DAS

DEPARTMENT OF ADMINISTRATIVE SERVICES

Fleet and Parking Services

Biennial Report Required by HB 4022 from 2018 Legislative Session

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Executive Summary

State Fleet Reporting

As required by HB 4022, enacting as Chapter 90 in Oregon Laws 2018, the Department of Administrative Services Fleet has gathered data from the state's fleets to report on the following areas:

1. List the number of devices or facilities for delivering electricity to the public for electric motor vehicles that state agencies installed or had installed in the previous two years and the total number of installations that have occurred since the effective date of this 2018 Act
2. List the number of devices or facilities that state agencies have planned for installation in the next two years
3. List the cost to the state agency of each installation and calculate an average cost for installations that state agencies have completed or had completed; and an overall trend line for costs that state agencies have incurred
4. Specify the current uniform price that each state agency charges under subsection of this section and any changes in the uniform price that occurred in the previous two years
5. Specify for each state agency an average rate of utilization for all of the devices or facilities located on premises that the state agency owns or controls, calculated as the ratio of the time each day during which a person is actually using the devices or facilities and the time each day in which the devices and facilities are available for use
6. Specify whether and to what extent using electric motor vehicles and devices or facilities located on premises that state agencies own or control to provide electricity for state agency electric motor vehicles results in a cost savings to the state agency in comparison to using motor vehicles that do not use electricity for propulsion.

DAS collected data from agencies under its authority via ORS 283. Almost all agencies had little or no data to report. This is because of the developing nature of the EV market, the lack of opportunities to install infrastructure, and for some, the limited types of vehicles available with a sufficient usage range that fit their state business needs.

DAS is has engaged Fluent Engineering to develop a plan for EV charging infrastructure for DAS Capitol Mall facilities and the Salem Motor Pool. This plan will not be final until at least the end of February 2019. The firm is also examining other state's policies on the ratio of EV chargers in relation to number of employees and demographics to guide DAS and other agencies on what level of infrastructure to budget for and install at state owned facilities. This will allow DAS to develop the rule for how, where, and in what quantity state agencies should install EV chargers.

In addition , this work is vital to implement Executive Order 17-21 issued by Governor Brown to advance the adoption of electric vehicles in the public and private sector.

Because of the ever changing nature of the EV market, the information contained in this report is the best that could be gathered at this time.

Reporting Criteria and Data:

For the data below, please note that for EV chargers, each "unit" below refers to a cable or port capable of rendering a charging session. A double headed charging device with two cables is counted as two units.

DAS queried the agencies that have fleet and who may have facilities the own and manage. In addition, agencies that rent light fleet vehicles from DAS but have their own facilities were asked to respond.

The table below shows the agencies with their own fleets.

State Agencies With Fleets	
Agency	**Authority**
DAS	Explicit
Agriculture	General
Education	General
Forestry	Explicit
Liquor Control Commission	Delegated
Lottery	Exempt
Military	General
State Police	Explicit
Transportation	General
OUS	Exempt

"Explicit" authority means the agency's governing statute has specific language granting them authority to own and operate vehicles

These agencies are still subject to DAS authority and policies on how vehicles are to be managed

"General" authority means the agency statutes grant authority to own equipment and procure goods and services to carry out the work

These agencies are subject to DAS authority and policies on how vehicles are to be managed

"Delegated" means DAS has granted the agency the authority to operate their own fleet

These agencies are subject to DAS authority and policies on how vehicles are to be managed

"Exempt" means the agency's authorizing statute has a specific exemption from ORS 283

These agencies are not subject to DAS policies

1. **List the number of devices or facilities for delivering electricity to the public for electric motor vehicles that state agencies installed or had installed in the previous two years and the total number of installations that have occurred since the effective date of this 2018 Act**

Total number of EV charging units installed since June 2, 2018		
Agency	Answer	Comments
ODOT	1	Added a second unit to Building B
DAS/Lottery	18	Installed stations at Airport Rd Lottery/DAS parking lot project

Total number of EV charging units installed in the previous two years; December 1, 2016 through November 30, 2018		
Agency	Answer	Comments
ODOT	10	Upgraded original Blink charging stations to SemaConnect.
DAS/Lottery	18	Installed stations at Airport Rd Lottery/DAS parking lot project
DOC	4	

2. **List the number of devices or facilities that state agencies have planned for installation in the next two years**

Number of devices or facilities that state agencies have planned for installation in the next two years		
Agency	Answer	Comments
ODOT	10	Possible more employee EV and state vehicle charging
DAS	Unknown, more than 20	Engineering in progress for Capitol Mall and Salem Motor Pool. Unknown how many will ultimately be installed within the next two years.
Oregon State Police	1 to 2	In conjunction with other improvement projects
OLCC	4 to 6	We are in the early stages of this process and don't have any hard numbers yet. We don't currently have any electric vehicles in our fleet, but are working on changing that.
DOC	4	
Forestry	2 to 4	Currently it is anticipated that these will serve staff/public private vehicles (non-subsidized).
Lottery	2	For Lottery owned state vehicles only

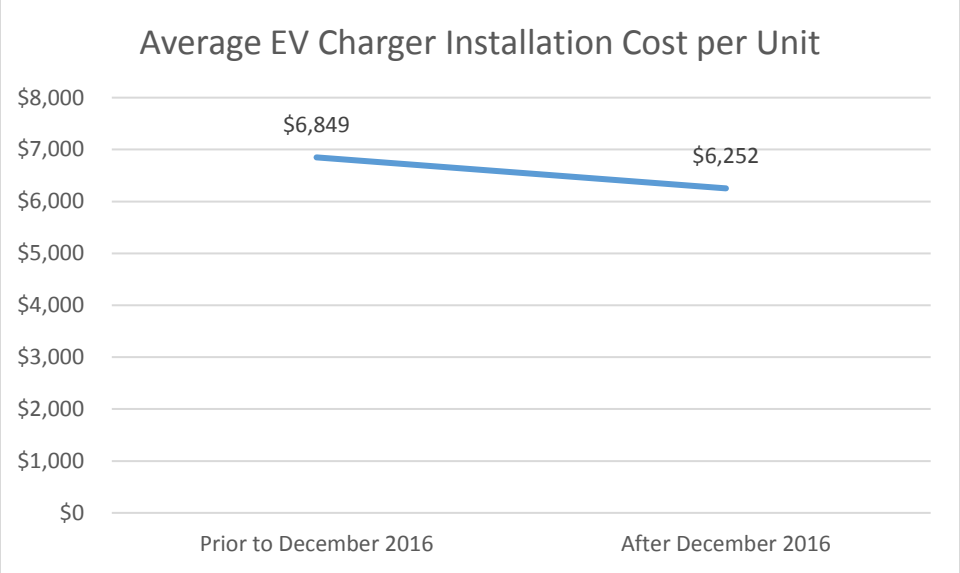
3. **List the cost to the state agency of each installation and calculate an average cost for installations that state agencies have completed or had completed; and an overall trend line for costs that state agencies have incurred**

   While the costs are captured for the following installations, one aspect of the data is that installations cost vary widely based on the complexity of the units (whether they are networked or not) and the site preparation needed along with any electrical system upgrades. For example, The DAS/lottery project involved extensive site work combined with networked machines from ChargePoint. ODOT replaced older machines with new ones using existing electrical

infrastructure. There is a large cost differential between the two projects per unit amounts for comparable functionality.

Cost of state agency installations			
Agency	Units installed	Cost	
ODOT	10	$7,799	
DAS	18	$167,260	
Total units	28	Average cost/unit	$6,252

Based on installation costs from before the required reporting period and the data above, the average cost per charger unit is declining slightly.



4. **Specify the current uniform price that each state agency charges and any changes in the uniform price that occurred in the previous two years**

Currently most Employee charging is Level 1 or 110V outlets. For this, agencies are following pricing guidelines in Statewide Fleet Management Policy 107-011-040 where a monthly fee of $20 or $10 is collected via payroll deduction. The price difference is based on full or half day charging or an older vehicle with a smaller battery capacity. There has been no change in this pricing in the last two years.

DAS has the only state agency public charge, which is located at the 550 Capitol St building. The pricing there is $2.82 per hour and included the cost for the parking space. The hourly fee equates to $5.98 per 14 kW received. The Marion County average for the same amount of kW is $5.92 so the DAS price is within 110% of the county average as required. The price was changed on 2/05/18 to the current $2.82 per hour from $1.40 per hour after DAS had collected enough usage

data to determine that the price needed to increase to better recover the expense of installing and operating the chargers.

5. **Specify for each state agency an average rate of utilization for all of the devices or facilities located on premises that the state agency owns or controls, calculated as the ratio of the time each day during which a person is actually using the devices or facilities and the time each day in which the devices and facilities are available for use**

   For this reporting measure, the only devices able to capture the information are fully networked systems. Again, the DAS public charger at 550 Capitol is the only one set up to capture this level of detail. The charger for the ODOE state vehicles at the same location can also capture the data, however, this measure is interpreted to pertain only to chargers provided for public or employee use. State vehicles will come and go throughout the day as need be for state business and including that data will skew the perceived intent of the measure, which is interpreted as defining the rate of utilization of EV charging services being offered by the state.

   In addition, the following assumption are included in calculating the ratio:
   - Available days used for calculation are state workdays
   - Available hours used for calculation are from 7:30 am to 5:30 pm on state workdays

   For calendar year 2018, the charger was used 23% of the hours it was available for use available.

   One factor that severely limits the utilization for this charger is that one of the parking spaces for charging is ADA accessible only. During design of the building renovations, it was felt to offer charging in an accessible manner was important. However, that port is has only been use 14% of the time and, from observation, by non-ADA users chancing a ticket to access the charger. DAS will be altering the parking layout to have both ports available to all potential users, which will increase utilization significantly.

6. **Specify whether and to what extent using electric motor vehicles and devices or facilities located on premises that state agencies own or control to provide electricity for state agency electric motor vehicles results in a cost savings to the state agency in comparison to using motor vehicles that do not use electricity for propulsion.**

   The Return on Investment for electric vehicles is a complex question and dependent on many factors.
   a. Cost differential between electric motor vehicles (EV) and internal combustion engine (ICE) vehicles: As prices increase for ICE cars and decrease for EV's, this factor becomes less impactful to the ROI in the upcoming years while expanding the useful range of the vehicles. DAS data shows a $5,000 drop in price from the 2012 Nissan Leaf to the 2016 model while the travel range of the vehicles doubled.
   b. Gasoline versus electricity prices: This factor is highly impactful to the ROI. The price of gasoline has been relatively low for several years but should it rise toward the $3.50 per gallon range or higher, the ROI for the EV's tips significantly toward the electric side of the equation.

c. Maintenance cost: EV's have not been in service very long but industry gathered data indicates a lower life cycle maintenance cost versus ICE cars; similar to and possibly lower than hybrid vehicles.
d. Utilization: Like hybrid vehicles and Plug-in Hybrid Vehicles (PHEV's), any ROI partially depends on the higher cost but more efficient vehicles traveling minimum miles per month.

Based on the factors above, a 2018 Nissan Leaf driving 630 miles per month with an average gas price of $2.53 (that annually increases with inflation) has a positive 12-year lifecycle ROI and is less expensive to operate than an ICE car. However, a 2018 Chevy Bolt driving the same amount of miles per month has a negative ROI due to its higher purchase cost. The Chevy Bolt would need to drive 1,162 miles per month to achieve a favorable ROI.

Currently, only two of the thirteen DAS owned EV's, which are stationed with Department of Corrections and DAS Parking Enforcement, are traveling enough miles to realize a lifecycle cost savings. However, with increased charging infrastructure, lowering vehicles prices, and likely increasing gas prices, the vehicles will be able to achieve a positive ROI in the near future. Agencies are also looking for opportunities to place vehicles in favorable utilization locations and educate staff about driving the EV's to increase miles driven.

In addition, several vehicles are used on a daily basis but just do not travel many miles. Despite the overall cost ROI being negative, for these vehicles there is still a savings on greenhouse gas emissions. For Example, DEQ uses a Chevy Bolt for agency business travel that averages 591 miles per month. Over a 12-year lifecycle, this vehicle will reduce emission by an estimated 56,741 pounds of CO2e versus using an ICE car. This will increase as the vehicle gets more use and the ROI will edge toward the positive.

Conclusion:

Although the current ROI on the very small number of state EV's in service (19) is negative, this will change over the next five years as EV vehicle prices decrease while ICE vehicle prices rise and gasoline prices are projected to increase. The state needs to continue investing in EV's and infrastructure at a reasonable rate to ensure we understand the changing overall operational expenses, vehicle capabilities, and usage opportunities. This will allow agencies to make informed decisions on the investments needed to best meet Governor Brown's Zero Emission Vehicle policy goals for state fleets in Executive Order 17-2, Governor Brown's Oregon Climate Agenda Strategy 2 – Hasten the pace of electrification of vehicles in Oregon by expanding the electric vehicle infrastructure and incentives to support 50,0000 electric vehicles on Oregon roads by 2020, and the multiple state goals outlined in statute for alternative fuel use and reduction of vehicle emissions.