



Synapse
Energy Economics, Inc.

Resource Planning Best Practices: Let's improve the state-of-the-art and start with a checklist

NARUC Bulk Power System Training

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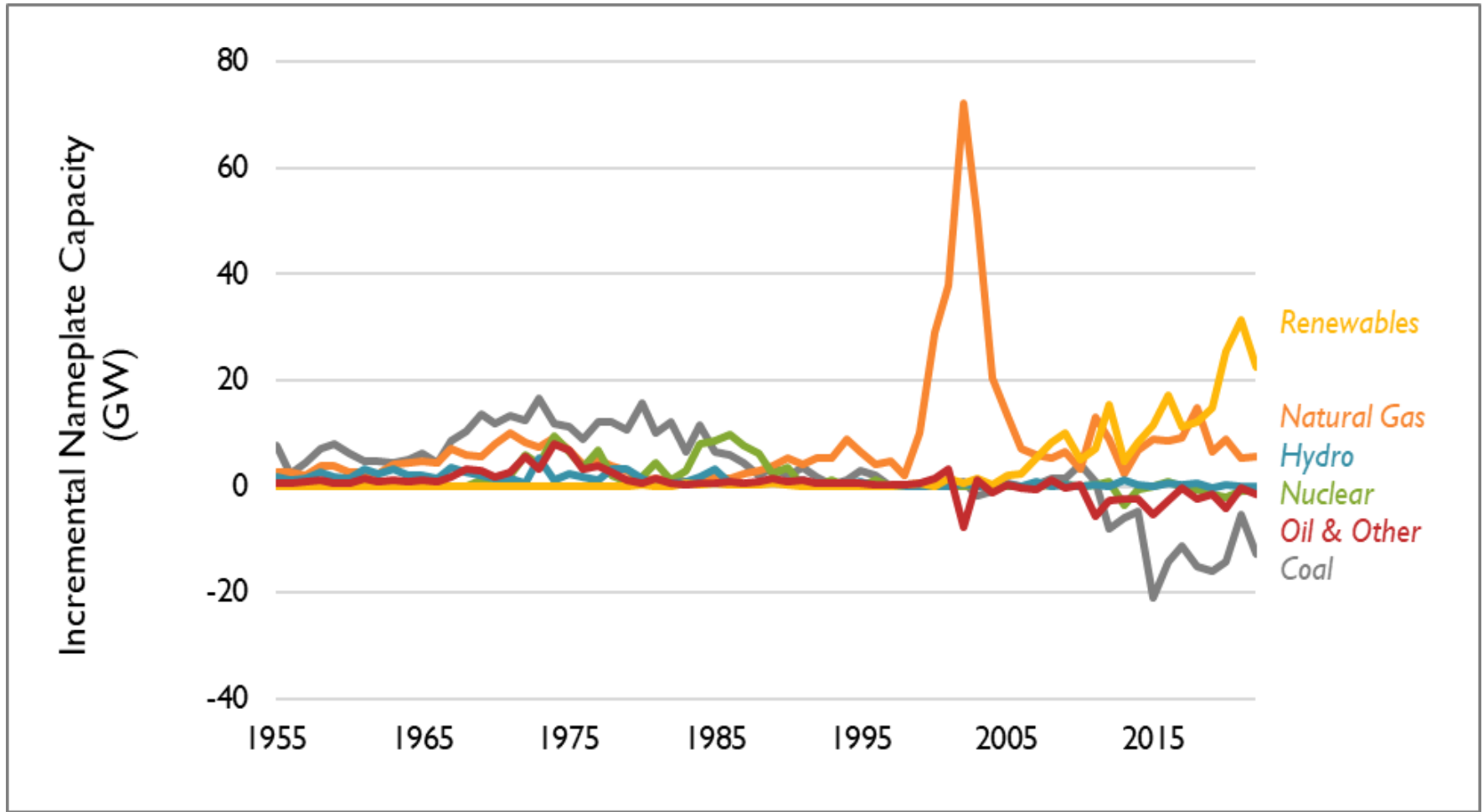
- Founded in 1996
- Leader for public interest and government clients in providing rigorous analysis of the electric power and natural gas sectors
- Staff of 50 includes experts in energy, economic, and environmental topics



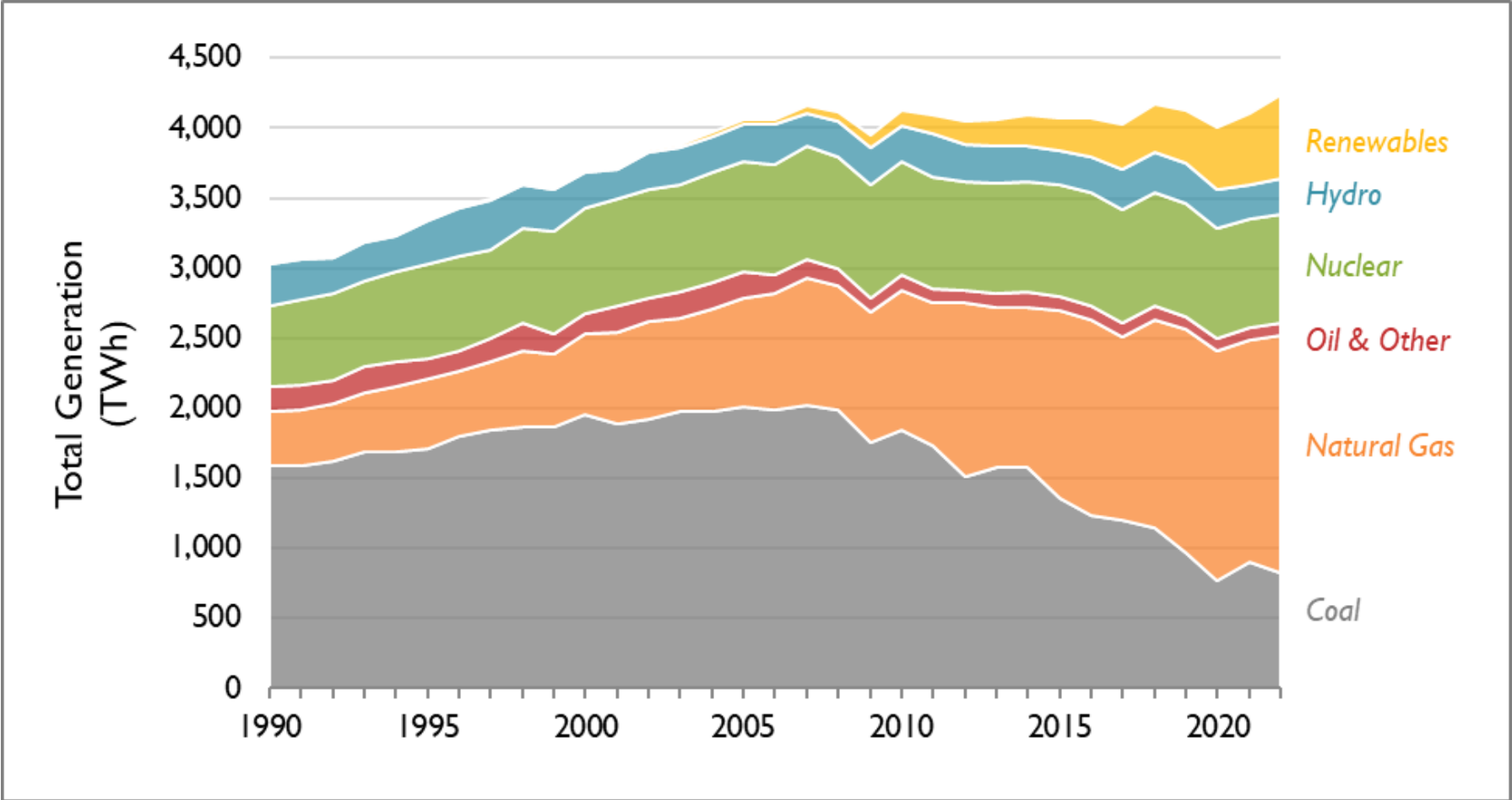
Summary of Presentation

1. Utility planning is important!
2. The utility plans filed with regulators are terrible, plagued with bias, error, and obfuscation.
3. Regulators' role is challenging.
4. Improvement is possible.
5. A checklist of best practices could be helpful.
6. More broadly, let's build community and a culture of excellence around modeling and planning.
7. What else?

US Electric Generating Capacity Additions 1955-2022



US Electricity Generation Mix by Type 1990-2022



Quality of Regulated Electric Utility IRPs

Utility Integrated Resource plans filed with regulators are plagued with bias, error, and obfuscation.



Types of problems in Utility Resource Plans

- Plain old errors
- Outdated assumptions
- Biased cost inputs
- Unrealistic resource limits
- Technical details (e.g., “end effects”)
- Myopia (e.g., “piecemealing”)
- Unrealistic representation of programs, policies, laws, and regulations
- Geographic boundaries
- Unreasonable approaches to risk and uncertainty
- Considering sunk costs
- Inadequate documentation
- Lack of transparency
- Hostility to stakeholder input

Is the problem Technical or Motivational?

Technical

- Forecasting and planning are hard
- Uncertainties are daunting
- Capabilities of planning models and planners are limited
- Modeling can be time-consuming and expensive

Motivational

- Utilities care disproportionately about shareholders over customers
- Thinking about sunk costs rather than future costs
- Worried about disallowances
- Inclination to build rate base
- Inability to innovate

What's a Regulator to do?

At the end of a long IRP process:

- Accept or reject? Refuse to acknowledge?

Up front:

- Require complete workpapers and model inputs/outputs be made available under a reasonably standard NDA and as soon as reasonably possible.
- Require a witness, who is sponsoring the modeling, to testify to the process of modeling development and application:
 - Reasonably accurate and up to date
 - Describe process of developing inputs and scenarios—and quality assurance review
 - Meets minimum standards
- Develop and require certification of a minimum standard for rigor in modeling and planning and including a checklist of “common errors” to be avoided and “best practices” to be followed.

Recipe for Good Planning: Selected Ingredients

- Ensure stakeholders can replicate modeling outcomes from the IRP and provide their own alternative portfolios.
- Ensure all inputs reflect up-to-date inputs and assumptions about expectations.
- Use accurate new resource costs and run cost sensitivities.
- Model all avoidable forward-going costs for existing legacy generation resources.
- Scenarios should be designed to provide information about uncertainty and risk in the *expected* future.

(JP Carvalho will talk about best practice for including growing electrification load, uncertainties, and resource adequacy.)

Let's build a Culture of Excellence

- Support and nurture modelers and technical witnesses
- Develop and apply standards
- Checklists and handbooks, e.g.:
 - “Best Practices in Electric Utility IRP” (Wilson and Biewald, 2013) and
 - “Best Practices in Integrated Resource Planning: a guide for planners developing the electricity resource mix of the future” (Synapse and LBL, forthcoming in 2024)
- Trainings utility regulators and staff and others
- Workshops and conference presentations
- Online community around modeling and best practice
- Watch the Energy Nerd Show!

Key takeaway: Utility planning can and should be improved!

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