BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Building Decarbonization.	Rulemaking 19-01-011 (Filed June 30, 2020)

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MITSUBISHI ELECTRIC US COMMENTS TO THE CALIFORNIA PUBLIC UTILITY COMMISSION REGARDING THE INFLUENCE OF MODELED PROJECTIONS AND DATA IN DEFINING SOCIETAL BENEFITS AND CLIMATE POLICY

Submitted by Mistubishi Electric June 30, 2020 by:

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I. INTRODUCTION

Mitsubishi Electric appreciates the Commission's efforts to mitigate the impacts of buildings on climate change and recognizes the importance of rapid mobilization strategies that produce measurable reductions in GHGs over the next thirty years as well as a broader transform California's economy to carbon free and carbon negative alternatives. On issues of climate mitigation strategies Mitsubishi Electric is an outspoken advocate. In June 2019, Mitsubishi Electric published "Environmental Sustainability Vision 2050" to clarify the company's stance on addressing long-term environmental issues. This corporate vision asserts that "The Mitsubishi Electric Group shall utilize diverse technological assets throughout wide-ranging business areas to solve various environmental issues, including climate change…" Mitsubishi Electric regards climate mitigation a primary mission and service to our customers, and in furtherance of the goals

of the Paris Accords, we believe the climate science and desire to be reliable and consistent partners in the global climate mitigation efforts.

II. THE PROBLEM WITH PARTIAL PICTURES

In order to properly evaluate long-term impacts and cost effectiveness of decarbonization strategies in California, shared data and unbiased research on cost effectiveness and lifecycle impacts is paramount. From the fuel substitution scenario analysis tool (FSSAT), to the criteria for how various sectors of the economy can be most cost-effectively decarbonized, critical data needs to be shared collaboratively to set policy priorities:

1) In the case of PG & E territory, the utility has access to both gas and electric infrastructure cost data and efficiency data. PG & E has done their own internal assessment and recently committed to electrification. They have also publicly asked for guidance on how to decommission the residential gas infrastructure one neighborhood at a time, because clear rules or guidance for how to do so don't exist, and current regulations allow one dissenting resident to prevent such market transformation.
2) In the case of Edison and SoCal Gas, both utilities have competing research and data that supports their differing agendas. Although they are partners insofar that Edison is SoCal Gas' largest customer as a purchaser of fuel for gas-fired plants, both utilities deliver research and analytics that support upgrading and expanding their current business models. Both make claims that they are committed to long term decarbonization goals and energy equity issues with data and metrics to support their positions.

Policy can never be crafted in the best interest of society if the research, metrics and analytic tools used to chart the course do not factor the entire picture but focus on the most convenient facts.

For example, it is somewhat incomprehensible that California Air Resources Board (CARB) has posted a letter to the CEC's decarbonization docket (19-DECARB-01, TN#233127, May 26, 2020) recommending and approving a lifecycle approach which excludes fugitive methane emissions that are "upstream of the meter", while HFC emissions from refrigerant and heat pump systems are factored. Such a policy position appears to have led the CEC to adopt a data analytics tool (FSSAT) that doesn't attempt to factor fugitive emissions for all of the natural gas

burned in the building sector because the emissions may not emanate from the buildings themselves. Climate change doesn't recognize such delineations. If we remain dependent on GHG producing processes, but move the sources out of our boundaries, out of state or out of the neighborhood, we still have a GHG problem. Policy based on such skewed data will always be misguided.

In his June 8th comments to the CEC regarding electrification and decarbonization, Tim Carmichael on behalf of SoCal Gas stated:

"SoCalGas submits that we can and should play a significant role in the decarbonization of buildings in accordance with the applicable laws and policy goals. To this end, a multi-faceted approach considering all prospective pathways to lower the carbon intensity of residential and commercial buildings will best serve public interests and impacted energy consumers."

It is reassuring to hear that SoCal Gas is flexible enough to support and commit to a multi-faceted approach to aggressive RNG and green hydrogen (power to gas, P2G) commercialization. On the recent CPUC webinar on data sharing to facilitate decarbonization efforts (June 2020) Deanna Hayes (Director of Policy and the Environment, SoCal Gas), expressed the Gas Company's vision "to become the cleanest gas utility in North America" and affirmed a "commitment" (not just a goal) to 5% RNG by 2022 and 20% RNG by 2030. Ms. Hayes also responded to an anonymous question that SoCal Gas is "open to electrification of some gas infrastructure". Such visionary goals and flexibility on the part of the SoCal Gas are to be sincerely commended and encouraged. They project determination despite significant market barriers to commercializing in-state and out-of-state RNG resources.

However, Mr. Carmichael's CEC comments also assert that *"Replacing less than 20% of traditional natural gas with renewable gas can achieve GHG emissions reductions equivalent to converting 100% electrification of buildings by 2030, at a significantly lower cost.4 The cost benefits result from effectively utilizing existing infrastructure and avoiding the cost of new electricity infrastructure to provide power for peak usage times."*

The cost analysis cited in the above footnote (4) is a study by the very reputable energy analytics firm, Navigant, which was commissioned by SoCal gas to write the cited report, "Analysis of the Role of Gas for a Low-Carbon California Future".

However, it should be noted, that the cost analysis submitted by Navigant assumes higher electric infrastructure costs based on lower efficiency heat pump technologies that would require greater grid capacity investments, and the study specifically disclaims an investigation into avoided grid investment resulting from higher efficiency heat pumps combined with energy efficiency. While gasification benefits are projected with and without EE (energy efficiency) improvements made at the time of equipment replacement, no similar electrification plus energy efficiency scenarios are shown - a blurring of the cost-benefits.

The study also specifically excludes analysis of RNG supply chain uncertainty which prior studies supported by SoCal Gas (EFI, Moniz, 2019) indicate are significant. The projected GHG and cost scenarios for gas and electrification that are offered are therefore not equivalent. These are significant variables which when omitted from the "snap-shot" of a study make a favorable conclusion easier. Excluding this data facilitates the claim that savings on gas infrastructure investment will lower societal and consumer costs in the residential sector while meeting "similar" GHG reduction targets as 100% electrification by 2030.

The EFI study (Moniz, 2019), entitled "Pathways for Deep Decarbonization in California" clearly spells out that some RNG resources are more cost effective than others (landfill sources versus livestock, etc.). RNG production is so variable across these resources that the cost effectiveness of initial resources are likely to encounter diminishing returns as the market more fully develops. Some potential RNG resources are seen to be too costly to commercialize, and it is not at all clear that 20% to 25% fuel mix can be achieved by 2030, although a firm commitment to that goal is significant and commendable.

III. THE NEED FOR SIMULTANEOUS FOCUS ON 2030 AND 2050 GOALS

Also, the Navigant study is based on meeting GHG reduction equivalence with electrification scenarios based on a 50% renewable portfolio standard (RPS) in 2030. It does not investigate the cost effectiveness of RNG or hydrogen when the RPS reaches 100% in 2045. By avoiding the 100% RPS comparison, the near-term trends are cast in a more favorable light. Context matters. In effect, the argument that RNG and the gas infrastructure will have higher societal benefits until 2030 is an argument to postpone the inevitable transition to full electrification on new residential construction until after 2030, which increases the risk of "stranded assets". At that

point we are likely to hear about the need to raise rates to cover infrastructure costs and the societal cost of the additional infrastructure investment will fall on the backs of ratepayers should the 25% RNG target prove untenable.

While gas distributors like to emphasize the "resilience" and cost-effectiveness of gas fuels (for residents) to support expansion and amortization of gas infrastructure assets, the risk is eventually borne by low and high income families alike who are the last to transition away from assets that are likely to be decommissioned at some unforeseeable point. The argument to delay market transformation will simply "kick a can down the road" and eventually result in growing infrastructure fees for the last residents to transition. In effect we are being asked to walk out further on the limb that offers only near-term or transitional viability.

IV. DATA AND ANALYTICS ARE KEY TO ACTUAL GHG REDUCTION

The focus of the data and cost analytics integrated into the FSSAT and other models such as CBECC matters – perhaps more than sweeping legislation. The variables and data integrated into the models paint the roadmap, and inaccuracies and omissions simply paint the wrong policy picture that will not hit our targets.

One must ask, how can we find a way to actually collaborate with gas distributors – to make them actual partners in decarbonization, employing either gas or electrification strategies where and when they have the highest societal benefits? How may they define diversification strategies that do not dig current stranded asset holes deeper or make their diversification at a later time less tenable?

In a presentation to the CPUC in 2018, George Minter, (Regional Vice President for External Affairs and Environmental Strategy, SoCal Gas) stated that projected in-state RNG resources can meet only 20% to 25% of the state's projected 2050 demand, even after accounting for gas appliance efficiency improvements. The balance is projected to come from out-of-state resources. But is it reasonable to assume that surrounding states are going to sell us their RNG supplies when they will have their own decarbonization standards by that time? Would it not lower carbon footprint for those states to serve their own economies with their own RNG supplies?

Although SoCal Gas advocates for green hydrogen (P2G) to make up the balance if RNG supplies fall short, the EFI "Pathways" study suggests that the gas infrastructure will need to be upgraded at some significant cost to be "hydrogen-ready" and avoid potentially increased leaks and safety issues. (Hydrogen is a "thinner" molecule.) So Mr. Carmichael's position that the existing gas infrastructure can altogether avoid the kind of upgrades that the grid requires to accommodate electrification is also questionable.

Deanna Hayes (SoCal Gas) stated that there is a CPUC working group that is investigating the safety concerns associated with introducing hydrogen into the residential gas infrastructure. It is clear that the science and engineering on this point as well as the scale of existing leaks in the gas infrastructure have not been adequately studied. In 2023, EDF will be launching a methane monitoring satellite which will clarify the actual impacts and externalities, but these are not likely to be integrated into the CEC, CARB, CPUC scenario analysis tool (FSSAT) if it is the state's policy to ignore some lifecycle costs, but not others. Context matters. Having all of our data inputs factored in open and collaborative discussion is a prerequisite if we are to agree on solutions that actually hit GHG reduction targets.

V. CONCLUSION

The high altitude perspective is to embrace all relevant data and GHG emissions in the process of calculating near and long-term costs and societal benefits. Partial accounting of data will always mask rather than clarify the most effective policy. Technology is constantly changing, and market transformations are occurring rapidly. The business survivors are those that are agile and see the changes coming, and flexibly diversify into new markets, technologies and sectors that hold promise. The flexibility to change business models is key, because it influences that data and research conclusions that are used to either promote real change or remain entrenched.

Clearly hydrogen will play a key role in decarbonizing heavy industry, heavy trucking, shipping and aviation. It may also play a key role in powering gas peaker plants as an alternative to utility scale batteries with seasonal storage capabilities. This is not as hypothetical or long term as it may seem. A company in Southern California is already in the process of developing hydrogen powered jet aircraft, Honda has committed to a significant passenger fleet but sees real opportunity in heavy transport, and there have been prototype diesel-hydrogen engines for

decades that have far lower emissions than conventional trucks. Strategic placement of the pilot facilities near both gas fired plants and transport centers will be critical to cost amortization and will minimize risk for early adopters. These are the applications where RNG and power to gas "green hydrogen" are most likely to find expanding rather than contracting markets.

Mitsubishi Electric has already committed to "Respecting long-term goals based on international agreements" and "cooperating with other companies and institutions …to use our …technologies and business synergies to create innovative technologies and solutions"*. We invite all stakeholders to take the broader and more collaborative view of the policy planning which must now occur if we are to remain true to the quality of life of future generations. Corporations must align behind the Paris Accord objectives and use the right analytics and the right policy to pull away from the precipice we are now on. We need both the high-altitude perspective as well as high resolution detail if the data analytics are going to capture the policy perspectives that will guide rather than inhibit the decision matrices and policy we must now evaluate. Partial pictures will not deliver the consensus or GHG reduction targets we must hit. We cannot afford a miss. The societal cost is too great.

Mitsubishi Electric is deeply grateful for the public forum that allows such public policy to be reasonably and fairly discussed.

Respectfully submitted,

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*Mitsubishi Press Release: Mitsubishi Electric Unveils its Group's Environmental Sustainability Vision 2050
Long-term environmental initiatives through 2050 for low-carbon, recycling-based society, TOKYO, June 13, 2019