G-PST Workshop on Establishing an ISO - Institutional Design and Governance:

Context Setting

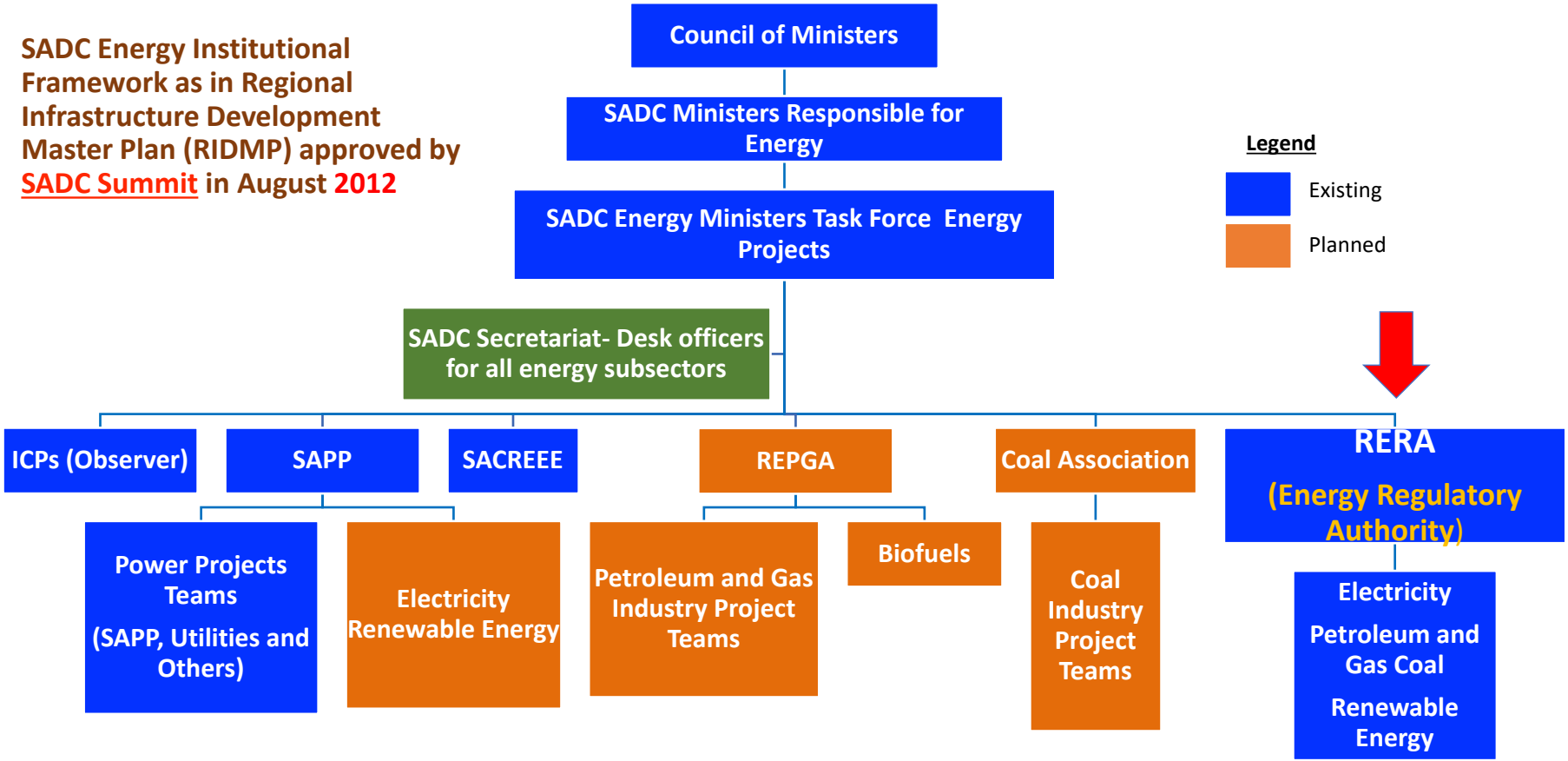
Presentation for the Virtual G-PST Workshop on Establishing an ISO - Institutional Design and Governance on 21 September 2023

Presentation Outline

- About RERA
- Certain Sector Features in Common
- Strategic Intents/Pillars
- Some Regulatory Initiatives
- Conclusion

About RERA (1)

SADC Energy Institutional Framework as in Regional Infrastructure Development Master Plan (RIDMP) approved by SADC Summit in August 2012



About RERA

- RERA was established by the SADC Ministers responsible for Energy at a meeting in Lesotho on **12 July 2002** and officially launched on September 26, 2002 in Windhoek, Namibia
- Association's Secretariat hosted in Windhoek, Namibia became functional in **October 2005**
- In **April 2019**, RERA expanded its mandate from Electricity to Energy Regulation

- Association's objectives (Portfolio Committees) increased from the original three (3) to four (4), as follows:
  1. Capacity Building & Information Sharing
  2. Facilitation of Energy Sector Policy, Legislation and Trade
  3. Consumer Protection and Communication Services
  4. Regional Regulation Cooperation
- **15/16** SADC Member States have electricity/energy regulator – *only exception is the Island of Comoros*

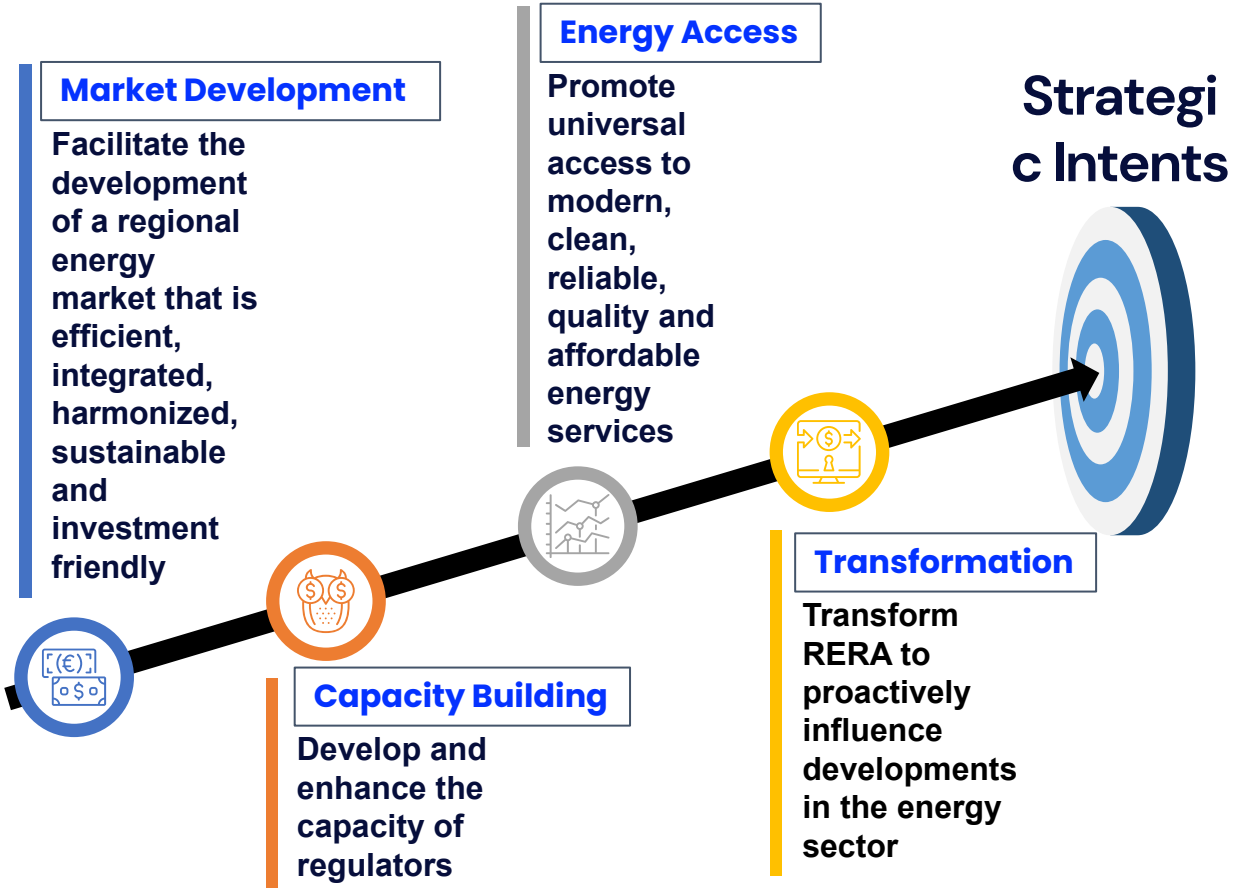
Certain Sector Features in Common (1)

- While SADC Member States having some experience in attracting investments including IPPs, they share certain sector features in common, such as:
  - Increasing electricity consumption;
  - Large and growing levels of unmet demand, yet often sub-scale markets (outside of South Africa) too small to fully account for the power output their resource potential suggests;
  - Transmission system and interconnected system constraints;
  - Politically strong, highly entrenched State-Owned Utilities (SOU) selling power at below cost, and therefore suffering budgetary challenges and/or decapitalization:
  - Significant untapped renewable potential;

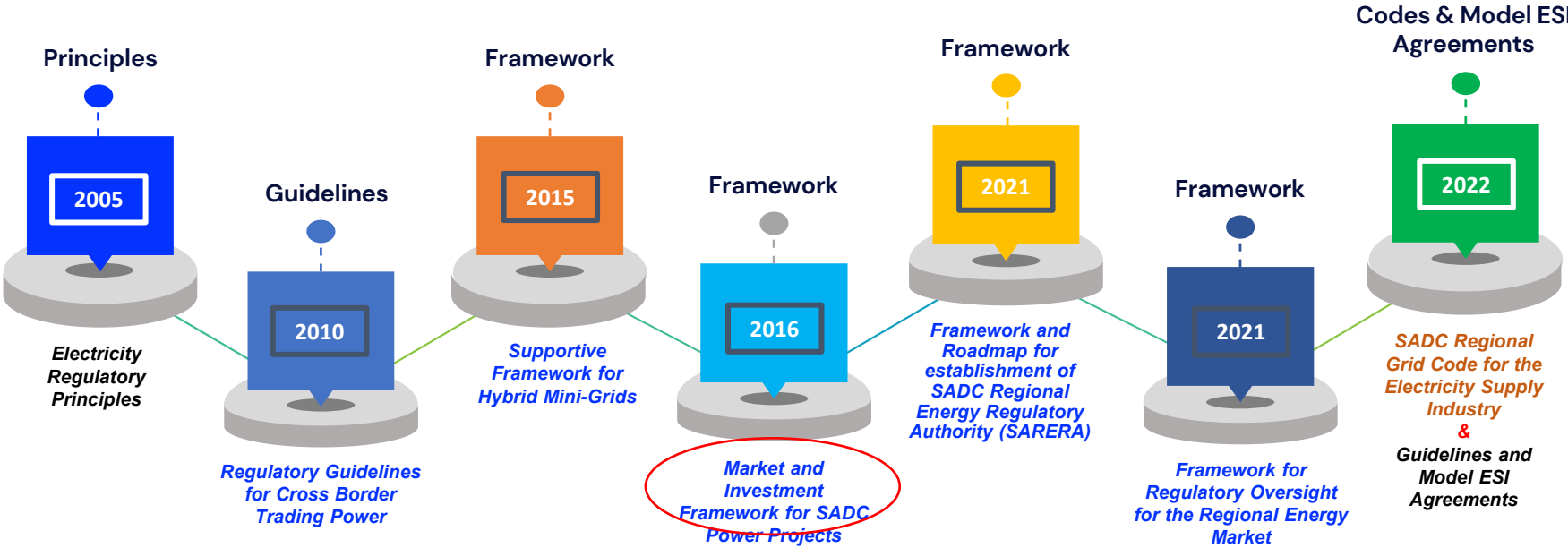
Certain Sector Features in Common (2)

- Lack of strong political and policy commitment to sector reform and demonstrated willingness to implement some changes;
- Unease at the thought of more complete sector unbundling and the loss of control of key power sector assets;
- High offtake risk; and
- High regulatory risk.

Strategic Intents/Pillars

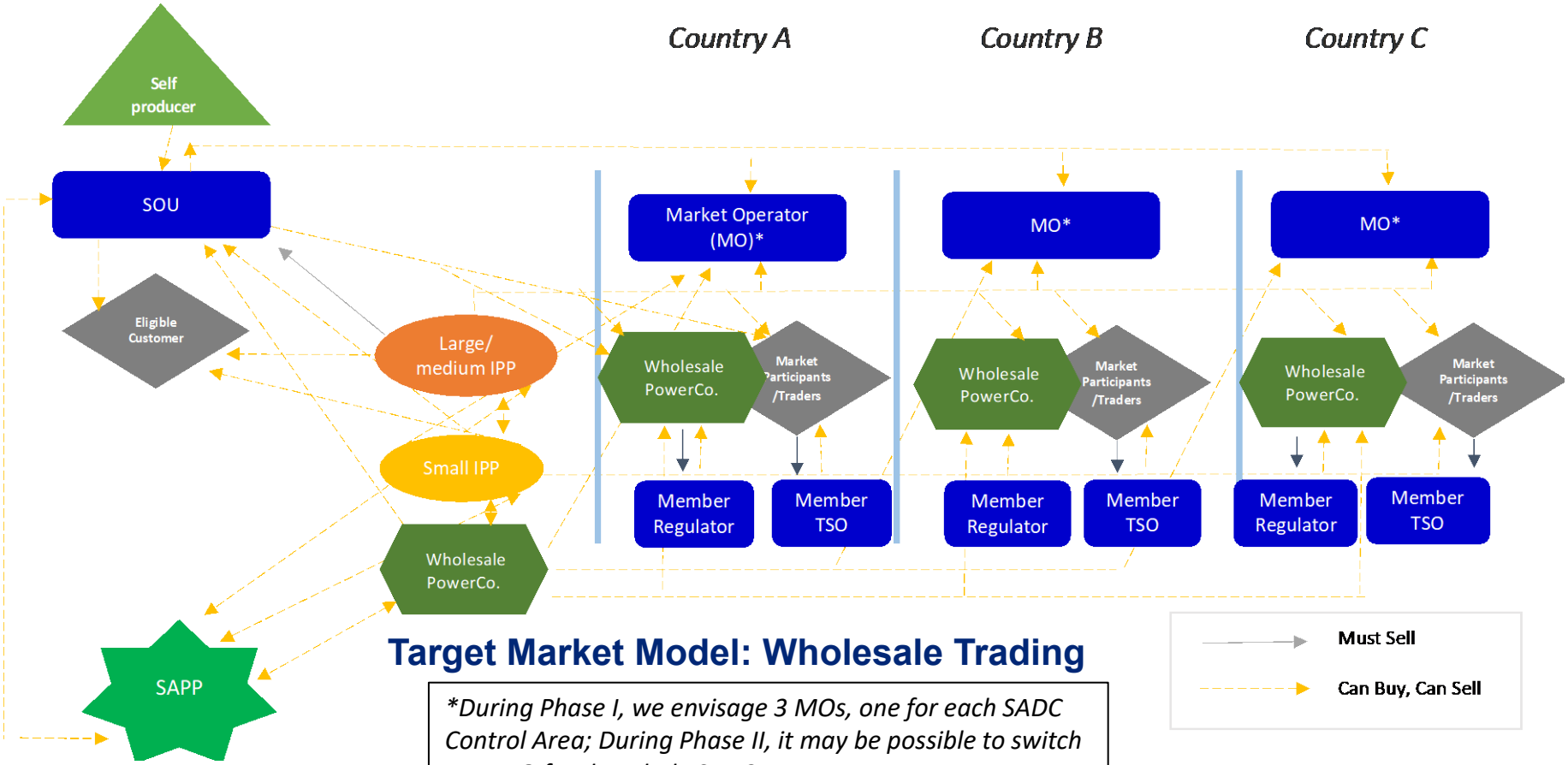


Some Regulatory Initiatives (1)



- ❑ **Regulatory aspects must be factored into market design.**
- ❑ **A well-designed power pool market will result in less cross-border enforcement actions.**

Some Regulatory Initiatives (2)



Target Market Model: Wholesale Trading

**During Phase I, we envisage 3 MOs, one for each SADC Control Area; During Phase II, it may be possible to switch to 1 MO for the whole SADC system*

Some Regulatory Initiatives (3)

- Implementation of the Market and Investment Framework will require some degree of institutional and enterprise restructuring
- New Legal and Regulatory Framework calls for the creation of the following unbundled or new institutions: transmission companies, MO and MCH.
- These are significant steps and require strong policy guidance and commitment from government.
- They are, however, probably unavoidable, and each SADC country must decide when it wishes to begin this process.
- International experience demonstrates the advantages that come from unbundling, including:
  - ✓Significant improvements in plant operations;
  - ✓More efficient wholesale trading;

Some Regulatory Initiatives (4)

- ✓More efficient investment decisions, including transmission investment;
- ✓Lower prices over the long term;
- ✓Discouragement of market power; and
- ✓Incentives to invest in generation.

- All of these are indispensable for the long-term development of an efficient market.
- The new legal and regulatory framework should follow the road map of the first and second EU energy packages and embrace unbundling of functions, starting with: ring fencing, financial unbundling and later legal unbundling.

Some Regulatory Initiatives (5)

Definition: The Institutional Framework refers to the 'Policy roles, functions, responsibilities, and procedures of each of the primary government and energy sector institutions, that have a role to play in enabling and implementing the IPP Framework.' Key among these institutions are those shown below, each of which also appear in the two diagrams that follow.

National Governments

- Develop, approve and implement strategy/policies and master plans
- Develop and adopt power market laws that harmonize power markets in member states
- Responsible for facilitating and overseeing implementation of IPP Framework

SADC

- Set and oversee implementation of regional energy policy (as per RIDMP)

National Regulatory Authorities

- Independent regulators for each state
- Harmonizing regulatory rules towards regional trade

National TSOs

- Unbundled and separate TSO for each member state that owns and operates transmission assets
- Responsible for grid code, transmission plan, etc.
- Operational harmonization between the states

RERA

- Facilitate the adoption of the Legal/Regulatory, Financial, Operational, and Institutional frameworks for the IPP implementation
- Facilitate cross-border agreements and MoU's with the states for adoption of regulations
- Lead development and roll out of the IPP implementation

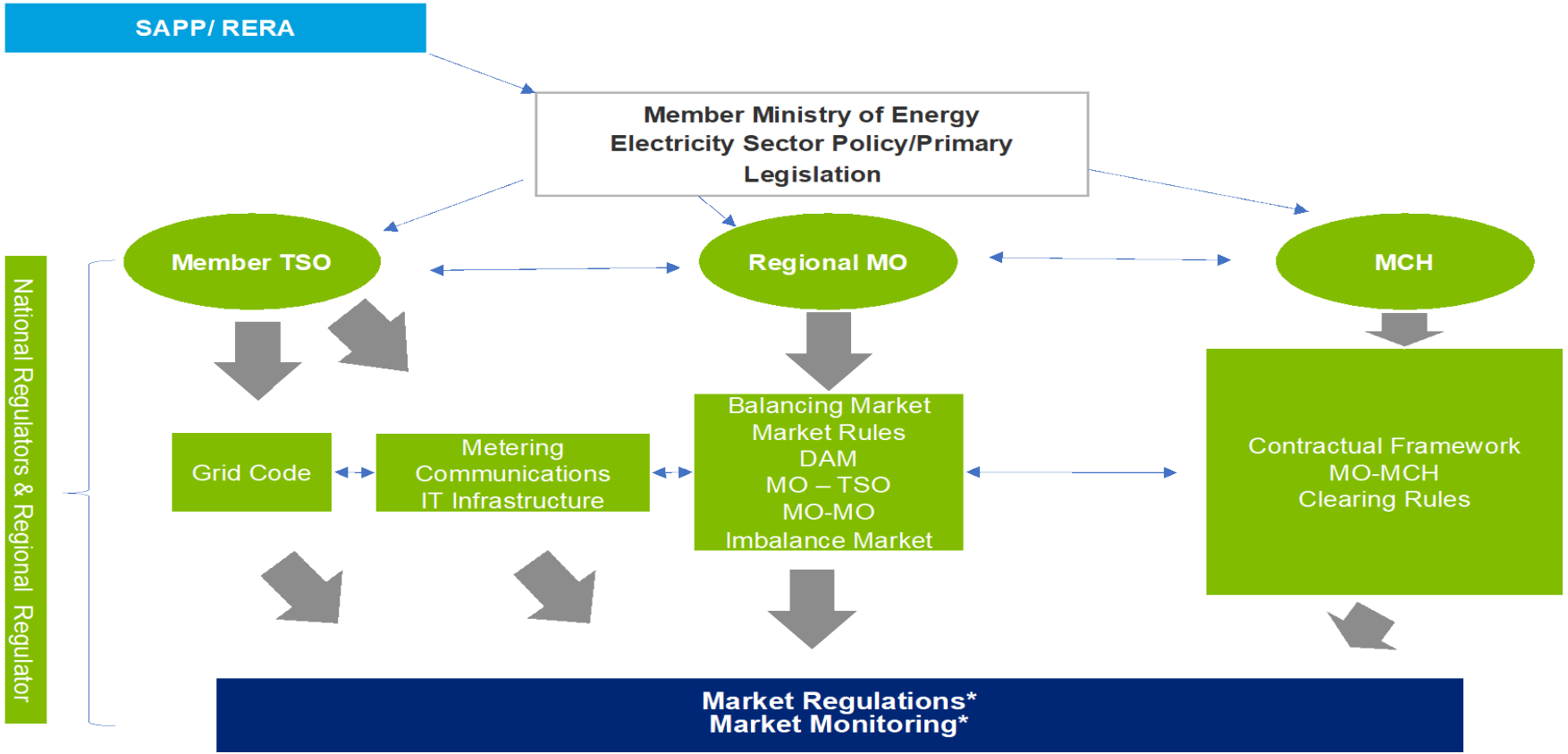
SAPP

- Continue to operate the regional power exchange
- Can become the regional MO coordinator for the new three established MOs

Market Operator(s)

- Operates and monitors the market
- Can play the Market Clearing House role
- Manage energy balancing and settlement services

Some Regulatory Initiatives (6)



Conclusion (1)

- We cannot afford to be in a paradigm paralysis.
- It is either we innovate or stagnate.
- As they say change is the only thing that is constant.
- So, if Member States, Regulators and Utilities don’t adapt and enable the energy transition, it will still happen, just not fast enough.
- Recognizing the changing use of the network and enable greater participation by the growing energy community by creating a level playing field for all market players, not prioritizing one particular business model.

Conclusion (2)

- Whether prosumers, peer-to-peer traders, aggregators or providers of flexibility services, there should be scope for fair, stable and reasonable returns (make money) from generating, trading or facilitating the exchange of energy, as well as incentive mechanisms.
- ZESCO deserve to be highly commended for being proactive and looking at the bigger picture, as envisioned by the SAPP and the approved Market and Investment Framework.
- Thank you to NREL for the partnership and support for organising this important workshop that can help to take us forward in implementing the approved M&I Framework to attract sector participation and investments.

Thank You
Obrigado
Merci Beaucoup
Asante Sana

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Institutional Design and Governance of U.S. RTO/ISOs

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GLOBAL PST
CONSORTIUM

Overview

- Why the ISO, and What Does it Do?
- Institutional Design and Oversight
- Governance and Stakeholder Process

Why the ISO, and What does it do?

Why Transition to ***Independent System Operators*** (ISOs)?

- In response to energy crisis of 1970's Congress passed a law (Public Utility Regulatory Policy Act, or PURPA of 1978) to promote independent power production.
  - Implied the right to interconnect to a utility's grid.

- Federal Energy Regulatory Commission (FERC) **Order 888 of 1996**
  - Order was in response to public utilities preventing competitors from accessing transmission system (incumbent "transmission dominance").
  - Required open access to public utility transmission systems at "unbundled" tariff rates.
  - To comply with the Order, FERC encouraged power pools and utilities to voluntarily join ISOs that would independently operate transmission system.

Transmission Dominance Examples

- In 1993, *Vertically Integrated Utility A* filed, on behalf of its public utility associate companies, an open access tariff that offered only firm point-to-point service with very limited flexibility. It did not offer network service, flexible point-to-point service, or non- firm service. Thus, it did not provide non-affiliated customers with the same flexibility that *Vertically Integrated Utility A* made available to its affiliated companies.

- Customers allege *Vertically Integrated Utility B* refused to interconnect/wheel power through its territory, refused to offer priority service equal to that of its native load, added charges to gain a competitive advantage, etc.

- *Vertically Integrated Utility C* protracted interconnection negotiations (e.g., 72-month wait times) and required excessive amounts of information.

Initial ISO Principles (Order 888)

1. ISO governance should be structured in a **fair and non-discriminatory** manner. Independent from market participants.

2. ISO and its Staff should have **no financial interest in market participants**. Adopt and enforce strict conflict of interest standards.

3. Provide **open access to transmission system** at single, unbundled, grid-wide tariff. ISO should schedule all transmission and ensure non-discriminatory access to all eligible users.

4. ISO should have **primary responsibility in ensuring short-term reliability** of grid operations. Comply with reliability standards set by NERC, etc.

5. ISO should **have control over the operation of interconnected transmission facilities** within its region. ISO is the transmission operator.

6. ISO should **identify constraints and take action** to relieve constraints within the trading rules established by governing body. Some control over generation facilities, subject to rules. FERC surmised ISOs would also offer ancillary services

Initial ISO Principles (Order 888)

7. ISO should have **incentives for efficient management & administration** and should use competitive procurement. Use competitive procurement whenever possible, all procedures should be publicly available.

8. Pricing policies should promote **efficient use of generation, transmission and consumption investments**. Conduct studies to identify operational problems or expansion needs.

9. ISO should make **transmission system information publicly available**. Free-flow of information electronically available* on a timely basis.

10. ISO should develop mechanisms to **coordinate power scheduling with neighboring control areas.** No specificity provided on the mechanism requirements.

11. Establish an **alternative dispute resolution process** to allow parties to resolve technical, financial, and other issues. Attempt to avoid filing complaints at FERC

FERC Order 889 of 1996 established **OASIS system for electronic sharing of transmission system information.*

Related Orders

Order 2000 of 1999

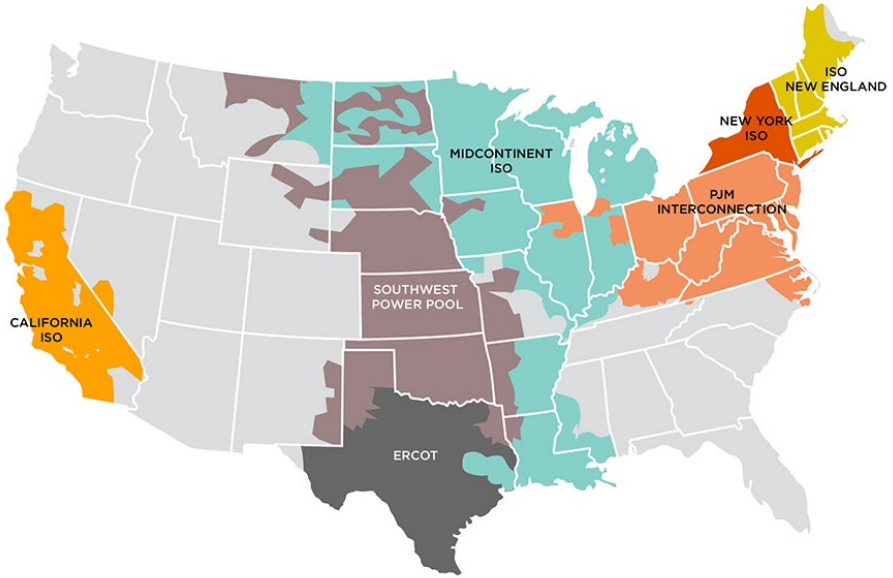
- In response to rapidly changing electricity sector that occurred after the passage of Order 888
- Established certain minimum characteristics and functions of a RTO.
  - One function included general requirements for market monitoring
- Required all public utilities to *consider* joining regional transmission organizations.

Order 719 of 2008

- *Among other things*, required ISOs and RTOs to establish market monitoring units (MMU) that meet specific criteria generally related to the independence of the MMU from RTO/ISO staff, and detailed MMU scope of work.

Institutional Design and Oversight

Image courtesy of sustainableferc.org
https://sustainableferc.org/rto-backgrounders-2/



Business Structure

- Most RTO/ISOs structured as non-profits.
- PJM is a “profit neutral” LLC, meaning revenues must equal expenses over the long term.

Name	RTO/ISO	Business Structure
CAISO	ISO	non-profit
ISO-NE	RTO	non-profit
MISO	RTO	non-profit
NYISO	ISO	non-profit
PJM	RTO	limited liability corp.
SPP	RTO	non-profit

Name	2023 Revenue Requirement (million)	Population (million)	Transmission Line (miles)	Annual Energy (GWh)
PJM	$ 319.50	65.0	88,115	806,000
MISO	$ 315.70	45.0	68,000	651,000
ISO-NE	$ 225.60	15.1	9,000	119,000
CAISO	$ 199.70	30.0	26,000	239,000
NYISO	$ 190.00	19.4	11,000	152,000
SPP	$ 184.50	19.0	72,000	287,000

Budgets and Funding

- Revenue requirement approved by FERC and recovered through charges applied to certain wholesale transactions.
- Revenues fund operation of the RTO/ISO

Key Staff Skills

Leadership Categories (approximate)	Skill Set	CAISO	ISO-NE	MISO	NYISO	PJM	SPP
Consistent							
CEO	Various	X	X	X	X	X	X
COO	Electrical engineering	X	X	X	X		X
CFO/Treasurer	Financial, Accounting, Business	X	X	X	X	X	X
General Counsel (VP)	Legal	X	X	X	X	X	X
Government Affairs (VP)	Government, Policy, Legal	X	X		X	X	X
Human Resources (VP)	Human resources	X	X	X	X		X
Chief Information Officer (VP)	Computer science		X		X	X	X
Markets (VP)	Economics, Engineering	X	X		X	X	X
Planning (VP)	Electrical engineering	X	X	X	X		X
Operations (VP)	Electrical engineering	X	X	X	X	X	X
Stakeholder & Member Engagement (VP)	Various	X				X	
Varied							
Chief Risk Officer (VP)	Economics					X	
Internal Audit (VP)	Business administration					X	
Corporate Client Services (VP)	Business administration					X	
Chief Administrative Officer	Operations research						X
Power System and Market Technology (VP)	Software, Electrical engineering	X					
Secretary to the Board	Administrative				X		
Executive VP	Engineering				X		
Markets and Digital Strategy	Engineering, Business			X			
Strategy and Business Development	Engineering Business			X			
System Planning and Competitive Transmission	Engineering			X			

Oversight of the ISO

- **U.S. Congress** – Establishes laws (e.g., Federal Power Act)
- **Federal Energy Regulatory Commission (FERC)**
  - Regulatory authority over RTO/ISO, compliance, enforcement
- **North American Electricity Reliability Corporation (NERC)**
  - Develops and enforces electric reliability standards
- **Independent Market Monitor**
  - Determines if markets are competitive – market concentration, gaming across markets, market power and mitigation
- **Participating States**
  - Exclusive retail jurisdiction, but may also have authority over resource adequacy, transmission, etc.

Oversight of the ISO

- Rates are ***"Just and Reasonable"*** (Federal Power Act)
  - FERC relies on cost-based and market-based rate authority
  - FERC relies on market competition to help achieve just and reasonable rates.

- What if competitive markets are not competitive?
  - FERC required RTOs to have market monitors in place (Order 2000 of 1999, Order 719 of 2008)
  - Screen, investigate, detect anti-competitive behavior
  - Mitigate this behavior, file complaints at FERC

Anti-Competitive Behavior (ENRON)

- California deregulated in 1996, with retail price caps in place temporarily for stranded cost recovery.

- In 2000, Enron energy traders took generation plants offline for maintenance (i.e., economic withholding) and *other actions* to create a supply shortage during peak demand periods to increase prices.
  - Power prices in wholesale spot market traded up to 20x the normal value.
  - Rolling blackouts

- Retail power price caps caused utility companies to go bankrupt.

Structure of Market Monitoring Units (MMUs)

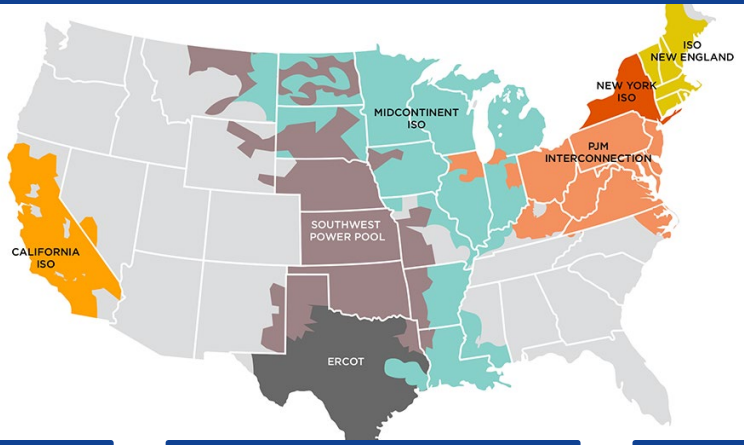


Image Credit:
https://sustainableferc.org/rto-backgrounders-2/

External to RTO/ISO	Hybrid (Internal/External)	Internal to RTO/ISO
• PJM • MISO • NY-ISO (w/ internal mitigation dept) • ERCOT	• CAISO internal w/ external advisory committee • ISO-NE internal w/external consultant	• SPP

Governance and Stakeholder Processes

Governance

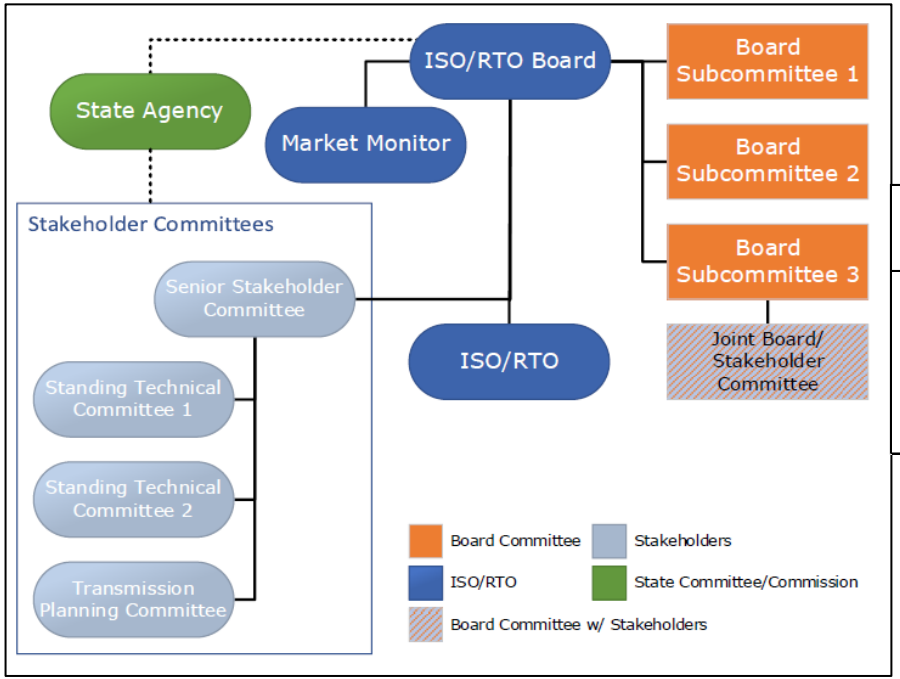
Making decisions within the ISO organization

- **RTO/ISO Governing Documents**
  - Includes market rules, rates, operating, membership rules, transmission operating agreements, etc.
  - Examples: open access transmission tariff, operating agreement, business manuals, etc.

- **Stakeholder Process**
  - Engaging RTO/ISO “Members” and non-Member stakeholders in negotiating changes to the governing documents
  - Changes can be pursued, for example, when a problem has been identified or in response to regulatory requirements.

- **Governing Board**
  - Member-elected or politically-appointed board that is independent from market participants.
  - Typically has unilateral or shared voting authority with ISO members
  - FERC generally has final decision-making authority

Governance Structure



Name	Board Members	Board Initial Approval	Board Final Approval	Voting Stakeholders	Voting Sectors (Senior)
CAISO	5	Governor	State Senate	None	None
ISO-NE	10	Member-Committee	Board	NEPOOL Members	6
MISO	10	Board	MISO Members	MISO Members	10
NYISO	10	None	Board	NYISO Voting Members	5
PJM	10	None	Member-Committee	PJM Members	5
SPP	10	None	SPP Members	SPP Members	2

Image to left courtesy of New England States Committee on Electricity, "Governance Structure and Practices in the FERC-Jurisdictional ISOs/RTOs", prepared by Exeter Associates, February 2021

Who Decides?

- Most Board members are approved by RTO/ISO members, existing Board members, or a combination thereof. CAISO is the exception.
- Most voting stakeholders are RTO/ISO members, non-members rarely have voting rights.
- Members pay dues and sign agreement with the RTO/ISO
- Most stakeholder voting typically occurs in voting sectors and may include sector-weighted vote.
- FERC typically has final authority

In Closing

- Key Decisions
  - Functions and independence of the ISO
  - Market monitoring
  - Staffing and funding
  - Governance
  - Oversight

Thank You.
Any Questions?

globalpst.org/

Resources

FERC Order 888 of 1996 https://www.ferc.gov/industries-data/electric/industry-activities/open-access-transmission-tariff-oatt-reform/history-oatt-reform/order-no-888

FERC Order 888 Appendix C – Allegations of public utilities exercising dominance https://www.ferc.gov/sites/default/files/2020-05/rm95-8-00z.txt

FERC Order 2000 of 1999 https://www.ferc.gov/sites/default/files/2020-06/RM99-2-00K_1.pdf

FERC Order 719 of 2008 https://www.ferc.gov/media/order-no-719

New England States Committee on Electricity, “Governance Structure and Practices in the FERC-Jurisdictional ISOs/RTOs”, prepared by Exeter Associates, February 2021 https://nescoe.com/wp-content/uploads/2021/02/ISO-RTOGovernanceStructureandPractices_19Feb2021.pdf