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U.S. Department of Energy
Office of Clean Energy Demonstrations
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RE: DE-NOI-0202301: Bipartisan Infrastructure Law: Additional Clean Hydrogen Programs (Section 40313): Regional Clean Hydrogen Hubs

BP America Inc. ("bp"),¹ is pleased to submit a response to the request for information ("RFI") issued by the Department of Energy ("DOE") Office of Clean Energy Demonstrations ("OCED") regarding development of demand-side support measures for clean hydrogen.

bp employs more than 30,000 people in the U.S. and supports nearly a quarter of a million jobs. Between 2005 and 2022, bp invested more than \$140 billion in the U.S. In 2022 alone, the company's operations contributed about \$70 billion to the U.S. economy. At bp, we aim to help the world's energy system become more secure, affordable, and lower carbon. Our ambition is to be a net-zero company by 2050 or sooner, and to help the world get there, too. To help us reach this ambition, we are investing in bioenergy, renewables, and clean hydrogen, as well as EV charging and convenience. bp supports the Biden Administration's goal of reaching net zero by 2050. Accelerating meaningful action on climate requires close cooperation among governments, companies, and consumers – and this decade is critical.

The initial focus of U.S. policy making to support clean hydrogen has been oriented toward lowering the cost of production for clean hydrogen. Both the Regional Clean Hydrogen Hubs program and the hydrogen production tax credit ("45V") have great potential to jump-start the clean hydrogen economy, if implemented practically. Multiple sources, including DOE's *Pathways to Commercial Liftoff Report* and the *National Clean Hydrogen Strategy and Roadmap*, as well as the Energy Future Initiative's (EFI) *U.S. Hydrogen Demand Action Plan*,² have indicated that demand-side

¹ BP America Inc. is a subsidiary of BP plc. "bp" is used interchangeably herein to refer to BP America Inc., BP plc, another subsidiary, or the group of companies collectively.

² Energy Futures Initiative, "The U.S. Hydrogen Demand Action Plan," February 2023. <https://efifoundation.org/reports/the-u-s-hydrogen-demand-action-plan-2/>



support mechanisms will be needed to advance commercialization of clean hydrogen at the pace necessary for “hard-to-abate” sectors to curb their emissions by 2050, in addition to the supply-side support provided by the programs noted above.

Our comments below seek to address the questions raised in the DOE’s request for information. These responses are provided for informational purposes only.

Category A: Most effective demand-side support measure to support H2Hubs

As previously noted, demand-side support can help potential clean hydrogen users by lowering purchase costs and offsetting retrofit or related infrastructure costs, such as liquefaction, distribution, and storage. Due to the limited budget for this effort and the significant federal outlays for supply support mechanisms, DOE should seek to pursue the most efficient and impactful use of funds via demand support mechanisms to enable long-term offtake.

- 1. What is the most effective way DOE could catalyze durable, bankable demand for clean hydrogen at DOE-funded H2Hubs? Which of the following potential mechanisms would be most impactful?**

FIXED LEVEL OF SUPPORT. Committing to a fixed level of support for projects would be the most effective approach for DOE to support demand for clean hydrogen, followed by a pay-for-difference approach.

Globally, various demand-oriented policies are being debated and implemented to help accelerate clean hydrogen deployment. Some of these include a contract-for-differences (CfDs) approach, establishing hydrogen “targets” for sectors identified as being difficult to decarbonize or regulatory actions such as establishing portfolio standards and renewable standards to drive hydrogen offtake. If properly implemented, these approaches could help support acceleration of technology learning curves and reduce volume and price risks. In terms of CfDs, if this mechanism is considered by the DOE, bp recommends the allocation of CfDs by a competitive process and that the contract duration is of sufficient length to ensure cost-efficient financing and price stability (e.g., project lifespan).

However, because DOE has a limited and fixed budget for this effort, the pay-for-difference approach may not be the most efficient use of capital. The nature of a pay-for-difference approach makes efficient allocation of capital more challenging due to variable and unknown costs that may be beyond the control of the producer, consumer, and DOE. Importantly, because of variable and unknown costs the pay-for-difference approach may not provide the certainty necessary for an effective program. A fixed award or fixed level of support, in contrast, may enable easier management of funds by DOE. In order to ensure continued efficacy over time, DOE should review the level of



support periodically. Such an approach may also provide greater certainty and predictability for users of clean hydrogen.

For demand cases where hydrogen is only an intermediate product, like sustainable aviation fuel (SAF) or marine fuel, DOE should evaluate the support mechanism in the context of the full value chain and the economics of the end product. SAF or marine fuel producers, for instance, may consider hydrogen as an input when other feedstocks, such as waste oils, are not available.³ DOE should consider a level of support for clean hydrogen that enables competitive pricing of the final product. In these circumstances, qualifying for these programs or mandates could be the ultimate factor that determines offtake commitments for clean hydrogen.

2. For eligible projects, what competitive process should be used to select projects that will receive demand-side support?

REVERSE AUCTION. bp supports a competitive selection process, facilitated by a reverse auction. DOE should not consider any eligibility-based processes.

DOE has indicated that demand-support mechanisms will provide “multi-year support for clean hydrogen produced by competitively selected projects affiliated with H2Hubs.”⁴ It is our understanding that DOE intends to support projects affiliated with the H2Hubs recipients. However, selecting specific projects within the hubs could create significant competition between H2Hubs parties that may not be beneficial to the Regional Clean Hydrogen Hub program due to the creation of potentially significant internal competition. Such competition and subsequent selection of specific projects within each hub may cause inefficiencies as hub partners compete against each other for funding and off-take as a result. With that in mind, DOE may wish to provide the funds to a competitively selected hub, with an indication of how the funds should be applied to projects within that hub.

To facilitate an approach where funds are awarded to a selected hub and apportioned in an efficient manner to projects within that hub, DOE should consider employing a reverse auction. As these funds are only being considered for selected Regional Clean Hydrogen Hub affiliated projects, a proposal-like process would be duplicative and an unnecessary burden for interested parties. DOE has already received, and will continue to receive, information regarding the full range of factors that will contribute to the success of a hub, including community benefit and engagement plans. A reverse auction approach, in contrast, will allow DOE to direct funds most efficiently to lower the cost to consumers of clean hydrogen. These funds should not be directed to any

³ Producers may be required by voluntary programs, like the US Government’s Sustainable Aviation Fuel Grand Challenge, or by international mandates, like the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA), to use low- or zero-carbon intensity inputs like clean hydrogen to generate a qualifying product. Low- or zero-carbon intensity inputs may have higher costs than comparable alternatives.

⁴ DE-NOI-0202301: Bipartisan Infrastructure Law: Additional Clean Hydrogen Programs (Section 40313): Regional Clean Hydrogen Hubs.



activity other than those that contribute to decreasing the cost of the clean hydrogen supply. The most relevant factor, cost, is highlighted by a reverse auction approach.

Funds to support demand for clean hydrogen from Regional Clean Hydrogen Hubs should not be tied to any specific production methods or carbon intensities. An “Eligibility-based process” that includes such factors would diminish the value of the hub as a program seeking to drive regional and technological variety. Some states (e.g., Colorado⁵) have already enacted demand-support mechanisms for clean hydrogen production that include specific limitations on production methods or carbon intensity, limiting the overall value of the support mechanism. The Regional Clean Hydrogen Hubs program set a limit for participants of two kilograms carbon dioxide equivalent (kgCO₂e) per kilogram of hydrogen produced. This requirement is consistent across all applicants, regions, and production methods. Any additional requirements set by the demand-side mechanism may drive inorganic divisions in the hydrogen market and may disadvantage some approaches relative to others. Any such limitation or division could result in a smaller hydrogen market, contrary to DOE goals.

Support mechanisms that fall outside the scope of this RFI may contribute to increasing durable, bankable demand for clean hydrogen.

In addition to the mechanisms included in the RFI, support related to transport infrastructure (e.g., hydrogen pipelines, storage, terminals), facility conversions or upgrades, or specific applications of clean hydrogen that have high barriers to entry can help drive long-term demand. One such area, heavy duty trucking, may be especially attractive to DOE. Fuel-cell trucks face significant barriers to entry that are both technology-based and economic. For example, investing in fueling infrastructure and other related infrastructure necessary to maintain fuel-cell trucks, along with liquefaction, could provide a self-sustaining source of offtake. Because of the significant investment required for and long life of heavy-duty trucks, operators that choose to invest in fuel-cells will be making a long-term commitment to clean hydrogen. With early investment in liquefaction and fueling infrastructure, DOE could create a durable market in a hard-to-electrify sector where clean hydrogen is an option to replace higher emitting but lower cost fuels rather than displacing traditional hydrogen.

Conclusion

bp applauds DOE’s continued efforts to enable a transition to clean hydrogen for hard-to-abate sectors or hard-to-electrify sectors in a cost-effective manner. We believe that a fundamental aspect of the energy transition will be our ability to supply the energy that consumers need and want in a way that maintains the security of its supply and its affordability.

⁵ Colorado HB23-1281, “Advance the Use of Clean Hydrogen” <https://www.leg.colorado.gov/bills/hb23-1281>



The DOE and Congress have provided programs that could jump start the clean hydrogen economy. The Regional Clean Hydrogen Hubs program provides initial support to companies as they invest in production facilities. 45V is expected to be the complementary cost-reducing “lifeline” that will enable continued operation of these investments, if implemented practically. As noted above, a need for additional support to drive long-term offtake remains. Through the programs discussed in this RFI, DOE has the potential to bridge that gap and continue the drive to a fully commercialized clean hydrogen economy.

We appreciate the opportunity to submit these responses and welcome the opportunity to meet with DOE to discuss these issues as OCED further considers demand-side support measures for clean hydrogen. Please contact Marcus Koblitz at marcus.koblitz@bp.com or Poh Boon Ung at PohBoon.Ung@bp.com if you would be interested in meeting or have questions about the information provided.

Respectfully submitted,

/s/ Bree Raum

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