

*Impacts of a 25-Percent Renewable Electricity Standard as Proposed in the American Clean Energy and Security Act Discussion Draft*

Addendum: Projected Expenditure Impacts By Sector

In response to a request from Chairman Edward Markey, the Energy Information Administration (EIA) prepared a report addressing the projected impacts of a 25-percent renewable electricity standard (RES) as proposed in the American Clean Energy and Security Act (ACESA) discussion draft. This addendum responds to a further request from Chairman Markey that EIA provide additional summary information regarding the projected impacts of the RES on expenditures for electricity and natural gas in the residential, commercial, and industrial sectors, spanning the period from 2020, when EIA's analysis shows that the RES program first becomes binding on a national basis, to 2030, the end of the projection period for the *Annual Energy Outlook 2009*.

The projected impacts of the RES on energy expenditures vary across sectors, the type of fuel consumed, and the year considered. Electricity expenditures generally rise, reflecting the effect of the RES in shifting to higher-cost renewable generation sources, while expenditures on natural gas generally fall, reflecting the reduction in the price of natural gas as electricity sector demand for that fuel is reduced by the RES. The expenditure changes for electricity and natural gas also reflect some small impacts of the RES itself and the price changes it causes on projected levels electricity and natural gas consumption.

Table A1 provides summary information on percentage changes in expenditures relative to the baseline for the two RES cases considered in EIA's analysis of the RES. The RES with Full Efficiency Credits (RESFEC) case assumes that the maximum level of efficiency credits, up to one fifth of the credits in the target in any given year, are claimed. This is reflected as a 20-percent reduction in the applicable target for eligible renewable generation. The RES with No Efficiency Credits (RESNEC) case assumes that States cannot qualify for, or elect not to use, efficiency credits.

Tables A2 through A4 provide the projections for prices, consumption, and expenditures in the three sectors that are the basis of the calculations reported in Table A1. All of the information in these tables is drawn from the summary spreadsheets that will be posted on EIA's website with the RES analysis report.

Table A1 – Percentage Change in Expenditures by Sector – RES Cases Relative to the Reference Case

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Residential Sector</b>											
RESFEC											
Electricity	0.06%	0.22%	0.23%	0.27%	1.13%	1.72%	1.69%	1.23%	0.82%	0.52%	0.16%
Natural Gas	-0.20%	-0.09%	-0.46%	-0.50%	-0.62%	-1.22%	-1.23%	-1.41%	-1.39%	0.07%	-0.35%
Combined	-0.01%	0.13%	0.04%	0.06%	0.66%	0.94%	0.92%	0.53%	0.23%	0.40%	0.02%
RESNEC											
Electricity	0.01%	0.04%	0.33%	0.73%	1.29%	1.97%	1.74%	1.08%	0.74%	0.51%	0.04%
Natural Gas	-0.92%	-1.01%	-1.67%	-1.90%	-2.12%	-2.48%	-2.60%	-2.80%	-2.48%	-1.48%	-1.73%
Combined	-0.25%	-0.25%	-0.22%	0.02%	0.38%	0.79%	0.59%	0.05%	-0.11%	-0.02%	-0.43%
<b>Commercial Sector</b>											
RESFEC											
Electricity	0.10%	0.35%	0.29%	0.31%	1.36%	2.15%	2.15%	1.76%	1.29%	1.00%	0.53%
Natural Gas	-0.21%	-0.05%	-0.48%	-0.48%	-0.57%	-1.13%	-1.04%	-1.15%	-1.04%	0.64%	0.07%
Combined	0.04%	0.27%	0.14%	0.17%	1.00%	1.54%	1.55%	1.21%	0.85%	0.93%	0.44%
RESNEC											
Electricity	0.01%	0.08%	0.34%	0.90%	1.45%	2.43%	2.18%	1.51%	1.08%	0.79%	0.19%
Natural Gas	-0.91%	-0.95%	-1.64%	-1.81%	-1.96%	-2.24%	-2.27%	-2.38%	-1.97%	-0.80%	-1.14%
Combined	-0.17%	-0.12%	-0.04%	0.39%	0.81%	1.56%	1.35%	0.78%	0.50%	0.49%	-0.07%
<b>Industrial Sector</b>											
RESFEC											
Electricity	-0.21%	-0.09%	-0.20%	-0.08%	1.26%	2.29%	2.40%	2.10%	1.44%	0.81%	0.27%
Natural Gas	-0.10%	-0.22%	-0.78%	-0.73%	-0.39%	-1.49%	-1.38%	-1.82%	-1.75%	2.60%	0.41%
Combined	-0.16%	-0.15%	-0.45%	-0.36%	0.56%	0.69%	0.77%	0.38%	0.02%	1.60%	0.33%
RESNEC											
Electricity	-0.34%	-0.27%	-0.02%	0.56%	1.49%	2.58%	2.37%	1.71%	1.18%	0.68%	-0.08%
Natural Gas	-0.99%	-1.35%	-2.88%	-3.15%	-2.79%	-3.25%	-3.42%	-3.04%	-2.33%	1.16%	-0.67%
Combined	-0.62%	-0.73%	-1.26%	-1.03%	-0.34%	0.11%	-0.11%	-0.36%	-0.38%	0.89%	-0.35%

Source: Energy Information Administration, National Energy Modeling System runs, STIMULUS.D041409A, WAXRPS.D041609A, AND WAXRPSNE.D041609C

Table A2 – Residential Energy Expenditures

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Reference Case</b>											
Electricity											
Prices (cents/kwh)	11.07	11.19	11.26	11.23	11.23	11.23	11.25	11.37	11.51	11.65	11.77
Sales (billion kWh)	1476	1487	1505	1525	1550	1570	1593	1613	1634	1646	1662
Expenditures (billion dollars, 2007)	163	166	169	171	174	176	179	183	188	192	196
Natural Gas											
Prices (\$/thou. cu ft)	12.91	13.15	13.23	13.01	12.98	12.95	13.14	13.44	13.78	14.06	14.35
Sales (trillion cu ft)	4.9	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Expenditures (billion dollars, 2007)	63	64	64	63	64	64	65	66	68	69	70
Combined											
Expenditures (billion dollars, 2007)	226	230	234	235	238	240	244	249	256	260	265
<b>RESFEC Case</b>											
Electricity											
Prices (cents/kwh)	11.07	11.21	11.29	11.27	11.38	11.47	11.50	11.58	11.68	11.78	11.85
Sales (billion kWh)	1477	1487	1504	1524	1547	1563	1584	1603	1624	1636	1653
Expenditures (billion dollars, 2007)	163	167	170	172	176	179	182	186	190	193	196
Natural Gas											
Prices (\$/thou. cu ft)	12.88	13.14	13.17	12.94	12.88	12.77	12.95	13.21	13.55	14.04	14.28
Sales (trillion cu ft)	4.9	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Expenditures (billion dollars, 2007)	63	64	64	63	63	63	64	65	67	69	70
Combined											
Expenditures (billion dollars, 2007)	226	230	234	235	239	242	246	251	256	262	266
<b>RESNEC Case</b>											
Electricity											
Prices (cents/kwh)	11.06	11.19	11.31	11.34	11.42	11.52	11.53	11.58	11.67	11.79	11.85
Sales (billion kWh)	1477	1487	1503	1522	1545	1561	1581	1602	1623	1635	1651
Expenditures (billion dollars, 2007)	163	166	170	173	176	180	182	185	190	193	196
Natural Gas											
Prices (\$/thou. cu ft)	12.77	13.00	12.98	12.72	12.65	12.56	12.73	12.98	13.35	13.77	14.03
Sales (trillion cu ft)	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Expenditures (billion dollars, 2007)	62	63	63	62	62	62	63	64	66	68	69
Combined											
Expenditures (billion dollars, 2007)	226	230	233	235	239	242	245	250	256	260	264

Source: Energy Information Administration, National Energy Modeling System runs, STIMULUS.D041409A, WAXRPS.D041609A, AND WAXRPSNE.D041609C

Table A3 – Commercial Energy Expenditures

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Reference Case</b>											
Electricity											
Prices (cents/kwh)	9.42	9.55	9.64	9.62	9.62	9.60	9.61	9.72	9.87	9.99	10.12
Sales (billion kWh)	1620	1642	1664	1688	1714	1741	1768	1793	1818	1841	1864
Expenditures (billion dollars, 2007)	153	157	160	162	165	167	170	174	179	184	189
Natural Gas											
Prices (\$/thou. cu ft)	11.39	11.63	11.72	11.53	11.51	11.47	11.67	11.97	12.31	12.58	12.87
Sales (trillion cu ft)	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4
Expenditures (billion dollars, 2007)	37	38	38	38	38	38	39	41	42	43	44
Combined											
Expenditures (billion dollars, 2007)	190	194	198	200	203	206	209	215	221	227	233
<b>RESFEC Case</b>											
Electricity											
Prices (cents/kwh)	9.44	9.59	9.67	9.66	9.78	9.86	9.89	9.97	10.07	10.16	10.24
Sales (billion kWh)	1620	1641	1662	1686	1709	1732	1756	1780	1804	1828	1852
Expenditures (billion dollars, 2007)	153	157	161	163	167	171	174	177	182	186	190
Natural Gas											
Prices (\$/thou. cu ft)	11.36	11.62	11.65	11.45	11.41	11.28	11.47	11.73	12.07	12.56	12.79
Sales (trillion cu ft)	3.2	3.2	3.2	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.5
Expenditures (billion dollars, 2007)	37	38	38	38	38	38	39	40	41	43	44
Combined											
Expenditures (billion dollars, 2007)	190	195	199	200	205	209	213	218	223	229	234
<b>RESNEC Case</b>											
Electricity											
Prices (cents/kwh)	9.42	9.56	9.68	9.72	9.80	9.89	9.90	9.95	10.05	10.15	10.21
Sales (billion kWh)	1621	1642	1663	1685	1708	1730	1754	1779	1803	1827	1851
Expenditures (billion dollars, 2007)	153	157	161	164	167	171	174	177	181	185	189
Natural Gas											
Prices (\$/thou. cu ft)	11.25	11.47	11.46	11.23	11.17	11.08	11.24	11.49	11.87	12.28	12.53
Sales (trillion cu ft)	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.5	3.5	3.5
Expenditures (billion dollars, 2007)	36	37	37	37	37	38	38	40	41	43	44
Combined											
Expenditures (billion dollars, 2007)	189	194	198	201	205	209	212	217	222	228	233

Source: Energy Information Administration, National Energy Modeling System runs, STIMULUS.D041409A, WAXRPS.D041609A, AND WAXRPSNE.D041609C

Table A4 – Industrial Energy Expenditures

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Reference Case</b>											
Electricity											
Prices (cents/kwh)	6.42	6.51	6.59	6.59	6.59	6.59	6.60	6.69	6.81	6.92	7.02
Sales (billion kWh)	1020	1021	1018	1022	1025	1025	1020	1013	1004	995	986
Expenditures (billion dollars, 2007)	65	66	67	67	68	68	67	68	68	69	69
Natural Gas											
Prices (\$/thou. cu ft)	7.68	7.89	7.97	7.77	7.76	7.67	7.81	8.08	8.42	8.66	8.94
Sales (trillion cu ft)	6.4	6.4	6.4	6.5	6.5	6.5	6.5	6.5	6.5	6.3	6.3
Expenditures (billion dollars, 2007)	49	50	51	50	50	50	51	53	55	55	57
Combined											
Expenditures (billion dollars, 2007)	114	117	118	118	118	117	118	120	123	124	126
<b>RESFEC Case</b>											
Electricity											
Prices (cents/kwh)	6.42	6.53	6.61	6.61	6.71	6.79	6.81	6.88	6.96	7.03	7.07
Sales (billion kWh)	1018	1017	1013	1017	1020	1019	1013	1007	998	988	981
Expenditures (billion dollars, 2007)	65	66	67	67	68	69	69	69	69	69	69
Natural Gas											
Prices (\$/thou. cu ft)	7.65	7.88	7.91	7.70	7.64	7.46	7.59	7.83	8.17	8.66	8.85
Sales (trillion cu ft)	6.4	6.4	6.4	6.5	6.6	6.6	6.6	6.6	6.6	6.5	6.4
Expenditures (billion dollars, 2007)	49	50	51	50	50	49	50	52	54	56	57
Combined											
Expenditures (billion dollars, 2007)	114	117	118	117	119	118	119	121	123	126	126
<b>RESNEC Case</b>											
Electricity											
Prices (cents/kwh)	6.41	6.51	6.62	6.66	6.73	6.82	6.82	6.86	6.95	7.03	7.06
Sales (billion kWh)	1018	1018	1013	1016	1019	1017	1011	1006	997	987	979
Expenditures (billion dollars, 2007)	65	66	67	68	69	69	69	69	69	69	69
Natural Gas											
Prices (\$/thou. cu ft)	7.53	7.73	7.71	7.47	7.42	7.27	7.39	7.61	7.99	8.39	8.59
Sales (trillion cu ft)	6.4	6.4	6.4	6.5	6.6	6.6	6.6	6.7	6.7	6.6	6.6
Expenditures (billion dollars, 2007)	48	50	50	49	49	48	49	51	53	55	56
Combined											
Expenditures (billion dollars, 2007)	114	116	117	116	118	118	118	120	123	125	125

Source: Energy Information Administration, National Energy Modeling System runs, STIMULUS.D041409A, WAXRPS.D041609A, AND WAXRPSNE.D041609C