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November 1, 2017

Steven V. King
Executive Director and Secretary
Washington Utilities & Transportation Commission
1300 S. Evergreen Park Drive S. W.
P.O. Box 47250
Olympia, Washington  98504-7250

Re: Docket No. UE-160082 – Avista Utilities Quarterly Report on Electric Vehicle Supply Equipment Pilot Program

Dear Mr. King,

On April 28, 2016 the Commission issued Order 01 in Docket UE-160882 approving Avista Corporation's, dba Avista Utilities (Avista or Company) tariff Schedule 77 for its Electric Vehicle Supply Equipment (EVSE) Pilot Program (program). Within the Order the Commission required Avista to submit quarterly reports on the status of the program beginning on August 1, 2016 and ending on August 1, 2018. The quarterly reports must include the following:

1. For DC Fast Charging stations, Avista shall report the locations and utilization of stations, review and revise the DC fast charging rate, and assess the amount of overall fixed and variable costs recovered through user payments and report its findings to the Commission quarterly, beginning August 1, 2016.

2. For all other services offered under the Electric Vehicle Supply Equipment Pilot Program, Avista shall report participation levels, expenditures, and revenues for each service offered for the duration of the program. We expect the Company to collect and report additional data necessary to provide enough information to accurately evaluate the program's success by August 1, 2018.

As described in Order 01, the effective date of tariff Schedule 77 was May 2, 2016. The term of the program began with the first residential EVSE installation on July 20, 2016. The following are program highlights covered in this report:

**Report Highlights:**

1. Number of port installations continue to increase across all categories, with residential installations expected to hit the two-year goal around year-end.
2. New EVSE is being tested for residential and commercial installations.
3. Residential demand response has been delayed due to technical issues (i.e., software). The Company is pursuing demand response (load management) in commercial settings with multiple manufacturers' EVSE.
4. Customer and cost expectations continue to be met. Additional installations improve dataset and insights.
5. DC Fast Charger near downtown Spokane (Kendall Yards) open for use on September 14, 2017. Next location in Pullman under construction.

Overall, the program's operations, analytics, customer participation and feedback remain positive. As of October 23, 2017, the number of applications and installations for the various EVSE categories are as follows:

**Table No. 1**

| | 2-Year Goal of Port Installations | Applicants | | Installations | |
|---|---|---|---|---|---|
| | | Applicants | Approved | Scheduled | # Ports Installed |
| **Residential SFH[1]** | 120 | 168 | 139 | 9 | 102 |
| **Workplace\Fleet\MUD[2]** | 100 | 119 | 66 | 8 | 47 |
| **Public** | 45 | 68 | 46 | 10 | 18 |
| **DCFC** | 7 | 5 | 5 | 3 | 2 |

*28 approved residential applicants have withdrew from the program due to their costs to participate or other reasons

[1] Single Family Home
[2] Multi-Unit Dwelling

Other high-level statistics on charging behaviors are shown in Table No. 2 below.

**Table No. 2**

| | |
|---|---|
| Daily Avg. No. of Charge Sessions | 67 |
| Daily Avg. kWh Consumed | 442 |
| Sessions Charged to Date | 22,352 |
| kWh Consumed to Date | 116,945 |
| Lbs. of $CO_2$ Saved to Date | 238,032 |
| Gallons of Gasoline Saved to Date | 12,151 |

**AC Level 2 Charging Stations – Residential**

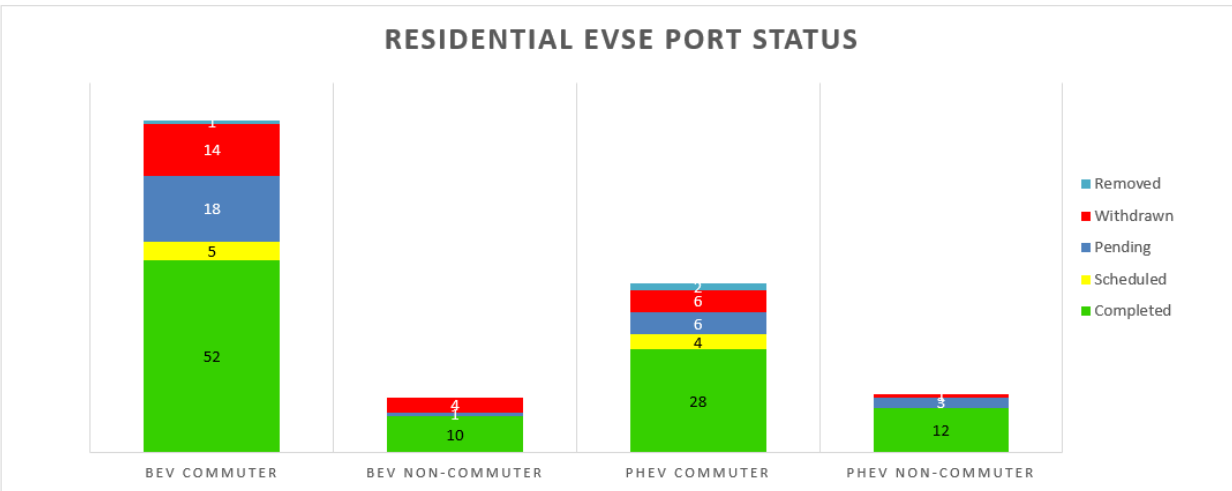
Residential EVSE are meeting customer needs, communications are improving overall, and installation costs continue to meet expectations. In addition to assisting with EVSE commissioning, Greenlots is providing notifications and assisting with corrective action to any connectivity issues as the program's EVSE Network Service Provider (EVSP). Although Wi-Fi communications are lost on occasion in residential settings, in most cases a request to the customer to power-cycle the unit corrects connectivity issues.

Approximately 15% of residential installations remain offline due to more technical customer Wi-Fi issues. In these cases, the EVSE still provides a charge for the customer in offline mode, maintaining customer satisfaction. However, technician visits are needed to re-establish communications, which are planned in the months ahead.

Although in many respects the residential EVSE are performing satisfactorily, one area of concern is the ongoing software issues which have delayed demand response experiments. Although it is expected that these problems will eventually be resolved, it is unclear when this may be expected with the EVSE currently in use. Tests are underway to certify the use of a new EVSE from a different manufacturer with similar price and quality characteristics that meet the program's specifications, including the ability to perform remote demand response initiatives. This new EVSE is expected to be deployable in the near term and may be used to substitute for the EVSE currently in use. This is a good example of the importance of open communications standards and networks, which allow an EVSE program to choose from alternative EVSE should any one manufacturer's EVSE demonstrate performance issues, rather than being "locked in" for the long term to proprietary EVSE and networks that are closed and do not allow for alternatives.

The following chart shows the status of residential applications and installations by categories of Battery Electric Vehicle (BEV) Commuter, BEV Non-Commuter, Plug-In Hybrid Electric Vehicle (PHEV) Commuter, and PHEV Non-Commuter. [3]

**Chart No. 1**



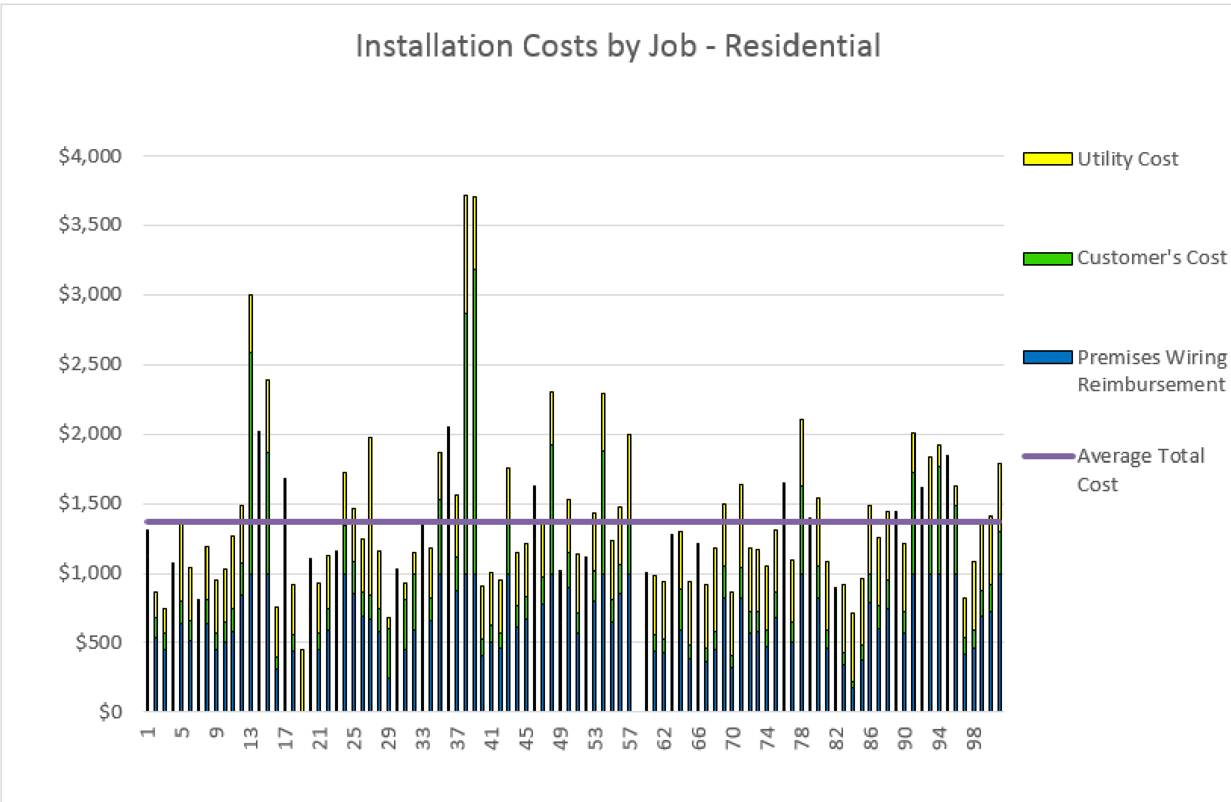

The number of residential applications and scheduled installations has increased since the last report and is nearing the initial target of 120. However, the desired number of port installations for non-commuter categories will not be achieved, once this total is reached. A larger number of residential installations beyond the initial targets over a longer period of time is desirable to improve the data set, to gain experience with new EVSE on the market, and to continue to support EV adoption in the Company's service territory.

The chart below shows the residential installation cost components by job, ranging from a total of \$452 to \$3,721. Low costs correspond to installations where an adequate 240V AC circuit is

[3] Completed – EVSE has been installed. Scheduled – EVSE is scheduled to be installed. Pending – customer application is pending full approval. Withdrawn – customer has withdrawn application from program. On Hold – customer application is on hold due to location of requested EVSE.

already installed, with higher costs generally corresponding to a greater number of wall and floor penetrations, total circuit distance, and/or service upgrades.

**Chart No. 2**




Residential installation cost breakdowns continue to meet expectations as shown by the average costs in the table below.

**Table No. 3**

| Premises Wiring Reimbursement | Customer's Cost | Utility Hardware & Installation Cost | Total Installation Cost | EVSE Cost | Total Costs Installation + EVSE |
|---|---|---|---|---|---|
| $671 | $284 | $418 | $1,373 | $1,048 | $2,439 |

One in six residential installations (17%) required a service panel upgrade, which substantially increased installation cost as shown in the table below. This is clearly the dominant cost factor for residential installations.

**Table No. 4**

| | No. of Installations | Avg. Install Cost | Median Install Cost |
|---|---|---|---|
| Panel Upgrade | 15 | $2,289 | $2,157 |
| No Panel Upgrade | 75 | $1,152 | $1,137 |

Length of conduit, the need for a subpanel, and the number of wall and floor penetrations also cause increased costs, however less substantially than the need for a service panel upgrade. Outdoor earth trenching occurs occasionally and adds costs, but concrete trench work is rare for residential installations. To date, no transformers or secondary wire from the transformer to the residential customer have required replacement as a result of an EVSE installation.

**Table No. 5**
**Comparison of Average Costs for Residential Installations (not including EVSE)** [4,5,6]

| Program/ Study | Timeframe | No. of Installations | Average Install Cost |
|---|---|---|---|
| Avista EVSE Pilot | 2016–17 | 103 | $1,373 |
| EV Project | 2012–13 | 4,777 | $1,375 |
| EPRI | 2009–13 | 214 | $1,613 |
| North Carolina | 2011–12 | 143 | $1,098 |

Geography is a significant factor of these average costs. For example, the Idaho National Laboratory's EV Project report on costs by geographic locations placed Los Angeles' average installation cost at $1,828, Atlanta's at $775, and Seattle's at $1,338.

[4] Brazell, M., Joffe, E., & Schurhoff, R. Electric Vehicle Supply Equipment Installed Cost Analysis. Electric Power Research Institute (2013)
[5] Idaho National Laboratory. How do Residential Level 2 Charging Installation Costs Vary by Geographic Location. The EV Project (2015)
[6] North Carolina PEV Taskforce, "Plug-in Electric Vehicle (PEV) Roadmap for North Carolina." (2013)

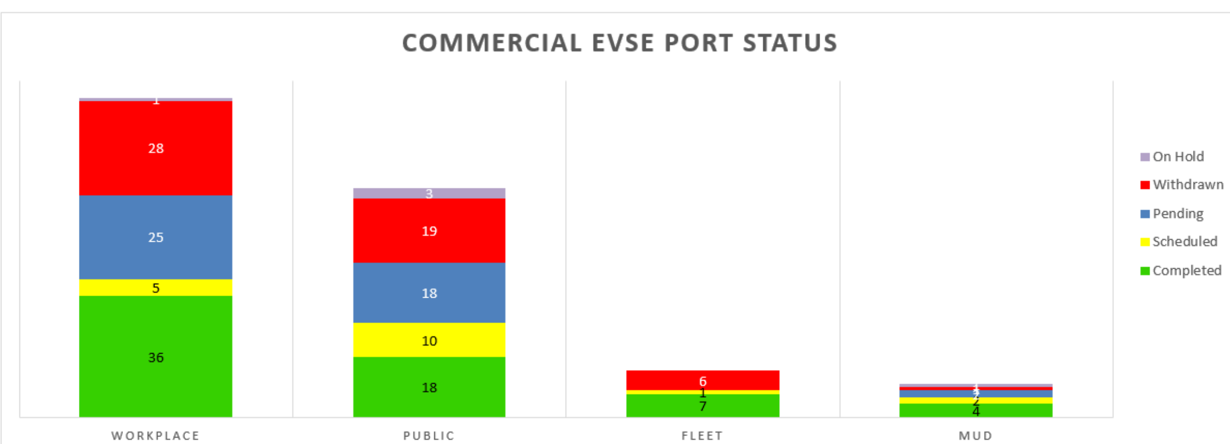
The use of networked EVSE in residential locations is necessary to provide data for analysis and modeling, and in the future may provide net system benefits with remote demand response capability that shifts load from peak to off-peak times, thereby reducing system strains and better utilizing grid infrastructure. Networked EVSE also add substantial upfront and ongoing costs in terms of installation work, hardware, communications and network services. The company intends to model costs and benefits for both networked and non-networked EVSE, as more cost data of both types are analyzed in detail.

Although the strong emphasis of the Company's EVSE pilot program involves the use of networked EVSE and demand response experiments, non-networked EVSE may play a useful role as part of a utility EVSE program portfolio, in terms of providing cost effective EVSE services and support for market transformation in the near term. Simultaneously, developing capabilities and reducing costs for networked EVSE systems over time is critical to maximize net system benefits over the long term. For example, the use of Advanced Metering Infrastructure (AMI) for communications and integration with other utility systems may provide the most cost-effective and reliable method for load management at scale.

**AC Level 2 Charging Stations – Commercial**

The following chart shows the status of commercial applications and installations by category.

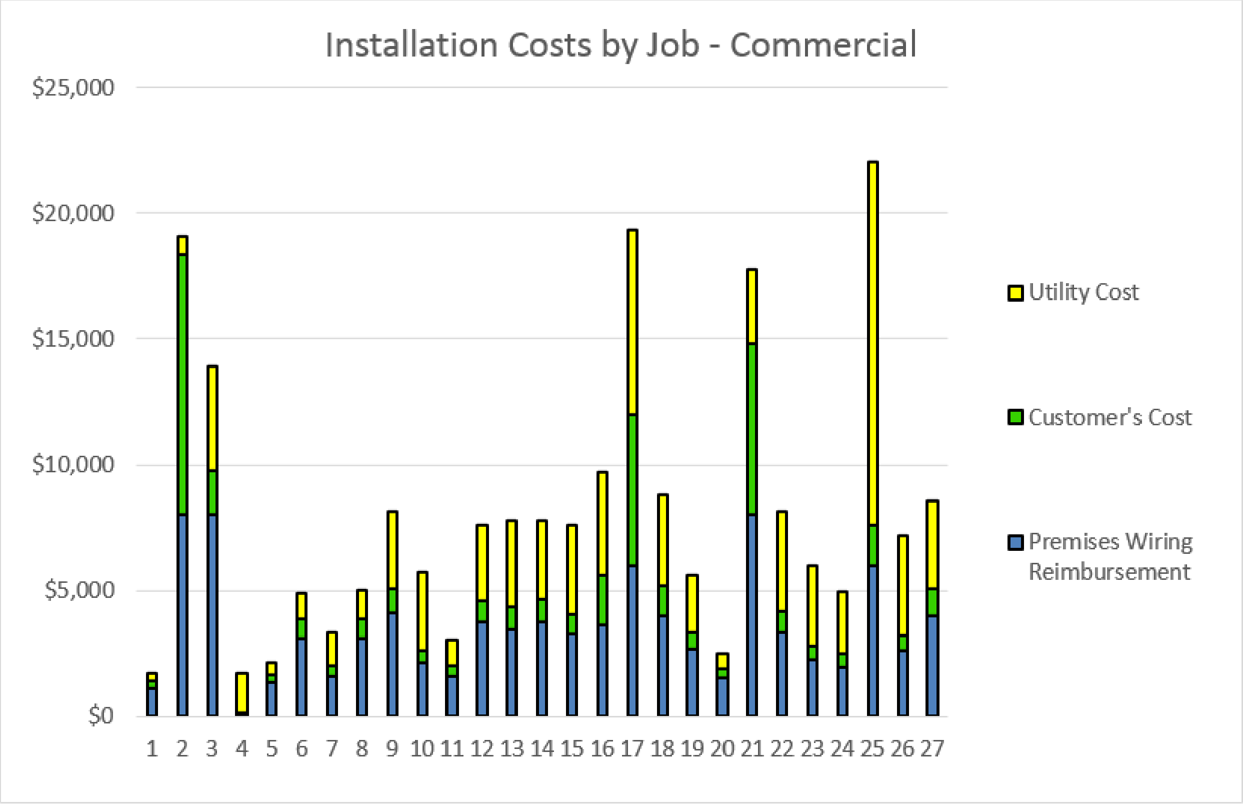
**<u>Chart No. 3</u>**



Commercial applications and installations have also increased recently in all categories of workplace, fleet, MUD, and public locations. Typically, significant outreach and consulting is required to inform and assist the customer to install an AC Level 2 EVSE on their property, particularly for more public locations. Property owners in our service territory are commonly unaware of EVs to a large degree due to lower adoption rates, as well as the implications of providing EVSE services on their property. Some of the principal concerns are the projected cost of electricity, liability risks, and potentially adverse impacts on parking areas with limited capacity. Strong efforts will continue to be made in terms of outreach and providing helpful information to customers, in order to make informed decisions that mutually benefit the customer and the program.

Costs for commercial installations are meeting expectations, with an understanding that larger variations in cost are expected depending on site conditions, compared to residential installations. A greater number of withdrawals occur for commercial applications, for a variety of reasons. This includes cost share for premises wiring, as well as other common concerns previously mentioned. The cost components of commercial installations at twenty-seven different locations are shown below. These EVSE locations are primarily used as workplace charging for employees.

**Chart No. 4**




Lower costs correspond to simpler installations avoiding service upgrades and trench work, lower cost EVSE, and/or a single port connection. Conversely, higher costs are associated with multiple installed EVSE ports, required upgrades to transformers, supply panels, and/or trench work, especially concrete and asphalt trenching. Average cost breakdowns for commercial EVSE sites are listed in the table below.

**Table No. 6**

| Premises Wiring Reimburse-ment | Customer Cost | Utility Hardware & Install Cost | Total Install Cost | EVSE Cost | Total Cost EVSE + Installation | Avg. # Ports | Total Cost per Port |
|---|---|---|---|---|---|---|---|
| $3,365 | $1,507 | $2,987 | $7,858 | $4,862 | $12,720 | 2.1 | $6,057 |

Although the length of trenching is a cost factor, due to heavy equipment mobilization costs it is not as significant as whether trenching is required or not in the first place, which may be illustrated by the EVSE mounting type. Wall mounted EVSE typically require no trench work and reduce the length of wall mounted and underground conduit, while pedestal mounted EVSE typically require trench work and relatively longer conduit lengths. The table below shows the relative costs between wall and pedestal mounted installations in the program.

**Table No. 7**

| | **No. of Installations** | **Avg. Install Cost per Port** |
|---|---|---|
| Wall Mount | 8 | $3,045 |
| Pedestal Mount | 25 | $4,140 |

The average installation costs for the Company's commercial EVSE installations are comparable to the reported averages from other studies, as shown in the table below:

**Table No. 8**

**Comparison of Average Costs for Commercial Installations (not including EVSE)**

| **Program/Study** | **Timeframe** | **No. of Installations** | **Average Install Cost Per Port** |
|---|---|---|---|
| Avista EVSE Pilot | 2016 - 2017 | 27 | $3,742 |
| EPRI | 2009 - 2013 | 385 | $3,005 |
| North Carolina | 2012 and Prior | 102 | $2,638 |

Further investigation indicates the relatively higher costs of the Company's commercial installations compared to those in the EPRI and North Carolina studies are due to a larger proportion of pedestal mounted EVSE and smaller proportion of wall mounted EVSE.

In order to minimize costs, where practical the Company will continue to encourage wall mounted EVSE and to minimize trenching and conduit lengths by locating the EVSE as close as possible to the nearest power source. Other factors such as desired location, accessibility, communication signal strength, and safety concerns also are of high importance when consulting with commercial customers on EVSE siting and configuration determinations.

**DC Fast Charging (DCFC) Stations**

Standardized DCFC site design has an operational 50kW DCFC with both CCS and CHAdeMO connectors, and a dual-port AC Level 2 EVSE as a backup. The installations include adequate property easements and/or site agreements for future expansion, with transformer capacity and conduit installed to allow for low-cost expansion of an additional 150kW DCFC.

The Company has found DCFC installations to pose a number of challenges requiring extra attention, including a much more involved site acquisition process and relatively longer lead times associated with site design and the larger scope and scale of construction work. Site acquisition in particular has required substantial effort and time to negotiate with property owners. Discussions with other experienced industry representatives indicate this is a common issue in other areas and programs around the country.

The first DCFC station in Rosalia, Washington was brought online January 18, 2017, and made available for public use. Remote monitoring shows satisfactory status and availability. More information about the Rosalia DCFC and other EVSE on the network is posted online at www.plugshare.com. The use of the Rosalia DCFC has been limited thus far with 48 sessions through October 18, but is seeing increased use with 15 sessions in September. Charging session characteristics are as indicated in the table below:

**Table No. 9**

| | |
|---|---|
| Avg. Charging Time | 17.4 minutes |
| Avg. Power Delivery | 33.1 kW |
| Avg. Consumption | 9.6 kWh |
| Avg. fuel price equivalent | $4.28/gal |

Closer analysis of the session data shows that different vehicle types may not be able to charge at the rated power of the unit as was originally assumed with the proposed fee of $0.30 per minute.

This results in much higher costs for certain customers based on the amount of electricity consumed. A high number of sessions resulted in fuel costs of over $5 per gallon of gasoline equivalent, with some over $10 per gallon (assuming an efficiency of 3.3 miles per kWh for an EV, and 26 mpg for the equivalent gasoline vehicle). Discussions with several customers indicate that the DCFC usage fee of $0.30/minute is not competitive with a gasoline powered vehicle, and they will choose to use a gas vehicle when making the trip between Pullman and Spokane rather than pay this high cost to use their electric vehicle.

In order to be competitive in the market and encourage EV adoption, the DCFC user fee should result in an electric fueling cost at or below an equivalent cost to travel using a gasoline vehicle. Therefore, in order to better understand customer needs and behaviors the Company believes that altering the DCFC usage fees between the per minute and per kWh bands, as shown in the table below, will provide good information on the pros and cons of fees that use a time versus energy basis, and how utilization may change when the cost of electricity is closer to the equivalent cost of gasoline.

**Table No. 10**

| Per minute fee | Per kWh fee | Assumed Power Delivery | $/gal equivalent |
|---|---|---|---|
| $0.30 | $0.54 | 33 kW | $4.28 |
| $0.20 | $0.36 | 33 kW | $2.86 |
| $0.30 | $0.40 | 45 kW | $3.15 |
| $0.20 | $0.27 | 45 kW | $2.10 |

These calculations assume an average session time of 17.4 minutes, an average power delivery of 33.1 kW, and a rated steady state power delivery of 45 kW.

The Company intends to propose moving to a banded rate structure through a tariff filing, in which it will also propose an extension of its pilot program.

The DCFC in Spokane's Kendall Yards location was commissioned for public use on September 14, 2017. Since commissioning, eight sessions have been logged in the first month of availability, a much higher rate than initially seen at Rosalia. This desirable location is within one mile of Interstate 90, situated among a number of attractive retail and restaurant venues at Kendall Yards, and is within a reasonable walking distance to the downtown core of Spokane and Riverfront Park. The Kendall Yards location will help enable regional transportation on both the North-South and East-West corridors through Spokane, as well as provide quick public charging for inner city travel within Spokane.

Construction is currently underway for the Pullman location adjacent to the Washington State University Visitor Center, with completion expected by December, 2017. Site agreements and land acquisition were successful for the Spokane Transit Authority (STA) Park & Ride in Liberty Lake east of Spokane, and in the new West Plains Transit Center west of Spokane located at exit 272 along I-90. The Park & Ride facilities were identified as excellent locations given their convenient access to Interstate 90 on both the West and East sides of Spokane County, nearby facilities including restaurants and convenience stores, proximity to three-phase power, as well as a partner in the STA that is able to provide the parking space necessary to facilitate the DCFC. The Liberty Lake location may be completed before the end of 2017, or possibly into early-2018. Construction for the DCFC installation at the West Plains location is anticipated in the spring of 2018.

Installation of these five identified locations will provide an electrified north-south corridor between Spokane and Pullman, as well as serving east-west traffic along I-90 in the vicinity of Spokane County.

This leaves two additional stations to complete the seven proposed DCFC for the pilot program. A suitable location on the outskirts of north Spokane is desirable, which will help to begin to electrify the US-395 corridor and serve customers living in the north Spokane area. Some promising sites have been identified for this general location, but are in the early stages of obtaining site agreements and acquisition. Candidates for the final DCFC location include the Spokane University District, Spokane Valley, Clarkston, Deer Park, Chewelah, and Colville. The Company will continue to consult with the Washington State Department of Transportation on site locations to confirm agreement and alignment with efforts to build out EVSE infrastructure across the state.

**Customer Surveys**

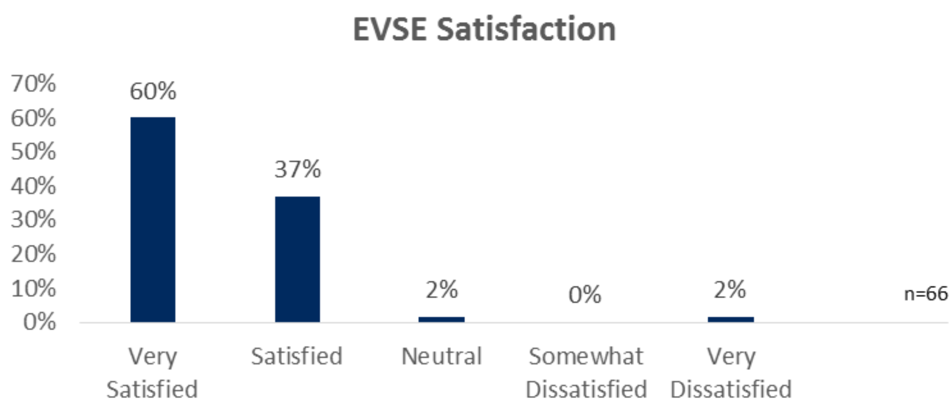
Web based customer surveys are carried out post-installation and quarterly thereafter for both residential and commercial customers. These surveys began on July 21, 2016 and will continue through the course of the pilot program. Completion rates as of July 21, 2017 are as follows:

**Table No. 11:**

| Customer | Post-installation | Quarterly |
|---|---|---|
| Residential | 67% (66 of 98) | 46% (46 of 99) |
| Commercial | 35% (8 of 28) | 50% (2 of 4) |

Overall satisfaction with the residential installations remains high with 97% of the 66 respondents reporting satisfied or very satisfied:

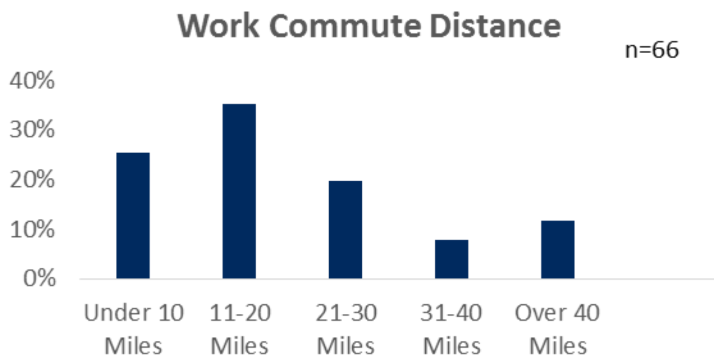
**Chart No. 5**




78% of residential customers indicated that they commute to work in their EV, with 29% of those customers indicating that their employer offers an EVSE at work.

Thus far, the average commute was 23.1 miles for those that could use an EVSE at work and slightly lower at 19.3 miles for those that did not have an EVSE available. 13 customers did not indicate commute distance

**Chart No. 6**




In general, customers indicated a moderate to high level of importance for both AC Level 2 and DCFC charging availability, and a low level of satisfaction for both types of charging availability as shown in the four charts below.

**Chart No. 7**

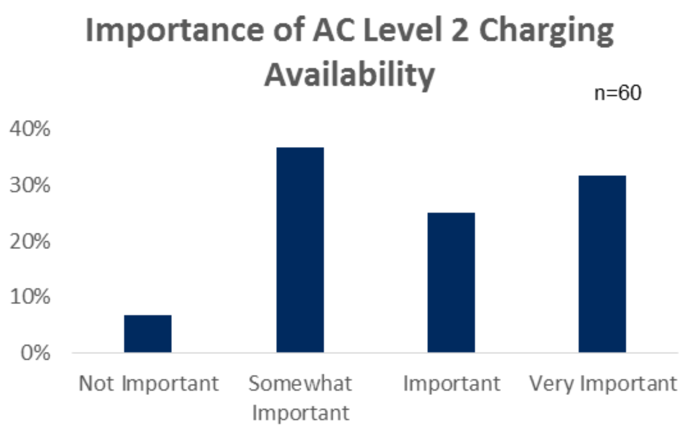



**Chart No. 8**

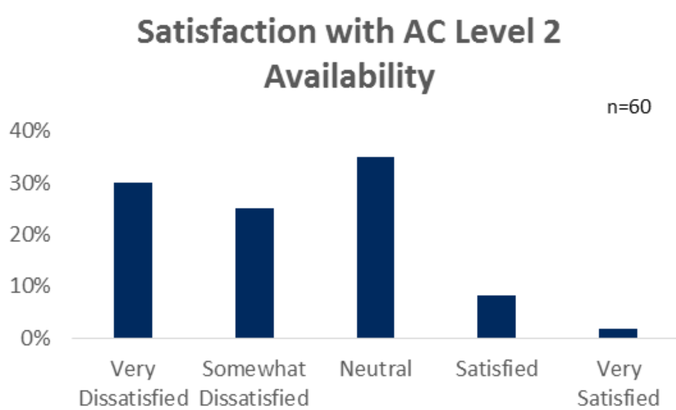


**Chart No. 9**

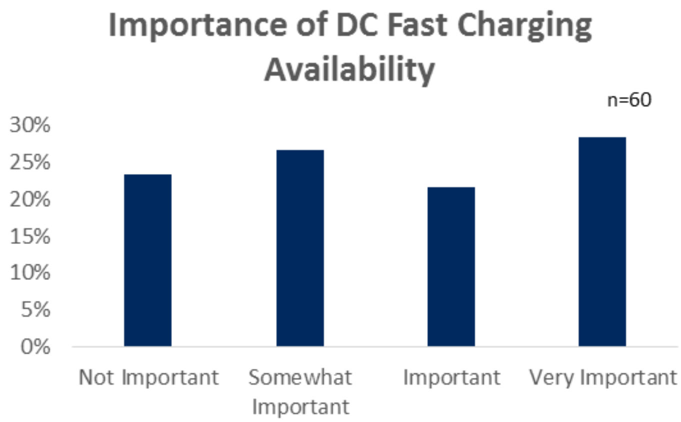
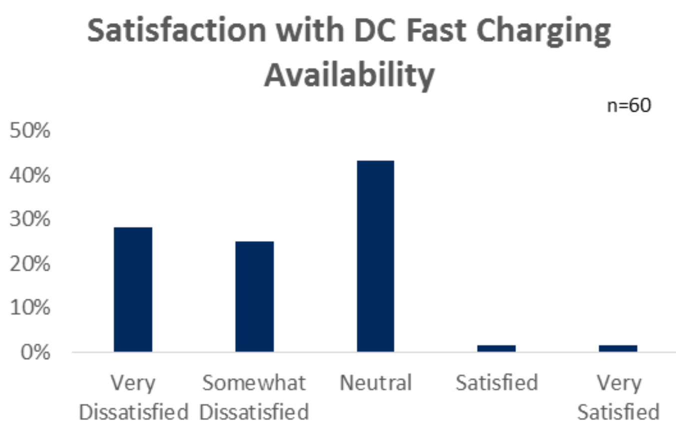


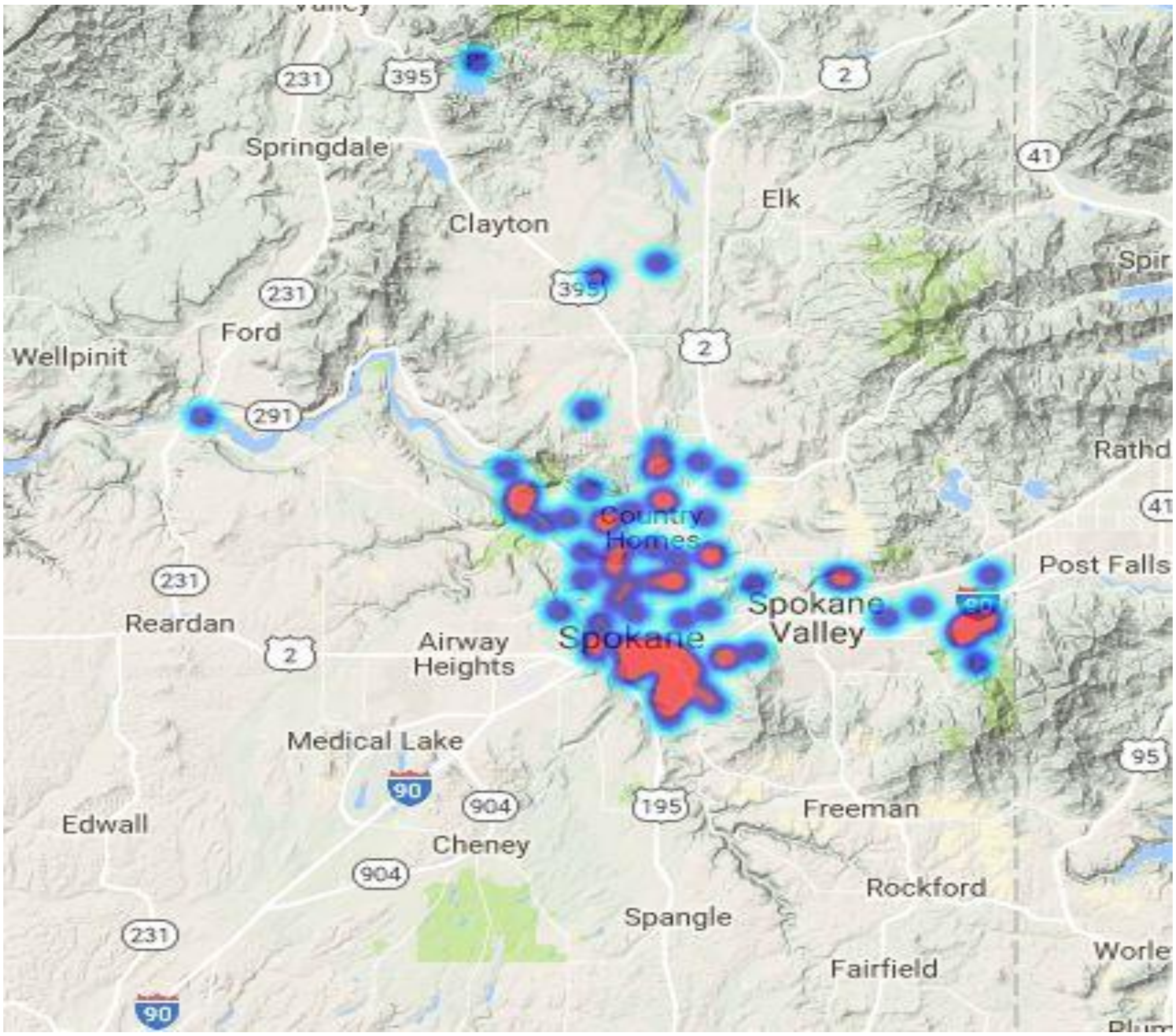

**Chart No. 10**




Additional insights from the customer surveys will be reported as a greater number of responses are received.

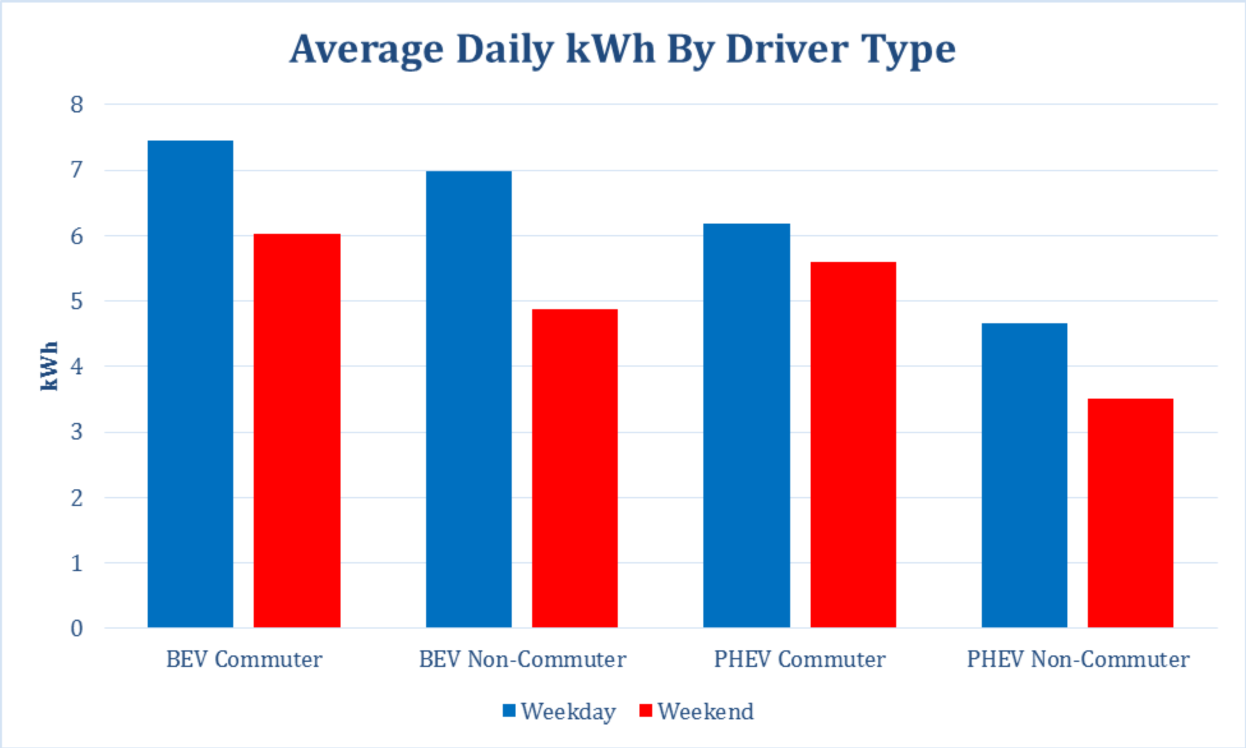
**Data Analysis, Modeling, and Load Management**

**Figure 1 – Residential Installation "Heatmap"**



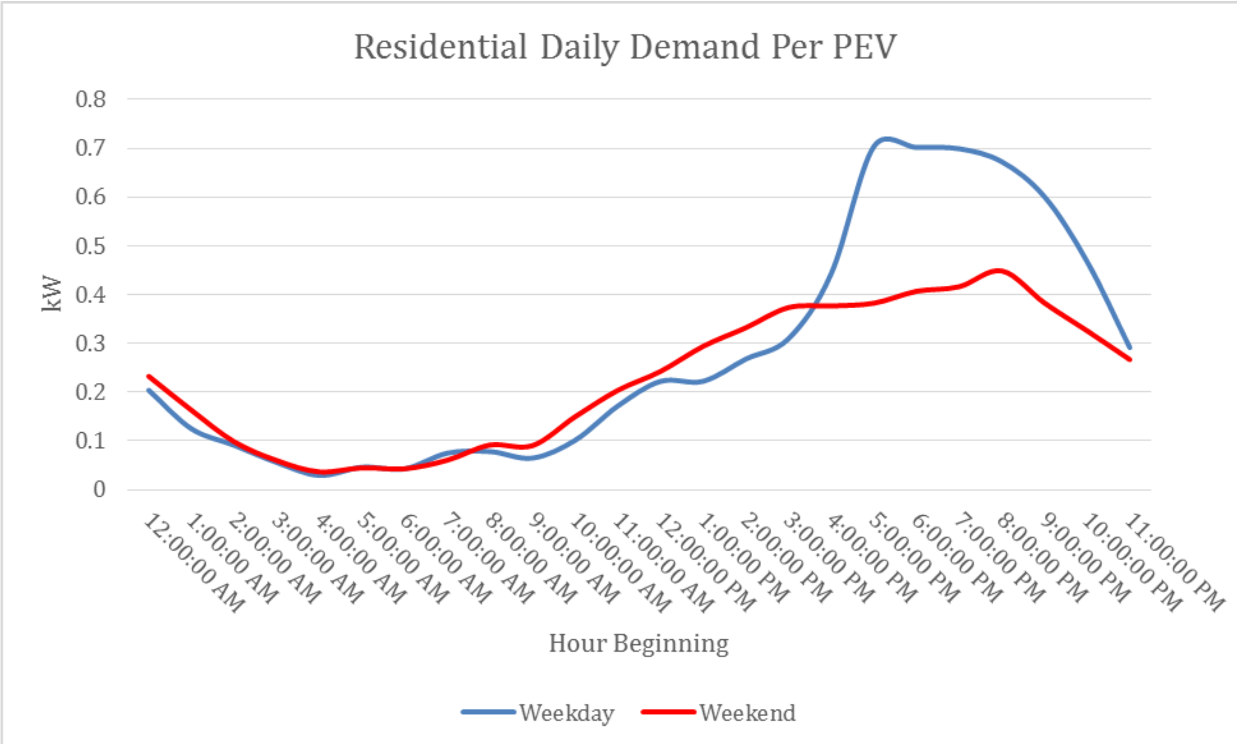

Average weekday energy demand is highest for BEV commuters at over 7.4 kWh, followed by BEV non-commuters and PHEV commuters at 7.0 kWh and 6.2 kWh respectively. PHEV non-commuters have a significantly lower average weekday demand at around 4.7 kWh. Daily energy demand in all categories is lower on the weekend compared to the weekdays as seen in the chart below.

**Chart 11**




Average peak power demand for each PEV was 0.7 kW at 5 pm during the weekdays with peak demand occurring from 5-9 pm. Weekend demand peaks at 0.45 kW at 8 pm on the weekend. Demand is flatter on the weekends as sessions were more evenly dispersed throughout the day, and weekdays experience a sharp demand peak as drivers arrive home.

**Chart 12**




As in previous updates, BEV commuter have the highest peak weekday demand of 0.86 kW, occurring at 6 pm. With BEV commuters, weekend demand is lower and steadily increases throughout the day, peaking at 0.55 kW at 8 pm. Other commuter types had similar power demand profiles, with the exception of PHEV non-commuters who have sharp increases in both weekday and weekend power demand occurring during the afternoon. PHEV non-commuter weekday power demand is also the lowest peak demand of the different driver types, at 0.42 kW. This could be due to the small sample level of the group, a lower maximum charge rate for PHEV's compared to most BEV's, and/or lower miles driven.

**Chart 13**

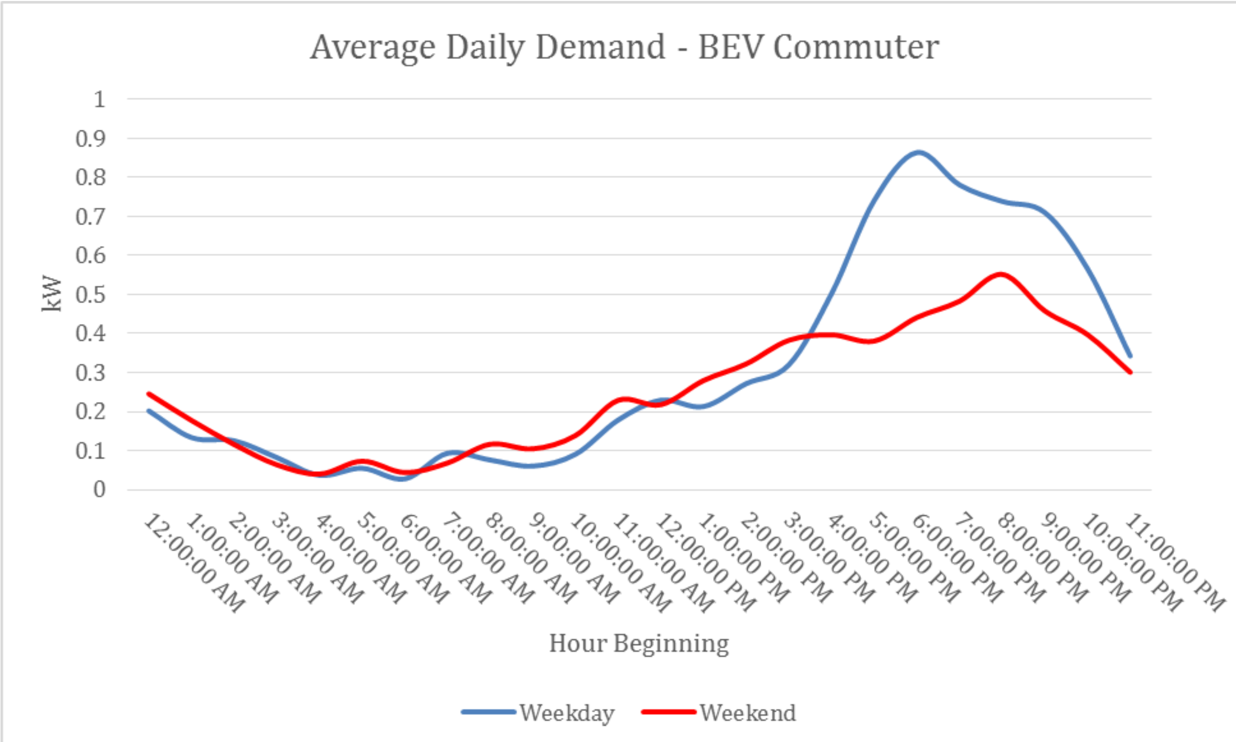



**Chart 14**

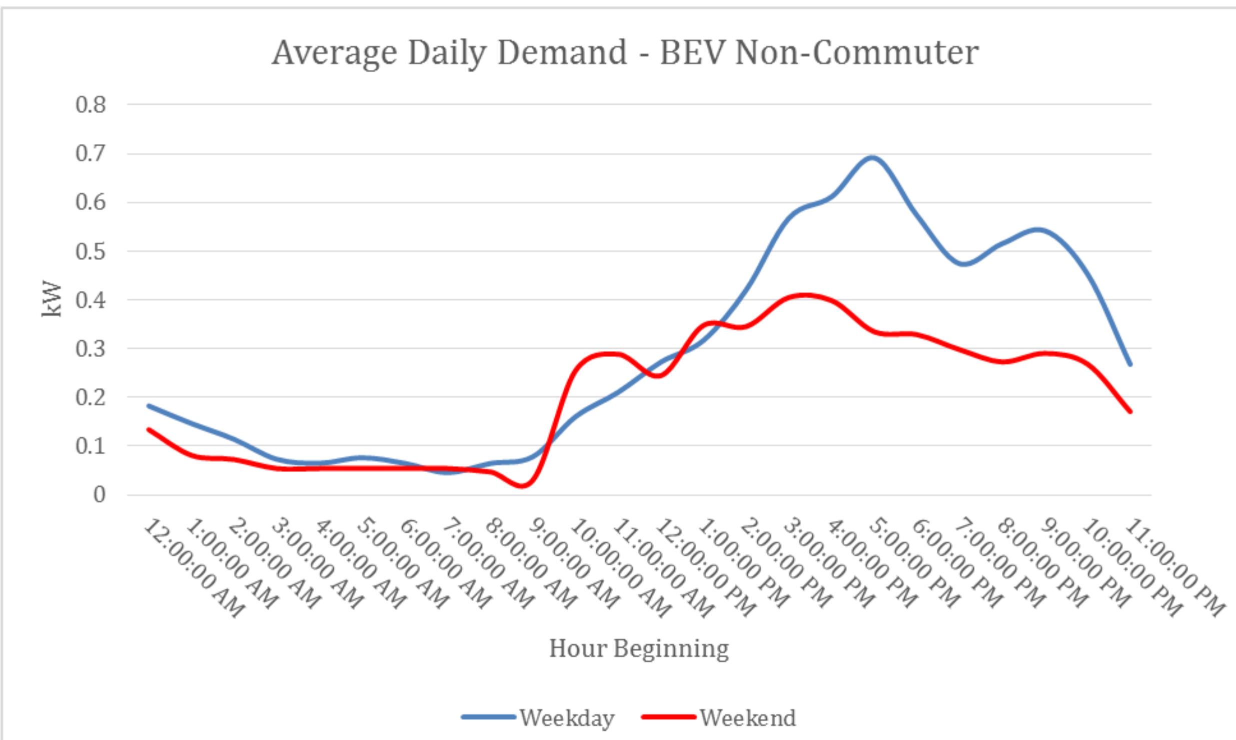


**Chart 15**

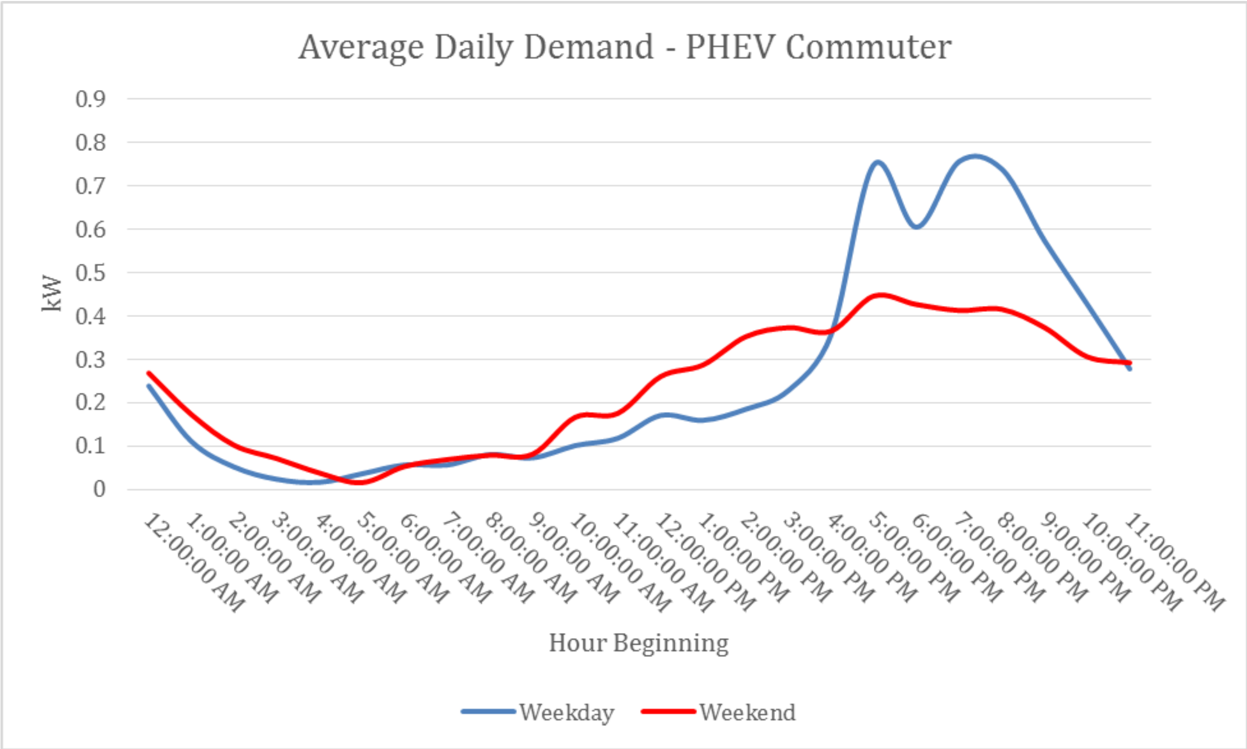
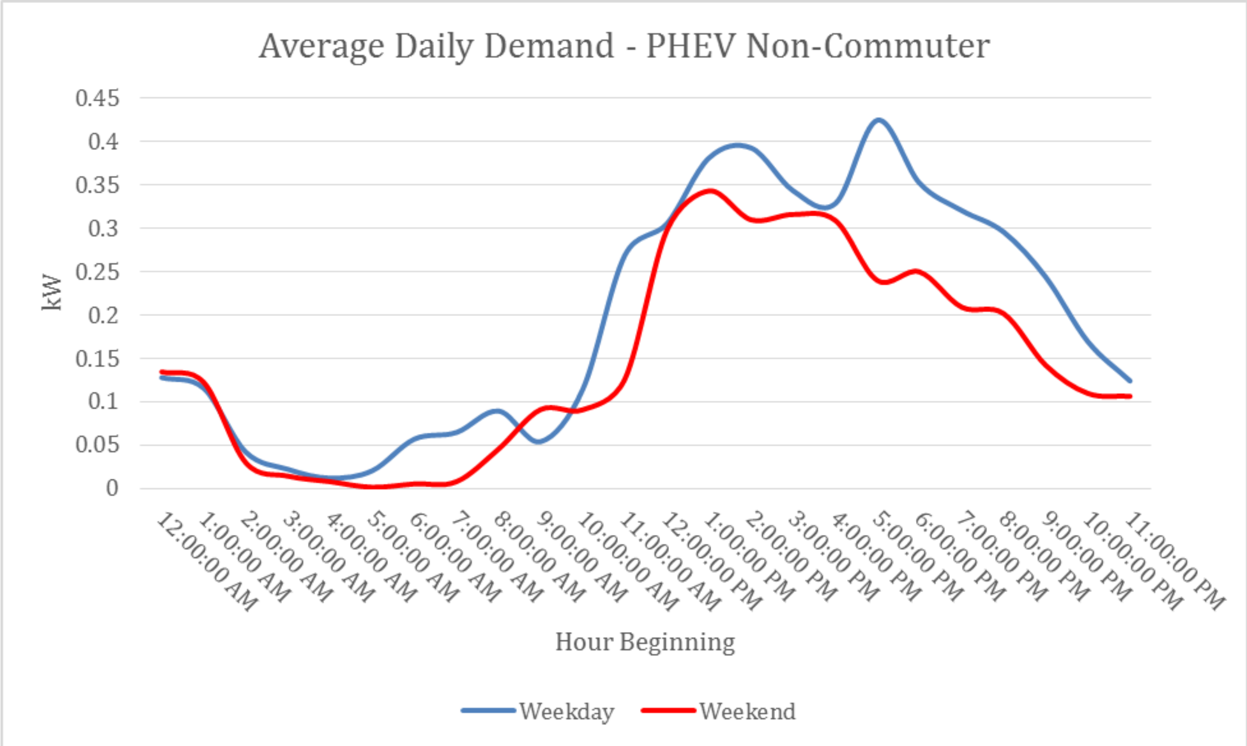


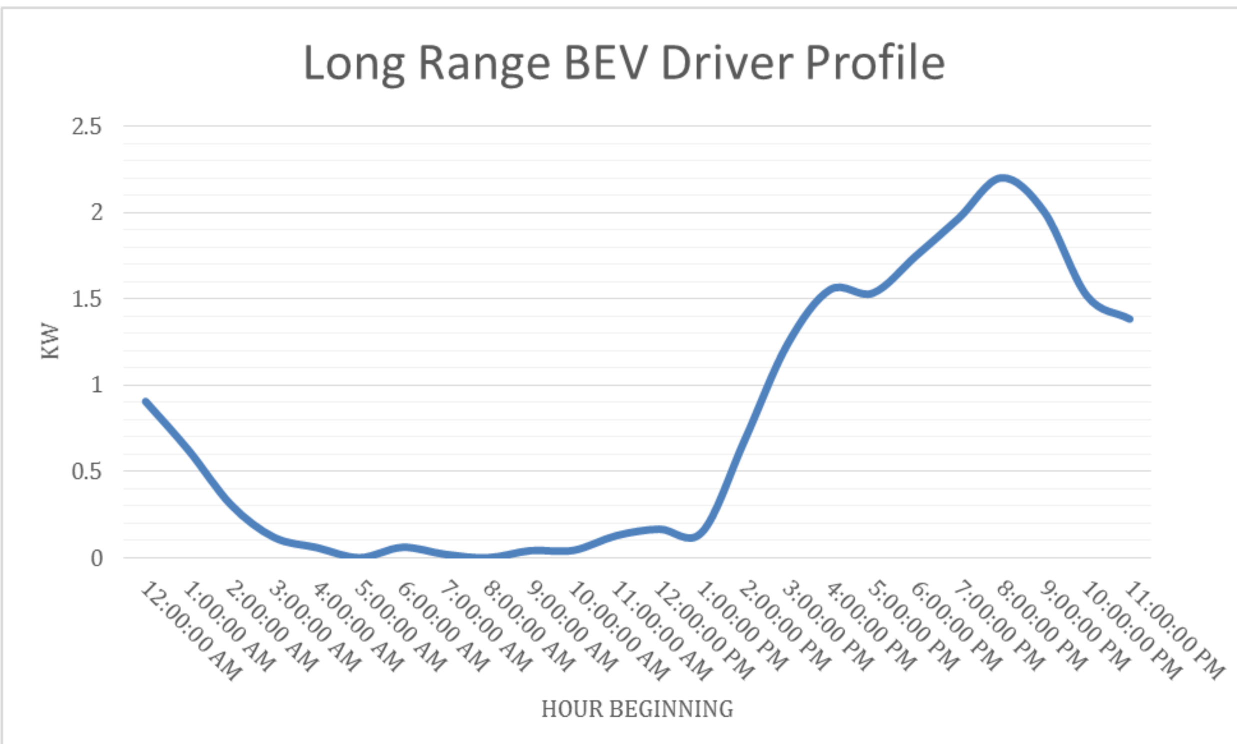

**Chart 16**



As more reasonably priced, long-range BEV's come to market, understanding how they interact with the grid is important. In the long-range BEV profile below, the average daily peak demand is 2.2 kW, much higher than that demonstrated by shorter range BEVs in the program to date. In addition to the high peak power demand, the amount of time spent charging at higher rates is much longer than the average PEV session. As a result of increased session length and power demand, the average energy consumed per session is 30.5 kWh and the average daily energy consumed over the period of this study is 18.4 kWh.

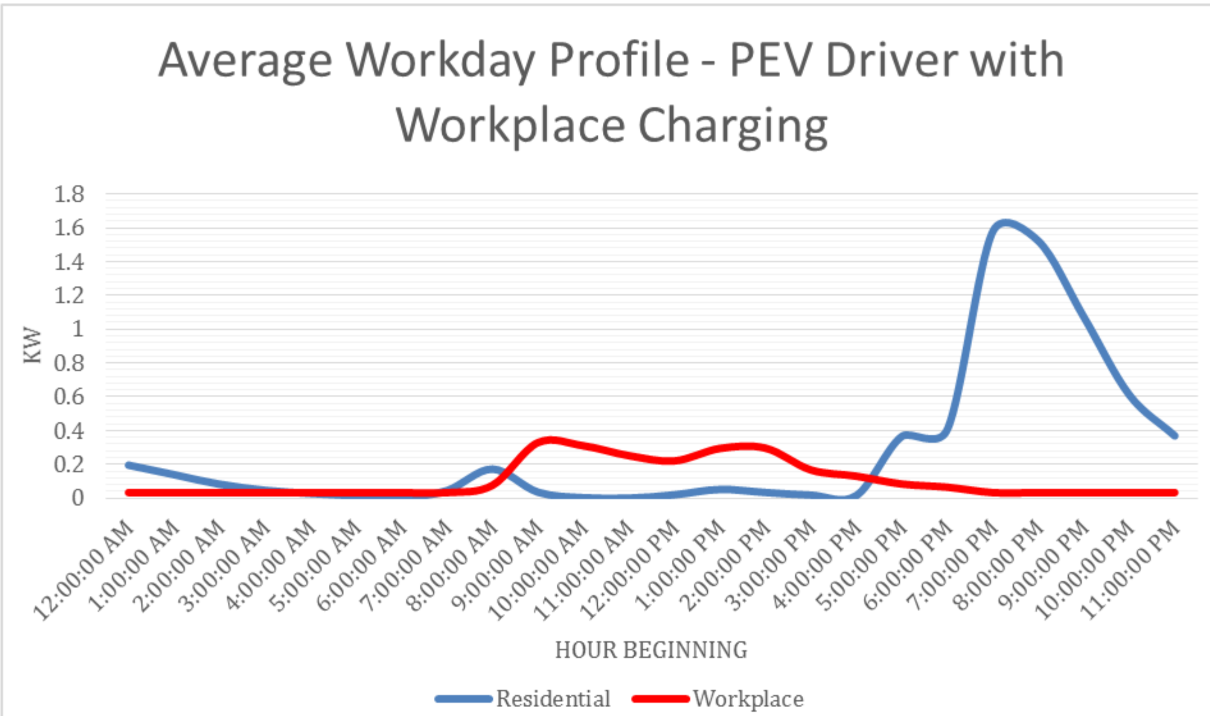
By increasing the availability of workplace charging, daily residential energy consumption would decrease and a portion of overall demand would shift to working hours. This could improve the effectiveness and customer satisfaction of residential load management measures.

**Chart 17**



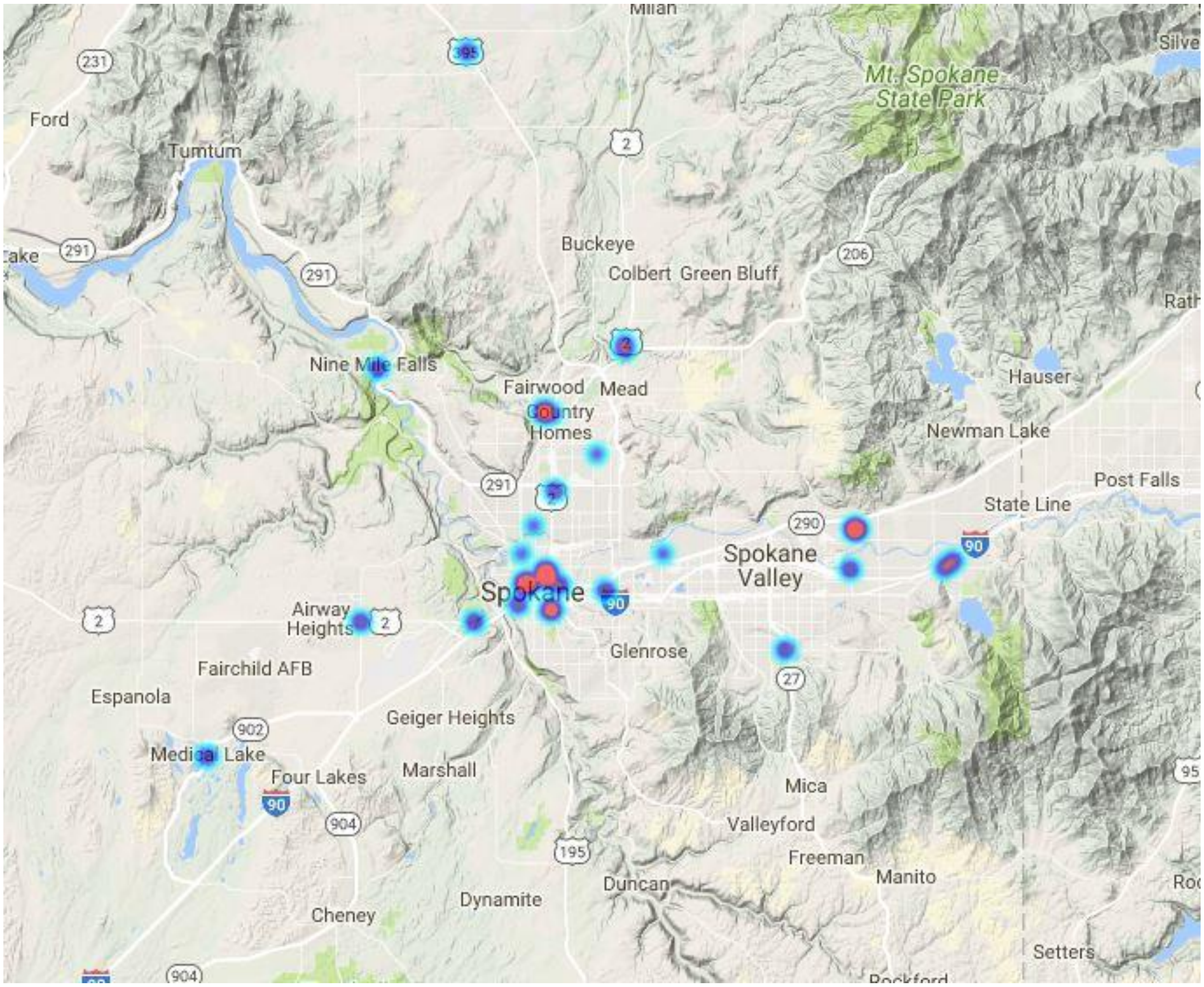
When workplace charging is available, customers are able to offset some of the peak charging demand at home. In the profile in Chart 18 below, the customer receives approximately 30% (2.7 kWh) of their total average workday PEV energy from their workplace EVSE. This effect will be further analyzed and reported as more data is gathered.

**Chart 18**



**Commercial Charging**

<u>**Figure 2 – Commercial Installation "Heatmap"**</u>




After residential EVSE's, workplace EVSE's are the next most frequently used stations by EV drivers and are important both in terms of balancing utility power demand from EV's throughout the day and providing drivers with a vital service. Two workplace sites with different demand profiles are shown below in Charts 19 and 20. The site in Chart 19 experiences a single peak at 9 am, with site demand of 5.5 kW. The site in Chart 20 experiences two peaks of 1.1 kW and 1.3 kW occurring at the start of two different shifts, at 8 am and 3 pm respectively.

**Chart 19**

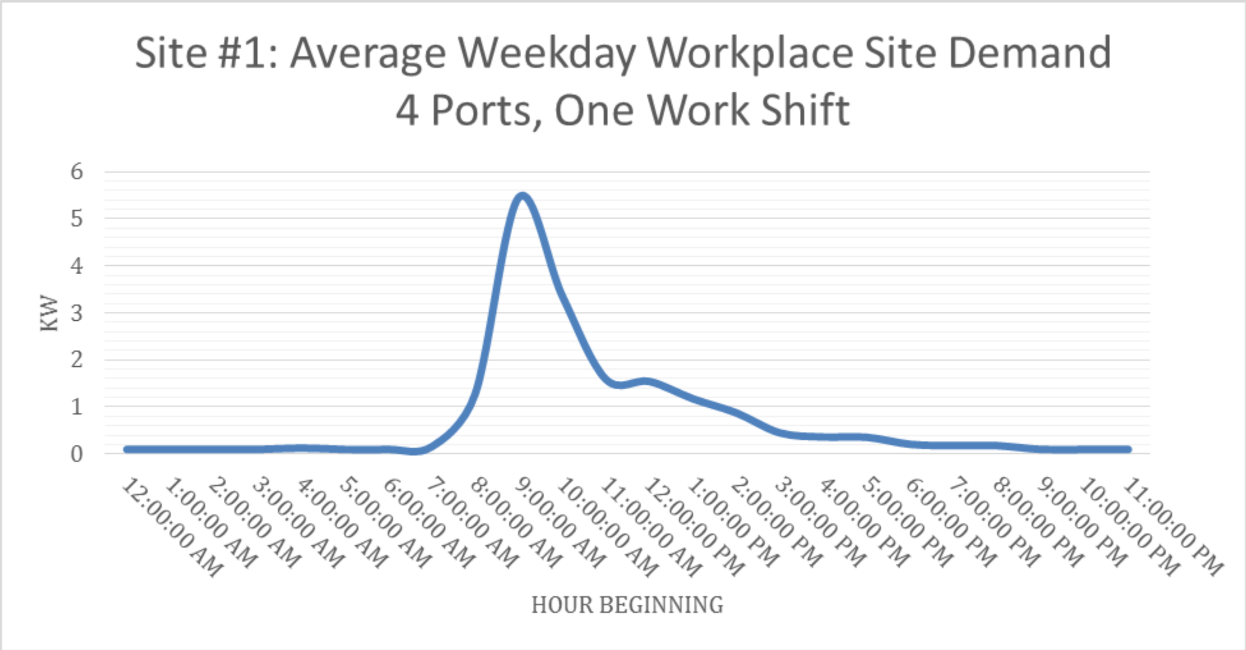
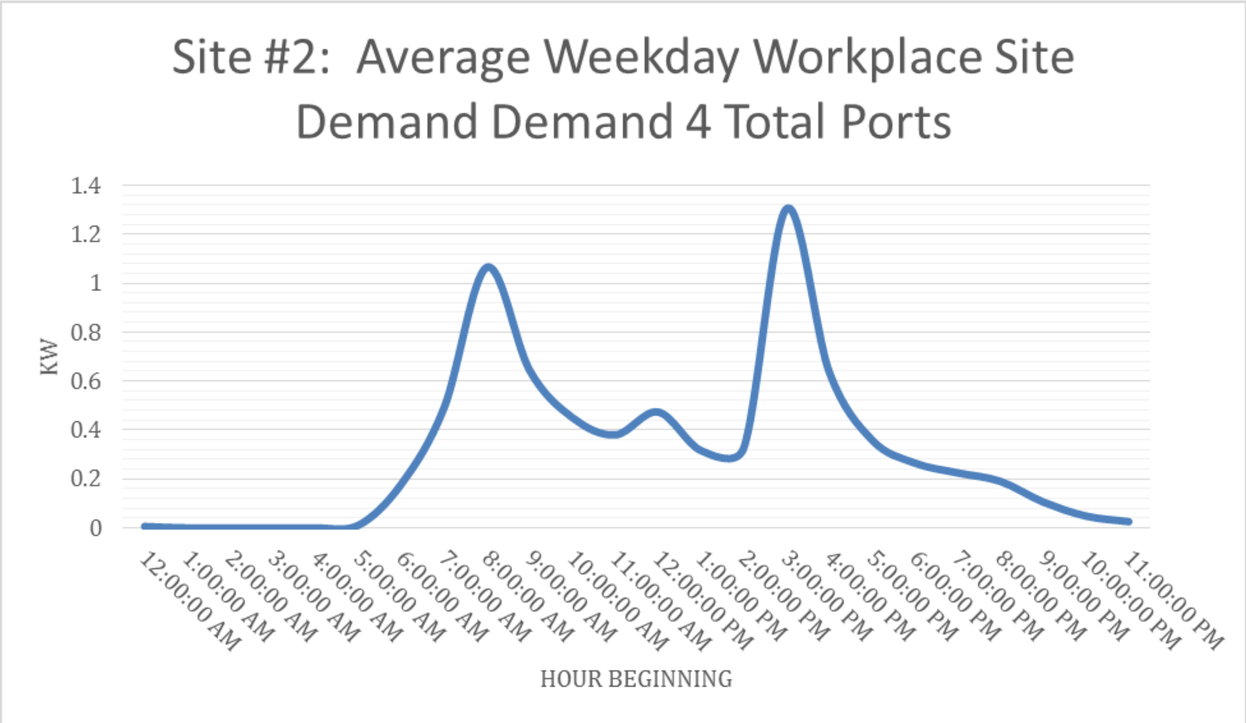



**Chart 20**




The public site profiled in Chart 21 below has average daily peak demand of 0.33 kW. While Level 2 public stations are not used as frequently as home or workplace stations, they are an integral part of the charging mix and provide relief from “range anxiety”. The small sample of these locations and lack of session data warrants further analysis to arrive at more definitive conclusions, which will occur as more location data is collected and analyzed.

**Chart 21**

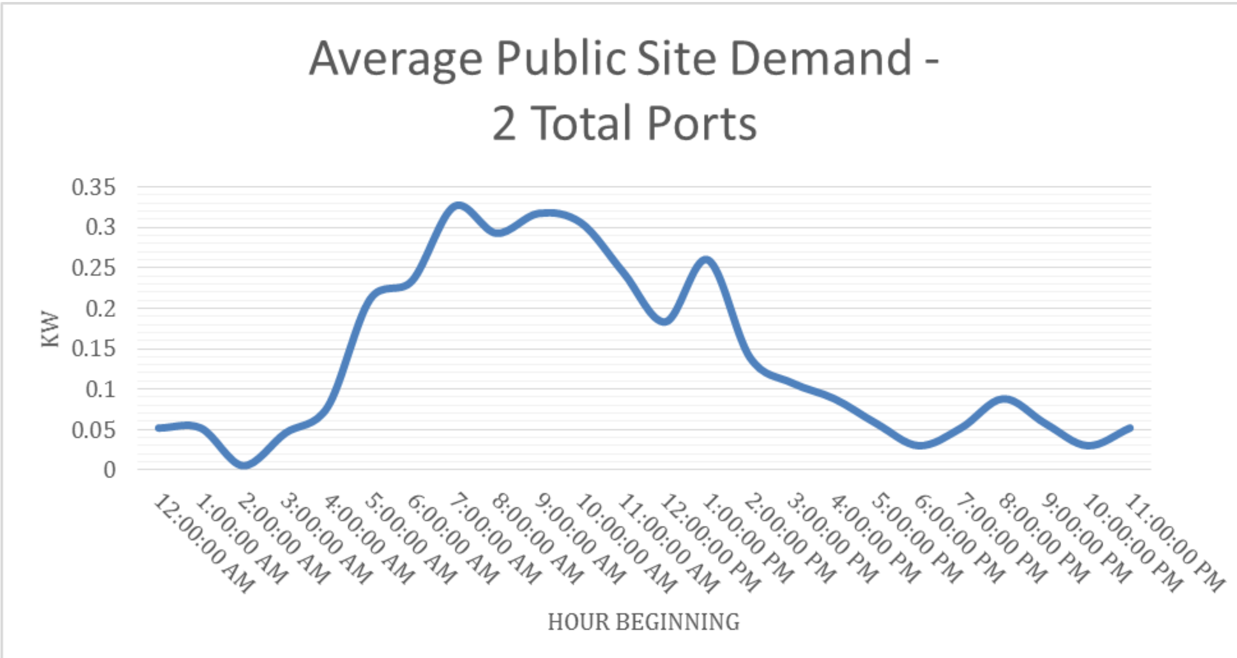
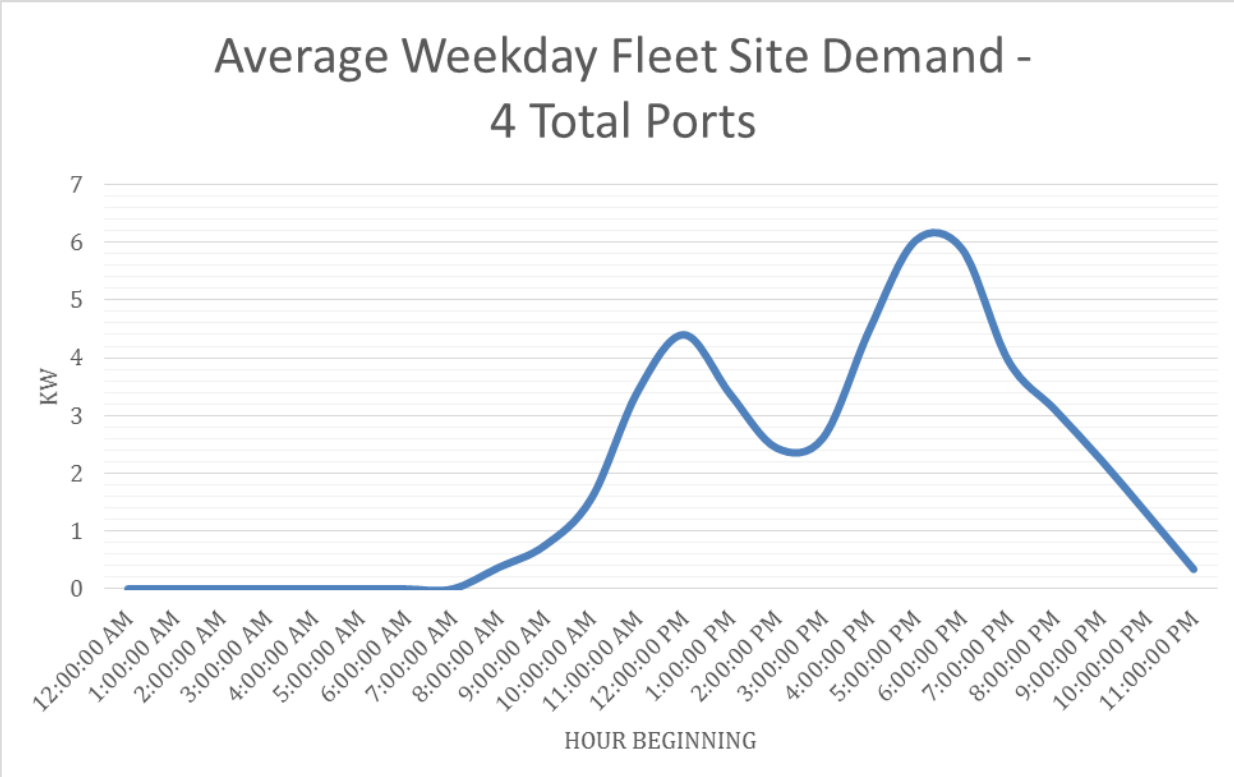



Chart 22 shows a four-port fleet location that has two distinct demand peaks of 4.4 kW and 6 kW at 12 pm and 5 pm respectively.  Note that although this site has four port connections, it is not known how many fleet vehicles are using them currently which will be investigated. The current fleet corresponds to average workday site demand of 46.2 kWh. These peaks in demand make this fleet site a viable candidate for demand response, both during morning and late afternoon peaks.

**Chart 22**




**Demand Response Initiatives (Load Management)**

As residential load management testing uncovered manufacturer-specific technical issues that delayed program-wide implementation, fleet and workplace load management events using a different manufacturer's EVSE have been carried out during both peak daytime and evening hours. Charts 23 and 24 below show sessions where load management was successfully carried out between 9-11 am. During this time, the max charge rate is throttled down 50% to 3.3 kW. Following 11 am the max charge rate of up to 6.6 kW resumes until 100% state-of-charge or disconnection occurs. The same throttling occurs between peak evening hours of 4pm and 10pm. As more sessions with load management are successfully carried out, the Company expects to demonstrate how much peak load may be shifted to off peak hours without using a time of use rate incentive, while still satisfying the customer's need to charge the vehicle. This information may be used to model and predict economic costs and benefits to customers over many years and different sets of assumptions. In the future this may be compared to alternative methods employing time of use rate incentives.

**Chart 23**

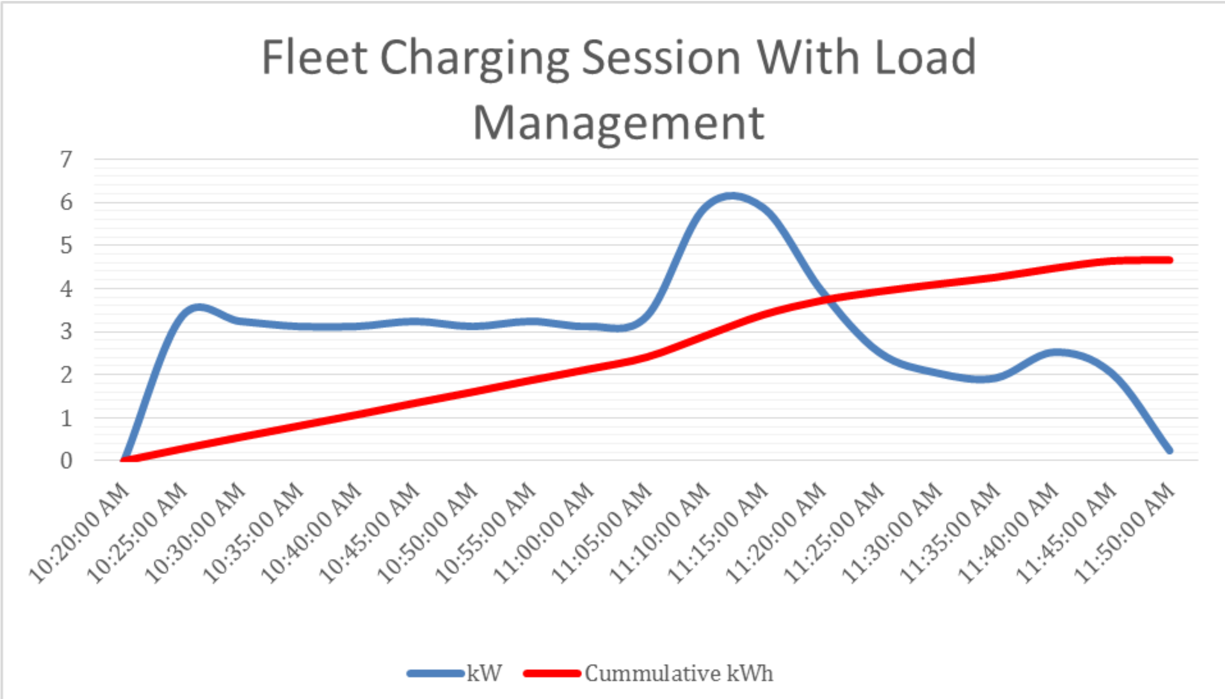
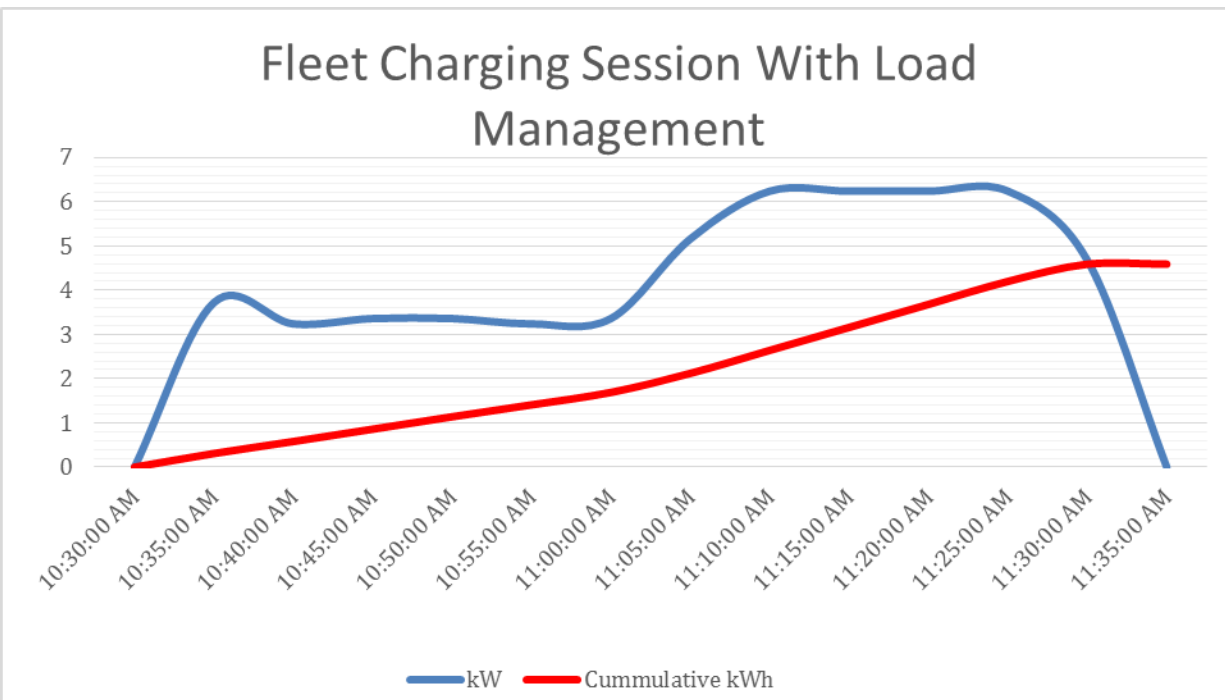



**Chart 24**



**Expenditures and Revenues**

Expenditures through October 17, 2017 totaled $1,278,501. A more detailed breakdown is provided in Attachment A.

Revenues to date are as follows, based on data from Greenlots' SKY network:

**Table No. 12**

| Type | No. of Charging Sessions | kWh Consumed | Avg. kWh Consumed per Session | Rate | Revenue |
|---|---|---|---|---|---|
| Residential AC Level 2 | 15,197 | 96,917 | 6.4 | $0.09134/kWh | $8,852 |
| Commercial AC Level 2 | 2,259 | 19,260 | 8.5 | $0.1162/kWh | $2,238 |
| DC Fast Charging | 69 | 768 | 11.1 | $0.30/minute | $378 |
| **Total** | 17,525 | 116,945 | - | - | $11,468 |

Please direct any questions regarding this report to Rendall Farley at 509-495-2823, rendall.farley@avistacorp.com, or Shawn Bonfield at 509-495-2782, shawn.bonfield@avistacorp.com.

Sincerely,

/s/Linda Gervais

Sr. Manager, Regulatory Policy
Avista Utilities

# Attachment A
# Avista EVSE Pilot Program Expenditures through October 17, 2017

Expenditures include all costs for both completed EVSE installations and installations in progress, as well as program administrative costs.

| Expenditure Category / Type | | Capital | O&M | Total |
|---|---|---|---|---|
| **Residential Level 2 EVSE** | Design & Installation | $114,398 | - | **$114,398** |
| | Hardware | $160,974 | - | **$160,974** |
| | Premises Wiring Reimbursements | - | $58,410 | **$58,410** |
| | **Total** | **$275,372** | **$58,410** | **$333,782** |
| **Workplace-Fleet-MUD Level 2 EVSE** | Design & Installation | $116,428 | - | **$116,428** |
| | Hardware | $169,236 | - | **$169,236** |
| | Premises Wiring Reimbursements | - | $66,092 | **$66,092** |
| | **Total** | **$285,665** | **$66,092** | **$351,757** |
| **Public Level 2 EVSE** | Design & Installation | $62,084 | - | **$62,084** |
| | Hardware | $35,321 | - | **$35,321** |
| | Premises Wiring Reimbursements | - | $11,774 | **$11,774** |
| | **Total** | **$97,405** | **$11,774** | **$109,179** |
| **DC Fast Charging Stations** | Design & Installation | $147,021 | - | **$147,021** |
| | Hardware | $102,060 | | **$102,060** |
| | Maintenance & Repairs | | $43 | **$43** |
| | Meter Billing | | $1,015 | **$1,015** |
| | **Total** | **$249,080** | **$1,058** | **$250,138** |
| **Other Project Expenses** | Communication & Advertising | - | $14,635 | **$14,635** |
| | EVSE Network & Data Management | $182,298 | - | **$182,298** |
| | Misc General Expenses/Incentives | - | $3,545 | **$3,545** |
| | Project Management/A&G Salaries | - | $33,167 | **$33,167** |
| | **Total** | **$182,298** | **$51,347** | **$233,645** |
| **Total** | | **$1,089,820** | **$188,681** | **$1,278,501** |