




OSCE Energy and Environmental Forum
Multi stakeholder Co-operation for the future of electricity

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Electric markets provide Reliable electricity at least cost

- These markets are DESIGNED markets, they did not emerge from unorganized market place economics
- They were DESIGNED in political/regulatory processes because electricity is an essential service and because of its unique technical properties.
- Good market DESIGN is crucial, because a design error or a technical mistake can result in extremely costly unintended consequences
- Good market DESIGN means, not only the market rules and expert planning, but good governance by all the parties to engender confidence
- Good market DESIGN is not static. Changes in technology, public policy and lessons learned need to be continuously evaluated and incorporated appropriately.

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Good Market Design Objectives

- Short run efficiency. That is, making the best use of existing resources
- Long -run efficiency . The design should encourage the proper incentives for long -run investment including new market entrants and technological innovation.
- Electric market DESIGNS are complex.
 - in the short run every second , supply and demand must balance . Thousands of resource and network constraints must be satisfied while the market sends the right price signals to motivate efficient generation each and every moment.
 - the long run efficiency has proven to be the most challenging objective. It is necessary to provide the right price signals while ensuring reliability and political objectives are achieved by the long run investments.



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Markets work and its worth the effort, over 20 years of history has shown that electric markets

1. Promote more reliable electric grids at least cost
2. Markets drive investment without consumer risk
3. Markets improve generator performance
4. Markets have driven lower emissions
5. Markets support the economy
6. Markets adapt and solutions are forthcoming



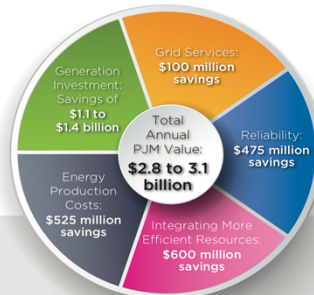
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Value Proposition



PJM Interconnection's operation of the high-voltage electric grid and wholesale electricity market provides significant value to the region it serves. PJM's regional grid and market operations produce annual savings of \$2.8 billion to \$3.1 billion in ensuring reliability, providing the needed generating capacity and reserves, managing the output of generation resources to meet demand and procuring specialized services that protect grid stability.



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Two alternate electric market designs have emerged

- Integrated Market designs , where the system operator centrally optimizes the scheduling and dispatch of resources as well as centralized planning. Billing and settlement of transactions is through traditional billing mechanisms
 - US, Canada, Singapore, China, Australia
- Exchange Based Market , in which each country maintains operational control and dispatch while Power Exchanges trade day ahead and throughout the day at prices that clear the market absent central optimization. Typically Billing and settlements is through a Clearing function.
 - Europe



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The Markets of EPEX SPOT

Markets and services of the European Power Exchange EPEX SPOT

- Current EPEX markets
- Market Expansion
- Market operation services and 25% shares
- Market operations services
- Market coupling services

- 21 borders
- Area of 1600 TWh consumption
- Over 285 Exchange Members
- 535 TWh of traded volume in 2017



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Black Sea Regional Transmission Planning Project (BSTP)



Southeast Europe Cooperation Initiative Transmission Planning Project (SECI)



Eastern Europe Natural Gas Partnership (NGP)



Southeast Europe DSO Security of Supply Working Group (DSO)



Electricity Market Initiative (EMI)



Utility Cyber Security Initiative (UCSI)



Plan for robust, reliable cross-border transmission interconnections as the backbone infrastructure for cross border trade and exchange of electricity generated by clean & innovative energy technologies.

Develop Technical rules, guidelines and network infrastructure assessments to accelerate integration of clean and innovative energy technologies.

Improve security of supply in distribution systems by supporting: optimization planning; line loss reduction; asset management; smart grid technology deployment; and region wide disaster preparedness and emergency response programs.

Fortify the capability of electric power and natural gas utilities to defend against cyber-attacks and improve their resilience

Energy Technology and Governance Program



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Stakeholder involvement is crucial to success.

- To achieve success its necessary for the market to be trustworthy, fair with equal treatment and open access with a high degree of transparency.
- the governance structure should ensure representation of all stakeholders.
- market rules and their development should be publicly available
- Market data should be available in real time and periodically reviewed by regulators and appropriate monitoring authorities.
- Markets must evolve and because they are Designed the governance structure needs processes and methods to achieve consensus on the next steps.

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