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MD commercial EV lacks data and EV inventory

Additional submitted attachment is included below.

Dated: April 30, 2017

BEFORE THE CALIFORNIA ENERGY COMMISSIONER ON INTERGRATED RESOURCE PLANS FOR THE MEDIUM AND HEAVY DUTY VEHICLE SECTOR

SAN DIEGO AIRPORT PARKING COMPANY'S COMMENTS

I. Introduction

The San Diego Airport Parking Company [SDAP] comments to the California Energy Commissioner (CEC) on the Integrated Resource Plans for the Medium and Heavy Duty Vehicle Sector workshop held on April 27, 2017. SDAP is San Diego's only Electric Vehicle (EV) commercial operator to date being served by SDGE. Since 1991, SDAP has been as a small commercial transportation business operator with a small commercial tariff schedule and for over 25 years and has never used more than 15 kW of demand on the property at one time. SDAP deployed 3 MD EV's in 2015 starting in May which immediately after plugging in one MD EV bus triggered a use that is over the small commercial kW limit and rule of a maximum of 20 kW. SDAP is very supportive for commercial operator fleets to adopt and transition into EV's. SDAP is concerned that there are not more commercial fleet operators adopting and still after two full years, SDAP has been the only EV fleet in the SDGE territory. For each one vehicle in the SDAP fleet this is the equivalent of 5 Chevy Volt EV passenger vehicles in terms of annual vehicle miles traveled (VMT); however, due to the short duty cycle in our commercial use, the amount of emissions --- carbon intensity (CI) and greenhouse gas (GHG) results in the equivalent of more than 5 Chevy Volt vehicles and for this reason SDAP is supportive for more EV demonstration projects in order to gather more data to understand the EV technology for commercial use. SDAP hereby submits its comments for consideration and to help educate parties on adoption of electrification transportation use when used in commercial fleets. The following information should be evaluated in adoption for EV fleet procurement when considering best cost and best benefits: fleet age, fleet efficiency, fleet complexities, issues, or barriers that need to be at the forefront to determine the best opportunities as EV's can greatly impact the investment results for transportation operators to adopt and in order to help accelerate electrification understanding the opportunity of the fleets that are best positioned to adopt will establish high utilization resulting in more benefits to managing the GHG goals for air quality improvement from transportation.

II. Issues:

a. Procurement less than 3 years away to hit goals

The volume for EV acquisitions is off the target to hit the policy goals. Commercial vehicles are a good source of opportunity for EV adoption if the right class of vehicle as well as duty cycle is targeted. It is imperative to evaluate the transportation procurement process in advance and to understand the lack of available EV inventory and/or the lack of advanced technology available in the MD inventory. These facts will help to determine how to successfully forecast a procurement plan with specific fleets and what fleets can progress and benefit the quickest. Our policy procurement goals are the following and thereby we must acknowledge we are less than 3 years away from year 2020.

California DGS – 10 percent of LD fleet purchases to be zero-emission by 2015 and at least 25 percent by 2020.

Federal EO 13693 – 20 percent of new acquisitions by 2020 and 50 percent by 2025.

Local Climate Action Plans – 50-100 percent of new acquisitions by 2020 or 2025

b. Electrical Supply Available on Property

An Electrical System Evaluation is required in order to know how much power supply is needed for your fleet and you can assume if you run a fleet of more than one commercial vehicle or you need 5+ chargers for your fleet, this will likely require upgrading which can mean a very expensive facilities upgrade, and project delay. The following Electrical Supply Assessment needs to be considered:

– Proximity of electrical power supply to desired charging location

– Power capacity

– Metering

– Tariff Schedule for EV charging

Key Questions that impact how much Electrical Supply you need

• How many available circuit breaker slots are on the electrical panel?

• How much available capacity (amps) is on the electrical panel?

• How many vehicles can I charge with my existing electrical service?

• When do I need to upgrade my electrical service or panel?

• What duration and time of day will charging occur? (Equates into the demand and energy charges in your current tariff schedule).

• Are there other options for charging my vehicles?

Answers required:

• Power available on property to charge vehicles without an electrical upgrade.

• Time and Budget for Electrical Upgrades.

• Estimated cost to charge (time of use rates and demand charges).

• Cost per mile for Kilowatt hours compared to fossil fuel vehicles.

Electrical Power Challenges from Standard Level 2 Chargers:

The current Standard Level 2 Charger requires 40 amp circuits per charger:

• 5 chargers would require 200 amps of *additional* service, which highly likely exceeds the service available at the average parking location.

c. Charging Level capacity: Single Phase VS 3 Phase Fast Charging

Commercial EV technology is not as mature as it is in Light Duty (LD) passenger's cars for optimal use. LD is primarily single phase charging known as Level 1 or Level 2 charging which works for the end users that average 40 miles per day. Early EV commercial adopters understand today from their experiences as does SDAP ---that fast charging is required for successful EV fleet commercial use. This can be widely debated as many believe that if they understand an EV from use of a light duty passenger car --- all you have to do is plug it in at night --- that is not the case when your use is beyond the range of the vehicle – the typical vehicle miles traveled for commercial use make the commercial EV use completely a different use than in LD and until you have actually operated an EV fleet, it is not easy to understand how hard the transition is and how complex it is from fossil fuel vehicles which have 3 times or more the amount of range as that of an EV vehicle. Commercial operators are pushing the boundaries of the existing EV technology mainly due to the limited range of an EV vehicle as it is much shorter. Commercial fleets will typically travel more miles daily than the range of an EV vehicle.

III. Commercial Sector to Target to get Immediate Effectiveness to Reduce Emissions and GHG.

a. Cost of a Mile needs to be a benefit.

The programs have the idea for rapid deployment; however, there are more considerations that are necessary to understand and the following comments will address several of these: The Transportation Energy Use and Environmental Impacts have resulted in increased changes since 2012 per the EPA:

> Home » BTS Publications » Transportation Statistics Annual Report » 2016 » Chapter 7
>
> For every one gallon of fuel burned the CI is increased affecting our air quality.
> The transportation sector GHG emissions peaked in 2005, but saw an overall downward trend with a low point in 2012 due to increased use of alternative fuels and
> Improved fuel economy tied to increased fuel prices; however, since then GHG emissions have begun to increase due to lower fuel prices resulting in increases in both miles traveled and use of the larger SUVs and light trucks [USEPA 2016a].

What is critical to point out in this result is that the cost of and benefit of a mile will affect immediate EV adoption therefore, in order to compare the price of a kWh to the MPG, the cost of a kWh mile needs to be a benefit. This fact needs to be examined so that this opportunity is targeted just as in the case of how SB350 is meant to drive accelerated adoption. We know that demand prices are a barrier, the lack of available power on a property is typically not adequate for EV fleet use, and the limited short range of an EV vehicle is a barrier for many fleet routes. These barriers are the objective of how the IOU's and POU's can spark adoption and to strive for fleets to have a benefit. We have an opportunity to determine the best use case, the best emissions reduction opportunity, the best route and duty cycle for EV technology and the best vocation for high utilization. The average annual miles traveled and the energy efficiency rate of a gallon of gas or a kWh in the vehicle needs to drive to a savings when displacing a conventional commercial vehicle to EV's. However, at the moment, there is no standard for the efficiency of an EV kilowatt hour mile and thereby a standard needs to be available and established to manage the future when comparing to the Fuel Regulation Standards that continue to improve over time.

How much tailpipe carbon dioxide (CO2) is created from burning one gallon of fuel?

> CO2 Emissions from a gallon of gasoline: 8,887 grams CO2/ gallon1
> CO2 Emissions from a gallon of diesel: 10,180 grams CO2/ gallon2
>
> *(EPA average carbon content values to estimate CO_2 emissions)*

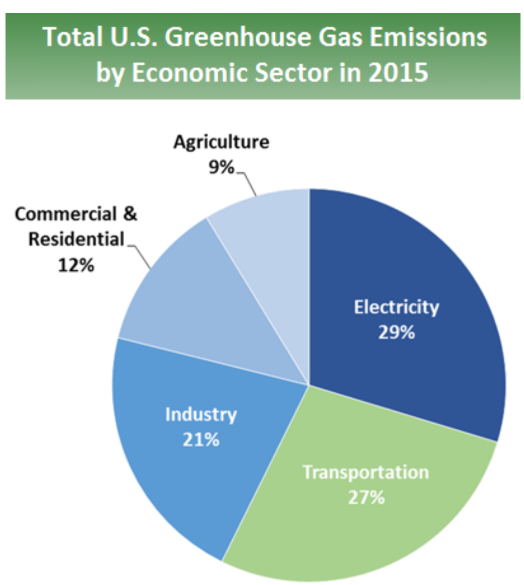
The Commissioner requested this workshop to discuss planning to support commercial adoption for the obvious reasons, the more VMT the more magnified the impact for a savings or cost per mile, thereby prioritizing commercial vehicles based on some of these facts will produce the best benefit and the most data in the shortest period of time. SDAP wants to point out the obstacles that should be well understood as transportation takes on many forms of vehicles sizes, uses, range, age and cost and therefore, there are current limitations on what is a good use for EV technology for the various commercial fleets as there are clear winners and losers that could likely adopt immediately. A winner is a short duty cycle operator with a route that is short and close to its charging infrastructure, has high daily VMT, and a vocation that reduces vehicles miles traveled by others, EV technology that is a compliment to using other standard EVSE charging at 3 phase (maximum of 50 kW) and a GVW class with vehicle model type that is popular, a vehicle model that will transfer into multiple vocations and a model that has high volume sales, and a vehicle class that represents a positive result as an EV vehicle whereby when measuring its Energy Efficiency Rate (EER) as an EV and when compared to its current counterpart in fossil fuels it provides a good opportunity and lastly, turnover of a fleet to newer vehicles will repeat more often with high VMT and thereby the age of the fleet can be 2 to 6 years old or in some other fleets it can be much higher at 12 to 20 years old.

b. Age of Fleet/Vehicles.

For example, there is a vehicle life age gap within the various classes of vehicles that corresponds to the Vocation, VMT, and Gross Vehicle Weight (GVW). Typically, the standard age life of a vehicle can be categorized by GVW: the Light Duty vehicles (LD), the Medium Duty vehicles (MD), and the Heavy Duty vehicles (HD) each have established a different average age of vehicle life. The LD vehicle (passenger vehicles) average age is 11.4 years. (*https://www.statista.com/statistics/.../average-age-of-passenger-cars-in-the-united-states/*).

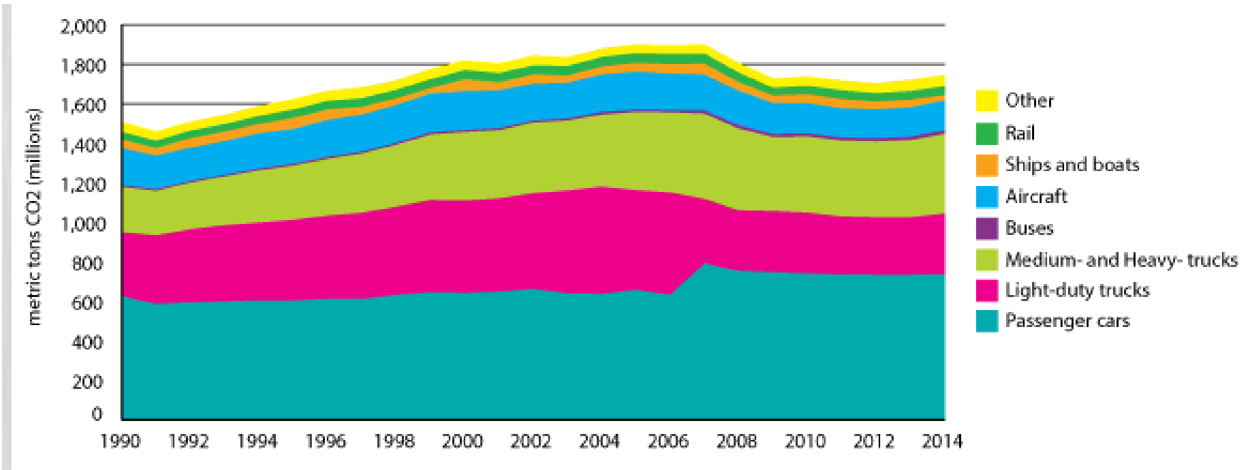
A HD Truck and Bus has an average age of 12 to 20 years plus the FTA funded vehicles are required to be kept for a minimum of 12 years, the MD truck or shuttle van is 2 to 12 years. A shorter life is common in the MD vehicles as high VMT and shorter duty cycles promote quicker fleet turn over and replacement to new vehicles due to the increased wear and tear from high miles plus the long hours from vehicle idling compounds the wear and tear. This one element "AGE of Vehicle" should be closely examined as this will provide a great opportunity that can predict which fleets to best target for EV adoption within the shortest period of time. Furthermore, we can gather the most amount of data to quickly learn the most in the shortest period of time from specifically the vocation that would be a good winner for the EV technology and within a one year period of time from a demonstration project. A suggestion that SDAP makes is to further recommend the airport ground transportation fleet operators that are called the Ground Transportation (GT) fleets. These are private transportation entities that operate under the Authority of the Airport whereby the fleet is primarily serving the Airport customers by a roadway permit that approves its use as a GT operator for that specific airport, these transportation fleets are not airport owned fleets, as these are private fleet operations and vehicles that are authorized through the Airports. This is very similar to the Airlines at an airport; the airplanes that participate at an airport are owned by other private entities. Specifically how SDAP summarizes its recommendations is based on the foregoing and its experience in this field since 1991. The Airport GT Shuttle operators average 50,000 to 80,000 miles per year on each vehicle resulting in high GHG inventories due to very high miles. As noted below by the EPA, the GHG emissions inventory is the highest among Electricity generation and Mobile transportation.

EPA.gov, Total Emissions in 2015 = 6,587 Million Metric Tons of CO_2 equivalent



CO2 and GHG Emissions by Transportation Mode: 1990-2014

SOURCE: U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (2016), table 2-13, available as of April 2016 at http://epa.gov/climatechange/emissions/usinventoryreport.html (link is external).



In the Transportation sector, the light duty truck and MHD (Medium Heavy Duty) buses, trucks and vans make up the highest GHG. *(MD/HD Vehicle Standard, USEPA Federal Vehicle Standards).*

The Airport GT fleets are a perfect use for an EV with the potential to improve the MD commercial modeling for other fleets within a period of one year; as such, a one year pilot demonstration project can provide the necessary data to provide answers and solutions to a sector that is very far behind in understanding EV's for fleets. The Airport GT fleets are a fixed route, and in constant stop and go traffic that are within a short distance of travel for each trip back to their base where the EVSE charging infrastructure exists and thereby, the EV fleet can be topped off throughout the day which is critical in order to keep the vehicle on the road. These GT fleets mainly service the most polluted communities which directly reduce the amount of VMT by the public and other passenger cars. The airport shuttle / vans are a very popular model used by many GT operators. This vehicle is a class 2B vehicle and it is the most popular commercial vehicle among all on road commercial vehicles, see ARB EMPAC 2017 table.

- **Table: ARB's Commercial Class Vehicle Volume (EMPAC Inventory, ARB 2017)**

Table 1: ARB's 2017 EMPAC Inventory – Our agency's current vehicle population estimates.

Vehicle Class	2017 Vehicle Population
2B (GVWR 8,501 lb.-10,000 lb.)	713,206
3 (GVWR 10,001 lb.-14,000 lb.)	157,777
4-7(GVWR 14,001 lb.-33,000 lb.)	320,892
8 (GVWR 33,001 lb. and greater)	259,655

- MD Class 2B-3 = 871,000 commercial vehicles (vans and trucks) = 60%
    - Turnover is 2-12 years
    - 1.6 Miles per kWh

- HD Class 4-8 = 580,000 commercial vehicle = 40%
    - Turnover is 12-20 years
    - .90 to .40 miles per kWh

Below is the Light vs Medium vs Heavy Duty Classification Table.

GVWR - Gross vehicle weight rating (GVWR) is the maximum rated weight of the vehicle and cargo, including passengers. GVWR may be applied to all vehicles and mainly is used to classify trucks, buses or trailers.

Light Medium duty trucks are classified as class 2 trucks. Class 2A trucks are typically called "light duty", while class 2B trucks and vans are often called "light heavy duty".

Heavy Medium duty trucks are classified as class 4-6 trucks.

Heavy duty trucks are classified as class 7-8 trucks.

Class	**Table: Gross Vehicle Weight Rating Range:**	**Examples**
Class 1	GVRW 0 - 6,0000 lbs.	Passenger Vehicles, Ford Ranger
Class 2	GVWR 6,001 - 10,000 lbs. (subdivided into 2 classes, Class 2A & 2B, see below)	See class 2A & 2B below
Class 2A	GVWR 6,001 - 8,500 lbs.	Ford F-150, Dodge Ram 1500

Class 2B	GVWR 8,501 - 10,000 lbs.	Dodge Ram 2500, Ford F-250, Dodge Promaster, Sprinter Mercedes, Ford Transit
Class 3	GVWR 10,001 - 14,000 lbs.	Dodge Ram 3500, Chevrolet Silverado 3500, Fo Ford -350, Ford F-450
Class 4	GVWR 14,001 - 16,000 lbs.	Dodge Ram 4500, Ford F-450 (chassis cab), School Bus
Class 5	GVWR 16,001 - 19,500 lbs.	Dodge Ram 5500, Ford F-550, School Bus
Class 6	GVWR 19,501 - 26,000 lbs.	Ford F-650, School Bus
Class 7	GVWR 26,001 - 33,000 lbs.	Ford F-750, Urban Bus
Class 8	GVWR over 33,000 lbs.	Tractor Trailer, Transit Bus

SDAP's recommendation is to align next steps with more demonstration in order to gather data. Implementing a demonstration project with a perfectly fitted transportation operation can prove how an EV model with advanced EV technology can be a benefit and can be scaled for EV adoption immediately into other airports in California such as San Francisco, LAX, Long Beach and at all Airports that have GT operators; as such, keeping in mind that these GT Airport operators have similar statistics of high VMT and drive the most popular commercial vehicle which further supports how this one EV commercial vehicle model is scalable. Once the project produces the facts, this will directly turn into accelerated adoption with airport fleets that already turnover their fleet every 2-6 years on average. Below tables provide facts derived for the San Diego 2016 Airport GT Trips.

<u>2016 SAN Airport Shuttles equal 1M Trips Annually x 3 miles per trip = 3M Annual Miles</u>

- **SAN Airport = Total of 385 GT Shuttles.**
  - 335 = MD Shuttles (87%) and 50 = HD Shuttles (13%)
- 1M Trips per year x 3 miles per trip = 3 million miles per year or 8,000 miles per day.
- Airport = 50 Buses and 250,000 Trips = HD Class 7 and Class 8

- Rental Car buses at 230,000 Trips = HD + MD buses that are included with SAN Airport Buses due to new CONRAC, the Rental Car Hub.
- Off Airport = 60 Buses and 240,000 Trips = MD Class 2b and Class 3
- Hotel = 75 Buses and 150,000 Trips = MD Class 2b and Class 3
- Door to Door Shuttle = 200 Buses and 130,000 Trips = LD and MD Class 2b

- **Table: 2016 SAN Trips**

Mode	Estimated Trips FY 2016	Share of Trips
Taxicabs	912,074	12.5%
Vehicles for hire	128,476	1.8
Limousines	97,310	1.3
Hotel / motel shuttles	150,854	2.1%
Off-airport parking Shuttles	240,101	3.3
TNC	34,944	0.5%
Rental car shuttles	427,536	5.9
Charter buses	3,208	0.0%
Private Vehicles	4,210,846	57.8%
Airport Parking Shuttles	218,455	3.0
Public Transit, Authority and Airport Vehicles	863,102	11.8%
TOTAL	7,286,907	100.0

1M GT Trips per year x 3 miles per trip = 3 million miles per year or 8,000 miles per day.

Airport = 50 Buses (13%) and 220,000 Trips = HD Class 7 and Class 8

Rental Car buses = HD / MD buses that are included with SAN Airport Buses due to new CONRAC, the Rental Car Hub.

Off Airport = 60 Buses and 240,000 Trips = MD Class 2b and Class 3

Hotel = 75 Buses and 150,000 Trips = MD Class 2b and Class 3

Door to Door Shuttle = 200 Buses and 130,000 Trips = LD and MD Class 2b

High vehicle miles traveled by the commercial transportation sector determines that mobile source emissions from on road commercial vehicles creates substantial amounts of CI, NOx and PM for every one commercial vehicle thereby prioritizing commercial vehicles over passenger LD vehicles for EV adoption directly improves the air quality from transportation the most effectively. Even when determining other sources such as off road equipment or stationary sources, the mobile on road NOx is 93.0 tons per day VS Off road NOx at 50 tons per day OR Stationary NOx at 4.0 tons per day.

See the next table for ***San Diego County's Emissions inventory, as the Emissions is generated primarily from commercial vehicles with the remaining 1/3 of emissions from On Road LDA passenger vehicles.***

The 2012 Ozone baseline inventory for the 2016 San Diego County Plan Emissions Inventories for2012 and 2017, depicted from ARB's model EMFAC2014:

San Diego County APCD Almanac Emission Projection Data (published in 2013)

MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES								
LIGHT DUTY PASSENGER (LDA)	12.67	11.60	120.49	10.37	0.17	2.31	2.27	0.98
LIGHT DUTY TRUCKS - 1 (LDT1)	3.47	3.21	31.21	2.56	0.03	0.35	0.35	0.16
LIGHT DUTY TRUCKS - 2 (LDT2)	4.71	4.26	50.97	5.95	0.09	0.87	0.85	0.36
MEDIUM DUTY TRUCKS (MDV)	4.16	3.67	49.15	6.15	0.08	0.63	0.61	0.26
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	1.87	1.75	15.49	2.74	0.02	0.12	0.11	0.05
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.15	0.14	1.31	0.21	0.00	0.01	0.01	0.00
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.37	0.35	4.20	0.57	0.00	0.01	0.01	0.00
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.06	0.06	1.40	0.19	0.00	0.00	0.00	0.00
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.32	0.28	1.47	5.61	0.01	0.18	0.18	0.11
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.08	0.07	0.37	1.37	0.00	0.05	0.05	0.03
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.43	0.38	1.21	6.70	0.01	0.37	0.37	0.27
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	1.20	1.06	4.70	19.54	0.03	0.81	0.80	0.65
MOTORCYCLES (MCY)	2.78	2.60	25.04	0.79	0.00	0.03	0.03	0.01
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.12	0.11	0.46	2.51	0.00	0.18	0.18	0.10
HEAVY DUTY GAS URBAN BUSES (UB)	0.04	0.03	0.44	0.07	0.00	0.00	0.00	0.00
SCHOOL BUSES - GAS (SBG)	0.06	0.05	0.90	0.05	0.00	0.00	0.00	0.00
SCHOOL BUSES - DIESEL (SBD)	0.03	0.03	0.09	0.53	0.00	0.05	0.05	0.03
OTHER BUSES - GAS (OBG)	0.11	0.10	1.47	0.26	0.00	0.00	0.00	0.00
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.03	0.03	0.12	0.58	0.00	0.02	0.02	0.02

ALL OTHER BUSES - DIESEL (OBD)	0.03	0.03	0.08	0.43	0.00	0.02	0.02	0.02
MOTOR HOMES (MH)	0.14	0.12	3.40	0.74	0.00	0.03	0.03	0.02
*** TOTAL ON-ROAD MOTOR VEHICLES**	**32.84**	**29.93**	**314.00**	**67.95**	**0.46**	**6.05**	**5.96**	**3.08**

In order to leapfrog the EV Transportation into accelerated adoption we need to learn how business' can make a good use case for EV's over conventional transportation therefore; demonstration is key, and the sooner the better in order to gain the knowledge and lessons learned that is still missing data when you move into the EV commercial segment. The current inventory of MD EV (under 14,000 GVW) vehicles is too limited to support accelerated EV adoption. The HVIP has only two available Class 2B vehicles and one is a Hybrid vehicle and the other is an Electric vehicle with only single phase Level 1 or Level 2 charging (there is no fast charging technology available today). The HVIP also has only two Class 3 vehicles today, one by Motive and the other by Phoenix Motors. When comparing the GVW of a Class 3 to a Class 2B the higher GVW creates a less efficient vehicle over the Class 2B vehicle. Even more alarming is the fact that there are "NO" Low NOx Class 2b or Class 3 vehicles available today in Model year 2016 or 2017 in either CNG or Propane; thereby with the lack of choices in ZEV inventory for MD commercial use, this is too limited to support accelerated adoption and since there are no options for a Low NOx Class 2B or Class 3 vehicle --- fleets are highly likely to purchase another fossil fuel vehicle and further determines we are far behind in available inventory of MD EV's and Low NOx. There should be more consideration to the lack of EV vehicle inventory for MD vehicles. The potential impact of a very high VMT vocation that procures new vehicles on average of every 2 to 6 years and that drives the most popular class of a commercial vehicle ---- is perfectly fit for EV use and can transfer immediately into other vocations that can adopt the same EV model. The GT Airport Shuttle vocation is perfect for ZEV use due to the short duty cycle. What also is important to apply when targeting best demonstration projects and EV vehicles is the Energy Efficiency Rate (EER) of the EV vehicle. The class 2B van maintains an efficiency of 1.5 miles per one kWh and the fact that an EV van that is close to 10,000 GVW can demonstrate efficiency that is similar to the diesel vehicle supports the opportunity that this model can support attracting fleet operators that are close to acquiring a new fleet or close to being aged out. Fleets will adopt if there is benefit to drive the EV vehicle because the cost per mile calculates into a benefit. The Commissioner should consider that advanced EV technology is necessary to move commercial EV's forward and that is not the case is the current two Class 2b EV's vehicles. Moving forward a demonstration should provide a mode of transportation that will best support the advanced technology, include renewable charging and actually utilize the EV's the most. Utilization is critical to objectively shape the unforeseen cost, the benefits, and the rates and by pushing the limits of the technology captures the real world experiences that we must learn in order to mitigate and overcome the barriers of the EV technology and charging patterns. LD EV vehicles already have some maturity, the HD buses have started to pave the commercial EV path and have designed a custom and higher charging technology and power that is completely different than LD EV vehicles and is overkill for MD EV's. MD EV's have the best opportunity for a benefit and is the most popular commercial vehicle; however, we have no inventory that fits the use. We can positively forecast EV adoption with a solution from a GT airport shuttle demonstration. For example San Diego International Airport (SAN) has 335 GT MD shuttles and another 50 HD buses. On average this one vocation in the commercial sector exceeds all other commercial vocations in VMT except it plays a very close 2nd to HD Long Haulers. The short haul duty cycle with high VMT can produce more tail pipe emissions than the HD Long Hauler plus the short haul operators primarily serve routes in disadvantaged communities (DAC) and or highly polluted communities associated by all Airports.

The next two tables provide more facts on the commercial vehicle sectors and annual mileage. Airports GT fleets are in a category that is completely individualistic to other commercial vehicle categories.

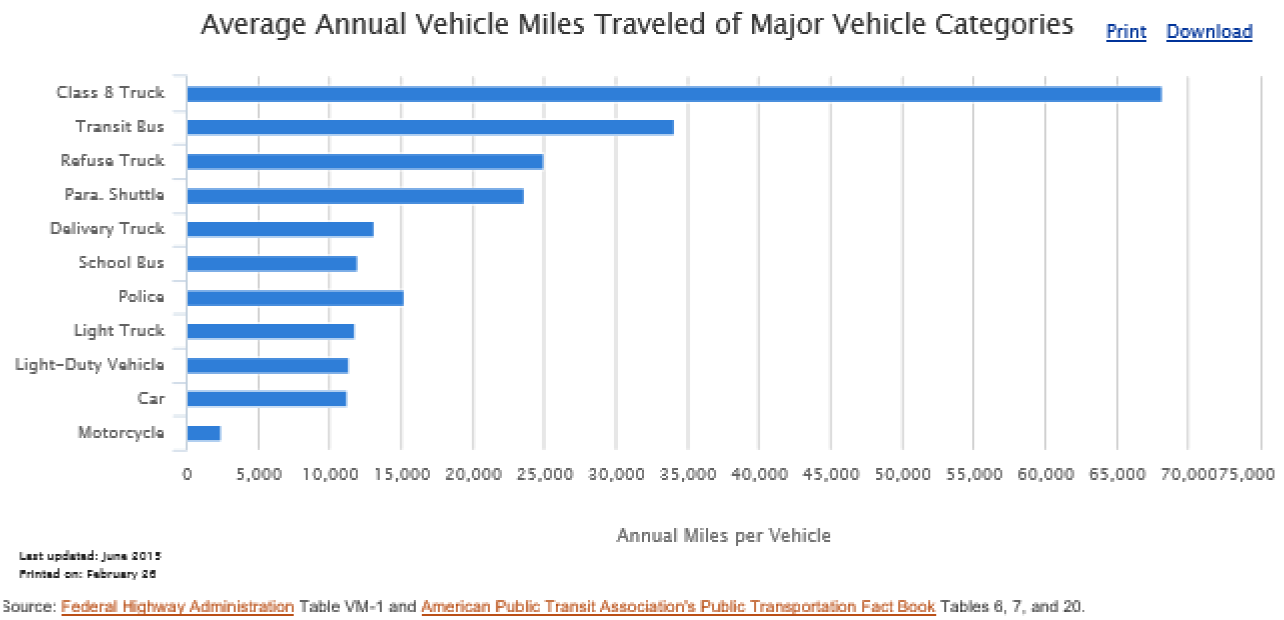
Table: Airport Shuttle Commercial Vehicle Annual Average Miles (AGTA Position Paper --- 7/2014)

Airport Shuttle Use

High occupancy vehicle making a limited number of stops. These vehicles, which are often introduced as new, would be for shared shuttle ride applications with a seating capacity of 8 to 12, including the driver. Shared shuttle ride works well with medium and large airports, where the companies can take advantage of moderate to high passenger traffic demand. Well maintained, these vehicles can safely operate

***80,000 miles** or more per year and have a useful life of 6 model years and should be replaced within that time frame.*

<u>Table</u>: Commercial Vehicle Annual Mile Average (June 2015 FHA)



Airport Shuttle Miles: 50,000 to 80,000 Annually + 50% additional idle time = High VMT

Overall, these comments aim to share and introduce how specifically the GT Airport Shuttles have the opportunity to promote EV market adoption, reduce emissions at the most aggressive pace, this sector is best positioned to enable a pilot/demonstration project to quickly gather data, enabling the opportunity to learn as soon as possible and resulting in an opportunity to gain the knowledge needed for implementing the most optimal EV MD fleet model with best cost. Such a pilot/demonstration supports all commercial fleet vocations in short haul and or high VMT which are both the best use of a ZEV and the most difficult use of a diesel which can further support interest from Short Haulers. ZEV's love short haul and diesels hate short haul. A short haul duty cycle, high VMT, and a high amount of idling hours in a diesel shuttle creates high wear and tear which accelerates fleet turn over and maintenance cost. For these same reasons this high utilization vocation can be determined as a good fit for a pilot/demonstration project capturing within the shortest period of time – data.

A Pilot/Demonstration project should be considered at the following airports: SAN, LAX and San Francisco Airports. When a benefit can be validated from driving a ZEV, then a Fleet end users positive experience will quickly be promoted into the community, the good word will spread fast when the cost per mile is a benefit as this is a huge expense on fleets and this cost is greatly considered; thereby when a benefit exists then accelerated adoption of ZEV commercial vehicles will transpire. SDAP further refers to the table below. Enplanement growth has steadily climbed in the US and currently has reached all-time highs which are forecasted to continue.

Domestic Passenger Enplanements on U.S. Airlines, Seasonally-Adjusted

Domestic passenger enplanements on U.S. airlines (seasonally-adjusted) in millions (000,000)
https://www.rita.dot.gov/bts/press_releases/bts08_17

	2013	**2014**	**2015**	**2016**
January	53.84	54.45	56.31	58.89
February	54.88	54.72	56.45	58.86
March	53.42	55.60	57.19	58.37
April	53.62	55.07	57.31	59.26
May	53.54	55.09	57.55	60.28
June	53.83	55.01	57.66	60.24
July	53.17	55.35	58.36	59.77
August	53.41	55.23	58.81	59.41
September	53.70	55.48	58.72	60.68
October	53.74	55.69	59.72	60.34
November	54.66	55.74	58.89	60.89
December	54.25	55.76	59.22	

Source: Bureau of Transportation Statistics, T-100 Domestic Market

IV. SB 350 Transportation Electrification Appendix Considerations

The SB350 Application Appendix was developed as a guide to support Electrification Transportation of commercial Fleets and to accelerate EV adoption with a benefit. The

Applications are to prioritize the technologies that are ready for market transformation and leverage high turnover just as the GT Airport shuttles operators do on a regular basis.

> ***Appendix A: SB 350 Transportation Electrification***
> *Prioritize sectors with high emissions reduction potentials.*
> *1. Consider potential for technology maturation and market transformation.*
> *2. Leverage natural turnover and high-impact decision makers.*
> *4. Coordinate with CEC and ARB research and forecasting initiatives, demonstration and pilot programs, and outreach and education activities. Ensure driver, customer, and worker safety.*
> **Appendix B: Workshop Questions**
> In light of current industry development and technology availability, Should the Commission focus on particular transportation sectors or Market barriers (e.g., light, medium or heavy duty vehicles, fuel types, or specific applications), and why?
> 3. What needs for standards development, research and development, or pilot projects exist that should be addressed by the Commission? What ongoing initiatives may be ready for increased scale?
>
> *(Scoping Memo, 3-30-16 proceeding 13-11-007, page 26)*

It is critical that market barriers are addressed and rates for the commercial EV's need a rate that is a benefit and there should be choices. Make Ready stubs and installation upgrades will be required on most fleet properties as there generally is not enough amps or electrical supply in order to support the EV infrastructure and the number of EV vehicles in a commercial fleet. Without enough access to the necessary electrical supply required for the EV fleet charging this is a barrier that will be a deal breaker as this is known as refueling. Modeling other sources of renewable charging technology and infrastructure will attract fleets into EV procurement as modeling with renewables creates a rate that is a benefit and can further reduce GHG, improve air quality and create a more sustainable grid and reduce construction barriers.

V. Rates

Rates can be further supported by more renewable infrastructure plus this further reduces load use on the grid, emissions and GHG. SDAP believes that Renewables should be required to be used during the Peak Period by fleets and purposes this idea to be implemented since system capacity loads are a concern and when fleets have access to speed for charging they can potentially manage peak time with the speed + renewables + storage. Not all interested EV fleets will have convenient access to charging locations and there needs to be more openness to support sharing of infrastructure and incentives. The range of

EV vehicles is another barrier that leaves no potential choice to avoid charging at peak time of day and with more vehicles in a fleet, the less likely charging an EV fleet can be managed without high speeds of EVSE and EV vehicle charging technology which is fast technology. Fast technology coupled high multiple EV vehicles directly transfers into the demand rates. As more adoption is accelerated over time, the more circuit and system load capacity conditions will occur; therefore, there is more to learn by all interested EV adopters who need to be supported by a choice for rates and rates that are a benefit.

I would like for the Commissioner to consider how VMT + EV vehicle range affects and impacts the fleet. If your VMT are more than the vehicle range, you must plug in during the day; this is a barrier when facing both peak time rates and demand rates. The Time of Use for Peak Demand kW or Non Coincidental Demand KW needs to be compared when fleets are 100% electrified. More examination is required at this point as it is clear that the number of vehicles in a fleet and the more VMT, the more charging is required and thereby peak time hours and demand rates will not be able to be avoided by commercial EV use unless renewables are required.

The question comes to mind….Will your own increased use trigger more demand rates? The demand rates are inevitable ---- will more EV vehicles in a fleet pose even more issues for the fleet operator, this is highly likely when it comes to how much electricity is available for use on the property and circuit. For example, in order for SDAP to charge its fleet for its daily VMT of 600 miles it will take 28 hours per day on a level 2 charging EVSE at 14kW and on board chargers of 62kWh. The super off peak time or off peak (night time only) charging or exemption can only work for a fleet that does not go beyond the maximum range of the vehicle in its daily use; thereby this type of fleet could plan to only plug in at night; however, it will not avoid demand rates due to charging more than one bus at a time.

When deploying advanced technologies, EV adoption can successfully be supported by the correct commercial uses that can benefit and have existing behaviors that can fit the technology requirements positively. As more adoption is planned in the future we know that both the EV commercial and residential vehicles can help to achieve a more balanced grid, the current over generation of the solar kWh can be absorbed mainly by commercial fleets with high VMT and with both commercial and residential EV's plugging in during the nights we believe that all of this participation by EV charging will create even a more stabilized grid and thereby this will lower the cost of a kWh in the future. Additionally this provides the opportunity for more revenue for the IOU's and POU's. The future Electrification Transportation is a great business case for the IOU's and POU's if we learn how to model it today. We need the support of make ready electricity to the property that is 3 phase and rates from the IOU's and POU's that create a benefit as you are asking us to adopt; but this can only be possible there is a positive use case. Mostly the cost per mile needs to be a benefit.

Fleet users should have options for EV Rates and Peak Demand Rates should be eliminated while requiring use of renewables at peak time which will further support a benefit for EV rates and adoption. Sub-metering needs to be included in the installations as the cost of the property kW for the small fleet and small commercial business are now required to pay for the kilowatt demand fees that are generated outside of EV charging and this is not the case in other fuels – just another opportunity for us to learn when we are sub-metered.

Rates should include the taxes as this adds to the cost of each kWh. Fleets need to compare apples to apples when displacing fossil fuel vehicles. The cost per mile should be a benefit and should be transparent. The cost per mile for fleets will determine adoption. Keep in mind the displacement of fuel to EV also has the opportunity to increase the amount of kilowatt hours procured in each commercial operators business, for example SDAP will increase its kWh use by over 300% when at 100% an EV fleet; as such, this is a great opportunity for the IOU's and POU's when EV Fleet operators adopt and displace fuel. See below for cost affects.

- **Table: Cost per Mile effect on Fleets when cost for fuel is MORE.**

  a. Small Commercial Fleet at 240k miles per year: 6 buses
  b. 0.2 cents more per mile = $4,800 more per year
  c. 0.3 cents more per mile = $7,200 more per year
  d. 0.4 cents more per mile = $9,600 more/year

  e. Medium Size Commercial Fleet at 4 Million miles per year: 100 buses
  f. 01 cents more per mile = $40k more per year.
  g. 0.2 cents more per mile = $80k more per year
  h. 0.4 cents more per mile = $160k more per year

VI. ZEV Certification and Lack of ZEV Safety Performance

ZEV's are exempted during the certification process due to zero tail pipe emissions. This is not a process that commercial transportation has ever experienced whereby vehicles are exempted from components performance and safety testing when entered into business commerce after it has been modified. We appear to be trading lives in the performance of vehicles for air quality. ZEV commercial vehicles have no components testing as MD commercial vehicles are up-fitted and modified with EV kits that have no components testing requirement. The following are regulations that affect safety for commercial transportation operators. Transportation should not be taking risks as the ZEV certification process enables. The commercial ZEV OEM warranty, durable useful life, and fit for use ---- should meet the expected and typical commercial vehicle safety and durability standards; however, that is not the case and there are many lessons learned that will affect commercial operator choices as safety standards are critical requirements that cannot be at risk or on the fleet operator as is currently:

a. **No ZEV OBD sharing**
    i. OBD is proprietary protected; only the OEM can plug into the port to find out what is wrong with the vehicle.
    ii. Therefore, no garage services support is available to work on your vehicle except for the OEM.
b. **No ZEV Durable Useful Life Standard**
    i. There is no history that can determine how long the vehicle will last or what expensive parts will require replacement.
    ii. There is not components testing on the modification to electric or monitoring for failures or premature defects.
c. **No ZEV Garage Services Regulation**
    i. As of April 2017 there is a requirement for only one service garage per State for a ZEV OEM.
        1. Prior to this there was no requirement for garage support; even with this new standard there is a lack of flexibility

and reliability to assure fleets and specifically private fleets' service in a reasonable period of time.

2. There appears to be no enforcement by both ARB and Cal Start on the one garage services requirement per State for each ZEV OEM.
3. There is no requirement for minimum response time to a service support call.
4. There is no requirement for a maximum time for a vehicle to be out of service.
5. Response times are critical when you do not have local garage support and the OBD is proprietary protected.

d. No kWh efficiency Standard or Future Energy Regulation

i. The fuel regulations and future standards promise high miles per gallon and yet there is no standards for how many miles you will get per kWh.

ii. Both increased range and higher charging speed can create more vehicle weight which results in more kWh and more cost per mile.

e. Low Volume OEM Production Regulation when producing less than 1,000 ZEV vehicles per year.

i. All ZEV commercial OEM's would be considered to be a small volume ZEV OEM producer which allows too many exemptions for commercial vehicles that we know very little about and the amount of risk assumed on vehicles operators that have much higher VMT, higher GVW and Payloads is compromising lives on the roads and high risk for fleets.

f. No ZEV Deterioration Regulation

i. There is not requirement for monitoring the up time or out of service amount of time of a ZEV.

ii. Without use of a ZEV, you are forced into a fossil fuel vehicle as you cannot rent a ZEV. This affects emissions which is all due to the OEM and there should be requirements to keep the vehicle on the road and reliable.

iii. There is no qualified testing standard on the OEM that the vehicle will maintain a specific standard and efficiency over time.

g. No ZEV Extended Warranty Requirement

i. There is no extended warranty on the OEM to require this option when we have no knowledge of how the technology will operate over time.

ii. This new technology is unknown and with no commercial lemon law protection, the OEM should be required to offer only extended warranty's that include all expensive parts to be under an extended warranty plan.

h. No ZEV Material Defect Regulation

i. ZEV components are installed onto the vehicle via a modified kit that includes the drivetrain, Axle, Gear box, Motor, AC etc. and there is no testing prior to the certification when the ZEV modification is a completed vehicle; thereby if the vehicle is defected, there are no consequences if the OEM does not handle the repairs to keep the vehicle on the road.

ii. A commercial fleet operator assumes all risk; as such, once a vehicle is registered for commercial use, there is NO lemon law.

i. No ZEV Components Safety Testing

i. There is no requirement to test the new components installed by the ZEV OEM.

ii. There is a voluntary Crash test.

iii. There is a range test.

iv. There is no proof that the vehicle is fit for its use.

1. High VMT, High GVW, High Payload all create the commercial fleet user is at high risk, will have more wear and tear and needs to know the vehicle will last the same as the ICE vehicle.

j. No Commercial Lemon Law

i. Commercial vehicles have no lemon law.

ii. Early adopters are taking on all the risk with new ZEV dealers that have never been in the space for, specifically with the MD ZEV's.

1. Early adopters need more protection as these regulations will not support long term investments that are expensive investments with many unknowns.

VII. TNC and Taxi Fleets

The Rideshare Drivers (TNC's) and the Taxi's average turnover is longer than MD vehicles, have a longer route per trip and primarily use a LD Hybrid passenger vehicle which has a very good cost benefit and EER when comparing the cost per mile of a Hybrid to an EV. Also, it is important to determine the lack of emissions benefit with this use as this use does nothing to support reducing vehicle miles traveled and actually creates and increases both miles traveled and emissions due to the deadheading of VMT. This use generally moves one party at a time which does not eliminate any VMT by the fleet driver and moreover it creates more miles when you factor in the deadheading.

VIII. Conclusion

SDAP supports expedited consideration of demonstration for a MD EV project and suggest that the foregoing be considered and to demonstrate the Class 2B Airport shuttle Van with Fast Charging and Renewable Charging to be required at Peak time.

Respectfully submitted,

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