

Input B_H_REFv1.3_demand_tab_supply.txt

The EnergyPLAN model 16.1




| | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|---|--|--|--|---|--|--|--|
| Electricity demand (TWh/year): Flexible demand0,00 Fixed demand 7,52 Fixed imp/exp. 3,57 Electric heating + HP 2,93 Transportation 0,06 Electric cooling 0,22 Total 14,30 | | | | | | Capacities Efficiencies Group 2: MW-e MJ/s elec. Ther COP CHP 0 1500 0,40 0,50 Heat Pump 0 0 3,00 Boiler 0 0,90 Group 3: CHP 1017 82 0,21 0,47 Heat Pump 0 0 3,00 Boiler 1165 0,90 Condensing 1099 0,30 | | | | Regulation StrategyTechnical regulation no. 1 CEEP regulation 000000000 Minimum Stabilisation share 0,00 Stabilisation share of CHP 0,00 Minimum CHP gr 3 load 0 MW Minimum PP 0 MW Heat Pump maximum share 1,00 Maximum import/export 1800 MW | | | | Fuel Price level: Basic Capacities Storage Efficiencies Elec. Storage MW-e GWh Elec. Ther. Charge 1: 0 0 0,80 Discharge 1: 0 0,90 Charge 2: 0 0 0,80 Discharge 2: 0 0,90 Electrolysers: 0 0 0,80 0,00 Rockbed Storage: 0 0 1,00 CAES fuel ratio: 0,000 | | | |
| District heating (TWh/year) Gr.1 Gr.2 Gr.3 Sum District heating demand 0,95 0,00 0,50 1,45 Solar Thermal 0,00 0,00 0,00 0,00 Industrial CHP (CSHP) 0,00 0,00 0,00 0,00 Demand after solar and CSHP 0,95 0,00 0,50 1,45 | | | | | | Heatstorage: gr.2: 0 GWh gr.30 GWh Fixed Boiler: gr.2:0,0 Per cent gr.0,0 Per cent | | | | Distr. Name : Hour_nordpool.txt Addition factor 0,00 DKK/MWh Multiplication factor 2,00 Dependency factor 0,00 DKK/MWh pr. MW Average Market Price227 DKK/MWh Gas Storage 0 GWh Syngas capacity 0 MW Biogas max to grid 0 MW | | | | (TWh/year) Coal Oil Ngas Biomass Transport 0,00 13,43 0,01 0,00 Household 1,15 0,41 0,71 13,47 Industry 2,47 1,32 0,89 0,20 Various 0,18 0,39 1,07 0,00 | | | |
| Wind 87 MW 0,16 TWh/year 0,00 Grid Photo Voltaic 35 MW 0,08 TWh/year 0,00 stabili- River Hydro 172 MW 0,44 TWh/year 0,00 sation River Hydro 0 MW 0 TWh/year 0,00 share Hydro Power 2105 MW 4,21 TWh/year Geothermal/Nuclear 0 MW 0 TWh/year | | | | | | Electricity prod. from CSHP Waste (TWh/year) Gr.1: 0,00 0,00 Gr.2: 0,00 0,00 Gr.3: 0,00 0,00 | | | | | | | | | | | |

Output

| | District Heating | | | | | | | | | | Electricity | | | | | | | | | | | | | | | Exchange | | | | |
|-----------|-------------------------|-------------|----------------------|-----------|-----------|----------|-----------|--------------|----------|-----------------------|--------------------|------------------------|-------------------------|----------|---------------------|--------------------|------------|------------------|-----------------------|----------------------|-----------|----------|--------------------|-----------|-----------|------------|-----------|--------------------------------------|---------------|-----|
| | Demand | | Production | | | | | | | | Ba- lance MW | Consumption | | | | | Production | | | | | | Balance | | | | | Payment Imp Exp Million DKK | | |
| | Distr. heating MW | Solar MW | Waste- CSHP MW | DHP MW | CHP MW | HP MW | ELT MW | Boiler MW | EH MW | Elec. demand MW | | Flex.& Transp MW | Elec- trolyser MW | EH MW | Hydro Pump MW | Tur- bine MW | RES MW | Hy- dro MW | Geo- thermal MW | Waste- CSHP MW | CHP MW | PP MW | Stab- Load % | Imp MW | Exp MW | CEEP MW | EEP MW | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | 348 | 0 | 0 | 229 | 81 | 0 | 0 | 39 | 0 | 0 | 737 | 7 | 4 | 0 | 701 | 0 | 0 | 100 | 482 | 0 | 0 | 999 | 500 | 100 | 13 | 0 | 0 | 0 | 3 | 0 |
| February | 273 | 0 | 0 | 180 | 75 | 0 | 0 | 18 | 0 | 0 | 769 | 7 | 3 | 0 | 550 | 0 | 0 | 84 | 443 | 0 | 0 | 935 | 294 | 100 | 0 | 1 | 0 | 1 | 0 | 0 |
| March | 253 | 0 | 0 | 166 | 72 | 0 | 0 | 14 | 0 | 0 | 712 | 7 | 3 | 0 | 508 | 0 | 0 | 108 | 456 | 0 | 0 | 894 | 391 | 100 | 5 | 3 | 0 | 3 | 1 | 0 |
| April | 170 | 0 | 0 | 112 | 53 | 0 | 0 | 5 | 0 | 0 | 762 | 7 | 2 | 0 | 341 | 0 | 0 | 61 | 452 | 0 | 0 | 661 | 217 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| May | 101 | 0 | 0 | 67 | 35 | 0 | 0 | 0 | 0 | 0 | 833 | 7 | 1 | 0 | 204 | 0 | 0 | 50 | 452 | 0 | 0 | 430 | 300 | 100 | 0 | 7 | 0 | 7 | 0 | 1 |
| June | 63 | 0 | 0 | 41 | 21 | 0 | 0 | 0 | 0 | 0 | 966 | 7 | 1 | 0 | 126 | 0 | 0 | 59 | 486 | 0 | 0 | 267 | 414 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| July | 43 | 0 | 0 | 28 | 15 | 0 | 0 | 0 | 0 | 0 | 1074 | 7 | 1 | 0 | 86 | 0 | 0 | 62 | 515 | 0 | 0 | 182 | 741 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| August | 36 | 0 | 0 | 24 | 12 | 0 | 0 | 0 | 0 | 0 | 1035 | 7 | 0 | 0 | 73 | 0 | 0 | 58 | 522 | 0 | 0 | 153 | 871 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| September | 55 | 0 | 0 | 36 | 19 | 0 | 0 | 0 | 0 | 0 | 1013 | 7 | 1 | 0 | 111 | 0 | 0 | 67 | 505 | 0 | 0 | 234 | 626 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| October | 131 | 0 | 0 | 86 | 45 | 0 | 0 | 0 | 0 | 0 | 936 | 7 | 2 | 0 | 263 | 0 | 0 | 81 | 493 | 0 | 0 | 553 | 424 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| November | 228 | 0 | 0 | 150 | 67 | 0 | 0 | 11 | 0 | 0 | 864 | 7 | 3 | 0 | 459 | 0 | 0 | 85 | 488 | 0 | 0 | 829 | 503 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| December | 281 | 0 | 0 | 185 | 76 | 0 | 0 | 20 | 0 | 0 | 866 | 7 | 4 | 0 | 565 | 0 | 0 | 109 | 450 | 0 | 0 | 945 | 482 | 100 | 14 | 6 | 0 | 6 | 3 | 1 |
| Average | 165 | 0 | 0 | 109 | 48 | 0 | 0 | 9 | 0 | 0 | 881 | 7 | 2 | 0 | 332 | 0 | 0 | 77 | 479 | 0 | 0 | 589 | 482 | 100 | 3 | 1 | 0 | 1 | Average price | |
| Maximum | 544 | 0 | 0 | 358 | 82 | 0 | 0 | 104 | 0 | 0 | 1514 | 13 | 7 | 0 | 1094 | 0 | 0 | 233 | 556 | 0 | 0 | 1017 | 1600 | 100 | 312 | 492 | 0 | 492 | (DKK/MWh) | |
| Minimum | 8 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 100 | 0 | 0 | 0 | 0 | 295 | 195 |
| TWh/year | 1,45 | 0,00 | 0,00 | 0,95 | 0,42 | 0,00 | 0,00 | 0,08 | 0,00 | 0,00 | 7,74 | 0,06 | 0,02 | 0,00 | 2,91 | 0,00 | 0,00 | 0,68 | 4,21 | 0,00 | 0,00 | 5,18 | 4,23 | | 0,02 | 0,01 | 0,00 | 0,01 | 7 | 2 |

| FUEL BALANCE (TWh/year): | | | | | | | Waste/ CAES BioCon-Electro- PV and Wind off | | | | | | | | | | Industry | | | Imp/Exp Corrected | | CO2 emission (Mt): | | |
|--------------------------|------|------|---------|---------|------|--------------|---|---------|---------|------|------|------|------|-------|----------|----------------|----------|-------|---------|-------------------|-------|--------------------|-------|-------|
| DHP | CHP2 | CHP3 | Boiler2 | Boiler3 | PP | Geo/Nu.Hydro | HTL | Elc.ly. | version | Fuel | Wind | CSP | Wave | Hydro | Solar.Tr | Transp.househ. | Various | Total | Imp/Exp | Net | Total | Net | | |
| Coal | 0,61 | - | 0,88 | - | 0,02 | 7,00 | - | - | - | - | - | - | - | - | - | - | 1,15 | 2,64 | 12,31 | 0,00 | 12,31 | 4,21 | 4,21 | |
| Oil | - | - | - | - | 0,02 | 2,34 | - | - | - | - | - | - | - | - | - | 13,43 | 0,41 | 1,71 | 17,91 | 0,00 | 17,91 | 4,77 | 4,77 | |
| N.Gas | 0,45 | - | - | - | 0,02 | 2,34 | - | - | - | - | - | - | - | - | - | 0,82 | 0,71 | 1,96 | 6,31 | 0,00 | 6,31 | 1,30 | 1,46 | |
| Biomass | - | - | - | - | 0,02 | 2,34 | - | - | - | - | - | - | - | - | - | - | 13,47 | 0,20 | 16,04 | 0,00 | 16,04 | 0,00 | 0,00 | |
| Renewable | - | - | - | - | - | - | 4,21 | - | - | - | 0,16 | 0,08 | - | 4,64 | - | - | - | 4,89 | 0,00 | 4,89 | 0,00 | 0,00 | | |
| H2 etc. | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | | |
| Biofuel | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | | |
| Nuclear/CCS | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | | |
| Total | 1,06 | - | 0,88 | - | 0,09 | 14,04 | - | 4,21 | - | - | - | 0,16 | 0,08 | - | 4,64 | - | 14,25 | 15,74 | 6,51 | 57,45 | 0,04 | 57,49 | 10,28 | 10,44 |



| | District Heating Production | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | |
|--------------------------|-----------------------------|----------|---------|--------|---------------------|----------|---------|--------|-------|--------|-----------|-------|------------|------------|---------------------|----------|---------|--------|-------|--------|-----------|-------|------------|------------|-------------------|----------|----------|--|-----------|------|
| | Gr.1 | | | | Gr.2 | | | | | | | | | | Gr.3 | | | | | | | | | | RES specification | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | RES1 | RES2 | RES3 | | RES Total | |
| | District heating MW | Solar MW | CSHP MW | DHP MW | District heating MW | Solar MW | CSHP MW | CHP MW | HP MW | ELT MW | Boiler MW | EH MW | Storage MW | Balance MW | District heating MW | Solar MW | CSHP MW | CHP MW | HP MW | ELT MW | Boiler MW | EH MW | Storage MW | Balance MW | Wind MW | Photo MW | River MW | | 14-7 MW | 5 MW |
| January | 229 | 0 | 0 | 229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 119 | 0 | 0 | 81 | 0 | 0 | 39 | 0 | 0 | 0 | 18 | 7 | 75 | 0 | 100 | |
| February | 180 | 0 | 0 | 180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 0 | 0 | 75 | 0 | 0 | 18 | 0 | 0 | 0 | 23 | 8 | 54 | 0 | 84 | |
| March | 166 | 0 | 0 | 166 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 0 | 72 | 0 | 0 | 14 | 0 | 0 | 0 | 29 | 8 | 71 | 0 | 108 | |
| April | 112 | 0 | 0 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 0 | 0 | 53 | 0 | 0 | 5 | 0 | 0 | 0 | 19 | 11 | 31 | 0 | 61 | |
| May | 67 | 0 | 0 | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 10 | 20 | 0 | 50 | |
| June | 41 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 35 | 0 | 59 | |
| July | 28 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 13 | 38 | 0 | 62 | |
| August | 24 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 34 | 0 | 58 | |
| September | 36 | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 10 | 42 | 0 | 67 | |
| October | 86 | 0 | 0 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 8 | 57 | 0 | 81 | |
| November | 150 | 0 | 0 | 150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 0 | 0 | 67 | 0 | 0 | 11 | 0 | 0 | 0 | 17 | 7 | 61 | 0 | 85 | |
| December | 185 | 0 | 0 | 185 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 0 | 76 | 0 | 0 | 20 | 0 | 0 | 0 | 27 | 3 | 79 | 0 | 109 | |
| Average | 109 | 0 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 0 | 48 | 0 | 0 | 9 | 0 | 0 | 0 | 18 | 9 | 50 | 0 | 77 | |
| Maximum | 358 | 0 | 0 | 358 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 186 | 0 | 0 | 82 | 0 | 0 | 104 | 0 | 0 | 0 | 87 | 35 | 172 | 0 | 233 | |
| Minimum | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Total for the whole year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TWh/year | 0,95 | 0,00 | 0,00 | 0,95 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,50 | 0,00 | 0,00 | 0,42 | 0,00 | 0,00 | 0,08 | 0,00 | 0,00 | 0,00 | 0,16 | 0,08 | 0,44 | 0,00 | 0,68 | |

Own use of heat from industrial CH0,00 TWh/year

| ANNUAL COSTS (Million DKK) | | | NATURAL GAS EXCHANGE | | | | | | | | | | | | | | | | |
|------------------------------|-----------------|--------------------------|----------------------|-----------|---------|--------------|------------|------------|------------|----------|----------|-----------|-----------|-----------|-----------|--------|----------|----------|--|
| | | | DHP & Boilers | CHP2 CHP3 | PP CAES | Indi- vidual | Trans port | Indu. Var. | Demand Sum | Bio- gas | Syn- gas | CO2Hy gas | SynHy gas | SynHy gas | Stor- age | Sum MW | Im- port | Ex- port | |
| Total Fuel ex | Ngas exchange = | 0 | | | | | | | | | | | | | | | | | |
| Uranium = | 0 | | MW | MW | MW | MW | MW | MW | MW | MW | MW | MW | MW | MW | MW | MW | MW | MW | |
| Coal = | 0 | | | | | | | | | | | | | | | | | | |
| FuelOil = | 0 | January | 119 | 0 | 64 | 171 | 1 | 236 | 592 | 0 | 0 | 0 | 0 | 0 | 0 | 592 | 592 | 0 | |
| Gasoil/Diesel= | 0 | February | 90 | 0 | 66 | 134 | 1 | 256 | 547 | 0 | 0 | 0 | 0 | 0 | 0 | 547 | 547 | 0 | |
| Petrol/JP = | 0 | March | 83 | 0 | 107 | 124 | 1 | 238 | 553 | 0 | 0 | 0 | 0 | 0 | 0 | 553 | 553 | 0 | |
| Gas handling = | 0 | April | 54 | 0 | 139 | 83 | 1 | 190 | 468 | 0 | 0 | 0 | 0 | 0 | 0 | 468 | 468 | 0 | |
| Biomass = | 0 | May | 32 | 0 | 241 | 50 | 1 | 170 | 493 | 0 | 0 | 0 | 0 | 0 | 0 | 493 | 493 | 0 | |
| Food income = | 0 | June | 20 | 0 | 333 | 31 | 1 | 138 | 522 | 0 | 0 | 0 | 0 | 0 | 0 | 522 | 522 | 0 | |
| Waste = | 0 | July | 13 | 0 | 575 | 21 | 1 | 157 | 767 | 0 | 0 | 0 | 0 | 0 | 0 | 767 | 767 | 0 | |
| | | August | 11 | 0 | 656 | 18 | 1 | 111 | 797 | 0 | 0 | 0 | 0 | 0 | 0 | 797 | 797 | 0 | |
| Total Ngas Exchange costs = | 0 | September | 17 | 0 | 488 | 27 | 1 | 154 | 688 | 0 | 0 | 0 | 0 | 0 | 0 | 688 | 688 | 0 | |
| | | October | 41 | 0 | 272 | 64 | 1 | 378 | 756 | 0 | 0 | 0 | 0 | 0 | 0 | 756 | 756 | 0 | |
| Marginal operation costs = | 0 | November | 74 | 0 | 168 | 112 | 1 | 263 | 618 | 0 | 0 | 0 | 0 | 0 | 0 | 618 | 618 | 0 | |
| Total Electricity exchange = | -826 | December | 93 | 0 | 84 | 138 | 1 | 386 | 702 | 0 | 0 | 0 | 0 | 0 | 0 | 702 | 702 | 0 | |
| Import = | 7 | Average | 54 | 0 | 267 | 81 | 1 | 223 | 626 | 0 | 0 | 0 | 0 | 0 | 0 | 626 | 626 | 0 | |
| Export = | -2 | Maximum | 198 | 0 | 834 | 268 | 1 | 728 | 1175 | 0 | 0 | 0 | 0 | 0 | 0 | 1175 | 1175 | 0 | |
| Bottleneck = | 0 | Minimum | 3 | 0 | 0 | 4 | 1 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 21 | 0 | |
| Fixed imp/ex= | -830 | | | | | | | | | | | | | | | | | | |
| Total CO2 emission costs = | 0 | Total for the whole year | | | | | | | | | | | | | | | | | |
| | | TWh/year | 0,47 | 0,00 | 2,34 | 0,71 | 0,01 | 1,96 | 5,50 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 5,50 | 5,50 | 0,00 | |
| Total variable costs = | -826 | | | | | | | | | | | | | | | | | | |
| Fixed operation costs = | 0 | | | | | | | | | | | | | | | | | | |
| Annual Investment costs = | 0 | | | | | | | | | | | | | | | | | | |
| TOTAL ANNUAL COSTS = | -826 | | | | | | | | | | | | | | | | | | |

RES Share: 36,4 Percent of Primary Energy51,0 Percent of Electricity

5,4 TWh electricity from RES

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