

DOCKETED

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CaFCP Stakeholder Response to 18-HYD-04 HySCapE Workshop

Additional submitted attachment is included below.

October 7, 2019

California Energy Commission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket No. 18-HYD-04, Comments in response to CEC's September 27, 2019 HySCapE Staff Workshop

Dear CEC Administrator –

The California Fuel Cell Partnership (CaFCP) respectfully submits this letter of comment in response to the California Energy Commission (CEC) workshop held on September 27, 2019 (18-HYD-04 HySCapE Staff Workshop).

This letter is submitted on behalf of those members participating and commenting. CaFCP, working within its charter, provided the membership a platform for open discussion and input. Although CaFCP acted as the facilitator to develop the content of this letter, the views expressed are a consensus solely of the stakeholders listed.

The listed stakeholders acknowledge that the Draft Solicitation Concepts in 18-HYD-04 are very good, and therefore support its release as soon as possible. However, CEC specifically asked industry for comments which this letter addresses. We appreciate CEC's desire to utilize HySCapE to evaluate GFO submissions, but we acknowledge that HySCapE is not an engineering performance model and therefore cannot provide precise quantitative metrics. Comments on this topic are intended to clarify the CEC intent with using HySCapE for evaluating hydrogen refueling station designs and equipment. We are suggesting corrections to the approaches introduced in the Workshop so that CEC can better accomplish its evaluation goals.

The following comments are specific to the CEC presentation, "Staff Workshop on the Hydrogen Station Capacity Evaluation (HySCapE) Tool and Hydrogen Station Data Collection and Reporting, September 27, 2019,"¹ presented by CEC staff at the workshop held on the same date and by reference in this letter as, "CEC Presentation."

¹ *Staff Workshop on the Hydrogen Station Capacity Evaluation (HySCapE) Tool and Hydrogen Station Data Collection and Reporting*, California Energy Commission, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=229879&DocumentContentId=61329>, accessed September 27, 2019.

Direct Comments to CEC Presentation

Slide 10, “Station Nameplate Capacity,” heading, as stated, “Minimum 24-hour fueling capacity:”²

Comment:

Recommendation 1: We feel that this should be revised to “24-hour fueling capacity according to the Chevron Friday Vehicle Demand Profile:”.

- This would clarify the intended use of the HySCapE model to:
 - be consistent with how the ARB uses the HySCapE tool
 - represent station equipment capability on a “normal” full demand profile

Slide 10, first bullet, as stated, ““Number of kg Mass Dispensed” is equal to or greater than 225 kg per fueling position”³

Comment:

We interpret this as establishing a minimum mass dispensed through each fueling position of 225 kg.

We support this as a minimum technical requirement, provided however that the evaluation of station capacity using the HySCapE model is done appropriately (please see comment below, to the Slide 10, fourth bullet).

Slide 10, second bullet, as stated, “The “Time Between Fills” reflects the capability of the station design that fully meets the Chevron Friday Vehicle Demand Profile”⁴

Comment:

We understand this is not a true statement about the HySCapE model – in fact the “Time Between Fills” is an input parameter to the model, and the capability of the station design to meet the resulting Chevron profile is represented in the output metrics for “Mass Dispensed” and “Mass Dispensed at SOC Limit.”

Rather, this appears to be a statement of how CEC intends to use the HySCapE model, by requiring the third bullet (i.e., require entry of “Time Between Fills” that causes “Mass Dispensed” to equal “Mass Dispensed at SOC Limit”).

For these reasons, we make the following recommendations:

² Staff Workshop on the Hydrogen Station Capacity Evaluation (HySCapE) Tool and Hydrogen Station Data Collection and Reporting, California Energy Commission, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=229879&DocumentContentId=61329>, accessed September 27, 2019, p. 11.

³ Ibid, p. 11.

⁴ Ibid, p. 11.

- Recommendation 1 for the intent of evaluating station equipment capability to dispense mass to customers at full SOC: the time between fills should be an input parameter from the station developer based on station design parameters relating to residence time (see further comment, below, to Slide 10, third bullet).
- Recommendation 2 for the intent of evaluating station equipment capability to dispense mass to customers at full SOC: the CEC may wish to cap the time between fills at “not to exceed 255 seconds” for consistency with ARB use of the HySCapE model and to specify a minimum level of performance for the customer in terms of wait time.

Slide 10, third bullet, as stated, “The HySCapE output file displays the “number of kg Mass Dispensed” equal to “number of kg Mass Dispensed at SOC limit”⁵

Comment:

We understand this to be CEC’s method / intended use of HySCapE to make the second bullet true (i.e., require entry of “Time Between Fills” that causes “Mass Dispensed” to equal “Mass Dispensed at SOC Limit”).

For the intent of evaluating station equipment capacity to dispense mass at the SOC limit, the CEC may wish to use the “Mass Dispensed at SOC Limit” metric in HySCapE output for its evaluations.

- Recommendation 1 for the intent of evaluating station equipment capability to dispense mass to customers at full SOC: do not require an applicant to specify a time between fills that makes “mass dispensed” equal to “mass dispensed at SOC limit,” for the following reasons.
 - It is unnecessary because HySCapE already provides the “mass dispensed at SOC limit” metric which the CEC can use to evaluate station equipment capacity for a specified time between fills.
 - This specific task of making the two numbers equal is an impractical and an imprecise use of the HySCapE model, which is not an engineering performance model.
- Recommendation 2 for the intent of evaluating station equipment capability to dispense mass to customers at full SOC: evaluate based on the “Mass Dispensed at SOC Limit” metric from the HySCapE model results
 - This would be consistent with CEC intent to evaluate station equipment capacity to dispense mass at the SOC limit
 - This would be consistent with ARB use of the HySCapE model
- Recommendation 3 for the intent of evaluating station equipment capability to dispense mass to customers at full SOC: the CEC may wish to cap the time between fills at “not to exceed 255 seconds” for consistency with ARB use of the HySCapE model and to specify a minimum level of performance for the customer in terms of wait time.

⁵ *Staff Workshop on the Hydrogen Station Capacity Evaluation (HySCapE) Tool and Hydrogen Station Data Collection and Reporting*, California Energy Commission, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=229879&DocumentContentId=61329>, accessed September 27, 2019, p. 11.

Slide 10, fourth bullet, as stated, “Enter “0” for the “Number of deliveries per day” in the HySCapE input file”⁶

Comment:

The HySCapE model is based on evaluation of the mass flow of hydrogen as determined / limited by system components.

- Recommendation 1 for the intent of a “Neutral Standard” for evaluating station equipment capability: change to “Enter “1” for the “Number of deliveries per day””
 - This would be the best approximation of a “neutral standard” given the simplifications and assumptions built into the HySCapE model and the range of possible station designs and control systems.
 - This would be consistent with ARB use of the HySCapE model
- Recommendation 2: Applicants should have the opportunity to report station performance, using HySCapE and supplemented by equivalent models or capacity estimation methodologies justified by the proposal
 - This is consistent with 17 CCR Section 95486.2 (a) (2) (E).
 - Because of nuances in station design (e.g., control scheme) not captured in HySCapE, CEC may wish to include this additional information in their evaluation.
 - This may help CEC to properly interpret equipment capabilities

Slide 15, first bullet, as stated, “Each fueling position meets the minimum 1 hour fueling capacity of 28 kilograms, completing seven 4-kilogram H70-T40 fills”⁷

- Recommendation: The 1-hour Fueling Capacity metric appears not necessary, provided our recommendations on use and interpretation of the HySCapE model are adopted.
 - The comment provided in response to Slide 10, second bullet addresses this issue.

Other Workshop Topics

Topic: Useable onsite storage quantity

Comment:

The useable quantity of hydrogen on site cannot be calculated consistently by HySCapE.

- Recommendation 1: Evaluate ground storage in terms of the quantity of useable hydrogen as a function of total quantity and useable fraction.

⁶ *Staff Workshop on the Hydrogen Station Capacity Evaluation (HySCapE) Tool and Hydrogen Station Data Collection and Reporting*, California Energy Commission, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=229879&DocumentContentId=61329>, accessed September 27, 2019, p. 11.

⁷ *Ibid*, p. 16.

- The usable fraction of onsite storage may be influenced by operational control schemes, such that the useable quantity of hydrogen may not be accurately calculated by HySCapE.

We greatly appreciate the opportunity to meet in the Workshop environment and CEC's receptivity to our industry's collective feedback. We hope that our views will provide CEC confidence in an expeditious release of this GFO.

In partnership,

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