

LAMPIRAN



Lampiran -1

Sensitifitas Harga Listrik Terhadap Perubahan Harga Gas, *Debt Interest Rate* & *Return on Equity* (Panjang Transmisi 300 Km)

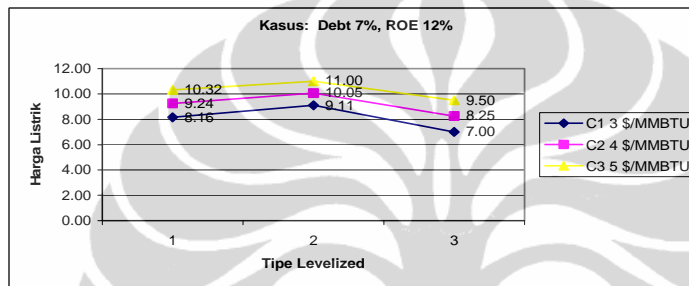
A. Debt Interest Rate Tetap 7%

Kasus : Debt Interest Rate 7%

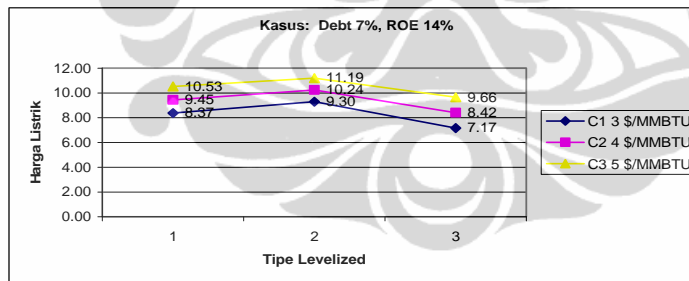
Keterangan

- 1 Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun
- 2 Harga Listrik Levelized (C\$/KWh) -- 8 tahun pertama/Periode pembayaran Hutang
- 3 Harga Listrik Levelized (C\$/KWh) -- selanjutnya tahun ke 9-25/Periode setelah hutang lunas

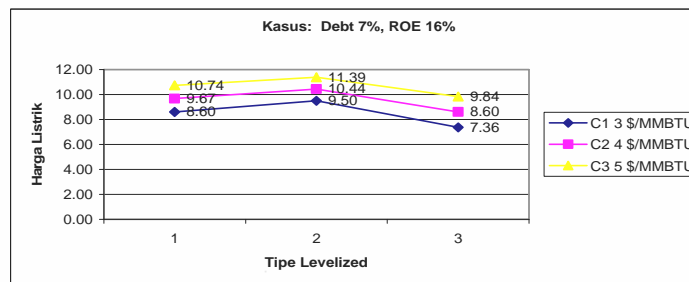
Debt Interest 7%, Return on Equity 12%			
No	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.16	9.24	10.32
2	9.11	10.05	11.00
3	7.00	8.25	9.50



Debt Interest 7%, Return on Equity 14%			
No	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.37	9.45	10.53
2	9.30	10.24	11.19
3	7.17	8.42	9.66



Debt Interest 7%, Return on Equity 16%			
No	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.60	9.67	10.74
2	9.50	10.44	11.39
3	7.36	8.60	9.84



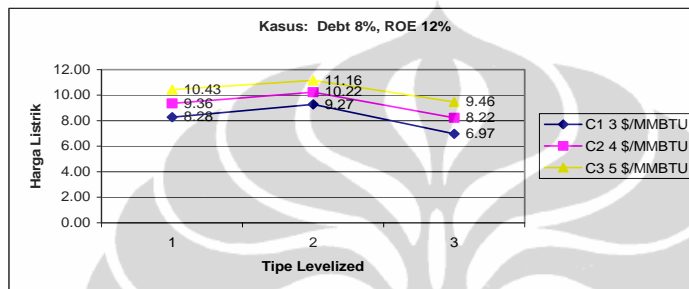
B. Debt Interest Rate Tetap 8%

Kasus : Debt Interest Rate 8%

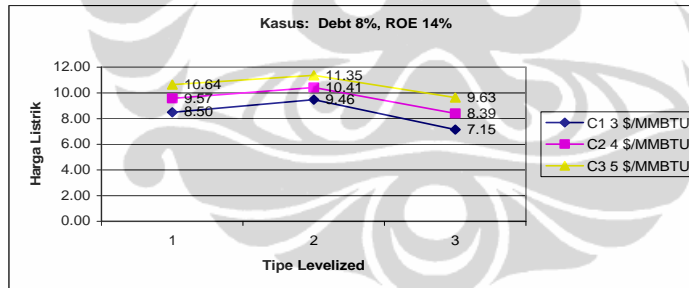
Keterangan

- 1 Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun
- 2 Harga Listrik Levelized (C\$/KWh) -- 8 tahun pertama/Periode pembayaran Hutang
- 3 Harga Listrik Levelized (C\$/KWh) -- selanjutnya tahun ke 9-25/Periode setelah hutang lunas

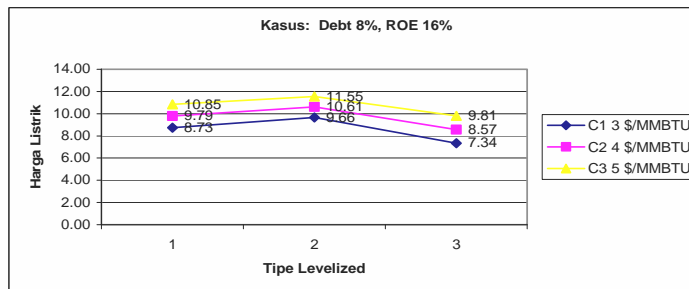
Debt Interest 8%, Return on Equity 12%			
No	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.28	9.36	10.43
2	9.27	10.22	11.16
3	6.97	8.22	9.46



Debt Interest 8%, Return on Equity 14%			
No	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.50	9.57	10.64
2	9.46	10.41	11.35
3	7.15	8.39	9.63



Debt Interest 8%, Return on Equity 16%			
No	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.73	9.79	10.85
2	9.66	10.61	11.55
3	7.34	8.57	9.81



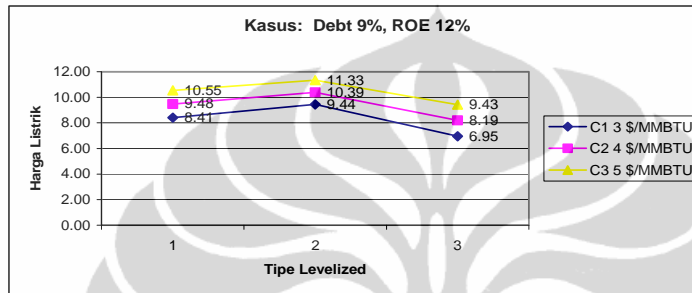
C. Debt Interest Rate Tetap 9 %

Kasus : Debt Interest Rate 9%

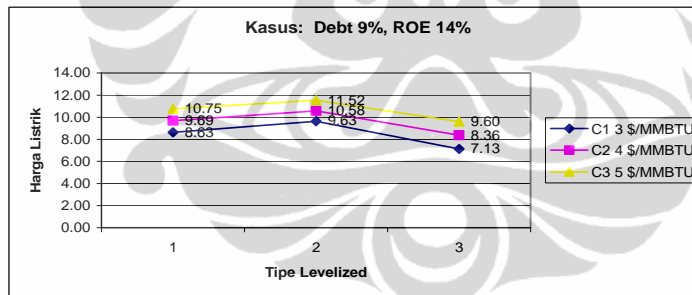
Keterangan

- 1 Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun
- 2 Harga Listrik Levelized (C\$/KWh) -- 8 tahun pertama/Periode pembayaran Hutang
- 3 Harga Listrik Levelized (C\$/KWh) -- selanjutnya tahun ke 9-25/Periode setelah hutang lunas

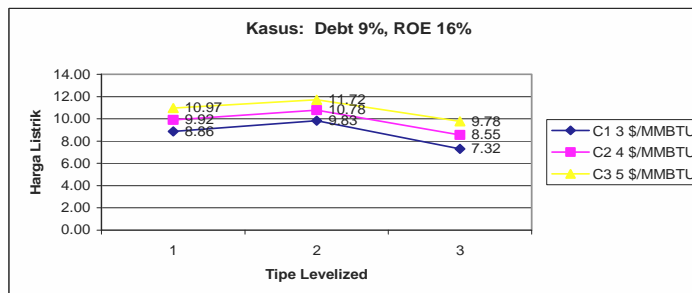
No	Debt Interest 9%, Return on Equity 12%		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.41	9.48	10.55
2	9.44	10.39	11.33
3	6.95	8.19	9.43



No	Debt Interest 9%, Return on Equity 14%		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.63	9.69	10.75
2	9.63	10.58	11.52
3	7.13	8.36	9.60



No	Debt Interest 9 %, Return on Equity 16%		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.86	9.92	10.97
2	9.83	10.78	11.72
3	7.32	8.55	9.78



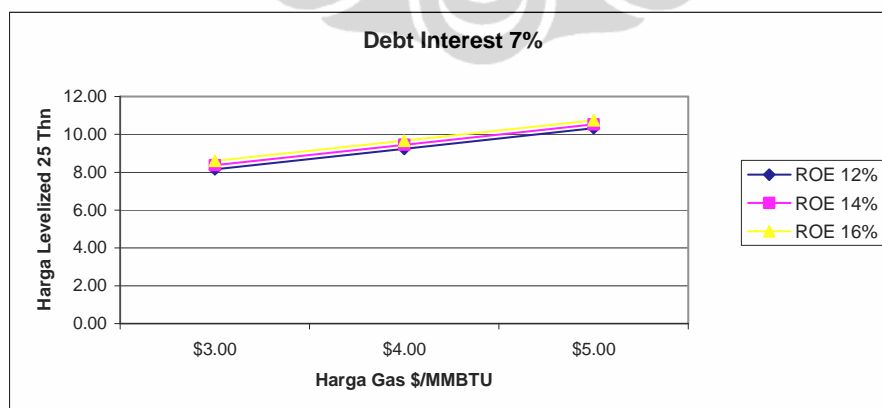
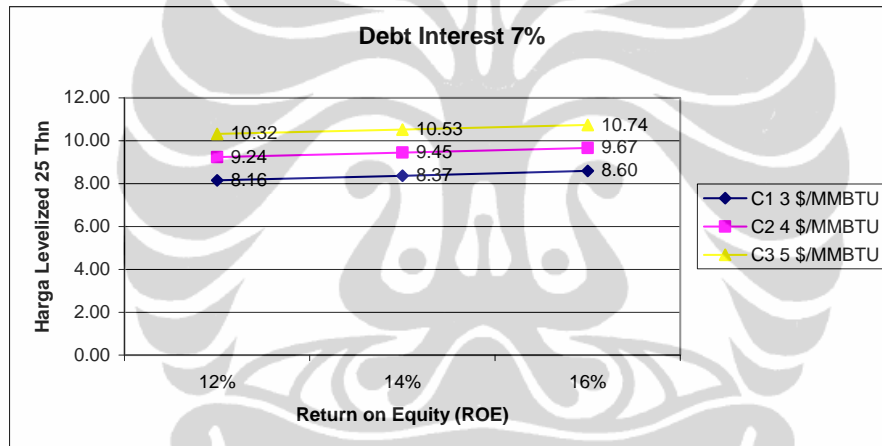
Lampiran -2

Sensitifitas Harga Listrik *Levelized* 25 Tahun Terhadap Perubahan Harga Gas &
Return on Equity dengan Debt Interest Rate
(Panjang Transmisi 300 Km)

A. Harga Listrik untuk Tipe *Levelized* 1 (Selama 25 Tahun), dengan Debt Interest Rate Tetap 7%.

Sensitivitas Debt Interest Rate(DIR) dan Return on Equity (ROE) terhadap Harga Gas
Harga Listrik *Levelized* (C\$/KWh) -- Selama Umur Pembangkit-25 tahun

ROE	Debt Interest 7%		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
12%	8.16	9.24	10.32
14%	8.37	9.45	10.53
16%	8.60	9.67	10.74

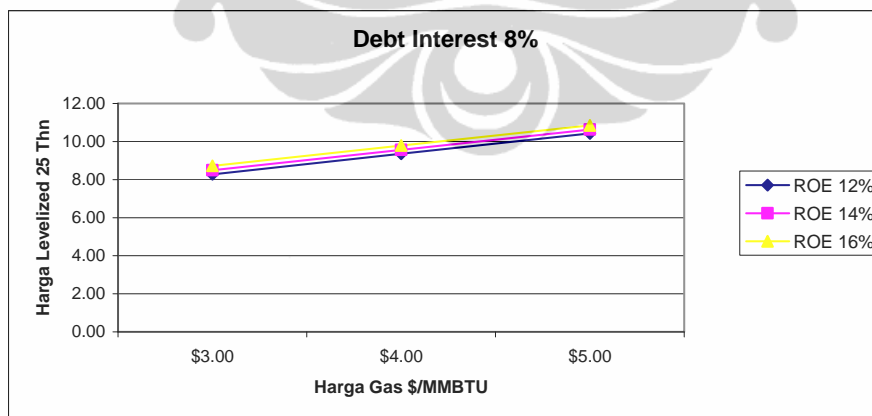
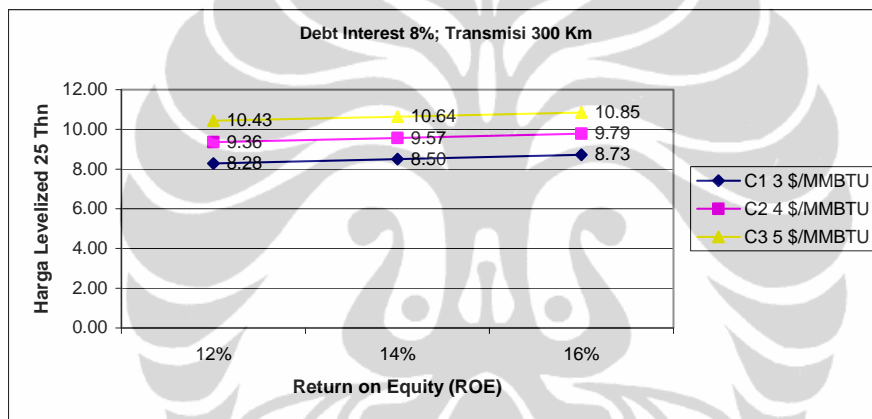


(Lanjutan Lampiran -2)

B. Harga Listrik untuk Tipe *Levelized 1* (Selama 25 Tahun), dengan *Debt Interest Rate* Tetap 8%

Sensitivitas Debt Interest Rate(DIR) dan Return on Equity (ROE) terhadap Harga Gas
Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun

ROE	Debt Interest 8%		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
12%	\$3.00	\$4.00	\$5.00
14%	8.28	9.36	10.43
16%	8.50	9.57	10.64

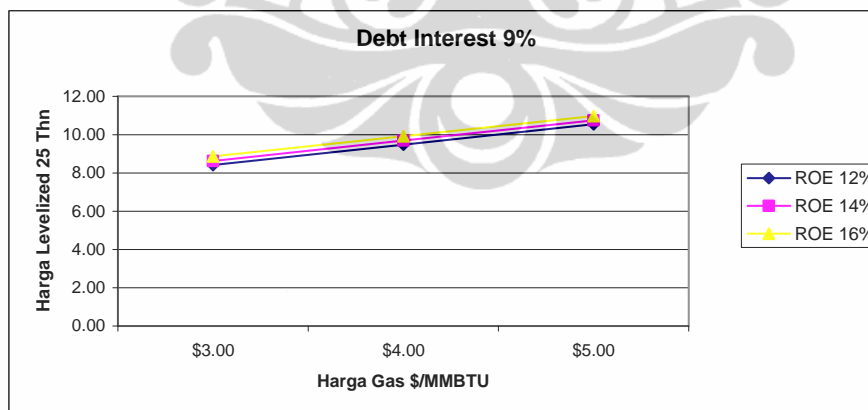
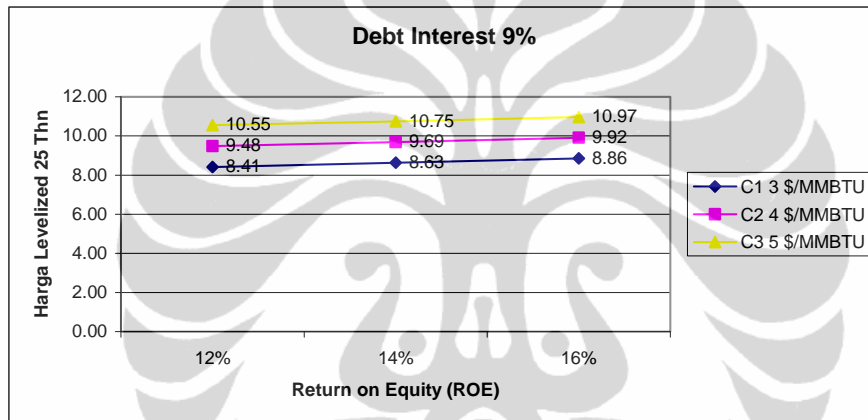


(Lanjutan Lampiran -2)

C. Harga Listrik untuk Tipe *Levelized 1* (Selama 25 Tahun), dengan *Debt Interest Rate* Tetap 9%.

Sensitivitas Debt Interest Rate(DIR) dan Return on Equity (ROE) terhadap Harga Gas
 Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun

ROE	Debt Interest 9%		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
12%	8.41	9.48	10.55
14%	8.63	9.69	10.75
16%	8.86	9.92	10.97



Sensitifitas Harga Listrik Terhadap Perubahan Harga Gas dan Panjang Transmisi Listrik (DIR 8%, ROE 16%)

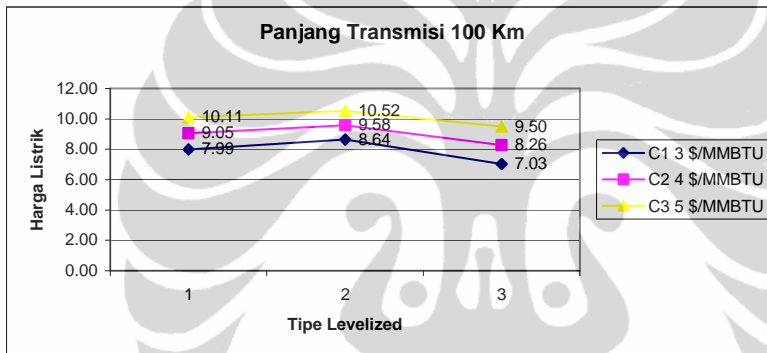
A. Panjang Transmisi Listrik 100 Km & 200 Km

Kasus : Debt Interest Rate 8%,Return on Equity 16%

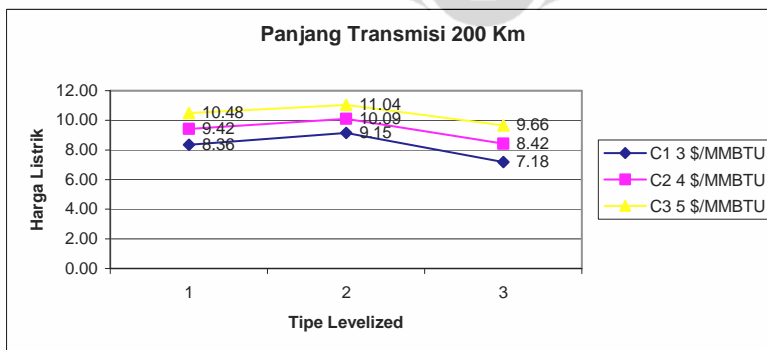
Keterangan

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- 2 Harga Listrik Levelized (C\$/KWh) -- 8 tahun pertama/Periode pembayaran Hutang
- 3 Harga Listrik Levelized (C\$/KWh) -- selanjutnya tahun ke 9-25/Periode setelah hutang lunas

No	Panjang Transmisi 100 Km		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	7.99	9.05	10.11
2	8.64	9.58	10.52
3	7.03	8.26	9.50



No	Panjang Transmisi 200 Km		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.36	9.42	10.48
2	9.15	10.09	11.04
3	7.18	8.42	9.66



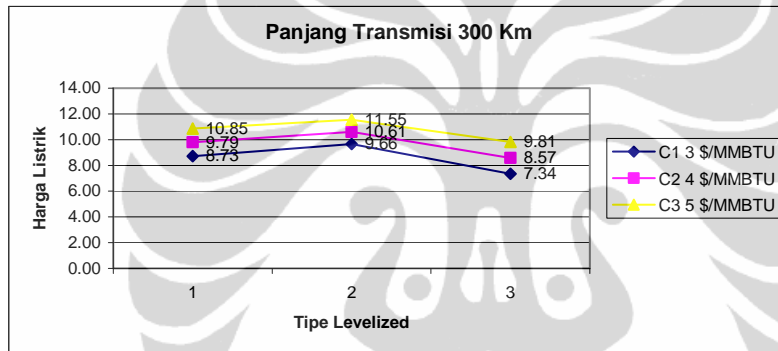
B. Panjang Transmisi Listrik 300 Km & 400 Km

Kasus : Debt Interest Rate 8%,Return on Equity 16%

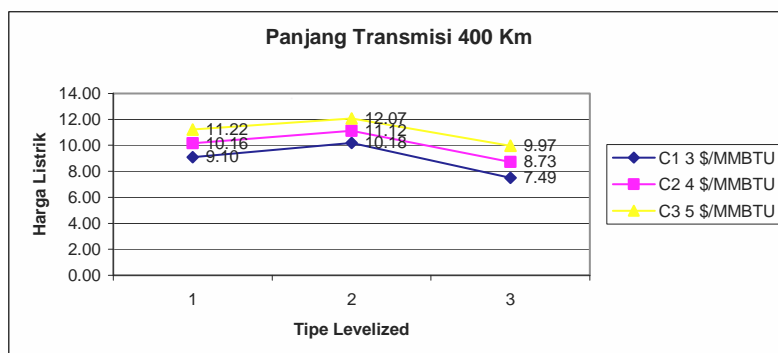
Keterangan

- 1 Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun
- 2 Harga Listrik Levelized (C\$/KWh) -- 8 tahun pertama/Periode pembayaran Hutang
- 3 Harga Listrik Levelized (C\$/KWh) -- selanjutnya tahun ke 9-25/Periode setelah hutang lunas

No	Panjang Transmisi 300 Km		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	8.73	9.79	10.85
2	9.66	10.61	11.55
3	7.34	8.57	9.81



No	Panjang Transmisi 400 Km		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	9.10	10.16	11.22
2	10.18	11.12	12.07
3	7.49	8.73	9.97



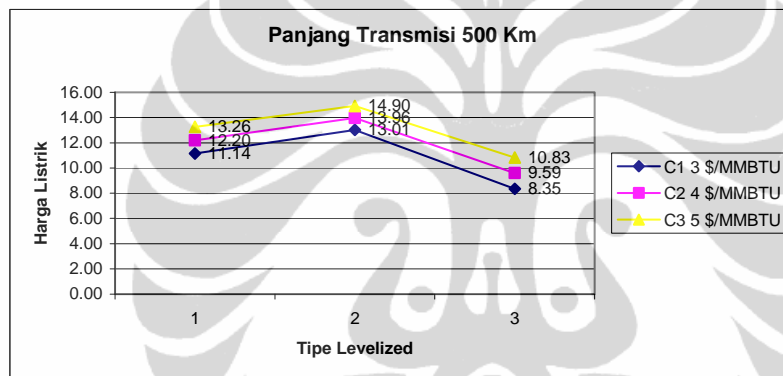
C. Panjang Transmisi Listrik 500 Km & 600 Km

Kasus : Debt Interest Rate 8%,Return on Equity 16%

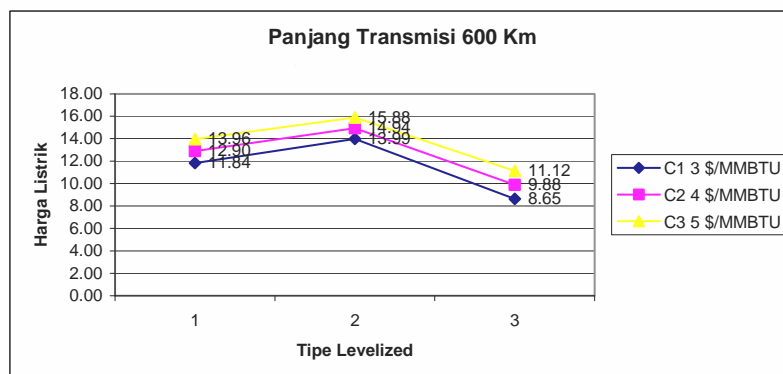
Keterangan

- 1 Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun
- 2 Harga Listrik Levelized (C\$/KWh) -- 8 tahun pertama/Periode pembayaran Hutang
- 3 Harga Listrik Levelized (C\$/KWh) -- selanjutnya tahun ke 9-25/Periode setelah hutang lunas

No	Panjang Transmisi 500 Km		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	11.14	12.20	13.26
2	13.01	13.96	14.90
3	8.35	9.59	10.83



No	Panjang Transmisi 600 Km		
	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
1	11.84	12.90	13.96
2	13.99	14.94	15.88
3	8.65	9.88	11.12



Lampiran -4

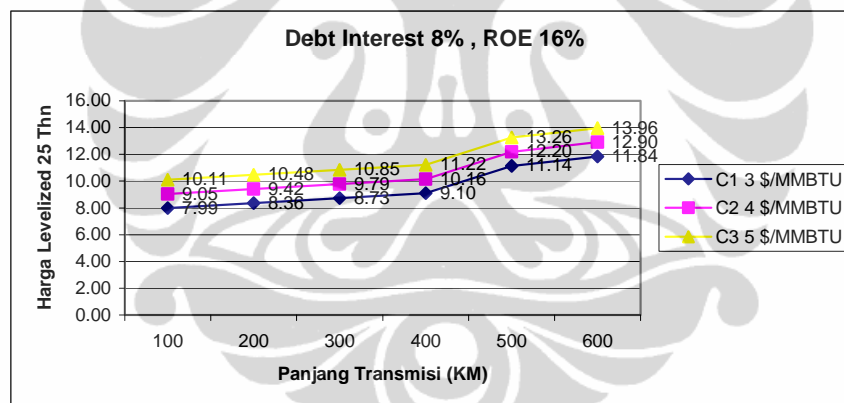
Sensitifitas Harga Listrik *Levelized* 25 Tahun Terhadap Perubahan Harga Gas, Interval Panjang Transmisi Listrik dan Selisih Harga (DIR 8%, ROE 16%)

Transmisi Listrik dengan Panjang 100 Km s/d 600 Km (Interval 100 Km)
Tegangan Transmisi : 100 s/d 400 Km; 275 KV, 500 & 600 Km; 500 KV

Kasus : Debt Interest Rate 8%,Return on Equity 16%

Trnasmisi listrik dari 100 Km s/d 600 Km dengan Interval 100 Km
Harga Listrik Levelized (C\$/KWh) -- Selama Umur Pembangkit-25 tahun

Panjang Transmisi (KM)	HARGA GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
100	7.99	9.05	10.11
200	8.36	9.42	10.48
300	8.73	9.79	10.85
400	9.10	10.16	11.22
500	11.14	12.20	13.26
600	11.84	12.90	13.96



Kasus : Debt Interest Rate 8%,Return on Equity 16%

Selisih Harga Listrik Terhadap Perubahan Panjang Transmisi

Panjang	GAS (\$/MMBTU)		
	C1	C2	C3
	\$3.00	\$4.00	\$5.00
100	-0.74	-0.74	-0.74
200	-0.37	-0.37	-0.37
300	0.00	0.00	0.00
400	0.37	0.37	0.37
500	2.41	2.41	2.41
600	3.11	3.11	3.11

Perubahan panjang 100 Km, perubahan harga listrik 0.37 C\$/Kwh, 100-400 Km
Perubahan panjang 100 Km, perubahan harga listrik 0.7 C\$/Kwh; 500-600 Km

(Lanjutan Lampiran -5)

	Konstruksi		Tahun								Tahun								Tahun										
	-30	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	
1 Faktor Eskalasi (dari tahun referens Cost)				1.1314	1.1597	1.1887	1.2184	1.2489	1.2801	1.3121	1.3449	1.3785	1.4130	1.4483	1.4845	1.5216	1.5597	1.5987	1.6386	1.6796	1.7216	1.7646	1.8087	1.8539	1.9003	1.9478	1.9965	2.0464	
2 Discount Factor (ke tahun pertama operasi)-PF	0.9558	0.8205	0.7432	0.6732	0.6098	0.5523	0.5003	0.4532	0.4105	0.3718	0.3368	0.3051	0.2763	0.2503	0.2267	0.2054	0.1860	0.1685	0.1526	0.1382	0.1252	0.1134	0.1027	0.0931	0.0843	0.0763	0.0692	0.0626	
3 Energi Listrik yang dibangkitkan CCGT Neto (MWh)				1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	1,030,439	
3 Energi Listrik yang dibangkitkan CCGT Neto (MWh), (Losses)				1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	1,007,357	
4 Konsumsi fuel Gas & Biaya																													
Harga Gas (\$/MMBTU)				3.39	3.48	3.57	3.66	3.75	3.84	3.94	4.03	4.14	4.24	4.34	4.45	4.56	4.68	4.80	4.92	5.04	5.16	5.29	5.43	5.56	5.70	5.84	5.99	6.14	
Konsumsi Gas (MMBTU)-HHV, terhadap energi yang dibangkitkan CCGT				7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	7,058,506	
Konsumsi Gas (MMBTU)-HHV, terhadap energi yang dibangkitkan CCGT				7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	7,799,649	
Total Fuel Gas Cost (\$)				26,473,760	27,135,664	27,813,995	28,509,344	29,222,078	29,952,826	30,709,446	31,488,963	32,295,796	33,132,099	33,998,852	34,795,968	35,624,265	36,484,371	37,480,700	38,514,899	39,589,446	40,702,957	41,854,031	42,322,282	43,386,539	44,464,848	45,576,469	46,715,880	47,883,777	
Biaya Rata Rata Fuel Gas (C\$/KWh) (Komponen C), terhadap energi yang dijual netto (Losses)				2.63	2.69	2.76	2.83	2.90	2.97	3.05	3.12	3.20	3.29	3.38	3.45	3.53	3.62	3.71	3.81	3.90	4.00	4.10	4.20	4.31	4.41	4.52	4.64		
5 Operation and Maintenance (O&M)																													
O&M Cost (\$)				13,796,392	14,141,302	14,494,834	14,857,205	15,228,635	15,609,351	15,999,886	16,399,574	16,809,564	17,229,803	17,660,548	18,102,062	18,554,613	19,018,478	19,493,940	19,981,289	20,480,821	20,992,842	21,517,663	22,055,604	22,606,994	23,172,169	23,751,473	24,344,260	24,953,892	
Biaya Interm. Major Overhaul (\$)																													
Total O&M Cost (\$)				13,796,392	14,141,302	14,494,834	14,857,205	15,228,635	15,609,351	15,999,886	16,399,574	16,809,564	17,229,803	17,660,548	18,102,062	18,554,613	19,018,478	19,493,940	19,981,289	20,480,821	20,992,842	21,517,663	22,055,604	22,606,994	23,172,169	23,751,473	24,344,260	24,953,892	
Average O&M Cost (C\$/KWh) (Komponen B)				1.37	1.40	1.44	1.47	1.51	1.55	1.59	1.64	1.67	1.71	1.75	1.80	1.84	1.89	1.94	1.99	2.03	2.08	2.14	2.19	2.24	2.30	2.36	2.42		
6 Capital Recovery (Komponen A)																													
6.1 Equity Cost (\$)		38,577,000	69,438,600	46,292,400	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218	29,317,218
Rata-rata Capital Recovery Equity terhadap Energi (C\$/KWh) (Komponen A)				2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	
6.2 Pembayaran Hutang (Debt) (\$)				67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341	67,516,341
Rata-rata Capital Recovery Debt Terhadap Energi (C\$/KWh) (Komponen A)				6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	
6.3 Total Cost (\$)				137,103,812	138,110,566	139,142,488	140,200,209	141,284,373	142,395,641	143,534,690	152,962,003	78,382,589	79,609,220	80,866,518	82,155,248	83,476,196	84,830,168	86,217,989	87,631,150	89,068,596	90,593,117	92,125,012	93,695,205	95,304,652	96,954,335	98,645,261	100,378,890	102,158,988	
6.4 Harga Listrik Rata-rata (C\$/KWh) (A,B,C)				13.61	13.71	13.81	13.92	14.03	14.14	14.25	15.18	7.78	7.90	8.03	8.16	8.29	8.42	8.56	8.69	8.84	8.99	9.15	9.30	9.46	9.62	9.79	11.17	10.14	
Energi Listrik netto yang dijual (MWh) - PV				678,121	614,240	556,377	503,964	456,490	413,487	374,535	338,253	307,294	278,346	252,125	228,374	206,861	187,374	169,723	153,734	139,252	126,134	114,252	103,489	93,740	84,910	76,911	69,666	63,103	
Total Cost (\$) - PV				92,293,951	84,213,465	76,650,257	70,199,901	64,023,814	58,448,724	53,366,183	51,483,613	23,910,614	21,587,089	20,239,590	18,625,126	17,141,842	15,778,877	14,526,285	14,899,648	12,316,558	11,343,437	10,448,596	9,626,619	8,868,626	8,172,227	7,531,480	7,783,675	6,399,198	
1 Harga Listrik Levelized (C\$/KWh) - Selama Umur Pembangkit-25 tahun				11.84																									
2 Harga Listrik Levelized (C\$/KWh) - 8 tahun pertama/Periode pembayaran hutang				13.39																									
3 Harga Listrik Levelized (C\$/KWh) - selanjutnya tahun ke 9-25/Periode setelah hutang lunas				8.65																									
NPV terhadap Discount rate				65,522,612																									
Total Cost (\$) - PV (Periode selama umur pembangkit)				790,438,403																									
Total Cost (\$) - PV (Periode pembayaran hutang)				550,829,907																									
Total Cost (\$) - PV (Periode setelah hutang lunas)				229,606,496																									
Total Energi Listrik Terkirim (MWh) - PV (Periode selama umur pembangkit)				6,591,755																									
Total Energi Listrik Terkirim (MWh) - PV (Periode pembayaran hutang)				3,936,466																									
Total Energi Listrik Terkirim (MWh) - PV (Periode setelah hutang lunas)				2,655,289																									