

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

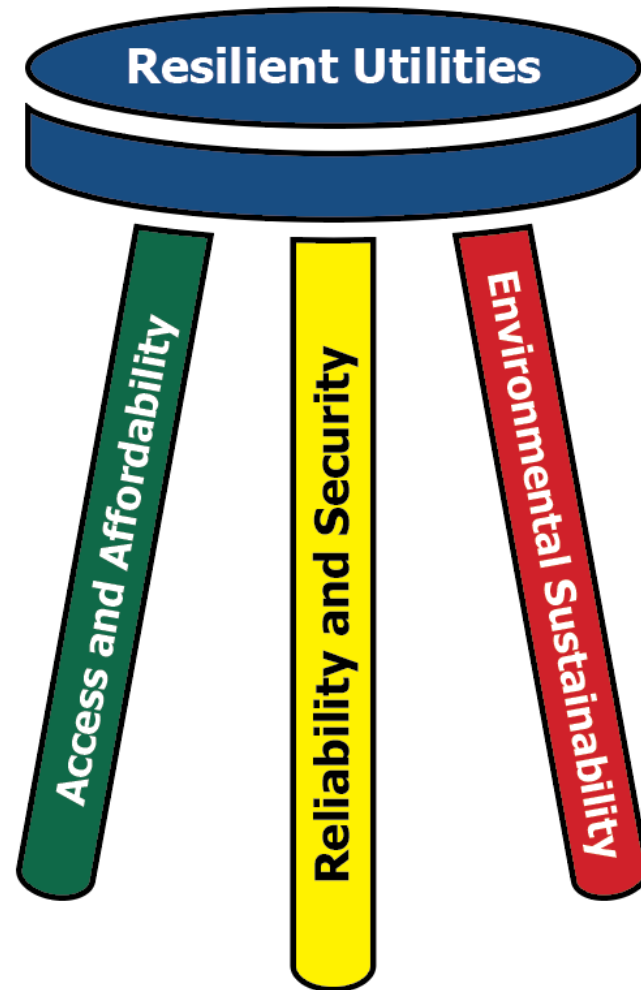
Navigating the Evolving Power Grid

Northern California Power Authority

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RELIABILITY | RESILIENCE | SECURITY



Hyper Complex Risk Environment Results in Increased BPS Reliability Risk



Resource Adequacy Challenges

- Retirements of traditional generation
- IBR growth/integration
- Natural gas interdependencies
- DER performance and visibility
- Load growth



Extreme Weather Complexities

- Extreme not infrequent
- Broader deeper longer



Toxic Soup Threat Landscape

- S/W vulnerabilities
- Supply chain
- Ransomware
- Physical attacks



Energy & Environmental Policy

- Electrification
- Emissions
- Siting and Permitting

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Increasing concentration of risk

- Common mode failure
- Declining fuel diversity
- SAAS/Cloud applications
- GETS deployment

Appropriate level of investment for hardening & resilience

- Extreme weather
- Coordinated Physical attack
- Interregional transfer capacity augmentation

Loss of key “Essential Reliability Services”

- Inertia/frequency response
- Reactive Power/voltage support
- Dispatchability

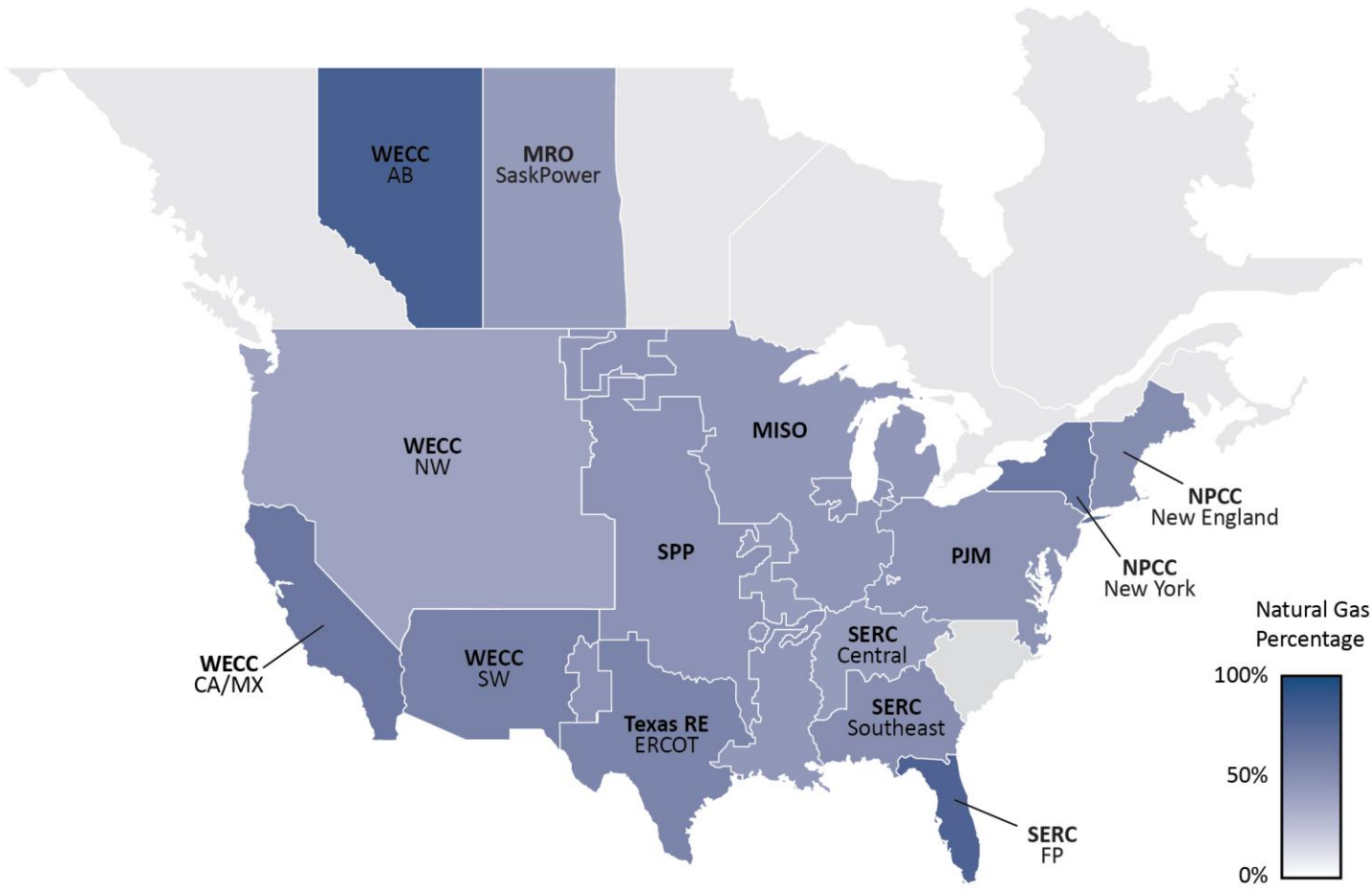
Expanding cyber attack surface

- Industry Control Systems (ICSs)
- IBRs/DERs/EV Charging/Large Loads

Rapidly evolving security needs

- Supply chain protections
- “One to many” attacks
- Low impact protections

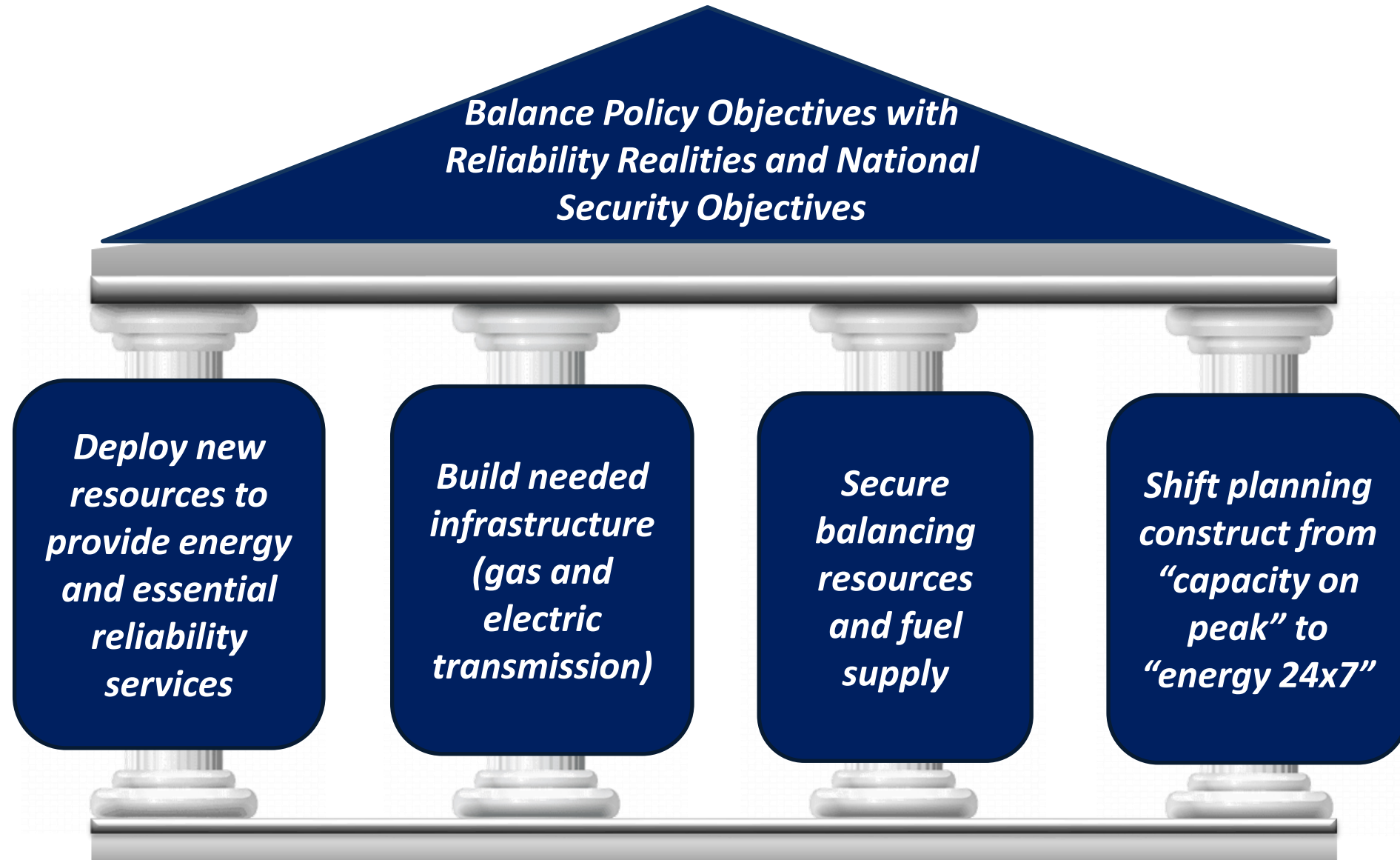
Criticality of Natural Gas Fuel for Electricity Generation



Note: Areas with less than 35% natural gas are shown in light grey.

	Natural-Gas-Fired Generation	
	Peak Winter Capacity	Contribution to Total Winter Resource Mix
MISO	62.3 GW	45%
MRO-SaskPower	2.4 GW	43%
NPCC-New England	15.0 GW	51%
NPCC-New York	24.5 GW	66%
PJM	84.4 GW	47%
SERC-Central	22.0 GW	43%
SERC-Florida Peninsula	49.8 GW	80%
SERC-Southeast	31.9 GW	50%
SPP	29.9 GW	48%
Texas RE-ERCOT	55.3 GW	57%
WECC-AB	13.9 GW	83%
WECC-CA/MX	37.8 GW	65%
WECC-NW	33.6 GW	39%
WECC-SW	18.1 GW	58%

2024-2025 Winter Natural Gas-fired Generation
Contribution to Winter Generation Capacity





Questions and Answers