GOLDEN EMPIRE TRANSIT DISTRICT
MINUTES OF THE REGULAR MEETING
OF THE BOARD OF DIRECTORS

OCTOBER 22, 2019
5:30 PM

1830 GOLDEN STATE AVENUE
BAKERSFIELD, CALIFORNIA 93301

DIRECTORS PRESENT:

Jim Baldwin
Rueben Pascual
Carlos Bello
Leasa Engel

DIRECTORS ABSENT:

Cindy Parra

ATTORNEY PRESENT:

Jim Worth

STAFF PRESENT:

Karen King
Jeanie Hill
Chris James
Robert Williams
Steve Barnes
Jill Smith
Candra Cheers
Jamie Gail
Deidre Brown
Denise Sailes
Ricardo Perez
Sharon Pierce

OTHERS PRESENT:

Bob Snoddy
Jordan Tuitt
Sydney Krueger
Temecia Ricks
Ed Krueger

The Chair called the meeting to order at 5:31 p.m.

PLEDGE OF ALLEGIANCE

Ms. Jeanie Hill led the pledge of allegiance to the flag of the United States of America.

(Director Bello entered meeting at 5:32 p.m.)
APPROVAL OF CONSENT AGENDA

Director Pascual moved and Director Bello seconded a motion to approve the consent agenda. The motion carried with four (4) ayes and one (1) absent (Parra).

PUBLIC COMMENTS

Ms. Temecia Ricks commented that customers calling the customer service line for the fixed route do not know whether you are still on hold since there is no music or recorded message. She suggested that GET consider expanding times in the evening as many riders work late and/or attend classes. Ms. Ricks also asked if a phone call or text message could be sent when the bus arrives.

FUEL CELL BUS PRESENTATION

Mr. James introduced Ms. Sydney Krueger with KTC. Ms. Krueger introduced Mr. Jordan Truitt with Airgas. Ms. Krueger and Mr. Truitt gave a presentation on hydrogen fuel cell buses. (See Attachments A-D). This was an informational item only.

ENVIRONMENTAL MANAGEMENT SYSTEM REPORT

Mr. James introduced Ms. Jamie Gail, GET’s Environmental Management System Coordinator. Ms. Gail shared information on the purpose of GET’s EMS and then presented a training module on GET’s EMS program. This was an informational item only.

MAINTENANCE BUILDING FLOOR RESURFACE

Mr. James presented information on the status of the Maintenance Building floor condition. After some discussion, Director Engel moved and Director Bello seconded a motion to award a contract to Terry Bedford Concrete in the amount of $173,305 to resurface the maintenance shop floor and provide a 3-year maintenance plan based on the lowest responsive and responsible bid. The motion carried with four (4) ayes and one (1) absent (Parra).

FIRST QUARTER FY 2019-20 PERFORMANCE REPORTS FOR MOTOR BUS AND DEMAND RESPONSE SERVICES

Mr. Perez stated that GET-A-Lift total unlinked passenger trips (14,417) increased 7.2% for the quarter compared to the same period last year. RYDE microtransit service was initiated on April 7, 2019 and total boardings for the first quarter of FY 2019-20 were 6,695 compared to 3,523 in the fourth quarter of FY 2018-19. The operating ratio was 10.69% and boardings averaged 1.6 per revenue hour. Total unlinked passenger trips on fixed routes were 1,529,928, a 3.7% decrease from the same quarter one year ago. This was an informational item only.
2019 STRATEGIC PLAN UPDATE

Ms. King reviewed the status of several of the initiatives of the 2019 Strategic Plan. This was an informational item only.

SEPTEMBER 2019 FINANCIAL POSITION AND RESULTS OF OPERATIONS

Mr. Barnes reviewed September 2019 financial reports. This was an informational item only.

FUTURE AGENDA ITEMS/BOARD COMMENTS

Director Bello stated that information received at the APTA TRANSform Conference was very educational, particularly on zero emission technology.

Director Pascual commented that the hydrogen fuel cell presentation was very informative. He asked if GET is looking to expand employer-subsidized commuter service, i.e. Grimmway.

Director Baldwin commented that decisions need to be made regardless of the plans of the California High Speed Rail Authority (CHSRA).

CHIEF EXECUTIVE OFFICER’S REPORT/COMMENTS

Ms. King stated that flu shots are available for employees until 8 pm this evening in the old Boardroom. Ms. King thanked the Board for the opportunity to attend APTA’s annual conference. She shared that a copy of APTA’s Strategic Plan was placed at their location. The Board meeting for December will be held on the first Tuesday, December 3rd at the Sheraton Four Points. The workshop will begin at 11:30 a.m. followed by a Board meeting, if necessary, at a time certain of 5:30 p.m. Ms. King commented that two additional applications have been received for the Marketing Manager position that appear very promising. Both of the applicants are highly qualified.

ADJOURNMENT

There being no further business, Director Baldwin moved that the meeting be closed. The meeting concluded at 7:38 p.m.

Respectfully submitted,

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Secretary of the Board of Directors
Fuel Cell Electric Bus Fact Sheet

Overview

- Fuel cell electric buses provide zero-emission transit with range and performance comparable to diesel and CNG, and significantly better fuel economy.
- More than 300 FCEBs have been deployed around the world and operated millions of miles in revenue service.
- Transit agencies in the U.S. operate 27 FCEBs. The majority are at AC Transit and SunLine Transit in California.
- More than 30 additional buses planned for deployment in California in the next two years.
- FCEBs meet FTA's Buy America requirements.
- Transit agencies in the EU operate 87 FCEBs; 163 additional buses are planned for deployment in the next two years.
- China operates 20 FCEBs and has confirmed orders to operate 500 FCEBs in the next two years.
- Two transit bus manufacturers, New Flyer Industries & ElDorado National, supply fuel cell electric buses in the U.S.
- Ballard Power Systems and Hydrogenics are the primary suppliers of fuel cell systems for transit buses.
- Most of the hydrogen fuel used in transit bus applications is delivered from large-scale central production facilities or produced renewably on-site.
- Fuel cell technology developed for the transit bus market is beginning to diffuse into other heavy-duty applications like light rail, drayage trucks, and parcel delivery trucks.

Environmental Benefits

Greenhouse gas modeling\(^1\) shows that FCEBs running on hydrogen produced from natural gas reduce CO\(_2\) by more than half compared to a diesel bus. When hydrogen is made from renewable sources—such as wind- and solar-power or biogas—GHGs are nearly zero.

From well to wheels, FCEBs have zero criteria pollutants (NO\(_x\), VOCs and PM). Whether hydrogen is made from natural gas or renewables at “upstream” central locations, emission control is more effective compared to fuels burned in a large number of individual transit buses with internal combustion engines.

Zero-emission FCEBs are a benefit to riders and drivers, and to the communities in which they operate. Many of the early-market FCEBs are being placed in disadvantaged communities where clean buses can make the biggest impact on the health-related impacts of poor air quality.

\(^1\) CaFCP analysis using GREET model with support and verification by Argonne National Laboratory and CARB
Performance and Range

Zero-emission FCEBs offer the same full vehicle performance—air conditioning, gradeability, and highway speeds—on all types of transit routes. With range of 240-310 miles per fill, FCEBs are therefore a "one-to-one" replacement for conventional buses.

Because FCEBs are electric buses that make electricity from hydrogen, they are about twice as efficient than buses powered by combustion engines. By converting more of the fuel energy into motive power, fuel cell buses have the potential to reduce overall fuel costs.

Costs

*Capital* - FCEB capital costs are about $1.3 million per bus, a reduction of more than 60% since 2008. In future years, manufacturers believe that costs will decrease to $900,000 per bus, with a long-term target of $600,000.

*Fuel* - Hydrogen cost ranges from $5.00–$8.00/kilogram at the three California transit fueling sites; approximately $0.71–$1.14/mile. As more buses are deployed, the increased fuel demand is expected to lower the fuel price more on a per-mile basis.

*Maintenance* - Costs of the SunLine and AC Transit fuel cell buses under warranty have been roughly the same as the agencies' conventional buses. In the long-term, however, there is significant potential for operational cost savings because fuel cell systems are solid-state devices without moving parts and the electric propulsion systems are far more durable and easier to maintain than conventional systems. Preventative maintenance and parts replacement is expected to be less than for diesel and CNG buses.

Scalability

Hydrogen stations at transit yards are built to be scalable. The equipment is similar to a CNG station, and therefore a station can increase its capacity from 40 to 400 buses by upgrading the compression and storage equipment, and adding dispensers, while not entailing ten times the investment. Hydrogen stations do not typically need vast electrical or gas utility upgrades to scale up to a commercial level.

Disadvantaged Communities

FCEBs serve riders of necessity in disadvantaged communities throughout California. This interaction between Californians and clean transit technology is important in establishing a link between the State's investments and a broad demographic of riders.

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2 May 2014 New Flyer letter to CARB, as referenced in [www.arb.ca.gov/msprog/tech/techreport/fc_tech_report.pdf](http://www.arb.ca.gov/msprog/tech/techreport/fc_tech_report.pdf)


4 When operating five or more FCEBs per site.
A fuel cell bus is an electric vehicle that uses compressed hydrogen gas as its energy source and storage.

The fuel cell power module on board of the bus generates electricity through an electro-chemical reaction leaving only water and heat as by-products.

- Same electric drivetrain as battery electric buses
- Battery-fuel cell hybrid power train configuration
- Fuel cells power electric drive and recharge batteries
- Common bus platform as a battery electric bus

Ballard’s heavy duty fuel cell power modules are designed for transit buses with configurations from 30kW to 100kW.

Durable  Fuel efficient  Versatile  Environmentally friendly
Fuel cells enhance the performance of electric buses

- REPLACEMENT OF CONVENTIONAL VEHICLES
- up to 450km/300mi proven range
- RAPID REFUELLING SPEEDS (6 to 10 minutes)
- SIGNIFICANT REDUCTION IN VEHICLE WEIGHT (more passengers)

Fuel cell electric buses powered by Ballard have demonstrated performance

- 24H FUEL CELL MODULE AVAILABILITY >97%
- >30,000 hours STACK DURABILITY
- OPERATING IN CHALLENGING ROUTES AND CLIMATES
- over 13m km/ 8m ml OF PASSENGER SERVICE
- MORE THAN 15 years OF ROAD EXPERIENCE

Hydrogen provides flexibility to transit fleets

- SCALABLE TO SUPPORT HUNDREDS OF BUSES PER DEPOT
- RENEWABLE SOURCES (WIND, SOLAR, BIOGAS)
- NO ROADSIDE INFRASTRUCTURE
- SMALL FOOTPRINT
We are committed to sustainable mobility and clean air for everyone.

Fuel cell electric buses delivers zero-emission transit without compromise in service

"We treat the fuel cell buses like any other bus in our fleet. The buses are deployed in all conditions on all routes and they are meeting availability targets."

Lauren Skiver, CEO and General Manager of Sunline Transit Agency

Dedicated service
- 3 Global service centers
- Call center (24 hours a day, 7 days a week)
- Regional sales and service teams
- Regional spare parts depots
- Training center & repair center
- After-sales service contracts

SHIPPED MORE than 1000 heavy duty modules

over 100 fuel cell powered BUSES

CONNECT WITH BALLARD

Ballard Power Systems Inc.
9000 Giantsyc Parkway,
Burnaby, BC, V5J 5J8, Canada
marketing@ballard.com
(P) +1.604.454.0600
www.ballard.com
www.zeromissionsbus.org
Technical Summary

celsior CHARGE H2™ 40’ Fuel Cell-Electric Transit Bus

MEASUREMENTS

Length 41' (12.5m) including bumpers
Roof Height 11' 1" (3.4m)
Step Height 14" (356mm)
Front Step Height Kneeled 10" (254mm)
Interior Height - Floor to Ceiling 79" (2m) over front and rear axle; 95" (2.4m) mid-coach
Tire Size 305/70R22.5
Aisle Width 22" - 24"
Wheelbase 283.75" (7.2m)

ENGINE

Fuel Cell Ballard FCvelocity-HD85
Net Power 85 kW

PROPULSION

Propulsion System Siemens PEM 1DB2022 Electric Drive
Rated Power 210 kW
Rated Torque 1,475 lb-ft

ENERGY STORAGE SYSTEM

Hydrogen Storage Volume 37.5 kg
Battery 4023 Systems - 100 kWh
Range¹ 300+ miles (fuel cell & battery combined)

ACCESSIBILITY

Passenger Doors 1 Vapor Slide Glide - Electric
Wheelchair Accessibility 1 medium AmeriGlide Vapor Slide Glide
Wheelchair Positions 660 lb (299kg), 32" (813mm) wide,
1/7 slope. Flip out NFL ramp, front door 2

CAPACITY

Seats/Standees 40 / 42
Total Passengers 82

WEIGHT

Curb Weight 32,750 lb.
GVWR 43,820 lb.

TURNING RADIUS

Turning radius (body, with aluminum wheels) 43.5” (11.1m)

CLEARANCES

Approach/Breakover Angles/Departure 9±/9±

MAIN COMPONENTS

Electrical System

Cooling System

HVAC

FEATURES

Diagnostic & Monitoring System

Additional Safety

1 Range per FTA 40/40 Test Protocol - HVAC off.

newflyer.com
Based on the proven Axess platform, the Axess Fuel Cell (FC) and new Axess Fuel Cell/Battery Dominant (FCBD) offer proven solutions to the Zero-Emissions challenge. With water and heat being the only tailpipe emissions, the Axess Fuel Cell supplies true zero-emissions performance with a proven range of over 250 miles. With over 500,000 miles of transit validated service, the Axess FC line is ready for your toughest transit applications. Your Zero-Emissions Transit Solution.

- Transit tested, heaviest-duty 100% stainless steel Axess low-floor bus structure, designed and built in the USA
- Proven BAE HybriDrive Propulsion System with millions of transit revenue miles
- Choice of hydrogen Fuel Cell or scalable Fuel Cell/Battery Dominant configurations
- Electrified subsystems including air compressor, A/C unit, passenger doors, cooling fans and power steering
- Only heavy-duty low-floor bus offering FMVSS 209 certified 3-point passenger seat belts
STANDARD CHASSIS EQUIPMENT

<table>
<thead>
<tr>
<th>Drive System</th>
<th>BAE HybridDrive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Cell</td>
<td>Ballard HD6 (150KW)</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>Up to 50 kg</td>
</tr>
<tr>
<td>Capacity</td>
<td>S-Cam drum air brakes with regenerative power</td>
</tr>
<tr>
<td>Range</td>
<td>Up to 260 miles</td>
</tr>
<tr>
<td>Brakes</td>
<td>Arvin Meritor, drop I-beam front &amp; conventional rear</td>
</tr>
<tr>
<td>Suspension</td>
<td>Full air ride; two bag front, four bag rear</td>
</tr>
</tbody>
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STANDARD BODY EQUIPMENT

- BRT front end appearance package
- 100% welded 304 Grade stainless steel monocoque safety cage
- Non-corrosive composite exterior skins
- I/O Controls G3 multiplex electrical system
- Seatbelt certified passenger seat track
- LED interior and exterior lighting
- Front or center door ADA compliant wheelchair ramp
- Vapor Slide/ Glide passenger doors
- One color full exterior body paint

POPULAR OPTIONS

- Full BRT package with hidden frame passenger windows
- Scalable Fuel Cell/Battery Dominant (FCBD) system for vehicle range optimization
- Rear mounted HVAC
- Assortment of passenger seating and wheelchair securements
- Custom Luggage and stroller/grocery racks
- GPS, AVL, APC, ITS & other electrical accessories
- Electrically operated slide/glide passenger doors

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>40'</th>
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<tbody>
<tr>
<td>Maximum Passenger Capacity</td>
<td>43</td>
</tr>
<tr>
<td>Overall Length</td>
<td>484&quot;</td>
</tr>
<tr>
<td>Overall Width</td>
<td>102&quot;</td>
</tr>
<tr>
<td>Overall Height</td>
<td>140&quot;</td>
</tr>
<tr>
<td>Approach Angle</td>
<td>8.7°</td>
</tr>
<tr>
<td>Breakover Angle</td>
<td>9°</td>
</tr>
<tr>
<td>Departure Angle</td>
<td>8.7°</td>
</tr>
<tr>
<td>Wheelbase</td>
<td>275&quot;</td>
</tr>
<tr>
<td>GVWR</td>
<td>44,300#</td>
</tr>
</tbody>
</table>

POPULAR FLOOR PLANS

- 40' Low Floor 27 + 2 Wheelchairs or 33 Passengers
- 40' Low Floor 29 + 2 Wheelchairs or 35 Passengers
- 40' Low Floor 27 + 3 Wheelchairs or 37 Passengers
- 40' Low Floor 31 + 2 Wheelchairs or 37 Passengers
- 40' Low Floor 31 + 2 Wheelchairs or 37 Passengers
- 40' Low Floor 35 + 2 Wheelchairs or 41 Passengers

Due to ongoing engineering improvements, ENC reserves the right to make changes without notification.

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