

**Clean Sustainable Energy Authority**

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**North Dakota Industrial Commission**

## Application

Project Title: SAFuels X

Applicant: AIC Energy Corp

John F. Melk

Date of Application: 5/19/23

Amount of Request

Grant: \$5,000,000

Loan: \$25,000,000

Total Amount of Proposed Project:

\$525,000,000

Duration of Project: 2 years

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# Clean Sustainable Energy Authority

## Request for Confidentiality

**Applicant:** AIC ENERGY CORP dba SAFuels X

**Application Title:** NDIC CLEAN SUSTAINABLE ENERGY GRANT/LOAN

1. *A general description of the nature of the information sought to be protected.*

All AIC Energy Corp dba SAFuels X financial including but limited to proposals, bids, and cost estimates provided by third party vendors to be held "Confidential". The following appendices, **Appendix B: Historical Financials, Appendix C: Business Plan, Appendix D: Project Budget, and Appendix F: Loan Application**, are requested to remain business confidential.

2. *An explanation of why the information derives independent economic value, actual or potential, from not being generally known to other persons.*

The information being requested confidential contain business specific figures, such as financials. This information is not known to the general public. If the information in the requested confidential sections were made known to the general public, it is possible someone could reverse engineer and duplicate AIC's competitive advantage.

3. *An explanation of why the information is not readily ascertainable by proper means by other persons.*

Access to AIC's business plan and financials are available only to the AIC Board of Directors and financial team. Potential investors and other similar parties have all signed a non-disclosure agreement to access the information.

4. *A general description of any person or entity that may obtain economic value from disclosure that may derive from the information, and how the person or entity may obtain this value.*

If the information was made public, an individual could obtain critical relationship information, market forecasts, technological intellectual property, etc.

5. *A description of the efforts used to maintain the secrecy of the information.*

AIC Energy Corp has executed non-disclosure agreements in place with all vendors and clients.

  
\_\_\_\_\_  
Signature

\_\_\_\_\_  
President/CEO

\_\_\_\_\_  
Title

\_\_\_\_\_  
May 19, 2023

\_\_\_\_\_  
Date

# 1 ABSTRACT

## 1.1 Objective

AIC Energy Corp's (AIC) SAFuels X facility is seeking a grant of \$5 million and a loan commitment of \$25 million from the Clean Sustainable Energy Authority.

AIC's objective is to obtain financial assistance from the North Dakota Industrial Commission Clean Sustainable Energy Authority (CSEA) to design, construct and operate a renewable fuels facility and blending plant (SAFX facility). This facility will bring stable, well-paying jobs to the north-west region of North Dakota and create high-value added agriculture products.

## 1.2 Expected Results

The SAFX facility will create 300 (peak) industrial & commercial construction jobs, more than 75 permanent jobs, plus numerous additional jobs for secondary industries such as: trucking, industrial service vendors, rail workers and suppliers. Additionally, the local economy will expand to support the housing and subsistence of these vendors, workers, and families.

- The feedstock initially will be RBD soybean oil. Bartlett Grain has been selected as the broker for the facilities feedstock. Bartlett Grain has also guaranteed product quality based on National Oil Producer Association standards.
- The impact on agriculture production will be significant and provide an improved long term, stable consumer & base price for feedstock producers.
- The facility will produce approximately 70 million gallons of renewable jet fuel annually, and 20 million gallons of renewable diesel. Haldor Topsoe has provided yield guarantees on jet fuel production.
- The renewable jet fuel will then be blended with mineral (petroleum based) jet fuel to create blended sustainable aviation fuel (SAF).
- The project will utilize large amounts of locally sourced energy, including electricity and natural gas, requiring the expansion of these utilities and using an under-utilized natural gas resource.

## 1.3 Duration

The detailed engineering (FEL 4) of the project is expected to start in early June 2023 and expected to continue for 15 months. A construction start in Q1 of 2024 is expected with underground utilities and foundations and scheduled to reach steady state around Q4 of 2025. This facility is expected to operate well beyond 30 years.

## 1.4 Total Project Cost

\$525,000,000 is the current project development cost including working capital. Please see the business plan full financial projections.

## 1.5 Participants

AIC Energy Corp is the sole owner of the SAFuels X refinery located in Trenton, ND. Feedstock agreements are in place with Bartlett Grain for RBD soybean oil. A confidential offtake agreement has been obtained for all products produced at the facility. Natural gas transmission is in negotiation with WBI Energy and supply from Rainbow Energy Marketing Corp. Electricity and raw water supply will be supplied from Lower Yellowstone REC and M&M Water respectively. Haldor Topsoe is the technology supplier. Richard Design Services is the Engineer, Procurement, and Construction Management partner for the project.

## 2 Project Description

### 2.1 Objectives

AIC Energy Corp's (AIC) objective is to design, permit, build, and operate the SAFuels X refinery (facility) in Trenton, ND. The SAFuels X (SAFX) facility will produce renewable jet fuel to be blended into sustainable aviation fuel (SAF), renewable diesel, and renewable naphtha as sellable products. SAF and renewable diesel are 'drop-in' replacements for existing transportation fuels. Renewable naphtha is a gasoline or chemical feedstock. The primary feedstock for the SAFX facility is expected to be soybean oil, although canola oil and other regionally grown oilseed oils are capable of being used as feedstock. The feedstock oil intake capacity of the facility will be 90 to 100 million gallons per year (6500 barrels per day), resulting in nearly a 1:1 volume yield. The resulting renewable fuels will reduce net carbon dioxide emissions by 41%. The SAFX facility will bring stable, well-paying jobs to the north-west region of North Dakota and create high value-added agriculture products.

### 2.2 Methodology

AIC is the developer for this project and has selected Haldor Topsoe as the technology provider. The engineering, procurement, and construction management consultant will be Richard Design Services (RDS). These experienced contractors will provide the bulk of the technology and engineering services required for this project. Additional engineering and consulting services were provided by North Dakota firms such as Keitu Engineers & Consultants and Interstate Engineering.

#### 2.2.1 Use of CSEA Funds

AIC is requesting \$5 million in grants and \$25 million in loans from the Clean Sustainable Energy Authority (CSEA). These funds will be used for the remainder of engineering and the natural gas line design. The detail design engineering will be performed by RDS and will cover the engineering for the SAFX facility on site. The natural gas line design will be done by WBI and will cover the engineering and permitting costs. For a further detailed budget of how these costs relate to the rest of the cost of the project, please see the breakdown in the Budget Section.

*Table 1 – CSEA funding requested for the SAFuels X facility.*

<b>Line Item</b>	<b>CSEA Grant Request</b>	<b>CSEA Loan Request</b>
Detailed Engineering	\$ 5,000,000	\$ 23,000,000
NG Line Design & Permitting	\$ 0	\$ 2,000,000
<b>Total Requested</b>	<b>\$ 5,000,000</b>	<b>\$ 25,000,000</b>

Table 1 above illustrates the costs AIC is requesting CSEA to fund by grant and/or loan. AIC will match the total requested costs by greater than a 50/50 match. The requested costs include detailed design engineering for the facility and full design and permitting for the natural gas line. The remaining costs for the project will be matched by a combination of the applicant's equity and development financing. The requested items are based on contracts and proposals for the status of the project. A more detailed line item of the budget as well as assumptions made in the budget can be found in Appendix D.

The clean energy funding program is a vital component in assisting AIC in meeting its financial goal. These funds will enhance our abilities to advance the project timeline forward by enabling engineering to be completed and allowing AIC to begin the procurement process with detailed equipment specifications. The funds are vital to keep the project on an aggressive schedule.

### 2.2.2 Key AIC Personnel

Mr. John F. Melk is the President and Chief Executive Officer (CEO) for AIC Energy Corp. Mr. Melk is a native of North Dakota and was raised locally in Minot, ND. He is a federally enrolled Native American with the Turtle Mountain Band, Chippewa Indians, Belcourt, ND. Mr. Melk is also a retired member of the Local UA 300 Union for Steamfitters and Pipefitters. He was an erector for Combustion Engineering at the Coal Creek Generating Station in Underwood, North Dakota. Mr. Melk also managed the installation of the isomerization system at the, at the time, Amoco oil refinery located in Mandan, ND. He also has an extensive and wide-ranging career in contracting for the U.S. Government, including working on cryogenic systems, ferrofluid dynamics systems, and fueling systems for missiles.

The lead engineer for the SAFuels X project is Mr. Kristopher Keller, P.E. Kris is responsible for engaging and coordinating multiple engineering groups and disciplines, along with technology providers, for the design, permitting, and construction of the SAFX facility. Kris's prior experience includes reliability and performance engineering with North Dakota power cooperatives, project & district manager at a major oil field service company, and a process development engineer for a multi-national ag processor. He also previously conducted detailed design engineering and construction management for a greenfield LPG fractionation facility in North Dakota. Most recently, he was the Senior Project Engineer with a local engineering & consulting company providing support for this project. He currently holds professional engineering licenses in both North Dakota and Montana.

Mr. Phillip Stack is AIC's senior engineer. Phillip is responsible for project financial forecasting, early engineering of potential sites, and assisting the lead engineer to bring a project to completion. His work experience includes evaluation of carbon intensity incentives, forecasting of feedstock and incentive prices, and project economic modeling. He is a graduate of the University of North Dakota where he received a Master of Business Administration (MBA) with a focus in data analytics. Additionally, Phillip has a master's degree in chemical engineering.

### 2.2.3 Project Technology

The SAFX facility will utilize Haldor Topsoe's Hydroflex and H2Bridge technology. Haldor Topsoe is an industry leader in renewable fuels production. The technology is based on traditional petroleum refining techniques but has been modified for renewable fuels production.

Soybean oil is an unsaturated fat known as a triglyceride, meaning that it has 3 long chain fatty acids connected together by a glycerol backbone. The Hydroflex unit uses hydrogen generated in the H2Bridge together with proprietary catalyst to hydrogenate double carbon bonds and de-oxygenate the fatty acids and glycerol. The hydrogenated, de-oxygenated glycerol converts into propane, which is separated and becomes a feedstock in the H2Bridge. The de-oxygenated portion of the fatty acid becomes water and is separated out of the process. The hydrogenated, de-oxygenated fatty acids changes into paraffins. Paraffins are long chain hydrocarbons that must be isomerized to improve cold weather and combustion performance. The isomerized hydrocarbons are fractionated into the main products – renewable naphtha, renewable jet fuel, and renewable diesel.

In 100% diesel mode, only renewable diesel and renewable naphtha are produced. In 100% jet mode, the renewable diesel which would be produced is recycled and hydrocracked into additional jet fuel and light hydrocarbons. The light hydrocarbons are used as a feedstock for the H2Bridge. The renewable naphtha can be separated into light and heavy naphtha or remain as full-range naphtha. Heavy naphtha can be used as a renewable gasoline blend stock or renewable chemical feedstock. The light naphtha is sent to the H2Bridge as feedstock in diesel mode but sold to a commercial user in jet mode. Use of the renewable light naphtha and

light hydrocarbons in the H2Bridge will reduce the carbon intensity of the end products by displacing natural gas as a feedstock.

Across the world, at least 16 refineries are utilizing similar technology from Haldor Topsoe for renewable diesel production. The SAFX facility will be the first greenfield site producing renewable jet fuel. Being a greenfield site, the facility will be integrated for minimal energy use. This integration allows for waste to be reduced, energy usage to be optimized, and feedstock to product be maximized. The technology also will enable AIC to take advantage of low-carbon techniques developed in prior facilities by Haldor Topsoe.

Currently, the project is at the end of the FEL-3 engineering phase, beginning of detail design. AIC is requesting funding to facilitate the detailed design of the SAFX facility. During the detail design, the facility construction will commence with civil work and procurement of long lead time components. By the end of detailed design, the complete facility can be constructed. It is the detailed design where the Haldor Topsoe technology is fully integrated into the SAFuels X project.

#### 2.2.4 Engineering, Procurement, & Construction Management Contractor

Richard Design Services, Inc. (RDS) is a full-service engineering, procurement, and construction management company. RDS has extensive experience in both the petrochemical and petroleum refining industries. The company and personnel are licensed and in good standing with multiple engineering and industrial certifications. Their services include conceptual and front-end consulting, total installed cost estimates, conceptual, preliminary and/or detailed design, procurement, and construction management. RDS has experience with Haldor Topsoe technology and has completed several renewable fuels projects in Louisiana and Montana. RDS has also performed work on existing fuel processing equipment at a large gas plant in North Dakota. RDS also has experience in modularizing refining operations for aggressive construction schedules.

AIC has engaged RDS to perform the engineering, procurement, and construction management for the SAFuels X project. The project manager for RDS is Mr. Leroy Royer. Leroy has 38+ years of experience in refining and capital improvement projects. He has worked in operations, engineering, and project management for large refiners and specialty chemical manufacturers.

#### 2.2.5 Other Major Project Contributors

AIC has used a variety of specialized contracted companies in addition to Haldor Topsoe and RDS. Table 2 lists the companies used in chronological order.

*Table 2 – List of Specialized Companies used by AIC*

<b>Company</b>	<b>Service</b>
Davis Consulting	General Business Consulting, Grants Advisor
Kirby Engineering	Survey Services
JLG Architects (ND Branch)	Architecture Services
Pinnacle Engineering	Environmental Site Assessment
Beaver Creek	Archaeological Services
Savage Service Corp.	Transloading Facility
Keitu Engineers & Consultants	Feasibility Study, Permitting, Stormwater Project Management
Diamond Resources	Landman Services
M&M Water	Raw Water Supply
Praxis Strategy Group	Business Impact Study
Wenck Associates/Stantec	Environmental Site Assessment
Interstate Engineering	Site Survey, Traffic Study, Stormwater Design
American Engineering and Testing	Geotechnical Report

Table 2 Cont. – List of Specialized Companies used by AIC

Company	Service
Alfa Laval	Wastewater Treatment Technology and Design
Muse, Stancil & Co.	Feedstock Study
Bartlett Grain	Feedstock Sourcing
Nova Energy	Onsite Safety
Eide Bailly	Financial Auditing
Leidos	Third-Party Validation
MRR Inc.	Stormwater Construction
WBI Energy	Natural Gas Transmission
Lower Yellowstone REC	Electricity Supply

### 2.2.6 Permitting Status

All major permits required for construction of the SAFX facility have been obtained. Table 3 shows each of the major permits and when they were received.

Table 3 – Major Permits Required for SAFX Facility Construction

Permit	Date Received
ND State Historic Preservation Office Concurrence Letter	January 28, 2021
ND State Industrial Stormwater Permit	March 18, 2021
Williams County Conditional Use Permit	June 1, 2021
Williams County Zone Change Application	June 1, 2021
Raw Water Intake Permit	July 15, 2021
NEPA Finding of No Significant Impact (FONSI) Letter	October 7, 2021
Air Permit / Permit-to-Construct	February 1, 2023
NPDES Wastewater Discharge Permit	March 23, 2023

### 2.2.7 Major Milestones

The project began in 2020 and is currently at the end of the FEL-3, start of detail design milestone. Table 4 shows the major milestones achieved to date.

Table 4 – Major Milestones Achieved to Date

Milestone	Date Achieved
Project Start	July 2020
Purchase of Property Complete	October 2020
FEL-1 Engineering Complete	December 2020
Technology Providers Selected	April 2021
Conditional Use Permit Issued	June 2021
FONSI Letter Received	October 2021
FEL-2 Engineering Complete	December 2021
FEL-3 Engineering Complete	October 2022
Site Grading Begins – Construction of Stormwater Pond	November 2022
Air Permit / Permit-to-Construct Received	January 2023
Wastewater Discharge Permit Received	March 2023
EPC Contractor Selected	April 2023



## 2.3 Anticipated Results

### 2.3.1 Products

The primary product of the facility is Sustainable Aviation Fuel (SAF). The facility will produce more than 70 million gallons per year of renewable jet fuel. The produced renewable jet fuel will be blended with up to 210 million gallons of mineral jet fuel resulting in 280 million gallons of SAF meeting industry (ASTM) specifications. The maximum blend ratio between renewable to mineral jet fuel is a 1:1 ratio with typical contracts being a 1:3 ratio. The products will be certified at the facility and leave via pipeline to be directly loaded onto outgoing rail cars. For SAF, this results in up to 25 rail cars per day depending on the blending ratio of SAF.

Additionally, the facility can produce up to 85 million gallons of renewable diesel. The facility can be operated in 100% renewable jet or 100% renewable diesel mode or any percentage in-between, with renewable naphtha as the co-product. At 100% renewable diesel production, on average, 8 rail cars per day will be shipped. 2 to 4 rail cars of renewable naphtha will be shipped out per day depending on the production split.

The renewable fuels produced are a direct "drop in" replacement for fuels produced from petroleum. These fuels will reduce the new carbon dioxide put into the atmosphere 41% over mineral based fuels according to California Air Resource Board's GREET 3.0 model.

### 2.3.2 Feedstock & Blend Stock

The primary feedstock for the facility is expected to be soybean oil, although canola oil and other regionally available agricultural products capable of being used as feedstock. The feedstock oil intake capacity of the facility will be 90 to 100 million gallons per year (6,500 barrels per day), resulting in almost a 1:1 volume yield. The feedstock will arrive by rail and be delivered to the SAFX facility via pipeline. This volume constitutes 10 rail cars per day of feedstock consumption. AIC conducted a feedstock study, conducted by Muse Stancil, which determined an ample amount of feedstock availability (soybean oil) in region available by rail. From the field, this constitutes 2.2 million acres of soybeans at the average ND yield of 35 bushels per acre.

The mineral blend stock will arrive by rail and be delivered to the SAFX facility via pipeline. At a 1:3 renewable to mineral jet fuel ration, this requires 19 rail cars per day of mineral jet fuel delivery. Blending for renewable diesel or renewable naphtha is not required. Additional feedstocks include pipeline quality natural gas and water.

### 2.3.3 Environmental Impact

Renewable fuel production results in 41% fewer carbon dioxide emissions compared to mineral based fuels. The AIC facility will avoid net CO<sub>2</sub> emissions by over 390,000 tons per year based on jet fuel for the facility's production. The use of home-grown feedstocks and blend stocks provides a layer of energy price security to the region and country by reducing imports of petroleum from foreign sources.

During construction, AIC will use best construction practices to control site-runoff, and use dust, light, and noise mitigation strategies.

### 2.3.4 Construction Economic Impact

For the direct economic impact, the SAFX facility will create 300 (peak) industrial & commercial construction jobs, more than 75 permanent jobs, plus numerous additional jobs for secondary industries such as: trucking, industrial service vendors, rail workers and suppliers. Additionally, the local economy will expand to support the housing and income of these vendors, workers, and families. Contractor expenditures are expected to exceed \$200 during construction.

Indirect economic value for North Dakota has several layers. Current SAF production combines North Dakota's largest industries, energy, and agriculture. The use of regionally sourced soybean and/or canola oil combined with regionally refined jet fuel with petroleum sourced primarily from the Williston Basin strengthens ND's leadership in both industries. SAF provides an outlet for mineral jet products as part of a more sustainable fuel. The facility will be a large local customer for the agriculture feedstocks providing a stable price point. The estimated dollar amounts can be found in Appendix D.

### 2.3.5 Long Term Economic Impact

The long-term economic impact of the facility will be to have a new commercial and innovative processes and equipment that will refine renewable feedstocks into renewable jet fuel and renewable diesel. SAFuels X economic impact analysis shows a significant impact on the 4-county regional economy. For every job created at the SAFuels X refinery, 4.85 additional jobs will be created in the local economy. For every dollar of earnings at SAFuels X refinery, an additional \$2.51 of earnings will be created in the local economy. The facility will create more than 300 (peak) construction jobs, more than 75 permanent jobs, plus additional jobs for truckers, vendors, rail workers and suppliers. The estimated annual payroll of the permanent employees is \$7 million. Full impact to the local, state, and regional economy is estimated to be \$515 million annually while in operation. This figure does not include mineral jet fuel purchases.

### 2.3.6 Project Need

As the world markets move towards demanding low carbon solutions for transportation fuel, it challenges oil-rich areas, such as North Dakota, to adapt to the new markets. The SAFuels X project helps North Dakota address and innovate ways to keep on the forefront of the transportation industry by combining two strong North Dakota industries – agriculture and petroleum. By using agriculture products to produce renewable jet fuel, farmers in North Dakota can see high value for the soybeans and other seed oil crops the state's farmers grow. By combining the produced renewable jet fuel with petroleum-based jet fuel, the oil industry of North Dakota has an innovative way to remarket their jet fuel. Overall, the SAFuels X project seeks to expand North Dakota's energy dominance and add immense value to both the state's communities and industrial sectors.

## 2.4 Facilities

The bio-refinery will be located on an 87+ acre site southwest of Trenton, N.D. The site is adjacent to Savage Services Trenton rail port and has access to sufficient water, power, and natural gas service to provide for a production facility of this size.

- The site is zoned as "heavy industrial," is adjacent to Savage Services Trenton rail port, and has access to sufficient water, power, and natural gas service to provide for a production facility of this size.
- The site is suitable for construction due to the proximity of nearby rail access, electrical and natural gas utilities, and nearby raw water source.
- A key strategic partner is Savage Industries has an existing rail terminal system on the BNSF main line to load products, unload feedstock and blend stock, and equipment if necessary.
- Lower Yellowstone Rural Electric Cooperatives Marley substation is directly adjacent to the project site with the capacity add additional bays to service the project.
- WBI Energy Transmission has pipeline capacity nearby at their Charbonneau Compressor Station. An approximately 8-mile lateral line supplying natural gas to the site will be constructed for the facility.
- Water line running approximately 5 miles to the AIC site will be installed from the Missouri River where a withdrawal permitted for industrial use is held by M&M Water.

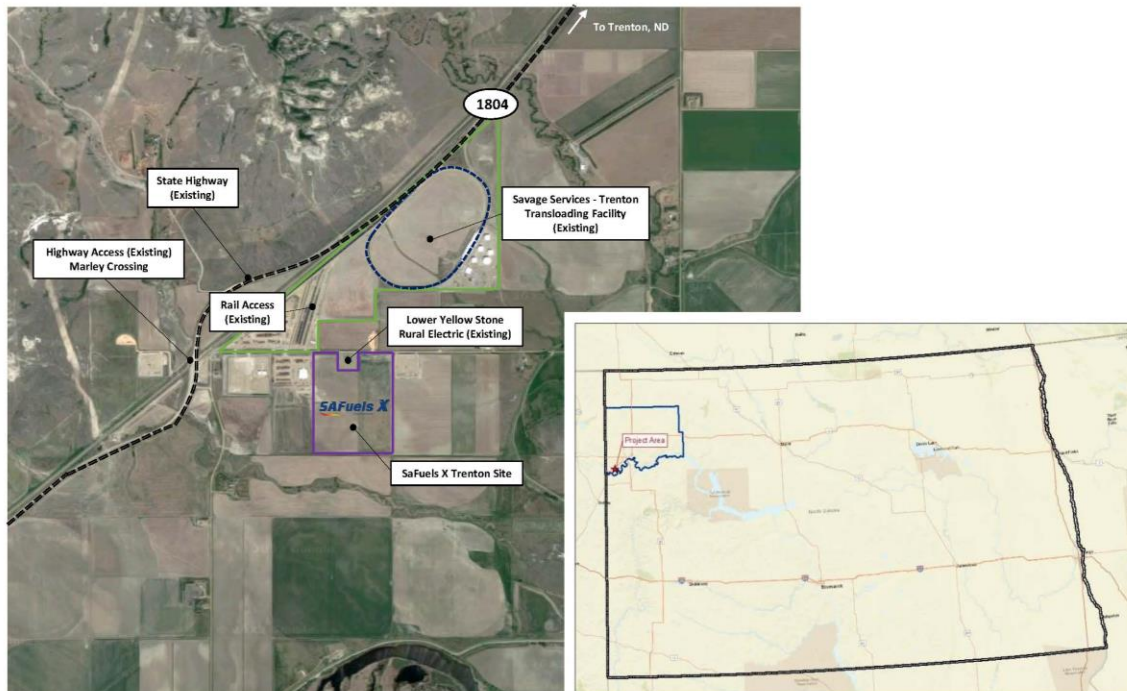


Figure 1 – Location of SAFuels X

## 2.5 Resources

### 2.5.1 Feedstock

The SAFX facility will require 6,500 barrels per day of refined, bleached, and deodorized soybean oil feedstock. This feedstock will be sourced regionally with preference being to utilize closer sources as much as possible. AIC has reached out to feedstock sources in the region and has locked down enough soybean oil feedstock for the SAFX facility. Canola oil can also be used as a feedstock if necessary. The feedstock will arrive via rail at the Savage Services Trenton rail port. A minimum of seven days of feedstock supply will be available on site to reduce supply disruptions. Facility soybean oil consumption is the equivalent of 2.2 million acres.

### 2.5.2 Rail Transport

Savage intends to provide logistical support to AIC by installing rail loading and unloading stations for the required number of rail cars. Additionally, Savage will facilitate rail movements with BNSF for rail car pick-up and delivery of manifest trains and coordinate with AIC for transfer and shipment.

### 2.5.3 Utilities

Natural gas transmission capacity will be provided by WBI Energy through a lateral line to be installed from the Charbonneau Station, approximately 8 miles from the facility, natural gas consumption will be on the order of 60 MMBtu per hour. The line will be able to supply over 400 MMBtu/hr of natural gas for start-up. Water for the facility will be pumped from the Missouri river, approximately 5 miles to the south-west of the site. An existing industrial permit is held by M&M Water. Expected water usage is approximately 750 gallons per minute with a treated wastewater discharge of 600 gallons per minute. The difference is the use of water as a feedstock in the H2Bridge and cooling evaporation.

## 2.6 Techniques to be Used, Their Availability and Capability

AIC's techniques to be used are the entities mentioned in the business plan in Appendix C. AIC has built a team that is addressing all the needs and risks of the development of this plant. Their capabilities include:

- Demonstrated experience with renewable energy projects
- Full understanding and industry recognition in renewable energy economics, incentives, and demand
- Permitting and advisory services related to environmental, energy and regulatory issues
- Design construction experience in renewable and clean energy refinery projects worldwide
- Innovative and creative technology proven worldwide
- Experienced refinery commissioning, start-up, maintenance, and operations
- Contracting and logistics coordination

## 2.7 Environmental Impacts while Project is Underway

A comprehensive study of the environmental and economic impact was completed. The USDA reviewed the environmental assessments conducted by Keitu Engineers & Consultants and issued a letter of Finding of No Significant Impact (FONSI) in October 2021. The SAFX facility will comply with all permits issued by the North Dakota Department of Environmental Quality.

# 3 Standards of Success

## 3.1 Emissions Reduction

Renewable fuel production results in 41% fewer carbon dioxide emissions compared to mineral based fuels. The AIC facility will reduce net CO<sub>2</sub> emissions by over 390,000 tons per year based on jet fuel for the facility's production.

## 3.2 Increased Energy Sustainability/Stability

The use of home-grown feedstocks and blend stocks provides a layer of energy price security to the region and country by reducing imports of petroleum from foreign sources.

## 3.3 Value to North Dakota

### 3.3.1 Communities

The benefit of the SAFX facility will be felt not only locally in the Trenton-Williston area, but throughout the state of North Dakota. Locally, the region will see about 75 full-time direct jobs created. Indirectly, for every full-time job created at the facility, about 4.85 jobs will be created in the community. For every dollar of earnings at the SAFX facility, about \$2.51 will be spent in the local economy. The facility will also draw from technical resources from around the state such as engineering, equipment supply, construction, and other ancillary services. There is additional value when including the annual multi-million-dollar tax benefit the state should see, the SAFX facility will impact four other industries in the state – agriculture, ethanol, natural gas, and petroleum.

### 3.3.2 Industries

#### 3.3.2.1 Agriculture Industry

According to the United States Department of Agriculture (USDA), North Dakota's most valuable crop in 2022 was soybeans. The SAFX facility will utilize soybean oil as its primary feedstock initially. Additionally, canola oil can also be used as a feedstock. The facility will seek to use locally sourced feedstock, when possible, to reduce the carbon intensity of its products. Farmers and other agricultural workers can benefit from the SAFX facility creating a higher demand for their products and thereby adding value.

#### 3.3.2.2 Ethanol Industry

The SAFX facility will produce renewable naphtha as a byproduct of the production of either renewable diesel or renewable jet fuel. This renewable naphtha can be used in the creation of ethanol for denaturant blending. By using a renewable source for the required denaturant in ethanol production the North Dakota ethanol industry can create an even lower carbon intensive ethanol, resulting in a higher value product. Currently, AIC has engaged in conversations with Red Trail Energy's fuel marketer RPMG, in Richardson, ND as a potential offtake for the renewable naphtha byproduct.

#### 3.3.2.3 Natural Gas Industry

The SAFX facility will utilize locally sourced natural gas in its production process via a connection to the WBI gas line in Western North Dakota. Through the addition of the SAFX facility, the natural gas industry will be able to have an increase in local demand. This local demand allows for more take-away capacity in the various near-by gas transmission pipelines – Northern Border and WBI's System.

#### 3.3.2.4 Petroleum Refining Industry

The SAFX produced renewable jet fuel, when combined with petroleum-based, mineral jet fuel creates blended sustainable aviation fuel (SAF). SAF can be blended with up to 50% renewable jet fuel in it according to industry standards (ASTM). However, in recent commercial contract standards, SAF typically contains between 30% and 40% renewable jet fuel. The remaining 60-70% will be mineral jet fuel.

Through the SAFX facility, the North Dakota refining industry will have significant demand for mineral jet fuel. When combined with the renewable jet fuel produced at the SAFX facility, the resulting blended SAF will have a lower carbon intensity than if the mineral jet fuel was sold as-is. The blended SAF created would seek to capitalize on the transportation market's demand for lower carbon alternatives. However, the goal of the SAFuels X project is not to replace the petroleum industry in North Dakota, but rather partner and enhance the petroleum products produced. The partnership between the North Dakota refining industry and SAFuels X will enable North Dakota to remain dominant in the energy industry.

### 3.4 Commercialization of the Project's Results

The SAFX facility will function as a commercial renewable feedstock refinery.

### 3.5 Job Preservation & Generation

The SAFX facility is expected to expand direct job opportunities in the immediate area of Trenton & Williston, ND. Indirect job opportunities will occur over a wider area for technical service providers, vendors, consultants, and suppliers.

## 4 Background/Qualifications

### 4.1 Major Milestones Achieved

The project began in 2020 and is currently at the end of the FEL-3, start of detail design milestone. Table 5 shows a summary of the major milestones achieved to date.

*Table 5 – Major Milestones Reached to Date for the SAFuels X Project*

<b>Milestone</b>	<b>Date Achieved</b>
Project Start	July 2020
Purchase of Property Complete	October 2020
FEL-1 Engineering Complete	December 2020
Technology Providers Selected	April 2021
Conditional Use Permit Issued	June 2021
FONSI Letter Received	October 2021
FEL-2 Engineering Complete	December 2021
FEL-3 Engineering Complete	October 2022
Site Grading Begins – Construction of Stormwater Pond	November 2022
Air Permit / Permit-to-Construct Received	January 2023
Wastewater Discharge Permit Received	March 2023
EPC Contractor Selected	April 2023

### 4.2 Experience and Qualifications

#### 4.2.1 Qualifications of Applicant

AIC's corporate and project management teams are exceptionally experienced and capable in all aspects of the business including designing, permitting, and operating a refinery and sales to DOD and commercial customers. Below is a synopsis of key personnel's biographies. Full biographies of the key personnel and management team is found in Appendix E.

Mr. John F. Melk is the President and Chief Executive Officer (CEO) for AIC Energy Corp. Mr. Melk is a native of North Dakota and was raised locally in Minot, ND. He is a federally enrolled Native American with the Turtle Mountain Band, Chippewa Indians, Belcourt, ND. Mr. Melk is also a retired member of the Local UA 300 Union for Steamfitters and Pipefitters. He was an erector for Combustion Engineering at the Coal Creek Generating Station in Underwood, North Dakota. Mr. Melk also managed the installation of the isomerization system at the, at the time, Amoco oil refinery located in Mandan, ND. He also has an extensive and wide-ranging career in contracting for the U.S. Government, including working on cryogenic systems, ferrofluid dynamics systems, and fueling systems for missiles.

The lead engineer for the SAFuels X project is Mr. Kristopher Keller, P.E. Kris is responsible for engaging and coordinating multiple engineering groups and disciplines, along with technology providers, for the design, permitting, and construction of the SAFX facility. Kris's prior experience includes reliability and performance engineering with North Dakota power cooperatives, project & district manager at a major oil field service company, and a process development engineer for a multi-national ag processor. He also previously conducted detailed design engineering and construction management for a greenfield LPG fractionation facility in North Dakota. Most recently, he was a Senior Project Engineer with a local engineering & consulting company providing support for this project. He currently holds professional engineering licenses in both North Dakota and Montana.

Mr. Phillip Stack is AIC's senior engineer. Phillip is responsible for project financial forecasting, early engineering of potential sites, and assisting the lead engineer to bring a project to completion. His work experience includes evaluation of carbon intensity incentives, forecasting of feedstock and incentive prices, and project economic modeling. He is a graduate of the University of North Dakota where he received a Master of Business Administration (MBA) with a focus in data analytics. Additionally, Phillip has a master's degree in chemical engineering.

#### 4.2.2 Qualifications of Other Participants on Project

##### 4.2.2.1 Haldor Topsoe

The SAFX facility will utilize Haldor Topsoe's Hydroflex and H2Bridge technology. Haldor Topsoe is an industry leader in renewable fuels production. The technology is based on traditional petroleum refining techniques but has been modified for renewable fuels production.

Across the world, at least 16 refineries are utilizing similar technology from Haldor Topsoe for renewable diesel production. The SAFX facility will be the first greenfield site producing renewable jet fuel. Being a greenfield site, the facility will be integrated for minimal energy use. This integration allows for waste to be reduced, energy usage to be optimized, and feedstock to product to be maximized. The technology also will enable AIC to take advantage of low-carbon techniques developed in prior facilities by Haldor Topsoe. The facility will also use light hydrocarbons produced in the Hydroflex unit as a feedstock to the H2Bridge hydrogen unit. This novel approach reduces the carbon intensity of the final products.

Currently, the project is at the end of the FEL-3 engineering phase, beginning of detail design. AIC is requesting funding to facilitate the detailed design of the SAFX facility. During the detailed design, the facility construction will commence with civil work and procurement of long lead time components. By the end of detailed design, the complete facility can be constructed. It is the detailed design where the Haldor Topsoe technology is fully integrated into the SAFuels X project.

##### 4.2.2.2 Richard Design Services

Richard Design Services, Inc. (RDS) is a full-service engineering, procurement, and construction management company. RDS has extensive experience in both the petrochemical and petroleum refining industries. The company and personnel are licensed and in good standing with multiple engineering and industrial certifications. Their services include conceptual and front-end consulting, total installed cost estimates, conceptual, preliminary and/or detailed design, procurement, and construction management. RDS has experience with Haldor Topsoe technology and has completed several renewable fuels projects in Louisiana and Montana. RDS has also performed work on existing fuel processing equipment at a large gas plant in North Dakota. RDS also has experience in modularizing refining operations for aggressive construction schedules.

AIC has engaged RDS to perform the engineering, procurement, and construction management for the SAFuels X project. The project manager for RDS is Mr. Leroy Royer. Leroy has 38+ years of experience in refining and capital improvement projects. He has worked in operations, engineering, and project management for large refiners and specialty chemical manufacturers.

##### 4.2.2.3 Specialized Companies

AIC has used a variety of specialized contracted companies in addition to Haldor Topsoe and RDS to address niche gaps. Table 6 lists the companies used in chronological order.

Table 6 – List of Specialized Companies used by AIC

<b>Company</b>	<b>Service</b>
Davis Consulting	General Business Consulting, Grants Advisor
Kirby Engineering	Survey Services
JLG Architects (ND Branch)	Architecture Services
Pinnacle Engineering	Environmental Site Assessment
Beaver Creek	Archaeological Services
Savage Service Corp.	Transloading Facility
Keitu Engineers & Consultants	Feasibility Study, Permitting, Stormwater Project Management
Diamond Resources	Landman Services
M&M Water	Raw Water Supply
Praxis Strategy Group	Business Impact Study
Wenck Associates/Stantec	Environmental Site Assessment
Interstate Engineering	Site Survey, Traffic Study, Stormwater Design
American Engineering and Testing	Geotechnical Report
Alfa Laval	Wastewater Treatment Technology and Design
Muse, Stancil & Co.	Feedstock Study
Bartlett Grain	Feedstock Sourcing
Nova Energy	Onsite Safety
Eide Bailly	Financial Auditing
Leidos	Third-Party Validation
MRR Inc.	Stormwater Construction
WBI Energy	Natural Gas Transmission
Lower Yellowstone REC	Electricity Supply

## 5 MANAGEMENT

### 5.1 Corporate and Project Management

AIC Energy Corp’s corporate and project management teams are exceptionally experienced and capable in all aspects of the business including designing, engineering, permitting, and operating a refinery and sales to DOD and commercial customers. See Business Plan Confidential Separate Document for additional experience bios.



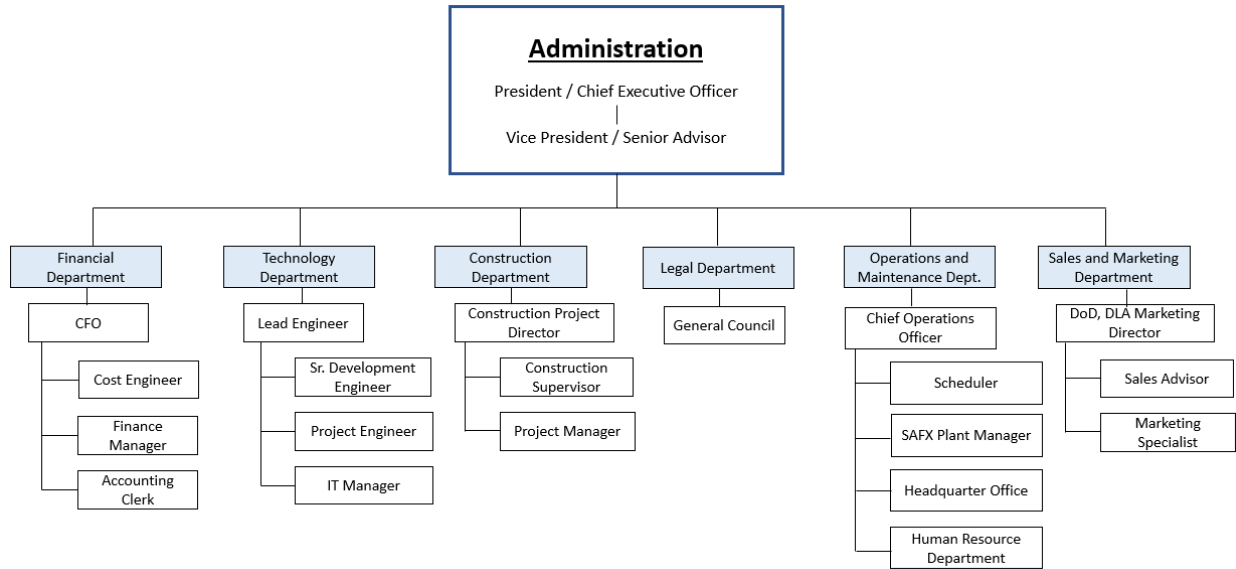


Figure 2 – AIC's Corporate Structure

## 5.2 Project Risk Management

The SAFuels X project risk will be managed and minimized during all portions of the project. Overall risk will be reduced through Management of Change documentation from the detailed design onward and through use of 3<sup>rd</sup> party reviews to identify information gaps in the project. Engineering/design risk will be mitigated through the use of experienced technology providers and EP-CM contracts. Robust Basis of Design documentation has been developed and will be adhered to for detailed design engineering. Additionally, the EP-CM will conduct internal design reviews along with Owner and 3<sup>rd</sup> party design reviews. At the 70% detailed design completion, a Process Safety Analysis will be conducted according to OSHA requirements. Financial risk was mitigated with the use of decision gates at the FEL I, II, and III levels.

Construction risk will be reduced by using an experienced construction manager (CM). The CM, with contractor input or bid, will develop a construction schedule and manpower loading. A detailed construction schedule will be developed with sufficient flexibility to accommodate delivery, weather, and minor delays. Weekly (daily if necessary) job reviews and status meetings will occur to determine if additional resources are required or prioritized elsewhere on the project. Safety risk will be managed through adherence to OSHA standards, such as work teams performing a Job Hazard Analysis prior to beginning a task.

Operational Risk will be mitigated through the use of an experienced commissioning and start-up team. Facility operators will complete formal training and check-out prior to being active in the facility. Continuous improvement training and procedures will be in place to prevent repeat quality or safety incidents from occurring, in addition to robust product quality assurance/quality control procedures. Equipment availability risk will be reduced through a predictive and prescriptive maintenance program where fault indicators are identified prior to catastrophic failure to allow for controlled shutdowns/repairs.

The project risk management will be overseen by AIC's lead engineer, Kris Keller. All contractors for engineering design, fabrication, and construction will report directly to the lead engineer. Kris will also handle all permitting reporting requirements and community relations for AIC until the SAFX facility starts up.

Assisting the lead engineer will be AIC's Senior Engineer, Phillip Stack. Phillip has a background in chemical engineering and will assist mainly during the detail design engineering phase of the project. As part of his

duties, Phillip will review engineering drawings, assist in procurement and scheduling, manage project financials including pro forma financials, and act as a second opinion for the lead engineer.

Both the lead engineer and the senior development engineer report to the Chief Operating Officer (COO) and ultimately the Chief Executive Officer (CEO). AIC’s corporate management structure can be found in Figure 2.

## 6 Timeline

### 6.1 Milestones Reached to Date

Table 7 – Major Milestones Reached to Date for the SAFuels X Project

Milestone	Date Achieved
Project Start	July 2020
Purchase of Property Complete	October 2020
FEL-1 Engineering Complete	December 2020
Technology Providers Selected	April 2021
Conditional Use Permit Issued	June 2021
FONSI Letter Received	October 2021
FEL-2 Engineering Complete	December 2021
FEL-3 Engineering Complete	October 2022
Site Grading Begins – Construction of Stormwater Pond	November 2022
Air Permit / Permit-to-Construct Received	January 2023
Wastewater Discharge Permit Received	March 2023
EPC Contractor Selected	April 2023

### 6.2 Future Schedule

Deliverable	2023												2024												2025											
	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S							
<b>Detail Engineering</b>																																				
Geotechnical Survey																																				
Update PFDs																																				
Update P&IDs																																				
Develop Plot Plan																																				
Civil Engineering Design																																				
Mechanical Engineering Design																																				
Instrumentation Engineering Design																																				
Electrical Engineering Design																																				
Steel Engineering Design																																				
Piping Engineering Design																																				
Project 3D Modeling																																				
<b>Procurement and Facility Construction</b>																																				
Procurement of Equipment																																				
Site Prep																																				
Facility Construction																																				
<b>Natural Gas Pipeline</b>																																				
Design and Permitting																																				
Construction of Line																																				
<b>Start Up and Commissioning</b>																																				
<b>Steady State Operations</b>																																				

Figure 3 – Tentative Schedule for Design and Construction of the SAFX Facility

## 7 Budget

Table 8 shows the project budget as it relates to CSEA. Please see the business confidential Appendix D for a more detailed breakdown.

*Table 8 – Budget for SAFuels X Project as it Relates to CSEA*

<b>Project Associated Expense</b>	<b>NDIC Grant</b>	<b>NDIC Loan</b>	<b>Applicant's Share (Cash)</b>	<b>Other Project Sponsor's Share</b>	<b>Total</b>
Detailed Engineering	\$ 5,000,000	\$ 23,000,000	\$ 0	\$ 17,000,000	\$ 45,000,000
Natural Gas Line Design	\$ 0	\$ 2,000,000	\$ 0	\$ 1,500,000	\$ 3,500,000
Other Items	\$ 0	\$ 0	\$ 23,500,000	\$ 453,000,000	\$ 476,500,000
<b>Total</b>	<b>\$ 5,000,000</b>	<b>\$ 25,000,000</b>	<b>\$ 23,500,000</b>	<b>\$ 471,500,000</b>	<b>\$ 525,000,000</b>

## 8 State Programs and Incentives

AIC has been awarded funding from the following State of North Dakota's programs and incentives shown in Table 9.

*Table 9 – State programs and incentives AIC has participated in.*

<b>Award Date</b>	<b>Program/Incentive</b>	<b>Award Amount</b>
February 2021	APUC Grant	\$ 212,000
November 2021	APUC Grant	\$ 60,000