

I support the State's efforts to decarbonize the New York economy. As an avid sailor, skier, golfer, and cyclist, I am all in favor of achieving the cleanest environment that is reasonably possible. I also agree that New York should be a leader in climate advocacy. But we must recognize that climate change is a larger issue than simply New York State, which by itself accounts for less than one-half of one percent of world-wide emissions. As such, from a practical standpoint, New York's ability to make a meaningful impact on global emissions is limited. That doesn't mean we shouldn't try; on the contrary, we absolutely should demonstrate strong leadership in the hopes that the world will follow our example. But given our place in the world, anything we attempt within the State must be reasonable. It's critical that our efforts to decarbonize be affordable for New Yorkers and not sacrifice energy reliability. In my opinion, the Climate Action Council's Draft Scoping Plan fails on both accounts.

Cost to Consumers

Thanks to a diverse portfolio of electric generating assets (balanced relatively equally between hydro, nuclear and natural gas fired) and an extensive natural gas distribution system, Western New Yorkers have enjoyed reasonably priced energy for generations. If enacted as written, the Scoping Plan would phase out the use of natural gas as a fuel to generate electricity and replace it with intermittent wind and solar assets. It would also eliminate the use of fossil fuels in practically all other applications, instead forcing New Yorkers to use electric alternatives. As described on page 74 of the Scoping Plan, that will result in electric consumption doubling by 2050 (and that's after some very aggressive assumed energy efficiency gains, which may or may not be realized). Substantially all of that incremental electricity would be generated using wind and solar. In a recent presentation on the Scoping Plan, National Grid estimates that, to meet the increased electric demand anticipated in the "full electrification" scenario, it will need to nearly quadruple its investment in the energy grid.

This will invariably lead to increased costs to consumers. But, because the Scoping Plan evaluates costs and benefits at a societal level, there's next to no discussion or details on how consumers will be impacted. Nevertheless, using the limited data that is available, one can infer the cost to consumers will be significant. The Scoping Plan presents a range of scenarios, and the incremental cost of each scenario relative to the status quo is generally in the range of \$300 billion dollars in today's dollars (assuming a 3.6% discount rate). According to the U.S. census, there are roughly 7.4 million households in New York, which means that each household's share of incremental energy costs over the next 28 years will be in excess of \$40,000. The Scoping Plan (on page 80) attempts to rationalize this as reasonable by suggesting that the direct costs will merely increase from 0.6% - 0.7% of Gross State Product (GSP) in 2030 to 1.4% of GSP in 2050. While this may be a small increase relative to GSP, it still represents at least a doubling of energy costs that are ultimately paid by the consumer. Further, \$40,000 is a significant burden for Western New Yorkers, whose median income is \$56,800 and median home value is \$202,000.

The Scoping Plan justifies these costs by pointing to roughly \$410 billion of benefits from avoided greenhouse gas emissions and other health benefits. But in my view, this approach suffers from significant flaws. First, the Scoping Plan treats the costs and benefits of the Plan as

being equivalent. In reality the \$300 billion in costs are true costs that will be paid for in cash by consumers, while the \$410 billion in benefits are largely theoretical in nature. Second, the Scoping Plan calculates roughly \$240 billion in alleged offsetting benefits from avoided greenhouse gas emissions. But it's important to remember that, because we all share one atmosphere, the benefits of these reductions are global in nature and not unique to New York. Unless the rest of the world reduces emissions at the same rate, New Yorkers are effectively underwriting emissions reductions for the rest of the world. To accrue the full benefit of those lower emissions to New York is, in my opinion, intellectually dishonest. Lastly, the Scoping Plan claims \$40 billion in health benefits from increased active transportation from walking and cycling. At roughly \$5,400 of benefits per household (in today's dollars), this appears to be quite a stretch, and in any case, is in no way related to the cost of revamping the State's energy complex. When adjusted for these two items, the alleged \$90 - \$115 billion of net benefits claimed by the Scoping Plan quickly becomes a significant net cost.

New Yorkers deserve to know and understand the true cost of achieving a deeply decarbonized economy, and I urge the Climate Action Council to undertake a more complete analysis of the cost to consumers before moving ahead with the implementation of the Plan.

Reliability

As noted above, the Scoping Plan proposes to begin phasing out affordable, reliable fuels like natural gas almost immediately, well before the grid itself is "green" and, most importantly, well before it's clear that the electric grid can support the added electric demand that would result. This presents multiple challenges that the Scoping Plan largely glosses over.

First is the pace at which renewable generation needs to be added to the grid to achieve the State's goals. According to a 2020 Analysis Group Study prepared for the New York State Energy Research and Development Authority, the New York grid will need to add on average 2.7 gigawatts (GW) of wind and 2.0 GW of solar each year through 2040. To put that in perspective, in 2020, there was a total of 2 GW of combined wind and solar generation installed in the State. That is an incredible rate of growth – every year for the next 18 years, the State must install double the amount of wind and solar capacity that currently exists in the State (which itself was installed over a period of decades). While not impossible, it certainly feels like a big stretch. The State would be foolish to prematurely retire natural gas fired generation before having greater certainty the timeline for the buildout of renewable energy can actually be achieved.

Second is the impact of intermittent renewables to the reliability of the electric grid, particularly in the winter. We all know it's not windy and sunny all the time. As a result, even if the unprecedented growth in renewables is achieved, by 2040 there still remains a shortfall of 15 – 25 GW of peak day generation that cannot be met with existing renewable technology (as acknowledged in several studies, including the Scoping Plan, Power Grid Study, Pathways Study, and NYISO Grid-in Transition and Climate Change Study). That is a startling amount of generation – greater than the total amount of electricity that's being generated in the state as I write this. And there's no clear plan as to how this shortfall will be solved other than, to paraphrase, "we'll figure it out when we get there."

If we electrify all of the state's heating load, electric peak day will shift to the winter, so it's almost certain that shortfall in generation would occur when we need it most – on the coldest days of the winter. In a state where the winters can be brutal, particularly in Western New York where peak day temperatures can be 50% colder than in downstate New York, it makes little sense to eliminate the natural gas system (which has a reliability of 99.99%) for space heating. I strongly encourage the Climate Action Council to reconsider its recommendations on the future role of the natural gas system.

Better Path Forward for Space Heating

As I stated earlier, I'm all in favor of reducing emissions in New York State, but I believe an "all of the above" emissions reduction strategy like the one proposed in National Fuel's "Pathways to a Low Carbon Future" report makes a lot more sense. National Fuel's plan focuses principally on energy efficiency programs and hybrid heating solutions. Energy efficiency programs are generally the least-cost approach to achieving carbon reductions, and any plan to achieve the state's decarbonization goals must focus first on the efficiency of energy use in all sectors. Energy efficiency can be viewed as a "no-regrets" solution because by making consumption more efficient the state lowers the cost of any of the pathways it is considering for decarbonization.

After aggressive energy efficiency and building envelope measures have been achieved, further decarbonization of the buildings sector can be gained through the adoption of a hybrid dual-energy pathway that utilizes the existing storm-resistant underground natural gas network to deliver low- and no-carbon fuels like RNG and hydrogen. Studies have shown that there will be significant supplies of RNG in and around New York, and hydrogen has been recognized by the US Department of Energy and multiple jurisdictions (including New York) as having enormous decarbonization potential. This hybrid pathway can contribute to emissions reductions while minimizing costs and strain on the electric grid. According to National Grid, this approach would avoid approximately 60 GW of new capacity statewide and approximately \$70 billion of capital expenditures in New York by 2050. It also would go a long way to solving the 15 – 25 GW peak day shortfall described above.

Through a combination of energy efficiency, selective electrification, hybrid heating solutions and deployment of low- and no- carbon fuels like green hydrogen and RNG, we can leverage existing utility infrastructure to achieve significant de-carbonization that not only meets the State's emissions goals but also preserves access to low cost, reliable and resilient energy for New Yorkers.

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