
ERCOT Trending Topics

TOPIC: ANCILLARY SERVICES

Ancillary Services

Ancillary Services Study

Purpose and Quantity of Ancillary Services

In this ERCOT Trending Topic, we explain what Ancillary Services are, how they are procured, and why they are necessary to support day-to-day grid reliability



FACTS:

What are Ancillary Services and why do we need them?

ERCOT must constantly balance generation output to meet consumer demand on the grid. Operators of generation units typically decide when units are going to run. ERCOT adjusts the output of these units every five minutes in a way that uses the most economic generation to reliably serve the total consumer demand.

However, that total consumer demand, as well as wind and solar output, is constantly changing even within those five-minute periods. Generating units trip and their output must be replaced quickly. Consumer demand is sometimes greater than forecasted, and wind and solar generation is sometimes less than forecasted. Ancillary Services (AS) are a type of insurance to cover the variability and uncertainty that arise from these and other factors. With growing demand variability and increased use of wind and solar resources, the reliability risks from these factors continue to grow.

Ancillary Services are provided by generation, load, and storage resources and are procured daily by ERCOT on behalf of consumers. In order to provide these Ancillary Services, some capacity from these resources with specific operational characteristics must be reserved in order to be available to address reliability concerns.

There are several different Ancillary Services products that are structured in a way that allows ERCOT to help mitigate the reliability risks that may occur due to these operational variabilities and uncertainties.


The methodology used to determine how much of each Ancillary Service product to procure is based on a detailed analysis of risk. Risks change by season and by time of day. The Ancillary Service methodology takes these factors into account when the methodology is reviewed and revised annually

What are the Ancillary Service products that ERCOT uses?

ERCOT uses five [Ancillary Service products](#) to manage the increasing variability and uncertainty of the power system. These five Ancillary Services are: Regulation (Regulation Up, Regulation Down), Responsive Reserve Service (RRS), Non-Spin Reserve Service (Non-Spin), and ERCOT Contingency Reserve Service (ECRS), which was implemented in [June 2023](#) as the first daily procured Ancillary Service introduced to the ERCOT market in more than 20 years.

Each one of these products has unique time and duration capabilities to match the risks that product is mitigating. Some may be deployed more often than others depending on the situation.

Additionally, ERCOT is currently developing a new, legislatively required product, Dispatchable Reliability Reserve Service (DRRS), which will be added to the existing suite of services.

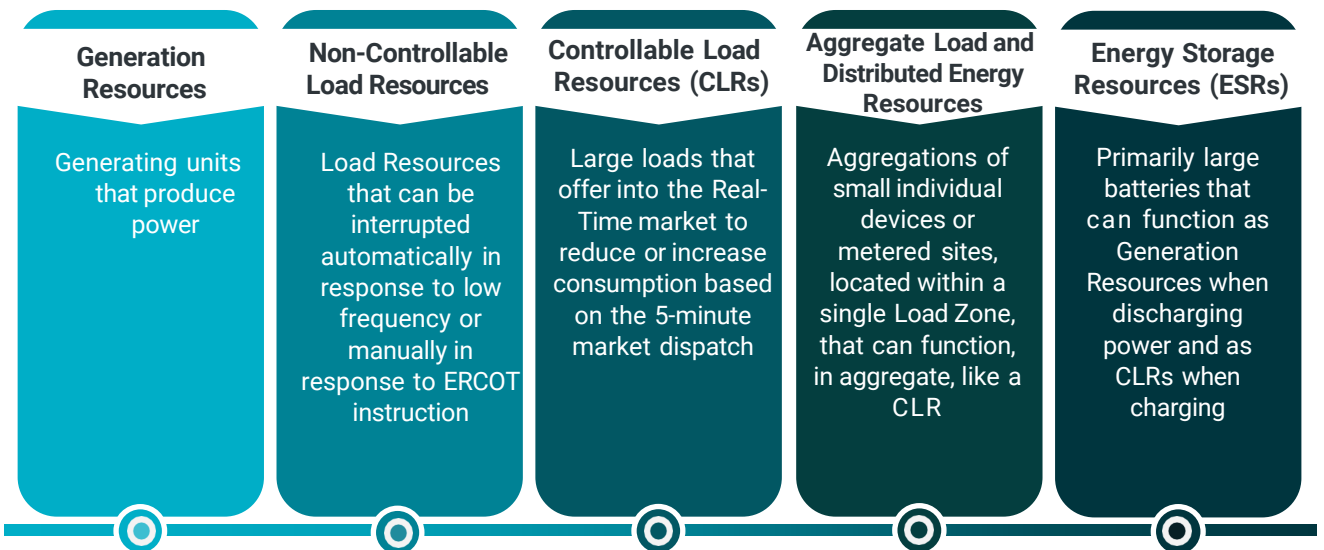
 **ANCILLARY SERVICES**

REGULATION SERVICE Reserve capacity that is deployed every four seconds to balance supply and demand to maintain grid frequency close to 60Hz.	RESPONSIVE RESERVE SERVICE (RRS) Reserve capacity that automatically and rapidly deploys to compensate for energy loss when a generator trips.	NON-SPIN RESERVE SERVICE Capacity that can be available within 30 minutes to cover forecast deviations or to replace deployed reserves	ERCOT CONTINGENCY RESERVE SERVICE (ECRS) Capacity that can respond within 10 minutes to address forecast deviations or to replace deployed reserves
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Regulation Up and **Regulation Down** are distinct AS products procured to provide upward and downward response, as necessary.

What are the types of resources that provide Ancillary Services?

Many different types of resources have the required operating characteristics and can qualify to offer the various Ancillary Services. This includes both transmission-connected and distribution-connected resources.



How are Ancillary Services competitively procured?

Resources that wish to provide one of the Ancillary Services register to do so and are tested to show they can provide the required operating characteristics. Once they are approved as being qualified, the resources can offer into the Day-Ahead Market (DAM) to provide the services. In addition to offering Ancillary Services, the DAM allows Market Participants to buy and sell energy and hedge transmission congestion costs one day in advance of the operating day. ERCOT procures the required amount of each type of Ancillary Service from the qualified offers for each hour of the next day as a part of the DAM auction. ERCOT purchases resources to meet each day's Ancillary Service needs that result in the lowest expected energy and ancillary services costs; applying competitive pressure keeps costs lower for customers.

Does ERCOT set the required amount of each Ancillary Service?

ERCOT sets the minimum amount of each Ancillary Service based on statistical analyses of the historic variability of the risks that each Ancillary Service is used to mitigate, adjusted for any known changes and other regulatory requirements. The quantities typically vary by month and hour of the day. The methodology for determining these requirements is reviewed and approved annually by the ERCOT Board of Directors and the Public Utility Commission of Texas (PUCT), and the expected quantities for each hour of the year are posted before the year begins.

How are Ancillary Services paid for?

Resources selected in the DAM auction to provide an Ancillary Service for a particular hour are all paid the same clearing price (the price point where supply is equal to demand) for that service for that hour. These payments are paid for by the Market Participants representing Load-Serving Entities (like retail electric providers and municipal and co-operative utilities) that provide electric service to individual and wholesale customers.

What is the Ancillary Services Study?

The PUCT initiated the Ancillary Services Study to meet the requirements of PURA § 35.004(g), enacted by the Texas Legislature in Senate Bill 3 (87 R.S.). The PUCT collaborated with ERCOT and the Independent Market Monitor (IMM) on this effort. ERCOT was asked to review the existing Ancillary Service products, including an analysis of the purpose for each of the products and a more thorough review of the methodologies used to determine Ancillary Service quantities. ERCOT was also asked to evaluate if any additional Ancillary Service products are needed. ERCOT produced [a white paper](#) that responds to those requests, and the PUCT will include information from ERCOT's white paper in a report that will be included in the PUCT's biennial agency report to the 89th Texas Legislature in January 2025.

Is ERCOT recommending new Ancillary Services?

ERCOT is not recommending any new Ancillary Service products at this time beyond what is in place or already under development, but has two recommendations regarding how to better determine the quantity of Ancillary Services that are needed:

1. Implement more sophisticated analytical techniques for evaluating how likely operational events are to occur. These techniques would then be used to revamp how ERCOT determines how much ECRS and Non-Spin to buy; and
2. Exploring the benefits of determining some portion of Ancillary Service quantities closer to the operating day based on a near-term analysis of risks. This would change our existing process of determining the full amount of expected Ancillary Service needs before the start of the year.

What happens next?

On September 30, 2024, PUCT Staff filed their draft [Ancillary Services Report](#) based on recommendations and other input from ERCOT and the IMM. The PUCT will receive stakeholder comments, finalize their study, and include it in their biennial agency report to the Texas State Legislature due in January 2025.