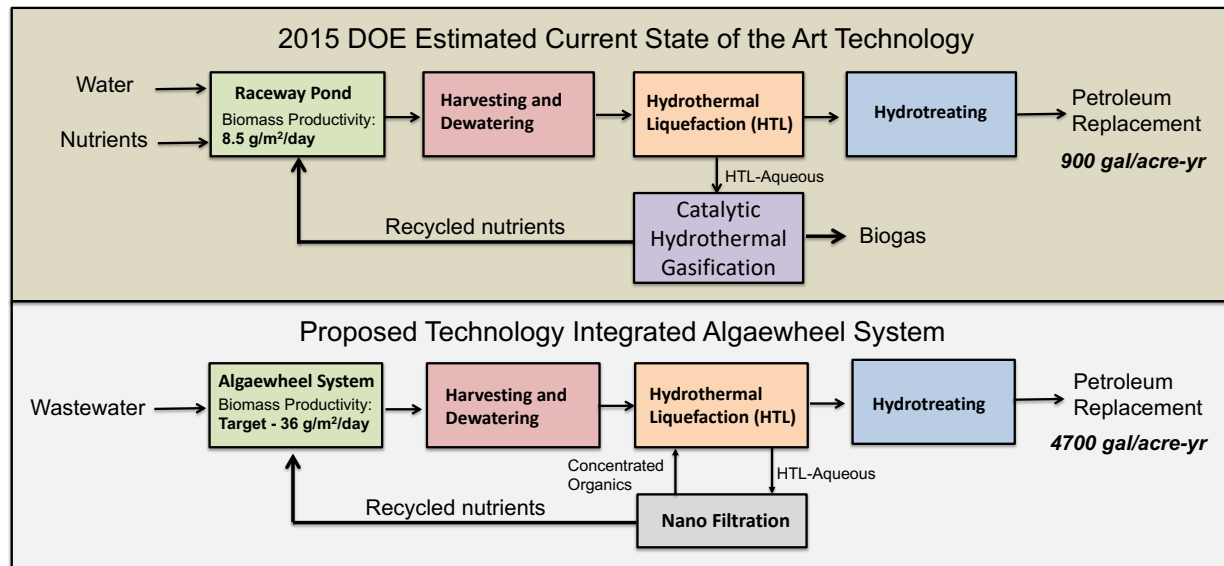


Improving the Productivity and Performance of Large-Scale Integrated Algal Systems for Wastewater Treatment and Biofuel Production

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Project Goal

The overarching goal of this project is to develop and demonstrate the algal biofuel production system that can produce fuel lower than the BETO's the minimum fuel selling price trajectory (\$2.50/GGE). The goal will be achieved through integrating the commercially available algal wastewater treatment system with hydrotreating technology. In this project, we proposed to develop and apply biological and engineering tools to enhance algal biomass productivity, quality and system robustness.

Project Summary

This project is directly relevant to the main objective of the program announcement, namely, to develop technologies that improve productivity and robustness of algal cultivation systems. In particular, this proposal addresses AOI-1: Cultivation Intensification Processes for Algae. This project will demonstrate multiple promising approaches to improve algae biomass productivity and lower the net cost of algal biomass production, which are the main bottlenecks limiting the large-scale cultivation of algae. The proposed technologies include biological approaches: stress induced endoreduplication and bioaugmentation of algal growth promoting bacteria; engineering approaches: integration of adsorbents and develop dynamic control model and system; improving downstream process: enhance biomass quality by optimizing harvesting frequency and use nanofiltration for hydrothermal liquefaction aqueous product recycling. Proposed technologies will be validated in pilot scale tests then integrated into multiple full-scale operation systems for demonstration. Collected data will be used to perform techno-economic analysis and life-cycle assessment to evaluate the minimum fuel selling price.