

**Baseline Carbon Emission Factor of  
Bulgarian Electricity and Heat Power System**

|                                                 | Unit               | 2000       | 2001       | 2002       | 2003       | 2004       |            |            |
|-------------------------------------------------|--------------------|------------|------------|------------|------------|------------|------------|------------|
| 1. Total system power generation                | GWh                | 41 805     | 44 785     | 41 943     | 41 990     | 43 621     |            |            |
| 2. Total system heat generation                 | MW <sub>th</sub> h | 14 398 244 | 17 092 947 | 17 104 183 | 18 945 487 | 15 622 107 |            |            |
| 3. Total CO2 emissions of power generation      | kt/a               | 20 686,07  | 24 186,09  | 21 130,37  | 23 502,96  | 26 141,93  |            |            |
| 4. Total CO2 emissions of energy transformation | kt/a               | 25 364,83  | 29 868,93  | 27 206,40  | 29 968,99  | 31 566,24  |            |            |
| <b>Baseline Emission Factor - BEF</b>           |                    |            |            |            |            |            |            |            |
| <b>Fossil Fuels</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | tonne/MWh          | 1,215      | 1,287      | 1,214      | 1,226      | 1,199      |            |            |
| 2. Dispatch Data Adjusted_OM_EF                 | tonne/MWh          | 1,159      | 1,222      | 1,150      | 1,160      | 1,138      |            |            |
| 3. Average Dispatch Data_OM_EF                  | tonne/MWh          | 1,269      | 1,307      | 1,231      | 1,237      | 1,239      |            |            |
| <b>HPP included</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | tonne/MWh          | 1,144      | 1,184      | 1,106      | 1,160      | 1,165      |            |            |
| 2. Dispatch Data Adjusted_OM_EF                 | tonne/MWh          | 1,065      | 1,106      | 1,032      | 1,067      | 1,078      |            |            |
| 3. Average Dispatch Data_OM_EF                  | tonne/MWh          | 1,101      | 1,149      | 1,040      | 1,073      | 1,108      |            |            |
| <b>Fossil Fuels</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | kg/GJ              | 106,38     | 109,57     | 110,86     | 111,24     | 110,03     |            |            |
| 2. Dispatch Data Adjusted_OM_EF                 | kg/GJ              | 106,93     | 109,05     | 110,68     | 111,09     | 109,91     |            |            |
| 3. Average Dispatch Data_OM_EF                  | kg/GJ              | 109,43     | 108,79     | 109,00     | 109,47     | 110,63     |            |            |
| <b>Forecast</b>                                 |                    |            |            |            |            |            |            |            |
| Minimum demand                                  | Unit               | 2006       | 2007       | 2008       | 2009       | 2010       | 2011       | 2012       |
| 1. Total system power generation                | GWh                | 45 051     | 43 115     | 44 156     | 47 490     | 48 212     | 51 139     | 52 291     |
| 2. Total system heat generation                 | MW <sub>th</sub> h | 17 875 519 | 18 057 503 | 18 320 175 | 18 746 936 | 19 028 565 | 19 744 974 | 19 358 651 |
| 3. Total CO2 emissions of power generation      | kt/a               | 28 035,37  | 31 810,38  | 31 245,76  | 33 538,31  | 33 547,47  | 33 863,20  | 31 248,73  |
| 4. Total CO2 emissions of energy transformation | kt/a               | 34 447,38  | 38 304,71  | 37 832,72  | 40 154,36  | 40 358,39  | 40 560,20  | 37 758,36  |
| <b>Baseline Emission Factor - BEF</b>           |                    |            |            |            |            |            |            |            |
| <b>Fossil Fuels</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | tonne/MWh          | 1,215      | 1,158      | 1,144      | 1,022      | 0,984      | 0,963      | 0,953      |
| 2. Dispatch Data Adjusted_OM_EF                 | tonne/MWh          | 1,154      | 1,100      | 1,078      | 0,956      | 0,917      | 0,902      | 0,899      |
| 3. Average Dispatch Data_OM_EF                  | tonne/MWh          | 1,243      | 1,190      | 1,146      | 1,026      | 0,986      | 0,974      | 0,983      |
| <b>HPP included</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | tonne/MWh          | 1,176      | 1,175      | 1,110      | 0,995      | 0,959      | 0,940      | 0,918      |
| 2. Dispatch Data Adjusted_OM_EF                 | tonne/MWh          | 1,111      | 1,102      | 1,017      | 0,894      | 0,858      | 0,849      | 0,838      |
| 3. Average Dispatch Data_OM_EF                  | tonne/MWh          | 1,138      | 1,153      | 1,057      | 0,947      | 0,909      | 0,898      | 0,889      |
| <b>Fossil Fuels</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | kg/GJ              | 111,997    | 106,693    | 106,484    | 100,340    | 97,288     | 95,088     | 96,152     |
| 2. Dispatch Data Adjusted_OM_EF                 | kg/GJ              | 111,976    | 106,621    | 106,402    | 100,566    | 97,871     | 95,946     | 96,570     |
| 3. Average Dispatch Data_OM_EF                  | kg/GJ              | 111,622    | 106,175    | 106,640    | 100,646    | 98,217     | 96,578     | 97,026     |
| <b>Forecast</b>                                 |                    |            |            |            |            |            |            |            |
| Maximum demand                                  | Unit               | 2006       | 2007       | 2008       | 2009       | 2010       | 2011       | 2012       |
| 1. Total system power generation                | GWh                | 46 739     | 43 572     | 46 588     | 48 351     | 49 455     | 51 368     | 53 194     |
| 2. Total system heat generation                 | MW <sub>th</sub> h | 20 360 486 | 19 909 333 | 20 240 498 | 21 206 857 | 22 170 354 | 23 026 991 | 23 407 576 |
| 3. Total CO2 emissions of power generation      | kt/a               | 27 152,04  | 31 508,75  | 32 821,32  | 33 044,62  | 33 387,00  | 32 807,31  | 30 531,04  |
| 4. Total CO2 emissions of energy transformation | kt/a               | 34 405,23  | 38 713,17  | 40 181,87  | 40 770,13  | 41 342,14  | 40 706,37  | 38 615,88  |
| <b>Baseline Emission Factor - BEF</b>           |                    |            |            |            |            |            |            |            |
| <b>Fossil Fuels</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | tCO2/MWh           | 1,204      | 1,215      | 1,124      | 1,014      | 0,973      | 0,947      | 0,884      |
| 2. Dispatch Data Adjusted_OM_EF                 | tCO2/MWh           | 1,143      | 1,156      | 1,059      | 0,947      | 0,908      | 0,884      | 0,833      |
| 3. Average Dispatch Data_OM_EF                  | tCO2/MWh           | 1,233      | 1,252      | 1,127      | 1,018      | 0,977      | 0,953      | 0,917      |
| <b>HPP included</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | tCO2/MWh           | 1,158      | 1,168      | 1,101      | 0,990      | 0,947      | 0,928      | 0,865      |
| 2. Dispatch Data Adjusted_OM_EF                 | tCO2/MWh           | 1,091      | 1,095      | 1,006      | 0,888      | 0,850      | 0,834      | 0,791      |
| 3. Average Dispatch Data_OM_EF                  | tCO2/MWh           | 1,118      | 1,144      | 1,052      | 0,940      | 0,899      | 0,879      | 0,840      |
| <b>Fossil Fuels</b>                             |                    |            |            |            |            |            |            |            |
| 1. Dispatch Data_OM_EF                          | kg/GJ              | 109,651    | 111,991    | 105,315    | 100,011    | 95,929     | 94,604     | 93,043     |
| 2. Dispatch Data Adjusted_OM_EF                 | kg/GJ              | 109,571    | 111,876    | 105,263    | 100,226    | 96,498     | 95,130     | 93,524     |
| 3. Average Dispatch Data_OM_EF                  | kg/GJ              | 109,126    | 111,908    | 105,550    | 100,273    | 96,821     | 95,676     | 94,056     |