

# ADM CA-GREET Model

The applicant has conducted its analysis of direct effects on carbon intensity for this pathway using CA-GREET, v.1.8b (Dec. 2009) (See [http://www.arb.ca.gov/fuels/lcfs/ca\\_greet1.8b\\_dec09.xls](http://www.arb.ca.gov/fuels/lcfs/ca_greet1.8b_dec09.xls)). The standard inputs and parameters specified in CA-GREET remain unchanged except as noted in the input table below. The input table below specifies the spreadsheet location of the CA-GREET inputs and other parameters that were claimed as confidential business information or trade secret by the applicant, but it does not disclose the actual value of such inputs and parameters because they are claimed to be confidential business information or trade secret.

ADM Input data table (Locations of cells containing Confidential Business Information are shown, but the actual values of such confidential information are not disclosed):

## CA-GREET MODEL SCENARIOS

Table 1 lists the user design inputs that were changed in CA-GREET for ADM pathway Midwest, Dry Mill, Dryer Closed-loop Enhanced Heat Recovery, Cogeneration – Coal and the biomass pathways. All other parameters are unchanged for the proposed sub-pathway including raw materials, ethanol energy content and land use change.

**TABLE 1 User design inputs for CA-GREET and ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP ENHANCED HEAT RECOVERY, COGENERATION - COAL**

CA-GREET Worksheet	Cell Reference	Input	Units	CA-GREET Value	ADM Pathway 1 Value
Inputs	B4	Target Year of Simulation		2010	2010
Fuel_Prod_TS	C271	EtOH Yield of Corn Dry Mill EtOH Plant	gal/bushel	2.72	2.70
Inputs	C244, D244	Share of corn ethanol plant types	%	85% dry mill, 15% wet mill	100% dry mill, 0% wet mill
Fuel_Prod_TS	K271	Total ethanol energy use (undenatured)	BTU/gal	36,000	
Inputs	C247	Electricity share of process fuel	%	10.2%	0%
Fuel_Prod_TS	S271	Share of Coal in total process fuels	%	20%	Base: 70.52%
					5% Biomass: 64.36%
					10% Biomass: 58.19%
					15% Biomass: 52.02%
Inputs	C255	Share of NG as Process Fuel	%	100%	29.48%
Inputs	C256	Share of Coal as Process Fuel	%	0%	Base: 70.52%
					5% Biomass: 64.36%
					10% Biomass: 58.19%
					15% Biomass: 52.02%
Inputs	E255	Biomass as Process Fuel	%		Base: 0%
					5% Biomass: 5%
					10% Biomass: 10%
					15% Biomass: 15%
Inputs	C262	Share of Biomass used as process fuel: Corn Stover	%	100%	100%
EtOH	C101	DGS Yield	bone-dry lb. per gallon EtOH	5.34	5.87



<b>CA-GREET Worksheet</b>	<b>Cell Reference</b>	<b>Input</b>	<b>Units</b>	<b>CA-GREET Value</b>	<b>ADM Pathway 1 Value</b>
Regional LT	H192	Midwest – Coal LHV	BTU/short-ton	19,546,300	16,497,700
Regional LT	H193	Midwest – Coal HHV	BTU/short-ton	20,608,570	17,366,000
Regional LT	H194	Midwest – Coal Carbon Content	% wt	63.7%	47.8%
Regional LT	H195	Midwest – S ratio	ppm by wt	11,100	4,000

Table 6 lists the user design inputs that were changed in CA-GREET for ADM pathway Midwest, Dry Mill, Dryer Closed-loop Heat Recovery, Cogeneration – Coal and the biomass pathways. All other parameters are unchanged for the proposed sub-pathway including raw materials, ethanol energy content and land use change.

TABLE 6 User design inputs for CA-GREET and ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP HEAT RECOVERY, COGENERATION – COAL AND BIOMASS PATHWAYS

CA-GREET Worksheet	Cell Reference	Input	Units	CA-GREET Value	ADM Pathway 1 Value
Inputs	B4	Target Year of Simulation		2010	2010
Fuel_Prod_TS	C271	EtOH Yield of Corn Dry Mill EtOH Plant	gal/bushel	2.72	2.70
Inputs	C244, D244	Share of corn ethanol plant types	%	85% dry mill, 15% wet mill	100% dry mill, 0% wet mill
Fuel_Prod_TS	K271	Total ethanol energy use (undenatured)	BTU/gal	36,000	
Inputs	C247	Electricity share of process fuel	%	10.2%	0%
Fuel_Prod_TS	S271	Share of Coal in total process fuels	%	20%	Base: 71% 5% Biomass: 65.15% 10% Biomass: 59.29% 15% Biomass: 53.44%
Inputs	C255	Share of NG as Process Fuel	%	100%	29.00%
Inputs	C256	Share of Coal as Process Fuel	%	0%	Base: 71% 5% Biomass: 65.15% 10% Biomass: 59.29% 15% Biomass: 53.44%
Inputs	E255	Biomass as Process Fuel	%		Base: 0% 5% Biomass: 5% 10% Biomass: 10% 15% Biomass: 15%
Inputs	C262	Share of Biomass used as process fuel: Corn Stover	%	100%	100%
EtOH	C101	DGS Yield	bone-dry lb. per gallon EtOH	5.34	5.87
Regional LT	H192	Midwest – Coal	BTU/sho	19,546,300	16,497,700



<b>CA-GREET Worksheet</b>	<b>Cell Reference</b>	<b>Input</b>	<b>Units</b>	<b>CA-GREET Value</b>	<b>ADM Pathway 1 Value</b>
		LHV	rt-ton		
Regional LT	H193	Midwest - Coal HHV	BTU/sho rt-ton	20,608,570	17,366,000
Regional LT	H194	Midwest - Coal Carbon Content	% wt	63.7%	47.8%
Regional LT	H195	Midwest - S ratio	ppm by wt	11,100	4,000