 **RAP**[®] Energy solutions
for a changing world

Can we trust in electricity markets?

*The case for improving the quality of Europe's
market monitoring to ensure confidence in
electricity prices.*

Presented by Sarah Keay-Bright, RAP
Dr. Joseph Bowring, Monitoring Analytics

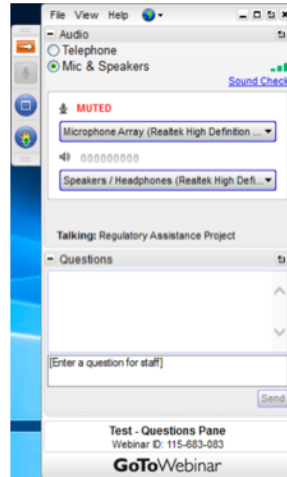
May 31, 2016

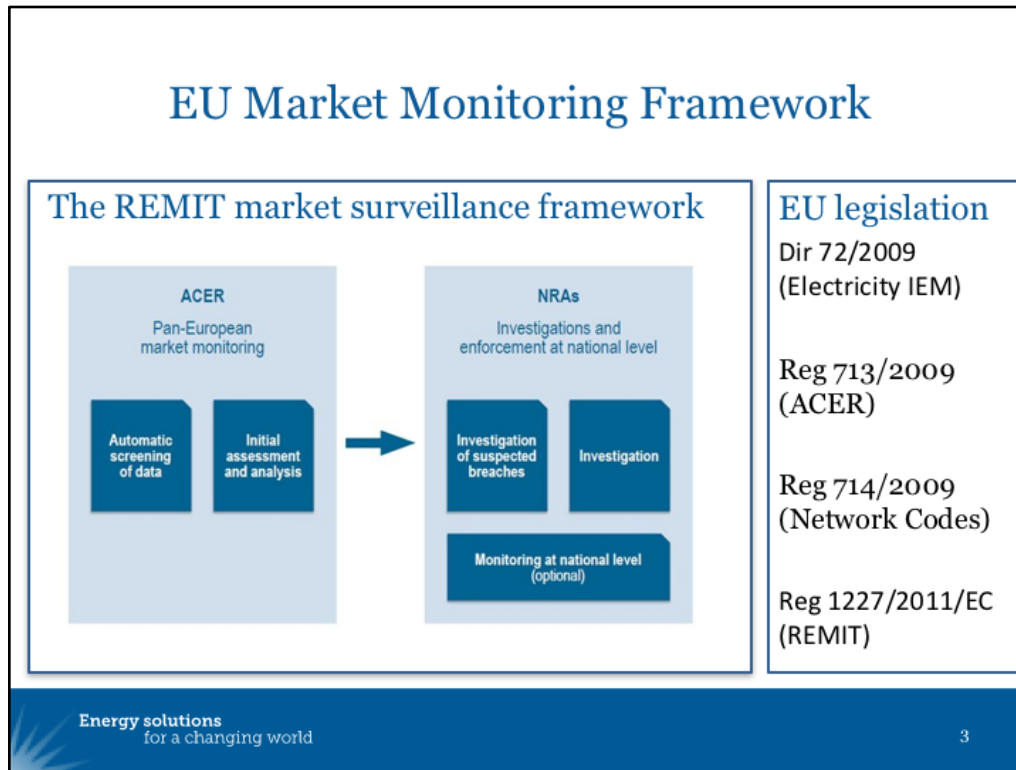
The Regulatory Assistance Project (RAP)[®]

I want to begin by mentioning the RAP paper which will be available shortly. The purpose of this paper is to explain why market monitoring is so important if we are to have well-functioning markets that stakeholders can trust, and also to initiate a discussion on whether the existing EU framework is fit for purpose, and if not, how it should be improved. The paper provides background on the EU context, reviews easily available evidence and looks at best practice abroad. The paper is not, however, a comprehensive academic assessment. It doesn't have all the answers, but it does highlight obvious points and hopefully raises the right questions.

Housekeeping

Please send questions through the Questions pane.





The existing EU framework for electricity market monitoring – that is, both market surveillance and market performance assessment - is set out in several Directives and Regulations. These are summarised on the right hand side of the slide.

Starting with **the Electricity Directive 72/2009** - this directive gives the European Commission the role of observing and monitoring EU electricity markets and their short, medium and long-term evolution. This Directive also confers responsibilities on National Regulatory Authorities to monitor transparency and ensure compliance with transparency obligations, though this is now superseded by REMIT. National regulatory authorities are also to monitor the level and effectiveness of market opening and competition at wholesale and retail levels.

The ACER Regulation 713/2009 – delegates some responsibility to ACER to monitor the internal market in electricity, in particular the retail prices of electricity, access to the network including access of electricity produced from renewables, and compliance with consumer rights.

Regulation 714/2009 requires ACER to monitor and analyse implementation of the Network Codes and their Guidelines including their effect on market integration, effective competition and the efficient functioning of the market.

And finally, the REMIT Regulation adopted in 2011 is the EU's sector-specific wholesale market surveillance framework intended to detect and prevent market abuse, manipulation and trading based on insider information. This is illustrated in the graphic on the slide.

REMIT is a collaborative framework, with ACER responsible for data collection and analysis. ACER must alert NRAs to anomalies for investigation as NRAs are responsible for enforcement. NRAs are, however, required to cooperate with ACER at regional level. REMIT is an important complement to the European Commission's work relating to antitrust, mergers and acquisitions, and implementation of competition rules.



On the right hand side of the slide you can see the high-level outcomes that the EU's electricity markets should be headed for. They are: acceptable reliability achieved at least cost; lower electricity prices than would otherwise be the case; and, a decarbonised and modernised power system.

I would say there is fairly broad agreement among stakeholders on these outcomes.

And I would also say there appears to be broad agreement on the key aspects needed to achieve this if one considers the European Commission's communications relating to market design and stakeholder responses to the Commission's mkt design consultation.

These key aspects include:

Sharper prices

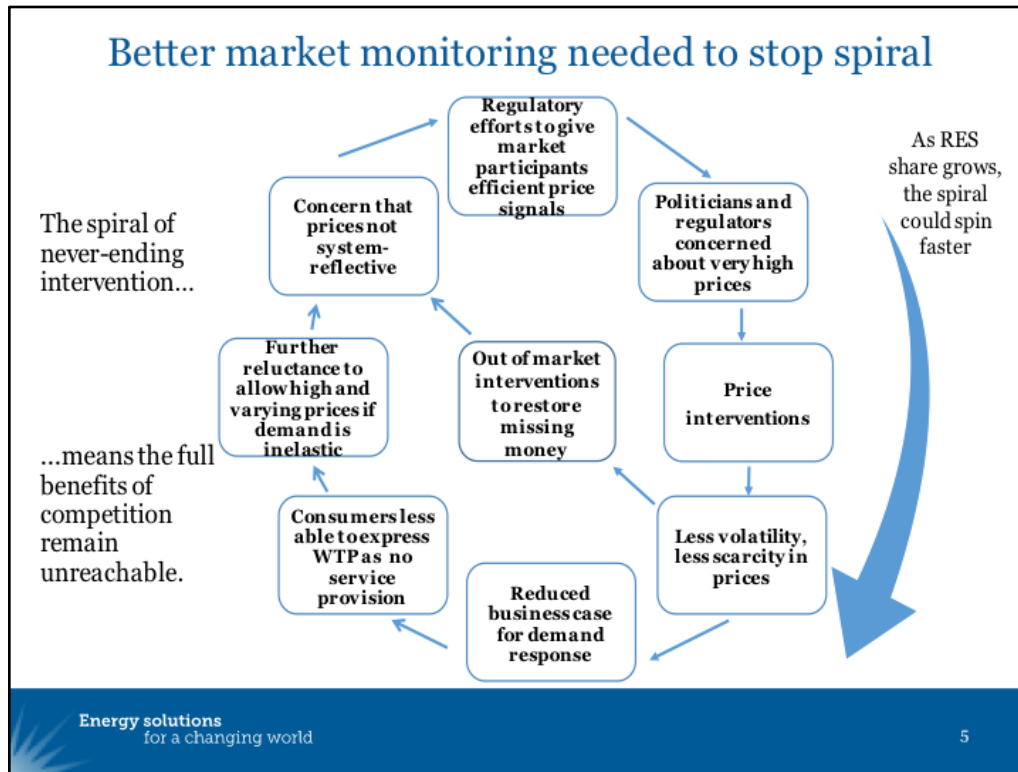
- Prices reflect scarcity and surplus of energy resources and transmission capacity
- and that price caps or controls are removed in wholesale and retail power markets

Another important requirement is competitive markets:

- All energy resources and new entrants can access the markets.
- that market participants respect the rules of the game
- and that market structure and market design are evolved to improve market performance

Last, but by no means least, consumers must be able to safely express their willingness to pay or not pay – that is, respond to prices:

- Customers need to have access to demand response services and contracts and also dynamic retail prices linked to wholesale prices
- So this point is clearly dependent on sharper prices and competitive markets. This is because system-reflective prices would provide demand response providers or aggregators with a business case. But in order for service providers to access this value, barriers to aggregated demand and new entrants must be removed.



Unless stakeholders have confidence in prices, interventions will continue (and further distort prices).

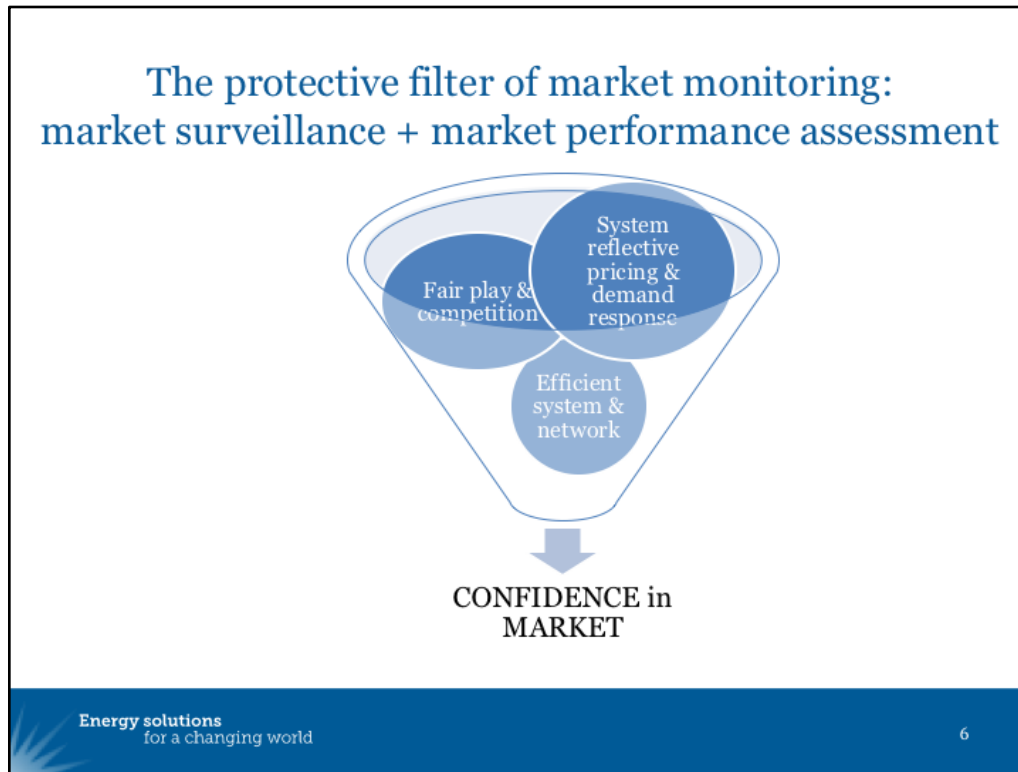
Interventions are inter-dependent, can become permanent. Becomes a spiral that hard to escape from and means the door is closed to realising the benefits of competition and well functioning markets.

Starting at the top

1. Regulatory efforts to give market participants efficient price signals – removing controls on retail prices, and price caps in wholesale energy markets
2. But if the market is tight and there is scarcity, prices can go very high – might not reach VOLL but politicians/consumers/regulators can be alarming
3. Knee-jerk reaction from politicians or regulators. Put controls back again or slow down/cancel reforms.
4. Get back to less variability in prices - critical to business case of flexibility services, including DR, needed to integrate RES
5. Because DR providers or aggregators can not get established, consumers do not get the help they need to be responsive (technology; company acting on behalf to extract value from multiple sources (network; energy/balancing; AS; CRM if exist).
6. Demand is inelastic which makes market more vulnerable to manipulation. Regulators say “we need to enable demand to be responsive and this requires dynamic prices”
7.and so the cycle begins again

Looking to the centre of the diagram...

...when controls are imposed on prices with no possibility of scarcity pricing, we then get into a discussion on the ‘missing money’ as generators say they are not covering their fixed costs. CRMs tend to reinforce the price control interventions as they can become a rather permanent feature



One way to think about market monitoring is as a protective filter that is crucial for enabling confidence in markets. To be effective this filter would integrate mkt surveillance and market performance assessment.

EU market monitoring: areas needing attention

- Framework & governance
- Human and financial resources
- Effective investigations & enforcement
- Quality of data and data analysis
- Quality of communications

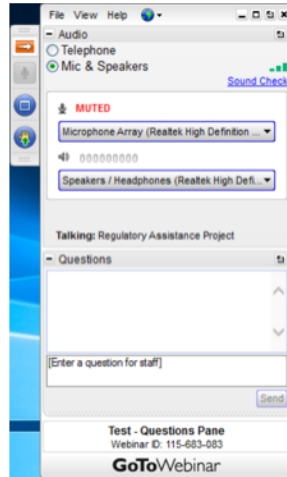
The policy paper mentioned earlier presents the following areas as needing attention and review, and I will cover these later in the webinar. They are:

- Framework & governance
- Human and financial resources
- Effective investigations & enforcement
- Quality of data and data analysis
- Quality of communications

I want to mention here that the report contains a detailed seven page Annex that compares market monitoring arrangements and the quality of data analysis and reporting in different jurisdictions including Australia, Canada (Ontario), and the regional markets of the US. Indeed, the EU context is very unique but there are certainly some lessons that can be learned which is why we invited Dr Joe Bowring, of the market monitor for PJM in the US, to be with us today.

Questions?

Please send questions through the Questions pane.



Best Practices for Market Monitoring

RAP Market Monitoring
Webinar
May 31, 2016

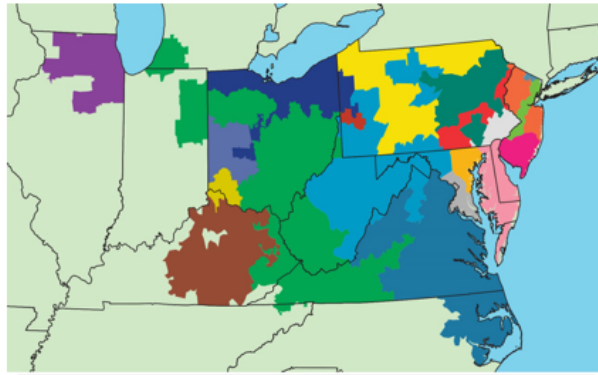
Joseph Bowring
Independent Market Monitor for
PJM



Overview

- PJM Markets
- Market Monitoring Function

PJM footprint: 20 control zones



Legend

- | | |
|--|---|
| ■ Allegheny Power Company (AP) | ■ Duquesne Light (DLCO) |
| ■ American Electric Power Co., Inc (AEP) | ■ Eastern Kentucky Power Cooperative (EKPC) |
| ■ American Transmission Systems, Inc. (ATSI) | ■ Jersey Central Power and Light Company (JCP&L) |
| ■ Atlantic Electric Company (AECO) | ■ Metropolitan Edison Company (Met-Ed) |
| ■ Baltimore Gas and Electric Company (BGE) | ■ PECO Energy (PECO) |
| ■ ComEd | ■ Pennsylvania Electric Company (PENELEC) |
| ■ Dayton Power and Light Company (DAY) | ■ Pepco |
| ■ Delmarva Power and Light (DPL) | ■ PPL Electric Utilities (PPL) |
| ■ Dominion | ■ Public Service Electric and Gas Company (PSEG) |
| ■ Duke Energy Ohio-Kentucky (DEOK) | ■ Rockland Electric Company (RECO) |

PJM Market Summary Statistics

	2014	2015	Percent Change
Load	780,505 GWh	776,083 GWh	(0.6%)
Generation	807,986 GWh	786,698 GWh	(2.6%)
Net Actual Interchange	(324) GWh	15,368 GWh	4,843%
Losses	17,150 GWh	16,241 GWh	(5.3%)
Regulation Requirement*	664 MW	641 MW	(3.5%)
RTO Primary Reserve Requirement	2,063 MW	2,175 MW	5.4%
Total Billing	\$50.03 Billion	\$42.63 Billion	(14.8%)
Peak	Jun 17, 2014 16:00	Jul 28, 2015 16:00	
Peak Load	141,673 MW	143,697 MW	1.4%
Load Factor	0.63	0.62	(2.0%)
Installed Capacity	As of 12/31/2014	As of 12/31/2015	
Installed Capacity	184,400 MW	177,683 MW	(3.6%)

* This is an hourly average stated in effective MW.

PJM Markets

- Energy Markets
 - Day Ahead
 - Real Time (Balancing)
- Capacity Market (RPM)
 - Base Residual Auctions
 - Incremental Auctions
- Financial Transmission Rights Market (FTR)
 - ARR/FTR
 - Long term/Annual/Balance of period/Monthly
 - Auction Options
- Ancillary Services
 - Regulation Market
 - Synchronized Reserve Market
 - Black Start Service
 - Reactive Service

Overview

- PJM Markets
- Market Monitoring Function

PJM Market Monitor

- Since 1999, the PJM Market Monitoring Unit has been responsible for promoting a robust, competitive and nondiscriminatory electric power market in PJM by implementing the PJM Market Monitoring Plan.
- Monitoring Analytics is the Independent Market Monitor for PJM.

Role of Market Monitoring

- Market monitoring is required by FERC Orders
 - FERC: Federal Energy Regulatory Commission
- Role of competition under FERC
 - Mechanism to regulate prices
 - Competitive outcome = just and reasonable
- Relevant model of competition is not laissez faire
- Competitive outcomes are not automatic
- Detailed rules required – like other market/exchanges
- Detailed monitoring required
 - Of participants
 - Of RTO: Regional Transmission Organization
 - Of rules

MMU Functions

- Monitoring
 - Compliance with market rules
 - Retrospective mitigation
 - Inputs to prospective mitigation
- Reporting
 - State of the market reports
 - Reports on specific issues
- Market Design
 - Recommendations for improved market design

Role of Market Monitoring

- Market Monitoring is primarily analytical
 - Compliance with market rules
 - Exercise of market power
 - Adequacy of market rules
- Market monitoring provides information
 - To FERC
 - To state regulators
 - To market participants
 - To RTO
- FERC has enforcement authority

Authority of MMU

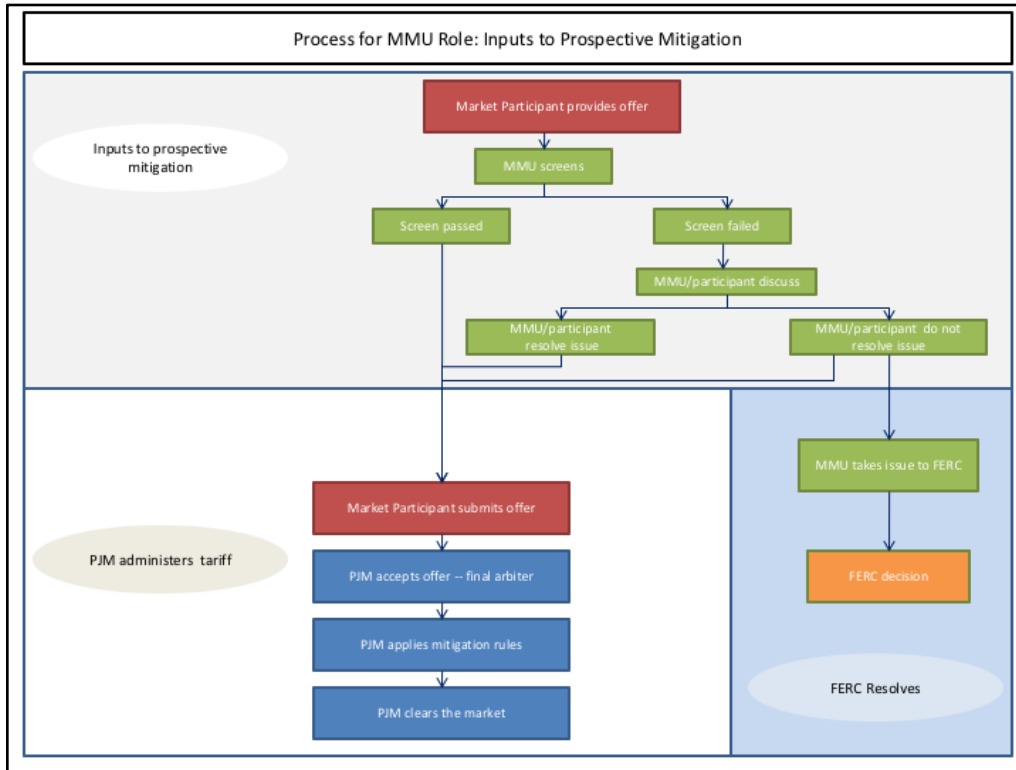
- Discuss issues with relevant Market Participants.
- Identify issues and notify FERC OE.
- Make formal referrals to FERC regarding the behavior of relevant Market Participants.
- Recommend modifications to rules, standards, procedures and practices of PJM.
 - Make recommendations to PJM Committees or to PJM Board.
 - Make regulatory filings to address market issues and seek remedial measures.
- Evaluate additional enforcement mechanisms.

Authority of MMU

- MMU has no authority to modify prices ex post
- MMU has no authority to make ad hoc adjustments in day-to-day market activities
- MMU has no authority to require changes in market participant behavior
- MMU has no authority to interfere with PJM system operations

MMU: Inputs to Prospective Mitigation

- MMU receives prospective offers from market participant
- MMU reviews data, applies screens and provides opinion to market participant
- MMU attempts to resolve any issues with market participant
- If agreement, market participant enters offer into PJM systems
- If disagreement, market participant enters offer into PJM systems
 - MMU notifies participant that FERC action will be requested in the event of market impact



Market Monitoring Function

- Diverse staff expertise
 - Developed through experience in monitoring
- Build detailed understanding
 - Market structure: macro/micro
 - Physical infrastructure
 - System operations
- Data access/storage requirements
 - Need to be built in to PJM data architecture
- Subtle and complex ways to exercise market power

Lessons Learned

- Interaction with market participants is critical to understanding real markets
- Interaction with state Commissions is critical to understanding retail/wholesale interaction issues
- Interaction with RTO staff is critical to understanding real markets
- Coordination with FERC is essential to efficient monitoring and mitigation
- Access to all markets data is essential
- Independence must be defined, transparent and enforceable

Monitoring the RTO

- MMU also monitors PJM
 - Role of PJM in ensuring efficient market outcomes
 - Operating reserves issues
 - Operator decisions
 - Impact on prices
 - Actions when market is tight
 - Demand side resources
 - Trigger for actions
 - Dispatch decisions and rules
 - Application of market power mitigation rules
 - Calculation of market prices

Market Monitor Independence

- Requirements for independence
 - Adequate resources
 - Involvement in membership process
 - Involvement in market rule development
 - Authority to do required analysis
 - Access to RTO
- Independence is enforceable by FERC
 - Regular reviews; detailed questions about process
 - Active role
 - Clear rules/expectations

Adequate Resources

- Adequate resources
 - Staff resources
 - IS resources: hardware and software
 - Data resources (external/internal)
 - External resources (consultants)
 - Legal resources
- Budget review process
 - Fair
 - No ability of interests to influence
- Staff of full time employees
 - Market monitoring career path
 - Job security subject to performance

Membership Process

- Full MMU involvement in membership process
 - Attend meetings
 - Present views/recommendations
 - Feedback from participants
- Source of information for participants
- Informed consensus
- Flawed rules are difficult to change
- Stability in rules is critical
- Critical to role

Market Rule Development

- Role in market rule development
 - Ongoing review of adequacy of rules for ensuring competitive outcomes
 - Authority to develop and propose modifications to rules
 - RTO has authority to file rules changes with FERC under FPA Section 205

Authority to Perform Analysis

- Prepare and distribute reports without intervention
- File complaints with FERC
- Make referrals to FERC
- Intervene at FERC
- Provide analysis to state commissions
- Perform specific tariff-defined roles
 - Local market power
 - Market power in capacity markets
- Peer review is critical
 - RTO staff
 - Market participants
 - State and federal regulators

Access to RTO

- Access to RTO
 - Unlimited access to all RTO data
 - Access to RTO personnel and facilities
 - Access to RTO models; software; consultants

Market Monitoring Unit Independence

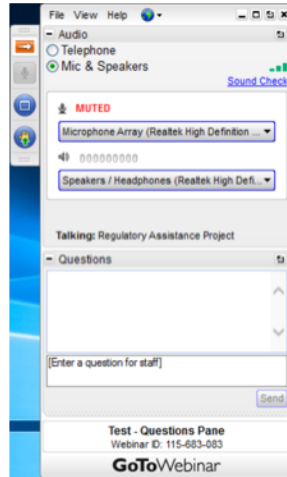
- Dimensions of independence
 - Independent from Market Participants
 - Independent from ISO/RTO management
 - Independent from ISO/RTO board of directors
- Market monitoring should be independent of sector bias

Institutional Requirements for Independence

- External MMU
 - Report to Board administratively only
 - No influence on analysis by Board or management
 - Clear tariff rules governing interactions between MMU and RTO
 - Rules enforceable by FERC; regular request for feedback
 - Contract definition and terms should not permit leverage
- Performance review – periodic renewal
 - Clear standards
 - Objective review
 - No role for influence

Questions?

Please send questions through the Questions pane.



EU market monitoring: areas needing attention

- Framework & governance
- Human and financial resources
- Effective investigations & enforcement
- Quality of data and data analysis
- Quality of communications

EU Market Monitoring Framework & Governance	
<ul style="list-style-type: none"> • Accountability, transparency and visibility • Degree of independence • Regional approach • Efficient institutional arrangements 	<p>EU legislation</p> <p>Dir 72/2009 (Electricity IEM)</p> <p>Reg 713/2009 (ACER)</p> <p>Reg 714/2009 (Network Codes)</p> <p>Reg 1227/2011/EC (REMIT)</p>
<p>Energy solutions for a changing world</p>	
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First, we need to consolidate and integrate the legislative framework which is currently fragmented.

Roles and responsibilities must be clearly defined so it is very clear who does what and to ensure no regulatory gaps exist.

Institutional arrangements should also be efficient with respect to resources.

The paper makes a strong case for a regional approach, because national markets are coupled in regional groupings and any attempt to harmonise energy policies will be likely at the regional level.

Considerable evidence shows that market monitoring is more effective when those conducting the data analysis are independent of the actors who must act on the recommendations, for example system operators and regulators.

In Europe of course, it is necessary to be sensitive to the current political context and to respect the EU principles of subsidiarity and proportionality. The report suggests some structural options to strengthen independence of the market monitor. Whatever option is chosen, it will also be necessary to pay attention to accountability, transparency and visibility.

EU market monitoring: short on resources even for the basics

One of the most important points made in the paper, if not the most important point, is the fact that the resources dedicated to EU market monitoring needs to be significantly increased.

For implementing REMIT, ACER has requested additional resources for the Agency draft budget every year since 2013. No additional human resources, however, have been allocated to the Agency since the first assignment of 15 staff members in 2012. ACER estimates that in order to effectively implement REMIT it needs 45 staff.

ACER's budget requests were just for implementing REMIT – there is also market performance assessment to consider too. Also consider the recommendations of this paper – these would need extra resources too.

“It would be most unfortunate if the effectiveness of wholesale energy market monitoring... were jeopardised by a lack of resources....”



Alberto Potoschnig, page 4 Foreword
ACER's REMIT report 2014, (Sept 2015)

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“It would be most unfortunate if the effectiveness of wholesale energy market monitoring, which is an integral part of the Energy Union strategy, were jeopardised by a lack of resources, especially given that, also based on the US experience, the benefits of market integrity and transparency are likely to be significantly greater than any resource costs involved in effective monitoring.”

Despite the difficulties, REMIT is having impact...cutting back on market monitoring resources is a false economy



Hogar

FACUA finds ridiculous the fine imposed to Iberdrola for manipulating the price of electricity

Iberdrola was fined 25m euros by the Spanish regulator for manipulating the market. It had profited 21.5m euros but actually cost consumers 105m euros.

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But despite the difficulties, REMIT is definitely having an impact. Although there are problems with investigations and enforcement, particularly with respect to the capacity and capability of ACER and the NRAs, 3 cases have gone to court.

Economising on market monitoring is a false economy. And the case of Iberdrola's manipulation of the market, illustrates this point well.

Iberdrola profited 21.5m euros by manipulating the market at the end of 2013. The Spanish authorities fined Iberdrola 25 million euros but the total cost to consumers was actually 105 million euros due to the inframarginal rent paid to other generators.

It is difficult to say how much it would cost to properly resource market monitoring across the EU but it is certain that it is a small fraction of market turnover and this particular case, of Iberdrola, illustrates that consumers can potentially end up paying multiples more than the cost to monitor the market properly. Remember, the Iberdrola case is just one event... in just one of 28 countries.

Reasons for weak enforcement

- the NRA does not yet have adequate powers
- the NRA does not have adequate capability or capacity;
- penalties applied by NRAs are diverse and sometimes inadequate;
- the NRA/MS is unwilling.

The quality of investigations and enforcement in the EU could be considerably improved. There are several reasons that explain why enforcement is inadequate.

In some countries, Governments have not properly implemented the Electricity Directive and the REMIT regulation, such that their NRAs do not yet have the powers they need to conduct effective enforcement.

Some NRAs are better resourced than others which means some do not have adequate capacity or capability to carry out effective investigations.

ACER has also pointed out that penalties applied by NRAs are diverse and sometimes inadequate.

And sometimes, the NRA or MS government maybe just plain unwilling to act.

Various options to improve investigations and enforcement

- Commission can enforce law to ensure NRAs have needed powers
- Stronger role for ACER in investigations
- Minimum rules for penalties/sanctions
- Ensure judicial review is possible

The paper suggests some options to address these enforcement issues and among them are those shown here.

It is clear that the European Commission will need to enforce EU law to ensure NRAs have the needed powers to act.

A case can be made for reinforcing ACER's role in investigations, with respect to better supporting NRAs and with respect to initiating investigations involving cross-border trade.

Another recommendation is to consider setting minimum rules for penalties or sanctions as a means to improve the effectiveness of penalties.

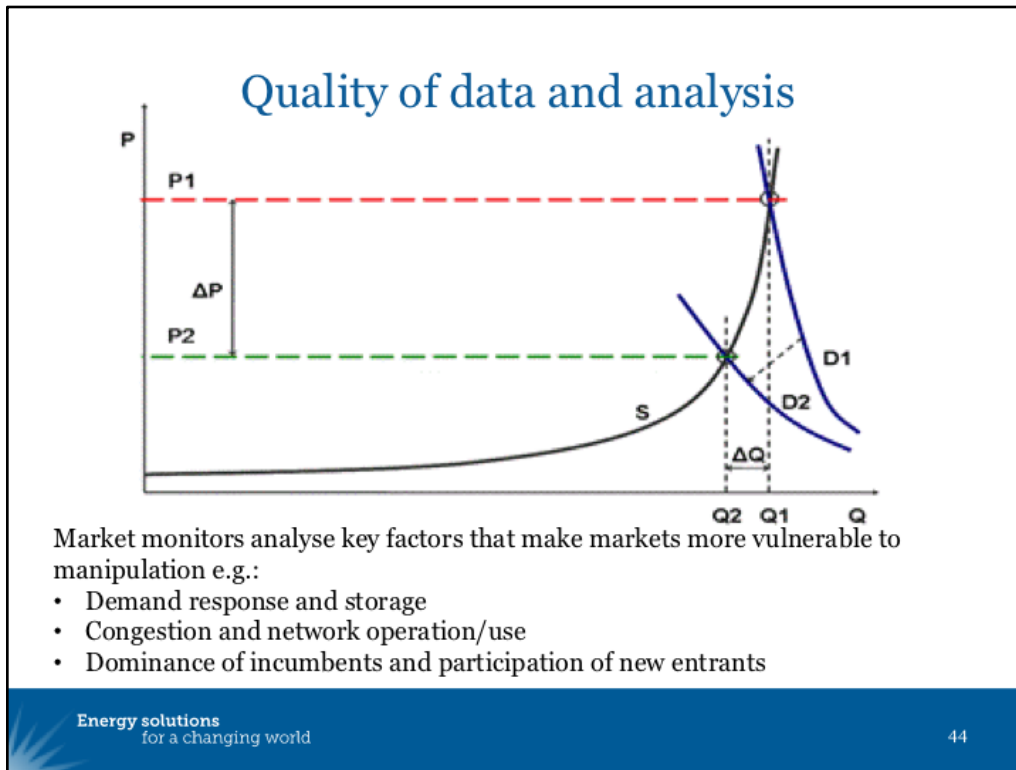
For cases where NRAs are not willing to act, despite the evidence, judicial review of NRA decision-making should be possible and this needs to be clearly set down in law.

Quality of data analysis

- Scope
- Data collection and access
- Metrics
- Ex-ante, ex-post
- Analysis capability
- Market surveillance and market performance interaction

The paper concludes that the quality of data analysis could be much improved in Europe and the Annex of the paper provides considerable evidence to support this point. The quality of data and data analysis depends on a number of factors such as:

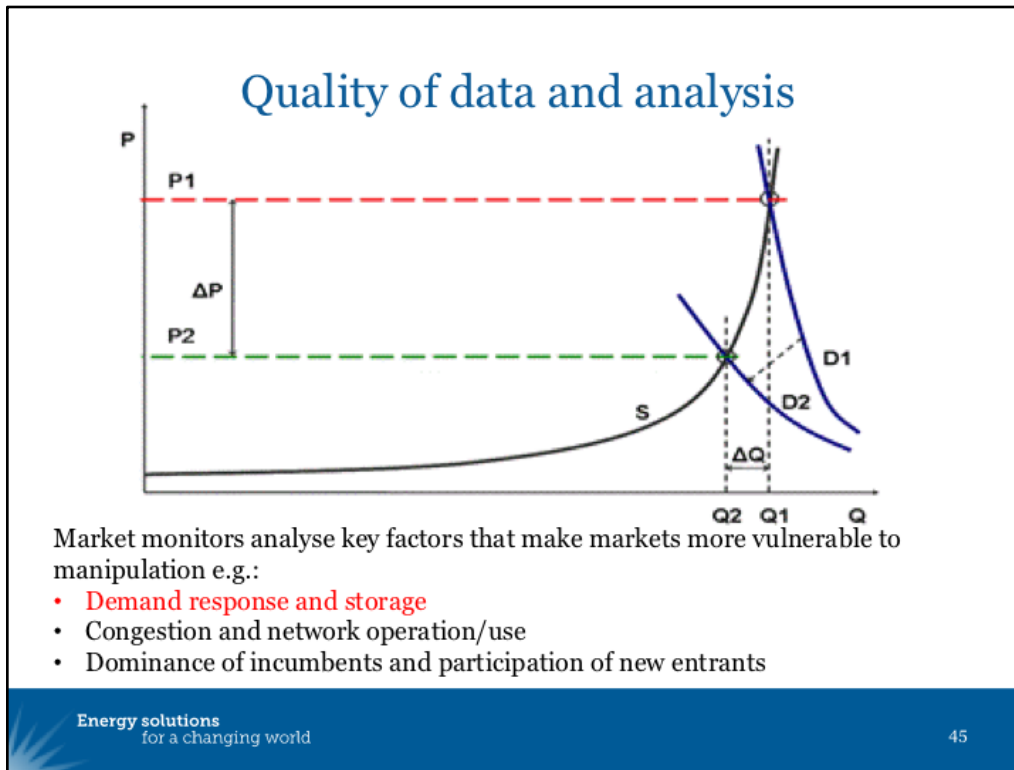
- The Scope – that is, what is covered
- Data collection and access – ACER has stated that it is not getting the access to data that it needs
- Metrics – we need to ask whether the right metrics or combination of metrics are being used and whether the market monitor can easily introduce new metrics as and when needed
- Ex-ante, ex-post – we also need to ask whether the monitoring is sufficiently proactive – is the right combination of ex-ante and ex-post analytics and mitigation techniques being used
- Analysis capability – does the market monitor have the skills, modelling capability and tools that it needs to do a good job?
- And finally,...Market surveillance and market performance interaction – these two aspects of market monitoring need to be brought together. Integrated analysis is needed, particularly as market design and market structure can influence market participant



It is very important for market monitors to pay close attention to factors that affect price formation.

Anything that pushes the clearing price up or down can have a major impact on consumer bills. Such factors that potentially make markets vulnerable to manipulation include:

- Demand response and storage
- Congestion and network operation and use
- Dominance of incumbents and participation of new entrants



Demand response has the potential to push the clearing price down. In the report you will see that best practice market monitors, like the PJM market monitor, closely analyse the participation of the demand side in markets, including the contribution to price formation. In Europe, however, we don't do this yet.

**Effective communications are key
to confidence in prices**

Quality of communications depends on:

- Content
- Timeliness
- Accessibility

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Quality communications are an essential aspect of the market monitor's role.

Better quality analysis and recommendations are wasted if they are not effectively communicated in a timely manner to the right audience.

The quality of communications depends on:

- Content – the depth and credibility of analysis is important here
- Timeliness – the frequency and timing of the communications matters to those in positions of responsibility who need to act
- Accessibility – stakeholders must be able to properly understand the information, and indeed there are different types of stakeholder with different levels of understanding when it comes to power markets

Best practice involves responsive oral communications with different stakeholders including the media.

All market monitors tend to produce reports. The Annex of the paper gives examples of reporting in different jurisdictions and shows that the quality of reports, in terms of depth and frequency, is far behind best practice.

In Europe ...

ACER produces an annual REMIT report on market surveillance.

ACER, with CEER, produces an Annual Market Monitoring Report which covers some market performance assessment.

And DG ENER produces short quarterly electricity market data reports but provides no analysis

By contrast, the Australian regulator produces weekly market performance reports and a report every time the price exceeds \$5000/MWh. Other monitors, such as the PJM monitor, produce detailed quarterly reports that provide analysis and recommendations.

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raonline.org

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