DOCKETED	
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Heavy-Duty FCEVs
Benefits and Challenges

Integrated Energy Policy Report Update

California Energy Commission

July 2, 2020

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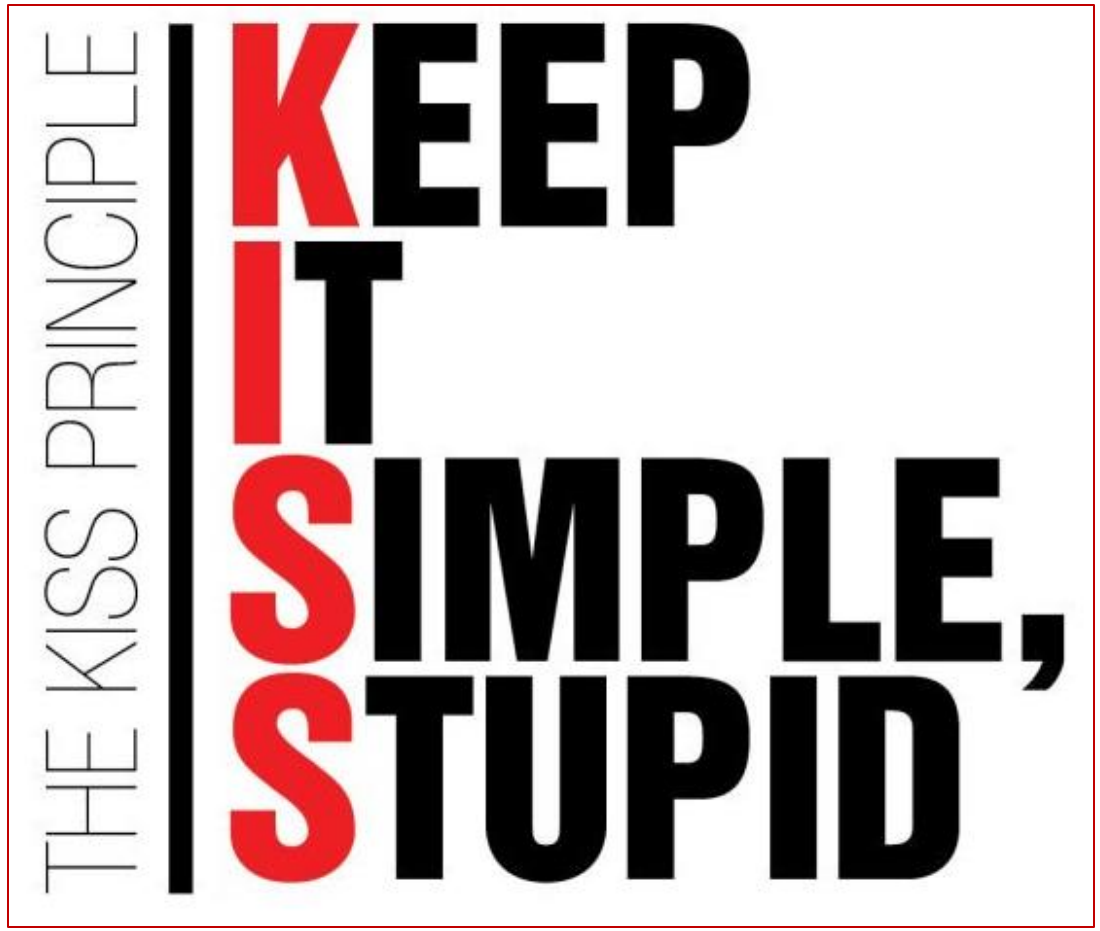
25th Anniversary
1993-2018

Fuel Cell Electric and H_2 Projects

- Class 6 UPS Trucks
- Class 8 Drayage Trucks
- Marine Cargo Top Loader
- 40’ and 60’ Transit Buses
- HD and LD H_2 Stations

Operational Efficiency



GOAL: Satisfy End-User Needs

Three Key Performance Objectives

1. Range
2. Passenger/Payload
3. Multiple Duty Cycles

Two Key Fiscal Objectives

1. Affordable CapEX
2. **Affordable OpEx**

FCEB Advantages

300-350 miles Proven range

Significant reduction in vehicle weight

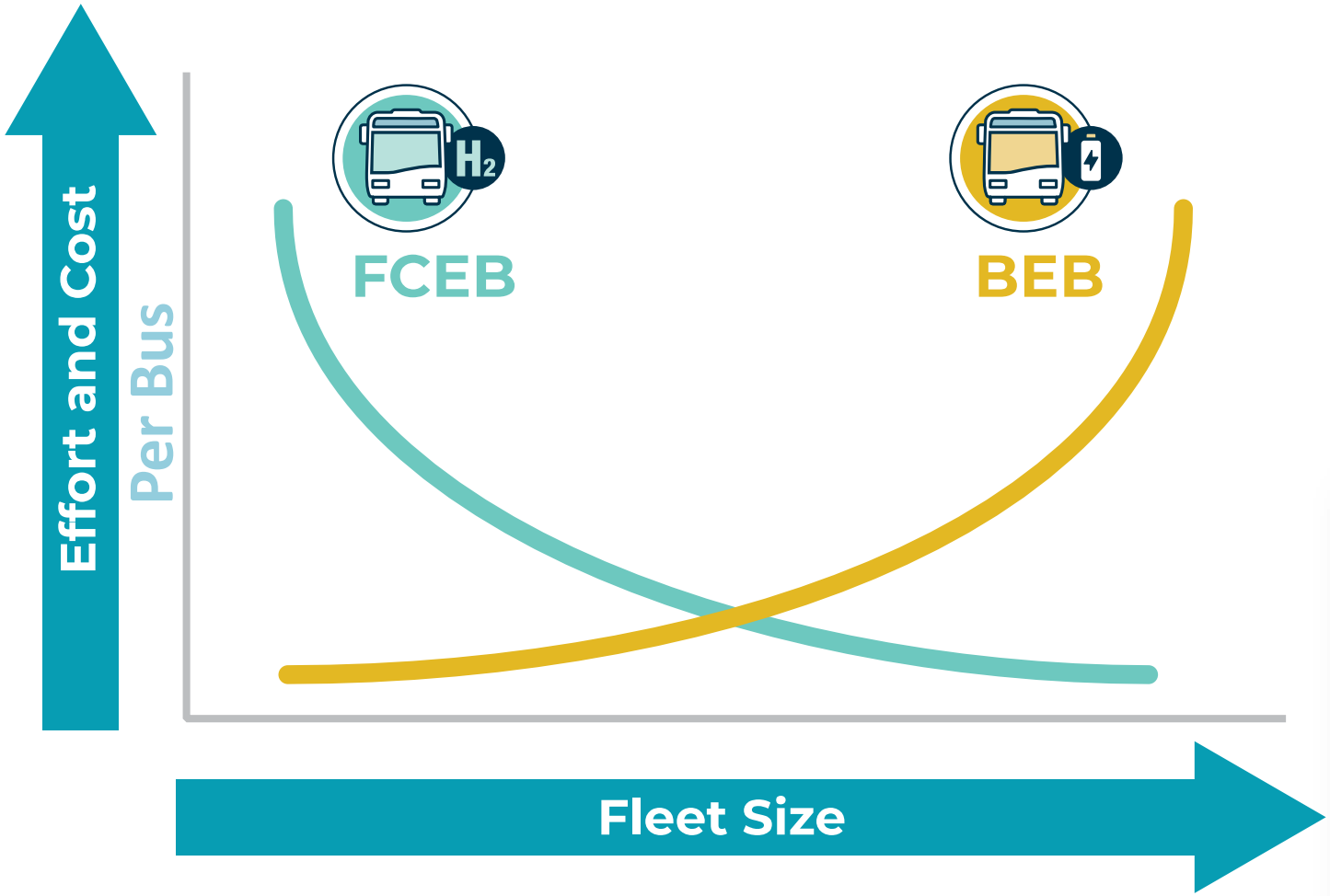
(carry more passengers)

Rapid refueling speeds

(6 to 10 minutes)

1:1 replacement of conventional vehicles

ZEB Infrastructure Scalability



- FCEB: High initial cost for H2 fueling stations can be leveraged over many buses in larger fleets
- BEB: More equipment and infrastructure is needed to support larger fleets

45’ X 56’ (12- to 15-Bus Capacity, Expanded to 60+ Buses)

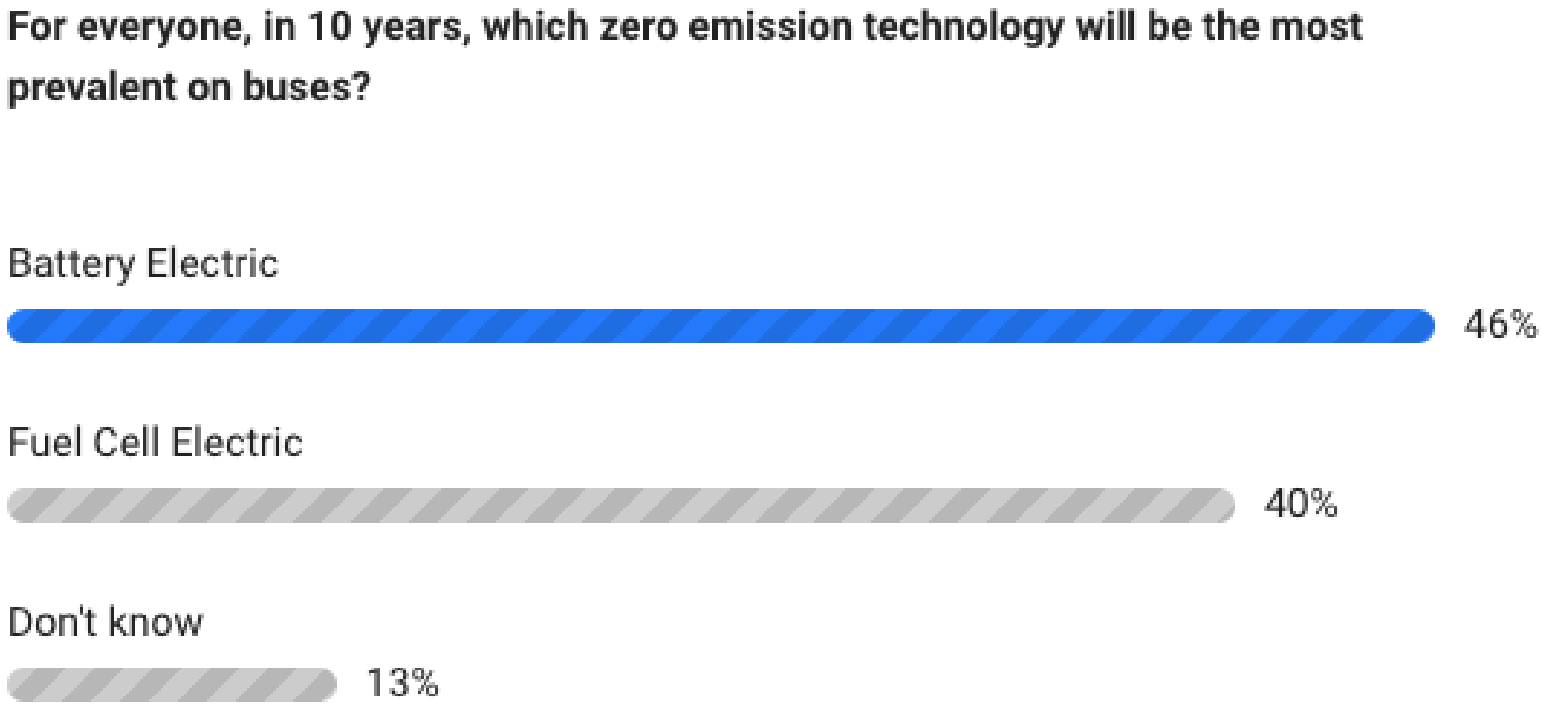
Infrastructure Challenges

PARSE

P	**Price** and delivery of H2 on parity with conventional fuels. Also equipment maintenance cost reduction.
A	**Area** of fueling footprint to refuel 50, 100, or 200 buses.
R	**Renewables** for hydrogen production; **Resiliency** - Natural Disasters; Also **Redundancy** to ensure near 100% service reliability.
S	**Speed** of refueling in the normal 8- to 10-hour night window; Also **Scalability** for future expansion.
E	**Entry-Level Startup and Equity** (CapEX) needed to build at an affordable price, utilizing baseline components for future scale up.

Patty Monahan Survey Question

Asked of 500 attendees at the conclusion of the International Zero-Emission Bus Conference in San Francisco on September 27, 2019



18 California Transit Agencies

25th Anniversary
1993-2018

Requesting CEC Funding Support for H2 Fueling Stations

- AC Transit
- Big Blue Bus (Santa Monica)
- County Connection (CCCTA - Concord)
- Foothill Transit (West Covina)
- Golden Empire Transit (GET – Bakersfield)
- Golden Gate Transit (Marin)
- Gold Coast (Ventura)
- Long Beach Transit
- Monterey-Salinas Transit
- North County Transit (Oceanside)
- OmniTrans (San Bernardino)
- San Diego Metropolitan Transit System
- San Joaquin Regional Transit District
- Santa Cruz Metropolitan Transit District
- Shasta Regional Transportation Agency
- SunLine Transit District (Thousand Palms)
- Tri-Delta Transit (ECCTA – Antioch)
- Victor Valley Transit (Hesperia)

DO NOT DESIGN OR SUBMIT PROPOSALS ACCORDING TO THIS DRAFT
Comments are due Friday, April 24, 2020 at 5:00 p.m.

INTRODUCTION

The Energy Commission adopted a resolution strengthening its commitment to diversity and equity in our funding programs. We continue to encourage disadvantaged and underrepresented businesses and communities to engage in and benefit from our many programs. This "draft solicitation concept" aims to deliver equitable outcomes and improve community air quality and health.

This draft solicitation concept document details the concept under consideration for a competitive grant solicitation to be issued by the CEC's Clean Transportation Program. The purpose of this solicitation is to provide capital assistance for make-ready equipment upgrades and zero-emission vehicle (ZEV) electric vehicle (EV) charging or hydrogen refueling infrastructure to support the roll-out of medium- and heavy-duty (MD/HD) zero-emission transit bus fleets. The goal of the solicitation will be to fund the infrastructure for 1-2 large-scale transit projects, for the transit bus fleet conversion of at least 50 buses.

The Draft Solicitation Concept follows:

1. **AVAILABLE FUNDING**
$20 million is available to fund the zero-emission EV charging and/or hydrogen refueling infrastructure for transit bus fleets.

Applicants will be divided into three categories based on the type of fleet conversion and the number of zero-emission buses to be supported.

Type of Fleet Conversion	Number of zero-emission buses supported by infrastructure
Conversion of a fleet with a fixed route or full small fleet	At least 50 buses
Conversion of full large fleet	At least 100 buses
Conversion of more than one fleet with shared major corridor/shared use of infrastructure	At least 100 buses

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DRAFT SOLICITATION CONCEPT

Clean Transportation Program

Subject Area – Zero-Emission Transit Fleet Infrastructure Deployment

No proposals are being accepted at this time. This is a draft compilation of a solicitation concept. Do not design or submit proposals according to this DRAFT. The actual solicitation is subject to change.

Staff will take comments and questions submitted to the docket prior to or by phone during the webinar. Comments on this DRAFT will be discussed at the April 10, 2020 Webinar. At the latest, comments are due by April 24, 2020, at 5:00 p.m. to the California Energy Commission (CEC) Dockets Unit (See Notice of Staff Webinar for additional details on how to comment).

http://www.energy.ca.gov/contracts/index.html
State of California
California Energy Commission
April 10, 2020

Zero-Emission Transit Fleet Infrastructure Deployment Draft Solicitation Concept Page 1 of 11 April 2020