WISCONSIN BIODIESEL BLENDING PROGRAM
Final Progress Report
Reporting Period:
Date of Report: April 1, 2013

Award Number:	DE-EE0003117
Project Title:	Wisconsin Biodiesel Blending Program
Project Period:	8/20/2010 to 12/31/2012
Recipient Organization:	Wisconsin Department of Administration Wisconsin State Energy Office 101 E. Wilson St., 6th. Fl. Madison WI 53702
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PROJECT BACKGROUND

The Wisconsin State Energy Office's (SEO) primary mission is to implement cost-effective, reliable, balanced, and environmentally-friendly clean energy projects. To support this mission the *Wisconsin Biodiesel Blending Program* was created to financially support the installation infrastructure necessary to directly sustain biodiesel blending and distribution at petroleum terminal facilities throughout Wisconsin. The SEO (formerly the Wisconsin Office of Energy Independence) secured a federal directed award of $600,000 over 2.25 years.

At the time of application, biodiesel was sold at one terminal and 8 retail locations in the state and the SEO recognized that installation of this equipment would enable the increased sales of biodiesel and growth of the biodiesel industry. In 2011, the implementation of the Renewable Fuels Standard mandated over 800 million gallons of biodiesel must be used in the domestic fuel pool. The challenge with blending 800 million gallons of biodiesel into the diesel fuel pool was the high infrastructure cost of biodiesel blending, the variability of the grades of biodiesel and the lack of mandated markets. In order to blend the high volumes of biodiesel the RFS required, there needed to be a focus on maximizing the volume of biodiesel blending at a finite number of terminals so that the high infrastructure cost of the blending infrastructure would be spread over millions of gallons rather than thousands of gallons. Additionally, flexibility needed to be built into the system to facilitate the individual customer requirements for biodiesel blends, ranging from low to high percentages of biodiesel.

The SEO believed that opening the market and creating a demand for the fuel helped to stimulate production and distribution of the product. Also, at the time of application, federal tax credits made biodiesel an economically favorable fuel choice. The initial goal was to support the construction of six additional biodiesel terminals in Wisconsin which the SEO felt would significantly boost the sales of biodiesel fuel in this state (which were less than 500,000 gallons per year at the time). The SEO anticipated that creating a demand for production and boosting the biodiesel industry in Wisconsin, with this funding opportunity, could increase our state's biodiesel consumption by at least 2,000,000 gallons per year.

ACCOMPLISHMENTS

With these funds, the SEO supported the construction of inline biodiesel blending facilities at two petroleum terminals in Wisconsin. SEO competitively solicited participation from companies at current terminals, such as those members of the Wisconsin Petroleum Marketers and Convenience Store Association and the Wisconsin Petroleum Council that showed interest in participating in the biodiesel distribution effort. The grantees chosen to participate constructed two in-line biodiesel blending facilities at two different petroleum terminals near Milwaukee, Wisconsin. The Federal funding provided through the state provided a little less than half of the necessary investment to construct the terminals, with the balance put forth by the partners.

Wisconsin is now home to two new biodiesel blending terminals. Fusion Renewables on Jones Island (in the City of Milwaukee) will offer a B100 blend to both bulk and retail customers. CITGO is currently providing a B5 blend to all customers at their Granville, WI terminal north of the City of Milwaukee. The Milwaukee Terminal is CITGO's first fully operational biodiesel blending facility. The short timeline allowed CITGO to waive several laborious internal corporate procedures and simply get the job done. Their intention is to provide higher blends of biodiesel in the near future.

OVERALL CHALLENGES

Initially the aim of the project was to fund as many as six new biodiesel blending terminals in Wisconsin, however only two were funded. Though the first grantee was awarded the funding in 2011, Fusion Renewables (a small, young company) faced a difficult market, high prices for hard-to-find feedstock, and uncertainty surrounding tax credits. The second grantee, CITGO, a more established company constructed the terminal within only three months, but found it difficult to procure biodiesel for blending. Eventually, CITGO was able to secure the first round of biodiesel from the Renewable Energy Group (www.regfuel.com). CITGO is currently being supplied by their IL and IA plants; with plans to bid this supply quarterly, so the supply points will change depending on market dynamics.

PROGRESS AND STATUS

Actual Task Schedule and Milestone Schedule

Contingent upon US-DOE Award and final contract date	**Year 1 (8/202010-8/19/2011)**												**Year 2 (8/20/2011-8/19/2012)**												**Year 3 (8/20/201-12/31/2012)**			
	Month:												**Month:**															
Tasks	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
Task A: Project Management and Planning																												
Subtask A.1 – Maintain Project Management Plan																												
Subtask A.2 – Reporting and Briefings																												
Task B: Competitive Grant Opportunity																												
Task C: Subcontracts with Identified Terminal Operators																												
Subtask C.1 –NEPA approval																												
Subtask C.2 – Develop sub-grants or sub-contracts and a construction/installation timetable for each terminal facility;																												
Subtask C.3 - monitor compliance and success variables																												
Task D: Implementation to Completion of Equipment Installation																												
Subtask D.1 –provide technical assistance for terminal operators :																												
D.1.1 - Permitting																												
D.1.2 - Equipment specifications and procurement																												
D.1.3 - Equipment delivery																												
D.1.4 - Installation																												
D.1.5 - Reimbursement																												
Task E: Vehicle and/or Fueling Site Data Collection (removed from final SOPO)																												
Prepare/submit quarterly/final reports to DOE																												
Program Completion – Final Report																												

Progress by Task and Milestone:

Task A: Competitive Grant Opportunity – Seeking Partners

The Recipient shall distribute funding awarded to the "Wisconsin Biodiesel Blending Program" through a competitive process to select sub-recipients for terminal infrastructure to ensure the funding is spent in a timely manner and in accordance with the Financial Assistance Agreement.

> ***Subtask A.1 – Obtain Approval from DOE Prior to Initiation of Activities***
>
> *Recipient will work with the selected sub recipients to complete the required NEPA documentation including an environmental questionnaire, obtain letters of cost-share commitment, and develop a site specific scope of work and budget and schedule. This information along with other application information and documents specified by DOE will be submitted to DOE Contracting Officer for authorized approval to move forward with the activity. The information submitted to DOE will include a description of sub-recipient's planned activity including a construction/installation timetable, scope, and budget. Recipient will provide the information to DOE after completing a reasonable level of due diligence and quality assurance on it.*

Progress:

In October of 2010, the SEO launched the Biofuels Expansion Program, a competitive process that included the funding received for the Wisconsin Biodiesel Program which was used to assist companies in installing biodiesel infrastructure at Wisconsin-based bulk fuel terminals. In March 2011, the SEO received its first application from Fusion Renewables and they were selected as the first recipient to receive an award under this program, in the amount of $300,000. The SEO then proceeded to work under Subtask A.1 to collect the required NEPA documentation, work with sub-recipient to layout planned activities, timetables, scope and budget. After a lot of back and forth with the U.S. Department of Energy the SEO received an award modification October 2011, with work commencing by Fusion Renewables shortly thereafter.

The SEO then spent the year after March 2011 reaching out to the Petroleum Marketers and Convenience store association, the Wisconsin Petroleum Council, and other interested parties to secure additional partners. The SEO concluded the reason for lack of interest in the program during this time was due to a loss of the federal biodiesel blending tax credit and the fraudulent Renewable Identification Numbers (RINS) issues. Fortunately in March of 2012, the state received another application from CITGO Petroleum Corporation (CITGO) and they were selected as the recipient of an award for $300,000. Although the original intent of the program was to install 6 terminal blending sites throughout the state, the SEO felt that because of the lack of interest and the need to spend before the completion of the program that this would be the final award. The SEO again proceeded to work under Subtask A.1 to collect the required NEPA documentation, work with sub-recipient to layout planned activities, timetables, scope and budget. The SEO received an award modification in September 2012 and approval from U.S. DOE for CITGO to begin work on their project.

Task B: Contract Negotiations with Sub-recipients

The Recipient shall negotiate, execute, and administer contracts for the selected sub-recipients.

Progress:

The SEO executed a contract with Fusion Renewables on September 21, 2011 and with CITGO on September 27, 2012.

Task C: Project Management and Planning

The Recipient shall manage the project for scope, cost, and schedule through all phases of the project. This will be accomplished through the following subtasks.

Subtask C.1 – Establish and Maintain the Project Baseline (Scope, Schedule and Budget) and the Project Management Plan.

The Recipient shall maintain the Project Management Plan (PMP). The PMP will be updated on an annual basis or more often as needed to reflect changes in the project's scope, schedule, or budget. Changes to the baseline and to the PMP that may require approval from DOE will be communicated to DOE with sufficient time for DOE to determine if the proposed changes require approval and to allow for DOE to process the approval.

Subtask C.2 – Conduct Contract Monitoring

The Recipient shall monitor the sub-recipients' progress and compliance with regulations and the DOE Special Terms and Conditions. The Recipient shall take actions as necessary to remediate or mitigate the identified problems. The Recipient will monitor the sub-recipient to ensure any proposed changes are communicated to DOE prior to initiating irreversible or irretrievable action.

Subtask C.3 – Provide Technical and Administrative Assistance to the Sub-recipients.

The Recipient shall provide assistance for sub-recipients in the following ways:

- *Permitting;*
- *Equipment specifications and procurement;*
- *Equipment delivery;*
- *Installation and Reimbursement; and*
- *Cost tracking and invoice preparation.*

***Subtask C.3** – Reporting*

The Recipient shall provide DOE with periodic and final reports in accordance with the "Federal Assistance Reporting Checklist" which is included in the Financial Assistance Award.

Progress:

The SEO managed the project for scope, cost, and schedule through all phases of the project. Although the process to get modifications for each of the sub-recipients approved tended to be time consuming, the approved modifications made the Project Management Plan for each project clear and straightforward and no major changes were needed (Subtask C.1). The SEO monitored the projects and conducted site visits as necessary to ensure planned work was completed in a timely manner (Subtask C.2). In the end, the sub-recipients held the responsibility for on-site permitting, equipment specifications, equipment delivery and installation. The SEO assisted the sub-recipients to collect proper documentation for invoicing, managed the cost tracking and invoice preparation for internal routing and ultimately U.S. DOE approval, to ensure that both the costs and match were properly accounted for.

Task D: Complete Planning, Installation, and Testing of the Equipment

(Note: The sub-activities under Task D cover the entirety of the scope that will be completed by the Sub-recipients. Each sub-recipient's Work Breakdown Structure will be coordinated with and subordinate to this task.) The Recipient shall provide assistance with state and federal compliance issues regarding the installation of equipment. The Recipient will provide adequate oversight and monitoring of the sub-recipient to help them maintain compliance with the Financial Assistance Award.

***Subtask D.1** – To be completed by Sub-recipient #1*

***Subtask D.2** – To be completed by Sub-recipient #2*

***Subtask D.3** – Sub-recipient #3 – To Be Determined (RESERVED)*

Progress:
The SEO provided oversight and monitoring of the sub-recipients installation timelines to ensure proper and timely completion of projects.

D.1 FUSION RENEWABLES
Fusion Renewables (Fusion) was the first of the sub-recipients selected under this award. The intended activities for Fusion included upgrading of the load computers/automation of the blending rack, as well as the necessary infrastructure improvements to receive diesel fuel via barge/vessel.

The improvements resulting from this project allowed for the increase of biodiesel blending from thousands to millions of gallons of fuel for distribution into the Midwest. The improvements included installation of selected terminal equipment, refurbishing existing equipment, replacement of piping, and heat wrapping some tanks. At the time of the final report the installation of equipment was complete and initial testing of the installed equipment including ancillary equipment had begun.

The SEO managed the project for scope, cost, and schedule through all phases of the project for Fusion Renewables. The SEO monitored the project and conducted site visits as necessary to ensure planned work was completed in a timely manner. In the end, Fusion held the responsibility for on-site permitting, equipment specifications, equipment delivery and installation.

As an IRS registered terminal, Tanco Milwaukee must comply with an array of Federal and state regulations and has multiple manuals and plans in place to comply with these regulations. Under Fusion, Tanco Milwaukee brought their electrical system up to current code. All other permitting was up to date and in compliance for this project:

Unfortunately, Fusion was unable to get the necessary permits (below) and approval of plans from the US Coast Guard related to expanding the dock/vessel to accept diesel fuel for biodiesel blending. Because of this set-back, they were unable to rebuild an above ground section of pipeline between the terminal manifold to the dock, replace corroded sections of the pipeline, or connect tank 6701 to the pipeline manifold in order to receive barge shipments of diesel fuel. Despite these setbacks, Fusion remains committed to opening up this access and is working with the permitting officials to make this happen in the near future. Fusion will continue to accept diesel fuel via rail and truck to ensure the continued distribution of various biodiesel blends.

Fusion was able to successfully complete the tank upgrades to facilitate the storage of higher volumes of biodiesel. These upgrades included:

- Converting tank 6701 into a diesel fuel storage tank. This tank has historically been used for diesel storage, but has most recently been used for ethanol storage. It was emptied, cleaned and purged with nitrogen prior to the start of the DOE funded activities,
- Ordering new high volume pumps for placement at tank 6701;
- Reconnecting tank 6701 to the loading rack using larger diameter piping (already in place) to accommodate higher volume flows at the rack;
- Completing stack tank upgrades;
- Install new pumps and valves;
- Reconfigure piping to accommodate 2 load positions;
- Building an enclosure to protect from the blending equipment from weather elements;

- Completing Rack Upgrades: the piping truck rack will be reconfigured to utilize larger pipe that is already in place at the terminal;
- Ordering, installing and programing a load computer system.
- Purchasing equipment for a new, second load position and refurbish existing meters; and
- Installing and integrate automated load computers and inventory tracking software.

D.2 CITGO

CITGO was the second of the sub-recipients selected under this award. The intended activities for CITGO included converting an existing tank to accommodate biodiesel service and installing blending equipment to blend biodiesel.

The improvements resulting from this project also allowed for the increase of biodiesel blending from thousands to millions of gallons of fuel for distribution into the Midwest. The improvements included installing a fully automated system consisting of offloading pump and related piping, a storage tank, injection meters and associated piping.

The SEO managed the project for scope, cost, and schedule through all phases of the project for CITGO. The SEO monitored the project and conducted site visits as necessary to ensure planned work was completed in a timely manner. In the end, CITGO held the responsibility for on-site permitting, equipment specifications, equipment delivery and installation.

CITGO was able to successfully install the automated system, including the offloading pump and related piping, a storage tank, injection meters and associated piping. CITGO is not offering customers a choice, if they buy diesel from the Granville terminal, it will be at least a B5 blend. They hope to increase the blend in the next couple of years.

D.3 Subrecipient #3 – To Be Determined (RESERVED)

Although the original intent of the program was to install 6 terminal blending sites throughout the state, the SEO only supported the installation of equipment at two terminals, because of the lack of interest and the need to spend before the completion of the program.

Publications/ Presentations: No publications have been produced, and no presentations given outside of peer review conducted in January of 2011

Citgo's Biodiesel Blending Terminal Images: Terminal is located in Granville, Wisconsin adjacent to the City of Milwaukee.

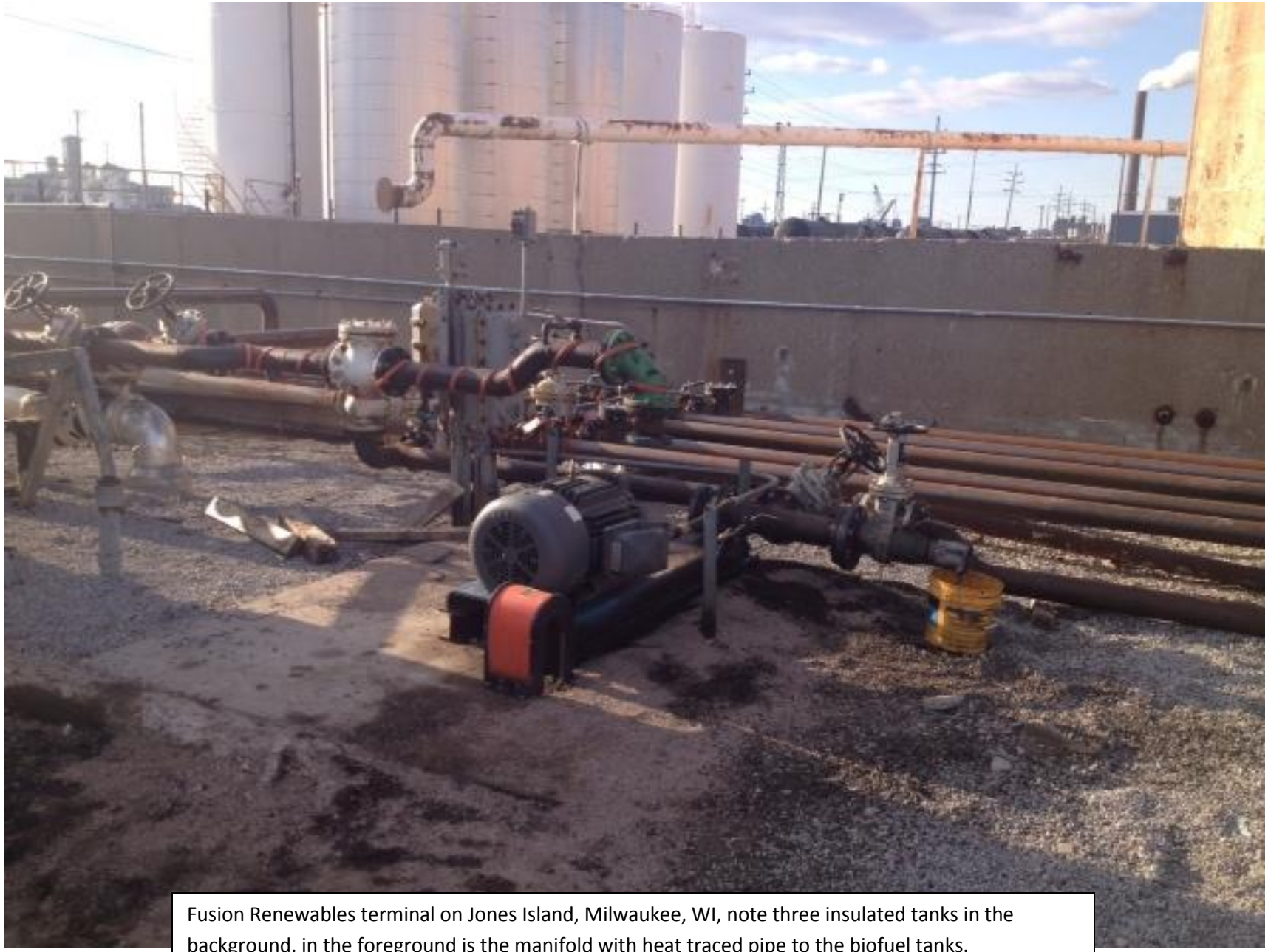
Figure 1. Citgo biodiesel blending terminal, this picture shows the insulated tank for storage of the biodiesel in the background (silver) and the newly installed, insulated and heat traced pipe.

Figure 2. CITGO biodiesel blending terminal, this picture shows the skid outfitted with new insulated and heat traced piping.

Figure 3: Biodiesel being dispensed at CITGO's Granville Terminal in March of 2013.

Figure 4: Klemm Tank Lines Truck fueling up with Biodiesel blended at CTIGO Granville Terminal.

Fusion's Biodiesel Blending Terminal Pictures: Terminal is located in Milwaukee, Wisconsin adjacent to the City of Milwaukee.



Fusion Renewables terminal on Jones Island, Milwaukee, WI, note three insulated tanks in the background, in the foreground is the manifold with heat traced pipe to the biofuel tanks.

Fusion Renewables terminal on Jones Island, Milwaukee, WI, blending equipment in enclosure to protect from the blending equipment from weather elements.

Fusion Renewables terminal on Jones Island, Milwaukee, WI, line from Tank 6701 barrel tank for line underneath to the rack.

Fusion Renewables terminal on Jones Island, Milwaukee, WI, close-up of insulated stack tank and associated piping.

Fusion Renewables terminal on Jones Island, Milwaukee, WI, updated electrical system to support automated load computers and inventory tracking software