



## Energy Storage Integration Challenges

*ERCOT ETWG Energy Storage Workshop  
2 December 2011*

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Commercial grid-scale energy storage is here. AES will have brought 72MW of commercial projects into operation by the end of 2011.

2009: Los Andes, Chile (12MW)



2010: Johnson City, NY (8MW Phase 1)



2011: Laurel Mountain, WV (32MW)



2011: Angamos, Chile (20MW)



## How did we get here?

19 Jan 2010: Then-Chairman Smitherman addresses the ERCOT Board requesting staff investigate barriers to storage participation in the markets.

13 Apr 2010: ERCOT Storage Workshop is held. Staff reports on initial view of storage integration issues.

16 Jun 2010: WMS establishes Power Storage Working Group (now Emerging Technologies Working Group)

24 Aug 2010: ERCOT PSWG (now ETWG) holds first meeting.

17 Jun 2011: SB943 is signed into law.

06 Oct 2011: PUC holds energy storage workshop.

10 Nov 2011: PUC issues order implementing SB943.

01 Dec 2011: PUC staff draft proposal on wholesale/nodal settlement.

02 Dec 2011: ERCOT Storage Workshop.

Top level energy storage integration challenges can be addressed by direct actions that will require PUC, ERCOT and stakeholders to work together.



Top Level Energy Storage Integration Issues		
Category	Issue	Action
Settlement	Question over whether charging energy is settled at wholesale nodal prices.	PUC Project 39917 (pending)
Operation	Regulation deployment currently persists in either direction for extended periods of time, even while ACE and frequency error change direction.	Pilot dynamic regulation deployment – open to all tech (via PUC rule?)
Supporting Action Categories		
<ul style="list-style-type: none"> <li>• Definitions</li> <li>• Registration</li> <li>• Testing</li> </ul>	<ul style="list-style-type: none"> <li>• Performance Monitoring</li> <li>• Settlement and Billing</li> <li>• Metering</li> </ul>	

**For a “pilot” to be effective it must attract investment in “first commercial” deployments of meaningful scale.**

Today's ancillary services projects serve as a reference for peaking projects which are already proposed in areas that are congested, forecast to be short on reserve margins, or in need of flexibility.



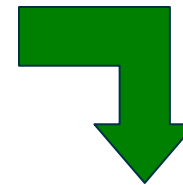
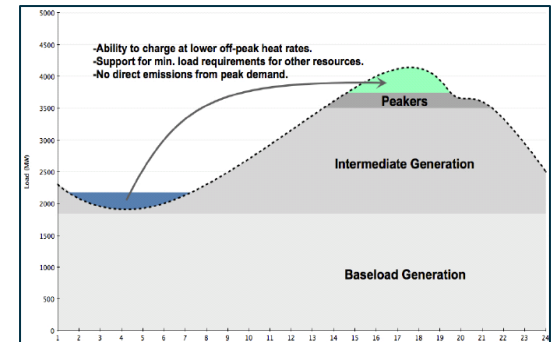
News Release Date: August 20, 2010

**LIPA Issues Request for Proposals For New and/or Repowered Power Resources**

LIPA is Seeking Up to 1000 MW to Modernize its Power Supply Resources to Reliably Serve its Increasing Customer Electricity Demands

Uniondale, NY - The Long Island Power Authority (LIPA) released a Request for Proposals (RFP) today that seeks to purchase from experienced and qualified entities up to 1,000 megawatts (MW) of new and/or repowered generation.

LIPA's 2010-2020 Electric System Plan indicates that the Long Island will need new power generation resources to meet these needs. To meet these needs, LIPA, it is seeking up to 1,000 MW of new power generation delivery as early as Spring of 2012.



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**LIPA eyes world's biggest battery**

400-megawatt proposal would store energy for peak usage

By CLAUDE SOLNIK



Energy storage facility in Johnson City, N.Y.



**AES**  
Energy Storage