

Input ReferenceENS2030

The EnergyPLAN model 6.99



Electricity demand (TWh/year):	Flexible demand	0.00											Regulation Strategy: Technical regulation no. 2	Fuel Price level:								
Fixed demand	49.00	Fixed imp/exp.	0.00											KEOL regulation	Capacities Storage Efficiencies							
Electric heating	0.00	Transportation	0.00											Minimum Stabilisation share	MW-e GWh elec. Ther.							
Electric cooling	0.00	Total	49.00											Stabilisation share of CHP	MW-e GWh elec. Ther.							
District heating (TWh/year)			Gr.1	Gr.2	Gr.3	Sum											Distr. Name :	Price_DKV_2005.txt				
District heating demand			2.26	14.29	22.63	39.18											Addition factor	60.00 DKK/MWh				
Solar Thermal			0.02	0.00	0.00	0.02											Multiplication factor	1.04				
Industrial CHP (CSHP)			0.00	0.00	1.73	1.73											Dependency factor	0.02 DKK/MWh pr. MW				
Demand after solar and CSHP			2.24	14.29	20.90	37.43											Average Market Price	349 DKK/MWh				
Wind			3100 MW	7.26	TWh/year	0.00	Grid											(TWh/year) Coal Oil Ngas Biomass				
Offshore Wind			1952 MW	7.61	TWh/year	0.00	stabilisation											Transport	13.25	27.50	0.00	0.00
Photo Voltaic			0 MW	0	TWh/year	0.00	share											Household	0.01	6.72	9.05	7.29
Wave Power			0 MW	0	TWh/year	0.00												Industry	3.37	26.92	18.19	5.18
Hydro Power			0 MW	0	TWh/year													Various	0.00	3.01	19.73	0.00
Geothermal			0 MW	0	TWh/year																	

Output

District Heating										Electricity														Exchange					
Demand		Production								Consumption										Production				Balance				Payment	
Distr. heating	MW	Solar	CSHP	DHP	CHP	HP	ELT	Boiler	EH	Ba-lance	Elec. demand	Flexi-ble	Elec-trolyser	EH	Hydro Pump	Tur-bine	RES	Hy-dro	Geo-thermal	CSHP	CHP	PP	Stab-Load %	Imp	Exp	CEEP	EEP	Imp	Exp
MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	%	MW	MW	MW	MW	Million DKK	Million DKK
January	7177	1	197	413	3704	40	0	2822	0	0	6305	0	7	0	0	0	1535	0	0	274	3036	1473	100	0	6	0	6	0	1
February	7343	2	197	422	3418	40	0	3264	0	0	6237	0	7	0	0	0	2134	0	0	274	2801	1053	100	0	19	0	19	0	3
March	6256	2	197	359	3596	40	0	2062	0	0	6004	0	7	0	0	0	1772	0	0	274	2947	1025	100	0	8	0	8	0	1
April	5013	3	197	286	3539	40	0	937	0	11	5291	0	7	0	0	0	1512	0	0	274	2901	611	100	0	0	0	0	0	0
May	3933	3	197	223	3113	40	0	349	0	7	5162	0	7	0	0	0	1511	0	0	274	2551	863	100	0	31	0	31	0	6
June	1782	3	197	100	1455	40	0	30	0	-43	5017	0	7	0	0	0	1616	0	0	274	1192	1957	100	0	16	0	16	0	3
July	1782	4	197	99	1400	40	0	30	0	13	4574	0	7	0	0	0	1106	0	0	274	1147	2059	100	0	5	0	5	0	1
August	1782	3	197	100	1405	40	0	28	0	9	5263	0	7	0	0	0	1500	0	0	274	1151	2364	100	0	20	0	20	0	4
September	2736	3	197	155	2287	40	0	57	0	-2	5401	0	7	0	0	0	1501	0	0	274	1874	1766	100	0	8	0	8	0	2
October	4076	2	197	234	2928	40	0	657	0	18	5602	0	7	0	0	0	2337	0	0	274	2400	651	100	0	53	0	53	0	10
November	5347	1	197	307	3284	40	0	1526	0	-9	6054	0	7	0	0	0	2240	0	0	274	2692	889	100	0	35	0	35	0	6
December	6385	1	197	368	3648	40	0	2126	0	6	6056	0	7	0	0	0	1574	0	0	274	2989	1247	100	0	22	0	22	0	4
Average	4460	2	197	255	2813	40	0	1152	0	1	5578	0	7	0	0	0	1692	0	0	274	2306	1332	100	0	19	0	19	Average price (DKK/MWh)	
Maximum	12535	28	197	723	4088	40	0	7747	0	2430	8603	0	7	0	0	0	5052	0	0	274	3350	5376	100	0	1713	0	1713	- 250	
Minimum	1561	0	197	76	549	40	0	26	0	-1451	2795	0	7	0	0	0	0	0	0	274	450	0	100	0	0	0	0		
Total for the whole year																								Million DKK					
TWh/year	39.18	0.02	1.73	2.24	24.71	0.35	0.00	10.12	0.00	0.01	49.00	0.00	0.06	0.00	0.00	0.00	0.00	14.87	0.00	0.00	2.41	20.25	11.70	0.00	0.16	0.00	0.16	0	41

FUEL BALANCE (TWh/year):																				Imp/Exp Corrected			CO2 emission (Mt):	
DHP	CHP2	CHP3	Boiler2	Boiler3	PP	Geo-th.	Hydro	Elec.ly.s	CAES	Wind	Offsh.	PV	Wave	Solar.Th	Transp.	househ.	Industry	Various	Total	Imp/Exp	Netto	Total	Netto	
Coal	0.04	2.14	3.11	0.07	0.12	8.28	-	-	-	-	-	-	-	-	-	0.01	3.37	-	17.14	-0.12	17.02	5.86	5.82	
Oil	0.83	0.48	0.69	1.62	2.62	0.62	-	-	-	-	-	-	-	-	69.20	6.72	26.92	3.01	112.73	-0.01	112.72	30.03	30.03	
N.Gas	0.67	9.91	14.39	1.30	2.10	13.33	-	-	-	-	-	-	-	-	-	9.05	18.19	19.73	88.68	-0.19	88.49	18.10	18.06	
Biomass	1.06	7.35	11.37	1.65	2.26	0.20	-	-	-	-	-	-	-	-	-	7.29	5.18	-	36.36	0.00	36.36	0.00	0.00	
Renewable	-	-	-	-	-	-	-	-	-	7.26	7.61	-	-	0.02	-	-	-	-	14.89	0.00	14.89	0.00	0.00	
H2 etc.	-	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	
Geothermal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	
Total	2.60	19.88	29.56	4.64	7.11	22.44	-	-	-	7.26	7.61	-	-	0.02	69.20	23.07	53.66	22.74	269.79	-0.32	269.47	53.99	53.91	



District Heating Production																														
Gr.1					Gr.2										Gr.3										RES specification					
District heating	Solar	CSHP	DHP		District heating	Solar	CSHP	CHP	HP	ELT	Boiler	EH	Storage	Bal-	District heating	Solar	CSHP	CHP	HP	ELT	Boiler	EH	Storage	Bal-	RES1	RES2	RES3	RES4	Total	
MW	MW	MW	MW		MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	Wind	Offsho	Photo	'Wave	I	er
																									MW	MW	MW	MW	MW	
January	414	1	0	413	2618	0	0	1469	40	0	1109	0	22320	0	4146	0	197	2235	0	0	1713	0	9648	0	743	792	0	0	1535	
February	424	2	0	422	2678	0	0	1336	40	0	1302	0	22320	0	4241	0	197	2083	0	0	1962	0	9648	0	1095	1039	0	0	2134	
March	361	2	0	359	2282	0	0	1419	40	0	823	0	22320	0	3614	0	197	2178	0	0	1239	0	9648	0	867	905	0	0	1772	
April	289	3	0	286	1829	0	0	1417	40	0	372	0	15774	-1	2896	0	197	2122	0	0	565	0	4947	12	710	802	0	0	1512	
May	227	3	0	223	1435	0	0	1268	40	0	108	0	19561	19	2272	0	197	1845	0	0	242	0	6039	-12	720	792	0	0	1511	
June	103	3	0	100	650	0	0	648	40	0	4	0	35349	-43	1030	0	197	807	0	0	26	0	8234	0	752	864	0	0	1616	
July	103	4	0	99	650	0	0	597	40	0	4	0	35789	9	1030	0	197	803	0	0	26	0	8101	4	505	600	0	0	1106	
August	103	3	0	100	650	0	0	601	40	0	3	0	32823	6	1030	0	197	804	0	0	26	0	6810	3	721	779	0	0	1500	
September	158	3	0	155	998	0	0	957	40	0	6	0	29199	-5	1581	0	197	1329	0	0	51	0	6921	3	707	794	0	0	1501	
October	235	2	0	234	1486	0	0	1155	40	0	277	0	12848	14	2354	0	197	1773	0	0	380	0	5341	4	1192	1145	0	0	2337	
November	308	1	0	307	1950	0	0	1273	40	0	637	0	18994	0	3089	0	197	2012	0	0	890	0	1969	-9	1146	1095	0	0	2240	
December	368	1	0	368	2329	0	0	1442	40	0	844	0	19581	2	3688	0	197	2205	0	0	1282	0	4196	4	773	802	0	0	1574	
Average	257	2	0	255	1627	0	0	1131	40	0	455	0	23905	0	2576	0	197	1682	0	0	697	0	6790	1	826	866	0	0	1692	
Maximum	723	28	0	723	4572	0	0	1647	40	0	3262	0	40000	1746	7240	0	197	2440	0	0	4603	0	10000	1244	3100	1952	0	0	5052	
Minimum	90	0	0	76	569	0	0	0	40	0	0	0	-1078		902	0	197	549	0	0	26	0	-911		0	0	0	0	0	
Total for the whole year																														
TWh/year	2.26	0.02	0.00	2.24	14.29	0.00	0.00	9.94	0.35	0.00	4.00	0.00	0.00	0.00	22.63	0.00	1.73	14.78	0.00	0.00	6.12	0.00	0.01		7.26	7.61	0.00	0.00	14.87	

ANNUAL COSTS (Million DKK)

Total Fuel =	62456
Coal =	953
FuelOil =	8159
Gasoil/Diesel=	13572
Petrol/JP =	17399
Ngas =	16907
Biomass =	5468
Maginal operation costs =	593
Total Electricity exchange =	-41
Import =	0
Export =	-41
Bottleneck =	0
Fixed imp/ex=	0
Total CO2 emission costs =	8099
Total variable costs =	71107
Fixed operation costs =	2979
Annual Investment costs =	8439
TOTAL ANNUAL COSTS =	82525