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
Council of Ministers

SADC Ministers Responsible for Energy

SADC Energy Ministers Task Force Energy Projects

SADC Secretariat - Desk officers for all energy subsectors

ICPs (Observer)
SAPP
SACREEE
REPGA
Coal Association

Power Projects Teams (SAPP, Utilities and Others)
Electricity Renewable Energy
Petroleum and Gas Industry Project Teams
Biofuels
Coal Industry Project Teams

RERA (Energy Regulatory Authority)

Legend

Existing
Planned

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

About RERA (1)
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*. 
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

**Market Development**
Facilitate the development of a regional energy market that is efficient, integrated, harmonized, sustainable and investment friendly.

**Energy Access**
Promote universal access to modern, clean, reliable, quality and affordable energy services.

**Capacity Building**
Develop and enhance the capacity of regulators.

**Transformation**
Transform RERA to proactively influence developments in the energy sector.
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.
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.

<table>
<thead>
<tr>
<th>National Governments</th>
<th>SADC</th>
<th>RERA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop, approve and implement strategy/policies and master plans</td>
<td></td>
<td>Facilitate the adoption of the Legal/Regulatory, Financial, Operational, and Institutional frameworks for the IPP implementation</td>
</tr>
<tr>
<td>Develop and adopt power market laws that harmonize power markets in member states</td>
<td></td>
<td>Facilitate cross-border agreements and MoU’s with the states for adoption of regulations</td>
</tr>
<tr>
<td>Responsible for facilitating and overseeing implementation of IPP Framework</td>
<td></td>
<td>Lead development and roll out of the IPP implementation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>National Regulatory Authorities</th>
<th>SAPP</th>
<th>Market Operator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent regulators for each state</td>
<td>Continue to operate the regional power exchange</td>
<td>Operates and monitors the market</td>
</tr>
<tr>
<td>Harmonizing regulatory rules towards regional trade</td>
<td>Can become the regional MO coordinator for the new three established MOs</td>
<td>Can play the Market Clearing House role</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>National TSOs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unbundled and separate TSO for each member state that owns and operates transmission assets</td>
<td></td>
<td>Manage energy balancing and settlement services</td>
</tr>
<tr>
<td>Responsible for grid code, transmission plan, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational harmonization between the states</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Some Regulatory Initiatives (6)

- Member TSO
  - Grid Code
  - Metering Communications IT Infrastructure
- Regional MO
  - Balancing Market Rules
    - DAM
    - MO-TSO
    - MO-MO
    - Imbalance Market
- MCH
  - Contractual Framework
    - MO-MCH
    - Clearing Rules

Market Regulations
Market Monitoring

SAPP/ RERA

Member Ministry of Energy
Electricity Sector Policy/Primary Legislation

National Regulators & Regional Regulator
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.
• 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

RERA Secretariat
ECB House, 35 Dr. Theo-Ben Gurirab Street
P. O. Box 23029
Windhoek
NAMIBIA

Tel:  +264 61 221720
Fax:  +264 61 223176 / +264 88 614252
Mob: +264 81 2271110
Email: secretariat@rerasadc.com
Web:  www.rerasadc.com
Institutional Design and Governance of U.S. RTO/ISOs

Christina E. Simeone, PhD
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.
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.
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

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*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.

<table>
<thead>
<tr>
<th>Name</th>
<th>RTO/ISO</th>
<th>Business Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAISO</td>
<td>ISO</td>
<td>non-profit</td>
</tr>
<tr>
<td>ISO-NE</td>
<td>RTO</td>
<td>non-profit</td>
</tr>
<tr>
<td>MISO</td>
<td>RTO</td>
<td>non-profit</td>
</tr>
<tr>
<td>NYISO</td>
<td>ISO</td>
<td>non-profit</td>
</tr>
<tr>
<td>PJM</td>
<td>RTO</td>
<td>limited liability corp.</td>
</tr>
<tr>
<td>SPP</td>
<td>RTO</td>
<td>non-profit</td>
</tr>
</tbody>
</table>
## Budgets and Funding

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

<table>
<thead>
<tr>
<th>Name</th>
<th>2023 Revenue Requirement (million)</th>
<th>Population (million)</th>
<th>Transmission Line (miles)</th>
<th>Annual Energy (GWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJM</td>
<td>$319.50</td>
<td>65.0</td>
<td>88,115</td>
<td>806,000</td>
</tr>
<tr>
<td>MISO</td>
<td>$315.70</td>
<td>45.0</td>
<td>68,000</td>
<td>651,000</td>
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<tr>
<td>ISO-NE</td>
<td>$225.60</td>
<td>15.1</td>
<td>9,000</td>
<td>119,000</td>
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<tr>
<td>CAISO</td>
<td>$199.70</td>
<td>30.0</td>
<td>26,000</td>
<td>239,000</td>
</tr>
<tr>
<td>NYISO</td>
<td>$190.00</td>
<td>19.4</td>
<td>11,000</td>
<td>152,000</td>
</tr>
<tr>
<td>SPP</td>
<td>$184.50</td>
<td>19.0</td>
<td>72,000</td>
<td>287,000</td>
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</table>
# Key Staff Skills

<table>
<thead>
<tr>
<th>Leadership Categories (approximate)</th>
<th>Skill Set</th>
<th>CAISO</th>
<th>ISO-NE</th>
<th>MISO</th>
<th>NYISO</th>
<th>PJM</th>
<th>SPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEO</td>
<td>Various</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>COO</td>
<td>Electrical engineering</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CFO/Treasurer</td>
<td>Financial, Accounting, Business</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>General Counsel (VP)</td>
<td>Legal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Government Affairs (VP)</td>
<td>Government, Policy, Legal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Human Resources (VP)</td>
<td>Human resources</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Chief Information Officer (VP)</td>
<td>Computer science</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Markets (VP)</td>
<td>Economics, Engineering</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Planning (VP)</td>
<td>Electrical engineering</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Operations (VP)</td>
<td>Electrical engineering</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Stakeholder &amp; Member Engagement (VP)</td>
<td>Various</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Consistent**

<table>
<thead>
<tr>
<th>Chief Risk Officer (VP)</th>
<th>Economics</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Audit (VP)</td>
<td>Business administration</td>
<td>X</td>
</tr>
<tr>
<td>Corporate Client Services (VP)</td>
<td>Business administration</td>
<td>X</td>
</tr>
<tr>
<td>Chief Administrative Officer</td>
<td>Operations research</td>
<td>X</td>
</tr>
<tr>
<td>Power System and Market Technology (VP)</td>
<td>Software, Electrical engineering</td>
<td>X</td>
</tr>
<tr>
<td>Secretary to the Board</td>
<td>Administrative</td>
<td>X</td>
</tr>
<tr>
<td>Executive VP</td>
<td>Engineering</td>
<td>X</td>
</tr>
<tr>
<td>Markets and Digital Strategy</td>
<td>Engineering, Business</td>
<td>X</td>
</tr>
<tr>
<td>Strategy and Business Development</td>
<td>Engineering Business</td>
<td>X</td>
</tr>
<tr>
<td>System Planning and Competitive Transmission</td>
<td>Engineering</td>
<td>X</td>
</tr>
</tbody>
</table>
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)

External to RTO/ISO
- PJM
- MISO
- NY-ISO (w/ internal mitigation dept)
- ERCOT

Hybrid (Internal/External)
- CAISO internal w/ external advisory committee
- ISO-NE internal w/ external consultant

Internal to RTO/ISO
- SPP

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Board Members</th>
<th>Board Initial Approval</th>
<th>Board Final Approval</th>
<th>Voting Stakeholders</th>
<th>Voting Sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAISO</td>
<td>5</td>
<td>Governor</td>
<td>State Senate</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>ISO-NE</td>
<td>10</td>
<td>Member-Committee</td>
<td>Board</td>
<td>NEPOOL Members</td>
<td>6</td>
</tr>
<tr>
<td>MISO</td>
<td>10</td>
<td>Board</td>
<td>MISO Members</td>
<td>MISO Members</td>
<td>10</td>
</tr>
<tr>
<td>NYISO</td>
<td>10</td>
<td>None</td>
<td>Board</td>
<td>NYISO Voting Members</td>
<td>5</td>
</tr>
<tr>
<td>PJM</td>
<td>10</td>
<td>None</td>
<td>Member-Committee</td>
<td>PJM Members</td>
<td>5</td>
</tr>
<tr>
<td>SPP</td>
<td>10</td>
<td>None</td>
<td>SPP Members</td>
<td>SPP Members</td>
<td>2</td>
</tr>
</tbody>
</table>

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 Appendix C – Allegations of public utilities exercising dominance [https://www.ferc.gov/sites/default/files/2020-05/rm95-8-00z.txt](https://www.ferc.gov/sites/default/files/2020-05/rm95-8-00z.txt)


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