

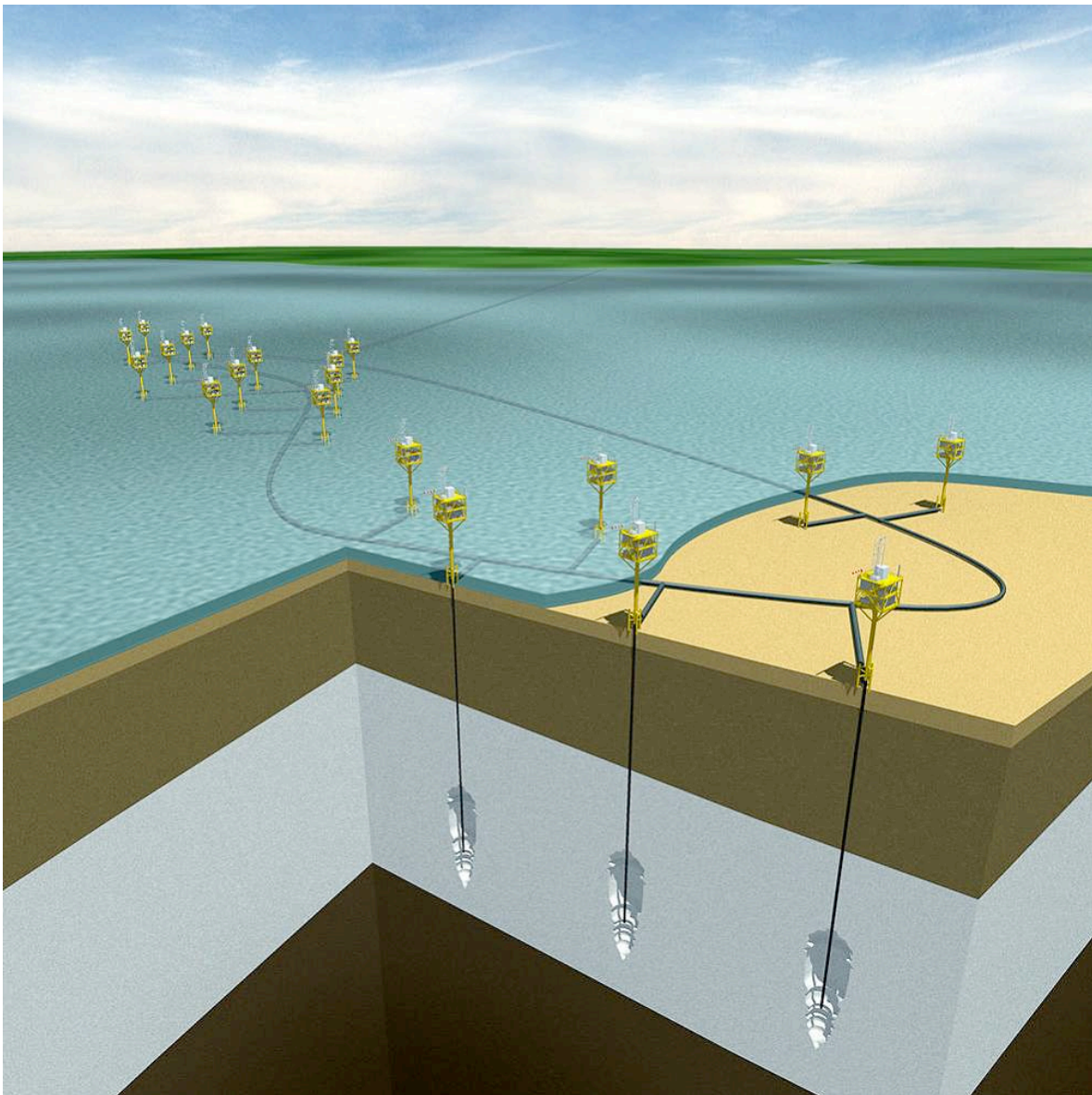
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# Gateway Gas Storage Project

## Project Summary

Gateway Storage Company Ltd (Gateway) plans to build an underground natural gas storage facility in the East Irish Sea, approximately 15 miles (25 km) offshore, south west of Barrow-in-Furness. Storage caverns will be developed in a natural salt structure below the seabed and will enable gas to be delivered, stored and then returned to the UK's national transmission system. As cavern management contractor, Parsons Brinckerhoff Energy Storage Services is providing subsurface engineering services for cavern, well and leaching program design.

*(LONG-FORM PROJECT DESCRIPTION FOLLOWS)*



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# Gateway Gas Storage Project

Irish Sea

## Client

StagEnergy Development Company, Ltd.

## Owner

Gateway Storage Company Ltd (Gateway)

## Background

Over the past 40 years the United Kingdom (UK) has become reliant on gas for a major portion of its energy supply. At present, storage capacity in the UK stands at around five percent of annual demand.

Gateway plans to build an underground natural gas storage facility in the East Irish Sea, approximately 15 miles (25 km) offshore, south west of Barrow-in-Furness. Storage caverns will be developed in a natural salt structure below the seabed and will enable gas to be delivered, stored and then returned to the UK's national transmission system.

This offshore facility will provide a significant boost to the security of energy supply in the UK gas market and will help to meet the strategic energy policy objectives of the UK government.

## Parsons Brinckerhoff Role

Parsons Brinckerhoff Energy Storage Services (PB ESS), a subsidiary of Parsons Brinckerhoff (PB), is serving as the cavern management contractor providing feasibility and front-end engineering design (FEED) services to the project.

## Project Elements

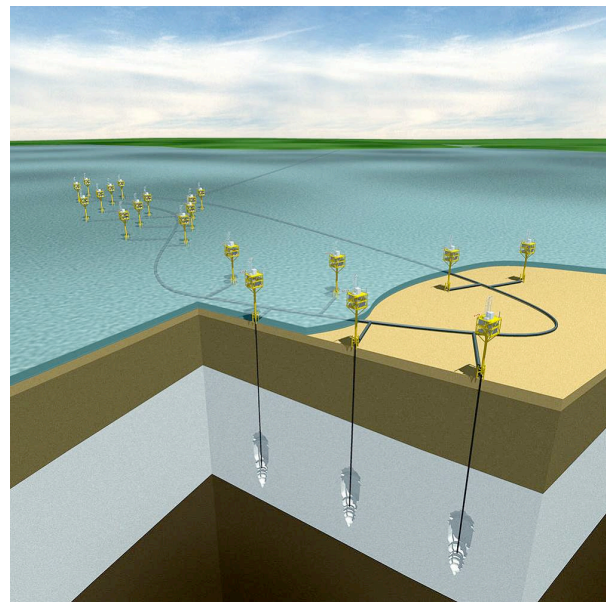
- 20 caverns, approximately 1.0 MM m<sup>3</sup> each (6.3 MM Bbl ea)
- Four hub platforms with leaching and gas handling facilities, each serving four additional satellite platforms
- Dual 25 km offshore gas pipelines and cavern ring main
- Onshore compressor station

## Project Description

The Gateway scheme involves the safe and secure storage of natural gas in salt caverns 2,300 feet below the seabed of the Irish Sea. The salt caverns will enable gas from the UK's national gas transmission system to be delivered, stored and then returned via underground pipeline across Walney Island and Piel Channel to a proposed new gas compression station, adjacent to the existing South Morecambe Terminal.

The Gateway Gas Storage Facility (GGSF) will comprise 20 man-made underground storage caverns, created by a solution mining process (leaching) in the salt strata beneath the Irish Sea. The caverns will be connected to a 'ring main' by a short pipeline and isolation valve. Two pipelines and a power cable will connect the offshore ring main to a new Gateway Gas Compression Station (GGCS), located onshore at Barrow-in-Furness. A pipeline and metering system will connect the GGCS to the National Grid Gas (NGG) National Transmission System (NTS) adjacent to the GGCS in Barrow-in-Furness.

The GGSF will be powered by a new power cable that will be installed at the same time as the offshore pipelines.



As the cavern management contractor, PB is providing subsurface engineering services for caverns wells and the leaching program. This includes:

- Geological review and assessment of selected site geology
- Cavern design
- Geomechanics
- Well and drilling program
- Leaching program
- Cavern thermodynamics modeling
- Workover (intervention) program planning
- Operations and systems engineering

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Having secured the necessary planning permission, the Gateway project is scheduled to begin construction in 2011 and the first gas storage services will be available in 2015.

Phase 1 of the facility will be capable of storing 1.5 billion standard cubic meters of working gas. This capacity will add nearly 30% to the current gas storage capacity and will provide a significant boost to the UK market.

#### **Teaming**

PB is serving as subsurface consultant on a team of prime consultants which also includes Amec for facilities design and Senergy for offshore drilling support. To ensure conformance with best European practices, PB engaged German cavern subconsultant DEEP to assist with leaching program development and peer design review.

#### **Staffing**

Tim Reichwein is serving as project manager; Roger Blair is serving as principal-in-charge and Dr. Joe Ratigan is principal consultant for cavern design.

#### **Schedule**

Our services began in September 2006 and are expected to continue through detailed design and cavern construction activities.

**Project Number:** 50680

**Creation Date:** 11/10

**Approved By:** Tim Reichwein