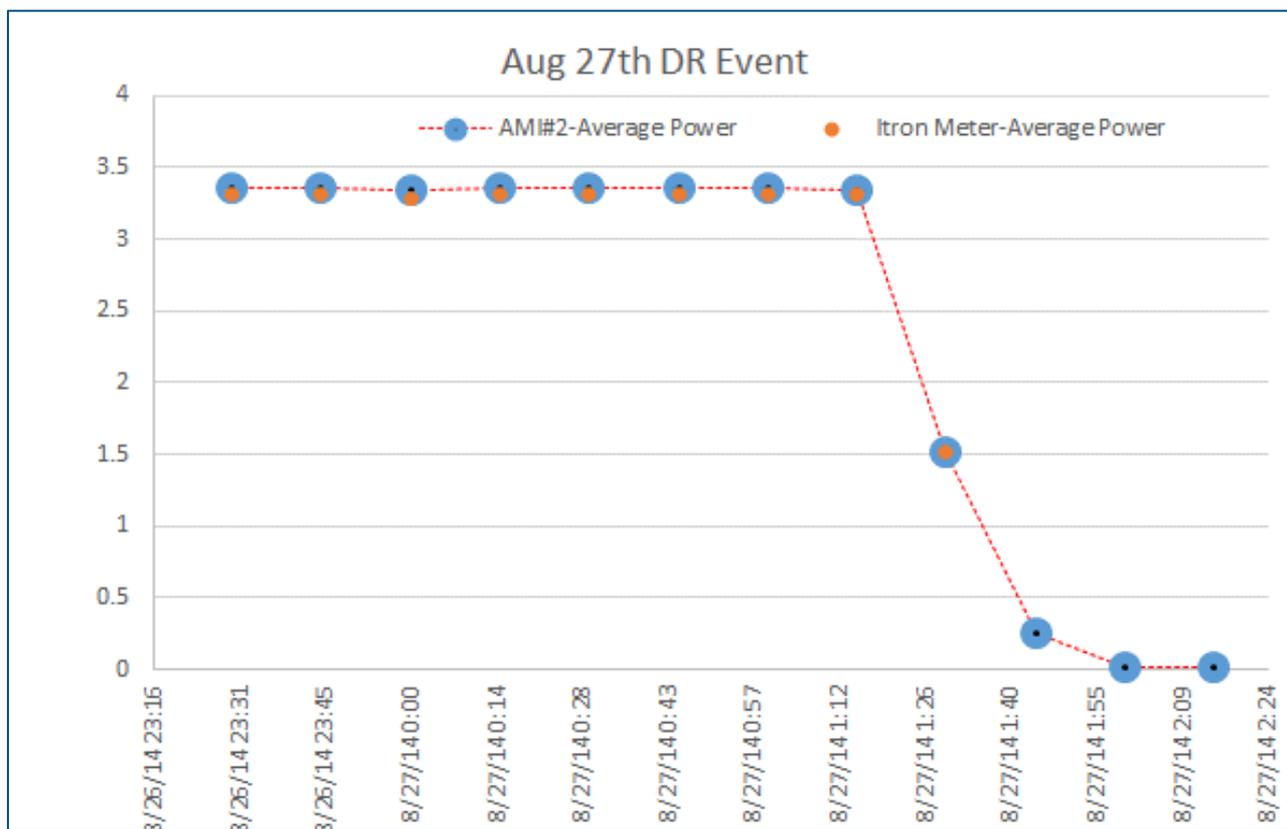
Customer with Smart EVSE, PIV (summer week day)



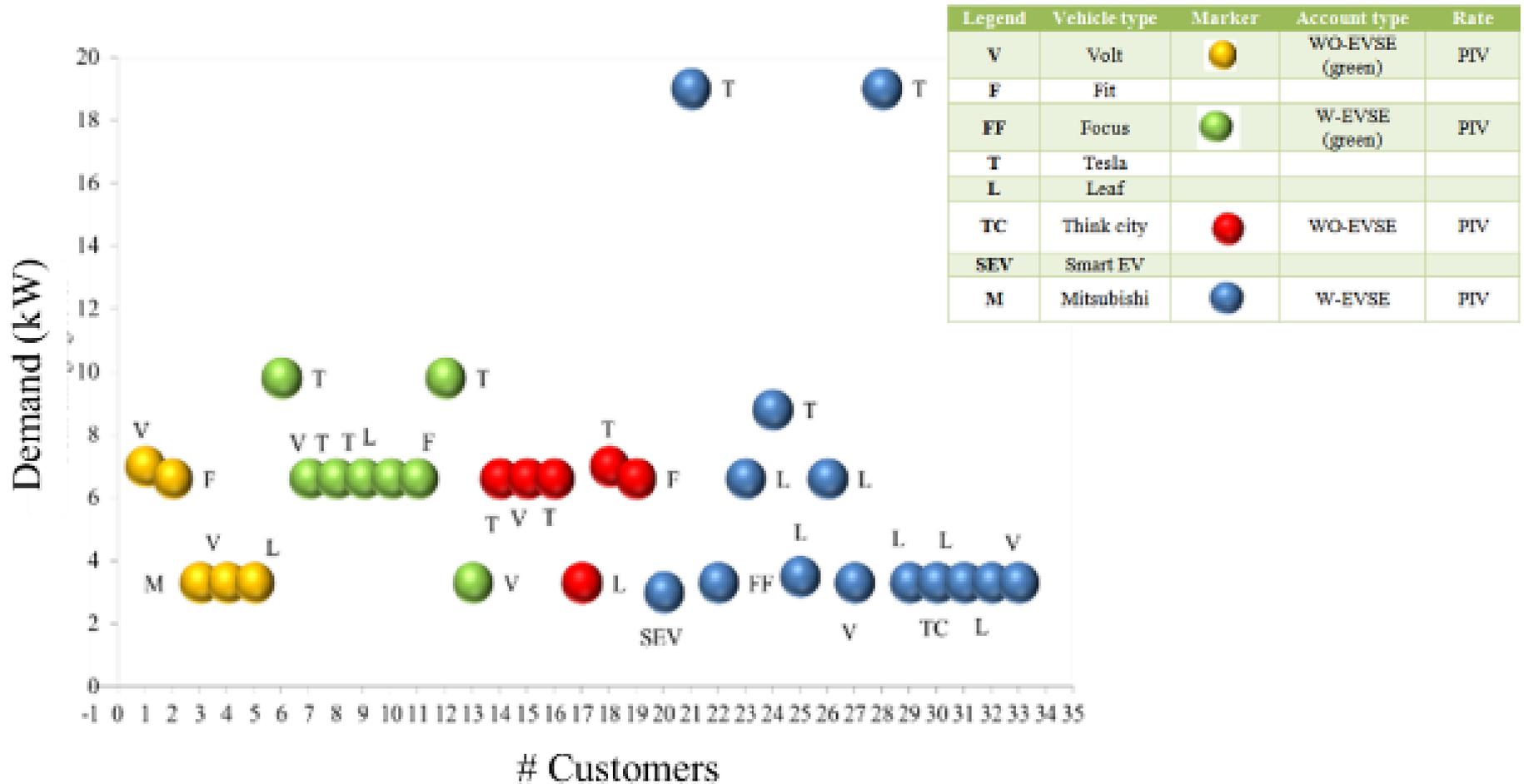
Overall weekday usage pattern for Cust #26



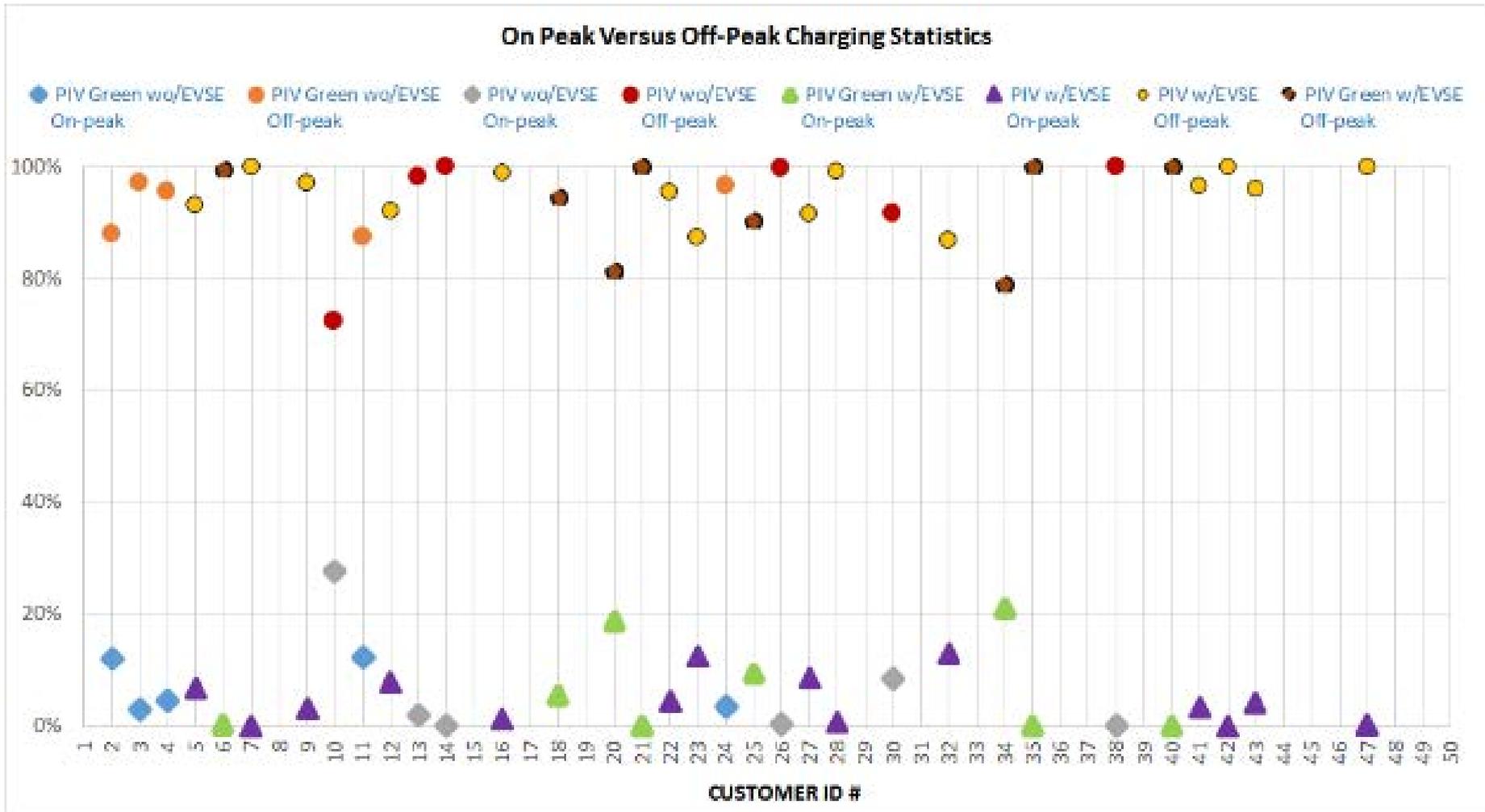
Demand Management Event



Program Customers Summary



Customer Behavior Changes



Next Steps

- PSC leadership, vision and support. They approved the extension of the program until December 2015
- Continue to increase enrollment to obtain a robust data set that can be transformed in useful program information
- Continue to work with all stake holders to support EVIC efforts in the State and beyond
- Collaboration with EPRI for robust and more detail Final Report.
- Continue Installations
- Customer Surveys
- For more information visit :
http://webapp.psc.state.md.us/newIntranet/Casenum/CaseAction_new.cfm?CaseNumber=9261



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Thank You