

Att.: California Air Resources Board (CARB)
Topic: Written comment to the “Public Hearing to Consider Proposed Low Carbon Fuel Standard Amendments”

Nel Hydrogen
 2389 Verna Court
 San Leandro, CA 94577

February 20, 2024

E info@nelhydrogen.com
 W www.nelhydrogen.com

Nel Hydrogen (NEL) appreciates the opportunity to provide input to the CARB on the “Public Hearing to Consider Proposed Low Carbon Fuel Standard Amendments” (LCFS)¹.

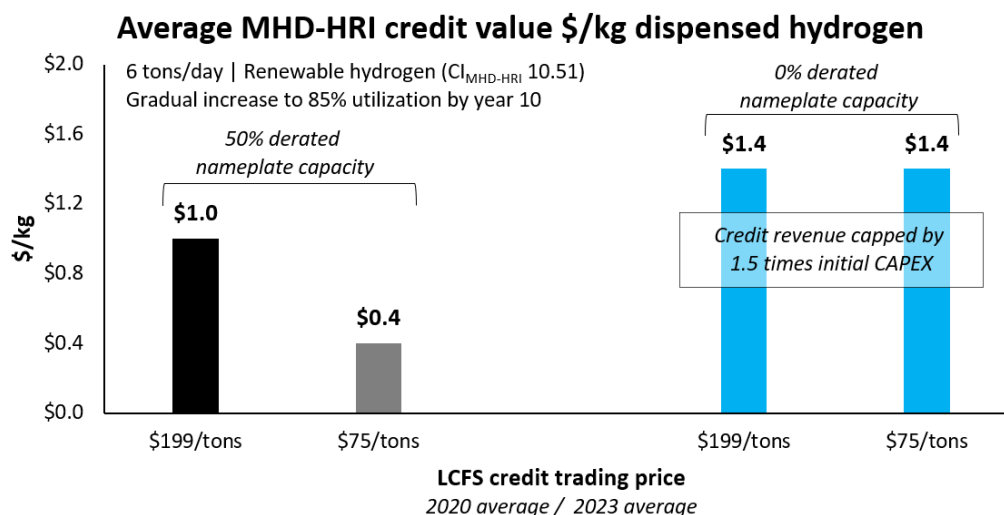
NEL is a leading manufacturer of hydrogen production and fueling equipment and have delivered equipment and provides services to multiple stations in California offering fueling to both Light Duty Vehicles (LDV) and Heavy Duty Vehicles (HDV) on a daily basis.

Foremost NEL would like to complement the CARB for proposing inclusion of both Medium and Heavy Duty Vehicles (MHD) in the LCFS regulation, in addition to the current LDVs only.

Whereas the CARB proposed inclusion of MHD into the LCFS² provides a good basis – NEL would like to convey some concerns regarding the following proposed new mechanisms:

- 50% derating of Nameplate capacity for Shared MHD-HRI stations
- Capping of cumulative credit value at 1.5 times initial capital expenditure.
- Shortening of Crediting Period from 15 years to 10 years.

The impact of the above mechanisms will significantly reduce the achievable credit value per kg hydrogen dispensed, as illustrated in the graph below.



The graph shows calculations of MHD-HRI credit value per kg hydrogen dispensed for a 6 tons/day Shared MHD-HRI station using renewable hydrogen. The average LCFS trading price during 2020 of \$199/tons³ and the average during 2023 of \$75/kg are used as they represent the all-time high and low during the past 10 years. Station is assumed operated for 10 years, and with a gradual annual increase of utilization reaching 85% by year 10.

¹ https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/lcfs_notice.pdf

² <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/appa-2.pdf>

³ Based on LCFS credit trading prices as reported on www.arb.ca.gov/fuels/lcfs/credit/lrtcreditreports.htm

The 50% derating of Nameplate capacity results in an average credit value of only \$0.4 - \$1.0 per kg of hydrogen dispensed during the 10 years Crediting Period.

Without derating of the capacity, the average credit value would be \$1.4/kg, almost regardless of the credit trading price, as the value is capped by the cumulative credit revenue limit of 1.5 times the initial capital expense for the MHD-HRI station.

In 2020 a California Energy Commission report⁴ assessed that an average LCFS credit value of ~\$3/kg in 2030 (\$150/tons CI=35) would bring hydrogen dispensed costs within the range of \$6-8/kg required for gasoline price parity in LDVs.

However, achieving diesel price parity for MHD vehicles will require an even lower cost of hydrogen dispensed, likely in the range of \$4-5/kg. Achieving MHD diesel price parity in 2030 would thus require an LCFS credit value higher than the \$3/kg sufficient for LDVs.

As shown in the credit value calculations above, the cap on cumulative credit revenue on 1.5 times the initial CAPEX indirectly limits the maximum credit value to only \$1.4/kg – and the 50% derating reduces this even further down to between \$0.4 to \$1/kg. The proposed 10 years Crediting Period, compared to the current 15 years, also reduces the overall credit value generated.

As a result, the achievable credit value \$/kg will most likely not be sufficient for enabling MHD-HRI stations to achieve diesel price parity by 2030.

According to the LCFS amendment Appendix E⁵ the CARB rationale for the 1.5 times CAPEX limit, 10 years crediting period and the derating of capacity, is to incentivize a sufficient number of stations to accommodate anticipated MHD hydrogen fuel demand.

Deployment of sufficient number of stations is definitely needed to accommodate MHD vehicle deployments. However, if the potential LCFS credit value does not enable diesel price parity, this will negatively impact the attractiveness of MHD vehicles and may challenge the actual vehicle deployments and emission reductions achieved.

NEL would therefore encourage CARB to:

- Consider removing the 50% Nameplate Capacity derating for Shared MHD-HRI stations
- Consider either removing or increasing the cumulative credit value cap of 1.5 times initial capital expenditure
- Consider keeping the 15 years Crediting Period as in the current LCFS regulation
- Aim of the above should be to enable credit values (\$/kg) where diesel price parity is within reach for MHD-HRI stations

Thank you for considering the input from NEL.

Best regards

Eddy Nupoort

Director of Sales and Business Development

Nel Hydrogen Inc.

Cell: (916) 841 7262

E-mail: enupo@nelhydrogen.com

⁴ <https://efiling.energy.ca.gov/getdocument.aspx?tn=233292>

⁵ https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/lcfs_appe.pdf

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