Brief Commentary on the NC Clean Energy Plan

A major deficiency in the NC Clean Energy Plan is that there is an exceptional technical error in its documents, and therefore in several of its charts and graphs.

Before I get to that, although a point was made that a stakeholder process came up with this Plan, exactly **who was there truly representing the interest of NC citizens?**

Further, I see no definition of what "Clean Energy" actually is. It seems like that should be prominently displayed in each of the six supporting Plan documents.

Here is the major deficiency I initially referred to:

> The technical reality is that there is no such thing as Wind (or solar) energy on the Grid, by itself. That is a profoundly significant matter.
>
> What actually typically exists on the Grid is a Wind+Gas (or Solar+Gas) package.
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> Further, it's important to *explain* in the Plan documents that there are two very different types of Gas electricity generators: Single-cycle Gas = Gas_{SC} and Combined-cycle Gas = Gas_{CC}.
>
> You do mention Combined Cycle Gas and give it an abbreviation (NGCC). You also mention Single Cycle calling it Combustion Turbine Gas. Strangely there is no abbreviation listed for that source (Part 1, page 9) which would seem to be NGCT.
>
> More importantly, there is no explanation of the very important three (3) major **differences** between these two types of gas generators.
>
> These differences are very pertinent, as the auxiliary partner with Wind is almost always NGCT. Therefore all charts, graphs and calculations should be of the Wind + NGCT package. (Solar would most likely actually be a Wind + NGCC package.)

Part 1:

On a related matter, the Lazard LCOE charts (e.g. Part 1, pp 50-51) are inappropriate, as their report very clearly states that such calculations do NOT take into account any reliability considerations. NCUC is statutorily obligated to consider reliability as one of the two most important factors in approving energy projects. As such, LCOE graphs that do not include reliability are inappropriate as a reference in this report.

Another error appears in chart 2.7 (Part 1, page 49). It lists onshore wind capacity factor as 44% — which is seriously inaccurate. Even your own text (on Part 1 page 37) contradicts that. NC onshore wind facilities getting to 35% would be an unexpected accomplishment.

Part 2:
In the nuclear section it was good that you mentioned SMRs (3.2.2).

On the preceding page you listed several nuclear limitations. The question is: why you didn't also list any of the many limitations of industrial wind energy (9.2.2)? For example, there are numerous well-documented adverse consequences from onshore wind energy: human health effects, environmental destruction, a net financial burden on host communities, military interference, etc. None of these are even mentioned.

Again the Wind+Gas reality is not accurately reflected in the Wind energy section (pp 123-144). For example, 9.5.4, Figure 9.11 is seriously inaccurate because of this error.

Again, none of the other necessary Grid infrastructure costs (transmission, the good words found in your section 9.4.2, etc.) are reflected in these figures. They are all wind-necessitated costs, so they should be fully attributed to the wind energy LCOE, etc.

On page 120 you cited a NREL study, but failed to convey all of what it said. For example, on page vii it says "In this study, we found that up to 33% of wind and solar energy penetration increases annual cycling costs by $35–$157." Since this was your citation, where did you take those costs into account in the NC Plan?

Etc. etc…. It seems like the Plan authors selectively chose parts from other sources to support the Plan, and neglected to include information that was deemed negative.

This is exactly why we spend enormous amounts of money on some "good-sounding" effort but years later find out (to our surprise) that:

1) the costs were much higher than projected,
2) the benefits were much less than promised, *and*
3) there were numerous other adverse unintended consequences.

My final comment is to learn from the mistakes of others. A few years ago NYS passed a similar measure called the Clean Energy Standard. Subsequent to its passage, an independent energy financial expert (PhD) did a comprehensive study of the CES. The conclusions were:

1) the CES was going to cost NYS citizens and businesses in excess of $1 TRILLION,
2) the benefits of the CES were so small that they were labelled as immeasurable.

Hopefully NC will focus on science-based alternatives, and not get caught up in a virtue signaling contest.

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