



Grid Modernization Policy: State of the States

Cameron Brooks

April 20, 2016



E9 Insight Overview

Regulatory research for engagement and business opportunities

1. **Commission Activity Tracking**

Online database with monthly updates on proceedings and commissions

2. **Tailored Research & Updates**

Curated information & market segmentation with standardized products

3. **Engagement Support**

Including stakeholder meetings and comment preparation



E9 Insight

Representative Clients and Partners since founding in 2013...

Aclara	Gravity Renewables	NRG
Alarm.com	Greentech Media	PNNL
ChargePoint	Gridwise Alliance	Sierra Club
CleaResult	Honeywell	Simple Energy
Comverge	Itron	SGCC
Department of Energy	Landis+Gyr	SGIP
E Source	LBNL	Tendril
Enernoc	Mission:data	Varentec
EnergyHub	Navigant	<i>and more...</i>
Energy Foundation	NEMA	
Environmental Defense	Nest	



Policy Domains

Monthly “radar screen” of new activity across these topic areas:

1. **Resource Planning** (including Integrated Resources Plans)
2. **Demand Side Management** (including energy efficiency and demand response)
3. **Distributed Energy Resources** (including residential solar, net metering and storage)
4. **Smart Grid** (including smart meters and home area networks)
5. **Distribution Infrastructure** (incl. distribution automation & voltage management)
6. **Community Energy** (nd microgrids)
7. **Utility Business Model** (including rate reform and adjustments)
8. **Market Design** (and competition)
9. **Electric Vehicles** (and transportation)



DOE Proceeding Review

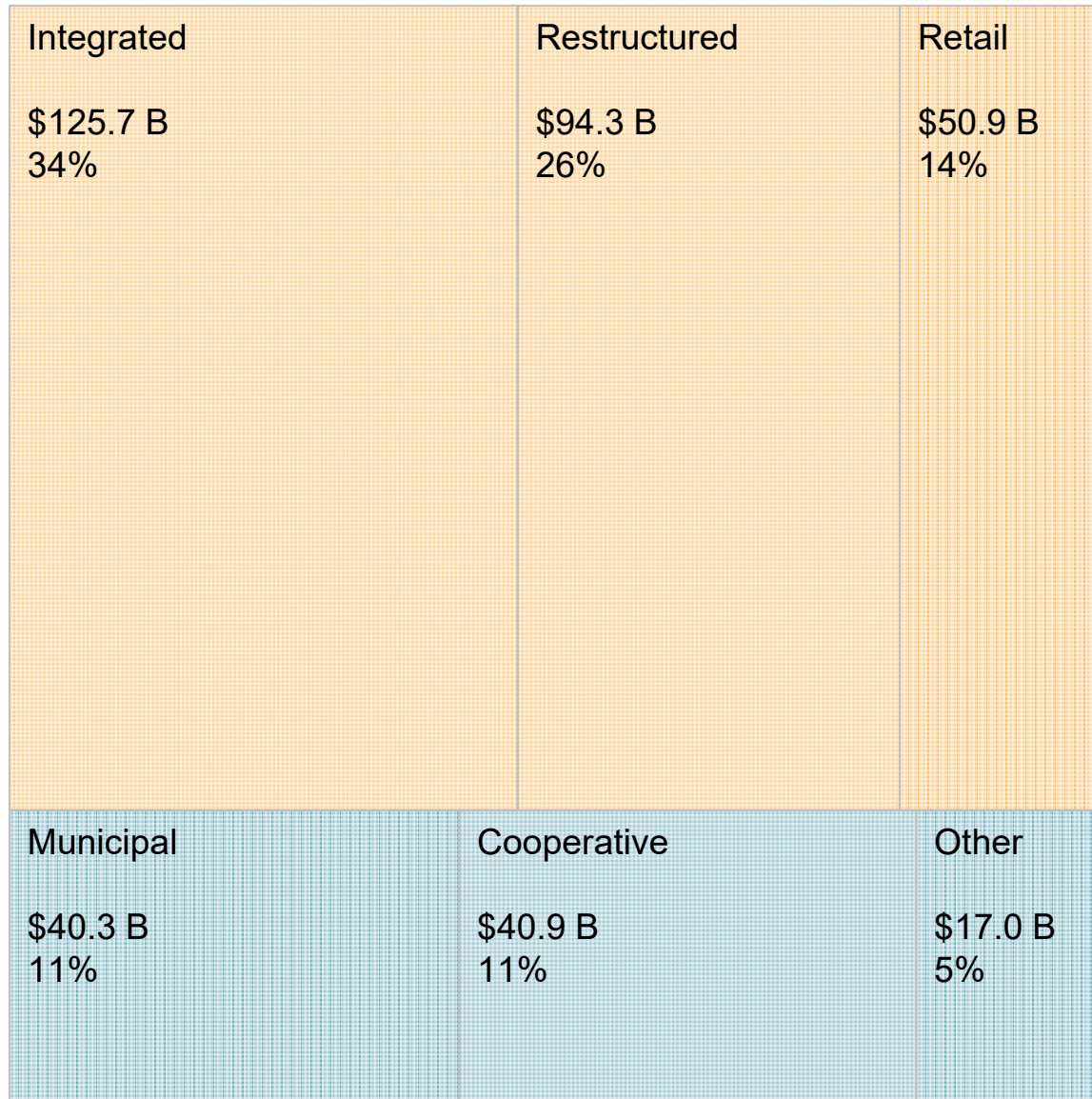
~2,500 recent and active proceedings reviewed for specific grid modernization elements

Cross-referenced based on:

1. Market Size
2. Market Structure
3. Policy Orientation



US Electricity Market



US Electricity Sales:

- \$369.5B annual retail sales
- ~\$1.01B per day

Investor-owned: (73%)

- 34% integrated
- 26% restructured
- 14% retail

Publicly-owned: (27%)

- 11% municipal
- 11% cooperative
- 5% other public power

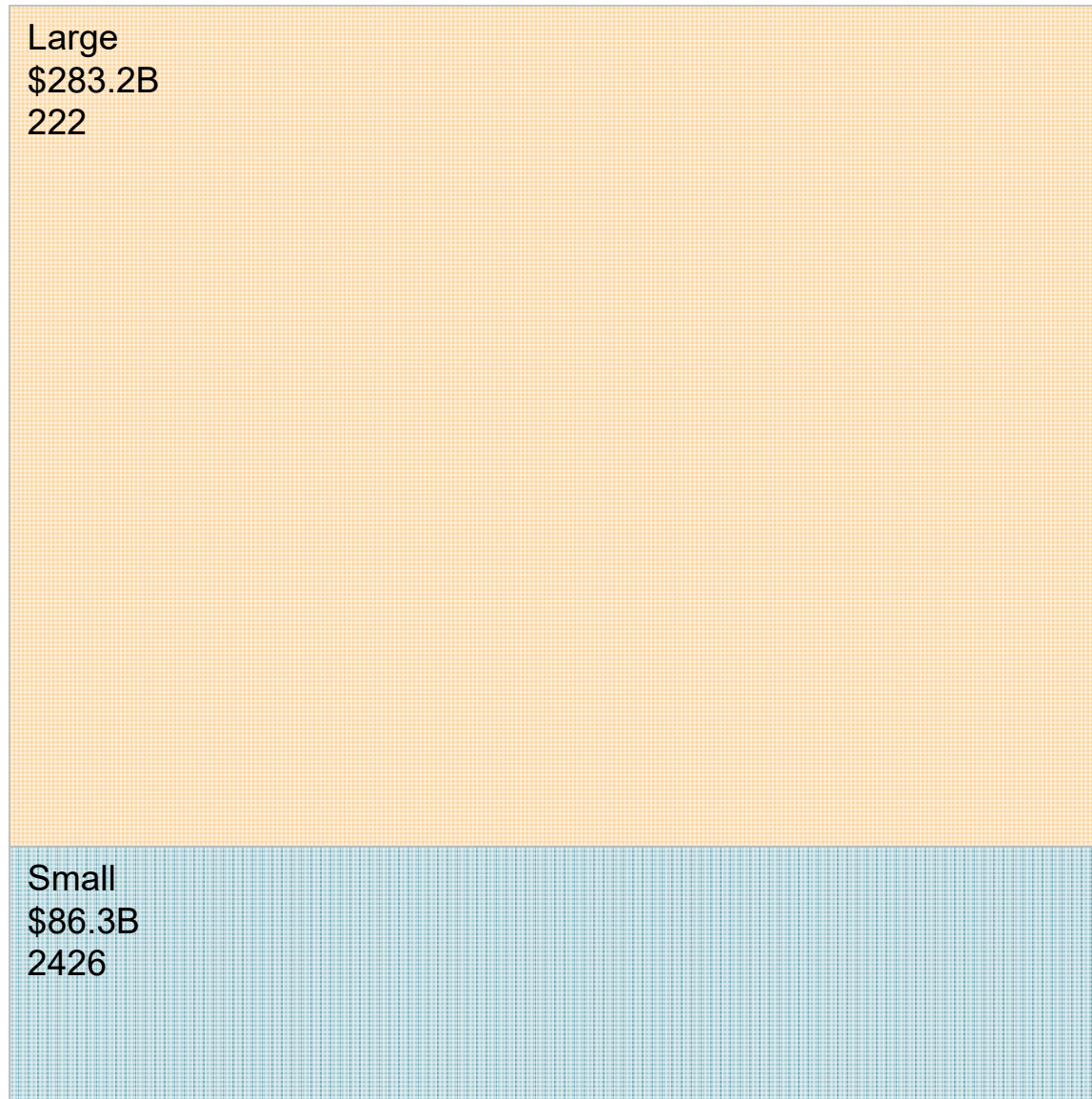
 = \$1B annual revenue

 Private Ownership

 Public Ownership



US Electricity Market: *By Utility Size*




Classes:

- >\$250m 222
- <\$250m 2,426

 = \$1B annual revenue

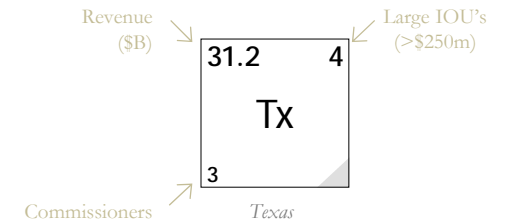
 Large >\$250m

 Small <\$250m





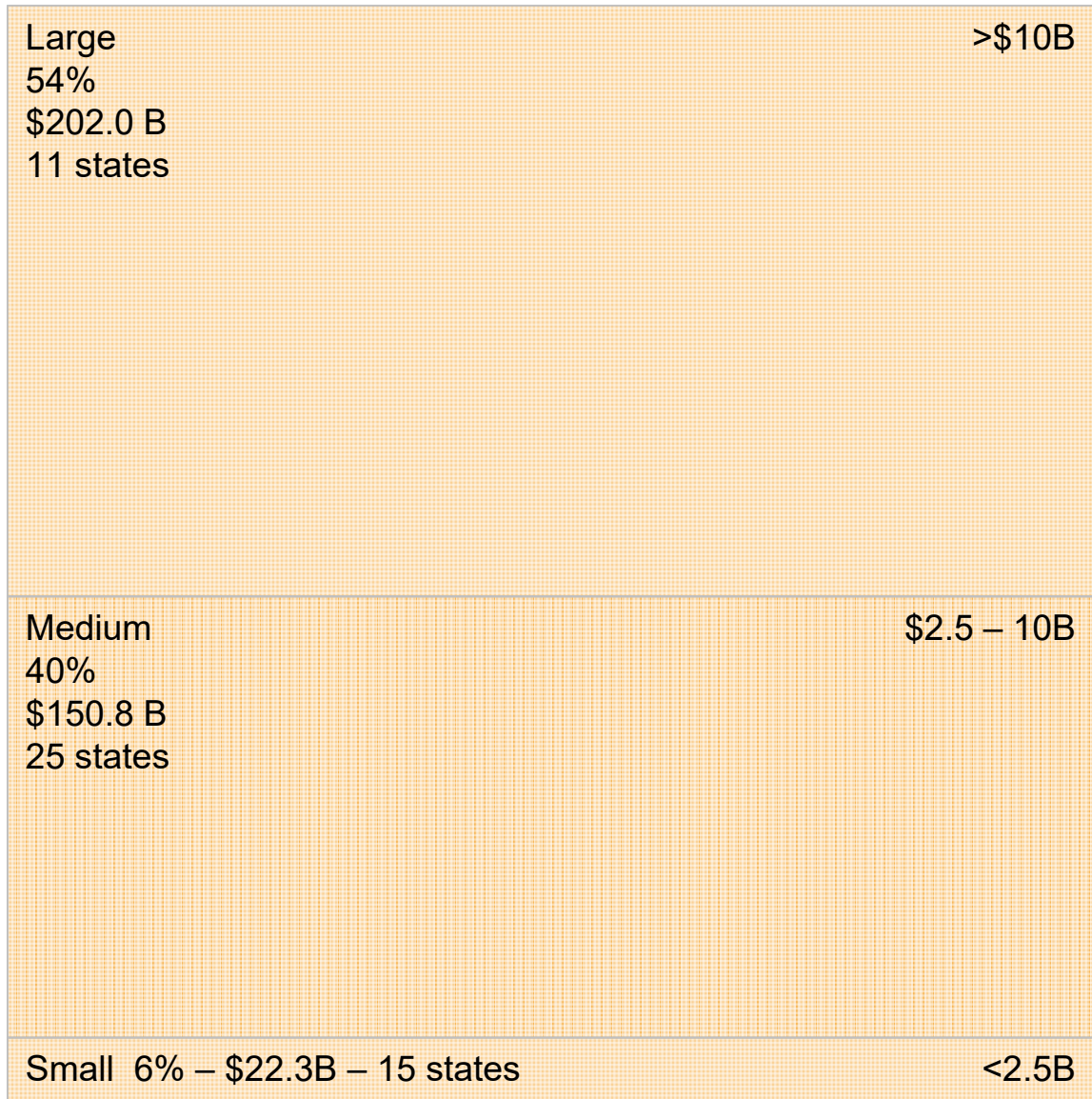
Periodic Table of State Policy



23 FI 5										21.7 Ny 5	7.6 Ma 3
12.3 Ga 5	11.7 Nc 7	7 Mo 5				35 Ca 5	13.9 Oh 5	14.3 Pa 5	4.6 Ct 3		
8.9 Tn 4	9.8 Va 3	4.5 Ok 3	6 Mn 5	7.4 Az 5	3.1 Nv 3	6.4 Wa 3	12.1 Il 5	10.3 Nj 5	1.5 Nh 3		
7.9 Al 3	7.1 Sc 7	3.8 Ks 3	3.5 Ia 3	5 Co 3	1.6 Id 3	3.8 Or 3	11.5 Mi 3	7 Md 5	1.4 Me 3		
5.8 La 5	6.5 Ky 3	2.6 Ne 5	1.2 Nd 3	2.3 Ut 3	1.2 Wy 3	3.3 Hi 3	8.7 In 5	1.3 Dc 3	1 Ri 3		
4.2 Ms 3	2.5 Wv 3	3.6 Ar 3	1 Sd 3	2 Nm 5	1.1 Mt 5	1 Ak 5	7.1 Wi 3	1.3 De 5	.8 Vt 3		


Deep South Upper South Lower Plains Upper Plains Intermountain West Pacific Rim Midwest Mid-Atlantic New England

US Electricity Market: *By Utility Size*



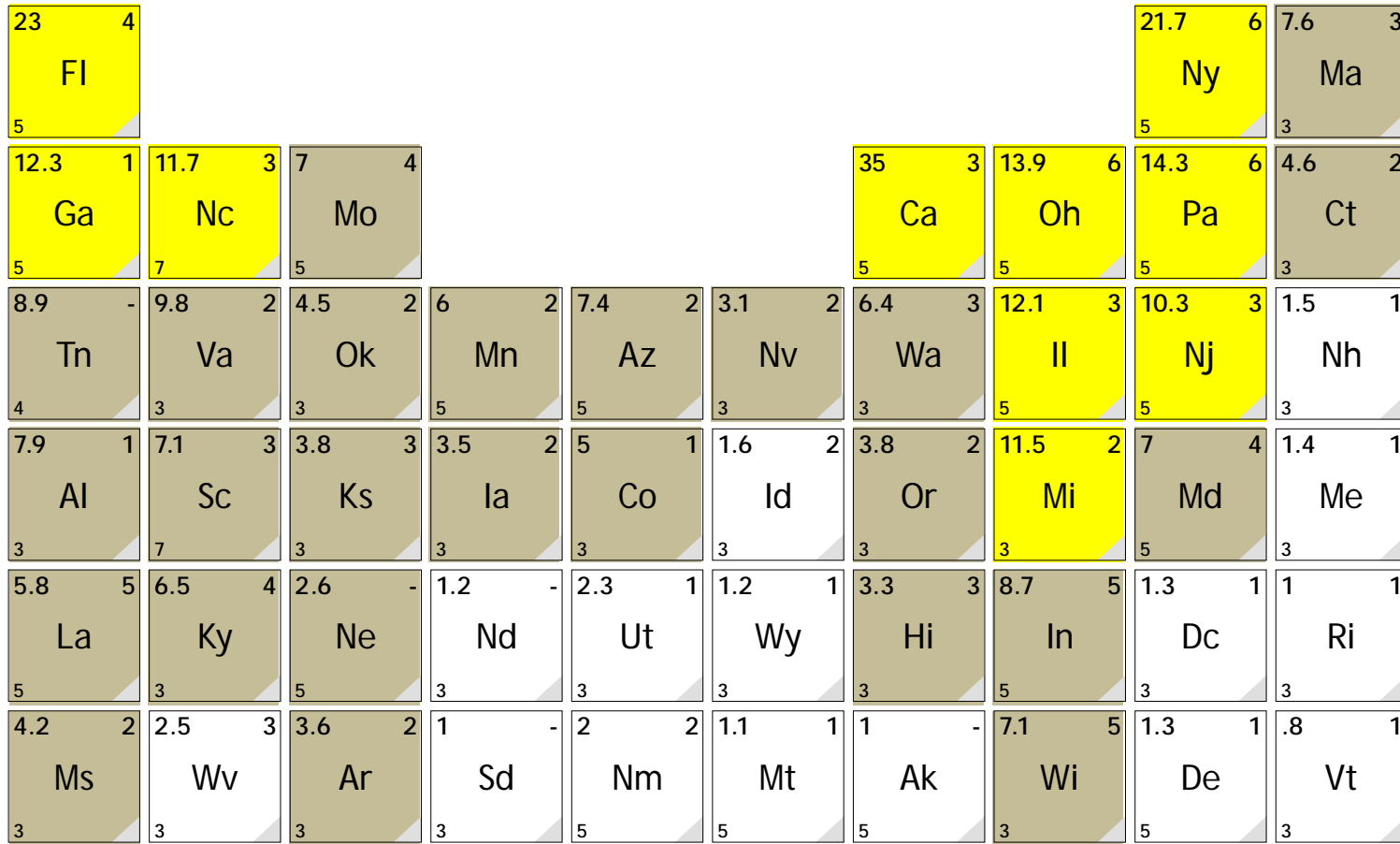
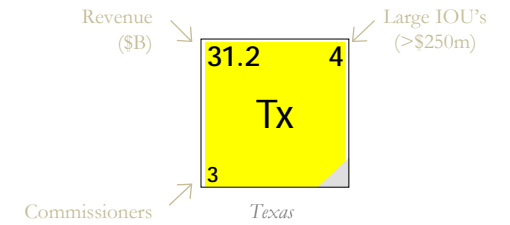
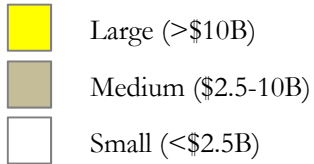
Classes:

- >\$250m 222
- <\$250m 2,426

 = \$1B annual revenue

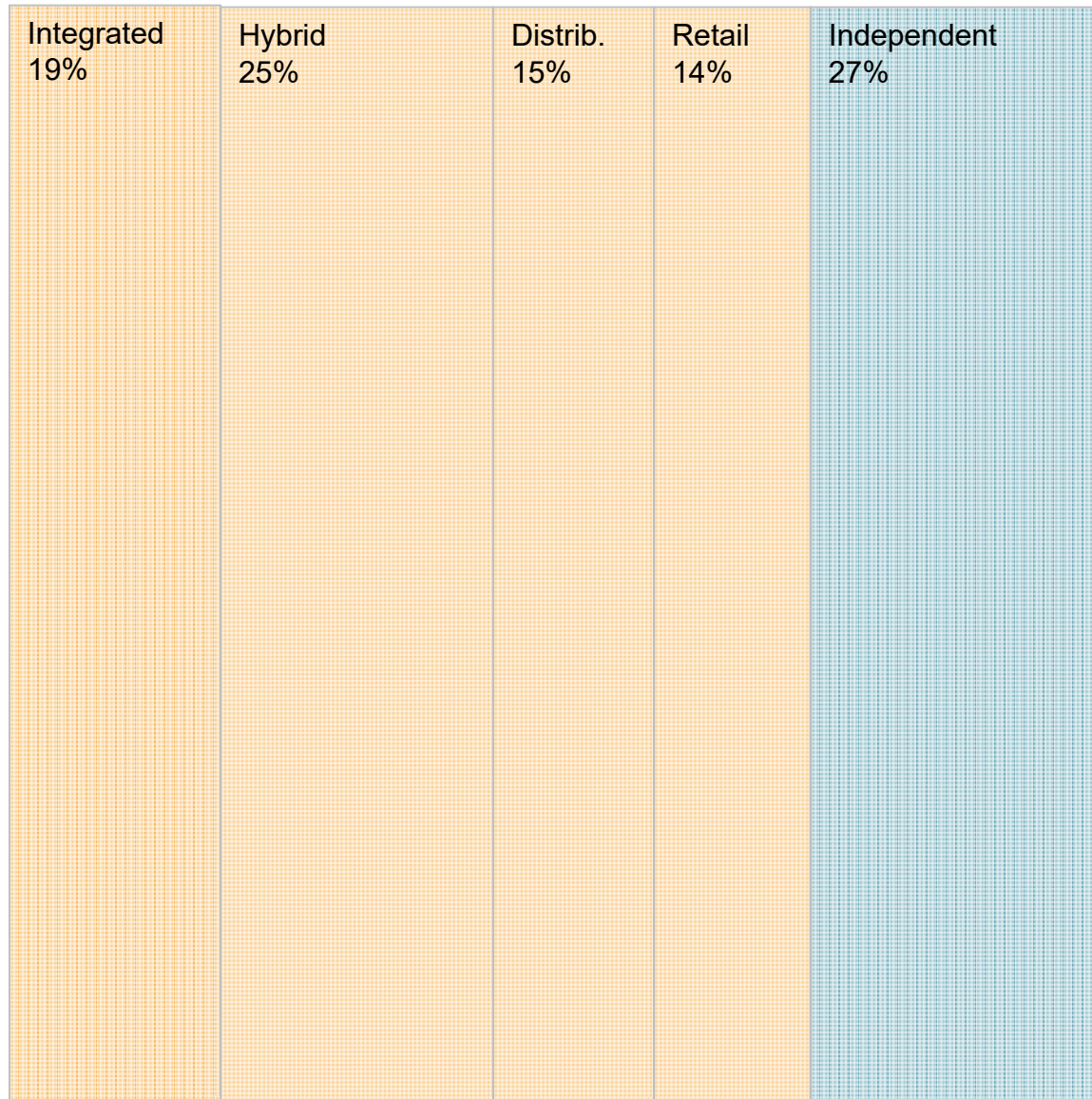


Periodic Table of State Policy Market Size



Deep South
Upper South
Lower Plains
Upper Plains
Intermountain West
Pacific Rim
Midwest
Mid-Atlantic
New England



US Electricity Market: *by market structure*



Classes:

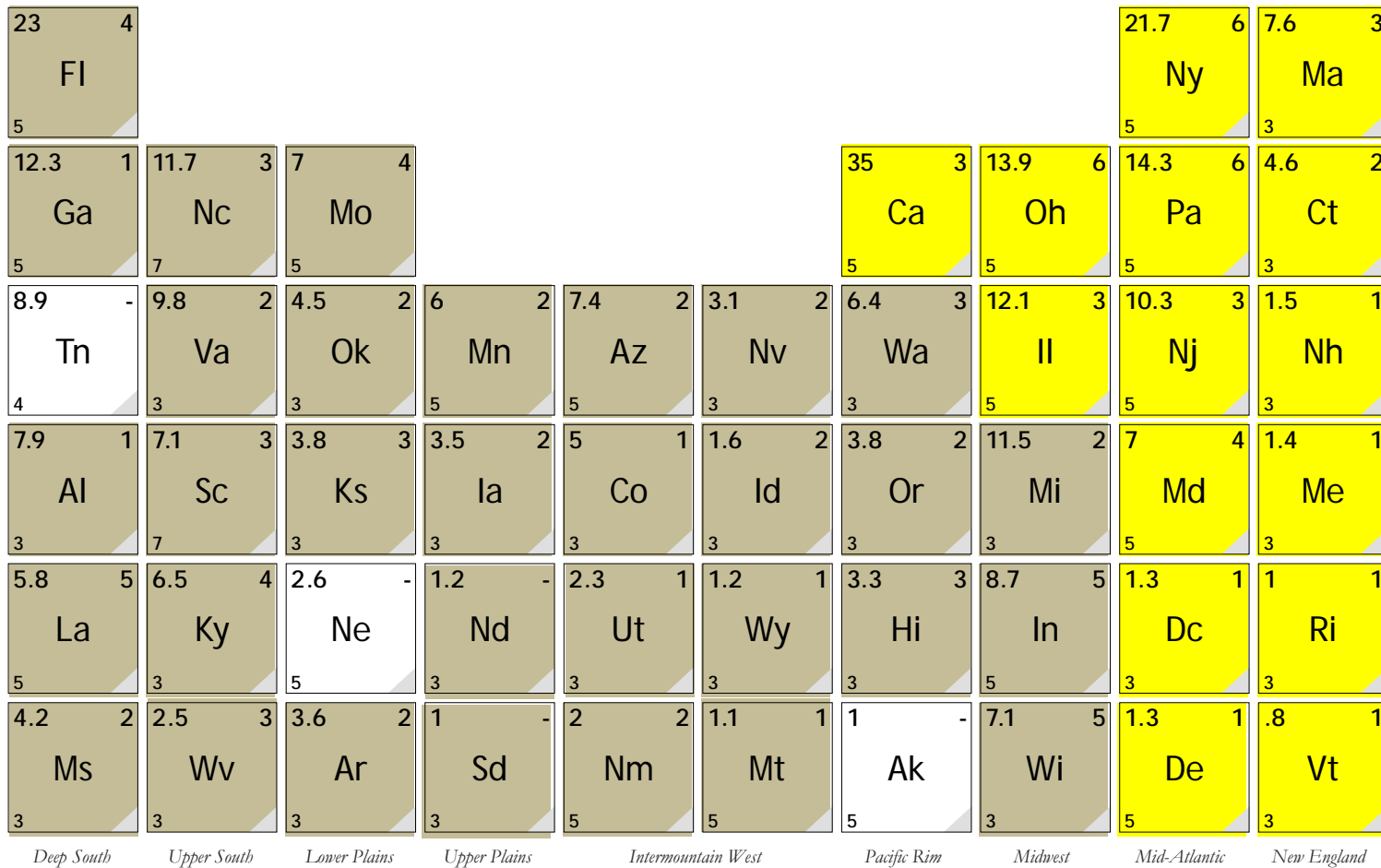
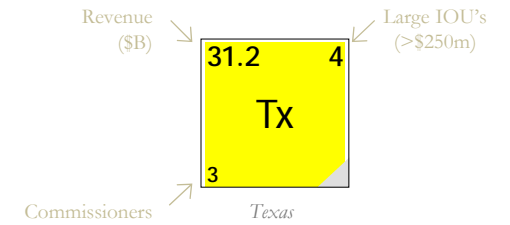
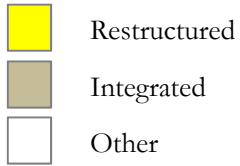
- Integrated \$71.3 (19%)
- Hybrid \$92.0 (25%)
- Distribution \$54.3 (15%)
- Retail \$52.8 (14%)
- Independent \$99.1 (27%)

 = \$1B annual revenue

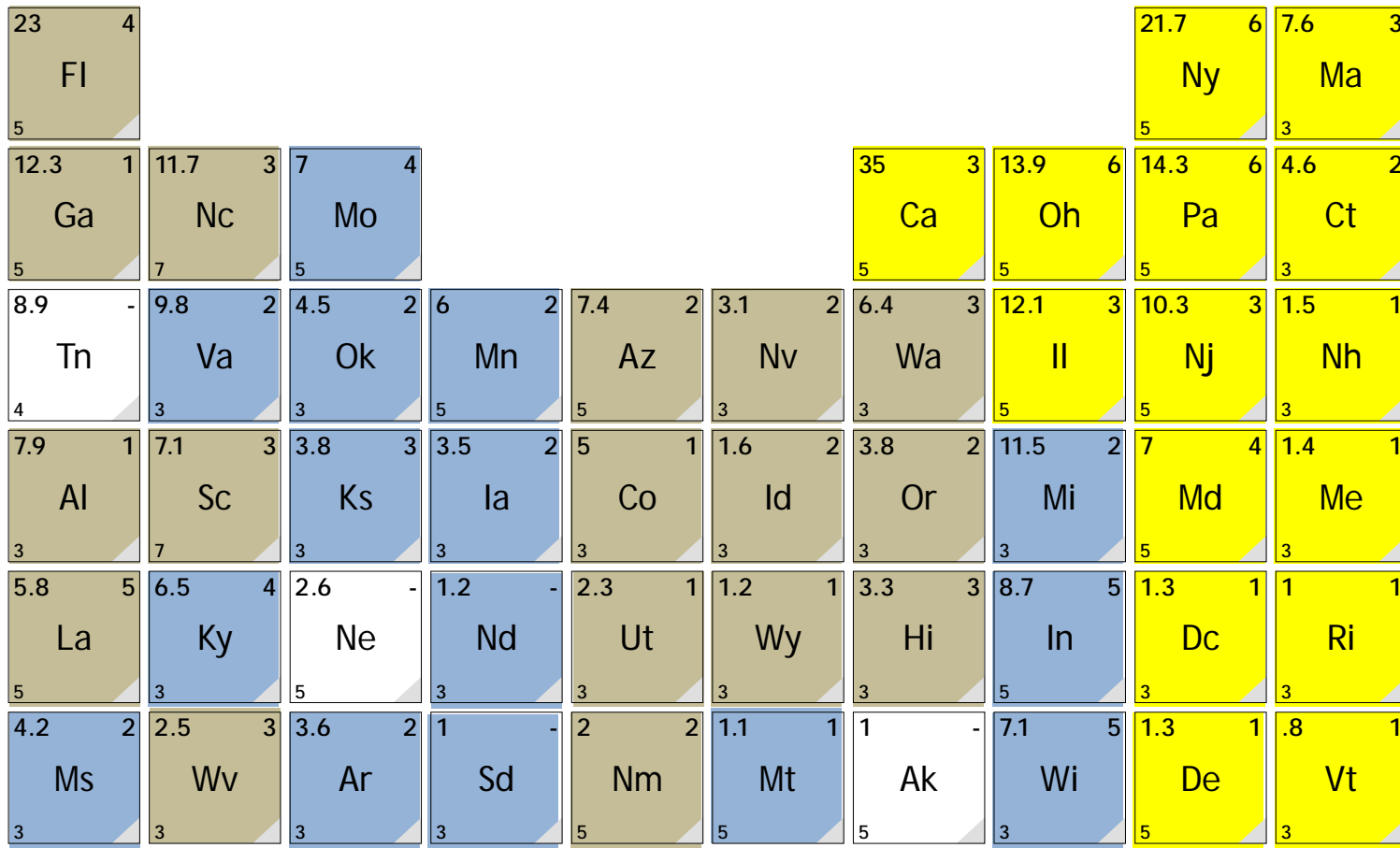
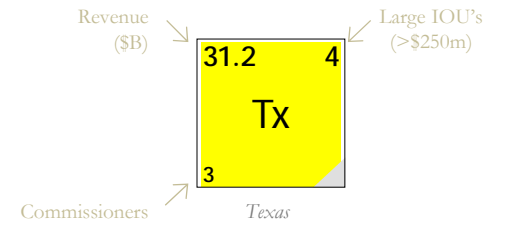
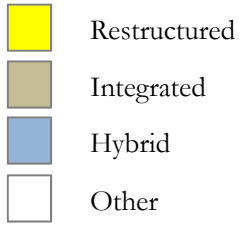
 Investor-Owned
 Public Ownership



Periodic Table of State Policy Market Structure

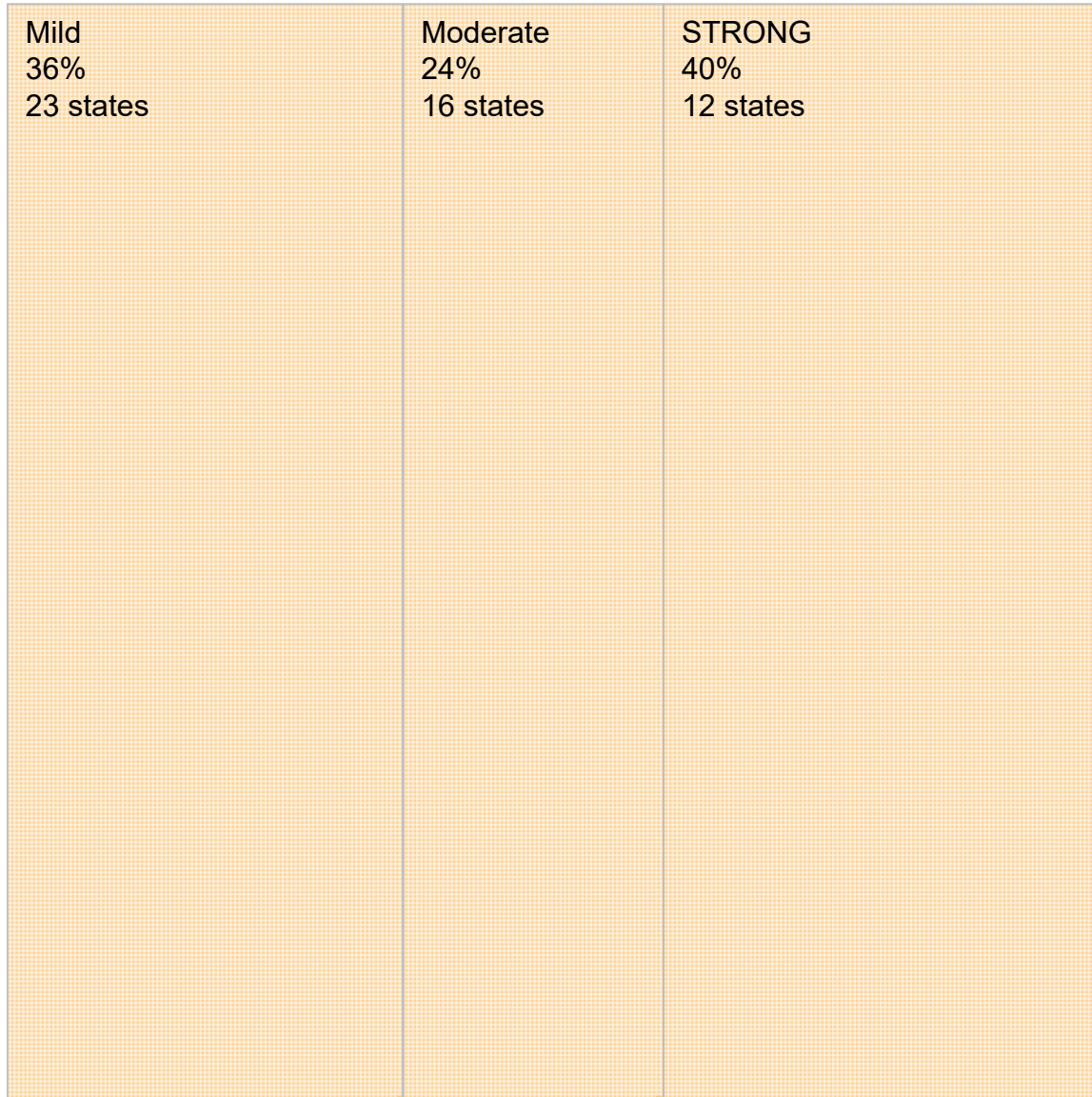


Periodic Table of State Policy Market Structure




Deep South
Upper South
Lower Plains
Upper Plains
Intermountain West
Pacific Rim
Midwest
Mid-Atlantic
New England



US Electricity Market: *by market structure*



Classes:

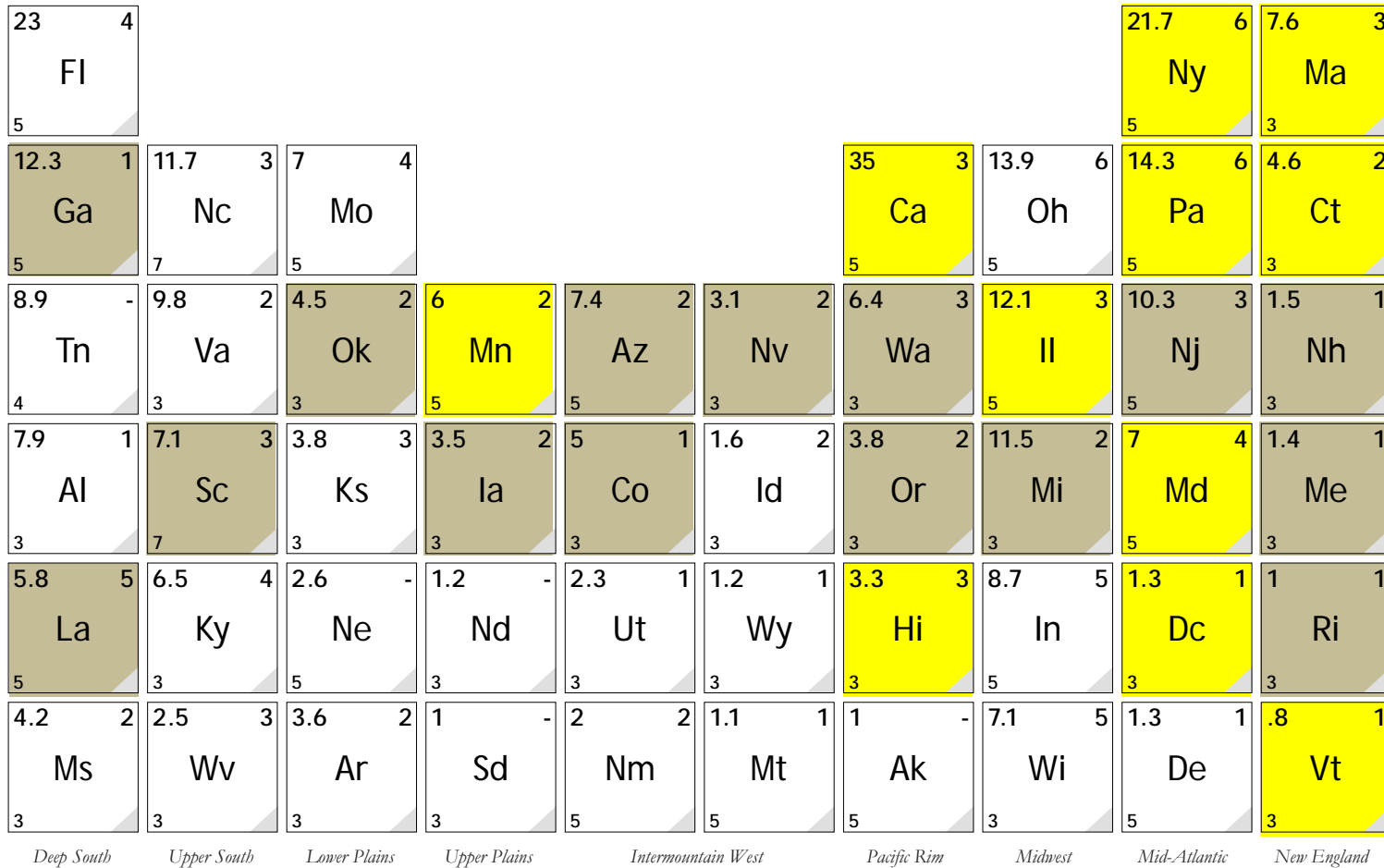
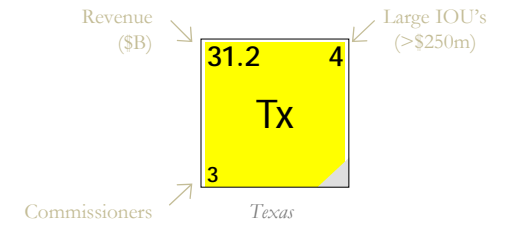
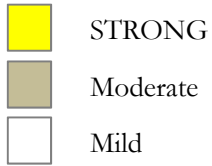
- Integrated \$71.3 (19%)
- Hybrid \$92.0 (25%)
- Distribution \$54.3 (15%)
- Retail \$52.8 (14%)
- Independent \$99.1 (27%)

 = \$1B annual revenue

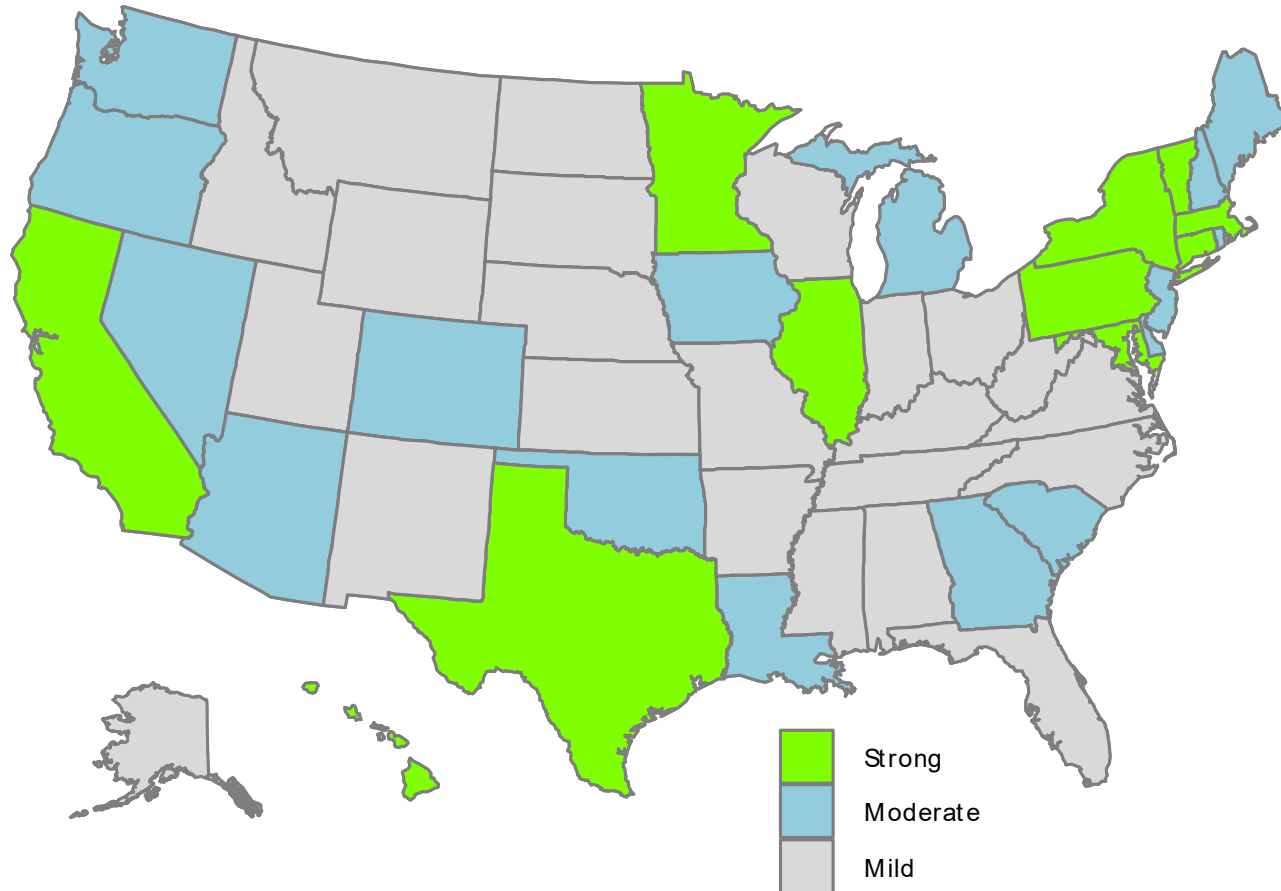
 Investor-Owned
 Public Ownership



Periodic Table of State Policy Policy Orientation



State Orientation



State Orientation

	MILD		MODERATE		STRONG	
	Integrated	restructured	Integrated	restructured	Integrated	restructured
LARGE	FL NC	OH	GA MI	NJ		CA IL NY PA TX
	\$34.7B (7) 14.9 m (9%)	\$13.8B (6) 7.9 m (5%)	\$24.2B (4) 9.5 m (6%)	\$10.2B (3) 4.6 m (3%)		\$119.0B (22) 53.6 m (34%)
MEDIUM	AL MO WI AR MS IN NE KS TN KY VA		AZ OK CO OR IA SC LA WA NV		HI MN	CT MA MD
	\$71.9B (28) 26.4 m (17%)		\$49.4B (22) 20.3 m (13%)		\$9.6B (5) 3.1 m (2%)	\$19.9B (9) 9.0 m (6%)
SMALL	AK SD ID UT MT WV ND UT NM WY			DE ME NH RI		DC VT
	\$14.9B (10) 6.1 m (4%)			\$5.3B (7) 3.4 m (2%)		\$2.1B (2) 0.7 m (0.4%)

Figure 1 – States organized by policy “orientation”, size and structure



Nine Notables

CA: Distributed Resource Planning and Demand Response

TX: Distributed Resources

IL: Open Data Framework

MA: Grid Modernization Plans

MN: Grid Modernization Investigation

PA: Act 129 Phase III and Rate Structure

GA: Georgia Power Solar

FL: Florida Power Solar Partnership

SC: Distributed Energy Resource Program Act

And, of course, “Reforming the Energy Vision” in New York...



Beyond The Radar

Major regulatory conversations in 2016

1. **Rate Reform**
2. **Consumer Data**
3. **Distribution System Planning**
4. **Clean Power Plan**



A Thought on Innovation

NARUC President Travis Kavulla to his colleagues:

Being an economic regulator is a bit of a paradox...We are a substitute for competition. The central premise of utility regulation is that competition would work better than we do. That is a humbling thing. To be needed by default. And it begs the question: Can competition work? And if it can, what does that mean for our duty? How can we keep the door open to innovation? ... It means resisting parochialism and rent-seeking behavior. Our unique role as economic regulators means we should play the skeptic of the political logrolling that is all too common in this industry.

....Ongoing Staff Subcommittee on Rate Design



Thank you

Cameron Brooks

President

E9 Insight

cbrooks@e9insight.com

303.957.7667

