

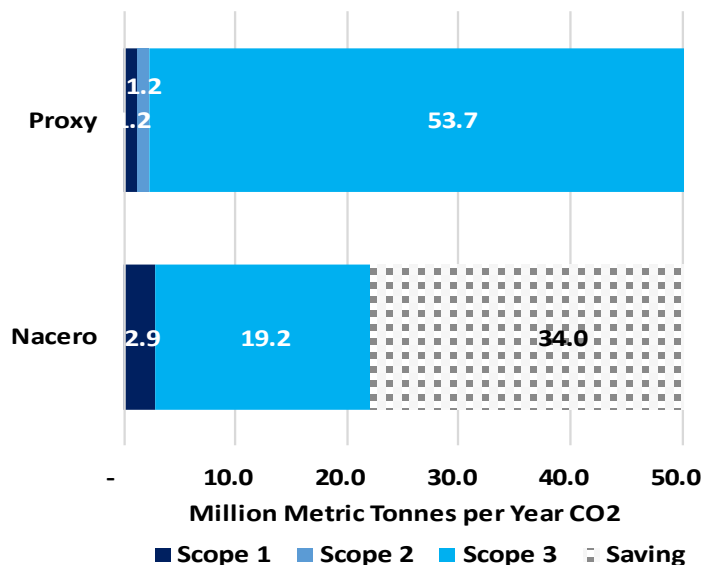
Executive Summary: Nacero vs. Traditional Crude Oil Refining. March 2, 2021

Trinity Consultants was retained by Nacero Inc. to perform a life cycle greenhouse gas (GHG) comparison of Nacero’s proposed Penwell, Texas gas-to-liquid manufacturing facility (“Penwell Facility” or “Facility”) with those of a conventional crude oil refinery. The model (version 1.0) created for this Life Cycle Analysis (“LCA”) estimates the life cycle GHG emissions of the Penwell Facility based on data provided by Nacero per the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard¹ and compares them to the estimated life cycle GHG emissions associated with a hypothetical petroleum refinery with the capacity (“Proxy Refinery Capacity”) required to yield the equivalent amount of gasoline as Nacero’s Penwell Facility. Publicly available data was used to calculate the LCA parameters for the Proxy Refinery Capacity in the same geographic markets that will be served by the Penwell Facility.²

Results were calculated assuming that the Nacero facility produces 89,717 barrels per day of gasoline, 23,391 barrels per day of LPG, and 137 tons per day of hydrogen. The Proxy Refinery Capacity was sized to reach a plant gate refinery volume of 89,717 barrels per day of gasoline; amounts of co-products were calculated based on a weighted average EIA PADD 3 Texas Gulf Coast and PADD 5 West Coast distribution.

Total yearly CO₂e emissions for the Nacero facility and the Proxy Refinery Capacity based on Trinity’s LCA³ are presented in Figure 1 below.

Because the Proxy Refinery Capacity yields many additional co-products, its upstream and downstream emissions footprint is substantially more carbon intensive. As a result, the Nacero Facility has a 60.7% lower Scope 1,2 and 3 life cycle carbon emissions footprint, resulting in 34 million metric tonnes per year of avoided CO₂e emissions, compared to the Proxy Refinery Capacity required to yield 89,717 barrels per day of gasoline.



¹ <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

² Where geographic specific data was not available, national average data were utilized.

³ Due to data limitations, Trinity’s LCA did not evaluate emissions associated with capital goods purchase, construction, maintenance, or waste generation.