



Zero-Emission Airport Shuttle Bus **WORKGROUP MEETING**

June 30, 2017
Sacramento, California
10:00 am – 3:00 pm (PST)

California Environmental Protection Agency

 **Air Resources Board**

Topics for Today

1. Welcome and Introductions
2. Workgroup Goals
3. Recap
4. Cost Sharing Opportunities
5. Proposed Measure Concepts
6. Survey
7. Next Steps

Workgroup Goals

- Sharing of information that will guide and inform the measure development
- CARB Role:
 - Share progress to date
 - Ask for stakeholder input
- Stakeholder Role: Provide data and experience

Zero-Emission Airport Shuttle Bus



RECAP



Goals,
Zero-Emission Manufacturers,
Airport Efforts

Zero-Emission Airport Shuttle Bus Measure – Goals

1. Complement existing programs to achieve NO_x and GHG emission reductions through use of zero-emission technology.
2. Increase the penetration of the first wave of zero-emission heavy-duty technology

-- 2016 State Strategy for the State Implementation Plan, March 2017

Best Applications for Zero-Emission Vehicles serving Airports

- Operational characteristics:
 - Fixed route
 - Low-mileage
 - Stop and go operation
 - Low average speeds
 - Centrally maintained and fueled

Zero-Emission Manufacturers



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GP GreenPower Bus
The Future of Public Transportation

US Hybrid

Existing Efforts at Airports

- Land use planning efforts replacing shuttles with electric rail, walkable routes, or public transit
- FAA grants for zero-emission airport shuttles
- Cleaner vehicle encouragement programs
- Battery electric parking shuttles - LAX, ONT



Questions on Recap?

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sierrarm@calepa.ca.gov



INCENTIVES




Cost Sharing Opportunities,
SB 350 Update,
Lunch Break

Cost Sharing Opportunities

Cost Share document:

<https://www.arb.ca.gov/msprog/asb/asbmtgs.htm>

California Environmental Protection Agency
 **Air Resources Board**

Cost-Share-Opportunities-for-Zero-Emission-Airport-Shuttle-Bus-Projects

California Air Resources Board (CARB) staff has prepared this contact document to help inform Airport Shuttle Bus stakeholders of potential funding opportunities. Information is current as of June 2017, but may change.

Utility and Incentive Contacts by Airport

Airport ⁽¹⁾	TE ⁽²⁾ Utility Information		Carl Moyer Program (Annual Funding) ⁽³⁾		
	Program Website	Contact	Local Air District	Air District Contact	Current Deadline
BUR (Burbank)	Burbank W&P	Kapil Kulkarni (818)-238-3792	South Coast AQMD	Vicki White (909)-396-3436	7/11/2017
LAX (Los Angeles)	LADWP	Marvin Moon (213)-367-1716	South Coast AQMD	Vicki White (909)-396-3436	7/11/2017
OAK (Oakland)	PG&E (partial-service)	Cal Silcox (415)-973-1741	Bay Area AQMD	Anthony Fournier (415)-749-4961	On-going
ONT (Ontario)	SCE	Lisa Arellanes (626)-815-7267	South Coast AQMD	Vicki White (909)-396-3436	7/11/2017
SAN (San Diego)	SDG&E	Hannon Rasool (858)-654-1590	San Diego APCD	Andy Hamilton (858)-586-2641	Recent solicitation closed 6/5/2017

Federal, State and Local Incentives

CARB [AQIP/LCT](#) Equipment Rebate

Airports	Shuttle Sizes	HVIP Funding*
SNA, SAN, SFO, SJC, SMF	20-24 feet	\$80,000
	25-29 feet	\$90,000
	30 feet and greater	\$95,000
BUR, LAX, OAK, ONT, BUR	20-24 feet	\$90,000
	25-29 feet	\$100,000
	30 feet and greater	\$110,000

*Air Quality Improvement/Low Carbon Transportation Program
Eligibility based on [CalEnviroScreen 3.0](#).

- CEC annual funding
- FAA VALE program for airports
- Carl Moyer project information
- VW NOx Mitigation

SB 350 Update

- SB 350 Presentation

<https://www.arb.ca.gov/msprog/asb/asbmtgs.htm>

LUNCH BREAK
Meeting will resume after break



Zero-Emission Airport Shuttle Bus
**WORKGROUP
MEETING**



MEASURE CONCEPTS



Technology Applicability/Scope,
Measure Strategy

Technology supports fixed route shuttle operation

- **Fixed route** = vehicles that provide service along a prescribed route with few course deviations
- **Not include:**
 - Door-to-door charter service (limousine, vans)
 - Light-duty vehicles (taxis, TNCs, private cars)
 - Transit buses
- **Include:**
 - Fixed airport routes and depot housed vehicles
 - Low-mileage, stop and go operation, and low average speeds
 - Examples: Vehicles servicing parking lots, rental car facility, off-air parking, hotels, destinations

Scope

- **Fixed route shuttles** supporting California's **26 primary** airports
 - **3 - Large:** LAX, SAN, SFO
 - **6 – Medium:** BUR, OAK, ONT, SNA, SMF, SJC
 - **4 – Small:** FAT, LGB, PSP, SBA
 - **13 – Nonhub:** ACV, BFL, CRQ, CIC, CEC, MMH, MOD, MRY, RDD, SBP, SMX, STS, SCK
- What is an **airport shuttle**?
 - Heavy-duty vehicles class size 2b (8,501 lbs.) to 8 (>33,000 lbs.)
 - Transports travelers to airports and around airport facilities



Feedback on Scope/Technology Applicability

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Measure Concept: Voluntary Early Actions and Regulation Strategy

- Early voluntary actions provide opportunity to:
 - Utilize incentive funding
 - Potentially lessen/delay future requirements
 - Spur manufacturer production
 - Inform other local airport regulatory efforts
- Regulatory approach provides:
 - Opportunity to achieve the greatest penetration of clean vehicles
 - Consistent requirements for all

Voluntary Early Action

- Maximizing incentives by allowing fleets the ability to apply for multiple rounds of funding
- Tap into transportation electrification infrastructure cost sharing projects
- Fleets could earn credit towards meeting future requirements
- Incentives and/or credits may be limited once regulation implementation starts

Proposed Regulatory Strategy

- All new shuttles purchased must be zero-emission
- Zero-emission vehicle phase-in schedule for all airport shuttle fleets
 - Includes annual mandatory reporting to prove that milestones are achieved
- Fleets must contain all zero-emission shuttles by end of compliance schedule

Proposed Schedule for Fleet Transformation

- **2018-2022:** Incentives/voluntary actions
- **2023:** New purchase requirement
- **2023-2031:** Fleet turnover requirements
 - **2025:** 33% fleet must be ZEV
 - **2028:** 66% fleet must be ZEV
 - **2031:** 100% fleet must be ZEV

ZEV Fleet Compliance Examples

Year	Milestone	Airport Shuttle Fleet Size						
		3	5	7	10	20	50	100
Now-2022	Early Action	Voluntary						
2025	33% Fleet	1	2	2	3	7	17	33
2028	66% Fleet	2	3	5	7	13	33	66
2031	100% Fleet	2	5	7	10	20	50	100

Interface with Facility Based Measures

- **CARB Board Resolution 17-7**
 - Report to the Board on facility based measure concepts for large freight facilities, and any equivalent alternatives, within 12 months (by March 2018)
 - Does not include CA commercial airports
- **SCAQMD Board Measure MOB-04**
 - Facility based measure for non-aircraft sources at commercial airports (by Feb. 2019)
 - Potentially affect all commercial airports located within air district
 - Efforts on-going – Two workgroup meetings held
- **Close interaction and coordination between CARB and SCAQMD**
- **Airport Shuttle Bus measure is not dependent on the outcome of these processes**



Discussion on Proposed Measure Strategy

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CARB Draft Proposal



SURVEY



Purpose,
Airport Fleets,
Fleets Serving Airports,
Draft Survey,
Questions/Comments

Purpose of Survey

- CARB gathers valuable data for better understanding of airport shuttle buses and off-airport transportation shuttles.
- Data analysis results will help refine the proposed measure strategy.

Two-part Survey

- Part I: Survey of airports
- Part II: Survey of companies operating shuttles/buses that serve airport passengers

Survey Draft

Preliminary Draft Survey for Review and Comment
June 28th, 2017



**Draft Part 1 Survey:
Airport Shuttle Bus Survey
Sample for Comment, 2017**

THIS IS A SAMPLE SURVEY FOR REVIEW AND COMMENT. PLEASE PROVIDE COMMENTS ON THE PROPOSED TEXT AND QUESTIONS TO Mr. Anthony Poggi at anthony.poggi@arb.ca.gov BY JULY 21st, 2017

Introduction

Promoting the development and use of zero-emission airport shuttle buses will help the California Air Resources (CARB) achieve the emission reduction strategies outlined in the Mobile Source Strategy, State Implementation Plan and the Sustainable Freight Action Plan. Vehicles like airport shuttle buses that operate on fixed routes, have stop-and-go operations, maintain low average speeds, and are centrally maintained and fueled are ideal candidates for targeting zero-emission electric technologies.

The purpose of this survey is to gather detailed information about everyday operations of airport shuttle bus fleets and to better understand variations among different types of fleet operations. This survey will help CARB to better estimate individual fleet costs (including vehicles and infrastructure) and understand potential opportunities and challenges associated with incorporating airport shuttles with zero-emission operating capabilities into the fleet. Accuracy and completeness of fleet data, including data collected in this survey, will be vital to CARB's efforts in developing a measure that integrates efficiently with airports and other businesses involved with airport shuttle bus operation and achieves the desired emission reductions.

Directions

This survey is designed to be completed by airport personnel (or third party entity) operating airport shuttle buses. If your airport has more than one third party entity operating shuttle buses, please deliver one survey to each company. If you are writing your responses by hand and need extra space, you can add extra pages at the end of this survey with the division's name, your contact information and the question number to which the answer refers.

Surveys should be returned directly to the California Air Resources Board upon completion. CARB will work closely with Airport Shuttle Bus Workgroup to interpret the results. Please submit any inquiries, along with the completed survey by XXXXX to Mr. Anthony Poggi at anthony.poggi@arb.ca.gov. You can either submit the electronic version via email or you can print the survey and mail it to the following address:

California Air Resources Board
Incentives and Technology Advancement Branch, 5th Floor
Attn. Anthony Poggi
P.O. Box 2815
Sacramento, CA 95812-2815

Thank you for your assistance in completing this important survey. We appreciate your efforts.

Questionnaire

Preliminary Draft Survey for Review and Comment
June 28th, 2017

1. Company/Contact Information

Airport Name	
Mailing Address	
City	
State/Province	
Zip	
Primary Airport Contact Name	
Primary Airport Contact Email	
Primary Airport Contact Phone Number	
Shuttle Bus Operation Entity (if different from airport)	
Primary Shuttle Bus Contact Name	
Primary Shuttle Bus Contact Phone Number	
Primary Shuttle Bus Contact Email	

2. What is the total number of shuttle buses in your fleet? Include any/all on-airport buses servicing terminals, rental car facilities, parking facilities, and airside operations at this airport. *If there are no airport shuttle buses operating at your airport, please disregard the rest of this survey.*

3. Have you reduced or expanded the number of shuttle buses in your fleet over the last 5 years? Do you have plans to do so over the next 5 years? If yes, please describe the reason(s) for the expansion/contraction and the number of vehicles involved.

4. What are the NAICS codes for your business?

5. Is your shuttle bus fleet maintained by a third part entity?

Questionnaire

- Airport and Shuttle Operation Contact Information
- Shuttle bus fleet size including past and future expansion
- Third party involvement in maintenance
- Effects of potential regulation on business

Questionnaire

- Shuttle bus and fuel purchasing habits
- Operation and purchase of zero-emission vehicles
- Low carbon fuel usage and Low Carbon Fuel Standard participation

Route Data Table (Survey Part I)

15. Shuttle Bus Route Information: Please fill in the table below with information about your shuttle bus fleet's route(s). Use a different line for each unique route traveled by vehicles in your fleet. Please begin with the routes that are most commonly traveled. |

Route #	Round Trip Distance (miles)	Number of Stops	Maximum Speed (mph)	Average Speed (mph)	Round Trips per Day	Locations/Purpose (e.g. parking facilities, rental car facilities, employee transport, tarmac/airside)
1	Ex: 1	3	25	20	20	parking, rental car
2	3	2	30	25	6	employee transport
1						
2						
3						
4						
5						
6						

Route Data Table (Survey Part 2)

15. Shuttle/Bus Route Information: Please fill in the table below with information about your shuttle fleet's route(s). Use a different line for each unique route traveled by vehicles in your fleet. Please begin with the routes that are most commonly traveled. If you need extra space please use table provided on the following page.

Route #	Round Trip Distance (miles)	Number of Stops	Maximum Speed (mph)	Average Speed (mph)	Round Trips per Day	Varied or Fixed?*
1	Ex: 4	3	35	20	20	Fixed
2	8	7	50	25	10	Fixed
1						
2						
3						
4						
5						
6						

*A fixed route is considered one in which vehicles repeatedly transport passengers between the same locations (e.g. off-airport parking lot and an airport). The number of stops along the route may vary but general route traveled and round trip distance are consistent. A varied route is one where the origins, destinations, locations of stop, and/or the round trip distance of the route may fluctuate.

Vehicle Data Table (Surveys Parts 1 & 2)

Preliminary Draft Survey for Review and Comment

June 28th, 2017

16. Airport Shuttle Bus Information: Please fill in the table below with information about each shuttle bus operating at your airport. For your convenience, please group similar/identical vehicles together. Do not include vehicle information from transit agencies or from other fleets that delivery passengers to airports. There is no need to repeat identical information for consecutive vehicles (see example below).

	Last Six Digits of VIN #	License Plate #	Body Type (e.g. Transit, Cutaway)	Length (feet)	GVWR	Engine Model Year	Fuel Type	Capacity		Operation				
								Seated	Total	Avg. Miles		Daily Hours of Operation	Estimated Daily Idle Time (minutes)*	Mid-Day Refueling Required? (Y/N)
										Annual	Daily			
1	Ex: 63490	9X4XXXX	Transit	35	32,320	2010	CNG	25	40	45,000	125	15	60	N
2	225320	3C2XXXX	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	N
3	109754	8Z3XXXX	Cutaway	30	23,350	2013	Diesel	20	30	60,000	175	18	90	Y
1														
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*Daily idle time refers to the amount of time the vehicle is stopped with the engine running while on route (e.g. loading or unloading passengers). To estimate the daily idle time use the following formula: #of daily round trips x #of stops per round trip x #of minutes idling at each stop.

Airport Survey Timeline

- **Draft Survey Comments from Stakeholders**
 - Due to CARB: July 21st, 2017
- **Survey Sent to Airports**
 - September 2017
- **Completed Surveys Due to ARB**
 - October 2017
- **ARB Data Review/Share Results**
 - November/December Meeting

Part II: Off-Airport Transportation Shuttles Survey

- Feedback needed on Part 2 strategy
 - Survey to be completed by shuttles that serve local airports
 - What is the best method to identify off-airport shuttles?
 - Should all shuttles that serve airports complete the survey?
 - Can timeline be consistent with airport survey?



Feedback on Preliminary Draft Surveys

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sierrarm@calepa.ca.gov

Next Steps

- Fleets submit survey
- Workgroup meeting (late Fall 2017)
 - Staff will present:
 - Survey results and analysis
 - Updates on measure concepts
 - Discussion on costs
- CARB Board Hearing 2018

Additional Comments or Questions

Please contact:

Katherine Garrison, Lead Staff

Katherine.Garrison@arb.ca.gov

(916)322-1522

or

David Salardino, Manager

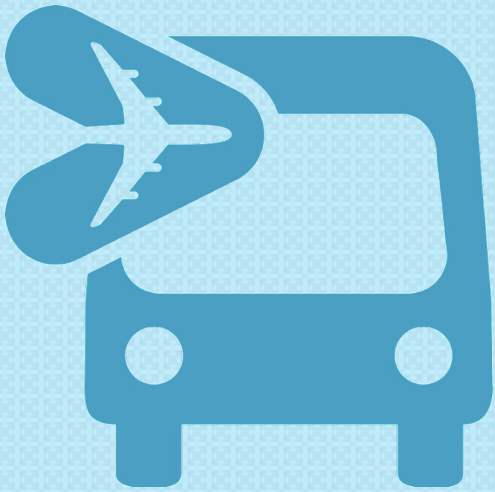
David.Salardino@arb.ca.gov

(626)575-6679



Web Page: <https://www.arb.ca.gov/msprog/asb/asb.htm>

Sign up for the Airport Shuttle Bus list-serve to receive updates!



Comments and Discussion

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