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James Duffy, Branch Chief
Industrial Strategies Division, Transportation Fuels Branch
California Air Resources Board
1001 I St.
Sacramento CA, 95814

Re: Proposed LCFS Refinery Investment Credit for Shell Cat Gas Plant Energy
Reduction Project

Dear Mr. Duffy,

Thank you for the opportunity to comment on the proposed Refinery Investment Credit (RIC) application related to the Shell Catalytic Cracking Unit (CCU) operating at the Martinez Refinery. In principle, RICs can support the objectives of the LCFS program -- reducing GHG emissions for transport fuels taking a lifecycle approach while incentivizing carbon-lowering technological innovation -- and reflect a strong basis in the science that underpins the program. As with all LCFS pathways, sufficient data to support the analysis underlying crediting for GHG reductions is paramount for the integrity of the program. Perhaps equally important is that the program be as transparent as possible regarding the data and analysis underlying the crediting, to provide the necessary information to those engaged in the credit market and making LCFS targets a reality. However, we are concerned that this application does not contain sufficient information for the public or independent experts to ascertain whether the suggested crediting is indeed appropriate.

This comment is not intended to advocate for approval or disapproval of the application, but rather encourage CARB to ensure, especially for new types of pathways, a balance between adequate information entering the public sphere and protection of confidential business information that underpins stakeholder investment and action. Our letter is a comment that the level of detail in this application may not be sufficient for independent bodies to review it and contribute to the public discussion as the LCFS moves to realize the carbon-lowering potential within petroleum refineries.

The Application Offers Insufficient Data to Evaluate its Claimed Reductions

The Project Report submitted with this application and posted on the LCFS webpage is heavily redacted, the majority of content is unavailable to the public, presumably due to proprietary business content. Unlike standard LCFS credit pathway applications, however, RICs are not



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evaluated through the CA-GREET model, which provides a basis for evaluation by independent parties. LCFS credit pathway applications can typically be independently evaluated because the information in the publicly available application material, combined with the framework of the CA-GREET model is sufficient to understand most of the critical characteristics of the proposed pathway. The overwhelming majority of LCFS credit pathways use technology and processes that have been repeatedly discussed in scientific literature, allowing a reasonable approximation of the claims under most pathways to be derived, which is typically sufficient to determine whether any of the claimed effects may be implausible.

RIC applications, however, do not as yet have an established modeling framework in the public domain and operational data on commercial refineries are less available than are similar data for biofuel production systems. As such, independent researchers and the public may lack the ability to engage on this issue in the manner intended under State law and practice.

The Application's System Diagram is Insufficiently Detailed

In the staff report section relating to *GHG Emission Reduction at the Wet Gas Compressor* (Page 4) states: "What doesn't get let down to the secondary chamber (B-A) is exhausted into the 160# steam header for further use elsewhere in the refinery." In this case, B and A are steam flows at two valves in the Wet Gas Compressor, and the credits generated are a function of, among other things, pre-project and post-project flows through each. The project diagram in the staff report, which appears to be identical to the one submitted by the applicant, does not include the location of these valves, or any of the points at which energy or mass flows that establish the GHG savings are measured,

The system diagram provided with the application is described, in the lower-right corner, as a "Simplified Process Flow." This simplification appears to be inadequate to the task of describing what changes the refinery proposes to make to generate the desired RICs; a more comprehensive accounting of mass and energy flows would be required for independent parties to understand how the proposed changes compare with business as usual, as discussed further below.

The Application's System Boundary Does Not Appear Sufficiently Expansive

The section referenced above indicates that the steam that isn't let into the secondary chamber in the unit being evaluated is exhausted into the 160# steam header for use elsewhere in the refinery. If the steam is to be used elsewhere, then it should fall into the definition of "first-order indirect impacts" under § 95489 (e)(2)(B)(1) of the *LCFS Final Regulation Order*. If the project changes the amount of steam released into a common header, and steam from that header is used elsewhere in the refinery, then the impacts of changes to steam in that header need to be



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considered. At a minimum, a description of the mass and energy flows into and out of the 160# steam header should be provided to establish that the changes from the specified project do not affect other processes or increase emissions elsewhere in the facility.

Similarly, in the *GHG Emissions Reduction at the HRSG Feedwater Economizer* section, the credit generation from addition of an economizer is defined as a function of the difference in temperature on the water side of the economizer. This assumes that the water from the economizer enters the HRSG unit at the same temperature as it is at the economizer exit, and that the Main Fractionator, which supplies the heat being withdrawn via the proposed economizer, does not need any additional energy inputs to maintain its temperature. These considerations would also fall under the definition of “first order indirect impacts” in § 95489 (e)(2)(B)(1), and additional data to support these claims should be provided.

To reiterate, this comment is not intended to advocate for either approval or disapproval of the application. Because the application is new in type for the program, the criteria for assessment and approval deserve attention, especially as they may provide a precedent and a guideline with which future credit generation activity may be evaluated. It is critical that adequate data regarding system flows and boundaries be provided to allow independent verification of claims, and support the public’s understanding of how crediting activity aligns with GHG reductions. As currently presented, the application contains inadequate information for an independent assessment of its accuracy or validity, so critical for the important informed public consultation that is a hallmark of the LCFS program.

Thank you again for the opportunity to comment on the proposed RIC pathway. If we can offer any clarification to this letter, or assistance to the broader process, please contact Colin Murphy at cwmurphy@ucdavis.edu or +1(530)754-1812.

Signed,

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