8 RIVERS + PACIFICORP CARBON CAPTURE RETROFIT *(PRE-FEED)*

Developer / Lead: 8 Rivers Capital & PacifiCorp (Rocky Mountain Power)

Location: Unknown at this time

Status Category: Proposed / Early Stage (Pre-FEED Study)

Prepared By: Carbon Solutions

OVERVIEW

8 Rivers Capital and PacifiCorp are jointly developing a carbon capture retrofit study for a brownfield coal or fossil fuel power plant in Wyoming, using the proprietary Allam-Fetvedt Cycle (AFC) power cycle technology. The project aims to retrofit an existing unit to produce electricity while capturing its CO_2 emissions, with the retrofit design under detailed Pre-FEED engineering. Siemens Energy is a partner in turbine development; Wood has been contracted to lead the Pre-FEED work.

OBJECTIVES

- Complete Pre-FEED (Preliminary Front-End Engineering & Design) to identify technical and economic feasibility for retrofit of an existing power plant unit with AFC technology.
- Evaluate how retrofitting can achieve near-zero emissions for power generation through full CO_2 capture, including integration with CO_2 turbines.
- Quantify CO_2 capture rates, energy efficiency, and lifecycle emissions for the retrofit option under different plant load scenarios.
- Define capture, compression, transport, and storage pathways to a storage hub or pipeline, including potential regional hub tie-ins.
- Assess permitting, regulatory, and environmental requirements for retrofit deployment.

GEOLOGY & DESIGN

Because this is a hydrogen / capture facility rather than a storage hub itself, geology pertains primarily to the location of the CO_2 sequestration path. The design anticipates capture of CO_2 at high concentration, enabling easier compression and transport. Potential sequestration options include regional Class VI approved hubs or pipelines, or on-site or nearby underground storage if suitable formations are identified. The facility will integrate with Neil Simpson's existing infrastructure to the extent possible to reduce cost and leverage coal supply and plant utilities.

TIMELINE / MILESTONES

2024: MOU executed between 8 Rivers and PacifiCorp; early feasibility and planning initiated.

March 2025: Contract awarded to Wood for Pre-FEED engineering; project milestones set for Q3 2025.

Mid- to Late 2025 (Projected): Completion of Pre-FEED; decision point for progressing to FEED or selecting plant unit for retrofit.

KEY FACTS

- In 2024, 8 Rivers and PacifiCorp signed a Memorandum of Understanding (MOU) to explore retrofitting an existing power plant in Wyoming.
- On March 12, 2025, 8 Rivers awarded Wood a contract for Pre-FEED engineering, expected to conclude in Q3 2025.
- Siemens Energy is collaborating on development of direct-fired supercritical CO_2 turbines to be used with the AFC.
- Project remains in study/engineering stage; no construction start date announced as of September 2025.
- The retrofit is intended to use existing plant infrastructure (brownfield site) to reduce capital costs and deployment time.

TECHNOLOGY & PARTNERSHIPS

The project is based on the Allam-Fetvedt Cycle (AFC), a natural gas or coal-derived power cycle that combusts fuel with oxygen in a high-pressure CO_2 environment, producing electricity while yielding a high-purity CO_2 stream. For the Wyoming study, AFC integration is being evaluated as a retrofit to an existing PacifiCorp unit. Wood is conducting Pre-FEED engineering to establish technical feasibility, cost ranges, and integration pathways. Siemens Energy is developing the advanced supercritical CO_2 turbines central to the cycle. The study also considers regulatory and permitting requirements, potential alignment with DOE funding opportunities, and how the retrofit could be adapted across PacifiCorp's broader fleet if successful.