

WBC Cogeneration Options: Option 1 Cash Flow

This calculation sheet is different to the options sheet - they are not interchangeable so add new options by copying an existing option sheet and not this sheet.

Scenario Details

Scenario Name	[text]	BAU
Scenario Number	[integer]	1

Capital and Maintenance Costs

Plant 1 Capital Costs	[\$]	\$0
Plant 2 Capital Costs	[\$]	\$0
Plant 1 Maintenance Costs	[\$]	\$0
Plant 2 Maintenance Costs	[\$]	\$0
Effective Tax Life	[years]	10

Base Year Operating Costs

Supplied Electricity	[\$/year]	\$90,959
Supplied Gas	[\$/year]	\$24,572

Base Year Energy Demand

Supplied Electricity	[kWh/year]	783,473
Supplied Gas	[GJ/year]	1,568

Construction Period

Plant 1 Construction Commencement	[date]
Plant 1 Construction Complete	[date]
Plant 1 Operations Commencement	[date]
Plant 1 Decommissioning	[date]
Plant 2 Construction Commencement	[date]
Plant 2 Construction Complete	[date]
Plant 2 Operations Commencement	[date]
Plant 2 Decommissioning	[date]

Time Period

Period Start	[date]	1-Jul-07	1-Jul-08	1-Jul-09	1-Jul-10	1-Jul-11	1-Jul-12	1-Jul-13	1-Jul-14	1-Jul-15	1-Jul-16	1-Jul-17	1-Jul-18	1-Jul-19
Period End	[date]	30-Jun-08	30-Jun-09	30-Jun-10	30-Jun-11	30-Jun-12	30-Jun-13	30-Jun-14	30-Jun-15	30-Jun-16	30-Jun-17	30-Jun-18	30-Jun-19	30-Jun-20
Included in Evaluation	[binary]	1	1	1	1	1	1	1	1	1	1	1	1	1

Cost Escalation Indices and Discount Factors

Present Value Factor	[index Jul-09=1]	1.00	0.91	0.83	0.76	0.69	0.63	0.57	0.52	0.48	0.44	0.40	0.36	0.33
Inflation Index	[index Jul-09=1]	0.96	0.98	1.00	1.03	1.05	1.07	1.10	1.13	1.16	1.19	1.22	1.25	1.28
Supplied Electricity Price Index	[index Jul-09=1]	0.81	0.84	1.00	1.07	1.16	1.25	1.27	1.45	1.48	1.59	1.65	1.75	1.78
Supplied Gas Price Index	[index Jul-09=1]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capital Cost Index	[index Jul-09=1]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maintenance Cost Index	[index Jul-09=1]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Energy and Carbon Prices

Supplied Electricity	[\$/kWh]	\$0.09	\$0.10	\$0.12	\$0.13	\$0.14	\$0.16	\$0.16	\$0.19	\$0.20	\$0.22	\$0.23	\$0.25	\$0.26
Supplied Gas	[\$/GJ]	\$15.11	\$15.43	\$15.67	\$16.11	\$16.43	\$16.84	\$17.26	\$17.69	\$18.14	\$18.59	\$19.05	\$19.53	\$20.02

CPRS Emission Permit	[\$/t CO ₂ e]	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.04	\$36.47	\$39.12	\$41.76	\$44.75	\$47.74	\$50.97
Carbon Tax	[\$/t CO ₂ e]	\$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
NGAC	[\$/t CO ₂ e]	<i>not considered</i>													
Grid Electricity Consumption															
Electricity	[kWh]	0	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473
Grid Electricity Emission Intensity (Scope 2)	[t CO ₂ e/MWh]	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Grid Electricity Emission Intensity (Scope 3)	[t CO ₂ e/MWh]	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Indirect Carbon Emissions (Scope 2)	[t CO ₂ e]	0	697	697	697	697	697	697	697	697	697	697	697	697	697
Boiler Operation															
Electricity Generation	[kWh]														
Gas Consumption	[GJ]	0	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568
Plant 1 Maintenance Costs	[\$]														
Plant 2 Maintenance Costs	[\$]														
Direct Carbon Emissions (Scope 1)	[t CO ₂ e]	0	80	80	80	80	80	80	80	80	80	80	80	80	80
Indirect Carbon Emissions (Scope 3)	[t CO ₂ e]	0	26	26	26	26	26	26	26	26	26	26	26	26	26
Capital Expenditure															
Plant 1 Capex	[\$]														
Plant 2 Capex	[\$]														
Total Capital Expenditure	[\$]														
Asset Depreciation															
Opening Asset Value	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Depreciation	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Expenditure	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Closing Asset Value	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Operating Expenses															
Electricity Consumption	[\$]	\$0	\$74,978	\$90,959	\$100,059	\$110,922	\$122,680	\$127,568	\$149,032	\$155,608	\$171,740	\$182,665	\$197,911	\$207,077	\$207,077
Gas Consumption	[\$]	\$0	\$24,200	\$24,572	\$25,260	\$25,765	\$26,409	\$27,069	\$27,746	\$28,439	\$29,150	\$29,879	\$30,626	\$31,392	\$31,392
Maintenance	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Carbon Permit Purchase	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$2,733	\$2,928	\$3,141	\$3,353	\$3,593	\$3,833	\$4,093	\$4,093
Total Operating Expenses	[\$]	\$0	\$99,178	\$115,530	\$125,319	\$136,687	\$149,089	\$157,370	\$179,706	\$187,189	\$204,244	\$216,137	\$232,370	\$242,562	\$242,562
Present Value Operating Expenses	[\$ PV]	\$0	\$90,429	\$96,046	\$94,993	\$94,470	\$93,952	\$90,423	\$94,148	\$89,417	\$88,957	\$85,833	\$84,139	\$80,081	\$80,081
Taxation															
Operating Expenses	[\$]	\$0	\$99,178	\$115,530	\$125,319	\$136,687	\$149,089	\$157,370	\$179,706	\$187,189	\$204,244	\$216,137	\$232,370	\$242,562	\$242,562
Interest Expenses	[\$]														
Depreciation	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Tax Deductions	[\$]	\$0	\$99,178	\$115,530	\$125,319	\$136,687	\$149,089	\$157,370	\$179,706	\$187,189	\$204,244	\$216,137	\$232,370	\$242,562	\$242,562
Net Tax Shield	[\$]	\$0	\$29,754	\$34,659	\$37,596	\$41,006	\$44,727	\$47,211	\$53,912	\$56,157	\$61,273	\$64,841	\$69,711	\$72,768	\$72,768
Carbon Tax Payable	[\$]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cash Flow															
Nominal Cash Flow	[\$]	\$0	-\$69,425	-\$80,871	-\$87,723	-\$95,681	-\$104,362	-\$110,159	-\$125,794	-\$131,032	-\$142,971	-\$151,296	-\$162,659	-\$169,793	-\$169,793
Discounted Cash Flow	[\$ PV]	\$0	-\$63,301	-\$67,232	-\$66,495	-\$66,129	-\$65,766	-\$63,296	-\$65,903	-\$62,592	-\$62,270	-\$60,083	-\$58,897	-\$56,057	-\$56,057
Cumulative Nominal Cash Flow	[\$]	\$0	-\$69,425	-\$150,296	-\$238,019	-\$333,700	-\$438,062	-\$548,221	-\$674,016	-\$805,048	-\$948,018	-\$1,099,314	-\$1,261,973	-\$1,431,766	-\$1,431,766
Cumulative Discounted Cash Flow	[\$ PV]	\$0	-\$63,301	-\$130,533	-\$197,028	-\$263,158	-\$328,924	-\$392,220	-\$458,123	-\$520,715	-\$582,985	-\$643,068	-\$701,965	-\$758,021	-\$758,021
Net Cash Flow Against Base Case															
Nominal Cash Flow	[\$]														
Discounted Cash Flow	[\$ PV]														
Cumulative Nominal Cash Flow	[\$]														
Cumulative Discounted Cash Flow	[\$ PV]														
Carbon Emissions															
Direct Carbon Emissions (Scope 1)	[t CO ₂ e]	0	80	80	80	80	80	80	80	80	80	80	80	80	80
Indirect Carbon Emissions (Scope 2 & 3)	[t CO ₂ e]	0	723	723	723	723	723	723	723	723	723	723	723	723	723
Total Carbon Emissions	[t CO ₂ e]	0	803	803	803	803	803	803	803	803	803	803	803	803	803
Carbon Savings Compared to Base Case															

Direct Carbon Emissions (Scope 1)
Indirect Carbon Emissions (Scope 2 & 3)
Total Carbon Emissions

[t CO₂e]
[t CO₂e]
[t CO₂e]

1-Jul-20	1-Jul-21	1-Jul-22	1-Jul-23	1-Jul-24	1-Jul-25	1-Jul-26	1-Jul-27	1-Jul-28	1-Jul-29	1-Jul-30	1-Jul-31	1-Jul-32	1-Jul-33	1-Jul-34	1-Jul-35	1-Jul-36
30-Jun-21	30-Jun-22	30-Jun-23	30-Jun-24	30-Jun-25	30-Jun-26	30-Jun-27	30-Jun-28	30-Jun-29	30-Jun-30	30-Jun-31	30-Jun-32	30-Jun-33	30-Jun-34	30-Jun-35	30-Jun-36	30-Jun-37
1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
0.30	0.27	0.25	0.23	0.21	0.19	0.17	0.16	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.08	0.07
1.31	1.34	1.38	1.41	1.45	1.48	1.52	1.56	1.60	1.64	1.68	1.72	1.76	1.81	1.85	1.90	1.94
1.85	1.91	1.95	1.93	1.94	1.94	1.95	1.93	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
\$0.28	\$0.30	\$0.31	\$0.32	\$0.33	\$0.33	\$0.34	\$0.35	\$0.36	\$0.37	\$0.38	\$0.39	\$0.40	\$0.41	\$0.42	\$0.43	\$0.44
\$20.52	\$21.03	\$21.56	\$22.10	\$22.65	\$23.22	\$23.80	\$24.39	\$25.00	\$25.63	\$26.27	\$26.92	\$27.60	\$28.29	\$28.99	\$29.72	\$30.46

\$54.34	\$57.45	\$61.36	\$65.29	\$69.67	\$74.08	\$78.97	\$84.52	\$90.31	\$96.49	\$103.09	\$109.96	\$117.47	\$125.28	\$133.59	\$142.62	\$152.02
\$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	\$0.00
783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473	783,473
0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
697	697	697	697	697	697	697	697	697	697	697	697	697	697	697	697	697
1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568
80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$220,506	\$233,388	\$243,420	\$247,125	\$255,001	\$261,154	\$268,924	\$273,838	\$284,710	\$291,828	\$299,123	\$306,602	\$314,267	\$322,123	\$330,176	\$338,431	\$346,892
\$32,177	\$32,981	\$33,806	\$34,651	\$35,517	\$36,405	\$37,315	\$38,248	\$39,204	\$40,184	\$41,189	\$42,219	\$43,274	\$44,356	\$45,465	\$46,601	\$47,766
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$4,363	\$4,612	\$4,926	\$5,242	\$5,594	\$5,948	\$6,340	\$6,786	\$7,250	\$7,747	\$8,277	\$8,829	\$9,431	\$10,058	\$10,726	\$11,451	\$12,205
\$257,046	\$270,982	\$282,152	\$287,017	\$296,112	\$303,507	\$312,580	\$318,872	\$331,165	\$339,759	\$348,589	\$357,649	\$366,972	\$376,537	\$386,367	\$396,483	\$406,863
\$77,377	\$74,376	\$70,610	\$65,492	\$61,606	\$57,575	\$54,065	\$50,288	\$47,619	\$44,545	\$41,671	\$38,983	\$36,470	\$0	\$0	\$0	\$0
\$257,046	\$270,982	\$282,152	\$287,017	\$296,112	\$303,507	\$312,580	\$318,872	\$331,165	\$339,759	\$348,589	\$357,649	\$366,972	\$376,537	\$386,367	\$396,483	\$406,863
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$257,046	\$270,982	\$282,152	\$287,017	\$296,112	\$303,507	\$312,580	\$318,872	\$331,165	\$339,759	\$348,589	\$357,649	\$366,972	\$376,537	\$386,367	\$396,483	\$406,863
\$77,114	\$81,294	\$84,646	\$86,105	\$88,834	\$91,052	\$93,774	\$95,662	\$99,349	\$101,928	\$104,577	\$107,295	\$110,092	\$112,961	\$115,910	\$118,945	\$122,059
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
-\$179,932	-\$189,687	-\$197,507	-\$200,912	-\$207,278	-\$212,455	-\$218,806	-\$223,211	-\$231,815	-\$237,831	-\$244,012	-\$250,354	-\$256,880	\$0	\$0	\$0	\$0
-\$54,164	-\$52,063	-\$49,427	-\$45,844	-\$43,124	-\$40,302	-\$37,845	-\$35,202	-\$33,334	-\$31,182	-\$29,170	-\$27,288	-\$25,529	\$0	\$0	\$0	\$0
-\$1,611,698	-\$1,801,385	-\$1,998,892	-\$2,199,804	-\$2,407,082	-\$2,619,537	-\$2,838,343	-\$3,061,553	-\$3,293,369	-\$3,531,200	-\$3,775,212	-\$4,025,566	-\$4,282,447	-\$4,282,447	-\$4,282,447	-\$4,282,447	-\$4,282,447
-\$812,185	-\$864,248	-\$913,676	-\$959,520	-\$1,002,644	-\$1,042,947	-\$1,080,792	-\$1,115,994	-\$1,149,327	-\$1,180,509	-\$1,209,679	-\$1,236,967	-\$1,262,496	-\$1,262,496	-\$1,262,496	-\$1,262,496	-\$1,262,496
80	80	80	80	80	80	80	80	80	80	80	80	80	0	0	0	0
723	723	723	723	723	723	723	723	723	723	723	723	723	0	0	0	0
803	803	803	803	803	803	803	803	803	803	803	803	803	0	0	0	0