

## Assessment of U.S. Cap-and-Trade Proposals

MIT Joint Program on the Science and Policy of Global Change Report 146  
(Paltsev *et al.*, 2007)

### APPENDIX C: Details of Simulation Results

This document is an appendix to *Report 146* of the MIT Joint Program. The full report is available as a separate file at [http://mit.edu/globalchange/www/MITJPSPGC\\_Rpt146.pdf](http://mit.edu/globalchange/www/MITJPSPGC_Rpt146.pdf).

**The Excel tables for this appendix are available as a separate file at [http://mit.edu/globalchange/www/MITJPSPGC\\_Rpt146\\_AppendixC.xls](http://mit.edu/globalchange/www/MITJPSPGC_Rpt146_AppendixC.xls).**

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<i>Reference Case (Ref)</i>										
	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>	<i>2045</i>	<i>2050</i>
<b><i>ECONOMY WIDE INDICATORS</i></b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16921	19773	22846	26459	30534	34929	39530	44210
<i>% Change GDP from Reference</i>	--	--	--	--	--	--	--	--	--	--
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11533	13384	15364	17761	20467	23392	26456	29567
<i>% Change Consumption from Reference</i>	--	--	--	--	--	--	--	--	--	--
<i>Welfare (billion 2005\$)</i>	9656	11773	13933	16342	18948	22016	25414	29032	32780	36553
<i>% Change Welfare from Reference(EV)</i>	--	--	--	--	--	--	--	--	--	--
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b><i>PRICES (index, 2005=1.00)</i></b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.48	1.69	1.87	1.97	2.09	2.19	2.25
<i>Natural Gas</i>	1.00	1.11	1.27	1.48	1.66	1.95	2.31	2.73	3.12	3.55
<i>Coal</i>	1.00	1.04	1.07	1.09	1.13	1.16	1.20	1.24	1.28	1.32
<i>Electricity</i>	1.00	1.11	1.19	1.27	1.35	1.38	1.42	1.42	1.42	1.41
<b><i>TRADE &amp; PRODUCTION (selected indicators)</i></b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	93.97	102.60	110.94	126.11	149.39	170.99	159.14	144.83
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	20.40	19.29	14.24	12.35	11.48	10.92	11.61	14.99
<b><i>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</i></b>										
<i>GHG Emissions</i>	7091.9	7680.1	8201.5	8595.6	9219.3	9884.8	10711.0	11507.3	12433.3	13283.3
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6995.2	7357.3	7915.4	8518.8	9283.0	10012.9	10871.0	11655.9
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	611.6	617.1	630.5	643.1	652.2	663.6	676.5	683.1
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	381.3	372.4	366.5	365.6	372.8	380.8	391.0	407.3
<i>Fluorinated Gases Emissions</i>	140.0	173.8	214.4	250.0	308.1	358.5	404.3	451.3	496.2	538.5
<b><i>PRIMARY ENERGY USE (EJ)</i></b>										
<i>Coal</i>	22.6	24.3	25.8	26.6	30.9	35.0	39.9	44.8	49.6	53.3
<i>Total Petroleum Products</i>	42.0	46.0	49.6	52.6	55.2	58.8	63.9	68.8	73.6	78.5
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	19.6
<i>Natural Gas</i>	22.5	24.7	26.8	28.9	28.4	28.3	27.7	26.8	25.8	25.1
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.8	8.7	8.6	8.5	8.4	8.4	8.3	8.3
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.8	2.8	2.8	2.9	2.9	3.0	3.1	3.2
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.2	1.1	1.4	1.5	1.6
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Total Primary Energy Use</i>	99.8	107.6	114.6	120.5	126.8	134.6	143.9	153.1	161.9	170.0
<i>Reduced Use from Reference</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b><i>ELECTRICITY PRODUCTION (EJ)</i></b>										
<i>Coal w/o CCS</i>	6.9	7.6	8.3	8.6	10.2	11.7	13.4	15.2	17.0	18.5
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6
<i>Gas w/o CCS</i>	2.1	2.5	3.1	3.9	3.3	3.1	2.9	2.7	2.4	2.3
<i>Nuclear</i>	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Total Electricity Production</i>	13.4	14.6	15.9	17.1	18.2	19.7	21.3	23.1	24.7	26.2

<b>Core Scenario: 287 bmt (287 bmt)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16884	19698	22720	26280	30433	34828	39388	44086
% Change GDP from Reference	0.00	0.00	-0.22	-0.38	-0.55	-0.68	-0.33	-0.29	-0.36	-0.28
Market Consumption (billion 2005\$)	8217	9858	11522	13349	15286	17646	20390	23322	26346	29470
% Change Consumption from Reference	0.00	0.00	-0.09	-0.26	-0.51	-0.65	-0.37	-0.30	-0.42	-0.33
Welfare (billion 2005\$)	9656	11773	13934	16320	18880	21917	25367	28999	32701	36488
% Change Welfare from Reference (EV)	0.00	0.00	0.01	-0.13	-0.36	-0.45	-0.19	-0.12	-0.24	-0.18
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	17.72	21.56	26.23	31.92	38.83	47.25	57.48	69.94
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.46	1.57	1.66	1.37	1.43	1.47	1.49
Natural Gas	1.00	1.11	1.22	1.47	1.94	2.40	2.53	2.81	2.82	2.80
Coal	1.00	1.04	1.04	1.03	1.01	1.00	1.03	1.06	1.12	1.16
Electricity	1.00	1.11	1.34	1.44	1.52	1.66	1.74	1.79	1.69	1.58
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	1.05	0.93	0.00	0.00	1.12	1.05
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	85.00	92.53	105.64	122.50	170.46	188.75	203.50	218.94
Net Agriculture Exports (billion 2005\$)	25.64	25.53	15.70	13.94	10.38	10.26	25.83	23.71	28.26	40.58
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6962.3	6897.1	6715.0	6866.1	7867.0	8216.8	7738.8	7804.9
CO <sub>2</sub> Emissions	5984.3	6517.4	6328.1	6287.4	6132.4	6289.6	7265.2	7605.2	7125.6	7174.9
CH <sub>4</sub> Emissions	583.4	602.0	374.6	365.0	342.9	338.1	353.1	360.4	359.0	368.8
N <sub>2</sub> O Emissions	385.2	387.9	252.3	236.7	230.4	228.3	238.8	241.3	244.6	252.0
Fluorinated Gases Emissions	140.0	173.8	7.9	8.6	9.9	10.5	10.5	10.4	10.2	9.8
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	21.5	17.7	11.6	10.8	17.2	22.7	30.9	39.6
Petroleum Products	42.0	46.0	46.3	48.7	51.4	55.0	64.3	68.7	71.7	74.8
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	25.7	29.6	35.0	35.5	31.6	29.1	24.4	21.5
Nuclear (primary energy eq)	9.3	9.0	8.7	8.5	8.5	8.2	7.5	7.5	7.2	7.2
Hydro (primary energy eq)	2.9	2.8	2.9	2.9	3.0	3.0	2.8	2.9	2.9	2.9
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.2	1.0	1.4	1.4	1.4
Biomass Liquids	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Total Primary Energy Use	99.8	107.6	106.0	108.4	110.5	113.9	124.4	132.3	138.7	147.6
Reduced Use from Reference	0.0	0.0	8.6	12.0	16.3	20.7	19.6	20.9	23.2	22.3
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	7.2	5.8	3.7	3.4	6.0	6.9	4.2	3.9
Oil w/o CCS	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.3	0.2	0.2
Gas w/o CCS	2.1	2.5	3.3	5.4	8.7	9.5	7.6	6.3	4.0	2.2
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.6	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.1	0.1	0.3	0.7	2.1	9.1	13.3
Total Electricity Production	13.4	14.6	15.1	16.1	17.1	18.0	19.2	20.5	22.4	24.5

<b>Core Scenario: 203 bmt (203 bmt)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16836	19616	22691	26310	30173	34579	39289	43998
% Change GDP from Reference	0.00	0.00	-0.51	-0.79	-0.67	-0.56	-1.18	-1.00	-0.61	-0.48
Market Consumption (billion 2005\$)	8217	9858	11502	13302	15208	17494	20220	23076	26000	29007
% Change Consumption from Reference	0.00	0.00	-0.26	-0.62	-1.01	-1.50	-1.20	-1.35	-1.73	-1.90
Welfare (billion 2005\$)	9656	11773	13928	16289	18818	21777	25218	28766	32359	36023
% Change Welfare from Reference(EV)	0.00	0.00	-0.04	-0.32	-0.69	-1.08	-0.77	-0.92	-1.28	-1.45
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	40.92	49.79	60.58	73.70	89.67	109.10	132.74	161.49
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.45	1.52	1.55	1.34	1.36	1.30	1.23
Natural Gas	1.00	1.11	1.15	1.40	1.79	2.14	2.13	2.16	2.17	2.02
Coal	1.00	1.04	1.02	1.01	0.99	0.98	1.02	1.08	1.12	1.15
Electricity	1.00	1.11	1.51	1.65	1.60	1.75	1.77	1.61	1.60	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Net Bio Liquids Imports (EJ)	0.0	0.0	0.4	1.0	7.6	17.8	0.0	5.9	23.6	33.5
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	1.91	5.40	40.37	95.09	0.13	31.33	126.31	178.84
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	74.40	77.25	66.79	45.24	141.79	135.83	87.70	65.88
Net Agriculture Exports (billion 2005\$)	25.64	25.53	10.22	7.55	6.86	9.55	16.90	19.55	29.84	41.08
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6332.8	6004.0	5453.6	4614.5	5699.5	5288.2	4141.4	3515.2
CO <sub>2</sub> Emissions	5984.3	6517.4	5739.5	5443.3	4914.2	4085.0	5168.5	4750.3	3587.7	2945.2
CH <sub>4</sub> Emissions	583.4	602.0	347.6	331.3	314.4	306.8	304.9	309.8	319.4	327.8
N <sub>2</sub> O Emissions	385.2	387.9	239.4	222.4	216.9	214.2	217.6	219.8	225.9	233.8
Fluorinated Gases Emissions	140.0	173.8	6.9	7.5	8.5	9.0	8.9	8.8	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	19.0	13.7	9.6	10.5	18.9	28.8	35.3	41.7
Petroleum Products	42.0	46.0	42.6	43.5	39.0	31.2	54.6	51.6	36.2	28.5
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	24.0	28.3	33.1	34.4	28.8	25.7	22.4	19.2
Nuclear (primary energy eq)	9.3	9.0	8.8	8.8	8.6	8.7	8.7	8.6	8.6	8.6
Hydro (primary energy eq)	2.9	2.8	3.1	3.1	3.1	3.2	3.3	3.3	3.4	3.5
Renewable Elec. (primary energy eq)	0.6	0.7	0.9	1.1	0.9	1.3	1.2	1.5	1.6	1.7
Biomass Liquids	0.0	0.0	0.4	1.0	7.6	17.8	0.0	5.9	23.6	33.9
Total Primary Energy Use	99.8	107.6	98.7	99.5	101.9	107.1	115.5	125.3	131.1	137.1
Reduced Use from Reference	0.0	0.0	15.8	20.9	24.9	27.5	28.4	27.8	30.8	32.9
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	6.3	4.3	2.6	1.4	0.4	0.0	0.0	0.0
Oil w/o CCS	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Gas w/o CCS	2.1	2.5	3.2	5.4	8.4	8.9	5.9	4.2	2.6	1.0
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
Other Renewables	0.2	0.2	0.1	0.6	0.3	0.5	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.2	0.1	0.4	0.8	0.5	0.3	0.2
Coal with CCS	0.0	0.0	0.0	0.2	0.6	1.7	6.8	11.4	14.5	17.6
Total Electricity Production	13.4	14.6	14.1	15.3	16.4	17.3	18.6	20.9	22.4	23.7

<b>Core Scenario: 167 bmt (167 bmt)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16807	19624	22755	26364	30298	34663	39196	43807
% Change GDP from Reference	0.00	0.00	-0.67	-0.75	-0.40	-0.36	-0.77	-0.76	-0.85	-0.91
Market Consumption (billion 2005\$)	8217	9858	11491	13262	15142	17414	20050	22829	25803	28872
% Change Consumption from Reference	0.00	0.00	-0.36	-0.92	-1.44	-1.95	-2.04	-2.41	-2.47	-2.35
Welfare (billion 2005\$)	9656	11773	13923	16252	18750	21693	25031	28498	32158	35897
% Change Welfare from Reference (EV)	0.00	0.00	-0.07	-0.55	-1.05	-1.47	-1.51	-1.84	-1.90	-1.79
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	53.17	64.69	78.70	95.76	116.50	141.74	172.45	209.81
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.42	1.45	1.49	1.23	1.23	1.22	1.20
Natural Gas	1.00	1.11	1.13	1.36	1.68	1.95	1.89	1.87	1.86	1.73
Coal	1.00	1.04	1.01	1.00	0.99	0.99	1.04	1.09	1.12	1.15
Electricity	1.00	1.11	1.60	1.73	1.64	1.78	1.72	1.62	1.61	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Net Bio Liquids Imports (EJ)	0.0	0.0	0.3	6.5	18.5	28.8	23.2	31.3	34.1	34.7
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	1.83	34.73	98.96	153.81	123.75	167.51	182.42	185.66
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	70.27	54.09	24.28	1.91	53.62	38.81	43.07	52.92
Net Agriculture Exports (billion 2005\$)	25.64	25.53	7.47	6.72	8.16	9.78	23.34	25.85	29.02	32.38
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6099.0	5359.1	4515.2	3687.3	3890.8	3203.6	3127.7	3140.8
CO <sub>2</sub> Emissions	5984.3	6517.4	5521.6	4814.9	3983.3	3161.2	3363.9	2675.4	2586.5	2587.5
CH <sub>4</sub> Emissions	583.4	602.0	336.9	319.8	310.7	306.5	304.1	302.9	309.9	314.8
N <sub>2</sub> O Emissions	385.2	387.9	234.4	217.8	213.5	211.5	214.6	216.9	222.9	230.1
Fluorinated Gases Emissions	140.0	173.8	6.6	7.1	8.1	8.6	8.7	8.8	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	18.1	12.7	10.4	10.6	19.5	28.3	34.3	39.9
Petroleum Products	42.0	46.0	41.1	36.2	26.0	18.3	28.3	23.1	23.3	24.8
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	23.2	27.6	31.2	30.7	25.7	22.3	19.2	16.4
Nuclear (primary energy eq)	9.3	9.0	8.9	8.9	8.5	8.3	7.8	7.8	7.8	7.8
Hydro (primary energy eq)	2.9	2.8	3.2	3.2	3.1	3.1	2.9	2.9	3.0	3.1
Renewable Elec. (primary energy eq)	0.6	0.7	0.9	1.1	0.9	1.2	1.0	1.3	1.4	1.5
Biomass Liquids	0.0	0.0	0.3	6.5	18.5	28.8	23.2	31.3	34.1	35.5
Total Primary Energy Use	99.8	107.6	95.7	96.2	98.6	101.0	108.4	117.0	123.1	129.1
Reduced Use from Reference	-99.2	-106.8	-94.9	-95.2	-97.7	-99.8	-107.3	-115.6	-121.6	-127.5
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	6.0	4.0	3.0	2.2	1.0	0.0	0.0	0.0
Oil w/o CCS	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Gas w/o CCS	2.1	2.5	3.1	5.4	7.3	6.6	4.5	2.9	1.6	0.4
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.3	0.5	1.5	1.1	0.8	0.6	0.4
Coal with CCS	0.0	0.0	0.0	0.3	0.6	1.8	7.3	12.1	15.0	17.7
Total Electricity Production	13.4	14.6	13.9	14.7	16.2	16.9	18.7	20.6	22.1	23.5

<b>No Banking: 287 bmt (287 bmt NB)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16908	19737	22778	26329	30383	34678	39194	43948
<i>% Change GDP from Reference</i>	0.00	0.00	-0.08	-0.18	-0.30	-0.49	-0.49	-0.72	-0.85	-0.59
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11529	13368	15320	17680	20376	23249	26264	29366
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.03	-0.12	-0.28	-0.45	-0.44	-0.61	-0.73	-0.68
<i>Welfare (billion 2005\$)</i>	9656	11773	13934	16332	18907	21948	25357	28944	32653	36385
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	0.01	-0.06	-0.22	-0.31	-0.23	-0.30	-0.39	-0.46
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	6.28	10.46	12.09	26.23	53.10	77.31	92.69	76.67
<b>PRICES (index, 2005=1.00)</b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.47	1.58	1.66	1.36	1.41	1.45	1.49
<i>Natural Gas</i>	1.00	1.11	1.25	1.49	1.90	2.28	2.82	3.19	3.33	3.18
<i>Coal</i>	1.00	1.04	1.05	1.05	1.04	1.03	1.00	1.01	1.04	1.14
<i>Electricity</i>	1.00	1.11	1.25	1.35	1.46	1.61	1.85	2.01	2.09	1.58
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	0.00	1.09	1.25	1.32	0.72
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	90.63	98.33	113.74	127.01	163.60	173.44	185.80	213.10
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	18.71	16.87	13.82	12.45	22.18	15.81	15.27	36.03
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
<i>GHG Emissions</i>	7091.9	7680.1	7382.5	7381.8	7381.3	7380.5	7378.2	7376.4	7373.6	7369.3
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6710.4	6739.9	6758.6	6782.5	6804.1	6806.2	6792.9	6762.2
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	399.7	386.6	370.8	354.2	331.8	330.8	338.1	350.7
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	263.7	246.1	241.2	233.4	232.9	230.5	233.8	247.4
<i>Fluorinated Gases Emissions</i>	140.0	173.8	9.3	9.7	11.4	10.9	9.9	9.4	9.2	9.6
<b>PRIMARY ENERGY USE (EJ)</b>										
<i>Coal</i>	22.6	24.3	23.8	20.8	16.6	15.4	12.2	13.8	18.8	34.4
<i>Petroleum Products</i>	42.0	46.0	48.3	50.7	54.2	56.5	61.7	63.1	65.5	72.8
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	26.5	29.9	33.8	33.9	34.5	31.8	27.7	23.2
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.7	8.6	8.5	8.2	7.9	7.4	7.0	6.8
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.8	2.9	2.9	3.0	3.0	3.0	2.9	2.7
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.2	1.1	1.4	1.5	1.3
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1
<i>Total Primary Energy Use</i>	99.8	107.6	111.0	113.7	116.9	118.2	120.6	120.7	123.7	141.4
<i>Reduced Use from Reference</i>	0.0	0.0	3.6	6.7	9.9	16.4	23.3	32.5	38.2	28.5
<b>ELECTRICITY PRODUCTION (EJ)</b>										
<i>Coal w/o CCS</i>	6.9	7.6	7.8	6.9	5.4	5.1	4.0	4.5	4.8	2.6
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1
<i>Gas w/o CCS</i>	2.1	2.5	3.2	5.0	7.5	8.2	9.4	8.5	6.6	3.8
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.1
<i>Hydro</i>	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.3	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.3	0.3	0.5	0.4	0.6	0.7	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1
<i>Coal with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	3.1	12.5
<i>Total Electricity Production</i>	13.4	14.6	15.6	16.6	17.6	18.3	18.7	19.3	20.0	24.1

<b>No Banking: 203 bmt (203 bmt NB)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16900	19684	22694	26282	30283	34685	39309	43759
<i>% Change GDP from Reference</i>	0.00	0.00	-0.12	-0.45	-0.66	-0.67	-0.82	-0.70	-0.56	-1.02
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11527	13345	15256	17563	20178	22983	25922	28898
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.05	-0.29	-0.70	-1.11	-1.41	-1.75	-2.02	-2.26
<i>Welfare (billion 2005\$)</i>	9656	11773	13934	16321	18866	21849	25177	28662	32275	35941
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	0.01	-0.13	-0.43	-0.76	-0.93	-1.28	-1.54	-1.68
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	10.05	30.35	53.25	64.50	107.92	121.49	139.59	261.76
<b>PRICES (index, 2005=1.00)</b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.46	1.55	1.60	1.28	1.28	1.26	1.19
<i>Natural Gas</i>	1.00	1.11	1.24	1.44	1.82	2.23	2.14	2.16	2.18	1.79
<i>Coal</i>	1.00	1.04	1.05	1.03	1.00	0.99	1.01	1.08	1.12	1.14
<i>Electricity</i>	1.00	1.11	1.28	1.51	1.58	1.73	1.89	1.61	1.60	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.3	3.0	9.8	12.9	20.4	30.6	33.5
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	1.58	15.85	52.27	68.87	108.88	163.66	179.03
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	88.69	88.18	86.02	76.79	94.15	83.14	61.20	48.68
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	17.69	12.12	6.79	8.19	19.80	24.16	31.76	21.74
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
<i>GHG Emissions</i>	7091.9	7680.1	7226.4	6629.1	6032.4	5434.4	4835.7	4236.2	3636.4	3042.8
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6570.4	6035.7	5481.7	4896.0	4309.8	3702.1	3085.7	2504.2
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	389.0	353.5	322.0	312.6	301.7	306.7	316.9	302.8
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	259.0	232.4	220.4	217.1	216.1	219.0	225.4	227.4
<i>Fluorinated Gases Emissions</i>	140.0	173.8	8.6	8.1	8.7	9.2	8.7	8.8	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
<i>Coal</i>	22.6	24.3	22.9	17.0	11.1	12.7	18.9	30.8	37.0	43.2
<i>Petroleum Products</i>	42.0	46.0	47.6	47.2	44.9	40.8	40.2	36.0	28.6	23.5
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	26.2	29.0	33.3	35.2	29.4	26.0	22.9	17.6
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.7	8.7	8.7	8.7	8.8	8.7	8.7	8.7
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.9	3.0	3.1	3.2	3.4	3.3	3.4	3.5
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.3	1.2	1.5	1.6	1.7
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.3	3.0	9.8	12.9	20.4	30.6	35.8
<i>Total Primary Energy Use</i>	99.8	107.6	109.1	106.2	105.0	111.8	114.8	126.6	132.8	134.1
<i>Reduced Use from Reference</i>	0.0	0.0	5.4	14.3	21.8	22.8	29.2	26.5	29.2	35.9
<b>ELECTRICITY PRODUCTION (EJ)</b>										
<i>Coal w/o CCS</i>	6.9	7.6	7.5	5.5	3.2	1.8	0.8	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.2	5.1	8.3	9.2	6.7	4.7	3.1	1.3
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.2	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.3
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.2	0.1	0.1	0.3	0.2	0.1	0.1
<i>Coal with CCS</i>	0.0	0.0	0.0	0.2	0.5	1.4	5.6	11.1	14.2	17.1
<i>Total Electricity Production</i>	13.4	14.6	15.4	15.8	16.7	17.4	18.1	20.8	22.3	23.5



<i>No Banking: 167 bmt (167 bmt NB)</i>										
	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>	<i>2045</i>	<i>2050</i>
<b><i>ECONOMY WIDE INDICATORS</i></b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16887	19638	22733	26341	30354	34556	38339	40234
<i>% Change GDP from Reference</i>	0.00	0.00	-0.20	-0.68	-0.49	-0.45	-0.59	-1.07	-3.01	-8.99
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11523	13322	15216	17496	20058	22788	25469	27402
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.09	-0.46	-0.96	-1.49	-2.00	-2.58	-3.73	-7.32
<i>Welfare (billion 2005\$)</i>	9656	11773	13934	16309	18826	21779	25039	28478	31920	34777
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	0.01	-0.20	-0.64	-1.08	-1.48	-1.91	-2.62	-4.86
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	16.60	47.98	64.23	76.60	119.74	237.26	624.73	2559.38
<b><i>PRICES (index, 2005=1.00)</i></b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.46	1.50	1.54	1.22	1.20	1.15	1.00
<i>Natural Gas</i>	1.00	1.11	1.22	1.40	1.77	2.13	2.04	1.81	1.36	1.48
<i>Coal</i>	1.00	1.04	1.04	1.01	0.99	0.98	1.02	1.07	1.09	0.98
<i>Electricity</i>	1.00	1.11	1.33	1.64	1.61	1.75	1.76	1.62	1.61	1.50
<b><i>TRADE &amp; PRODUCTION (selected indicators)</i></b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	26.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.6	10.1	19.9	26.7	33.2	29.7	11.4
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	3.40	54.06	106.44	142.46	177.58	158.93	60.82
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	85.52	80.11	58.10	37.82	42.74	25.00	16.75	1.20
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	15.98	8.25	7.53	9.91	25.13	16.83	-32.30	-224.99
<b><i>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</i></b>										
<i>GHG Emissions</i>	7091.9	7680.1	6997.6	6171.5	5345.6	4518.6	3690.7	2867.6	2049.0	1246.7
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6360.7	5604.8	4804.4	3987.8	3168.3	2367.2	1593.6	945.4
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	376.4	335.3	315.9	307.9	299.2	279.8	244.1	158.5
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	253.1	224.4	217.3	214.4	215.0	212.2	202.8	134.2
<i>Fluorinated Gases Emissions</i>	140.0	173.8	8.0	7.5	8.4	8.9	8.7	8.9	8.9	8.8
<b><i>PRIMARY ENERGY USE (EJ)</i></b>										
<i>Coal</i>	22.6	24.3	21.7	14.9	10.7	12.4	20.5	30.2	37.9	27.6
<i>Petroleum Products</i>	42.0	46.0	46.5	44.4	36.3	29.0	25.1	19.1	15.7	9.7
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	25.7	28.2	32.5	34.1	28.2	23.0	14.2	18.4
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.7	8.8	8.7	8.7	8.7	8.7	8.7	8.7
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.9	3.1	3.1	3.2	3.3	3.3	3.4	3.6
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.1	0.9	1.3	1.2	1.5	1.6	1.6
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.6	10.1	19.9	26.7	33.2	35.1	37.4
<i>Total Primary Energy Use</i>	99.8	107.6	106.4	101.1	102.3	108.7	113.5	118.9	116.6	107.0
<i>Reduced Use from Reference</i>	0.0	0.0	8.2	19.3	24.5	25.9	30.4	34.2	45.3	63.0
<b><i>ELECTRICITY PRODUCTION (EJ)</i></b>										
<i>Coal w/o CCS</i>	6.9	7.6	7.2	4.7	3.0	1.7	0.7	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.3	5.2	8.1	8.6	5.7	4.1	0.0	0.0
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.3
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.2	0.1	0.4	0.8	0.5	1.8	6.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.2	0.6	1.7	6.7	11.2	14.7	10.7
<i>Total Electricity Production</i>	13.4	14.6	15.2	15.2	16.5	17.2	18.6	20.5	21.4	21.7



<i>Limited Sectoral Coverage: 287 bmt, US only (287 bmt SEC)</i>										
	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16896	19720	22733	26331	30470	34857	39414	44073
<i>% Change GDP from Reference</i>	0.00	0.00	-0.15	-0.27	-0.49	-0.49	-0.21	-0.21	-0.29	-0.31
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11526	13359	15294	17676	20417	23343	26381	29458
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.06	-0.19	-0.45	-0.48	-0.24	-0.21	-0.29	-0.37
<i>Welfare (billion 2005\$)</i>	9656	11773	13933	16325	18883	21943	25380	29004	32726	36453
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	0.01	-0.10	-0.34	-0.33	-0.14	-0.10	-0.17	-0.27
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	13.70	16.66	20.27	24.66	30.01	36.51	44.42	54.04
<b>PRICES (index, 2005=1.00)</b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.48	1.63	1.76	1.54	1.64	1.71	1.75
<i>Natural Gas</i>	1.00	1.11	1.25	1.52	2.02	2.26	2.50	2.91	3.18	3.18
<i>Coal</i>	1.00	1.04	1.05	1.04	1.02	1.06	1.07	1.09	1.12	1.18
<i>Electricity</i>	1.00	1.11	1.31	1.41	1.51	1.60	1.67	1.72	1.76	1.57
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	1.42
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	88.10	95.76	106.87	121.41	165.62	183.33	201.25	217.04
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	19.24	17.92	12.12	12.17	14.03	12.10	14.32	22.05
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
<i>GHG Emissions</i>	7091.9	7680.1	6986.5	6993.8	6764.9	7282.6	8223.3	8636.6	8574.0	8158.4
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6510.1	6534.7	6331.1	6837.0	7763.2	8170.4	8106.0	7688.5
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	314.3	305.1	282.1	292.1	298.5	301.1	299.5	297.4
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	154.4	145.5	141.7	142.9	150.9	154.5	158.1	162.5
<i>Fluorinated Gases Emissions</i>	140.0	173.8	8.2	9.0	10.4	11.0	11.1	11.0	10.7	10.4
<b>PRIMARY ENERGY USE (EJ)</b>										
<i>Coal</i>	22.6	24.3	22.2	18.9	12.5	17.3	22.1	26.0	31.0	41.1
<i>Petroleum Products</i>	42.0	46.0	47.4	49.9	52.5	55.8	64.9	69.3	73.1	76.3
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	26.6	30.3	35.4	32.9	30.6	28.4	25.3	21.6
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.7	8.5	8.5	8.0	7.6	7.4	7.3	7.2
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.9	2.9	3.0	2.9	2.8	2.9	2.9	2.9
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.2	1.0	1.3	1.4	1.4
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
<i>Total Primary Energy Use</i>	99.8	107.6	108.6	111.5	112.9	118.3	129.1	135.3	141.1	150.8
<i>Reduced Use from Reference</i>	0.0	0.0	5.9	8.9	13.9	16.2	14.9	17.9	20.8	19.2
<b>ELECTRICITY PRODUCTION (EJ)</b>										
<i>Coal w/o CCS</i>	6.9	7.6	7.4	6.3	4.0	5.9	8.0	9.1	8.1	5.5
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.3	0.2
<i>Gas w/o CCS</i>	2.1	2.5	3.2	5.2	8.5	7.2	6.2	5.3	3.8	1.7
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.6	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.0	0.1	0.2	0.5	1.3	4.8	12.3
<i>Total Electricity Production</i>	13.4	14.6	15.3	16.3	17.2	18.3	19.7	20.9	22.1	24.7

<i>Limited Sectoral Coverage: 203 bmt, US only (203 bmt SEC)</i>										
	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16868	19661	22680	26275	30230	34582	39291	44085
<i>% Change GDP from Reference</i>	0.00	0.00	-0.32	-0.56	-0.73	-0.70	-0.99	-1.00	-0.61	-0.28
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11513	13328	15248	17561	20255	23133	26115	29153
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.17	-0.42	-0.75	-1.13	-1.04	-1.11	-1.29	-1.40
<i>Welfare (billion 2005\$)</i>	9656	11773	13930	16304	18848	21836	25232	28801	32457	36146
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	-0.02	-0.23	-0.52	-0.82	-0.72	-0.80	-0.99	-1.11
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	30.61	37.25	45.31	55.13	67.08	81.61	99.29	120.80
<b>PRICES (index, 2005=1.00)</b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.47	1.62	1.71	1.53	1.62	1.61	1.58
<i>Natural Gas</i>	1.00	1.11	1.23	1.51	1.97	2.43	2.47	2.64	2.81	2.84
<i>Coal</i>	1.00	1.04	1.03	1.02	1.00	1.00	1.03	1.09	1.13	1.16
<i>Electricity</i>	1.00	1.11	1.44	1.57	1.59	1.75	1.83	1.61	1.60	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.4	0.3	1.8	8.6	0.0	0.0	13.4	26.2
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	1.98	1.43	9.87	46.21	0.15	0.00	71.84	140.15
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	80.84	87.08	91.29	81.69	147.29	161.98	132.81	105.04
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	18.11	16.71	11.83	12.95	12.70	14.45	22.87	31.99
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
<i>GHG Emissions</i>	7091.9	7680.1	6535.3	6334.8	6034.1	5459.0	6053.7	6037.4	5238.3	4498.1
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6077.7	5901.5	5624.7	5061.5	5653.4	5632.5	4822.7	4067.8
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	300.0	285.1	263.7	252.6	250.1	252.3	257.7	264.6
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	150.8	140.8	137.1	135.8	141.1	143.6	149.3	157.2
<i>Fluorinated Gases Emissions</i>	140.0	173.8	7.2	7.9	9.0	9.5	9.5	9.3	9.0	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
<i>Coal</i>	22.6	24.3	19.9	15.1	10.0	11.0	18.4	29.5	36.1	42.9
<i>Petroleum Products</i>	42.0	46.0	44.8	46.8	47.3	43.3	58.4	61.8	51.6	42.2
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	26.1	30.3	35.0	36.4	31.5	28.2	24.9	21.9
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.8	8.6	8.6	8.7	8.7	8.6	8.6	8.6
<i>Hydro (primary energy eq)</i>	2.9	2.8	3.0	3.1	3.1	3.2	3.3	3.2	3.3	3.4
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.3	1.2	1.5	1.6	1.7
<i>Biomass Liquids</i>	0.0	0.0	0.4	0.3	1.8	8.6	0.0	0.0	13.4	26.2
<i>Total Primary Energy Use</i>	99.8	107.6	103.8	105.2	106.8	112.5	121.5	132.8	139.7	146.9
<i>Reduced Use from Reference</i>	0.0	0.0	10.7	15.2	20.0	22.0	22.4	20.4	22.3	23.0
<b>ELECTRICITY PRODUCTION (EJ)</b>										
<i>Coal w/o CCS</i>	6.9	7.6	6.7	4.9	2.8	1.5	0.5	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.2	5.3	8.5	9.4	7.0	4.9	3.2	1.3
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.2	0.5	1.5	6.2	11.4	14.6	17.9
<i>Total Electricity Production</i>	13.4	14.6	14.6	15.5	16.6	17.4	18.6	21.2	22.7	24.2

<i>Limited Sectoral Coverage: 167 bmt, US only (167 bmt SEC)</i>										
	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16848	19638	22736	26367	30290	34749	39296	43947
<i>% Change GDP from Reference</i>	0.00	0.00	-0.43	-0.68	-0.48	-0.35	-0.80	-0.52	-0.59	-0.59
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11506	13309	15206	17483	20159	22969	25981	29077
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.23	-0.56	-1.03	-1.56	-1.51	-1.81	-1.80	-1.66
<i>Welfare (billion 2005\$)</i>	9656	11773	13927	16290	18807	21755	25131	28621	32318	36077
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	-0.04	-0.32	-0.74	-1.19	-1.11	-1.42	-1.41	-1.30
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	40.92	49.79	60.58	73.70	89.67	109.10	132.74	161.49
<b>PRICES (index, 2005=1.00)</b>										
<i>Petroleum Product</i>	1.00	1.15	1.31	1.47	1.57	1.64	1.48	1.51	1.56	1.58
<i>Natural Gas</i>	1.00	1.11	1.22	1.49	1.91	2.31	2.26	2.44	2.60	2.65
<i>Coal</i>	1.00	1.04	1.03	1.01	1.00	1.00	1.05	1.10	1.13	1.16
<i>Electricity</i>	1.00	1.11	1.52	1.66	1.64	1.79	1.80	1.62	1.61	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.4	1.3	10.3	21.7	12.6	24.1	25.0	26.0
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	1.91	7.08	55.29	115.88	67.39	128.88	133.84	138.97
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	77.70	79.60	58.97	32.64	96.35	72.37	85.09	97.63
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	17.44	16.28	15.17	17.11	15.89	21.46	26.18	31.15
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
<i>GHG Emissions</i>	7091.9	7680.1	6350.1	6016.6	5271.1	4354.2	4884.8	4152.0	4225.7	4296.0
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	5900.2	5593.3	4868.6	3961.8	4487.4	3749.6	3811.7	3868.2
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	294.1	277.3	258.8	248.9	248.9	250.5	256.0	262.4
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	149.3	138.9	135.6	134.9	139.9	143.4	149.5	156.9
<i>Fluorinated Gases Emissions</i>	140.0	173.8	6.9	7.5	8.5	9.0	9.0	8.9	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
<i>Coal</i>	22.6	24.3	19.0	13.8	9.7	10.7	20.1	29.7	36.2	42.7
<i>Petroleum Products</i>	42.0	46.0	43.7	44.3	37.2	28.4	43.1	35.2	37.8	40.4
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	25.7	30.0	34.4	35.4	29.6	27.0	23.9	21.1
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.8	8.7	8.7	8.7	8.7	8.6	8.6	8.6
<i>Hydro (primary energy eq)</i>	2.9	2.8	3.1	3.1	3.1	3.3	3.3	3.3	3.4	3.5
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.9	1.1	0.9	1.3	1.2	1.5	1.6	1.7
<i>Biomass Liquids</i>	0.0	0.0	0.4	1.3	10.3	21.7	12.6	24.1	25.0	26.0
<i>Total Primary Energy Use</i>	99.8	107.6	101.5	102.5	104.3	109.5	118.6	129.4	136.6	144.0
<i>Reduced Use from Reference</i>	0.0	0.0	13.0	18.0	22.5	25.1	25.3	23.8	25.3	26.0
<b>ELECTRICITY PRODUCTION (EJ)</b>										
<i>Coal w/o CCS</i>	6.9	7.6	6.3	4.4	2.7	1.4	0.4	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.2	5.3	8.3	8.7	5.8	4.1	2.5	0.9
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.2	0.1	0.4	0.3	0.2	0.1	0.1
<i>Coal with CCS</i>	0.0	0.0	0.0	0.2	0.6	1.7	7.3	11.8	14.9	18.0
<i>Total Electricity Production</i>	13.4	14.6	14.3	15.0	16.4	17.1	18.5	20.9	22.5	24.0

**International Emissions Trading: 287 bmt, No Banking (287 bmt TR)**

**2005      2010      2015      2020      2025      2030      2035      2040      2045      2050**

**ECONOMY WIDE INDICATORS**

<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16921	19772	22787	26357	30323	34633	39156	43823
<i>% Change GDP from Reference</i>	0.00	0.00	0.00	0.00	-0.26	-0.39	-0.69	-0.85	-0.95	-0.88
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11532	13384	15333	17694	20384	23251	26255	29359
<i>% Change Consumption from Reference</i>	0.00	0.00	0.00	0.00	-0.20	-0.37	-0.40	-0.60	-0.76	-0.70
<i>Welfare (billion 2005\$)</i>	9656	11773	13932	16341	18921	21964	25385	28955	32648	36404
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	0.00	0.00	-0.14	-0.23	-0.12	-0.26	-0.40	-0.41
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	0.01	0.13	13.09	23.09	77.41	84.74	92.96	101.69

**PRICES (index, 2005=1.00)**

<i>Petroleum Product</i>	1.00	1.15	1.30	1.48	1.61	1.70	1.40	1.47	1.51	1.52
<i>Natural Gas</i>	1.00	1.11	1.27	1.48	1.91	2.22	2.78	3.32	3.50	3.28
<i>Coal</i>	1.00	1.04	1.07	1.09	1.05	1.06	0.99	1.00	1.03	1.13
<i>Electricity</i>	1.00	1.11	1.19	1.27	1.46	1.58	1.93	2.06	2.10	1.59

**TRADE & PRODUCTION (selected indicators)**

<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.97	1.18	0.36
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	93.97	102.59	110.69	126.62	149.78	164.34	179.11	195.90
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	20.40	19.28	12.46	11.55	13.41	8.76	10.64	23.36

**GHG EMISSIONS (mmt CO<sub>2</sub>-e)**

<i>GHG Emissions</i>	7091.9	7587.0	7915.3	8143.9	7427.6	7652.6	6983.3	7112.3	7206.1	6651.7
<i>CO<sub>2</sub> Emissions</i>	5984.3	6516.8	6992.4	7342.6	6807.3	7043.4	6431.2	6556.3	6633.6	6072.3
<i>CH<sub>4</sub> Emissions</i>	583.4	678.0	579.8	499.7	369.2	363.2	318.8	321.1	332.3	332.4
<i>N<sub>2</sub>O Emissions</i>	385.2	349.9	314.4	281.9	240.5	235.5	224.6	226.1	231.5	238.6
<i>Fluorinated Gases Emissions</i>	140.0	43.2	29.5	20.5	11.2	11.2	9.2	9.3	9.2	9.0

**PRIMARY ENERGY USE (EJ)**

<i>Coal</i>	22.6	24.3	25.8	26.4	17.6	18.5	15.3	12.2	19.9	33.5
<i>Petroleum Products</i>	42.0	46.0	49.6	52.6	53.7	56.8	57.6	61.0	64.5	67.9
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	26.8	28.9	33.7	32.8	35.5	32.9	29.0	22.4
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.8	8.7	8.7	8.3	8.4	7.8	7.8	6.6
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.8	2.8	3.0	3.0	3.3	3.2	3.3	2.6
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.2	1.2	1.5	1.6	1.3
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1
<i>Total Primary Energy Use</i>	99.8	107.6	114.5	120.3	117.6	120.7	121.4	118.8	126.4	134.4
<i>Reduced Use from Reference</i>	0.0	0.0	0.0	0.1	9.2	13.9	22.5	34.3	35.6	35.5

**ELECTRICITY PRODUCTION (EJ)**

<i>Coal w/o CCS</i>	6.9	7.6	8.3	8.5	5.5	6.2	3.5	3.6	4.3	1.3
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.1
<i>Gas w/o CCS</i>	2.1	2.5	3.1	3.9	7.4	7.3	9.5	9.1	6.8	3.7
<i>Nuclear</i>	3.0	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.2	3.1
<i>Hydro</i>	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.3	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.3	0.3	0.5	0.4	0.6	0.7	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.3
<i>Coal with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	3.0	13.4
<i>Total Electricity Production</i>	13.4	14.6	15.9	17.1	17.6	18.5	18.3	19.0	19.9	23.7

**International Emissions Trading: 203 bmt, No Banking (203 bmt TR)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16921	19771	22782	26338	30329	34585	39053	43818
% Change GDP from Reference	0.00	0.00	0.00	-0.01	-0.28	-0.46	-0.67	-0.99	-1.21	-0.89
Market Consumption (billion 2005\$)	8217	9858	11532	13383	15313	17649	20221	22988	25882	28869
% Change Consumption from Reference	0.00	0.00	0.00	-0.01	-0.33	-0.63	-1.20	-1.73	-2.17	-2.36
Welfare (billion 2005\$)	9656	11773	13932	16340	18902	21913	25204	28664	32239	35865
% Change Welfare from Reference (EV)	0.00	0.00	0.00	-0.01	-0.24	-0.47	-0.83	-1.27	-1.65	-1.88
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	0.02	0.35	19.39	31.92	100.91	108.51	123.61	137.67
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.48	1.58	1.64	1.27	1.33	1.33	1.29
Natural Gas	1.00	1.11	1.27	1.49	1.90	2.36	2.65	3.29	3.51	3.17
Coal	1.00	1.04	1.07	1.09	1.04	1.02	0.99	0.98	1.01	1.12
Electricity	1.00	1.11	1.19	1.27	1.48	1.65	1.98	2.14	2.24	1.59
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	17.0
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	0.00	1.16	0.92	0.74	0.64	90.65
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	93.97	102.55	110.53	125.28	150.50	163.78	178.87	133.00
Net Agriculture Exports (billion 2005\$)	25.64	25.53	20.40	19.25	13.00	12.08	19.96	15.72	19.78	38.60
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7587.0	7898.7	8079.9	7284.1	7210.9	6823.4	6846.8	6745.7	4958.9
CO <sub>2</sub> Emissions	5984.3	6516.8	6992.2	7318.2	6678.0	6626.6	6280.3	6305.1	6195.6	4397.6
CH <sub>4</sub> Emissions	583.4	678.0	567.6	470.9	359.1	343.0	312.4	309.7	313.6	317.4
N <sub>2</sub> O Emissions	385.2	349.9	311.7	274.2	237.2	231.3	222.5	223.6	228.0	235.4
Fluorinated Gases Emissions	140.0	43.2	28.0	17.3	10.5	10.5	8.8	8.9	9.0	9.0
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	25.8	26.1	16.6	14.0	11.7	11.2	16.1	32.3
Petroleum Products	42.0	46.0	49.6	52.5	53.1	55.7	55.7	59.0	61.7	47.6
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	26.8	29.0	33.7	35.0	33.5	33.1	29.0	22.3
Nuclear (primary energy eq)	9.3	9.0	8.8	8.7	8.8	8.8	8.9	8.9	8.9	8.7
Hydro (primary energy eq)	2.9	2.8	2.8	2.8	3.0	3.2	3.5	3.6	3.8	3.5
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.3	1.3	1.7	1.9	1.7
Biomass Liquids	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	17.0
Total Primary Energy Use	99.8	107.6	114.5	120.1	116.2	118.3	114.6	117.7	121.6	133.0
Reduced Use from Reference	0.0	0.0	0.0	0.3	10.6	16.3	29.3	35.4	40.3	36.9
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	8.3	8.4	5.2	4.3	3.5	2.8	2.4	0.0
Oil w/o CCS	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.0
Gas w/o CCS	2.1	2.5	3.1	4.0	7.6	8.9	9.2	9.3	7.3	4.0
Nuclear	3.0	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.2	3.1
Hydro	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.4	1.2
Other Renewables	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.7	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.4
Coal with CCS	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.0	3.6	14.0
Total Electricity Production	13.4	14.6	15.9	17.1	17.5	18.1	18.1	18.6	19.2	23.4

**International Emissions Trading: 167 bmt, No Banking (167 bmt TR)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16921	19770	22779	26335	30315	34550	39082	43795
% Change GDP from Reference	0.00	0.00	0.00	-0.02	-0.29	-0.47	-0.72	-1.09	-1.13	-0.94
Market Consumption (billion 2005\$)	8217	9858	11532	13382	15298	17616	20110	22820	25646	28561
% Change Consumption from Reference	0.00	0.00	0.00	-0.02	-0.42	-0.81	-1.74	-2.44	-3.06	-3.40
Welfare (billion 2005\$)	9656	11773	13932	16339	18886	21878	25080	28477	31976	35525
% Change Welfare from Reference (EV)	0.00	0.00	0.00	-0.02	-0.33	-0.62	-1.32	-1.91	-2.45	-2.81
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	0.02	0.72	22.87	36.53	109.74	121.35	140.77	155.63
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.48	1.56	1.61	1.23	1.27	1.22	1.18
Natural Gas	1.00	1.11	1.27	1.49	1.88	2.34	2.60	3.19	3.31	2.98
Coal	1.00	1.04	1.06	1.08	1.03	1.02	0.99	0.98	1.02	1.12
Electricity	1.00	1.11	1.19	1.27	1.49	1.66	2.00	2.17	2.25	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	10.8	28.4
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	0.00	1.14	0.90	0.72	57.92	151.94
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	93.97	102.49	110.44	125.89	150.41	163.64	139.28	85.17
Net Agriculture Exports (billion 2005\$)	25.64	25.53	20.40	19.22	13.43	13.47	23.42	20.58	28.20	43.61
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7587.0	7874.6	8017.9	7225.6	7152.1	6735.5	6726.4	5853.7	3955.6
CO <sub>2</sub> Emissions	5984.3	6516.8	6991.8	7282.7	6625.0	6572.2	6195.0	6187.9	5306.2	3398.5
CH <sub>4</sub> Emissions	583.4	678.0	549.9	451.7	355.2	339.8	310.4	307.4	311.9	314.8
N <sub>2</sub> O Emissions	385.2	349.9	307.8	268.8	235.8	230.3	221.8	222.6	227.1	233.9
Fluorinated Gases Emissions	140.0	43.2	25.9	15.3	10.2	10.3	8.7	8.9	9.0	9.0
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	25.8	25.7	16.3	13.7	11.4	11.0	16.1	32.2
Petroleum Products	42.0	46.0	49.6	52.5	52.8	55.4	54.9	57.9	49.4	33.2
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	26.8	29.2	33.6	34.9	33.2	32.8	28.5	21.9
Nuclear (primary energy eq)	9.3	9.0	8.8	8.7	8.8	8.8	8.9	8.9	8.9	8.7
Hydro (primary energy eq)	2.9	2.8	2.8	2.8	3.0	3.2	3.5	3.6	3.8	3.5
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.3	1.3	1.7	1.9	1.7
Biomass Liquids	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	10.8	29.6
Total Primary Energy Use	99.8	107.6	114.5	119.8	115.5	117.6	113.4	116.0	119.3	130.7
Reduced Use from Reference	0.0	0.0	-0.6	0.7	11.2	17.0	30.6	37.1	42.6	39.2
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	8.3	8.3	5.2	4.2	3.4	2.7	2.4	0.0
Oil w/o CCS	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0
Gas w/o CCS	2.1	2.5	3.1	4.1	7.6	8.9	9.1	9.2	7.0	3.9
Nuclear	3.0	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.2	3.1
Hydro	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.4	1.2
Other Renewables	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.7	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.4
Coal with CCS	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.0	3.7	14.0
Total Electricity Production	13.4	14.6	15.9	17.1	17.4	18.1	17.9	18.4	19.0	23.2



**Developed Countries Only Pursue Mitigation: 287 bmt (287 bmt USA+DEV)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16895	19720	22730	26323	30355	34710	39372	44204
% Change GDP from Reference	0.00	0.00	-0.15	-0.27	-0.51	-0.52	-0.59	-0.63	-0.40	-0.01
Market Consumption (billion 2005\$)	8217	9858	11525	13359	15293	17673	20355	23257	26264	29261
% Change Consumption from Reference	0.00	0.00	-0.06	-0.19	-0.46	-0.49	-0.55	-0.58	-0.72	-1.04
Welfare (billion 2005\$)	9656	11773	13934	16326	18884	21943	25323	28925	32614	36258
% Change Welfare from Reference (EV)	0.00	0.00	0.01	-0.09	-0.34	-0.33	-0.36	-0.37	-0.51	-0.81
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	12.41	15.09	18.36	22.34	27.18	33.07	40.24	48.96
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.47	1.63	1.79	1.92	2.04	2.13	2.14
Natural Gas	1.00	1.11	1.23	1.48	1.98	2.21	2.52	2.88	3.21	3.10
Coal	1.00	1.04	1.04	1.04	1.02	1.06	1.09	1.12	1.14	1.18
Electricity	1.00	1.11	1.30	1.39	1.50	1.58	1.64	1.68	1.73	1.72
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.5	10.1	28.4
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	0.00	1.66	2.13	2.47	53.79	151.78
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	87.52	95.76	105.30	117.69	134.71	153.20	137.17	89.78
Net Agriculture Exports (billion 2005\$)	25.64	25.53	17.07	15.58	9.20	8.28	5.94	3.90	7.54	19.52
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	7139.1	7156.7	6906.0	7433.5	7977.3	8415.1	7977.0	6055.3
CO <sub>2</sub> Emissions	5984.3	6517.4	6490.8	6530.4	6310.2	6825.1	7359.7	7788.3	7338.4	5414.2
CH <sub>4</sub> Emissions	583.4	602.0	383.9	376.2	352.3	364.9	372.6	379.8	387.1	384.9
N <sub>2</sub> O Emissions	385.2	387.9	256.7	241.6	233.6	232.8	234.3	236.4	241.1	246.2
Fluorinated Gases Emissions	140.0	173.8	8.3	9.2	10.5	11.2	11.3	11.2	10.9	10.6
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	22.4	19.2	12.6	17.9	22.4	26.2	30.2	37.8
Petroleum Products	42.0	46.0	47.2	49.8	51.9	55.0	58.6	52.6	37.1	67.3
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	26.1	29.9	35.2	32.3	30.2	28.4	26.0	21.8
Nuclear (primary energy eq)	9.3	9.0	8.7	8.5	8.5	8.0	7.7	7.5	7.3	7.3
Hydro (primary energy eq)	2.9	2.8	2.9	2.9	2.9	2.9	2.8	2.9	2.9	3.0
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.2	1.0	1.3	1.4	1.5
Biomass Liquids	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.5	10.1	28.4
Total Primary Energy Use	99.8	107.6	108.1	111.2	112.0	117.5	123.1	119.3	114.9	167.1
Reduced Use from Reference	0.0	0.0	6.5	9.2	14.8	17.0	20.8	33.9	47.0	2.9
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	7.4	6.4	4.0	6.2	8.2	9.6	10.3	6.8
Oil w/o CCS	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.3
Gas w/o CCS	2.1	2.5	3.3	5.2	8.6	7.2	6.1	5.3	4.3	1.9
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.6	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.7	2.1	9.3
Total Electricity Production	13.4	14.6	15.3	16.4	17.3	18.4	19.6	20.9	22.0	23.3



**Developed Countries Only Pursue Mitigation: 203 bmt (203 bmt USA+DEV)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16866	19666	22660	26225	30318	34768	39361	44007
% Change GDP from Reference	0.00	0.00	-0.33	-0.54	-0.81	-0.89	-0.71	-0.46	-0.43	-0.46
Market Consumption (billion 2005\$)	8217	9858	11516	13331	15251	17568	20146	22940	25917	28999
% Change Consumption from Reference	0.00	0.00	-0.15	-0.40	-0.73	-1.08	-1.57	-1.93	-2.04	-1.92
Welfare (billion 2005\$)	9656	11773	13933	16308	18855	21849	25120	28597	32253	35998
% Change Welfare from Reference (EV)	0.00	0.00	0.00	-0.21	-0.49	-0.76	-1.16	-1.50	-1.61	-1.52
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	26.10	31.76	38.64	47.01	57.19	69.58	84.66	103.00
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.46	1.63	1.76	1.85	1.91	1.99	2.07
Natural Gas	1.00	1.11	1.19	1.45	1.92	2.39	2.56	2.60	2.67	2.53
Coal	1.00	1.04	1.03	1.02	1.00	1.00	1.04	1.11	1.15	1.19
Electricity	1.00	1.11	1.40	1.52	1.55	1.71	1.80	1.60	1.59	1.59
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.3	0.2	4.9	17.5	28.7	35.1	37.0
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	1.49	0.82	26.42	93.48	153.47	187.73	197.88
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	81.31	86.91	95.10	90.01	59.53	36.43	32.94	46.01
Net Agriculture Exports (billion 2005\$)	25.64	25.53	13.62	11.52	5.07	3.59	4.76	11.57	13.87	18.10
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6723.8	6494.8	6270.7	5810.1	4708.5	3862.1	3551.2	3552.1
CO <sub>2</sub> Emissions	5984.3	6517.4	6106.9	5906.6	5712.1	5264.8	4167.4	3312.5	2987.1	2971.1
CH <sub>4</sub> Emissions	583.4	602.0	363.2	350.0	327.4	317.7	314.3	320.4	328.9	337.6
N <sub>2</sub> O Emissions	385.2	387.9	246.9	230.6	222.5	218.4	217.6	220.1	226.4	234.9
Fluorinated Gases Emissions	140.0	173.8	7.4	8.1	9.2	9.8	9.7	9.6	9.3	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	20.4	15.8	10.1	11.0	16.4	28.1	34.8	41.8
Petroleum Products	42.0	46.0	45.0	46.7	48.7	46.2	35.8	27.2	24.1	26.0
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	25.1	29.3	34.5	36.2	32.3	28.2	24.6	21.2
Nuclear (primary energy eq)	9.3	9.0	8.8	8.6	8.6	8.6	8.7	8.6	8.6	8.6
Hydro (primary energy eq)	2.9	2.8	3.0	3.0	3.0	3.2	3.3	3.2	3.3	3.4
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.3	1.2	1.4	1.6	1.7
Biomass Liquids	0.0	0.0	0.0	0.3	0.2	4.9	17.5	28.7	35.1	37.0
Total Primary Energy Use	99.8	107.6	103.0	104.7	106.0	111.5	115.1	125.5	132.2	139.8
Reduced Use from Reference	0.0	0.0	11.5	15.8	20.8	23.1	28.8	27.6	29.7	30.2
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	6.8	5.1	2.8	1.6	0.6	0.0	0.0	0.0
Oil w/o CCS	0.3	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Gas w/o CCS	2.1	2.5	3.3	5.4	8.7	9.7	7.9	5.5	3.6	1.7
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.2	0.5	1.3	5.1	10.6	13.9	17.2
Total Electricity Production	13.4	14.6	14.8	15.7	16.8	17.5	18.5	20.9	22.4	23.9

**Developed Countries Only Pursue Mitigation: 167 bmt (167 bmt USA+DEV)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16822	19610	22734	26366	30337	34657	39179	43800
% Change GDP from Reference	0.00	0.00	-0.58	-0.83	-0.49	-0.35	-0.64	-0.78	-0.89	-0.93
Market Consumption (billion 2005\$)	8217	9858	11497	13286	15160	17409	19999	22830	25823	28898
% Change Consumption from Reference	0.00	0.00	-0.31	-0.73	-1.33	-1.98	-2.29	-2.40	-2.39	-2.26
Welfare (billion 2005\$)	9656	11773	13925	16276	18768	21687	24973	28498	32177	35918
% Change Welfare from Reference (EV)	0.00	0.00	-0.05	-0.40	-0.95	-1.50	-1.74	-1.84	-1.84	-1.74
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	46.73	56.85	69.16	84.15	102.38	124.56	151.55	184.38
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.44	1.54	1.61	1.78	1.89	1.97	2.05
Natural Gas	1.00	1.11	1.14	1.38	1.76	2.11	2.03	2.08	2.07	1.92
Coal	1.00	1.04	1.02	1.00	0.99	0.99	1.06	1.11	1.15	1.19
Electricity	1.00	1.11	1.55	1.70	1.63	1.78	1.74	1.61	1.61	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.4	2.7	15.2	28.5	31.2	33.0	34.9	36.9
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	1.87	14.29	81.44	152.41	166.65	176.34	186.36	197.42
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	72.38	69.24	33.53	0.00	0.80	11.67	24.43	36.46
Net Agriculture Exports (billion 2005\$)	25.64	25.53	8.90	6.47	5.52	5.77	3.89	4.28	4.63	6.42
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6217.7	5744.8	4767.4	3679.3	3223.9	3129.8	3123.8	3102.8
CO <sub>2</sub> Emissions	5984.3	6517.4	5632.2	5193.0	4235.7	3158.7	2705.4	2605.1	2585.9	2551.5
CH <sub>4</sub> Emissions	583.4	602.0	342.3	325.1	310.0	301.9	299.5	302.4	309.3	314.9
N <sub>2</sub> O Emissions	385.2	387.9	236.9	219.9	213.9	210.4	210.8	213.9	220.1	228.1
Fluorinated Gases Emissions	140.0	173.8	6.7	7.3	8.3	8.8	8.7	8.9	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	18.5	13.1	9.4	10.3	19.6	28.6	35.0	41.4
Petroleum Products	42.0	46.0	41.9	40.9	29.7	18.3	18.6	20.3	22.0	23.4
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	23.6	28.0	32.5	33.4	27.5	24.5	21.1	17.9
Nuclear (primary energy eq)	9.3	9.0	8.9	8.8	8.7	8.7	8.7	8.6	8.6	8.6
Hydro (primary energy eq)	2.9	2.8	3.1	3.2	3.1	3.2	3.3	3.3	3.4	3.5
Renewable Elec. (primary energy eq)	0.6	0.7	0.9	1.1	0.9	1.3	1.2	1.5	1.6	1.7
Biomass Liquids	0.0	0.0	0.4	2.7	15.2	28.5	31.2	33.0	34.9	36.9
Total Primary Energy Use	99.8	107.6	97.2	97.8	99.5	103.9	110.0	119.7	126.6	133.5
Reduced Use from Reference	0.0	0.0	17.3	22.7	27.3	30.7	33.9	33.4	35.3	36.5
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	6.2	4.1	2.6	1.4	0.4	0.0	0.0	0.0
Oil w/o CCS	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Gas w/o CCS	2.1	2.5	3.2	5.4	8.3	8.6	5.7	4.1	2.5	0.9
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.3	0.1	0.4	0.4	0.3	0.2	0.1
Coal with CCS	0.0	0.0	0.0	0.3	0.6	1.7	7.2	11.4	14.5	17.5
Total Electricity Production	13.4	14.6	14.1	14.8	16.3	16.9	18.5	20.6	22.1	23.5

<b>US Only Pursues Mitigation: 287 bmt (287 bmt USA only)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16901	19728	22740	26327	30378	34824	39781	44489
% Change GDP from Reference	0.00	0.00	-0.12	-0.23	-0.46	-0.50	-0.51	-0.30	0.63	0.63
Market Consumption (billion 2005\$)	8217	9858	11527	13363	15299	17675	20370	23275	26262	29363
% Change Consumption from Reference	0.00	0.00	-0.05	-0.16	-0.42	-0.48	-0.47	-0.50	-0.73	-0.69
Welfare (billion 2005\$)	9656	11773	13934	16329	18889	21945	25337	28937	32601	36365
% Change Welfare from Reference (EV)	0.00	0.00	0.01	-0.08	-0.31	-0.32	-0.30	-0.33	-0.55	-0.52
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	9.99	12.15	14.79	17.99	21.89	26.63	32.40	39.42
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.48	1.68	1.88	1.97	2.08	2.21	2.26
Natural Gas	1.00	1.11	1.24	1.50	1.98	2.14	2.49	2.89	3.19	3.43
Coal	1.00	1.04	1.05	1.05	1.04	1.09	1.13	1.16	1.20	1.23
Electricity	1.00	1.11	1.28	1.37	1.48	1.54	1.60	1.64	1.67	1.71
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.2	0.4	0.4	6.5	36.7	39.5
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	1.29	1.97	2.39	34.91	195.88	211.10
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	88.61	95.79	101.99	114.00	133.90	131.29	40.68	28.48
Net Agriculture Exports (billion 2005\$)	25.64	25.53	17.58	15.72	8.65	6.27	3.63	2.59	7.88	10.52
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	7225.5	7256.2	7005.0	7674.4	8234.7	8296.9	6573.3	6818.7
CO <sub>2</sub> Emissions	5984.3	6517.4	6569.5	6621.8	6398.7	7051.4	7604.7	7657.8	5918.6	6149.2
CH <sub>4</sub> Emissions	583.4	602.0	389.0	381.7	360.4	377.2	382.4	389.1	400.1	408.0
N <sub>2</sub> O Emissions	385.2	387.9	259.0	243.8	235.5	234.7	236.4	238.8	243.7	251.0
Fluorinated Gases Emissions	140.0	173.8	8.6	9.5	11.0	11.7	11.7	11.7	11.5	11.1
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	22.9	19.9	14.3	21.0	27.0	28.5	33.0	35.3
Petroleum Products	42.0	46.0	47.6	50.1	51.9	54.7	58.9	56.3	27.8	28.7
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Natural Gas	22.5	24.7	26.2	29.8	34.5	31.0	30.1	27.9	26.7	24.1
Nuclear (primary energy eq)	9.3	9.0	8.7	8.5	8.5	8.0	8.0	7.5	7.6	7.2
Hydro (primary energy eq)	2.9	2.8	2.9	2.9	2.9	2.8	3.0	2.9	3.0	3.0
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.1	1.1	1.3	1.4	1.5
Biomass Liquids	0.0	0.0	0.0	0.0	0.2	0.4	0.4	6.5	36.7	39.5
Total Primary Energy Use	99.8	107.6	109.1	112.3	113.2	119.1	128.4	131.0	136.1	145.2
Reduced Use from Reference	0.0	0.0	5.4	8.2	13.6	15.5	15.5	22.2	25.8	24.8
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	7.5	6.6	4.6	7.5	9.2	10.8	12.2	13.2
Oil w/o CCS	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.4	0.5	0.5
Gas w/o CCS	2.1	2.5	3.2	5.1	8.1	6.1	5.5	4.8	4.1	3.1
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	1.4
Total Electricity Production	13.4	14.6	15.4	16.5	17.3	18.5	19.8	21.1	22.2	23.3

**US Only Pursues Mitigation: 203 bmt (203 bmt USA only)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16879	19690	22695	26342	30535	34903	39435	44095
% Change GDP from Reference	0.00	0.00	-0.25	-0.42	-0.66	-0.44	0.00	-0.07	-0.24	-0.26
Market Consumption (billion 2005\$)	8217	9858	11520	13343	15269	17583	20167	23003	25985	29067
% Change Consumption from Reference	0.00	0.00	-0.11	-0.31	-0.62	-1.00	-1.47	-1.66	-1.78	-1.69
Welfare (billion 2005\$)	9656	11773	13934	16316	18866	21854	25129	28652	32319	36061
% Change Welfare from Reference (EV)	0.00	0.00	0.01	-0.15	-0.43	-0.74	-1.12	-1.31	-1.41	-1.35
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	20.30	24.70	30.05	36.56	44.48	54.12	65.85	80.11
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.47	1.67	1.84	1.94	2.08	2.19	2.26
Natural Gas	1.00	1.11	1.21	1.47	1.94	2.41	2.68	2.72	2.75	2.77
Coal	1.00	1.04	1.04	1.04	1.02	1.03	1.07	1.14	1.19	1.24
Electricity	1.00	1.11	1.36	1.47	1.53	1.67	1.78	1.59	1.59	1.59
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.3	0.9	12.2	31.0	35.5	37.0	38.4
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	1.62	5.06	65.12	165.62	189.76	197.82	205.46
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	83.70	88.55	92.33	63.25	11.54	15.83	29.64	43.31
Net Agriculture Exports (billion 2005\$)	25.64	25.53	14.91	12.60	5.56	3.67	4.11	2.55	5.75	10.39
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6881.0	6721.1	6449.2	5583.9	4255.0	3794.9	3620.5	3641.3
CO <sub>2</sub> Emissions	5984.3	6517.4	6252.9	6119.1	5875.2	5021.6	3693.7	3231.4	3047.2	3052.4
CH <sub>4</sub> Emissions	583.4	602.0	370.6	359.8	338.8	330.9	330.3	330.2	334.8	343.0
N <sub>2</sub> O Emissions	385.2	387.9	250.4	234.3	226.0	221.6	221.2	223.7	229.2	237.1
Fluorinated Gases Emissions	140.0	173.8	7.7	8.4	9.7	10.2	10.2	10.1	9.9	9.4
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	21.1	17.1	11.8	10.4	14.7	25.0	32.7	39.1
Petroleum Products	42.0	46.0	45.9	47.6	48.6	39.2	22.5	22.1	24.1	26.1
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	25.4	29.3	34.2	34.9	31.8	26.7	23.2	19.9
Nuclear (primary energy eq)	9.3	9.0	8.7	8.5	8.5	8.3	7.8	7.8	7.8	7.8
Hydro (primary energy eq)	2.9	2.8	2.9	3.0	3.0	3.0	3.0	2.9	3.0	3.1
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.2	1.1	1.3	1.4	1.5
Biomass Liquids	0.0	0.0	0.0	0.3	0.9	12.2	31.0	35.5	37.0	38.4
Total Primary Energy Use	99.8	107.6	105.0	106.9	107.9	109.3	111.8	121.3	129.2	136.1
Reduced Use from Reference	0.0	0.0	9.6	13.5	18.9	25.3	32.1	31.9	32.7	33.9
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	7.0	5.6	3.5	2.5	2.2	0.8	0.0	0.0
Oil w/o CCS	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0
Gas w/o CCS	2.1	2.5	3.3	5.4	8.4	9.3	7.9	5.4	3.3	1.5
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.2	0.4	1.0	3.6	9.9	14.2	17.4
Total Electricity Production	13.4	14.6	15.0	15.9	17.0	17.7	18.6	21.0	22.5	23.9

<b>US Only Pursues Mitigation: 167 bmt (167 bmt USA only)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16823	19614	22753	26375	30363	34706	39239	43862
% Change GDP from Reference	0.00	0.00	-0.58	-0.80	-0.41	-0.32	-0.56	-0.64	-0.74	-0.79
Market Consumption (billion 2005\$)	8217	9858	11497	13285	15154	17421	20035	22895	25895	28964
% Change Consumption from Reference	0.00	0.00	-0.31	-0.74	-1.37	-1.91	-2.11	-2.13	-2.12	-2.04
Welfare (billion 2005\$)	9656	11773	13926	16275	18761	21700	25010	28564	32250	35985
% Change Welfare from Reference (EV)	0.00	0.00	-0.05	-0.41	-0.98	-1.43	-1.59	-1.61	-1.62	-1.55
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	46.40	56.46	68.69	83.57	101.67	123.70	150.50	183.11
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.46	1.57	1.66	1.87	2.05	2.17	2.24
Natural Gas	1.00	1.11	1.15	1.39	1.78	2.12	2.05	2.11	2.15	2.10
Coal	1.00	1.04	1.02	1.01	1.01	1.02	1.09	1.14	1.18	1.22
Electricity	1.00	1.11	1.55	1.70	1.63	1.77	1.74	1.61	1.61	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.4	3.1	17.1	28.7	32.1	34.9	36.9	38.6
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	1.87	16.48	91.60	153.12	171.66	186.67	197.33	206.14
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	72.34	66.53	23.88	0.00	0.00	7.21	19.28	31.60
Net Agriculture Exports (billion 2005\$)	25.64	25.53	8.82	6.13	4.96	2.73	-2.79	-7.44	-6.83	-4.46
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6220.7	5706.2	4605.6	3661.6	3199.1	3089.6	3075.6	3052.3
CO <sub>2</sub> Emissions	5984.3	6517.4	5635.1	5154.4	4074.1	3141.5	2681.8	2567.1	2540.6	2505.0
CH <sub>4</sub> Emissions	583.4	602.0	342.5	325.2	310.2	301.5	297.9	299.4	305.9	310.9
N <sub>2</sub> O Emissions	385.2	387.9	237.0	219.7	213.5	210.2	211.2	214.7	220.7	228.0
Fluorinated Gases Emissions	140.0	173.8	6.7	7.3	8.3	8.8	8.7	8.9	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	18.5	13.1	9.4	10.3	19.5	28.6	35.0	41.2
Petroleum Products	42.0	46.0	41.9	40.4	27.4	18.2	18.4	20.0	21.6	23.1
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	23.6	27.9	32.3	33.3	27.3	24.2	20.7	17.5
Nuclear (primary energy eq)	9.3	9.0	8.9	8.8	8.7	8.7	8.7	8.6	8.6	8.7
Hydro (primary energy eq)	2.9	2.8	3.1	3.2	3.1	3.2	3.3	3.3	3.4	3.5
Renewable Elec. (primary energy eq)	0.6	0.7	0.9	1.1	0.9	1.3	1.2	1.5	1.6	1.7
Biomass Liquids	0.0	0.0	0.4	3.1	17.1	28.7	32.1	34.9	36.9	38.6
Total Primary Energy Use	99.8	107.6	97.3	97.6	99.0	103.7	110.5	121.0	127.9	134.2
Reduced Use from Reference	0.0	0.0	17.3	22.8	27.8	30.9	33.5	32.1	34.0	35.7
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	6.2	4.1	2.6	1.4	0.4	0.0	0.0	0.0
Oil w/o CCS	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Gas w/o CCS	2.1	2.5	3.2	5.4	8.2	8.5	5.7	4.0	2.5	0.9
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
Other Renewables	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.3	0.1	0.4	0.4	0.3	0.2	0.1
Coal with CCS	0.0	0.0	0.0	0.2	0.6	1.7	7.2	11.4	14.6	17.5
Total Electricity Production	13.4	14.6	14.1	14.8	16.2	16.9	18.4	20.6	22.1	23.5

<i>No Biofuel Trading: 287 bmt (287 bmt NobioTR)</i>										
	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>	<i>2045</i>	<i>2050</i>
<b><i>ECONOMY WIDE INDICATORS</i></b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16884	19699	22714	26265	30408	34796	39340	44015
<i>% Change GDP from Reference</i>	0.00	0.00	-0.22	-0.37	-0.57	-0.72	-0.35	-0.31	-0.38	-0.27
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11522	13350	15284	17639	20376	23306	26334	29421
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.09	-0.26	-0.52	-0.67	-0.40	-0.31	-0.36	-0.32
<i>Welfare (billion 2005\$)</i>	9656	11773	13934	16320	18878	21910	25354	28984	32697	36441
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	0.01	-0.13	-0.37	-0.47	-0.20	-0.13	-0.19	-0.18
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	17.66	21.48	26.14	31.80	38.69	47.08	57.27	69.68
<b><i>PRICES (index, 2005=1.00)</i></b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.46	1.59	1.71	1.43	1.51	1.56	1.56
<i>Natural Gas</i>	1.00	1.11	1.22	1.47	1.94	2.40	2.53	2.84	2.88	2.81
<i>Coal</i>	1.00	1.04	1.04	1.03	1.00	1.00	1.03	1.06	1.10	1.16
<i>Electricity</i>	1.00	1.11	1.34	1.44	1.52	1.66	1.74	1.79	1.83	1.58
<b><i>TRADE &amp; PRODUCTION (selected indicators)</i></b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	85.03	92.57	105.27	120.63	165.48	182.24	197.82	213.78
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	15.71	13.96	10.16	8.40	26.88	22.70	27.39	44.53
<b><i>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</i></b>										
<i>GHG Emissions</i>	7091.9	7680.1	6964.3	6904.8	6738.2	6866.4	7850.5	8217.0	7863.0	7576.1
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6329.9	6294.7	6155.4	6290.8	7247.3	7604.4	7246.6	6948.8
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	374.7	365.2	343.3	338.1	354.9	362.2	362.7	366.7
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	252.4	236.8	230.2	227.5	238.3	240.5	244.1	251.4
<i>Fluorinated Gases Emissions</i>	140.0	173.8	7.9	8.6	9.9	10.5	10.5	10.4	10.2	9.8
<b><i>PRIMARY ENERGY USE (EJ)</i></b>										
<i>Coal</i>	22.6	24.3	21.5	17.7	11.6	10.7	17.3	22.6	28.4	40.1
<i>Petroleum Products</i>	42.0	46.0	46.3	48.7	51.4	54.8	63.4	67.5	70.7	73.7
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	25.7	29.6	35.1	35.8	31.6	29.3	24.9	21.1
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.7	8.5	8.5	8.2	7.5	7.5	7.2	7.1
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.9	2.9	3.0	3.0	2.8	2.9	2.9	2.8
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.2	1.0	1.4	1.4	1.4
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
<i>Total Primary Energy Use</i>	99.8	107.6	106.0	108.5	110.4	113.6	123.7	131.2	135.6	146.4
<i>Reduced Use from Reference</i>	0.0	-0.1	8.0	12.0	16.2	20.7	19.3	20.8	24.9	21.3
<b><i>ELECTRICITY PRODUCTION (EJ)</i></b>										
<i>Coal w/o CCS</i>	6.9	7.6	7.2	5.9	3.7	3.3	6.1	7.2	5.1	3.2
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.2	0.1	0.1	0.3	0.3	0.2	0.1
<i>Gas w/o CCS</i>	2.1	2.5	3.3	5.4	8.7	9.6	7.6	6.4	4.2	1.9
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.6	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.1	0.1	0.2	0.6	1.6	7.0	14.1
<i>Total Electricity Production</i>	13.4	14.6	15.1	16.1	17.1	18.0	19.3	20.4	21.5	24.4



<i>No Biofuel Trading: 203 bmt (203 bmt NobioTR)</i>										
	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>	<i>2045</i>	<i>2050</i>
<b><i>ECONOMY WIDE INDICATORS</i></b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16811	19571	22591	26075	30129	34368	38744	43129
<i>% Change GDP from Reference</i>	0.00	0.00	-0.65	-1.02	-1.12	-1.43	-1.26	-1.53	-1.89	-2.28
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11493	13285	15220	17524	20198	22999	25890	28775
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.34	-0.74	-0.94	-1.32	-1.27	-1.62	-2.04	-2.51
<i>Welfare (billion 2005\$)</i>	9656	11773	13924	16278	18839	21829	25199	28710	32303	35868
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	-0.06	-0.39	-0.57	-0.84	-0.81	-1.07	-1.39	-1.75
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	49.30	59.98	72.98	88.79	108.03	131.43	159.91	194.55
<b><i>PRICES (index, 2005=1.00)</i></b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.46	1.57	1.64	1.38	1.39	1.34	1.24
<i>Natural Gas</i>	1.00	1.11	1.14	1.37	1.71	1.99	1.94	1.91	1.85	1.79
<i>Coal</i>	1.00	1.04	1.02	1.00	0.99	0.99	1.04	1.09	1.12	1.15
<i>Electricity</i>	1.00	1.11	1.58	1.72	1.63	1.76	1.69	1.62	1.61	1.61
<b><i>TRADE &amp; PRODUCTION (selected indicators)</i></b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.3	0.2	0.2	5.3	0.1	7.3	18.4	28.7
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	71.51	76.10	85.88	79.63	131.65	118.09	91.25	65.84
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	7.52	4.69	1.05	-16.31	19.38	-10.67	-51.62	-84.82
<b><i>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</i></b>										
<i>GHG Emissions</i>	7091.9	7680.1	6165.1	5849.5	5830.2	5290.0	5666.8	4800.4	4048.7	3332.1
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	5583.7	5302.3	5297.4	4772.3	5133.6	4282.4	3533.3	2819.0
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	339.8	322.2	312.5	304.8	311.2	300.7	301.4	300.5
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	235.5	218.3	212.5	204.7	213.9	209.1	205.6	204.3
<i>Fluorinated Gases Emissions</i>	140.0	173.8	6.7	7.2	8.2	8.7	8.6	8.8	8.8	8.8
<b><i>PRIMARY ENERGY USE (EJ)</i></b>										
<i>Coal</i>	22.6	24.3	18.3	12.8	10.6	10.7	20.0	27.7	33.1	38.0
<i>Petroleum Products</i>	42.0	46.0	41.6	43.0	44.8	41.6	51.8	46.5	37.1	28.1
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	23.4	27.8	31.6	31.1	26.2	22.0	18.9	16.1
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.9	8.9	8.5	8.3	7.8	7.8	7.8	7.8
<i>Hydro (primary energy eq)</i>	2.9	2.8	3.1	3.2	3.0	3.1	2.9	2.9	3.0	3.1
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.9	1.1	0.9	1.2	1.0	1.3	1.4	1.4
<i>Biomass Liquids</i>	0.0	0.0	0.3	0.2	0.2	5.3	0.1	7.3	18.4	28.7
<i>Total Primary Energy Use</i>	99.8	107.6	96.6	97.1	99.6	101.3	109.9	115.4	119.7	123.2
<i>Reduced Use from Reference</i>	0.0	-0.1	17.4	23.4	27.1	33.0	33.1	36.6	40.8	44.5
<b><i>ELECTRICITY PRODUCTION (EJ)</i></b>										
<i>Coal w/o CCS</i>	6.9	7.6	6.1	4.0	3.0	2.2	1.5	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.1	5.4	7.4	6.8	4.9	3.0	1.7	0.5
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.5	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.3	0.5	1.3	0.8	0.6	0.4	0.3
<i>Coal with CCS</i>	0.0	0.0	0.0	0.3	0.6	1.8	6.9	12.2	14.9	17.3
<i>Total Electricity Production</i>	13.4	14.6	14.0	14.7	16.3	17.0	18.9	20.6	21.9	22.9



<b>No Biofuel Trading: 167 bmt (167 bmt NobioTR)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16771	19505	22440	25800	29664	33787	38101	42548
<i>% Change GDP from Reference</i>	0.00	0.00	-0.89	-1.35	-1.78	-2.47	-2.79	-3.20	-3.52	-3.59
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11476	13243	15107	17308	19825	22535	25388	28342
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.49	-1.06	-1.67	-2.53	-3.09	-3.61	-3.94	-3.97
<i>Welfare (billion 2005\$)</i>	9656	11773	13916	16246	18743	21635	24847	28266	31812	35438
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	-0.12	-0.59	-1.08	-1.72	-2.20	-2.60	-2.88	-2.93
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	66.70	81.16	98.74	120.13	146.16	177.82	216.35	263.22
<b>PRICES (index, 2005=1.00)</b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.43	1.49	1.53	1.27	1.25	1.23	1.20
<i>Natural Gas</i>	1.00	1.11	1.10	1.32	1.60	1.79	1.77	1.77	1.67	1.61
<i>Coal</i>	1.00	1.04	1.01	0.99	0.98	0.98	1.02	1.07	1.10	1.13
<i>Electricity</i>	1.00	1.11	1.70	1.75	1.70	1.84	1.71	1.64	1.64	1.63
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
<i>Bio Liquids Production in USA (EJ)</i>	0.0	0.0	0.3	3.4	9.6	18.0	14.9	25.4	29.8	31.2
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	66.18	59.01	46.46	26.85	67.50	40.76	37.73	46.66
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	3.82	-5.95	-25.12	-54.88	-23.69	-70.37	-85.72	-81.86
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
<i>GHG Emissions</i>	7091.9	7680.1	5872.3	5344.5	4796.4	3939.9	3728.0	3053.5	2833.4	2828.9
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	5310.8	4821.4	4297.6	3462.1	3252.4	2584.9	2358.1	2342.3
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	326.5	307.3	293.2	282.7	274.4	273.3	277.0	280.7
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	229.2	209.4	198.3	187.1	193.0	187.2	190.0	197.8
<i>Fluorinated Gases Emissions</i>	140.0	173.8	6.3	6.9	7.8	8.3	8.5	8.6	8.7	8.6
<b>PRIMARY ENERGY USE (EJ)</b>										
<i>Coal</i>	22.6	24.3	17.3	12.2	9.9	10.2	18.0	24.8	30.8	36.2
<i>Petroleum Products</i>	42.0	46.0	39.7	37.5	32.5	25.5	32.2	23.4	21.6	22.9
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	22.3	26.7	29.8	28.9	24.9	21.3	18.0	15.0
<i>Nuclear (primary energy eq)</i>	9.3	9.0	9.0	8.9	8.6	8.3	8.2	8.2	8.2	8.2
<i>Hydro (primary energy eq)</i>	2.9	2.8	3.2	3.2	3.1	3.1	3.1	3.1	3.2	3.3
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	1.0	1.1	0.9	1.2	1.0	1.3	1.4	1.5
<i>Biomass Liquids</i>	0.0	0.0	0.3	3.4	9.6	18.0	14.9	25.4	29.8	31.2
<i>Total Primary Energy Use</i>	99.8	107.6	92.8	93.2	94.4	95.1	102.3	107.6	112.9	118.3
<i>Reduced Use from Reference</i>	0.0	-0.1	21.2	27.3	32.3	39.1	40.7	44.4	47.6	49.4
<b>ELECTRICITY PRODUCTION (EJ)</b>										
<i>Coal w/o CCS</i>	6.9	7.6	5.7	3.8	2.8	2.0	0.0	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.0	5.3	7.0	5.8	3.6	2.6	1.3	0.3
<i>Nuclear</i>	3.0	3.0	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.5	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.3	0.6	1.8	2.3	1.5	1.1	0.8
<i>Coal with CCS</i>	0.0	0.0	0.0	0.3	0.6	1.9	7.7	10.9	13.8	16.4
<i>Total Electricity Production</i>	13.4	14.6	13.6	14.5	15.7	16.3	18.2	19.8	21.1	22.4

**Safety Valve: US and Rest of World Pursue Mitigation (SV USA+ROW)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16907	19740	22782	26398	30592	35025	39654	44380
% Change GDP from Reference	0.00	0.00	-0.09	-0.17	-0.28	-0.23	0.19	0.27	0.31	0.38
Market Consumption (billion 2005\$)	8217	9858	11529	13368	15323	17715	20489	23445	26539	29700
% Change Consumption from Reference	0.00	0.00	-0.03	-0.12	-0.26	-0.26	0.11	0.23	0.31	0.45
Welfare (billion 2005\$)	9656	11773	13934	16331	18910	21979	25448	29104	32886	36718
% Change Welfare from Reference (EV)	0.00	0.00	0.01	-0.07	-0.20	-0.17	0.13	0.25	0.32	0.45
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	7.02	8.97	11.44	14.60	18.64	23.79	30.36	38.75
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.47	1.58	1.67	1.38	1.45	1.51	1.54
Natural Gas	1.00	1.11	1.25	1.49	1.88	2.05	2.32	2.69	3.07	3.34
Coal	1.00	1.04	1.05	1.05	1.04	1.08	1.10	1.12	1.14	1.15
Electricity	1.00	1.11	1.25	1.34	1.45	1.51	1.57	1.61	1.65	1.69
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	90.24	99.04	114.10	132.76	184.90	206.08	225.32	242.83
Net Agriculture Exports (billion 2005\$)	25.64	25.53	18.51	17.23	14.07	16.13	32.15	30.69	32.58	42.00
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	7349.9	7434.3	7444.4	8194.8	9259.7	9858.2	10375.6	10786.4
CO <sub>2</sub> Emissions	5984.3	6517.4	6681.4	6787.1	6817.9	7552.4	8600.0	9189.9	9694.6	10089.9
CH <sub>4</sub> Emissions	583.4	602.0	397.2	390.3	373.7	388.0	394.3	400.1	407.9	416.9
N <sub>2</sub> O Emissions	385.2	387.9	262.6	247.6	242.0	242.8	253.9	256.8	262.1	269.1
Fluorinated Gases Emissions	140.0	173.8	9.2	10.0	11.5	12.1	12.1	12.0	11.7	11.2
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	23.6	21.0	17.3	23.4	27.6	30.9	34.0	36.7
Petroleum Products	42.0	46.0	48.2	51.0	54.3	58.7	69.5	74.8	79.5	83.3
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	26.4	29.9	33.6	30.7	29.3	27.9	26.2	24.6
Nuclear (primary energy eq)	9.3	9.0	8.7	8.5	8.4	8.1	7.8	7.6	7.4	7.2
Hydro (primary energy eq)	2.9	2.8	2.9	2.9	2.9	2.8	2.8	2.9	2.9	3.0
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.1	1.0	1.3	1.4	1.5
Biomass Liquids	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Primary Energy Use	99.8	107.6	110.6	114.3	117.4	124.8	138.0	145.5	151.5	156.3
Reduced Use from Reference	0.0	0.0	4.0	6.1	9.4	9.7	5.9	7.7	10.5	13.6
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	7.7	7.0	5.6	8.3	10.2	11.8	13.4	14.7
Oil w/o CCS	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.5	0.5	0.6
Gas w/o CCS	2.1	2.5	3.2	5.0	7.3	5.7	5.2	4.7	4.0	3.3
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3
Other Renewables	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4
Total Electricity Production	13.4	14.6	15.6	16.7	17.6	18.9	20.4	21.8	23.1	24.1

**Safety Valve: US Only Pursues Mitigation (SV USA only)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16907	19739	22763	26354	30406	34800	39667	44515
% Change GDP from Reference	0.00	0.00	-0.08	-0.17	-0.36	-0.40	-0.42	-0.37	0.35	0.69
Market Consumption (billion 2005\$)	8217	9858	11529	13368	15315	17693	20388	23298	26302	29382
% Change Consumption from Reference	0.00	0.00	-0.03	-0.12	-0.32	-0.38	-0.38	-0.40	-0.58	-0.63
Welfare (billion 2005\$)	9656	11773	13934	16331	18904	21959	25351	28958	32642	36385
% Change Welfare from Reference (EV)	0.00	0.00	0.01	-0.06	-0.23	-0.26	-0.25	-0.26	-0.42	-0.46
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	7.02	8.97	11.44	14.60	18.64	23.79	30.36	38.75
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.48	1.69	1.88	1.97	2.10	2.20	2.26
Natural Gas	1.00	1.11	1.25	1.51	1.90	2.09	2.44	2.85	3.16	3.43
Coal	1.00	1.04	1.05	1.06	1.06	1.11	1.14	1.17	1.21	1.24
Electricity	1.00	1.11	1.25	1.34	1.45	1.51	1.57	1.61	1.65	1.70
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.0	0.4	0.5	2.6	25.9	39.6
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	0.00	2.17	2.55	14.10	138.38	211.57
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	90.13	97.51	104.58	115.85	135.83	146.78	80.73	27.63
Net Agriculture Exports (billion 2005\$)	25.64	25.53	18.39	16.59	9.85	7.46	4.88	2.62	7.92	10.75
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	7346.6	7409.7	7358.9	7933.5	8477.8	8783.6	7504.6	6912.3
CO <sub>2</sub> Emissions	5984.3	6517.4	6678.4	6763.4	6734.2	7296.6	7836.3	8136.0	6843.7	6240.6
CH <sub>4</sub> Emissions	583.4	602.0	397.1	389.7	374.4	387.4	390.8	395.4	404.6	409.6
N <sub>2</sub> O Emissions	385.2	387.9	262.6	247.2	239.4	237.9	239.1	240.8	245.2	251.5
Fluorinated Gases Emissions	140.0	173.8	9.2	10.0	11.5	12.1	12.1	12.0	11.6	11.1
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	23.6	21.0	17.7	23.5	27.2	30.4	33.2	35.6
Petroleum Products	42.0	46.0	48.2	50.8	52.8	55.3	59.4	60.9	39.6	28.7
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6
Natural Gas	22.5	24.7	26.4	29.8	33.1	30.4	29.1	27.6	26.1	24.3
Nuclear (primary energy eq)	9.3	9.0	8.7	8.5	8.4	8.1	7.8	7.6	7.4	7.2
Hydro (primary energy eq)	2.9	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.1	1.0	1.3	1.4	1.5
Biomass Liquids	0.0	0.0	0.0	0.0	0.0	0.4	0.5	2.6	25.9	39.6
Total Primary Energy Use	99.8	107.6	110.5	114.0	115.8	121.7	127.9	133.4	136.6	146.6
Reduced Use from Reference	0.0	0.0	4.0	6.5	11.0	12.9	16.0	19.8	25.3	23.4
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	7.7	6.9	5.8	8.3	10.0	11.5	12.8	13.5
Oil w/o CCS	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.4	0.5	0.5
Gas w/o CCS	2.1	2.5	3.2	5.0	7.0	5.5	5.0	4.5	3.8	3.1
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3
Other Renewables	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	1.2
Total Electricity Production	13.4	14.6	15.6	16.6	17.5	18.7	20.0	21.4	22.4	23.3

**Safety Valve: Safety Valve Price Revised in 2030, US and Rest of World Pursue Mitigation (SV Double)**

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16907	19740	22782	26318	30466	34859	39431	44092
% Change GDP from Reference	0.00	0.00	-0.09	-0.17	-0.28	-0.53	-0.22	-0.20	-0.25	-0.27
Market Consumption (billion 2005\$)	8217	9858	11529	13368	15323	17673	20417	23350	26402	29486
% Change Consumption from Reference	0.00	0.00	-0.03	-0.12	-0.26	-0.49	-0.24	-0.18	-0.21	-0.28
Welfare (billion 2005\$)	9656	11773	13934	16331	18910	21943	25390	29026	32770	36510
% Change Welfare from Reference (EV)	0.00	0.00	0.01	-0.07	-0.20	-0.33	-0.10	-0.02	-0.03	-0.12
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	7.02	8.97	11.44	29.20	37.26	47.56	60.69	77.46
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.47	1.58	1.66	1.37	1.43	1.47	1.49
Natural Gas	1.00	1.11	1.25	1.49	1.88	2.35	2.49	2.81	3.05	2.88
Coal	1.00	1.04	1.05	1.05	1.04	1.02	1.04	1.07	1.09	1.15
Electricity	1.00	1.11	1.25	1.34	1.45	1.63	1.72	1.79	1.86	1.59
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.3
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	2.20	1.37
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	90.24	99.04	114.10	124.99	172.60	189.76	202.58	215.68
Net Agriculture Exports (billion 2005\$)	25.64	25.53	18.51	17.23	14.07	11.65	26.73	23.82	24.42	38.64
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	7349.9	7434.3	7444.4	7181.7	8153.5	8540.9	8543.3	7939.5
CO <sub>2</sub> Emissions	5984.3	6517.4	6681.4	6787.1	6817.9	6593.0	7542.8	7921.3	7915.4	7310.4
CH <sub>4</sub> Emissions	583.4	602.0	397.2	390.3	373.7	347.0	359.7	367.2	372.5	369.5
N <sub>2</sub> O Emissions	385.2	387.9	262.6	247.6	242.0	231.5	241.0	242.6	245.9	250.6
Fluorinated Gases Emissions	140.0	173.8	9.2	10.0	11.5	10.7	10.6	10.4	10.1	9.6
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	23.6	21.0	17.3	13.7	19.1	22.5	26.2	37.8
Petroleum Products	42.0	46.0	48.2	51.0	54.3	55.8	65.0	69.0	71.4	73.6
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	26.4	29.9	33.6	34.7	31.2	28.8	26.0	21.9
Nuclear (primary energy eq)	9.3	9.0	8.7	8.5	8.4	8.3	7.6	7.3	7.1	7.0
Hydro (primary energy eq)	2.9	2.8	2.9	2.9	2.9	3.0	2.9	2.9	2.9	2.8
Renewable Elec. (primary energy eq)	0.6	0.7	0.8	1.0	0.9	1.2	1.0	1.3	1.4	1.4
Biomass Liquids	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.3
Total Primary Energy Use	99.8	107.6	110.6	114.3	117.4	117.0	126.9	131.8	135.5	144.7
Reduced Use from Reference	0.0	0.0	4.0	6.1	9.4	17.6	17.0	21.3	26.4	25.2
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	7.7	7.0	5.6	4.4	6.9	8.2	8.3	5.2
Oil w/o CCS	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.2
Gas w/o CCS	2.1	2.5	3.2	5.0	7.3	8.7	7.2	6.2	4.9	2.6
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.1
Hydro	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.2
Other Renewables	0.2	0.2	0.3	0.3	0.3	0.5	0.4	0.6	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal with CCS	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.8	2.7	11.3
Total Electricity Production	13.4	14.6	15.6	16.7	17.6	18.2	19.4	20.5	21.4	24.3

<i>Nuclear Expansion: 287 bmt (287 bmt Nuclear)</i>										
	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>	<i>2045</i>	<i>2050</i>
<b><i>ECONOMY WIDE INDICATORS</i></b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16893	19715	22737	26320	30462	34807	39392	44100
<i>% Change GDP from Reference</i>	0.00	0.00	-0.17	-0.29	-0.48	-0.53	-0.24	-0.35	-0.35	-0.25
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11525	13357	15297	17669	20399	23276	26326	29466
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.07	-0.20	-0.44	-0.52	-0.33	-0.50	-0.49	-0.34
<i>Welfare (billion 2005\$)</i>	9656	11773	13934	16325	18887	21936	25363	28928	32663	36468
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	0.01	-0.10	-0.32	-0.36	-0.20	-0.36	-0.36	-0.23
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	13.70	16.66	20.27	24.66	30.01	36.51	44.42	54.04
<b><i>PRICES (index, 2005=1.00)</i></b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.46	1.57	1.66	1.37	1.43	1.48	1.51
<i>Natural Gas</i>	1.00	1.11	1.23	1.48	1.96	2.24	2.36	2.47	2.65	2.67
<i>Coal</i>	1.00	1.04	1.04	1.04	1.01	1.02	1.03	0.99	1.01	1.06
<i>Electricity</i>	1.00	1.11	1.31	1.41	1.50	1.59	1.66	1.61	1.59	1.58
<b><i>TRADE &amp; PRODUCTION (selected indicators)</i></b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	86.90	94.98	109.28	126.79	175.65	194.26	211.67	228.29
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	16.73	15.18	11.54	12.71	29.17	30.14	33.60	44.75
<b><i>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</i></b>										
<i>GHG Emissions</i>	7091.9	7680.1	7093.9	7095.5	6910.1	7211.2	7864.5	7433.9	7559.8	7743.6
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	6449.3	6473.4	6316.3	6613.6	7250.1	6823.3	6936.9	7102.6
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	381.4	373.3	350.1	354.1	361.1	356.6	363.9	374.8
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	255.5	240.3	233.9	233.0	242.8	243.6	248.8	256.5
<i>Fluorinated Gases Emissions</i>	140.0	173.8	8.2	9.0	10.4	11.0	11.0	11.0	10.7	10.3
<b><i>PRIMARY ENERGY USE (EJ)</i></b>										
<i>Coal</i>	22.6	24.3	22.2	18.8	12.3	13.8	15.8	10.4	12.1	21.1
<i>Petroleum Products</i>	42.0	46.0	47.0	49.5	52.6	56.5	66.1	70.4	74.4	78.0
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	26.0	29.8	35.2	33.3	29.7	26.0	23.3	20.7
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.7	8.5	8.5	10.2	14.7	28.9	33.5	30.7
<i>Hydro (primary energy eq)</i>	2.9	2.8	2.9	2.9	2.9	2.9	2.8	2.9	2.9	3.0
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.8	1.0	0.9	1.2	1.0	1.3	1.4	1.5
<i>Biomass Liquids</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Total Primary Energy Use</i>	99.8	107.6	107.6	110.5	112.5	118.0	130.1	139.8	147.7	154.9
<i>Reduced Use from Reference</i>	0.0	0.0	7.0	9.9	14.3	16.6	13.8	13.3	14.2	15.0
<b><i>ELECTRICITY PRODUCTION (EJ)</i></b>										
<i>Coal w/o CCS</i>	6.9	7.6	7.3	6.3	3.9	4.6	5.5	3.0	2.8	2.8
<i>Oil w/o CCS</i>	0.3	0.3	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.1
<i>Gas w/o CCS</i>	2.1	2.5	3.3	5.3	8.7	7.9	6.2	4.3	2.8	1.2
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.9	6.0	11.8	13.9	12.8
<i>Hydro</i>	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.7	1.7	6.0
<i>Total Electricity Production</i>	13.4	14.6	15.3	16.3	17.3	18.3	19.7	21.6	23.2	24.8

<i>Nuclear Expansion: 203 bmt (203 bmt Nuclear)</i>										
	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>	<i>2045</i>	<i>2050</i>
<b><i>ECONOMY WIDE INDICATORS</i></b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16836	19622	22703	26343	30236	34634	39281	43991
<i>% Change GDP from Reference</i>	0.00	0.00	-0.50	-0.76	-0.63	-0.44	-0.97	-0.85	-0.63	-0.49
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11502	13298	15216	17511	20257	23140	26011	28994
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.26	-0.65	-0.96	-1.41	-1.03	-1.08	-1.68	-1.94
<i>Welfare (billion 2005\$)</i>	9656	11773	13928	16279	18824	21786	25245	28828	32368	36004
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	-0.04	-0.39	-0.66	-1.04	-0.66	-0.70	-1.26	-1.50
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	40.60	49.40	60.10	73.12	88.97	108.24	131.69	160.22
<b><i>PRICES (index, 2005=1.00)</i></b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.45	1.52	1.55	1.34	1.36	1.30	1.23
<i>Natural Gas</i>	1.00	1.11	1.16	1.37	1.60	1.63	1.73	1.85	1.80	1.75
<i>Coal</i>	1.00	1.04	1.02	1.00	0.99	0.98	0.99	1.01	0.96	0.95
<i>Electricity</i>	1.00	1.11	1.51	1.49	1.56	1.59	1.61	1.60	1.58	1.56
<b><i>TRADE &amp; PRODUCTION (selected indicators)</i></b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.4	0.9	7.2	17.4	0.1	4.3	22.0	33.5
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	1.91	4.61	38.68	92.95	0.50	22.80	117.55	179.23
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	74.52	77.93	67.78	46.27	141.68	141.49	92.88	65.89
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	10.29	9.21	7.91	12.66	20.23	20.49	31.68	44.55
<b><i>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</i></b>										
<i>GHG Emissions</i>	7091.9	7680.1	6339.4	5935.1	5436.0	4525.2	5814.4	5618.9	4066.8	3391.4
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	5745.7	5374.1	4886.8	3976.1	5262.4	5060.2	3506.1	2816.2
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	347.9	331.2	323.4	325.0	324.1	328.9	326.0	332.6
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	239.6	222.8	217.8	215.6	219.5	221.5	226.2	234.3
<i>Fluorinated Gases Emissions</i>	140.0	173.8	6.9	7.5	8.5	9.0	8.9	8.8	8.9	8.9
<b><i>PRIMARY ENERGY USE (EJ)</i></b>										
<i>Coal</i>	22.6	24.3	19.0	13.1	10.6	9.4	11.0	14.7	7.2	5.6
<i>Petroleum Products</i>	42.0	46.0	42.6	43.7	39.3	31.5	54.6	53.2	37.6	28.4
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	24.0	27.4	29.1	25.1	23.0	21.4	17.8	16.3
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.8	12.9	14.4	22.7	25.6	27.2	42.8	50.1
<i>Hydro (primary energy eq)</i>	2.9	2.8	3.1	3.0	3.0	2.9	2.9	3.0	3.0	3.1
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.9	1.0	0.9	1.2	1.0	1.3	1.4	1.5
<i>Biomass Liquids</i>	0.0	0.0	0.4	0.9	7.2	17.4	0.1	4.3	22.0	33.8
<i>Total Primary Energy Use</i>	99.8	107.6	98.8	102.0	104.5	110.2	118.2	125.0	131.8	138.7
<i>Reduced Use from Reference</i>	0.0	0.0	15.8	18.4	22.3	24.3	25.7	28.2	30.1	31.3
<b><i>ELECTRICITY PRODUCTION (EJ)</i></b>										
<i>Coal w/o CCS</i>	6.9	7.6	6.3	4.1	3.2	2.4	1.7	1.4	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.2	4.9	6.2	4.2	3.3	2.4	0.8	0.0
<i>Nuclear</i>	3.0	3.0	3.1	4.6	5.3	8.6	10.2	10.8	17.0	19.9
<i>Hydro</i>	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.2	0.4	1.0	2.7	4.6	3.0	2.3
<i>Total Electricity Production</i>	13.4	14.6	14.3	15.7	16.7	18.0	19.5	21.1	22.6	24.0



<i>Nuclear Expansion: 167 bmt (167 bmt Nuclear)</i>										
	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>	<i>2045</i>	<i>2050</i>
<b><i>ECONOMY WIDE INDICATORS</i></b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16814	19629	22730	26376	30274	34686	39207	43818
<i>% Change GDP from Reference</i>	0.00	0.00	-0.63	-0.73	-0.51	-0.32	-0.85	-0.70	-0.82	-0.89
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11493	13272	15141	17404	20100	22841	25804	28864
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.34	-0.84	-1.45	-2.01	-1.79	-2.36	-2.47	-2.38
<i>Welfare (billion 2005\$)</i>	9656	11773	13924	16255	18746	21673	25079	28504	32150	35878
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	-0.06	-0.53	-1.07	-1.56	-1.32	-1.82	-1.92	-1.85
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	50.27	61.16	74.41	90.53	110.15	134.01	163.05	198.37
<b><i>PRICES (index, 2005=1.00)</i></b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.43	1.46	1.49	1.26	1.22	1.22	1.20
<i>Natural Gas</i>	1.00	1.11	1.13	1.33	1.38	1.44	1.51	1.53	1.57	1.58
<i>Coal</i>	1.00	1.04	1.02	1.00	0.99	0.98	0.97	0.96	0.94	0.94
<i>Electricity</i>	1.00	1.11	1.58	1.49	1.56	1.59	1.61	1.60	1.58	1.56
<b><i>TRADE &amp; PRODUCTION (selected indicators)</i></b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.3	4.5	16.1	28.6	16.5	31.2	33.9	35.0
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	1.85	24.02	85.99	152.88	88.05	166.51	181.14	187.13
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	71.21	62.01	33.04	2.63	77.48	40.01	44.43	54.26
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	8.11	8.66	9.91	15.03	24.24	29.45	32.61	38.04
<b><i>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</i></b>										
<i>GHG Emissions</i>	7091.9	7680.1	6151.3	5502.7	4420.4	3443.8	4276.0	3063.6	3022.0	3107.1
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	5570.4	4953.3	3879.4	2904.1	3735.5	2525.4	2472.1	2546.5
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	339.3	323.4	318.8	319.0	316.4	312.0	317.8	321.0
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	235.5	219.3	214.5	212.7	215.9	217.8	223.7	231.3
<i>Fluorinated Gases Emissions</i>	140.0	173.8	6.6	7.2	8.2	8.7	8.6	8.8	8.9	8.9
<b><i>PRIMARY ENERGY USE (EJ)</i></b>										
<i>Coal</i>	22.6	24.3	18.3	12.7	10.1	8.8	9.3	7.5	5.1	3.9
<i>Petroleum Products</i>	42.0	46.0	41.5	38.7	28.6	18.4	35.4	23.3	23.6	25.2
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	23.3	26.5	24.1	22.1	20.3	17.8	16.0	15.3
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.9	13.4	20.8	26.5	29.5	37.6	45.9	51.1
<i>Hydro (primary energy eq)</i>	2.9	2.8	3.1	3.0	3.0	2.9	2.9	2.9	3.0	3.1
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.9	1.0	0.9	1.2	1.0	1.3	1.4	1.5
<i>Biomass Liquids</i>	0.0	0.0	0.3	4.5	16.1	28.6	16.5	31.2	33.9	35.3
<i>Total Primary Energy Use</i>	99.8	107.6	96.4	99.8	103.7	108.5	115.0	121.7	128.8	135.4
<i>Reduced Use from Reference</i>	0.0	0.0	18.2	20.6	23.1	26.1	29.0	31.5	33.1	34.6
<b><i>ELECTRICITY PRODUCTION (EJ)</i></b>										
<i>Coal w/o CCS</i>	6.9	7.6	6.1	4.0	3.0	2.2	1.3	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.1	4.8	3.5	2.7	2.0	0.9	0.1	0.0
<i>Nuclear</i>	3.0	3.0	3.1	4.8	7.6	10.1	11.8	15.1	18.4	20.5
<i>Hydro</i>	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.2	0.4	0.2	0.2	0.1	0.1	0.0
<i>Coal with CCS</i>	0.0	0.0	0.0	0.2	0.4	0.9	2.4	3.1	2.1	1.5
<i>Total Electricity Production</i>	13.4	14.6	14.0	15.6	16.6	17.8	19.4	20.9	22.4	23.9



<b>Quadratic Path: 50% Below 1990 Levels (230 bmt)</b>										
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>ECONOMY WIDE INDICATORS</b>										
Population (million)	296	309	321	334	347	359	369	379	388	397
GDP (billion 2005\$)	11981	14339	16848	19630	22661	26255	30222	34578	39194	44032
% Change GDP from Reference	0.00	0.00	-0.43	-0.72	-0.81	-0.77	-1.02	-1.01	-0.85	-0.40
Market Consumption (billion 2005\$)	8217	9858	11507	13314	15235	17547	20253	23139	26148	29136
% Change Consumption from Reference	0.00	0.00	-0.22	-0.53	-0.84	-1.20	-1.04	-1.08	-1.16	-1.46
Welfare (billion 2005\$)	9656	11773	13929	16297	18844	21832	25247	28827	32522	36158
% Change Welfare from Reference(EV)	0.00	0.00	-0.02	-0.27	-0.55	-0.83	-0.66	-0.71	-0.79	-1.08
CO <sub>2</sub> -E Price (2005\$/tCO <sub>2</sub> -e)	0.00	0.00	35.45	43.13	52.47	63.84	77.67	94.50	114.97	139.88
<b>PRICES (index, 2005=1.00)</b>										
Petroleum Product	1.00	1.15	1.30	1.46	1.55	1.60	1.34	1.39	1.40	1.29
Natural Gas	1.00	1.11	1.17	1.42	1.83	2.22	2.21	2.26	2.29	2.16
Coal	1.00	1.04	1.02	1.01	0.99	0.98	1.02	1.08	1.12	1.15
Electricity	1.00	1.11	1.47	1.60	1.58	1.73	1.80	1.61	1.60	1.59
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
Bio Liquids Production in US (EJ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Bio Liquids Imports (EJ)	0.0	0.0	0.4	0.3	2.3	9.1	0.0	0.0	6.2	25.3
Net Bio Liquids Imports (billion 2005\$)	0.00	0.00	1.94	1.35	12.22	48.67	0.14	0.00	33.00	135.24
Net Crude Oil Imports (billion 2005\$)	77.40	85.21	76.41	82.27	87.12	78.18	147.53	161.73	153.29	101.03
Net Agriculture Exports (billion 2005\$)	25.64	25.53	11.49	8.89	6.21	7.84	19.06	19.55	24.17	42.38
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
GHG Emissions	7091.9	7680.1	6449.8	6205.5	5937.7	5365.3	5936.7	5907.7	5530.1	4274.1
CO <sub>2</sub> Emissions	5984.3	6517.4	5848.5	5635.5	5391.5	4829.8	5397.9	5362.5	4970.8	3696.2
CH <sub>4</sub> Emissions	583.4	602.0	352.9	337.7	318.9	310.6	309.3	314.1	323.3	333.6
N <sub>2</sub> O Emissions	385.2	387.9	242.0	225.2	219.0	216.2	220.8	222.7	227.7	236.0
Fluorinated Gases Emissions	140.0	173.8	7.0	7.7	8.7	9.2	9.2	9.0	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
Coal	22.6	24.3	19.4	14.4	9.8	10.6	18.1	28.9	35.4	42.0
Petroleum Products	42.0	46.0	43.3	45.1	45.3	41.2	56.4	59.5	55.6	38.7
Including Shale Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas	22.5	24.7	24.4	28.7	33.7	35.2	30.0	26.6	23.2	20.0
Nuclear (primary energy eq)	9.3	9.0	8.8	8.7	8.6	8.7	8.7	8.6	8.6	8.6
Hydro (primary energy eq)	2.9	2.8	3.0	3.1	3.1	3.2	3.3	3.3	3.4	3.5
Renewable Elec. (primary energy eq)	0.6	0.7	0.9	1.1	0.9	1.3	1.2	1.5	1.6	1.7
Biomass Liquids	0.0	0.0	0.4	0.3	2.3	9.1	0.0	0.0	6.2	25.3
Total Primary Energy Use	99.8	107.6	100.2	101.3	103.6	109.3	117.7	128.2	134.0	139.8
Reduced Use from Reference	0.0	0.0	14.4	19.2	23.2	25.3	26.2	24.9	27.9	30.1
<b>ELECTRICITY PRODUCTION (EJ)</b>										
Coal w/o CCS	6.9	7.6	6.5	4.6	2.7	1.5	0.5	0.0	0.0	0.0
Oil w/o CCS	0.3	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Gas w/o CCS	2.1	2.5	3.2	5.4	8.6	9.4	6.8	4.8	3.1	1.3
Nuclear	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Hydro	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
Other Renewables	0.2	0.2	0.1	0.6	0.3	0.5	0.4	0.5	0.6	0.6
Gas with CCS	0.0	0.0	0.0	0.2	0.1	0.1	0.3	0.2	0.1	0.1
Coal with CCS	0.0	0.0	0.0	0.2	0.5	1.5	6.3	11.3	14.5	17.6
Total Electricity Production	13.4	14.6	14.3	15.5	16.5	17.4	18.6	21.0	22.5	23.9

<i>Quadratic Path: 80% Below 1990 Levels (206 bmt)</i>										
	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECONOMY WIDE INDICATORS</b>										
<i>Population (million)</i>	296	309	321	334	347	359	369	379	388	397
<i>GDP (billion 2005\$)</i>	11981	14339	16833	19615	22696	26319	30166	34594	39306	43977
<i>% Change GDP from Reference</i>	0.00	0.00	-0.52	-0.80	-0.65	-0.53	-1.21	-0.96	-0.57	-0.53
<i>Market Consumption (billion 2005\$)</i>	8217	9858	11501	13299	15203	17484	20215	23058	25966	28994
<i>% Change Consumption from Reference</i>	0.00	0.00	-0.27	-0.63	-1.05	-1.56	-1.23	-1.43	-1.85	-1.94
<i>Welfare (billion 2005\$)</i>	9656	11773	13927	16287	18813	21766	25214	28746	32323	36011
<i>% Change Welfare from Reference (EV)</i>	0.00	0.00	-0.04	-0.34	-0.71	-1.13	-0.79	-0.99	-1.40	-1.48
<i>CO<sub>2</sub>-E Price (2005\$/tCO<sub>2</sub>-e)</i>	0.00	0.00	41.89	50.97	62.01	75.44	91.79	111.68	135.87	165.31
<b>PRICES (index, 2005=1.00)</b>										
<i>Petroleum Product</i>	1.00	1.15	1.30	1.45	1.51	1.54	1.34	1.34	1.28	1.23
<i>Natural Gas</i>	1.00	1.11	1.15	1.40	1.79	2.13	2.11	2.14	2.15	2.00
<i>Coal</i>	1.00	1.04	1.02	1.00	0.99	0.98	1.03	1.08	1.12	1.15
<i>Electricity</i>	1.00	1.11	1.52	1.66	1.61	1.75	1.77	1.61	1.60	1.60
<b>TRADE &amp; PRODUCTION (selected indicators)</b>										
<i>Bio Liquids Production in US (EJ)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
<i>Net Bio Liquids Imports (EJ)</i>	0.0	0.0	0.4	1.3	8.4	19.3	0.0	8.3	27.1	33.4
<i>Net Bio Liquids Imports (billion 2005\$)</i>	0.00	0.00	1.90	6.85	45.09	103.19	0.13	44.58	144.87	178.27
<i>Net Crude Oil Imports (billion 2005\$)</i>	77.40	85.21	74.06	75.93	63.36	39.47	140.85	126.58	74.74	65.17
<i>Net Agriculture Exports (billion 2005\$)</i>	25.64	25.53	10.00	7.35	6.97	9.82	16.56	20.22	31.22	39.78
<b>GHG EMISSIONS (mmt CO<sub>2</sub>-e)</b>										
<i>GHG Emissions</i>	7091.9	7680.1	6313.0	5960.4	5372.9	4485.8	5669.3	5091.2	3878.7	3493.0
<i>CO<sub>2</sub> Emissions</i>	5984.3	6517.4	5721.1	5401.3	4834.7	3957.4	5139.6	4554.2	3325.8	2924.6
<i>CH<sub>4</sub> Emissions</i>	583.4	602.0	346.7	330.2	313.7	306.1	304.2	309.2	318.8	326.6
<i>N<sub>2</sub>O Emissions</i>	385.2	387.9	239.0	222.0	216.6	213.9	217.1	219.5	225.7	233.4
<i>Fluorinated Gases Emissions</i>	140.0	173.8	6.8	7.4	8.5	9.0	8.9	8.8	8.9	8.9
<b>PRIMARY ENERGY USE (EJ)</b>										
<i>Coal</i>	22.6	24.3	18.9	13.6	9.6	10.4	19.0	28.8	35.3	41.6
<i>Petroleum Products</i>	42.0	46.0	42.5	43.1	37.9	29.5	54.3	48.8	32.4	28.3
<i>Including Shale Oil</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Natural Gas</i>	22.5	24.7	23.9	28.3	33.0	34.3	28.7	25.6	22.2	19.1
<i>Nuclear (primary energy eq)</i>	9.3	9.0	8.8	8.8	8.6	8.7	8.7	8.6	8.6	8.6
<i>Hydro (primary energy eq)</i>	2.9	2.8	3.1	3.1	3.1	3.2	3.3	3.3	3.4	3.5
<i>Renewable Elec. (primary energy eq)</i>	0.6	0.7	0.9	1.1	0.9	1.3	1.2	1.5	1.6	1.7
<i>Biomass Liquids</i>	0.0	0.0	0.4	1.3	8.4	19.3	0.0	8.3	27.1	33.9
<i>Total Primary Energy Use</i>	99.8	107.6	98.5	99.2	101.6	106.7	115.2	124.9	130.6	136.7
<i>Reduced Use from Reference</i>	-99.2	-106.8	-97.7	-98.3	-100.7	-105.6	-114.1	-123.5	-129.1	-135.1
<b>ELECTRICITY PRODUCTION (EJ)</b>										
<i>Coal w/o CCS</i>	6.9	7.6	6.3	4.3	2.6	1.4	0.4	0.0	0.0	0.0
<i>Oil w/o CCS</i>	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
<i>Gas w/o CCS</i>	2.1	2.5	3.2	5.4	8.4	8.9	5.9	4.2	2.6	0.9
<i>Nuclear</i>	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<i>Hydro</i>	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
<i>Other Renewables</i>	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.6	0.6
<i>Gas with CCS</i>	0.0	0.0	0.0	0.2	0.1	0.4	0.7	0.5	0.3	0.2
<i>Coal with CCS</i>	0.0	0.0	0.0	0.2	0.6	1.7	6.8	11.4	14.5	17.6
<i>Total Electricity Production</i>	13.4	14.6	14.3	15.0	16.4	17.2	18.6	20.9	22.3	23.7