Climate Law & Policy Project

Thank you for the opportunity to provide further comments on the discussion draft of the *Building Energy Transition Plan*.

Overall, the draft is excellent, and we fully support most of its recommendations. However, we think certain issues raise some questions and possibly could be refined and improved.

- *"Electrification with Fuel Backup" as the Lowest-Cost Scenario (p.2):* As we have partially noted in previous comments, E3's modeling of the "Electrification with Fuel Backup" (i.e., hybrid) scenario as being lowest-cost is problematic in several respects.
    - E3's result depends largely on excluding building shell improvements from the hybrid scenario but including them in the other scenarios (e.g., p.6). The draft *Transition Plan* says these improvements are "less necessary" in the hybrid scenario, but building shell improvements should be a key strategy in all decarbonization scenarios. In the hybrid scenario, there are almost certainly cost-effective and easily implementable shell improvements that might reduce the volumes needed of high-cost RNG, the limited quantities of which may need to be reserved for harder-to-decarbonize sectors.
    - The hybrid scenario is described as lowest-cost (p.2) in part because heating loads are only electrified to the point that winter and summer electricity peak demand levels match, which means electricity system cost is minimal. The winter peak constraint appears too restrictive, as it is possible (indeed, likely) that grid buildout to allow some amount of winter peaking will be less costly than the RNG it would displace. As the draft notes (p.3), the Pepco filing suggests upgrade of the electricity system to accommodate winter peaking would be quite manageable.
    - As the draft also notes, RNG could become very expensive, raising the risk that dual-fuel building owners will choose to operate on electricity even on the coldest days. This could lead to unplanned-for winter peaking, as well as implementation of building shell improvements (p.8). It could also lead to low-income households being burdened with the legacy cost of gas infrastructure and high-cost RNG.
    - The draft *Transition Plan* acknowledges (p.3) that the High Electrification pathway could end up being the lowest-cost, if low-carbon fuels end up on the higher end of the estimated range and/or if federal funding is available for system improvements, but the report gives the impression, especially if read casually, that the hybrid approach is recommended as being lowest cost. For example, the draft bolds the E3 conclusion that fuel-backup is the lowest-cost, lowest-risk pathway on page 2.
- *Cumulative Emissions:* The draft *Transition Plan* notes (p.2) that each of E3's modeled scenarios achieves net-zero emissions by 2045 for the residential and commercial building sectors. The draft, however, does not point out that the scenarios are not equivalent in terms of cumulative emissions between now and 2045—and that the High Electrification scenario achieves the most cumulative emission reductions. For a plan focused on achieving emission reductions, this is an important omission, as cumulative emissions are more important than single-year targets.
- *Gas Use in the Hybrid Scenario:* The hybrid scenario results in only a 62% reduction in gas use in 2045 (p.9). The remaining gas usage still seems too high. No reason is given, for example, for continuing the use of gas appliances in the hybrid scenario. Again, entirely excluding building shell improvements in the hybrid scenario also does not make sense, as it misses opportunities to reduce gas usage.

- *Conservative Assumptions in the Electrification Scenario:* E3 takes a conservative view of the potential for air source heat pump efficiency improvements and the adoption rate for geothermal (the modeling does not even mention wastewater thermal energy). This stands in stark contrast to its optimistic view of RNG availability and cost. The report would benefit from some analysis of the possibility that affordable higher-efficiency heat pumps will become available or geothermal energy will be more widely available.
- *Implications of the Recommendation to Plan for Both a High-Electrification and a Hybrid Scenario:* The draft plan recommends a policy approach that initially accommodates both scenarios but could pivot to the better scenario, depending on future costs and other factors. While this seems on its face to be a sensible approach, it could be difficult to navigate. The report should more clearly suggest ways to do that.
- *Consideration of the Practical Obstacles to a Hybrid Approach:* One puzzle unaddressed in the modeling or the draft plan is the practicality of the hybrid scenario. It is difficult to imagine how having both heat pumps and existing furnaces / boilers would work for homeowners. First, they need the space for both systems. Some, perhaps many, houses will not have that. Second, in addition to taking up more space, keeping two systems functioning means maintaining and servicing both, which clearly would be more costly and inconvenient. Third, at what point in time does a homeowner make the decision to install a heat pump? For the Electric with Fuel Backup approach to work, the heat pump must be installed when the existing fossil fuel system is still in good condition, so it can continue to provide backup heat. How would homeowners, or any building owner, be incentivized to install a heat pump when their existing system is still working? Maybe some combination of energy cost savings and government incentives would be enough motivation, but the incentives (rebates, tax credits, etc.) would probably have to be very high to make it worth the cost and the bother. From the owner's perspective, it makes more sense to install a heat pump when the old system needs to be replaced, but then there would be no operating backup system. A lot of building owners and homeowners may opt to have only one system—particularly since, as the report points out, gas prices will rise as gas use declines, further disincentivizing maintaining and operating a fossil fuel backup system.
- *Behavioral/Inertia Hurdles to Retrofits:* Related to the bullet above, the Clean Heat Retrofit Program (p.12) should have more than just incentives. There should be actual implementation teams that go make retrofits happen, to overcome the hurdles posed by inertia, building owners being disinclined to deal with the bother and hassle of retrofits, and so forth. A more proactive approach is needed. For example, there should be an office that building owners and others can easily contact that can arrange a low-cost or free energy audit, help create an individualized retrofit plan, and dispatch deployment teams.
- *AC Heat Pump Goal (pp.12-13):* The draft plan states that 50% of new AC sales should be heat pumps by 2025. The 2020 MCCC recommendation was to set a goal of 50% of *space heater* sales to be electric heat pumps (air source or ground source) by 2025. We strongly recommend retaining a goal that targets space heater sales. Both electrification scenarios require heat pumps for space heating, so if a space heating system (of any type) is being replaced, it should be with a heat pump. A fossil fuel backup (likely smaller, as it would only be supplemental) can be added later. If an operating fossil fuel space heater is already in place, then of course any addition should be a heat pump. We also note this is a somewhat indirect goal for building decarbonization. For example, the target includes building owners that are replacing existing heat pumps with new ones. The metric should be something more like the number of fossil fuel

or electric resistance space and water heating systems replaced with air or ground source heat pumps. The recommendation should explain (and be expanded to include) the need to fully electrify 40,000-50,000 Maryland homes per year between now and 2045.

- *Resiliency:* More consideration should be given to resiliency, although that may be outside the MWG mandate. Currently, the building conversation seems to be mainly about mitigation (energy use and emissions). The draft plan mentions resiliency briefly (pp.16, 23), but particularly in light of recent weather events, resiliency must be built into all aspects of planning, just as equity now is. In fact, protection from climate impacts is an equity issue. Buildings must be able to withstand extreme flooding, wind, temperature, erosion, etc. There is also a need for robust emergency shelters, which have their own special energy design requirements, e.g., they must be able to operate off-grid for lengthy periods. (Schools may be good candidates for emergency shelters.) These issues merit some discussion in the report.
- *Protection of LMI households:* The draft plan does not give adequate attention to the risks that electrification, particularly in the hybrid scenario, pose for low- and moderate-income (LMI) households. The plan's many suggestions for providing improved affordable and clean energy services to LMI households and consumers are commendable, but the draft fails to squarely address the likelihood that these customers will be among the last remaining on a very high-priced gas system. Upper-income consumers, when faced with extremely high gas prices for fuel backup, may opt to leave the system entirely, leaving LMI consumers to bear the cost of an increasingly expensive system. The fact that many of these homes will not be properly weatherized (despite the plan's laudable recommendations) exacerbates this problem and is another argument for including shell upgrades in the hybrid scenario.