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Nel Hydrogen input document attached.

Additional submitted attachment is included below.

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Nel Hydrogen Input to Renewable Hydrogen Transportation Fuel Production 17-HYD-01

Nel Hydrogen appreciates the opportunity to provide input for the above *Draft Solicitation Concepts* issued by the California Energy Commission (CEC).

In general, we applaud the CEC for compiling well-written *Draft Solicitation Concepts*, which address key industry recommendations made at the Pre-Solicitation Workshop on January 30, 2017. Our input is therefore limited to few items, as well as our general support for the CEC in commencing the Solicitation process.

While we understand the need to prioritize public funding – hence the currently indicated $2M in potential awards toward this pending solicitation – we would like to highlight that investments in hydrogen were deliberately omitted by Electrify America in their 1st cycle *California ZEV Investment Plan (ZIP)*, and against strong recommendations by ARB and public stakeholders to address and include hydrogen.

In ARB's *Staff Analysis of Electrify America's First Zero Emission Vehicle Investment Plan* from July 21, 2017 – and issued prior to the recent ARB approval of the ZIP – a relevant public comment recommended that the *"State of California identify another funding source for Hydrogen infrastructure absent funding from the Plan"*.

This critical point may help justify that more public funds are made available for the CEC to allocate toward this potential solicitation, particularly since additional funds will not only enable increased renewable hydrogen production capacity, but will also address the SB 1505 requirement for 33.3% renewable hydrogen – a requirement that does not currently apply to electricity charged from BEV infrastructure that was included in the *ZIP*.

Our input specific to the *Draft Solicitation Concepts* are outlined below:

- **Section 17. Full Application Scoring Criteria and Points, D. Performance**: ***"At least 6 months of demonstration/validation and testing data shall be provided."*** We understand this as data from testing of the production equipment that applies for funds within the Application. Thus, the intent of receiving these data is to validate that the production equipment is thoroughly tested in the market space and sufficiently mature to receive public funds. If so, it may be relevant to not only require demonstration data, but potentially also require market and customer references and years of operational experience to further substantiate the capability of the production technology. With regard to the test data, the CEC provision of a template with specific line-item datum requests may ensure a coherent, streamlined comparison basis across Applicants. Also, in order to achieve more detailed data from Applicants, we recommend that these potentially sensitive data are allowed to be submitted as confidential, similar to the approach on handling of business plans submitted under the former hydrogen station solicitation GFO-15-605.

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- **Section 20. References: Laws, Regulations, Reports, and Other Documents.** This section outlines various technical hydrogen standards where project compliance is required for funding eligibility. It may be relevant to soften the language and be less prescriptive on Applicant's application of these standards, as some may not be relevant to a hydrogen production plant. E.g., some of the listed standards are more germane to hydrogen *fueling* than to fuel production. Also, alternative standards or approval/certification pathways may be more relevant than those currently listed. Instead, CEC could chose to emphasize Applicants' ability to outline and substantiate that their approval/certification pathway is likely to be accepted by relevant Authorities Having Jurisdiction.

- **Hydrogen Production Capacity.** Throughout the *Draft Solicitation Concepts*, several definitions of daily "*hydrogen production capacity*" for the intended plant seem to be stated – ranging from a nameplate capacity of a 1,000 kg/day (Section 7A. *Minimum Technical Requirements*) to a daily capacity of a 1,000kg/day (Section 7D. *Minimum Technical Requirements*). For commercial reasons, the hydrogen production facility operator may choose to have a variant production load, e.g., to optimize the electricity rate schedule costs towards the grid and/or renewable electricity content. Further, e.g., ramping up/down hydrogen production may provide grid demand-response services that reduce average electricity costs, whilst indirectly integrating more renewables into the California power grid. Thus, only requiring a specific nameplate capacity would allow for such flexible operation; whereas requiring a certain daily production or offtake may limit the operator's ability to both meet CEC capacity requirements while allowing for flexible production loads. Therefore, it would be beneficial if the capacity requirement would be further specified to only be nameplate capacity.

- **Section 17. Full Application Scoring Criteria and Points, B. Project Readiness** (top of page 12). This section outlines an evaluation criterion where a score seems to be commensurate to an Applicant's ability to outline that they have ***"secured feedstocks and off-take agreements for full production capacity…"*** However, potential off-take is only limited to the rate of light-duty fuel cell electric vehicles (LDVs) adoption (as stated throughout the *Concepts*). This criterion may unintentionally place a substantial restraint on Applicants' commercial flexibility in choosing market off-take channels. E.g., a 1,000kg hydrogen production plant built in a certain California region during 2019, to which off-take would be limited to only LDVs and if *full* off-take from day 1 is a scoring preference, would limit the potential market off-take to very few channels. This would indirectly limit other emerging off-take channels in the future that may not be able to utilize the full production capacity from day 1; and/or other vehicle types, such as heavy-duty-vehicles, where the environmental gains from use of hydrogen may be even higher than LDVs. Therefore, it might be relevant to consider adjusting the requirements to allow for a more flexible commercial hydrogen plant operation and off-take.

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- In previous PONs or GFOs for hydrogen fueling stations, projects with executed Agreements may also have been eligible for **Operation and Maintenance (O&M)** Agreements. This opportunity could also be relevant to consider for this potential solicitation, as support for O&M may alleviate operational losses from low utilization during the early years of operation.

- Lastly, to increase both the hydrogen production capacity and scope of a project, it would be helpful to leverage the potential CEC funds with funds from other similar State or Federal programs. This would however require further guidance to applicants and a coordination effort between the CEC and other public programs.

Again, Nel would like to thank the CEC for their thoughtful and forward-thinking approach on this critical topic, and we look forward to seeing its further development in the near future. Should the CEC have any questions on our comments and input for these Draft Solicitation Concepts, please do not hesitate to contact us.

Best regards
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