California Transportation Commission

Senate Bill 671 Workgroup

Friday, April 1, 2022

10:00 am – 11:00 am

Via GoToWebinar

https://attendee.gotowebinar.com/register/3768143317622821903

Agenda

Topic	Details
Welcome and Introductions	• Welcome • Webinar Logistics
Key Focus Areas for Discussion	• Potential Methodology for Prioritizing Hydrogen Station Locations (Nico Bouwkamp, California Fuel Cell Partnership) • Hydrogen Charging Station Needs and Initial Cost Estimates (Mikhael Skvarla, Gualco Group)
Closing and Next Steps	• Next Meeting on May 13, 2022

CALIFORNIA TRANSPORTATION COMMISSION STAFF CONTACTS:

Hannah Walter, Associate Deputy Director- Hannah.Walter@catc.ca.gov

WORKGROUP

SENATE BILL 671

Meeting Agenda

- Potential Methodology for Prioritizing Hydrogen Station Locations
- Hydrogen Charging Station Needs and Initial Cost Estimates

Potential Methodology for Prioritizing Hydrogen Station Locations

CA Fuel Cell Partnership Heavy-Duty Hydrogen Re-Fueling Station Density Areas

- Number of stations
- City/region
- Nearest Interstate or state highway
- Type of fuel
- Number of dispensers
- Station capacity

Potential Criteria

1. Identify critical locations
2. Identify connections between areas
3. Identify number of stations needed for coverage along connection
4. Identify number of stations needed for capacity along connection
5. Other criteria

Critical Location Examples

- Ports
- Intermodal rail yards
- Warehouse districts
- Air cargo locations

Connections

- Connections should be along recommended corridors

Other Criteria

An existing diesel station that is willing to work with partners on hydrogen.

A station with space to meet heavy-duty re-fueling needs

Proximity to freeways

Minimal impact on residents and or reduction of impacts to disadvantaged populations

Hydrogen Station Needs and Initial Cost Estimates

Hydrogen Station Needs and Initial Cost Estimates

Presented by Mikhael Skvarla

Senior Government Affairs Advisor

The Gualco Group, Inc.

Disclaimer

- These are early days for the zero emission (ZE) heavy-duty (HD) market and HD hydrogen (H2) refueling
  - The statements I make are based on my preliminary analysis which is still being finalized and reviewed.
- H2 production, refueling, and fuel cell technology is rapidly advancing and there are innovations on the cusp of commercialization that will benefit all segments of this market.
- These are estimates based on early information and scaled datasets from the light-duty experience.
  - Just trying to get close at this point in time.
    - This information is based on insights from station developers representing over 80% of the existing H2 refueling market and 100% of the publicly available HD stations.

Foundational Policy Needs

- Parity in statewide HD infrastructure funding
  - Currently less than 3% of zero-emission infrastructure funds have been allocated to hydrogen refueling.
  - With designated HD funds in the 21-22 budget and currently proposed 22-23 budget there is a significant opportunity to launch HD hydrogen refueling.
  - CEC/CALSTART propose to limit HD H2 Refueling to just 30% of the funds
- Heavy-Duty Hydrogen Refueling Infrastructure Credits in Low-Carbon Fuel Standard (LCFS)
  - Add an additional 2.5% deficit to the LCFS program to support “capacity credits”
    - Different design than the LD credit to account for the needs of the HD sector
      - Significantly larger stations
      - Higher initial utilization

Cost Estimates

- The operating HD stations are scaled up LD stations and undersized for what we envision for the future needs of these operations.
  - HD HRI will allow us to build substantially larger stations initially while the fleet is growing.
  - The energy transfer from current hydrogen stations is equivalent to a 4MW charger.
    - Faster refueling is being developed with a target energy transfer rate equivalent to a 12MW charger,
- LD Station equipment costs between $2 to $2.5M for 1200-1600kg of capacity.
  - GFO 19-602's average public match was ~$1M
  - HD stations should be at least ***five*** times the size of a LD station.
    - Initial stations will have equipment cost around $10M with a need to initially support about half of the equipment costs.
      - If HD HRI is adopted, we will be able to lower the funding needs to develop these stations
- With the appropriate policy signals in the initial launch of HD H2 refueling we anticipate being able to drive station equipment costs down to the point that we can build stations five times bigger at three times the current costs.

Thank You

For questions please contact:
Hannah.Walter@catc.ca.gov