Input NovaScotia2030_trial001d_2024_11_17_WIP.txt — The EnergyPLAN model 16.3

Electricity demand (TWh/year):		Flexible demand	0.00
Fixed demand	12.17	Fixed imp/exp.	0.00
Electric heating + HP	2.33	Transportation	1.84
Electric cooling	0.00	Total	16.34

District heating (TWh/year)	Gr.1	Gr.2	Gr.3	Sum
District heating demand	0.00	0.00	14.00	14.00
Solar Thermal	0.00	0.00	0.00	0.00
Industrial CHP (CSHP)	0.00	5.00	0.00	5.00
Demand after solar and CSHP	0.00	-5.00	14.00	9.00

Wind	950	MW	2.83	TWh/year	0.00	Grid
Offshore Wind	6000	MW	20.29	TWh/year	0.00	stabili-
Photo Voltaic	300	MW	0.5	TWh/year	0.00	sation
River Hydro	168	MW	0.88	TWh/year	0.00	share
Hydro Power	730	MW	3.4	TWh/year		
Geothermal/Nuclear	0	MW	0	TWh/year		

	Capacities MW-e	MJ/s	Efficiencies elec.	Ther	COP
Group 2:					
CHP	700	2100	0.20	0.60	
Heat Pump	0	0			3.00
Boiler		0		0.90	
Group 3:					
CHP	0	0	0.85	0.00	
Heat Pump	0	0			3.00
Boiler		0		0.90	
Condensing	0		0.80		

Heatstorage:	gr.2:50	GWh	gr.30	GWh
Fixed Boiler:	gr.2:0.0	Per cent	gr.0.0	Per cent

Electricity prod. from	CSHP	Waste	(TWh/year)
Gr.1:	0.00	0.00	
Gr.2:	0.83	0.00	
Gr.3:	0.00	0.00	

Regulation Strate	Technical regulation no. 2		
CEEP regulation	7.0000000		
Minimum Stabilisation share	0.00		
Stabilisation share of CHP	0.00		
Minimum CHP gr 3 load	730	MW	
Minimum PP	0	MW	
Heat Pump maximum share	1.00		
Maximum import/export	20000	MW	

Distr. Name :	Hour_nordpool.txt		
Addition factor	0.00	CAN/MWh	
Multiplication factor	2.30		
Dependency factor	0.00	CAN/MWh pr. MW	
Average Market Price	261	CAN/MWh	
Gas Storage	0	GWh	
Syngas capacity	0	MW	
Biogas max to grid	0	MW	

Fuel Price level:

Elec. Storage	Capacities MW-e	Storage GWh	Efficiencies Elec.	Ther.
Charge 1:	1000	4000	0.80	
Discharge 1:	1000		0.90	
Charge 2:	0	0	0.80	
Discharge 2:	0		0.90	
Electrolysers:	4000	10000	0.85	0.00
Rockbed Storage:	0	0	1.00	
CAES fuel ratio:		1.100		

(TWh/year)	Coal	Oil	Ngas	Biomass
Transport	0.00	0.95	0.00	0.00
Household	0.00	0.00	0.00	0.36
Industry	0.00	0.00	0.00	2.78
Various	0.00	0.00	0.00	0.00

Output

	District Heating										Electricity																	Exchange	
	Demand	Production									Consumption						Production							Balance					Payment	
	Distr. heating	Solar	Waste-CSHP	DHP	CHP	HP	ELT	Boiler	EH	Balance	Elec. demand	Flex.& Transp	HP	Elec-trolyser	EH	Hydro Pump	Tur-bine	RES	Hy-dro	Geo-thermal	Waste-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 CAN	
January	2699	0	569	0	0	0	0	0	999	1131	1660	209	450	1526	999	0	0	3244	428	0	94	0	0	100	1077	0	0	0	281	0
February	2551	0	569	0	0	0	0	0	1177	805	1649	209	425	1551	1177	0	0	3494	506	0	94	0	0	100	916	0	0	0	154	0
March	2198	0	569	0	0	0	0	0	930	698	1473	209	366	1356	930	0	0	2795	396	0	94	0	0	100	1049	0	0	0	189	0
April	1642	0	569	0	0	0	0	0	999	73	1296	209	274	1220	999	0	0	2789	397	0	94	0	0	100	865	148	0	148	167	26
May	1076	0	569	0	0	0	0	0	742	-235	1232	209	179	841	742	0	0	2636	357	0	94	0	0	100	653	537	0	537	134	120
June	787	0	569	0	0	0	0	0	632	-414	1221	209	131	944	632	0	0	2586	369	0	94	0	0	100	498	409	0	409	79	83
July	639	0	569	0	0	0	0	0	398	-328	1287	209	106	769	398	0	0	1993	283	0	94	0	0	100	650	251	0	251	80	26
August	662	0	569	0	0	0	0	0	459	-366	1299	209	110	887	459	0	0	2251	318	0	94	0	0	100	561	261	0	261	101	52
September	933	0	569	0	0	0	0	0	680	-317	1268	209	155	988	680	0	0	2638	370	0	94	0	0	100	603	406	0	406	119	83
October	1450	0	569	0	0	0	0	0	809	72	1309	209	242	844	809	0	0	2518	346	0	94	0	0	100	800	347	0	347	165	69
November	2046	0	569	0	0	0	0	0	1203	274	1413	209	341	713	1203	0	0	3311	456	0	94	0	0	100	662	645	0	645	127	119
December	2473	0	569	0	0	0	0	0	1177	727	1531	209	412	1079	1177	0	0	3267	428	0	94	0	0	100	898	280	0	280	186	54
Average	1594	0	569	0	0	0	0	0	848	176	1386	209	266	1058	848	0	0	2789	387	0	94	0	0	100	770	274	0	274	Average price	
Maximum	2834	0	569	0	0	0	0	0	2547	2265	2120	418	472	4000	2547	0	0	7231	730	0	94	0	0	100	2646	5877	0	5877	(CAN/MWh)	
Minimum	574	0	569	0	0	0	0	0	0	-569	771	0	96	0	0	0	0	0	0	0	94	0	0	100	0	0	0	0	264	264
TWh/year	14.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	7.45	1.55	12.17	1.84	2.33	9.29	7.45	0.00	0.00	24.50	3.40	0.00	0.83	0.00	0.00		6.76	2.40	0.00	2.40	1782	634

FUEL BALANCE (TWh/year):	DHP	CHP2	CHP3	Boiler2	Boiler3	PP	Geo/Nu.	Hydro	Waste/ HTL	CAES Elc.ly.	BioCon-version	Electro-Fuel	Wind	PV and Wind off CSP	Wave	Hydro	Solar.Th	Transp.	household	Industry Various	Total	Imp/Exp Corrected Imp/Exp	Net	CO2 emission (Mt): Total	Net
Coal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00
Oil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	0.95	0.00	0.95	0.25	0.25
N.Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00
Biomass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.36	2.78	3.14	0.00	3.14	0.00	0.00
Renewable	-	-	-	-	-	-	-	3.40	-	-	-	-	2.83	0.50	20.29	4.28	-	-	-	-	27.90	0.00	27.90	0.00	0.00
H2 etc.	-	-	-	-	-	-	-	-	-	-6.56	-	-	-	-	-	-	-	6.56	-	-	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	-	-	-	-	-	-	-	3.40	-	-6.56	-	-	2.83	0.50	20.29	4.28	-	7.51	0.36	2.78	31.99	5.45	37.44	0.25	0.25

District Heating Production

	Gr.1				Gr.2									Gr.3									RES specification				
	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	Stor-age MW	Ba-lance MW	District heating MW	Solar MW	CSHP MW	CHP MW	HP MW	ELT MW	Boiler MW	EH MW	Stor-age MW	Ba-lance MW	RES1 Wind MW	RES2 Offshc MW	RES3 Photo MW	RES 4-7 aic MW	Total MW
January	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	2699	0	0	0	0	0	0	999	0	1700	393	2736	8	108	3244
February	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	2551	0	0	0	0	0	0	1177	0	1374	410	2933	28	122	3494
March	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	2198	0	0	0	0	0	0	930	0	1268	326	2332	39	99	2795
April	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	1642	0	0	0	0	0	0	999	0	643	315	2291	80	102	2789
May	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	1076	0	0	0	0	0	0	742	0	334	298	2150	92	96	2636
June	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	787	0	0	0	0	0	0	632	0	155	283	2094	110	99	2586
July	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	639	0	0	0	0	0	0	398	0	241	216	1601	98	78	1993
August	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	662	0	0	0	0	0	0	459	0	203	246	1824	93	88	2251
September	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	933	0	0	0	0	0	0	680	0	253	299	2171	71	98	2638
October	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	1450	0	0	0	0	0	0	809	0	641	290	2097	37	94	2518
November	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	2046	0	0	0	0	0	0	1203	0	843	395	2786	17	113	3311
December	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	2473	0	0	0	0	0	0	1177	0	1296	397	2751	12	107	3267
Average	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	1594	0	0	0	0	0	0	848	0	745	322	2310	57	100	2789
Maximum	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	2834	0	0	0	0	0	0	2547	0	2834	945	5979	300	168	7231
Minimum	0	0	0	0	0	0	569	0	0	0	0	0	50000	-569	574	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total for the whole year TWh/year	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00		-5.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	7.45		6.55	2.83	20.29	0.50	0.88	24.50

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

ANNUAL COSTS (Million CAN)

Total Fuel ex Ngas exchange =	253
Uranium =	0
Coal =	0
FuelOil =	0
Gasoil/Diesel=	0
Petrol/JP =	140
Gas handling =	0
Biomass =	113
Food income =	0
Waste =	0
Total Ngas Exchange costs =	0
Marginal operation costs =	221
Total Electricity exchange =	1149
Import =	1782
Export =	-634
Bottleneck =	0
Fixed imp/ex=	0
Total CO2 emission costs =	8
Total variable costs =	1630
Fixed operation costs =	65
Annual Investment costs =	4060
TOTAL ANNUAL COSTS =	5755

NATURAL GAS EXCHANGE

	DHP & Boilers MW	CHP2 CHP3 MW	PP CAES MW	Indi-vidual MW	Trans port MW	Indu. Var. MW	Demand Sum MW	Bio-gas MW	Syn-gas MW	CO2Hy gas MW	SynHy gas MW	SynHy gas MW	Stor-age MW	Sum MW	Im-port MW	Ex-port MW
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total for the whole year TWh/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

RES Share: 97.0 Percent of Primary Energy 84.3 Percent of Electricity 27.9 TWh electricity from RES