



Hydrogen Opportunities for Airports

Today's Transit for Tomorrow's World

Lauren Skiver
CEO/General Manager
SunLine Transit Agency



Coachella Valley

- 1,120 square miles of service area
- San Geronimo Pass in the west to the Salton Sea in the southeast

Operation – 370+ Employees

Routes



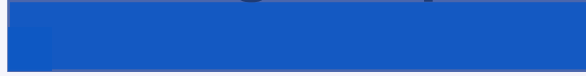
- 14 fixed routes
- 1 express route
- 1 regional route
- ADA Paratransit

Fleet

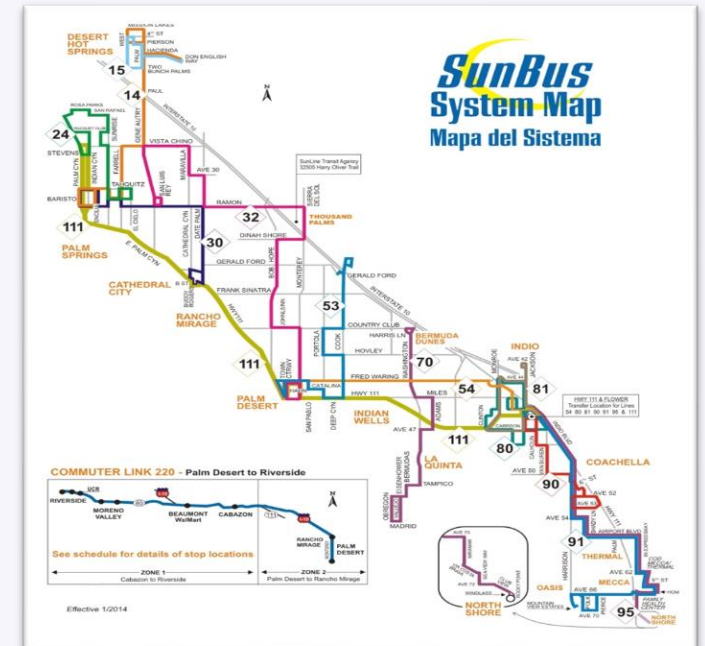


- 60 CNG
- 17 Hydrogen Electric Fuel Cell
- 4 Electric Battery BYD
- 39 CNG Paratransit Vehicles

Revenue Miles vs. Passenger Trips



- 4.3 million revenue miles
- 4.5 million passenger trips



ZEB Fleet

4-
BYD



11

El Dorado
National

Ballard

US Hybrid

BAE

New Flyer

Ballard

Cummins
Hydrogenics

Siemens

6



- 4 FC Shuttle Buses (Pilot Project)
- 5 awarded through VW Mitigation Settlement and vehicle replacement funds
- 5 awarded through EPA TAG

Hydrogen Fueling Station Overview



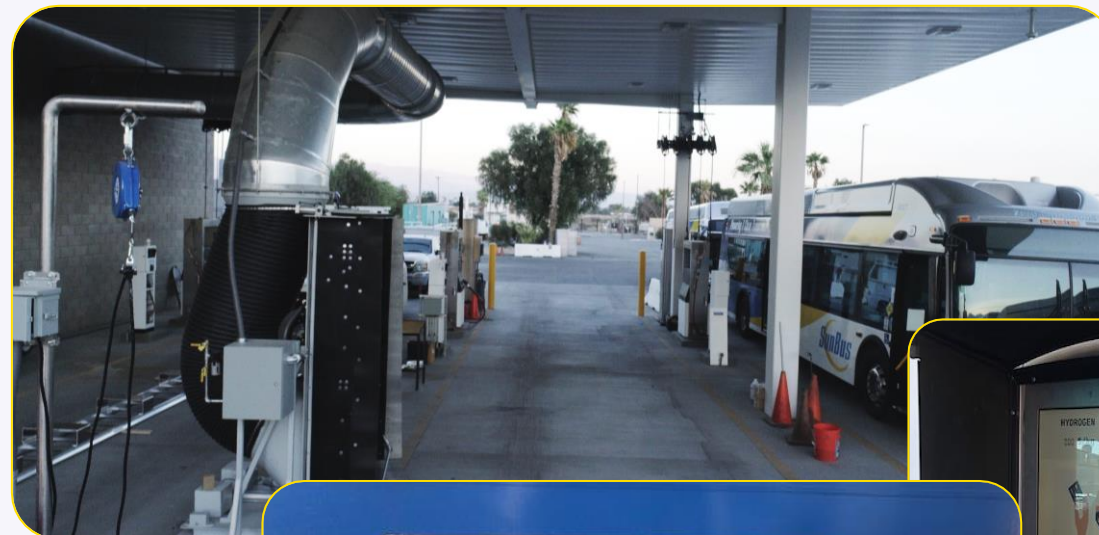
Proton/Nel PEM Electrolyzer

900 Kg per day production

380 Kg use per day

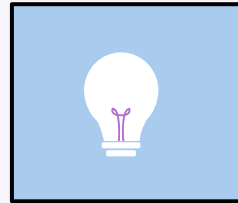
2 dispenser fast fill rate

\$8.7 Million CARB Grant

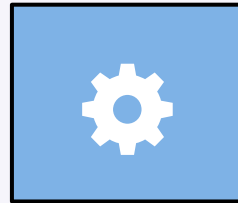


Hydrogen Fueling Station Lessons Learned

Ensuring utilities were able to support project



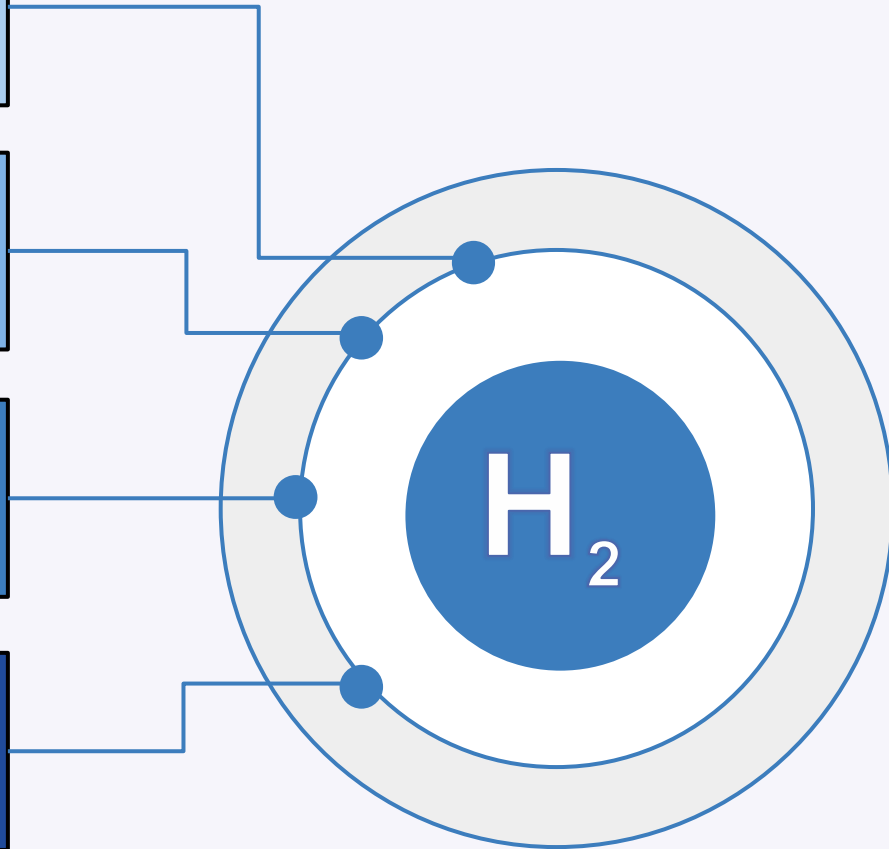
Ensuring we have personnel with the right credentials to execute the project



Correctly estimating the amount of civil work involved



Establishing a performance based statement of work



Microgrid to Hydrogen

SunLine is looking to expand its fueling systems



Solar Farm

700 Bar Public
Fueling Station

Fuel Cell Shuttle Bus Project

California Energy Commission
(CEC) Grant Funded Project
With CALSTART

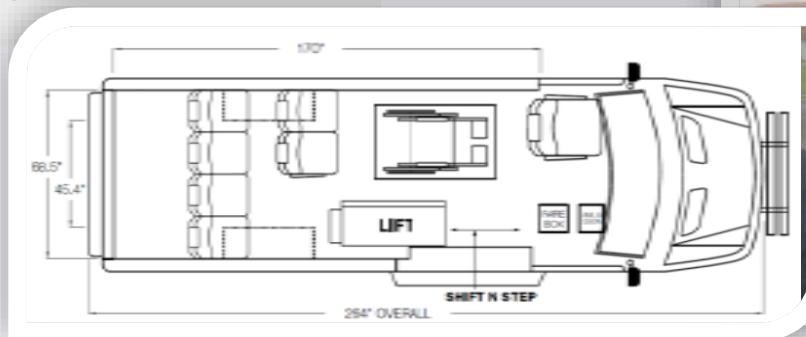
Total Project Cost \$4,353,738

- CEC funded \$2,688,548
- Cost Share \$1,665,190

18-Months of Data Collection
and Demonstration

Four 22-foot Fuel Cell Paratransit Shuttle Buses
Vehicle Information

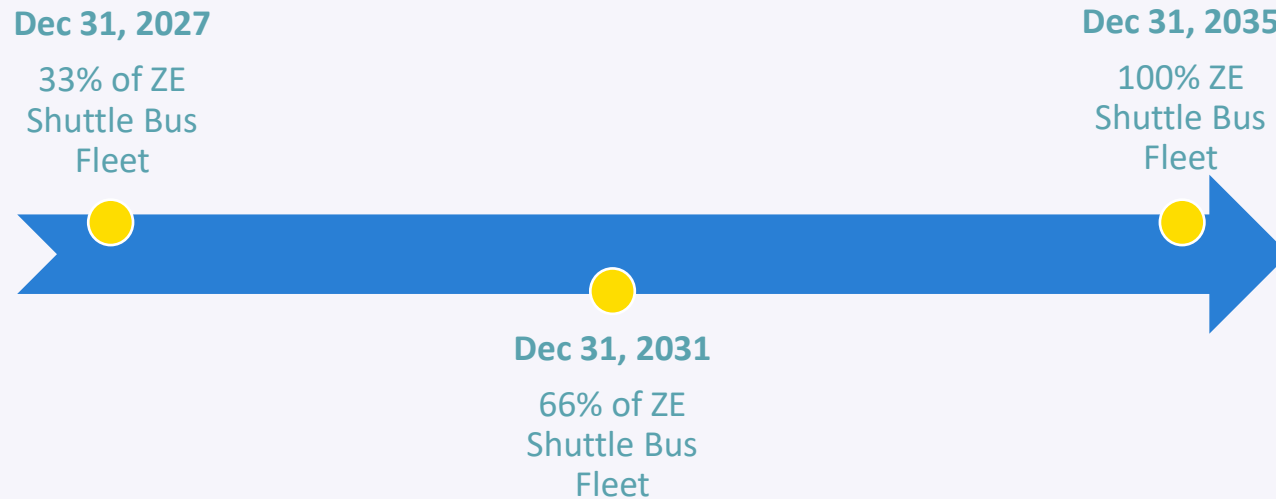
- Ford Transit 350 HD
- Fuel Cell US Hybrid
- Range: 250 miles
- Fueling: Hydrogen tank capacity of 13kg,
fueling at 350 bar pressure



ICT Rollout Plan Timeline



ICT Regulation Timeline for Airports



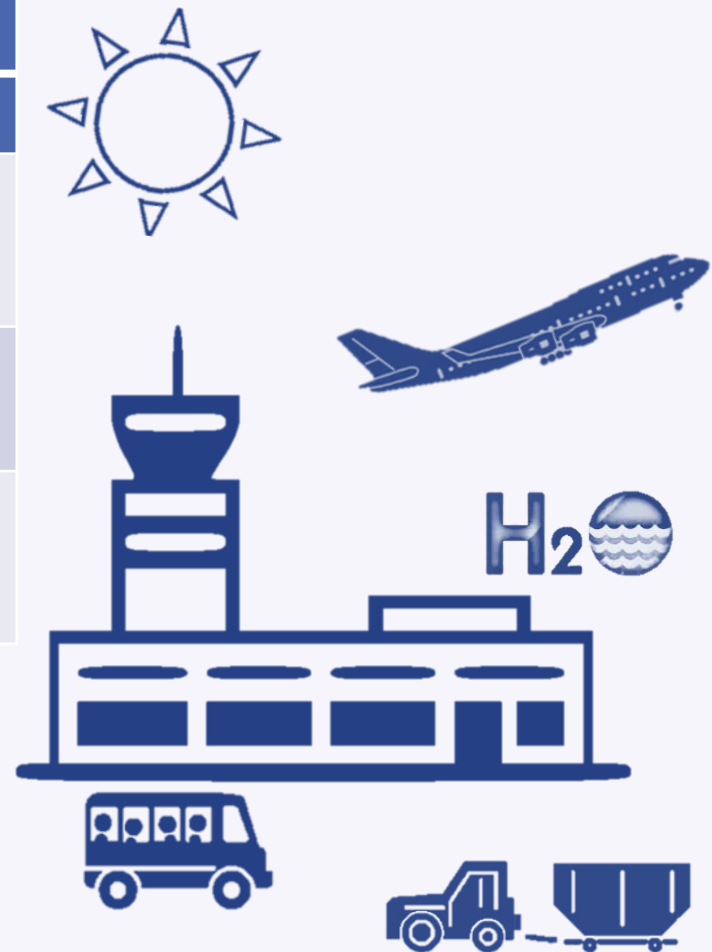
Regulated Airports	
Los Angeles (LAX)	John Wayne (SNA)
San Francisco (SFO)	Sacramento (SMF)
San Diego (SAN)	Mineta San Jose (SJC)
Hollywood Burbank (BUR)	Palm Springs (PSP)
Oakland (OAK)	Santa Barbara (SBA)
Ontario (ONT)	Long Beach (LBG)
Fresno (FAT)	

Hydrogen Opportunities for Airports

SUNLINE		AIRPORT POSSIBILITIES	
FUEL	FLEET	FUEL	FLEET
Electrolyzer	Multiple Manufacturers	Delivery or Production Station	Multiple Manufacturers
Gas	Buses	Liquid or Gas	Buses and/or Support Vehicles
Owner Operated	Owner Operated	Owner Operated or Contracted Out	Owner Operated or Contracted Out

Other vehicles/infrastructures to consider:

- Cargo Trucks
- Runway Operations
- Terminals
- Control Towers
- Multi-Megawatt Fuel Cell Systems for Power
- Back-up Generators
- Aircraft



Thank You!



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