

Appendix F. Electricity Emission Factors

F.1 Domestic Electricity Emission Factors, 1999-2002

Region	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/ MWh)	Methane (kg/ MWh)	Nitrous Oxide (kg/ MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
(1) New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire and Maine	0.466	0.02647	0.00616	0.744	0.793
(2) New Jersey, Delaware, Pennsylvania, Maryland, West Virginia, Ohio, Indiana and Michigan	0.782	0.01404	0.01281	0.900	1.002
(3) Illinois and Wisconsin	0.638	0.01231	0.01048	0.900	1.151
(4) Missouri, Kentucky, Virginia, Arkansas, Tennessee, North Carolina, South Carolina, Louisiana, Mississippi, Alabama and Georgia	0.690	0.02556	0.01283	0.900	1.005
(5) Florida	0.678	0.02437	0.00856	0.788	0.840
(6) Texas	0.730	0.01351	0.00774	0.782	0.833
(7) Oklahoma and Kansas	0.867	0.01315	0.01236	0.900	0.990
(8) North Dakota, South Dakota, Nebraska, Minnesota and Iowa	0.875	0.01392	0.01414	0.900	1.160
(9) Colorado, Utah, Nevada, Wyoming and Montana	0.909	0.01158	0.01377	0.900	1.009
(10) New Mexico and Arizona	0.658	0.00762	0.00941	0.900	0.970
(11) Oregon, Washington and Idaho	0.147	0.01345	0.00337	0.781	0.833
(12) California	0.350	0.01831	0.00299	0.618	0.659
(13) Hawaii	0.858	0.03443	0.00777	0.849	0.905
(14) Alaska	0.749	0.01163	0.00461	0.859	0.916
(15) U.S. Territories	0.858	0.03443	0.00777	0.849	0.905
U.S. Average	0.676	0.01815	0.01053	0.900	0.959

^a Emission inventory electricity emission factors are based on average emissions intensity of total electric sector generation for specified state-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to the point of use.

^b Avoided emissions benchmark emission factors are based on average emissions intensity of fossil-fired generation for specified state-based regions, but do not exceed 0.9 metric tons CO₂e per MWh. Note that the Avoided emissions benchmarks do not include (T&D) losses.

^c Indirect emission reductions emission factors for reduced purchases of electricity are based on average emissions intensity of fossil-fired generation for specified state-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to point of use.

Source: U.S. Energy Information Administration, October, 2007.

F.2 Domestic Electricity Emission Factors, 1991-1994

Region	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/ MWh)	Methane (kg/ MWh)	Nitrous Oxide (kg/ MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
(1) New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire and Maine	0.500	0.03281	0.00816	0.817	0.877
(2) New Jersey, Delaware, Pennsylvania, Maryland, West Virginia, Ohio, Indiana and Michigan	0.799	0.01442	0.01320	0.900	1.012
(3) Illinois and Wisconsin	0.636	0.01312	0.01083	0.900	1.162
(4) Missouri, Kentucky, Virginia, Arkansas, Tennessee, North Carolina, South Carolina, Louisiana, Mississippi, Alabama and Georgia	0.681	0.02892	0.01351	0.900	1.025
(5) Florida	0.718	0.03551	0.01187	0.838	0.899
(6) Texas	0.786	0.01536	0.00891	0.813	0.872
(7) Oklahoma and Kansas	0.857	0.01379	0.01222	0.900	0.988
(8) North Dakota, South Dakota, Nebraska, Minnesota and Iowa	0.892	0.01498	0.01461	0.900	1.191
(9) Colorado, Utah, Nevada, Wyoming and Montana	0.945	0.01147	0.01497	0.900	1.061
(10) New Mexico and Arizona	0.690	0.00832	0.01064	0.900	1.024
(11) Oregon, Washington and Idaho	0.124	0.01490	0.00374	0.900	1.057
(12) California	0.345	0.01950	0.00338	0.621	0.666
(13) Hawaii	0.861	0.06238	0.01186	0.856	0.918
(14) Alaska	0.797	0.01440	0.00647	0.900	1.007
(15) U.S. Territories	0.861	0.06238	0.01186	0.856	0.918
U.S. Average	0.687	0.02051	0.01136	0.900	0.987

^a Emission inventory electricity emission factors are based on average emissions intensity of total electric sector generation for specified state-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to the point of use.

^b Avoided emissions benchmark emission factors are based on average emissions intensity of fossil-fired generation for specified state-based regions, but do not exceed 0.9 metric tons CO₂e per MWh. Note that the Avoided emissions benchmarks do not include (T&D) losses.

^c Indirect emission reductions emission factors for reduced purchases of electricity are based on average emissions intensity of fossil-fired generation for specified state-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to point of use.

Source: U.S. Energy Information Administration, October, 2007

F.3 Foreign Electricity Emission Factors, 1999-2002

Region/Country	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/ MWh)	Methane (kg/ MWh)	Nitrous Oxide (kg/ MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
OECD North America					
Canada	0.223	0.00390	0.00351	0.802	0.876
Mexico	0.593	0.01676	0.00230	0.763	0.899
OECD Europe^d	0.387	0.00694	0.00505	0.694	0.749
Austria	0.197	0.00377	0.00207	0.558	0.594
Belgium	0.289	0.00420	0.00275	0.682	0.716
Czech Republic	0.604	0.00783	0.01074	0.782	0.854
Denmark	0.358	0.01181	0.00831	0.475	0.506
Finland	0.239	0.00395	0.00348	0.451	0.468
France	0.083	0.00136	0.00093	0.849	0.912
Germany	0.539	0.00637	0.00779	0.829	0.869
Greece	0.887	0.01453	0.01141	0.900	1.044
Hungary	0.437	0.01009	0.00540	0.673	0.773
Iceland	0.001	0.00003	0.00001	0.315	0.331
Ireland	0.699	0.01623	0.00765	0.738	0.807
Italy	0.525	0.01773	0.00482	0.649	0.693
Luxembourg ^e	0.387	0.00694	0.00505	0.694	0.749
Netherlands	0.479	0.00998	0.00492	0.545	0.568
Norway	0.005	0.00003	0.00001	0.410	0.442
Poland	0.730	0.01084	0.01528	0.749	0.848
Portugal	0.511	0.01459	0.00711	0.690	0.755
Slovak Republic	0.297	0.00357	0.00324	0.706	0.750
Spain	0.443	0.00923	0.00631	0.790	0.865
Sweden	0.048	0.00092	0.00046	0.495	0.537
Switzerland	0.022	0.00030	0.00005	0.379	0.408
Turkey	0.584	0.01135	0.00628	0.786	0.973
United Kingdom	0.475	0.00793	0.00549	0.643	0.701
OECD Asia	0.511	0.00787	0.00679	0.808	0.963
Australia	0.924	0.01008	0.01290	0.900	1.096
Japan	0.417	0.00839	0.00465	0.696	0.730
Korea	0.493	0.00758	0.00672	0.842	0.892
New Zealand	0.159	0.00307	0.00084	0.526	0.595
Non-OECD Europe and Eurasia	0.513	0.01300	0.01309	0.900	1.077
Albania	0.051	0.00251	0.00050	0.685	1.025
Armenia	0.230	0.00950	0.00095	0.490	0.693
Azerbaijan	0.613	0.03937	0.00710	0.664	0.790
Belarus	0.326	0.02441	0.00335	0.328	0.369
Bosnia-Herzegovina	0.770	0.01074	0.01544	0.900	2.145
Bulgaria	0.492	0.01087	0.01351	0.900	1.124
Croatia ^e	0.513	0.01300	0.01309	0.900	1.077
Estonia	0.774	0.02085	0.02810	0.900	1.300
FYR of Macedonia	0.773	0.01810	0.02453	0.900	1.255
Georgia	0.137	0.00392	0.00052	0.853	1.007
Gibraltar	0.870	0.05168	0.01034	0.874	0.874
Kazakhstan	1.293	0.01888	0.02150	0.900	1.814
Kyrgyzstan	0.102	0.00209	0.00168	0.407	0.605
Latvia ^e	0.513	0.01300	0.01309	0.900	1.077
Lithuania	0.165	0.00629	0.00103	0.343	0.407
Malta	0.904	0.05977	0.01195	0.900	1.051
Republic of Moldova ^e	0.513	0.01300	0.01309	0.900	1.077
Romania	0.426	0.01443	0.01135	0.676	0.785
Russia	0.351	0.01379	0.00668	0.403	0.463
Serbia and Montenegro	0.786	0.01291	0.01828	0.900	1.595
Slovenia	0.369	0.00674	0.00915	0.861	0.918
Tajikistan	0.038	0.00044	0.00004	0.475	0.554

Region/Country	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/ MWh)	Methane (kg/ MWh)	Nitrous Oxide (kg/ MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
Turkmenistan	0.858	0.01951	0.00195	0.859	1.034
Ukraine	0.345	0.01035	0.00999	0.796	1.003
Uzbekistan	0.497	0.01976	0.00366	0.543	0.599
Non-OECD Asia	0.809	0.01607	0.01447	0.900	1.136
Bangladesh	0.625	0.02353	0.00274	0.664	0.783
Brunei Darussalam	0.830	0.02089	0.00213	0.831	0.893
China (including Hong Kong)	0.839	0.01458	0.01841	0.900	1.081
Chinese Taipei	0.631	0.01375	0.00882	0.845	0.887
Dem. People's Republic of Korea	0.630	0.00732	0.00747	0.900	1.645
India	0.999	0.01664	0.01959	0.900	1.702
Indonesia	0.722	0.02041	0.00855	0.865	1.001
Malaysia	0.528	0.01984	0.00365	0.585	0.623
Myanmar	0.456	0.02336	0.00318	0.696	1.023
Nepal	0.013	0.00093	0.00019	0.823	1.047
Pakistan	0.482	0.03146	0.00549	0.690	0.945
Philippines	0.526	0.01554	0.00777	0.879	1.021
Singapore	0.731	0.03997	0.00743	0.734	0.774
Sri Lanka	0.384	0.02717	0.00543	0.777	0.941
Thailand	0.583	0.01967	0.00489	0.631	0.688
Vietnam	0.417	0.01297	0.00389	0.900	1.101
Other Asia ^f	0.469	0.02202	0.00656	0.512	0.609
Middle East^g	0.743	0.01917	0.00507	0.760	0.857
Bahrain	0.876	0.01163	0.00116	0.877	0.954
Cyprus	0.851	0.03817	0.00763	0.854	0.909
Iraq	0.744	0.03809	0.00762	0.760	0.822
Islamic Republic of Iran	0.598	0.01874	0.00279	0.626	0.754
Israel	0.839	0.01769	0.01318	0.844	0.875
Jordan	0.775	0.03787	0.00746	0.782	0.890
Kuwait	0.790	0.03331	0.00633	0.792	0.907
Lebanon	0.754	0.04011	0.00802	0.799	0.943
Oman	0.856	0.01821	0.00258	0.857	1.035
Qatar	0.862	0.01156	0.00116	0.863	0.934
Saudi Arabia	0.816	0.02678	0.00487	0.818	0.873
Syria	0.655	0.03129	0.00564	0.751	1.099
United Arab Emirates	0.760	0.01205	0.00132	0.761	0.801
Yemen	1.029	0.05155	0.01031	0.900	1.482
Africa	0.683	0.00977	0.00955	0.860	0.985
Algeria	0.752	0.01506	0.00161	0.756	0.925
Angola	0.386	0.01341	0.00268	0.900	1.275
Benin ^e	0.683	0.00977	0.00955	0.860	0.985
Botswana ^e	0.683	0.00977	0.00955	0.860	0.985
Cameroon	0.016	0.00079	0.00016	0.830	1.076
Congo ^e	0.683	0.00977	0.00955	0.860	0.985
Côte d'Ivoire	0.408	0.00980	0.00103	0.635	0.788
Democratic Republic of Congo	0.004	0.00011	0.00002	0.900	1.188
Egypt	0.436	0.01365	0.00177	0.531	0.606
Eritrea	0.736	0.03845	0.00769	0.742	0.905
Ethiopia	0.011	0.00040	0.00008	0.900	1.060
Gabon	0.311	0.01011	0.00177	0.846	1.040
Ghana	0.150	0.00693	0.00139	0.875	1.112
Kenya	0.393	0.01342	0.00268	0.900	1.447
Libya	1.146	0.03699	0.00705	0.900	1.555
Morocco	0.809	0.01874	0.01467	0.868	1.030
Mozambique ^e	0.683	0.00977	0.00955	0.860	0.985
Namibia ^e	0.683	0.00977	0.00955	0.860	0.985
Nigeria	0.372	0.01444	0.00189	0.621	1.019

Region/Country	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/MWh)	Methane (kg/MWh)	Nitrous Oxide (kg/MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
Senegal	0.892	0.03793	0.00758	0.900	1.545
South Africa	0.911	0.01085	0.01627	0.900	1.069
Sudan	0.540	0.01962	0.00392	0.900	1.221
Togo ^e	0.683	0.00977	0.00955	0.860	0.985
Tunisia	0.608	0.01566	0.00196	0.614	0.692
United Republic of Tanzania	0.108	0.00249	0.00105	0.900	1.767
Zambia	0.007	0.00017	0.00006	0.900	1.145
Zimbabwe ^e	0.683	0.00977	0.00955	0.860	0.985
Other Africa ^h	0.431	0.01631	0.00435	0.794	0.826
Central and South America	0.204	0.00520	0.00170	0.780	0.940
Argentina	0.317	0.00570	0.00101	0.569	0.671
Bolivia	0.401	0.00730	0.00115	0.850	0.968
Brazil	0.093	0.00251	0.00106	0.900	1.140
Chile	0.333	0.00586	0.00417	0.693	0.742
Colombia	0.157	0.00280	0.00185	0.647	0.823
Costa Rica	0.015	0.00057	0.00011	0.900	1.073
Cuba	1.104	0.03956	0.00791	0.900	1.412
Dominican Republic	0.771	0.04458	0.01017	0.850	1.247
Ecuador	0.256	0.01523	0.00304	0.779	1.055
El Salvador	0.302	0.01764	0.00353	0.680	0.774
Guatemala	0.418	0.02068	0.00593	0.822	1.074
Haiti	0.347	0.03417	0.00683	0.720	1.461
Honduras	0.290	0.01656	0.00331	0.765	0.957
Jamaica	0.819	0.03716	0.00743	0.847	0.932
Netherlands Antilles	0.793	0.04090	0.00818	0.796	0.936
Nicaragua	0.650	0.04223	0.00845	0.804	1.202
Panama	0.286	0.01651	0.00330	0.777	0.998
Paraguay	0.000	0.00000	0.00000	0.900	1.970
Peru	0.148	0.00534	0.00135	0.826	0.931
Trinidad and Tobago	0.751	0.00796	0.00080	0.755	0.821
Uruguay	0.055	0.00281	0.00056	0.848	1.043
Venezuela	0.251	0.00628	0.00106	0.854	1.134
Other Latin America ⁱ	0.584	0.03073	0.00614	0.705	0.750

^a Emission inventory electricity emission factors are based on average emissions intensity of total electric sector generation for specified countries or country-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to the point of use.

^b Avoided emissions benchmark emission factors are based on average emissions intensity of fossil-fired generation for specified countries or country-based regions, but do not exceed 0.9 metric tons CO₂e per MWh. Note that the Avoided emissions benchmarks do not include (T&D) losses.

^c Indirect emission reductions emission factors for reduced purchases of electricity are based on average emissions intensity of fossil-fired generation for specified countries or country-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to point of use.

^d Use the factors for OECD Europe for western European countries not listed (e.g., Andorra, Monaco, Liechtenstein, San Marino, Vatican City).

^e The weighted average emission factors for the region are provided for countries that import more than 25 percent of electricity consumed in either or both time periods (1991-1994 or 1999-2002).

^f Use the factors for Other Asia for non-OECD Asian countries not listed.

^g Use the weighted average Middle East factors for the West Bank and Gaza Strip.

^h Use the factors for Other Africa for African countries not listed.

ⁱ Use the factors for Other Latin America for Central and South American countries not listed.

Source: U.S. Energy Information Administration, based on data from the following sources: International Energy Agency (IEA), *Electricity Information Database 2007* and *CO₂ Emissions from Fuel Combustion Database 2006*, <http://www.iea.org>, October 2007.

F.4 Foreign Electricity Emission Factors, 1991-1994

Region/Country	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/ MWh)	Methane (kg/ MWh)	Nitrous Oxide (kg/ MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
OECD North America					
Canada	0.188	0.00357	0.00317	0.882	0.954
Mexico	0.558	0.02090	0.00490	0.740	0.859
OECD Europe^d	0.432	0.00750	0.00597	0.769	0.829
Austria	0.223	0.00434	0.00203	0.599	0.639
Belgium	0.366	0.00451	0.00423	0.882	0.930
Czech Republic	0.628	0.00800	0.01146	0.786	0.855
Denmark	0.506	0.01102	0.01309	0.606	0.650
Finland	0.249	0.00444	0.00423	0.458	0.479
France	0.094	0.00156	0.00122	0.900	1.006
Germany	0.602	0.00708	0.00858	0.872	0.902
Greece	1.020	0.01634	0.01267	0.900	1.196
Hungary	0.501	0.01046	0.00574	0.778	0.879
Iceland	0.001	0.00005	0.00001	0.429	0.463
Ireland	0.788	0.01481	0.00985	0.834	0.923
Italy	0.560	0.02370	0.00604	0.710	0.764
Luxembourg ^e	0.432	0.00750	0.00597	0.769	0.829
Netherlands	0.588	0.01018	0.00568	0.627	0.652
Norway	0.004	0.00001	0.00001	0.654	0.703
Poland	0.713	0.01104	0.01587	0.739	0.855
Portugal	0.569	0.01873	0.00861	0.814	0.920
Slovak Republic	0.432	0.00618	0.00470	0.791	0.857
Spain	0.456	0.00728	0.00682	0.900	1.050
Sweden	0.056	0.00108	0.00047	0.390	0.419
Switzerland	0.023	0.00040	0.00007	0.541	0.583
Turkey	0.605	0.00878	0.00656	0.900	1.204
United Kingdom	0.644	0.00969	0.00942	0.887	0.966
OECD Asia	0.494	0.01046	0.00521	0.777	0.821
Australia	0.855	0.00992	0.01284	0.900	1.030
Japan	0.430	0.01091	0.00410	0.696	0.733
Korea	0.582	0.01005	0.00461	0.900	1.106
New Zealand	0.122	0.00226	0.00049	0.550	0.619
Non-OECD Europe and Eurasia^f	0.521	0.01573	0.01345	0.858	0.995
Albania ^f	0.074	0.00416	0.00083	0.512	1.025
Armenia ^f	0.122	0.01512	0.00236	0.295	0.453
Azerbaijan ^g	0.723	0.05159	0.01014	0.851	1.024
Belarus ^f	0.364	0.02941	0.00456	0.356	0.396
Bosnia-Herzegovina ^f	0.831	0.00703	0.01032	0.900	3.334
Bulgaria ^f	0.534	0.01351	0.01486	0.895	1.087
Croatia ^e	0.521	0.01573	0.01345	0.858	0.995
Estonia ^f	0.717	0.02234	0.02870	0.823	1.030
FYR of Macedonia ^f	0.873	0.01640	0.02379	0.900	1.296
Georgia ^f	0.333	0.00979	0.00130	0.452	0.544
Gibraltar ^f	0.922	0.05229	0.01046	0.900	0.938
Kazakhstan ^f	1.355	0.01979	0.02090	0.900	1.705
Kyrgyzstan ^f	0.114	0.00325	0.00225	0.395	0.469
Latvia ^e	0.521	0.01573	0.01345	0.858	0.995
Lithuania ^f	0.218	0.00778	0.00147	0.386	0.480
Malta ^f	1.312	0.04383	0.01666	0.900	1.451
Republic of Moldova ^e	0.521	0.01573	0.01345	0.858	0.995
Romania ^f	0.468	0.01782	0.01126	0.667	0.745
Russia ^f	0.321	0.01612	0.00630	0.355	0.394
Serbia and Montenegro ^f	0.792	0.01346	0.01895	0.900	1.453
Slovenia ^f	0.363	0.00761	0.00972	0.774	0.828
Tajikistan ^f	0.064	0.00064	0.00006	0.517	0.581

Region/Country	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/ MWh)	Methane (kg/ MWh)	Nitrous Oxide (kg/ MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
Turkmenistan ^h	0.521	0.01573	0.01140	0.858	0.995
Ukraine ^f	0.387	0.01450	0.01196	0.863	0.965
Uzbekistan ^f	0.558	0.01730	0.00365	0.679	0.752
Non-OECD Asia^f	0.778	0.01670	0.01391	0.900	1.113
Bangladesh ^f	0.613	0.02479	0.00283	0.668	0.863
Brunei Darussalam ^f	1.034	0.02037	0.00208	0.900	1.087
China (including Hong Kong) ^f	0.839	0.01458	0.01841	0.900	1.081
Chinese Taipei ^f	0.521	0.01476	0.00776	0.828	0.878
Dem. People's Republic of Korea ^f	0.563	0.00450	0.00658	0.900	1.613
India ^f	0.963	0.01357	0.01672	0.900	1.552
Indonesia ^f	0.709	0.02590	0.00832	0.898	1.022
Malaysia ^f	0.596	0.02517	0.00532	0.706	0.778
Myanmar ^f	0.477	0.01881	0.00245	0.900	1.479
Nepal ^f	0.065	0.00387	0.00077	0.900	1.242
Pakistan ^f	0.403	0.02399	0.00408	0.702	0.916
Philippines ^f	0.516	0.02985	0.00687	0.856	1.019
Singapore ^f	0.997	0.03971	0.00739	0.900	1.043
Sri Lanka ^f	0.106	0.00516	0.00103	0.900	1.366
Thailand ^f	0.658	0.02559	0.00714	0.707	0.782
Vietnam ^f	0.290	0.01131	0.00350	0.900	1.531
Other Asia ^{f,i}	0.500	0.02652	0.00700	0.550	0.575
Middle East^{f,j}	0.756	0.02439	0.00512	0.792	0.876
Bahrain ^f	0.998	0.01121	0.00112	0.900	1.048
Cyprus ^f	0.878	0.03805	0.00761	0.881	0.934
Iraq ^f	0.648	0.03665	0.00733	0.667	0.697
Islamic Republic of Iran ^f	0.607	0.01938	0.00316	0.690	0.790
Israel ^f	0.872	0.02120	0.01233	0.877	0.918
Jordan ^f	0.916	0.03601	0.00706	0.900	1.018
Kuwait ^f	0.753	0.02551	0.00453	0.755	0.818
Lebanon ^f	0.676	0.03437	0.00687	0.814	0.936
Oman ^f	0.899	0.01779	0.00256	0.900	1.036
Qatar ^f	1.046	0.01134	0.00113	0.900	1.111
Saudi Arabia ^f	0.848	0.02770	0.00507	0.850	0.916
Syria ^f	0.589	0.03017	0.00558	0.732	1.034
United Arab Emirates ^f	0.799	0.01286	0.00143	0.800	0.886
Yemen ^f	0.973	0.04627	0.00925	0.900	1.258
Africa^{f,k}	0.724	0.01304	0.01040	0.900	1.020
Algeria ^f	0.711	0.01491	0.00163	0.720	0.865
Angola ^f	0.171	0.00359	0.00072	0.900	3.068
Benin ^e	0.724	0.01304	0.01040	0.900	1.020
Botswana ^e	0.724	0.01304	0.01040	0.900	1.020
Cameroon ^f	0.010	0.00044	0.00009	0.887	1.046
Congo ^e	0.724	0.01304	0.01040	0.900	1.020
Côte d'Ivoire ^f	0.303	0.01830	0.00366	0.632	0.759
Democratic Republic of Congo ^f	0.003	0.00011	0.00002	0.900	1.138
Egypt ^f	0.519	0.01702	0.00277	0.665	0.744
Eritrea ^f	1.495	0.03707	0.00741	0.900	1.754
Ethiopia ^f	0.062	0.00269	0.00054	0.823	0.928
Gabon ^f	0.269	0.00614	0.00096	0.900	1.127
Ghana ^f	0.002	0.00009	0.00002	0.835	0.906
Kenya ^f	0.075	0.00175	0.00035	0.900	1.870
Libya ^f	0.882	0.04359	0.00872	0.885	1.219
Morocco ^f	0.908	0.02611	0.00860	0.900	1.043
Mozambique ^e	0.724	0.01304	0.01040	0.900	1.020
Namibia ^e	0.724	0.01304	0.01040	0.900	1.020
Nigeria ^f	0.366	0.01505	0.00213	0.595	0.912

Region/Country	Emission Inventory ^a			Emission Reductions	
	Carbon Dioxide (Metric tons/MWh)	Methane (kg/MWh)	Nitrous Oxide (kg/MWh)	Avoided Emissions ^b (Metric tons CO ₂ e/MWh)	Indirect Emissions ^c (Metric tons CO ₂ e/MWh)
Senegal ^f	0.935	0.03362	0.00668	0.900	1.170
South Africa ^f	0.931	0.01102	0.01650	0.900	1.077
Sudan ^f	0.394	0.01526	0.00305	0.900	1.449
Togo ^e	0.724	0.01304	0.01040	0.900	1.020
Tunisia ^f	0.701	0.02176	0.00356	0.709	0.791
United Republic of Tanzania ^f	0.172	0.00435	0.00118	0.900	1.830
Zambia ^f	0.011	0.00015	0.00009	0.900	1.581
Zimbabwe ^e	0.724	0.01304	0.01040	0.900	1.020
Other Africa ^f	0.442	0.01644	0.00389	0.847	0.887
Central and South America^{f,i}	0.189	0.00517	0.00145	0.900	1.080
Argentina ^f	0.358	0.00816	0.00178	0.753	0.939
Bolivia ^f	0.398	0.00567	0.00082	0.900	1.062
Brazil ^f	0.057	0.00136	0.00065	0.900	1.408
Chile ^f	0.212	0.00357	0.00305	0.900	1.295
Colombia ^f	0.228	0.00368	0.00291	0.866	1.102
Costa Rica ^f	0.138	0.00538	0.00108	0.900	1.052
Cuba ^f	1.097	0.03931	0.00786	0.900	1.465
Dominican Republic ^f	0.808	0.03977	0.00963	0.900	1.324
Ecuador ^f	0.216	0.01083	0.00217	0.900	1.198
El Salvador ^f	0.322	0.01369	0.00274	0.900	1.157
Guatemala ^f	0.291	0.01379	0.00276	0.845	0.968
Haiti ^f	0.233	0.01332	0.00266	0.900	1.775
Honduras ^f	0.081	0.00657	0.00131	0.604	0.848
Jamaica ^f	0.978	0.03587	0.00717	0.900	1.114
Netherlands Antilles ^f	0.791	0.04030	0.00806	0.794	0.920
Nicaragua ^f	0.450	0.02419	0.00484	0.891	1.222
Panama ^f	0.325	0.01293	0.00259	0.900	1.450
Paraguay ^f	0.000	0.00001	0.00000	0.900	1.397
Peru ^f	0.184	0.00871	0.00173	0.881	1.091
Trinidad and Tobago ^f	0.770	0.00817	0.00082	0.776	0.871
Uruguay ^f	0.058	0.00293	0.00059	0.876	1.103
Venezuela ^f	0.234	0.00455	0.00069	0.786	0.970
Other Latin America ^f	0.686	0.02953	0.00590	0.855	0.904

^a Emission inventory electricity emission factors are based on average emissions intensity of total electric sector generation for specified countries or country-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to the point of use.

^b Avoided emissions benchmark emission factors are based on average emissions intensity of fossil-fired generation for specified countries or country-based regions, but do not exceed 0.9 metric tons CO₂e per MWh. Note that the Avoided emissions benchmarks do not include (T&D) losses.

^c Indirect emission reductions emission factors for reduced purchases of electricity are based on average emissions intensity of fossil-fired generation for specified countries or country-based regions and include transmission and distribution (T&D) losses incurred in delivering electricity to point of use.

^d Use the factors for OECD Europe for western European countries not listed (e.g., Andorra, Monaco, Liechtenstein, San Marino, Vatican City).

^e The weighted average emission factors for the region are provided for countries that import more than 25 percent of electricity consumed in either or both time periods (1991-1994 or 1999-2002).

^f The weighted average emission factors for 1992-1994 are provided because data for 1991 were unavailable.

^g The weighted average emission factors for 1993-1994 are provided because 1991 and 1992 data were unavailable for Azerbaijan.

^h The weighted average emission factors for the region are provided since 1991-1994 data were not available for Turkmenistan.

ⁱ Use the factors for Other Asia for non-OECD Asian countries not listed.

^j Use the weighted average Middle East factors for the West Bank and Gaza Strip.

^k Use the factors for Other Africa for African countries not listed.

^l Use the factors for Other Latin America for Central and South American countries not listed.

Source: U.S. Energy Information Administration, based on data from the following sources: International Energy Agency (IEA), *Electricity Information Database 2007* and *CO₂ Emissions from Fuel Combustion Database 2006*, <http://www.iea.org>, October 2007.