

CHARACTERIZING GEOHERMAL LITHIUM RESOURCES NEAR THE SALTON SEA



In order for the U.S. to develop its own secure supply chain of Lithium for storage and electric vehicle batteries, abundant geothermal resources beneath the Salton Sea need to be quantitatively assessed and characterized.

RESEARCH RESULTS

Geothermal brines beneath the Salton Sea contain at least 4.1 million metric tons of proven LCE and 18 million metric tons of probable LCE, rivaling the size of some of the largest Li brine deposits in the world.

Annual geothermal brine production from the field (112 Megatons) currently brings 115,000 metric tons of LCE to the surface, with the planned expansion of geothermal power production at the field likely doubling or tripling that available amount of Li over the next few years. Suitable Direct Lithium Extraction technology for the hot brines, along with conversion of the extracted LiCl to Li carbonate and Li hydroxide, are all undergoing development, testing and refinement by the companies involved.

Expected rates of water use, solid waste generation, air emissions and induced seismicity are predicted. No significant environmental impacts on agriculture, human health or the Salton Sea are foreseen. Established landfill capacity for solid wastes may need to be increased if the full MWe capacity of the SS-KGRA is realized over the next decade.

Salton Sea geothermal Lithium has a unique Li isotopic signature that allows it to be distinguished from Li sourced in South America and Australia.

Establishment of a regional Critical Minerals Supply Chain Research and Training facility in southern California will assist major producers of Critical Minerals such as Li, REEs and B in the region characterize the purity of their marketed materials and verify the domestic provenance of battery and magnet components.



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Salton Sea strategic metal resources beyond Lithium: Manganese, Zinc, and the Rare Earth Elements; Maryjo Brounce, Patrick Dobson, Michael McKibben; 1University of California Riverside, Riverside CA USA; 2Lawrence Berkeley National Laboratory, Berkeley CA USA; DOE/GTO sub contract via LBL.

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Selected References

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