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**Mitsubishi Electric Comments on the FSSAT and Concern about
Critical Omissions**

Additional submitted attachment is included below.

Mitsubishi Electric Comments on the Fuel Substitution Scenario Analysis Tool and Concern about Critical Omissions.

Submitted by Bruce Severance, Regulatory Compliance Engineer, Mitsubishi Electric US, June 18, 2020
Submitted to CEC Docket 19-DECARB-01

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 consider it a moral responsibility to be reliable and consistent partners in the global climate mitigation efforts.

FSSAT MODEL NEEDS TO BE ACCURATE

Although electrification of buildings is widely accepted as a lower carbon alternative to continued reliance on natural gas for heating, we also understand and embrace the energy equity issues and the need to accurately assess the cost of fuel switching and the actual impacts household utility bills and the environmental benefits. For this reason we support the overall goal of having a Fuel Substitution Scenario Analysis Tool and appreciate the value of having such a tool for long term planning and policy making.

However, it is critical that this tool encompass and include all life-cycle cost impacts and carbon externalities in order to assure an accurate long term assessment of GHG emissions and the corresponding policy impacts. It is also important to all parties that consumer cost

estimates are accurate and appropriately peer reviewed by more than one impartial party. Stakeholders have expressed concern about electrification cost estimates in the FSSAT model being high, which would favor gas interests. The Building Decarbonization Coalition among others has expressed concerns about the accuracy of projected electrification costs, a critical variable to creating a level playing field. Contractor installation costs vary widely across the state as do actual energy savings to the consumer relative to climate zone variables.

If the FSSAT model uses the 100-year GWP rating of methane rather than the higher 20-year rating, it projects an inaccurate picture. Clearly the climate crisis is upon us now, and only the 20-year GWP of methane is relevant. Using the 100-year rating would skew the GHG impacts to favor gas interests four to one.

Also, the need for improved contractor training and improved EPA 608 compliance which will necessarily follow from the introduction of lower GWP refrigerants in 2023, should be assumed and integrated into the projected GHG reduction of refrigerants over time. Currently, there are relatively poor recycling and reclamation practices nationally, and the early introduction of A2L*1 refrigerants in California in 2023 represents an opportunity for across-the-board advanced HVAC contractor training that should include improved quality installation practices to reduce system leaks as well as enhanced EPA 608 practices to reduce refrigerant leaks at time of service.

GAS INFRASTRUCTURE LEAKS - A SIGNIFICANT VARIABLE

From the variables laid out in the February 27th GuideHouse presentation to the Commission on the Fuel Substitution Scenario Analysis Tool (TN#232239-2020022), it appears that methane leakage is only factored downstream from the meter. **Despite public comments on this point, the FSSAT model continues to omit this variable, which weighs heavily against heat pump technologies that are moving toward low-GWP refrigerants, and heavily favors the gas industry that has embraced deregulation of methane leak monitoring and which has not been fully transparent about its impacts.** Although there is significant leakage behind the meter, recent studies indicate it is dwarfed by wellsite and distribution leaks and what the Energy Commission has deemed to be “super-emitters” which we believe contribute far more significantly to climate change than current refrigerant emissions.

The Aliso Canyon leak of 2014 emitted CO₂ equal to every car in the state having a fuel economy of 15mpg for the entire year. It nullified the all the fuel economy progress made over decades for an entire year. Although emissions from extraction well sites are rarely this calamitous, they are nevertheless significant.

EDF has been conducting wellsite monitoring and has at least partial data and conservative estimates of 2% to 3% leakage rates nationally. The leaked gas is equivalent to that required to power 10 million homes, over 6% of the national housing stock, and it has a worth of \$2 billion dollars and cost-effective and profitable to capture and sell the otherwise lost asset.

As early as 2022, EDF will be launching its Methane Satellite which will be able to precisely measure leaks globally. If the FSSAT modeling doesn't integrate this important variable, it will be increasingly obvious that model projections are inaccurate and that they unfavorably tilt the scale in the direction of gas interests. Clearly, this works against the Energy Commissions intent to comply with 2030 and 2050 decarbonization goals.

HVAC Industry Compliance with Low-GWP Targets

By contrast, the HVAC industry has largely embraced the need to reduce the GWP of refrigerants and is certainly going to continue on that path over the coming decade, while the gas extraction industry and some distributors have largely resisted monitoring and repairing leaks and have embraced the Trump Administration's deregulation of this sector. It is hard to imagine why the CEC would create a modeling tool that would tilt the scales in favor of higher GHG technologies that have not embraced a "good-faith" effort to reduce GHG emissions.

In September of 2019, AHRI, the manufacturers association and a number of AHRI member companies signed onto a memorandum of understanding that the industry would try to work toward a 2023 implementation of the <750GWP standard. Not all AHRI members signed up for this commitment in part because it is painfully challenging. Not only is the product development cycle challenging, the process will involve the kind of shift in technology that occur every two or three decades. Despite costly and challenging product development, we believe the HVAC industry as a whole is moving rapidly in this direction and that it is critical for them to do so to meet regulatory requirements as well as increased consumer demand for greener alternatives.

Where is the corresponding effort on the part of the fossil fuel industry to reduce their methane emissions and refining emissions and other climate impacts? In 2021, the Environmental Defense Fund (EDF) is scheduled to launch its methane satellite that will be able to pinpoint the size and location of methane leaks all over the globe. With this new technology, we will have a “bird’s-eye” perspective and more complete data on the extent to which the gas extraction industry as well as the gas distribution infrastructure needs to be reinvented. It is time for these climate impacts to be fully factored.

Thank you for the opportunity to comment on the Fuel Substitution Scenario Analysis Tool while it is still not too late to correct the lack of accounting for these significant climate variables.

Sincerely,

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