

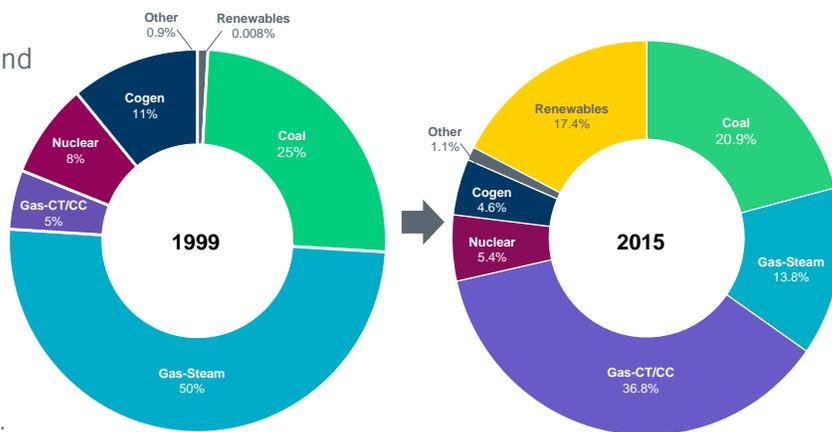
Future Ancillary Services

Preparing to maintain reliability on a changing grid

In the fall of 2013, ERCOT staff and stakeholders began exploring concepts to improve the Ancillary Services the grid operator acquires from the wholesale electricity market to help support reliable, secure operations and maintain system frequency at required levels.

ERCOT's existing Ancillary Services framework has been in place since the 1990s. Today, new developments — such as increasing penetration of distributed and utility-scale intermittent generation resources, fast-acting storage devices, the evolution of sophisticated smart grid technologies, and increased use of demand response resources to support grid reliability — are presenting new challenges and opportunities. With this in mind, ERCOT proposed a revised framework that would unbundle the services based on characteristics of different resources.

The goal is to provide a comprehensive set of tools that work together in a complementary, efficient and cost-effective manner, while remaining as technology-neutral and flexible as possible. Some of the analysis that occurred during this process already has resulted in some program improvements.



Generation Resource Capacity

Reviewing proposed framework

Currently, stakeholders continue to evaluate the following changes to ERCOT's Ancillary Services:

Regulation Services: Continue the use of Regulation-Up and Regulation-Down services, which provide capacity within several seconds in response to ERCOT signals, and continue the use of a Fast-Responding Regulation Service for resources that can respond in less than one second.

Frequency Reserve Services: These services would unbundle the current Responsive Reserve Service into three categories to maintain the required 60 Hz.

- **Fast Frequency Response:** Resources must be able to provide designated levels of energy or power in fractions of a second and sustain those response levels for at least 10 minutes, with the service potentially including an equivalency ratio that recognizes the enhanced value of quick responses to frequency deviations.

(continued)

- **Primary Frequency Response:** Resources reserve defined levels of capacity for this service, which can respond proportionally to frequency deviations.
- **Contingency Reserve Service:** Resources (dispatchable or non-dispatchable) must be able to achieve a specified output level within 10 minutes.

Supplemental Reserve Service:

Resources provide a specified, measurable amount of power to the system within 30 minutes but are not required to respond to frequency deviations.

Current	Proposed	
Regulation Up	Regulation Up	<i>Mostly unchanged</i>
Fast-Responding Regulation Up	Fast-Responding Regulation Up	
Regulation Down	Regulation Down	
Fast-Responding Regulation Down	Fast-Responding Regulation Down	
	Fast Frequency Response 1	59.8 Hz, Limited duration
	Fast Frequency Response 2	59.7 Hz, Longer duration
	Primary Frequency Response	
	Contingency Reserves 1	SCED-dispatched
	Contingency Reserves 2	Manually dispatched
	Supplemental Reserves 1	SCED-dispatched
	Supplemental Reserves 2	Manually dispatched
	Synchronous Inertial Response	Ongoing development

Synchronous Inertial Response: In addition to these services, ERCOT staff and stakeholders continue to discuss possible approaches to support the need for “synchronous inertial response” where synchronous generation is not sufficient to maintain the inertial force that helps support the continued movement of electricity.

Evaluating costs and potential benefits

ERCOT currently spends about \$500 million annually on these services, and the cost to implement the proposed changes is estimated at \$12-15 million.

In late 2015, ERCOT engaged the Brattle Group to perform a cost-benefit analysis of the proposed changes. That initial study cited benefits to reliability, flexibility and economics, referring to the proposed changes as “good market design.” Generally, the changes would reduce the amount of reserved capacity ERCOT would need to procure. As a result, Brattle estimated savings at \$20 million a year, based on 2016 and 2024 scenarios that included natural gas prices of \$4.35 per million Btu (MMBtu).

Subsequent studies, using a lower natural gas price of \$2.36 per MMBtu based on updated forecasts, estimate annual savings at about \$11-16 million, with consideration given to a range of operating scenarios and procurement strategies.

Next steps

Stakeholders have evaluated this proposal and other possible approaches to Future Ancillary Services. Staff and stakeholders continue to consider the proposed changes and the best approach to move forward. If supported by a two-thirds majority of the Technical Advisory Committee, the proposed changes would go to the ERCOT Board of Directors for final approval. ERCOT has committed to allow three years for implementation of the approved solution so Market Participants can prepare for necessary changes.

Additional reference

Cost-Benefit Analysis of ERCOT’s Future Ancillary Services Proposal
www.ercot.com/content/wcm/key_documents_lists/30517/667NPRR_12a_Cost_Benefit_Analysis_122115.pdf