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1001 “I” Street
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RE: Pacific Gas and Electric Comments on the kick-off 2022 Scoping Plan workshops in June 2021

Pacific Gas and Electric Company (PG&E) appreciates this opportunity to comment on the initial planning for the California Air Resources Board (CARB) 2022 Scoping Plan Update process.

At PG&E, we embrace our foundational role in achieving carbon neutrality and transitioning California to a decarbonized and climate-resilient economy. We approach this work through the “triple bottom line” framework of serving people, the planet and California’s prosperity—underscored by performance. This includes our foundational belief that clean energy alternatives should be affordable and accessible by all households.

PG&E’s long-standing commitment to supporting these objectives goes back to our support of the original climate and clean air goals in Assembly Bill 32 – the Global Warming Solutions Act of 2006 (AB 32). PG&E continues to align our resources and business strategy with California’s clean energy vision by advocating for policies and programs that create a resilient system to provide safe, reliable, affordable, and clean energy to our customers.

PG&E’s size and scale enable us to be a meaningful part of the State’s strategy and solutions. This includes delivering some of the nation’s cleanest energy - in 2020, more than 88% of the electricity we supplied to customers had no associated greenhouse gas emissions. In the U.S., about one in five customers with private rooftop solar and one in five electric vehicles plug into PG&E’s grid.

As California turns toward achieving even deeper emissions reductions by 2030 and 2045, PG&E stands ready to work with all stakeholders to help shape an achievable, affordable, and equitable path through the Scoping Plan Update process.
PG&E’s comments on the June 2021 workshops are divided into the following sections:

I. Modeling and Analytical Approach
II. Carbon Neutrality Framework
III. Electricity Sector
IV. Transportation Sector
V. Role of Hydrogen
VI. Natural Gas Sector

I. Modeling and Analytical Approach

PG&E supports the high-level analytical approach proposed by CARB for this Scoping Plan. We anticipate that the addition of rigorous and granular air quality and economic modeling will deliver new insights into the implications of various scenarios for local air quality and economic impacts and support decision making. As both the air quality and economic modeling rely on outputs from the Pathways model, this makes the inputs and assumptions to the Pathways model even more important to get right. Towards this end, we encourage CARB to provide transparency throughout (e.g., by releasing detailed documentation and input and output spreadsheets) and an opportunity for stakeholder input early in the process – not just after the modeling is done. We support CARB Staff’s plan to hold a workshop specifically on modelling issues. In order for the modeling to provide apples-to-apples comparisons of alternative scenarios and support decision-making, it will be critical to develop the capabilities to incorporate the effects of the cap-and-trade and Low Carb Fuel Standard (LCFS) programs – and other flexible policies represented in alternative scenarios – into the Pathways model outputs like greenhouse gas emissions, costs, and others that are used as inputs to the subsequent air quality and economic modeling.

II. Carbon Neutrality Framework

We encourage CARB to develop a transparent framework for carbon neutrality as part of this Scoping Plan Update. We believe CARB’s high level “sources equals sinks” description is a good starting point; both substantial greenhouse gas emission reductions from AB 32 GHG inventory sources and new and enhanced sinks will be needed to achieve carbon neutrality. We support CARB’s inclusion of carbon capture and sequestration (CCS) at point sources and through direct air capture as eligible to contribute within the overall framework for carbon neutrality. We encourage CARB to provide additional detail beyond the high level “sources equals sinks” description in an upcoming workshop and as part of the written Draft 2022 Scoping Plan Update. In particular, we encourage CARB to utilize a framework that directly recognizes the sinks and emissions reductions Californians pay for through state regulatory programs like cap-and-trade and LCFS. In its last Scoping Plan Update in 2017, CARB
indicated\(^1\) the need for such an accounting framework and we think it's even more important that one be developed as part of this 2022 Scoping Plan Update.

### III. Electricity Sector

PG&E appreciates the coordination between CARB, the California Energy Commission (CEC), the California Public Utilities Commission (CPUC) and the California Independent System Operator (CAISO) on the Scoping Plan Update kick-off update workshop on June 8\(^{th}\) and the electricity sector Focus Area Discussion on June 10\(^{th}\). Since the electricity sector is regulated by all four agencies in various aspects that impact the continued decarbonization of the sector, close collaboration between all the energy agencies and CARB is vital to charting a cohesive path for the future of electricity and how it will enable the decarbonization of other sectors of the economy.

#### a. Overall comments on SB 100 and reliability

The Senate Bill 100 (SB 100) Joint Agency Report issued in 2021 is an important starting point in modeling how the electricity sector could achieve the renewable and zero-carbon goal for 100\% of retail electricity sales in 2045. However, the report should be considered as directional, rather than providing specific policy prescriptions. There is much additional analysis that is still needed, as acknowledged in the CEC’s June 8\(^{th}\) presentation\(^2\). In particular, it is crucial that a comprehensive reliability assessment is a part of the statewide effort to identify economy wide, cost-effective pathways to meet the state’s GHG goals and for integrating far more renewable resources than are present in today’s electricity supply. This effort needs to be a collaboration between the state agencies and the CAISO to ensure that the existing processes (e.g., CPUC’s Integrated Resource Planning and CAISO’s Transmission Planning Process) are leveraged to complete this assessment. At a minimum this should include:

- A resource adequacy assessment to determine whether the system has sufficient resources to meet load under various system conditions while considering any transmission constraints or limitations.
- An operational reliability assessment to determine whether changes in the resource mix (resource types and locations) create operational reliability challenges.

\(^1\) “In addition to the State’s existing GHG inventory, CARB has begun exploring how to build an accounting framework that also utilizes existing program data to better reflect the broader benefits of our policies that may be happening outside of the State. For GHG reductions outside of the State to be attributed to our programs, those reductions must be real and quantifiable, without any double counting, including claims to those reductions by other jurisdictions. CARB is collaborating with other jurisdictions to ensure GHG accounting rules are consistent with international best practices. Robust accounting rules will instill confidence in the reductions claimed and maintain support for joint action across jurisdictions. Consistency and transparency are critical as we work together with other jurisdictions on our parallel paths to achieve our GHG targets.” P.12 CARB: California’s 2017 Climate Change Scoping Plan.

\(^2\) Achieving 100\% Clean Electricity in California, An Initial Assessment, CEC, slides 11-12

https://ww2.arb.ca.gov/sites/default/files/2021-06/cec_cp_sp_kickoff_june2021.pdf
We anticipate that decarbonized gas-fueled generation resources will be required in the long run to ensure reliability while meeting the state’s decarbonization objective. As California’s current fossil generation begins to retire, these plants will be replaced by new decarbonized gas-fueled generation. This is likely to be some combination of generation fueled by hydrogen, renewable natural gas, and fossil natural gas combined with carbon capture and storage and direct air capture. We should maintain flexibility for pathways that emerge as these technologies advance. The state will need to participate in and support ongoing research on future carbon-free gas generation resources, while also developing renewables and various types of storage technologies.

b. Electric sector intersection with air quality and public health benefits

The electric sector will continue to play a crucial role in maximizing air quality and public health benefits to vulnerable communities. Reduced fossil fuel usage by power plants will help with local air pollution; however power plants emit only 2 to 4 percent of statewide NOx emissions and only 1 to 2 percent of statewide PM2.5 emissions, while the transportation sector is responsible for 60 to 75 percent of statewide NOx emissions and 12 to 22 percent of statewide PM2.5 emissions. PG&E strongly supports a more comprehensive, multi-sector effort to tackle California’s air pollution challenges. Actively considering how to best facilitate the growth of electric and low-to-zero emission natural gas and hydrogen vehicles to reduce local air pollutant emissions from the transportation sector will provide the biggest and most impactful benefit for maximizing air-quality and public health benefits for vulnerable communities.

In addition, the state should continue to explore cost effective opportunities to prioritize reduction of fossil fuel based electric generation use in vulnerable communities. Since some of the fossil fuel resources reside in CAISO’s Local Areas, a systematic approach to identify cost-effective solutions will be essential to ensure that the local capacity resource needs are addressed in a timely manner to allow reduction of use of natural gas-based generation in these areas.

c. Integration of Distributed Energy Resources (DERs)

DERs, including behind the meter (BTM) solar and storage, flexible customer load, and the growing number of EVs, can play a key role in addressing reliability throughout the transition to a carbon neutral future. California must take the long view in charting rate design and program options to ensure that customers benefit from using DERS in a way that supports the grid, rather than the current system which does not fundamentally support DER-grid alignment with rate design. We must enable electricity customers to support the reliability of the grid by structuring rates to align load and the use of DERs with grid needs. The Scoping Plan modeling and policy recommendations can provide an opportunity to take a holistic view of the role of DER’s across planning agencies to ensure alignment and identify opportunities where additional regulatory work is needed.
d. Affordability and an equitable transition

In terms of energy affordability, the rapid and widespread adoption of electric vehicles (EVs) is a critical element. A rapid transition to EVs displacing expensive gasoline is critical to the state’s objectives of an affordable carbon neutral pathway, allowing customers to substitute less expensive electricity for higher-cost gas in their overall energy wallet. The electric utilities must encourage and prepare for this transition by making the grid ready for rapid, widespread adoption of EVs as discussed further below.

Energy efficiency will also support an affordable pathway to decarbonization – the cheapest kilowatt hour (kwh) is the one not generated. California must plan for an equitable transition, ensuring that transition of the workforce is planned for, and the customers least able to afford new technologies like EVs, solar and battery systems, and electric heat pumps are not left behind, particularly those in environmental and social justice communities. An energy share-of-wallet analysis could provide important insight into the impacts of various pathways on all segments of the population, including those most vulnerable to high energy costs. The State and joint agencies will need to ensure that equity is intentionally taken into consideration as we work together to develop affordable pathways to a carbon-free energy supply for California.

Continued allowance allocation to the electric sector to help defray the costs of decarbonization programs like cap-and-trade will also be critical in keeping electricity costs affordable in the future. The successful transition of other sectors such as transportation, buildings and some industrial applications to electricity will be reliant on electricity being a cheaper fuel source than fossil fuels.

IV. Transportation Sector

PG&E believes decarbonizing the transportation sector is critical to reaching the State’s carbon neutrality goals and that it will require a coordinated approach from all market actors – utilities, state agencies, vehicle manufacturers, fuel producers, and others. The market needs clear, stable signals to effectively plan for decarbonization, so it is critical that state strategies and regulatory requirements are aligned. The state agencies have made progress in laying out a more coordinated and comprehensive plan for decarbonizing the transportation sector as evidenced in CARB’s Scoping Plan update process and the Mobile Source Strategy 2020 update, the GoBIZ ZEV Market Framework Strategy, the CEC’s AB 2127 report, and the CPUC Transportation Electrification Framework (TEF). What is clear from all of this work is that there is much more that needs to be done to meet the state’s ambitious goals.

PG&E supports the Low Carbon Fuel Standard Program as a key strategy to decarbonize the transportation sector as the declining carbon intensity target incentivizes cleaner fuels of all types that support customer needs. In June, PG&E proposed over $120M in programs to address customer barriers and support EV adoption with revenue generated from PG&E’s participation.
in the LCFS program. The LCFS revenue offers a unique opportunity to support transportation electrification (TE) with off-bill revenue and can further the impact of utility customer-funded programs. PG&E recommends that CARB extend the LCFS program beyond 2030 to provide stability to the market and also recommends that CARB increase the stringency of the carbon intensity target in the post-2030 program to drive for more aggressive emission reductions in line with the state’s recent climate goals.

PG&E also supports the specific role of transportation electrification in reaching carbon neutrality and is committed to helping customers make the transition. The utilities play an important role in enabling customer adoption of electric vehicles by increasing access to charging infrastructure, reducing total cost of ownership through rates and rebate programs, enhancing the education and buying experience through customer education and seamlessly integrating EV loads into the utility grid. Currently, PG&E offers support for infrastructure installation for residential and commercial customers through our traditional service planning process as well as through our TE Infrastructure programs such as EV Charge Network, EV Fleet, EV Fast Charge, EV Schools and Parks, and Empower EV. All these programs provide additional support for and/or focus on low-income customers and disadvantaged communities.

In addition to infrastructure programs, rates specifically designed for EV customers will be critical in supporting affordability and grid reliability in the transition to TE as discussed by the CPUC at the Scoping Plan Focus Area Discussion on the Transportation Sector on June 3. PG&E currently offers two residential EV rates: EV-B and EV-2A. Additionally, in October 2020 PG&E launched the Business EV (BEV) rate to help make EV charging costs for fleets and other commercial customers simpler, more affordable and more consistent. With the BEV rate, customers can choose a rate plan that is more customized to their specific charging needs. The BEV rate replaces the demand charges of traditional commercial rates with a subscription charge, which allows customers to choose the amount of kilowatt power they need for their charging stations on a monthly basis. The subscription charge allows customers to have consistent, predictable charging costs which will be important for fleet owners as they begin to electrify their own fleets and offer more charging services publicly. In October 2020 PG&E also proposed and is awaiting CPUC approval of a Day Ahead Hourly Real Time Pricing Commercial EV (DAHRTP-CEV) Pilot Rate. This pilot is intended to evaluate the potential for a dynamic rate option with fluctuating hourly prices to help EV drivers reduce their impact on the grid and the environment while potentially lowering their costs. PG&E will continue to support customers who electrify by providing affordable charging options. PG&E also offers a suite of online customer tools to promote awareness of the benefits and cost savings of EVs including an

Utility offerings to support customers in their transportation electrification journey are essential to advancing the TE market. However, an “all-in” approach that goes beyond utility programs will be needed to reach the state’s ambitious carbon neutrality goals and the specific TE goals as laid out in the Executive Order N-79-20 and AB 2127. While the TE market has grown over the last two decades, as a whole it is still nascent and evolving quickly. As PG&E states in its comments on the CPUC’s Draft TEF, the needs of the market are not homogenous and are rapidly changing and therefore stable, continuous and innovative investments in multiple, different market segments are necessary to achieve and sustain the State’s goals. This should be considered for whichever strategies CARB develops for the transportation sector in the Scoping Plan. Without public and private investment, the emissions reductions in the sector will not occur at the speed or scale that is needed and planned for in the Scoping Plan. Electric customers cannot support the transition of the entire TE sector on their own. PG&E recommends that CARB work closely with the CPUC on the development of the DRIVE OIR R-18-12-006 Transportation Electrification Framework to enable timely implementation of new infrastructure programs to provide the necessary infrastructure investment for adoption of ZEV fleets to meet California’s ZEV goals.

PG&E recommends that as CARB identifies the specific role of electric vehicles in decarbonizing the transportation sector in the Scoping Plan update, there also be an intentional and dedicated effort to plan for the supply of ZEVs from OEMs, the demand of ZEVs by customers, and the necessary infrastructure installation to support the vehicles. The utility is only one part of a customer’s electrification journey and there needs to be a coordinated effort on the part of all market players. PG&E recommends that CARB convene a series of working groups with different market players to specifically plan for the needed charging infrastructure to support the transition of the vehicle market, particularly for the medium and heavy-duty vehicle segment. Long-term planning and thoughtful development of charging infrastructure (including activities such as fleet transition plans and proactive capacity upgrades) will be essential to ensure affordable, adequate access to charging infrastructure. Planned and coordinated electrification of each market segment will ensure that utilities can proactively plan for capacity upgrades and grid needs.

PG&E is committed to supporting the State’s TE goals and doing so equitably. PG&E supports the focus on zero emission technologies (both battery electric and fuel cell) but also supports flexibility in regulations to allow for alternative cleaner technologies such as renewable natural gas (RNG) in low-NOx compressed natural gas (CNG) vehicles. This is especially critical for heavy duty trucks given the need to make investments in the near term on vehicles and

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4 PG&E EV Savings Calculator available at: [https://ev.pge.com/](https://ev.pge.com/)
5 See PG&E’s Opening Comments on the draft TEF sections 2, 3.1, 3.2, 3.3, 4 and 5
infrastructure in categories for which zero-emission options are not yet available. It is more advantageous from an environmental and local air quality perspective for those trucks to switch to RNG/CNG now than re-invest in diesel until battery electric vehicle technology and hydrogen fuel cell technology and fueling station infrastructure is readily available for heavy-duty trucks. Multiple technologies can support the transition of California’s transportation sector to clean fuel technologies and PG&E looks forward to continued engagement on the Scoping Plan Update to ensure a coordinated, efficient, and technologically feasible pathway for customers and the utility.

V. Role of Hydrogen

As part of our commitment to provide customers with safe, reliable, and clean energy, PG&E continues to explore multiple options for decarbonizing its system, including the potential use of hydrogen. Hydrogen is relevant to PG&E through its use directly as a fuel, as a feedstock for renewable natural gas, or blended with natural gas. PG&E has a unique opportunity to leverage the nature of its integrated natural gas and electric business to explore several applications for hydrogen as part of its push to reduce GHG emissions.

a. Role of hydrogen across sectors and how it supports carbon neutrality

PG&E believes hydrogen will play a critical role in California’s decarbonized future. In addition to decarbonizing the gas system, increasing the use of zero-carbon fuels such as hydrogen in PG&E’s pipelines can supply hard-to-electrify sectors and help them reduce their carbon footprint.

One of the reasons PG&E is looking at hydrogen is its potential for power to gas (P2G), something that becomes more important as intermittent renewable energy dominates our electricity portfolio and options for long-duration energy storage are not yet widely available. Excess renewable electricity could be used to create hydrogen instead of it being curtailed. Hydrogen can then be blended and injected into the natural gas system as a means of storage and transportation via pipeline. Once downstream, the hydrogen could be separated out from the natural gas to be used as fuel for vehicles for transportation purposes or remain as a blend to be delivered to end use customers. Hydrogen has the potential to provide much needed long-duration energy storage to support intermittent renewable electricity and reduce curtailments.

Below is an overview of how hydrogen could be utilized in both the near term and long term.

Potential Opportunities for Pipeline Hydrogen:

1. Near Future – Fuel for Light Duty Hydrogen FCEVs
2. Near Future – Small-Scale Blending with Pipeline Natural Gas
5. Long-Term – Delivery of Hydrogen for Residential Fuel Applications

6. Long-Term - Fuel for Heavy Duty Hydrogen FCEVs

7. Long-Term – Seasonal Storage for Electric Grid

PG&E is supportive of a broad range of technologies that enable the production of hydrogen. PG&E is actively engaged and involved in external working groups, research consortiums, and professional associations, related to bringing the hydrogen market to full potential and supporting growth of the industry. Enabling research and development (R&D) efforts to understand the impacts of hydrogen on the gas system to ensure safe and reliable delivery of gas and electricity is critical. PG&E’s hydrogen roadmap is in its early stages and we will continue using our gas R&D hydrogen roadmap as a guideline for prioritizing the knowledge gaps that need to be addressed through collaboration with others in the industry and globally. To date, we have 11 active projects and six completed R&D projects related to hydrogen.

PG&E, and other California gas utilities also recently jointly filed Application A.20-11-004 (on November 20, 2020) with the CPUC for a preliminary hydrogen injection standard. This application is part of the process of working toward a hydrogen injection standard that will shape how the utilities’ pipeline systems transport hydrogen.

b. State support for hydrogen

Similar to the need for both public and private investment as noted above for battery electric vehicle infrastructure, there is also need for public and private investment in hydrogen. The state of California can help the private sector in the transition to hydrogen as a fuel source in the following ways:

- Actively engage in setting policies that will create momentum for the private sector to invest in hydrogen technologies
- Fund research, development, demonstration programs and grants for various sectors to get hands-on industry experience in transitioning their assets and end-uses to use hydrogen
- Remain open-minded about hydrogen production methods and technology innovations to achieve the full potential of clean hydrogen
- Provide a regulatory framework that supports incorporating hydrogen in the utility sector with safety, integrity, reliability, and affordability
- Ensure policies do not disproportionately impact environmental and social justice communities while also promoting workforce development
- Collaborate with industry stakeholders on the best methodology for measuring the carbon intensity of hydrogen to allow for ramp up of a multitude of production technologies
- Facilitate the creation and adoption of codes and standards to support hydrogen in the various sectors
While hydrogen was not extensively discussed in the June Scoping Plan workshops, it should be included in future discussions of technology pathways for modeling and could be a useful future workshop topic.

**VI. Natural Gas Sector**

PG&E is aligned with the CPUC’s and CARB’s efforts in reducing short-lived climate pollutants (SLCPs), including methane, which will be necessary to achieve carbon neutrality. This is another area where closer coordination and collaboration across state agencies is needed in order to provide consistent, feasible, and affordable regulatory requirements and pathways.

a. CPUC biomethane procurement proposal and additional measures needed that could be addressed in the Scoping Plan

Per the requirements of SB 1440, the CPUC staff recently released a biomethane procurement proposal that would apply to core customers of natural gas investor-owned utilities (IOUs). PG&E and the other natural gas IOUs’ full comments on the procurement proposal can be found here. With respect to the Scoping Plan, an RNG procurement measure has been considered in previous updates but was ultimately not included in the adopted Scoping Plan. Now that biomethane procurement proposals are under discussion at the CPUC, the 2022 Scoping Plan Update provides an opportunity to evaluate and model the contribution that biomethane procurement programs (including complementary programs that apply to customers outside the CPUC’s jurisdiction) could have towards the state’s goals.

To help support customer affordability and equitable implementation of a biomethane procurement requirement enacted by the CPUC, PG&E recommends CARB allocate additional Cap-and-Trade Program allowances to natural gas suppliers to reduce the above-market costs resulting from such procurement. One potential basis for this additional allocation to natural gas suppliers would be to allocate additional allowances equivalent to the avoided methane emissions from landfill and wastewater facilities resulting from this procurement. This would be consistent with CARB Board direction to CARB’s Executive Officer in Board Resolution 17-21, which states “Be it further resolved that the Board directs the Executive Officer to work with natural gas utilities to evaluate and propose, as necessary, post-2020 program regulatory amendments to ensure adequate ratepayer protection as the State pursues strategies to decarbonize the natural gas system.”

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6 Joint Utilities Comments on R.13-02-008 Phase 4A Staff Proposal: [https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M389/K956/389956909.PDF](https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M389/K956/389956909.PDF)
7 2017 Scoping Plan, Table 9 “Estimated Social Cost of Policies or Measures Considered in the 2017 Scoping Plan Development”: [https://www2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf](https://www2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf)
8 CPUC Staff Proposal, pp. 7 “Methane released into the atmosphere acts as a potent SLCP with a global warming potential (GWP) 25 times greater than CO2 over a 100-year period and 84 times greater than CO2 over a 20-year period.”
b. Paying for the transition of the natural gas pipeline

As noted by the CPUC, the Gas System Planning OIR R.20-01-007 examines how to manage California’s energy transition while still providing safe, reliable service at just and reasonable rates.\textsuperscript{10} This is another important element that should be considered in the Scoping Plan. One of PG&E’s key priorities in the transition of the natural gas pipeline is to protect customer affordability. Securing funding from sources external to PG&E’s gas rates that would help to recover some natural gas delivery system costs, provide a reduction to customer gas bills, or to fund other elements of gas strategy without PG&E customer funding (e.g. for electrification projects), has been identified by internal and external analyses as a critical element of the broader solution to declining gas throughput and the related impacts on customer energy affordability. External funding could come from a wide range of sources, including sources like the Greenhouse Gas Reduction Fund (GGRF), taxpayers, federal funds, repurposing energy efficiency programs, Cap-and-Trade revenues returned to gas and/or electric customers, or from electric customers who benefit from new electric load. This will require significant further public discussion and action from state agencies, especially the CPUC and CARB, and the Legislature, and will depend upon the availability of public funds. The Scoping Plan Update process can help provide a venue for some of these critical conversations on how to enact the transition to a clean, affordable, and reliable future California energy system.

Conclusion

The 2022 Scoping Plan Update process is an opportunity to consider both near-term strategies that are necessary to reach the 2030 GHG targets, as well as identify pathways for longer-term strategies to achieve carbon neutrality by 2045. As outlined in the opening June 2021 workshops, there are numerous inputs from multiple state agencies and across multiple economic sectors that need to be incorporated into the Scoping Plan Update, including the issues and subjects that PG&E has highlighted in its comments above. To do so successfully, PG&E reiterates our support for enhanced transparency and a robust public stakeholder process. We look forward to collaborating on the production of an achievable, affordable, and equitable 2022 Scoping Plan.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

/s/

Fariya Ali

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State Agency Relations, Pacific Gas and Electric

\textsuperscript{10} CPUC 2022 Scoping Plan Update Kickoff Workshop Presentation