

Impact of Distributed Generation on RTOs

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DISTRIBUTED GENERATION AND INTERCONNECTION

Washington, DC

Impact of distributed generation on the PJM system

What happens when customer energy production exceeds localized distribution consumption?

- Power may flow bi-directionally to and through distribution substation
- May result in localized high voltage conditions on the distribution circuits
- Foreshadows a different, future method of dispatching the system

What is the impact on the PJM system in terms of reverse power flows?

- Historically – due to system design, indication of a reverse power flow was symptomatic of a modeling, communication or state estimation error
- Today – It may actually be due to a region of the system in which supply exceeds demand
- For PJM – it may result in a hidden impact to actual measurement of generation
(negative load rather than actual generation)
- For utilities – it may skew data and accounting - unaccounted for energy

Impact of distributed generation on the PJM system

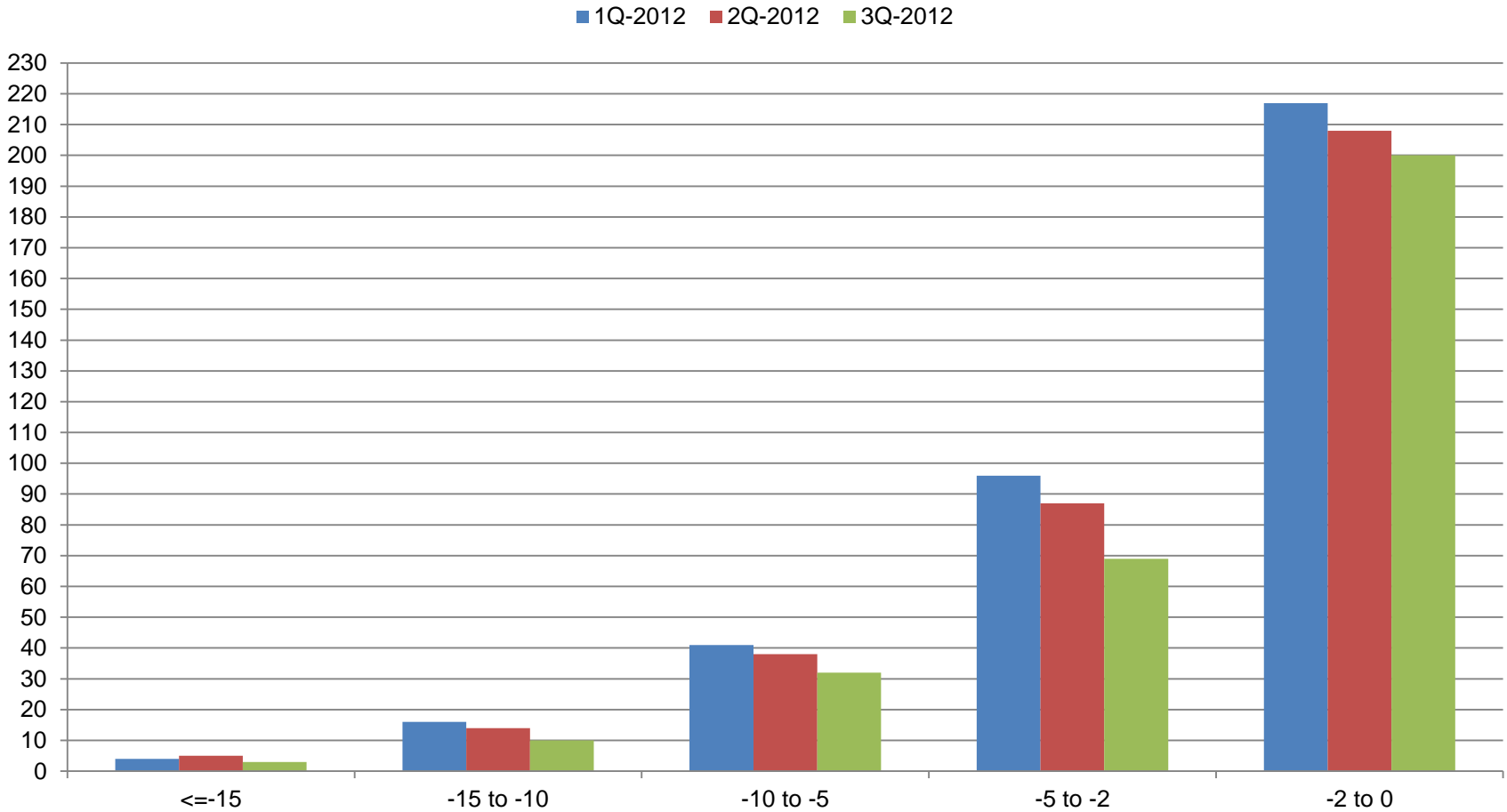
What steps has PJM taken to integrate distributed generation with the PJM system especially in cases of overflow?

PJM continues to adapt while striving to provide excellence in system reliability, transparent markets and long term infrastructure planning

- Provide open Interconnection processes – sized to varying type and size generators
- Offer customer options via market participation and products
 - Energy and or Capacity
 - In front or Behind the Meter
 - Demand Response and or Load Management Resource
- Serve as a Stakeholder forum to explore and exchange ideas
- Enable and assist in the formulation of solutions to complex problems

State Estimation - Negative Power Flows on PJM System

Average State Estimator MWh solution Count:
N=8097 load buses



What does PJM desire from all forms of generation?

- Periodic reporting of generation
 - Type
 - Size
 - Location
- Maintain system reliability and integrity
- Ensure market prices and signals, at all times, accurately reflect real-time conditions and longer term trends