Resource Adequacy: Example and perspective from a multi-state RTO

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NARUC Resource Adequacy Training

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The magnitude and pace of system change presents both opportunity and challenges for multistate planning and coordination

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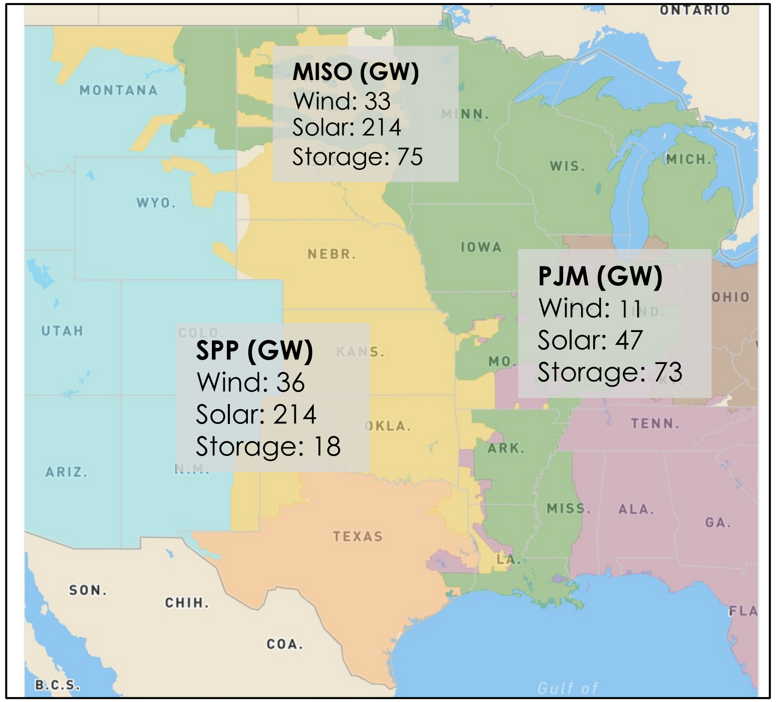
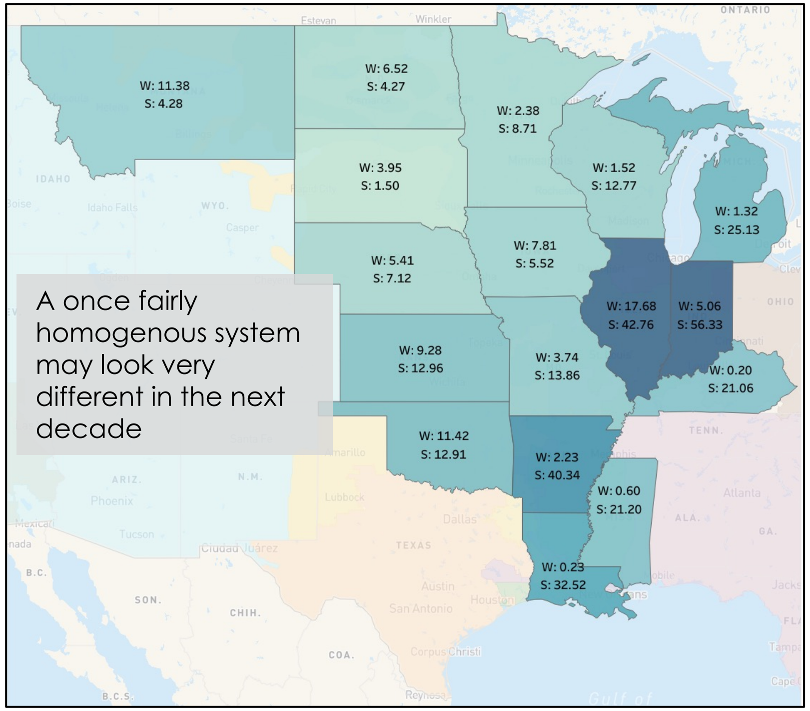
Interconnection Queues by Region[1]



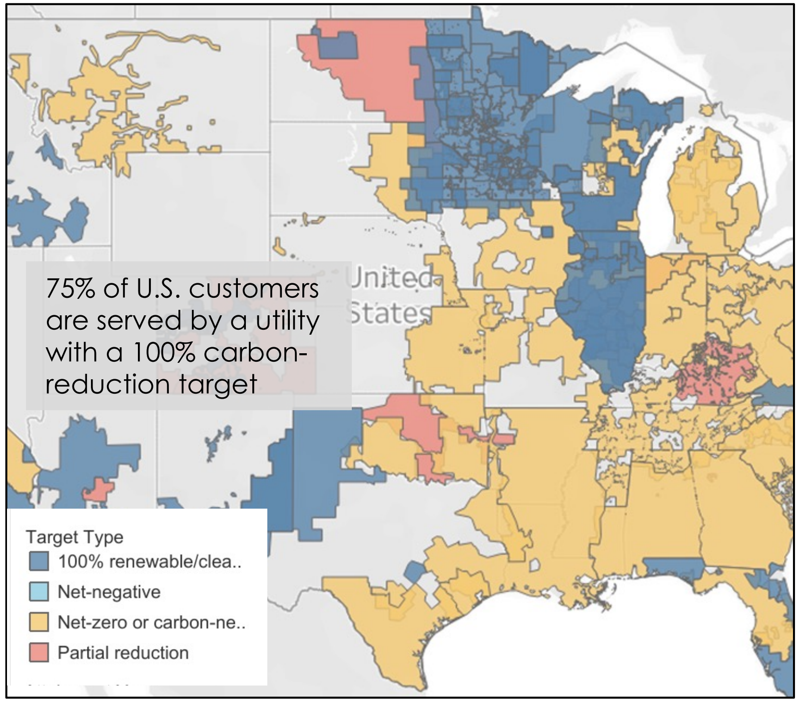
2TW of capacity nationally. A historical 15% success rate still represents a monumental shift

Interconnection Queues by State[1]



The distribution and mix of renewables in the queue varies greatly by state

Utility carbon reduction targets[2]



13 States have either a 100% renewable/clean energy target or net zero requirements

[1]Lawrence Berkeley National Laboratory: Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection

[2]Smart Electric Power Allliance: Utility Carbon Reduction Tracker

In a rapidly changing world, multiple entities with a shared responsibility for reliability, have different roles and perspectives; we need stronger coordination

ISO/RTO

- For a rapidly changing world, need to send the right reliability and economic signals (short and long term)
- Resource investment decisions are being made now that operators will have to live with for years
- Limited visibility into individual utility plans
- Increasing concern not just about the capacity but the type and location
- Increasingly need to understand neighbors' plans
- States have ultimate authority on resource adequacy; there is, however, the possibility for conflict with ISO/RTO processes, policies/market

Utilities:

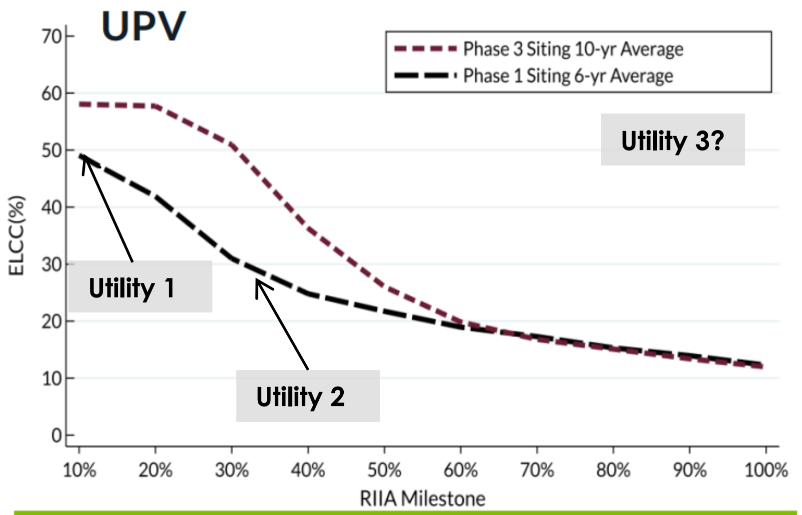
- Meet ISO requirements, state regulations, and stakeholders' objectives
- Balance both regional short-term RA requirements and long-term planning
- Different business models and pursuing different long-term strategies
- Increasingly need to understand neighbors' and regions' plans
- Changes in both supply and demand side technology: growth, features, and costs
- Have different levels of resources, data, and tools to do the increasingly complex analysis

With the speed and scope of change, are we speaking the same language?

An example: 4 entities looking at the same solar accreditation data but using it differently, with big implications for resource planning and adequacy

- 3 large utilities use data from an ISO-published[1] chart in their IRPs differently

	Solar in IRP	Accreditation Assumptions
Utility 1 (6 GW system)	8 GW	50% held constant, annual
Utility 2 (11 GW system)	6 GW	Disagrees with ISO value, hires consultant. Declining ELCC based on utility footprint only, 47% to 8%.
Utility 3 (11 GW system)	9 GW	Declines from 50% to a minimum of 30%



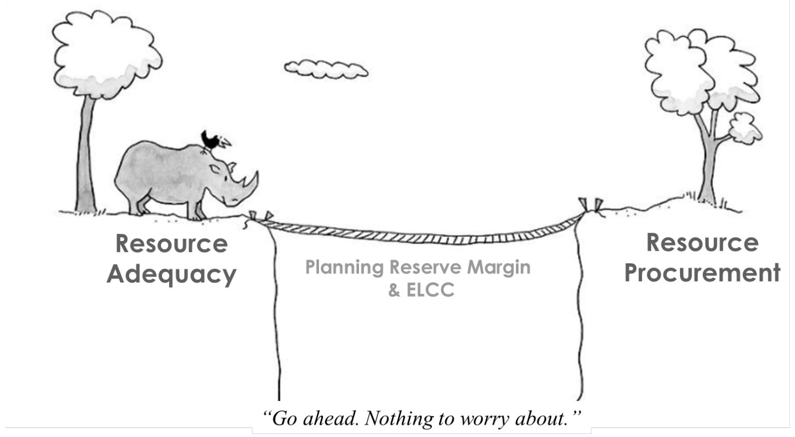
UPV ICAP (GW)										
Milestone	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Phase 1	1.3	9.1	16.3	24.0	31.5	38.6	46.0	53.6	60.5	69.3
Phase 2s and 3	1.5	11.3	26.7	42.9	61.7	83.7	100.1	112.7	128.9	146.6

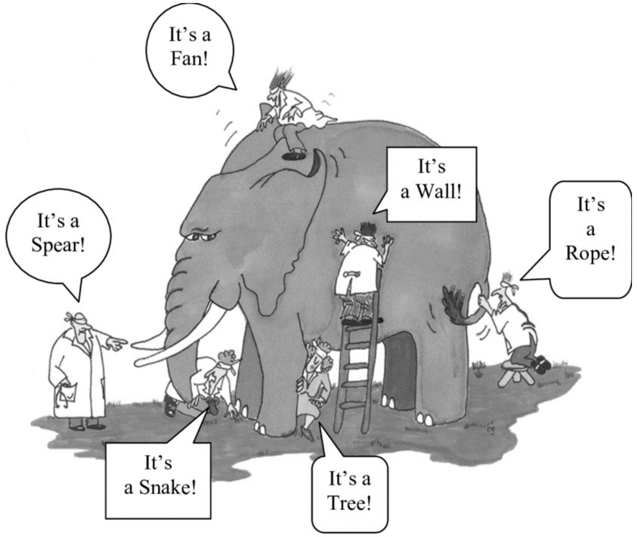
[1]Curves reflect a system with similarly changing wind capacity, but no storage

- ISO long-term assessment of all the member goals/IRPs combined shows
  - Solar ELCC dropping to 8% - 33%, for different seasons
  - Risk of [accredited] capacity shortfall in the next 5 years
  - Utility-specified units represent only 40% of the capacity needed to meet utility-announced goals
- Chicken and egg: what forward-looking RA assessments should the ISO do, and what utility assumptions (of the several dozen options) should be used

[1]MISO Renewable Integration Impact Assessment, and adapted for MISO MTEP

This is complicated and moving fast. We need better coordination and better collective understanding





THANK YOU

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