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# **Long Term Capacity Issues Symposium**

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# Background

National interest and protecting the environment mandate the need for new forms of capacity resources: - EE - DR - Solar - Wind

State and Federal regulators are setting ambitious targets – RTOs and utilities have been responsive:

## New Jersey

- 20% reductions in projected energy and peak electric demand,
- 30% of NJ electricity produced by Solar and Wind

## PJM

- Simplified interconnection Queue process to accommodate Solar and Wind
- Modified RPM to encourage EE and DR
- Revised RTEP process to include EE and DR in transmission expansion plans

## PSE&G

- Obtained PJM approval and is presently installing 80 MW of solar resources
- Other Solar applications still under study in the PJM interconnection Queue
- Bid 62MW of DR in PJM May 2009 RPM Auction

# State and Federal policies and incentives continue to promote these new types of capacity resources, .....

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## Benefits

- Lower dependency on foreign energy resources (OIL, LNG, ...)
- Clean to the environment
- Lower variable cost to customers

**But as they have benefits they also have limitations and it is vital to recognize and understand the limitations and fully address it in the PJM system planning and operation processes to ensure future system reliability.**

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## **Issues and limitations**

- PJM performance test for DR emulates the annual capacity test for generators. We need to realize the huge differences between the characteristics of DR and conventional generation and tailor the DR test to suit DR. This would better define performance and limit gaming.
- DR has a saturation point beyond which it loses its effectiveness as a capacity resource. We need to determine these saturation points for the local areas and either limit DR or find solution to enhance the saturation point.
- DR, EE, and renewable resources would eventually replace existing units and potential future fossil generating units. This creates the following concerns:
  - Reduction in system spinning reactive capability.
  - Reduction in system flexibility to resolve congestion.
  - Reduces units available for blackstart
- DR activation could cause phase imbalance issues
- Long term viability of DR; unlike generating units, DR has no sunk cost and could withdraw from the market at anytime which would impact the capacity market and system reliability.
- Solar and wind generation are vulnerable to sudden shifts in wind and cloud coverage, which could result in large unbalances between load and generation.
- Better tools needed for wind and solar short term forecasting
- During light load conditions (min Generation run time), wind generation could result in turning off coal plants that may be needed on the following day.

# Conclusion

Ambitious plans are put forth to promote and develop EE, DR, Solar and Wind in larger amounts than we have ever seen before. These new energy resources have different characteristics than the resources presently on the system. We need to fully understand and determine the potential impact that these new resources will have on the bulk power system and accordingly, PJM needs to revise its operating and planning processes in order to continue to enjoy the reliable system performance we have today. In short, we need to proceed with our eyes wide open.