

General Comments on DOE Staff Report

I initially had the understanding that the [Staff Report](#) to the DOE Secretary was a first draft. My impression was that [public comments](#) were being solicited so that this draft Report could be refined and improved before becoming official. To assist in that sensible process I was going to carefully read through the entire Report, and write out comments to specific items in it.

However, I was told by one of the authors, that there are **no plans to make changes to this Report!** Public comments would simply be collected and noted. Considering the enormity of this Report's significance, I find that plan-of-action hard to understand.

In any case, there is now little point in enumerating the details of every error and oversight of the Report. Instead, I've perused the Report, and submit the following ten Big Picture observations:

1) A Grid not thoroughly rooted in Science will be inherently unreliable.

Science exists to give us answers to our technical questions and problems. Energy matters are technical problems. As such it's puzzling how a 150+ page technical Report on energy sources does not mention the word "Science" a single time.

For a more thorough explanation of this profoundly important issue, see my [Preliminary Comments](#) to the authors of this Report.

[Note that a true "Scientific" assessment would include technical, economic and environmental considerations... Note also that just because a source is "renewable" does not mean that it gets a free pass from Scientific scrutiny.]

2) Even though this Report is about Reliability, the term "Reliability" doesn't seem to be defined in the Report. It's an error to simply assume that we all have the same understanding of what this fundamental term is.

In the industry the NERC [definition of Reliability](#) is commonly accepted. However this defines reliability from a systemic (Grid) – *not source* – perspective.

3) There are two significantly different reliability issues involved: *systemic* reliability and *source* reliability. It does not appear that this Report clearly segregated these.

4) A critically important question (not apparently directly addressed by this Report) is: "Will we have a more reliable Grid if –
a) it only uses reliable energy sources, **or**
b) we allow unreliable energy sources to be added?"

Re "b": of course we have the engineering skill to compensate for this permeating unreliability – but does it make sense (economically and reliability-wise) to do so?

5) Electrical reliability is inextricably connected with economics. This Report could have done a better job at making that connection clearer.

- a) For example: electric power system reliability not only directly affects US economic success, but also the health, success and security of its citizens.
- b) For example: is a reliable energy source costing 5¢/KWH equally desirable as a reliable energy source costing 20¢/KWH?

6) More is not necessarily better. Having choices is good – but that assumes that there are net benefits for each option. That is unproven regarding “alternative energy” Grid sources. Diversity for the sake of diversity is counter-productive.

For example, would a husband and wife be better off owning and operating two vehicles, or 5 vehicles, or 10 vehicles? Which situation would be more reliable?

This Report should have directly attacked the “All of the Above” energy policy being promoted by special interests, as it is devoid of Science and common sense (and is contrary to reliability). The Report should have endorsed an “All of the Sensible” energy policy (and then have defined what “sensible” means). See [this](#) for a brief explanation of this exceptionally important matter.

7) Simply renaming unreliable energy sources as VRE (Variable Renewable Energy) misses the entire point. The issue is not the **name**, but the **treatment**.

It’s good that wind and solar are identified as “intermittent.” However to simply rename them as VRE does not do justice to the situation. *The key point is that no VRE can be directly compared to a conventional energy source!*

A simple solution is to define VRES (Variable Renewable Energy System) which includes one variable source (e.g. wind) paired with gas.

In other words VRES1 would be wind+gas (NGCT). VRES2 would be solar+gas (NGCT), etc. Each VRES could then be meaningfully compared, one-to-one, to conventional energy sources (NGCC, nuclear, hydro, coal, etc.).

8) The Grid Safety Reserve has been substantially abused by intermittent energy sources, and this is a major (undocumented) reliability threat to the Grid.

Wind and solar have been accommodated by the Grid, as they have freely availed themselves of the Grid Safety Reserve. What’s worse is that wind and solar have not been penalized for this purposeful reduction of the Grid Safety Reserve – which (in effect) is a reduction of Grid reliability. This uncompensated pilfering can be tolerated when wind and solar are very low amounts, but if their percentages increase this situation will become seriously problematic. One solution is to charge for this absconding, *and* to assign an auxiliary gas source to every wind and solar project.

9) In some regions the bidding rules are rigged to favor unreliaables. The net effect of allowing unreliaables to game the system, is that Grid reliability is undermined.

In some regions wholesale electricity pricing is determined by what some call a "[Dutch Auction](#)." There are several questionable aspects of this methodology, and all of them undermine reliability. For example:

- a) All selected sources are paid the price of the highest accepted bid – not what the source actually bid. This is claimed to result in “lower costs” to ratepayers, but the contrived justification is highly suspect.
- b) Compared to the other sources, unreliaables receive substantial compensation otherwise (e.g. wind energy gets the PTC). This skews the bidding process.
- c) Unreliaables pay no penalty for not fulfilling their bid – while conventional sources get steep fines (to rightly compensate ratepayers for the cost of having to pay premium spot prices to fulfill the unmet commitment).
- d) When unreliaables do not fulfill their contractual bids, the Grid still has to pay a premium spot prices to meet demand. However, these costs are never directly attributed to the unreliaables that are responsible for them – but they should be.

10) The Policy Recommendations seem to have merit. However, in addition to addressing the nine points made above, the following should be added:

- a) EIA should stop the process of showing unreliable energy sources on the same charts and graphs as conventional energy sources. Having fine print that explains the disparity is not acceptable.
- b) All DOE affiliated organizations (Berkeley Labs, NREL, etc) should be directed to be focused on Science, not promoting political-science agendas. If that is too high a bar for them to achieve, those rogue facilities should be defunded.
- c) A *comprehensive* and *objective* economic analysis of all energy sources should be undertaken. The *comprehensive* part would include **social costs and benefits**. When that is matched with a comparable study about the “Social Cost of CO2” we’d have a science-based foundation for making energy decisions.
- d) Although the Report uses the term “Capacity” a lot, there appears to be no discussion of the most important version: “Capacity Value.” This is a serious omission. See [this](#) and [this](#) for sample discussions.
- e) Alternative energy sources should be encouraged. However, no alternative energy source should be allowed on the Grid without a genuine scientific assessment concluding that it is a **NET Societal Benefit**.
- f) Consistent with “d,” the Policy Recommendation of “improving VRE integration” is premature. This Report does not make that clear. Hundreds of studies done by independent experts have alerted us to numerous serious downsides of some VREs – including undermining our national security (see [here](#)). Once these studies are understood, why is “improving VRE integration” a good thing?