ARE “WE” ASKING TOO MUCH OF ELECTRICITY MARKETS?

CEE 4th Mid-Year Meeting, June 28, 2016
CEE Funding

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- Cedigaz
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State of Texas Advanced Resource Recovery Program/Office of the Comptroller

U.S. Government

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“Our” Asks – Cognitive Dissonance?

• “Cheap” electricity (efficiency)
  • Wholesale v retail
• High reliability (e.g., NERC criteria of 1-in-10-yrs ➔ reserve margin: 10-20% capacity above peak demand)
• “Clean” electricity
  • Air emissions
  • Land impact
  • Water impact
  • Solid waste
• Secure grid
Major Uncertainties in the Power Sector

• An inventory of ~114 GW of wind and ~34 GW of solar (SNL)
  • Extension of PTC & ITC (BNEF: $73B increase in investment ➔ 19 GW of wind and 18 GW of solar between 2016 and 2021)

• Renewable Energy Buyers Alliance: 60 GW by 2025

• KPMG survey of energy executives:
  • 62% believe half of US power from clean energy sources by 2045
  • 41% of utility executives expect "significant change" towards a significantly more distributed, unbundled system

• Interest in DER (Brookings: “Net metering is a net benefit”)

• Declining cost of PV (utility-scale and rooftop)

• Long-term PPAs offered by IOUs, munis, coops
Competitive Price Formation is Partial

• Energy-only markets are the exception, and
  • Price caps limit their effectiveness
  • There is no/incomplete demand-side participation (FERC Order 745?)
• Capacity markets “fill the gap,” but
  • They can be inefficient
  • Non-transparent uplift payments are still needed
• Prices are also distorted by
  • Renewables (federal and local subsidies, RPS programs, long-term PPAs)
• Retail prices have not followed wholesale prices down
“The Times They Are A-Changin’” – Creative Destruction?

• “Early” retirements raise reliability concerns, inducing more out-of-market solutions (Ohio, Maryland, New York, Illinois)
• DER reduces revenues for utilities ➔ regulatory corrections
  • DR and EE might have similar impacts if provided by non-utility competitors
  • Load profiles might change significantly with uncertainty of market prices
• Gas-power harmonization?
• Large grids where wind & solar balance each other
  • Can needed transmission be built (ROW, jurisdiction)? Who pays?
  • Grid security?
• Storage can be a game-changer but large uncertainties exist regarding technology, cost, market rules, minerals value chain issues

CEE submitted a grant application to DOE NETL to study storage economics (in collaboration with Prof. Erich Schneider, UT Austin Dept. of Mechanical Engineering).
So, What Future Should We Expect?

Consumption of NG in Power Generation (2014=1)