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AI:
The Chicken or the Egg?

It's impossible to summarize the myriad potential benefits of AI.

It will/is improving productivity in a similar fashion as the Internet once did, but perhaps by a multiple.

The Internet offered everyone immediate access to information.

AI will offer everyone immediate access to answers – hopefully correct ones.

The low-hanging fruit

- There isn't an area of climate change that couldn't benefit from AI.
- It is already being deployed to produce more accurate weather models.
- Developers are leveraging it to streamline permitting, siting, and interconnection.
- And the accuracy of climate science will improve at an accelerated pace.

I would classify these applications as "low hanging fruit." That's not to say that any of this is simple, but these applications lend themselves to using the current iterations of AI.

But what about the more complex?

Former Republican FERC Commissioner Neil Chatterjee
Photo: Francis Chung/E&E News

"I really think the climate case for AI needs to be made," said Neil Chatterjee, a former chairman of the Federal Energy Regulatory Commission (FERC).

- The electric grid on the other hand is a significantly more complex challenge.
- I asked AI what comprises the U.S. electric grid and this was its answer:
  - The entire grid consists of thousands of miles of high-voltage power lines and millions of miles of low-voltage power lines.
  - The Energy Information Administration (EIA) estimates there are over 12,500 utility-scale power plants (not to mention the thousands of "mini" renewable utilities).
  - There are an estimated 55,000 substations.
  - And there are between 60 to 80 million transformers of various shapes and sizes.
- AI is already being used to assist utilities to optimize the management of these assets, and it can be deployed to enhance and rearchitect the grid.

The key question: What will happen first?

See Next Slide

Will AI fix or break the grid?

One of the more recent estimates of U.S. electric load growth from the AI came from Bain & Company.

It estimates that from 2023 to 2028 AI-driven data centers could account for 44% of load growth. If this is accurate, utilities would have to increase generation by up to 26% by 2028.

As I said – a lot.

- There are a multitude of speculative estimates on AI data center power requirements.
- The real answer is no one actually knows because no one knows how quickly data centers will be deployed, or how efficient the next generation of chips may be.
- The only thing that is certain is that it's a lot.
- For decades, utilities have lived in world of flat demand. Now the industry will be asked to increase capacity by what could be described as an historically "exponential" rate.
- This challenge puts both net-zero and grid reliability is a precarious position, thus the question: Will AI fix or break the grid?

My prediction: See next slide

Oh brother, yet another prediction

Those that read my posts on a regular basis know my tendency is to identify potential problems.

Some might consider this as having a "glass half empty" perspective.

I consider it a prudent way to operate because you can't fix (or preempt) what you don't see.

I'm going counter to my inclination to find the "gloom and doom" when it comes to AI and its potential impact to climate change.

Prediction:

AI will be a net positive, not only for climate change, but in enhancing and rearchitecting the grid.

Why?

I've been involved in technology for almost 50 years and I can say one thing for sure: The adoption of any technology always takes longer then people predict. ALWAYS.

In addition, AI will be a bit like water: it will seek its own level in that centers will first go where power already exists.

Caveat:

The utility industry needs to embrace technology, which is somewhat contrary to standard operating procedure.

It would also help if the utility incentive models aligned with the new technology world order.

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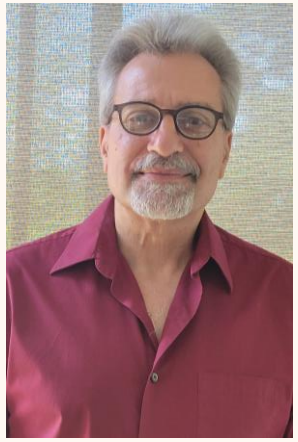

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Unbiased and Unfiltered

- An honest assessment of the climate change effort.
- I cover what's working – but more important - the issues/roadblocks that the industry would prefer to ignore.
- A must-read for anyone with a desire to understand what's really going on with renewable energy and climate change.

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