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Ready to Let Go – Natural Gas Storage Projects in the Gulf Coast Region

Development Driven by Increasing Need for Flexibility



- Gas storage helps balance gas supply and demand both seasonally and — increasingly — day to day and even intraday.
- LNG export facilities, the ups and downs of renewable power output and other factors are driving demand for incremental storage.
- The Gulf Coast is the epicenter of new salt-cavern and depleted-reservoir projects.
- Nine companies cited in this report are together planning more than 150 Bcf of new storage in the region.

1. Introduction

Storage has long been a critically important balancing mechanism in the Lower 48 natural gas market. After languishing for much of the Shale Era, storage values have been coming out of the doldrums the past couple of years. The key driver behind this change is that, unlike in the old days, when the storage market was driven primarily by the *intrinsic value* of capacity — i.e., the need to sock away gas in the lower-demand summer months for use in the peak winter months — the value of storage is being driven mostly by *extrinsic economics* — i.e., how flexible and responsive capacity allows market participants to manage supply and demand during short-term market swings.

This is especially true in the Gulf Coast region, where a combination of factors — rising gas production, increasingly undulating demand for gas (tied in part to the ups and downs of wind and solar power), frequent extreme weather events, new LNG export capacity, and plans for tens of thousands of megawatts (MW) of new gas-fired power generation — have been increasing the value of gas storage or, more specifically, the merit of quickly injecting and withdrawing gas to respond to market swings. As a result, interest in developing gas storage projects with high deliverability rates and cyclability has taken off, with billions of cubic feet of new storage capacity already coming online and a lot more in the works.

There's a caveat, though: While gas storage capacity is increasingly valued for its role in providing volume assurance and the opportunities created by high deliverability, that doesn't necessarily mean storage values will be high enough to support the large-scale buildout of new facilities. Instead, the development of new storage capacity is likely to be very targeted — it will happen only where it clearly makes economic sense.

As you'd expect, midstream companies anticipating a greater, more valuable role for Gulf Coast gas storage are taking different approaches to increasing their involvement in the sector. Some, like broad-based midstreamers Williams Cos. and Enbridge, have been acquiring existing gas storage assets and planning — or at least considering — expansions to them. Others, like Kinder Morgan, are expanding storage assets they have held for years. And still others, like Enstor Gas, Caliche Storage, Trinity Gas Storage and Black Bayou Gas Storage, are laser-focused on storage and planning projects of their own.

Many of the natural gas storage projects under development along the Gulf Coast involve the expansion of existing salt-cavern complexes and, with that, the sharing of at least some already-built infrastructure. That typically saves money, and the lower capital costs can help make a project a “go.” But at least a few well-sited projects competing for commitments are greenfield in nature and require not just the buildout of storage capacity itself but also the development of compression, freshwater wells, saltwater disposal wells, electricity supply, header pipelines and pipeline interconnections.

In this report, we will discuss the basic types of gas storage facilities — depleted gas fields or reservoirs, aquifers and salt caverns — provide a brief history of how gas-storage markets have evolved since the 1980s, and examine ongoing plans by nine companies to add new storage capacity in the Gulf Coast region. Their projects aren't the only ones being planned, but they are a representative sample that shows just how active this midstream space has become.

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