

Fundamentals of Electricity Markets, Economics, & Regulation – Part 3

IPU Power Grid Course 2024

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Topics for Today

- **Session 1: The many meanings and drivers of electricity “restructuring” or “deregulation”**
- **Session 2: The wild world of markets for power**
- **Session 3: Designing the grid by democracy: planning and governance (plus, a bonus on retail competition)**

Regional Transmission Planning

FERC Order 1000 *

- At the 30,000 foot level, FERC Order 1000 was intended to
 - improve transmission planning processes and cost allocation mechanisms
 - build on Order 890 (2007) – FERC concluded that the existing requirements of Order 890 were “inadequate”
 - FERC found that the additional reforms were necessary to ensure that rates for FERC-jurisdictional services are just and reasonable in light of changing conditions in the industry

*FERC issued Order 1000-A on May 17, 2012 and Order 1000-B on Oct. 18, 2012.

Transmission Planning Process – FERC Order 1000

- Transmission providers are required to participate in a regional transmission planning process that satisfies Order No. 890 principles:
 - (1) coordination; (2) openness; (3) transparency; (4) information exchange; (5) comparability; (6) dispute resolution; (7) regional participation; (8) economic planning studies; and (9) cost allocation for new projects
 - Additionally, transmission planning processes were supposed to consider public policy initiatives, like state requirements for renewable generation.

Cost Allocation for New Transmission Facilities

Also, Order 1000 requires that each public utility transmission provider must participate in a regional transmission planning process that has:

- (1) a regional cost allocation method for the cost of new transmission facilities selected in a regional transmission plan for purposes of cost allocation; and
- (2) an interregional cost allocation method for the cost of certain new transmission facilities that are located in two or more neighboring transmission planning regions and are jointly evaluated by the regions in the interregional transmission coordination procedures required by this Final Rule

Order 1000 Cost Allocation Principles

- The regional and interregional cost allocation methods each must adhere to six regional and interregional cost allocation principles:
 1. costs must be allocated in a way that is roughly commensurate with benefits;
 2. there must be no involuntary allocation of costs to non-beneficiaries;
 3. a benefit to cost threshold ratio cannot exceed 1.25;
 4. costs must be allocated solely within the transmission planning region or pair of regions unless those outside the region or pair of regions voluntarily assume costs;
 5. there must be a transparent method for determining benefits and identifying beneficiaries; and
 6. there may be different methods for different types of transmission facilities

Order 1920 (2024)

- Order 1000 had a lot of aspirational goals, but was not considered widely successful at actually spurring regional transmission planning or investment. FERC seems to have viewed this as especially true in ISO New England and PJM.
- In May 2024, FERC issued Order 1920, which layered a number of requirements on top of Order 1000. A few of the most critical are:
 - Requires long term transmission planning (20 year horizon)
 - Establishes a list of potential benefits that should be considered in long range transmission plans
 - Reforms to “local” transmission upgrade processes

Order 1920: Long Range Planning

- Order 1920 sets out a requirement to perform 20 year transmission planning, and (to some extent) to consider cross-footprint transmission needs. This is especially critical for getting renewables built.
- Planners will need to develop multiple scenarios for planning purposes that consider issues like future demand, changes in the resource base, fuel prices, state policy, tribal issues, generator interconnection and extreme events.

Order 1920: Benefits Analysis

- Planners will also need to consider a range of benefits for each scenario, including:
 - reliability (loss of load probability or reserve margin reduction)
 - operating cost savings
 - congestion
 - losses
 - resilience to extreme weather.

Order 1920: Cost Allocation

- Cost Allocation has always been like blood sport in RTO footprints in particular. Order 1920 probably will not change that, but does require compliance filings to contain a cost allocation method.
- RTOs may adopt a “state agreement process” like PJM has already done, in which states agree on how to share costs for specific projects. (MISO’s approach to its Multi-Value Projects does not seem too dissimilar)
- Order 1920 does not go so far as to mandate a strict “beneficiary pays” model for cost allocation, but does require some alignment with benefits.

Order 1920: Local Transmission Reforms

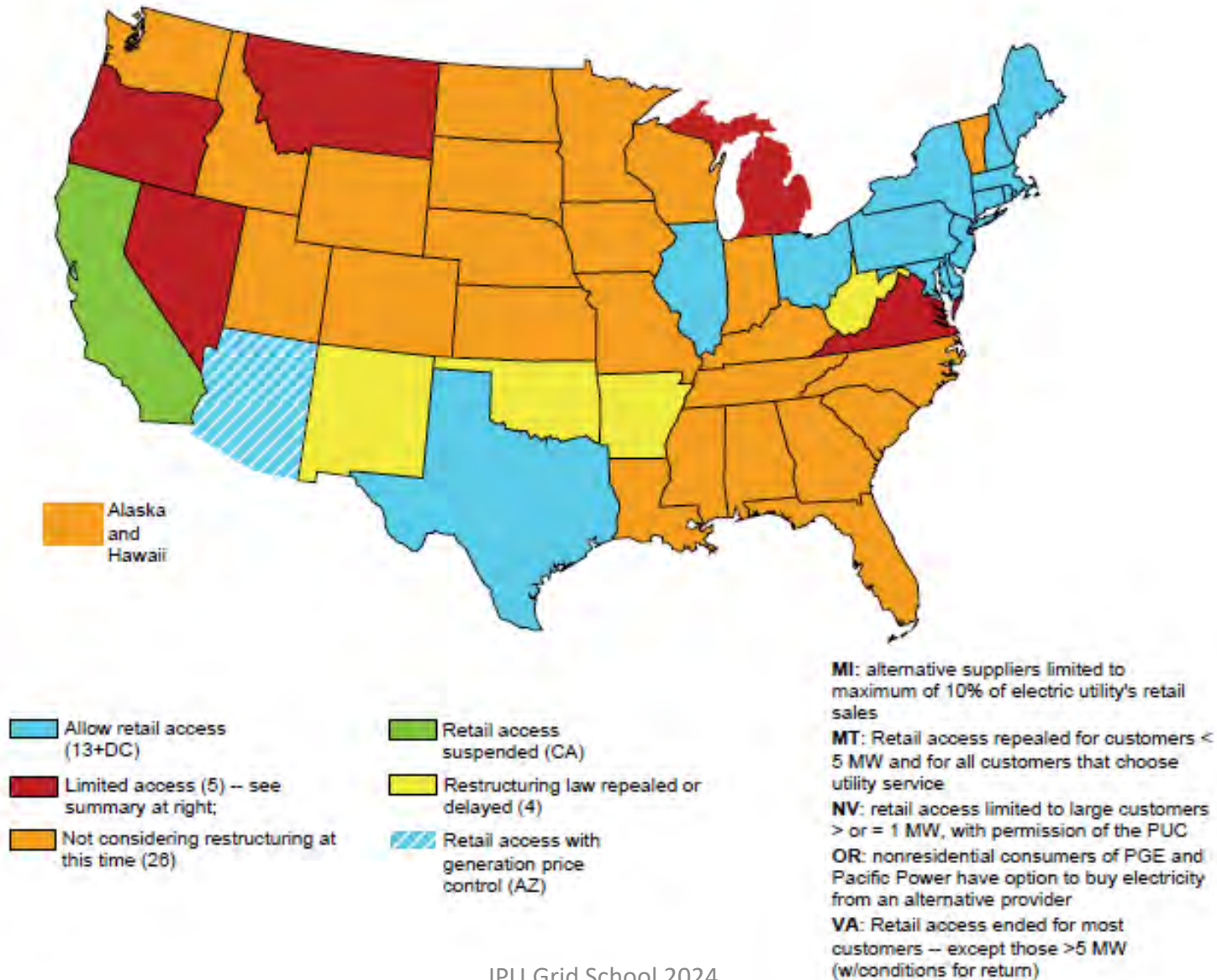
- Some RTOs were viewed as having transmission processes where individual transmission owners could implement localized transmission upgrades that would crowd-out regional upgrades.
- Order 1920 seeks to address this through increased transparency and requirements to evaluate whether local upgrades could be integrated into long term transmission plans.
- Incumbents would retain the right of first refusal (ROFR, the industry's new favorite acronym) for local upgrades, but ROFR would NOT apply to long range regional transmission plans.

Poll #5

Which of the following are major goals of FERC Order 1920?

- a) Long-range transmission planning
- b) Reforms to “local” transmission upgrades
- c) Improving coordination between gas and electric transmission planning
- d) (a) and (b) only
- e) All of these

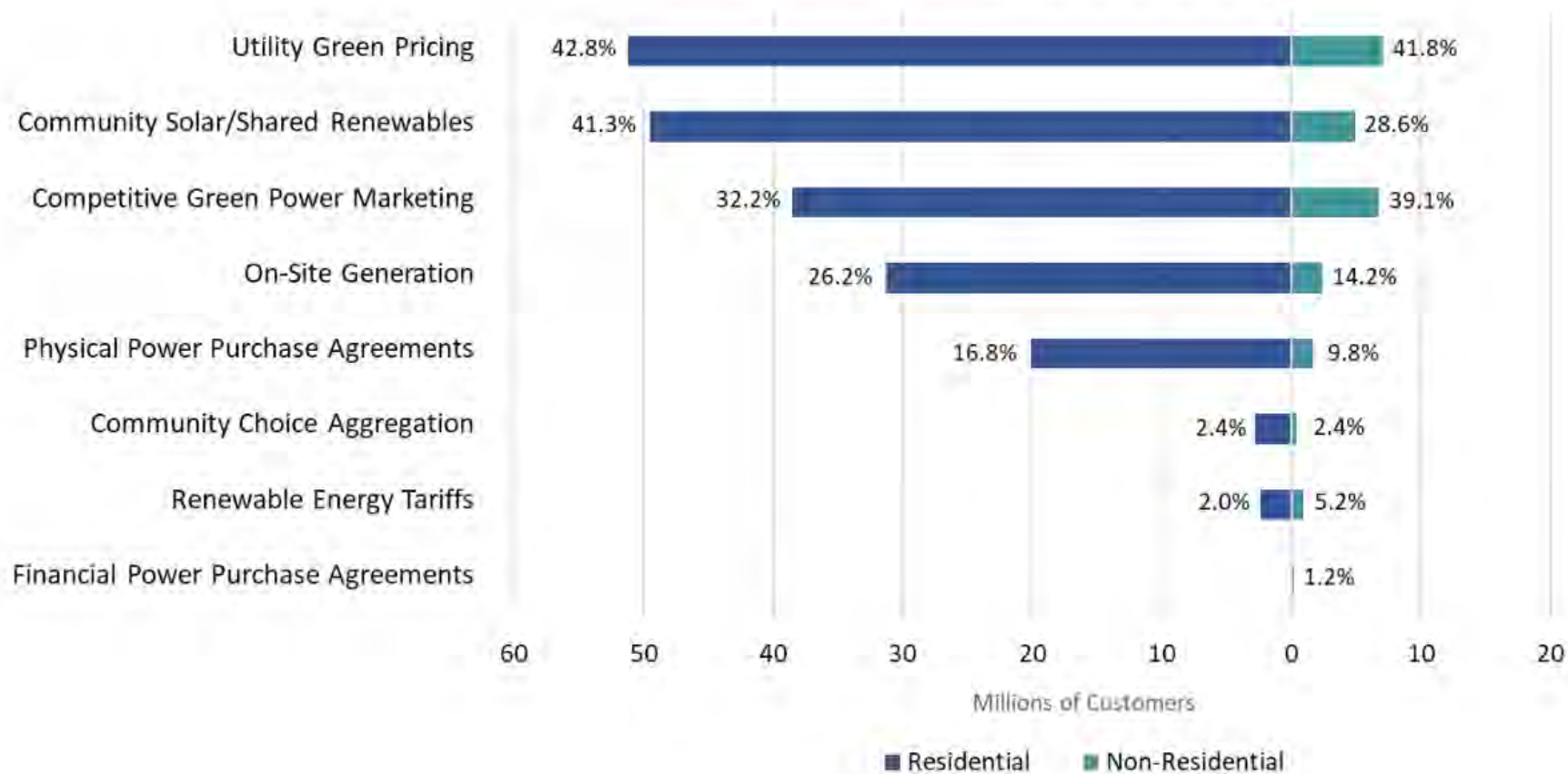
Status of State Restructuring



Retail Competition: What and Why?

- States with retail competition allow consumers to choose their own generation provider. The transmission and distribution service is not opened up to competition. (If you happen to remember when you could choose your long-distance phone call provider, this is a similar idea.)
- This was supposed to benefit consumers in a number of ways:
 - Competition would lower generation rates and electric bills
 - Consumers could purchase electricity with desirable attributes (e.g. green power)
 - Consumers who could be flexible with electricity consumption could save money through dynamic rates (tied in some way to wholesale prices).

The Good(ish): Green Power



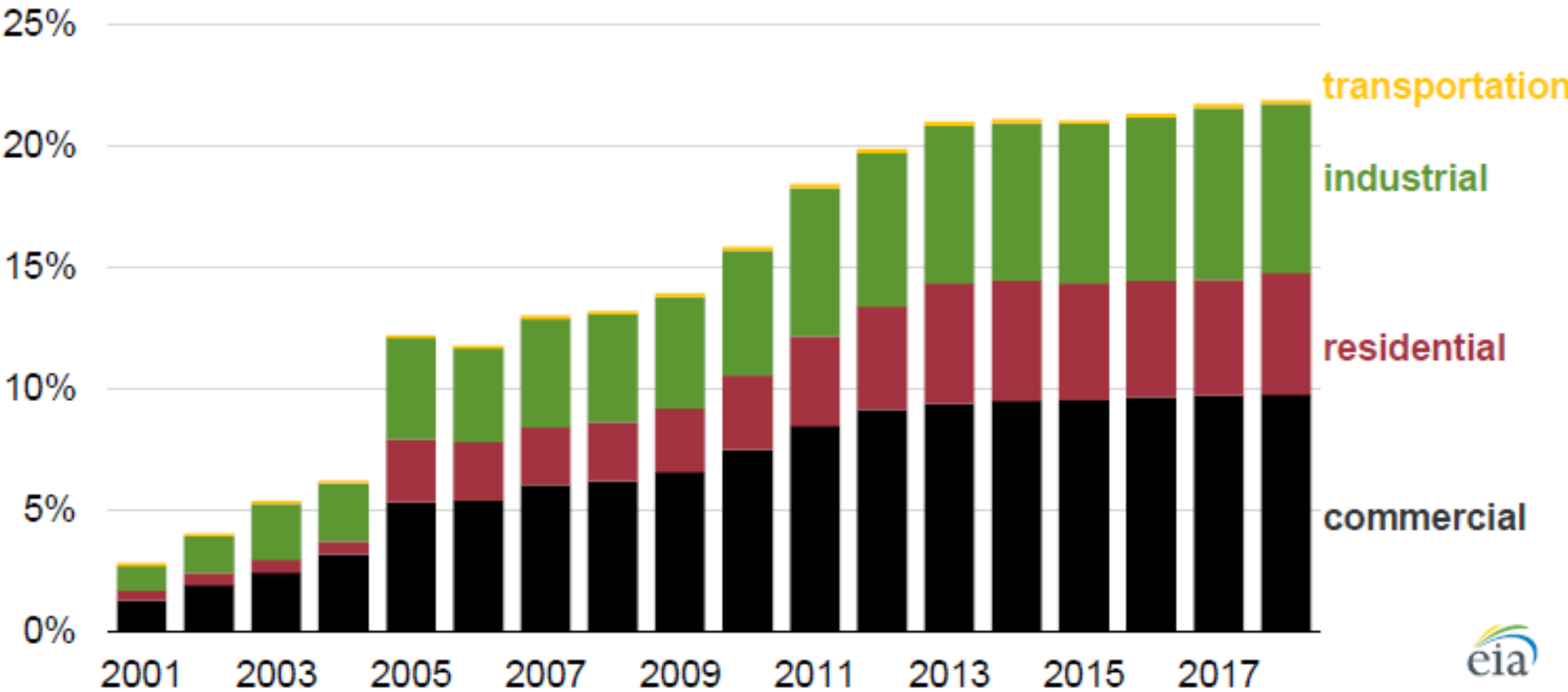
**Total residential consumers: 120 million; total non-residential consumers: 17 million (EIA, 2018)*

Figure source: EPA

The “meh”: lower electric bills

- In a nutshell, retail competition does not seem to have saved many electric consumers a lot of money.
- (To be fair, figuring out how much consumers “would have” saved in a hypothetical world without retail competition is a very complicated question.)

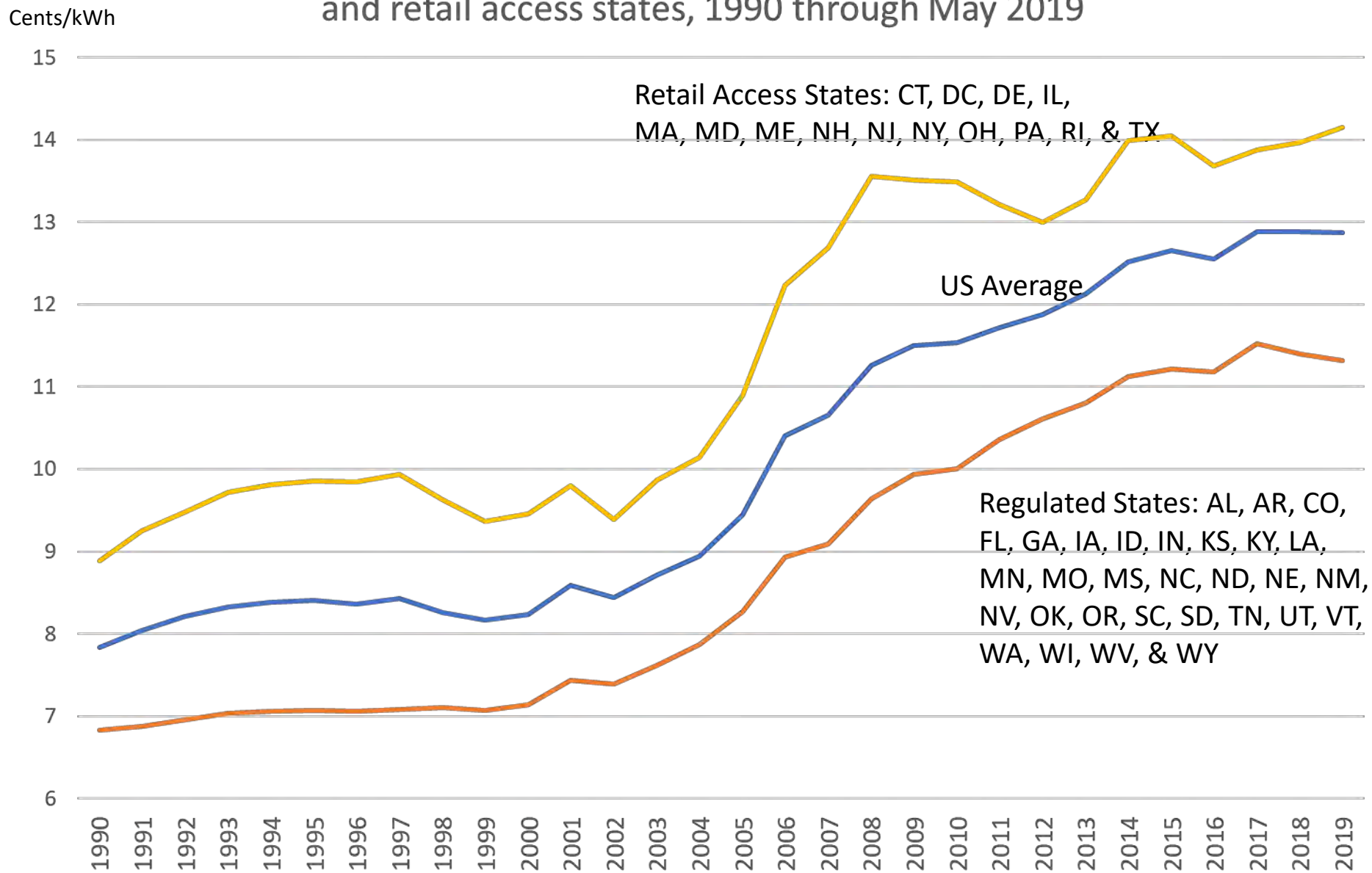
Percentage of U.S. retail electricity load sold by competitive suppliers (2001-2018)
 percent by sector



Source: U.S. Energy Information Administration, Form EIA-861, *Annual Electric Power Industry Report*

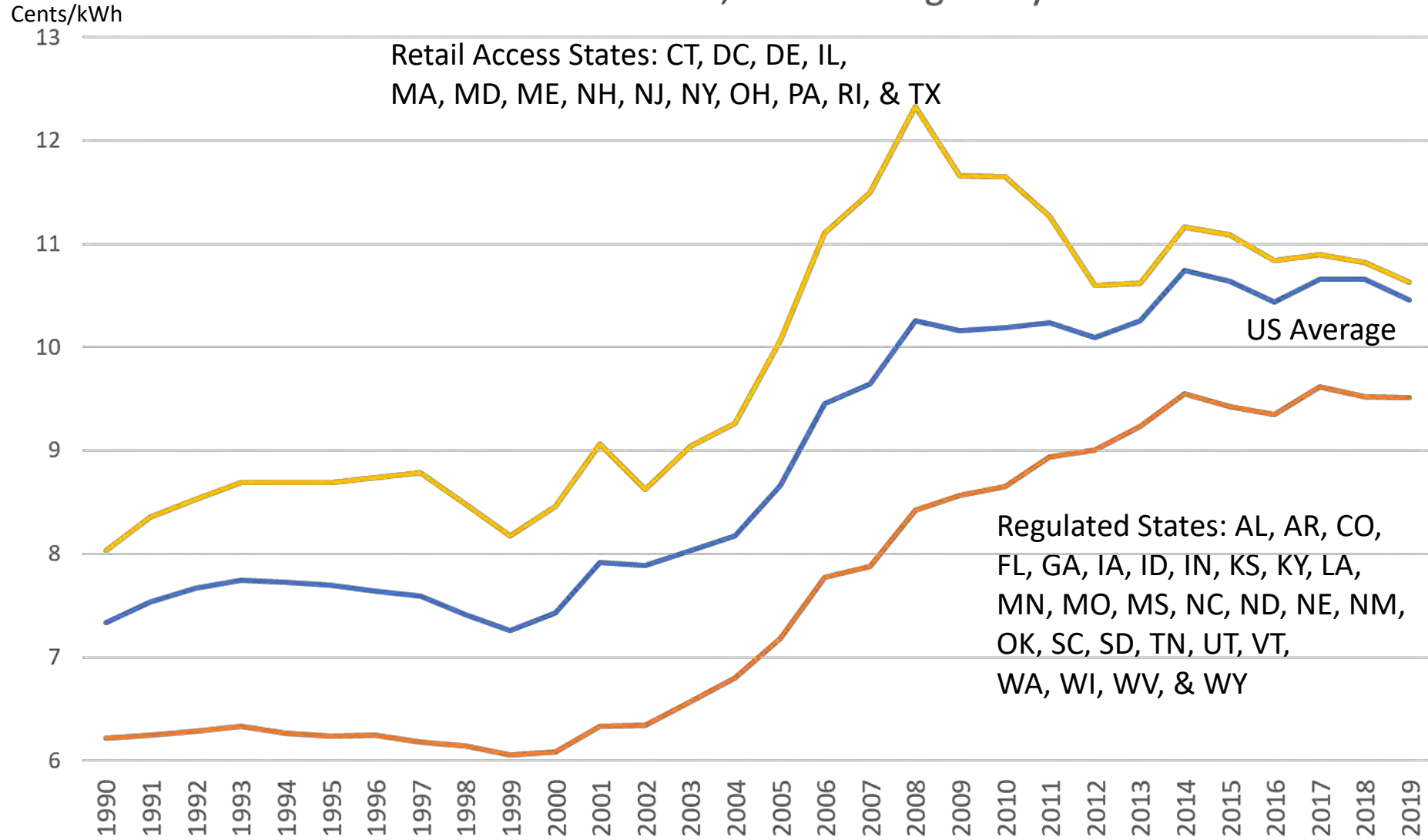


Residential weighted average price for all states, regulated states, and retail access states, 1990 through May 2019



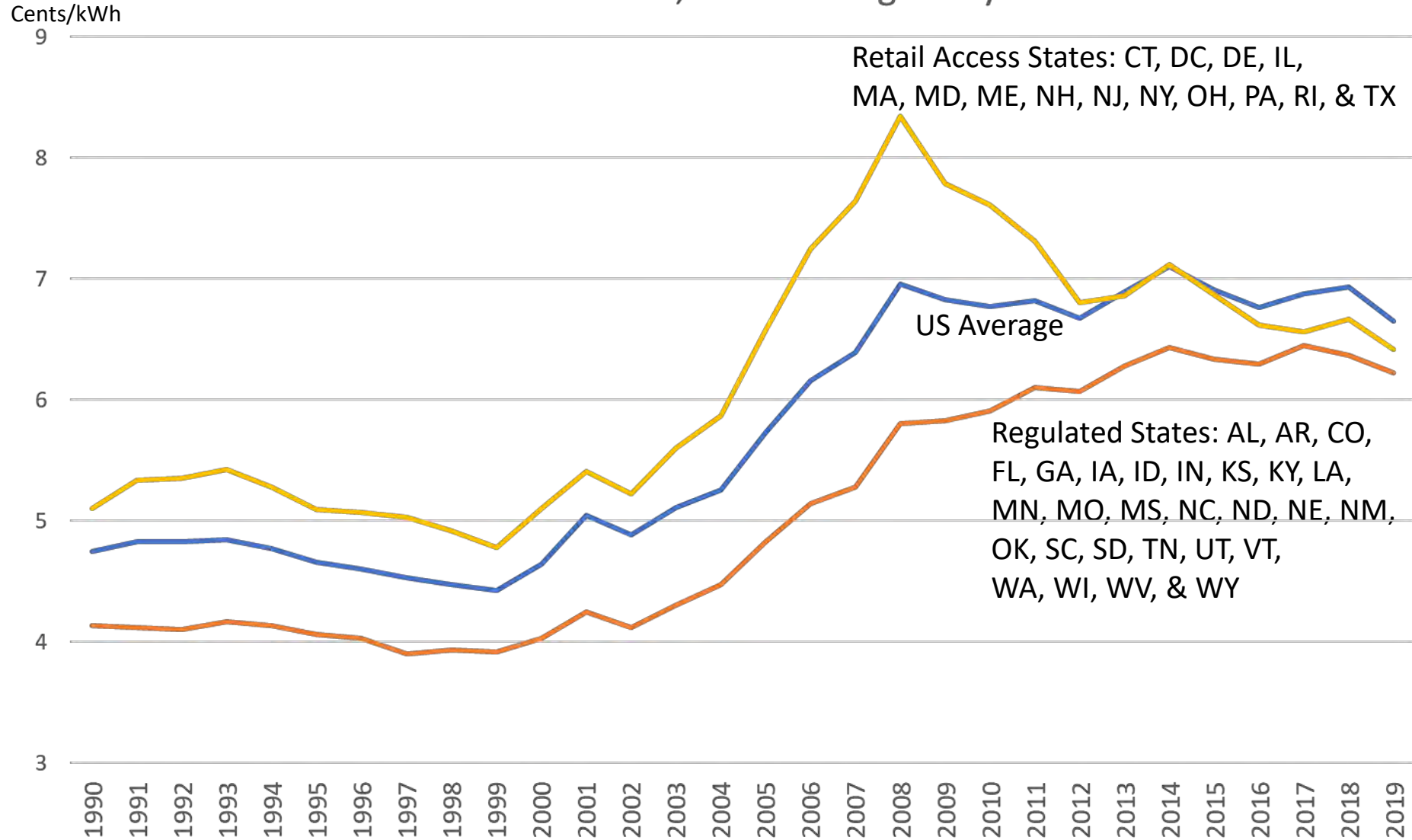
Data Source: DOE/EIA.

Commercial weighted average price for all states, regulated states, and retail access states, 1990 through May 2019



Data Source: DOE/EIA.

Industrial weighted average price for all states, regulated states, and retail access states, 1990 through May 2019

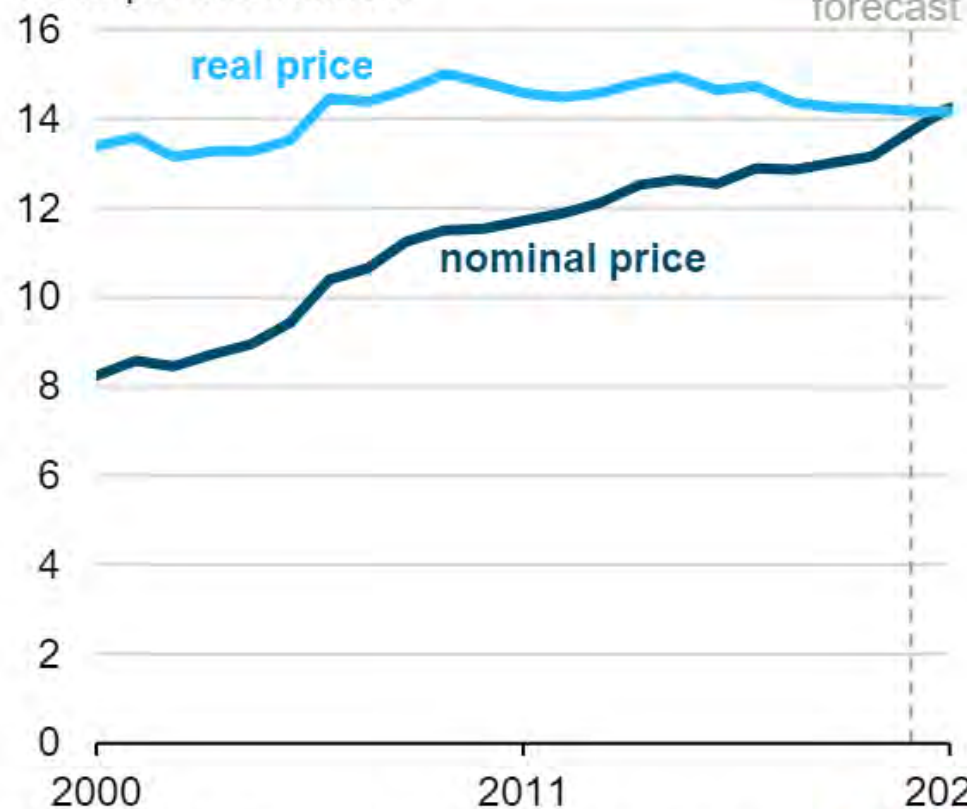


Data Source: DOE/EIA.

During 2021, U.S. retail electricity prices rose at fastest rate since 2008

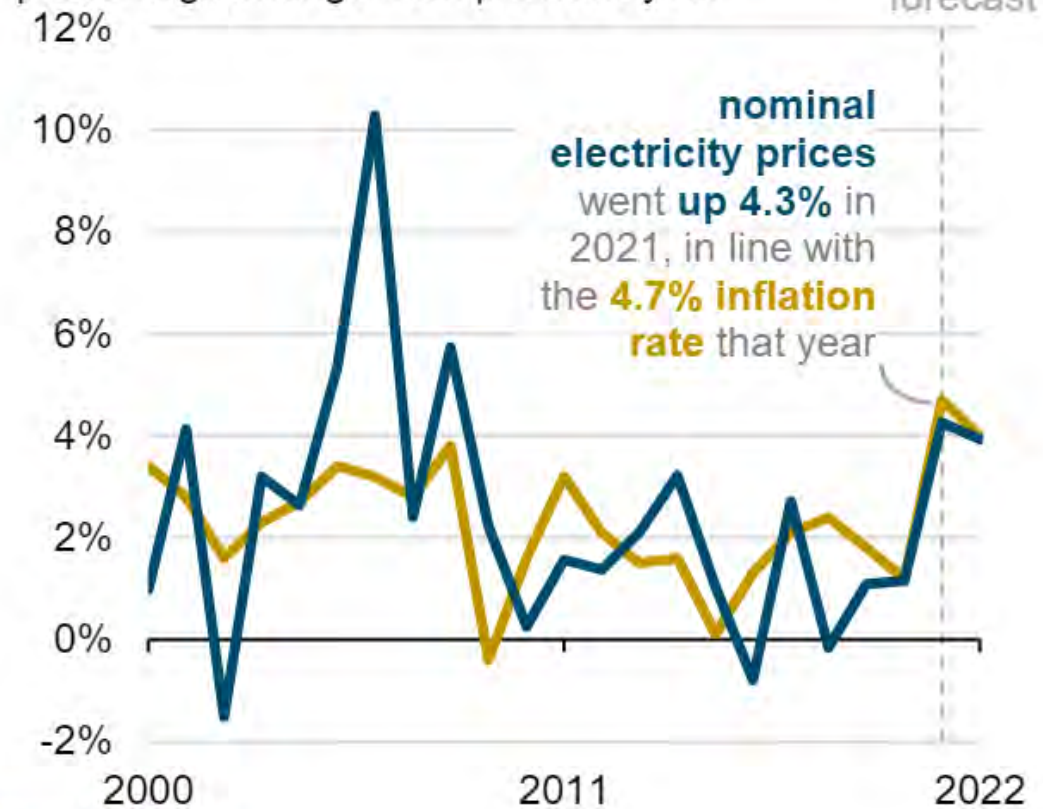
Average annual U.S. residential retail electricity price (2000–2022)

cents per kilowatthour



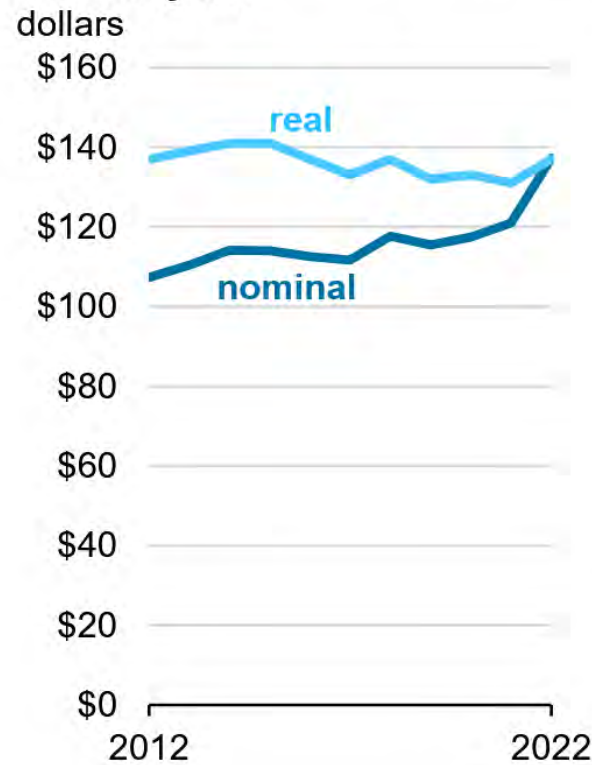
U.S. inflation rate and nominal residential retail electricity price (2000–2022)

percentage change from previous year

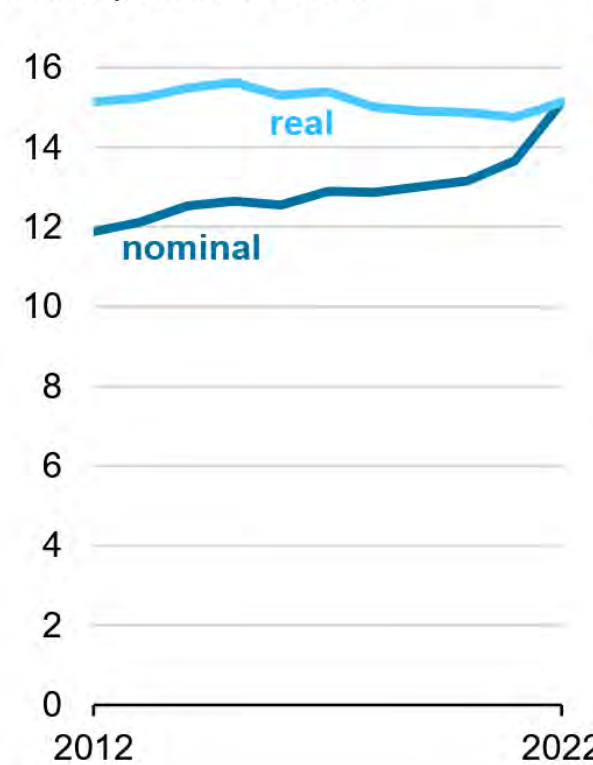


U.S. residential electricity bills increased 5% in 2022, after adjusting for inflation

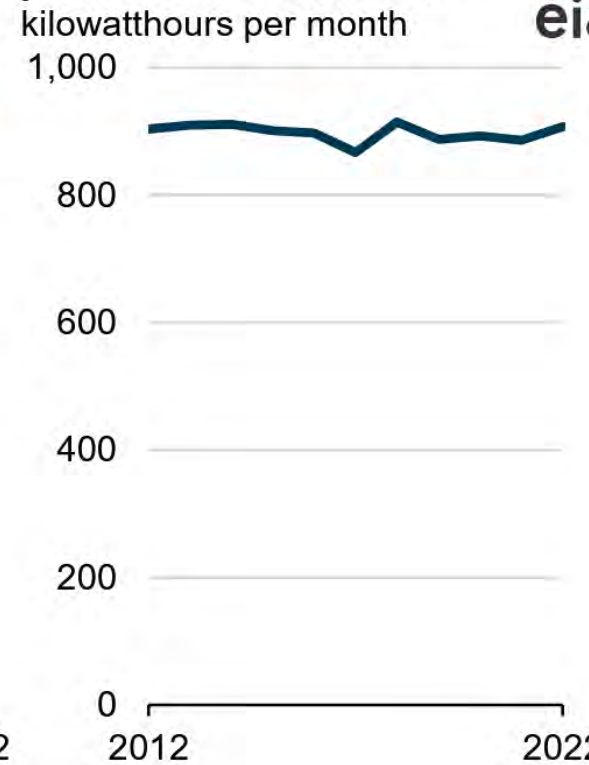
Average U.S. monthly residential electricity bill



Residential retail electricity price



Average electricity consumption per residential customer



Data source: U.S. Energy Information Administration, [Monthly Electric Power Industry Report](#) and [Annual Electric Power Industry Report](#)

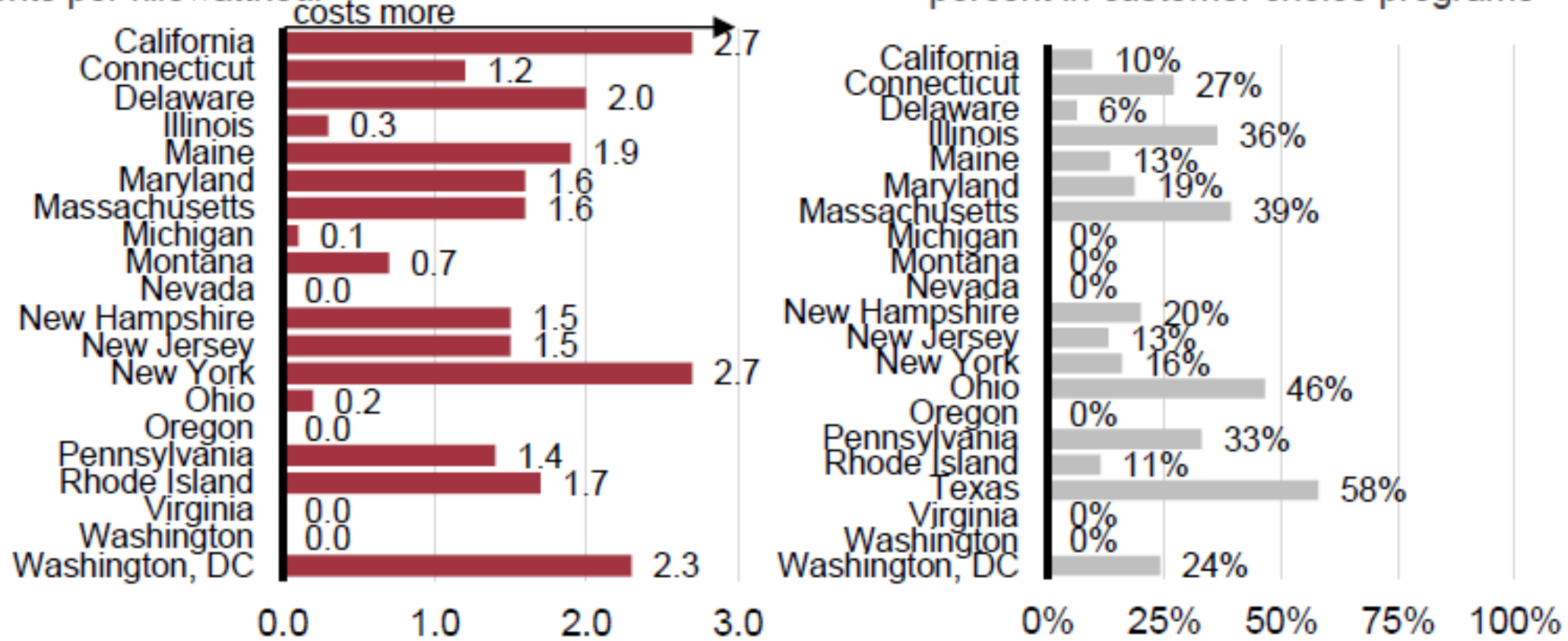
Note: Real prices are adjusted for inflation.

Residential electricity prices compared with utility default price and competitive sales (2018)



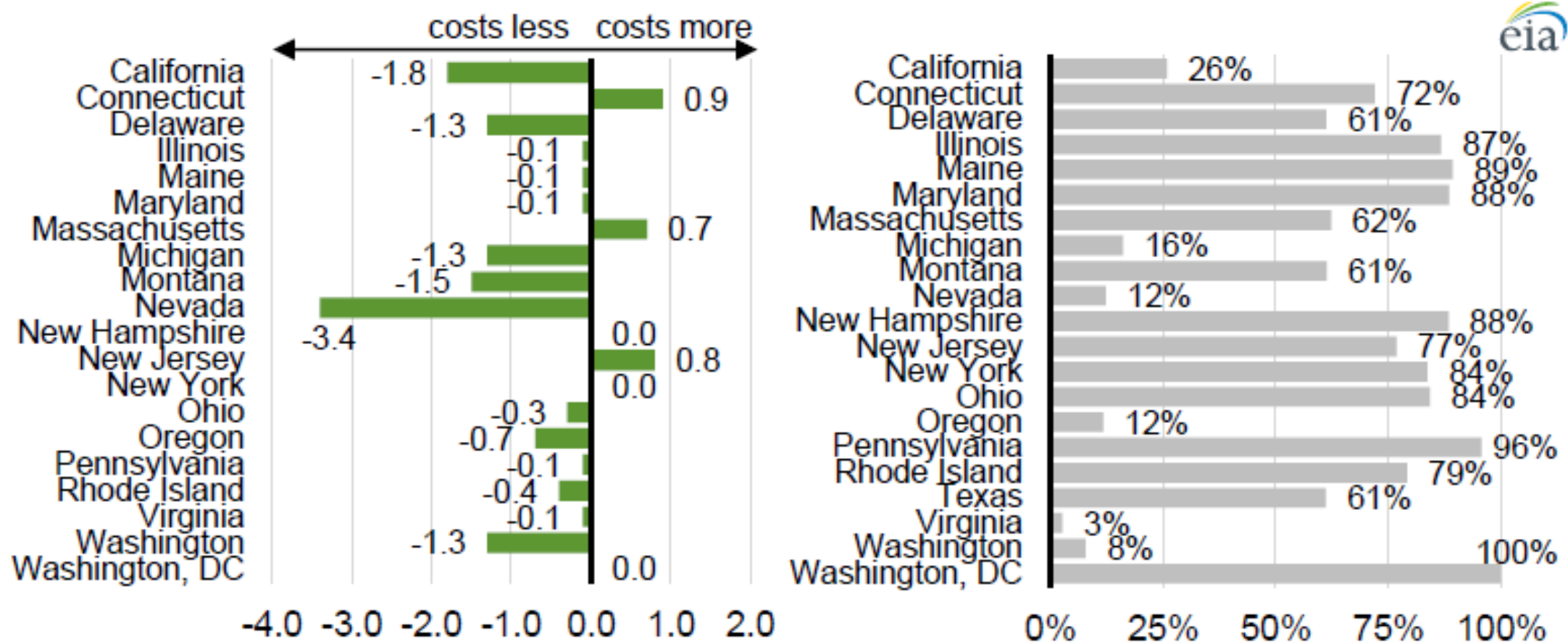
cents per kilowatthour

percent in customer choice programs



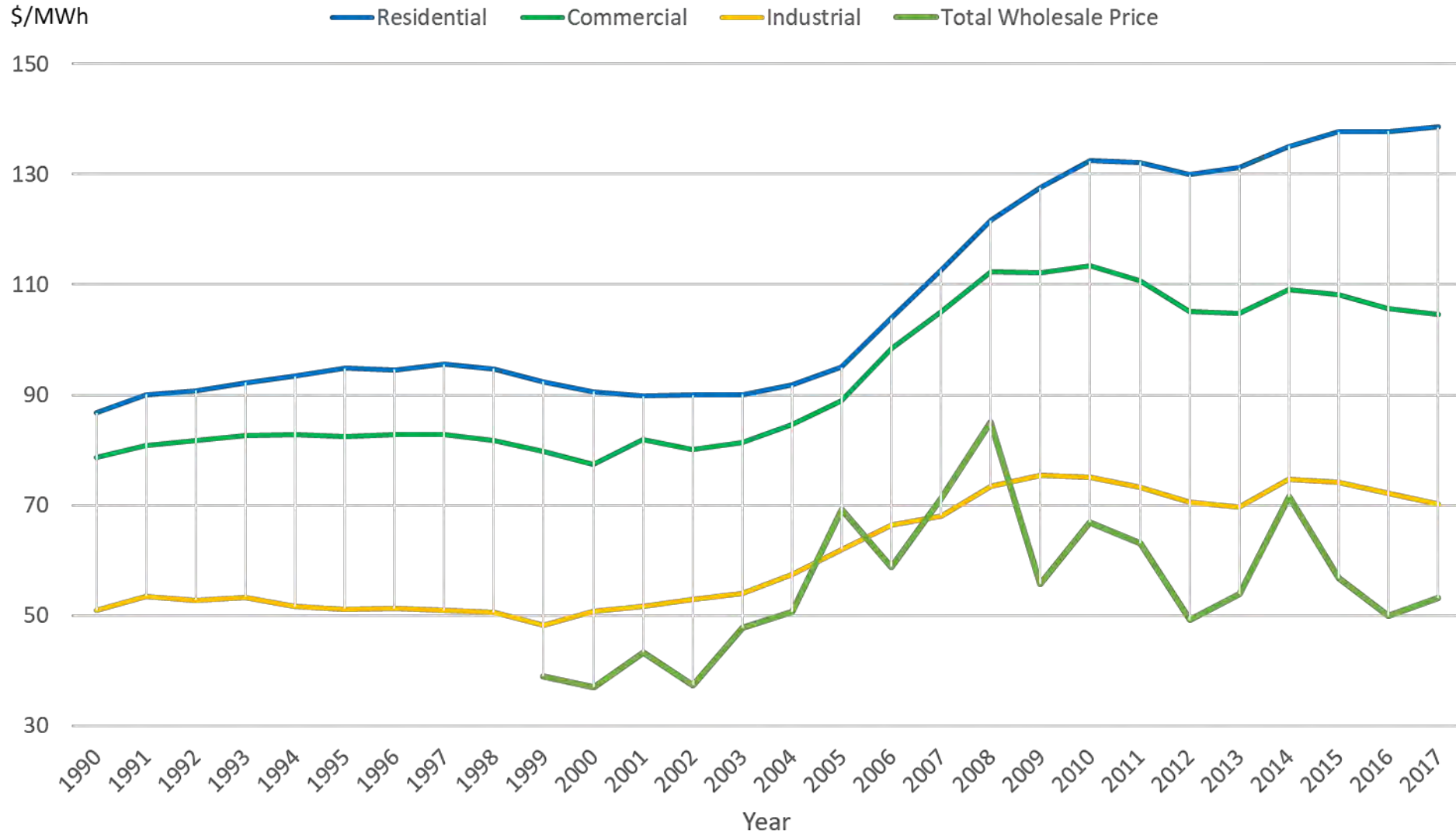
Source: U.S. Energy Information Administration, Form EIA-861, *Annual Electric Power Industry Report*

Industrial electricity prices compared with utility default price and competitive sales (2018)
cents per kilowatthour percent in customer choice programs



Source: U.S. Energy Information Administration, Form EIA-861, *Annual Electric Power Industry Report*

PJM States with Retail Access and “Total” PJM Wholesale Price



Data Sources: DOE/EIA and 2017 State of the Market Report for PJM, Monitoring Analytics, LLC

Texas Attorney General Sues Griddy, Saying Electricity Provider Misled Customers

MARCH 1, 2021 · 11:38 AM ET

By Bill Chappell



"As Texans struggled to survive this winter storm, Griddy made the suffering even worse as it debited outrageous amounts each day," Texas Attorney General Ken Paxton said as his office sued the company. Here, electrical lines run through a neighborhood in Austin during the recent winter storms.

Joe Raedle/Getty Images

Texas Attorney General Ken Paxton is suing Griddy, saying the electricity provider passed along massive increases during winter storms, leaving some customers to face up to \$5,000 in power bills. Paxton's lawsuit says Griddy deceived customers when it promised low "wholesale" energy prices.

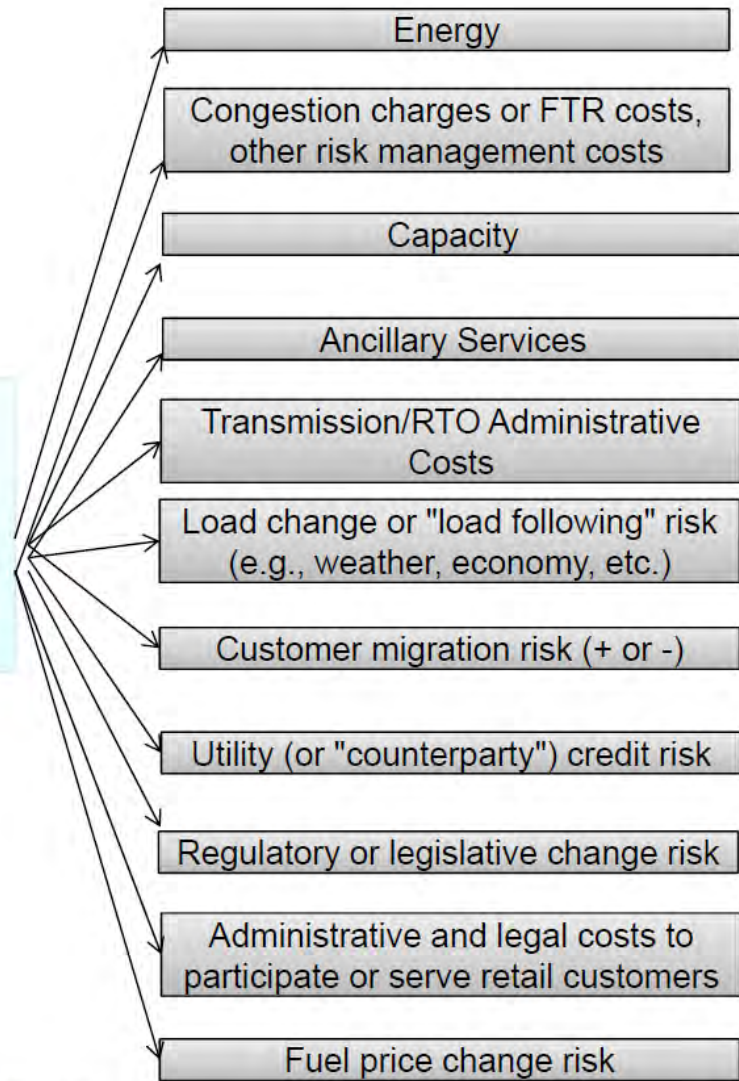
The ugly: Retail markets under stress

- Some forms of retail contracts leave consumers highly exposed to RTO market volatility.
- This was most clear during the 2021 Texas power crisis, when a cutely-named supplier (Griddy) sent customers exceptionally un-cute (large) electric bills.
- In some cases it's not clear that consumers understood what they were buying. There have also been some cases that seem to involve fraud or deceptive marketing practices.

Retail competition: What is going on here?

- Industrial consumers seem to have done well overall with retail competition. As large users, they may be able to tailor contracts with suppliers to their own needs, and may have the resources to be more sophisticated at managing risks.
- Residential and commercial users don't seem to have benefitted as much economically.
- The previous graph suggests that the reason is not necessarily sky-high wholesale prices. States with retail competition (which are also mostly in RTO market footprints) also tend to have more charges for state programs and a more complex array of fees related to wholesale pass-throughs.

Costs for "full requirements" service to *retail* customers*



- ✓ The sum of the parts may be greater than the whole (due to new costs and risks)
- ✓ Some of these costs did not exist with regulation

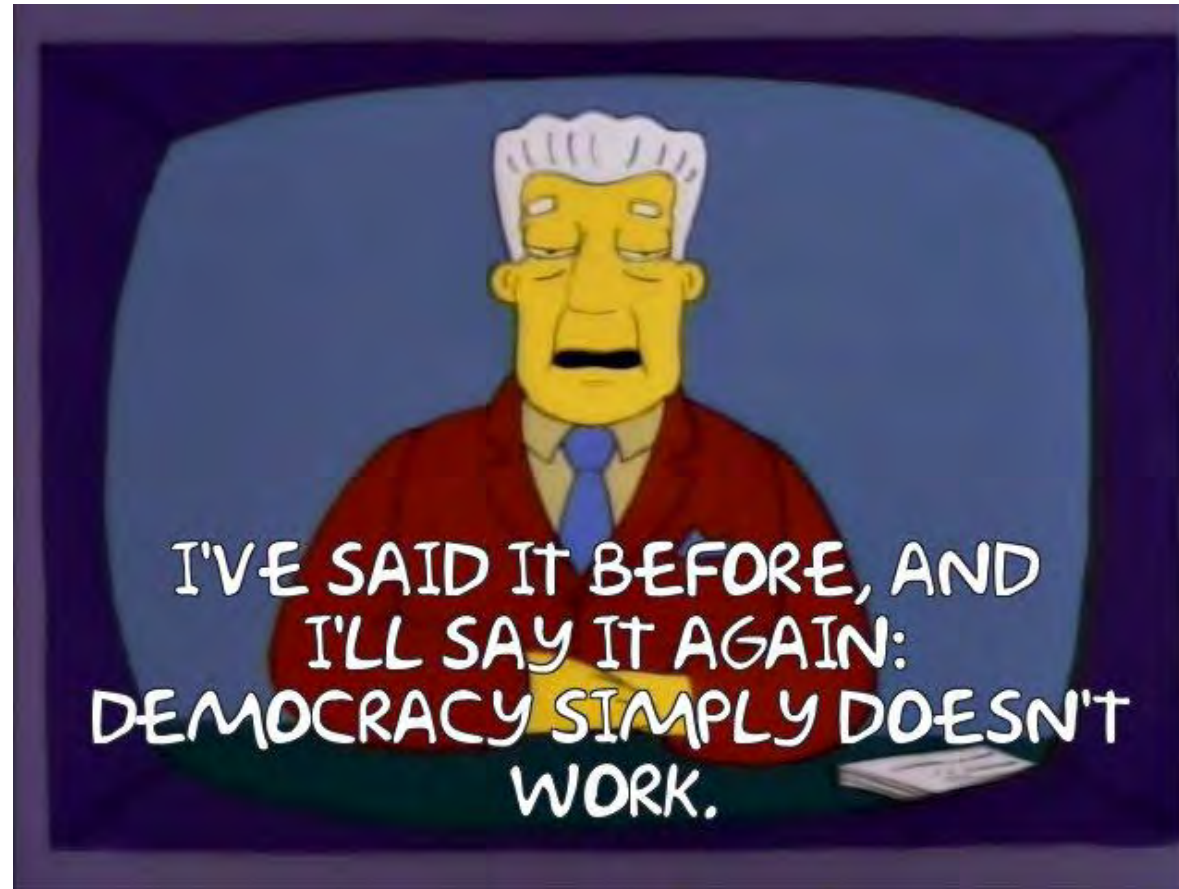
*Not all costs may apply in all cases.

Poll #6

Fill in the blank: Over the past few years, retail rates for _____ consumers in states with retail competition have tended to be higher than rates for similar consumers in states without retail competition.

- a) All consumers
- b) Commercial consumers
- c) Industrial consumers
- d) Residential consumers
- e) Residential and Industrial consumers
- f) No consumers (states with retail competition have had lower rates for all consumers than states without retail competition)

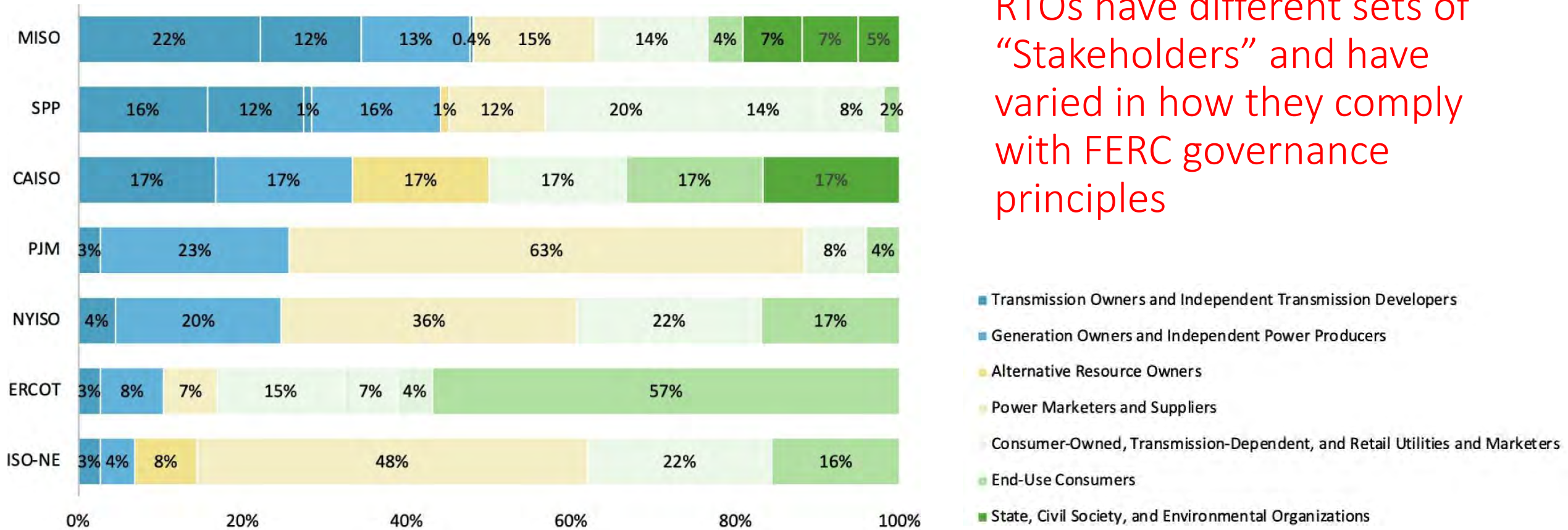
Power Grid Governance



RTO Governance Principles

- FERC Orders 888, 719, 2000 lay out a number of principles for RTO governance
- Independence from individual commercial interests
- Stakeholder-engaged decision making
- Incorporate minority voices into internal decision-making

Just Who Are These “Stakeholders”?



And What Are They Doing to the Grid?

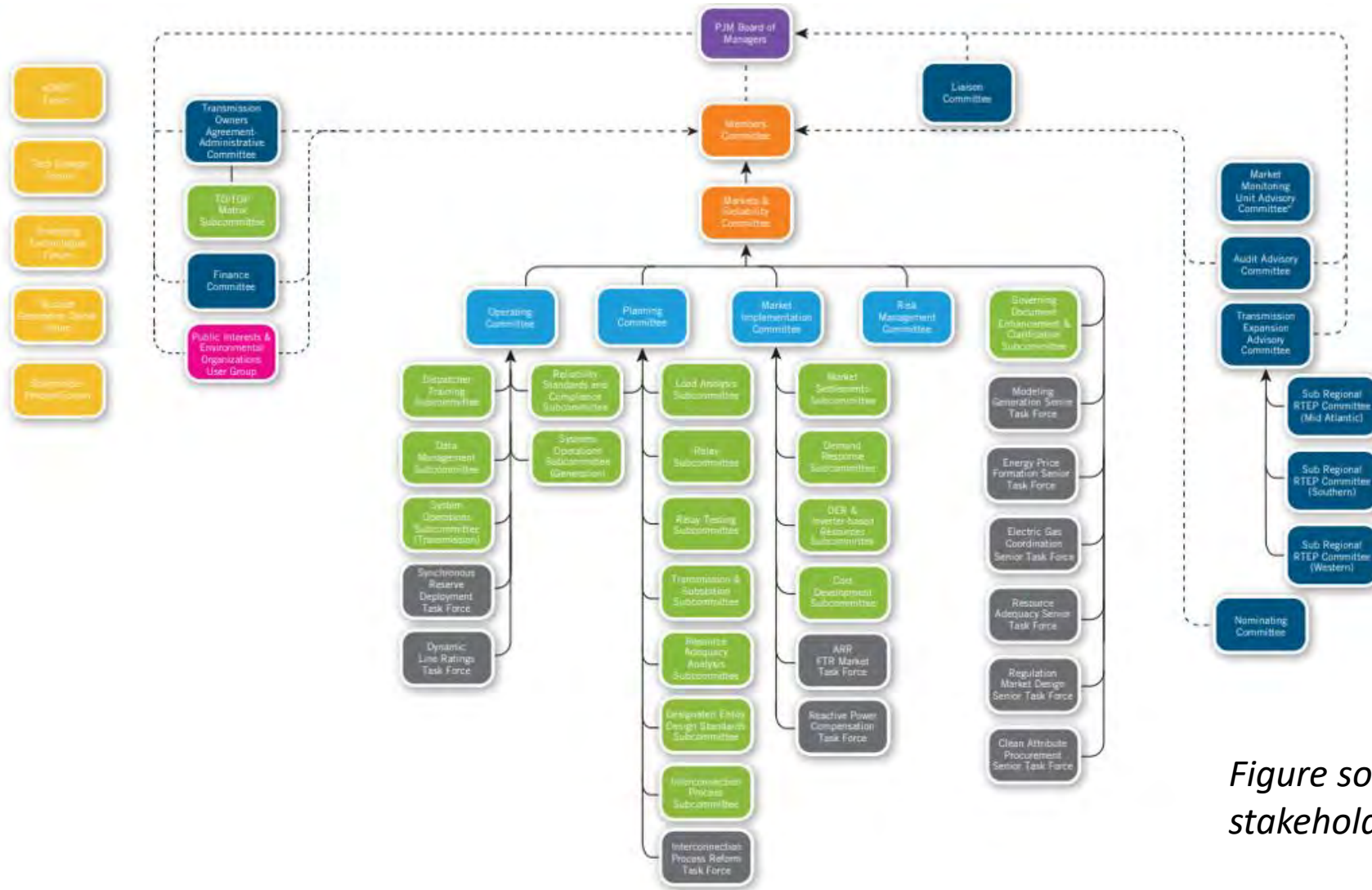


Figure source: PJM. Other RTOs have similar stakeholder process structures

And What Are They Doing to the Grid?

The “Members Committee” is the top-level stakeholder decision-making body, which is the voice of the RTO membership to the RTO Board.

(In PJM, the Members has “filing rights” to go directly to FERC on some matters.)

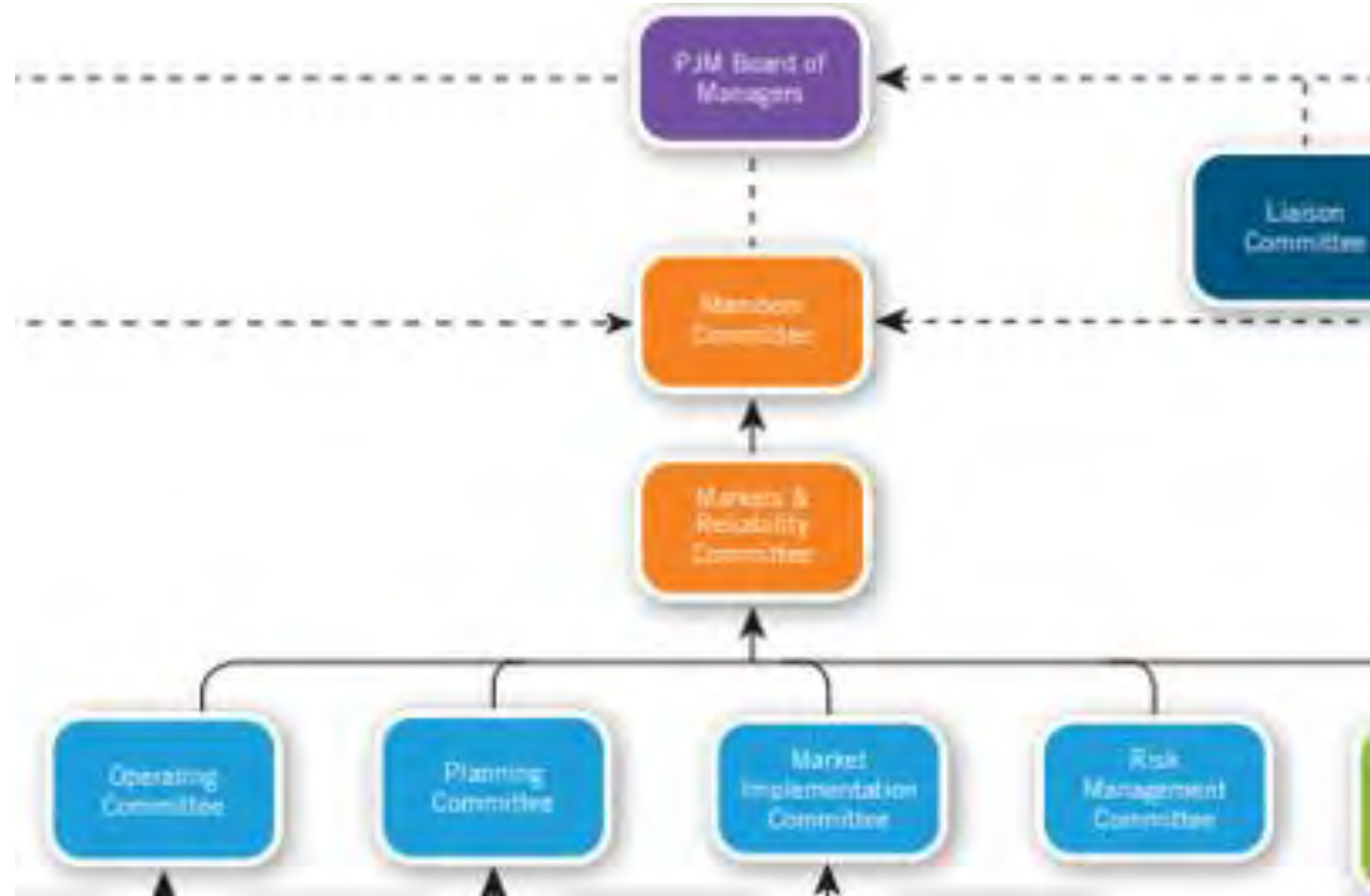


Figure source: PJM. Other RTOs have similar stakeholder process structures

Stakeholder Decision-Making Models

- In many RTOs, stakeholders vote on proposed changes to market designs, planning processes and other internal RTO policy matters.
- These proposals are typically developed in lower-level committees and get voted out of committee (using a different set of rules) before going to the full membership.
- Some RTOs group stakeholders into defined sectors (generation owners, transmission owners, etc) and weight votes by sector. This is kind of like how the electoral college works in presidential elections.

A shameless plug (or insomnia cure)

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ARTICLES

[Fifteen Years Later - Literature Perspectives on the Impacts of Dworkin and Goldwasser and FERC Order No. 719](#)

Michael D. Helbing

[Coalition Stability in PJM: Exploring the Consequences of State Defection From the Wholesale Market](#)

Travis Dauwalter, Ali Daraeepour, Bryan Higgins, Seth Blumsack, Brian Murray, and Dalia Patino-Echeverri

[Incorporating Environmental Concerns Into Wholesale Electric Markets: The Impact of Regional Transmission](#)

[Organization Governance Models on ENGO Participation in Stakeholder Processes](#)

Mark James, Kevin B. Jones, and Adelaide Hardwick

[Incorporating Environmental Concerns Into Wholesale Electric Markets: Recommendations for Increasing Effective](#)

[Participation of ENGOS in RTO Governance Stakeholder Processes](#)

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[The Evolution of Participatory Policy-Making for Regional Power Grids](#)

Nicholas Johnson, Stephanie Lenhart, and Seth Blumsack

[Replacing The Utility Transmission Syndicate's Control](#)

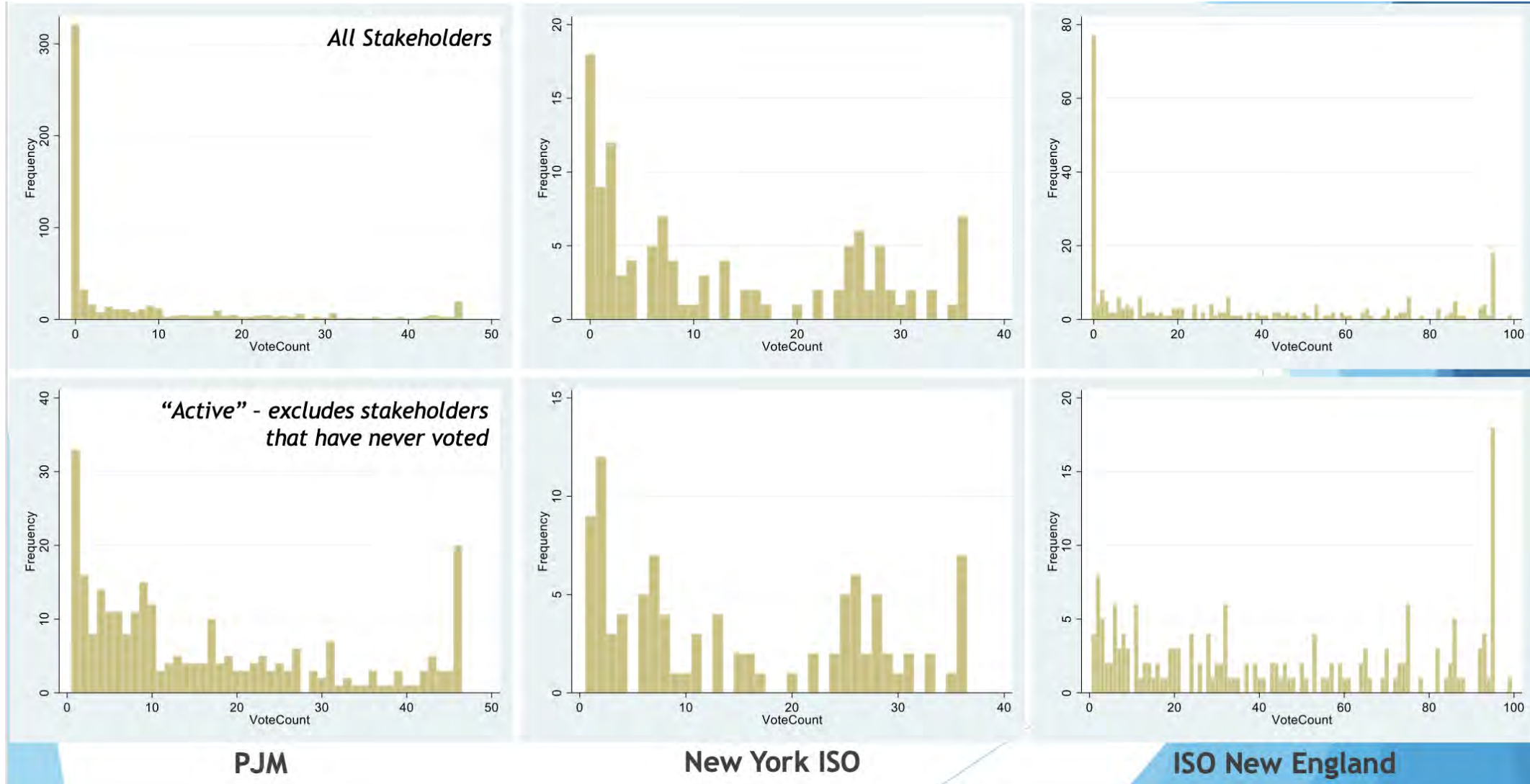
Ari Peskoe

- November 2023: *Energy Law Journal* special issue on RTO governance
- Available at <https://www.eba-net.org/felj/elj-44-3/>
- THE foundational paper on RTO Governance: Dworkin, Michael and Rachel Goldwasser. "Ensuring consideration of the public interest in the governance and accountability of regional transmission organizations." *Energy Law Journal* 28 (2007): 543.

(Some) Stakeholder Process Issues

- Stakeholder processes in RTOs can be very time-consuming and contentious undertakings. Sometimes the stakeholders fail to reach decisions on important issues, which leaves the RTO staff and board somewhat stuck.
- Driver #1: Increasingly complex policy influence affecting RTO decisions
- Driver #2: Narrowing scope of decisions and narrowing interests of stakeholders (so-called “pocketbook voting”)
- Driver #3: Internal response to these tensions by the RTO (described in PJM as the RTO playing JP Morgan)

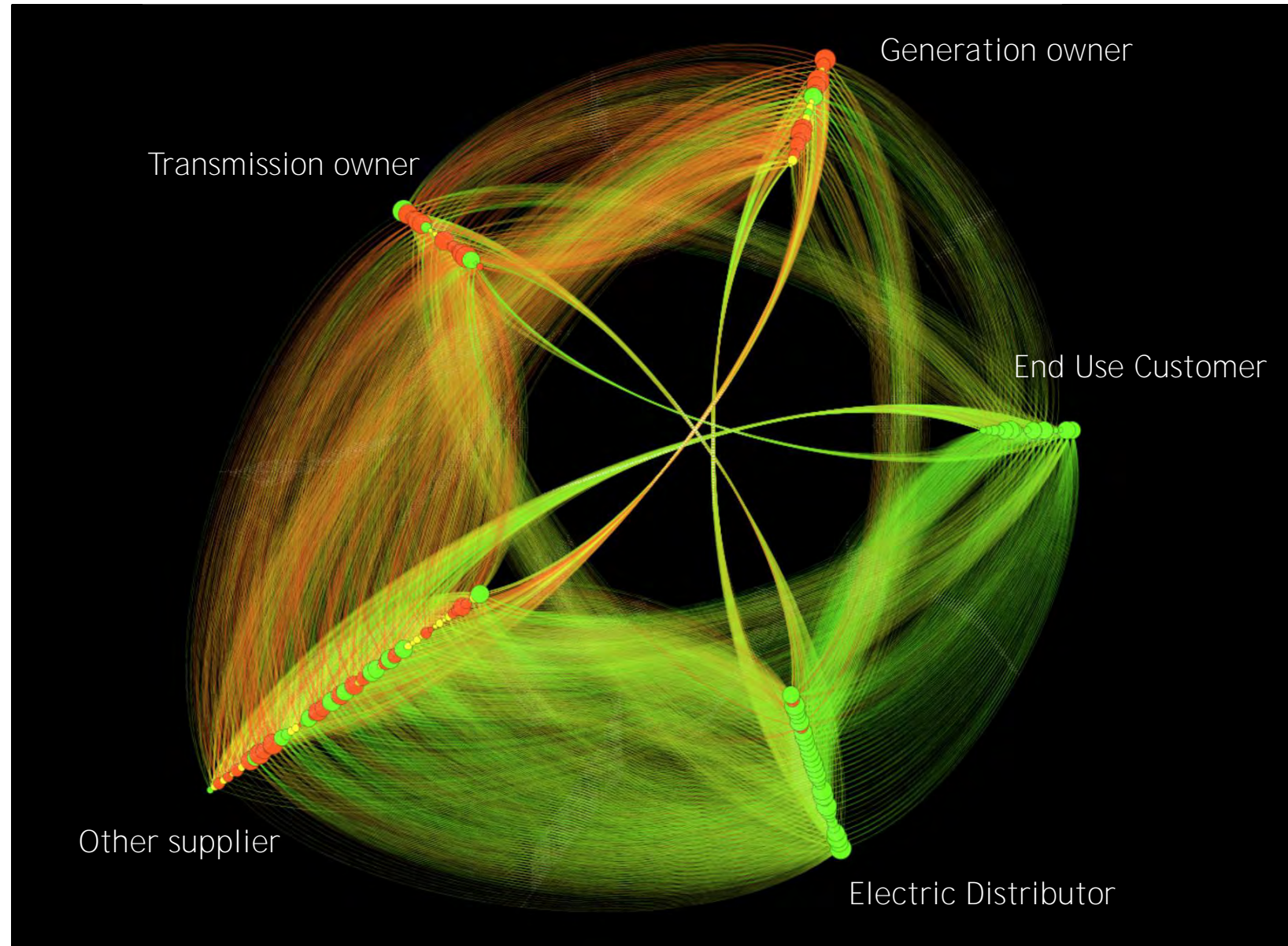
Stakeholder Vote Count Frequency



Stakeholder Political Blocs (PJM)

Stakeholders vote in blocs that can sway outcomes:

- Suppliers and transmission owners seem to have more agenda-setting influence in the committee level
- Demand side interests can have influence to block proposals in the member's committee



Governance Matters

- RTO governance is arcane, but does influence outcomes on the power grid in various ways.
- Stephanie Lenhart* has described how governance structures have influenced RTO integration of energy storage – for example, the stakeholder sector structure creates boxes that are not very conducive to storage (is it generation? transmission?)
- FERC has, to date, not seen RTO governance as a matter worth spending lots of time on.

* <https://www.frontiersin.org/articles/10.3389/fclim.2021.749021/full>