

**APPENDIX D**  
**DETAILED RESULTS**

**APPENDIX D-5**  
**INTEGRATED RESULTS**

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Business As Usual (990811)</i>						
<i>demand side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>
<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>supply side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	20.5	21.2	22.2	23.2
Commercial	15.2	16.0	16.6	17.3	18.1	18.5
Industrial	34.8	35.8	37.0	38.8	40.1	41.2
Transportation	25.0	27.1	30.2	33.1	35.0	36.8
Total	94.0	98.9	104.3	110.3	115.4	119.8
<b>Electricity Sales (TWh)</b>						
Residential	1072	1175	1263	1342	1447	1551
Commercial	1008	1081	1164	1251	1337	1392
Industrial	1033	1057	1119	1197	1258	1311
Transportation	17	18	31	44	55	65
Total	3130	3331	3577	3833	4097	4318
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	309	317	330	347	363
Commercial	237	255	265	280	293	300
Industrial	482	498	512	534	551	563
Transportation	475	516	573	626	662	696
Total	1480	1578	1667	1769	1852	1922
Utilities	532	586	609	645	680	709
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	668	706	755	787	818
Natural Gas	319	330	365	404	437	460
Coal	533	579	594	608	626	642
Other	0	0	1	1	2	2
Total	1480	1578	1667	1769	1852	1922
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	7.76	8.12	8.16	8.25
Natural Gas	4.32	4.12	4.08	4.02	3.92	3.90
Coal	1.28	1.21	1.14	1.07	1.00	0.94
Electricity	20.25	19.25	18.54	17.85	16.89	16.15
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	1.49	1.54	1.55	1.54
Petroleum Products	2.88	2.28	3.13	3.79	3.90	4.19
Distillate Fuel	4.47	3.84	4.88	5.22	5.33	5.51
Residual Fuel	2.76	2.18	2.97	3.57	3.66	3.94
Natural Gas	2.70	2.62	2.90	3.01	3.02	3.04
Steam Coal	1.27	1.20	1.12	1.06	0.99	0.93
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.9	41.2	44.1	46.0	47.9
Natural Gas	22.6	23.1	25.5	28.3	30.5	32.1
Coal Subtotal	21.1	22.6	23.1	23.7	24.3	25.0
Nuclear Power	6.7	7.1	6.8	6.2	5.9	5.6
Renewable Energy	6.8	6.9	7.3	7.8	8.3	8.9
Electricity Imports	0.3	0.4	0.3	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.1	0.1	0.1
Total	94.0	98.9	104.3	110.3	115.4	119.8
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	553	534	604	651	672	694
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.6	9.9	9.5	9.1
Carbon/GDP Ratio (gC/1997\$)	181	179	169	159	153	146
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	176	170	168	166	164

## Carbon Emissions Forecast Summary (MtC)

*CEF-NEMS Business As Usual (990811)*

<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Base 1997</i>	<i>Base 0 Base 2000</i>	<i>Base 0 Base 2005</i>	<i>Base 0 Base 2010</i>	<i>Base 0 Base 2015</i>	<i>Base 0 Base 2020</i>
<i>Residential</i>						
Petroleum	27.8	26	24.3	23	22	21
Natural Gas	74.1	75	76.5	79.7	83.6	86.3
Coal	1.4	1.5	1.4	1.3	1.3	1.3
Electricity	182.3	206.8	215	225.7	240.1	254.5
Total	285.6	309.3	317.2	329.7	347	363
<i>Commercial</i>						
Petroleum	14.4	11.6	11.3	11.1	11	10.6
Natural Gas	48.6	51.1	53.1	55.4	57.5	58
Coal	2.1	2.3	2.4	2.5	2.6	2.6
Electricity	171.5	190.2	198.2	210.4	221.9	228.4
Total	236.6	255.2	265	279.5	292.9	299.6
<i>Industrial</i>						
Petroleum	105.8	108.3	111.5	115.9	117.4	118.5
Natural Gas	142.2	145.1	150.9	157.3	164.1	169.2
Coal	58.5	58.2	59.1	59.7	60.1	60.4
Electricity	175.6	186.1	190.5	201.3	208.8	215.2
Total Fuel	482.1	497.8	511.9	534.2	550.5	563.3
Process Emissions	11.16	10.69	11.34	12.02	12.25	12.41
Total	493.26	508.49	523.24	546.22	562.75	575.71
<i>Transportation</i>						
Petroleum	461.9	500.6	552.1	600.5	632.7	664.4
Natural Gas	10.5	11.5	14.5	16.5	18	19.1
Other	0	0.3	0.9	1.3	1.7	1.9
Electricity	2.9	3.2	5.2	7.4	9.1	10.7
Total	475.3	515.6	572.7	625.8	661.5	696.1
<i>Total Carbon Emissions</i>						
Petroleum	609.9	646.6	699.2	750.6	783.1	814.5
Natural Gas	275.4	282.7	295	308.9	323.2	332.6
Coal	62	62	62.8	63.5	64	64.3
Other	0	0.3	0.9	1.3	1.7	1.9
Electricity	532.4	586.3	608.9	644.9	679.9	708.8
Total	1480	1578	1667	1769	1852	1922
<i>Electric Generators</i>						
Petroleum	17.6	21.6	7.2	4.6	4.1	3.7
Natural Gas	43.8	47.3	70.2	95.4	114	127.1
Coal	471	517.3	531.5	544.8	561.8	577.9
Total	532.4	586.3	608.9	644.9	679.9	708.8
<i>Total Carbon Emissions</i>						
Petroleum	627.5	668.2	706.3	755.3	787.2	818.3
Natural Gas	319.1	330	365.2	404.3	437.2	459.7
Coal	533	579.3	594.3	608.3	625.8	642.2
Other	0	0.3	0.9	1.3	1.7	1.9
Total	1480	1578	1667	1769	1852	1922

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Business As Usual with \$25/t C-Charge (990811)</i>						
<i>demand side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>
<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>25</i>	<i>25</i>	<i>25</i>
<i>supply side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	20.1	20.9	21.9	22.9
Commercial	15.2	15.9	16.1	17.0	17.7	18.2
Industrial	34.8	35.8	36.6	38.3	39.7	40.8
Transportation	25.0	27.1	30.1	32.9	34.8	36.6
Total	94.0	98.8	102.9	109.1	114.0	118.5
<b>Electricity Sales (TWh)</b>						
Residential	1072	1175	1241	1318	1420	1518
Commercial	1008	1081	1141	1223	1306	1359
Industrial	1033	1057	1111	1183	1244	1293
Transportation	17	18	31	44	55	65
Total	3130	3331	3524	3768	4025	4235
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	308	303	315	327	337
Commercial	237	254	252	265	274	277
Industrial	482	496	497	517	528	536
Transportation	475	516	571	623	658	691
Total	1480	1573	1622	1720	1786	1842
Utilities	532	582	575	608	628	645
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	668	702	751	782	813
Natural Gas	319	331	368	402	436	459
Coal	533	575	552	565	566	569
Other	0	0	1	1	2	2
Total	1480	1573	1622	1720	1786	1842
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	8.18	8.52	8.57	8.62
Natural Gas	4.32	4.12	4.43	4.35	4.26	4.23
Coal	1.28	1.21	1.78	1.72	1.64	1.59
Electricity	20.25	19.28	20.06	19.36	18.34	17.54
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	2.10	2.13	2.15	2.16
Petroleum Products	2.88	2.29	3.71	4.27	4.52	4.75
Distillate Fuel	4.47	3.83	5.29	5.69	5.78	5.96
Residual Fuel	2.76	2.18	3.53	4.06	4.29	4.52
Natural Gas	2.70	2.61	3.25	3.33	3.36	3.38
Steam Coal	1.27	1.20	1.77	1.70	1.62	1.57
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.9	41.0	43.9	45.7	47.6
Natural Gas	22.6	23.2	25.7	28.1	30.4	32.0
Coal Subtotal	21.1	22.4	21.5	22.0	22.0	22.1
Nuclear Power	6.7	7.1	6.9	6.7	6.5	6.4
Renewable Energy	6.8	6.9	7.4	8.0	8.9	10.1
Electricity Imports	0.3	0.4	0.4	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.1	0.1	0.1
Total	94.0	98.8	102.9	109.1	114.0	118.5
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	553	534	640	688	710	731
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.4	9.8	9.4	9.0
Carbon/GDP Ratio (gC/1997\$)	181	179	165	155	147	140
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	175	163	161	156	152

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Business As Usual with \$25/t C-Charge (990811)*

	<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Base 1997</i>	<i>Base 0 Base 2000</i>	<i>Base 25 Base 2005</i>	<i>Base 25 Base 2010</i>	<i>Base 25 Base 2015</i>	<i>Base 25 Base 2020</i>
<i>Residential</i>							
Petroleum		27.8	26	23.9	22.6	21.5	20.5
Natural Gas		74.1	75	75.2	78.2	81.9	84.4
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	205.2	202.4	212.9	221.7	231.2
Total		285.6	307.7	302.9	315	326.5	337.4
<i>Commercial</i>							
Petroleum		14.4	11.7	11.1	10.9	10.7	10.4
Natural Gas		48.6	51.1	52.1	54.4	56.3	56.8
Coal		2.1	2.3	2.3	2.4	2.5	2.5
Electricity		171.5	188.8	186.1	197.4	203.9	207
Total		236.6	253.8	251.5	265.1	273.5	276.7
<i>Industrial</i>							
Petroleum		105.8	108.2	110.9	115.4	117	117.8
Natural Gas		142.2	145.1	149.9	155.8	161.7	166.2
Coal		58.5	58.3	54.5	54.6	55.2	55.3
Electricity		175.6	184.7	181.2	191	194.2	196.9
Total Fuel		482.1	496.3	496.5	516.8	528.1	536.2
Process Emissions		11.16	10.69	11.34	12.02	12.25	12.41
Total		493.26	506.99	507.84	528.82	540.35	548.61
<i>Transportation</i>							
Petroleum		461.9	500.6	550.7	598	629.5	660.5
Natural Gas		10.5	11.5	14.6	16.4	17.9	19
Other		0	0.3	0.9	1.4	1.7	1.9
Electricity		2.9	3.2	5	7.1	8.6	9.9
Total		475.3	515.6	571.1	622.9	657.6	691.3
<i>Total Carbon Emissions</i>							
Petroleum		609.9	646.5	696.5	746.9	778.8	809.3
Natural Gas		275.4	282.7	291.8	304.8	317.8	326.5
Coal		62	62	58.2	58.4	59	59
Other		0	0.3	0.9	1.4	1.7	1.9
Electricity		532.4	581.9	574.7	608.4	628.4	645
Total		1480	1573	1622	1720	1786	1842
<i>Electric Generators</i>							
Petroleum		17.6	21.1	5.3	4.5	3.6	3.4
Natural Gas		43.8	48.2	75.7	97.1	117.7	132
Coal		471	512.7	493.6	506.8	507.2	509.5
Total		532.4	581.9	574.7	608.4	628.4	645
<i>Total Carbon Emissions</i>							
Petroleum		627.5	667.6	701.9	751.3	782.3	812.7
Natural Gas		319.1	330.8	367.5	401.9	435.5	458.5
Coal		533	574.7	551.8	565.2	566.2	568.5
Other		0	0.3	0.9	1.4	1.7	1.9
Total		1480	1573	1622	1720	1786	1842

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Business As Usual with \$50/t C-Charge (990811)</i>						
<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Base</i>	<i>Base 0 Base</i>	<i>Base 50 Base</i>	<i>Base 50 Base</i>	<i>Base 50 Base</i>	<i>Base 50 Base</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	19.6	20.3	21.2	22.2
Commercial	15.2	15.9	15.6	16.4	17.1	17.6
Industrial	34.8	35.8	36.2	38.1	39.4	40.5
Transportation	25.0	27.1	30.0	32.7	34.5	36.3
Total	94.0	98.8	101.4	107.5	112.2	116.5
<b>Electricity Sales (TWh)</b>						
Residential	1072	1174	1221	1291	1391	1486
Commercial	1008	1080	1116	1191	1276	1329
Industrial	1033	1057	1103	1179	1240	1289
Transportation	17	18	30	44	55	65
Total	3130	3330	3470	3706	3961	4170
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	306	286	296	303	307
Commercial	237	253	236	247	252	250
Industrial	482	495	482	503	510	513
Transportation	475	516	570	618	652	685
Total	1480	1570	1573	1663	1717	1755
Utilities	532	578	534	562	571	571
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	668	699	745	776	806
Natural Gas	319	332	376	409	445	471
Coal	533	569	498	508	494	477
Other	0	0	1	1	2	2
Total	1480	1570	1573	1663	1717	1755
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	8.59	8.94	8.88	8.97
Natural Gas	4.32	4.11	4.80	4.75	4.63	4.62
Coal	1.28	1.21	2.43	2.37	2.29	2.23
Electricity	20.24	19.31	21.63	21.03	19.85	18.96
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.45	2.75	2.78	2.79	2.82
Petroleum Products	2.88	2.28	4.31	4.90	4.98	5.37
Distillate Fuel	4.47	3.83	5.75	6.18	6.19	6.44
Residual Fuel	2.76	2.18	4.13	4.69	4.77	5.16
Natural Gas	2.70	2.60	3.66	3.74	3.74	3.78
Steam Coal	1.27	1.20	2.42	2.36	2.27	2.21
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.9	40.8	43.6	45.4	47.2
Natural Gas	22.6	23.3	26.3	28.6	31.1	32.9
Coal Subtotal	21.1	22.2	19.4	19.8	19.2	18.5
Nuclear Power	6.7	7.1	7.0	6.8	6.8	6.7
Renewable Energy	6.8	6.9	7.5	8.3	9.3	10.8
Electricity Imports	0.3	0.5	0.4	0.4	0.4	0.4
Others	0.0	0.0	0.1	0.1	0.1	0.1
Total	94.0	98.8	101.4	107.5	112.2	116.5
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	553	535	678	728	747	769
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.3	9.7	9.2	8.9
Carbon/GDP Ratio (gC/1997\$)	181	178	160	150	141	134
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	174	154	152	144	137

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Business As Usual with \$50/t C-Charge (990811)*

	<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Base 1997</i>	<i>Base 0 Base 2000</i>	<i>Base 50 Base 2005</i>	<i>Base 50 Base 2010</i>	<i>Base 50 Base 2015</i>	<i>Base 50 Base 2020</i>
<i>Residential</i>							
Petroleum		27.8	26	23.5	22.2	21.2	20.1
Natural Gas		74.1	75	73.9	76.5	80	82.3
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	203.8	187.7	195.9	200.4	203.5
Total		285.6	306.3	286.4	295.9	302.9	307.2
<i>Commercial</i>							
Petroleum		14.4	11.6	10.8	10.6	10.5	10.1
Natural Gas		48.6	51.1	50.9	53.1	55	55.4
Coal		2.1	2.3	2.3	2.4	2.4	2.5
Electricity		171.5	187.5	171.5	180.7	183.8	182
Total		236.6	252.5	235.6	246.7	251.7	250
<i>Industrial</i>							
Petroleum		105.8	108.7	110.7	115.3	117.1	117.8
Natural Gas		142.2	144.6	150.4	156.8	162.4	166.9
Coal		58.5	58.3	51.2	51.6	52.1	52
Electricity		175.6	183.5	169.6	178.9	178.7	176.6
Total Fuel		482.1	495.2	481.9	502.6	510.3	513.3
Process Emissions		11.16	10.69	11.34	12.02	12.25	12.41
Total		493.26	505.89	493.24	514.62	522.55	525.71
<i>Transportation</i>							
Petroleum		461.9	500.6	549.1	593.3	624.4	654.8
Natural Gas		10.5	11.6	14.9	16.6	18.2	19.3
Other		0	0.3	0.9	1.3	1.6	1.9
Electricity		2.9	3.2	4.7	6.7	7.9	8.8
Total		475.3	515.7	569.6	617.9	652.1	684.9
<i>Total Carbon Emissions</i>							
Petroleum		609.9	647	694.1	741.3	773.2	802.9
Natural Gas		275.4	282.3	290.1	303	315.6	324
Coal		62	62	54.9	55.3	55.8	55.7
Other		0	0.3	0.9	1.3	1.6	1.9
Electricity		532.4	578	533.5	562.1	570.8	571
Total		1480	1570	1573	1663	1717	1755
<i>Electric Generators</i>							
Petroleum		17.6	20.9	4.4	3.8	3.2	3
Natural Gas		43.8	49.8	85.6	105.8	129.6	146.7
Coal		471	507.3	443.4	452.5	438	421.2
Total		532.4	578	533.5	562.1	570.8	571
<i>Total Carbon Emissions</i>							
Petroleum		627.5	667.9	698.6	745.1	776.4	805.9
Natural Gas		319.1	332.1	375.7	408.8	445.1	470.7
Coal		533	569.3	498.3	507.8	493.8	477
Other		0	0.3	0.9	1.3	1.6	1.9
Total		1480	1570	1573	1663	1717	1755

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Moderate Scenario (991213)</i>						
<i>demand side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>supply side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	20.3	20.4	20.8	21.1
Commercial	15.2	16.0	16.0	16.7	17.0	17.0
Industrial	34.8	35.7	36.1	37.2	37.7	38.0
Transportation	25.0	27.1	29.9	32.2	33.3	34.1
Total	94.0	98.8	102.3	106.5	108.8	110.3
<b>Electricity Sales (TWh)</b>						
Residential	1072	1177	1237	1253	1272	1300
Commercial	1008	1083	1112	1176	1207	1218
Industrial	1033	1053	1085	1132	1151	1157
Transportation	17	18	32	47	59	71
Total	3130	3332	3465	3608	3689	3745
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	309	308	311	317	323
Commercial	237	255	251	263	269	271
Industrial	482	495	493	505	509	511
Transportation	475	515	568	606	623	638
Total	1480	1574	1620	1684	1717	1743
Utilities	532	584	577	597	611	623
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	668	695	727	735	742
Natural Gas	319	330	349	373	387	402
Coal	533	576	574	581	591	593
Other	0	0	1	3	4	5
Total	1480	1574	1620	1684	1717	1743
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.56	7.75	7.96	7.77	7.76
Natural Gas	4.32	4.11	3.95	3.80	3.66	3.56
Coal	1.28	1.21	1.13	1.06	0.99	0.93
Electricity	20.24	19.10	17.26	16.44	15.98	15.51
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	1.40	1.38	1.32	1.29
Petroleum Products	2.88	2.28	3.26	3.78	3.90	4.14
Distillate Fuel	4.47	3.84	4.81	5.04	5.14	5.28
Residual Fuel	2.76	2.18	3.06	3.54	3.67	3.92
Natural Gas	2.70	2.61	2.67	2.67	2.60	2.54
Steam Coal	1.27	1.20	1.11	1.05	0.97	0.92
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.8	40.5	42.5	43.2	43.7
Natural Gas	22.6	23.1	24.4	26.1	27.0	28.1
Coal Subtotal	21.1	22.4	22.4	22.6	23.0	23.0
Nuclear Power	6.7	7.1	6.8	6.2	5.7	4.9
Renewable Energy	6.8	6.9	7.8	8.6	9.4	9.9
Electricity Imports	0.3	0.4	0.3	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.2	0.3	0.3
Total	94.0	98.8	102.3	106.5	108.8	110.3
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	552	531	572	595	593	594
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.4	9.6	9.0	8.4
Carbon/GDP Ratio (gC/1997\$)	181	179	164	151	141	133
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	175	167	165	166	166



## Carbon Emissions Forecast Summary (MtC)

CEF-NEMS Moderate Scenario (991213)

	<i>demand side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<i>supply side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<i>Residential</i>							
Petroleum		27.8	26	24.2	23.1	22.1	21
Natural Gas		74.1	75	76.5	79.2	82.7	85
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	206.1	205.9	207.2	210.6	216.2
Total		285.6	308.6	308.1	310.8	316.7	323.4
<i>Commercial</i>							
Petroleum		14.4	11.7	11.5	11.5	11.4	11.1
Natural Gas		48.6	51.1	52.1	54.1	55.1	55
Coal		2.1	2.3	2.4	2.5	2.6	2.6
Electricity		171.5	189.7	185.1	194.6	199.9	202.4
Total		236.6	254.7	251.1	262.6	269	271.2
<i>Industrial</i>							
Petroleum		105.8	108.3	107.5	109.2	105.6	103.2
Natural Gas		142.2	144.4	147.7	152.1	156.7	160.7
Coal		58.5	58.3	57.2	56.5	55.6	54.4
Electricity		175.6	184.5	180.7	187.2	190.6	192.3
Total Fuel		482.1	495.4	493.1	505	508.5	510.6
Process Emissions		11.16	10.69	11.30	11.72	11.70	11.60
Total		493.26	506.09	504.40	516.72	520.20	522.20
<i>Transportation</i>							
Petroleum		461.9	500.1	547.5	580.1	592.7	603.9
Natural Gas		10.5	11.4	13.7	15.1	16	16.6
Other		0	0.2	1.4	2.9	4.3	5.3
Electricity		3	3.2	5.3	7.8	9.8	11.8
Total		475.4	514.9	567.8	606	622.8	637.6
<i>Total Carbon Emissions</i>							
Petroleum		609.9	646.1	690.7	723.8	731.9	739.2
Natural Gas		275.4	281.8	290	300.5	310.5	317.2
Coal		62	62	61	60.4	59.4	58.3
Other		0	0.2	1.4	2.9	4.3	5.3
Electricity		532.4	583.5	577	596.7	611	622.6
Total		1480	1574	1620	1684	1717	1743
<i>Electric Generators</i>							
Petroleum		17.6	21.4	4.5	3.4	3.4	3
Natural Gas		43.8	47.9	59.2	72.3	76.5	85
Coal		471	514.2	513.3	521	531.1	534.5
Total		532.4	583.5	577	596.7	611	622.6
<i>Total Carbon Emissions</i>							
Petroleum		627.5	667.5	695.3	727.2	735.2	742.3
Natural Gas		319.1	329.7	349.2	372.9	386.9	402.3
Coal		533	576.2	574.2	581.4	590.5	592.8
Other		0	0.2	1.4	2.9	4.3	5.3
Total		1480	1574	1620	1684	1717	1743

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Moderate Scenario (991213) w/\$25/t Carbon Charge</i>						
<i>demand side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>25</i>	<i>25</i>	<i>25</i>
<i>supply side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	19.8	20.1	20.5	20.8
Commercial	15.2	16.0	15.6	16.3	16.7	16.8
Industrial	34.8	35.7	35.6	36.6	37.3	37.6
Transportation	25.0	27.1	29.9	32.0	33.0	33.8
Total	94.0	98.7	100.8	104.9	107.4	109.0
<b>Electricity Sales (TWh)</b>						
Residential	1072	1177	1218	1234	1252	1279
Commercial	1008	1083	1093	1149	1180	1191
Industrial	1033	1053	1075	1112	1129	1133
Transportation	17	18	32	47	59	71
Total	3130	3332	3418	3542	3620	3674
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	307	293	295	297	298
Commercial	237	253	237	247	249	247
Industrial	482	494	476	482	482	480
Transportation	475	515	566	601	617	630
Total	1480	1569	1572	1625	1645	1654
Utilities	532	579	540	556	557	554
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	667	692	721	728	733
Natural Gas	319	331	356	374	391	404
Coal	533	570	523	527	522	512
Other	0	0	1	3	4	5
Total	1480	1569	1572	1625	1645	1654
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	8.17	8.37	8.17	8.15
Natural Gas	4.32	4.11	4.31	4.19	4.00	3.87
Coal	1.28	1.22	1.77	1.70	1.63	1.57
Electricity	20.24	19.09	18.62	18.06	17.51	16.96
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	2.04	2.01	1.95	1.90
Petroleum Products	2.88	2.27	3.85	4.26	4.37	4.61
Distillate Fuel	4.47	3.82	5.23	5.51	5.57	5.73
Residual Fuel	2.76	2.17	3.65	4.05	4.17	4.40
Natural Gas	2.70	2.59	3.06	3.04	2.92	2.81
Steam Coal	1.27	1.20	1.75	1.69	1.61	1.55
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.8	40.3	42.2	42.9	43.3
Natural Gas	22.6	23.2	24.9	26.2	27.3	28.2
Coal Subtotal	21.1	22.2	20.4	20.5	20.3	19.9
Nuclear Power	6.7	7.1	6.8	6.3	6.0	5.8
Renewable Energy	6.8	6.9	8.0	9.3	10.5	11.2
Electricity Imports	0.3	0.4	0.3	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.2	0.3	0.3
Total	94.0	98.7	100.8	104.9	107.4	109.1
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	552	531	608	633	629	628
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.2	9.4	8.8	8.3
Carbon/GDP Ratio (gC/1997\$)	181	178	159	146	135	126
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	174	158	157	154	151

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Moderate Scenario (991213) w/\$25/t Carbon Charge*

<i>demand side efficiency carbon charge (\$/t) retirements(coal/gas&amp;oil)</i>	<i>Mod 0</i>	<i>Mod 0</i>	<i>Mod 25</i>	<i>Mod 25</i>	<i>Mod 25</i>	<i>Mod 25</i>
	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
	1997	2000	2005	2010	2015	2020
<i>Residential</i>						
Petroleum	27.8	26	23.9	22.6	21.6	20.6
Natural Gas	74.1	75	75	77.4	80.7	83
Coal	1.4	1.5	1.4	1.3	1.3	1.3
Electricity	182.3	204.5	192.6	193.5	192.8	193
Total	285.6	307	292.9	294.8	296.5	297.8
<i>Commercial</i>						
Petroleum	14.4	11.7	11.2	11.1	11.1	10.8
Natural Gas	48.6	51.1	51	52.9	54	54
Coal	2.1	2.3	2.3	2.4	2.5	2.5
Electricity	171.5	188.2	172.8	180.3	181.6	179.7
Total	236.6	253.2	237.4	246.8	249.3	247.1
<i>Industrial</i>						
Petroleum	105.8	108.3	107.3	107.8	104.5	101.8
Natural Gas	142.2	144.4	146.3	149.4	154.5	158.9
Coal	58.5	58.3	52.2	50.5	49.3	48.4
Electricity	175.6	183	170	174.4	173.9	170.9
Total Fuel	482.1	494	475.8	482.2	482.2	480
Process Emissions	11.16	10.69	11.30	11.72	11.70	11.60
Total	493.26	504.69	487.10	493.92	493.90	491.60
<i>Transportation</i>						
Petroleum	461.9	500.1	545.7	575.7	587.2	596.7
Natural Gas	10.5	11.4	13.9	15.2	16.1	16.8
Other	0	0.2	1.4	2.9	4.3	5.4
Electricity	3	3.2	5	7.4	9.1	10.6
Total	475.4	514.9	566	601.1	616.8	629.5
<i>Total Carbon Emissions</i>						
Petroleum	609.9	646.1	688.1	717.3	724.5	730
Natural Gas	275.4	281.9	286.2	294.9	305.4	312.7
Coal	62	62	56	54.3	53.1	52.2
Other	0	0.2	1.4	2.9	4.3	5.4
Electricity	532.4	578.9	540.4	555.6	557.4	554.2
Total	1480	1569	1572	1625	1645	1654
<i>Electric Generators</i>						
Petroleum	17.6	21	3.7	3.4	3.4	3.1
Natural Gas	43.8	49.4	70.1	79.4	85.6	91
Coal	471	508.4	466.5	472.8	468.4	460.1
Total	532.4	578.9	540.4	555.6	557.4	554.2
<i>Total Carbon Emissions</i>						
Petroleum	627.5	667.1	691.9	720.6	727.9	733.1
Natural Gas	319.1	331.3	356.3	374.3	391	403.7
Coal	533	570.4	522.5	527.1	521.5	512.3
Other	0	0.2	1.4	2.9	4.3	5.4
Total	1480	1569	1572	1625	1645	1654

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Moderate Scenario (991213) w/\$50/t Carbon Charge</i>						
<i>demand side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>50</i>	<i>50</i>	<i>50</i>	<i>50</i>
<i>supply side efficiency</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>	<i>Mod</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	19.3	19.6	20.0	20.4
Commercial	15.2	15.9	15.1	15.8	16.3	16.4
Industrial	34.8	35.6	35.2	36.2	36.8	37.3
Transportation	25.0	27.1	29.8	31.7	32.8	33.6
Total	94.0	98.6	99.4	103.2	105.8	107.7
<b>Electricity Sales (TWh)</b>						
Residential	1072	1177	1200	1214	1233	1257
Commercial	1008	1083	1071	1124	1158	1171
Industrial	1033	1053	1062	1096	1109	1111
Transportation	17	18	32	47	59	70
Total	3130	3332	3364	3481	3559	3609
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	306	275	270	266	263
Commercial	237	252	220	223	221	216
Industrial	482	493	458	458	452	447
Transportation	475	515	564	595	610	621
Total	1480	1567	1517	1547	1550	1547
Utilities	532	577	494	490	476	461
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	667	688	713	720	724
Natural Gas	319	331	365	381	394	409
Coal	533	568	463	449	431	409
Other	0	0	1	3	4	5
Total	1480	1567	1517	1547	1550	1547
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	8.58	8.79	8.59	8.46
Natural Gas	4.32	4.11	4.66	4.58	4.35	4.16
Coal	1.28	1.22	2.42	2.36	2.27	2.22
Electricity	20.24	19.10	20.20	19.68	18.89	18.16
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	2.69	2.67	2.58	2.51
Petroleum Products	2.88	2.27	4.47	4.87	5.03	5.24
Distillate Fuel	4.47	3.82	5.70	6.02	6.05	6.24
Residual Fuel	2.76	2.16	4.26	4.67	4.83	5.05
Natural Gas	2.70	2.59	3.46	3.45	3.28	3.11
Steam Coal	1.27	1.20	2.41	2.34	2.26	2.20
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.8	40.1	41.9	42.4	42.9
Natural Gas	22.6	23.2	25.5	26.6	27.5	28.6
Coal Subtotal	21.1	22.1	18.0	17.5	16.8	15.9
Nuclear Power	6.7	7.1	7.0	6.8	6.7	6.6
Renewable Energy	6.8	6.9	8.3	9.9	11.8	13.2
Electricity Imports	0.3	0.5	0.4	0.4	0.3	0.3
Others	0.0	0.0	0.1	0.2	0.3	0.3
Total	94.0	98.6	99.4	103.2	105.8	107.7
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	552	531	645	671	663	656
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.1	9.3	8.7	8.2
Carbon/GDP Ratio (gC/1997\$)	181	178	154	139	128	118
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	173	147	141	134	128

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Moderate Scenario (991213) w/\$50/t Carbon Charge*

<i>demand side efficiency carbon charge (\$/t) retirements(coal/gas&amp;oil)</i>	<i>Mod 0 Mod</i>	<i>Mod 0 Mod</i>	<i>Mod 50 Mod</i>	<i>Mod 50 Mod</i>	<i>Mod 50 Mod</i>	<i>Mod 50 Mod</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<i>Residential</i>						
Petroleum	27.8	26	23.5	22.2	21.2	20.2
Natural Gas	74.1	75	73.7	75.6	79	81.3
Coal	1.4	1.5	1.4	1.3	1.3	1.3
Electricity	182.3	203.6	176.1	171	165	160.6
Total	285.6	306.1	274.8	270.2	266.4	263.4
<i>Commercial</i>						
Petroleum	14.4	11.7	10.9	10.8	10.8	10.5
Natural Gas	48.6	51.1	49.9	51.7	52.9	53
Coal	2.1	2.3	2.3	2.4	2.4	2.5
Electricity	171.5	187.4	157.3	158.4	154.9	149.7
Total	236.6	252.4	220.4	223.3	221.1	215.7
<i>Industrial</i>						
Petroleum	105.8	108.3	106.8	106.8	103.5	100.7
Natural Gas	142.2	144.4	146.9	149.8	154.3	159.7
Coal	58.5	58.3	48.7	47.1	45.7	44.9
Electricity	175.6	182.3	155.9	154.3	148.5	142
Total Fuel	482.1	493.3	458.3	458	452	447.3
Process Emissions	11.16	10.69	11.30	11.72	11.70	11.60
Total	493.26	503.99	469.60	469.72	463.70	458.90
<i>Transportation</i>						
Petroleum	461.9	500.1	543.7	570.3	581.8	589.3
Natural Gas	10.5	11.4	14.2	15.4	16.2	16.9
Other	0	0.2	1.4	3	4.4	5.3
Electricity	3	3.2	4.6	6.6	7.9	9
Total	475.4	514.9	564	595.3	610.2	620.5
<i>Total Carbon Emissions</i>						
Petroleum	609.9	646.1	685	710.1	717.3	720.7
Natural Gas	275.4	281.9	284.8	292.5	302.4	310.9
Coal	62	62	52.4	50.8	49.5	48.6
Other	0	0.2	1.4	3	4.4	5.3
Electricity	532.4	576.5	493.9	490.3	476.2	461.4
Total	1480	1567	1517	1547	1550	1547
<i>Electric Generators</i>						
Petroleum	17.6	21	3.2	3.1	2.9	2.8
Natural Gas	43.8	49.2	80	88.7	91.6	98.3
Coal	471	506.3	410.8	398.5	381.7	360.3
Total	532.4	576.5	493.9	490.3	476.2	461.4
<i>Total Carbon Emissions</i>						
Petroleum	627.5	667	688.2	713.2	720.2	723.5
Natural Gas	319.1	331	364.7	381.3	394	409.2
Coal	533	568.3	463.1	449.3	431.2	408.9
Other	0	0.2	1.4	3	4.4	5.3
Total	1480	1567	1517	1547	1550	1547

<b>All-Sector Forecast Summary</b>							
<i>CEF_NEMS Advanced Scenario (991213)</i>							
	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>50</i>	<i>50</i>	<i>50</i>	<i>50</i>
	<i>supply side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>							
Residential		19.0	19.9	19.1	19.3	18.9	18.3
Commercial		15.2	15.8	15.1	15.9	15.9	15.4
Industrial		34.8	35.6	34.4	34.7	34.6	34.3
Transportation		25.0	27.1	29.1	29.8	29.2	28.9
Total		94.0	98.3	97.7	99.5	98.6	97.0
<b>Electricity Sales (TWh)</b>							
Residential		1072	1177	1199	1203	1169	1140
Commercial		1008	1083	1080	1142	1159	1149
Industrial		1033	1053	1042	1053	1050	1035
Transportation		17	19	32	47	57	67
Total		3130	3332	3353	3444	3436	3392
<b>Carbon Emissions by Sector (MtC)</b>							
Residential		286	305	269	260	249	230
Commercial		237	251	218	218	213	195
Industrial		482	493	444	429	418	399
Transportation		475	514	551	560	543	533
Total		1480	1563	1482	1467	1423	1357
Utilities		532	572	478	460	436	382
<b>Carbon Emissions by Source (MtC)</b>							
Petroleum		628	666	673	673	646	627
Natural Gas		319	332	365	375	385	398
Coal		533	564	443	418	390	328
Other		0	0	1	2	2	3
Total		1480	1563	1482	1467	1423	1357
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>							
Petroleum Products		7.69	6.57	8.50	8.58	8.08	7.92
Natural Gas		4.32	4.11	4.67	4.55	4.29	4.14
Coal		1.28	1.21	2.42	2.35	2.28	2.22
Electricity		20.24	19.10	20.15	19.32	18.38	17.92
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>							
Fossil Fuel Average		1.54	1.45	2.71	2.67	2.59	2.57
Petroleum Products		2.88	2.29	4.62	5.01	5.32	5.56
Distillate Fuel		4.47	3.84	5.82	6.16	6.22	6.34
Residual Fuel		2.76	2.19	4.41	4.80	5.13	5.39
Natural Gas		2.70	2.62	3.47	3.40	3.22	3.09
Steam Coal		1.27	1.20	2.40	2.34	2.26	2.20
<b>Energy Consumption (Quadrillion Btu)</b>							
Petroleum Subtotal		36.5	38.8	39.3	39.7	38.5	37.8
Natural Gas		22.6	23.3	25.5	26.2	27.0	28.2
Coal Subtotal		21.1	22.0	17.3	16.3	15.2	12.7
Nuclear Power		6.7	7.1	6.9	6.7	6.6	6.4
Renewable Energy		6.8	6.9	8.2	10.2	11.0	11.3
Electricity Imports		0.3	0.3	0.4	0.3	0.3	0.3
Others		0.0	0.0	0.1	0.1	0.1	0.3
Total		94.0	98.3	97.7	99.5	98.6	97.0
<b>Macroeconomic Indicators</b>							
GDP (billion 1997\$)		8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)		552	531	633	634	593	572
Energy/GDP Ratio (kBtu/1997\$)		11.5	11.2	9.9	8.9	8.1	7.4
Carbon/GDP Ratio (gC/1997\$)		181	178	150	132	117	103
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>							
		170	172	142	133	127	113

## Carbon Emissions Forecast Summary (MtC)

CEF\_NEMS Advanced Scenario (991213)

	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>50</i>	<i>50</i>	<i>50</i>	<i>50</i>
	<i>supply side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<i>Residential</i>							
Petroleum		27.8	26	23.5	22.1	21	20
Natural Gas		74.1	75	73.6	75.8	78.3	79.7
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	202	170.7	160.5	148.5	128.6
Total		285.6	304.5	269.3	259.7	249.1	229.5
<i>Commercial</i>							
Petroleum		14.4	11.7	10.9	10.5	10.1	9.6
Natural Gas		48.6	50.9	50.6	53	53.5	53.4
Coal		2.1	2.3	2.3	2.4	2.4	2.5
Electricity		171.5	185.9	153.7	152.4	147.2	129.5
Total		236.6	250.8	217.6	218.3	213.3	195
<i>Industrial</i>							
Petroleum		105.8	108.1	103.9	100.4	94.8	89.3
Natural Gas		142.2	144.1	144.1	143.6	146.3	150.5
Coal		58.5	60	47.3	44.7	43.3	42.3
Electricity		175.6	180.6	148.4	140.5	133.3	116.6
Total Fuel		482.1	492.8	443.8	429.1	417.7	398.7
Process Emissions		11.16	10.69	11.23	11.32	10.97	10.56
Total		493.26	503.49	455.03	440.42	428.67	409.26
<i>Transportation</i>							
Petroleum		461.9	499.6	531.2	536.6	517.5	506.4
Natural Gas		10.5	11.4	14.2	15	15.6	16.3
Other		0	0.2	1	1.8	2.3	3
Electricity		3	3.2	4.6	6.3	7.3	7.6
Total		475.4	514.4	551	559.6	542.7	533.3
<i>Total Carbon Emissions</i>							
Petroleum		609.9	645.4	669.6	669.6	643.4	625.3
Natural Gas		275.4	281.4	282.6	287.4	293.7	299.9
Coal		62	63.7	51	48.4	47.1	46
Other		0	0.2	1	1.8	2.3	3
Electricity		532.4	571.8	477.5	459.6	436.3	382.3
Total		1480	1563	1482	1467	1423	1357
<i>Electric Generators</i>							
Petroleum		17.6	20.6	3	2.9	2.4	2.1
Natural Gas		43.8	51	82.9	87.1	91.2	98.2
Coal		471	500.3	391.6	369.5	342.7	282
Total		532.4	571.8	477.5	459.6	436.3	382.3
<i>Total Carbon Emissions</i>							
Petroleum		627.5	666	672.6	672.5	645.8	627.4
Natural Gas		319.1	332.3	365.4	374.5	384.9	398.1
Coal		533	564	442.7	417.9	389.8	328
Other		0	0.2	1	1.8	2.3	3
Total		1480	1563	1482	1467	1423	1357

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Advanced Scenario Demand Only No Carbon Charge (991213)</i>						
<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Adv 0 Base</i>	<i>Adv 0 Base</i>	<i>Adv 0 Base</i>	<i>Adv 0 Base</i>	<i>Adv 0 Base</i>	<i>Adv 0 Base</i>
	1997	2000	2005	2010	2015	2020
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	20.0	20.1	19.9	19.8
Commercial	15.2	16.0	15.9	16.6	16.8	16.7
Industrial	34.8	35.7	35.6	36.1	36.1	36.3
Transportation	25.0	27.1	29.4	30.3	29.7	29.4
Total	94.0	98.8	100.8	103.1	102.4	102.2
<b>Electricity Sales (TWh)</b>						
Residential	1072	1175	1211	1220	1195	1180
Commercial	1008	1081	1102	1170	1193	1193
Industrial	1033	1052	1064	1089	1093	1088
Transportation	17	19	32	48	58	68
Total	3130	3327	3409	3527	3538	3529
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	309	307	310	305	303
Commercial	237	255	253	267	268	267
Industrial	482	497	488	491	485	486
Transportation	475	515	557	574	562	555
Total	1480	1575	1604	1641	1620	1609
Utilities	532	585	575	596	591	587
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	667	683	691	668	653
Natural Gas	319	329	347	369	376	383
Coal	533	579	573	580	575	571
Other	0	0	1	2	2	3
Total	1480	1575	1604	1641	1620	1609
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.56	7.69	7.74	7.38	7.12
Natural Gas	4.32	4.11	3.96	3.79	3.60	3.45
Coal	1.28	1.22	1.13	1.06	0.98	0.92
Electricity	20.24	19.25	18.46	17.34	16.12	15.10
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	1.40	1.38	1.29	1.23
Petroleum Products	2.88	2.28	3.21	3.81	4.18	4.55
Distillate Fuel	4.47	3.84	4.90	5.17	5.28	5.39
Residual Fuel	2.76	2.18	3.03	3.58	3.95	4.34
Natural Gas	2.70	2.61	2.70	2.64	2.51	2.38
Steam Coal	1.27	1.20	1.12	1.05	0.97	0.90
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.8	39.9	40.5	39.4	38.7
Natural Gas	22.6	23.1	24.3	25.8	26.2	26.7
Coal Subtotal	21.1	22.6	22.3	22.6	22.3	22.2
Nuclear Power	6.7	7.1	6.7	6.2	5.8	5.3
Renewable Energy	6.8	6.9	7.3	7.7	8.2	8.6
Electricity Imports	0.3	0.4	0.3	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.1	0.1	0.3
Total	94.0	98.8	100.8	103.1	102.4	102.2
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	552	532	575	575	537	507
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.2	9.3	8.4	7.8
Carbon/GDP Ratio (gC/1997\$)	181	179	163	148	133	123
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	176	169	169	167	166



**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Advanced Scenario Demand Only No Carbon Charge (991213)*

	<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Adv 0 Base 1997</i>	<i>Adv 0 Base 2000</i>	<i>Adv 0 Base 2005</i>	<i>Adv 0 Base 2010</i>	<i>Adv 0 Base 2015</i>	<i>Adv 0 Base 2020</i>
<i>Residential</i>							
Petroleum		27.8	26	24.2	23	22	20.9
Natural Gas		74.1	75	76.5	79.6	82.4	84.3
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	206.4	204.4	206.1	199.4	196.1
Total		285.6	308.9	306.6	310	305.1	302.5
<i>Commercial</i>							
Petroleum		14.4	11.7	11.6	11.2	10.8	10.2
Natural Gas		48.6	51	52.7	55.4	55.7	55.7
Coal		2.1	2.3	2.4	2.5	2.6	2.6
Electricity		171.5	189.9	186	197.6	199.2	198.3
Total		236.6	254.9	252.7	266.6	268.3	266.8
<i>Industrial</i>							
Petroleum		105.8	108	105.1	103.7	98.2	95.1
Natural Gas		142.2	143.9	145.4	147	149	151.3
Coal		58.5	59.9	57.7	56.3	55.5	58.3
Electricity		175.6	184.9	179.5	183.9	182.4	180.9
Total Fuel		482.1	496.8	487.8	490.9	485.2	485.6
Process Emissions		11.16	10.69	11.23	11.32	10.97	10.56
Total		493.26	507.49	499.03	502.22	496.17	496.16
<i>Transportation</i>							
Petroleum		461.9	499.7	537.1	549	534.3	524.5
Natural Gas		10.5	11.3	13.6	14.9	15.4	15.7
Other		0	0.2	1	1.7	2.2	2.9
Electricity		3	3.3	5.5	8	9.7	11.3
Total		475.4	514.5	557.1	573.6	561.5	554.5
<i>Total Carbon Emissions</i>							
Petroleum		609.9	645.4	678.1	686.9	665.3	650.7
Natural Gas		275.4	281.2	288.2	296.9	302.5	307
Coal		62	63.7	61.5	60.1	59.4	62.2
Other		0	0.2	1	1.7	2.2	2.9
Electricity		532.4	584.5	575.4	595.6	590.8	586.6
Total		1480	1575	1604	1641	1620	1609
<i>Electric Generators</i>							
Petroleum		17.6	21.4	5.2	3.8	2.7	2.2
Natural Gas		43.8	47.5	58.7	72.2	73	75.7
Coal		471	515.6	511.5	519.6	515.1	508.7
Total		532.4	584.5	575.4	595.6	590.8	586.6
<i>Total Carbon Emissions</i>							
Petroleum		627.5	666.8	683.4	690.7	668	652.9
Natural Gas		319.1	328.7	347	369	375.5	382.7
Coal		533	579.3	572.9	579.7	574.5	570.9
Other		0	0.2	1	1.7	2.2	2.9
Total		1480	1575	1604	1641	1620	1609

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Advanced Scenario, Supply Only No Carbon Charge (990811)</i>						
<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Adv</i>	<i>Base 0 Adv</i>	<i>Base 0 Adv</i>	<i>Base 0 Adv</i>	<i>Base 0 Adv</i>	<i>Base 0 Adv</i>
	1997	2000	2005	2010	2015	2020
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	19.9	20.2	20.4	20.4	20.1
Commercial	15.2	15.9	16.6	17.5	18.0	17.9
Industrial	34.8	35.7	36.7	38.6	39.5	40.1
Transportation	25.0	27.2	30.0	32.5	33.4	34.5
Total	94.0	98.7	103.5	109.0	111.3	112.6
<b>Electricity Sales (TWh)</b>						
Residential	1072	1177	1245	1270	1270	1263
Commercial	1008	1083	1172	1261	1332	1365
Industrial	1033	1057	1112	1183	1225	1251
Transportation	17	20	36	51	61	71
Total	3130	3337	3564	3764	3888	3950
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	307	308	307	305	297
Commercial	237	253	261	272	279	274
Industrial	482	496	504	521	529	531
Transportation	475	516	569	613	626	646
Total	1480	1572	1643	1714	1739	1748
Utilities	532	580	591	604	610	593
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	667	699	738	746	760
Natural Gas	319	331	362	393	419	452
Coal	533	573	581	580	572	533
Other	0	1	1	2	3	3
Total	1480	1572	1643	1714	1739	1748
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	7.73	8.01	7.73	7.78
Natural Gas	4.32	4.12	4.05	3.96	3.83	3.75
Coal	1.28	1.22	1.13	1.07	1.01	0.98
Electricity	20.28	19.11	17.45	16.61	16.30	16.41
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	1.45	1.47	1.48	1.56
Petroleum Products	2.88	2.27	3.27	3.83	4.14	4.41
Distillate Fuel	4.47	3.84	4.86	5.30	5.34	5.53
Residual Fuel	2.76	2.17	3.08	3.59	3.89	4.16
Natural Gas	2.70	2.61	2.80	2.85	2.83	2.81
Steam Coal	1.27	1.20	1.12	1.05	0.99	0.96
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.9	40.8	43.3	44.1	45.0
Natural Gas	22.6	23.2	25.3	27.5	29.3	31.5
Coal Subtotal	21.1	22.3	22.6	22.6	22.2	20.6
Nuclear Power	6.7	7.1	6.4	5.9	5.3	4.6
Renewable Energy	6.8	6.9	8.0	9.4	10.0	10.4
Electricity Imports	0.3	0.4	0.3	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.1	0.2	0.2
Total	94.0	98.7	103.5	109.0	111.3	112.6
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	553	533	586	619	618	634
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.5	9.8	9.2	8.6
Carbon/GDP Ratio (gC/1997\$)	181	179	167	154	143	133
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	174	166	161	157	150

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Advanced Scenario, Supply Only No Carbon Charge (990811)*

<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Adv 1997</i>	<i>Base 0 Adv 2000</i>	<i>Base 0 Adv 2005</i>	<i>Base 0 Adv 2010</i>	<i>Base 0 Adv 2015</i>	<i>Base 0 Adv 2020</i>
<i>Residential</i>						
Petroleum	27.8	26	24.2	22.9	21.9	20.7
Natural Gas	74.1	75	76.4	79.3	82.8	85.2
Coal	1.4	1.5	1.4	1.3	1.3	1.3
Electricity	182.3	204.5	206.3	203.8	199.3	189.6
Total	285.6	306.9	308.3	307.3	305.3	296.7
<i>Commercial</i>						
Petroleum	14.4	11.7	11.3	10.8	10.5	10
Natural Gas	48.6	51.1	53.4	56.1	56.9	56.9
Coal	2.1	2.3	2.4	2.5	2.6	2.6
Electricity	171.5	188.1	194.2	202.3	209.1	204.8
Total	236.6	253.1	261.3	271.8	279	274.3
<i>Industrial</i>						
Petroleum	105.8	108	111	114.7	115.2	114.1
Natural Gas	142.2	145.7	150.3	158	163.5	170.8
Coal	58.5	58.3	58.6	58.7	58.5	58.1
Electricity	175.6	183.6	184.2	189.9	192.3	187.7
Total Fuel	482.1	495.5	504.1	521.3	529.4	530.8
Process Emissions	11.16	10.69	11.23	11.32	10.97	10.56
Total	493.26	506.19	515.33	532.62	540.37	541.36
<i>Transportation</i>						
Petroleum	461.9	500.6	546.9	585.9	595.3	612.2
Natural Gas	10.5	11.7	14.9	16.8	18.1	19.5
Other	0	0.5	1.4	2.1	2.7	3.3
Electricity	2.9	3.5	5.9	8.2	9.5	10.6
Total	475.3	516.2	569.2	613.1	625.6	645.7
<i>Total Carbon Emissions</i>						
Petroleum	609.9	646.2	693.4	734.3	742.8	757
Natural Gas	275.4	283.4	295	310.3	321.3	332.4
Coal	62	62	62.4	62.6	62.4	62
Other	0	0.5	1.4	2.1	2.7	3.3
Electricity	532.4	579.6	590.7	604.2	610.2	592.9
Total	1480	1572	1643	1714	1739	1748
<i>Electric Generators</i>						
Petroleum	17.6	21.2	5.2	3.9	3.1	2.7
Natural Gas	43.8	47.7	67.4	82.7	97.5	119.2
Coal	471	510.8	518.1	517.6	509.7	470.9
Total	532.4	579.6	590.7	604.2	610.2	592.9
<i>Total Carbon Emissions</i>						
Petroleum	627.5	667.4	698.6	738.2	745.9	759.8
Natural Gas	319.1	331.1	362.4	393	418.7	451.6
Coal	533	572.7	580.5	580.2	572.1	532.9
Other	0	0.5	1.4	2.1	2.7	3.3
Total	1480	1572	1643	1714	1739	1748

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Advanced Scenario No Carbon Charge (991213)</i>							
	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
	<i>supply side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	
		<i>2020</i>					
<b>Primary Energy (Quadrillion Btu)</b>							
Residential		19.0	19.9	20.1	20.2	19.7	19.4
Commercial		15.2	15.9	16.0	16.8	16.8	16.4
Industrial		34.8	35.6	35.5	36.1	35.9	35.9
Transportation		25.0	27.1	29.4	30.3	29.7	29.4
Total		94.0	98.6	101.0	103.4	102.1	101.1
<b>Electricity Sales (TWh)</b>							
Residential		1072	1177	1235	1236	1202	1178
Commercial		1008	1083	1123	1192	1209	1197
Industrial		1033	1052	1070	1099	1098	1076
Transportation		17	19	32	48	58	68
Total		3130	3331	3460	3574	3567	3519
<b>Carbon Emissions by Sector (MtC)</b>							
Residential		286	307	306	303	295	291
Commercial		237	253	252	261	260	257
Industrial		482	495	485	485	477	476
Transportation		475	514	557	571	556	549
Total		1480	1569	1599	1620	1588	1572
Utilities		532	578	570	576	563	553
<b>Carbon Emissions by Source (MtC)</b>							
Petroleum		628	666	683	688	662	646
Natural Gas		319	330	349	369	382	394
Coal		533	574	567	562	542	530
Other		0	0	1	2	2	3
Total		1480	1569	1599	1620	1588	1572
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>							
Petroleum Products		7.69	6.57	7.69	7.73	7.27	7.12
Natural Gas		4.32	4.11	3.94	3.79	3.58	3.47
Coal		1.28	1.22	1.13	1.06	1.00	0.94
Electricity		20.28	19.10	17.11	16.30	15.65	15.26
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>							
Fossil Fuel Average		1.54	1.44	1.40	1.38	1.35	1.30
Petroleum Products		2.88	2.26	3.36	3.89	4.25	4.51
Distillate Fuel		4.47	3.83	4.91	5.20	5.26	5.37
Residual Fuel		2.76	2.17	3.16	3.66	4.03	4.30
Natural Gas		2.70	2.61	2.65	2.61	2.51	2.42
Steam Coal		1.27	1.20	1.11	1.04	0.98	0.92
<b>Energy Consumption (Quadrillion Btu)</b>							
Petroleum Subtotal		36.5	38.8	39.9	40.5	39.4	38.7
Natural Gas		22.6	23.0	24.4	25.8	26.7	27.5
Coal Subtotal		21.1	22.3	22.1	21.9	21.0	20.6
Nuclear Power		6.7	7.1	6.4	5.9	5.3	4.5
Renewable Energy		6.8	6.9	7.9	9.0	9.3	9.4
Electricity Imports		0.3	0.4	0.3	0.3	0.3	0.3
Others		0.0	0.0	0.1	0.1	0.1	0.3
Total		94.0	98.6	101.0	103.4	102.1	101.1
<b>Macroeconomic Indicators</b>							
GDP (billion 1997\$)		8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)		553	531	562	565	529	511
Energy/GDP Ratio (kBtu/1997\$)		11.5	11.2	10.2	9.3	8.4	7.7
Carbon/GDP Ratio (gC/1997\$)		181	178	162	146	131	120
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>							
		170	174	165	161	158	157

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Advanced Scenario No Carbon Charge (991213)*

	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<i>supply side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<i>Residential</i>							
Petroleum		27.8	26	24.2	23	21.9	20.9
Natural Gas		74.1	75	76.4	79.2	81.9	83.6
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	204.3	203.6	199.3	189.9	185.2
Total		285.6	306.8	305.6	302.9	295.1	290.9
<i>Commercial</i>							
Petroleum		14.4	11.7	11.6	11.2	10.8	10.2
Natural Gas		48.6	50.9	52.7	55.4	55.7	55.5
Coal		2.1	2.3	2.4	2.5	2.6	2.6
Electricity		171.5	188	185	192.2	190.9	188.1
Total		236.6	253	251.7	261.2	260	256.5
<i>Industrial</i>							
Petroleum		105.8	107.5	105.5	103.4	97.5	93.4
Natural Gas		142.2	144.9	145	148	149.4	154
Coal		58.5	60	57.6	56.3	56.5	59.2
Electricity		175.6	182.7	176.3	177.1	173.4	169.1
Total Fuel		482.1	495.1	484.5	484.8	476.8	475.7
Process Emissions		11.16	10.69	11.23	11.32	10.97	10.56
Total		493.26	505.79	495.73	496.12	487.77	486.26
<i>Transportation</i>							
Petroleum		461.9	499.6	537	547	529.3	519.4
Natural Gas		10.5	11.3	13.7	14.9	15.6	16.1
Other		0	0.2	0.9	1.7	2.2	3
Electricity		3	3.3	5.3	7.7	9.2	10.7
Total		475.4	514.4	557	571.3	556.3	549.2
<i>Total Carbon Emissions</i>							
Petroleum		609.9	644.9	678.4	684.6	659.6	643.9
Natural Gas		275.4	282.2	287.8	297.6	302.6	309.2
Coal		62	63.7	61.4	60.1	60.4	63
Other		0	0.2	0.9	1.7	2.2	3
Electricity		532.4	578.3	570.2	576.3	563.4	553.1
Total		1480	1569	1599	1620	1588	1572
<i>Electric Generators</i>							
Petroleum		17.6	20.9	4.4	3.3	2.5	2.2
Natural Gas		43.8	47.3	60.8	71.3	79.6	84.3
Coal		471	510.1	505.1	501.7	481.2	466.5
Total		532.4	578.3	570.2	576.3	563.4	553.1
<i>Total Carbon Emissions</i>							
Petroleum		627.5	665.8	682.7	687.9	662.1	646.1
Natural Gas		319.1	329.5	348.6	368.9	382.2	393.5
Coal		533	573.8	566.5	561.8	541.6	529.5
Other		0	0.2	0.9	1.7	2.2	3
Total		1480	1569	1599	1620	1588	1572

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS ADVANCED Scenario Demand Only &amp; \$25/t C-Charge (991213)</i>						
<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>25</i>	<i>25</i>	<i>25</i>
<i>supply side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	19.5	19.5	19.3	19.2
Commercial	15.2	15.9	15.5	16.1	16.3	16.3
Industrial	34.8	35.7	34.9	35.2	35.2	35.4
Transportation	25.0	27.1	29.2	30.1	29.4	29.2
Total	94.0	98.7	99.1	100.9	100.3	100.0
<b>Electricity Sales (TWh)</b>						
Residential	1072	1174	1189	1193	1165	1144
Commercial	1008	1081	1079	1141	1164	1160
Industrial	1033	1052	1047	1062	1064	1057
Transportation	17	19	32	47	58	68
Total	3130	3326	3347	3444	3451	3428
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	308	291	288	281	273
Commercial	237	254	238	246	245	238
Industrial	482	496	467	461	452	445
Transportation	475	514	554	568	554	548
Total	1480	1571	1550	1564	1532	1504
Utilities	532	581	535	538	525	506
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	666	678	683	658	644
Natural Gas	319	329	351	372	380	387
Coal	533	576	520	507	492	470
Other	0	0	1	2	2	3
Total	1480	1571	1550	1564	1532	1504
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.56	8.09	8.17	7.72	7.56
Natural Gas	4.32	4.11	4.29	4.15	3.97	3.82
Coal	1.28	1.22	1.77	1.70	1.62	1.55
Electricity	20.24	19.27	20.07	19.05	17.77	16.91
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	2.04	2.02	1.94	1.87
Petroleum Products	2.88	2.27	3.86	4.42	4.80	5.14
Distillate Fuel	4.47	3.83	5.35	5.63	5.69	5.82
Residual Fuel	2.76	2.17	3.67	4.21	4.60	4.96
Natural Gas	2.70	2.60	3.06	3.01	2.88	2.73
Steam Coal	1.27	1.20	1.76	1.69	1.60	1.54
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.8	39.6	40.1	39.0	38.3
Natural Gas	22.6	23.1	24.5	26.0	26.5	27.0
Coal Subtotal	21.1	22.4	20.3	19.8	19.1	18.3
Nuclear Power	6.7	7.1	6.9	6.7	6.5	6.4
Renewable Energy	6.8	6.9	7.4	7.9	8.7	9.5
Electricity Imports	0.3	0.4	0.4	0.4	0.3	0.3
Others	0.0	0.0	0.1	0.1	0.1	0.3
Total	94.0	98.7	99.1	100.9	100.3	100.0
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	553	532	610	610	569	544
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.1	9.1	8.3	7.6
Carbon/GDP Ratio (gC/1997\$)	181	179	157	141	126	115
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	175	160	156	152	148

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS ADVANCED Scenario Demand Only & \$25/t C-Charge (991213)*

	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>25</i>	<i>25</i>	
	<i>supply side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	
						<i>2020</i>	
<i>Residential</i>							
Petroleum		27.8	26	23.9	22.6	21.5	20.4
Natural Gas		74.1	75	75.3	77.9	80.5	82.2
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	205.1	190.2	186.5	177.3	168.9
Total		285.6	307.6	290.8	288.4	280.6	272.8
<i>Commercial</i>							
Petroleum		14.4	11.7	11.3	10.8	10.5	9.9
Natural Gas		48.6	50.9	51.8	54.3	54.6	54.6
Coal		2.1	2.3	2.3	2.4	2.5	2.5
Electricity		171.5	188.7	172.6	178.3	177.1	171.3
Total		236.6	253.7	237.9	245.9	244.7	238.3
<i>Industrial</i>							
Petroleum		105.8	108.1	104.4	102	96.1	92.7
Natural Gas		142.2	144	143.9	144.5	146.6	149.4
Coal		58.5	60	51.3	48.6	47.8	46.9
Electricity		175.6	183.7	167.4	166	161.9	156.1
Total Fuel		482.1	495.7	467	461.2	452.4	445.1
Process Emissions		11.16	10.69	11.23	11.32	10.97	10.56
Total		493.26	506.39	478.23	472.52	463.37	455.66
<i>Transportation</i>							
Petroleum		461.9	499.6	534.4	544.3	527.6	519.1
Natural Gas		10.5	11.3	13.7	15	15.4	15.8
Other		0	0.2	0.9	1.7	2.2	2.9
Electricity		3	3.3	5.2	7.4	8.8	10
Total		475.4	514.4	554.2	568.3	553.9	547.9
<i>Total Carbon Emissions</i>							
Petroleum		609.9	645.5	674	679.7	655.6	642.2
Natural Gas		275.4	281.3	284.7	291.7	297.1	301.9
Coal		62	63.7	55	52.4	51.6	50.7
Other		0	0.2	0.9	1.7	2.2	2.9
Electricity		532.4	580.8	535.3	538.3	525.1	506.3
Total		1480	1571	1550	1564	1532	1504
<i>Electric Generators</i>							
Petroleum		17.6	20.9	4	3.2	2.4	2.1
Natural Gas		43.8	48	66.3	80.2	82.5	84.9
Coal		471	511.9	465	455	440.2	419.3
Total		532.4	580.8	535.3	538.3	525.1	506.3
<i>Total Carbon Emissions</i>							
Petroleum		627.5	666.4	678	682.9	658	644.2
Natural Gas		319.1	329.2	350.9	371.8	379.6	386.9
Coal		533	575.6	520.1	507.4	491.8	470
Other		0	0.2	0.9	1.7	2.2	2.9
Total		1480	1571	1550	1564	1532	1504

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Advanced Scenario Supply Only \$25/t C-Charge (990811)</i>						
<i>demand side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>
<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>25</i>	<i>25</i>	<i>25</i>
<i>supply side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	19.9	19.8	20.0	20.1	20.0
Commercial	15.2	15.9	16.1	17.0	17.6	17.8
Industrial	34.8	35.7	36.3	38.1	39.2	40.2
Transportation	25.0	27.2	29.9	32.3	33.1	34.2
Total	94.0	98.6	102.1	107.5	110.0	112.1
<b>Electricity Sales (TWh)</b>						
Residential	1072	1177	1229	1255	1258	1260
Commercial	1008	1083	1153	1233	1305	1348
Industrial	1033	1057	1104	1172	1219	1258
Transportation	17	20	36	51	60	70
Total	3130	3338	3521	3711	3842	3937
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	306	293	290	287	280
Commercial	237	252	246	253	258	255
Industrial	482	494	487	502	509	513
Transportation	475	516	566	607	618	636
Total	1480	1567	1592	1652	1671	1684
Utilities	532	576	551	557	559	547
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	668	694	732	738	752
Natural Gas	319	333	368	397	423	448
Coal	533	566	529	521	508	481
Other	0	1	1	2	3	3
Total	1480	1567	1592	1652	1671	1684
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	8.14	8.39	8.15	8.18
Natural Gas	4.32	4.12	4.39	4.34	4.18	4.11
Coal	1.28	1.22	1.77	1.71	1.64	1.60
Electricity	20.24	19.09	18.72	18.08	17.62	17.19
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.45	2.09	2.12	2.10	2.13
Petroleum Products	2.88	2.29	3.84	4.44	4.52	4.80
Distillate Fuel	4.47	3.85	5.33	5.77	5.82	5.98
Residual Fuel	2.76	2.19	3.65	4.23	4.32	4.59
Natural Gas	2.70	2.63	3.18	3.25	3.19	3.17
Steam Coal	1.27	1.20	1.76	1.70	1.63	1.58
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.9	40.5	43.0	43.7	44.7
Natural Gas	22.6	23.3	25.7	27.8	29.6	31.3
Coal Subtotal	21.1	22.1	20.6	20.3	19.8	18.6
Nuclear Power	6.7	7.1	6.7	6.2	5.8	5.5
Renewable Energy	6.8	6.9	8.2	9.9	10.7	11.4
Electricity Imports	0.3	0.3	0.3	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.1	0.2	0.2
Total	94.0	98.6	102.1	107.5	110.0	112.1
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	552	533	620	656	655	666
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.4	9.7	9.1	8.5
Carbon/GDP Ratio (gC/1997\$)	181	178	161	149	138	128
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	172	157	150	145	139



**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Advanced Scenario Supply Only \$25/t C-Charge (990811)*

	<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Adv 1997</i>	<i>Base 0 Adv 2000</i>	<i>Base 25 Adv 2005</i>	<i>Base 25 Adv 2010</i>	<i>Base 25 Adv 2015</i>	<i>Base 25 Adv 2020</i>
<i>Residential</i>							
Petroleum		27.8	26	23.8	22.5	21.4	20.3
Natural Gas		74.1	75	75.1	77.7	80.9	83
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	203	192.5	188.5	182.9	175
Total		285.6	305.5	292.8	290	286.6	279.6
<i>Commercial</i>							
Petroleum		14.4	11.7	11	10.5	10.2	9.7
Natural Gas		48.6	51	52.4	55	55.7	55.7
Coal		2.1	2.3	2.3	2.4	2.5	2.5
Electricity		171.5	186.8	180.5	185.2	189.8	187.1
Total		236.6	251.7	246.2	253.1	258.2	255
<i>Industrial</i>							
Petroleum		105.8	108.6	110.8	114.9	114.5	115.3
Natural Gas		142.2	144.7	149.6	157.1	163.3	169.6
Coal		58.5	58.3	54.1	53.9	53.9	53.8
Electricity		175.6	182.3	172.9	176	177.3	174.7
Total Fuel		482.1	493.9	487.3	502	509	513.3
Process Emissions		11.16	10.69	11.23	11.32	10.97	10.56
Total		493.26	504.59	498.53	513.32	519.97	523.86
<i>Transportation</i>							
Petroleum		461.9	500.5	544	580.5	588.1	603.8
Natural Gas		10.5	11.7	15	16.9	18.2	19.4
Other		0	0.5	1.4	2.1	2.7	3.3
Electricity		2.9	3.4	5.6	7.6	8.7	9.7
Total		475.3	516.2	566	607.1	617.7	636.3
<i>Total Carbon Emissions</i>							
Petroleum		609.9	646.8	689.6	728.4	734.2	749.1
Natural Gas		275.4	282.5	292.2	306.7	318.1	327.7
Coal		62	62	57.8	57.7	57.7	57.6
Other		0	0.5	1.4	2.1	2.7	3.3
Electricity		532.4	575.5	551.4	557.3	558.7	546.5
Total		1480	1567	1592	1652	1671	1684
<i>Electric Generators</i>							
Petroleum		17.6	21	4.3	3.6	3.2	2.8
Natural Gas		43.8	50.2	75.6	90.5	105	120.5
Coal		471	504.3	471.5	463.3	450.5	423.3
Total		532.4	575.5	551.4	557.3	558.7	546.5
<i>Total Carbon Emissions</i>							
Petroleum		627.5	667.8	693.9	731.9	737.5	751.9
Natural Gas		319.1	332.7	367.7	397.2	423.1	448.2
Coal		533	566.3	529.4	521	508.2	480.8
Other		0	0.5	1.4	2.1	2.7	3.3
Total		1480	1567	1592	1652	1671	1684

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Advanced Scenario with \$25/t C-Charge (991213)</i>							
	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>25</i>	<i>25</i>	
	<i>supply side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>							
Residential		19.0	19.9	19.6	19.7	19.3	18.9
Commercial		15.2	15.9	15.6	16.3	16.3	16.0
Industrial		34.8	35.6	34.9	35.2	35.1	35.0
Transportation		25.0	27.1	29.2	30.1	29.5	29.2
Total		94.0	98.4	99.3	101.3	100.2	99.0
<b>Electricity Sales (TWh)</b>							
Residential		1072	1177	1218	1221	1190	1164
Commercial		1008	1083	1103	1168	1186	1173
Industrial		1033	1052	1057	1075	1072	1057
Transportation		17	19	32	47	58	68
Total		3130	3332	3410	3511	3505	3462
<b>Carbon Emissions by Sector (MtC)</b>							
Residential		286	305	287	281	274	267
Commercial		237	252	234	240	238	232
Industrial		482	494	462	454	445	438
Transportation		475	514	554	566	550	541
Total		1480	1565	1537	1540	1507	1478
Utilities		532	574	522	518	505	487
<b>Carbon Emissions by Source (MtC)</b>							
Petroleum		628	666	678	680	654	636
Natural Gas		319	331	356	373	384	396
Coal		533	567	501	486	467	443
Other		0	0	1	2	2	3
Total		1480	1565	1537	1540	1507	1478
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>							
Petroleum Products		7.69	6.56	8.08	8.16	7.68	7.53
Natural Gas		4.32	4.11	4.28	4.17	3.95	3.82
Coal		1.28	1.21	1.77	1.71	1.64	1.59
Electricity		20.24	19.09	18.49	17.69	16.88	16.59
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>							
Fossil Fuel Average		1.54	1.45	2.06	2.04	1.98	1.95
Petroleum Products		2.88	2.28	3.95	4.50	4.78	5.07
Distillate Fuel		4.47	3.83	5.33	5.64	5.76	5.86
Residual Fuel		2.76	2.18	3.74	4.28	4.60	4.90
Natural Gas		2.70	2.62	3.03	3.02	2.87	2.78
Steam Coal		1.26	1.20	1.76	1.70	1.62	1.57
<b>Energy Consumption (Quadrillion Btu)</b>							
Petroleum Subtotal		36.5	38.8	39.6	40.1	39.0	38.3
Natural Gas		22.6	23.2	24.9	26.1	26.8	27.6
Coal Subtotal		21.1	22.1	19.5	18.9	18.1	17.2
Nuclear Power		6.7	7.1	6.7	6.2	5.8	5.3
Renewable Energy		6.8	6.9	8.2	9.7	10.0	10.1
Electricity Imports		0.3	0.3	0.3	0.3	0.3	0.3
Others		0.0	0.0	0.1	0.1	0.1	0.3
Total		94.0	98.4	99.3	101.3	100.2	99.0
<b>Macroeconomic Indicators</b>							
GDP (billion 1997\$)		8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)		552	530	596	599	560	542
Energy/GDP Ratio (kBtu/1997\$)		11.5	11.2	10.1	9.1	8.3	7.5
Carbon/GDP Ratio (gC/1997\$)		181	178	156	138	124	113
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>							
		170	172	153	147	144	141

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Advanced Scenario with \$25/t C-Charge (991213)*

	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>25</i>	<i>25</i>	<i>25</i>
	<i>supply side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<i>Residential</i>							
Petroleum		27.8	26	23.9	22.6	21.5	20.4
Natural Gas		74.1	75	75	77.5	80	81.5
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	202.8	186.4	180	171.4	163.8
Total		285.6	305.3	286.7	281.4	274.1	267
<i>Commercial</i>							
Petroleum		14.4	11.7	11.3	10.8	10.5	9.9
Natural Gas		48.6	50.9	51.7	54.2	54.6	54.5
Coal		2.1	2.3	2.3	2.4	2.5	2.5
Electricity		171.5	186.6	168.8	172.1	170.8	165.1
Total		236.6	251.5	234.1	239.6	238.3	232
<i>Industrial</i>							
Petroleum		105.8	108.1	104.9	101.7	95.8	92
Natural Gas		142.2	144.3	143.4	144.6	146.8	150.3
Coal		58.5	60	51.5	48.8	47.7	47.1
Electricity		175.6	181.3	161.8	158.4	154.3	148.8
Total Fuel		482.1	493.6	461.6	453.5	444.6	438.1
Process Emissions		11.16	10.69	11.23	11.32	10.97	10.56
Total		493.26	504.29	472.83	464.82	455.57	448.66
<i>Transportation</i>							
Petroleum		461.9	499.6	534.3	541.9	523.9	511.9
Natural Gas		10.5	11.4	13.9	15	15.6	16.1
Other		0	0.2	1	1.7	2.3	3
Electricity		3	3.2	4.9	7	8.3	9.5
Total		475.4	514.4	554.1	565.6	550.1	540.5
<i>Total Carbon Emissions</i>							
Petroleum		609.9	645.4	674.3	676.9	651.7	634.1
Natural Gas		275.4	281.6	284.1	291.3	296.9	302.4
Coal		62	63.7	55.3	52.6	51.5	50.9
Other		0	0.2	1	1.7	2.3	3
Electricity		532.4	574	522	517.5	504.8	487.3
Total		1480	1565	1537	1540	1507	1478
<i>Electric Generators</i>							
Petroleum		17.6	21	3.6	2.9	2.4	2.1
Natural Gas		43.8	49.8	72.2	81.7	86.9	93.1
Coal		471	503.2	446.2	432.9	415.5	392.1
Total		532.4	574	522	517.5	504.8	487.3
<i>Total Carbon Emissions</i>							
Petroleum		627.5	666.4	677.9	679.9	654.1	636.2
Natural Gas		319.1	331.4	356.3	373	383.8	395.5
Coal		533	566.9	501.4	485.5	467	443
Other		0	0.2	1	1.7	2.3	3
Total		1480	1565	1537	1540	1507	1478

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Advanced Scenario Demand Only \$50/t C-Charge (991213)</i>						
<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Adv 0 Base</i>	<i>Adv 0 Base</i>	<i>Adv 50 Base</i>	<i>Adv 50 Base</i>	<i>Adv 50 Base</i>	<i>Adv 50 Base</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	20.0	19.0	19.0	18.8	18.7
Commercial	15.2	15.9	14.9	15.6	15.8	15.8
Industrial	34.8	35.7	34.5	34.7	34.8	34.9
Transportation	25.0	27.1	29.1	29.8	29.2	28.9
Total	94.0	98.6	97.5	99.1	98.6	98.3
<b>Electricity Sales (TWh)</b>						
Residential	1072	1174	1170	1170	1141	1117
Commercial	1008	1080	1055	1111	1135	1134
Industrial	1033	1052	1035	1047	1048	1038
Transportation	17	19	32	47	57	67
Total	3130	3325	3291	3375	3380	3356
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	306	273	271	259	249
Commercial	237	252	221	228	223	215
Industrial	482	495	449	442	431	420
Transportation	475	514	551	563	548	542
Total	1480	1568	1494	1504	1461	1426
Utilities	532	577	490	493	469	443
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	666	673	675	651	636
Natural Gas	319	331	362	378	390	398
Coal	533	570	459	450	418	389
Other	0	0	1	2	2	3
Total	1480	1568	1494	1504	1461	1426
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	8.50	8.59	8.14	7.98
Natural Gas	4.32	4.11	4.67	4.56	4.35	4.16
Coal	1.28	1.22	2.42	2.35	2.26	2.20
Electricity	20.25	19.31	21.68	20.80	19.43	18.41
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.44	2.69	2.67	2.59	2.51
Petroleum Products	2.88	2.28	4.52	5.14	5.45	5.68
Distillate Fuel	4.47	3.83	5.82	6.15	6.21	6.33
Residual Fuel	2.76	2.17	4.32	4.92	5.28	5.52
Natural Gas	2.70	2.59	3.48	3.46	3.30	3.11
Steam Coal	1.27	1.20	2.40	2.34	2.24	2.18
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.8	39.3	39.7	38.5	37.8
Natural Gas	22.6	23.2	25.3	26.4	27.3	27.8
Coal Subtotal	21.1	22.2	17.9	17.5	16.3	15.1
Nuclear Power	6.7	7.1	7.0	6.8	6.8	6.7
Renewable Energy	6.8	6.9	7.5	8.2	9.3	10.2
Electricity Imports	0.3	0.5	0.4	0.4	0.4	0.4
Others	0.0	0.0	0.1	0.1	0.1	0.3
Total	94.0	98.6	97.5	99.1	98.6	98.3
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	553	533	646	647	604	577
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	9.9	8.9	8.1	7.5
Carbon/GDP Ratio (gC/1997\$)	181	178	152	135	120	109
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	174	149	146	139	132

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Advanced Scenario Demand Only \$50/t C-Charge (991213)*

	<i>demand side efficiency</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>	<i>Adv</i>
	<i>carbon charge (\$/t)</i>	<i>0</i>	<i>0</i>	<i>50</i>	<i>50</i>	<i>50</i>
	<i>supply side efficiency</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>	<i>Base</i>
		<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>
<i>Residential</i>						
Petroleum		27.8	26	23.5	22.2	21.1
Natural Gas		74.1	75	73.9	76.2	78.5
Coal		1.4	1.5	1.4	1.3	1.3
Electricity		182.3	203.7	174.1	171.1	158.1
Total		285.6	306.2	272.9	270.8	259.1
<i>Commercial</i>						
Petroleum		14.4	11.7	10.9	10.5	10.1
Natural Gas		48.6	50.9	50.7	53.1	53.4
Coal		2.1	2.3	2.3	2.4	2.4
Electricity		171.5	187.4	157	162.4	157.3
Total		236.6	252.4	220.9	228.3	223.2
<i>Industrial</i>						
Petroleum		105.8	108.1	103.6	100.1	94.5
Natural Gas		142.2	144.1	144.5	143.7	147.3
Coal		58.5	60	47.3	44.7	43.5
Electricity		175.6	182.6	154.1	153	145.3
Total Fuel		482.1	494.7	449.4	441.6	430.6
Process Emissions		11.16	10.69	11.23	11.32	10.97
Total		493.26	505.39	460.63	452.92	441.57
<i>Transportation</i>						
Petroleum		461.9	499.6	531.4	539.7	522.5
Natural Gas		10.5	11.4	14.1	15.1	15.7
Other		0	0.2	1	1.7	2.2
Electricity		3	3.3	4.8	6.9	7.9
Total		475.4	514.4	551.3	563.4	548.4
<i>Total Carbon Emissions</i>						
Petroleum		609.9	645.5	669.4	672.5	648.3
Natural Gas		275.4	281.4	283.1	288	294.9
Coal		62	63.7	51	48.4	47.3
Other		0	0.2	1	1.7	2.2
Electricity		532.4	577	490	493.3	468.5
Total		1480	1568	1494	1504	1461
<i>Electric Generators</i>						
Petroleum		17.6	20.8	3.3	2.7	2.2
Natural Gas		43.8	49.5	78.9	89.5	95.3
Coal		471	506.7	407.8	401.2	371.1
Total		532.4	577	490	493.3	468.5
<i>Total Carbon Emissions</i>						
Petroleum		627.5	666.2	672.7	675.2	650.5
Natural Gas		319.1	330.9	362.1	377.5	390.1
Coal		533	570.4	458.7	449.6	418.4
Other		0	0.2	1	1.7	2.2
Total		1480	1568	1494	1504	1461

<b>All-Sector Forecast Summary</b> <i>CEF-NEMS Advanced Scenario, \$50/t Carbon Charge, Supply Only (990811)</i>						
<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Adv</i>	<i>Base 0 Adv</i>	<i>Base 50 Adv</i>	<i>Base 50 Adv</i>	<i>Base 50 Adv</i>	<i>Base 50 Adv</i>
	<i>1997</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<b>Primary Energy (Quadrillion Btu)</b>						
Residential	19.0	19.9	19.3	19.6	19.7	19.5
Commercial	15.2	15.8	15.6	16.5	17.2	17.3
Industrial	34.8	35.7	36.0	37.9	39.0	40.1
Transportation	25.0	27.2	29.7	32.0	32.7	33.8
Total	94.0	98.5	100.6	106.0	108.6	110.8
<b>Electricity Sales (TWh)</b>						
Residential	1072	1177	1211	1236	1241	1244
Commercial	1008	1083	1130	1210	1284	1329
Industrial	1033	1057	1096	1167	1214	1260
Transportation	17	20	35	50	59	69
Total	3130	3338	3472	3663	3798	3902
<b>Carbon Emissions by Sector (MtC)</b>						
Residential	286	305	275	267	259	243
Commercial	237	251	229	230	229	216
Industrial	482	493	472	482	482	479
Transportation	475	516	563	601	608	624
Total	1480	1565	1539	1579	1578	1562
Utilities	532	574	506	496	480	440
<b>Carbon Emissions by Source (MtC)</b>						
Petroleum	628	668	690	725	728	741
Natural Gas	319	334	378	404	424	441
Coal	533	564	469	448	423	377
Other	0	1	1	2	3	3
Total	1480	1565	1539	1579	1578	1562
<b>Average Energy Prices to All Users (1997\$/MBtu)</b>						
Petroleum Products	7.69	6.57	8.55	8.79	8.55	8.50
Natural Gas	4.32	4.12	4.77	4.73	4.53	4.44
Coal	1.28	1.21	2.43	2.37	2.30	2.24
Electricity	20.24	19.11	20.37	19.54	18.81	18.11
<b>Average Energy Price to Elec Gen (1997\$/MBtu)</b>						
Fossil Fuel Average	1.54	1.46	2.75	2.77	2.73	2.76
Petroleum Products	2.88	2.29	4.39	4.95	5.12	5.35
Distillate Fuel	4.47	3.84	5.82	6.24	6.26	6.46
Residual Fuel	2.76	2.19	4.20	4.74	4.91	5.16
Natural Gas	2.70	2.62	3.59	3.65	3.53	3.48
Steam Coal	1.27	1.20	2.42	2.36	2.29	2.22
<b>Energy Consumption (Quadrillion Btu)</b>						
Petroleum Subtotal	36.5	38.9	40.3	42.6	43.2	44.3
Natural Gas	22.6	23.4	26.4	28.2	29.8	31.8
Coal Subtotal	21.1	21.9	18.3	17.5	16.4	14.7
Nuclear Power	6.7	7.1	6.9	6.7	6.6	6.4
Renewable Energy	6.8	6.9	8.3	10.5	12.2	13.1
Electricity Imports	0.3	0.3	0.4	0.3	0.3	0.3
Others	0.0	0.0	0.1	0.1	0.2	0.2
Total	94.0	98.5	100.6	106.0	108.6	110.8
<b>Macroeconomic Indicators</b>						
GDP (billion 1997\$)	8171	8799	9859	11123	12141	13128
Energy Bill (billion 1997\$)	553	533	659	694	689	694
Energy/GDP Ratio (kBtu/1997\$)	11.5	11.2	10.2	9.5	8.9	8.4
Carbon/GDP Ratio (gC/1997\$)	181	178	156	142	130	119
<b>Electricity Sector Carbon Coefficient (gC/kWh)</b>						
	170	172	146	135	126	113

**Carbon Emissions Forecast Summary (MtC)**  
*CEF-NEMS Advanced Scenario, \$50/t Carbon Charge, Supply Only (990811)*

	<i>demand side efficiency carbon charge (\$/t) supply side efficiency</i>	<i>Base 0 Adv 1997</i>	<i>Base 0 Adv 2000</i>	<i>Base 50 Adv 2005</i>	<i>Base 50 Adv 2010</i>	<i>Base 50 Adv 2015</i>	<i>Base 50 Adv 2020</i>
<i>Residential</i>							
Petroleum		27.8	26	23.5	22.1	21	19.9
Natural Gas		74.1	75	73.7	75.9	79.3	81.3
Coal		1.4	1.5	1.4	1.3	1.3	1.3
Electricity		182.3	202.4	176.4	167.3	156.9	140.1
Total		285.6	304.8	275	266.7	258.5	242.6
<i>Commercial</i>							
Petroleum		14.4	11.7	10.7	10.2	9.9	9.4
Natural Gas		48.6	51	51.3	53.7	54.6	54.5
Coal		2.1	2.3	2.3	2.4	2.4	2.5
Electricity		171.5	186.1	164.7	163.8	162.3	149.7
Total		236.6	251.1	229	230.2	229.2	216.1
<i>Industrial</i>							
Petroleum		105.8	108.6	110.9	114.7	114.2	115.4
Natural Gas		142.2	144.8	150.5	158	163.8	171.4
Coal		58.5	58.3	50.9	51	50.6	50.3
Electricity		175.6	181.7	159.7	158	153.4	141.9
Total Fuel		482.1	493.4	472	481.7	482.1	479
Process Emissions		11.16	10.69	11.23	11.32	10.97	10.56
Total		493.26	504.09	483.23	493.02	493.07	489.56
<i>Transportation</i>							
Petroleum		461.9	500.5	540.9	574.5	579.6	593.4
Natural Gas		10.5	11.8	15.4	17	18.2	19.7
Other		0	0.5	1.4	2.1	2.7	3.3
Electricity		2.9	3.4	5.2	6.8	7.5	7.8
Total		475.3	516.2	562.9	600.5	608	624.2
<i>Total Carbon Emissions</i>							
Petroleum		609.9	646.8	685.9	721.6	724.8	738.2
Natural Gas		275.4	282.5	290.9	304.6	315.9	326.8
Coal		62	62	54.6	54.7	54.4	54
Other		0	0.5	1.4	2.1	2.7	3.3
Electricity		532.4	573.7	506	495.9	480.1	439.5
Total		1480	1565	1539	1579	1578	1562
<i>Electric Generators</i>							
Petroleum		17.6	21	3.9	3.3	2.9	2.7
Natural Gas		43.8	51.1	87.4	99	108.5	113.6
Coal		471	501.6	414.7	393.7	368.6	323.2
Total		532.4	573.7	506	495.9	480.1	439.5
<i>Total Carbon Emissions</i>							
Petroleum		627.5	667.8	689.9	724.9	727.7	740.9
Natural Gas		319.1	333.6	378.4	403.6	424.4	440.5
Coal		533	563.6	469.3	448.4	423	377.3
Other		0	0.5	1.4	2.1	2.7	3.3
Total		1480	1565	1539	1579	1578	1562