Demonstration of GREET1.7 Simulations

II. Simulations through the Excel Spreadsheet

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GREET User Workshop
Argonne, IL, June 25-26, 2007

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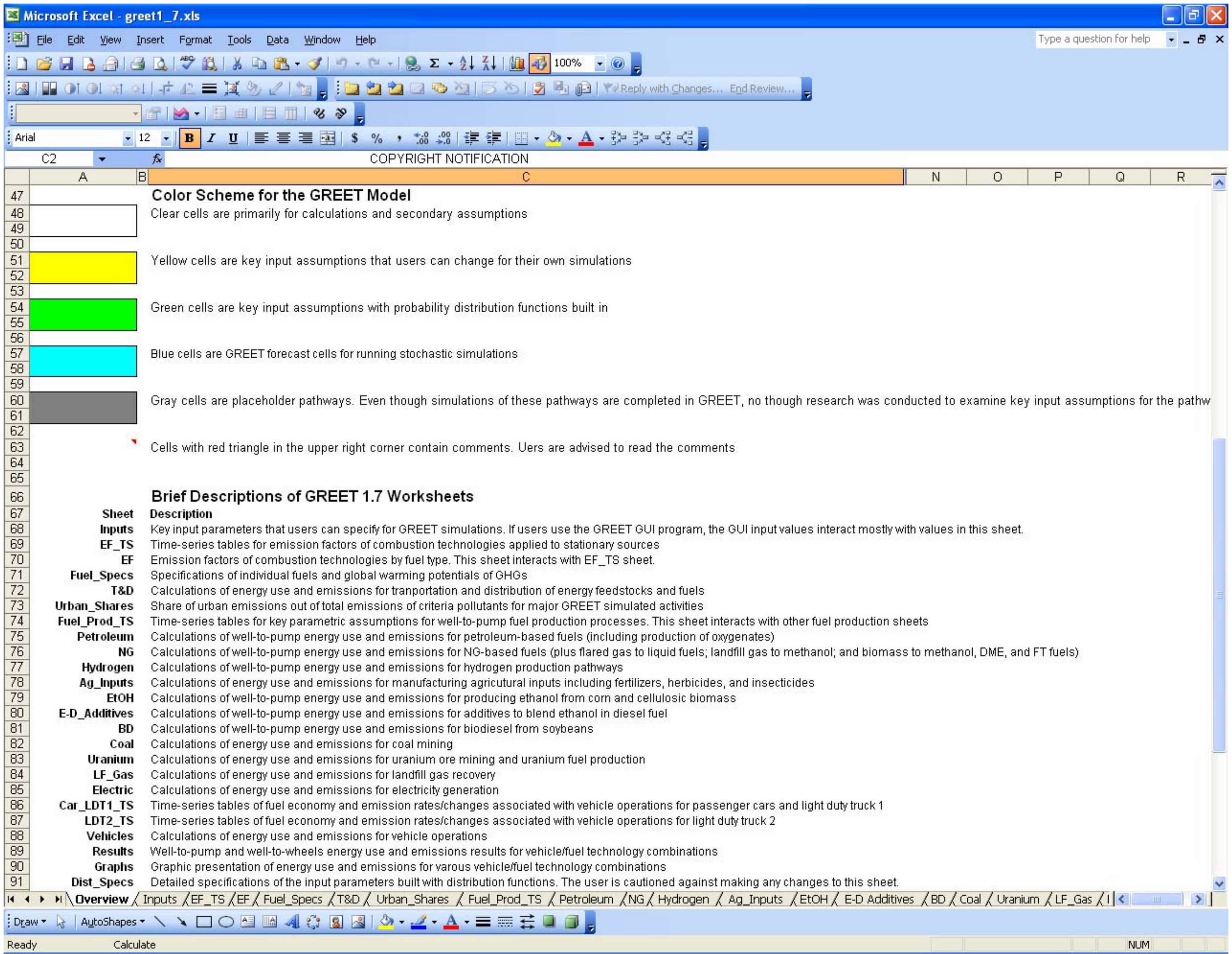
Three Cases Will be Demoed through GREET Excel Spreadsheet Model

- Petroleum Based Pathways (Demo 1)
  - Feedstock Selection: Conventional Crude vs. Canadian Oil Sands
  - Fuel Selection: RFG w/ corn-ethanol as oxygenate vs. LSD
  - Vehicle Selection: SI GV vs. GI SI HEV vs. CI DI DV vs. GI CIDI HEV

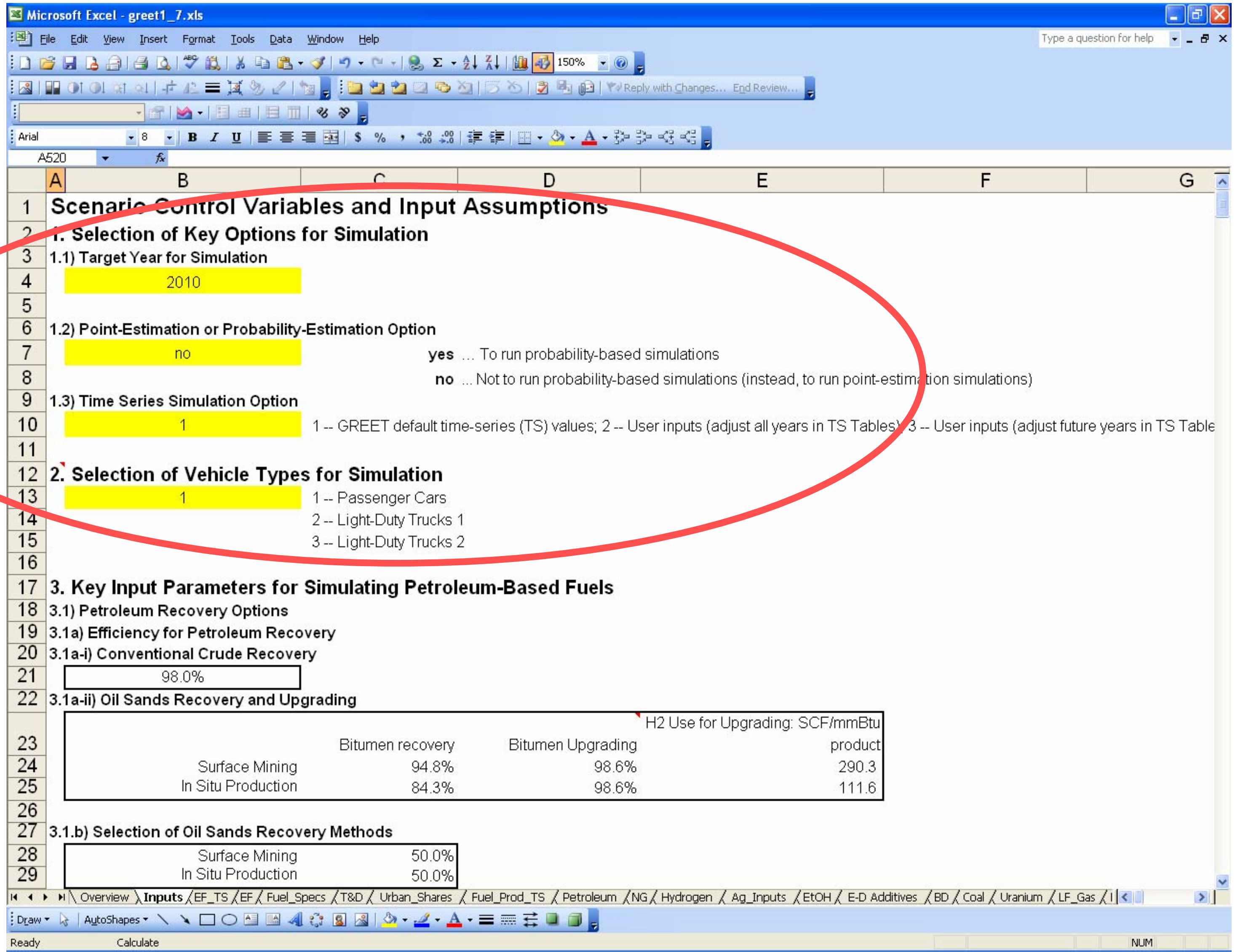
- Hydrogen Production Pathways (Demo 2)
  - Feedstock Selection: NA NG
  - Location Selection: Central vs. Distributed
  - Fuel Selection: GH2 vs. LH2
  - Vehicle Selection: FCV

- Ethanol Production Pathways (Demo 3)
  - Feedstock Selection: Corn vs. Farmed Trees vs. Herbaceous Biomass
  - Fuel Selection: E85
  - Vehicle Selection: E85 FFV

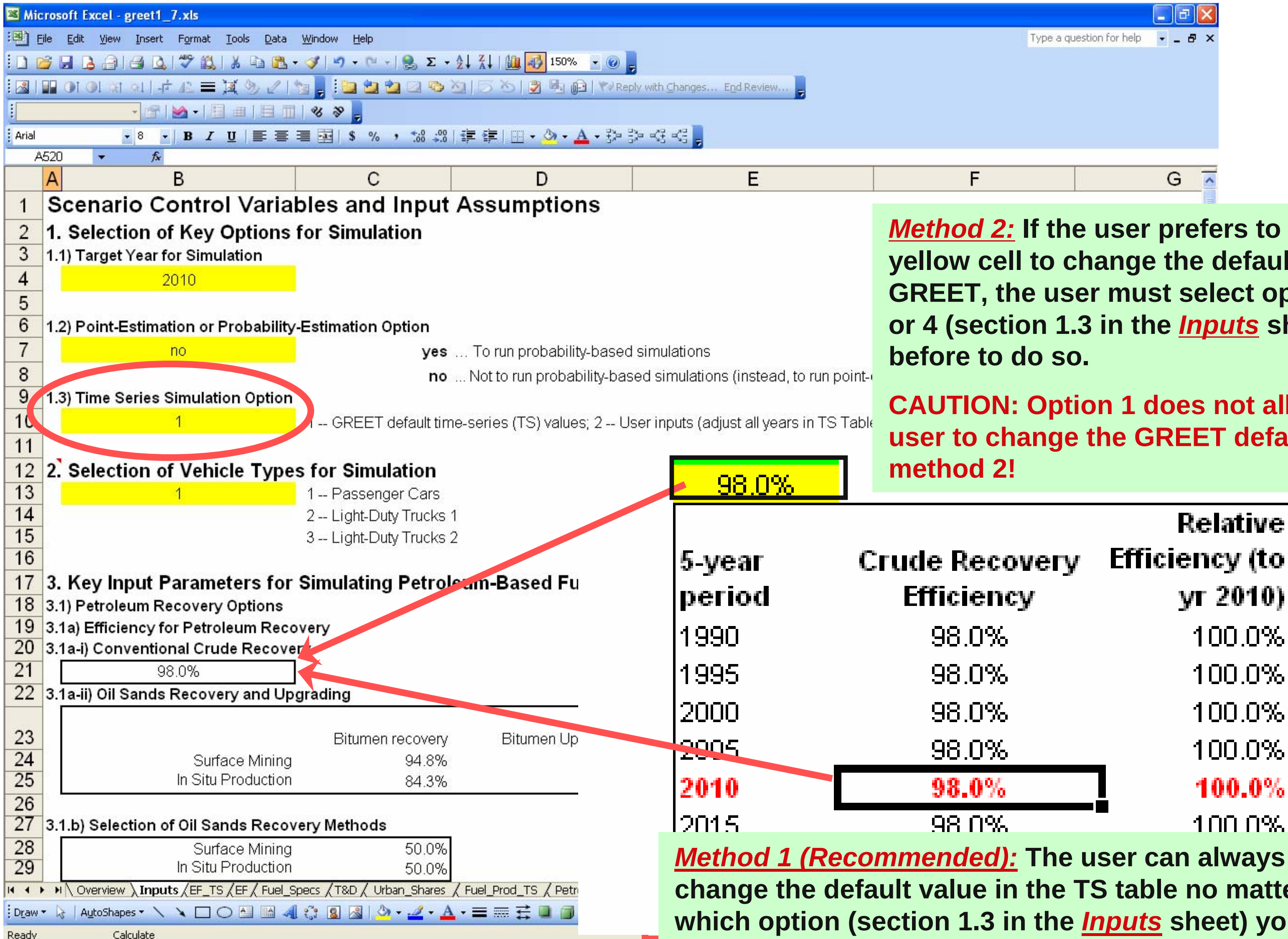
Browse the Overview Sheet prior to the Specific GREET Simulation



Select Key Scenario Options in the Inputs Sheet



Changing Default in TS Table Requires a Careful Selection of <u>Time Series Simulation Option</u>

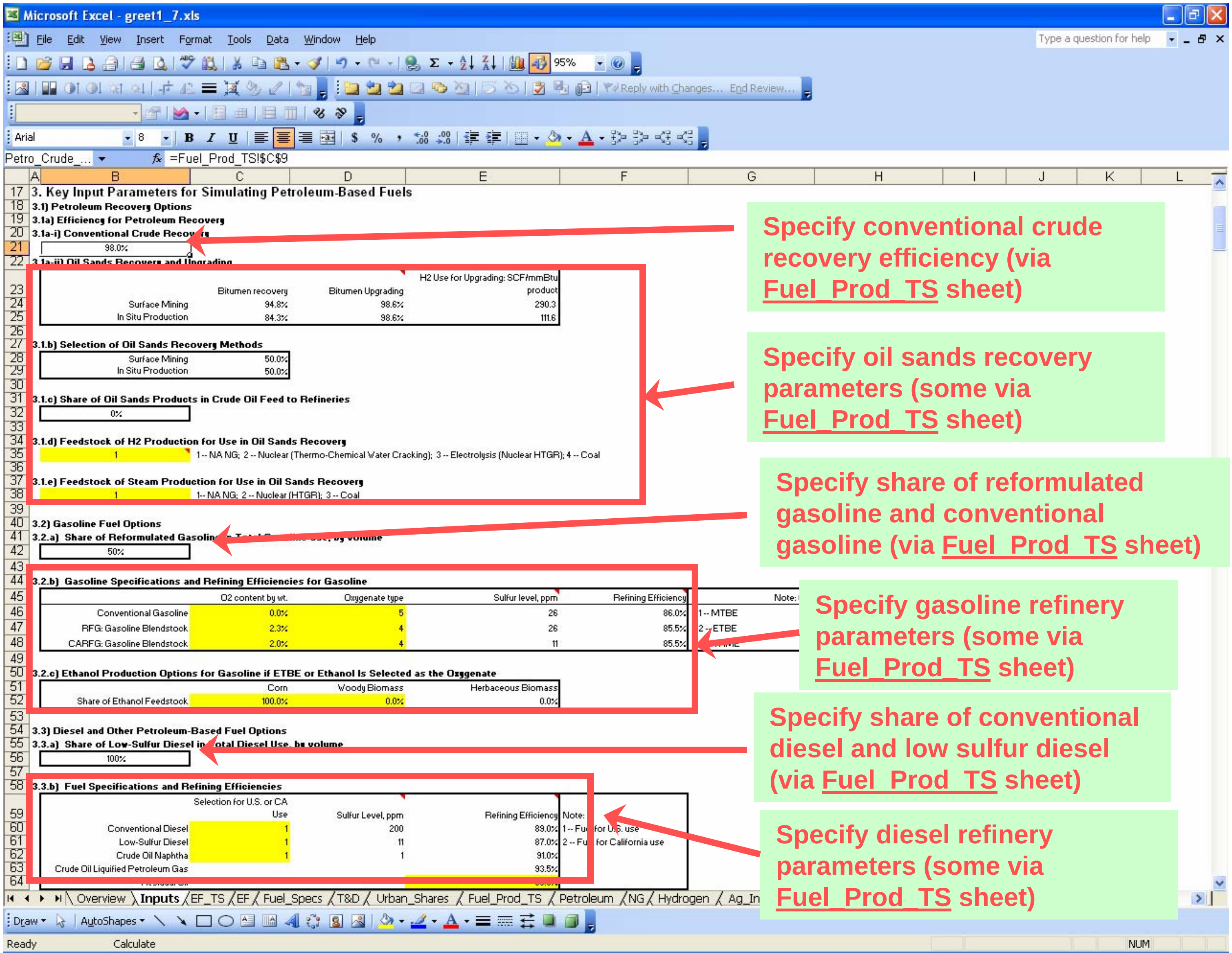


Method 2: **If the user prefers to select the yellow cell to change the default value in GREET, the user must select option 2, 3 or 4 (section 1.3 in the *<u>Inputs</u>* sheet) before to do so.**

CAUTION: Option 1 does not allow the user to change the GREET default via method 2!

Method 1 (Recommended): **The user can always change the default value in the TS table no matter which option (section 1.3 in the *<u>Inputs</u>* sheet) you select.**

Select Key Input Parameters in the Inputs Sheet: Petroleum-Based Gasoline and Diesel (Demo 1)



Specify conventional crude recovery efficiency (via Fuel_Prod_TS sheet)

Specify oil sands recovery parameters (some via Fuel_Prod_TS sheet)

Specify share of reformulated gasoline and conventional gasoline (via Fuel_Prod_TS sheet)

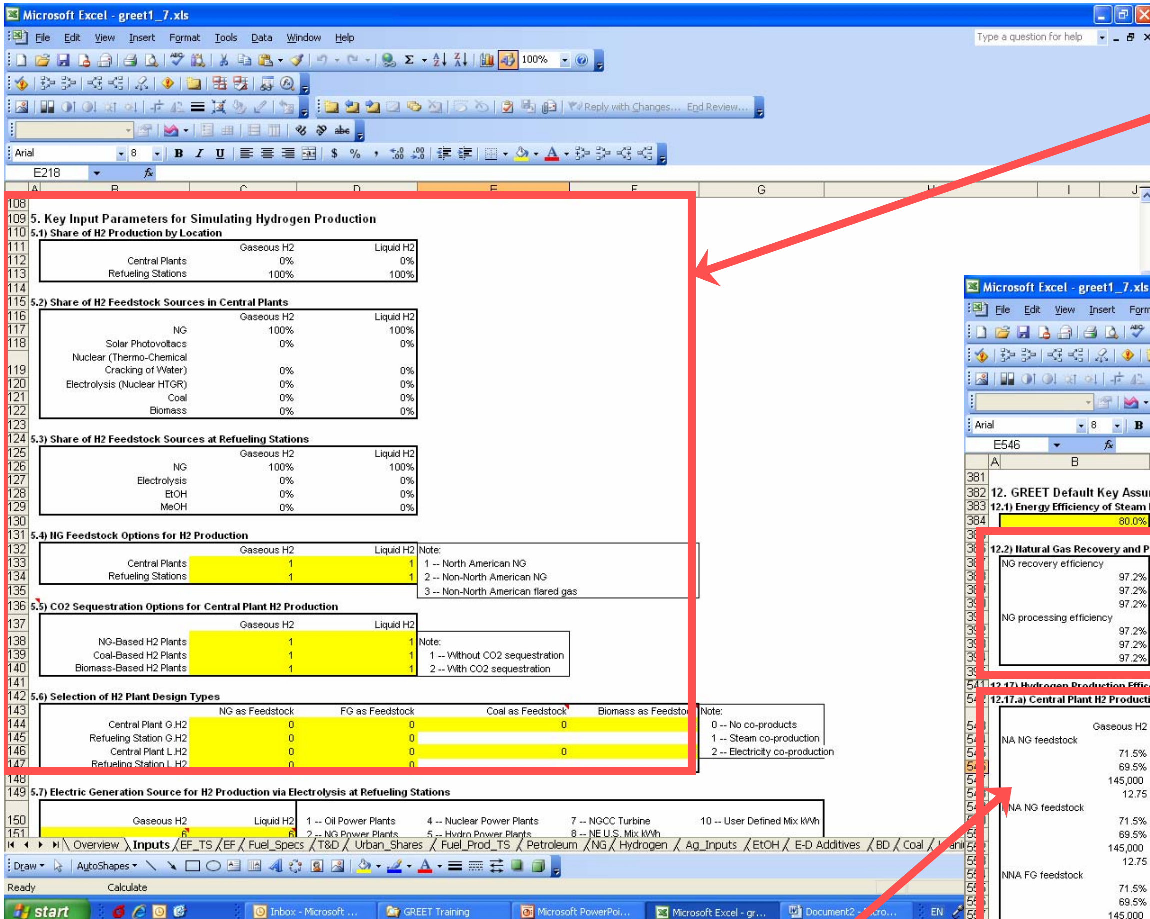
Specify gasoline refinery parameters (some via Fuel_Prod_TS sheet)

Specify share of conventional diesel and low sulfur diesel (via Fuel_Prod_TS sheet)

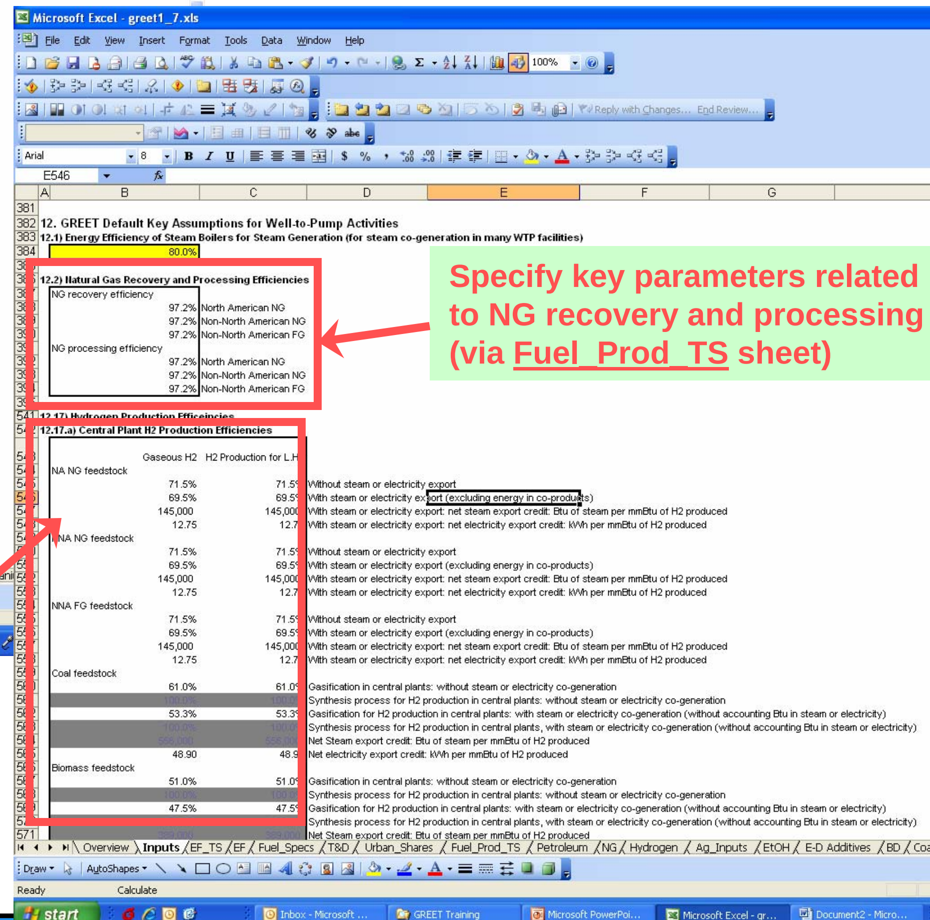
Specify diesel refinery parameters (some via Fuel_Prod_TS sheet)

Select Key Input Parameters in the Inputs Sheet: NG-to-H2 Pathways (Demo 2)

Specify H2 production location, feedstock, plant design, and other key options. (some via Fuel_Prod_TS sheet)



Specify key parameters related to NG recovery and processing (via Fuel_Prod_TS sheet)



Specify H2 production efficiency and other H2 production parameters (via Fuel_Prod_TS sheet)

Select Key Input Parameters in the Inputs Sheet: Ethanol Production Pathways (Demo 3)

8. Key Input Parameters for Fuel Ethanol Pathway Simulations

8.1) Selection of Ethanol Production Feedstocks: Combination of Corn, Woody Biomass, and Herbaceous Biomass

	Corn	Farmed Trees	Herbaceous Biomass	Corn Stover	Forest Residue
Share of Each Feedstock	100.0%	0.0%	0.0%	0.0%	0.0%

8.2) Selection of Corn Ethanol Plant Types

Dry Milling Plant	85.0%
Wet Milling Plant	15.0%

8.3) Selection of Method for Estimating Credits of Co-Products of Corn Ethanol

1	1 -- displacement method
	Other values -- market value-based method

8.4) CO2 Emissions from Potential Land Use Changes of Farming: grams/bushel for corn and grams/dry ton for biomass and corn stover

	Corn	Farmed Trees	Herbaceous Biomass	Corn Stover	Forest Residue
Data cells	195	-112,500	-48,500	0	0
Calculation cells	195	-112,500	-48,500	0	0

8.5a) N2O Emissions: N in N2O as % of N in N fertilizer

Corn Farming	Biomass Farming	Corn Stover
2.0%	1.5%	2.0%

8.5b) N2O Credit from Corn Stover Removal

N in N2O Avoided per Unit of Corn Stover Removed	N Content of Corn Stover	N in N2O Avoided per Unit of N in Stover Removed
-0.00563%	0.45%	-1.25%

8.6) Farming Energy Use and Fertilizer use

	Corn (per bushel)	Farmed Trees (per d.ton)	H. Biomass (per d.ton)	Corn Stover (per d.ton)	Forest Residue (per d.ton)
Farming Energy Use: Btu	22,500	234,770	217,230	235,244	612,700
Fertilizer Use					
Grams of Nitrogen	420.0	709.0	10,635	3,175	
Grams of P2O5	149.0	189.0	142.0	1,633	
Grams of K2O	174.0	331.0	226.0	8,346	
Grams of $CaCO_3$	1202.0	0.0	0.0		
Pesticide Use					
Grams of Herbicide	8.10	24.00	28.00	0.00	
Grams of Insecticide	0.68	2.00	0.00	0.00	

8.7) Key Assumptions for Simulating Additional Energy Use and Fertillizer Use for Corn Stover-Based Ethanol Pathway

Corn Yield, bu/harvest acre	158.0
Ratio of Harvest vs. Planted Acre	90%
Collection Rate of Corn Stover	50.0%
Corn Stover Removed, dry ton/acre	1.884

8.8) Key Assumptions for Simulating Corn-Based Ethanol Production

8.8.a) Ethanol Yield: gallons/bushel

Dry Milling Plant	2.72
Wet Milling Plant	2.62

8.8.b) Energy Use for Ethanol Production: Btu/gallon

Dry Milling Plant	36,000
Wet Milling Plant	45,950

8.8.c) Share of Process Fuels in Corn-Based Ethanol Plants

	Coal	NG
Dry Milling Plant	20%	80%
Wet Milling Plant	40%	60%

8.9) Key Assumptions for Simulating Cellulosic Ethanol Production

8.9.a) Selection of Technologies for Biomass-Based Ethanol Plant

Farmed Trees Plant	1	
Herbaceous Biomass Plant	1	1 -- Fermentation
Corn Stover Plant	1	2 -- Gasification
Forest Residue Plant	2	

8.9.b) Ethanol Yield: Gallons per Dry Ton of Biomass

	Fermentation	Gasification
Farmed Trees Plant	90.0	87.0
Herbaceous Biomass Plant	95.0	91.5
Corn Stover Plant	95.0	91.5
Forest Residue Plant	92.8	90.4

8.9.c) Amount of Electricity Co-Produced in Cellulosic Ethanol Plants for Export: kWh per gallon of ethanol (negative values mean net export from ethanol plants)

	Fermentation	Gasification
Farmed Trees Plant	-1.145	-1.145
Herbaceous Biomass Plant	-0.572	-0.572
Corn Stover Plant	-0.572	0.000
Forest Residue Plant	-1.145	0.000

8.10) Moisture Content of Biomass When Being Transported

Farmed Trees	25%
Herbaceous Biomass	15%
Corn Stover	15%

Specify key parameters and key options for ethanol production pathways: e.g., feedstock selection, plant design options, farming energy use, fertilizer and pesticide use, etc. (some via Fuel_Prod_TS sheet)

Those Input Parameters with Time-Series Tables Must be Specified in the Fuel_Prod_TS, EF_TS, Car_LDT1_TS, and/or LDT2_TS Sheets

Time-Series Tables for Ke... l Production Options

Year 2010

Co... nd Fuel Refining from Conventional ...

The cell immediately above the green cell, which presents the mean of the distribution curve for such parameter, is used for stochastic simulations.

The cell immediately above the yellow cells, which is colored in green, has built-in probability distribution for stochastic simulations.

The cell in yellow contains the value that is interpolated from the time-series table and that represents the value of the parameter corresponding to the year targeted for simulation. The yellow cell also serves as a user input cell.

98.0%

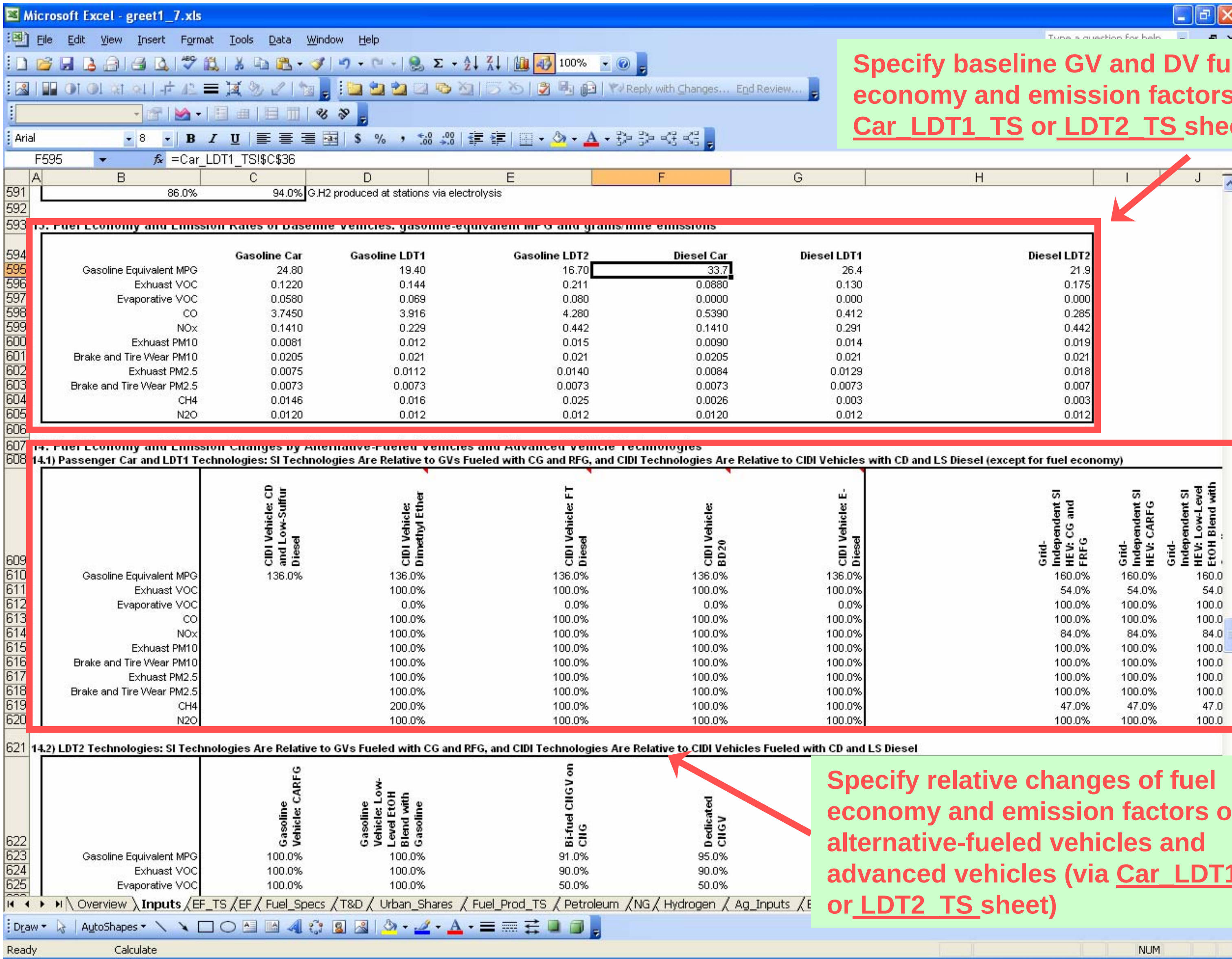
Fixed (original for 2010) 98.0%

Interpolated Default or user input 98.0%

The time-series look-up table contains GREET default values for such parameter in five-year internal from 1990 to 2020.

5-year period	Crude Recovery Efficiency	Relative Efficiency (to yr 2010)
1990	98.0%	100.0%
1995	98.0%	100.0%
2000	98.0%	100.0%
2005	98.0%	100.0%
2010	98.0%	100.0%
2015	98.0%	100.0%
2020	98.0%	100.0%

Select Key Input Parameters in the Inputs Sheet: Vehicle Fuel Economy and Emission Factors



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F595 =Car_LDT1_TS!$C$36

	B	C	D
591	86.0%	94.0%	G.H2 produced at stations via electrolysis

13. Fuel Economy and Emission Rates of Baseline Vehicles: gasoline-equivalent MPG and grams/mile emissions

	Gasoline Car	Gasoline LDT1	Gasoline LDT2	Diesel Car	Diesel LDT1	Diesel LDT2
Gasoline Equivalent MPG	24.80	19.40	16.70	33.7	26.4	21.9
Exhuast VOC	0.1220	0.144	0.211	0.0880	0.130	0.175
Evaporative VOC	0.0580	0.069	0.080	0.0000	0.000	0.000
CO	3.7450	3.916	4.280	0.5390	0.412	0.285
NOx	0.1410	0.229	0.442	0.1410	0.291	0.442
Exhaust PM10	0.0081	0.012	0.015	0.0090	0.014	0.019
Brake and Tire Wear PM10	0.0205	0.021	0.021	0.0205	0.021	0.021
Exhaust PM2.5	0.0075	0.0112	0.0140	0.0084	0.0129	0.018
Brake and Tire Wear PM2.5	0.0073	0.0073	0.0073	0.0073	0.0073	0.007
CH4	0.0146	0.016	0.025	0.0026	0.003	0.003
N2O	0.0120	0.012	0.012	0.0120	0.012	0.012

14. Fuel Economy and Emission Changes by Alternative-Fueled Vehicles and Advanced Vehicle Technologies

14.1) Passenger Car and LDT1 Technologies: SI Technologies Are Relative to GVs Fueled with CG and RFG, and CIDI Technologies Are Relative to CIDI Vehicles with CD and LS Diesel (except for fuel economy)

	CIDI Vehicle: CD and Low-Sulfur Diesel	CIDI Vehicle: Dimethyl Ether	CIDI Vehicle: FT Diesel	CIDI Vehicle: BD20	CIDI Vehicle: E-Diesel	Grid-Independent SI HEV: CG and FRFG	Grid-Independent SI HEV: CARFG	Grid-Independent SI HEV: Low-Level EtOH Blend with
Gasoline Equivalent MPG	136.0%	136.0%	136.0%	136.0%	136.0%	160.0%	160.0%	160.0
Exhuast VOC		100.0%	100.0%	100.0%	100.0%	54.0%	54.0%	54.0
Evaporative VOC		0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0
CO		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0
NOx		100.0%	100.0%	100.0%	100.0%	84.0%	84.0%	84.0
Exhaust PM10		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0
Brake and Tire Wear PM10		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0
Exhaust PM2.5		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0
Brake and Tire Wear PM2.5		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0
CH4		200.0%	100.0%	100.0%	100.0%	47.0%	47.0%	47.0
N2O		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0

14.2) LDT2 Technologies: SI Technologies Are Relative to GVs Fueled with CG and RFG, and CIDI Technologies Are Relative to CIDI Vehicles Fueled with CD and LS Diesel

	Gasoline Vehicle: CARFG	Gasoline Vehicle: Low-Level EtOH Blend with Gasoline	Bi-fuel CNGV on CNG	Dedicated CNGV
Gasoline Equivalent MPG	100.0%	100.0%	91.0%	95.0%
Exhaust VOC	100.0%	100.0%	90.0%	90.0%
Evaporative VOC	100.0%	100.0%	50.0%	50.0%

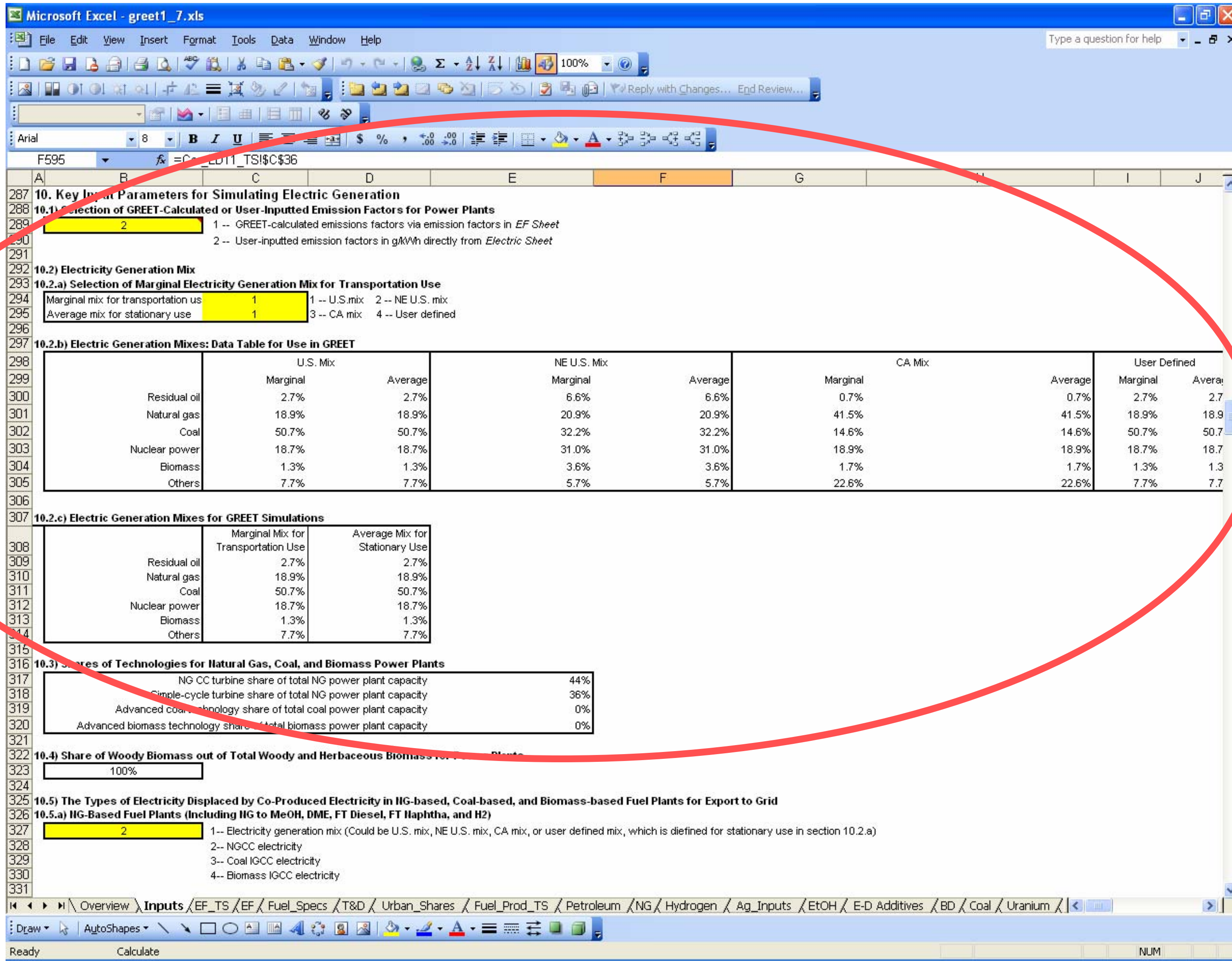
Overview | Inputs | EF_TS | EF | Fuel_Specs | T&D | Urban_Shares | Fuel_Prod_TS | Petroleum | NG | Hydrogen | Ag_Inputs

Ready Calculate NUM

Specify baseline GV and DV fuel economy and emission factors (via Car_LDT1_TS or LDT2_TS sheet)

Specify relative changes of fuel economy and emission factors of alternative-fueled vehicles and advanced vehicles (via Car_LDT1_TS or LDT2_TS sheet)

Select Key Input Parameters in the Inputs Sheet: Other Key Inputs, e.g., Electricity Generation Mix



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F595 =C[illegible]_LD11_TS!$C$36

10. Key In[illegible] Parameters for Simulating Electric Generation

10.1) [illegible]election of GREET-Calculated or User-Inputted Emission Factors for Power Plants

2 — 1 -- GREET-calculated emissions factors via emission factors in *EF Sheet*; 2 -- User-inputted emission factors in g/kWh directly from *Electric Sheet*

10.2) Electricity Generation Mix

10.2.a) Selection of Marginal Electricity Generation Mix for Transportation Use

Marginal mix for transportation us	1	1 -- U.S.mix 2 -- NE U.S. mix
Average mix for stationary use	1	3 -- CA mix 4 -- User defined

10.2.b) Electric Generation Mixes: Data Table for Use in GREET

	U.S. Mix		NE U.S. Mix		CA Mix		User Defined	
	Marginal	Average	Marginal	Average	Marginal	Average	Marginal	Avera
Residual oil	2.7%	2.7%	6.6%	6.6%	0.7%	0.7%	2.7%	2.7
Natural gas	18.9%	18.9%	20.9%	20.9%	41.5%	41.5%	18.9%	18.9
Coal	50.7%	50.7%	32.2%	32.2%	14.6%	14.6%	50.7%	50.7
Nuclear power	18.7%	18.7%	31.0%	31.0%	18.9%	18.9%	18.7%	18.7
Biomass	1.3%	1.3%	3.6%	3.6%	1.7%	1.7%	1.3%	1.3
Others	7.7%	7.7%	5.7%	5.7%	22.6%	22.6%	7.7%	7.7

10.2.c) Electric Generation Mixes for GREET Simulations

	Marginal Mix for Transportation Use	Average Mix for Stationary Use
Residual oil	2.7%	2.7%
Natural gas	18.9%	18.9%
Coal	50.7%	50.7%
Nuclear power	18.7%	18.7%
Biomass	1.3%	1.3%
Others	7.7%	7.7%

10.3) [illegible]res of Technologies for Natural Gas, Coal, and Biomass Power Plants

NG CC turbine share of total NG power plant capacity	44%
[illegible]imple-cycle turbine share of total NG power plant capacity	36%
Advanced coa[illegible]hnology share of total coal power plant capacity	0%
Advanced biomass technology sha[illegible]tal biomass power plant capacity	0%

10.4) Share of Woody Biomass out of Total Woody and Herbaceous Bioma[illegible] Plants

100%

10.5) The Types of Electricity Displaced by Co-Produced Electricity in NG-based, Coal-based, and Biomass-based Fuel Plants for Export to Grid

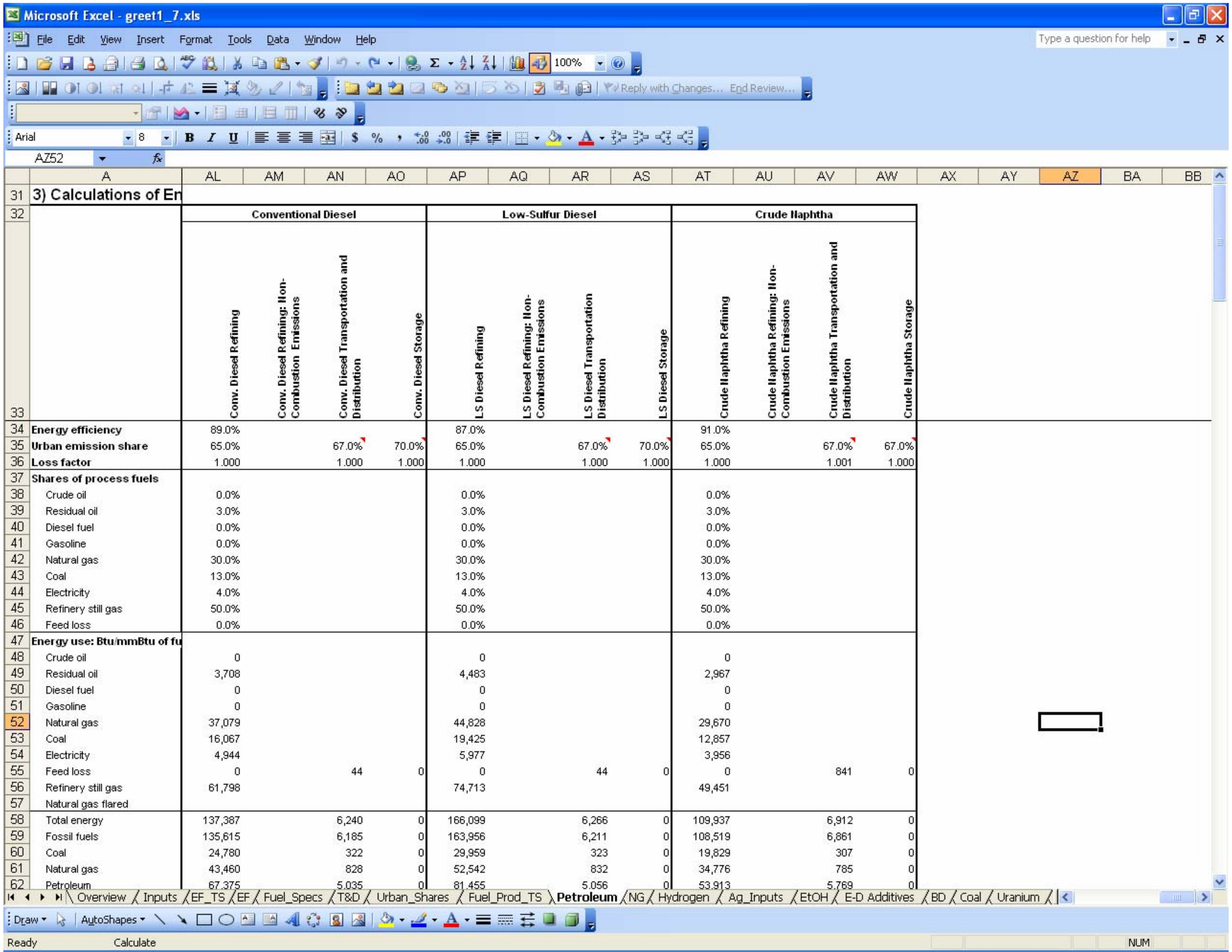
10.5.a) NG-Based Fuel Plants (Including NG to MeOH, DME, FT Diesel, FT Naphtha, and H2)

2 — 1-- Electricity generation mix (Could be U.S. mix, NE U.S. mix, CA mix, or user defined mix, which is diefined for stationary use in section 10.2.a); 2-- NGCC electricity; 3-- Coal IGCC electricity; 4-- Biomass IGCC electricity

Overview | Inputs | EF_TS | EF | Fuel_Specs | T&D | Urban_Shares | Fuel_Prod_TS | Petroleum | NG | Hydrogen | Ag_Inputs | EtOH | E-D Additives | BD | Coal | Uranium

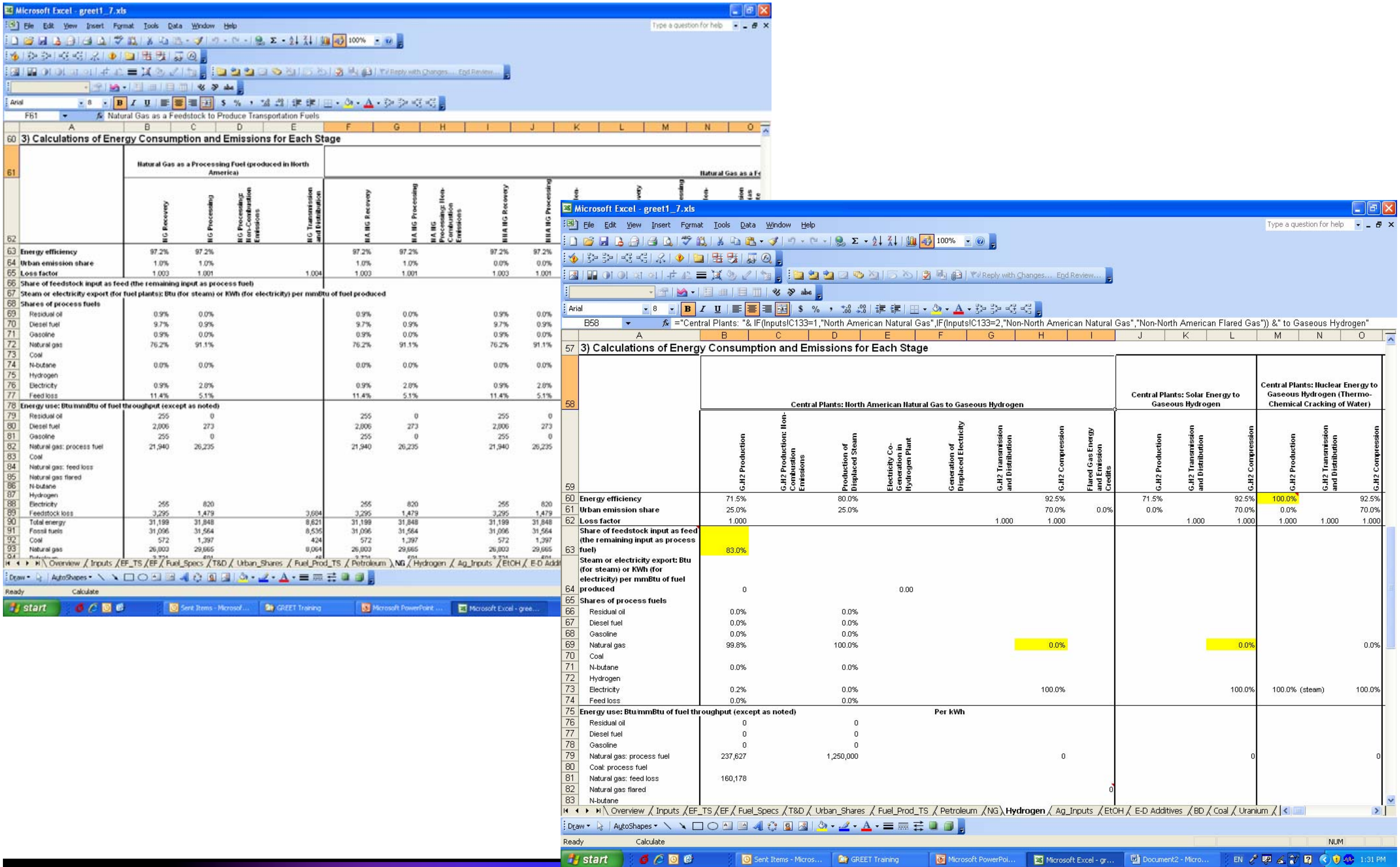
Ready Calculate NUM

The User May Further Refine Simulations via Specific Processing Sheets: 1) the Petroleum Sheet (Demo 1)

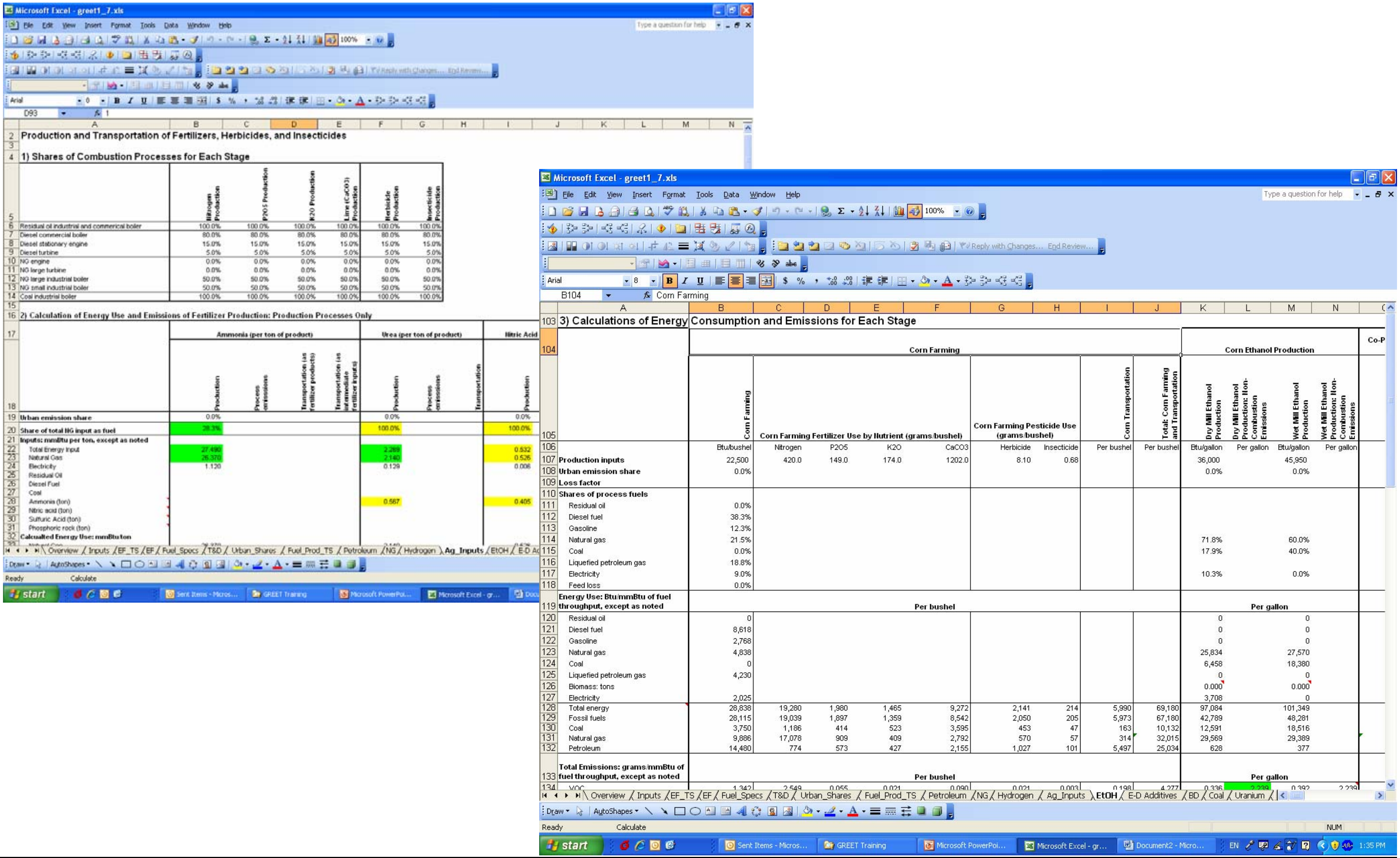


	A	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW
31	3) Calculations of En												
32		Conventional Diesel				Low-Sulfur Diesel				Crude Naphtha			
33		Conv. Diesel Refining	Conv. Diesel Refining: Non-Combustion Emissions	Conv. Diesel Transportation and Distribution	Conv. Diesel Storage	LS Diesel Refining	LS Diesel Refining: Non-Combustion Emissions	LS Diesel Transportation Distribution	LS Diesel Storage	Crude Naphtha Refining	Crude Naphtha Refining: Non-Combustion Emissions	Crude Naphtha Transportation and Distribution	Crude Naphtha Storage
34	**Energy efficiency**	89.0%				87.0%				91.0%			
35	**Urban emission share**	65.0%		67.0%	70.0%	65.0%		67.0%	70.0%	65.0%		67.0%	67.0%
36	**Loss factor**	1.000		1.000	1.000	1.000		1.000	1.000	1.000		1.001	1.000
37	**Shares of process fuels**												
38	Crude oil	0.0%				0.0%				0.0%			
39	Residual oil	3.0%				3.0%				3.0%			
40	Diesel fuel	0.0%				0.0%				0.0%			
41	Gasoline	0.0%				0.0%				0.0%			
42	Natural gas	30.0%				30.0%				30.0%			
43	Coal	13.0%				13.0%				13.0%			
44	Electricity	4.0%				4.0%				4.0%			
45	Refinery still gas	50.0%				50.0%				50.0%			
46	Feed loss	0.0%				0.0%				0.0%			
47	**Energy use: Btu/mmBtu of fu**												
48	Crude oil	0				0				0			
49	Residual oil	3,708				4,483				2,967			
50	Diesel fuel	0				0				0			
51	Gasoline	0				0				0			
52	Natural gas	37,079				44,828				29,670			
53	Coal	16,067				19,425				12,857			
54	Electricity	4,944				5,977				3,956			
55	Feed loss	0		44	0	0		44	0	0		841	0
56	Refinery still gas	61,798				74,713				49,451			
57	Natural gas flared												
58	Total energy	137,387		6,240	0	166,099		6,266	0	109,937		6,912	0
59	Fossil fuels	135,615		6,185	0	163,956		6,211	0	108,519		6,861	0
60	Coal	24,780		322	0	29,959		323	0	19,829		307	0
61	Natural gas	43,460		828	0	52,542		832	0	34,776		785	0
62	Petroleum	67,375		5,035	0	81,455		5,056	0	53,913		5,769	0

The User May Further Refine Simulations via Specific Processing Sheets: 2) the NG and Hydrogen Sheets (Demo 2)



The User May Further Refine Simulations via Specific Processing Sheets: 3) the EtOH and Ag_Inputs Sheets (Demo 3)



The User May Further Refine Simulations via Specific Processing Sheets: 4) the T&D Sheet

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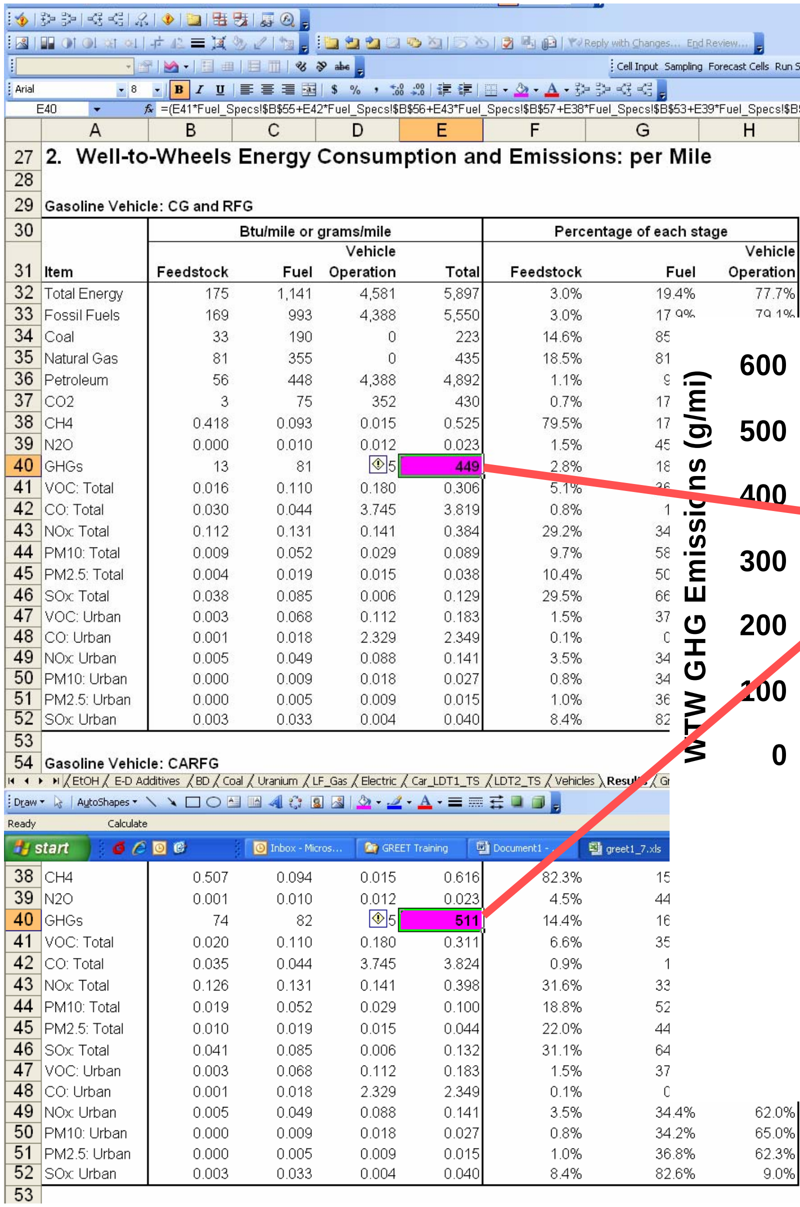
	A	B	C	D	E	F	G	H	I	J	K
81	9) Energy Consumption and Emissions of Feedstock and Fuel Transportation										
82	**Feedstock/Fuel**	**Crude Oil for Use in U.S. Refineries**					**Crude Oil for Use in California Refineries**				
83	**Transportation Mode**	**Ocean Tanker**	**Barge**	**Pipeline**	**Rail**	**Truck**	**Ocean Tanker**	**Barge**	**Pipeline**	**Rail**	**Truck**
84	Urban Emission Share	5.0%	7.0%	5.0%	5.0%	44.0%	7.0%	5.0%	7.0%	5.0%	54.0%
85	Distance (Miles, one-way)	5,080	500	750	800	30	3,900	200	150	200	30
86	Share of Fuel Type Used:										
87	Diesel	0%	0%	20%	100%	100%	0%	0%	20%	100%	100%
88	Residual Oil	100%	100%	50%			100%	100%	50%		
89	Natural Gas			24%					24%		
90	LPG										
91	DME										
92	FTD										
93	Methanol										
94	Ethanol										
95	Biodiesel										
96	Hydrogen										
97	Electricity			6%	0%				6%	0%	
98	Energy Intensity: Btu/ton-mile										
99	Origin to Destination	22	403	253	370	1,028	22	403	253	370	1,028
100	Back-Haul	20	307			1,028	20	307			1,028
101	Energy Consumption: Btu/mmBtu of fuel transported										
102	Total energy	6,299	10,613	6,192	9,523	1,984	4,836	4,245	1,238	2,381	1,984
103	Fossil energy	6,286	10,592	6,079	9,497	1,978	4,826	4,237	1,216	2,374	1,978
104	Coal	97	163	584	260	54	74	65	117	65	54
105	Natural gas	200	337	1,643	499	104	154	135	329	125	104
106	Petroleum	5,989	10,092	3,852	8,739	1,820	4,598	4,037	770	2,185	1,820
107	Total Emissions: grams/mmBtu fuel transported										
108	VOC	0.572	0.453	0.216	0.657	0.063	0.439	0.181	0.043	0.164	0.063
109	CO	2.528	1.239	1.091	1.824	0.279	1.941	0.495	0.218	0.456	0.279
110	NOx	14.452	10.490	4.655	12.563	0.827	11.095	4.196	0.931	3.141	0.827
111	PM10	0.446	0.293	0.185	0.348	0.026	0.342	0.117	0.037	0.087	0.026
112	PM2.5	0.326	0.143	0.095	0.282	0.017	0.250	0.057	0.019	0.071	0.017
113	SOx	4.125	2.727	0.932	0.149	0.048	3.167	1.091	0.186	0.037	0.048
114	CH4	0.578	0.949	0.892	0.862	0.175	0.444	0.379	0.178	0.215	0.175
115	N2O	0.012	0.021	0.011	0.018	0.004	0.009	0.008	0.002	0.005	0.004
116	CO2	530	900	482	742	155	407	360	96	186	155
117	Urban Emissions: grams/mmBtu of fuel transported										
118	VOC	0.038	0.047	0.018	0.054	0.027	0.038	0.016	0.004	0.013	0.032
119	CO	0.135	0.099	0.064	0.116	0.119	0.141	0.030	0.017	0.029	0.145
120	NOx	0.738	0.753	0.255	0.683	0.348	0.785	0.220	0.069	0.171	0.423
121	PM10	0.023	0.022	0.006	0.020	0.007	0.024	0.007	0.002	0.005	0.009

Overview / Inputs / EF_TS / EF / Fuel_Specs / **T&D** / Urban_Shares / Fuel_Prod_TS / Petroleum / NG / Hydrogen / Ag_Inputs / EtOH / E-D Additives / BD / Coal / Uranium

Ready Calculate NUM

The *Results* *Sheet Summarizes the WTP and WTW Results*



2. Well-to-Wheels Energy Consumption and Emissions: per Mile

Gasoline Vehicle: CG and RFG

Item	Btu/mile or grams/mile Feedstock	Fuel	Vehicle Operation	Total	Percentage of each stage Feedstock	Fuel	Vehicle Operation
Total Energy	175	1,141	4,581	5,897	3.0%	19.4%	77.7%
Fossil Fuels	169	993	4,388	5,550	3.0%	17.9%	79.1%
Coal	33	190	0	223	14.6%	85	
Natural Gas	81	355	0	435	18.5%	81	
Petroleum	56	448	4,388	4,892	1.1%	9	
CO2	3	75	352	430	0.7%	17	
CH4	0.418	0.093	0.015	0.525	79.5%	17	
N2O	0.000	0.010	0.012	0.023	1.5%	45	
GHGs	13	81	5	449	2.8%	18	
VOC: Total	0.016	0.110	0.180	0.306	5.1%		
CO: Total	0.030	0.044	3.745	3.819	0.8%	1	
NOx: Total	0.112	0.131	0.141	0.384	29.2%	34	
PM10: Total	0.009	0.052	0.029	0.089	9.7%	58	
PM2.5: Total	0.004	0.019	0.015	0.038	10.4%	50	
SOx: Total	0.038	0.085	0.006	0.129	29.5%	66	
VOC: Urban	0.003	0.068	0.112	0.183	1.5%	37	
CO: Urban	0.001	0.018	2.329	2.349	0.1%	0	
NOx: Urban	0.005	0.049	0.088	0.141	3.5%	34	
PM10: Urban	0.000	0.009	0.018	0.027	0.8%	34	
PM2.5: Urban	0.000	0.005	0.009	0.015	1.0%	36	
SOx: Urban	0.003	0.033	0.004	0.040	8.4%	82	

Gasoline Vehicle: CARFG

Item	Feedstock	Fuel	Vehicle Operation	Total	Feedstock	Fuel	Vehicle Operation
CH4	0.507	0.094	0.015	0.616	82.3%	15	
N2O	0.001	0.010	0.012	0.023	4.5%	44	
GHGs	74	82	5	511	14.4%	16	
VOC: Total	0.020	0.110	0.180	0.311	6.6%	35	
CO: Total	0.035	0.044	3.745	3.824	0.9%	1	
NOx: Total	0.126	0.131	0.141	0.398	31.6%	33	
PM10: Total	0.019	0.052	0.029	0.100	18.8%	52	
PM2.5: Total	0.010	0.019	0.015	0.044	22.0%	44	
SOx: Total	0.041	0.085	0.006	0.132	31.1%	64	
VOC: Urban	0.003	0.068	0.112	0.183	1.5%	37	
CO: Urban	0.001	0.018	2.329	2.349	0.1%	0	
NOx: Urban	0.005	0.049	0.088	0.141	3.5%	34.4%	62.0%
PM10: Urban	0.000	0.009	0.018	0.027	0.8%	34.2%	65.0%
PM2.5: Urban	0.000	0.005	0.009	0.015	1.0%	36.8%	62.3%
SOx: Urban	0.003	0.033	0.004	0.040	8.4%	82.6%	9.0%