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Project Economics of Lithium Extraction from Smackover Brines: A Cost Competitiveness Analysis

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The Smackover Formation hosts significant lithium resources contained within oilfield brines, complementing its long history of bromine production and conventional oil and gas development. Accelerating lithium demand forecasts and strong price expectations have generated a new type of interest in mineral resource development in the Smackover, positioning the area as an emerging domestic lithium hub.

The region benefits from a combination of established brine handling and transportation infrastructure, existing regional chemical supply chains, and strong local support for extractive industries, making it an attractive location for lithium production. This trend is exemplified by the first commercial U.S. direct lithium extraction (DLE) project currently being advanced by the Equinor–Standard Lithium joint venture in Southwestern Arkansas (Smackover Lithium. 2025).

The maturity of DLE technologies and the availability of existing brine management infrastructure have encouraged several conventional energy companies to enter the lithium sector. Multiple ventures are developing exploration and production projects in the eastern Texas – South western Arkansas area, including large companies such as Chevron and ExxonMobil.

As the technical challenges related to DLE scalability are increasingly well understood, this paper focuses instead on evaluating the cost competitiveness of Smackover DLE projects within the global lithium supply landscape.

Our study presents a deterministic techno economic assessment based on publicly available data from the most advanced DLE project in the region, Smackover Lithium's SWA development. Our analysis finds that Smackover DLE projects exhibit cost structures broadly competitive with leading South American brine operations.