Discussion for "An Empirical Analysis of the US Generator Interconnection Policy"

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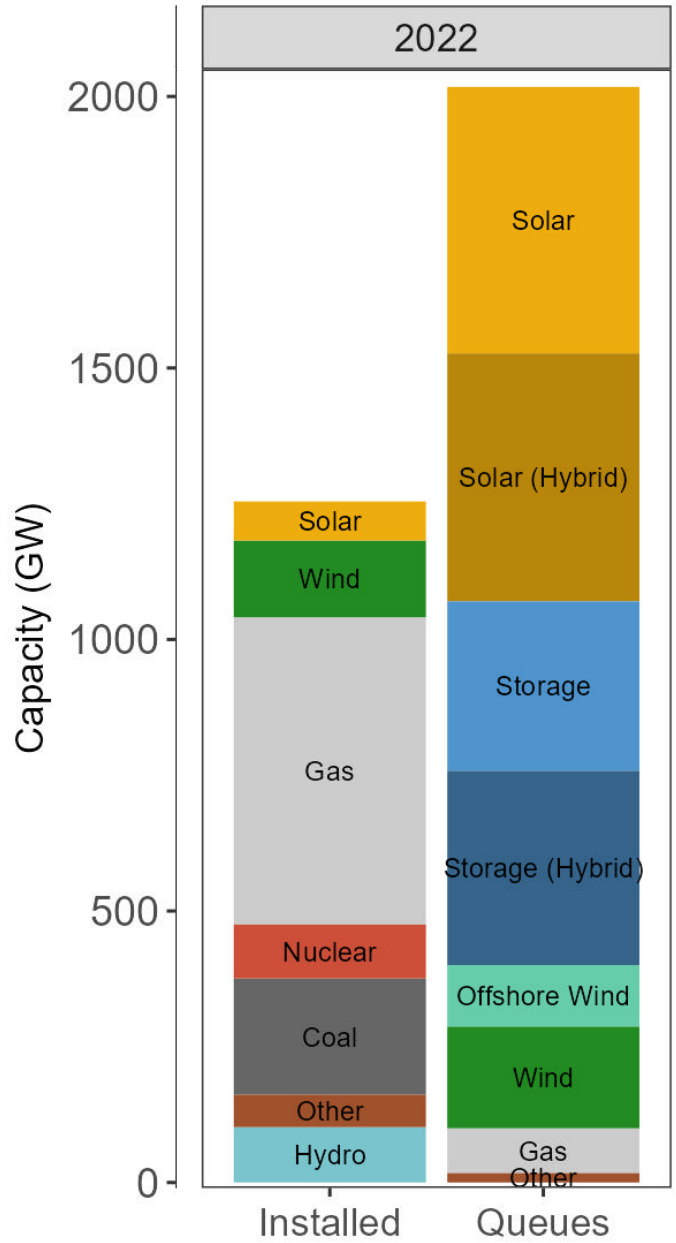
This paper studies a pressing issue in U.S. energy policy

- With declining costs of renewables and storage, many new plants want to enter
- However, they are stuck in the queues, reaching over 2,000 GW
- This exceeds the installed capacity of entire U.S. power plant fleet (1,250 GW)



Source: Rand et al. (2023)

The authors provide thorough economic analysis

- Existing economics papers do not focus on the interconnection queue
  - e.g., Wolak (2015), Cicala (2021), Fell, Kaffine and Novan (2021), Ryan (2021), Gonzales, Ito, and Reguant (2023)
- Existing evidence on this question is mostly from engineering studies
  - e.g., Rand et al. (2023)
- The authors provide thorough economic analysis on this pressing issue
  - Newly collected data on interconnection queue in the PJM
  - Informative descriptive evidence from the data
  - Structural estimation and counterfactual policy simulations
- This is a really important paper. I will describe a few comments.

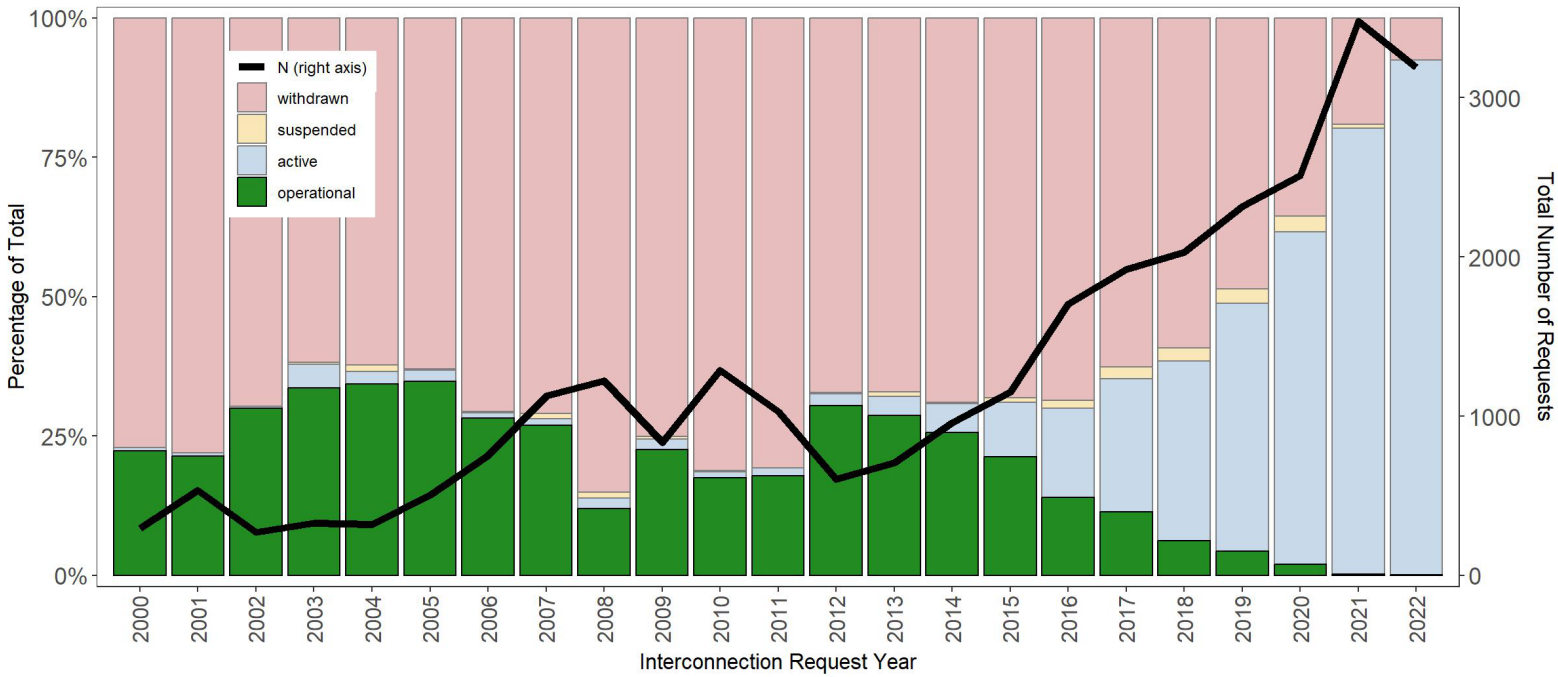
1) Entry into the queue

- Entry into the queue is not part of the analysis
  - The model & counterfactual simulations treat entry as exogenous
  - Analysis focuses on reforms' impacts on plants already in the queue
  - Results are very informative, but worth considering implications for entry

- Reforms on the queue may affect entry in non-trivial ways
  - Possibility 1: Better queue process could incentivize more entries
  - Possibility 2: Better queue process could reduce speculative entries
  - Many grid operators believe reforms can induce "more efficient" entries

Grid operators believe queue reforms can improve entry

- Currently, 75% of entries withdraw (only 25% become operational)
  - This implies that many are speculative entries to "find out" costs
  - Grid operators consider queue reforms to address this issue (MISO, 2023)



Source: Rand et al. (2023)

- Suggestions:
  - Modeling entry is one option, but the current model is already complex
  - Alternatively, in each counterfactual policy analysis, include more discussions about potential implications for entries

2) A generator's decision creates externalities to others

- A generator's decision to enter/exit the queue creates externalities
  1. More generators in the queue make everyone's wait time longer
  2. More generators in an area make everyone's interconnection cost higher
  3. Grid upgrades paid by earlier entrants may benefit late-comers

- e.g., NPR planet money episode (2023) mentioned externality #2
  - "But they want to hold on as long as they can... If some of those other projects were to drop out, those wires wouldn't need to carry as much new power, so Lyle might not need to upgrade them at all. Connecting might suddenly get cheaper." (and this indeed happened in the end)

- Generators are not modeled to be strategic about these externalities
  - Is it possible to model it or discuss implications of this behavior?
  - A related useful paper is Gowrisankaran, Langer, and Zhang (2023)

3) More policy-relevant counterfactual policies?

- The paper considers "subsidies to connection cost" as counterfactuals
  - However, subsidies are not proposed in reality (as far as I heard)
  - Also, the "cost stabilizing subsidy" seems a bad idea to allocate the cost

- Many policy options are currently being proposed & discussed
  - FERC (2022) proposed cluster study process
  - MISO (2023) proposed:
  - 1) Increase payment to enter the queue
  - 2) Nonlinear penalty on withdrawal (higher penalty at later stages)
  - 3) Limit the number of MWs one developer can submit per cycle

- Counterfactuals of these policies would be policy-relevant & informative

4) Other comments and references

- Other comments
  1. The paper currently focus on the uncertainty in the interconnection cost. However, market participants complain more about the duration and uncertainty of "wait time." In many industry reports, firms mention that they do not mind the cost, but the wait time is killing their business. Possibly, the paper can have more weight on this point.
  2. The clarity of the identification section can be improved to highlight what variation in the data identifies the profit and wait cost functions

- References:

  - Cicala, Steve. 2021. "Decarbonizing the U.S. Economy with a National Grid." In U.S. Energy Climate Roadmap. Energy Policy Institute at the University of Chicago.
  - FERC (2022). Notice of Proposed Rulemaking, 87 Fed. Reg. 39,934 (July 5, 2022).
  - Gowrisankaran, G., Langer, A., & Zhang, W. (2022). "Policy uncertainty in the market for coal electricity: The case of air toxics standards" (NBER WP 30297).
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  - NPR (2023). "Green energy gridlock"
  - Rand, J., Bolinger, M., Wiser, R. H., Jeong, S. & Paulos, B. (2023), "Queued up: Characteristics of power plants seeking transmission interconnection as of the end of 2022".