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**APEP Comments on 21-IEPR-01 2021 Scoping Order**

*Additional submitted attachment is included below.*



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February 19, 2021

California Energy Commission  
Docket Unit, MS-4  
Re: Docket No. 21-IEPR-01  
1516 Ninth Street  
Sacramento, CA 95814-5512

**Subject: 21-IEPR-01 2021 Scoping Order**

The Advanced Power and Energy Program (APEP) submits these comments on the Draft Scoping Order for the 2021 Integrated Energy Policy Report (Draft Order), released on February 5, 2021.

**I. Introduction**

The Advanced Power and Energy Program at the University of California, Irvine advances the development and deployment of efficient, environmentally sensitive, and sustainable power generation, energy storage and conversion technologies, and energy conservation. At the center of APEP's efforts is the creation of new knowledge brought about through fundamental and applied research and development, and the sharing of this knowledge through education and outreach. The connection of APEP's research to practical application is achieved with our close collaboration with industry, state, regional

and national agencies, and national laboratories to “bridge” engineering science and practical application.

## **II. Comments on the Draft Scoping Order for the 2021 IEPR**

APEP is pleased to see the thoughtful and technically sound transition from fossil fuels to renewable resources reflected in the Draft Order. APEP broadly supports the approach of simultaneously addressing behind-the-meter initiatives while engaging in electricity planning to ensure short-term and long-term reliability and resiliency.

### **A. Energy Reliability Over the Next Five Years**

Examination of the opportunities to address issues and barriers related to expanding the role of distributed energy resources and demand response in supporting reliability and resource adequacy should include further analysis of microgrids and appropriate valuation. The IEPR should include continued analysis of the benefits and value that distributed energy resources bring to ensure reliability and resource adequacy, such as capacity services, ancillary services, and resilient backup power. Additionally, energy storage system procurement targets and policies should be inclusive of hydrogen energy storage, and not limited to battery energy storage.

## **B. Evolving Role of Pipeline Gas: Trends and Outlook**

APEP fully supports the initiation of assessing how the state can repurpose and transform pipeline gas infrastructure. Many regions of the world, including Australia<sup>1</sup> and the European Union,<sup>2</sup> and Korea<sup>3</sup> are meeting renewable generation targets with the inclusion of hydrogen pipeline injection, up to 20% today. Comprehensive technical assessment is needed to validate the feasibility of transitioning the gas system, over time, to 100% renewable and zero-carbon fuels. Such analysis will help address concerns raised publicly by some parties questioning the viability of such a transition and asserting that claims that such a transition can occur are simply aimed at prolonging the use of fossil gas. With the objective of supporting 100% renewable generation, the Commission should engage fully in this activity with a clear target to begin hydrogen pipeline injection before 2025 in order to meet the long-term reliability needs created by intermittent renewable generation.

## **C. Building and Industrial Decarbonization and Energy Efficiency**

APEP supports further analysis of building decarbonization provided that technology neutrality is maintained in the analysis. To-date, the Commission has

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<sup>1</sup> Australian Government Department of Industry, Science, Energy and Resources, *Australia's National Hydrogen Strategy*, November 2019. Available at: [Australia's National Hydrogen Strategy | Department of Industry, Science, Energy and Resources](#)

<sup>2</sup> Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions, *A hydrogen strategy for a climate-neutral Europe*, July 8, 2020, available at: [EUR-Lex - 52020DC0301 - EN - EUR-Lex \(europa.eu\)](#)

<sup>3</sup> Kan, Sichao, *South Korea's Hydrogen Strategy and Industrial Perspectives*, March 25, 2020. Available at: [South Korea's Hydrogen Strategy and Industrial Perspectives \(ifri.org\)](#)

supported the use of battery-based and electric technologies for building decarbonization. This strategy could be enhanced by the inclusion of hydrogen, fuel cells and electrolyzers to generate low and zero carbon fuels as well as electricity. The aforementioned transition of the natural gas pipeline to renewable fuels and hydrogen can augment electrification as a tool for building decarbonization in residential, commercial and industrial buildings by using the existing infrastructure to bring hydrogen and renewable or zero-carbon methane to consumers for applications where the economics are superior or where electrification solutions are not feasible.

APEP was pleased to see that the Commission held a recent workshop focused on the role of hydrogen in industrial decarbonization. A technology neutral approach to assessing optimal approaches to decarbonizing buildings and industry must include the potential use of renewable fuels and fuel cell systems that are currently being used broadly in commercial and industrial facilities for goods movement, heat and power production and resilient backup power.

## D. Energy Demand

With respect to electricity, natural gas, and transportation demand forecasts, APEP requests once again that the Commission conduct technology neutral assessments and economy-wide energy demand scenarios. Specifically, hydrogen storage should be included in assessments and scenario development; these assessments should not be limited to battery storage. Renewable hydrogen demand scenarios have already been developed by APEP in collaboration with the Commission in the Roadmap for the Deployment and Buildout of Renewable Hydrogen Production Plants in California.<sup>4</sup>

## III. Closing Comments

APEP appreciates the opportunity to comment on the Draft Scoping Order for the 2021 IEPR and recommends that the Commission take an inclusive approach to ensure the cleanest, most reliable and safest transition to a zero carbon energy resource portfolio in California.

Respectfully submitted,

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<sup>4</sup> UC Irvine Advanced Power and Energy Program, California Energy Commission Clean Transportation Program Final Project Report, *Roadmap for the Deployment and Buildout of Renewable Hydrogen Production Plants in California*, June 2020, CEC-600-2020-002, Chapter 2: Renewable Hydrogen Demand Scenarios at 9.