

Improved Quantification of Lithium Resources in the Salton Sea Region

Extracting lithium from geothermal brines offers the country its only opportunity to pair clean, renewable electricity generation with the retrieval of a domestic source of a critical mineral essential to overcoming the climate crisis.

Lithium is a critical mineral, with particular importance for electric vehicles (EVs) and energy storage, and global demand is expected to grow more than 40 times by 2040. The United States currently has limited capabilities to obtain domestically sourced lithium, so nearly all lithium for U.S. needs is imported. A 2023 U.S. Department of Energy analysis by Lawrence Berkeley National Laboratory finds that **geothermal brines in California's Salton Sea region could provide an abundant, secure, domestic lithium source** to support the nation's energy future.

Key Findings

Lithium is the most feasible, abundant, and economic critical mineral that can be extracted from geothermal brines, which are a byproduct of geothermal electricity generation, using a process called Direct Lithium Extraction (DLE).

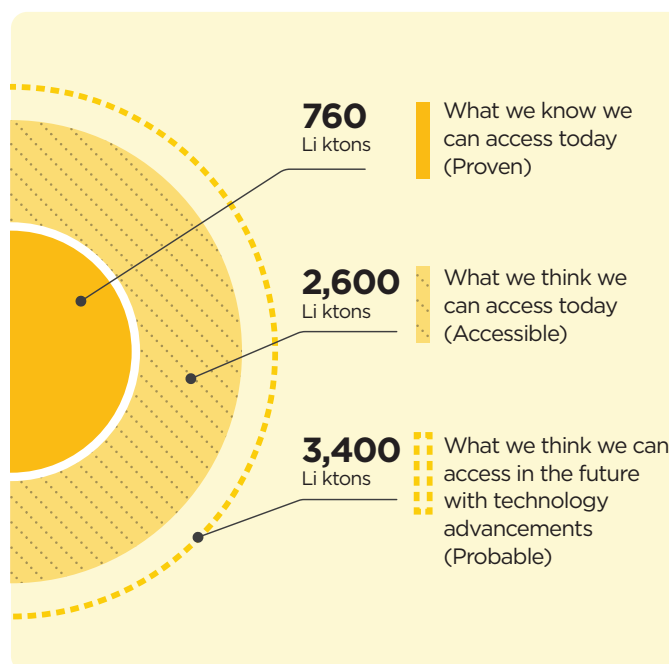
With technology advances and additional geothermal development, the Salton Sea region's lithium resource could provide the U.S. with enough secure, domestic lithium to support more than 375 million electric-vehicle batteries—exceeding all the vehicles currently on U.S. roads.

The Salton Sea's Known Geothermal Resource Area (KGRA) already produces 400 MW of geothermal electricity, but the area has the potential to produce up to 2,950 MW—indicating the opportunity for significant expansion that could be designed to capitalize on the coexisting lithium resource.

The Salton Sea KGRA's existing geothermal capacity as of 2023 (400 MW) is estimated to be producing 21,500 tons of lithium-in-brine annually—but this resource is not presently being recovered.

DLE requires 99% less water per ton of lithium than current lithium mining processes and emits almost no carbon dioxide.

The Salton Sea region's available lithium resource will enable the United States to meet or exceed global demand for decades.



Read the report: <https://escholarship.org/uc/item/4x8868mf>

