

Good morning. Thank you for the opportunity to testify today.

My name is Gabrielle Stebbins. I am a Managing Consultant with Energy Futures Group, a clean-energy consulting firm focused on energy efficiency, renewables, and strategic electrification. Our clients include regulators, government agencies, utilities, and advocacy organizations across the U.S., Canada and Europe.

EFG has been providing Sierra Club with expert technical review and analysis regarding the modeling conducted by the LDC's consultant, E3, throughout the DPU 20-80 proceeding. You've already heard that the DPU 20-80 process ultimately identified the "hybrid electrification" pathway as the lowest cost option, AND that this pathway utilizes hybrid gas electric heat pumps to reduce gas consumption, but essentially maintains the customers and infrastructure.

My testimony will focus on six of the inaccuracies and problematic proposals in the modeling assumptions, that ultimately result in a skewed analysis that favors keeping the gas system online.

First. E3's analysis relied upon an unreasonably high real discount rate, which biases against more capital-intensive solutions, such as customer investments in cold climate heat pumps, and favors solutions that are expensed annually, such as fuel costs.

E3 appears to have used a real discount rate of 7.2% to convert all capital costs for equipment installed in homes and buildings into levelized annual costs. But alternatives analyses focused on a societal concern like climate change usually use a societal discount rate between 0% and 3%. Using a 7.2% rate for a \$12,000 weatherization project expected to last 30 years, instead of a 1% rate, results in a 112% increase.

Second. E3 included the capital costs from more expensive building weatherization investments in most of the pathway scenarios, but not in the hybrid electrification scenario – the scenario ultimately identified as having the lowest cost. So there is no way to compare the costs, apples-to-apples, across the scenarios.

Third. E3's cost assumptions for various capital investments are unreasonable. When electrification scales up - here and nationally—the market for cold climate heat pumps will fundamentally change and prices will decline. E3 doesn't recognize this and assumes cold climate heat pumps will remain more than twice the cost of a high efficiency non-cold climate heat pump moving forward. There isn't any engineering or installation reason for why the costs would remain at E3s high price.

Meanwhile, E3 assumed little improvement in commercial building shells. The model did not account for Boston's recent Building Emissions Reduction and Disclosure Ordinance, which lays out a path to zero emissions by building type, even though this ordinance would apply to more than 60% of the commercial floor area in the State.

Fourth. E3's analysis assumed greenhouse gas emissions from biofuels that understate their actual impact. E3 has unrealistically assumed that renewable natural gas, or

RNG, is zero-emitting *and* that there will be no leakage.

Fifth. E3 has unreasonably assumed that the market clearing prices for RNG and synthetic natural gas (SNG) are completely unconnected. The basic laws of economics suggest that prices for commodities are based on the marginal cost of the most expensive unit produced to meet demand. However, E3 assumed that if SNG (which is much more expensive than RNG) is needed to meet demand, because there is not enough RNG to do so, then the higher priced SNG would not affect the price of all the RNG still being purchased. RNG and SNG are molecularly identical. There is no logical basis for assuming that RNG and SNG prices would be disconnected, and it results in an artificially lower estimated cost for scenarios relying on alternative fuels.

Sixth. E3 used a population-weighted methodology to determine the quantity of RNG available. E3 took Massachusetts' share of population east of the Mississippi – 3.7% - and assumed that the Bay State would receive 3.7% of available resources. However, it is generally agreed that these fuels should be prioritized for the hardest-to-electrify sectors of the economy, like industry, not heating buildings. An industrial emissions allocation results in 0.9%, not 3.7.

In sum: the model assumptions and approach present multiple, problematic concerns that ultimately combine to result in tipping the scale in favor of a pathway reliant on the gas distribution system and biofuels.

My role in this proceeding has been as a technical consultant. But I am also a Vermont State Representative. From one legislator to others, I would want to know that the outcome of this process is concerning and skewed. We urge more thorough examination of the assumptions and modeling. The work is not done. Massachusetts' ratepayers deserve better. Thank you.