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Subject: zoning ordinance electrification mandate thoughts

Dear Planning Commission,

I was able to tune in for part of the 12/6 meeting and appreciate the depth of the conversation around mandating electrification of new buildings and I am glad you are taking your time on this to really understand the implications of the forms this policy could take. I very much agree our goal and vision should be for an all electric future, and it is important to communicate that clearly and consistently so the markets and trades can catch up. Policy tools like a mandate can be a catalyst to faster change but can also undermine our ability to make the transition. We need to take great care in how we get there.

Please account for the actual weather in places we are comparing ourselves to. Commissioners frequently referred to cities in coastal California which has a mild climate. This severely limits their value in comparisons of construction and operating costs. There are few (if any?) cities in our HVAC climate zone that have an electrification mandate (NYC is one zone further south and doesn't get as cold for as long as our zone). The technologies used for electric heat (and heat is far and away the most significant energy draw) perform very differently in our zone.

A 2019 Columbia Center on Global Energy study explores the economics of air source heat pumps in various climates ([linked here and attached](#)) for the goal of decarbonization. Air source heat pumps are worth focusing on because they are very energy efficient (less likely to create extremely high operating costs) and much more practical and cheaper to install than ground source heat pumps, which aren't viable for many sites. **The study predicts in our climate zone air source heat pumps will become economical vs new gas some time in the 2030s, but that prediction assumes a policy that sets a price on carbon that does not currently exist.** This finding suggests a near term mandate in our climate zone would significantly increase the cost of new construction, even while this technology is already economical in milder climate zones. This is just one study, but I think it is credible enough to take seriously as an indicator and cost impacts are worth deeper exploration.

The risk of increased costs suppressing building in city limits is high and the side effects could be worse than allowing new gas connections. We should take this risk seriously. If this mandate significantly raises the cost of new construction, it will shift new construction into the townships and into adjacent counties. As one commissioner noted, this will increase transportation emissions substantially, but the carbon costs associated with that sprawl are greater than just transportation emissions. There are also emissions associated with the new lane miles of highways and miles of pipes, conduit and wires to serve low density sprawl; and the emissions associated with what will likely be the very gas heated buildings we're trying to prevent. We often don't "count" this carbon when we do analyses but our decisions directly affect these outcomes. Increased costs will also contribute to the exacerbation of our housing crisis by further increasing the floor of the cost of new construction housing which limits all potential new supply, including our ability to build subsidized housing.

Multiple commissioners raised the issue of **indoor air quality**. The biggest culprit of low indoor air quality is gas stoves, not heating systems or other mechanicals or appliances, which in new construction are vented. Affordable rentals typically have cheap resistive electric ranges because those are the cheapest things to install and maintain. Mandating electric heat to ensure people do not install gas stoves is a very heavy handed approach. **I don't think this should be a significant factor for deciding this policy and the zoning ordinance is not the right place** to regulate whether people have gas stoves or not.

Commissioners also talked about **things that can offset operational costs of electrification which I also don't think should be significant deciding factors** like utility demand response or solar panels.

DTE already has a demand response program for the cooling season, and they could theoretically start one for the heating season (as could our future SEU). The mechanism for demand response is remote control of a thermostat, so demand response can just as effectively make natural gas comparatively cheaper as it does electricity. Also, as one commissioner noted, this kind of incentive can be perverse and encourage underutilization that harms quality of life and well being of cost-strained residents.

Solar panels are going to be the least effective when electricity demand for heat is highest, in low light winter months when panels are frequently covered in snow. Rooftop solar is great, in general, especially for cooling season months, but is not a cost effective offset for heating electrified buildings. Also, dense new developments have limited roof square footage per resident, and will not be able to meaningfully generate on site solar relative to building load demand. Those buildings enable much smaller carbon footprints for their residents, so we should not be discouraging them with an unrealistic expectation that every parcel can solve its own energy needs.

Based on my understanding so far, I think it probably makes sense for a timed phase-in that ends beyond 2023 and the current proposed timeline is too aggressive. If it makes practical sense, I suggest phasing in these requirements by building type, starting with the least efficient building form: individual detached homes. Phase this requirement in on larger structures later, so we don't throw out the long term benefits of dense new infill because we set the cost floor too high. This would give the market time to scale up and ease the infrastructure planning side of the transition, while discouraging the least land- and energy-efficient building forms without discouraging the most energy- and land-efficient forms.

Thanks for all your hard work on this issue!

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