



# Managing the Industry's Evolving Landscape

*Constructing an HEPG Agenda*

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Several factors are driving a significant shift in the makeup of the generating fleet, challenging existing market designs and foundational assumptions

## PAST

Primarily  
**controllable**  
fossil-fuel  
resources

Federal Policy & Legislation

State Policy

Environment, Social &  
Governance (ESG) criteria

Member and Large  
Customer Goals

## FUTURE

Primarily  
**variable**  
weather-  
dependent  
resources



# Resource decisions being made today, with a focus on out of market attributes, are increasing near-term reliability risks

- Accelerated retirement of controllable resources
- Replace almost entirely with renewables without consideration for the disparity in “value” between resource types
- Lack of coordination between entities resulting in a reliance on system resources that are being removed from the system by others



While energy and capacity markets have historically been the backbone of competitive markets, there are actually many critical attributes required to reliably operate the system

Illustrative Attributes	
Controllability	Ramp rate up
	Ramp rate down
	Rapid start up
	Minimum downtime
Certainty	Available in all seasons
	Fuel availability
	Energy adequacy / Output sustainability
	Run time limitations
	Inertia
	Carbon reducing

Note: MISO and the industry as a whole are still defining attributes. This list is illustrative and not exhaustive.

Different resource types each bring a unique mix of those attributes  
 – while every resource does not need to bring all attributes, the system will need an “adequate” supply of each attribute

	Attribute	Battery	Coal	Gas	LMR	Nuclear	Solar	Wind
Controllability	Ramp rate up	●	●	●	◐	◐	◐	◐
	Ramp rate down	●	●	●	◐	◐	◐	◐
	Rapid start up	●	◐	●	◐	◐	●	●
	Minimum downtime	◐	◐	●	◐	◐	●	●
Certainty	Available in all seasons	●	●	●	◐	●	◐	◐
	Fuel availability	◐	◐	◐	◐	●	◐	◐
	Energy adequacy / Output sustainability	◐	●	●	◐	●	◐	◐
	Run time limitations	◐	◐	◐	◐	●	●	●
	Inertia	◐	●	◐	◐	●	◐	◐
	Carbon reducing	?	○	◐	●	●	●	●

Key: Weak Provider of Attribute - ◐  
 Strong Provider of Attribute - ●

# MISO continues working on reforms to align fleet capability with system needs

## Recently Approved by FERC

### Resource Adequacy Construct

- Moves from annual to seasonal model, improves accreditation, and updates planned outage thresholds

## Ongoing Activities

### Improved Resource Accreditation

- Renewable and Load Modifying Resources are the focus in 2022

### Resource Adequacy Construct

- Potential improvements to the Planning Resource Auction, including reevaluation of a reliability-based demand curve

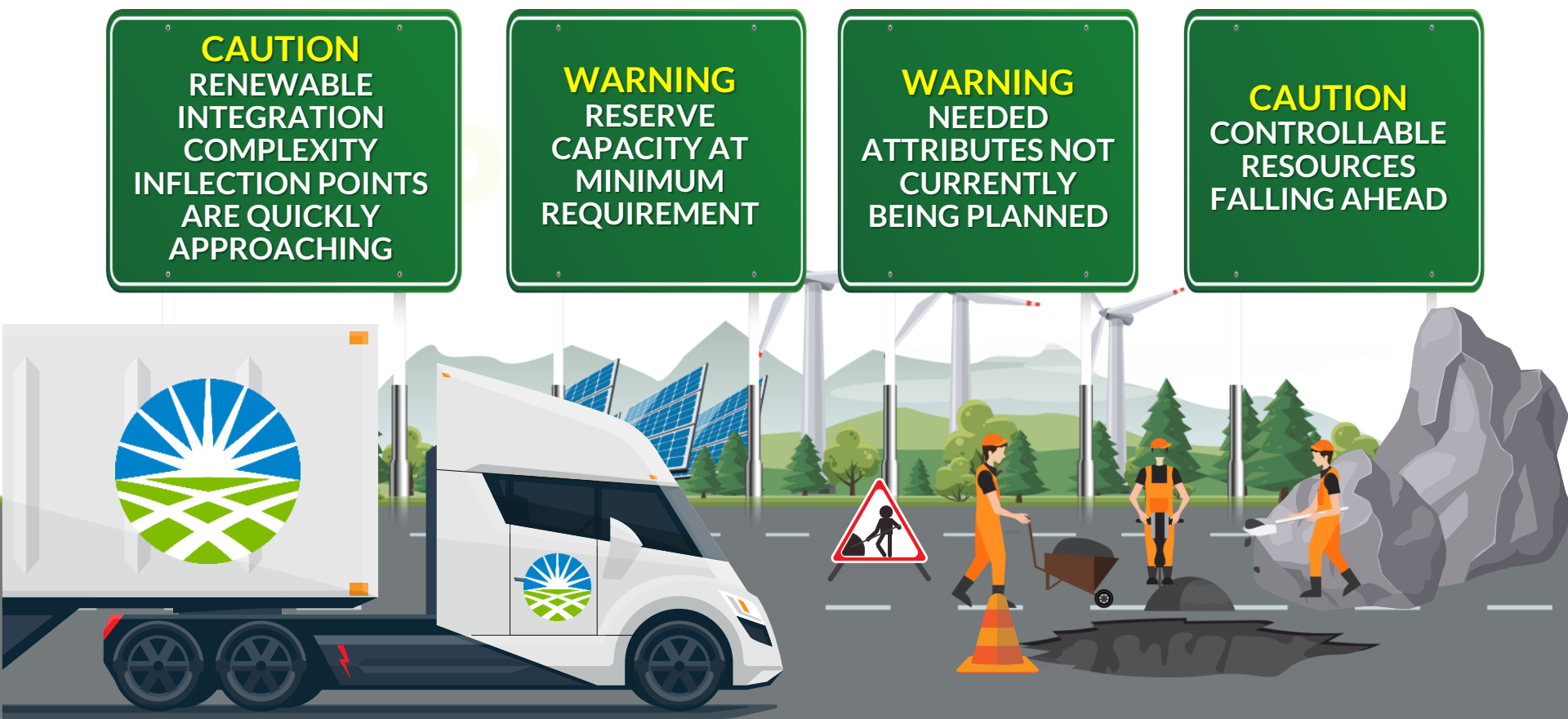
### Pricing

- Continued refinement of scarcity price reforms
- Improved modeling to achieve more efficient market outcomes and price signals

### Resource Attributes

- Evaluating approaches to value resource attributes critical to reliably operating the evolving portfolio

# Implications of current policy preferences are showing signs of new challenges to address



The MISO Reliability Imperative is an effort to facilitate a reliable path forward



**OPERATIONS  
OF THE FUTURE**

**SYSTEM  
ENHANCEMENTS**

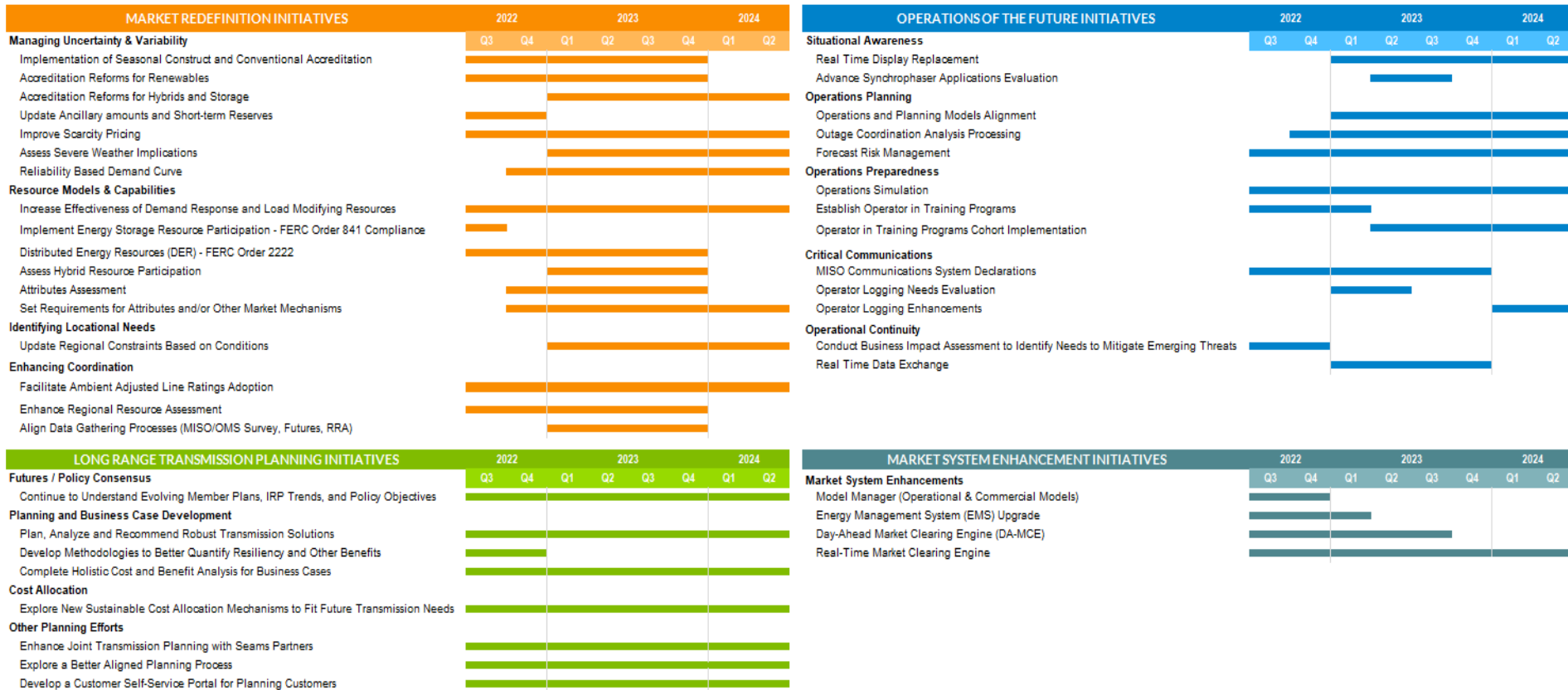
**LONG RANGE  
TRANSMISSION  
PLANNING**

**MARKET  
REDEFINITION**



# The MISO Roadmap identifies the many Reliability Imperative priorities MISO is engaging with stakeholders to advance

## --- MISO Roadmap ---

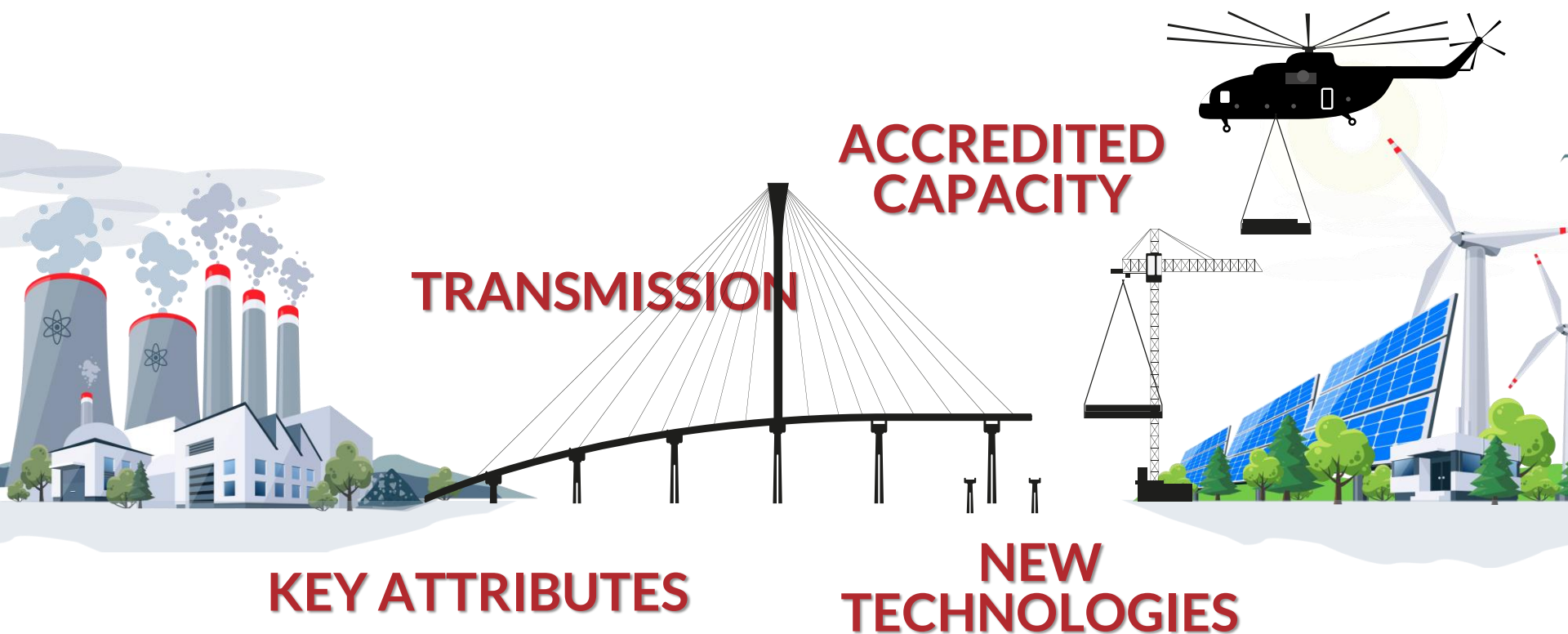


Draft Plan as of August 2022

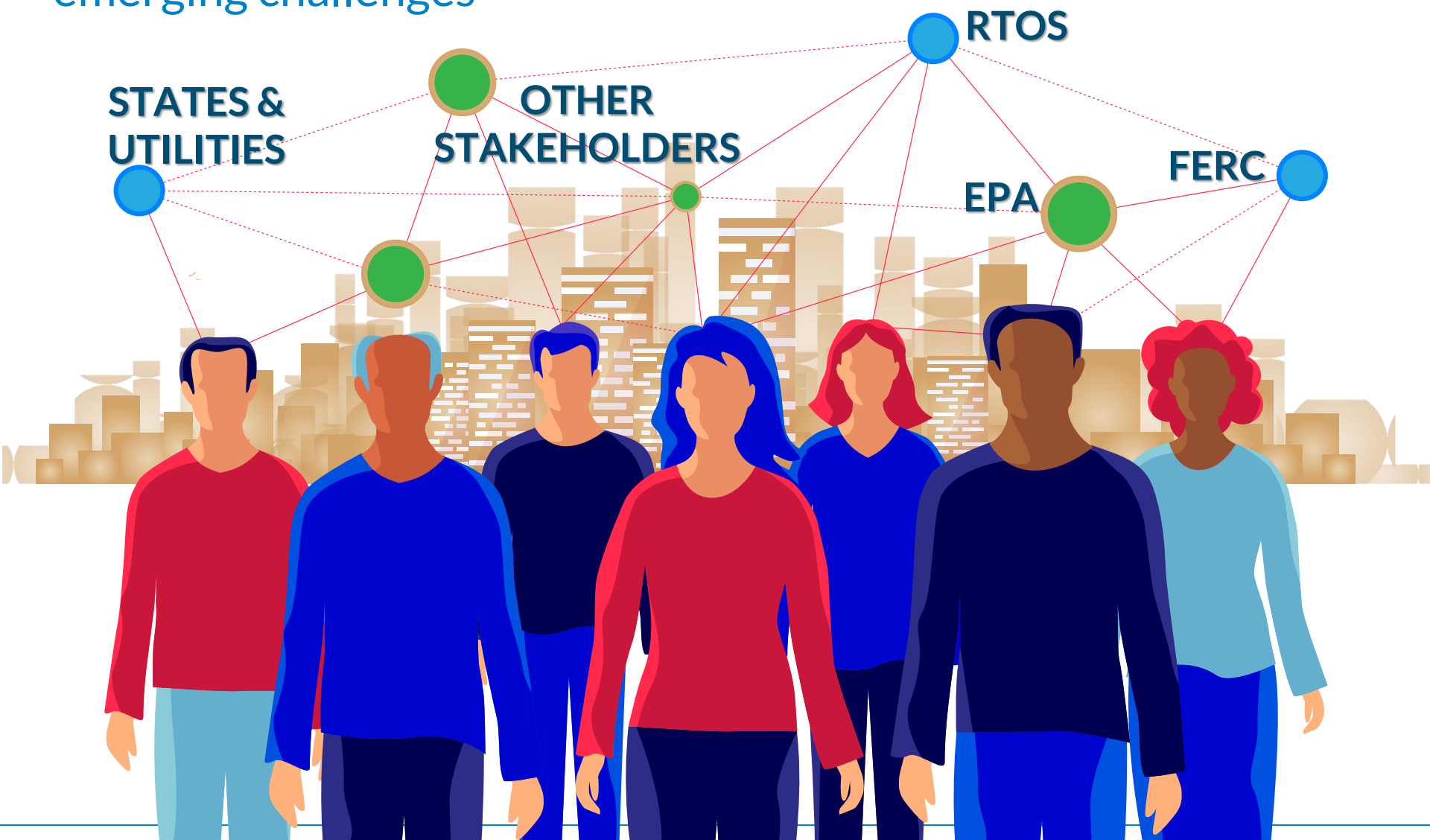
Policy evolution and changes in traditional roles are needed to enable resource decisions and investments required to bridge the gap during the transition

**PAST**

**FUTURE**



Industry participants and policymakers will need critical coordination and adaptation to identify and incent solutions to emerging challenges



# Opportunities for further discussion

- Dispatchable Resources – How can market design changes bring the needed flexibility to market?
- FERC Efforts to Advance Participation Models – Advancing industry progress or imposing inefficient prioritization?
- Is Gas a Bridge Fuel or Road to Nowhere – Is there a future for gas with current policy, political and financial pressures?
- Corporate Buyers and Green Energy Goals – Are maturing procurement practices helping support reliable greening of the grid?
- Transmission Investment – Can robust transmission buildout help support market and reliability challenges?
- Can We Get There from Here? – State, Corporate and Federal Goals, are we setting ourselves up for failure?
- Resource Adequacy – Do states with aggressive green policies need to play a bigger role to ensure reliability in the resource mix