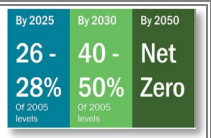

Reducing Net Greenhouse Gas (GHG) Emissions
• Minimize net GHG emissions.
Improving Health and Quality of Life for Residents and Communities
• Maximize quality of and access to essential goods, services, and infrastructure for residents.
• Maximize positive public health outcomes and public safety.
• Maximize the preservation of cultural heritage.
Creating a More Equitable Society
• Reduce socioeconomic, demographic, and geographic disparities in future opportunities and outcomes.
• Maximize reduction and mitigation of historical and structural inequities and their impacts for underserved and marginalized communities, including communities of color and Indigenous peoples.
• Maximize engagement with and participation of communities in decision-making and implementation.
Strengthening the Economy and Workforce
• Maximize employment, economic opportunity, and support for Louisiana workers.
• Maximize economic growth.
Conserving Natural Resources
• Maximize preservation of natural resources and ecosystem services.
• Maximize environmental stewardship and support of healthy ecosystems.
Adapting to a Changing Climate
• Increase resilience of the built and natural environment to climate change.
• Increase the resilience of communities to climate change.
Managing for Short- and Long-Term Success
• Maximize confidence of the public and stakeholders in the outcome of emissions-reduction strategies to increase support for their implementation.
• Maximize the efficiency and effectiveness of emissions-reduction strategies.
• Maximize timely implementation of emissions-reduction strategies.
• Maximize the durability of emissions-reduction strategies in an uncertain future.

FAQ



Reducing Net Greenhouse Gas (GHG) Emissions | Improving Health and Quality of Life for Residents and Communities | Creating a More Equitable Society | Strengthening the Economy and Workforce | Conserving Natural Resources | Adapting to a Changing Climate | Managing for Short- and Long-Term Success

THE PROJECT IS CONSISTENT WITH THE STATE OF LOUISIANA'S 2050 NET ZERO PROGRAM

➲ THE PROJECT WILL HELP REDUCE GHG 1) BY REDUCING USED OIL CONTAMINATION OF THE ECOSYSTEM BY BEING THE FIRST USED OIL REFINERY IN LOUISIANA (SEE FIGURE 20) AND 2) BY NOT USING HYDROGEN (WHICH IN THE REFINING PROCESS OR THROUGH ESCAPE FORMS HYDROGEN SULFIDE IN THE ATMOSPHERE WHICH DEGRADES INTO SULFURIC ACID). THESE ENVIRONMENTAL CONTAMINANTS ARE TOXIC TO THE LAND & OCEAN ORGANISMS THAT CONVERT CO_2 INTO O_2 AND FURTHER SEQUESTER THE CARBON. FEWER SUCH ORGANISMS CAUSES MORE RESIDUAL GHG - ADVERSELY AFFECTING CLIMATE.

IN PRODUCING REFINED PRODUCTS, THE PROJECT WILL UTILIZE PATENTED, PROPRIETARY, PROVEN ODS TECHNOLOGY THAT REDUCES GHG EMISSIONS PER BARREL BY 60%.

➲ BY ELIMINATING THE CONTAMINATION OF THE ENVIRONMENT – ESPECIALLY THE WATER TABLE – WITH USED OIL, AND BY NOT UTILIZING HYDROGEN IN ITS PROCESS (ELIMINATING THE CONSEQUENTIAL GENERATION OF HYDROGEN SULFIDE – RECOGNIZED BY THE US HHS AS TOXIC), AND BY PROVIDING CRITICALLY NEEDED HIGH-WAGE JOBS TO THE PARISH (IN TOTAL RECOVERING HALF THE NET JOBS LOST IN THE PARISH IN THE PAST DECADE), THE PROJECT IMPROVES THE QUALITY OF LIFE FOR RESIDENTS. THE PROJECT'S JOBS AVERAGE $60,000 ANNUAL WAGE VS AN AVERAGE ANNUAL WAGE OF $34,000 IN JENNINGS AND $35,000 IN THE PARISH.

➲ THE PROJECT CONTRIBUTES TO A MORE EQUITABLE SOCIETY THROUGH THE 100 HIGH-WAGE COMPANY JOBS AND 456 TOTAL NEW JOBS (PHASES 1 & 2 COMBINED). THESE JOBS WILL HELP ALL CITIZENS OF ALL RACES – AS POVERTY AND SUBSISTENCE WAGES CHARACTERIZE THE ENTIRE PARISH. THIS VETERAN AND MINORITY OWNED PROJECT WILL PROVIDE EQUAL OPPORTUNITY TO ALL, WITH A PRIORITY FOR JENNINGS AND PARISH RESIDENTS.

➲ THE PROJECT AND PROJECT-RELATED JOBS WILL INHERENTLY STRENGTHEN THE LOCAL ECONOMY, AND BY PROVIDING ENVIRONMENTALLY FRIENDLY AND COST-EFFECTIVE DE-SULFURIZATION WILL ENHANCE THE LONG-TERM VIABILITY OF LOUISIANA'S CRUDE OIL PRODUCTION FROM THE MARS FORMATION IN THE GULF. THE PROJECT (ACCORDING TO RIMS) WILL ALSO CONTRIBUTE APPROXIMATELY $12 MILLION IN ANNUAL IMPROVEMENT TO LOCAL AND STATE GOVERNMENT NET INCOME (PHASES 1 & 2 COMBINED).

➲ THE PROJECT WILL CONSERVE NATURAL RESOURCES BY 1) REDUCING THE CONSUMPTION OF NATURAL GAS PER BARREL OF CRUDE REFINED, 2) EXTENDING RESERVES LIFE BY UTILIZING PREVIOUSLY DISCARDED OIL IN THE REFINING FEEDSTOCK, 3) INCREASING RESERVES LIFE BY EXPANDING COST-EFFECTIVE UTILIZATION OF HIGH-SULFUR CRUDE (THE PRINCIPAL CRUDE OIL PRODUCED IN LOUISIANA), 4) REDUCING THE LOSS OF DIATOM AND OTHER PHYTOPLANKTON LIFE CRITICAL IN THE CARBON CYCLE – BOTH FOR THE CONVERSION OF CO_2 INTO O_2 AS WELL AS THE SEQUESTRATION OF CARBON – BY ELIMINATING THE USE OF HYDROGEN IN THE REFINING PROCESS AND BY REMOVING USED OIL FROM THE ENVIRONMENT THAT ULTIMATELY CONTAMINATES THE OCEANS, & 5) REDUCING THE LOSS OF LAND-BASED PLANT LIFE DUE TO ENVIRONMENTAL CONTAMINATION BY DISCARDED USED CRUDE OIL AND HYDROGEN SULFIDE.

➲ THE PROJECT WILL REDUCE MATERIALS FROM THE ENVIRONMENT (USED OIL, HYDROGEN SULFIDE, ETC.) THAT STRESS, DAMAGE OR CHALLENGE THE NATURAL CARBON-CYCLE CONTROL COMPONENTS (SUCH AS DIATOMS, PLANT FOLIAGE, ETC), AND REDUCE THE DEMAND ON THOSE CONTROL SYSTEMS BY REDUCING THE PRODUCTION OF GHG EMISSIONS PER BARREL CRUDE REFINED.

➲ THE PROJECT WILL UTILIZE PROVEN TECHNOLOGIES - SUCH AS ODS VS HYDROTREATING, HEAT RETENTION AND RECOVERY – WHICH HAVE HAD NO ADVERSE UNINTENDED CONSEQUENCES. IN SHORT, THE RISK IS MINIMAL IF NOT NON-EXISTENT WHICH SHOULD REBUILD PUBLIC CONFIDENCE IN CLIMATE INVESTMENTS.

FAQ

By 2025	By 2030	By 2050
26 - 28% Of 2005 levels	40 - 50% Of 2005 levels	Net Zero

Reducing Net Greenhouse Gas (GHG) Emissions

- Minimize net GHG emissions.

MAJORITY OF REFINERY GHG IS GENERATED BY NATURAL GAS COMBUSTED TO PRODUCE PROCESS STEAM (COMBUSTION EMISSIONS) – NOT BY THE REFINING PROCESS ITSELF (PROCESS EMISSIONS)

FIGURE 1

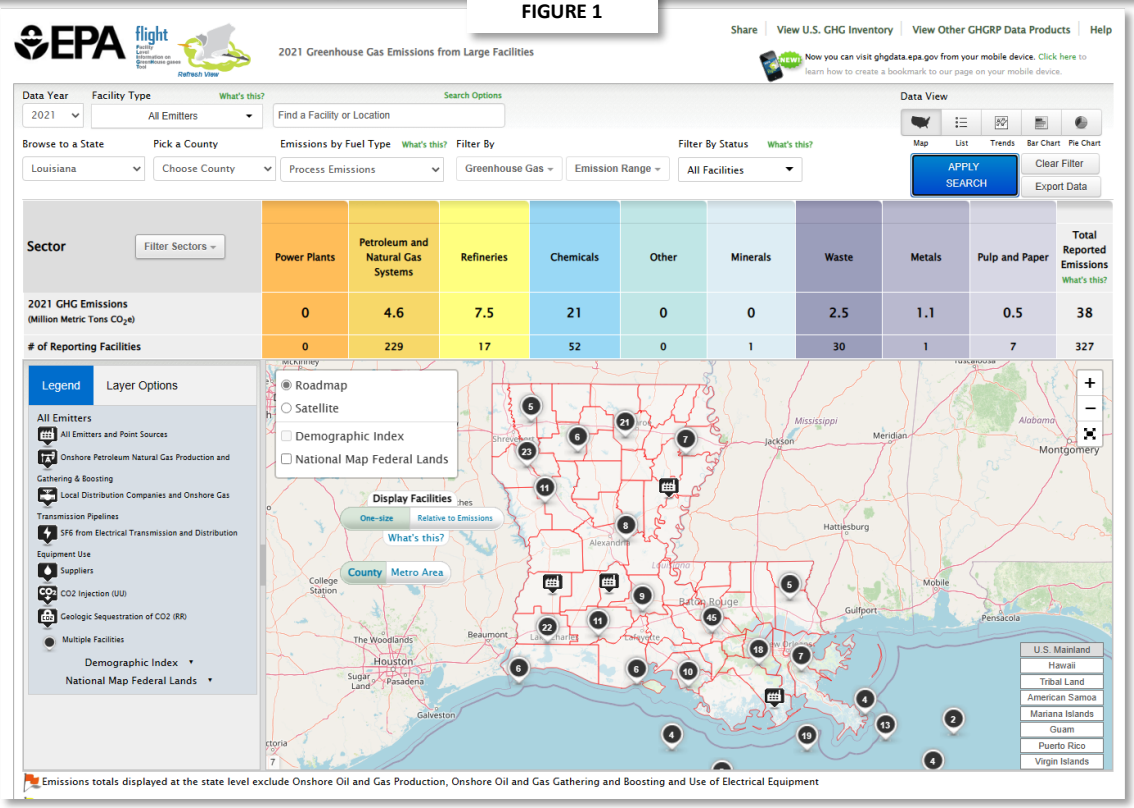
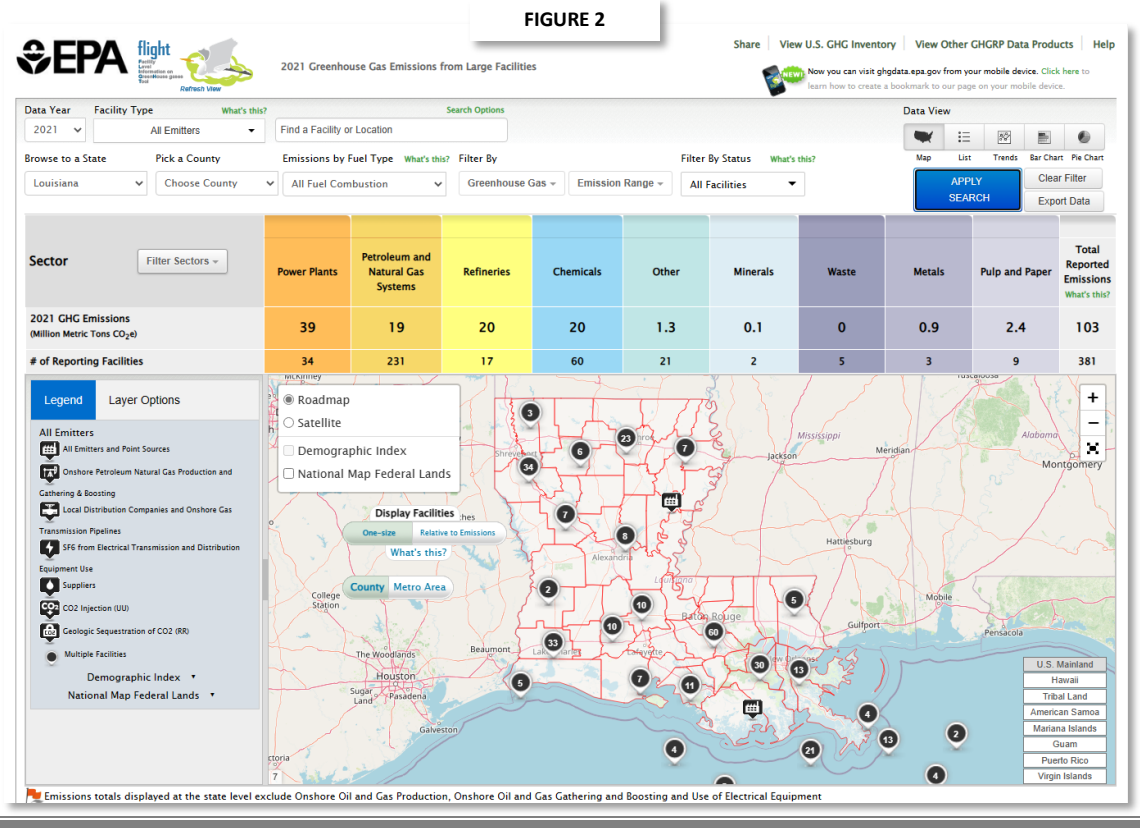


FIGURE 2



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COMBUSTION EMISSIONS: PROJECT PLAN TO MINIMIZE GHG FROM FUEL (NOT FEEDSTOCK) USED FOR STEAM – THE SOURCE OF HEAT FOR THE REFINERY PROCESS

- Per EPA 2023: From the most recent EPA data available (2021 – see Figures 1 & 2), Louisiana Refinery GHG Emissions from Fuel (not Feedstock) are 3x the GHG Emissions from the Refinery Process, but there is no perfected method for scrubbing the CO_2 and no viable downstream methodology for utilizing or disposing of it in Louisiana. In West Texas, where CO_2 injection is used in Exploration & Production (E&P), there is a ready use, with CO_2 captured in the fields and gas processing plants and then re-utilized. CO_2 is also produced in a KM field in Colorado and then piped to West Texas. None of this infrastructure is in place in Louisiana, making recovery a pyrrhic victory.
- As a result, the only effective solution is the efficient utilization of heat in the process – both by process design and by efficient generation and preservation of heat once generated. The project utilizes ODS rather than hydrotreatment. Inherently, that reduces the MCF combusted per barrel of crude refined, as the process temperatures for ODS are 150°F vs 800°F for hydrotreating. The impact on combustion is significant, as there is a 60% reduction in MCF per barrel of crude produced by the project, versus existing Louisiana Gulf refineries. That amount can be validated by comparing the project process specifications (derived from the physics and the experience of an existing process designed, installed and in successful operation) with the Louisiana Gulf refinery actual data (from the EPA and EIA) – see Figures 3-7.

FIGURE 3

Data Extracted from EPA's FLIGHT Tool (http://ghgdata.epa.gov/ghgp)
The data was reported to EPA by facilities as of 08/12/2022
All emissions data is presented in units of metric tons of carbon dioxide equivalent using GWP's from IPCC's AR4
GHG data for some source categories are not directly comparable between 2010 and subsequent years. 12 new source categories began reporting for 2011.
Search Parameters: year=2021; state=LA; GHGs=ALL; data type=All Emitters;

REPORTING YEAR	FACILITY NAME	GHGRP ID	REPORTED ADDRESS	LATITUDE	LONGITUDE	CITY NAME	COUNTY NAME	STATE	ZIP CODE	PARENT COMPANIES	GHG QUANTITY (METRIC TONS CO2e)	SUBPARTS
2021	CF INDUSTRIES NITROGEN, LLC - DONALDSONVILLE NITROGEN COMPLEX	1002301	39018 HIGHWAY 3089	30.086917	-90.957861	DONALDSON	ASCENSION PARISH	LA	70346	CF INDUSTRIES HOLDINGS INC (100%)	9052754	
2021	EXXONMOBIL BATON ROUGE REFINERY AND CHEMICAL PLANT	1007643	4045 SCENIC HWY	30.484917	-91.17392	BATON ROUG	EAST BATON ROUGE PARISI	LA	70805	EXXON MOBIL CORP (100%)	6286603	HH
2021	Brame Energy Center	1001041	275 RODEMACHER RD	31.395	-92.7167	LENA	Rapides	LA	71447	CLECO CORPORATE HOLDINGS LLC (76	6186680	C
2021	SABINE PASS LNG TERMINAL	1002259	9243 GULF BEACH HWY	29.74777	-93.87163	JOHNSONS BA	CAMERON PARISH	LA	70631	CHENIERE ENERGY INC (100%)	5636545	C
2021	CITGO PETROLEUM CORP - LAKE CHARLES MANUFACTURING COMPLEX	1002389	4401 Hwy 108	30.18887	-93.32524	Westlake	CALCASIEU PARISH	LA	70665	PDV AMERICA INC (100%)	4194227	C
2021	Garyville Refinery	1003043	155 Sugarcane Road	30.06132	-90.59353	Garyville	ST. JOHN THE BAPTIST PAR	LA	70051	MARATHON PETROLEUM CORP (100%)	4034489	P
2021	Ninemile Point	1001606	1617 RIVER ROAD	29.9472	-90.1458	WESTWEGO	Jefferson	LA	70094	ENTERGY CORP (100%)	3930378	
2021	Norco Manufacturing Complex	1005911	15536 River Road	30.000964	-90.403863	Norco	ST. CHARLES PARISH	LA	70079	SHELL PETROLEUM INC (100%)	3409664	P,PP
2021	Plaquemine Cogen Facility	1000816	21255 HIGHWAY 1	30.3215	-91.2392	PLAQUEMINE	Iberville	LA	70765	DOW INC (100%)	3031565	P
2021	Big Cajun 2	1001016	10431 CAJUN 2 ROAD HWY 9	30.7261	-91.3669	NEW ROADS	Pointe Coupee	LA	70760	LOUISIANA GENERATING LLC (86%); EN	2952196	P
2021	Cameron LNG, LLC	1013553	301 N. Main Street	30.03898	-93.33638	Hackberry	CAMERON PARISH	LA	70645	SEMPRA ENERGY (100%)	2854246	
2021	Eagle US 2 LLC	1008459	1300 PPG Drive	30.221	-93.2826	WESTLAKE	CALCASIEU PARISH	LA	70669	WESTLAKE CHEMICAL CORP (83%); ENT	2779109	C,MM,Y
2021	St Charles Operations (Taft/Star) Union Carbide Corp	1007031	355 LA HWY 3142 (GATE 1)	29.9829	-90.4437	TAFT	ST. CHARLES PARISH	LA	70057	DOW INC (100%)	2685456	C
2021	Valero Refining - New Orleans, L.L.C.	1009080	14902 RIVER ROAD	29.985278	-90.392778	NORCO	ST. CHARLES PARISH	LA	70079	VALERO ENERGY CORP (100%)	2547744	C
2021	Louisiana 1	1001209	GULF STATES ROAD	30.4903	-91.1875	BATON ROUG	East Baton Rouge	LA	70821	ENTERGY CORP (100%)	2059325	C,V
2021	The Dow Chemical Company -- Louisiana Operations	1004314	21255 Highway 1 South	30.320903	-91.239015	PLAQUEMINE	IBERVILLE PARISH	LA	70765	DOW INC (100%)	2058218	C,W
2021	Lake Charles Power Station	1013878	2500 Houston River Road	30.259686	-93.281737	Westlake	CALCASIEU PARISH	LA	70669	ENTERGY CORP (100%)	2023251	C,W
2021	Acadia Power Station	1001347	30385 CROWLEY EUNICE HWY	30.4284	-92.4112	EUNICE	Acadia	LA	70535	CLECO CORPORATE HOLDINGS LLC (50	1976826	C,W
2021	St.Charles	1013578	17494 River Rd	30.004648	-90.464826	Montz	ST. CHARLES PARISH	LA	70068	ENTERGY CORP (100%)	1913978	C,W
2021	PHILLIPS 66 CO - ALLIANCE REFINERY	1001824	15551 HIGHWAY 23 SOUTH	29.68	-89.980833	BELLE CHASSE	PLAQUEMINES PARISH	LA	70037	PHILLIPS 66 (100%)	1841565	C
2021	R S Nelson	1001602	3500 HOUSTON RIVER ROAD	30.2861	-93.2917	WESTLAKE	Calcasieu	LA	70669	ENTERGY CORP (91.4%); SAM RAYBURN	1726045	D
2021	Nelson Industrial Steam Company	1000513	3500 Houston River Road	30.2861	-93.2917	Westlake	Calcasieu	LA	70669	NELSON INDUSTRIAL STEAM CO LTD (1	1722292	C,X
2021	OCCIDENTAL CHEMICAL CORPORATION - Taft Facility	1001709	266 HIGHWAY 3142	29.9861	-90.4575	HAHNVILLE	ST. CHARLES PARISH	LA	70057	OCCIDENTAL PETROLEUM CORP (100%	1718286	P
2021	CHALMETTE REFINING LLC - CHALMETTE REFINERY	1007625	500 W ST BERNARD HWY	29.962482	-89.953344	CHALMETTE	ST. BERNARD PARISH	LA	70043	PBF ENERGY INC (100%)	1565594	P
2021	PHILLIPS 66 CO - LAKE CHARLES REFINERY	1006012	2200 OLD SPANISH TRAIL	30.242155	-93.274386	WESTLAKE	CALCASIEU PARISH	LA	70669	PHILLIPS 66 (100%)	1538260	P
2021	PCS NITROGEN FERTILIZER LP - GEISMAR AGRICULTURAL NITROGEN & PH	1003489	10886 Hwy 75	30.225784	-91.053154	GEISMAR	ASCENSION PARISH	LA	70734	PCS NITROGEN FERTILIZER LP (100%)	1458823	P
2021	Dolet Hills Power Station	1001416	963 POWER PLANT RD	32.0306	-93.5692	MANSFIELD	De Soto	LA	71052	AMERICAN ELECTRIC POWER CO INC (5	1283864	
2021	Carville Energy Center	1005110	4322 HIGHWAY 30	30.2292	-91.065	Saint Gabriel	IBERVILLE PARISH	LA	70776	ARGO INFRASTRUCTURE PARTNERS LLC	1244215	C,W
2021	Axiall, LLC	1002350	26100 STATE HIGHWAY 405 S	30.265426	-91.18419	PLAQUEMINE	IBERVILLE PARISH	LA	70764	WESTLAKE CHEMICAL CORP (100%)	1164519	C
2021	Ouachita Plant	1000826	350 HARVEY GREGG RD	32.7056	-92.0697	STERLINGTON	Ouachita	LA	71280	ENTERGY CORP (100%)	1124233	C,N
2021	Arsenal Hill Power Plant	1001609	520 NORTH ALLEN	32.5181	-93.7611	SHREVEPORT	Caddo	LA	71101	AMERICAN ELECTRIC POWER CO INC (1	1115589	D
2021	Nucor Steel Louisiana LLC	1010766	9101 LA HWY 3125	30.081306	-90.860528	Convent	ST. JAMES PARISH	LA	70723	NUCOR CORP (100%)	1093104	C,W
2021	Coughlin Power Station	1001603	2180 ST LANDRY HWY	30.8442	-92.2606	ST. LANDRY	Evangeline	LA	71367	CLECO CORPORATE HOLDINGS LLC (10	1068150	C,X
2021	SHELL CHEMICAL CO - GEISMAR PLANT	1001936	7594 HIGHWAY 75	30.184161	-90.992889	GEISMAR	ASCENSION PARISH	LA	70734	SHELL PETROLEUM INC (100%)	1046916	C,X

- The project also delivers Process Emissions improvement through the utilization of vapor recovery systems, in addition to the inherent Combustion Emissions improvement through the utilization of heat retention and proven recovery solutions (e.g., stack heat recovery).
- EPA Technical Note:

Greenhouse Gases - 6-9

CO_2, CH_4, and N_2O emissions are all produced during natural gas combustion. In properly tuned boilers, nearly all the fuel carbon (99.9 percent) in natural gas is converted to CO_2 during the combustion process. This conversion is relatively independent of boiler or combustor type. Fuel carbon not converted to CO_2 results in CH_4, CO, and/or VOC emissions and is due to incomplete combustion. Even in boilers operating with poor combustion efficiency, the amount of CH_4, CO, and VOC produced is insignificant compared to CO_2 levels. Formation of N_2O during the combustion process is affected by two furnace-zone factors. N_2O emissions are minimized when combustion temperatures are kept high (above 1475°F) and excess oxygen is kept to a minimum (less than 1 percent). Methane emissions are highest during low-temperature combustion or incomplete combustion, such as the start-up or shut-down cycle for boilers. Typically, conditions that favor formation of N_2O also favor emissions of methane.

FAQ

By 2025 26 - 28% Of 2005 levels | By 2030 40 - 50% Of 2005 levels | By 2050 Net Zero

Reducing Net Greenhouse Gas (GHG) Emissions

- Minimize net GHG emissions.

EPA & EIA DATA CAN BE FURTHER ANALYZED TO DETERMINE THE CURRENT LA GULF REFINERIES' GHG RATE PER BARREL OF OIL PROCESSED AND PER MCF OF NG USED FOR FUEL TO HEAT THE PROCESS

- In short, the project has been designed to be 60% more efficient in the burning of natural gas (and hence production of GHG from "fuel") than the current average Louisiana Gulf refinery (see Figures 4 & 7, 2021 values compiled from EIA data in Figures 5 & 6). Granular data to the individual refinery was only available for feedstock input, with PADD 3 Louisiana Gulf available for feedstock input and fuel consumption.
- In 2021, Louisiana Gulf refineries processed 3.6 barrels of crude, etc., for every MCF of natural gas used to generate process steam for heat in the process. The project plans to process 6.1 barrels of crude for every MCF of natural gas used to generate process steam (see Figures 4 & 7).
- The project forecast is conservative when contrasted with historic Louisiana Gulf refinery data, as the project will employ heat recovery and heat retention technology not fully utilized in all Louisiana Gulf refineries (see Figure 7).

FIGURE 4

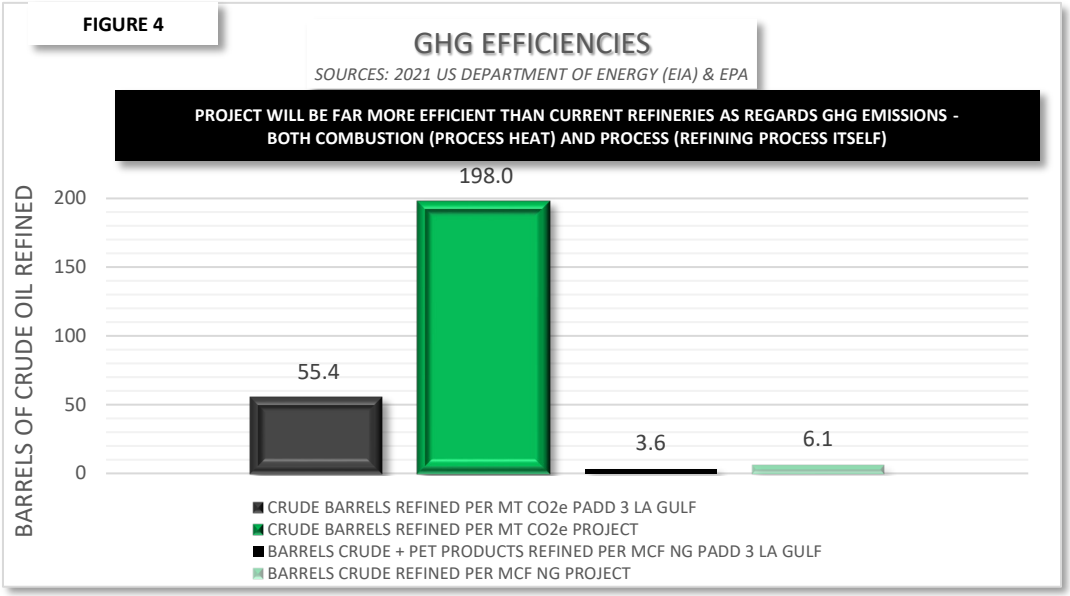

FIGURE 5

Workbook Contents
Louisiana Gulf Coast Refinery Utilization and Capacity

Date	Gulf Coast (PADD 3) Refinery Net Input of Crude Oil and Petroleum Products (Thousand Barrels)	Gulf Coast (PADD 3) Natural Gas Consumed at Refineries (Million Cubic Feet)	PADD 3 GULF CRUDE AND PET PRODUCTS BARRELS PER MCF
2005	2,779,172	395,980	7.02
2006	2,664,193	395,627	6.73
2007	2,658,056	363,004	7.32
2008	2,473,210	381,022	6.49
2009	2,311,602	383,891	6.02
2010	2,229,242	415,660	5.36
2011	2,131,305	434,493	4.91
2012	2,075,982	474,359	4.38
2013	2,116,022	491,023	4.31
2014	2,146,700	474,212	4.53
2015	2,169,157	445,865	4.87
2016	2,142,895	462,107	4.64
2017	2,192,949	465,489	4.71
2018	2,290,882	482,945	4.74
2019	2,245,665	495,521	4.53
2020	1,942,138	514,668	3.77
2021	**1,982,080**	**557,541**	**3.56**
2022	2,118,100	-	-

FIGURE 6

Data Extracted from EPA's FLIGHT Tool (http://ghgdata.epa.gov/ghgp)
The data was reported to EPA by facilities as of 08/12/2022
All emissions data is presented in units of metric tons of carbon dioxide equivalent using GWP's from IPCC's AR4
GHG data for some source categories are not directly comparable between 2010 and subsequent years. 12 new source categories began reporting for 2011.
Search Parameters: year=2021; state=LA; GHGs=ALL; data type=All Emitters;

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EXXON MOBIL CORP (100%)	6,706,857	6,265,462	6,475,810	6,355,424	6,286,678	6,000,189	6,213,229	6,162,653	6,403,336	6,369,741	5,531,181	6,286,603
MARATHON PETROLEUM CORP (100%)	3,548,812	3,914,481	3,958,139	3,946,970	3,958,037	3,978,498	3,807,983	4,060,112	4,127,346	4,065,911	3,881,805	4,034,489
VALERO ENERGY CORP (100%)	2,408,104	2,464,352	2,395,982	2,764,110	2,606,177	2,529,869	2,800,860	2,535,694	2,528,290	2,314,734	2,010,218	2,547,744
PHILLIPS 66 (100%)	2,595,849	2,499,815	2,175,659	2,416,372	2,122,581	1,973,789	2,582,034	2,803,216	2,741,632	2,697,634	1,548,007	1,841,565
PBF ENERGY INC (100%)	1,833,245	1,458,248	1,582,620	1,473,867	1,543,348	1,610,679	1,624,283	1,613,608	1,653,272	1,601,075	1,492,094	1,565,594
PHILLIPS 66 (100%)	1,756,063	1,814,712	1,624,822	1,682,175	1,584,268	1,739,973	1,730,893	1,779,721	1,896,562	1,730,933	1,383,803	1,538,260
VALERO ENERGY CORP (100%)	985,329	1,098,586	744,678	801,312	703,746	614,830	665,500	739,008	690,823	763,295	631,629	710,508
THE WILLIAM HERBERT HUNT TRUST ESTATE (100%)	596,813	600,969	564,143	538,949	480,186	599,676	633,155	605,016	625,738	568,933	638,738	632,244
CALUMET SPECIALTY PRODUCTS PARTNERS LP (100%)	369,114	465,988	391,186	424,305	411,122	373,058	455,483	425,817	385,893	336,058	364,247	527,986
DELEK US HOLDINGS INC (100%)	258,478	456,685	533,876	530,019	535,458	445,406	558,575	568,376	593,882	587,064	372,167	459,812
TRANSWORLD OIL USA INC (100%)	371,809	329,663	386,859	315,349	281,065	324,570	320,701	227,820	242,052	272,664	157,851	165,164
SHELL PETROLEUM INC (100%)	2,529,004	2,362,407	2,044,250	1,985,611	2,089,138	2,271,203	2,371,145	2,370,044	2,165,013	2,301,471	1,936,890	162,270
TOTAL HOLDINGS USA INC (100%)	20,226	18,861	19,590	21,906	21,411	21,701	20,004	18,989	19,693	18,886	15,169	17,056
PELICAN REFINING CO LLC (100%);	2,908	991	991	-	-	-	-	-	-	-	-	-
TOTAL PADD 3 LA GULF	23,613,497	23,285,232	22,507,419	22,832,064	22,212,093	22,110,383	23,328,362	23,484,257	23,687,639	23,292,341	19,599,552	19,961,309

FIGURE 7

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CRUDE BARRELS REFINED PER MT CO2e PADD 3 LA GULF	47.9	50.8	52.0	51.5	54.6	56.5	54.2	54.6	54.1	55.3	52.7	**55.4**
CRUDE BARRELS REFINED PER MT CO2e PROJECT												198.0
CRUDE BARRELS REFINED PER MCF NG PADD 3 LA GULF												
BARRELS CRUDE + PET PRODUCTS REFINED PER MCF NG PADD 3 LA GULF	5.4	4.9	4.4	4.3	4.5	4.9	4.6	4.7	4.7	4.5	3.8	**3.6**
BARRELS CRUDE REFINED PER MCF NG PROJECT												6.1

FAQ

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Reducing Net Greenhouse Gas (GHG) Emissions

- Minimize net GHG emissions.

PROCESS EMISSIONS: CONSEQUENTIAL GHG UNACCOUNTED FOR IN REGULAR REFINERY PROCESS BUT ELIMINATED IN PROJECT'S PATENTED & PROPRIETARY TECHNOLOGY

- According to the EPA "Emission Calculation Methodologies", emissions from combustion (vs process) that are to be reported are CO_2, CH_4, and N_20 as they are released into the atmosphere. No consequential GHG that result from the release of other gases are reported or considered. Process emissions are to include GHG identified as CO_2, CH_4, and N_2O, as well as HFCs, PFCs, NF_3 and SF_6. Again, direct gases released are to be reported, but not consequential GHG that result from the release of other gases, such as hydrogen and hydrogen sulfide.
- Yet, the release of hydrogen and hydrogen sulfide not only consequentially produce GHG, but also have significant toxicological implications for human health, according to the Agency for Toxic Substances and Disease Registry - ATSDR (US Department of Health & Human Services).
- As to hydrogen, the UK has conducted exhaustive research through its Met Office and Natural Environment Research Council utilizing its NEXCS High Performance Computing facility – published in April 2022 in a report entitled, "Atmospheric Implications of Increased Hydrogen Use". It is common sense as well that the release of hydrogen, a molecule that is fundamentally vulnerable to energy disruption would result in the formation of methane (CH_4) for example. Those who have studied the physiochemistry of the origin of life theories know that reducing gases, such as hydrogen, are highly combustible when in the presence of oxygen – and that they readily convert to more stable compounds (hydrogen forming methane and water vapor, for example – both molecules having high global warming repercussions). The term of art used for the consequential production of GHG by hydrogen is "radiative forcing". The study's conclusion was that the GWP (Global Warming Potential) for hydrogen was "more than 100% larger than previously published calculations." In short, the study concluded that hydrogen was 11 times more potent than CO_2 as regards global warming – yet the EPA does not require nor monitor its release.

THE PROJECT IS UNLIKE CONVENTIONAL LOUISIANA GULF REFINERIES AS IT DOES NOT USE HYDROGEN IN ITS PROCESS

- Regarding hydrogen sulfide (H_2S), once released it remains in the atmosphere as many as 42 days (per the ATSDR). Symptoms in people exposed include eye, nose and/or throat irritation, difficulty breathing (especially for those with asthma or similar respiratory conditions), headaches, reduced memory, fatigue and balance impedance. Hydrogen sulfide's impact on the environment is more damaging, as it disrupts the carbon cycle by damaging plant foliage and stunts plant growth. Further, it contributes to acid rain (H_2SO_4) which among other things can cause marine life death. Of course, in onto itself, hydrogen sulfide is poisonous.

BY NOT USING HYDROGEN IN ITS PROCESS, THE PROJECT ELIMINATES THE CONSEQUENTIAL GENERATION OF HYDROGEN SULFIDE.

THUS, THE PROJECT IS DESIGNED TO MINIMIZE NET GHG EMISSIONS WHILE PROVIDING A SIGIFICANT PUBLIC PURPOSE:

- ELIMINATING THE CONTAMINATION OF THE ENVIRONMENT CAUSED BY USED OIL BEING DISCARDED & THE USE OF HYDROGEN IN THE CONVENTIONAL REFINING PROCESS &
- REDUCING BY 60% THE GHG EMISSIONS PER BARREL OF CRUDE PRODUCED UTILIZING PROJECT'S ODS TECHNOLOGY &
- CREATING HIGH-WAGE JOBS IN A COMMUNITY EXPERIENCING A LONG-TERM SEVERE DECLINE IN JOBS & ECONOMIC OPPORTUNITY

FAQ

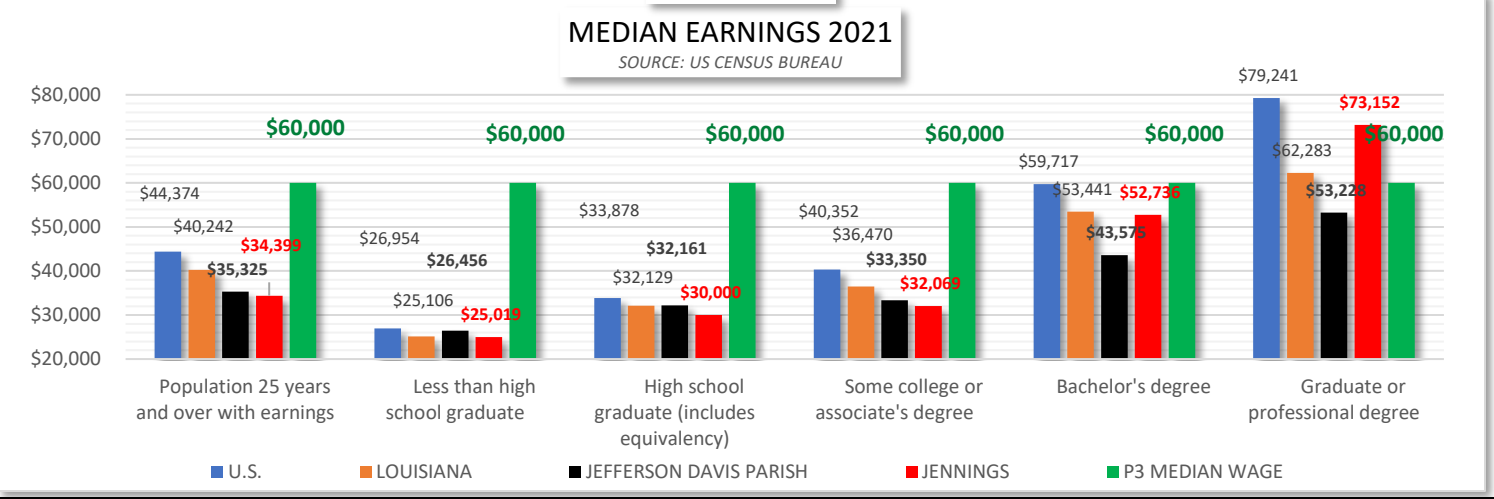
By 2025	By 2030	By 2050
26 - 28% Of 2005 levels	40 - 50% Of 2005 levels	Net Zero

Improving Health and Quality of Life for Residents and Communities

- Maximize quality of and access to essential goods, services, and infrastructure for residents.
- Maximize positive public health outcomes and public safety.
- Maximize the preservation of cultural heritage.

THE PROJECT IMPROVES THE HEALTH & QUALITY OF LIFE FOR RESIDENTS BY PROVIDING AN AVERAGE ANNUAL WAGE ($60,000) SIGNIFICANTLY HIGHER THAN THAT OF THE CITY ($34,000) AND PARISH ($35,000)

FIGURE 8



THE PROJECT IMPROVES THE HEALTH & QUALITY OF LIFE FOR RESIDENTS BY GIVING THEM HOPE – REVERSING A LONG-TERM TREND OF DECLINING EMPLOYMENT OPPORTUNITY AND INCREASING POVERTY

FIGURE 9

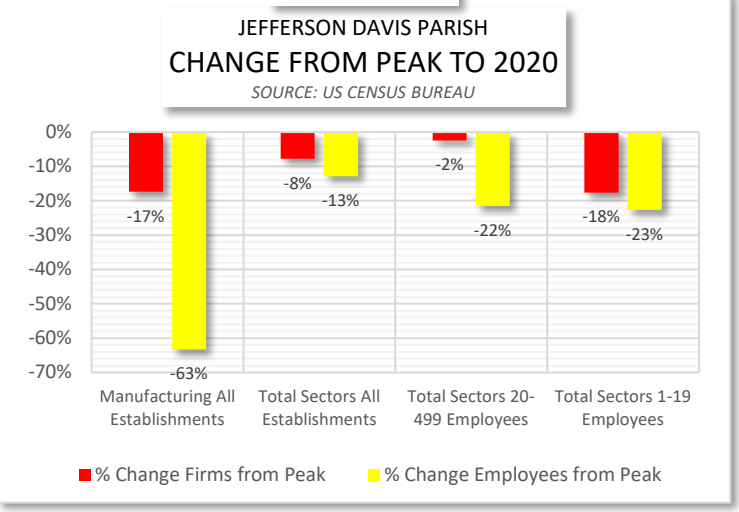
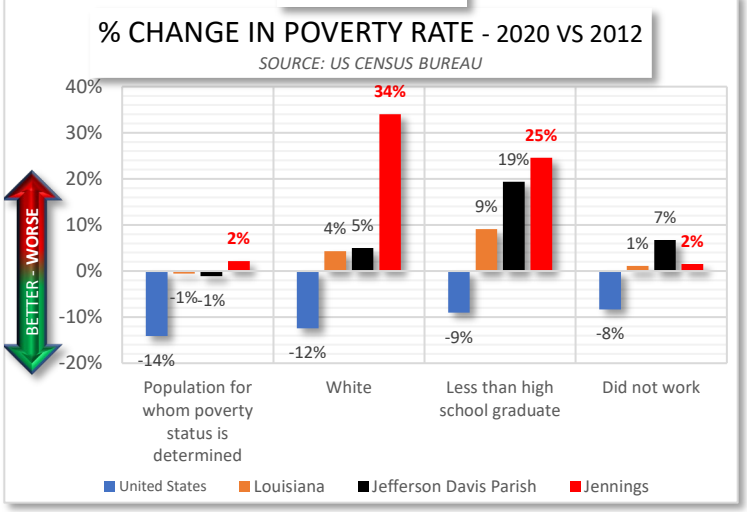


FIGURE 10



BY CREATING 100 JOBS (60 PHASE 1, 40 PHASE 2) , THE PROJECT WILL BE ONE OF THE FIVE LARGEST EMPLOYERS IN THE PARISH

SO THE PROJECT WILL IMPROVE THE HEALTH & WELFARE OF THE COMMUNITY BOTH BY CREATING HIGH-WAGE JOBS AND - BY BEING THE ONLY USED OIL REFINERY IN LOUISIANA (SEE FIGURE 20) – REDUCING, IF NOT LOCALLY ELIMINATING, THE USED OIL BEING DUMPED IN THE PARISH, CONTAMINATING ITS RESIDENTS' WATER SUPPLY

AND IT WILL REFINE WITHOUT USING HYDROGEN AND WITHOUT CREATING HYDROGEN SULFIDE CONSIDERED TOXIC BY THE US DEPARTMENT OF HEALTH & HUMAN SERVICES – AND CERTAINLY TOXIC TO PLANT & MARINE LIFE, DISRUPTING AND ENDANGERING BOTH THE CARBON CYCLE AND THE ENVIRONMENT IN GENERAL

FAQ

By 2025	By 2030	By 2050
26 - 28% of 2005 levels	40 - 50% of 2005 levels	Net Zero

Creating a More Equitable Society

- Reduce socioeconomic, demographic, and geographic disparities in future opportunities and outcomes.
- Maximize reduction and mitigation of historical and structural inequities and their impacts for underserved and marginalized communities, including communities of color and Indigenous peoples.
- Maximize engagement with and participation of communities in decision-making and implementation.

THE PROJECT'S $60,000 AVERAGE ANNUAL WAGE JOBS – HIGH PAY NOT REQUIRING A COLLEGE DEGREE – WILL IMPROVE THE ECONOMIC PLIGHT OF THE RESIDENTS FOR WHOM EDUCATION & RACE ARE EQUITY BARRIERS

FIGURE 11

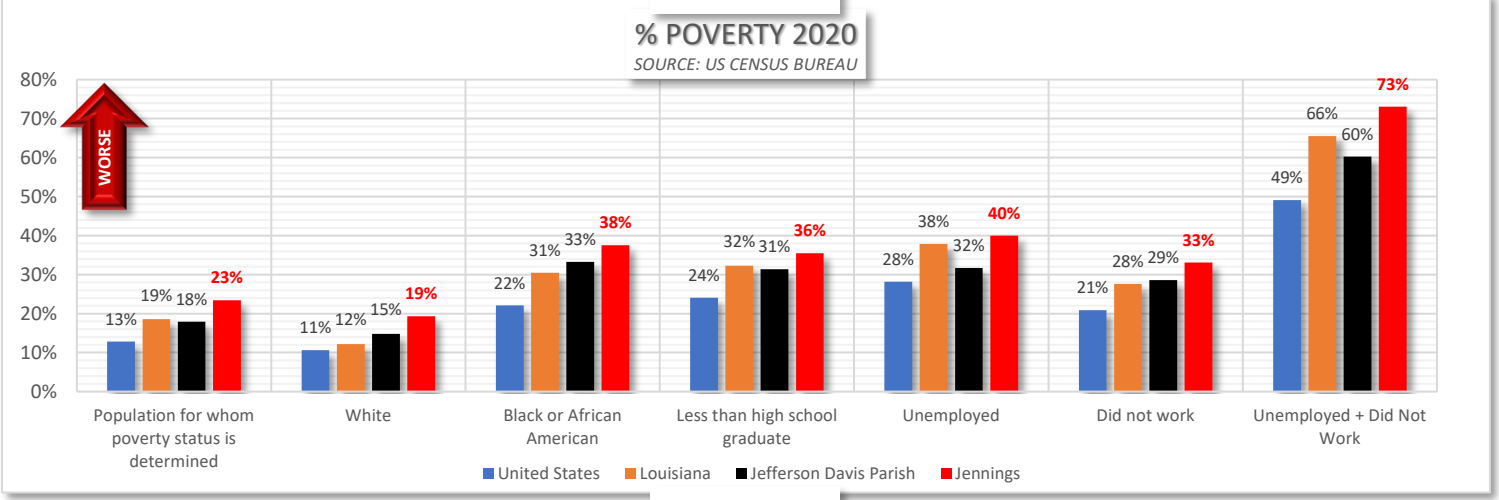
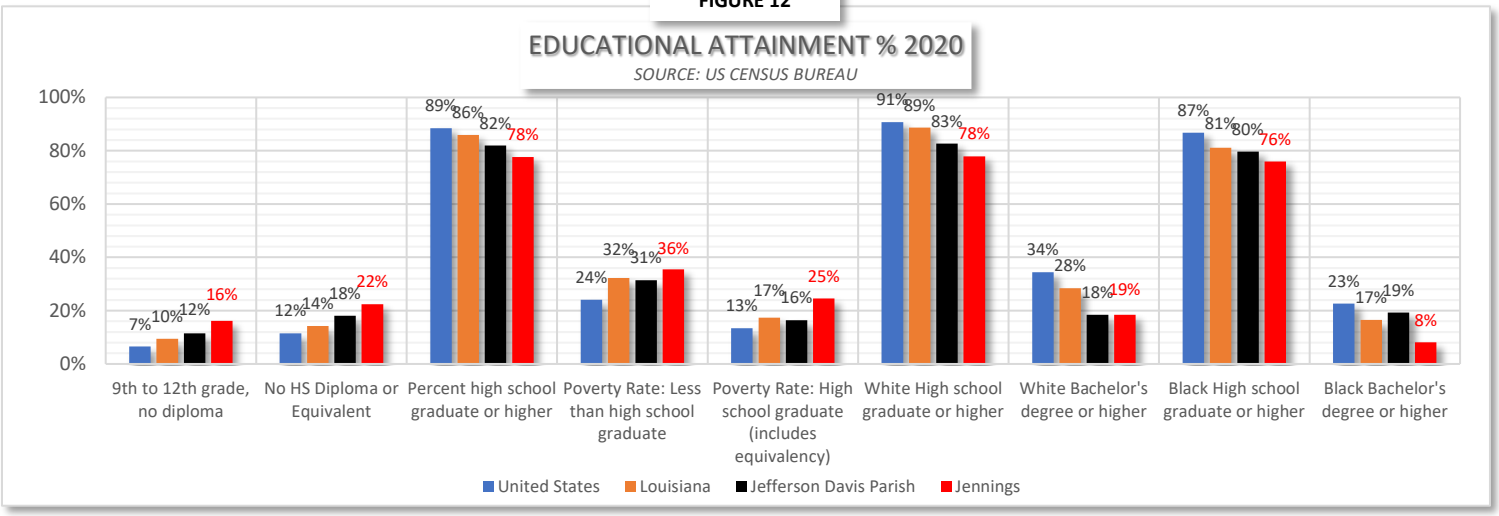


FIGURE 12



- Jennings and Jefferson Davis are exceptionally poor areas of Louisiana. Earnings and income are well below the averages for the State and nation (see Figure 8) – and poverty well above both (see Figure 11). That is true regardless of race. However, the percentage of Blacks in poverty in the Parish and City is significantly higher than those of whites – double in fact. And the situation in both Jennings and the Parish is getting worse, both absolutely and comparatively (see Figure 10). Those who work have an average wage barely above the living wage – and so many are in poverty – and those without a job are almost guaranteed to be in poverty since that rate is 73% (see Figure 11).
- And jobs are becoming scarcer over time in Jennings and the Parish, as the number of both businesses and jobs have declined over the past decade (see Figures 9 & 15). The Parish has lost over 700 high-wage manufacturing jobs (over 60% of the total manufacturing jobs), and almost 1,000 businesses. The 100 very-high-wage manufacturing jobs the project will create should make a significant favorable impact on equity, as will the total 456 jobs to be created by the project per RIMS II analysis – making up over ½ of the prior decade's loss of jobs.
- Equally important are the facts that a) the jobs are consistent with the current educational attainment data for the workforce – and b) that poverty is increasing in the most common levels of educational attainment in Jennings and the Parish, more so than in the State and nation (Figures 12 - 14).

FAQ

By 2025	By 2030	By 2050
26 - 28% Of 2005 levels	40 - 50% Of 2005 levels	Net Zero

Creating a More Equitable Society

- Reduce socioeconomic, demographic, and geographic disparities in future opportunities and outcomes.
- Maximize reduction and mitigation of historical and structural inequities and their impacts for underserved and marginalized communities, including communities of color and Indigenous peoples.
- Maximize engagement with and participation of communities in decision-making and implementation.

FIGURE 13

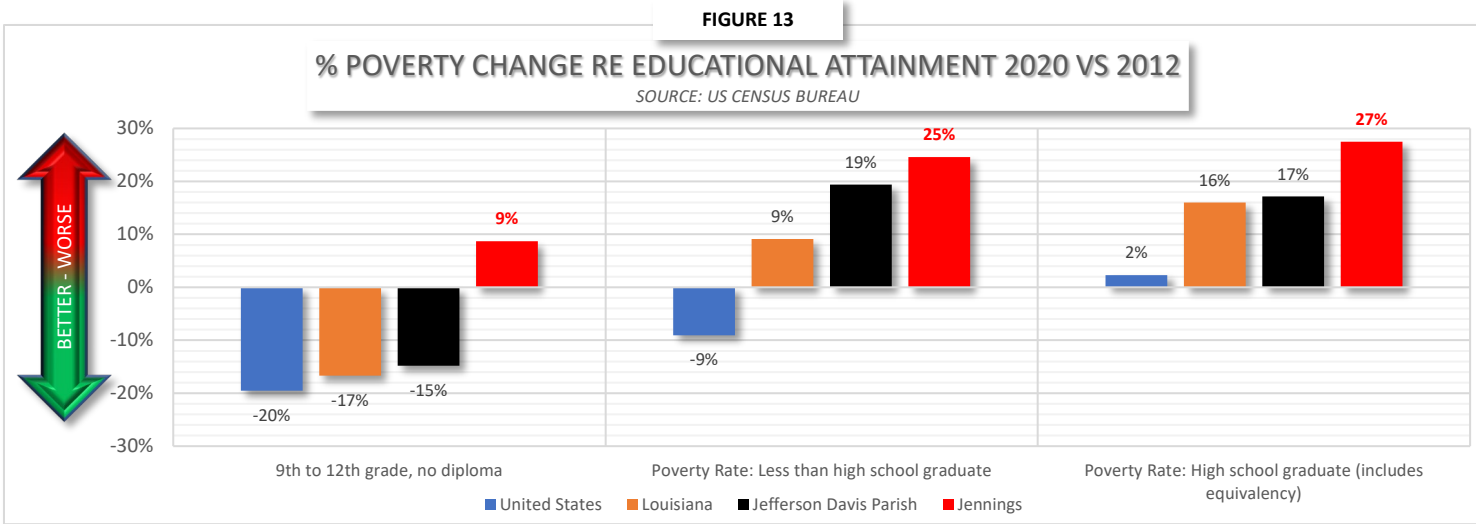


FIGURE 14

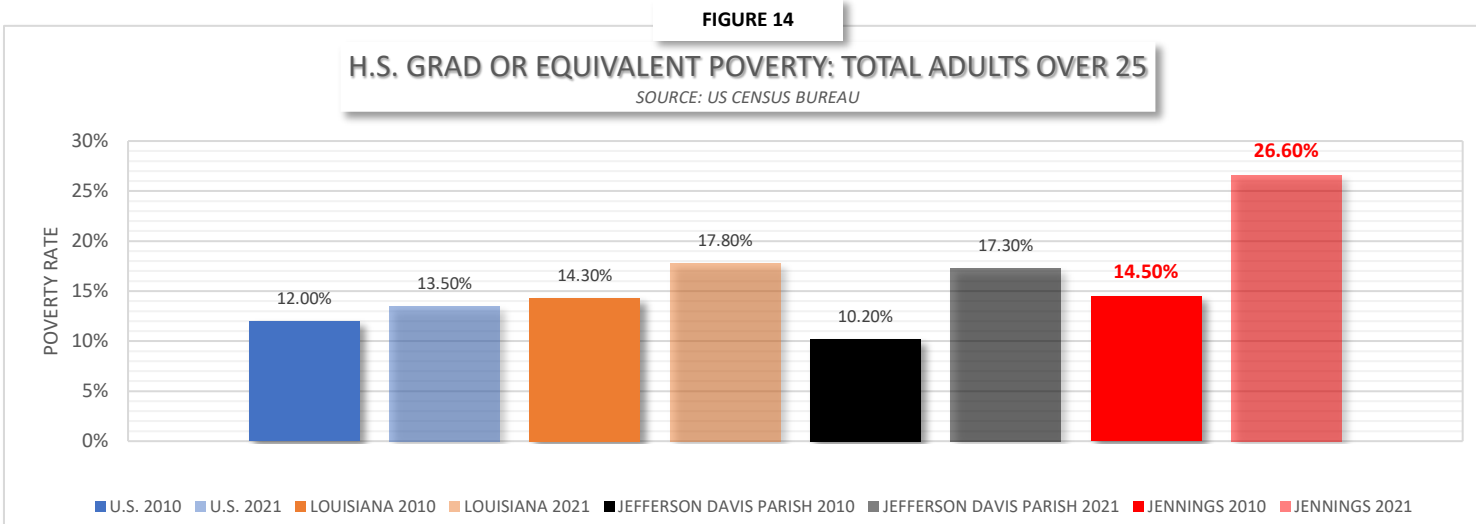
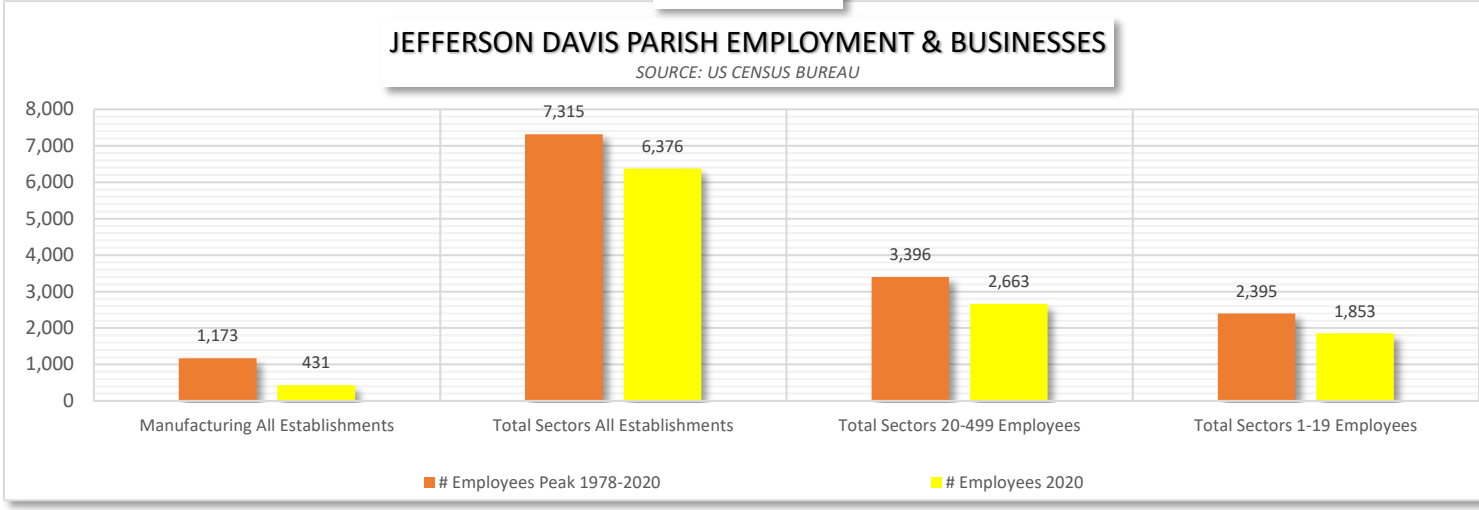


FIGURE 15



FAQ

By 2025	By 2030	By 2050
26 - 28% Of 2005 levels	40 - 50% Of 2005 levels	Net Zero

Creating a More Equitable Society

- Reduce socioeconomic, demographic, and geographic disparities in future opportunities and outcomes.
- Maximize reduction and mitigation of historical and structural inequities and their impacts for underserved and marginalized communities, including communities of color and Indigenous peoples.
- Maximize engagement with and participation of communities in decision-making and implementation.

FIGURE 16

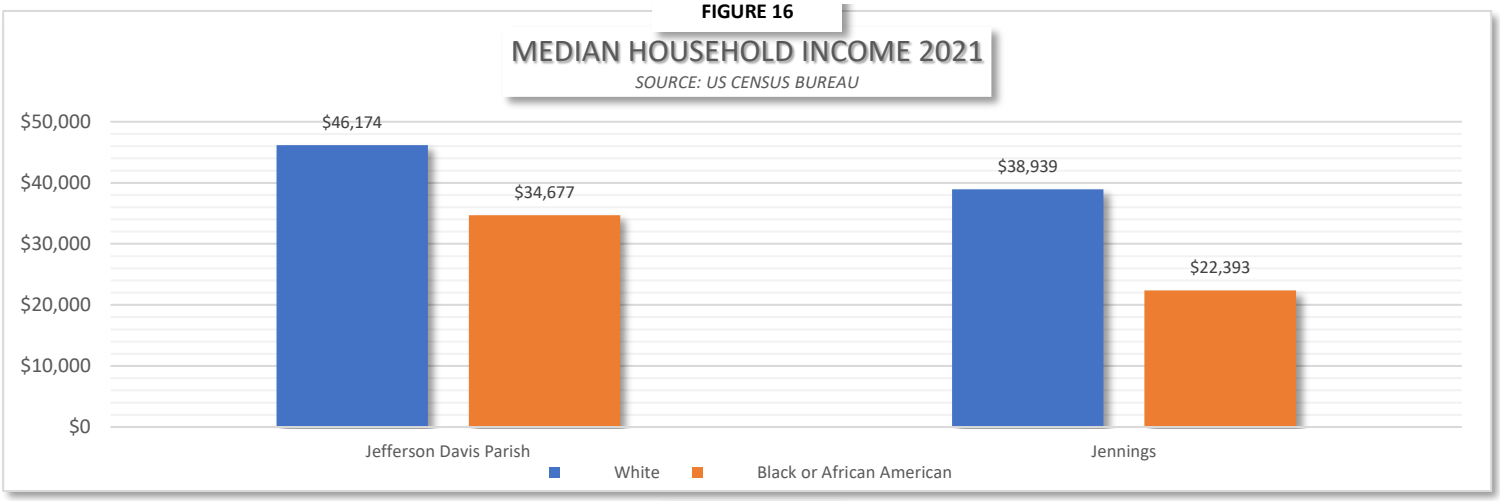


FIGURE 17

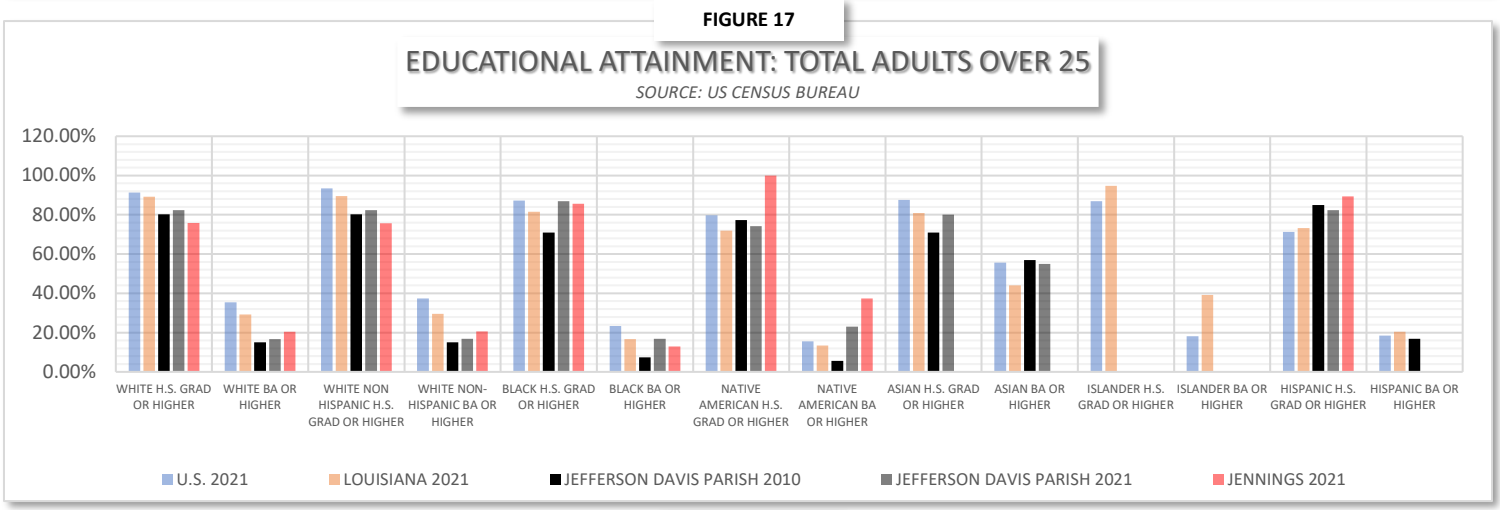
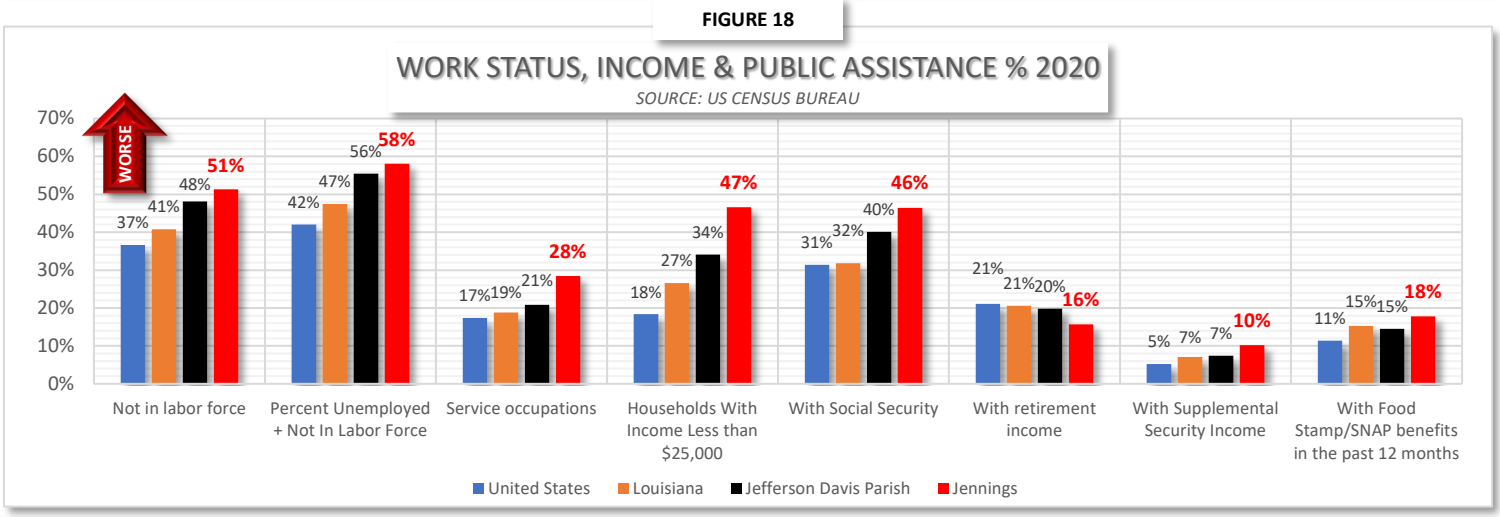


FIGURE 18



THE ADDITION OF THE MINORITY & VETERAN OWNED PROJECT WILL PROVIDE SIGNIFICANT OPPORTUNITY TO ALL RACES – AND ADDRESS THE FACT THAT ALTHOUGH A HIGHER PERCENTAGE OF BLACKS THAN WHITES IN JENNINGS GRADUATE HIGH SCHOOL, BLACK WAGES LAG THOSE OF WHITES & BLACK POVERTY IS GREATER.

FAQ

By 2025	By 2030	By 2050
26 - 28% Of 2005 levels	40 - 50% Of 2005 levels	Net Zero

Strengthening the Economy and Workforce

- Maximize employment, economic opportunity, and support for Louisiana workers.
- Maximize economic growth.

THE PROJECT WILL CREATE 456 JOBS PER RIMS II (100 DIRECTLY CREATED BY THE COMPANY AND THE BALANCE BY ITS "DIRECT EFFECT" - MINIMUM MULTIPLIER - ACTIVITY, AS WELL AS CONTRIBUTE NEW TAX REVENUES

- The 456 new jobs created by the project are equal to more than one-half the net jobs that the Parish has lost during the past decade (see Figures 15 & 19) .
- The high wages of the direct project jobs (average annual wage = $60,000) are almost double those of Jennings and the Parish (see Figure 8).
- The jobs can be filled by those currently in the workforce, and priority for hiring will be given to Jennings, Parish and State residents. The company will work with the local WIB to maximize its reach into the community for recruitment.
- As a result, the project represents a truly significant economic opportunity for the City and Parish residents – as well as for local governmnet which is anticipated to receive over $1.5 million annually in new tax revenues as a result of the project.
- Figures 8 – 18 provide visualizations of the data that together with the attendant discussion confirm the public purpose and consequentially the significant public benefit to the community and the dire public need for the high-wage jobs created in the project.

FIGURE 19

P3 ENERGY SOLUTIONS LOUISIANA ECONOMIC IMPACT

FAQ

NOTE: ANALYSIS BASED ON RIMS II DIRECT EFFECT (MINIMAL IMPACT) - NOT TOTAL DEMAND (MAXIMUM IMPACT)

JOBS & PAYROLL		
JOBS		**456**
TOTAL JOBS DUE TO MULTIPLIER (RIMS II DIRECT EFFECT IMPACT)		456
JOBS ON-SITE		100
JOBS ON PAYROLL		100
PAYROLL		
CURRENT ANNUAL		
TOTAL ANNUAL PAYROLL GENERATED (RIMS II DIRECT EFFECT IMPACT)	**$**	**18,740,000**
TOTAL ANNUAL COMPANY PAYROLL		**6,000,000**
30-YEAR TERM		
AGGREGATE PAYROLL GENERATED (RIMS II DIRECT EFFECT IMPACT)	**$**	**1,143,159,000**
AGGREGATE PAYROLL GENERATED NPV (RIMS II DIRECT EFFECT IMPACT)	**$**	**500,009,000**
GOVERNMENT INCOME		
TOTAL STATE & LOCAL INCOME IMPACT		
CURRENT ANNUAL	**$**	**11,947,000**
30-YEAR TERM NPV	**$**	**355,758,000**
TOTAL STATE & LOCAL REVENUE IMPACT		
CURRENT ANNUAL	$	1,675,000
30-YEAR TERM NPV	$	93,055,000
TOTAL STATE & LOCAL SOCIAL SERVICES SPENDING IMPACT		
CURRENT ANNUAL	$	10,272,000
30-YEAR TERM	$	262,703,000
STATE		
TOTAL STATE INCOME (REVENUE & SPENDING) IMPACT		
CURRENT ANNUAL	**$**	**11,218,000**
30-YEAR TERM NPV	**$**	**287,945,000**
TOTAL STATE REVENUE IMPACT		
CURRENT ANNUAL	$	946,000
STATE INDIVIDUAL INCOME TAX	$	703,000
STATE COMPANY INCOME		
INDIVIDUAL SALES TAX	$	243,000
COMPANY SALES TAX	$	-
30-YEAR TERM NPV	$	25,242,000
STATE INDIVIDUAL INCOME TAX	$	18,750,000
STATE COMPANY INCOME	$	-
INDIVIDUAL SALES TAX	$	6,492,000
COMPANY SALES TAX	$	-
TOTAL STATE SPENDING IMPACT (SOCIAL SERVICES - TANF CAN THEN BE REDEPLOYED VS OTHER STATE COSTS)		
CURRENT ANNUAL	$	10,272,000
30-YEAR TERM NPV	$	262,703,000
LOCAL		
TOTAL LOCAL INCOME IMPACT		
CURRENT ANNUAL	**$**	**729,000**
30-YEAR TERM NPV	**$**	**67,813,000**
TOTAL LOCAL REVENUE IMPACT		
CURRENT ANNUAL	$	729,000
INDIVIDUAL SALES	$	273,000
INDIVIDUAL AD VALOREM	$	456,000
COMPANY SALES & USE	$	-
COMPANY AD VALOREM	$	-
30-YEAR TERM NPV	$	67,813,000
INDIVIDUAL SALES	$	7,296,000
INDIVIDUAL AD VALOREM	$	10,467,000
COMPANY SALES & USE	$	-
COMPANY AD VALOREM	$	50,050,000
FEDERAL INCOME TAX		
TOTAL FEDERAL INDIVIDUAL INCOME TAX IMPACT		
CURRENT ANNUAL	**$**	**2,376,000**
30-YEAR TERM NPV	**$**	**63,401,000**

SEE PAGES 6 – 9 FOR A DISCUSSION ON THE MERITS OF THE PROJECT RELATIVE TO THE ECONOMIC WELFARE OF JENNINGS & PARISH RESIDENTS

FAQ

By 2025	By 2030	By 2050
26 - 28% of 2005 levels	40 - 50% of 2005 levels	Net Zero

Conserving Natural Resources

- Maximize preservation of natural resources and ecosystem services.
- Maximize environmental stewardship and support of healthy ecosystems.

THE PROJECT MAXIMIZES THE PRESERVATION OF NATURAL RESOURCES & THE ECOSYSTEM, AND IS REPRESENTATIVE OF AN EXCELLENT STEWARD OF THE ENVIRONMENT BY:

- **REDUCING THE CONTAMINATION OF WATER AND LAND DUE TO USED OIL BEING DISCARDED.** Nationally over 30% of the used oil is dumped rather than recycled. Louisiana does not have one of the 16 used oil refineries in the country – and the project will finally provide Louisiana with native capacity to re-refine used oil – see Figure 20 - (which in part will be used to reduce the nation's dependency on foreign base stock for use in producing high-tech lubricants - as currently 85% is imported).
- **ELIMINATING THE USE OF HYDROGEN IN THE REFINING PROCESS.** Conventional refining utilizes hydrogen and produces hydrogen sulfide (a toxic substance) as a byproduct. The project – utilizing its proprietary and patented technology - will produce no hydrogen sulfide and will not use hydrogen. In addition to the toxicity of the by-product, hydrogen and hydrogen sulfide endanger the ecosystem. Hydrogen is 11x the climate warming molecule as carbon dioxide. Further, in the atmosphere it reacts with other volatiles to produce methane and water vapor, two molecules that significantly contribute to the greenhouse gas effect.
- **INCREASING THE EFFICENT USE OF NATURAL GAS FOR PROCESS HEAT** – thereby reducing the GHG per barrel of crude refined. Almost ¾ of the GHG emissions in crude refining are generated by making steam to heat the feedstock and in-process chemicals. The EPA terms this "combustion emissions". Only ¼ of the refinery GHG emissions are produced by the refining process itself. By 1) minimizing the amount of steam needed per barrel through ODS technology, 2) maximizing the retention of heat during delivery of steam to the process, and 3) utilizing proven technologies to capture heat from the flues, the project estimates natural gas utilization efficiencies 60% superior to the EPA/EIA reported efficiencies of existing Louisiana gulf (PADD 3) refineries (see Figures 22 & 23).
- **DESULFURIZING MARINE FUELS**. Aiding the Louisiana economy which is dependent on MARS crude – high sulfur crude produced in the Gulf: Impact of the new international marine diesel regulations (see Figure 21).

FIGURE 20

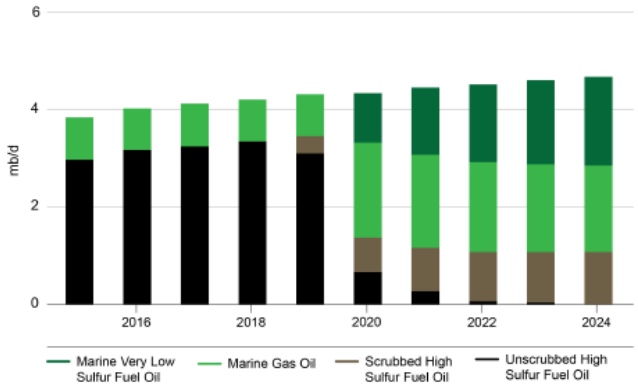
Table 10. Operating, Idle and Under Construction Used Oil Re-refining Plants for Base Stock Production as of August 2019 [86]

Status	Company	Parent	Plant Location	Start Date	Used Oil Feed Capacity (MM gals/yr.)	Base Oil Production Capacity (MM gallons/yr.)			
						G I	G II/II+	G III	Total
Operating	Safety-Kleen	Clean Harbors*	East Chicago, IN	1991	117	-	78.18	-	78.18
	Heritage-Crystal Clean	Heritage Group*	Indianapolis, IN	2012	75	-	48.75	-	48.75
	UES	Avista*	Peachtree City, GA	2013	48	-	30.6	5.4	36.00
	Bango Refining	Clean Harbors*	Fallon, NV	2006	32	-	21.46	-	21.46
	Heartland Petroleum	Vertex Energy*	Columbus, OH	2009	20	-	17.00	-	17.00
	Universal Lubricants	Clean Harbors*	Wichita, KS	2009	18	-	12.26	-	12.26
	Clein Recovery	-	Yabucoa, PR	2006	10	-	6.98	-	6.98
	Ecolube Recovery	-	Portland, OR	2003	7.7	-	5.37	-	5.37
	Green View Tech.	-	Rollinsford, NH	2012	6.0	-	4.26	-	4.26
	Rock Canyon Oil	-	American Fork, UT	2008	5.6	4.65	-	-	4.65
	Rational Energies	-	Plymouth, MN	2017	5.5	3.85	-	-	3.85
	Como Lube	-	Duluth, MN	2009	1.5	1.04	-	-	1.04
	Rock Oil Refining	-	Stratford, WI	2012	1.0	0.25	-	-	0.25
			Total Operating Capacity		347.3	9.79	224.86	5.4	240.05
Idle (August 2019)	Evergreen Oil	Clean Harbors	Newark, CA	1987	2.7	-	18.40	-	18.40
	Southeastern Petroleum	-	Chester, SC	2011	13.7	9.20	-	-	9.20
			Total Idle Capacity		16.4	9.20	18.40	-	27.60
Under Con-struction (August 2019)	Mesa Oil Recycling	-	Belen, NM	2019	5.6	4.65	-	-	4.65
			Total Under Construction Capacity		5.6	4.65	-	-	4.65
			Total		369.3	23.64	243.26	5.4	272.30

*UORC member.

FIGURE 21

Figure 34. Bunker Fuel Market by Fuel Type (MBD)



Source: Energy Information Administration

SEE PAGES 2 – 5 FOR GREATER DISCUSSION ON THE MERITS OF THE PROJECT RELATIVE TO THE PRESERVATION OF NATURAL RESOURCES & THE ECOSYSTEM.

FAQ

By 2025	By 2030	By 2050
26 - 28% Of 2005 levels	40 - 50% Of 2005 levels	Net Zero

Conserving Natural Resources

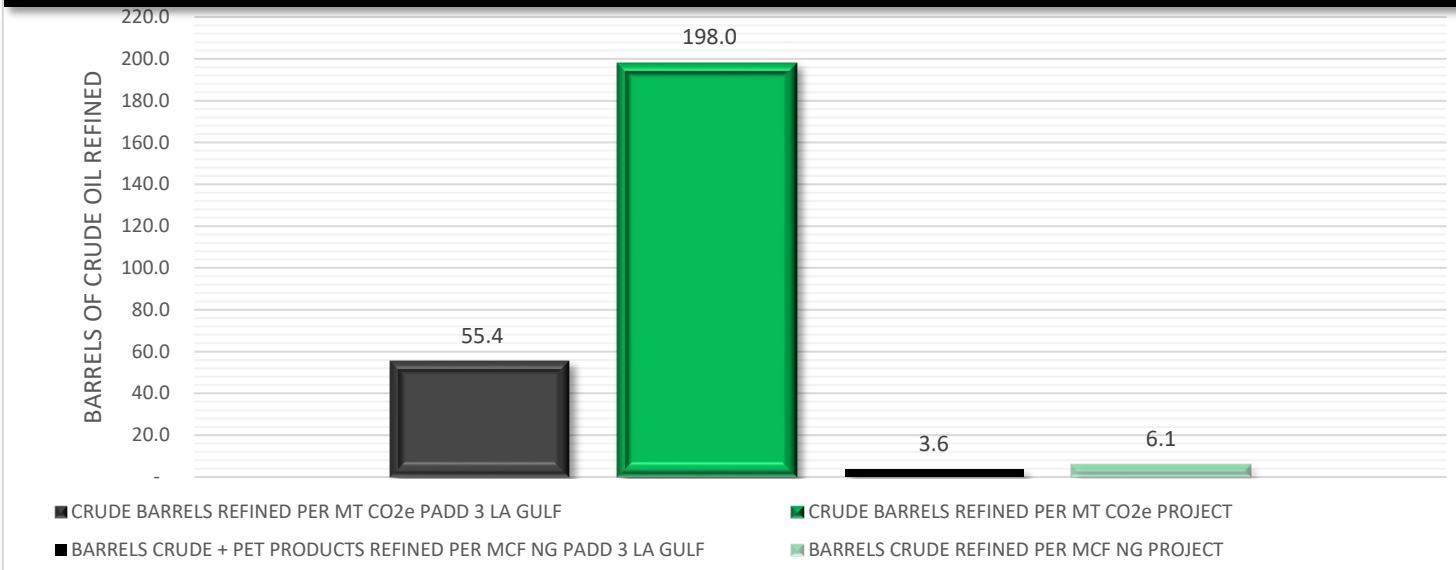
- Maximize preservation of natural resources and ecosystem services.
- Maximize environmental stewardship and support of healthy ecosystems.

GHG EFFICIENCIES

SOURCES: 2021 EIA & EPA

FIGURE 22

PROJECT WILL BE FAR MORE EFFICIENT THAN CURRENT REFINERIES AS REGARDS GHG EMISSIONS - BOTH FROM THE PROCESS AND FROM THE NATURAL GAS USED AS BOILER FUEL



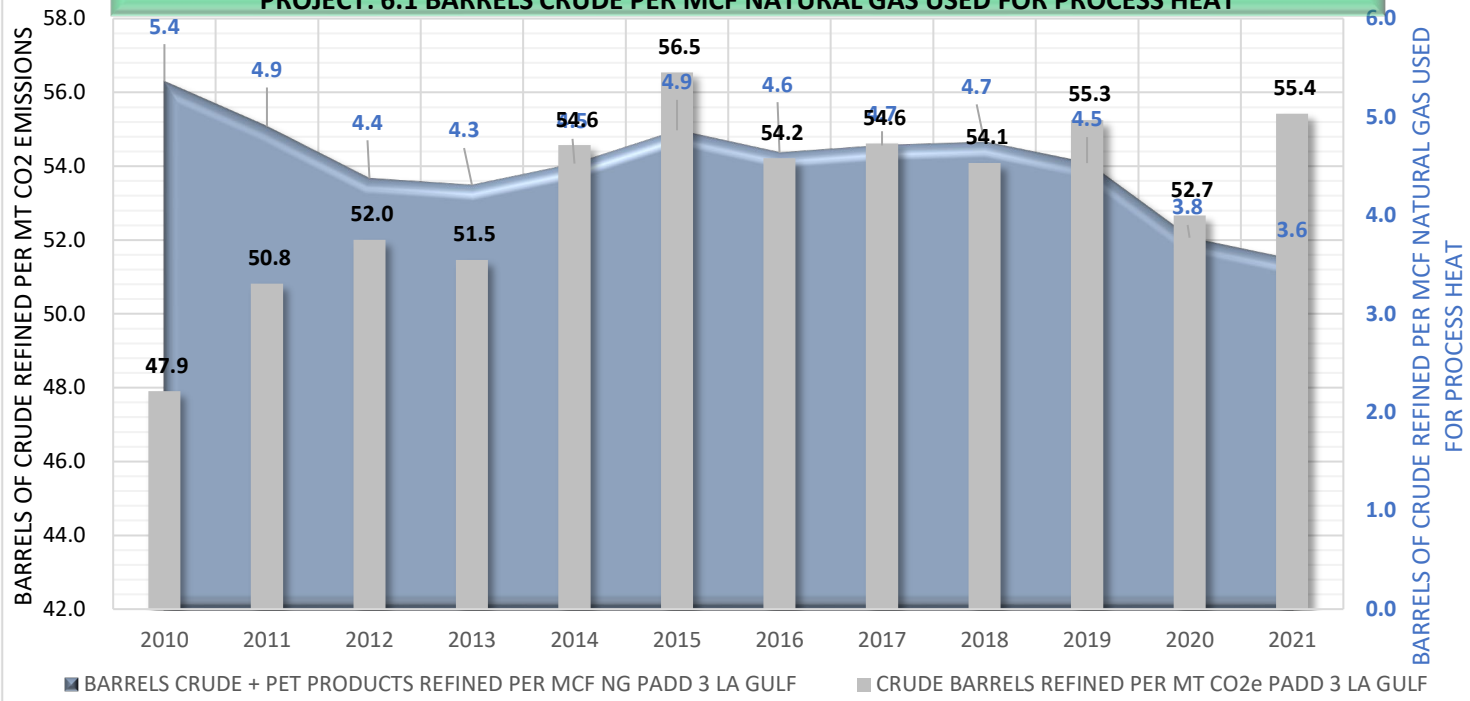
BARRELS OF OIL PER MT CO2 & PER MCF NATURAL GAS

SOURCE: EIA & EPA

FIGURE 23

PROJECT: 198 BARRELS CRUDE PER MT CO2 EMISSIONS

PROJECT: 6.1 BARRELS CRUDE PER MCF NATURAL GAS USED FOR PROCESS HEAT



FAQ

- Increase resilience of the built and natural environment to climate change.
- Increase the resilience of communities to climate change.

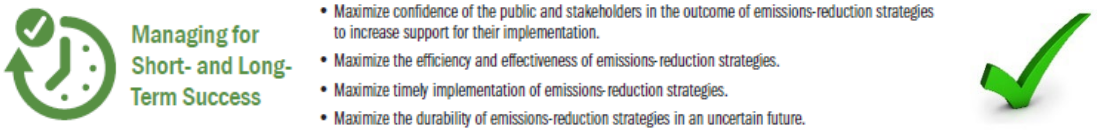
THE PROJECT IS NOT DESIGNED TO DIRECTLY ADDRESS EITHER OF THESE OBJECTIVES.

HOWEVER:

- See the discussions regarding hydrogen and used oil as these project outcomes make the natural environment more robust and resistant to climate change.
- For example, healthy and plentiful foliage is critical for the CO_2 to O_2 exchange conducted by land plants. Both used oil contamination and hydrogen sulfide will diminish this natural barrier to global warming.
- Similarly, the elimination (or reduction) of contaminated water reaching the gulf and the dissolution of hydrogen sulfide into water (either indirectly through acid rain or directly through water/air interface) will reduce the decimation of diatoms in the oceans (including the gulf). Diatoms produce approximately 40% of the oxygen in the atmosphere, having converted it from CO_2. Diatoms are extremely sensitive to acidification (as from sulfuric acid produced as a result of hydrogen sulfide). Of note: diatoms and other phytoplankton also have been confirmed to be carbon sinks – essential in the process of sequestering carbon naturally.

THUS, THIS PROJECT - THROUGH ITS REDUCTION/ELIMINATION OF LETHAL CONTAMINANTS THAT ADVERSELY AFFECT THE NATURAL SYSTEMS THAT SEQUESTOR CARBON AND REDUCE CARBON DIOXIDE IN THE ATMOSPHERE – HAS A FAVORABLE IMPACT ON NATURAL ENVIRONMENTAL SYSTEMS THAT CONTROL FACTORS ATTRIBUTED TO GLOBAL WARMING (INCREASING THE RESILIENCE OF THE NATURAL ENVIRONMENT TO CLIMATE CHANGE).

FAQ



THE PROJECT IS DESIGNED TO DELIVER AGAINST EACH OF THE OBJECTIVES

- OBJECTIVE: Maximize public confidence in the outcome of emissions-reduction strategies to increase the public's support for their implementation

  PROJECT: The public has grown weary of impracticable "solutions" that don't work or have severe unintended consequences. We are reminded of this every day that a whale or other sea mammal beaches itself because of the low-frequency sounds being generated by off-shore wind turbines. That shouldn't have been unanticipated, since the on-shore turbines also generate low-frequency noise and also have very undesirable unintended consequences that translate into millions of bird deaths. This project is designed to eliminate one source of toxic contaminant in the environment – hydrogen (and hydrogen sulfide) – common in the refining process, to reduce another toxic contaminant in the environment – discarded used oil, and to reduce GHG emissions in the refining process by utilizing proven more heat efficient ODS refining technologies in conjunction with proven heat recovery and heat preservation technologies. Will GHG also be reduced because fewer diatoms and other phytoplankton are not killed due to ocean acidification and contamination? Yes. Will GHG also be reduced because of fewer land plant deaths due to hydrogen sulfide toxicity? Yes. But those things cannot be measured. However, the efficiency of the conversion of natural gas to heat to refine a barrel of oil can AND ALREADY IS measured. The baseline data has been memorialized by the EIA. The efficiency of the refining process (barrels of crude input vs MT CO_2) is also something that can be and already is measured. So simple communication of the measurable objective and then the measured outcome against that objective should increase the confidence of the public that has been critically damaged by impractical, unproven technologies that have had devasting adverse consequences.

- OBJECTIVE: Maximize the efficiency and effectiveness of emissions-reduction strategies.

  PROJECT: There is an old maxim: If you can't properly define a problem, you will NEVER resolve the problem – for the answer is in the problem definition. That holds true with GHG emissions. One doesn't need to speculate the status of GHG refinery emissions: it is well-documented by a combination of the EPA and EIA. Industry by industry – documented by the EPA…and separating the GHG emissions into "COMBUSTION" vs "PROCESS". In Louisiana, power plants are the cause of more GHG than oil refineries, and for refineries, COMBUSTION is generating three times the GHG as PROCESS. The problem is efficient heat generation and heat utilization in the process (demand requirement), and both challenges can be met by PROVEN technologies that have no unintended consequences. There is an additional but lesser opportunity re the emissions from the refining process itself, by utilizing vapor recovery which is planned in the project. In addressing COMBUSTION, there are two fundamental approaches: 1) capture the GHG gas stream, isolate the GHG gases, and then sequester them (or use them in a continuous cycle – as Kinder Morgan does in its CO_2 flooded E&P operations). Sounds good, but it falls into the trap discussed in the first Objective. Louisiana doesn't have CO2 flooded E&P operations. It doesn't have the network of CO_2 pipelines. In short, it doesn't have the necessary infrastructure OR use. It is an IMPRACTICABLE solution. So the Project doesn't pursue or consider it. Instead, 2) the Project reduces the generation of the GHG by increasing the efficient use of the heat generated by natural gas combustion AND by reducing the demand for heat by utilizing ODS technology that requires lower processing temperatures. Those technologies are proven, whether recovering heat at the stack, recycling heat within the vessels, maximizing heat transfer conditions and surfaces, or utilizing ODS rather than hydrotreating for refining. The project, in essence has a low-cost, high-yield non-exotic approach.

FAQ

By 2025	By 2030	By 2050
26 - 28% Of 2005 levels	40 - 50% Of 2005 levels	Net Zero

Managing for Short- and Long-Term Success

- Maximize confidence of the public and stakeholders in the outcome of emissions-reduction strategies to increase support for their implementation.
- Maximize the efficiency and effectiveness of emissions-reduction strategies.
- Maximize timely implementation of emissions-reduction strategies.
- Maximize the durability of emissions-reduction strategies in an uncertain future.

- OBJECTIVE: Maximize timely implementation of emissions-reduction strategies.

  PROJECT: Exotic, unproven (and impracticable) solutions rarely end up being solutions and often end up being the source of new problems. Pharmacology and other industries that utilize bio and chemical systems are quite conditioned to understanding that when an unintended consequence appears, STOP DOING WHAT YOU ARE DOING. Don't compensate for it. If the medicine you start taking results in spiked blood pressure, the answer is not to take blood pressure medication. The answer is to stop taking the medication that caused the blood pressure problem. What is most important for any solution is that it is the solution. It is not how fast it is implemented. For the timely implementation of a strategy that is a faux solution is of no benefit and is both counterproductive and perhaps fatal to really solving the problem – having eroded public confidence. The Project, in utilizing proven technologies against a substantiated significant opportunity to reduce emissions, ensures not only timely implementation but success as well.

- OBJECTIVE: Maximize the durability of emissions-reduction strategies in an uncertain future.

  PROJECT: There are certain fundamentals that comprise "real science". When one utilizes multi-variate regression analysis to determine interactions and quadratics of effect – that is real science. When one assumes that something is a factor in an outcome and then simply tries to correlate it to the outcome – that is not real science. That is an invalid technique. The only thing better than confirmed multi-variate results is a living history of success – such as the Project utilizing heat management engineering to maximize fuel efficiency and minimize as a result GHG emissions. There are nuances to it. So fuel is used to make process steam. Is that super saturated steam? Super-heated steam? What pH should the water be? Steam is not simply steam, and the heat transfer efficiency of one type of steam is significantly different from another. That is a convoluted way to say that in an uncertain future utilize the certain solutions from the past – not some theoretical approach that has yet to be vetted for its effectiveness AND unintended consequences.

MANAGING FOR SHORT AND LONG TERM SUCCESS REQUIRES THE ABSENCE OF FAILURE – NOT THE ABSENCE OF RISK-TAKING

BUT IT ALSO REQUIRES BUILDING PUBLIC CONFIDENCE – A CHALLENGE IN THIS ERA OF SOLYNDRA AND DEAD WHALES

- **THE PROJECT IMPROVES PUBLIC-CONFIDENCE BY USING KNOWN & PROVEN TECHNOLOGIES AND KNOWN SCIENCE – WHETHER TO REDUCE GHG THROUGH IMPROVED COMBUSTION AND DEMAND EFFICIENCIES OR TO REDUCE GHG CONSEQUENTIALLY IN THE ENVIRONMENT BY REMOVING OR ELIMINATING CONTAMINANTS THAT ARE TOXIC TO THE ORGANISMS THAT PLAY A SEMINAL ROLE IN CONVERTING GHG IN THE ENVIRONMENT AND SEQUESTERING CARBON**
- **THE PROJECT PROVIDES THAT PUBLIC-CONFIDENCE BUILDING THROUGH THE USE OF METRICS – MEASURABLE OUTCOMES AGAINST A DATA BASE CREATED WITHOUT ANY INPUT BY THE PROJECT MEMBERS**