CALIFORNIA ENERGY COMMISSION

California Energy Commission

Clean Transportation Program

FINAL PROJECT REPORT

Expanding Access to Renewable Fuels - Port of Stockton Terminal

Prepared for: California Energy Commission

Prepared by: American Biodiesel, Inc. dba Community Fuels

COMMUNITY FUELS

Gavin Newsom, Governor

July 2020 | CEC-600-2020-046

California Energy Commission

Lisa Mortenson
Christopher Young
Christopher Guay, Ph.D.
Primary Authors

American Biodiesel, Inc. dba Community Fuels
171 Saxony Road
Enicinitas, CA 92024
(760) 942-9306
Community Fuels Website (http://communityfuels.com/)

Agreement Number: ARV-10-037

Andre Freeman
Project Manager

Elizabeth John
Office Manager
ADVANCED FUELS AND VEHICLE TECHNOLOGIES OFFICE

John P. Butler II
Acting Deputy Director
FUELS AND TRANSPORTATION

Drew Bohan
Executive Director

PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorizes the Clean Transportation Program through January 1, 2024, and specifies that the CEC allocate up to $20 million per year (or up to 20 percent of each fiscal year's funds) in funding for hydrogen station development until at least 100 stations are operational.

The Clean Transportation Program has an annual budget of about $100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and nonroad vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce-training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the Clean Transportation Program, a project must be consistent with the CEC's annual Clean Transportation Program Investment Plan Update. The CEC issued PON-09-006 to develop infrastructure necessary to store, distribute and dispense the following transportation fuels: electricity, E-85, biomass-based diesel, and natural gas. In response to PON-09-006, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards May 17, 2010 and the agreement was executed as ARV-10-037 on August 2, 2011.

ABSTRACT

The objectives of the project were to construct and operate a biodiesel terminal adjacent to the Recipient's existing biorefinery. The successful operation of the terminal will increase the volume of biodiesel supplied to the California market, contribute to the displacement of petroleum by renewable fuels, contribute to the reduction of greenhouse gas emissions, and ensure the biodiesel supplied meets fuel quality specifications.

Community Fuels developed over 3 acres of vacant land adjacent to its existing biorefinery into a high throughput advanced biofuel terminal. This terminal is compatible with standard operating procedures and equipment used within the petroleum industry, allowing seamless integration with existing fuel infrastructure. Emphasis was placed on ensuring the highest product quality; all fuel is filtered, and terminal customers may contract for fuel quality testing through Community Fuels' on-site BQ-9000 fuel laboratory. This infrastructure project resulted in the construction of 500,000 gallons of new biodiesel storage at the Port of Stockton, California. The strategic location and the robust truck and rail loading and unloading capabilities will support efficient distribution of large volumes of high-quality biodiesel throughout California.

Keywords: California Energy Commission, American Biodiesel, Inc., Community Fuels, biodiesel, advanced biofuels, terminal, storage

Please use the following citation for this report:

Mortenson, Lisa, et al. (American Biodiesel, Inc. dba Community Fuels). 2020. *Expanding Access to Renewable Fuels – Port of Stockton Terminal.* California Energy Commission. Publication Number: CEC-600-2020-046.

TABLE OF CONTENTS

Page

LIST OF FIGURES

Page

EXECUTIVE SUMMARY

The demand for biodiesel in California is anticipated to increase as the Low-Carbon Fuel Standard (LCFS) continues to require lower carbon intensity standards each year for transportation fuels in California. The 2020-2021 Investment Plan Update for the Clean Transportation Program of the CEC states that, "As LCFS continues to encourage increased production and supply of low carbon fuels in California, the infrastructure to distribute low-carbon fuels will have to be in place to meet California's low-carbon fuel production potential and consumption needs, as well as accomplish California's greenhouse gas emission goals." Meeting the anticipated demand will require significant expansion of the infrastructure for storing, transporting and distributing biodiesel within California.

In addition to building additional fueling infrastructure, ensuring fuel quality will be one of the most critical issues governing the use of biofuels as a means of reducing greenhouse gas (GHG) emissions in California. Any significant degradation of the fuel supply will jeopardize implementation of the LCFS. In order for the LCFS to be successfully implemented in California, it will be critically important to establish reliable means of ensuring fuel quality in conjunction with developing fueling infrastructure to handle higher levels of throughput.

The objectives of the project were to:

- Increase the volume of biodiesel supplied to the California market
- Contribute to the displacement of petroleum by renewable fuels in California
- Contribute to the reduction of GHG emissions in California in support of Assembly Bill 32 and implementation of the LCFS
- Ensure that biodiesel supplied by the proposed terminal meets fuel quality specifications

To meet these objectives, Community Fuels developed a 3.1-acre parcel of vacant land adjacent to the company's existing biorefinery at the Port of Stockton, California. Community Fuels completed the permitting, engineering, and construction of a biodiesel terminal which includes 500,000 gallons of new biodiesel storage. Truck and rail loading and unloading equipment and a fully automated software system were installed; these installations are compatible with standard operating procedures and equipment used for petroleum products, allowing seamless integration with existing fuel infrastructure. Terminal operations leverage the BQ-9000® fuel laboratory at the adjacent Community Fuels biorefinery. Fuel received into and distributed from the terminal is filtered and can be analyzed on-site to verify that it meets applicable quality specifications.

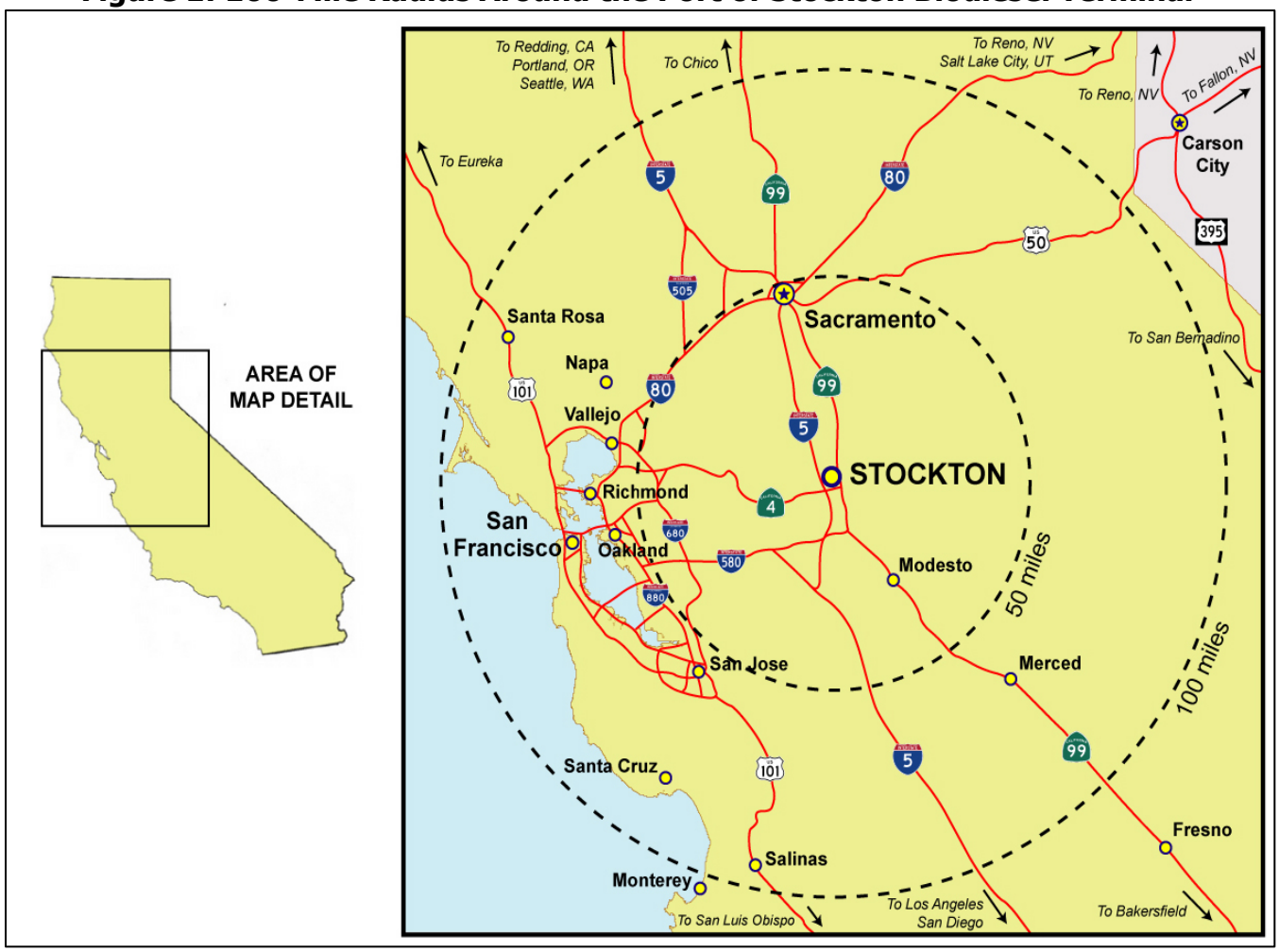
The strategic location and robust truck and rail loading and unloading capabilities will support efficient distribution of large volumes of high-quality biodiesel through the terminal. If the inventory is turned every 2.5 days, the new installations can support the sales and distribution of 73 million gallons of biodiesel per year. The terminal provides new infrastructure that is necessary to support increased supply of biodiesel to California, which will contribute to the displacement of petroleum and the reduction of harmful emissions.

CHAPTER 1: Project Overview and Description

1.1 Purpose

The purpose of the project was to build a biodiesel fuel terminal on a parcel of vacant land adjacent to the existing Community Fuels biorefinery at the Port of Stockton, CA. The project site is strategically located in close proximity to existing fuel distribution facilities, major trucking corridors, rail lines, and marine shipping via San Francisco Bay (Figure 1). The proposed terminal will be compatible with standard operating procedures and equipment used for loading and transporting petroleum products, allowing seamless integration with existing fuel infrastructure. Particular emphasis will be placed on ensuring the highest degree of product quality, and terminal operations will leverage the existing quality control laboratory at the adjacent Community Fuels biorefinery. Successful completion of the proposed infrastructure project will result in a strategically located terminal capable of efficiently distributing large volumes of high-quality biodiesel throughout California.

Figure 1: 100-Mile Radius Around the Port of Stockton Biodiesel Terminal



Source: Community Fuels

1.2 Objectives

The proposed project will result in a fully functional fuel terminal compatible with existing equipment and procedures utilized for distributing petroleum products via truck and rail. This will constitute a major contribution towards building the fueling infrastructure that will be needed in California in order to efficiently distribute biodiesel at projected demand levels in 2020 and beyond. The project has the following overarching objectives:

- Increase the volume of biodiesel supplied to the California market
- Contribute to the displacement of petroleum by renewable fuels in California
- Contribute to the reduction of GHG emissions in California in support of Assembly Bill 32 and implementation of the LCFS
- Ensure that biodiesel supplied by the proposed terminal meets fuel quality specifications

The objectives of this project are consistent with the stated intentions of this solicitation, which include upgrading public and private infrastructure investments and putting in place infrastructure that will ultimately be needed to accommodate transportation fuels with very low greenhouse gas emissions.

1.3 Approach

The entity that will own and operate the proposed project is American Biodiesel Inc., dba Community Fuels (Community Fuels or Recipient), a California C-corporation headquartered in Encinitas, CA. Community Fuels has extensive experience in the renewable fuels industry and currently owns and operates one of the largest active biodiesel production facilities in the western United States. This facility includes an on-site quality control laboratory equipped with instrumentation for verifying that biodiesel meets fuel quality specifications. These in-house laboratory resources, which far surpass industry norms, contribute fundamentally to the exceptional quality assurance and quality control practices that have earned Community Fuels a reputation within the marketplace for supplying fuel of impeccable quality.

The project will involve the development of a 3.1-acre parcel of vacant land adjacent to the existing Community Fuels biorefinery and will include the design, procurement and installation of the following equipment:

- Fuel storage: The terminal will have above-ground tank storage capacity for 500,000 gallons of biodiesel with filtration for all fuel.
- Loading and unloading: A truck loading area will be equipped with fuel dispensing units and two separate lanes will be available for truck loading. Biodiesel will be able to be received and shipped by rail.
- Software: The terminal will include a fully automated terminal software system.

CHAPTER 2: Performance of Project Tasks

2.1 Project Administration

This task comprised several activities critical to efficiently planning, implementing, and managing project activities and maintaining open lines of communication with the CEC.

2.1.1 Project Meetings

The project kickoff meeting was held on August 19, 2011 at the CEC offices in Sacramento. During the kickoff meeting, CEC representatives indicated that a formal amendment for grant extension was submitted due to the delay in preparing and executing the grant agreements. In September 2012, the Recipient received notification that the extension was approved. The grant amendment extending the project time period until March 31, 2015 was received, reviewed, signed and returned to the CEC. During October 2012, the Recipient received a fully executed amendment from the CEC specifying the adjusted project period.

2.1.2 Project Reports

The Recipient prepared monthly progress reports and submitted them to the CEC. Each monthly report contained a summary of what the Recipient planned to accomplish during the period, what was actually accomplished during the period, and what the Recipient expected to accomplish during the next period. The reports also contained an update on the status of project milestones and products, a discussion of any significant problems or changes to the project, a summary of current and cumulative budget expenditures, an invoice narrative, and recent photos from the project site.

2.1.3 California Environmental Quality Act (CEQA)

An Addendum to the Port of Stockton West Complex Development Plan Environmental Impact Report for the Community Fuels Expansion Project was finalized during November 2010. The addendum specifically analyzed the impacts of the biodiesel terminal and new land development proposed as part of this project. A determination was made by the Port of Stockton and filed with County of San Joaquin on January 25, 2011 that the project will not have a significant effect on the environment; mitigation measures were not made a condition of the approval of the project; and, findings were made pursuant to the provisions of CEQA. The CEQA determination and supporting documentation was provided to the CEC prior to the grant agreements being finalized.

2.1.4 Environmental Site Assessment

The Phase I Environmental Site Assessment was completed during January 2012. No recognized environmental conditions that would represent obstacles or risks to developing the property for the proposed fuel terminal were listed in the assessment. An aerial view of the project area prior to development is outlined in blue in Figure 2.

Figure 2: Aerial Photo of Site Prior to Development

Photo Credit: Condor Earth Technologies

2.1.5 Property Lease

This task comprised obtaining a lease from the Port of Stockton for the parcel of land adjacent to the Recipient's existing biorefinery. The new parcel of land is where the fuel terminal will be constructed. In March 2012, the final lease amendment to add 3.17 acres of vacant land to the Recipient's lease was obtained from the Port of Stockton. This lease amendment was approved by the Recipient's Board of Directors and the Port Commission and became effective on August 1, 2012.

2.1.6 Permits

This task included the preparation and submission of applications for all environmental permits required for the project as well as subsequent follow up work with the permitting agencies in order to ensure that all of the permits were obtained. The Recipient notified the CEC whenever permits were not received on time and provided the CEC with updated schedules for acquiring permits as changes occurred during the term of the Agreement.

The biodiesel storage and loading equipment that will be installed under this project is exempt from air permitting requirements. After construction has been completed, the Recipient will notify the San Joaquin Valley Air Pollution Control District in writing and the new fuel terminal facility will be added to the air permit for the Recipient's current biorefinery adjacent to the terminal.

2.1.7 Geotechnical Engineering

The geotechnical engineering and soil report was completed July 2012. The report was reviewed by the Recipient and provided to the civil engineering contractor. Several meetings were held to review the project and various considerations related to grading and the characteristics of the property that could potentially impact the layout of the fuel terminal. The geotechnical engineering and soil report test can be seen in Figure 3.

Figure 3: Geotechnical and Soils Engineering on Vacant Land

Photo Credit: Community Fuels

2.2 Integrated Project Plan

An integrated project plan was prepared for use in assigning tasks to project team members and tracking critical project activities and milestones. The integrated project plan was completed in October 2011 and was provided to the CEC for review. A preliminary site layout was developed to show where the proposed equipment will be situated on the parcel of land for the fuel terminal.

2.3 Equipment Specifications

The Recipient evaluated equipment needs and specifications throughout the project. Equipment purchases occurred throughout the project period and at times when compliance with permitting requirements could be determined.

2.4 Engineering

This task comprised the preparation of design specifications used to support detailed engineering for preparing civil, mechanical, structural and electrical plans for the project.

The Recipient's project team held many meetings with representatives of the Port of Stockton and the various permitting agencies to review the project. The project team determined that the civil engineering should be completed in advance of other engineering plans; this would allow time for soil treatment and compaction and to accommodate any seasonal impacts related to weather and/or water tables. Multiple meetings were held with the Recipient's project team and engineers to develop the initial drawings and then the process flow diagram and piping and instrumentation diagrams.

2.5 Sales and Marketing Plan

This task focused on activities to raise awareness of the project and ultimately to support the successful launch of the renewable fuel terminal. Sales and marketing efforts occurred throughout the project period and included the key activities described in Sections 2.5.1 through 2.5.7.

2.5.1 Industry Conferences

The Recipient's Project Manager attended multiple industry conferences, including the Western Petroleum Marketers Association Convention and Pacific Oil Conference, to meet with potential suppliers and customers for the new fuel terminal. These conferences specifically target the needs of petroleum markets by gathering industry specific suppliers and customers into one location. Meetings were held with potential suppliers and customers to discuss the services that will be offered at the new terminal and to obtain updated biodiesel quality requirements from major buyers. Also, discussions were held about the anticipated demand for biodiesel within California. An example of the Community Fuels booth at these conferences is shown in Figure 4.

Figure 4: Community Fuels Booth at Pacific Oil Conference

Photo Credit: Community Fuels

2.5.2 Website

The Recipient's website was redesigned and updated to include information about the new terminal services. The redesigned website[1] was launched with the objective of establishing the Recipient as a source for high quality advanced biofuels and to raise awareness of its new advanced biofuel distribution hub at Port of Stockton. The redesigned website is shown in Figure 5.

1 Community Fuels Website www.communityfuels.com

Figure 5: Redesigned Website with New Terminal Content

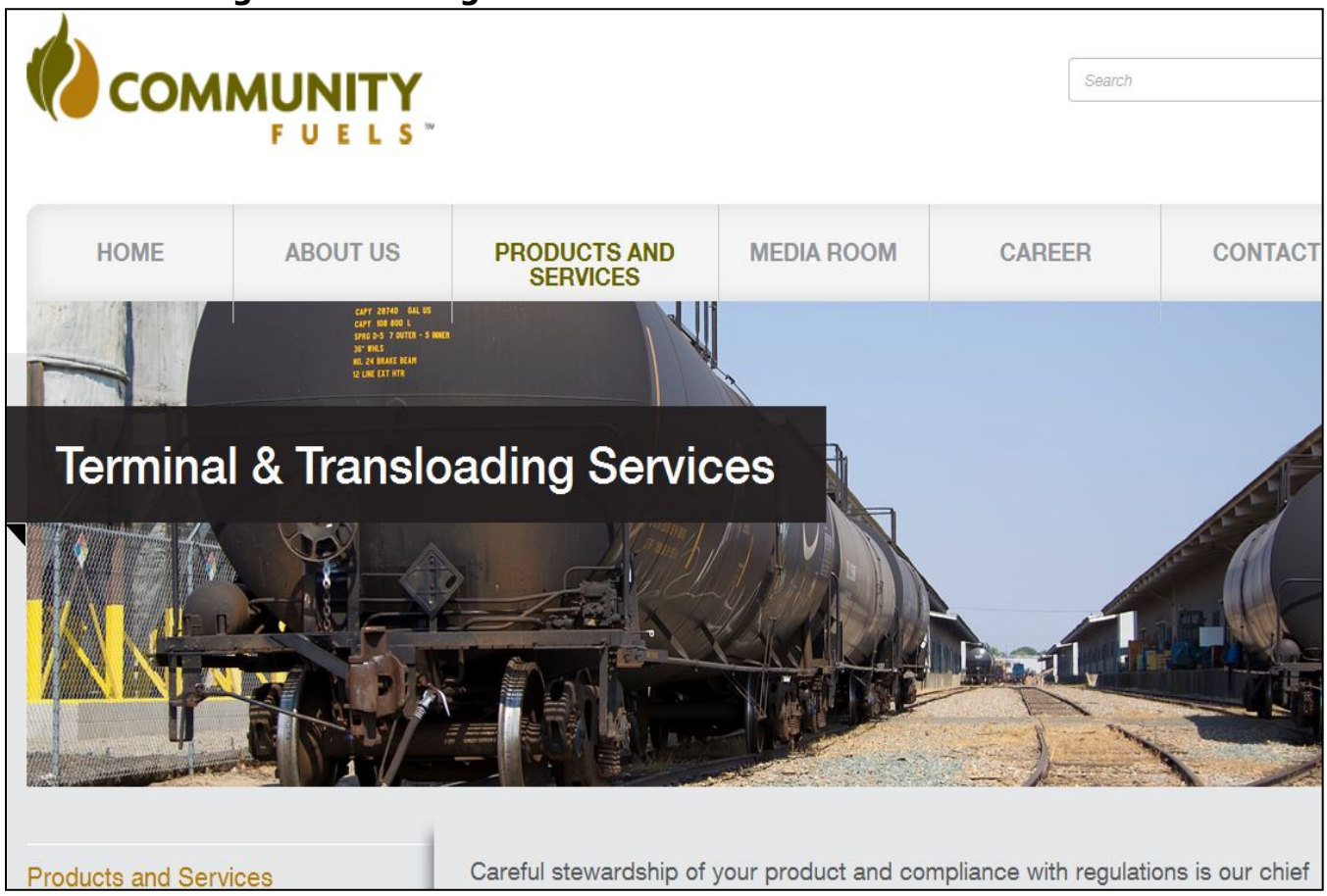


Photo Credit: Captivating Photos

2.5.3 RIN integrity

Based on feedback obtained at industry conferences, the project team determined that concerns regarding the integrity and marketability of the Renewable Identification Numbers (RINs) associated with fuel sold through the new terminal could be a barrier to the petroleum industry blending more biodiesel. The project team engaged several industry consultants and service providers to determine proper procedures for vetting terminal suppliers' RINs, and the Recipient established a relationship with RINAlliance to proactively address any customer concerns related to RIN marketability. The Recipient and RINAlliance developed and distributed a flyer advertising turn-key solution for RIN management to raise awareness of this solution to potential customer concerns.

2.5.4 Third Party Certifications

Based upon information collected during meetings with multiple potential suppliers and terminal customers, the project team determined that fuel quality testing should be offered as an optional service for the new terminal.

The National Biodiesel Accreditation Program is a cooperative and voluntary program for the accreditation of producers and marketers of biodiesel fuel called BQ-9000®. The program is a unique combination of the American Society for Testing and Material standard for biodiesel and a quality systems program that includes storage, sampling, testing, blending, shipping, distribution, and fuel management practices. The BQ-9000® laboratory certification is for

commercial laboratories engaged in the analysis of biodiesel and biodiesel blends. The BQ-9000® marketer certification is for distribution companies who sell biodiesel and biodiesel blends. This is an important designation, because proper handling of biodiesel is as critical to fuel quality as proper production.

To raise awareness and establish credibility for its analytical testing capabilities, the Recipient obtained BQ-9000® laboratory certification during March 2013. The advanced biofuel terminal is now supported by a BQ-9000® laboratory for fuel quality testing (Figure 6). The Recipient also applied for BQ-9000® marketer certification which will apply to biodiesel purchased from others and resold through the terminal. BQ-9000® marketer certification is anticipated to be secured during 2015 after an on-site audit is completed.

Figure 6: BQ-9000 Laboratory Certification

Source: Community Fuels

2.5.5 Petroleum Industry Standard Procedures

The project team met with petroleum terminal operators in other regions to discuss customer documentation, logistics, contract structures and operational procedures typical with the petroleum industry. Several meetings were held with potential terminal customers to better understand the range of services that will be requested. Multiple versions of terminal supply agreements, information forms and regulatory reviews were generated by the project team in an effort to align with petroleum industry standards.

2.5.6 Regulations

Regulations will have a significant impact on the types of biodiesel that will be marketed through the terminal. The Recipient monitored several regulations including the LCFS re-adoption with specific focus on biodiesel pathways and reporting requirements, the California Alternative Diesel Fuel Rulemaking, the LCFS Sustainability Working Group, California Cap & Trade and United State Environmental Protection Agency's Quality Assurance Program for the Renewable Fuel Standard.

2.5.7 Advertisements

During 2014 and 2015, advertisements were published in Fuel Marketer News and Biodiesel Magazine to raise awareness of the Recipient's new terminal services. The Recipient also announced the new terminal services in a newsletter distributed to over 1,000 industry contacts. An example advertisement is shown in Figure 7.

Figure 7: Advertisement of Services Available through Community Fuels

Photo Credit: Captivating Photos

2.6 Construction

This task comprised all construction-related activities for the project, including permitting, grading, site work, foundations, utilities, concrete, asphalt, fencing, and installation of tanks and equipment. The Recipient was responsible for on-site monitoring and management of the construction activities.

2.6.1 Construction-Related Permits

Construction Stormwater Pollution Prevention Plan

A Storm Water Pollution Prevention Plan must be obtained before any grading or construction work may begin. The Storm Water Pollution Prevention Plan was prepared on March 1, 2014 and testing and monitoring activities were performed during construction.

Building Permit

In November 2013, the Recipient submitted final engineering drawings to the City of Stockton for the building permit. Although multiple meetings were held with agency representatives during the design phase, there were several requests for changes and questions posed by the fire marshal and by 4LEAF, Inc., a consulting firm assisting the City of Stockton on plan reviews. The project team reviewed the comments and worked to incorporate the required changes.

Several resubmissions of the plans were required to address comments. In light of the extensive revisions that would be required to satisfy the items raised during the plan check, the project team considered a range of alternatives to the design. It was ultimately decided, however, to have the changes/modifications specified during the plan check incorporated into the plans.

A detailed review of street conditions, truck routing details and fire access lanes was completed by the project team. Meetings with representatives from Port of Stockton were held to discuss the potential impact to roads and whether upgrades or repairs may be needed. Certain road improvements and repairs were required for the project.

Many meetings were held with engineering contractors to address outstanding questions from the building plan check review. After a several-month delay and multiple resubmissions, the building permit was issued during August 2014. The time required to obtain the building permit was substantially longer than the project team had anticipated and resulted in the project falling behind schedule.

Construction General Permit

In March 2014, the Recipient received notice from City of Stockton that the construction general permit was complete. Due to the delays with the building permit, the Recipient pulled the construction general permit first and proceeded with the civil construction while awaiting the building permit. The construction general permit was issued during March 2014.

2.6.2 Civil Construction

The project team held multiple pre-construction meetings. In May 2014 site preparation and grading construction began (Figure 8-11). All rough grading was completed, storm drains were

installed, and backfilled and water lines were installed and back filled by July 2014. Underground electrical was started and electrical work continued through the end of the project.

Figure 8: Site Preparation and Grading

Photo Credit: Community Fuels

Figure 9: Site Preparation and Grading

Photo Credit: Community Fuels

Figure 10: Site Preparation

Photo Credit: Community Fuels

Figure 11: Utilities Preparation

Photo Credit: Community Fuels

Concrete work was initiated in August 2014. Construction inspections were completed as required by the permits and multiple construction meetings were held. By the end of September 2014, grading was complete, rebar and forms were installed, and various permitting inspections were completed. Concrete pouring was completed in October 2014. Aggregate rock was placed in areas designated for asphalt. These processes are shown in Figures 12- 16.

Figure 12: Concrete Preparation

Photo Credit: Community Fuels

Figure 13: Rebar and Forms

Photo Credit: Community Fuels

Figure 14: Concrete Pour

Photo Credit: Community Fuels

Figure 15: Concrete Finishing

Photo Credit: Community Fuels

Figure 16: Concrete Finishing

Photo Credit: Community Fuels

2.6.3 Bulk Biodiesel Storage Tanks

Erection of two 250,000-gallon biodiesel storage tanks was started in October 2014; progress was slower than expected due to heavy rains which limited welding activities. The tanks were completed in February 2015 resulting in 500,000 gallons of new biodiesel storage for the terminal. The tank erection process is shown in Figures 17-22.

Figure 17: Tank Preparation

Photo Credit: Community Fuels

Figure 18: First Level of Tank Erection

Photo Credit: Community Fuels

Figure 19: Second Level of Tank Erection

Photo Credit: Community Fuels

Figure 20: Tanks Partially Constructed

Photo Credit: Community Fuels

Figure 21: Third Level Tank Erection

Photo Credit: Community Fuels

Figure 22: Completed Tanks

Photo Credit: Community Fuels

2.6.4 Equipment

Skid-mounted loading racks (including meters, loading arms, couplings, controls, grounding, etc.) were delivered and installed during January 2015. All fuel received into and distributed from the terminal is filtered. The terminal includes two separate lanes which enables the simultaneously loading of two tank trucks at a rate of up to 500 gallons per minute. The loading rack equipment is compatible with petroleum industry standards.

A dedicated pump and piping were installed to enable unloading biodiesel from railcars. The design allows the biodiesel to be quarantined and tested at the on-site laboratory prior to being released into the bulk terminal tanks. This format enables a critical, proactive quality control function for inbound biodiesel.

Robust software and a fully automated fuel delivery system were installed. This computer-controlled dispensing system allows customers to load fuel at any time and carry out the entire loading process without requiring assistance from facility operators. The system generates bill of ladings and provides extensive, real-time reporting for accounting and operations. This type of automation is customary at fuel terminals and is necessary to effectively manage high throughput. If the terminal tank inventory is turned every 2.5 days, this terminal infrastructure will support the sales and distribution of 73 million gallons of biodiesel per year.

The pieces of equipment are shown in Figures 23-25.

Figure 23: Biodiesel Truck Loading Skids

Photo Credit: Community Fuels

Figure 24: Biodiesel Rail Unloading System

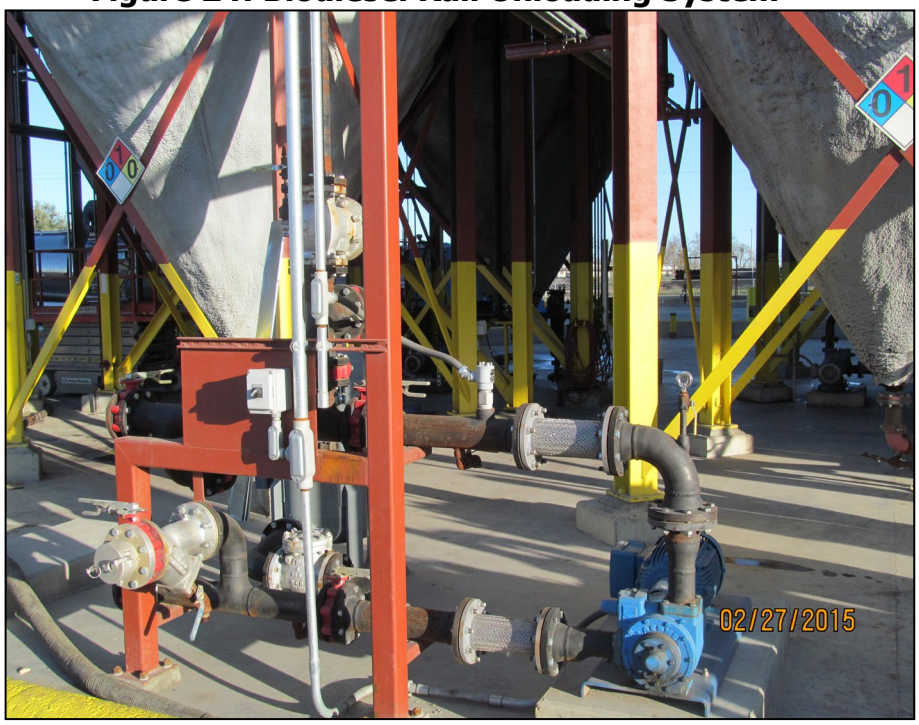


Photo Credit: Community Fuels

Figure 25: Automated Driver Interface

Photo Credit: Community Fuels

2.7 Equipment Testing and Start Up

Due to new piping and pumps that were installed, the Recipient was able to launch an initial phase of terminal services utilizing an existing tank. The existing tank also will be used during ongoing terminal operations and will serve as a quarantine tank for testing and certification prior to inbound biodiesel being released into the bulk storage.

This soft launch of services began in February 2014 and enabled the project team to develop operational procedures and to cultivate a customer base that is anticipated to use the terminal for higher volumes in the future. The project team finalized new customer documents, order forms, invoices and daily inventory reporting for terminal activities. The first contract was executed and approximately 75,000 gallons of biodiesel was received by rail from a customer and then stored and loaded to tank truck during the two-month trial.

2.8 Commencement of Operations

Due to the permitting and weather delays, the bulk tanks will be commissioned and operational after the close of the agreement. Major construction is complete, and the project team anticipates full operation of the terminal and BQ-9000® marketer certification by third quarter 2015.

2.9 Data Collection and Analysis

Terminal operations data will be collected on an ongoing basis and reported monthly to the CEC via the CEC Form M810 (Figure 26). The Recipient will be available to address questions and to prepare and submit supplemental reports as requested by the Commission.

Figure 26: Sample Data Collection Report

California Energy Commission
1516 9th Street,MS 23
Sacramento, CA 95814
Ph. 916-654-4868 Fax 916-654-4753
E-mail: piira@energy.state.ca.us

California Refinery
Monthly Report
CEC Addendum Form M810 (Revised 1/17/06)

Company Name:			
Company ID Number:		**Report Period (Month/Year):**	
Refinery Name:			
Refinery Address:			

Enter all values in thousands of barrels (MBBLS).

DISTILLATE FUEL OIL	**Product Code**	**Stocks at Beginning of Month**	**Receipts During Month**	**Inputs During Month**	**Production During Month**	**Shipments During Month**	**Refinery Fuel Use and Losses During Month**	**Stocks at End of Month**
Bio-Diesel B100	489							

Source: California Energy Commission

CHAPTER 3:
Achievement of Project Objectives

Pollutants emitted by diesel engines are a major cause of air quality problems and public health issues in California. Diesel exhaust contains high levels of several air pollutants including sulfates, fine particulate matter, unburned hydrocarbons, carbon monoxide, carcinogenic polycyclic aromatic hydrocarbons and nitrated polycyclic aromatic hydrocarbons. A health assessment conducted by the U.S. Environmental Protection Agency concluded that exposure to diesel exhaust poses a lung cancer hazard and causes other harmful effects including aggravation of respiratory and cardiovascular disease, aggravation of existing asthma, acute respiratory symptoms, chronic bronchitis, and decreased lung function.[2]

Biodiesel is a clean-burning, renewable fuel that can be used with existing equipment and infrastructure, thereby offering an immediate means of reducing emissions from diesel engines. A life-cycle analysis study conducted by the U.S. Department of Agriculture and U.S. Department of Energy demonstrated that biodiesel results in lower emissions of carbon dioxide (78 percent), sulfates (100 percent), particulate matter (47 percent), unburned hydrocarbons (67 percent), carbon monoxide (48 percent), polycyclic aromatic hydrocarbons (80 percent) and nitrated polycyclic aromatic hydrocarbons (90 percent) relative to petroleum diesel.[3] The project's objectives are consistent with ongoing efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions and GHG emissions.

The objectives of the project were to:

- Increase the volume of biodiesel supplied to the California market.
- Contribute to the displacement of petroleum by renewable fuels in California.
- Contribute to the reduction of GHG emissions in California in support of Assembly Bill (AB) 32 and implementation of the LCFS.
- Ensure that biodiesel supplied by the proposed terminal meets fuel quality specifications.

The project achieved these goals by successfully developing 3.1 acres of vacant land into a strategically located advanced biofuel terminal at the Port of Stockton, CA. The newly constructed terminal includes 500,000 gallons of new biodiesel storage and loading and unloading equipment that is compatible with petroleum industry standards. There are several reasons the Port of Stockton represents an optimal location and will contribute to the terminal's long-term success:

---

[2] U.S. Environmental Protection Agency, 2002. *Health Assessment Document for Diesel Engine Exhaust.* U.S. Government Printing Office, Washington, DC, 669 pp.
[3] Sheehan, J., *et al.*, 1998. *Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus, Final Report.* U.S. Department of Energy/U.S. Department of Agriculture, Washington, DC, 314 pp.

- Prime access to rail transport: The Port is served by two transcontinental railroads (Union Pacific and Burlington Northern Santa Fe, with reciprocal switching privileges). Railcars of biodiesel may be received and shipped directly at Community Fuels' property at the Port.
- Proximity to trucking routes and infrastructure: The Port is a prominent truck transportation hub linked to several major California trucking corridors (most notably Interstates 5, 80, 580 and State Highway 99). The Port is served by over 200 truck companies including major transcontinental carriers.
- Proximity to existing petroleum distribution facilities: The Port encompasses several petroleum terminals operated by major oil companies. The location of the new biodiesel terminal therefore is ideal for integrating biodiesel with mainstream fuel infrastructure.
- Positive impact on the local economy: The San Joaquin Valley in general, and the City of Stockton in particular, are among the most economically distressed areas in California (defined by high unemployment, low per-capita income, high rates of property foreclosure, etc.). The construction and ongoing operation of the biodiesel terminal will create urgently needed jobs for local workers and contribute to the local tax base.

The project results in a fully functional fuel terminal compatible with existing equipment and procedures utilized for distributing petroleum products via truck and rail. This constitutes a major contribution towards building the fueling infrastructure that will be needed in California in order to efficiently distribute biodiesel at projected demand levels in 2020 and beyond. The project achieves the following overarching objectives:

1. **Increase the volume of biodiesel supplied to the California market**

   The terminal will support 73 million gallons per year of biodiesel distribution if the inventory is turned every 2.5 days. Actual throughput will vary and will depend on market conditions, in particular the economics of blending biodiesel with petroleum diesel, and the rate at which biodiesel demand grows in California.

2. **Contribute to the displacement of petroleum by renewable fuels in California**

   Introducing 73 million gallons biodiesel per year into California's diesel fuel supply will result in the displacement of 68.5 million gallons of petroleum per year. Over a 20-year useful life of the project, this could displace over 1.3 billion gallons of petroleum diesel.

3. **Contribute to the reduction of GHG emissions in California in support of AB 32 and implementation of the LCFS**

   Biodiesel is a clean-burning, renewable fuel that can be blended at any level with petroleum diesel and used by most diesel engines with few or no modifications. Results from several life cycle assessments demonstrate that displacing petroleum diesel with

biodiesel reduces GHG emissions by 41-78 percent.[4] Biodiesel therefore offers an immediate and relatively inexpensive means of reducing the GHG emissions associated with existing diesel vehicles. The reduction in GHG emissions for the project will depend upon the volumes of biodiesel distributed and on the feedstocks from which the biodiesel was produced. The biodiesel distributed through the terminal will be derived from various feedstocks as determined by a combination of market factors (price, availability, customer preference, etc.) and sustainability criteria. The Recipient will prioritize low carbon intensity biodiesel with strong sustainability criteria during ongoing terminal operations.

4. **Ensure that biodiesel supplied by the proposed terminal meets fuel quality specifications**

   Preventing low-quality fuel from entering the California market is critical to smooth implementation of the LCFS. All fuel in the terminal is filtered. Also, the biodiesel terminal benefits from access to the BQ-9000® quality control laboratory at the adjacent Community Fuels biorefinery. This makes it possible to directly certify that fuel received into and distributed from the terminal meets applicable quality specifications.

The objectives of this project are consistent with the stated intentions of the solicitation, which included upgrading public and private infrastructure investments and putting in place infrastructure that will ultimately be needed to accommodate transportation fuels with very low greenhouse gas emissions.

Figure 27 and 28 show before and after the tank construction.

[4] Sheehan, J., *et al.,* 1998. Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus, Final Report. U.S. Department of Agriculture/U.S. Department of Energy, Washington, DC, 314 pp; Hill, J., *et al.,* 2006. Proceedings of the National Academy of Sciences, 103(30), 11,206-11,210; Huo, H., *et al.,* 2009. Environ. Sci. Technol., 43, 750-756.

Figure 27: Aerial View of Project Site After Grading (June 2014)

Photo Credit: Community Fuels

Figure 28: Aerial View of Project Site After Construction (February 2015)

Photo Credit: Community Fuels

CHAPTER 4:
Conclusions and Recommendations

The successful completion of this project is an important initial step in establishing Stockton as an advanced biofuel distribution hub. As demand for renewable fuels increases in California, the terminal capabilities may be expanded.

- The terminal is designed to accommodate future expansion through the installation of additional tanks and/or additional loading racks.
- The terminal is situated at the Port on the Stockton Deepwater Shipping Channel, which can accommodate large ships and offers direct access to the Pacific Ocean via San Francisco Bay (the Port is located 75 nautical miles due east of the Golden Gate Bridge). A future project could involve the construction of a pipeline to the deep-water shipping channel for direct biofuel loading and unloading to shipping vessels. This would significantly expand the terminal capabilities and allow servicing high volumes of biodiesel imports and exports.
- The terminal is currently designed and permitted for biodiesel. Based upon the expected growth of renewable diesel within California, the Recipient could engage in updating permits and any related equipment modifications to allow the storage and distribution of renewable diesel in addition to biodiesel.

GLOSSARY

ASSEMBLY BILL (AB)—A proposed law, introduced during a session for consideration by the Legislature, and identified numerically in order of presentation; also, a reference that may include joint, concurrent resolutions, and constitutional amendments, by Assembly, the house of the California Legislature consisting of 80 members, elected from districts determined on the basis of population. Two Assembly districts are situated within each Senate district.

CALIFORNIA ENERGY COMMISSION (CEC)—The state agency established by the Warren-Alquist State Energy Resources Conservation and Development Act in 1974 (Public Resources Code, Sections 25000 et seq.) responsible for energy policy. The CEC's five major areas of responsibilities are:

1. Forecasting future statewide energy needs.
2. Licensing power plants sufficient to meet those needs.
3. Promoting energy conservation and efficiency measures.
4. Developing renewable and alternative energy resources, including providing assistance to develop clean transportation fuels.
5. Planning for and directing state response to energy emergencies.

Funding for the CEC's activities comes from the Energy Resources Program Account, Federal Petroleum Violation Escrow Account, and other sources.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA - pronounced See' quah)—Enacted in 1970 and amended through 1983, established state policy to maintain a high-quality environment in California and set up regulations to inhibit degradation of the environment.

GREENHOUSE GAS (GHG)—Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (NOx), halogenated fluorocarbons (HCFCs), ozone (O3), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).

LOW CARBON FUEL STANDARD (LCFS)—A set of standards designed to encourage the use of cleaner low-carbon fuels in California, encourage the production of those fuels, and therefore reduce greenhouse gas emissions. The LCFS standards are expressed in terms of the carbon intensity of gasoline and diesel fuel and their respective substitutes. The LCFS is a key part of a comprehensive set of programs in California that aim cut greenhouse gas emissions and other smog-forming and toxic air pollutants by improving vehicle technology, reducing fuel consumption, and increasing transportation mobility options.

RENEWABLE IDENTIFICATION NUMBERS (RINS)—Credits used for compliance and are the currency of the Renewable Fuel Standards Program.[5]

5 Renewable Fuel Standards Website https://www.epa.gov/renewable-fuel-standard-program/renewable-identification-numbers-rins-under-renewable-fuel-standard