

SUMMARY FOR PUBLIC RELEASE

Future biosolids disposal includes stringent requirements for the handling, treatment, storage, and land application of biosolids. California SB 1383 mandates that by 2024, jurisdictions must ensure that biosolids are managed to avoid methane emissions from anaerobic decomposition. Provisions such as SB1383 are likely to extend throughout the country as climate change becomes a challenge difficult to ignore. In combination, these laws demand innovative solutions such as proposed here to deal with solid waste streams.

Current shortcomings, limitations, and challenges in solid waste stream production include federal and state regulatory drivers such as EPA Biosolids Rule (40 CFR Part 503) which sets national standards for the use and disposal of sewage sludge (biosolids) to protect public health and the environment and California Code of Regulations, Title 27, Division 2, Subdivision 1, Chapter 3 which specifically addresses the management and disposal of biosolids in California.

Our project deals with the methane problem from biosolids and the biosolids disposal problem in one swoop. It accomplishes this by converting methane to hydrogen using a catalyst derived from biosolids. The biosolids problem is dispensed by biosolids conversion to biochar. The current proposed project aims, for phase 1, to the design work and experimental validation for a facility that diverts 1-2 tons of biosolids per day and generates 100 kg/day of fuel cell grade hydrogen. The hydrogen production will be performed near the Rancho Las Virgenes Composting Facility. The Facility is owned and operated by the Las Virgenes Municipal Water District. Collaborators include CRR Environmental as the hydrogen user and Hago Energetics Benefit Corporation as the technology developer. The produced hydrogen will be shipped to CRR Environmental who will be operating a small fleet of a fleet of hydrogen semi tractor trucks. This project will demonstrate the viability of using biosolids as an effective agent for hydrogen production and carbon sequestration in the form of biochar, as well as verify the reduction in greenhouse gas emissions from using this approach.

This project will help us move this technology to maturity. It will help prepare municipalities for the coming need to deal with methane gas, biosolids disposal and increasing need for new hydrogen supplies as the nation and the world seeks to decarbonize in multiple sectors.