WHITE ENERGY
CLEAN ENERGY FOR A CLEAN FUTURE.

February 9, 2015

Re: Method 2A Revised Lifecycle Analysis for White Energy Hereford Ethanol Plant
(Revises the lifecycle analysis accompanying the application posted Aug. 1, 2013)
- Excluding Confidential Business Information

California Air Resources Board
Industrial Strategies Division
Transportation Fuels Branch
Fuels Evaluation Section
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

To: The Executive Officer

Based on a review of our operation, we are herewith submitting this revised lifecycle analysis for our fuel pathways associated with for our WE Hereford, LLC ("Hereford") ethanol plant located near Hereford, Texas. We request that these pathways replace the previous pathways posted by the ARB on August 1, 2013. The following table summarizes our calculation of the carbon intensity of the revised pathways based on 24 months of continuous data through July 2014. The existing pathways are shown for reference and comparison. We have used the CA-GREET Model 1.8b to calculate the lifecycle greenhouse gas emissions of these pathways.

Table 1: Original and Revised Carbon Intensity Values

White Energy Hereford Ethanol Pathways for 100% WDGS Co-Product				
Feedstock	Original Pathway CI, gCO2/MJ	**Revised Pathway CI, gCO2/MJ**	Difference CI, gCO2/MJ	Original Pathway Number Assigned
Corn	79.51	82.21	2.70	ETHC078
Milo - default lime use	78.76	81.01	2.25	ETHG008
Milo - no lime use	n/a	79.79	n/a	n/a

At our facility, we produce ethanol from corn and milo[1]. Our facility uses natural gas for its process energy and electrical power from the local grid. These pathways are based on producing wet xxx distillers grains solubles (WDGS). Since xxx our plant has produced distillers oil[2], which is expected to be used for a variety of purposes, but mainly as animal feed. Since the distiller's oil extracted has been xxx by weight (dry matter basis) of our co-product production, it has been considered part of the DGS production for the purpose of the CI calculations.

xxx

The CARB LCFS regulations stipulate that only pathways lower in carbon intensity value than the main pathway they deviate from can use the Method 2A application. Our pathways are either a sub-pathway of the Ethanol from Corn (Dry Mill; Wet DGS, NG) Pathway or the Ethanol from Milo (Midwest; Dry Mill; Wet DGS, NG) Pathway depending on feedstock, because except for the points of deviation summarized in this report, our pathways are identical to the Corn Ethanol (Dry Mill; Wet DGS, NG) Pathway described in the Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis and the Detailed California-Modified GREET Pathway for Sorghum Ethanol.[3]

The following sections of this lifecycle analysis provide the details and documentation of our application for new pathways under Method 2A. Portions of the following information are considered confidential business information and each page with "Contains Confidential Information" in the page header should be considered to contain confidential business information. Pages that have been redacted to remove confidential business information have "Non-Confidential, Redacted Version" in the header. Where redaction has occurs in the text, it is marked with one or more "x" symbols. The number of "x" symbols has no meaning.

We request your approval and would be glad to answer any questions you may have. Following please find the names and contact information of the persons who are available to

[1] Milo is synonymous with grain sorghum, which is often referred to as sorghum. For the purposes of this application these terms can be interchanged and in all cases refer to grain sorghum. Sweet sorghum is a different plant.

[2] Distiller's oil is oil recovered from the distillers grains prior to drying and is a fraction of the oil in the corn and grain sorghum feedstock. The mix of corn and grain sorghum oil in the distillers oil will vary based on the corn and grain sorghum feedstock used at the time the distiller's oil is extracted. However the aggregated co-product yield (DG and distiller's oil) is not affected by the oil extraction process.

[3] Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis, Version 2.1, published February 27, 2009. Detailed California-Modified GREET Pathway for Sorghum Ethanol Well-to-Wheel (WTW) lifecycle analysis, Version 2.0, published December 28, 2010.

answer any questions about our application. Please note that Houston BioFuels Consultants, LLC are assisting us with the application and may be contacted if you have questions or comments about our application

Affiliation:	White Energy, Inc.	Houston BioFuels Consultants, LLC
Name:	Mr. Kim Do	Mr. Logan Caldwell, Consultant
Telephone number:	1-214-751-2568	1-281-360-8515
E-mail address:	kdo@white-energy.com	lc@hbioc.net
Mailing address:	2745 N. Dallas Pkwy, STE 670 Plano, TX 75093	5707 Ridge Vista Drive Kingwood, TX 77345

Respectfully,

Mr. Kim Do

Attachments

Attachments

Section Number and Contents

I. WTW Diagram of Hereford Sub-Pathway of the Midwest Corn Ethanol Pathway

Figure 1: WTW Components of the Hereford Pathway are Essentially Identical to the Corn Ethanol (Midwest; Dry/Wet Mill; Dry DGS, NG) Pathway[4]

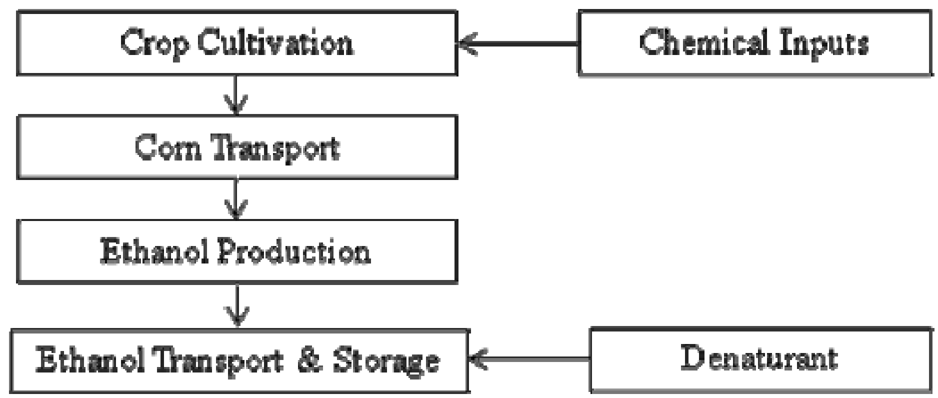


Figure 1. WTT Components for Ethanol Transported to California

Tank-To-Wheel (TTW) analysis includes actual combustion of fuel in a motor vehicle for motive power. Together WTT and TTW analysis are combined to provide Well-To-Wheel (WTW) analysis.

[4] Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis, Page 4, Version 2.1, published February 27, 2009.

II. Hereford Plant Information

Hereford Plant Info

1. Facility Name - WE Hereford, LLC and EPA Facility ID Number - 70037

2. Plant Location – 3748 S. Progressive Road, Hereford, Texas 79045

3. Capacity Notes – 100 MGY name plate and maximum permitted capacity of xxx MGY.

4. Technology – ICM Design

5. Feedstock Type – Corn and Milo

6. Product - Ethanol

7. Co-Products – WDGS and syrup. xxx. In February 2014, distiller's oil extraction facilities were commissioned at our facility. The distiller's oil produced at our facility may be used for a variety of purposes, but the expected market is for local livestock.

8. Process fuel – Natural Gas by pipeline.

9. Power supply – From local utilities located in the EPA SPSO eGRID sub-region according to the EPA website.

10. Process Flow Description – The following description and diagram of the dry mill process is from the ICM Inc. web site.

Delivery/Storage

Grain is delivered by truck or rail to the ethanol plant where it's loaded in storage bins designed to hold enough grain to supply the plant for 6-8 days.

Milling

The grain is screened to remove debris and ground into course flour.

Cooking (Hot Slurry, Primary Liquefaction, and Secondary Liquefaction)

During the cook process, the starch in the flour is physically and chemically prepared for fermentation.

Hot Slurry

The milled grain is mixed with process water, the pH is adjusted to about 5.8, and an alpha-amylase enzyme is added. The slurry is heated to 180–190°F for 30–45 minutes to reduce viscosity.

Primary Liquefaction

The slurry is then pumped through a pressurized jet cooker at 221°F and held for 5 minutes. The mixture is then cooled by an atmospheric or vacuum flash condenser.

Secondary Liquefaction

After the flash condensation cooling, the mixture is held for 1–2 hours at 180–190°F to give the alpha-amylase enzyme time to break down the starch into short chain dextrins. After pH and temperature adjustment, a second enzyme, glucoamylase, is added as the mixture is pumped into the fermentation tanks.

Simultaneous Saccharification Fermentation

Once inside the fermentation tanks, the mixture is referred to as mash. The glucoamylase enzyme breaks down the dextrins to form simple sugars. Yeast is added to convert the sugar to ethanol and carbon dioxide. The mash is then allowed to ferment for 40-50 hours, resulting in a mixture that contains about 15% ethanol as well as the solids from the grain and added yeast.

Distillation

The fermented mash is pumped into a multi-column distillation system where additional heat is added. The columns utilize the differences in the boiling points of ethanol and water to boil off and separate the ethanol. By the time the product stream is ready to leave the distillation columns, it contains about 95% ethanol by volume (190-proof). The residue from this process, called stillage, contains non-fermentable solids and water and is pumped out from the bottom of the columns into the centrifuges.

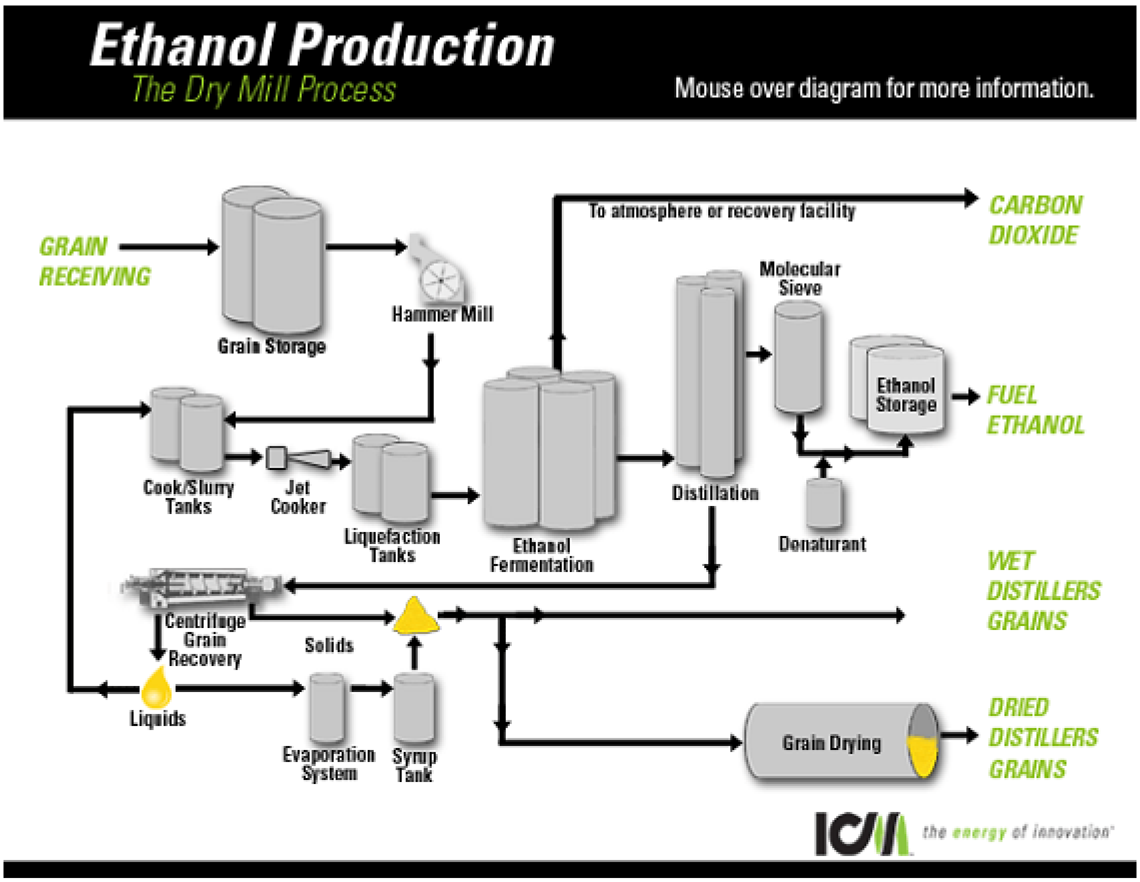
Dehydration

The 190-proof ethanol still contains about 5% water. It's passed through a molecular sieve to physically separate the remaining water from the ethanol based on the different sizes of the molecules. This step produces 200-proof anhydrous (waterless) ethanol.

Ethanol Storage
Before the ethanol is sent to storage tanks, a small amount of denaturant is added, making it unfit for human consumption. Most ethanol plants' storage tanks are sized to allow storage of 7–10 days' production capacity.

11. Process Block Flow Diagram

Source: ICM Inc.



III. Table of CA-GREET Model Inputs for Hereford Pathways

The following table depicts the revised inputs to the CA-GREET Model for the Hereford ethanol plant with Midwest corn feedstock, using natural gas for fuel and power from the local grid. These input variables are based on 24-months of continuous data through July 2014.

Table 2: CA-GREET Model Inputs for the Hereford's Corn Ethanol
For the Revised 100% WDGS, Corn Feedstock Pathway

CA-GREET Model Sheet Name	Cell number	Default Pathway Value	White Hereford Pathway Value	Units	Description	Comments
Regional LT	C2	U.S. Avg and Midwest	U.S. Avg.and SPSO	n/a	Region for Analysis	Midwest feedstock with U.S. Avg Power and Hereford ethanol production with SPSO power
Regional LT	C83	0.0%	Business Confidential	%	Residual oil	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C84	33.5%	Business Confidential	%	Natural gas	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C85	51.6%	Business Confidential	%	Coal	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C86	0.0%	Business Confidential	%	Nuclear	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C87	5.8%	Business Confidential	%	Biomass	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C88	9.1%	Business Confidential	%	Other (renewables)	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Fuel_Prod_TS	L277	36,000	Business Confidential	btu/gal (LHV)	Corn Ethanol Plant Energy Use, Dry Mill	Total Energy use
Fuel_Prod_TS	D277	2.72	Business Confidential	gal/bu	Ethanol yield of Corn Ethanol Plant, Dry Mill	xxx
Inputs	C247	10.19%	Business Confidential	%	Electricity 5 of total process energy	
T&D_Flowcharts	F1308	100%	Business Confidential	%	Corn, % from Field to Stack	xxx
T&D_Flowcharts	F1309	10	Business Confidential	miles	Corn from Field to Stack	xxx
T&D_Flowcharts	M1308	0%	Business Confidential	%	Corn, % by Rail from Stack to Ethanol Plant	All by rail for Hereford
T&D_Flowcharts	M1309	400	Business Confidential	miles	Rail Distance from Corn Stack to Ethanol Plant	Average distance for Midwest corn origination
T&D_Flowcharts	M1312	100%	Business Confidential	miles	Corn Per cent by Truck from Stack to Ethanol	All corn feedstock shipped by rail from stack to Hereford ethanol plant
T&D_Flowcharts	F1441	100%	Business Confidential	%	Percent shipped by rail	All ethanol is shipped by rail to California bulk terminal
T&D_Flowcharts	F1442	1,400	Business Confidential	miles	Distance from Ethanol Plant to Ca. bulk terminal	Average distance for bulk terminals in xxx area used by Hereford
T&D_Flowcharts	F1445	70%	Business Confidential	%	Percent shipped by truck to Bulk Terminal	All ethanol is shipped by rail bulk terminal

The Hereford plant is located within the U.S. EPA eGRID SPSO sub-region, which has been used as the basis for the power primary fuel mix instead of the CA-GREET Midwest average for ethanol production. For locally grown grain sorghum feedstock, the SPSO sub-region has also been used for the upstream agriculture lifecycle modeling instead of the Midwest average used in the default grain sorghum pathway. The EPA eGRID database on the EPA web site[5] indicated the sub-region by entering the plant zip code (79045) and local utility providers (Xcel). The tables below show how the marginal primary fuel mix in the SPSO sub-region was determined using the protocol provided in a private email from the ARB.[6] The CA-GREET Midwest region primary fuel mix is shown for reference.

Table 3: SPSO eGRID Sub-region Marginal Primary Fuel Mix

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

When Hereford uses Midwest corn, the transportation mode and distance from the field to the ethanol plant differs from the default case. For Hereford, 100% of the Midwest corn feedstock is transported by rail and the average rail transportation distance is xxx miles.

Ethanol produced at Hereford is transported by rail to California to terminals in the Los Angeles area. The average rail distance from Hereford to the bulk storage terminals in California is xxx miles.

The following table provides a side-by-side comparison of the differences in the CA-GREET 1.8b input variables for the original and revised Hereford corn ethanol pathways with the CARB WTW default values shown for convenient reference.

[5] Web address: http://oaspub.epa.gov/powpro/ept_pack.charts

[6] October 17, 2012 email from Mr. Reza Lorestany to Mr. Logan Caldwell stating: "Because eGRID energy mixes are average mixes, however, they must be converted to marginal mixes for full compatibility with the LCFS. We would accomplish this conversion for the SPSO region as we have for the other LCFS regions: we would allocate the nuclear and large hydroelectric shares of the SPSO mix to the gas fraction."

Table 4: Comparison of the Revised and Original Pathway CA-GREET model Input Variables

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

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Milo Pathways

The following table depicts the revised inputs to the CA-GREET Model for the Hereford ethanol plant with local grain sorghum ("milo") feedstock, using natural gas for fuel and power from the local grid. These input variables are based on 24-months of continuous data through July 2014.

Table 5: CA-GREET Model Revised Inputs for the Hereford Milo Feedstock Pathways

CA-GREET Model Sheet Name	Cell number	Grain Sorghum 100% WDGS Pathway Value	White Hereford Milo Pathway Value	Units	Description	Comments
Fuel_Prod_TS	CU271	26,100	Business Confidential	btu/gal	Grain Sorghum Ethanol Plant Energy Use, Default is 100% Dry Mill	Input added by CARB for Grain Sorghum default pathway.
Inputs	E247	10.19%	Business Confidential	%	Electricity used as % of total energy used for ethanol production	Input added by CARB for Grain Sorghum default pathway.
Inputs	E254	22,430	Business Confidential	btu/gal	Process fuel for 100% WDGS	Input added by CARB for Grain Sorghum default pathway.
Inputs	D235	2.72	Business Confidential	gal/bu	Ethanol yield of Dry Mill using Grain Sorghuma	Input added by CARB for Grain Sorghum default pathway.
Regional LT	C2	Midwest	Business Confidential	n/a	Region for Analysis	Sorghum is grown near Hereford
Regional LT	C2	Midwest	Business Confidential	n/a	Region for Analysis	Hereford ethanol production is in the SPSO eGRID Subregion.
Regional LT	C83	0.0%	Business Confidential	%	Residual oil	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C84	33.5%	Business Confidential	%	Natural gas	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C85	51.6%	Business Confidential	%	Coal	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C86	0.0%	Business Confidential	%	Nuclear	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C87	5.8%	Business Confidential	%	Biomass	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
Regional LT	C88	9.1%	Business Confidential	%	Other (renewables)	Changed from Midwest to SPSO sub-region value for Hereford ethanol production
T&D_Flowcharts	F1308	0%	Business Confidential	%	Milo Per cent by Rail from Stack to Ethanol	xxx
T&D_Flowcharts	F1309	10	Business Confidential	miles	Milo from Field to Stack	xxx
T&D_Flowcharts	M1308	0%	Business Confidential	%	Milo % by Rail from Stack to Ethanol Plant	All milo feedstock shipped by truck from stack to Hereford ethanol plant
T&D_Flowcharts	M1312	100%	Business Confidential	%	Milo % by Truck from Stack to Ethanol Plant	All milo feedstock shipped by rail from stack to Hereford ethanol plant
T&D_Flowcharts	M1313	40	Business Confidential	miles	Truck Distance from Milo Stack to Ethanol Plant	Average distance from stack to Hereford ethanol plant
T&D_Flowcharts	F1441	100%	Business Confidential	%	Percent shipped by rail	All ethanol is shipped by truck from Hereford to bulk terminal
T&D_Flowcharts	F1442	1,400	Business Confidential	miles	Distance from Ethanol Plant to Ca. bulk terminal	Average distance for bulk terminals in xxx area used by Hereford
T&D_Flowcharts	F1445	70%	Business Confidential	%	Percent shipped by truck to Bulk Terminal	All ethanol is shipped by rail to bulk terminal
CA-GREET Model Sheet Name	**Cell number**	**Default Pathway Value**	**White Hereford Pathway Value**	**Units**	**Description**	**Comments**
Fuel_Prod_TS	DS257	357.6	Business Confidential	g/bu	CaCO3 fertilizer	No lime use on soil used for milo production

When Hereford uses local milo feedstock, the transportation mode and distance from the field to the ethanol plant differs from the CARB WTW Grain Sorghum Ethanol default case. For Hereford, the milo feedstock for the two milo pathways is transported by truck for an average distance of xxx miles compared to 40 miles in the default pathway.

Comments on the fuel, power and ethanol transportation revised input variables for the corn ethanol pathway are applicable to the two milo pathways.

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Table 6: Comparison of the Revised and Original Pathway CA-GREET model Input Variables

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

IV. Basis for the Input Values

Milo Used as Feedstock

The grain sorghum (milo) used by Hereford as feedstock is sourced from farms an average distance of xx miles of the plant, xxx, from the stack to the Hereford ethanol plant. The amount of milo used as feedstock is expected to vary due to both agronomic and market conditions.

In the Great Plains region where Hereford sources its milo, there is no need for lime to treat the soil used to grow milo because of the inherent high pH nature of the soil there. As reference, included with this new pathway application, please find a letter from xxx attesting to no reason to use lime in the region. The file with this letter is named: *Lime use letter to CARB from xxx via NSB CONFIDENTIAL29Jul13.pdf*. Additional documentation of no-lime use for sorghum production is in the accompanying file named: *sorghum_belt_soil_acidity_information CONFIDENTIAL 14Apr14.pdf*. This document contains attestations from Kansas, Nebraska, Oklahoma, South Dakota and Texas on the minimal use of lime in their states for milo production.

During the production period from August 2012 through July 2014, milo feedstock comprised 30% of the bushels of feedstock used by Hereford. Due to the essentially identical energy use and yield when processing corn and milo, no distinction has been made in the energy use or yield values when milo is used as a feedstock.

Distiller's oil Considerations

The Hereford plant began extracting distiller's oil from the distillers grains co-product stream in xxx. Distiller's oil production has averaged xxx pounds of distiller's oil per gallon of ethanol produced. This production amount is consistent with other dry-mill ethanol plants extracting distiller's oil. By comparison, the default DGS production on a bone dry basis is xxx pounds of DGS per gallon of ethanol in the default corn dry-mill pathway, and for the 24-month production period was xxx pounds of DGS per gallon of ethanol. The DGS calculated in the CA-GREET model includes the distiller's oil since there is no extraction of distiller's oil in the default pathway process flow sequence. The distiller's oil extracted by Hereford is approximately xxx of the DGS production before distiller's oil extraction. Distiller's oil from the Hereford plant is used for several types of animal feed and may be used at some point for biodiesel production. Given the relatively small amount of extracted distiller's oil to the total DGS production, and the relatively small fraction of the CI represented by co-product production, for the purpose of calculating the CI of the Hereford new pathways, the distiller's oil has been assumed to be part of the DGS production.

Ethanol Production

The input values presented in this application are based on the 24-month period from August 2012 through July 2014, the "Production Period." The data for the production period are shown in a later section of this report. The following table shows the calculation of the input values based on the data from the production period for WDGS production with corn and milo feedstock.

Table 7: Calculation of the Input Values for the Hereford Pathway

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

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V. CA-GREET Model Output, CI Calculations and Analysis of Results

The Hereford corn ethanol pathway carbon intensity values are a sub-pathway of the Midwest, Dry-Mill, 100% WDGS Co-product, 100% natural gas fuel ethanol plant pathway that has a carbon intensity value of 90.10 gCO2e/MJ.

The carbon intensity values for the new pathways of the Hereford ethanol plant using Midwest corn feedstock is 82.21 gCO2e/MJ.

Table 8: CI of Existing Corn Ethanol Dry Mill, 100% WDGS, Natural Gas Fuel Pathway

CARB Lookup Table Reference Pathway: Midwest Dry Mill Ethanol Plant, 100% WDGS, NG Fuel Pathway							
		CA-GREET Model Output					
	IPPC factors	Corn	Ethanol	Calculations to convert Output to g/CO2e/MJ			
	gCO2e/g	*Btu or Grams per mmbtu of Fuel Throughput*				gCO2e/mmbtu	**gCO2e/MJ**
		US Avg Corn	100% DDGS	Corn w/loss	Total corn + EtOH		
Total energy		187,247	1,330,569	187,342	1,517,911		
VOC		16.768	54.446	17	71		
CO		151.276	26.943	151	178		
CH4	25	17.400	56.801	17	74	1,855.2	1.76
N2O	298	41.743	0.350	42	42	12,550.1	11.90
CO2	1	15,064	33,114	15,071	48,185	48,185.2	45.67
Sub-total lifecycle CI before denaturant and lt. vehicle combustion						62,590.5	59.33
Denaturant and lt. vehicle combustion effects factor							0.80
Total Lifecycle CI before ILUC with denaturant and lt. vehicle combustion effects included							60.13
Indirect Land Use Change Factor (ILUC)							30
Total CI of Pathway including Indirect Land Use Change							90.13
Note: The calculated result of this pathway prior to making the input changes for the Plainview ethanol plant is 59.33 gCO2e/MJ. This matches the Corn Ethanol WTW Analysis result of 59.3 gCO2e/MJ (Table C. GHG Emissions Summary for the Various Corn Ethanol Scenarios, page 6) before the denaturant and light vehicle combustion factor of 0.8 gCO2e/MJ is added.							

Table 9: CI Calculation of Hereford Corn Ethanol, 100% WDGS Pathway:

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

The Hereford milo ethanol pathways carbon intensity values are sub-pathways of the Midwest, Dry-Mill, 100% WDGS Co-product, 100% natural gas fuel ethanol plant with grain sorghum feedstock pathway. The carbon intensity value of the default pathway is 85.81 gCO2e/MJ. The carbon intensity value of the Hereford ethanol plant ethanol three milo ethanol pathways are:

- Milo, default lime use: 81.01 gCO2e/MJ
- Milo, no-lime use: 79.79 gCO2e/MJ

Table 10 CI Calculation of Hereford Pathway, Milo Feedstock, SPSO Power, and default lime use

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

Table 11: CI Calculation of Hereford Pathway: Milo Feedstock, SPSO Power, and no-lime use

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

VI. Production Range of Hereford Pathway

As stated in the Hereford Method 2A application form, the new pathways are applicable to the Hereford facilities for at least xxx MGY to xxx MGY of denatured ethanol production. The maximum permitted annual production is xxx MG. Should Hereford plan to produce more than this amount per year, it will first obtain a revised air permit to allow the higher production amount.

VII. Sustainability of Hereford Pathway

The Hereford facility was designed and constructed using well-established modern designs and equipment and is managed by professional staff well-qualified to assure that over time the energy efficiency of and emissions from the facility do not deteriorate. Any deterioration would result in a less profitable business. Thus the sustainability of the plant is well aligned with the business objectives of the owners.

VIII. Impact on Land Use

There is negligible difference between the land use of this sub-pathway and that of the Corn Ethanol (Corn Ethanol Dry Mill; Dry DGS, NG) Pathway described in the Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis and the Detailed California-Modified GREET Pathway for Sorghum Ethanol [7].

[7] Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis, Version 2.1, published February 27, 2009. Detailed California-Modified GREET Pathway for Sorghum Ethanol Well-to-Wheel (WTW) lifecycle analysis, Version 2.0, published December 28, 2010.

IX. Documents supporting Annual Quantities of Feedstock, Utilities and Production

The input values presented in this application are based on the 24-month period from August 2012 through July 2014, the "Production Period." The basis for selecting this period is explained in Section IV of this report.

The following table shows the Hereford input and output data during the production period.

Table 12: Summary of Inputs and Outputs during the "Production Period"

This table is considered Confidential Business Information and is not included in this non-confidential, redacted version of the application.

The utilities quantities in the preceding table showing the actual monthly utility use are documented by the utility invoices with the files named:

NG Invoices

- *WEH US Energy NG Invoices CONFIDENTIAL 16Oct14 .zip*

Electricity Invoices

- *Xcel Electricity Invoices CONFIDENTIAL 16Oct14.zip*

The monthly electricity invoices are pro-rated into the calendar months they cover in a separate spreadsheet, with the file named:

- *Hereford Electricity Use Monthly Invoice Reconciliation CONFIDENTIAL 15Oct14.xls*

The accuracy and authenticity of all the data in this new pathway application are attested to in a letter from Ms. Carol Tjiong, Vice President and Secretary of Hereford, in an accompanying file named:

- *Transmittal Letter Attesting to Accuracy of Data PUBLIC 6Feb15.pdf*.