Border Environment Cooperation Commission

Global Alternative Fuels, LLC – Biodiesel Production Facility in El Paso, Texas

1. General

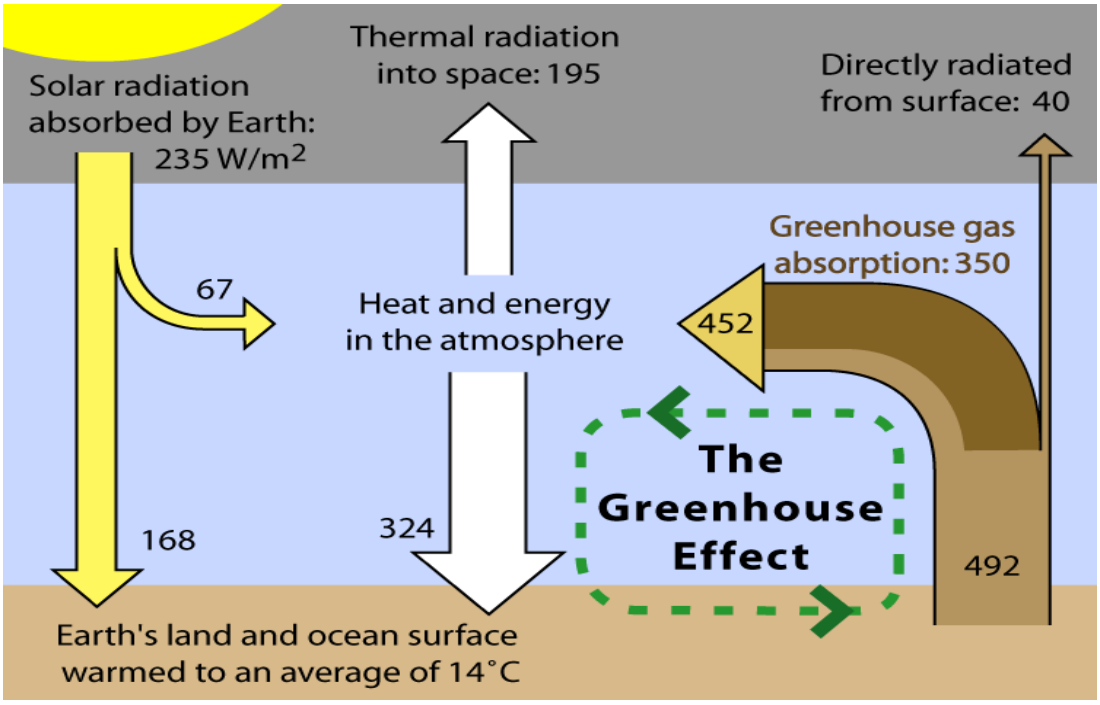
1.a Project Type

The project falls under **Clean and Efficient Energy** project sectors included in the priorities of the Border Environment Cooperation Commission (BECC).

Global Alternative Fuels, LLC "GAF" (sponsor of the project) through the installation of a waterless biodiesel processor will produce a clean renewable biodiesel fuel with an initial output of 5 million gallons per year. Phase two will be initiated with another processor and putting total output of biodiesel to 25 million gallons per year. The biodiesel will be used in two separate sectors; supplying retail outlets for vehicle fuel (Flying J. Pilot Travel Centers) and a local refinery (Western Refining) with biodiesel for fuel blending with diesel. Generation of electricity will be 10MW in the initial stage, and could expand up to 50 MW in the next five years.

The use of biodiesel, among other benefits, reduces emissions from Carbon dioxide (CO2)[1]. The CO2 is considerer a Greenhouse Gas (GHG) which contributes to the Greenhouse effect. The Greenhouse effect is the process in which the emission of infrared radiation by the atmosphere warms the planet surface. (Fig.1.1)[2]

Figure 1.1 Greenhouse Effect



[1] National Biodiesel Board – Benefits of Biodiesel
[2] Wikipedia – Image: Greenhouse Effect

Figure 1.1 is a schematic representation of the flows of energy between space, the atmosphere, and the Earth's surface, and shows how these flows combine to trap heat near the surface and create the greenhouse effect. Energy exchanges are exposed in watts per square meter (W/m^2) (Kiehl & Trenberth 1997).

The sun is ultimately responsible for virtually all energy that reaches the Earth's surface. Direct overhead sunlight at the top of the atmosphere provides 1366 W/m^2; however, geometric effects and reflective surfaces limit the light which is absorbed at the typical location to an annual average of ~235 W/m^2. If this were the total heat received at the surface, then, neglecting changes in albedo, the Earth's surface would be expected to have an average temperature of -18 °C (Lashof 1989). Instead, the Earth's atmosphere recycles heat coming from the surface and delivers an additional 324 W/m^2, which results in an average surface temperature of roughly +14 °C. Of the surface heat captured by the atmosphere, more than 75% can be attributed to the action of greenhouse gases that absorb thermal radiation emitted by the Earth's surface. The atmosphere in turn transfers the energy it receives both into space (38%) and back to the Earth's surface (62%), where the amount transferred in each direction depends on the thermal and density structure of the atmosphere. This process by which energy is recycled in the atmosphere to warm the Earth's surface is known as the greenhouse effect and is an essential piece of Earth's climate.[3]

1.b Project Category

The project belongs to the category of **Private-sector Environmental Infrastructure Projects.** The project will create positive impacts to the community and to the atmosphere due, among other benefits, the reduction of CO2 emissions from petroleum-based diesel.

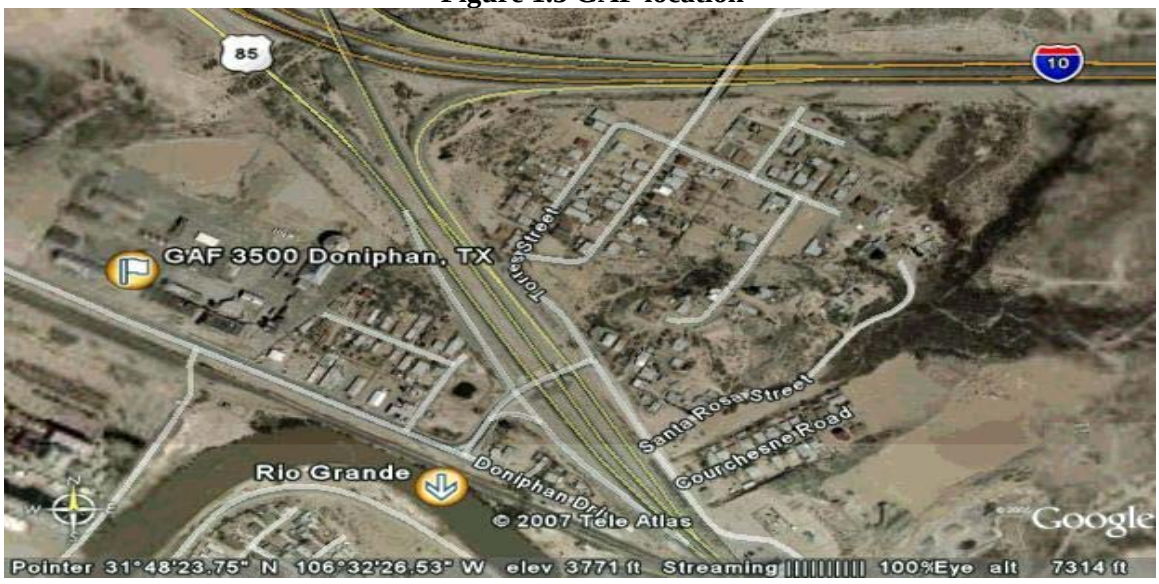
1.c Project Location and Community Profile

The project is located in El Paso, Texas. The plant is located at the Global Alternative Fuels GAF Industrial Research Park at 3500 Doniphan Drive. The site consists of 27.94 acres and is surrounded in the North by the U.S. I-10, in the South by Doniphan Drive. (Figures 1.2, 1.3)

Figure 1.2 GAF location

[3] Wikipedia – Description: Greenhouse Effects

Figure 1.3 GAF location



Demographics
According to the U.S. Census, the El Paso, TX population for 2000 was 563,662 and the estimated population for 2006 was 596,189. The in labor force (population 16 years and over) estimated for 2006 was 256,558 people or 59.4%, the U.S. media was 65%. The estimated median family income for 2006 was $33,103 dollars and the U.S. media was $48,451 dollars. The estimated percentage of families below poverty level for 2006 was 23.6%, the U.S media was 9.8%

1.d Legal Authority

An amended certificate of the formation of Global Alternative Fuels, LLC was filed with the Secretary of State of Texas with an effective date of January 1, 2007. GAF is managed by a team of professionals with backgrounds in industrial and electrical engineering, shipping and logistics, corporate finance, accounting, and infrastructure project management and implementation.

1.e Project Summary

Project Description

Biodiesel as a renewable biofuel
Biodiesel is a clean burning alternative fuel; produced from renewable resources, typically plant oils (soy, palm, and rapeseed), yellow grease, and tallow (animal fat). Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. Depending on the percentage blended into petrodiesel will determine the corresponding number (i.e. 2% biodiesel-B2, 10%-B10, etc.) It can be used in diesel engines with little or no modifications. Biodiesel is biodegradable, nontoxic, and essentially free of sulfur and aromatics.

Biodiesel is typically produced through a refinery process called transesterification. Biodiesel is typically produced by a reaction of a veo 0able oie or(an(m)8((l fa,)TJ0.0011 Tc 0.2766 Tw 222463 0 Td with analcoholf schl asn

Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements of the 1990 Clean Air Act Amendments. Biodiesel that meets ASTM D6751 and is legally registered with the U.S. Environmental Protection Agency ("EPA") is a legal motor fuel for sale and distribution, in its pure form (B100) or as a blended biodiesel product.
The American Society for Testing and Materials (ASTM) has developed specifications for B100 that will be blended with diesel fuel to make low-level biodiesel blends. ASTM specification D6751-03 is intended to insure the quality of biodiesel used in the United States, and any biodiesel used for blending should meet this specification. Biodiesel meeting ASTM D6751-03 is also legally registered as a fuel and fuel additive with the USEPA.[5]

Global Alternative Fuels, LLC "GAF" through the installation of a waterless biodiesel processor will produce a clean renewable biodiesel fuel with an initial output of 5 million gallons per year. Phase two will be initiated with another processor and putting total output of biodiesel to 25 million gallons per year. The primary feedstock will be yellow grease (waste cooking oils) and tallow (animal fats). The biodiesel will be used in two separate sectors: supplying retail outlets for vehicle fuel (Flying J. Pilot) and a local refinery (Western Refining) with biodiesel for fuel blending with diesel. Generation of electricity will be 10MW in the initial stage, and could expand up to 50 MW in the next five years. The project includes a full biodiesel lab testing facility that will offer services to other biodiesel processors.

The process for the biodiesel processor includes:
1. Raw materials holding tanks (various oil feedstock's; blending oil; catalyst; methanol)
2. Optional centrifugal and blending module
3. Dosing module
4. Drying station
5. First pass transesterification reactor
6. Glycerin removal
7. Second pass transesterification reactor
8. Glycerin removal/settlement tanks
9. Ion exchange waterless wash
10. Methanol recovery
11. Polish filter
12. Storage tanks

Current estimates for biodiesel fuel retail outlets are shown on table 1.1

Table 1.1 Estimates on Biodiesel Fuel Retail Outlets

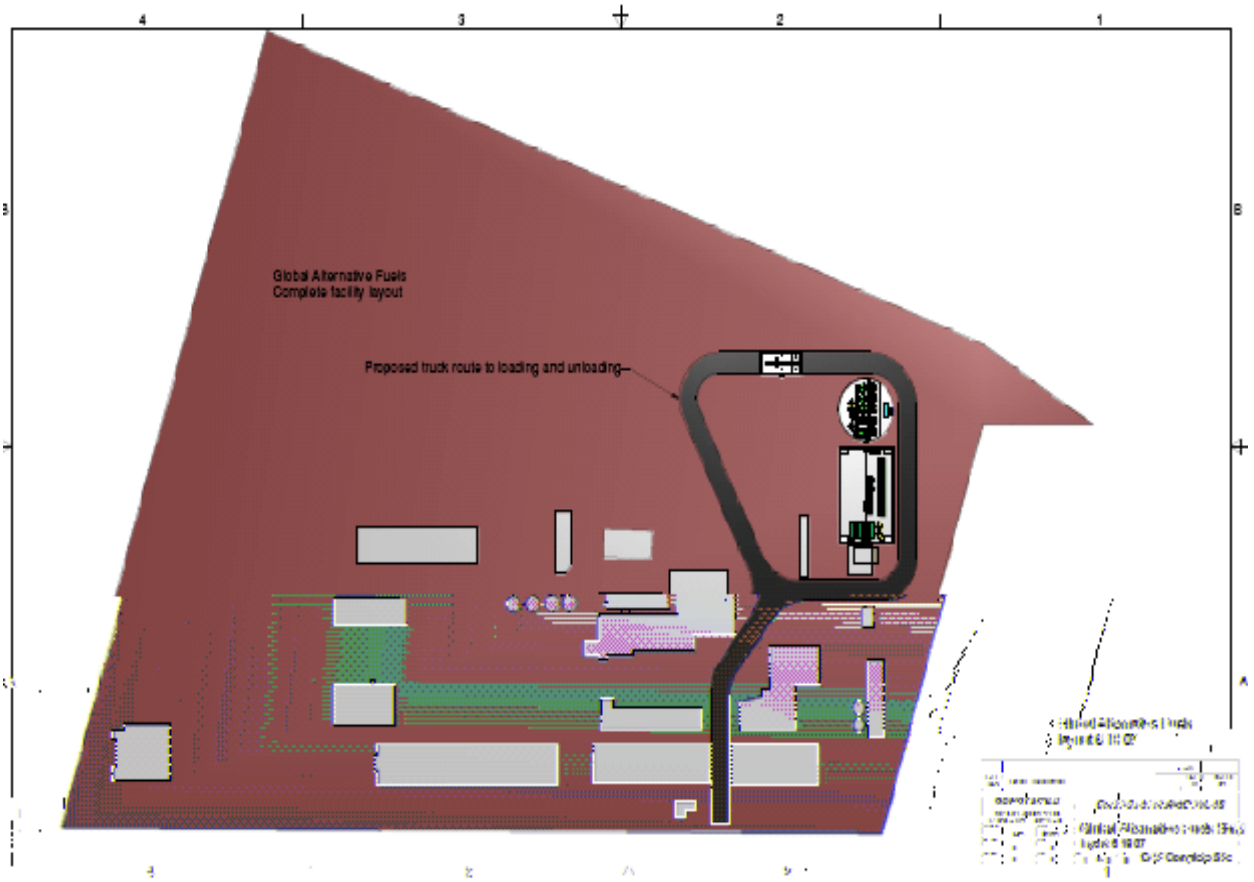
Company	Phase I (Total capacity= 5millon gallons per year)	Phase II (Total capacity= 20 million gallons per year)
Flying J. Pilot	5 million gallons	
Western Refining	0	20 million gallons

[5] U.S. Department of Energy Clean Cities Program, April 2005

Project Map

Figure 1. show Site layout for the project.

Figure 1.4 Layout



Project Justification

Environmental

In 2006, about 60% of the petroleum consumed in the U.S. was imported from foreign countries, two-thirds of which is use to fuel vehicles in the form of gasoline and diesel. The demand for petroleum imports is increasing. Using alternative fuel reduces the world's dependency on fossil fuels. Unlike hydrogen fuel, or burning pure vegetable oil, biodiesel can be produced domestically and used in conventional diesel engines without making any changes in current automotive technology.[6]

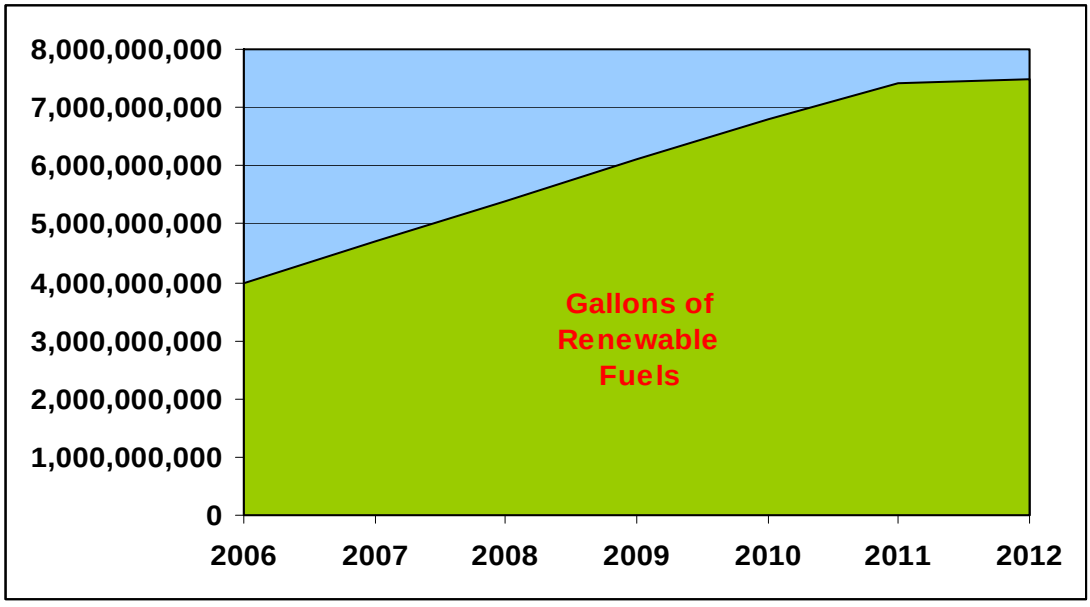
As of September 1, 2007, the EPA began requiring that a certain percentage of all vehicle fuels be produced from renewable fuel sources (or "biofuel"), such as ethanol and biodiesel. A renewable fuel is defined in the Energy Policy Act as a motor vehicle fuel that is produced from plant or animal products or wastes, as opposed to fossil fuel sources. The program created for this effort is called the Renewable Fuel Standard Program ("RFS"), which was mandated under the Energy Policy Act of 2005 ("EPACT 2005") by amending the Clean Air Act to establish an RFS. The RFS requires that any party that produces

[6] U.S. Department of Energy – Energy Efficiency and Renewable Energy

gasoline (and diesel) for use in the U.S., including all refiners, importers, and blenders, is obligated to meet the legal standards set forth for blending particular levels of biofuels into the nation's fuel supply.

The RFS was created for a number of important reasons, but primary of those are energy security through enhancing domestic production of a renewable fuel source, reduction in the use of imported petroleum, and environmental benefits associated with renewable fuels. The RFS will increase the volume of renewable fuel required to be blended into gasoline, starting with 4.0 billion gallons in calendar year 2006 and nearly doubling to 7.5 billion gallons by 2012. The table 1.2 demonstrates the mandated levels of production through 2012.[7]

Table 1. 2 RFS annual volumes of renewable fuels
(Ethanol and biodiesel)
Source: USEPA



As of September 1, 2007, all obligated parties under the RFS are required to meet the blending levels mandated for biofuels. In 2006, the EPA set as a statutory default level that 2.78% of the gasoline (and diesel) sold or dispensed in that calendar year be renewable fuel. The RFS is more than merely a mandated level of biofuel production; it also incorporates a credit trading system, compliance mechanisms, and reporting requirements for the obligated parties. The first phase of compliance is from 2007 thru 2012. Beyond 2012, the RFS requires that biofuel production and blending remain in the same proportions growth wise to gasoline production in the U.S.

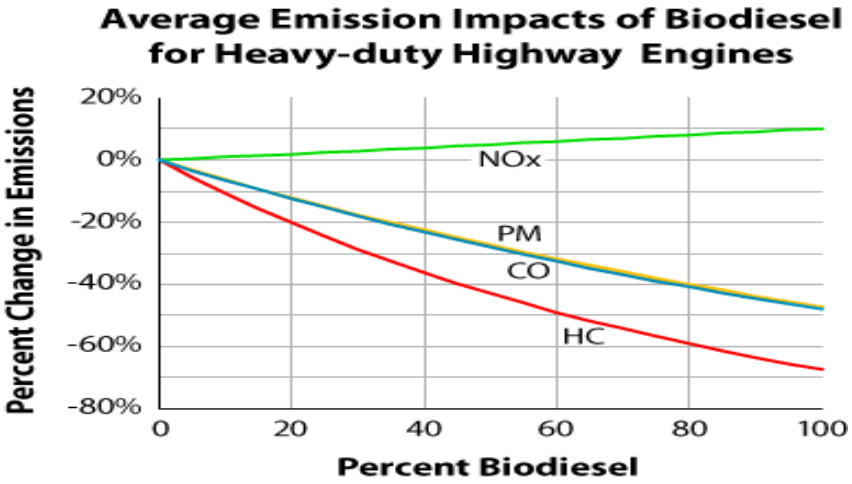
EPA has projected that the environmental and air quality outcomes of reduced petroleum consumption are positive. Some of the most relevant highlights from the Regulatory Impact Analysis for the RFS, conducted by the EPA Office of Transportation and Air Quality, are as follows:

- In 2012, petroleum consumption will have been reduced (through the increased use of ethanol and biodiesel) between 2.0 and 3.9 billion gallons. That is roughly between 0.8 to 1.6 percent of the total petroleum used by the transportation sector.

[7] NADB Loan Proposal Nov. 2007 - U.S. EPA – Renewable Fuel Standard Program

- In 2012, emission impacts will see reductions for carbon monoxide (1 to 2.5%), benzene (3 to 4%), and carbon dioxide (1%) from the transportation sector.

The use of biodiesel in a conventional diesel engine substantially reduces emissions of unburned hydrocarbons (HC), carbon monoxide (CO), sulfates, polycyclic aromatic hydrocarbons (PAH), nitrated polycyclic aromatic hydrocarbons (nPAH), and particulate matter (PM). Biodiesel B100 provides the best emission reductions. Using biodiesel B100 also reduces Greenhouse emission. B100 use reduces carbon dioxide (CO2) emissions by more than 75% compared with #2 diesel. Using B20 reduces carbon dioxide emissions by 15%. Biodiesel can be blended with petroleum diesel. The percentages are designated as B20 for a blend containing 20% biodiesel and 80% petroleum diesel, B100 for 100% biodiesel.[8]



Electricity generation is the largest industrial source of CO2 emissions and a close second to the transportation sector. The biodiesel will be used in two separate sectors: supplying retail outlets with biodiesel for the end consumers and a local refinery.

Energy

Biodiesel may be used to produce renewable energy. Renewable energy describes the energy generated by wind, sun, water, and geothermic heat that is then converted into power for our everyday use. Power utilities in the State of Texas and New Mexico are currently mandated by the government to substitute a portion of their output with renewable electricity. This requirement is the motivating factor in El Paso Electric's interest in purchasing electricity from the planned RGRE facility. First phase of the project includes electricity generation for 10MW.

Implementing the use of renewable fuels and electricity will create public benefits such as, environmental improvement, increased fuel diversity, national security, and economic development.

Economic

The project will provide economic and social benefits to the area and its residents through investment and job creation.

[8] U.S. Department of Energy – Energy Efficiency and Renewable Energy

Also, another positive dynamic under the RFS is that renewable fuel credits are transferable and/or saleable, and designed to ease the purchase requirements on obligated parties. Refiners and importers can receive credits for renewable fuels blended above the mandated baseline for their facility. This gives gasoline suppliers the flexibility to use less renewable fuel than required by the RFS, and still meet the standard by purchasing credits from suppliers who need to use more renewable fuel to meet their requirements. Another factor in the RFS credit system is that biodiesel is worth 1.5 credits compared to 1 credit for ethanol. The renewable fuel credit system is monitored and regulated by EPA.[9]

This model is very similar to the "renewable energy certificates" ("REC's") produced from wind energy projects in States that have a "renewable energy portfolio standard" ("RPS") The REC's produced from a renewable energy project can take the place of an actual kilowatt hour of electricity produced, and can be sold to energy producers who have not met their RPS requirements for that year. In essence, they can replace their own lack of actual production with a purchased credit from an existing renewable energy generation facility at a price determined in the marketplace.[10]

Social

The consumers are becoming more environmentally perceptive and globally conscious, and the need for alternative fuel is expanding. Consumers desire an alternative to foreign fuels dependency.

Important Issues for Certification:

The project falls within the BECC's sectors and complies with general criteria.

Pending Issues:

None.

[9] NADB Loan Proposal Nov. 2007
[10] NADB Loan Proposal Nov. 2007

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations

GAF has completed all required air permits through the Texas Commission of Environmental Quality (TCEQ). The applications were approved and assign the registration number TXRNEV 122.
GAF has registered the emissions associated with the Biodiesel Blending Facility site under Title 30 Texas Administrative Code. The permit by Rule Registration Number is: 81973.

The project will comply with the following regulations or specifications:

- Specifications for biodiesel (B100) of the American Society of Testing and Materials (ASTM) ASTM D 6751
- Energy Policy Act of 2005
- Renewable Fuel Standard Program "RFS"

The project construction will be executed in accordance with applicable regulations.

The plant is located at the Global Alternative Fuels GAF Industrial Research Park. GAF does not foresee nor is it planning any operation that would adversely affect any cultural or historic resource in the area.

2.b Human Health and Environmental Impacts

Human Health Impacts

With regards to the proposed project's project impact on Human Health; no impacts are foreseen during construction, as the plant will be built in an existing industrial park and no major land movements are contemplated. The equipment installation and other plant components will be carried out taking advantage of existing buildings

Concerning the operation or close out phases of this project, EPA recently awarded the Technology provider for this project, Greenline industries' CF series plants, and associated technology, with an award for the CF Series waterless continuous flow Biodiesel production process. The award was given based on the process that boasts extremely low emissions during the creation of an environmentally friendly product (Biodiesel). Emissions are captured using a skid mounted vacuum system that traps and recycles residual elements. One emission point is for distilled water vapors from the oil dryer, and the second emission point is from the methanol recovery system. The methanol recovery system uses molecular sieves, a chilled water vacuum system, and charcoal filter to lower the methanol rate to less than 10 PPM discharged in the air. Total volume of air discharged is estimated at 575 lbs per day yielding an extremely low estimated emission of methanol of less than 2.94 lbs per year. The remaining methanol is recycled back into the system.

In addition to the positive impacts due to NOx and SOx emissions reduction, the use of yellow grease and tallow as feed, the biodiesel process will provide a sustainable recycling method that will impede these materials to get into, either superficial streams, causing potential odor an pollution problems or sewers to wastewater treatment plants, causing potential clogging and other operational problems.

As far as the product that will be obtained, in June 2000, representatives of the U.S. Congress announced that biodiesel had become the first and only alternative fuel to have successfully completed the Tier I and Tier II Health Effects testing requirements of the Clean Air Act Amendments of 1990. The biodiesel industry invested more than two million dollars and four years into the health effects testing program with

the goal of setting biodiesel apart from other alternative fuels and increasing consumer confidence in biodiesel.

Results of the health effects testing concluded that biodiesel is non-toxic and biodegradable, posing no threat to human health. Also among the findings of biodiesel emissions compared to petroleum diesel emissions in this testing:[11]

- The overall ozone (smog) forming potential of the speciated hydrocarbon exhaust emissions from biodiesel is 50% less
- The exhaust emissions of *carbon monoxide (*a poisonous gas and a contributing factor in the localized formation of smog and ozone) from biodiesel are 50% lower
- The exhaust emissions of *particulate matter* (recognized as a contributing factor in respiratory disease) from biodiesel are 30% lower
- The exhaust emissions of *sulfur oxides and sulfates* (major components of acid rain) from biodiesel are completely eliminated
- The exhaust emissions of *hydrocarbons* (a contributing factor in the localized formation of smog and ozone) are 95% lower
- The exhaust emissions of *aromatic compounds* known as PAH and NPAH compounds (suspected of causing cancer) are substantially reduced for biodiesel compared to diesel. Most PAH compounds were reduced by 75% to 85%. All NPAH compounds were reduced by at least 90%.

Additionally, the generation of renewable electricity reduces emissions of nitrogen oxide (NOx), sulfur dioxide (SOx), mercury, and carbon dioxide (CO2) from electric power plants.

Environmental Impacts

Because the area for the proposed biodiesel plant is located in an existing industrial park, within the urban footprint of El Paso, and no close neighborhoods are located in its entourage no negative social/environmental impacts are envisaged; for the same reason, no local flora or fauna will be negatively impacted. No exotic species will be introduced. Due to the process characteristics (e.g. waterless process) no discharge is anticipated to the municipal sewer or any other superficial or underground water receiving body. As indicated above, the Technology provider, Greenline Industries has recently received and EPA award for its extremely low emissions technology.
In relation to biodiesel's impact on greenhouse gases, the U.S. Department of Energy conducted a study, which showed that the production and use of biodiesel compared to petrodiesel, resulted in a 78.5% reduction in carbon dioxide emissions. Additionally, biodiesel yields 3.24 units of energy for every unit of energy needed to produce one gallon.

Transboundary Impacts

Negative impacts are not anticipated due to the development of this project. As a matter of fact, it is anticipated that the project will have a beneficial impact, as a result of the foreseen improvement in air quality from the use of biodiesel blended into regional fuel supplies in the El Paso, Texas – Juarez, Chihuahua air basin.

[11] National Biodiesel Board - Performance

Important Issues for Certification:

The project will have beneficial environmental impacts.

Pending Issues:

None.

3. Technical Feasibility

3.a Technical Aspects

Project Development Requirements

Global Alternative Fuels, LLC "GAF" through the installation of a waterless biodiesel processor in El Paso, Texas will produce a clean renewable biodiesel fuel with an initial output of 5 million gallons per year. Phase two will be initiated with another processor and putting total output of biodiesel to 25 million gallons per year. The primary feedstock will be yellow grease (waste cooking oils) and tallow (animal fats).

The project involves a number of different companies that will be business partners, feedstock suppliers, technology providers, and biodiesel purchasers. GAF is the borrower and lead company for project. There are other key players in the project structure which are: 1) Feedstock provider – Westway Trading Company; 2) Technology provider – Greenline Industries; 3) Biodiesel offtakers – Flying J. Pilot Travel Centers and Western Refining, Inc.; and 4) Glycerin offtaker – Westway Feeds.

Appropriate Technology

Biodiesel

Global Alternative Fuel GAF has utilized technology from Greenline Industries, SRS Industries, and other equipment manufacturers that have been proven effective and incorporated into the overall plan. GAF selected the Greenline biodiesel processor on its ability to utilize a variety of feedstocks, waterless processes, and timeline for delivery. The processor is flexible enough to use virgin oils to yellow greases.

Greenline Industries has been a reputable producer of biodiesel processors. They are recognized by the National Biodiesel Board and use technology that has been proven effective in the production of ASTM quality biodiesel. Greenline has deployed thirty biodiesel processor systems throughout the U.S., Europe, and Asia producing in millions of gallons per year on a commercial basis. They are one of the leading biodiesel processor manufacturers and system designers that attempt to minimize the environmental impact of the system through the elimination of waste by-products from the production process.

The basic process (Figure 3.1) for any catalyst induced transesterification process involves migrating ester chains from a triglyceride molecule, and reconnecting the ester chains with a methanol or ethanol molecule, thus creating a methyl ester molecule. It is this methyl ester molecule that is Biodiesel. Various chemical and mechanical actions work together to make the transesterification process occur. The catalyst used is a strong base, either sodium or potassium. Once the ester chains are broken off, the left over glycerin molecule is a byproduct of the reaction. The mass balance is shown following this description.

Vegetable oil + Methanol = Biodiesel + Glycerin

1. Raw materials holding tanks:

Tanks depicted in the upper left corner, hold the following supplies; the raw materials storage tanks hold:

a. Vegetable feedstock, (soy, rapeseed, etc.)

b. The second feedstock tank (optional) contains blending oil, (rendered fats, waste cooking oil, or other suitable material) this tank may also be used to store a secondary vegetable oil

c. Catalyst or methoxide, can be either potassium, or sodium and is mixed with methanol forming a methylate. Using methylate is a safe and easy method of handling and blending catalyst into the

process that does not require open mixing of methanol with the caustic. Operators are not exposed to either methanol, or catalyst materials

d. Methanol

2. Optional Centrifuge and Blending Module:

The system can process two or more feedstocks of similar or dissimilar acid values, by using the optional blending module (shown in yellow). Combined acid value must be less than ≤ 5. Acid value is an indicator for FFA (free fatty acid) level. FFA is approximately 50% of acid value. Shown in the diagram as the yellow group just below the left feedstock tank. The centrifuge, also optional, may be included with the blending module offering further flexibility in feedstock selection. The blending unit simply blends and meters the various components together. The centrifuge separates water and other unwanted material from the incoming feedstock. For example, this combination would be used when working with a combination of soy and chicken fat

3. Dosing Module:

Just below the methanol tank is the methanol catalyst mixing station. It is at this station that the concentrated methoxide solution is blended with methanol to the exact proportions needed for the specific process recipe.

Metering is done via closed loop control from the computer module. Process parameters and real time feedback are available on the computer control screen where operators can monitor flow rates at any given moment. Dosing ratios are metered using mass flow meters that are keyed into the mass of feedstock entering the system

4. Drying Station:

Water has been described as the bane of the Biodiesel industry. It causes soap to be formed in the transesterification process, and also causes the finished fuel to be unstable. The Greenline process in totally waterless, and to further deter any moisture contamination, Greenline uses two drying stations. The first drying station, depicted as a green box, following the line from the blending unit, re-circulates and heats the oil under vacuum to remove any residual moisture in the incoming feedstock. The second drying station, the methanol removal unit is discussed later in this document

5. First Pass Transesterification Reactor:

Immediately after the drying station the dosing mix of methanol and catalyst enter a special mixing tube and then enter the reactor. Our system features a two-stage transesterification process, which accelerates conversion efficiency and maximizes yield. Approximately 90% of the feedstock oil is transesterified in the first pass. With other Biodiesel processes there is always a trade off between quality fuel and increased throughput. With the Greenline dual station transesterification process there is no trade off or sacrifice of fuel quality for throughput. The secret involves the proprietary reaction tank design, and in the cutting of the fuel after the first transesterification reactor. The result is high throughput and high quality fuel

6. Glycerin Removal:

Initial separation of glycerin from product stream is done using a settling tank. It is located directly after the first reaction station. The glycerin is then pumped to the glycerin storage tank, (6a) shown in the upper right corner of the diagram. Glycerin contains approximately 2% methanol. This small amount helps to keep the glycerin liquid as ambient temperatures drop. The glycerin storage tank is the tank in the upper right corner of the illustration

7. Second Pass Transesterification Reactor:

Immediately after the glycerin removal station the second dosing mix of methanol and catalyst enter a special mixing tube and then enter the reactor. This mix is a slightly different mixture of catalyst. All metering is computer controlled. The second pass reactor further pushes the reaction enabling the process to fully react any remaining mono, di, or triglycerides

8. Glycerin Removal/Settlement Tanks:

This step sends the product mix on to settling tanks (2, 3, and 4) after second pass reactor. Trace amounts of biodiesel, methanol, and the remaining catalyst are carried away with the glycerin byproduct to the glycerin holding tank (6a) in the upper right area of the diagram

9. Ion Exchange Waterless Wash:

Following the settling tanks, the biodiesel moves to the ion exchange towers. One of the principle

Figure 3.1 Biodiesel production process

Figure 3.2 is a picture of the processor installations

Figure 3.2 GAF Processor Installations

GAF has an arrangement with feedstock provider and biodiesel/glycerin offtakers. The feedstock providers agree to provide uninterrupted, economically-priced feedstock of yellow grease or tallow for a fixed-term of five years is of strategic importance to GAF.
The offtake agreement with Westway Feeds for purchase of the glycerin provides a small revenue stream for a by-product that is used as an input to make animal feeds. This arrangement is beneficial since glycerin would otherwise become a "waste" by-product to be processed and disposed of, creating only an O&M cost to the project.

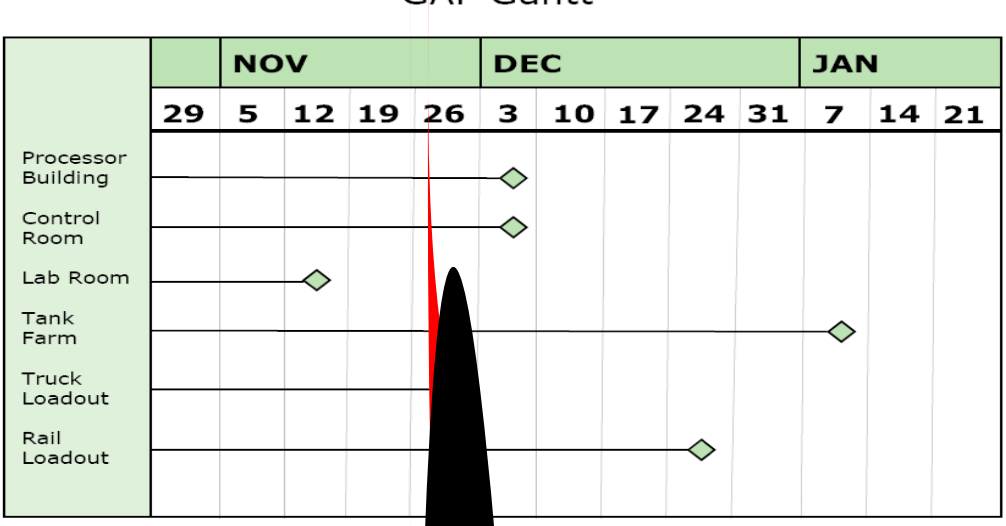
The biodiesel offtakers for Phase 1 and 2 are all located in the El Paso region. For Phase 1, Pilot Travel Centers has committed to purchase the first 5 million gallons. For Phase 2, Western Refining, Inc. is the primary offtaker in negotiations to purchase the follow-on 20 million gallons. These contracts have terms of 3 years with two options for renewal of three-year terms each. Each of these entities is involved in the purchase of biodiesel for blending into petrodiesel to create a B2, B5, or B10 biodiesel product.

Renewable energy
Rio Grande Renewable Electric, LLC "RGRE", a sister company of GAF, is a potential offtaker of biodiesel.

Land Acquisition and Rights of Way Requirements
An amended certificate of the formation of Global Alternative Fuels, LLC was filed with the Secretary of State of Texas with an effective date of January 1, 2007. GAF is managed by a team of professionals with backgrounds in industrial and electrical engineering, shipping and logistics, corporate finance, accounting, and infrastructure project management and implementation. The plant is located at the Global Alternative Fuels GAF Industrial Research Park at 3500 Doniphan Drive.

Work Tasks and Schedule

The following Gantt chart shows development work for the Biodiesel plant. Future development plans for all forthcoming phases will be finalized upon completion of phase one.

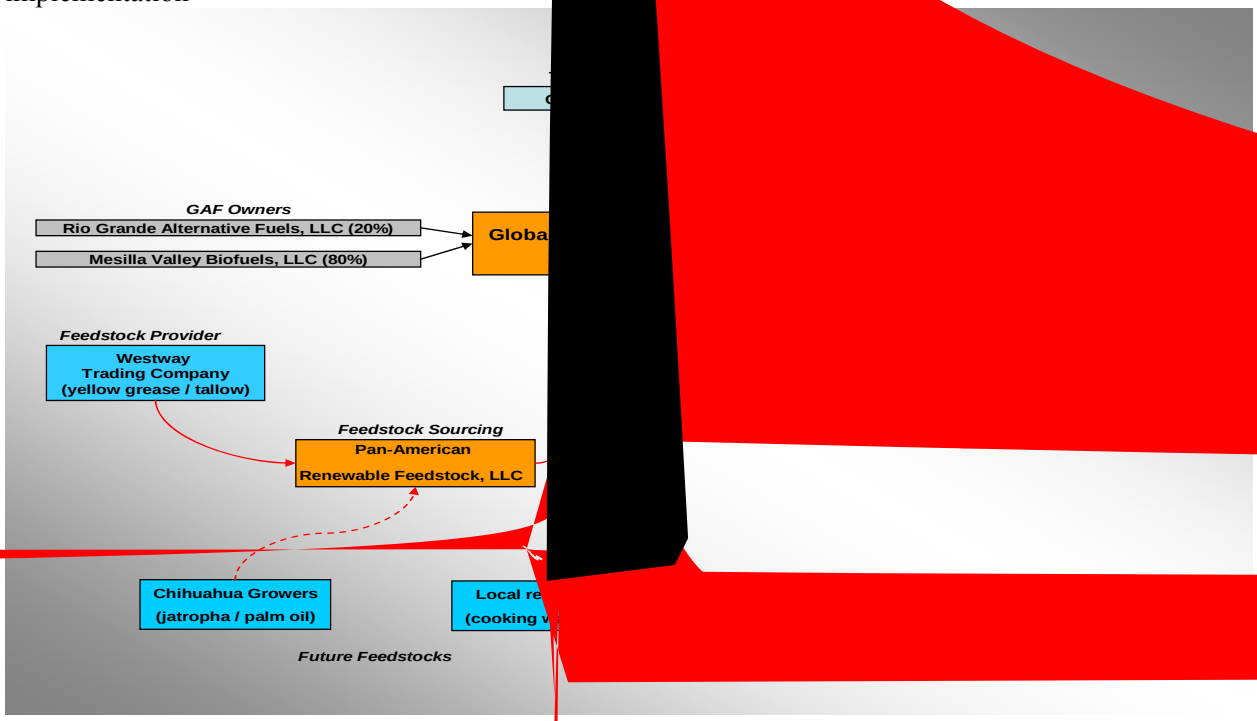


3.b Management and Operation

Project Management

The following organizational chart depicts the ...ith GAF's various suppliers and customers. This diagram shows intakes and off takes and s... ...elopment plans.

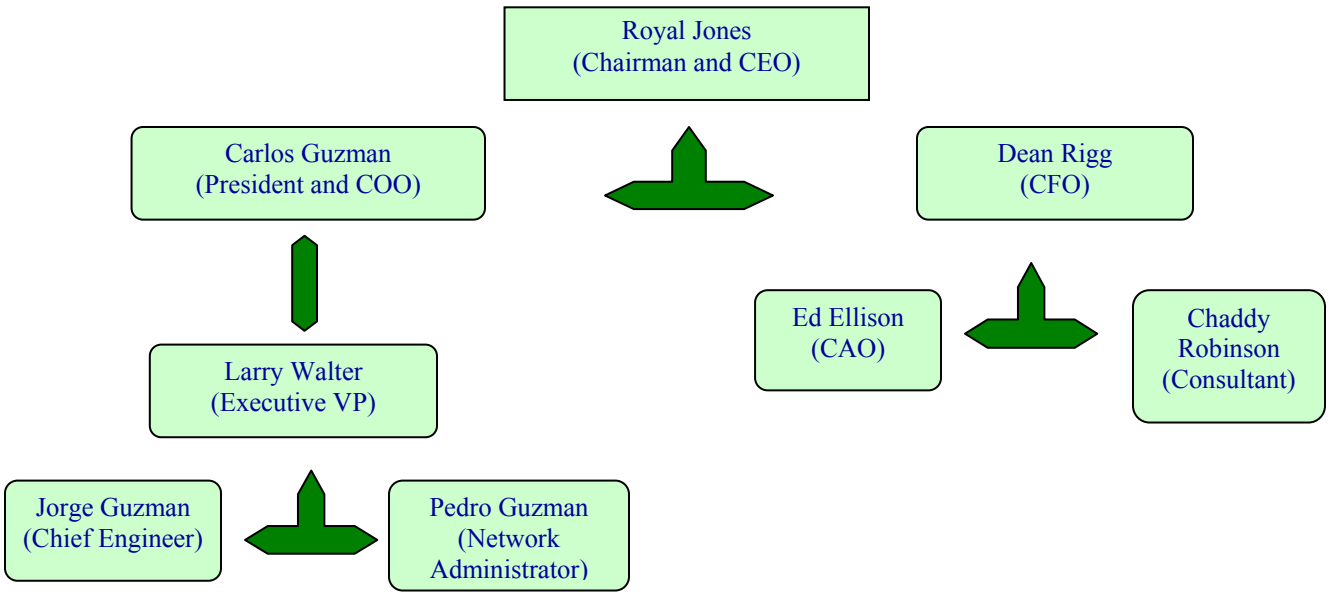
GAF is managed by a team of professionals ... ...ndustrial and electrical engineering, shipping and logistics, corporate finance, ...cture project management and implementation



GAF has aggressive growth plans for their biodiesel production facility. They are proposing to grow to a full production capacity of 105 million gallons by 2014. They plan to become the dominant producer of biodiesel in the west Texas and southern New Mexico region, and become the primary source of biodiesel for blending into petrodiesel. Currently, there are only two small-volume producers in the region, which produce less than 1 million gallons per year each and are targeting very specific market niches for the farming sector in Doña Ana County, New Mexico. GAF does not consider these two small-volume producers to be serious competition in their business growth plan.

Operation and Maintenance

Organization



Operations and Maintenance

Biodiesel

Greenline Industries, processor designer, will use remote monitoring to connect to their electric power equipment anywhere in the world, 24/7/365, through on-site hardware, communications technologies and web-based software.

Table 3.2 shows typical diesel maintenance schedule.

Table 3.2 Diesel maintenance schedule

Maintenance Items	Service time				
	Daily	Weekly	Monthly	6 Months	Yearly
Inspection	X				
Check coolant heater	X				
Check coolant level	X				
Check oil level	X				
Check fuel level	X				
Check charge-air piping	X				
Check/clean air cleaner		X			
Check battery charger		X			
Drain fuel filter		X			
Drain water from fuel tank		X			
Check coolant concentration			X		
Check drive belt tension			X		
Drain exhaust condensate			X		
Check starting batteries			X		
Change oil and filter				X	
Change coolant filter				X	
Clean crankcase breather				X	
Change air cleaner element				X	
Check radiator hoses				X	
Change fuel filters				X	
Clean cooling system					X

Permits, Licensees, and other Regulatory Requirements

GAF has completed all required air permits through the Texas Commission of Environmental Quality (TCEQ). The applications were approved and assign the registration number TXRNEV 122.
GAF has registered the emissions associated with the Biodiesel Blending Facility site under Title 30 Texas Administrative Code. The permit by Rule Registration Number is: 81973.

The project will comply with the following regulations or specifications:

- Specifications for biodiesel (B100) of the American Society of Testing and Materials (ASTM) ASTM D 6751
- Energy Policy Act of 2005
- Renewable Fuel Standard Program "RFS"

The project construction will be executed in accordance with applicable regulations.

Important Issues for Certification:

Information provided by the project sponsor has been reviewed.

Pending Issues:

None.

4. Financial Feasibility

4.a Financial Feasibility

Financial Conditions

The North American Development Bank (NADB), after reviewing the financial information submitted by the project sponsor, determined that the financial capacity and structure are adequate. The information submitted and the financial analysis includes but it is not limited to:

i) Historic and pro-forma financial statements
ii) Project financial structure
iii) Improvement plan / budget
iv) Historic and pro-forma operation and maintenance budget
v) Sensitivity and break-even analysis, and
vi) Economic and demographic information on the project area

Project Costs, Funding Structure and Other Capital Investment Plans (CIP)

A detailed analysis of the project's financial information is contained in the loan proposal that will be submitted to the NADB Financial Committee for authorization. Following is a summary of the financial analysis developed by NADB:

The total cost for the Project is estimated to be US$26.6 millions (Table 4.1), including design, construction management, fees and commissions, contingencies, and taxes. The direct costs are estimated to be US$22.9 millions and indirect costs are estimated to be US$3.75 millions.

Table 4.1 Project Total Cost
(Millions of US dollars)

TIPO	$	%
Direct costs	22.90	85.9
Indirect costs	3.75	14.1
TOTAL	**26.65**	**100.0**

Source: GAF 2007

Dedicated Revenue Source

GAF has requested from NADB credit funds for US$19.9 millions to finance 75% of the project. Table 4.2 presents the use and sources of the financial resources.

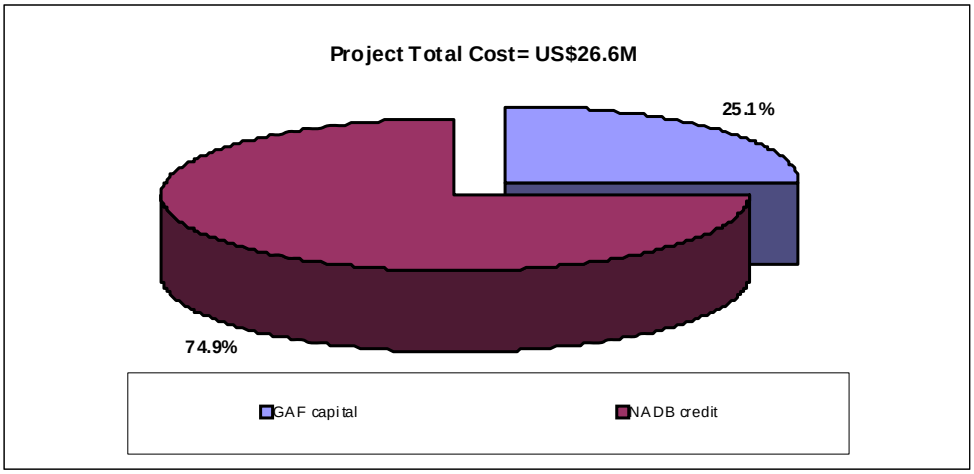
Table 4.2 Use and Sources of funds
(Millions of US dollars)

	PHASE 1	PHASE 2	Total
Uses of Funds			
Capital investments	5.86	17.04	22.9
Start up	0.65	0.25	0.90
Contingencies	0.26	2.59	2.85
TOTAL	**6.77**	**19.88**	**26.65**
Sources			
GAF capital	3.32	3.34	6.66
NADB credit	3.44	16.55	19.99
TOTAL	**6.76**	**19.89**	**26.65**

Source: GAF 2007

Chart 4.1 presents the funding sources for the project.

Chart 4.1 Funding sources



In general terms, it can be concluded that the financial performance of GAF will be satisfactory and consists with his business plan. GAF has a solid management staff with experience and knowledge. The knowledge of GAF on the market put it as one of leading firms in this field. It is estimated that the projected income during the project life span will be sufficient to face the commitments derived from the debt service with NADB and to continue with the routine activities of GAF.

4.b Legal Considerations

GAF is managed by a team of professionals with backgrounds in industrial and electrical engineering, shipping and logistics, corporate finance, accounting, and infrastructure project management and implementation.

Important Issues for Certification:

The financial feasibility of the project was analyzed by NADB and determined to be financial feasibly.

Pending Issues:

None.

5. Public Participation

Local Steering Committee

For the project category of Private-sector Environmental Infrastructure Projects there's no requirement to form a Local Steering Committee.

Public Access to Information

The Project Certification Document (PCD) will be posted for a period of 30 days for public comments.

Final Public Participation Report

For the project category of Private-sector Environmental Infrastructure Projects there's no requirement to form a Local Steering Committee or conduct Public Meetings, thus no final report will develop.

General Public Comment Period

The Project Certification Document (PCD) was released for public comments on _____ (date).

The PCD was published on BECCNet, BECC website and on El Paso Times, etc.

Important Issues for Certification:

The project complies with all applicable public participation principles for Private-sector Environmental Infrastructure projects.

Pending Issues:

None.

6. Sustainable Development

6.a Institutional and Human Capacity Building

Greenline Industries will provide training to GAF staff.

6.b Conformance with Applicable Local, State, and Regional Laws and Regulations and Conservation and Development Plans

GAF has completed all required air permits through the Texas Commission of Environmental Quality (TCEQ). The applications were approved and assign the registration number TXRNEV 122.
GAF has registered the emissions associated with the Biodiesel Blending Facility site under Title 30 Texas Administrative Code. The permit by Rule Registration Number is: 81973.

In June 2000, representatives of the U.S. Congress announced that biodiesel had become the first and only alternative fuel to have successfully completed the Tier I and Tier II Health Effects testing requirements of the Clean Air Act Amendments of 1990.

The project will comply with the following regulations or specifications:

- Specifications for biodiesel (B100) of the American Society of Testing and Materials (ASTM) ASTM D 6751
- Energy Policy Act of 2005
- Renewable Fuel Standard Program "RFS"

The project construction will be executed in accordance with applicable regulations.

6.c Natural Resource Conservation

A U.S Department of Energy study showed that the production and use of biodiesel (B100), compared to #2 diesel, resulted in a 75% reduction in carbon dioxide (CO2)[12] emissions. Using B20 reduces carbon dioxide by more than 15%. Carbon dioxide is the most important of the greenhouse gases which contributes to the Greenhouse effect.

6.d Community Development

The project will provide economic and social benefits to the area and its residents through investment and job creation.

The consumers are becoming more environmentally perceptive and globally conscious, and the need for alternative fuel is expanding. Consumers desire an alternative to foreign fuels dependency.

Important Issues for Certification:

The project complies with all sustainable development principles.

Pending Issues:

None.

[12] National Biodiesel Board – Biodiesel benefits