APPENDIX－2　TECHNOLOGY TRANSFER SEMINAR

Technology Transfer Seminar

1. Selection of Technology Transfer Seminar

The technology transfer seminar will be conducted in accordance with the requests from the counterpart as follows. Contents of the seminar will be based on discussion with counterpart in the first trip finally. Technology transfer seminar was carried out at PJB Head Office in Surabaya at same period of 2ndworkshop.

1) Design of transmission and substation including insulation, lightning and pollution for improving reliability
2) Method of voltage control and system protection
3) Advanced and efficient technologies on transmission and substation facilities including maintenance technology

2. Technology Transfer Program

Technology Transfer Program (Draft) 1st Day

Date: 27 August 2008 at 10:00 AM.
Place: PJB Head Office
Subject: Technology Transfer (Substation and Transmission)

Time	Content	Presenter
10:00 - 10:20	Coffee Time	
10:20 - 12:00	Technology Transfer "Design of Transmission and Substation"	Mr. Manabe Mr. Maruoka
12:00 - 12:30	Question and Answer	
12:30 - 13:30	Lunch	
13:30 - 15:00	Technology Transfer "Advanced and efficient technologies of Transmission and Substation equipment"	Mr. Manabe Mr. Maruoka
15:00 - 15:20	Question and Answer	
15:20 - 15:30	Questionnaire to Audience	

Technology Transfer Program (Draft) 2nd Day

Date: 28 August 2008 at 9:00 AM.

Place: PJB Head Office

Subject: Technology Transfer (System Operation)

Time	Content	Presenter
09:10 - 11:10	Technology Transfer : System Operation	Mr. Koyama
11:10 - 11:40	Question and Answer	
11:40 - 11:50	Questionnaire to Audience	
11:50 - 12:00	Closing Speech by JICA	Mr. Yamaoka
12:00 - 13:00	Lunch	

In this content, it was concrete method to measures to describe in "Clause 5.5 improvement of system operation".

The outline of technology transfer seminar is indicated as Table 1.

Table1 Contents of Technology Transfer Seminar

1. Contents of Technology Transfer Seminar (Substation and Transmission)

1.1 Insulation Design

1) Classification of the over voltages and overview of design against them
- External over voltage: Lightning surge
- Internal over voltage: Switching surge and sustained over voltage

2) Determination of the number of insulators
- The number of insulators should be determined based on the over voltages in consideration of pollution level and horn gap.

3) Protection design of lightning surge
- Reduction of shield angle of overhead ground wire
- Multiple ground wire
- Reduction of grounding resistance
- Differential insulation

4) Protection design against pollution
- Classification of pollution and salt deposit density
- Flashover characteristics of polluted insulator
- Countermeasures against pollution

5) Insulation coordination among substation and transmission line
- Insulation level of transmission line at the first tower from substation

6) Insulation coordination at substations with surge arresters
- Adequate layout of the surge arresters to protect equipment in substations

1.2 Advanced and Efficient Technologies of Transmission and Substation Equipment

1) Gas Insulated Switchgear (GIS)
- Reduction of the site area for substations
- Reduction of maintenance cost

2) Life assessment of substation equipment
- Proper estimation of deterioration and time of replacement

3) Advanced monitoring and control system
- Advanced monitoring and control system with LAN system

4) Conductor with reduced wind load and conductor with bulk capacity
- Reduction of wind load and weight of support towers
- Introduction of the conductor with bulk capacity

5) Lightning Protection Devices for Transmission Line
- Equipments to reduce outage by lightning such as Line arresters and Active Horns

2. Contents of technical transfer seminar (System Operation)

1) Introduction of Past Large Scale Power Outages in KANSAI
- Miboro Fault, Great Hanshin-Awaji Earthquake, Ohi Bulk Systems Fault

2) Fault Extension Protection Relays
- Classification of typical protection relays (Fault extension protection, Fault clearance protection etc.)
- Objectives of fault extension protection relays

3) Voltage Operations
- Classification of typical voltage operations (Tapped control operation, Reactive supply equipment operation etc.)

4) Reactive Supply Equipment
- Classification of typical reactive supply equipment (Static capacitor, Shunt reactor, Static Var Generator etc.)
- Planning and operation of reactive supply equipment

5) DC Facilities
- Introduction of HVDC (High Voltage Direct Current) facilities in KANSAI

6) Pumped-storage Power Stations
- Roles of pumped-storage power stations in power system operation

7) Power System Analysis
- Classification of typical analysis techniques
- Analysis data management method

8) Optimal Hydropower Operations Considering River System
- Hydropower operations considering river system using developed supporting systems

4. Result of the Technology Transfer Seminar

In order to confirm the "Degree of Satisfaction", "Degree of Contribution" and "Degree of Understanding", a quuestionnaire as shown in table-4 was handed over to each paticipant during the technology transfer seminar. As shown in a tabel-2, technology transfer might be assessed as successfully conducted.

Table-2 Results of questionnaire (Satisfaction and Contribution)

Topics in the seminar	Substation and Transmission (1st day)	System Operation (2nd day)
Degree of Satisfaction(YES)	83% (29/35)*	95% (22/23)*
Degree of Contribution(YES)	91% (31/35)*	91% (21/23)*

* (A/B): A: Number of YES, B: Number of respondents

Concerning substation and transmission (1st day), 89% of respondents could understand 50 % or more of the content. And concerning system operation (2nd day), 91% of respondents could understand 50 % or more of the content. Consideringby these results, technology transfer was successfully conducted, even though the topic contains an advanced technology and perfomed in short period.

Table-3 Results of questionnaire (Understanding)

Topics in the Seminar	Substation and Transmission	System Operation
Date	1st day 2008/8/27	2nd day 2008/8/28
80 ~ 100 % understood	6	3
50 ~80 % understood	25	18
0~50 % understood	4	2
Number of collected questionnaires	35	23

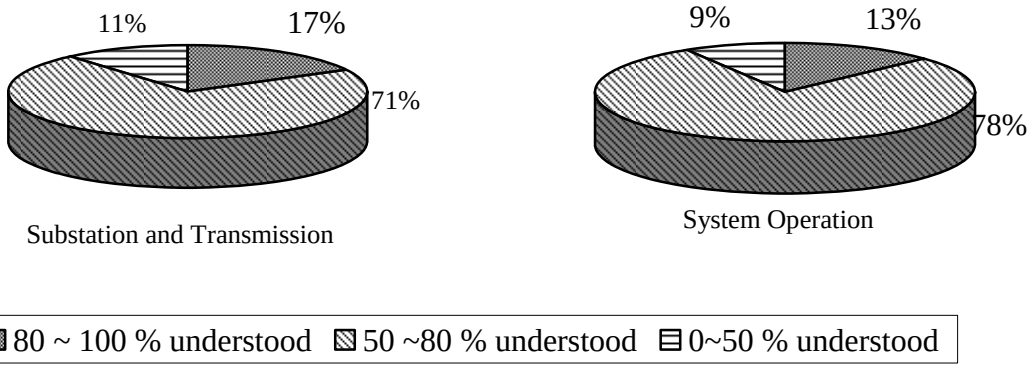


Table 2（1/2） Result of Questionnaire for Technology Transfer Seminar(1st Day 2008.8.27)

Questionnaire Survey on Technology Transfer Seminar relating to Substation, Transmission on August 27 at PJB Head Office				
2. Technology Transfer related to Substation and Transmission				
2.1	Topics in the Seminar			
	Are you satisfied with the topics presented in the Seminar?		Yes (**29**)	No (**6**)
	If your answer is “No”, what kind of topics do you expect?			
	Reactive power planning and Voltage control			
2.2	Understanding of topics			
	Do you understand the contents presented in the Seminar? Please tell us the degree of understanding.			
	80 ~ 100 % understood (**6**)	50 ~80 % understood (**25**)	0~50 % understood (**4**)	
2.3	Contribution toward your work			
	Is this seminar useful for your work?		Yes (**31**)	No (**3**)

Table 2（2/2） Result of Questionnaire for Technology Transfer Seminar(2nd Day 2008.8.28)

Questionnaire Survey on Technology Transfer Seminar relating to Substation, Transmission on August 28 at PJB Head Office				
2. Technology Transfer related to System Operation				
2.1	Topics in the Seminar			
	Are you satisfied with the topics presented in the Seminar?		Yes (**22**)	No (**1**)
2.2	Understanding of topics			
	Do you understand the contents presented in the Seminar? Please tell us the degree of understanding.			
	80 ~ 100 % understood (**3**)	50 ~80 % understood (**18**)	0~50 % understood (**2**)	
2.3	Contribution toward your work			
	Is this seminar useful for your work?		Yes (**21**)	No (**2**)

5. Photo

1. PJB Head Office

2. Technology Transfer Seminar (8/27)

3. Technology Transfer Seminar (8/27)

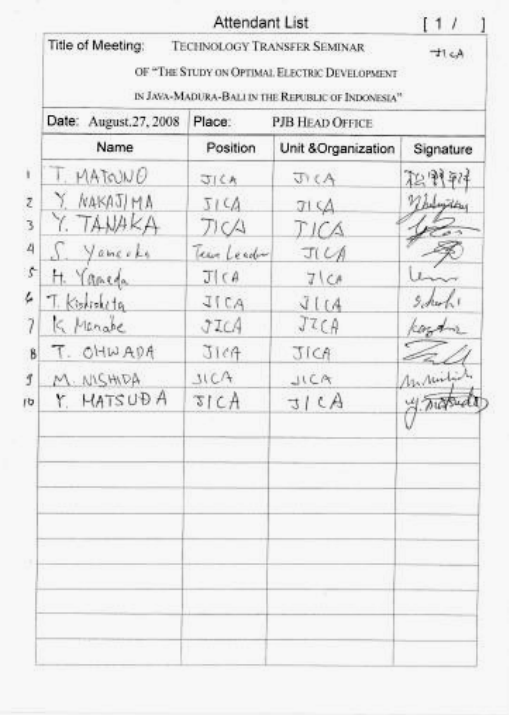
4. Technology Transfer Seminar (8/27)

5. Technology Transfer Seminar (8/28)

6. Technology Transfer Seminar (8/28)

6. Attendance list

(a) Attendance list (8/27)



Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" JICA

Date: August.27, 2008 Place: PJB HEAD OFFICE

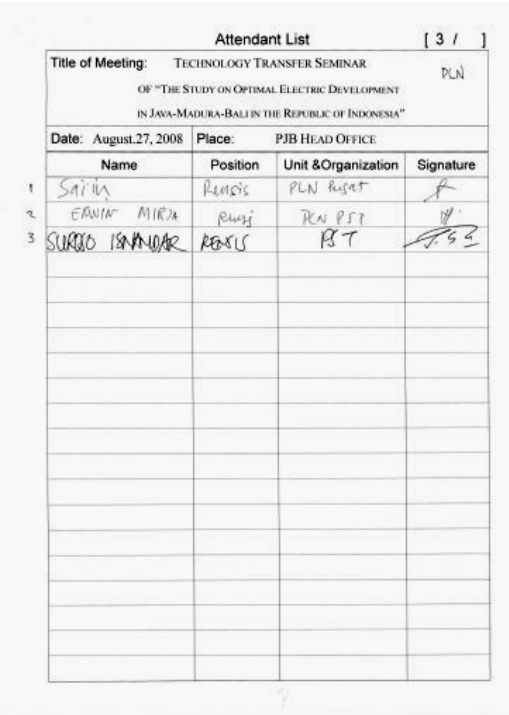
	Name	Position	Unit &Organization	Signature
1	T. MATSUNO	JICA	JICA	
2	Y. NAKAJIMA	JICA	JICA	
3	Y. TANAKA	JICA	JICA	
4	S. Yamaoka	Team Leader	JICA	
5	H. Yamada	JICA	JICA	
6	T. Kishikata	JICA	JICA	
7	K. Manabe	JICA	JICA	
8	T. OHWADA	JICA	JICA	
9	M. NISHIDA	JICA	JICA	
10	Y. HATSUDA	JICA	JICA	

Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" JICA

Date: August.27, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1	Y. Koyama	JICA	JICA	
2	Y. Maruoka	JICA	JICA	

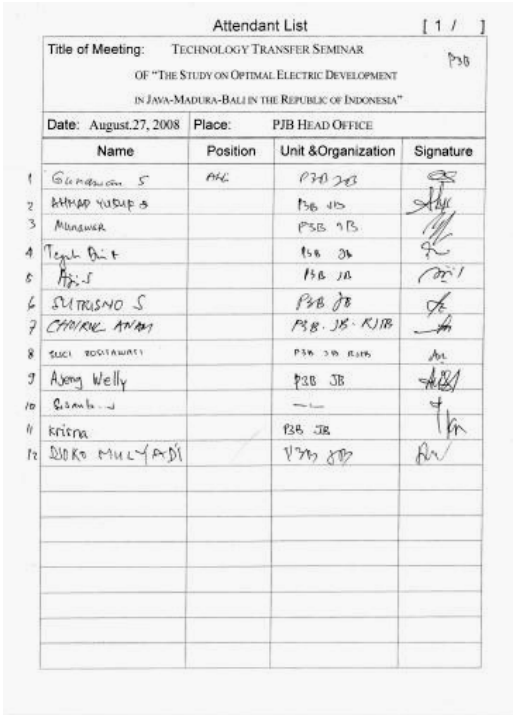


Attendant List [3 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PLN

Date: August.27, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1	Saiful	Kepala	PLN Pusat	
2	ERWIN MIRZA	Kepala	PLN PST	
3	SURYO ISKANDAR	KEPALA	PST	



Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB

Date: August.27, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1	Gunawan S	AM	PJB JB	
2	AHMAD YUSUP S		PJB UP	
3	Munawer		PJB UP	
4	Teguh Dwi T		PJB JB	
5	Agus S		PJB JB	
6	SUTRISNO S		PJB JB	
7	CHAIRUL ANAM		PJB. JB. KJB	
8	SUCI ROSTIAWATI		PJB JB KJB	
9	Ajang Welly		PJB JB	
10	Gunawan S		—	
11	Krisna		PJB JB	
12	DJOKO MULYADI		PJB JB	

Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB JP

Date: August.27, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1				
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Attendant List [2 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB. JP

Date: August.27, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1				
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Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" JP PJB

Date: August.27, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
21				
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(b) Attendance list (8/28)

Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" JICA

Date: August.28, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1.	S. Yamaoka	Team Leader	JICA	[illegible]
2.	H. Yamada	JICA	JICA	[illegible]
3.	Y. NAKAJIMA	〃	〃	[illegible]
4.	T. MATSUNO	〃	〃	[illegible]
5.	Y. Matsuda	〃	〃	[illegible]
6.	Y. TANAKA	〃	〃	[illegible]
7.	T. OHWADA	JICA	JICA	[illegible]
8.	K. Manabe	JICA	〃	[illegible]
9.	Y. Maruoka	JICA	JICA	[illegible]
10.	M. NISHIDA	JICA	JICA	[illegible]

Attendant List [2 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" JICA

Date: August.28, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1.	Y. Koyama	JICA	JICA	[illegible]
2.	T. Kishishita	JICA	JICA	[illegible]

Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB

Date: August.28, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1	Ahmad S.E.		PJB JB	[illegible]
2	Ajeng Welly		— 〃 —	[illegible]
3.	Munawar		PJB JB	[illegible]
4.	Teguh Dwit		PJB JB	[illegible]
5.	Choirul Anam		PJB. JB	[illegible]
6	trima		PJB JB	[illegible]

Attendant List [1 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB

Date: August.28, 2008 Place: PJB HEAD OFFICE

	Name	Position	Unit &Organization	Signature
1.	IWAN AGUNG	M.	UP BKS	[illegible]
2.	RACHMAT HIDAYAT	M	UP CIRATA	[illegible]
3.	Adi Firmanto		SYSTEK	[illegible]
4.	MIFTAHUL J		UP MTW	[illegible]
5.	Rudy. F		UPHB	[illegible]
6.	SUTOMO		UPHT	[illegible]
7.	Raditya KA		UPHT	[illegible]
8.	Adi Setyawan		UPHT	[illegible]
9.	Irwan Supanghat	VPE	VP Eng	[illegible]
10.	Paminto A.B	M UPGRK	PJB	[illegible]
11.	Rachmanu I.	up Gresik	PJB	[illegible]
12.	Dwiono Komang		MN KPI	[illegible]
13.	Martiko B		PT PJB	[illegible]
14.	Tedjo Lelono	MTEK	PT PJB	[illegible]
15.	A. DJATI R	UP PTN	UP PTN	[illegible]
16.	ARIF WAHYU A.	SPROP	PJB	[illegible]
17.	Wicaksono Satrijono	SD Kin	PJB	[illegible]
18.	WAHYUDI	SD ROP	PJB	
19.	ACHMAD RIANTO	SD UMUM	PJB	
20.	M. JUPRI	SD UMUM	PJB	

Attendant List [2 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB

Date: August.28, 2008 Place: PJB HEAD OFFICE

No.	Name	Position	Unit &Organization	Signature
21	Sitta	[illegible]	PJB	
22	Paramita Purwanti	[illegible]	PJB	
23	Puji Astuti	—	—	
24	Fitria Migana	SD KM	PJB	
25	Ronik N.	—	—	
26	Wisnu Satijono	SPKOM	SPKOM	
27	DODI	SDTI	SDTI	
28	NANIK KD	SD/KLM		
29	[illegible]	PJB	PJB	
30	TANT-S	[illegible]/PJB	[illegible]	
31	PUTRI YUNDITA SARI	TIME KEEPER	PJB	
32	Durall	PR	—	
33	Santika !	Security	[illegible]	
34	Teguh S.	SD UMUM		
35	HARRY PRIJONO	SDMUM	PJB	
36	BUDI UTOMO	SDKM	PJB	
37	SUTEJO	SEKURITI	PJB	
38	Winderto	SDMUM	PJB	
39	M. Jafar A	SD UMUM	PJB	
40	Rahtyo KA	Kendal	UPHT	

Attendant List [2 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB

Date: August.28, 2008 Place: PJB HEAD OFFICE

No.	Name	Position	Unit &Organization	Signature
1	Danni Yanuar	UP MKR	PJB	
2	Ardi [illegible]	MPUT	PJB	
3	Dadang W	—	—	
4	Sukanti	[illegible]	PJB	
5	Hepi		SDME	
6	Nyoman Awatan	[illegible]	[illegible]	
7	Ratna Handayani		SD ME	
8	Denik	ME		
9	DADANG K	MANAGER	PJB – PDKEU	

Attendant List [2 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" PJB

Date: August.28, 2008 Place: PJB HEAD OFFICE

No.	Name	Position	Unit &Organization	Signature
1	Sugiyanto	Pambina	PJB UP PRN	
2	Arif Wahyu Aw	PT PJB	PT PJB	
3	Bambang Setiawan	PT PJB	UP Muara Tawar	
4	Yan Suprayogi	PT PJB	UP Muara Tawar	
5	Kurniawan E.W	PT PJB	Cirata	
6	Farid OF	PT. PJB	UP Brantas	
7	Dedik M	ENJ.	UP CIRATA	
8	Harry Santoso	Eng.	UP. Cirata	
9	Faisal R	UP Paiton		
10	I.B. [illegible]	PC	UP Paiton	
11	Mulyono Rohta	SAPNEAT	PJB	
12	[illegible]	[illegible] KR	MPKKK	
13	Heru TJ	VPE	PJB	
14	Ahmad Fajar R	VPE	PJB KP	
15	Thamrin Hapror	Eng	PJB MTV	
16	Haryati	KM	PJB KP	
17	Rousa Sangsthita A	CORPU	PJB KP	
18	Aryanti	VPE	H.O	
19	Didik A	KM	PT PJB KP	
20	SJAIFUL ANAS	PJB	PJB	

Attendant List [3 /]

Title of Meeting: TECHNOLOGY TRANSFER SEMINAR OF "THE STUDY ON OPTIMAL ELECTRIC DEVELOPMENT IN JAVA-MADURA-BALI IN THE REPUBLIC OF INDONESIA" IP

Date: August.28, 2008 Place: PJB HEAD OFFICE

No.	Name	Position	Unit &Organization	Signature
1	[illegible]	Maintenance	PT. IP UBPPGT	
2	[illegible]	[illegible]	[illegible]	
3	[illegible]	Manager	PT PJB UPHT	
4	M. IMADUDDIN	Operation	PT IP UBPPGT	
5	ARY CAHYONO B.J	OPERATION	—	
6	Tuting B	OPS	PT IP	

Distribution material at Technology Transfer Seminar

1. Design of Transmission Line and Substation
2. Advanced and Efficient Technologies of Transmission and Substation Equipment
3. System Operation (Voltage Control and System Protection)

APPENDIX－3 A SUMMARY OF A STUDY ON A RAILWAY LINK PLAN FOR COAL TRANSPORTATION

A Summary of a Study on a Railway Link Plan for Coal Transportation between Central and East Kalimantan

1. Study results of coal transportation in Kalimantan (Central – East Kalimantan)

- This study was compiled in 2005 by Nippon Koei. This study is called, Kalimantan Coal Transportation Program (KTCP).
  Bappenas was also involved in compiling this study.

- This study examines the economical aspect of the first stage construction priority, line section Muaratuhup (in Central Kalimantan) – Kalipapak (in East Kalimantan) 127 km length.
  This line serves as an alternative line from the hill to the shore (line section Kalipapak – Balikpapan will be discussed later). 2 stations, 2 loading deck facilities will be built on the 127 km section.

- The calculation of the required daily train operation of the first stage is as follows :

  - The transport volume target per year is 18,5 mil ton/year
  - The operational days per year : 330 day
  - The transport volume target per day : 560,060 ton/day
  - The wagon loading capacity : 70 ton
  - Number of train wagons : 80 wagon
  - Cargo volume per train :: 5,600 ton/train
  - Number of loaded trains per day : 10 train/day
  - Train velocity : 40 km/hour
  - Travelling trip per day : 1 round trip
  - The required train : 10 train

- The rail line passes through the mining regions PKP2B and KP in Central Kalimantan and East Kalimantan until Kalipapak.

- The construction cost will reach USD 484,250,000,-. and the best funding allocation is 65,9 % by the Government and 34,1 % by the Private.

- In this study, it is recommended that the Government acts in the infrastructure development as a contribution to the Local Government whereas the Private acts as an operator in the operational stage.

- In the Nippon Koei study recommendation it is mentioned that the Local Government is expected to use this study to develop the region and to avoid the environmental impact which may arise caused by the coal transportation program. In addition to that the Government, in this case the Directorate General of Mineral, Coal and Geothermal,

should immediately inform the coal mining Contractor who is holding concession on the area in the coal transportation program in Kalimantan (KTCP), regarding the program and coordination.

2. The preliminary design study results of coal railway construction in Central Kalimantan.

- This study was compiled by Itochu Corporation – Japan in 2007

- This study examines the economical aspect of the first stage construction priority for section Pelaci (Murung Raya district – Bangkuang (South Barito district) along Barito riverbank.

- The train potential users are the existing 10 PKP2B and KP in Central Kalimantan.

- Except for coal transportation, in the future the train will be used for other commodity transportation, such as palm oil and industry commodities.
  For the long term program it may be used as a public transportation in the province, cross province and cross country.

- The construction consists of 4 stages, with the following investment cost :

  - Stage I
    - Operational in 2013
    - Capacity 10 mill ton
    - Investment USD 610. 2 mill

  - Stage II
    - Operational in 2015
    - Capacity 15 mill ton

  - Stage III
    - Operational in 2017
    - Capacity 20 mill ton
    - Investment USD 57.6 mill

  - Stage IV
    - Operational in 2019
    - Capacity 30 mill ton
    - Investment USD 99.5 mill

  Cost sharing model as shares :

    - Public USD 55 mill
    - Private USD 128 mill
    - Loan USD 427 mill from JBIC

REPORT
The Development Plan Progress of Coal Transportation Infrastructure in South Sumatera

I. Preface

PT Bukit Asam Coal Mine as the Mining holder to execute the mining in Tanjung Enim region, Muara Enim District, South Sumatera Province is planning to increase the coal production from 9,6 mill T to 20 mill T.

To transport the coal from mine location to the Port in Tarahan it is required to develop the coal transportation railway to accommodate the increasing coal production capacity.
The existing railway is not capable of transporting the coal with such a huge capacity.

PT Bukit Asam plans to construct the railway line from Tanjung Enim to Tarahan, which is integrated with the coal terminal and Jetty in Tarahan, Lampung province.

Currently PT Bukit Asam has performed a cooperation with China railway and PT Transpacific securindo to conduct a feasibility study on the railway line from Tanjung Enim to Tarahan as mentioned above.
The feasibility study has been compiled and is now waiting for the approval from the Transportation Department and Local Government.

II. A study on the Train Loading Station, Coal Terminal and Jetty

PT Transpacific securindo as a cooperation partner of PT Bukit Asam has been planning to lengthen the coal railway line from Tanjung Enim to Tarahan, Lampung province.
The line is expected to be operational for 20 years to transport the coal from a new reserve which amounts to 20 – 24 mill tons per year.

Construction target of the new railway line and Jetty in Tarahan

First year	:	6 million tons per year
Second year	:	10 million tons per year
Third year	:	20 million tons per year
Fourth year	:	22 million tons per year, etc.

Currently PT Bukit Asam is operating in big coal mines around Tanjung Enim.
The mine locations are connected to 2 Jettys, i.e., a small quantity Jetty in Kertapati, Palembang and a big quantity Jetty in Tarahan.
In the future the coal produced in Central Bangko mine will be transported by the train which is currently under a feasibility study. This is a matter between PT KAI and PT Bukit Asam regarding the current coal transportation capacity.
The existing mono railway line which was built during the Dutch era and was rehabilited in 1980, has several segments with steep slope.

PT Transpacific Securindo estimated around 60 ha area in Srengsem to the North East direction of the old coal terminal will be used for constructing the new train loading facility as well as the terminal facility and shipment with a capacity of 159,000 DWT.

A summary of facilities that will be constructed

1. Train Loading Facility
   - Loading capacity : 4,400 tons per hour (for 2 times transportation with the same train)
   - Conveyor loading capacity : 2,200 tons per hour

2. Coal Terminal Facility
   a. As the first choice related with the problem of fine and dash coal, the details of Stacking and Reclaiming System are as follows :
      - System Stacking is designed for 4,400 tons per hour and is able to receive the coal reminder from station I & II
      - Stockpile Capacity 450,000 tons – 750,000 tons
   b. The second choice is related to the coal Blending capacity, the details of Stacking and Reclaiming System are as follows :
      - System Stacking is designed for 4,400 tons per hour and is able to receive the coal reminder from station I & II
      - Stockpile Capacity 600,000 tons, consisting of 3 stockpiles, each 200,000 tons
   c. The ship loading system is designed for 6,000 tons per hour and is able to receive the coal from stacker/reclaimer

III. A study of Coal Railway Line

a. Existing Railway

- The existing railway is 411 km to Tarahan port, Lampung province
- The management is under PT Kereta Api Indonesia
- The tonage of coal transported to Tarahan is 7,25 mill tons per year
- Another railway line to Kertapati 159 km long, with the annual capacity of 1,35 mill tons per year
- Current railway line condition is not satisfactory, and it has been renovated many times, therefore it is not suitable for coal transportation with an increasing capacity of 20 to 24 mill tons per year

b. Construction Plan of the New Rail Line

- This line stretches from Tanjung Enim (Central Bangko) to Tarahan (Srengsem)
- To shorten the traveling time from Tanjung Enim to Tarahan, Tanjung Enim to Baturaja line will be built (as a shortcut)
- The total length of a single line is 312 km with 20 stations between mine location and terminal
- There are 24 return trips per day, 295 effective working days per year, not to mention 70 days for maintenance
- 24 trains are required, consisting of 1 locomotive and 55 wagons. The wagon capacity is 60 tons
- This project is a cooperation between PT Bukit Asam, China Railway and PT Transpacific Securindo
- The capital investment cost including the land acquisition cost is USD 644,150,250, the cost for AMDAL and Basic Design is excluded
- The total investment cost is USD 1,061,519,000
- The project implementation schedule is as follows
  - Pre construction stage (6 months), is planned by the end of 2008

- The construction period is 36 months for a contract system with a 320 km long of railway line. It consists of 2 packages
  : a. Srengsem - Negara Ratu
  b. Tanjung Enim - Negara Ratu

  The construction is estimated to start in mid 2009 - 2012
- Operational stage is planned to start by the end of 2012
- Guarantee period 12 months

- The problems which are facing the railway construction are as follows
  - During the construction, when the railway line crosses over the fly over between Natar and Banjar baru; which in the reality the land availability is not enough.
  - During the construction, when the railway line passes through dense housing complex such as in Kota Bumi and Martapura
  - Social issue is a dominant impact which will arise during the land acquisition process
  - Based on Lampung RUTRD, the proposed plan location of coal terminal facility is in a conservation forest, it required an intensive approach and negotiation with the Local Government.

- Regarding the above issues PT Bukit Asam has to do the following matters :
  - Approach and coordination with the Lampung Province Government to find out the following information :
    1. The exact border of the conservation forest
    2. The development plan of Kota Baru Natar
    3. The highway plan between Bakauheni to Terbanggi Besar
    4. The future development plan for Srengsem region
    5. The railway line plan from Bandar Lampung to Rejosari and Bakauheni to Rejosari
  - The detailed survey involves other authorities such as :
    PT KAI, PT PLN, PT Telkom, PDAM to clarify the following matters :
    1. The borders of land owned by PT KAI and individuals
    2. The telecommunication, electricity and drinking water networks

APPENDIX－4　COAL SUPPLY TO PLN

KESIAPAN PASOKAN BATU BARA UNTUK PLTU

PT PLN (PERSERO)

10 APRIL 2008

PERMASALAHAN LOGISTIK BATUBARA UNTUK PLTU

- Stock batubara di PLTU saat ini kurang dari satu bulan operasi.
- Kenaikan harga yang cepat dan hampir mencapai 100% menyulitkan untuk melakukan pengadaan jangka panjang meskipun HPS sudah disusun mengikuti harga pasar (ICI).
- Logistik yang sepenuhnya diserahkan pasar karena tidak memiliki usaha penambangan sendiri menyebabkan posisi tawar PLN dan kehandalan pasokan sangat rendah.
- Belum adanya kebijakan tentang Domestik Market Obligation (DMO) mengakibatkan PLN harus bersaing bebas dengan konsumen industri dan asing.
- Angkutan kereta api dari Tanjung Enim ke Tarahan masih single track dengan kapasitas terbatas (± 8,2 Juta ton).
- Jumlah perusahaan PKP2B (Perjanjian Karya Pengusahaan dan Penambangan Batubara) yang selama ini menjadi pemasok batubara ke PLTU hanya 8 dari 66 perusahaan.
- Jumlah kapal bendera Indonesia yang ada saat ini hanya 11 unit (digunakan untuk domestik dan export) sedangkan kebutuhan kapal minimal 13 unit.
- Dermaga muat yang ada lebih banyak digunakan untuk melayani export karena kebutuhan export lebih banyak dari domestik.
- Temuan BPK terhadap tingginya stock batubara menyebabkan keraguan untuk menimbun batubara dalam jumlah yang banyak.

Pengelolaan Logistik Batubara Saat Ini

No.	PLTU	KEBUTUHAN		PASOKAN				
		GCV	Volume	Jangka Waktu	Volume	Lama Kontrak	CIF/ FOB	Angkutan
		Kcal/kg (ar)	per tahun		Pertahun	Tahun		
1	Suralaya	4225 - 5242	12,5 Jt	Jk. panjang	6.1 Jt	10	CIF	Kereta dan Kapal
				Jk. menengah	5 Jt	4	CIF	Truck, tongkang dan vessel
				Jk. pendek/ spot	3.5 Jt	< 1	CIF	Truck, tongkang dan vessel
2	Tanjung Jati B	5150 - 6100	4 Jt	Jk panjang	2 Jt	10	FOB	Kapal
				Jk pendek	2 Jt	1	CIF	Kapal
3	Paiton	5092 - 5242	3 Jt	Jk menengah	2.4 Jt	4	CIF	Tongkang
4	Ombilin	6585 - 6876 (adb)	631Rb	Jk panjang	450 Rb	5	CIF	Truck
				Jk menengah	65 Rb	4	CIF	Truck
				Spot	120 Rb	< 1	CIF	Truck
5	Bukit Asam	5178	986 Rb	Jk. Panjang	986 Rb	10	CIF	Conveyor
6	Tarahan # 3 & 4	5100	706Rb	Jk. Panjang	706 Rb	25	CIF	Conveyor
7	Asam-asam	3820 - 4615	650 Rb	Jk. Panjang	446 Rb	20	CIF	Truck

KEBUTUHAN PEMBANGKIT & BATU BARA

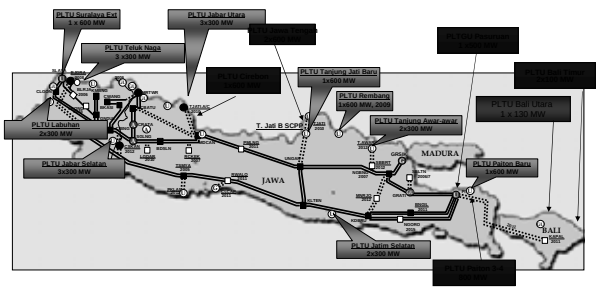
No	PROYEK	TAHUN					
		2008		2009		2010	
		MW	TON	MW	TON	MW	TON
1	KEMITRAAN	-	-	1,142	4,401,725	1,142	4,401,725
2	DAERAH KRITIS	-	-	648	1,873,238	648	1,873,238
3	IPP BARU	50	192,720	250	963,600	2,620	9,720,096
4	PLN-NON PERCEPATAN	230	1,050,000	540	2,331,984	540	2,331,984
5	PLN-PERCEPATAN (JAMALI & LUAR JAMALI)	-	-	-	-	9,530	**31,900,000**
6	EXISTING POWER PLANT (PLN & IPP)	9,550	33,231,936	9,550	33,231,936	9,550	33,231,936
	TOTAL	**9,830**	**34,474,656**	**12,130**	**42,802,483**	**24,030**	**83,458,979**

Asumsi :

1 Perhitungan kebutuhan LRC untuk PLTU Percepatan Jawa menggunakan CF = 60% ; SFC = 0,52 Kwh/Kg dan 0,55 Kwh/Kg untuk kapasitas 300-400 MW

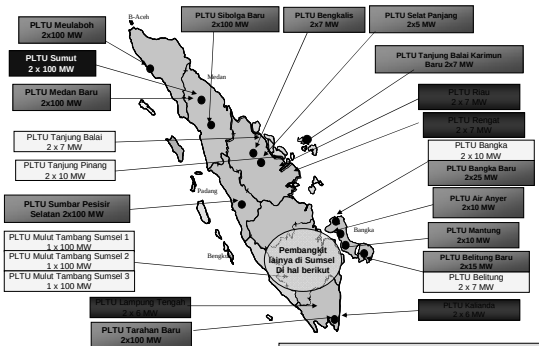
2 Perhitungan kebutuhan LRC untuk PLTU Percepatan Luar Jawa menggunakan CF = 80% ; SFC bervariasi

LOKASI PROYEK PEMBANGKIT BARU JAWA-MADURA-BALI



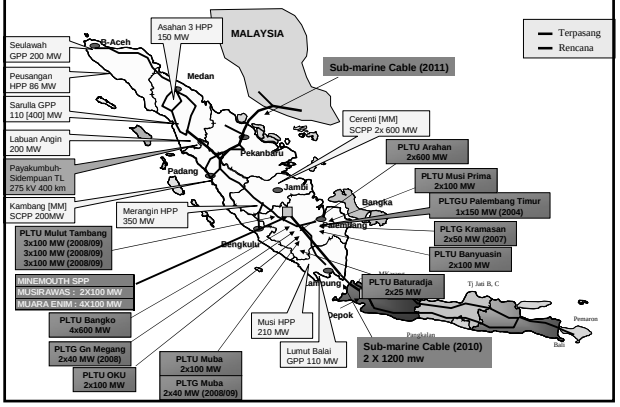
INFR SUMMIT	PERCEPATAN	PENANGG KRISIS	IPP KEMITRAAN
3.300 MW	6.900 MW	130 MW	0 MW

PROYEK PEMBANGKIT BARU PLN DI SUMATERA

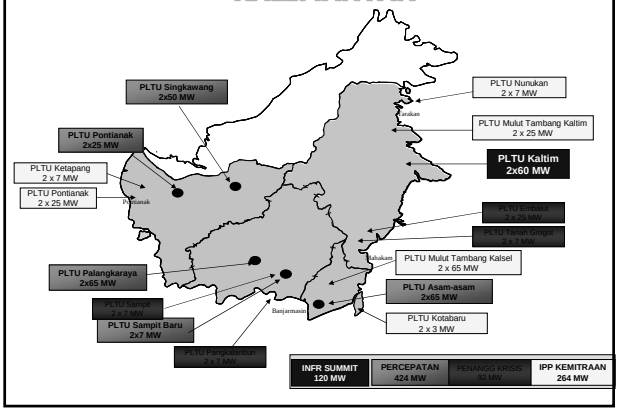


INFR SUMMIT	PERCEPATAN	PENANGG KRISIS	IPP KEMITRAAN
200 MW	1.158 MW	52 MW	368 MW

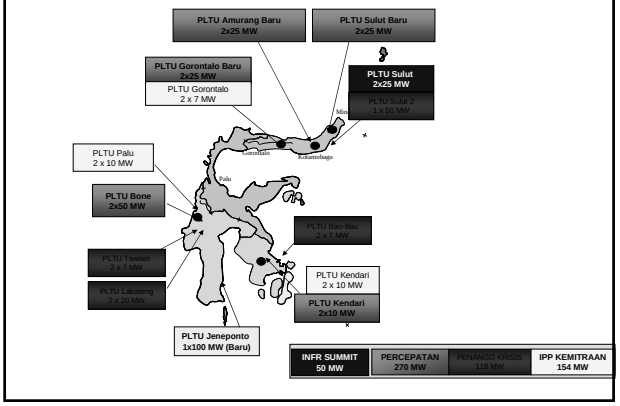
PROYEK PEMBANGKITAN (IPP) DAN TRANSMISI



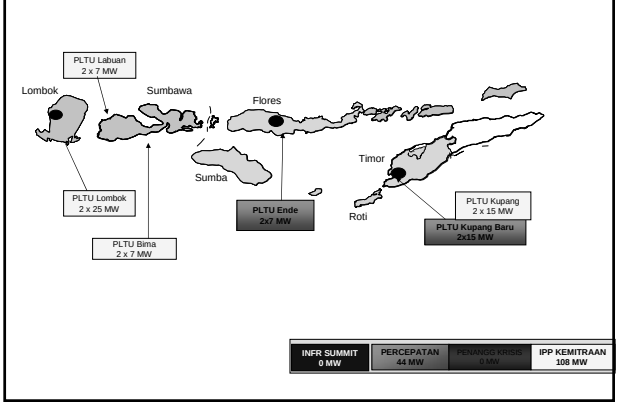
LOKASI PROYEK PEMBANGKIT BARU KALIMANTAN



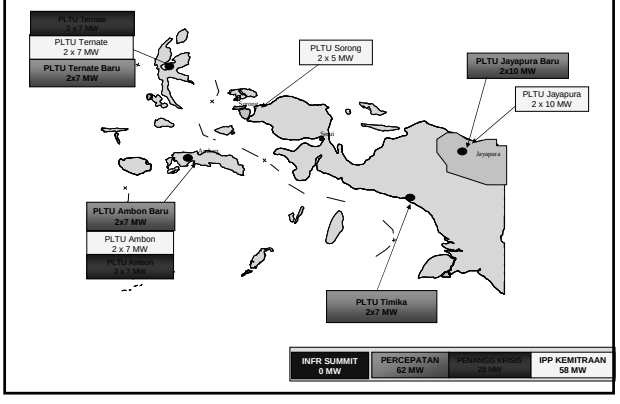
LOKASI PROYEK PEMBANGKIT BARU SULAWESI



LOKASI PROYEK PEMBANGKIT BARU NTB DAN NTT



LOKASI PROYEK PEMBANGKIT BARU MALUKU DAN PAPUA



CADANGAN BATUBARA INDONESIA

Klasifikasi Batubara	Sumber Daya Milyar ton	Cadangan Milyar ton
Kalori Rendah <5100 kcal/kg (adb)	14,95	6.962
Kalori Sedang 5100 - 6100 kcal/kg (adb)	37,65	2.443
Kalori Tinggi >6100 kcal/kg (adb)	7,97	1.229
Kalori Tinggi >7100 kcal/kg (adb)	0,672	0,124
Jumlah	61,242	6,759

Sumber data : Pusat Sumber Daya Geology th. 2005

Cadangan adalah sumberdaya yang secara teknis layak ditambang.

SPESIFIKASI LRC

LRC UNTUK PLTU PERCEPATAN P. JAWA

Uraian	Typical	Penolakan
Gross Calorific Value kCal/kg (ar)	4200	< 4000 atau > 4500
Hardgrove Grindability Index	60	< 45 atau > 65
Total Moisture % (ar)	30	> 35
Ash Content % (ar)	5	> 6
Sodium Content % (in Ash)	1,5	> 4
Sulphur Content % (daf)	0,33	> 0,35
Nitrogen % (daf)	Max 1,2	> 1,2
Slagging dan Fouling Index	Medium	> Medium
Ukuran butiran lolos ayakan 2,38 mm	Max 20 %	> 20%
Ukuran butiran lolos ayakan 32 mm	Max 80 %	> 80%
Ukuran butiran lolos ayakan 50 mm	Min 95 %	< 95%
Ukuran butiran lolos ayakan 70 mm	100%	< 98% (Ukuran butiran Maximum 100 mm)
Ash Fusion Temperature (IDT) °C	1150	< 1100

LRC UNTUK PLTU PERCEPATAN LUAR P. JAWA

Uraian	Typical	Penolakan
Gross Calorific Value kcal/kg (ar)	4200 4000 *)	< 4000 atau > 4700 < 3900 atau > 4700 *)
Hardgrove Grindability Index	60 50 *)	< 50 atau > 65 < 40 atau > 65 *)
Total Moisture % (ar)	30 35 *)	> 35 > 40 *)
Ash Content % (ar)	5	> 6
Sodium Content % (in Ash)	1,5	> 4
Sulphur Content % (daf)	0,33 1,0 *)	> 0,35 > 2,2 *)
Nitrogen % (daf)	Max 1,2	> 1,2
Slagging dan Fouling Index	Medium	> Medium
Ukuran butiran lolos ayakan 2,38 mm	Max 20 %	> 20%
Ukuran butiran lolos ayakan 32 mm	Max 80 %	> 80%
Ukuran butiran lolos ayakan 50 mm	Min 95 %	< 95%
Ukuran butiran lolos ayakan 70 mm	100%	< 98% (Ukuran butiran Maximum 100 mm)
Ash Fusion Temperature (IDT) °C	1150 1050*)	< 1100 < 1000 *)

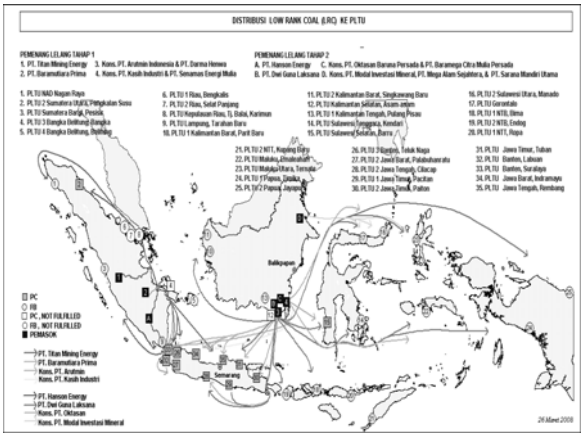
Keterangan :
*) CFB Boiler, Fixed Bed Boiler dan PC Boiler dengan FGD

PROGRES PENGADAAN LRC UNTUK PROYEK PLTU PERCEPATAN

- **TOTAL KEBUTUHAN (35 PLTU) = 31,90 Juta Ton/tahun**
- **HASIL PELELANGAN = 28,49 Juta Ton/tahun**
- **KEKURANGAN = 3.41 Juta Ton/tahun (10,70%)**
- **CALON PEMASOK ADA 8 PERUSAHAAN :**
  - **4 PERUSAHAAN SUDAH PRODUKSI**
  - **4 PERUSAHAAN MASIH EXPLORASI**
- **PERIODE KONTRAK 20 THN (CIF)**
- **PENGIRIMAN TAHAP AWAL PADA TAHUN 2009 DENGAN HARGA DASAR, SERTA PENYESUAIAN HARGA PERBULAN UNTUK USD & BBM, PENYESUAIAN HARGA PERTAHUN UNTUK INDONESIAN COAL INDEX (ICI) DAN AKAN DILAKUKAN PRICE REVIEW (JIKA DIPERLUKAN).**
- **ASSESSMENT DUE DILIGENCE AKAN DILAKUKAN SECARA PERIODIK SETIAP 6 BULAN TERMASUK PROGRES INFRASTRUKTUR YANG AKAN DILAKUKAN OLEH PLN DENGAN KONSULTAN PT ENERGY MANAGEMENT INDONESIA (EMI) DAN POKJA BATU BARA.**

PEMASOK LRC UNTUK PLTU 10.000 MW

NO	NAMA PEMASOK	STATUS	VOLUME	TAHAP PENAMBANGAN
1	PT TITAN MINING ENERGY	PKP2B	3,205,000	EXPLORASI
2	PT BARAMUTIARA PRIMA	PKP2B	2,328,000	EXPLORASI
3	KONS. PT ARUTMIN INDONESIA	KP	8,493,000	PRODUKSI
4	KONS. PT KASIH INDUSTRI	KP	3,810,000	PRODUKSI
5	PT HANSON ENERGY	KP	4,372,000	EXPLORASI
6	PT DWI GUNA LAKSANA	KP	2,945,000	PRODUKSI
7	KONS. OKTASAN BARUNA PERSADA	KP	3,056,000	PRODUKSI
8	KONS. MODAL INVESTASI MINERAL	KP	279,000	EXPLORASI
TOTAL			**28,488,000**	



PERUSAHAAN TAMBANG PKP2B

Jumlah Perusahaan Tambang PKP2B : 66 perusahaan

dengan status :

- **31 perusahaan sudah produksi**
- **18 perusahaan dalam tahap F/S**
- **5 perusahaan dalam tahap konstruksi**
- **12 perusahaan dalam tahap explorasi**

Jumlah Perusahaan Tambang PKP2B yang memasok batubara ke PLN ada 8 perusahaan yaitu :

1. **PT Kaltim Prima Coal**
2. **PT Kideco Jaya Agung**
3. **PT Berau Coal**
4. **PT Indominco Mandiri**
5. **PT Anugerah Bara Kaltim**
6. **PT Arutmin Indonesia**
7. **PT Adaro Indonesia**
8. **PT Tambang Batubara Bukit Asam**

Sumber data : Indonesian Coal Book 2006/2007 dan kontrak2 PLN

Kebutuhan dan Ketersediaan Kapal dan Tongkang

Kapal

-Kebutuhan 13 unit
-Tersedia 11 unit

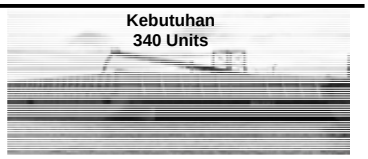
Tahun 2008

Tahun 2010

Tongkang

-Kebutuhan 29 unit
-Tersedia 160 unit

Tahun 2008



Tahun 2010

Daftar Kapal Pengangkut Batubara Berbendera Indonesia

No	Nama Kapal	Ukuran	Kapasitas (ton)	Thn	Type	Pemilik
1	Dewi Umayi	Panamax	62.000	1981	Gear	Arpeni
2	Banowati	Panamax	64.000	1983	Gear	Arpeni
3	Urmilla	Panamax	63.000	1984	Gear	Arpeni
4	Suryawati	Panamax	70.000	1996	Gearless	Arpeni
5	Citrawati	Panamax	70.000	1990	Gearless	Arpeni
6	Indrani	Panamax	70.000	1986	Gearless	Arpeni
7	Mustikawati	Panamax	75.000	1981	Gearless	Arpeni
8	Victory Union	Panamax	65.000	1983	Gearless	JSK
9	Zaleha Fitrat	Handymax	43.000	1986	Gear	GLS
10	Saraswati	Handymax	24.000	1981	Gearless	Arpeni
11	Adhiguna Tarahan	Handymax	10.000	1981	Gearless	Bahtera A.

PELABUHAN MUAT BATUBARA DI INDONESIA

NO.	NAMA PELABUHAN	LOKASI	UKURAN KAPAL MAKS (DWT)	PEMAKAI
1	Tarahan	Sumatera Selatan	55,000	PT BA
2	Tanjung Bara	Kalimantan Timur	180,000	Kaltim Prima Coal
3	Samarinda / Mahakam	Kalimantan Timur	70,000	Umum
4	IBT / Pulau Laut	Kalimantan Selatan	80,000	Adaro Indonesia
5	Kota Baru / Pulau Laut	Kalimantan Selatan	150,000	Arutmin Indonesia
6	Bontang	Kalimantan Timur	90,000	Indominco Mandiri
7	Berau Offshore	Kalimantan Timur	180,000	Berau Coal
8	Banjarmasin / Taboneo	Kalimantan Selatan	170,000	Adaro dan terbuka umum
9	Balikpapan	Kalimantan Timur	80,000	Terbuka Umum
10	Adang Bay	Kalimantan Timur	120,000	Kideco Jaya Agung

MONITORING TERHADAP KESIAPAN INFRASTRUKTUR

- PT BARAMUTIARA PRIMA
  - Infrastruktur belum ada
  - Pembebasan lahan sebagian kecil
  - Aliran sungai Calik terjadi sedimentasi
  - Belum ada perjanjian angkutan tongkang
- KONS. PT ARUTMIN INDONESIA
  - Sarana Infrastruktur sudah ada & akan ditingkatkan secara bertahap
  - Angkutan batubara ke pelabuhan menggunakan konveyor
  - Saat ini pelabuhan sewa PT Cenko & PT BS, Tahun 2009 menggunakan pelabuhan sendiri
  - Crushing Plant ada 2 unit & akan ditambah 1 unit/thn
  - Kendala penambangan area di Asam-Asam tumpang tindih dengan perkebuinan sawit. Area di west mulia tahun 2011 akan masuk area perkebunan sawit.
- PT TITAN MINING ENERGY
  - Belum ada Infrastruktur yang permanen
  - Jalan angkutan menggunakan jalan profinsi
  - Belum ada perjanjian angkutan tongkang
- KONS. PT KASIH INDUSTRI
  - Batubara akan dipasok dari KP di daerah Muba
  - Jalan angkut & pelabuhan belum ada
  - Belum ada explorasi detail

LANGKAH-LANGKAH YANG DILAKUKAN DAN USULAN

1. **PLN akan segera meningkatkan stock batubara hingga posisi aman 30 hari pemakaian dan menambah porsi kontrak jangka panjang hingga 100%.**
2. **Perlu dukungan dari sektor yang terkait untuk mengambil kebijakan agar PKP2B ikut berpartisipasi secara penuh.**
3. **PLN memiliki tambang sendiri atau segera melakukan kerjasama operasi dengan pemilik tambang dan akuisisi/penyertaan modal perusahaan tambang.**
4. **Stock batubara di PLTU seharusnya tidak dianggap sebagai in effisiensi perusahaan karena PLTU batubara sebagai pemikul beban dasar dengan biaya bahan bakar yang murah.**
5. **Dibuat kebijakan tentang Domestik Market Obligation yang mengatur kewajiban pasokan, mekanisme dan insentif harga domestik. Kebutuhan dalam negeri tahun 2008 sekitar 48.47 juta ton (22.5%), tahun 2009 sekitar 58.8 juta ton (25%), tahun 2010 sekitar 107.33 juta ton (43%) harus dapat dipenuhi dengan harga yang layak untuk konsumsi domestik.**
6. **Pada tahun 1983-1996 Royalti batubara sebesar 13,5% dari produksi diambil pemerintah secara INKIND (dalam bentuk natura / barang). Diusulkan model seperti itu dihidupkan kembali dengan penugasan kepada anak perusahaan PLN untuk mengelola.**
7. **Perlu segera dibangun jalur kereta api dan coal terminal baru di Sumatera Selatan alternatif lokasi di Tanjung Api-Api (selat bangka), Kalimantan dan Jawa (diarea Suralaya dan Paiton).**
8. **Kapal berbendera Indonesia yang ada saat ini harus didedikasikan untuk kebutuhan dalam negeri dan dalam waktu dekat harus ada tambahan 2 unit kapal Panamax.**
9. **Perlu sinergi atau penugasan kerjasama antar BUMN untuk angkutan batubara dan diberikan dispensasi penggunaan kapal bendera asing.**

TERIMA KASIH

APPENDIX－5 OPERATION RECORD

5.1 Operation Performance Record for the Existing Power Plants of PJB

5.2 Operation Performance Record for the Existing Power Plants of Indonesia Power

5.1 Operation Performance Record for the Existing Power Plants of PJB

Operation Performance Record for the Existing Power Plants of PJB

No.	Plant Name	Unit No.	Operation Year	Installed Capacity (MW)	Available Max. (kW)	Operation (Hours)			Forced Outage (Hours)			Planned Outage (Hours)			Stand By (Hours)			Production Energy (GWh)			Gross Heat Rate (Kcal/kWh)			Thermal Efficiency (%)		
						2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
	UP. BRANTAS																									
1.	SUTAMI	1	1973	35.00	34,333.00	6,096.07	6,595.11	5,289.89	0.00	0.00	6.22	81.83	122.00	55.73	2582.10	2042.89	3408.16	152.46	173.46	139.57	0	0	0	0	0	0
2.	SUTAMI	2	1973	35.00	34,333.00	6,463.70	6,089.87	6,032.50	0.00	0.00	3.55	74.57	260.05	32.45	2221.73	2410.08	2691.50	162.58	160.10	154.82	0	0	0	0	0	0
3.	SUTAMI	3	1974	35.00	34,333.00	3,626.21	3,642.88	3,281.93	0.00	0.00	0.00	104.90	0.00	51.63	5028.89	5117.12	5426.44	105.05	112.65	81.28	0	0	0	0	0	0
4.	WLINGI	1	1978	27.00	26,810.00	4,693.00	5,119.56	4,068.88	0.00	0.00	0.00	111.78	585.85	82.60	3955.22	3054.59	4608.52	71.83	75.38	65.78	0	0	0	0	0	0
5.	WLINGI	2	1980	27.00	26,810.00	5,208.25	4,770.14	3,605.55	0.00	0.00	0.00	104.30	0.00	33.43	3447.45	3989.86	5121.02	72.92	71.25	60.60	0	0	0	0	0	0
6.	LODOYO	1	1983	4.50	4,460.00	8,132.76	8,525.71	8,164.19	1.27	14.59	0.00	509.45	139.25	59.85	116.52	80.45	535.96	35.92	38.27	38.81	0	0	0	0	0	0
7.	SENGGURUH	1	1988	14.50	14,230.00	3,743.52	4,179.51	3,837.70	0.00	0.63	126.42	209.92	85.90	0.00	4806.56	4493.96	4795.88	37.77	40.50	36.30	0	0	0	0	0	0
8.	SENGGURUH	2	1988	14.50	14,230.00	3,468.69	3,715.07	2,623.59	0.00	0.63	0.00	0.00	105.13	1527.27	5291.31	4939.17	4609.14	34.89	35.10	23.69	0	0	0	0	0	0
9.	TULUNG AGUNG	1	1993	18.00	17,860.00	4,250.51	3,721.91	3,781.29	1.51	7.23	61.07	40.58	80.75	0.00	4467.40	4950.11	4917.64	64.92	60.27	60.47	0	0	0	0	0	0
10.	TULUNG AGUNG	2	1993	18.00	17,860.00	4,269.63	3,582.61	3,780.13	3.13	0.00	0.00	0.00	80.02	0.00	4487.24	5097.37	4979.87	65.39	59.00	64.79	0	0	0	0	0	0
11.	MENDALAN	1	1930	5.60	4,200.00	1,257.48	387.09	755.44	0.00	0.00	0.00	0.00	0.00	0.00	7502.52	8372.91	8004.56	4.38	1.51	2.59	0	0	0	0	0	0
12.	MENDALAN	2	1955	5.80	5,500.00	6,328.41	7,908.34	5,913.17	0.58	0.00	0.00	559.45	0.00	0.00	1871.56	851.66	2846.83	28.69	36.59	26.50	0	0	0	0	0	0
13.	MENDALAN	3	1955	5.80	5,500.00	5,078.56	4,208.90	4,582.89	0.50	0.00	0.00	216.00	0.00	0.00	3464.94	4551.10	4177.11	21.35	20.36	24.75	0	0	0	0	0	0
14.	MENDALAN	4	1955	5.80	5,500.00	4,350.56	4,853.34	5,198.73	0.25	0.00	0.00	0.00	0.00	0.00	4409.19	3906.66	3561.27	21.87	23.67	24.90	0	0	0	0	0	0
15.	SIMAN	1	1955	3.6	3,400.00	6,440.12	4,439.18	10.00	0.97	2.55	0.00	0.00	3026.00	8750.00	2318.91	1292.27	0.00	17.68	11.21	0.02	0	0	0	0	0	0
16.	SIMAN	2	1931	3.6	3,400.00	6,587.87	8,530.29	7,905.28	3.72	2.23	0.00	0.00	0.00	364.32	2168.41	227.48	490.40	17.94	24.93	22.90	0	0	0	0	0	0
17.	SIMAN	3	1955	3.6	3,400.00	7,593.96	8,356.17	7,449.67	3.88	3.17	0.00	24.00	0.00	80.47	1138.16	400.66	1229.86	20.43	23.85	26.87	0	0	0	0	0	0
18.	SELOREJO	1	1973	4.48	4,430.00	7,622.31	8,491.52	7,657.86	0.00	0.63	0.00	716.02	97.20	244.05	421.67	170.65	858.09	17.56	23.20	21.65	0	0	0	0	0	0
19.	WONOREJO	1	2002	6.5	6,500.00	4,587.98	3,518.52	4,287.27	0.56	0.39	0.00	0.00	80.75	103.33	4171.46	5160.34	4369.40	16.89	18.37	20.72	0	0	0	0	0	0
20	GIRINGAN	1	1955	0.90	880.00	5,142.82	6,015.41	5,199.72	0.00	8.75	0.00	0.00	0.00	0.00	3617.18	2735.84	3560.28	3.66	4.38	4.10	0	0	0	0	0	0
21	GIRINGAN	2	1955	0.90	880.00	5,289.25	5,832.31	5,261.23	10.07	9.08	0.00	0.00	0.00	0.00	3460.68	2918.61	3498.77	3.79	4.26	3.81	0	0	0	0	0	0
22	GIRINGAN	3	1937	1.40	1,370.00	5,901.42	5,532.93	5,608.81	6.25	9.34	0.00	0.00	0.00	0.00	2852.33	3217.73	3151.19	5.53	5.04	5.08	0	0	0	0	0	0
23	GOLANG	1	1959	0.90	890.00	5,662.88	6,573.51	5,625.51	15.56	5.75	0.00	0.00	0.00	0.00	3081.56	2180.74	3134.49	4.11	4.51	4.10	0	0	0	0	0	0
24	GOLANG	2	1959	0.90	890.00	5,238.27	5,351.01	5,441.53	0.00	6.00	0.00	0.00	0.00	0.00	3521.73	3402.99	3318.47	3.86	3.94	4.49	0	0	0	0	0	0
25	GOLANG	3	1959	0.90	890.00	5,575.93	5,693.62	4,616.12	0.00	6.17	0.00	0.00	0.00	0.00	3184.07	3060.21	4143.88	3.87	3.92	3.42	0	0	0	0	0	0
26	NGEBEL	1	1968	2.20	2,160.00	4,603.00	5,304.42	4,503.24	17.52	0.00	640.75	0.00	0.00	700.92	4139.48	3455.58	2915.09	7.94	9.06	6.84	0	0	0	0	0	0
	UP. CIRATA																									
27	CIRATA	1	1988	126.00	118,500.00	2,441.23	1,825.17	2,197.79	37.10	0.18	3.96	224.67	875.25	0.00	6057.00	6059.40	6558.25	170.62	97.12	153.22	0	0	0	0	0	0
28	CIRATA	2	1988	126.00	118,500.00	2,358.70	2,088.99	1,853.28	9.91	5.05	3.85	202.03	894.08	0.00	6189.36	5771.88	6902.87	171.10	92.43	139.95	0	0	0	0	0	0
29	CIRATA	3	1988	126.00	118,500.00	2,268.35	2,640.84	8,760.00	26.39	105.12	0.00	509.21	706.00	0.00	5956.05	5308.04	0.00	168.60	93.41	92.81	0	0	0	0	0	0
30	CIRATA	4	1988	126.00	118,500.00	2,329.49	2,405.10	1,919.31	0.22	4.45	0.25	561.18	802.92	0.00	5869.11	5547.53	6840.44	163.09	142.14	147.14	0	0	0	0	0	0
31	CIRATA	5	1997	126.00	118,500.00	2,806.37	2,173.89	1,414.40	0.37	15.07	0.82	202.25	395.25	906.55	5751.01	6175.79	6438.23	209.43	100.26	112.53	0	0	0	0	0	0
32	CIRATA	6	1997	126.00	118,500.00	2,591.38	2,398.61	1,869.67	1.25	8.02	0.38	201.08	229.00	398.58	5966.29	6124.37	6491.37	189.77	127.90	141.92	0	0	0	0	0	0
33	CIRATA	7	1998	126.00	118,500.00	2,311.40	2,590.41	1,955.80	20.07	0.00	4.13	417.12	205.92	443.07	6011.41	5963.67	6357.00	173.17	122.82	149.13	0	0	0	0	0	0
34	CIRATA	8	1998	126.00	118,500.00	5,300.57	2,603.52	3,079.78	0.23	77.27	4.03	0.00	186.92	0.00	3459.20	5892.29	5676.19	131.24	118.04	173.04	0	0	0	0	0	0
	UP. GRESIK																									
35	PLTU GRESIK	1	1981	100.00	80,000.00	7,322.95	8,010.55	7,249.00	96.00	10.20	0.25	1173.90	365.98	1344.00	167.15	373.27	166.75	567.28	606.30	589.21	2,833.26	2,771.63	2,875.76	30.35	31.03	29.91
36	PLTU GRESIK	2	1981	100.00	80,000.00	8,252.97	7,642.72	8,371.06	21.05	8.31	49.12	364.11	1078.13	339.66	121.87	30.84	0.16	641.73	599.02	654.80	2,802.70	2,769.40	2,793.46	30.68	31.05	30.79
37	PLTU GRESIK	3	1988	200.00	166,500.00	6,735.33	8,373.87	8,019.86	0.00	10.43	19.80	2024.67	375.70	720.34	0.00	0.00	0.00	874.42	1244.23	1315.40	2,486.88	2,403.94	2,343.98	34.58	35.77	36.69
38	PLTU GRESIK	4	1988	200.00	166,500.00	6,466.41	8,274.06	7,877.71	0.00	23.47	52.60	2293.59	462.47	749.95	0.00	0.00	79.74	902.84	1257.03	1255.82	2,543.70	2,437.13	2,540.89	33.81	35.29	33.85
39	PLTG GRESIK	1	1978	20.10	16,000.00	1,215.62	1,279.83	251.85	525.19	56.42	304.43	1042.85	0.00	1143.92	5976.34	7423.75	7059.80	16.66	8.58	3.86	4,314.79	4,845.43	4,705.18	19.93	17.75	18.28
40	PLTG GRESIK	2	1978	20.10	16,000.00	1,422.55	1,067.63	258.65	117.94	140.29	144.95	0.00	3713.03	246.47	7219.51	3839.05	8109.93	23.05	5.27	4.34	4,244.43	4,381.94	4,299.12	20.26	19.63	20.00
41	PLTG GRESIK (GILITIMUR)	1	1993	20.10	16,500.00	1,801.68	1,905.02	195.21	64.12	0.00	0.00	0.00	27.00	2363.17	6894.20	6827.98	6201.62	28.06	18.73	3.27	4,276.87	4,393.61	5,169.27	20.11	19.57	16.64
42	PLTG GRESIK (GILITIMUR)	2	1993	20.10	16,500.00	1,932.14	1,031.30	391.89	189.98	106.42	323.70	0.00	1552.67	0.00	6637.88	6069.61	8044.41	25.03	15.49	3.51	4,489.30	4,742.97	5,758.53	19.16	18.13	14.93
43	PLTGU GRESIK	GT 11	1992	112.45	90,000.00	7,756.84	6,924.58	7,932.93	13.35	106.48	77.69	837.03	1258.39	214.05	152.78	470.55	535.33	557.56	460.94	644.75	3,515.56	3,625.77	3,419.48	24.46	23.72	25.15
44	PLTGU GRESIK	GT 12	1992	112.45	90,000.00	7,432.50	7,223.41	7,942.70	153.68	182.87	26.75	1090.83	627.75	415.33	82.99	725.97	375.22	503.01	493.96	631.86	3,531.00	3,556.81	3,444.85	24.36	24.18	24.96
45	PLTGU GRESIK	GT 13	1992	112.45	90,000.00	7,703.73	8,378.23	7,192.95	7.15	100.02	161.16	1047.18	215.25	551.27	1.93	66.50	854.62	694.12	740.37	542.50	3,278.34	3,235.78	3,428.75	26.23	26.58	25.08
46	PLTGU GRESIK	ST10	1993	188.91	170,000.00	8,748.86	7,641.98	8,175.98	3.14	24.65	235.19	8.00	1083.34	348.83	0.00	10.03	0.00	1037.48	926.41	975.76	0.00	0.00	0.00	-	-	-
47	PLTGU GRESIK	GT 21	1992	112.45	90,000.00	7,431.02	5,303.95	5,408.85	4.95	25.33	18.02	992.88	254.98	574.32	331.15	3175.74	2758.81	495.18	328.56	391.67	3,638.49	3,718.06	3,441.39	23.64	23.13	24.99
48	PLTGU GRESIK	GT 22	1992	112.45	90,000.00	7,288.55	5,247.07	3,729.88	55.60	6.35	18.85	996.86	0.00	966.78	418.99	3506.58	4044.49	468.20	327.67	248.28	3,626.41	3,709.95	3,536.65	23.71	23.18	24.32
49	PLTGU GRESIK	GT 23	1992	112.45	90,000.00	7,238.58	5,192.60	4,379.09	15.22	8.43	14.21	705.45	1258.85	645.88	800.75	2300.12	3720.82	278.32	307.95	319.68	4,602.70	3,877.32	3,476.57	18.68	22.18	24.74
50	PLTGU GRESIK	ST 20	1993	188.91	170,000.00	8,210.36	5,807.02	6,822.64	0.50	22.85	2.98	283.28	1116.15	274.00	265.86	1813.98	1660.38	719.46	539.37	521.88	0.00	0.00	0.00	-	-	-
51	PLTGU GRESIK	GT 31	1993	112.45	100,000.00	8,401.51	7,421.86	7,806.19	62.44	1.52	0.57	237.63	1056.32	202.25	58.42	280.30	750.99	609.70	567.18	715.30	3,594.87	3,509.60	3,311.05	23.92	24.50	25.97
52	PLTGU GRESIK	GT 32	1993	112.45	100,000.00	8,475.50	8,075.19	7,915.92	9.79	2.79	9.30	191.72	616.79	187.58	82.99	65.23	647.20	624.50	631.16	739.21	3,555.26	3,477.18	3,290.18	24.19	24.73	26.14
53	PLTGU GRESIK	GT 33	1993	112.45	100,000.00	8,362.18	7,895.79	8,474.31	6.32	0.85	0.00	241.65	521.22	192.07	149.85	342.14	93.62	623.62	623.77	797.34	3,524.19	3,462.82	3,275.18	24.40	24.84	26.26
54	PLTGU GRESIK	ST 30	1993	188.91	180,000.00	8,373.10	7,662.01	8,755.28	1.58	2.13	4.70	375.10	1072.08	0.00	10.22	23.78	0.02	1168.71	1046.75	1320.21	0.00	0.00	0.00	-	-	-
	UP. PAITON																									
55	PLTU PAITON	1	1993	400.00	370,000.00	5,964.99	7,916.72	8,437.30	95.43	173.86	322.70	2698.47	669.32	0.00	1.11	0.10	0.00	1913.17	2899.22	3170.91	2,777.57	2,761.07	2,729.02	30.96	31.15	31.51
56	PLTU PAITON	2	1993	400.00	370,000.00	8,413.88	6,804.96	7,720.36	346.12	0.00	311.46	0.00	1727.35	689.60	0.00	227.69	38.58	3010.80	2433.18	2933.50	2,747.08	2,843.98	2,675.69	31.31	30.24	32.14
	UP. MUARA KARANG																									
57	PLTU M.KARANG	1	1979	100.00	80,667.00	7,148.11	8,444.93	6,510.87	397.85	315.07	496.13	1205.95	0.00	1751.00	8.09	0.00	2.00	564.01	665.01	518.62	3,068.89	3,070.97	3,136.28	28.02	28.00	27.42
58	PLTU M.KARANG	2	1979	100.00	80,667.00	5,568.49	6,608.57	7,911.91	206.17	478.71	476.62	2966.79	1672.72	371.47	18.55	0.00	0.00	415.22	441.21	630.44	3,078.27	3,203.01	3,206.88	27.94	26.85	26.82
59	PLTU M.KARANG	3	1979	100.00	80,667.00	8,187.97	7,095.11	7,051.23	505.73	89.45	195.29	4.25	1575.43	1513.48	62.05	0.01	0.00	588.21	568.93	542.66	3,056.52	3,105.55	3,180.22	28.14	27.69	27.04
60	PLTU M.KARANG	4	1981	200.00	162,000.00	7,083.14	7,207.93	5,078.23	300.11	406.69	2566.30	1347.03	1131.67	1114.55	29.72	13.71	0.92	514.59	782.49	585.32	3,228.07	2,938.83	3,078.97	26.64	29.26	27.93
61	PLTU M.KARANG	5	1982	200.00	162,000.00	7,712.56	7,058.75	6,813.68	364.79	363.77	432.89	682.65	1326.58	1503.18	0.00	10.90	10.25	792.92	549.20	984.24	2,891.65	3,085.42	2,876.56	29.74	27.87	29.90
62	PLTGU M.KARANG	GT 11	1992	107.86	90,000.00	8,209.40	7,528.24	8,212.38	197.76	128.96	55.22	352.84	1090.35	470.87	0.00	12.45	21.53	624.97	659.42	721.45	3,245.24	3,332.28	3,393.34	26.50	25.81	25.34
63	PLTGU M.KARANG	GT 12	1992	107.86	90,000.00	8,172.85	6,946.38	7,969.45	42.15	46.06	76.33	447.28	1767.56	714.22	97.72	0.00	0.00	707.05	640.49	726.82	3,164.29	3,228.03	3,392.24	27.18	26.64	25.35
64	PLTGU M.KARANG	GT 13	1992	107.86	90,000.00	6,529.75	8,558.85	5,618.40	85.58	49.73	52.08	2144.30	150.25	3072.37	0.37	1.17	17.15	586.50	797.26	517.76	3,123.83	3,168.24	3,205.63	27.53	27.14	26.83
65	PLTGU M.KARANG	ST10	1995	185.00	150,000.00	5,141.80	8,387.41	7,919.82	241.38	315.12	294.58	3376.82	0.00	544.08	0.00	57.47	1.52	454.31	984.29	832.14	0.00	0.00	0.00	-	-	-
	UP. MUARA TAWAR																									
66	PLTGU M.TAWAR	GT 11	1997	145.00	135,000.00	4,905.24	5,971.96	5,245.54	199.84	193.36	119.28	3466.65	465.90	1605.50	188.27	2128.78	1789.68	481.83	588.97	481.87	3,104.61	3,178.92	3,137.73	27.70	27.05	27.41
67	PLTGU M.TAWAR	GT 12	1997	145.00	135,000.00	6,844.48	6,585.62	5,875.95	35.05	200.81	81.42	1547.28	351.76	1007.38	333.18	1621.81	1795.25	689.05	665.96	582.06	3,070.69	3,134.39	3,116.41	28.01	27.44	27.60
68	PLTGU M.TAWAR	GT 13	1997	145.00	135,000.00	7,941.72	5,534.97	5,921.38	99.82	150.79	73.83	470.47	1849.33	1039.17	248.00	1224.91	1725.62	803.05	551.70	548.43	3,107.15	3,149.98	3,148.92	27.68	27.30	27.31
69	PLTGU M.TAWAR	ST10	1997	220.00	180,000.00	8,503.12	7,129.06	7,245.66	50.62	156.31	33.06	0.00	951.05	0.00	206.26	523.58	1481.28	1038.34	899.30	828.10	0.00	0.00	0.00	-	-	-
70	PLTG M.TAWAR	GT 21	1997	145.00	135,000.00	3,986.73	2,355.30	1,314.28	298.12	116.80	59.98	1712.37	347.72	1230.12	2762.78	5940.18	6155.62	276.35	212.37	98.96	3,234.28	3,273.18	3,334.45	26.59	26.27	25.79
71	PLTG M.TAWAR	GT 22	1997	145.00	135,000.00	4,282.89	1,960.85	856.65	325.31	23.72	58.04	1006.37	3580.70	1853.50	3145.43	3194.73	5991.81	332.62	178.03	70.81	3,264.31	3,228.58	3,366.23	26.35	26.64	25.55

Operation Performance Record for the Existing Power Plants of PJB

No.	Plant Name	Unit No.	Type Fuel	Fuel Consumption (2005)					Fuel Consumption (2006)					Fuel Consumption (2007)				
				MFO (Ltr)	IDO (Ltr)	HSD (Ltr)	Gas (MMBTU)	Coal (Kg)	MFO (Ltr)	IDO (Ltr)	HSD (Ltr)	Gas (MMBTU)	Coal (Kg)	MFO (Ltr)	IDO (Ltr)	HSD (Ltr)	Gas (MMBTU)	Coal (Kg)
	UP. BRANTAS																	
1.	SUTAMI	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	SUTAMI	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.	SUTAMI	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.	WLINGI	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.	WLINGI	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.	LODOYO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.	SENGGURUH	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.	SENGGURUH	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.	TULUNG AGUNG	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.	TULUNG AGUNG	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.	MENDALAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.	MENDALAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.	MENDALAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	MENDALAN	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.	SIMAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.	SIMAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.	SIMAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.	SELOREJO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.	WONOREJO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	GIRINGAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	GIRINGAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	GIRINGAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	GOLANG	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	GOLANG	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	GOLANG	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	NGEBEL	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. CIRATA																	
27	CIRATA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	CIRATA	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	CIRATA	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	CIRATA	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	CIRATA	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	CIRATA	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	CIRATA	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	CIRATA	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. GRESIK																	
35	PLTU GRESIK	1	MFO & HSD	154,132,742	-	17,019	-	-	161,687,911	-	42,219	-	-	161,558,215	-	23,583	-	-
36	PLTU GRESIK	2	MFO & HSD	173,083,910	-	47,077	-	-	159,977,893	-	27,799	-	-	174,296,786	-	47,747	-	-
37	PLTU GRESIK	3	MFO, HSD & Gas	168,488,509	-	42,406	1,538,519	-	253,624,614	-	137,575	1,302,972	-	224,531,856	-	114,093	2,707,660	-
38	PLTU GRESIK	4	MFO, HSD & Gas	181,914,169	-	237,207	1,495,996	-	245,628,184	-	86,980	1,903,978	-	253,275,043	-	140,415	1,940,630	-
39	PLTG GRESIK	1	HSD	-	-	7,764,018	-	-	-	-	4,404,548	-	-	-	-	1,871,519	-	-
40	PLTG GRESIK	2	HSD	-	-	10,612,430	-	-	-	-	2,443,458	-	-	-	-	2,011,461	-	-
41	PLTG GRESIK (GILITIMUR)	1	HSD	-	-	12,964,164	-	-	-	-	8,736,593	-	-	-	-	1,714,424	-	-
42	PLTG GRESIK (GILITIMUR)	2	HSD	-	-	12,132,610	-	-	-	-	7,823,790	-	-	-	-	2,049,673	-	-
43	PLTGU GRESIK	GT 11	HSD & Gas	-	-	173,881,117	1,410,620	-	-	-	149,888,114	1,091,387	-	-	-	131,544,125	3,876,307	-
44	PLTGU GRESIK	GT 12	HSD & Gas	-	-	186,811,609	234,933	-	-	-	136,500,467	1,963,402	-	-	-	127,496,207	3,945,448	-
45	PLTGU GRESIK	GT 13	HSD & Gas	-	-	-	8,956,119	-	-	-	-	9,433,983	-	-	-	157,236,832	1,627,007	-
46	PLTGU GRESIK	ST10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	PLTGU GRESIK	GT 21	HSD & Gas	-	-	196,025,608	-	-	-	-	131,434,777	5,593	-	-	-	81,521,068	2,347,717	-
48	PLTGU GRESIK	GT 22	HSD & Gas	-	-	184,898,225	-	-	-	-	130,803,391	-	-	-	-	87,412,128	291,293	-
49	PLTGU GRESIK	GT 23	HSD & Gas	-	-	24,293,539	4,150,192	-	-	-	126,358,619	57,395	-	-	-	105,124,037	563,753	-
50	PLTGU GRESIK	ST 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	PLTGU GRESIK	GT 31	Gas	-	-	-	8,614,169	-	-	-	-	7,818,981	-	-	-	-	9,314,674	-
52	PLTGU GRESIK	GT 32	Gas	-	-	-	8,748,717	-	-	-	-	8,643,612	-	-	-	-	9,591,507	-
53	PLTGU GRESIK	GT 33	Gas	-	-	-	8,639,994	-	-	-	-	8,500,112	-	-	-	-	10,283,750	-
54	PLTGU GRESIK	ST 30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. PAITON																	
55	PLTU PAITON	1	HSD & Coal	-	-	975,498	-	971,765,818	-	-	921,626	-	1,494,149,306	-	-	1,333,233	-	1,587,827,946
56	PLTU PAITON	2	HSD & Coal	-	-	1,140,605	-	1,534,260,238	-	-	1,557,556	-	1,258,609,914	-	-	1,168,703	-	1,452,590,592
	UP. MUARA KARANG																	
57	PLTU M.KARANG	1	MFO & IDO	160,853,257	2,693,634	-	-	-	192,764,443	1,404,967	-	-	-	150,202,799	778,165	655,693	-	-
58	PLTU M.KARANG	2	MFO & IDO	116,630,328	2,751,937	-	-	-	132,056,755	778,067	-	-	-	191,041,786	781,850	594,228	-	-
59	PLTU M.KARANG	3	MFO & IDO	169,419,817	937,189	-	-	-	168,424,149	955,452	-	-	-	163,190,966	627,421	307,698	-	-
60	PLTU M.KARANG	4	MFO, IDO, HSD & Gas	105,992,316	574,481	825,380	1,910,564	-	145,130,515	574,584	1,186,635	2,791,702	-	111,740,621	374,410	1,291,244	2,145,299	-
61	PLTU M.KARANG	5	MFO, IDO, HSD & Gas	156,478,423	3,257,302	2,781,233	2,163,453	-	129,254,877	783,712	729,781	1,205,663	-	181,778,609	700,532	1,710,480	3,250,493	-
62	PLTGU M.KARANG	GT 11	HSD & Gas	-	-	185,298	7,942,972	-	-	-	-	8,488,727	-	-	-	-	9,265,549	-
63	PLTGU M.KARANG	GT 12	HSD & Gas	-	-	28,753	8,732,577	-	-	-	-	7,999,192	-	-	-	6,390	9,280,861	-
64	PLTGU M.KARANG	GT 13	HSD & Gas	-	-	18,782,229	6,567,381	-	-	-	-	9,953,378	-	-	-	-	6,432,903	-
65	PLTGU M.KARANG	ST10	HSD & Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. MUARA TAWAR																	
66	PLTGU M.TAWAR	GT 11	HSD	-	-	162,536,371	-	-	-	-	201,423,048	-	-	-	-	163,313,148	-	-
67	PLTGU M.TAWAR	GT 12	HSD	-	-	229,347,701	-	-	-	-	224,865,448	-	-	-	-	196,010,214	-	-
68	PLTGU M.TAWAR	GT 13	HSD	-	-	270,717,227	-	-	-	-	187,024,851	-	-	-	-	186,687,181	-	-
69	PLTGU M.TAWAR	ST10	HSD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	PLTG M.TAWAR	GT 21	HSD	-	-	96,479,137	-	-	-	-	74,463,880	-	-	-	-	35,126,811	-	-
71	PLTG M.TAWAR	GT 22	HSD	-	-	117,197,406	-	-	-	-	61,817,783	-	-	-	-	25,315,268	-	-

Operation Performance Record for the Existing Power Plants of PJB

No.	Plant Name	Unit No.	Heat Content of Fuel (2005)					Heat Content of Fuel (2006)					Heat Content of Fuel (2007)					Kcal Consumption (2005)		
			MFO (kcal/Ltr)	IDO (kcal/Ltr)	HSD (kcal/Ltr)	Gas (Btu/SCF)	Coal (kcal/Kg)	MFO (kcal/Ltr)	IDO (kcal/Ltr)	HSD (kcal/Ltr)	Gas (Btu/SCF)	Coal (kcal/Kg)	MFO (kcal/Ltr)	IDO (kcal/Ltr)	HSD (kcal/Ltr)	Gas (Btu/SCF)	Coal (kcal/Kg)	MFO (M.kcal)	IDO (M.kcal)	HSD (M.kcal)
	UP. BRANTAS																			
1.	SUTAMI	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	SUTAMI	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.	SUTAMI	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.	WLINGI	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.	WLINGI	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.	LODOYO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.	SENGGURUH	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.	SENGGURUH	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.	TULUNG AGUNG	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.	TULUNG AGUNG	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.	MENDALAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.	MENDALAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.	MENDALAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	MENDALAN	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.	SIMAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.	SIMAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.	SIMAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.	SELOREJO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.	WONOREJO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	GIRINGAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	GIRINGAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	GIRINGAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	GOLANG	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	GOLANG	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	GOLANG	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	NGEBEL	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. CIRATA																			
27	CIRATA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	CIRATA	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	CIRATA	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	CIRATA	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	CIRATA	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	CIRATA	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	CIRATA	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	CIRATA	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. GRESIK																			
35	PLTU GRESIK	1	10,365	-	10,802	-	-	10,140	-	10,727	-	-	10,335	-	10,865	-	-	1,597,586	-	184
36	PLTU GRESIK	2	10,365	-	10,802	-	-	10,140	-	10,727	-	-	10,335	-	10,865	-	-	1,794,015	-	509
37	PLTU GRESIK	3	10,365	-	10,802	-	-	10,140	-	10,727	1,224	-	10,335	-	10,865	1,214	-	1,746,383	-	458
38	PLTU GRESIK	4	10,365	-	10,802	1,235	-	10,140	-	10,727	1,224	-	10,335	-	10,865	1,214	-	1,885,540	-	2,562
39	PLTG GRESIK	1	-	-	10,802	-	-	-	-	10,727	-	-	-	-	10,865	-	-	-	-	83,867
40	PLTG GRESIK	2	-	-	10,802	-	-	-	-	10,727	-	-	-	-	10,865	-	-	-	-	114,635
41	PLTG GRESIK (GILITIMUR)	1	-	-	10,802	-	-	-	-	10,727	-	-	-	-	10,865	-	-	-	-	140,039
42	PLTG GRESIK (GILITIMUR)	2	-	-	10,802	-	-	-	-	10,727	-	-	-	-	10,865	-	-	-	-	131,056
43	PLTGU GRESIK	GT 11	-	-	10,802	1,235	-	-	-	10,727	1,224	-	-	-	10,865	1,144	-	-	-	1,878,264
44	PLTGU GRESIK	GT 12	-	-	10,802	1,235	-	-	-	10,727	1,224	-	-	-	10,865	1,144	-	-	-	2,017,939
45	PLTGU GRESIK	GT 13	-	-	10,802	1,235	-	-	-	10,727	1,224	-	-	-	10,865	1,144	-	-	-	-
46	PLTGU GRESIK	ST10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	PLTGU GRESIK	GT 21	-	-	10,802	1,235	-	-	-	10,727	1,224	-	-	-	10,865	1,144	-	-	-	2,117,469
48	PLTGU GRESIK	GT 22	-	-	10,802	1,235	-	-	-	10,727	1,224	-	-	-	10,865	1,144	-	-	-	1,997,271
49	PLTGU GRESIK	GT 23	-	-	10,802	1,235	-	-	-	10,727	1,224	-	-	-	10,865	1,144	-	-	-	262,419
50	PLTGU GRESIK	ST 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	PLTGU GRESIK	GT 31	-	-	-	1,235	-	-	-	-	1,224	-	-	-	-	1,144	-	-	-	-
52	PLTGU GRESIK	GT 32	-	-	-	1,235	-	-	-	-	1,224	-	-	-	-	1,144	-	-	-	-
53	PLTGU GRESIK	GT 33	-	-	-	1,235	-	-	-	-	1,224	-	-	-	-	1,144	-	-	-	-
54	PLTGU GRESIK	ST 30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. PAITON																			
55	PLTU PAITON	1	-	-	-	-	5,035	-	-	9,102	-	5,077	-	-	9,147	-	4,916	-	-	-
56	PLTU PAITON	2	-	-	-	-	5,041	-	-	9,102	-	4,989	-	-	-	-	4,916	-	-	-
	UP. MUARA KARANG																			
57	PLTU M.KARANG	1	10,336	10,783	-	-	-	10,425	10,698	-	-	-	10,242	10,684	-	-	-	1,662,597	29,045	-
58	PLTU M.KARANG	2	10,336	10,783	-	-	-	10,425	10,698	-	-	-	10,242	10,684	-	-	-	1,205,504	29,674	-
59	PLTU M.KARANG	3	10,336	10,783	-	-	-	10,425	10,698	-	-	-	10,242	10,684	-	-	-	1,751,142	10,106	-
60	PLTU M.KARANG	4	10,336	10,783	10,752	1,106	-	10,425	10,698	11,022	1,086	-	10,242	10,684	10,907	1,049	-	1,095,548	6,195	8,874
61	PLTU M.KARANG	5	10,336	10,783	10,752	1,106	-	10,425	10,698	11,022	1,086	-	10,242	10,684	10,907	1,049	-	1,617,378	35,123	29,903
62	PLTGU M.KARANG	GT 11	-	-	10,752	1,106	-	-	-	11,022	1,086	-	-	-	10,907	1,049	-	-	-	1,992
63	PLTGU M.KARANG	GT 12	-	-	10,752	1,106	-	-	-	11,022	1,086	-	-	-	10,907	1,049	-	-	-	309
64	PLTGU M.KARANG	GT 13	-	-	10,752	1,106	-	-	-	11,022	1,086	-	-	-	10,907	1,049	-	-	-	201,940
65	PLTGU M.KARANG	ST10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UP. MUARA TAWAR																			
66	PLTGU M.TAWAR	GT 11	-	-	10,941	-	-	-	-	9,207	-	-	-	-	9,147	-	-	-	-	1,778,246
67	PLTGU M.TAWAR	GT 12	-	-	10,941	-	-	-	-	9,207	-	-	-	-	9,147	-	-	-	-	2,509,203
68	PLTGU M.TAWAR	GT 13	-	-	10,941	-	-	-	-	9,207	-	-	-	-	9,147	-	-	-	-	2,961,811
69	PLTGU M.TAWAR	ST10	-	-	-	-	-	-	-	9,207	-	-	-	-	9,147	-	-	-	-	-
70	PLTG M.TAWAR	GT 21	-	-	10,941	-	-	-	-	9,207	-	-	-	-	9,147	-	-	-	-	1,055,540
71	PLTG M.TAWAR	GT 22	-	-	10,941	-	-	-	-	9,207	-	-	-	-	9,147	-	-	-	-	1,282,211

Operation Performance Record for the Existing Power Plants of PJB

No.	Plant Name	Unit No.	Kcal Consumption (2005)			Kcal Consumption (2006)						Kcal Consumption (2007)						Selling Price (2005) (M.Rp)			Selling Price (2006) s/d Nop.(M.Rp)		
			Gas (M.kcal)	Coal (M.kcal)	Total (M.kcal)	MFO (M.kcal)	IDO (M.kcal)	HSD (M.kcal)	Gas (M.kcal)	Coal (M.kcal)	Total (M.kcal)	MFO (M.kcal)	IDO (M.kcal)	HSD (M.kcal)	Gas (M.kcal)	Coal (M.kcal)	Total (M.kcal)	K.B	K.C	K.D	K.B	K.C	K.D
	UP. BRANTAS																						
1.	SUTAMI	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
2.	SUTAMI	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				18,352	16,828	-
3.	SUTAMI	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
4.	WLINGI	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
5.	WLINGI	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
6.	LODOYO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
7.	SENGGURUH	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
8.	SENGGURUH	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
9.	TULUNG AGUNG	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
10.	TULUNG AGUNG	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
11.	MENDALAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
12.	MENDALAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				30,735	15,058	-
13.	MENDALAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
14.	MENDALAN	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
15.	SIMAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
16.	SIMAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
17.	SIMAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
18.	SELOREJO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
19.	WONOREJO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
20	GIRINGAN	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
21	GIRINGAN	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
22	GIRINGAN	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
23	GOLANG	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				13,280	3,217	-
24	GOLANG	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
25	GOLANG	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
26	NGEBEL	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	UP. CIRATA																						
27	CIRATA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
28	CIRATA	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
29	CIRATA	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
30	CIRATA	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
31	CIRATA	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				54,789	7,124	-
32	CIRATA	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
33	CIRATA	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
34	CIRATA	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	UP. GRESIK																						
35	PLTU GRESIK	1	-	-	1,597,770	1,639,515	-	453	-	-	1,639,968	1,669,704	-	256	-	-	1,669,960				30,444	1,168,445	1,390
36	PLTU GRESIK	2	-	-	1,794,524	1,622,176	-	298	-	-	1,622,474	1,801,357	-	519	-	-	1,801,876						
37	PLTU GRESIK	3	387,707	-	2,134,548	2,571,754	-	1,476	328,349	-	2,901,579	2,320,537	-	1,240	682,330	-	3,004,107				69,001	2,152,901	2,857
38	PLTU GRESIK	4	376,991	-	2,265,093	2,490,670	-	933	479,803	-	2,971,406	2,617,598	-	1,526	489,039	-	3,108,163						
39	PLTG GRESIK	1	-	-	83,867	-	-	47,248	-	-	47,248	-	-	20,334	-	-	20,334				1,513	35,237	21
40	PLTG GRESIK	2	-	-	114,635	-	-	26,211	-	-	26,211	-	-	21,855	-	-	21,855						
41	PLTG GRESIK (GILITIMUR)	1	-	-	140,039	-	-	93,718	-	-	93,718	-	-	18,627	-	-	18,627				6,041	84,687	52
42	PLTG GRESIK (GILITIMUR)	2	-	-	131,056	-	-	83,927	-	-	83,927	-	-	22,270	-	-	22,270						
43	PLTGU GRESIK	GT 11	355,476	-	2,233,740	-	-	1,607,865	275,030	-	1,882,895	-	-	1,429,227	976,829	-	2,406,056						
44	PLTGU GRESIK	GT 12	59,203	-	2,077,142	-	-	1,464,254	494,777	-	1,959,031	-	-	1,385,246	994,253	-	2,379,499						
45	PLTGU GRESIK	GT 13	2,256,942	-	2,256,942	-	-	-	2,377,364	-	2,377,364	-	-	1,708,378	410,006	-	2,118,384						
46	PLTGU GRESIK	ST10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
47	PLTGU GRESIK	GT 21	-	-	2,117,469	-	-	1,409,914	1,409	-	1,411,323	-	-	885,726	591,625	-	1,477,351						
48	PLTGU GRESIK	GT 22	-	-	1,997,271	-	-	1,403,141	-	-	1,403,141	-	-	949,733	73,406	-	1,023,139						
49	PLTGU GRESIK	GT 23	1,045,848	-	1,308,267	-	-	1,355,462	14,463	-	1,369,925	-	-	1,142,173	142,066	-	1,284,239				237,226	4,304,291	9,306
50	PLTGU GRESIK	ST 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
51	PLTGU GRESIK	GT 31	2,170,770	-	2,170,770	-	-	-	1,970,383	-	1,970,383	-	-	-	2,347,298	-	2,347,298						
52	PLTGU GRESIK	GT 32	2,204,677	-	2,204,677	-	-	-	2,178,190	-	2,178,190	-	-	-	2,417,060	-	2,417,060						
53	PLTGU GRESIK	GT 33	2,177,279	-	2,177,279	-	-	-	2,142,028	-	2,142,028	-	-	-	2,591,505	-	2,591,505						
54	PLTGU GRESIK	ST 30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	UP. PAITON																						
55	PLTU PAITON	1	-	4,892,948	4,892,948	-	-	8,389	-	7,586,364	7,594,753	-	-	12,196	-	7,805,476	7,817,672				221,427	576,942	8,185
56	PLTU PAITON	2	-	7,734,774	7,734,774	-	-	14,178	-	6,278,840	6,293,018	-	-	-	-	7,140,674	7,140,674						
	UP. MUARA KARANG																						
57	PLTU M.KARANG	1	-	-	1,691,642	2,009,656	15,031	-	-	-	2,024,687	1,538,328	8,314	-	-	-	1,546,642						
58	PLTU M.KARANG	2	-	-	1,235,178	1,376,751	8,324	-	-	-	1,385,075	1,956,587	8,354	-	-	-	1,964,941				26,249	1,634,175	1,891
59	PLTU M.KARANG	3	-	-	1,761,248	1,755,898	10,222	-	-	-	1,766,120	1,671,348	6,704	-	-	-	1,678,052						
60	PLTU M.KARANG	4	481,462	-	1,592,079	1,513,051	6,147	13,079	703,509	-	2,235,786	1,144,411	4,000	14,083	540,615	-	1,703,109						
61	PLTU M.KARANG	5	545,190	-	2,227,594	1,347,540	8,385	8,043	303,827	-	1,667,795	1,861,717	7,485	18,656	819,124	-	2,706,982				34,868	987,369	1,447
62	PLTGU M.KARANG	GT 11	2,001,629	-	2,003,621	-	-	-	2,139,159	-	2,139,159	-	-	-	2,334,918	-	2,334,918						
63	PLTGU M.KARANG	GT 12	2,200,609	-	2,200,918	-	-	-	2,015,796	-	2,015,796	-	-	70	2,338,777	-	2,338,847						
64	PLTGU M.KARANG	GT 13	1,654,980	-	1,856,920	-	-	-	2,508,251	-	2,508,251	-	-	-	1,621,092	-	1,621,092				224,829	681,774	4,078
65	PLTGU M.KARANG	ST10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	UP. MUARA TAWAR																						
66	PLTGU M.TAWAR	GT 11	-	-	1,778,246	-	-	1,854,502	-	-	1,854,502	-	-	1,493,825	-	-	1,493,825						
67	PLTGU M.TAWAR	GT 12	-	-	2,509,203	-	-	2,070,336	-	-	2,070,336	-	-	1,792,905	-	-	1,792,905						
68	PLTGU M.TAWAR	GT 13	-	-	2,961,811	-	-	1,721,938	-	-	1,721,938	-	-	1,707,628	-	-	1,707,628				140,791	3,659,909	3,531
69	PLTGU M.TAWAR	ST10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
70	PLTG M.TAWAR	GT 21	-	-	1,055,540	-	-	685,589	-	-	685,589	-	-	321,305	-	-	321,305						
71	PLTG M.TAWAR	GT 22	-	-	1,282,211	-	-	569,156	-	-	569,156	-	-	231,559	-	-	231,559				167,197	822,449	584

Operation Performance Record for the Existing Power Plants of PJB

No.	Plant Name	Unit	Selling Price (2007) (M.Rp)			Av. F.O	Av. P.O	Av. Prod.	Av. Kcal Consump	Av. H.R	Average Fuel Consumption (kl,MMBTU,ton)					Av. F.O by Entity	Av. P.O by Entity	Prod. By Entity	Av. H.R	Ava. Max by Entity	F. Cost by Entity	V. Cost by Entity	F. Cost by Entity	V. Cost by Entity
		No.	K.B	K.C	K.D	%	Days	GWh	M.kcal	kcal/kWh	MOF	IDO	HSD	Gas	Coal	%	Days	GWh	kcal/kWh	MW	Rp/kw-m	Rp/kwh	$/kw-m	$/Mwh
	UP. BRANTAS																							
1.	SUTAMI	1				2.07	0.01	155.16	-	-	-	-	-	-	-									
2.	SUTAMI	2	28,942	16,582	-	1.18	0.01	159.17	-	-	-	-	-	-	-	1.09	0.01	414	-	103.0	23,416	-	2.60	-
3.	SUTAMI	3				0.00	0.01	99.66	-	-	-	-	-	-	-									
4.	WLINGI	1				0.00	0.03	70.99	-	-	-	-	-	-	-									
5.	WLINGI	2				0.00	0.01	68.26	-	-	-	-	-	-	-									
6.	LODOYO	1				5.29	0.03	37.67	-	-	-	-	-	-	-									
7.	SENGGURUH	1				42.35	0.01	38.19	-	-	-	-	-	-	-									
8.	SENGGURUH	2				0.21	0.06	31.23	-	-	-	-	-	-	-									
9.	TULUNG AGUNG	1				23.27	0.00	61.89	-	-	-	-	-	-	-									
10.	TULUNG AGUNG	2				1.04	1.11	63.06	-	-	-	-	-	-	-									
11.	MENDALAN	1				0.00	0.00	2.83	-	-	-	-	-	-	-									
12.	MENDALAN	2	27,138	21,182	-	0.19	7.77	30.59	-	-	-	-	-	-	-	4.91	12.46	545	-	164.1	13,781	-	1.53	-
13.	MENDALAN	3				0.17	3.00	22.15	-	-	-	-	-	-	-									
14.	MENDALAN	4				0.08	0.00	23.48	-	-	-	-	-	-	-									
15.	SIMAN	1				1.17	163.56	9.64	-	-	-	-	-	-	-									
16.	SIMAN	2				1.98	5.06	21.92	-	-	-	-	-	-	-									
17.	SIMAN	3				2.35	1.45	23.72	-	-	-	-	-	-	-									
18.	SELOREJO	1				0.21	14.68	20.80	-	-	-	-	-	-	-									
19.	WONOREJO	1				0.32	2.56	18.66	-	-	-	-	-	-	-									
20	GIRINGAN	1				2.92	0.00	4.05	-	-	-	-	-	-	-									
21	GIRINGAN	2				6.38	0.00	3.95	-	-	-	-	-	-	-									
22	GIRINGAN	3				5.20	0.00	5.22	-	-	-	-	-	-	-									
23	GOLANG	1	2,237	2,261	-	7.10	0.00	4.24	-	-	-	-	-	-	-	3.73	1.39	33	-	8.0	23,302	-	2.59	-
24	GOLANG	2				2.00	0.00	4.10	-	-	-	-	-	-	-									
25	GOLANG	3				0.00	0.00	3.74	-	-	-	-	-	-	-									
26	NGEBEL	1				2.50	9.74	7.95	-	-	-	-	-	-	-									
	UP. CIRATA																							
27	CIRATA	1				0.20	15.28	140.32	-	-	-	-	-	-	-									
28	CIRATA	2				0.10	15.22	134.49	-	-	-	-	-	-	-									
29	CIRATA	3				0.50	16.88	118.27	-	-	-	-	-	-	-									
30	CIRATA	4	83,679	6,481	-	0.00	18.95	150.79	-	-	-	-	-	-	-	0.16	14.52	1,127	-	948.0	7,356	-	0.82	-
31	CIRATA	5				0.10	20.89	140.74	-	-	-	-	-	-	-									
32	CIRATA	6				0.00	11.51	153.20	-	-	-	-	-	-	-									
33	CIRATA	7				0.10	14.81	148.38	-	-	-	-	-	-	-									
34	CIRATA	8				0.30	2.60	140.77	-	-	-	-	-	-	-									
	UP. GRESIK																							
35	PLTU GRESIK	1	28,374	1,310,102	1,727	0.40	40.05	587.60	1,635,899	2,784	159,126	0	28	0	0	0.35	32.40	610	2,768	80.0	29,556	1.4	3.28	0.16
36	PLTU GRESIK	2				0.30	24.75	631.85	1,739,625	2,753	169,120	0	41	0	0									
37	PLTU GRESIK	3	55,622	1,891,566	3,550	0.10	43.34	1144.68	2,680,078	2,341	215,548	0	98	1,849,717	0	0.20	46.02	1,142	2,392	166.5	27,839	1.6	3.09	0.18
38	PLTU GRESIK	4				0.30	48.69	1138.56	2,781,554	2,443	226,939	0	155	1,780,201	0									
39	PLTG GRESIK	1	4,224	25,173	14	3.40	30.37	9.70	50,483	5,203	0	0	4,680	0	0	1.50	54.99	10	5,085	16.0	22,000	0.7	2.44	0.08
40	PLTG GRESIK	2				1.50	54.99	10.89	54,234	4,980	0	0	5,022	0	0									
41	PLTG GRESIK (GILITIMUR)	1	4,123	17,936	12	0.20	33.20	16.69	84,128	5,041	0	0	7,805	0	0	1.30	27.38	16	5,204	16.5	20,823	0.4	2.31	0.04
42	PLTG GRESIK (GILITIMUR)	2				2.40	21.56	14.68	79,084	5,388	0	0	7,335	0	0									
43	PLTGU GRESIK	GT 11				0.80	32.08	554.42	2,174,230	3,922	0	0	151,771	2,126,105	0									
44	PLTGU GRESIK	GT 12				1.40	29.64	542.94	2,138,557	3,939	0	0	150,269	2,047,928	0									
45	PLTGU GRESIK	GT 13				1.00	25.19	659.00	2,250,897	3,416	0	0	52,412	6,672,369	0									
46	PLTGU GRESIK	ST10				1.00	20.00	979.88	-	-	0	0	0	0	0									
47	PLTGU GRESIK	GT 21				0.20	25.31	405.14	1,668,714	4,119	0	0	136,327	784,437	0									
48	PLTGU GRESIK	GT 22				0.30	27.27	348.05	1,474,517	4,237	0	0	134,371	97,098	0									
49	PLTGU GRESIK	GT 23	263,799	5,095,154	12,500	0.10	36.25	301.98	1,320,810	4,374	0	0	85,259	1,590,446	0	0.43	23.91	2,514	2,355	453.3	16,164	1.7	1.80	0.19
50	PLTGU GRESIK	ST 20				0.10	23.24	593.57	-	-	0	0	0	0	0									
51	PLTGU GRESIK	GT 31				0.20	20.78	630.73	2,162,817	3,429	0	0	0	8,582,608	0									
52	PLTGU GRESIK	GT 32				0.10	13.83	664.96	2,266,642	3,409	0	0	0	8,994,612	0									
53	PLTGU GRESIK	GT 33				0.00	13.26	681.58	2,303,604	3,380	0	0	0	9,141,286	0									
54	PLTGU GRESIK	ST 30				0.00	20.10	1178.56	-	-	0	0	0	0	0									
	UP. PAITON																							
55	PLTU PAITON	1	199,959	915,122	11,009	2.30	46.77	2661.10	6,768,458	2,543	0	0	1,077	0	1,351,248	2.40	40.17	2,727	2,535	370.00	22,518	2.0	2.50	0.22
56	PLTU PAITON	2				2.50	33.57	2792.50	7,056,155	2,527	0	0	1,289	0	1,415,154									
	UP. MUARA KARANG																							
57	PLTU M.KARANG	1				4.60	41.07	582.55	1,754,324	3,011	167,940	1,626	219	0	0									
58	PLTU M.KARANG	2	59,790	1,932,024	2,327	4.40	69.60	495.63	1,528,398	3,084	146,576	1,437	198	0	0	4.00	51.21	548	3,051	80.7	20,589	1.4	2.29	0.16
59	PLTU M.KARANG	3				3.00	42.96	566.60	1,735,140	3,062	167,012	840	103	0	0									
60	PLTU M.KARANG	4	84,375	1,244,448	2,148	12.50	49.91	627.47	1,843,658	2,938	120,954	508	1,101	2,282,522	0	8.45	49.35	701	2,883	162.0	21,701	1.5	2.41	0.17
61	PLTU M.KARANG	5				4.40	48.78	775.45	2,200,790	2,838	155,837	1,581	1,740	2,206,536	0									
62	PLTGU M.KARANG	GT 11				1.50	26.58	668.61	2,159,233	3,229	0	0	62	8,565,749	0									
63	PLTGU M.KARANG	GT 12	110,685	607,699	4,340	0.60	40.68	691.45	2,185,187	3,160	0	0	12	8,670,877	0	1.50	49.07	688	2,305	420.0	21,961	1.6	0.24	0.18
64	PLTGU M.KARANG	GT 13				0.70	74.54	633.84	1,995,421	3,148	0	0	6,261	7,651,221	0									
65	PLTGU M.KARANG	ST10				3.20	54.46	756.91	-	-	0	0	0	0	0									
	UP. MUARA TAWAR																							
66	PLTGU M.TAWAR	GT 11				2.00	76.92	517.56	1,708,858	3,302	0	0	175,758	0	0									
67	PLTGU M.TAWAR	GT 12	284,655	3,266,922	3,820	1.20	40.37	645.69	2,124,148	3,290	0	0	216,741	0	0	1.33	44.29	2,720	2,193	585.0	40,549	1.4	4.51	0.16
68	PLTGU M.TAWAR	GT 13				1.20	46.65	634.39	2,130,459	3,358	0	0	214,810	0	0									
69	PLTGU M.TAWAR	ST10				0.90	13.21	921.91	-	-	0	0	0	0	0									
70	PLTG M.TAWAR	GT 21	118,751	371,383	295	1.80	45.70	195.89	687,478	3,509	0	0	68,690	0	0	1.65	67.58	195	3,546	135.0	36,652	0.8	4.07	0.09
71	PLTG M.TAWAR	GT 22				1.50	89.45	193.82	694,309	3,582	0	0	68,110	0	0									

5.2 Operation Performance Record for the Existing Power Plants of Indonesia Power

Operation Performance Record for the Existing Power Plants of Indonesia Power

No.	Plant Name	Unit	Operation	Installed Capacity	Available Max.	Operation (Hours)			Forced Outage (Hours) (Dalam)			Production Energy (GWh)			Gross Heat Rate (Kcal/kWh)			Thermal Efficiency (%)			Fuel Consumption (2005)					Fuel Consumption (2006)				
		No.	Year	(MW)	(MW)	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	MFO (Ltr)	IDO (Ltr)	HSD (Ltr)	Gas (MMBTU)	Coal (Kg)	MFO (Ltr)	IDO (Ltr)	HSD (Ltr)	Gas (MMBTU)	Coal (Kg)
	UBP SAGULING																													
1.	SAGULING	1	1985	175.18	174.60	5,312	3,984	5,240	33	49	21	681.84	466.47	634.40							-	-	-	-	-	-	-	-	-	-
2.	SAGULING	2	1985	175.18	174.60	5,220	3,225	4,509	27	89	47	626.62	367.68	539.21							-	-	-	-	-	-	-	-	-	-
3.	SAGULING	3	1986	175.18	174.60	3,481	2,007	4,903	45	-	19	471.86	246.54	600.75							-	-	-	-	-	-	-	-	-	-
4.	SAGULING	4	1986	175.18	174.60	6,018	4,146	4,638	8	5	87	740.38	470.55	547.91							-	-	-	-	-	-	-	-	-	-
5.	PRK. KONDANG	1	1955	2.49	2.49	7,220	5,507	7,041	-	-	-	11.68	8.92	11.53							-	-	-	-	-	-	-	-	-	-
6.	PRK. KONDANG	2	1955	2.49	2.49	6,739	6,693	5,806	390	-	-	12.09	11.04	10.00							-	-	-	-	-	-	-	-	-	-
7.	PRK. KONDANG	3	1955	2.46	2.46	7,945	5,716	6,623	-	4	-	13.88	10.76	11.85							-	-	-	-	-	-	-	-	-	-
8.	PRK. KONDANG	4	1955	2.46	2.46	6,592	6,198	5,666	-	5	-	11.46	10.58	8.53							-	-	-	-	-	-	-	-	-	-
9.	BENGKOK	1	1923	1.05	1.05	4,887	3,783	4,647	-	-	-	2.99	2.30	3.23							-	-	-	-	-	-	-	-	-	-
10.	BENGKOK	2	1923	1.05	1.05	5,317	4,195	4,906	-	-	-	4.24	3.24	3.87							-	-	-	-	-	-	-	-	-	-
11.	BENGKOK	3	1923	1.05	1.05	5,173	3,985	5,062	-	-	-	3.38	2.29	3.35							-	-	-	-	-	-	-	-	-	-
12.	BENGKOK (DAGO)	4	1923	0.70	0.70	8,155	6,420	7,591	-	274	-	3.55	2.20	2.16							-	-	-	-	-	-	-	-	-	-
13.	PLENGAN	1	1962	1.08	1.08	5,256	5,476	5,071	2	-	-	4.13	4.27	3.76							-	-	-	-	-	-	-	-	-	-
14.	PLENGAN	2	1962	1.08	1.08	3,437	3,419	5,838	-	-	-	2.76	2.60	4.56							-	-	-	-	-	-	-	-	-	-
15.	PLENGAN	3	1962	1.08	1.08	5,358	5,937	6,992	-	-	-	4.23	4.56	5.36							-	-	-	-	-	-	-	-	-	-
16.	PLENGAN	4	1962	2.02	2.02	7,300	6,937	6,881	2	-	-	10.16	8.44	8.46							-	-	-	-	-	-	-	-	-	-
17.	PLENGAN	5	1962	1.61	1.61	6,156	5,236	3,357	-	-	-	6.08	4.62	2.85							-	-	-	-	-	-	-	-	-	-
18.	LAMAJAN	1	1934	6.52	6.51	6,339	5,471	4,441	-	-	-	30.98	27.53	21.46							-	-	-	-	-	-	-	-	-	-
19.	LAMAJAN	2	1934	6.52	6.51	5,793	5,293	6,535	191	-	-	28.68	25.79	33.54							-	-	-	-	-	-	-	-	-	-
20	LAMAJAN	3	1934	6.52	6.51	6,172	4,635	4,498	2	1	-	30.18	22.04	22.93							-	-	-	-	-	-	-	-	-	-
21	CIKALONG	1	1960	6.40	6.00	5,211	4,422	4,199	-	-	221	25.47	18.24	17.28							-	-	-	-	-	-	-	-	-	-
22	CIKALONG	2	1960	6.40	6.00	4,240	4,416	4,452	-	-	-	19.18	18.11	19.28							-	-	-	-	-	-	-	-	-	-
23	CIKALONG	3	1960	6.40	6.00	3,795	3,409	3,653	-	-	-	17.77	14.11	15.26							-	-	-	-	-	-	-	-	-	-
24	UBRUG	1	1939	5.94	5.94	5,568	4,460	3,895	-	-	-	22.18	17.37	14.63							-	-	-	-	-	-	-	-	-	-
25	UBRUG	2	1939	5.94	5.94	5,596	4,661	4,735	-	-	-	22.07	17.90	17.64							-	-	-	-	-	-	-	-	-	-
26	UBRUG	3	1939	6.48	5.94	4,876	5,017	4,910	-	-	-	19.66	20.37	19.60							-	-	-	-	-	-	-	-	-	-
27	KRACAK	1	1958	6.30	6.30	6,439	4,726	4,660	-	-	-	29.08	21.50	23.29							-	-	-	-	-	-	-	-	-	-
28	KRACAK	2	1958	6.30	6.30	3,287	1,727	4,048	-	-	-	15.97	7.81	16.76							-	-	-	-	-	-	-	-	-	-
29	KRACAK	3	1958	6.30	6.30	6,048	5,078	4,686	-	-	-	29.96	23.44	22.05							-	-	-	-	-	-	-	-	-	-
	UBP MRICA																													
29	PB SUDIRMAN	1	1989	60.30	59.80	3,879	2,690	2,841	-	1	-	173.64	129.37								-	-	-	-	-	-	-	-	-	-
30	PB SUDIRMAN	2	1989	60.30	59.80	3,441	2,755	2,941	-	1	-	151.44	129.22								-	-	-	-	-	-	-	-	-	-
31	PB SUDIRMAN	3	1988	60.30	59.80	3,688	2,987	3,113	2	-	2	164.70	139.72								-	-	-	-	-	-	-	-	-	-
32	KETENGER	1	1939	3.52	3.50	8,490	8,469	8,628	142	23	16	22.54	18.58								-	-	-	-	-	-	-	-	-	-
33	KETENGER	2	1939	3.52	3.50	8,596	8,515	8,525	6	20	17	22.69	18.66								-	-	-	-	-	-	-	-	-	-
34	KETENGER	3	1999	1.00	0.98	8,001	6,152	6,835	6	11	12	4.51	3.09								-	-	-	-	-	-	-	-	-	-
35	GARUNG	1	1982	13.20	13.18	1,252	1,201	1,080	1	5	29	16.37	15.87								-	-	-	-	-	-	-	-	-	-
36	GARUNG	2	1982	13.20	13.18	1,199	1,208	1,096	-	7	1	15.87	15.86								-	-	-	-	-	-	-	-	-	-
37	WADASLINTANG	1	1988	9.00	8.98	5,764	7,536	5,793	3	29	19	43.69	59.95								-	-	-	-	-	-	-	-	-	-
38	WADASLINTANG	2	1988	9.00	8.98	6,612	6,199	5,885	-	32	15	49.16	49.37								-	-	-	-	-	-	-	-	-	-
39	JELOK	1	1938	5.12	5.10	7,754	6,843	6,135	3	17	9	27.43	25.72								-	-	-	-	-	-	-	-	-	-
40	JELOK	2	1938	5.12	5.10	7,334	5,697	4,491	3	905	12	26.16	21.45								-	-	-	-	-	-	-	-	-	-
41	JELOK	3	1938	5.12	5.10	7,327	5,820	5,934	4	17	12	26.63	21.75								-	-	-	-	-	-	-	-	-	-
42	JELOK	4	1962	5.12	5.10	7,278	6,064	5,694	4	14	6	26.66	23.30								-	-	-	-	-	-	-	-	-	-
43	TIM	1	1962	4.00	3.98	7,870	6,398	6,124	20	33	23	25.21	20.37								-	-	-	-	-	-	-	-	-	-
44	TIM	2	1962	4.00	3.98	8,285	6,606	7,173	10	1,164	14	27.43	21.34								-	-	-	-	-	-	-	-	-	-
45	TIM	3	1962	4.00	3.98	6,536	6,080	5,620	-	26	9	22.11	20.46								-	-	-	-	-	-	-	-	-	-
46	WONOGIRI	1	1983	6.20	6.18	3,617	4,518	4,189	-	-	7	19.22	25.97								-	-	-	-	-	-	-	-	-	-
47	WONOGIRI	2	1983	6.20	6.18	3,686	3,992	3,769	-	-	11	20.04	22.91								-	-	-	-	-	-	-	-	-	-
48	KEDUNG OMBO	1	1992	22.50	22.33	3,020	3,491	2,163	-	6	1	53.53	70.69								-	-	-	-	-	-	-	-	-	-
49	TAPEN	1	1997	0.75	0.73	7,764	8,032	7,632	10	-	2	4.43	4.90								-	-	-	-	-	-	-	-	-	-
50	SEMPOR	1	1980	1.00	0.98	6,310	5,409	3,919	4	11	760	6.02	4.62								-	-	-	-	-	-	-	-	-	-
51	PEJENGKOLAN	1	1992	1.40	1.38	4,319	6,441	6,317	153	-	16	4.89	7.66								-	-	-	-	-	-	-	-	-	-
52	KELAMBU	1	1992	1.17	1.15	1,645	1,553	1,265	-	-	-	1.61	1.41								-	-	-	-	-	-	-	-	-	-
53	SIDOREJO	1	1992	1.40	1.38	3,032	3,744	2,092	-	4	-	4.05	5.00								-	-	-	-	-	-	-	-	-	-
	UBP PRIOK																													
54	PLTU PRIOK	3	1972	50.00	45.00	-	-	5,070	-	-	3,403	-	-	183.29	-	-	Keandalan Total (2007)	-	-		-	-	-	-	-	-	-	-	-	-
55	PLTU PRIOK	4	1972	50.00	45.00	-	-	4,960	-	-	3,682	-	-	79.56	-	-		-	-		-	-	-	-	-	-	-	-	-	-
56	PLTG PRIOK	1	1976	26.00	17.00	965	80	-	1,316	6,861	8,760	15.84	1.40	-	4,432	4,515		19.40	19.05		-	-	8,184,734	-	-	-	-	735,664	-	-
57	PLTG PRIOK	3	1976	26.00	17.00	219	179	387	4,994	3,183	72	3.46	3.29	7.14	4,863	4,434		17.69	19.40		-	-	1,983,817	-	-	-	-	1,682,813	-	-
58	PLTGU PRIOK	GT 11	1993	130.00	121.56	7,624	7,887	6,920	64	595	68	823.05	895.58	751.01	3,007	3,025		28.60	28.43		-	-	36,156,052	8,592,815	-	-	-	3,474,073	10,631,509	-
59	PLTGU PRIOK	GT 12	1994	130.00	120.15	8,250	7,216	8,586	212	334	31	873.15	799.59	919.81	3,005	3,021		28.62	28.47		-	-	66,816,171	8,138,014	-	-	-	35,668,170	8,386,881	-
60	PLTGU PRIOK	GT 13	1994	130.00	118.90	8,208	8,267	6,905	56	177	673	846.64	919.18	732.91	2,958	3,014		29.07	28.54		-	-	143,921,936	5,094,535	-	-	-	38,046,176	9,696,583	-
61	PLTGU PRIOK	ST 10	1994	200.00	167.68	8,681	8,657	8,701	73	103	48	1,187.69	1,207.49	1,096.35				-	-		-	-	-	-	-	-	-	-	-	-
62	PLTGU PRIOK	GT 21	1994	130.00	122.74	7,411	7,969	8,117	66	127	213	783.58	864.40	861.54	3,022	2,975		28.45	28.91		-	-	19,749,715	8,745,697	-	-	-	119,370,751	6,127,469	-
63	PLTGU PRIOK	GT 22	1994	130.00	121.27	8,179	6,068	8,132	328	709	228	882.27	673.59	830.07	2,963	2,959		29.02	29.07		-	-	106,678,909	6,778,596	-	-	-	66,773,627	5,629,767	-
64	PLTGU PRIOK	GT 23	1994	130.00	120.12	5,094	8,071	3,840	94	169	4,202	505.00	816.02	425.94	3,015	2,888		28.52	29.78		-	-	62,901,738	3,911,918	-	-	-	91,393,163	6,527,541	-
65	PLTGU PRIOK	ST 20	1995	200.00	169.32	8,723	7,418	8,685	27	200	70	1,039.43	998.29	1,005.20				-	-		-	-	-	-	-	-	-	-	-	-
66	PLTD KEBAYORAN	1	1961	2.52	1.27	81	46	51	-	-	-	0.10	0.06	0.07	2,750	2,929		31.27	29.37		-	-	31,064	-	-	-	-	20,445	-	-
67	PLTD KEBAYORAN	2	1991	3.00	2.25	80	40	38	-	29	-	0.10	0.07	0.07	2,452	2,440		35.08	35.25		-	-	28,393	-	-	-	-	20,184	-	-
68	PLTD KEBAYORAN	3	1962	2.52	1.27	106	48	80	-	-	-	0.13	0.06	0.07	2,836	2,887		30.33	29.79		-	-	43,788	-	-	-	-	20,239	-	-
69	PLTD KEBAYORAN	4	1962	2.52	1.27	95	36	41	-	-	-	0.13	0.05	0.06	2,760	2,771		31.16	31.04		-	-	40,270	-	-	-	-	16,046	-	-
70	PLTD KEBAYORAN	5	1962	2.52	1.27	100	55	33	-	-	-	0.13	0.07	0.05	2,772	2,728		31.02	31.53		-	-	41,548	-	-	-	-	21,796	-	-
71	PLTD KEBAYORAN	6	1993	3.00	2.25	66	35	50	-	-	-	0.12	0.06	0.09	2,459	2,643		34.98	32.54		-	-	35,574	-	-	-	-	19,246	-	-
	UBP SURALAYA																													
72	PLTU SURALAYA	1	1985	400.00	371.50	7,225	8,172	8,487	321	481	167	2,726.48	3,029.15	1,601.10	2,536	2,509		33.91	34.27		1,197,186	-	1,683,000	-	1,439,221,242	-	-	1,426,400	-	1,610,570,169
73	PLTU SURALAYA	2	1986	400.00	371.50	6,752	8,526	7,436	386	1	367	2,487.81	3,180.38	1,252.93	2,450	2,494		35.10	34.49		1,050,033	-	2,297,800	-	1,275,029,601	-	275,924	701,060	-	1,683,203,035
74	PLTU SURALAYA	3	1989	400.00	371.50	8,403	7,547	8,671	325	581	89	3,025.55	2,817.04	1,583.44	2,422	2,401		35.51	35.81		444,079	-	1,558,700	-	1,531,050,883	-	-	961,950	-	1,441,909,468
75	PLTU SURALAYA	4	1989	400.00	371.50	8,273	7,832	7,742	401	222	324	3,080.92	2,908.43	1,192.04	2,422	2,364		35.50	36.39		1,277,797	-	1,074,920	-	1,559,223,889	-	44,175	640,267	-	1,450,541,523
76	PLTU SURALAYA	5	1997	600.00	575.20	8,319	7,350	2,976	427	13	5,784	4,673.10	4,164.02	1,690.06	2,326	2,431		36.97	35.37		-	-	1,316,100	-	2,336,201,472	-	-	583,000	-	2,221,893,858
77	PLTU SURALAYA	6	1997	600.00	575.20	8,134	7,862	8,546	376	136	214	4,452.29	4,413.55	2,344.70	2,439	2,435		35.26	35.32		-	-	1,399,900	-	2,334,747,560	-	-	805,700	-	2,330,565,103
78	PLTU SURALAYA	7	1998	600.00	575.20	7,127	8,202	8,680	376	80	80	4,073.76	4,733.64	2,418.81	2,328	2,354		36.94	36.53		-	-	1,408,100	-	2,032,932,538	-	-	514,800	-	2,426,090,146
	UBP SEMARANG																													
79	PLTU TAMBAK LOROK	1	1978	50.00	41.00	7,654	7,907	7,572	46	197	329	305.72	314.27	292.60	2,813	2,713		30.57	31.69		92,027,243	776,479	92,255	-	-	91,148,694	977,414	158,816	-	-
80	PLTU TAMBAK LOROK	2	1978	50.00	41.00	7,907	7,367	7,263	124	238	86	304.18	281.69	277.08	2,799	2,712		30.73	31.71		91,181,416	777,028	16,981	-	-	81,746,388	754,617	157,449	-	-
81	PLTU TAMBAK LOROK	3	1983	200.00	185.00	6,551	6,433	5,343	1,062	2,287	228	920.80	669.52	678.68	2,383	2,499		36.09	34.41		234,153,529	2,520,491	68,935	-	-	180,010,186	611,163	340,477	-	-
82	PLTGU TAMBAK LOROK	GT 11	1993	109.65	100.00	5,750	4,144	4,647	117	145	1	462.10	339.15	381.99	3,024	2,969		28.44	28.97		-	-	161,961,817	-	-	-	-	117,190,686	-	-
83	PLTGU TAMBAK LOROK	GT 12	1993	109.65	100.00	6,668	6,291	5,070	69	11	64	538.33	510.12	414.39	3,044	2,984		28.25	28.82		-	-	189,859,521	-	-	-	-	177,167,921	-	-
84	PLTGU TAMBAK LOROK	GT 13	1993	109.65	100.00	5,050	5,464	4,203	14	98	134	420.50	458.88	347.82	3,004	2,979		28.62	28.87		-	-	146,364,122	-	-	-	-	159,100,951	-	-
85	PLTGU TAMBAK LOROK	ST 10	1997	188.00	150.00	7,386	7,291	6,202	269	188	79	654.89	601.86	540.79				-	-		-	-	-	-	-	-	-		-	-
86	PLTGU TAMBAK LOROK	GT 21	1996	109.65	100.00	4,241	4,189	4,019	85	248	214	349.38	340.99	334.97	2,982	2,992		28.84	28.75		-	-	120,636,262	-	-	-	-	118,573,759	-	-
87	PLTGU TAMBAK LOROK	GT 22	1996	109.65	100.00	6,336	5,221	3,515	37	211	143	518.85	421.94	286.15	3,031	3,015		28.37	28.52		-	-	182,346,269	-	-	-	-	147,936,896	-	-
88	PLTGU TAMBAK LOROK	GT 23	1996	109.65	100.00	5,708	4,034	4,611	7	79	6	456.73	319.92	381.41	3,069	3,059		28.02	28.11		-	-	162,305,094	-	-	-	-	113,707,920	-	-
89	PLTGU TAMBAK LOROK	ST 20	1997	188.00	150.00	8,092	5,735	5,540	95	62	59	601.52	427.26	440.62				-	-		-	-	-	-	-	-	-	-	-	-
90	PLTG CILACAP	1	1996	29.00	20.00	1,350	707	190	56	384	38	23.72	12.48	3.36	4,545	4,565		18.92	18.84		-	-	12,435,956	-	-	-	-	6,577,254	-	-
91	PLTG CILACAP	2	1996	26.00	20.00	1,731	687	202	263	47	35	24.44	10.01	3.60	4,692	4,941		18.33	17.40		-	-	13,261,320	-	-	-	-	5,713,606	-	-
92	PLTG SUNYARAGI	1	1976	20.03	18.00	5,381	805	178	33	38	1,400	83.15	12.90	2.99	3,412	3,671		25.20	23.43		-	-	5,451,900	939,305	-	-	-	4,812,093	23,378	-
93	PLTG SUNYARAGI	2	1976	20.03	18.00	1,607	1,500	254	28	91	15	27.15	24.55	4.36	3,805	3,535		22.60	24.33		-	-	11,984,800	-	-	-	-	6,407,165	125,021	-
94	PLTG SUNYARAGI	3	1980	20.10	18.00	4,721	3,141	4,167	14	17	6	76.08	43.66	58.28	3,315	3,366		25.94	25.55		-	-	5,313,600	819,008	-	-	-	2,803,458	487,353	-
95	PLTG SUNYARAGI	4	1980	20.10	18.00	922	4,120	4,322	3,409	1,821	5	14.94	60.73	57.63	3,795	3,267		22.66	26.33		-	-	6,575,000	-	-	-	-	3,636,184	662,856	-
	UBP PERAK GRATI																													
95	PLTU PERAK	3	1978	50.00	40.00	6,825	6,617	5,059	691	1,360	951	206.95	205.04	197.72	2,940	2,623		29.26	32.79		62,737,710	-	111,842	-	-	61,144,600	-	110,481	-	-
96	PLTU PERAK	4	1978	50.00	40.00	6,556	4,849	7,577	684	1,508	539	199.21	149.82	281.32	3,013	2,762		28.54	31.14		62,865,253	-	155,270	-	-	46,948,733	-	156,016	-	-
97	PLTGU GRATI	GT 11	1996	100.75	99.50	7,207	3,955	4,034	459	190	237	455.84	265.93	286.53	3,630	3,547		23.69	24.25		-	-	181,255,873	-	-	-	-	103,686,657	-	-
98	PLTGU GRATI	GT 12	1996	100.75	99.50	7,205	3,180	5,010	69	145	29	446.55	211.88	355.68	3,652	3,518		23.55	24.45		-	-	178,696,107	-	-	-	-	81,837,157	-	-
99	PLTGU GRATI	GT 13	1996	100.75	99.50	6,626	4,645	4,926	540	4	13	419.41	317.04	341.96	3,630	3,532		23.69	24.35		-	-	166,682,677	-	-	-	-	123,047,890	-	-
100	PLTGU GRATI	ST 10	1997	159.58	151.48	8,202	5,080	5,152	168	33	7	755.25	372.26	500.13				-	-		-	-	-	-	-	-	-	-	-	-
101	PLTG GRATI	2.1	2002	100.75	100.00	2,507	1,820	2,078	26	353	13	162.45	118.93	140.24	3,591	3,523		23.95	24.41		-	-	63,972,168	-	-	-	-	46,171,175	-	-
102	PLTG GRATI	2.2	2002	100.75	100.00	2,615	1,889	1,240	376	250	7	173.78	127.03	100.70	3,512	3,493		24.49	24.62		-	-	66,893,829	-	-	-	-	48,976,981	-	-
103	PLTG GRATI	2.3	2002	100.75	100.00	2,063	1,287	1,499	259	372	14	139.27	86.47	85.06	3,488	3,460		24.65	24.86		-	-	53,235,033	-	-	-	-	32,994,331	-	-
	UBP BALI																													
104	PLTD PESANGGARAN	2	1974	5.08	3.92	4,573	2,850	2,935	-	-	413	20.10	11.75	6.68	2,546	2,545		33.78	33.80		-	-	5,594,639	-	-	-	-	3,269,452	-	-
105	PLTD PESANGGARAN	3	1974	5.08	3.92	4,131	3,174	2,151	-	405	3,594	16.11	13.74	4.29	2,592	2,559		33.17	33.61		-	-	4,554,365	-	-	-	-	3,846,187	-	-
106	PLTD PESANGGARAN	4	1974	5.08	3.92	4,400	2,150	1,025	5	4,648	-	18.87	9.43	-	2,624	2,588		32.77	33.23		-	-	5,411,638	-	-	-	-	2,663,217	-	-
107	PLTD PESANGGARAN	5	1980	4.14	3.03	2,221	1,588	2,188	-	225	-	6.54	4.77	3.31	2,593	2,551		33.17	33.71		-	-	1,852,252	-	-	-	-	1,329,502	-	-
108	PLTD PESANGGARAN	6	1982	6.77	5.34	4,388	3,806	2,475	6	1,503	505	21.59	19.17	4.71	2,488	2,531		34.57	33.97		-	-	5,868,065	-	-	-	-	5,366,164	-	-
109	PLTD PESANGGARAN	7	1982	6.77	5.34	3,629	3,503	2,017	-	-	-	17.87	17.75	1.29	2,502	2,530		34.37	33.99		-	-	4,891,951	-	-	-	-	4,908,527	-	-
110	PLTD PESANGGARAN	8	1983	6.52	3.99	1,256	650	1,161	3	5	723	5.24	2.76	2.86	2,641	2,549		32.56	33.73		-	-	1,509,483	-	-	-	-	772,582	-	-
111	PLTD PESANGGARAN	9	1983	6.20	3.99	1,036	26	-	-	7,526	-	3.05	0.83	-	2,742	2,390		31.36	35.99		-	-	912,939	-	-	-	-	21,534	-	-
112	PLTD PESANGGARAN	10	1989	12.40	9.00	1,429	1,547	1,912	78	-	-	11.64	12.86	7.96	2,279	2,359		37.73	36.45		-	-	2,900,265	-	-	-	-	3,320,212	-	-
113	PLTD PESANGGARAN	11	1989	12.40	9.00	1,757	1,680	1,883	36	409	1	14.46	15.25	8.63	2,370	2,358		36.29	36.47		-	-	3,739,768	-	-	-	-	3,929,933	-	-
114	PLTG PESANGGARAN	1	1985	21.35	17.65	4,572	3,103	2,321	7	236	82	79.96	52.78	10.51	3,871	4,019		22.22	21.40		-	-	33,819,575	-	-	-	-	23,169,679	-	-
115	PLTG PESANGGARAN	2	1993	20.10	18.30	3,191	2,795	2,936	82	1	-	56.96	45.08	25.53	3,928	4,153		21.89	20.71		-	-	24,478,998	-	-	-	-	20,454,821	-	-
116	PLTG PESANGGARAN	3	1994	42.00	36.15	3,551	6,457	7,948	4,806	86	416	115.65	235.02	133.34	3,463	3,241		24.84	26.53		-	-	43,765,563	-	-	-	-	83,343,411	-	-
117	PLTG PESANGGARAN	4	1994	42.00	36.15	8,487	6,304	8,356	12	6	37	275.80	215.88	141.21	3,485	3,334		24.68	25.80		-	-	105,017,834	-	-	-	-	78,670,093	-	-
118	PLTG GILIMANUK	1	1997	133.80	130.44	7,128	7,225	7,337	10	88	167	564.88	618.02	352.71	3,460	3,330		24.86	25.83		-	-	212,699,124	-	-	-	-	224,876,224	-	-
119	PLTG PEMARON	1	2004	48.80	40.00	2,954	1,719	2,016	482	85	56	104.01	62.26	20.63	3,667	3,682		23.46	23.35		-	-	41,728,720	-	-	-	-	25,153,713	-	-
120	PLTG PEMARON	2	2005	48.80	40.00	1,131	1,492	2,372	42	6	5	34.71	54.84	20.07	3,796	3,556		22.66	24.18		-	-	14,335,432	-	-	-	-	21,396,710	-	-
	UBP KAMOJANG																													
121	PLTP KAMOJANG	1	1982	30.00	27.40	8,138	8,709	8,721	49	-	31	246.60	263.45	130.15							-	-	-	-	-	-	-	-	-	-
122	PLTP KAMOJANG	2	1987	55.00	52.30	8,342	8,677	7,293	6	44	1,454	461.54	479.35	236.99							-	-	-	-	-	-	-	-	-	-
123	PLTP KAMOJANG	3	1987	55.00	52.30	4,594	5,507	6,918	4	10	679	253.37	304.05	138.73							-	-	-	-	-	-	-	-	-	-
124	PLTP GN. SALAK	1	1994	60.00	56.50	7,771	8,622	8,364	281	107	5	462.66	493.37	227.86							-	-	-	-	-	-	-	-	-	-
125	PLTP GN. SALAK	2	1994	60.00	56.50	7,730	8,449	8,380	91	222	3	460.21	499.43	258.94							-	-	-	-	-	-	-	-	-	-
126	PLTP GN. SALAK	3	1997	60.00	57.00	8,552	8,427	8,581	1	106	164	500.21	473.43	241.83							-	-	-	-	-	-	-	-	-	-
127	PLTP DARAJAT	1	1994	55.00	52.00	8,756	8,368	8,671	-	7	82	485.66	462.35	230.06							-	-	-	-	-	-	-	-	-	-

Operation Performance Record for the Existing Power Plants of Indonesia Power

No.	Plant Name	Unit No.	Fuel Consumption (2007)					Heat Content of Fuel (2005)					Heat Content of Fuel (2006)					Heat Content of Fuel (2007)					Kcal Consumption (2005)					
			MFO (Ltr)	IDO (Ltr)	HSD (Ltr)	Gas (MMBTU)	Coal (Kg)	MFO (kcal/Ltr)	IDO (kcal/Ltr)	HSD (kcal/Ltr)	Gas (kcal/MMBTU)	Coal (kcal/Kg)	MFO (kcal/Ltr)	IDO (kcal/Ltr)	HSD (kcal/Ltr)	Gas (kcal/MMBTU)	Coal (kcal/Kg)	MFO (kcal/Ltr)	IDO (kcal/Ltr)	HSD (kcal/Ltr)	Gas (kcal/MMBTU)	Coal (kcal/Kg)	MFO (M.kcal)	IDO (M.kcal)	HSD (M.kcal)	Gas (M.kcal)	Coal (M.kcal)	Total (M.kcal)
	UBP SAGULING																											
1.	SAGULING	1	-	-	-	-	-																	-	-	-	-	-
2.	SAGULING	2	-	-	-	-	-																	-	-	-	-	-
3.	SAGULING	3	-	-	-	-	-																	-	-	-	-	-
4.	SAGULING	4	-	-	-	-	-																	-	-	-	-	-
5.	PRK. KONDANG	1	-	-	-	-	-																	-	-	-	-	-
6.	PRK. KONDANG	2	-	-	-	-	-																	-	-	-	-	-
7.	PRK. KONDANG	3	-	-	-	-	-																	-	-	-	-	-
8.	PRK. KONDANG	4	-	-	-	-	-																	-	-	-	-	-
9.	BENGKOK	1	-	-	-	-	-																	-	-	-	-	-
10.	BENGKOK	2	-	-	-	-	-																	-	-	-	-	-
11.	BENGKOK	3	-	-	-	-	-																	-	-	-	-	-
12.	BENGKOK (DAGO)	4	-	-	-	-	-																	-	-	-	-	-
13.	PLENGAN	1	-	-	-	-	-																	-	-	-	-	-
14.	PLENGAN	2	-	-	-	-	-																	-	-	-	-	-
15.	PLENGAN	3	-	-	-	-	-																	-	-	-	-	-
16.	PLENGAN	4	-	-	-	-	-																	-	-	-	-	-
17.	PLENGAN	5	-	-	-	-	-																	-	-	-	-	-
18.	LAMAJAN	1	-	-	-	-	-																	-	-	-	-	-
19.	LAMAJAN	2	-	-	-	-	-																	-	-	-	-	-
20	LAMAJAN	3	-	-	-	-	-																	-	-	-	-	-
21	CIKALONG	1	-	-	-	-	-																	-	-	-	-	-
22	CIKALONG	2	-	-	-	-	-																	-	-	-	-	-
23	CIKALONG	3	-	-	-	-	-																	-	-	-	-	-
24	UBRUG	1	-	-	-	-	-																	-	-	-	-	-
25	UBRUG	2	-	-	-	-	-																	-	-	-	-	-
26	UBRUG	3	-	-	-	-	-																	-	-	-	-	-
27	KRACAK	1	-	-	-	-	-																	-	-	-	-	-
28	KRACAK	2	-	-	-	-	-																	-	-	-	-	-
29	KRACAK	3	-	-	-	-	-																	-	-	-	-	-
	UBP MRICA																											
29	PB SUDIRMAN	1	-	-	-	-	-																	-	-	-	-	-
30	PB SUDIRMAN	2	-	-	-	-	-																	-	-	-	-	-
31	PB SUDIRMAN	3	-	-	-	-	-																	-	-	-	-	-
32	KETENGER	1	-	-	-	-	-																	-	-	-	-	-
33	KETENGER	2	-	-	-	-	-																	-	-	-	-	-
34	KETENGER	3	-	-	-	-	-																	-	-	-	-	-
35	GARUNG	1	-	-	-	-	-																	-	-	-	-	-
36	GARUNG	2	-	-	-	-	-																	-	-	-	-	-
37	WADASLINTANG	1	-	-	-	-	-																	-	-	-	-	-
38	WADASLINTANG	2	-	-	-	-	-																	-	-	-	-	-
39	JELOK	1	-	-	-	-	-																	-	-	-	-	-
40	JELOK	2	-	-	-	-	-																	-	-	-	-	-
41	JELOK	3	-	-	-	-	-																	-	-	-	-	-
42	JELOK	4	-	-	-	-	-																	-	-	-	-	-
43	TIM	1	-	-	-	-	-																	-	-	-	-	-
44	TIM	2	-	-	-	-	-																	-	-	-	-	-
45	TIM	3	-	-	-	-	-																	-	-	-	-	-
46	WONOGIRI	1	-	-	-	-	-																	-	-	-	-	-
47	WONOGIRI	2	-	-	-	-	-																	-	-	-	-	-
48	KEDUNG OMBO	1	-	-	-	-	-																	-	-	-	-	-
49	TAPEN	1	-	-	-	-	-																	-	-	-	-	-
50	SEMPOR	1	-	-	-	-	-																	-	-	-	-	-
51	PEJENGKOLAN	1	-	-	-	-	-																	-	-	-	-	-
52	KELAMBU	1	-	-	-	-	-																	-	-	-	-	-
53	SIDOREJO	1	-	-	-	-	-																	-	-	-	-	-
	UBP PRIOK																											
54	PLTU PRIOK	3	62,280,699	-	39,605	-	-																	-	-	-	-	-
55	PLTU PRIOK	4	57,675,438	-	68,640	-	-																	-	-	-	-	-
56	PLTG PRIOK	1	-	-	-	-	-			8,579					8,565									-	-	70,217	-	-	70,217
57	PLTG PRIOK	3	-	-	3,409,215	-	-			8,487					8,667									-	-	16,837	-	-	16,837
58	PLTGU PRIOK	GT 11	-	-	-	9,095,668	-			8,550	252,000				8,534	252,000								-	-	309,134	2,165,389	-	2,474,523
59	PLTGU PRIOK	GT 12	-	-	42,747,330	9,581,957	-			8,570	252,000				8,468	252,000								-	-	572,615	2,050,780	-	2,623,395
60	PLTGU PRIOK	GT 13	-	-	81,888,707	5,912,169	-			8,481	252,000				8,583	252,000								-	-	1,220,602	1,283,823	-	2,504,425
61	PLTGU PRIOK	ST 10	-	-	-	-	-																	-	-	-	-	-	-
62	PLTGU PRIOK	GT 21	-	-	54,883,198	8,460,129	-			8,326	252,000				8,609	252,000								-	-	164,436	2,203,916	-	2,368,352
63	PLTGU PRIOK	GT 22	-	-	148,248,484	4,916,717	-			8,496	252,000				8,559	252,000								-	-	906,344	1,708,206	-	2,614,550
64	PLTGU PRIOK	GT 23	-	-	10,354,334	4,743,562	-			8,535	252,000				7,790	252,000								-	-	536,866	985,803	-	1,522,669
65	PLTGU PRIOK	ST 20	-	-	-	-	-																	-	-	-	-	-	-
66	PLTD KEBAYORAN	1	-	-	21,925	-	-			8,603					8,570									-	-	267	-	-	267
67	PLTD KEBAYORAN	2	-	-	19,593	-	-			8,625					8,571									-	-	245	-	-	245
68	PLTD KEBAYORAN	3	-	-	22,994	-	-			8,610					8,561									-	-	377	-	-	377
69	PLTD KEBAYORAN	4	-	-	19,688	-	-			8,612					8,535									-	-	347	-	-	347
70	PLTD KEBAYORAN	5	-	-	13,068	-	-			8,611					8,561									-	-	358	-	-	358
71	PLTD KEBAYORAN	6	-	-	25,901	-	-			8,600					8,552									-	-	306	-	-	306
	UBP SURALAYA																											
72	PLTU SURALAYA	1	-	-	-	-	1,747,675,652	10,399		9,277		4,785			9,194		4,711							12,450	-	15,613	-	6,886,674	6,914,737
73	PLTU SURALAYA	2	-	-	-	-	1,509,227,658	10,399		9,508		4,754	9,816		9,202		4,706							10,919	-	21,847	-	6,061,491	6,094,257
74	PLTU SURALAYA	3	-	-	-	-	1,689,176,772	10,399		9,241		4,774			9,199		4,685							4,618	-	14,404	-	7,309,237	7,328,259
75	PLTU SURALAYA	4	-	-	-	-	1,443,024,939	10,399		9,240		4,772	9,818		9,186		4,735							13,288	-	9,932	-	7,440,616	7,463,836
76	PLTU SURALAYA	5	-	-	-	-	934,488,447			9,552		4,648			9,191		4,554							-	-	12,571	-	10,858,664	10,871,235
77	PLTU SURALAYA	6	-	-	-	-	2,548,545,846			9,316		4,646			9,202		4,608							-	-	13,041	-	10,847,237	10,860,278
78	PLTU SURALAYA	7	-	-	-	-	2,576,286,643			9,233		4,659			9,200		4,591							-	-	13,001	-	9,471,433	9,484,434
	UBP SEMARANG																											
79	PLTU TAMBAK LOROK	1	88,802,498	868,603	2,669	-	-	9,262	8,665	8,605			9,248	8,654	8,620									852,356	6,728	794	-	-	859,878
80	PLTU TAMBAK LOROK	2	83,170,569	868,606	-	-	-	9,261	8,675	8,631			9,248	8,644	8,651									844,431	6,741	147	-	-	851,319
81	PLTU TAMBAK LOROK	3	177,139,965	568,415	12,165	-	-	9,273	8,837	8,629			9,249	8,651	8,614									2,171,306	22,274	595	-	-	2,194,175
82	PLTGU TAMBAK LOROK	GT 11	-	-	133,492,445	-	-	-	-	8,628					8,592									-	-	1,397,407	-	-	1,397,407
83	PLTGU TAMBAK LOROK	GT 12	-	-	146,354,498	-	-	-	-	8,631					8,591									-	-	1,638,678	-	-	1,638,678
84	PLTGU TAMBAK LOROK	GT 13	-	-	127,408,141	-	-	-	-	8,632					8,592									-	-	1,263,415	-	-	1,263,415
85	PLTGU TAMBAK LOROK	ST 10	-	-	-	-	-	-	-	-					-									-	-	-	-	-	-
86	PLTGU TAMBAK LOROK	GT 21	-	-	116,491,146	-	-	-	-	8,636					8,603									-	-	1,041,815	-	-	1,041,815
87	PLTGU TAMBAK LOROK	GT 22	-	-	100,013,804	-	-	-	-	8,625					8,600									-	-	1,572,737	-	-	1,572,737
88	PLTGU TAMBAK LOROK	GT 23	-	-	132,499,698	-	-	-	-	8,630					8,606									-	-	1,400,693	-	-	1,400,693
89	PLTGU TAMBAK LOROK	ST 20	-	-	-	-	-	-	-	-														-	-	-	-	-	-
90	PLTG CILACAP	1	-	-	-	-	-	-	-	8,669					8,661									-	-	107,807	-	-	107,807
91	PLTG CILACAP	2	-	-	-	-	-	-	-	8,646					8,656									-	-	114,657	-	-	114,657
92	PLTG SUNYARAGI	1	-	-	1,318,940	-	-	-	-	8,622	252,000				8,616	252,000								-	-	47,006	236,705	-	283,711
93	PLTG SUNYARAGI	2	-	-	1,886,130	-	-	-	-	8,619					8,628	252,000								-	-	103,297	-	-	103,297
94	PLTG SUNYARAGI	3	-	-	781,100	694,550	-	-	-	8,621	252,000				8,612	252,000								-	-	45,809	206,390	-	252,199
95	PLTG SUNYARAGI	4	-	-	1,141,630	710,606	-	-	-	8,624					8,621	252,000								-	-	56,703	-	-	56,703
	UBP PERAK GRATI																											
95	PLTU PERAK	3	59,340,593	-	213,190	-	-	9,681	-	8,690			8,781		7,311									607,364	-	972	-	-	608,336
96	PLTU PERAK	4	82,028,320	-	107,491	-	-	9,528	-	8,741			8,780		9,781									598,980	-	1,357	-	-	600,337
97	PLTGU GRATI	GT 11	-	-	109,990,867	-	-	-	-	9,130					9,096									-	-	1,654,866	-	-	1,654,866
98	PLTGU GRATI	GT 12	-	-	135,849,142	-	-	-	-	9,127					9,107									-	-	1,630,959	-	-	1,630,959
99	PLTGU GRATI	GT 13	-	-	132,646,608	-	-	-	-	9,134					9,101									-	-	1,522,480	-	-	1,522,480
100	PLTGU GRATI	ST 10	-	-	-	-	-	-	-	-														-	-	-	-	-	-
101	PLTG GRATI	2.1	-	-	54,747,148	-	-	-	-	9,118					9,074									-	-	583,298	-	-	583,298
102	PLTG GRATI	2.2	-	-	39,280,596	-	-	-	-	9,124					9,060									-	-	610,339	-	-	610,339
103	PLTG GRATI	2.3	-	-	32,957,302	-	-	-	-	9,126					9,067									-	-	485,823	-	-	485,823
	UBP BALI																											
104	PLTD PESANGGARAN	2	-	-	3,290,122	-	-	-	-	9,148					9,147									-	-	51,180	-	-	51,180
105	PLTD PESANGGARAN	3	-	-	2,535,188	-	-	-	-	9,169					9,140									-	-	41,759	-	-	41,759
106	PLTD PESANGGARAN	4	-	-	1,178,585	-	-	-	-	9,150					9,163									-	-	49,516	-	-	49,516
107	PLTD PESANGGARAN	5	-	-	1,906,073	-	-	-	-	9,150					9,152									-	-	16,948	-	-	16,948
108	PLTD PESANGGARAN	6	-	-	3,379,080	-	-	-	-	9,153					9,148									-	-	53,710	-	-	53,710
109	PLTD PESANGGARAN	7	-	-	2,830,704	-	-	-	-	9,144					9,149									-	-	44,732	-	-	44,732
110	PLTD PESANGGARAN	8	-	-	1,501,942	-	-	-	-	9,171					9,108									-	-	13,843	-	-	13,843
111	PLTD PESANGGARAN	9	-	-	591	-	-	-	-	9,170					9,184									-	-	8,372	-	-	8,372
112	PLTD PESANGGARAN	10	-	-	4,450,332	-	-	-	-	9,147					9,140									-	-	26,529	-	-	26,529
113	PLTD PESANGGARAN	11	-	-	4,467,412	-	-	-	-	9,164					9,149									-	-	34,271	-	-	34,271
114	PLTG PESANGGARAN	1	-	-	17,384,553	-	-	-	-	9,152					9,154									-	-	309,517	-	-	309,517
115	PLTG PESANGGARAN	2	-	-	22,416,306	-	-	-	-	9,140					9,151									-	-	223,738	-	-	223,738
116	PLTG PESANGGARAN	3	-	-	100,880,525	-	-	-	-	9,150					9,139									-	-	400,455	-	-	400,455
117	PLTG PESANGGARAN	4	-	-	104,854,723	-	-	-	-	9,152					9,149									-	-	961,123	-	-	961,123
118	PLTG GILIMANUK	1	-	-	233,538,158	-	-	-	-	9,188					9,152									-	-	1,954,280	-	-	1,954,280
119	PLTG PEMARON	1	-	-	30,935,410	-	-	-	-	9,139					9,115									-	-	381,359	-	-	381,359
120	PLTG PEMARON	2	-	-	35,799,175	-	-	-	-	9,192					9,115									-	-	131,771	-	-	131,771
	UBP KAMOJANG																											
121	PLTP KAMOJANG	1	-	-	-	-	-	-	-	-														-	-	-	-	-	-
122	PLTP KAMOJANG	2	-	-	-	-	-	-	-	-														-	-	-	-	-	-
123	PLTP KAMOJANG	3	-	-	-	-	-	-	-	-														-	-	-	-	-	-
124	PLTP GN. SALAK	1	-	-	-	-	-	-	-	-														-	-	-	-	-	-
125	PLTP GN. SALAK	2	-	-	-	-	-	-	-	-														-	-	-	-	-	-
126	PLTP GN. SALAK	3	-	-	-	-	-	-	-	-														-	-	-	-	-	-
127	PLTP DARAJAT	1	-	-	-	-	-	-	-	-														-	-	-	-	-	-

Bahan Bakar komulatif (2007)

Operation Performance Record for the Existing Power Plants of Indonesia Power

No.	Plant Name	Unit No.	Kcal Consumption (2006)						Kcal Consumption (2007)						Selling Price (2005) (M.Rp)			Selling Price (2006) (M.Rp)			Selling Price (2007) (M.Rp)			Av.F.O	Av.P.O	Av.Prod. 2005 & 06	Av. Kcal Consup	Av. H.R	Average Fuel Consumption (kL, MMBTU, ton) from 2005 to 2006				
			MFO (M.kcal)	IDO (M.kcal)	HSD (M.kcal)	Gas (M.kcal)	Coal (M.kcal)	Total (M.kcal)	MFO (M.kcal)	IDO (M.kcal)	HSD (M.kcal)	Gas (M.kcal)	Coal (M.kcal)	Total (M.kcal)	K.B	K.C	K.D	K.B	K.C	K.D	K.B	K.C	K.D	%	days	GWh	M.kcal	kca/kWh	MFO	IDO	HSD	Gas	Coal
	UBP SAGULING																																
1.	SAGULING	1	-	-	-	-	-	-	-	-	-	-	-	-										0.39	16.82	574.16	-	-	-	-	-	-	-
2.	SAGULING	2	-	-	-	-	-	-	-	-	-	-	-	-	88,498	12,568	1,257	88,302	7,730	774				0.62	9.94	497.15	-	-	-	-	-	-	-
3.	SAGULING	3	-	-	-	-	-	-	-	-	-	-	-	-										0.24	13.47	359.20	-	-	-	-	-	-	-
4.	SAGULING	4	-	-	-	-	-	-	-	-	-	-	-	-										0.38	12.02	605.47	-	-	-	-	-	-	-
5.	PRK. KONDANG	1	-	-	-	-	-	-	-	-	-	-	-	-										0	7.73	10.30	-	-	-	-	-	-	-
6.	PRK. KONDANG	2	-	-	-	-	-	-	-	-	-	-	-	-										1.49	16.27	11.57	-	-	-	-	-	-	-
7.	PRK. KONDANG	3	-	-	-	-	-	-	-	-	-	-	-	-										0.02	8.54	12.32	-	-	-	-	-	-	-
8.	PRK. KONDANG	4	-	-	-	-	-	-	-	-	-	-	-	-										0.02	18.52	11.02	-	-	-	-	-	-	-
9.	BENGKOK	1	-	-	-	-	-	-	-	-	-	-	-	-										0	9.96	2.65	-	-	-	-	-	-	-
10.	BENGKOK	2	-	-	-	-	-	-	-	-	-	-	-	-										0	0.35	3.74	-	-	-	-	-	-	-
11.	BENGKOK	3	-	-	-	-	-	-	-	-	-	-	-	-										0	1.64	2.84	-	-	-	-	-	-	-
12.	BENGKOK (DAGO)	4	-	-	-	-	-	-	-	-	-	-	-	-										1.04	3.03	2.88	-	-	-	-	-	-	-
13.	PLENGAN	1	-	-	-	-	-	-	-	-	-	-	-	-										0.01	2.78	4.20	-	-	-	-	-	-	-
14.	PLENGAN	2	-	-	-	-	-	-	-	-	-	-	-	-	8,906	688	69	8,906	540	55				0	2.71	2.68	-	-	-	-	-	-	-
15.	PLENGAN	3	-	-	-	-	-	-	-	-	-	-	-	-										0	10.82	4.40	-	-	-	-	-	-	-
16.	PLENGAN	4	-	-	-	-	-	-	-	-	-	-	-	-										0.01	3.47	9.30	-	-	-	-	-	-	-
17.	PLENGAN	5	-	-	-	-	-	-	-	-	-	-	-	-										0	3.31	5.35	-	-	-	-	-	-	-
18.	LAMAJAN	1	-	-	-	-	-	-	-	-	-	-	-	-										0	4.56	29.26	-	-	-	-	-	-	-
19.	LAMAJAN	2	-	-	-	-	-	-	-	-	-	-	-	-										0.73	2.12	27.24	-	-	-	-	-	-	-
20	LAMAJAN	3	-	-	-	-	-	-	-	-	-	-	-	-										0.01	2.69	26.11	-	-	-	-	-	-	-
21	CIKALONG	1	-	-	-	-	-	-	-	-	-	-	-	-										0.84	2.97	21.86	-	-	-	-	-	-	-
22	CIKALONG	2	-	-	-	-	-	-	-	-	-	-	-	-										0	5.67	18.65	-	-	-	-	-	-	-
23	CIKALONG	3	-	-	-	-	-	-	-	-	-	-	-	-										0	0.86	15.94	-	-	-	-	-	-	-
24	UBRUG	1	-	-	-	-	-	-	-	-	-	-	-	-										0	13.98	19.78	-	-	-	-	-	-	-
25	UBRUG	2	-	-	-	-	-	-	-	-	-	-	-	-										0	11.49	19.99	-	-	-	-	-	-	-
26	UBRUG	3	-	-	-	-	-	-	-	-	-	-	-	-	19,498	1,200	120	19,498	1,005	101				0	13.56	20.02	-	-	-	-	-	-	-
27	KRACAK	1	-	-	-	-	-	-	-	-	-	-	-	-										0	1.74	25.29	-	-	-	-	-	-	-
28	KRACAK	2	-	-	-	-	-	-	-	-	-	-	-	-										0	1.43	11.89	-	-	-	-	-	-	-
29	KRACAK	3	-	-	-	-	-	-	-	-	-	-	-	-										0	10.91	26.70	-	-	-	-	-	-	-
	UBP MRICA																																
29	PB SUDIRMAN	1	-	-	-	-	-	-	-	-	-	-	-	-										0.01	6.46	151.51	-	-	-	-	-	-	-
30	PB SUDIRMAN	2	-	-	-	-	-	-	-	-	-	-	-	-	34,942	2,427	244	34,762	1,969	198				0.00	7.13	140.33	-	-	-	-	-	-	-
31	PB SUDIRMAN	3	-	-	-	-	-	-	-	-	-	-	-	-										0.02	5.87	152.21	-	-	-	-	-	-	-
32	KETENGER	1	-	-	-	-	-	-	-	-	-	-	-	-										0.69	4	20.56	-	-	-	-	-	-	-
33	KETENGER	2	-	-	-	-	-	-	-	-	-	-	-	-										0.16	4.45	20.68	-	-	-	-	-	-	-
34	KETENGER	3	-	-	-	-	-	-	-	-	-	-	-	-										0.11	4.05	3.80	-	-	-	-	-	-	-
35	GARUNG	1	-	-	-	-	-	-	-	-	-	-	-	-										0.13	6.17	16.12	-	-	-	-	-	-	-
36	GARUNG	2	-	-	-	-	-	-	-	-	-	-	-	-										0.03	4.47	15.87	-	-	-	-	-	-	-
37	WADASLINTANG	1	-	-	-	-	-	-	-	-	-	-	-	-										0.19	4.17	51.82	-	-	-	-	-	-	-
38	WADASLINTANG	2	-	-	-	-	-	-	-	-	-	-	-	-										0.18	5.89	49.27	-	-	-	-	-	-	-
39	JELOK	1	-	-	-	-	-	-	-	-	-	-	-	-										0.11	4.69	26.58	-	-	-	-	-	-	-
40	JELOK	2	-	-	-	-	-	-	-	-	-	-	-	-										3.50	5.42	23.81	-	-	-	-	-	-	-
41	JELOK	3	-	-	-	-	-	-	-	-	-	-	-	-										0.13	3.97	24.19	-	-	-	-	-	-	-
42	JELOK	4	-	-	-	-	-	-	-	-	-	-	-	-	45,435	1,999	201	45,435	1,999	200				0.09	6.59	24.98	-	-	-	-	-	-	-
43	TIM	1	-	-	-	-	-	-	-	-	-	-	-	-										0.29	7.47	22.79	-	-	-	-	-	-	-
44	TIM	2	-	-	-	-	-	-	-	-	-	-	-	-										4.52	5.67	24.39	-	-	-	-	-	-	-
45	TIM	3	-	-	-	-	-	-	-	-	-	-	-	-										0.13	6.97	21.29	-	-	-	-	-	-	-
46	WONOGIRI	1	-	-	-	-	-	-	-	-	-	-	-	-										0.03	4.01	22.60	-	-	-	-	-	-	-
47	WONOGIRI	2	-	-	-	-	-	-	-	-	-	-	-	-										0.04	6.25	21.48	-	-	-	-	-	-	-
48	KEDUNG OMBO	1	-	-	-	-	-	-	-	-	-	-	-	-										0.03	4.9	62.11	-	-	-	-	-	-	-
49	TAPEN	1	-	-	-	-	-	-	-	-	-	-	-	-										0.05	2.92	4.67	-	-	-	-	-	-	-
50	SEMPOR	1	-	-	-	-	-	-	-	-	-	-	-	-										2.95	4.74	5.32	-	-	-	-	-	-	-
51	PEJENGKOLAN	1	-	-	-	-	-	-	-	-	-	-	-	-										0.64	20.83	6.28	-	-	-	-	-	-	-
52	KELAMBU	1	-	-	-	-	-	-	-	-	-	-	-	-										0.00	2.98	1.51	-	-	-	-	-	-	-
53	SIDOREJO	1	-	-	-	-	-	-	-	-	-	-	-	-										0.02	2.96	4.53	-	-	-	-	-	-	-
	UBP PRIOK																																
54	PLTU PRIOK	3	-	-	-	-	-	-	#VALUE!	-	-	-	-	#VALUE!	-	-	-	1,203	87,572	97				12.95	0	-	-	#DIV/0!	-	-	-	-	-
55	PLTU PRIOK	4	-	-	-	-	-	-	-	-	-	-	-	-										14.01	0	-	-	#DIV/0!	-	-	-	-	-
56	PLTG PRIOK	1	-	-	6,301	-	-	6,301	-	-	-	-	-	-	17,666	22,177	23	13,855	9,867	5				64.45	24.46	8.62	38,259	4,438	-	-	4,460	-	-
57	PLTG PRIOK	3	-	-	14,585	-	-	14,585	-	-	-	-	-	-										31.39	30.52	3.38	15,711	4,648	-	-	1,833	-	-
58	PLTGU PRIOK	GT 11	-	-	29,648	2,679,140	-	2,708,788	-	-	-	-	-	-										2.76	36.92	859.32	2,591,656	3,016	-	-	19,815	9,612	-
59	PLTGU PRIOK	GT 12	-	-	302,038	2,113,494	-	2,415,532	-	-	-	-	-	-	216,367	1,076,011	7,519	206,013	1,130,631	7,802				2.19	7.44	836.37	2,519,464	3,012	-	-	51,242	8,262	-
60	PLTGU PRIOK	GT 13	-	-	326,550	2,443,539	-	2,770,089	-	-	-	-	-	-										3.45	21.46	882.91	2,637,257	2,987	-	-	90,984	7,396	-
61	PLTGU PRIOK	ST 10	-	-	-	-	-	-	-	-	-	-	-	-										0.86	0	1,197.59	-	-	-	-	-	-	-
62	PLTGU PRIOK	GT 21	-	-	1,027,663	1,544,122	-	2,571,785	-	-	-	-	-	-										1.54	22.55	823.99	2,470,069	2,998	-	-	69,560	7,437	-
63	PLTGU PRIOK	GT 22	-	-	571,515	1,418,701	-	1,990,216	-	-	-	-	-	-	186,613	1,439,010	-	202,634	2,631,872	-				4.81	19.75	777.93	2,302,383	2,960	-	-	86,726	6,204	-
64	PLTGU PRIOK	GT 23	-	-	711,953	1,644,940	-	2,356,893	-	-	-	-	-	-										16.99	51.18	660.51	1,939,781	2,937	-	-	77,147	5,220	-
65	PLTGU PRIOK	ST 20	-	-	-	-	-	-	-	-	-	-	-	-										1.13	15.86	1,018.86	-	-	-	-	-	-	-
66	PLTD KEBAYORAN	1	-	-	175	-	-	175	-	-	-	-	-	-										0.00	1.77	0.08	221	2,763	-	-	26	-	-
67	PLTD KEBAYORAN	2	-	-	173	-	-	173	-	-	-	-	-	-										0.11	1.77	0.09	209	2,322	-	-	24	-	-
68	PLTD KEBAYORAN	3	-	-	173	-	-	173	-	-	-	-	-	-										0.00	1.77	0.10	275	2,750	-	-	32	-	-
69	PLTD KEBAYORAN	4	-	-	137	-	-	137	-	-	-	-	-	-										0.00	1.77	0.09	242	2,689	-	-	28	-	-
70	PLTD KEBAYORAN	5	-	-	187	-	-	187	-	-	-	-	-	-										0.00	1.77	0.10	273	2,730	-	-	32	-	-
71	PLTD KEBAYORAN	6	-	-	165	-	-	165	-	-	-	-	-	-										0.00	1.77	0.09	236	2,622	-	-	27	-	-
	UBP SURALAYA																																
72	PLTU SURALAYA	1	-	-	13,114	-	7,587,396	7,600,510	-	-	-	-	-	-										3.69	17.13	2,877.82	7,257,624	2,522	599	-	1,555	-	1,524,896
73	PLTU SURALAYA	2	-	-	6,451	-	7,921,153	7,927,604	-	-	-	-	-	-	315,649	1,332,998	8,491	334,117	1,401,447	8,929				2.87	32.99	2,834.10	7,010,931	2,474	525	138	1,499	-	1,479,116
74	PLTU SURALAYA	3	-	-	8,849	-	6,755,346	6,764,195	-	-	-	-	-	-										3.79	8.77	2,921.30	7,046,227	2,412	222	-	1,260	-	1,486,480
75	PLTU SURALAYA	4	-	-	5,881	-	6,868,314	6,874,195	-	-	-	-	-	-										3.60	19.89	2,994.68	7,169,016	2,394	639	22	858	-	1,504,883
76	PLTU SURALAYA	5	-	-	5,358	-	10,118,505	10,123,863	-	-	-	-	-	-										23.68	18.1	4,418.56	10,497,549	2,376	-	-	950	-	2,279,048
77	PLTU SURALAYA	6	-	-	7,414	-	10,739,244	10,746,658	-	-	-	-	-	-	186,510	1,487,775	10,180	187,118	1,494,988	10,248				2.76	11.27	4,432.92	10,803,468	2,437	-	-	1,103	-	2,332,656
78	PLTU SURALAYA	7	-	-	4,736	-	11,138,180	11,142,916	-	-	-	-	-	-										2.04	23.9	4,403.70	10,313,675	2,342	-	-	961	-	2,229,511
	UBP SEMARANG																																
79	PLTU TAMBAK LOROK	1	842,943	8,459	1,369	-	-	852,771	-	-	-	-	-	-										2.18	34.6	310.00	856,325	2,762	91,588	877	126	-	-
80	PLTU TAMBAK LOROK	2	755,991	6,523	1,362	-	-	763,876	-	-	-	-	-	-	58,038	1,104,429	1,434	42,689	1,428,681	1,175				1.71	39.77	292.94	807,598	2,757	86,464	766	87	-	-
81	PLTU TAMBAK LOROK	3	1,664,914	5,287	2,933	-	-	1,673,134	-	-	-	-	-	-										13.61	57.88	795.16	1,933,655	2,432	207,082	1,566	205	-	-
82	PLTGU TAMBAK LOROK	GT 11	-	-	1,006,902	-	-	1,006,902	-	-	-	-	-	-										1.00	34.35	400.63	1,202,155	3,001	-	-	139,576	-	-
83	PLTGU TAMBAK LOROK	GT 12	-	-	1,522,050	-	-	1,522,050	-	-	-	-	-	-	162,890	1,584,286	2,211	156,894	2,903,073	2,026				0.55	10.85	524.23	1,580,364	3,015	-	-	183,514	-	-
84	PLTGU TAMBAK LOROK	GT 13	-	-	1,366,995	-	-	1,366,995	-	-	-	-	-	-										0.93	12.87	439.69	1,315,205	2,991	-	-	152,733	-	-
85	PLTGU TAMBAK LOROK	ST 10	-	-	-	-	-	-	-	-	-	-	-	-										2.04	20.82	628.38	-	-	-	-	-	-	-
86	PLTGU TAMBAK LOROK	GT 21	-	-	1,020,090	-	-	1,020,090	-	-	-	-	-	-										2.08	43.88	345.19	1,030,953	2,987	-	-	119,605	-	-
87	PLTGU TAMBAK LOROK	GT 22	-	-	1,272,257	-	-	1,272,257	-	-	-	-	-	-	154,085	1,550,953	2,081	149,505	2,296,761	1,644				1.49	31.91	470.40	1,422,497	3,024	-	-	165,142	-	-
88	PLTGU TAMBAK LOROK	GT 23	-	-	978,570	-	-	978,570	-	-	-	-	-	-										0.35	25.61	388.33	1,189,632	3,063	-	-	138,007	-	-
89	PLTGU TAMBAK LOROK	ST 20	-	-	-	-	-	-	-	-	-	-	-	-										0.82	31.41	514.39	-	-	-	-	-	-	-
90	PLTG CILACAP	1	-	-	56,966	-	-	56,966	-	-	-	-	-	-	14,741	62,077	58	15,302	53,734	27				1.82	19.38	18.10	82,387	4,552	-	-	9,507	-	-
91	PLTG CILACAP	2	-	-	49,457	-	-	49,457	-	-	-	-	-	-										1.31	10.24	17.23	82,057	4,762	-	-	9,487	-	-
92	PLTG SUNYARAGI	1	-	-	41,461	5,891	-	47,352	-	-	-	-	-	-	40,696	44,250	238	44,773	41,212	167				5.59	14.39	48.03	165,532	3,446	-	-	5,132	481	-
93	PLTG SUNYARAGI	2	-	-	55,281	31,505	-	86,786	-	-	-	-	-	-										0.51	11.56	25.85	95,042	3,677	-	-	9,196	63	-
94	PLTG SUNYARAGI	3	-	-	24,143	122,813	-	146,956	-	-	-	-	-	-										0.14	19.9	59.87	199,578	3,334	-	-	4,059	653	-
95	PLTG SUNYARAGI	4	-	-	31,348	167,040	-	198,388	-	-	-	-	-	-	-	128,524	-	-	96,006	-				19.92	18.66	37.84	127,546	3,371	-	-	5,106	331	-
	UBP PERAK GRATI																																
95	PLTU PERAK	3	536,911	-	808	-	-	537,719	-	-	-	-	-	-	125,702	381,418	348	108,555	484,631	304				11.42	65.33	206.00	573,028	2,782	61,941	-	111	-	-
96	PLTU PERAK	4	412,210	-	1,526	-	-	413,736	-	-	-	-	-	-										10.39	60.35	174.52	507,037	2,905	54,907	-	156	-	-
97	PLTGU GRATI	GT 11	-	-	943,134	-	-	943,134	-	-	-	-	-	-										3.37	12.89	360.89	1,299,000	3,599	-	-	142,471	-	-
98	PLTGU GRATI	GT 12	-	-	745,291	-	-	745,291	-	-	-	-	-	-	121,053	1,532,096	2,241	111,089	1,771,019	1,264				0.92	36.61	329.22	1,188,125	3,609	-	-	130,267	-	-
99	PLTGU GRATI	GT 13	-	-	1,119,859	-	-	1,119,859	-	-	-	-	-	-										2.12	12.81	368.23	1,321,170	3,588	-	-	144,865	-	-
100	PLTGU GRATI	ST 10	-	-	-	-	-	-	-	-	-	-	-	-										0.79	9.04	563.76	-	-	-	-	-	-	-
101	PLTG GRATI	2.1	-	-	418,957	-	-	418,957	-	-	-	-	-	-										1.49	12.89	140.69	501,128	3,562	-	-	55,072	-	-
102	PLTG GRATI	2.2	-	-	443,731	-	-	443,731	-	-	-	-	-	-	14,055	562,665	566	13,718	823,988	397				2.41	8.9	150.41	527,035	3,504	-	-	57,935	-	-
103	PLTG GRATI	2.3	-	-	299,160	-	-	299,160	-	-	-	-	-	-										2.45	7.57	112.87	392,492	3,477	-	-	43,115	-	-
	UBP BALI																																
104	PLTD PESANGGARAN	2	-	-	29,906	-	-	29,906	-	-	-	-	-	-										1.57	6.29	15.93	40,543	2,545	-	-	4,432	-	-
105	PLTD PESANGGARAN	3	-	-	35,154	-	-	35,154	-	-	-	-	-	-										15.22	2.07	14.93	38,457	2,576	-	-	4,200	-	-
106	PLTD PESANGGARAN	4	-	-	24,403	-	-	24,403	-	-	-	-	-	-										17.71	87.91	14.15	36,960	2,612	-	-	4,037	-	-
107	PLTD PESANGGARAN	5	-	-	12,168	-	-	12,168	-	-	-	-	-	-										0.85	3.71	5.66	14,558	2,572	-	-	1,591	-	-
108	PLTD PESANGGARAN	6	-	-	49,090	-	-	49,090	-	-	-	-	-	-	49,575	157,162	179	49,575	236,937	143				7.66	13.41	20.38	51,400	2,522	-	-	5,617	-	-
109	PLTD PESANGGARAN	7	-	-	44,908	-	-	44,908	-	-	-	-	-	-										0.00	12.5	17.81	44,820	2,517	-	-	4,900	-	-
110	PLTD PESANGGARAN	8	-	-	7,037	-	-	7,037	-	-	-	-	-	-										2.78	0	4.00	10,440	2,610	-	-	1,141	-	-
111	PLTD PESANGGARAN	9	-	-	198	-	-	198	-	-	-	-	-	-										28.64	121.78	1.94	4,285	2,209	-	-	467	-	-
112	PLTD PESANGGARAN	10	-	-	30,347	-	-	30,347	-	-	-	-	-	-										0.30	17.46	12.25	28,438	2,321	-	-	3,110	-	-
113	PLTD PESANGGARAN	11	-	-	35,955	-	-	35,955	-	-	-	-	-	-										1.70	18.47	14.86	35,113	2,363	-	-	3,835	-	-
114	PLTG PESANGGARAN	1	-	-	212,095	-	-	212,095	-	-	-	-	-	-										1.24	6.86	66.37	260,806	3,930	-	-	28,495	-	-
115	PLTG PESANGGARAN	2	-	-	187,182	-	-	187,182	-	-	-	-	-	-	77,632	647,289	624	97,156	1,363,917	645				0.32	48.89	51.02	205,460	4,027	-	-	22,467	-	-
116	PLTG PESANGGARAN	3	-	-	761,675	-	-	761,675	-	-	-	-	-	-										20.20	22.5	175.34	581,065	3,314	-	-	63,554	-	-
117	PLTG PESANGGARAN	4	-	-	719,753	-	-	719,753	-	-	-	-	-	-										0.21	20.09	245.84	840,438	3,419	-	-	91,844	-	-
118	PLTG GILIMANUK	1	-	-	2,058,067	-	-	2,058,067	-	-	-	-	-	-	24,321	558,218	672	24,453	1,320,353	735				1.01	56.48	591.45	2,006,174	3,392	-	-	218,788	-	-
119	PLTG PEMARON	1	-	-	229,276	-	-	229,276	-	-	-	-	-	-										2.37	31.72	83.14	305,318	3,672	-	-	33,441	-	-
120	PLTG PEMARON	2	-	-	195,031	-	-	195,031	-	-	-	-	-	-	3,336	235,583	167	6,804	315,866	141				0.20	13.86	44.78	163,401	3,649	-	-	17,866	-	-
	UBP KAMOJANG																																
121	PLTP KAMOJANG	1	-	-	-	-	-	-	-	-	-	-	-	-										0.30	6.46	255.03	-	-	-	-	-	-	-
122	PLTP KAMOJANG	2	-	-	-	-	-	-	-	-	-	-	-	-	32,794	504,961	914	35,572	822,024	999				5.72	5.66	470.45	-	-	-	-	-	-	-
123	PLTP KAMOJANG	3	-	-	-	-	-	-	-	-	-	-	-	-										2.63	118.91	278.71	-	-	-	-	-	-	-
124	PLTP GN. SALAK	1	-	-	-	-	-	-	-	-	-	-	-	-										1.49	14.73	478.02	-	-	-	-	-	-	-
125	PLTP GN. SALAK	2	-	-	-	-	-	-	-	-	-	-	-	-	43,205	630,928	1,345	45,456	592,332	1,385				1.20	17.75	479.82	-	-	-	-	-	-	-
126	PLTP GN. SALAK	3	-	-	-	-	-	-	-	-	-	-	-	-										1.03	2.4	486.82	-	-	-	-	-	-	-
127	PLTP DARAJAT	1	-	-	-	-	-	-	-	-	-	-	-	-	11,978	141,494	1,266	11,434	133,829	1,206				0.34	5.21	474.01	-	-	-	-	-	-	-

Operation Performance Record for the Existing Power Plants of Indonesia Power

No.	Plant Name	Unit	Av. F.O by Entity	Av. P.O by Entity	Prod. by Entity	Av. H.R by Entity	Ava.Max by Entity	F.C by Entity	V.C by Entity	F.C by Entity	V.C by Entity
		No.	%	days	GWh	kcal/kWh	MW	Rp/kW-m	Rp/kWh	$/kW-m	$/MWh
	UBP SAGULING										
1.	SAGULING	1	0.41	15.79	2,036	-	698.4	10,548	0.5	1.17	0.06
2.	SAGULING	2									
3.	SAGULING	3									
4.	SAGULING	4									
5.	PRK. KONDANG	1	0.22	5.68	222	-	59.4	12,773	0.3	1.42	0.03
6.	PRK. KONDANG	2									
7.	PRK. KONDANG	3									
8.	PRK. KONDANG	4									
9.	BENGKOK	1									
10.	BENGKOK	2									
11.	BENGKOK	3									
12.	BENGKOK (DAGO)	4									
13.	PLENGAN	1									
14.	PLENGAN	2									
15.	PLENGAN	3									
16.	PLENGAN	4									
17.	PLENGAN	5									
18.	LAMAJAN	1									
19.	LAMAJAN	2									
20	LAMAJAN	3									
21	CIKALONG	1									
22	CIKALONG	2									
23	CIKALONG	3									
24	UBRUG	1	-	8.85	124	-	37.3	44,257	0.9	4.92	0.10
25	UBRUG	2									
26	UBRUG	3									
27	KRACAK	1									
28	KRACAK	2									
29	KRACAK	3									
	UBP MRICA										
29	PB SUDIRMAN	1	0.01	6.49	444	-	179.4	16,189	0.5	1.80	0.06
30	PB SUDIRMAN	2									
31	PB SUDIRMAN	3									
32	KETENGER	1	0.64	5.62	475	-	125.0	30,302	0.4	3.37	0.04
33	KETENGER	2									
34	KETENGER	3									
35	GARUNG	1									
36	GARUNG	2									
37	WADASLINTANG	1									
38	WADASLINTANG	2									
39	JELOK	1									
40	JELOK	2									
41	JELOK	3									
42	JELOK	4									
43	TIM	1									
44	TIM	2									
45	TIM	3									
46	WONOGIRI	1									
47	WONOGIRI	2									
48	KEDUNG OMBO	1									
49	TAPEN	1									
50	SEMPOR	1									
51	PEJENGKOLAN	1									
52	KELAMBU	1									
53	SIDOREJO	1									
	UBP PRIOK										
54	PLTU PRIOK	3	13.48	-	-	-	45.0	1,114	-	0.12	-
55	PLTU PRIOK	4									
56	PLTG PRIOK	1	47.92	27.49	6	4,498	17.0	38,629	1.2	4.29	0.13
57	PLTG PRIOK	3									
58	PLTGU PRIOK	GT 11	2.32	16.46	3,776	2,052	528.3	33,313	2.0	3.70	0.22
59	PLTGU PRIOK	GT 12									
60	PLTGU PRIOK	GT 13									
61	PLTGU PRIOK	ST 10									
62	PLTGU PRIOK	GT 21	6.12	27.34	3,281	2,046	533.5	30,403	-	3.38	-
63	PLTGU PRIOK	GT 22									
64	PLTGU PRIOK	GT 23									
65	PLTGU PRIOK	ST 20									
66	PLTD KEBAYORAN	1									
67	PLTD KEBAYORAN	2									
68	PLTD KEBAYORAN	3									
69	PLTD KEBAYORAN	4									
70	PLTD KEBAYORAN	5									
71	PLTD KEBAYORAN	6									
	UBP SURALAYA										
72	PLTU SURALAYA	1	3.49	19.70	2,907	2,450	371.5	18,219	0.7	2.02	0.08
73	PLTU SURALAYA	2									
74	PLTU SURALAYA	3									
75	PLTU SURALAYA	4									
76	PLTU SURALAYA	5	9.49	17.76	4,418	2,385	575.2	9,022	0.8	1.00	0.09
77	PLTU SURALAYA	6									
78	PLTU SURALAYA	7									
	UBP SEMARANG										
79	PLTU TAMBAK LOROK	1	5.83	44.08	466	2,573	89.0	15,719	0.9	1.8	0.10
80	PLTU TAMBAK LOROK	2									
81	PLTU TAMBAK LOROK	3									
82	PLTGU TAMBAK LOROK	GT 11	1.13	19.72	1,993	2,056	450.0	29,610	1.1	3.3	0.12
83	PLTGU TAMBAK LOROK	GT 12									
84	PLTGU TAMBAK LOROK	GT 13									
85	PLTGU TAMBAK LOROK	ST 10									
86	PLTGU TAMBAK LOROK	GT 21	1.19	33.20	1,718	2,120	450.0	28,110	1.1	3.1	0.12
87	PLTGU TAMBAK LOROK	GT 22									
88	PLTGU TAMBAK LOROK	GT 23									
89	PLTGU TAMBAK LOROK	ST 20									
90	PLTG CILACAP	1	1.57	14.81	18	4,655	20.0	31,295	1.2	3.5	0.13
91	PLTG CILACAP	2									
92	PLTG SUNYARAGI	1	3.05	12.98	37	3,527	18.0	98,922	2.7	11.0	0.30
93	PLTG SUNYARAGI	2									
94	PLTG SUNYARAGI	3	10.03	19.28	49	3,348	18.0	-	-	-	-
95	PLTG SUNYARAGI	4									
	UBP PERAK GRATI										
95	PLTU PERAK	3	10.91	62.84	190	2,838	40.0	122,009	0.9	13.56	0.10
96	PLTU PERAK	4									
97	PLTGU GRATI	GT 11	1.80	17.84	1,622	2,348	450.0	21,496	1.1	2.39	0.12
98	PLTGU GRATI	GT 12									
99	PLTGU GRATI	GT 13									
100	PLTGU GRATI	ST 10									
101	PLTG GRATI	2.1	2.12	9.79	135	3,517	100.0	3,857	1.2	0.43	0.13
102	PLTG GRATI	2.2									
103	PLTG GRATI	2.3									
	UBP BALI										
104	PLTD PESANGGARAN	2	7.64	28.36	12	2,502	5.1	80,362	1.3	8.93	0.14
105	PLTD PESANGGARAN	3									
106	PLTD PESANGGARAN	4									
107	PLTD PESANGGARAN	5									
108	PLTD PESANGGARAN	6									
109	PLTD PESANGGARAN	7									
110	PLTD PESANGGARAN	8									
111	PLTD PESANGGARAN	9									
112	PLTD PESANGGARAN	10									
113	PLTD PESANGGARAN	11									
114	PLTG PESANGGARAN	1	5.49	24.59	135	3,505	27.1	67,278	1.2	7.48	0.13
115	PLTG PESANGGARAN	2									
116	PLTG PESANGGARAN	3									
117	PLTG PESANGGARAN	4									
118	PLTG GILIMANUK	1	1.01	56.48	591	3,392	130.4	15,580	1.2	1.73	0.13
119	PLTG PEMARON	1	1.29	22.79	64	3,664	40.0	5,281	1.1	0.59	0.12
120	PLTG PEMARON	2									
	UBP KAMOJANG										
121	PLTP KAMOJANG	1	2.88	43.68	335	-	44.0	21,580	1.0	2.40	0.11
122	PLTP KAMOJANG	2									
123	PLTP KAMOJANG	3									
124	PLTP GN. SALAK	1	1.24	11.63	482	-	56.7	21,731	0.9	2.41	0.10
125	PLTP GN. SALAK	2									
126	PLTP GN. SALAK	3									
127	PLTP DARAJAT	1	0.34	5.21	474	-	52.0	18,760	2.6	2.08	0.29

APPENDIX－6 SIMULATION DATA OF WASP IV

6.1 Input Data

6.2 Output Data

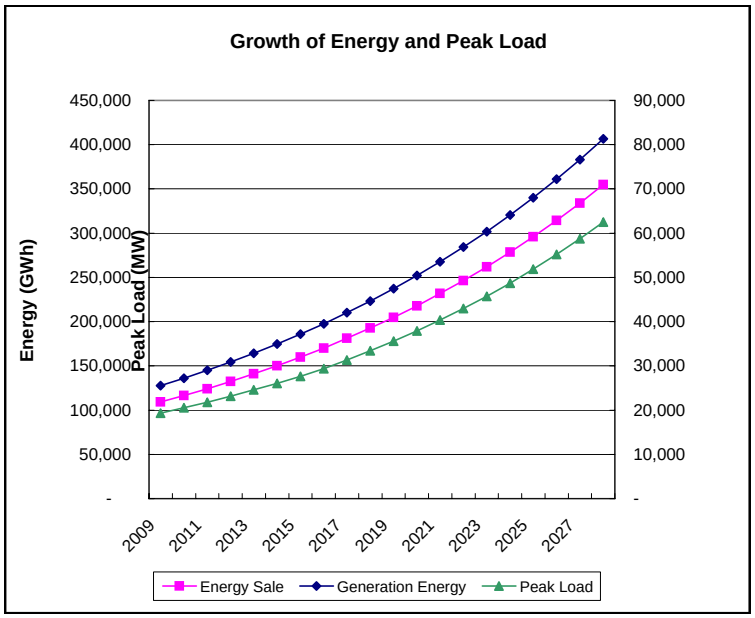
6.1 Input Data

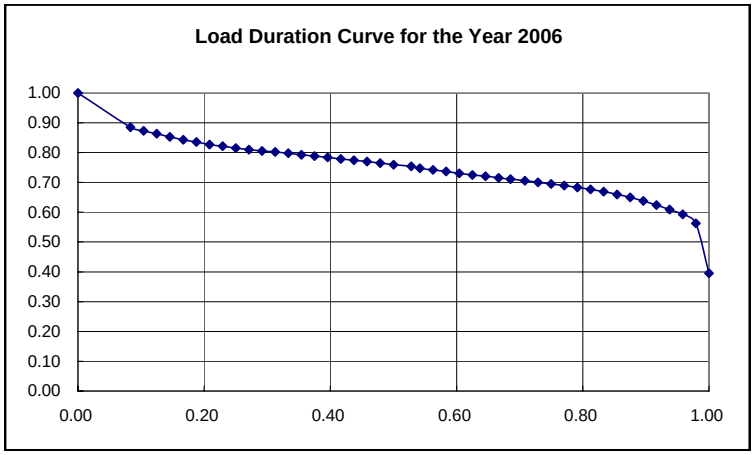
Peak Load Ratio

Period	Peak Load Ratio

Generation Energy and Peak Load

Year	Energy Sale	Station Use	T & D Loss	Generation Energy	Load Factor	Peak Load	Growth Rate of P.L.
	GWh	% of Generation Energy		GWh		MW	%
2009	109,227	4%	11.00%	127,841	75.5%	19,329	
2010	116,480	4%	10.90%	136,177	75.7%	20,535	6.2%
2011	124,169	4%	10.80%	145,003	75.9%	21,809	6.2%
2012	132,320	4%	10.70%	154,349	76.1%	23,153	6.2%
2013	140,962	4%	10.60%	164,245	76.3%	24,573	6.1%
2014	150,124	4%	10.50%	174,725	76.5%	26,073	6.1%
2015	159,838	4%	10.40%	185,824	76.7%	27,657	6.1%
2016	170,137	4%	10.30%	197,576	76.7%	29,406	6.3%
2017	181,057	4%	10.20%	210,023	76.5%	31,340	6.6%
2018	192,636	4%	10.10%	223,206	76.3%	33,395	6.6%
2019	204,913	4%	10.00%	237,168	76.1%	35,577	6.5%
2020	217,933	4%	9.90%	251,957	75.9%	37,895	6.5%
2021	231,738	4%	9.80%	267,621	75.7%	40,357	6.5%
2022	246,379	4%	9.70%	284,214	75.5%	42,973	6.5%
2023	261,905	4%	9.60%	301,790	75.3%	45,751	6.5%
2024	278,371	4%	9.50%	320,409	75.1%	48,703	6.5%
2025	295,834	4%	9.40%	340,133	74.9%	51,840	6.4%
2026	314,355	4%	9.30%	361,029	74.7%	55,172	6.4%
2027	333,999	4%	9.20%	383,167	74.5%	58,712	6.4%
2028	354,835	4%	9.10%	406,622	74.3%	62,474	6.4%





LDC for the Year 2006
(Based on P3B 2006 Data)

No.	Load	Duration	Area
1	1.0000	0.00000	
5	0.8855	0.08333	0.0186
6	0.8736	0.10417	0.0183
7	0.8632	0.12500	0.0181
8	0.8532	0.14583	0.0179
9	0.8437	0.16667	0.0177
10	0.8357	0.18750	0.0175
11	0.8275	0.20833	0.0173
12	0.8213	0.22917	0.0172
13	0.8155	0.25000	0.0170
14	0.8102	0.27083	0.0169
15	0.8060	0.29167	0.0168
16	0.8019	0.31250	0.0167
17	0.7977	0.33333	0.0167
18	0.7930	0.35417	0.0166
19	0.7889	0.37500	0.0165
20	0.7839	0.39583	0.0164
21	0.7790	0.41667	0.0163
22	0.7744	0.43750	0.0162
23	0.7697	0.45833	0.0161
24	0.7646	0.47917	0.0160
25	0.7593	0.50000	0.0159
26	0.7535	0.52803	0.0212
27	0.7479	0.54167	0.0102
28	0.7425	0.56250	0.0155
29	0.7367	0.58333	0.0154
30	0.7309	0.60417	0.0153
31	0.7255	0.62500	0.0152
32	0.7203	0.64583	0.0151
33	0.7154	0.66667	0.0150
34	0.7112	0.68522	0.0132
35	0.7058	0.70833	0.0164
36	0.7006	0.72917	0.0147
37	0.6949	0.75000	0.0145
38	0.6893	0.77083	0.0144
39	0.6830	0.79167	0.0143
40	0.6770	0.81250	0.0142
41	0.6694	0.83333	0.0140
42	0.6599	0.85417	0.0139
43	0.6499	0.87500	0.0136
44	0.6380	0.89583	0.0134
45	0.6242	0.91667	0.0132
46	0.6086	0.93750	0.0128
47	0.5932	0.95833	0.0125
48	0.5631	0.97917	0.0120
49	0.3957	1.00000	0.0100
50			
51			
52			
Area (Load Factor) =			0.7551

Addition/Retirements

No.	Name	No. of Sets	Available Capacity MW	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028

Supply Balance Information	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Available capacity of thermal	18,816																					
installed capacity of hydro	2,573																					
Gross available capacity	21,389	21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208
Addition/Retirement			3,000	3,916	1,683	967			110		(1,553)	(701)	(998)			(605)						
Gross available capacity(year end)	21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208	27,208
Peak Load at Power Station	-	-	19,329	20,535	21,809	23,153	24,573	26,073	27,657	29,406	31,340	33,395	35,577	37,895	40,357	42,973	45,751	48,703	51,840	55,172	58,712	62,474
Shortage/surplus of power supply	21,389	21,389	5,060	7,770	8,179	7,802	6,382	4,882	3,408	1,659	-1,828	-4,584	-7,764	-10,082	-12,544	-15,765	-18,543	-21,495	-24,632	-27,964	-31,504	-35,266
Required available capacity																						
Min. reserve margin of 10%	-	-	21,262	22,589	23,990	25,468	27,030	28,680	30,423	32,347	34,474	36,735	39,135	41,685	44,393	47,270	50,326	53,573	57,024	60,689	64,583	68,721
Max. reserve margin of 35%	-	-	26,094	27,722	29,442	31,257	33,174	35,199	37,337	39,698	42,309	45,083	48,029	51,158	54,482	58,014	61,764	65,749	69,984	74,482	79,261	84,340
Required mini. additional capacity	-	-	-	-	-	-	-	-	-	1,282	4,962	7,924	11,322	13,872	16,580	20,062	23,118	26,365	29,816	33,481	37,375	41,513

			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
C6H	PLTU	600																						
C10H	PLTU	1000						1	1	1	1	1	5	5	8	10	12	15	17	18	21	24	27	31
LNG	PLTG	750									1	2	3	4	4	4	4	4	6	6	8	8	10	10
N10H	PLTN	1000												1	1	1	2	2	2	3	3	4	4	5
GE55	PLTP	55					6	6	6	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
G150	PLTG	150																						
PS	Pumped S.	500									1	2	2	4	6	6	6	6	6	6	6	6	6	6
CIB3	PLTA	172														1	1	1	1	1	1	1	1	1
CPSG	PLTA	400														1	1	1	1	1	1	1	1	1
CMD3	PLTA	238														1	1	1	1	1	1	1	1	1
MANG	PLTA	360														1	1	1	1	1	1	1	1	1
PLTA	PLTA	300																3	3	6	6	6	7	7
Java-Sumatra I.C.		600								4	5	5	5	5	5	5	5	5	5	5	5	5	5	5

C6H	PLTU	600																						
C10H	PLTU	1000						1,000	1,000	1,000	1,000	1,000	5,000	5,000	8,000	10,000	12,000	15,000	17,000	18,000	21,000	24,000	27,000	31,000
LNG	PLTG	750									750	1,500	2,250	3,000	3,000	3,000	3,000	3,000	4,500	4,500	6,000	6,000	7,500	7,500
N10H	PLTN	1000												1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000
GE55	PLTP	55					330	330	330	550	660	770	880	990	1,100	1,210	1,320	1,430	1,540	1,650	1,760	1,870	1,980	2,090
G150	PLTG	150																						
PS	Pumped S.	500									500	1,000	1,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
CIB3	PLTA	172														172	172	172	172	172	172	172	172	172
CPSG	PLTA	400														400	400	400	400	400	400	400	400	400
CMD3	PLTA	238														238	238	238	238	238	238	238	238	238
MANG	PLTA	360														360	360	360	360	360	360	360	360	360
PLTA	PLTA	300																900	900	1,800	1,800	1,800	2,100	2,100
Java-Sumatera I.C.		600								2,400	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Total Additional Capacity					-	-	330	1,330	1,330	3,950	5,910	7,270	12,130	14,990	19,100	22,380	25,490	29,500	33,110	36,120	40,730	44,840	49,750	54,860
Total Supply Capacity at year end					24,389	28,305	30,318	32,285	32,285	34,905	36,975	38,335	41,642	43,801	46,913	50,193	53,303	56,708	60,318	63,328	67,938	72,048	76,958	82,068
Reserve Margin		%			26.2%	37.8%	39.0%	39.4%	31.4%	33.9%	33.7%	30.4%	32.9%	31.2%	31.9%	32.5%	32.1%	32.0%	31.8%	30.0%	31.1%	30.6%	31.1%	31.4%

FIXSYS HYDRO

PLTA	Index	Installed Cap. [MW]	Energy Storage (GWh)	Inflow Energy				Min. Generation				Average Capacity			
				I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [MW]	II(Dry) [MW]	III [MW]	IV [MW]
Jatiluhur #1-6	JTLH	180	842.6	315.8	376.9			204.3	298			180	180		
Saguling	SAGL	700.7	2,520.7	1292	680.8			999.2	400.6			701	701		
IP- Area I	IPA1	37.26	-	70.5	53.9			61.8	37.8			37	37		
IP- Area II	IPA2	59.38	-	143.1	78.9			112.3	56.7			59	59		
Sudirman	MRTC	180.9	489.8	356.9	79.7			277.3	18			181	181		
IP-Area III	APA3	125.54	-	264.1	199			235.8	166.3			126	126		
Sutami	STMI	105	451.1	263.2	155.5			164.6	127.5			105	105		
EP Non Suami	EPNS	134.5	563.5	312.3	175.8			223	115.8			135	135		
Brantas Non EP	BNEP	41.9	-	47.3	41.2			17.1	11.3			42	42		
Cirata	CRI2	1008	1,377.0	648.2	444.9			487.8	256			1008	1008		
Rajamandala	RJMD	47	90.0	82.0	61.8			70.0	52.5			47	47		
Jatigede	JTGD	110	620.0	216.8	72.3			184.3	61.4			110	110		

INPUT VARSYS

No.	Name	No. of Sets	Min. Load MW	Capacity MW	Heat Rates Kcal/kWh Base Load	Heat Rates Kcal/kWh Average Incremental	Fuel Costs Cents/Million Kcal Domestic	Fuel Costs Cents/Million Kcal Foreign	Fuel Type	Spinning Reserveas	FOR	Days Scheduled Maintenance Days	Maintenance Class Size MW	O&M (FIX) $/kWm	O&M (VAR) $/MWh	FLD HEAT RT KCAL/KWH	UNIT GENERATION COSTS ($/MWH) BASE DOM	BASE FRGN	FLD DOM	FLD FRGN	FLD TOT
1	C6H	0	300	600	2510	2389	1509	0	0	5	7	42	600	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
2	C10H	0	500	1000	2510	2389	1509	0	0	5	7	42	1000	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
3	LNG	0	375	750	1911	1741	0	3968	2	7	7	42	750	1.60	1.00	1826	1.0	75.8	1.0	72.5	73.5
4	N10H	0	1000	1000	2606	2606	0	250	6	0	7	28	1000	4.66	0.41	2606	0.4	6.5	0.4	6.5	6.9
5	GE55	0	44	55	1000	1000	6430	0	5	0	7	28	55	2.50	1.00	1000	65.3	0.0	65.3	0.0	65.3
6	G150	0	75	150	3150	2625	9222	0	4	10	7	28	150	0.97	2.00	2888	292.5	0.0	268.3	0.0	268.3
7	J-SIC	5	300	600	2510	2389	1509	0	7	5	8	45	600	2.64	2.00	2450	39.9	0.0	39.0	0.0	39.0

PUMP STORAGE
(Upper Cisokan)

PS1

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2015	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

PS2

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2016	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

Hydropower Project

		MANG (Maung)		CIB3 (Cibuni-3)		CPSG (Cipasang)		CMD3(Cimandiri-3)	
Construction Cost	$/kW	1872	Inc.IDC	2,865	Inc.IDC	1,636	Inc.IDC	1,998	Inc.IDC
Installed Caapcity	MW	360		172		400		238	
Reservoir Energy	GWh	535		568		751		600	
Inflow Energy									
wet	GWh	430		450		600		480	
dry	GWh	160		170		230		180	
Minimum Generation									
wet	GWh	320		340		450		360	
dry	GWh	80		90		110		90	
Average Capacity									
wet	MW	360		172		400		238	
dry	MW	360		172		400		238	
Construction Period									
	year	5		5		5		5	
	I.D.C (%)	22.6		22.6		22.6		22.6	

Source: Hydro Inventory and Pre-feasibility Studies, June 1999, Nippon Koei Co., Ltd.

PUMP STORAGE
(Matenggeng)

PS3

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	450
2	530	500	450

PUMP STORAGE
(Grindulu)

PS4

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap MW	Gen. Cap MW	Max. Energy GWh
1	530	500	450
2	530	500	450

Construction Cost inc. IDC

PLANT	CAPITAL COSTS ($/kW) DEPRECIABLE PART DOMESTIC	DEPRECIABLE PART FOREIGN	NON-DEPRECIABLE PART DOMESTIC	NON-DEPRECIABLE PART FOREIGN	PLANT LIFE YEARS	D.R=12% I.D.C. (%)	CONSTR. TIME (YEARS)
C6H	444	1,037	0	0	30	18.46	4
C10H	611	1,425	0	0	30	18.46	4
LNG	300	699	0	0	25	14.13	3
N10H	659	2,637	0	0	40	26.6	6
G150	82	466	0	0	20	9.6	2
PS 1&2	271	584	0	0	50	22.6	5
PS 3	252	541	0	0	50	22.6	5
PS 4	268	579	0	0	50	22.6	5
GE55	444	1,776	0	0	30	14.13	3
J-SIC	308	2,051	0	0	30	18.46	4

Java - Sumatra Interconnection (HVDC)

1. Investment Cost for HVDC			Note
EPC Cost	1,370	M.US$	
Land Acquisition + ROW	160	M.US$	
Total Investment Cost	**1,530**	**M.US$**	
2. Construction Cost for HVDC	510	$/kW	Divided by 3000 MW
3. Construction Cost of C6H	1,481	$/kW	Referred to P3B Data
4. Total Investment Cost	**1,991**	**$/kW**	

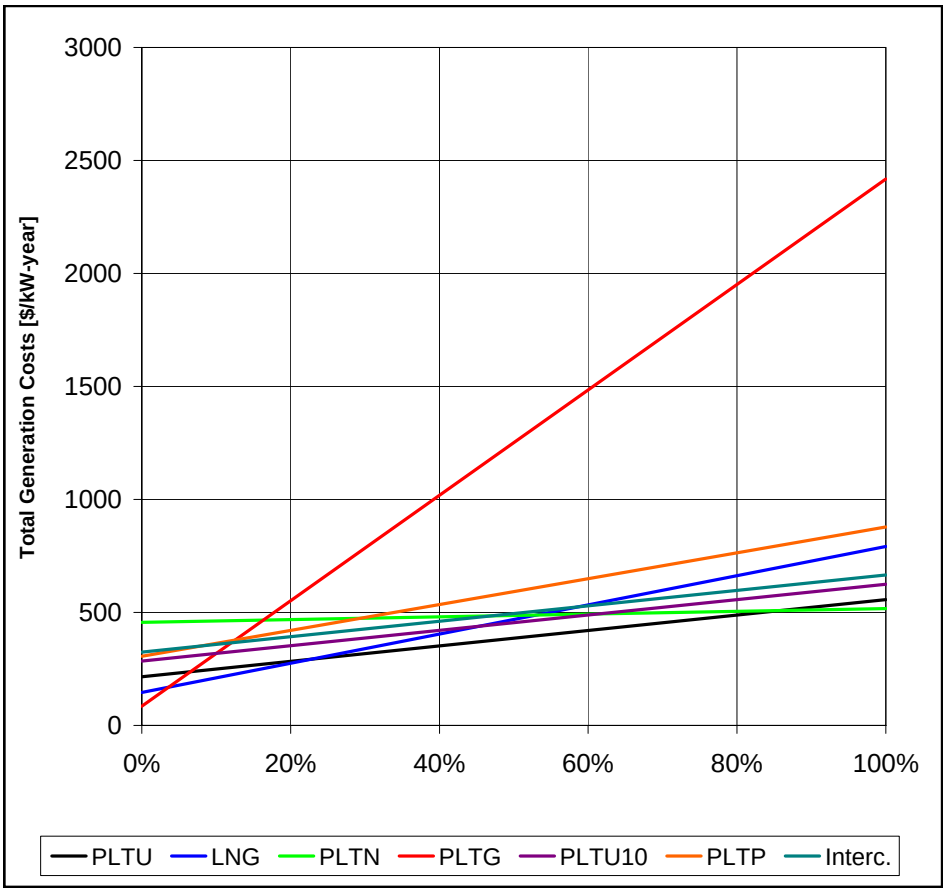
Source: Updated Feasibility Study Jawa - Sumatera Interconnection, Sep. 2007

WASP IV Screening Curve

Fuel Prices Scenario Index	2	Medium Scenario						
		PLTU	LNG	PLTN	PLTG	PLTU10	PLTP	Interc.
Installed Capacity	MW	600	750	1000	150	1000	55	3000
Fuel Type		coal	LNG	nuclear	HSD	coal	Geothermal	HVDC T/L
Fuel Price	$/MMBTU	3.80	10.00	0.63	23.24	3.80	16.20	3.80
Thermal Efficiency	%	35%	47%	33%	30%	35%	86%	35%
Variabel O&M	$/MWh	2.0	1.0	0.4	2.0	2.0	1.0	2.0
Fixed O&M	$/KW.year	31.32	19.2	55.92	11.64	31.32	30.00	31.68
Investment Cost inc. IDC	$/KW	1,481	999	3,296	548	2,036	2,220	2,359
Construction Period	Years	4	3	6	2	4	3	4
Book Life	Years	30	25	40	20	30	30	30
Discount Rate		12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
Capital Recovery Factor (CRF)		12.41%	12.75%	12.13%	13.39%	12.41%	12.41%	12.41%
Interest During Construction (IDC)		18.46%	14.13%	26.60%	9.60%	18.46%	14.13%	14.13%
Annual Investment cost	$/KW.year	183.86	127.37	399.82	73.37	252.76	275.60	292.75
Annual Fixed Cost	**$/KW.year**	**215.18**	**146.57**	**455.74**	**85.01**	**284.08**	**305.60**	**324.43**
Annual Fuel Cost	$/KW.year	324.58	636.07	57.07	2315.88	323.65	563.14	323.65
Annual Variable O&M	$/KW.year	17.52	8.76	3.59	17.52	17.52	8.76	17.52
Annual Variable Cost	**$/KW.year**	**342.10**	**644.83**	**60.66**	**2333.40**	**341.17**	**571.90**	**341.17**
Annual Fixed Cost	$/KW.year	215.18	146.57	455.74	85.01	284.08	305.60	324.43
Total	**$/KW.year**	**557.28**	**791.40**	**516.40**	**2418.41**	**625.25**	**877.50**	**665.60**
CF	0%	215.18	146.57	455.74	85.01	284.08	305.60	324.43
	100%	557.28	791.40	516.40	2418.41	625.25	877.50	665.60

	Fuel Prices $/MMBTU		
	Low	Medium	High
Index	**1**	**2**	**3**
Coal	3.33	3.80	4.28
LNG	8.00	10.00	12.00
N.Gas	4.00	5.00	6.00
Nuclear	0.57	0.63	0.69
HSD	19.57	23.24	26.91
MFO	11.50	13.70	15.90
Geothemal	14.58	16.20	17.82

Note: $/MMBTU is referred to "Fuel Price Sheet" except Nuclear.



INPUT REMERSIM (Fuel Comsumption per GWh)

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) at FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo
1	SRL1	PLTU	4	240	381	2,622	2,452	2,559	0	5,100	0.502			
2	SRL2	PLTU	3	340	579	2,560	2,309	2,456	0	5,100	0.482			
3	MKR1	PLTU	3	44	84	3,273	3,194	3,235	3	9,598			0.337	
4	MKR2	PLTG	2	90	165	2,948	2,884	2,919	1	2,520		11.58		
5	MKR3	PLTGU	1	300	465	2,433	2,018	2,286	1	2,520		9.07		
6	MKRR	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
7	PRK1	PLTU	2	25	48	3,229	2,957	3,099	3	9,598			0.323	
8	PRK2	PLTGU	2	315	560	2,319	1,994	2,177	4	9,095			0.239	
9	PRK3	PLTG	2	10	20	4,711	3,930	4,321	4	9,095			0.475	
10	PRKE	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
11	MTR1	PLTGU	1	315	605	2,555	2,246	2,407	4	9,095			0.265	
12	MTR2	PLTG	2	72	138	3,376	3,204	3,294	4	9,095			0.362	
13	MTR3	PLTG	6	72	143	3,376	3,204	3,291	4	9,095			0.362	
14	MTRR	PLTGU	-	150	225	2,433	2,018	2,295	1	2,520		9.11		
15	SLK1	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
16	SLK2	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
17	CLND	PLTG	1	50	150	4,465	3,200	3,622	1	2,520		14.37		
18	CLGN	PLTGU	1	240	740	2,175	1,800	1,922	1	2,520		7.63		
19	SRL3	PLTU	-	340	600	2,560	2,309	2,451	0	4,200	0.584			
20	LBHN	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
21	TLNG	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
22	KMJ1	PLTP	1	26	26	1,000	1,000	1,000	5	7,308				-
23	KMJ2	PLTP	2	47	47	1,000	1,000	1,000	5	7,308				-
24	KMJ3	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
25	DRJ1	PLTP	1	44	44	1,000	1,000	1,000	5	7,308				-
26	DRJ2	PLTP	1	70	70	1,000	1,000	1,000	5	5,300				-
27	DRJ3	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
28	WW1	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
29	SRG1	PLTG	2	8	18	4,700	4,084	4,358	1	2,520		17.29		
30	SRG2	PLTG	2	8	20	4,700	4,084	4,330	4	9,095			0.476	
31	PTH1	PLTP	-	60	60	1,000	1,000	1,000	5	7,308				-
32	JBSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
33	JBUT	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
34	CRBN	PLTU	-	360	600	2,560	2,160	2,400	0	5,300	0.453			
35	TBK1	PLTGU	2	297	496	2,632	2,015	2,384	4	9,095			0.262	
36	TBK2	PLTU	2	25	41	3,229	3,127	3,189	3	9,598			0.332	
37	TBK3	PLTU	1	125	192	3,229	3,127	3,193	3	9,598			0.333	
38	CLC1	PLTG	2	10	22	4,700	4,079	4,361	4	9,095			0.479	
39	CLC2	PLTU	2	150	300	2,772	2,285	2,529	0	5,215	0.485			
40	TJB1	PLTU	2	330	660	2,772	2,285	2,529	0	5,215	0.485			
41	TJB2	PLTU	-	360	600	2,560	2,160	2,400	0	4,500	0.533			
42	DIEN	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
43	RMBG	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
44	PTN1	PLTU	2	225	370	2,579	2,412	2,514	0	5,100	0.493			
45	PTN2	PLTU	-	340	600	2,560	2,309	2,451	0	4,500	0.545			
46	PEC	PLTU	2	368	615	2,772	2,285	2,576	0	5,215	0.494			
47	JPOW	PLTU	2	355	610	2,700	2,310	2,537	0	5,500	0.461			
48	GSK1	PLGU	3	250	480	2,318	1,990	2,161	1	2,520		8.58		
49	GSK2	PLTG	2	5	16	4,456	4,284	4,338	1	2,520		17.21		
50	GSK3	PLTU	2	43	85	2,882	2,709	2,797	1	2,520		11.10		
51	GSK4	PLTU	2	90	175	2,826	2,601	2,717	1	2,520		10.78		
52	PRAK	PLTU	2	25	48	4,323	3,517	3,937	3	9,598			0.410	
53	GRT1	PLTGU	1	270	462	2,632	2,083	2,404	4	9,095			0.264	
54	GRT2	PLTG	3	40	100	3,376	3,310	3,336	4	9,095			0.367	
55	PMRN	PLTG	2	12	48	4,439	4,035	4,136	4	9,095			0.455	
56	GLMR	PLTG	2	5	16	4,456	4,284	4,338	4	9,095			0.477	
57	GLMK	PLTG	1	56	133	4,439	4,035	4,205	4	9,095			0.462	
58	BLI1	PLTG	4	6	20	4,700	4,131	4,302	4	9,095			0.473	
59	BLI2	PLTD	10	2	5	3,880	3,576	3,698	4	9,095			0.407	
60	BLUT	PLTU	-	65	130	2,590	2,115	2,353	0	5,300	0.444			
61	BDGL	PLTP	-	10	10	1,000	1,000	1,000	5	7,308				-
62	TJAW	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
63	JTSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) a FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo Nuclear
1	C6H	PLTU	0	300	600	2510	2389	2,450	0	4,766	0.514			
2	C10H	PLTU	0	500	1000	2510	2389	2,450	0	4,766	0.514			
3	LNG	PLTG	0	375	750	1911	1741	1,826	2	2,520		7.25		
4	N10H	PLTN	0	1000	1000	2606	2606	2,606	6	0				-
5	GE55	PLTP	0	44	55	1000	1000	1,000	5	0				-
6	G150	PLTG	0	75	150	3150	2625	2,888	4	9,095			0.318	
7	J-SIC	J-SI	5	300	600	2510	2389	2,450	7	0				-

Assumption of Fuel Prices (Medium Scenario)

Kind of Fuel	Price			Heat Content	
	USD		Cents/mKcal		
Coal	80.0	per Ton	1,509	5,300	Kcal/kg
LNG	10.0	per MMBTU	3,968	252,000	Kcal/mmbtu
Gas	5.0	per MMBTU	1,984	252,000	Kcal/mmbtu
HSD	133.0	per Barrel	9,222	9,070	Kcal/l
MFO	81.0	per Barrel	5,437	9,370	Kcal/l
Geothermal	0.0553	per kWh	6,430		
Nuclear			250		

Price	Crude Oil	95	$/barrel			
	HSD	133	$/barrel	23.24	$/mmbtu	
	MFO	81	$/barrel	13.70	$/mmbtu	
	LNG+transport	10.0	$/mmbtu			
	transport	0.7	$/mmbtu			
	LNG	9.3	$/mmbtu	9.30	$/mmbtu	
	Gas	5.0	$/mmbtu	5.00	$/mmbtu	
	Coal+transport	80	$/ton	3.80	$/mmbtu	
	transport	18	$/ton	Note: Coal price at P/S is CIF Price.		
	Coal	74	$/ton	6,300	Kcal/kg	
		62	$/ton	5,300	Kcal/kg	
Heat (	HSD	19,500	btu/lb	1 kg =	2.2	lb
		10,811	Kcal/kg	berat jenis =	0.839	kg/l
		9,070	Kcal/l			
	MFO	18,000	btu/lb	1 kg =	2.2	lb
		9,979	Kcal/kg	berat jenis =	0.939	kg/l
		9,370	Kcal/l			

Reference 2: Relationship between MOPS and Domestic Prices

MOPS (2008/03/31 ~ 2008/04/04)	
	$/barrel
High Speed Diesel Oil (0.05%)	132.02
Kerosene	128.36
Crude Oil	**104.30**

Note: HSD and Kerosene are FOB at Singapore
MOPS means Mean of Platts Singapore
Source://www.gu-goon.com/

PERTAMINA Price	$/barrel	Price Index (IP)
HSD	**145.93**	**1.40**
MFO	**89.14**	**0.85**
Crude Oil	**104.30**	**1.00**

Note : 1 barrel = 159 liter

New Fuel Prices for Industry in April 2008 released by PERTAMINA on March 31, 2008						
Fuel Type	Economical Selling Fuel Price - Non Tax (Base Price)					
	Region 1		Region 2		Region 3	
	Rp/KL	US$/KL	Rp/KL	US$/KL	Rp/KL	US$/KL
Gasoline	7080.13	768.17	7352.107	797.68	7508.057	814.60
Kerosene	8532.07	925.76	8718.104	945.94	8903.029	966.01
High Speed Diesel	8458.78	**917.77**	8819.464	956.91	9006.539	977.20
Marine Diesel Fuel	8284.08	898.88	8464.705	918.48	8644.250	937.97
Marine Fuel Oil	5166.53	**560.60**	5278.949	572.80	5390.924	584.95
Pertamina DEX	8757.37	950.14	-	-	-	-

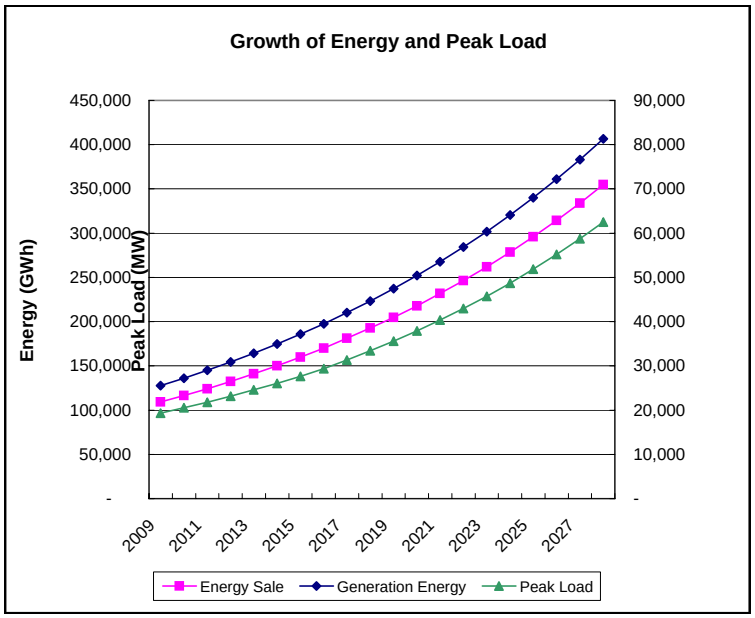
Source: www.pertamina.com/
Note : Fuel prices released by PERTAMINA depend on MOPS.

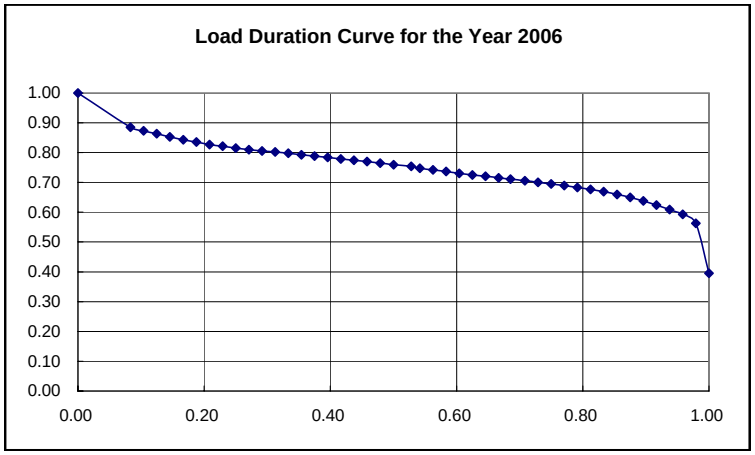
Peak Load Ratio

Period	Peak Load Ratio

Generation Energy and Peak Load

Year	Energy Sale	Station Use	T & D Loss	Generation Energy	Load Factor	Peak Load	Growth Rate of P.L.
	GWh	% of Generation Energy		GWh		MW	%
2009	109,227	4%	11.00%	127,841	75.5%	19,329	
2010	116,480	4%	10.90%	136,177	75.7%	20,535	6.2%
2011	124,169	4%	10.80%	145,003	75.9%	21,809	6.2%
2012	132,320	4%	10.70%	154,349	76.1%	23,153	6.2%
2013	140,962	4%	10.60%	164,245	76.3%	24,573	6.1%
2014	150,124	4%	10.50%	174,725	76.5%	26,073	6.1%
2015	159,838	4%	10.40%	185,824	76.7%	27,657	6.1%
2016	170,137	4%	10.30%	197,576	76.7%	29,406	6.3%
2017	181,057	4%	10.20%	210,023	76.5%	31,340	6.6%
2018	192,636	4%	10.10%	223,206	76.3%	33,395	6.6%
2019	204,913	4%	10.00%	237,168	76.1%	35,577	6.5%
2020	217,933	4%	9.90%	251,957	75.9%	37,895	6.5%
2021	231,738	4%	9.80%	267,621	75.7%	40,357	6.5%
2022	246,379	4%	9.70%	284,214	75.5%	42,973	6.5%
2023	261,905	4%	9.60%	301,790	75.3%	45,751	6.5%
2024	278,371	4%	9.50%	320,409	75.1%	48,703	6.5%
2025	295,834	4%	9.40%	340,133	74.9%	51,840	6.4%
2026	314,355	4%	9.30%	361,029	74.7%	55,172	6.4%
2027	333,999	4%	9.20%	383,167	74.5%	58,712	6.4%
2028	354,835	4%	9.10%	406,622	74.3%	62,474	6.4%





LDC for the Year 2006
(Based on P3B 2006 Data)

No.	Load	Duration	Area
1	1.0000	0.00000	
5	0.8855	0.08333	0.0186
6	0.8736	0.10417	0.0183
7	0.8632	0.12500	0.0181
8	0.8532	0.14583	0.0179
9	0.8437	0.16667	0.0177
10	0.8357	0.18750	0.0175
11	0.8275	0.20833	0.0173
12	0.8213	0.22917	0.0172
13	0.8155	0.25000	0.0170
14	0.8102	0.27083	0.0169
15	0.8060	0.29167	0.0168
16	0.8019	0.31250	0.0167
17	0.7977	0.33333	0.0167
18	0.7930	0.35417	0.0166
19	0.7889	0.37500	0.0165
20	0.7839	0.39583	0.0164
21	0.7790	0.41667	0.0163
22	0.7744	0.43750	0.0162
23	0.7697	0.45833	0.0161
24	0.7646	0.47917	0.0160
25	0.7593	0.50000	0.0159
26	0.7535	0.52803	0.0212
27	0.7479	0.54167	0.0102
28	0.7425	0.56250	0.0155
29	0.7367	0.58333	0.0154
30	0.7309	0.60417	0.0153
31	0.7255	0.62500	0.0152
32	0.7203	0.64583	0.0151
33	0.7154	0.66667	0.0150
34	0.7112	0.68522	0.0132
35	0.7058	0.70833	0.0164
36	0.7006	0.72917	0.0147
37	0.6949	0.75000	0.0145
38	0.6893	0.77083	0.0144
39	0.6830	0.79167	0.0143
40	0.6770	0.81250	0.0142
41	0.6694	0.83333	0.0140
42	0.6599	0.85417	0.0139
43	0.6499	0.87500	0.0136
44	0.6380	0.89583	0.0134
45	0.6242	0.91667	0.0132
46	0.6086	0.93750	0.0128
47	0.5932	0.95833	0.0125
48	0.5631	0.97917	0.0120
49	0.3957	1.00000	0.0100
50			
51			
52			
Area (Load Factor) =			0.7551

Addition/Retirements

No.	Name	No. of Sets	Available Capacity MW	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Supply Balance Information				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Available capacity of thermal				18,816																					
installed capacity of hydro				2,573																					
Gross available capacity				21,389	21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208
Addition/Retirement						3,000	3,916	1,683	967			110		(1,553)	(701)	(998)			(605)						
Gross available capacity(year end)				21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208	27,208
Peak Load at Power Station				-	-	19,329	20,535	21,809	23,153	24,573	26,073	27,657	29,406	31,340	33,395	35,577	37,895	40,357	42,973	45,751	48,703	51,840	55,172	58,712	62,474
Shortage/surplus of power supply				21,389	21,389	5,060	7,770	8,179	7,802	6,382	4,882	3,408	1,659	-1,828	-4,584	-7,764	-10,082	-12,544	-15,765	-18,543	-21,495	-24,632	-27,964	-31,504	-35,266
Required available capacity																									
Min. reserve margin of			10%	-	-	21,262	22,589	23,990	25,468	27,030	28,680	30,423	32,347	34,474	36,735	39,135	41,685	44,393	47,270	50,326	53,573	57,024	60,689	64,583	68,721
Max. reserve margin of			35%	-	-	26,094	27,722	29,442	31,257	33,174	35,199	37,337	39,698	42,309	45,083	48,029	51,158	54,482	58,014	61,764	65,749	69,984	74,482	79,261	84,340
Required mini. additional capacity				-	-	-	-	-	-	-	-	-	1,282	4,962	7,924	11,322	13,872	16,580	20,062	23,118	26,365	29,816	33,481	37,375	41,513
				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
C6H	PLTU	600																							
C10H	PLTU	1000							1	1	1	1	2	5	6	9	10	13	17	19	22	26	30	34	38
LNG	PLTG	750										1	2	3	4	4	4	4	4	5	5	5	5	5	5
N10H	PLTN	1000													1	1	1	2	2	2	3	3	4	4	5
GE55	PLTP	55						6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
G150	PLTG	150																							
PS	Pumped S.	500										1	2	2	4	6	6	6	6	6	6	6	6	6	6
CIB3	PLTA	172															1	1	1	1	1	1	1	1	1
CPSG	PLTA	400															1	1	1	1	1	1	1	1	1
CMD3	PLTA	238															1	1	1	1	1	1	1	1	1
MANG	PLTA	360															1	1	1	1	1	1	1	1	1
PLTA	PLTA	300																							
Java-Sumatra I.C.		600									4	5	5	5	5	5	5	5	5	5	5	5	5	5	5

C6H	PLTU	600																							
C10H	PLTU	1000							1,000	1,000	1,000	1,000	2,000	5,000	6,000	9,000	10,000	13,000	17,000	19,000	22,000	26,000	30,000	34,000	38,000
LNG	PLTG	750										750	1,500	2,250	3,000	3,000	3,000	3,000	3,000	3,750	3,750	3,750	3,750	3,750	3,750
N10H	PLTN	1000													1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000
GE55	PLTP	55						330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330
G150	PLTG	150																							
PS	Pumped S.	500										500	1,000	1,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
CIB3	PLTA	172															172	172	172	172	172	172	172	172	172
CPSG	PLTA	400															400	400	400	400	400	400	400	400	400
CMD3	PLTA	238															238	238	238	238	238	238	238	238	238
MANG	PLTA	360															360	360	360	360	360	360	360	360	360
PLTA	PLTA	300																							
Java-Sumatera I.C.		600									2,400	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Total Additional Capacity						-	-	330	1,330	1,330	3,730	5,580	7,830	11,580	15,330	19,330	21,500	25,500	29,500	32,250	36,250	40,250	45,250	49,250	54,250
Total Supply Capacity at year end						24,389	28,305	30,318	32,285	32,285	34,685	36,645	38,895	41,092	44,141	47,143	49,313	53,313	56,708	59,458	63,458	67,458	72,458	76,458	81,458
Reserve Margin		%				26.2%	37.8%	39.0%	39.4%	31.4%	33.0%	32.5%	32.3%	31.1%	32.2%	32.5%	30.1%	32.1%	32.0%	30.0%	30.3%	30.1%	31.3%	30.2%	30.4%

FIXSYS HYDRO

PLTA	Index	Installed Cap. [MW]	Energy Storage (GWh)	Inflow Energy				Min. Generation				Average Capacity			
				I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [MW]	II(Dry) [MW]	III [MW]	IV [MW]
Jatiluhur #1-6	JTLH	180	842.6	315.8	376.9			204.3	298			180	180		
Saguling	SAGL	700.7	2,520.7	1292	680.8			999.2	400.6			701	701		
IP- Area I	IPA1	37.26	-	70.5	53.9			61.8	37.8			37	37		
IP- Area II	IPA2	59.38	-	143.1	78.9			112.3	56.7			59	59		
Sudirman	MRTC	180.9	489.8	356.9	79.7			277.3	18			181	181		
IP-Area III	APA3	125.54	-	264.1	199			235.8	166.3			126	126		
Sutami	STMI	105	451.1	263.2	155.5			164.6	127.5			105	105		
EP Non Suami	EPNS	134.5	563.5	312.3	175.8			223	115.8			135	135		
Brantas Non EP	BNEP	41.9	-	47.3	41.2			17.1	11.3			42	42		
Cirata	CRI2	1008	1,377.0	648.2	444.9			487.8	256			1008	1008		
Rajamandala	RJMD	47	90.0	82.0	61.8			70.0	52.5			47	47		
Jatigede	JTGD	110	620.0	216.8	72.3			184.3	61.4			110	110		

INPUT VARSYS

No.	Name	No. of Sets	Min. Load MW	Capacity MW	Heat Rates Kcal/kWh Base Load	Heat Rates Kcal/kWh Average Incremental	Fuel Costs Cents/Million Kcal Domestic	Fuel Costs Cents/Million Kcal Foreign	Fuel Type	Spinning Reserveas	FOR	Days Scheduled Maintenance Days	Maintenance Class Size MW	O&M (FIX) $/kWm	O&M (VAR) $/MWh	FLD HEAT RT KCAL/KWH	UNIT GENERATION COSTS ($/MWH) BASE DOM	BASE FRGN	FLD DOM	FLD FRGN	FLD TOT
1	C6H	0	300	600	2510	2389	1509	0	0	5	7	42	600	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
2	C10H	0	500	1000	2510	2389	1509	0	0	5	7	42	1000	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
3	LNG	0	375	750	1911	1741	0	3968	2	7	7	42	750	1.60	1.00	1826	1.0	75.8	1.0	72.5	73.5
4	N10H	0	1000	1000	2606	2606	0	250	6	0	7	28	1000	4.66	0.41	2606	0.4	6.5	0.4	6.5	6.9
5	GE55	0	44	55	1000	1000	6430	0	5	0	7	28	55	2.50	1.00	1000	65.3	0.0	65.3	0.0	65.3
6	G150	0	75	150	3150	2625	9222	0	4	10	7	28	150	0.97	2.00	2888	292.5	0.0	268.3	0.0	268.3
7	J-SIC	5	300	600	2510	2389	1509	0	7	5	8	45	600	2.64	2.00	2450	39.9	0.0	39.0	0.0	39.0

PUMP STORAGE
(Upper Cisokan)

PS1

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2015	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

PS2

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2016	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

Hydropower Project

		MANG (Maung)		CIB3 (Cibuni-3)		CPSG (Cipasang)		CMD3(Cimandiri-3)	
Construction Cost	$/kW	1872	Inc.IDC	2,865	Inc.IDC	1,636	Inc.IDC	1,998	Inc.IDC
Installed Caapcity	MW	360		172		400		238	
Reservoir Energy	GWh	535		568		751		600	
Inflow Energy									
wet	GWh	430		450		600		480	
dry	GWh	160		170		230		180	
Minimum Generation									
wet	GWh	320		340		450		360	
dry	GWh	80		90		110		90	
Average Capacity									
wet	MW	360		172		400		238	
dry	MW	360		172		400		238	
Construction Period									
	year	5		5		5		5	
	I.D.C (%)	22.6		22.6		22.6		22.6	

Source: Hydro Inventory and Pre-feasibility Studies, June 1999, Nippon Koei Co., Ltd.

PUMP STORAGE
(Matenggeng)

PS3

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	450
2	530	500	450

PUMP STORAGE
(Grindulu)

PS4

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap MW	Gen. Cap MW	Max. Energy GWh
1	530	500	450
2	530	500	450

Construction Cost inc. IDC

PLANT	CAPITAL COSTS ($/kW) DEPRECIABLE PART DOMESTIC	DEPRECIABLE PART FOREIGN	NON-DEPRECIABLE PART DOMESTIC	NON-DEPRECIABLE PART FOREIGN	PLANT LIFE YEARS	D.R=12% I.D.C. (%)	CONSTR. TIME (YEARS)
C6H	444	1,037	0	0	30	18.46	4
C10H	611	1,425	0	0	30	18.46	4
LNG	300	699	0	0	25	14.13	3
N10H	659	2,637	0	0	40	26.6	6
G150	82	466	0	0	20	9.6	2
PS 1&2	271	584	0	0	50	22.6	5
PS 3	252	541	0	0	50	22.6	5
PS 4	268	579	0	0	50	22.6	5
GE55	444	1,776	0	0	30	14.13	3
J-SIC	308	2,051	0	0	30	18.46	4

Java - Sumatra Interconnection (HVDC)

1. Investment Cost for HVDC			Note
EPC Cost	1,370	M.US$	
Land Acquisition + ROW	160	M.US$	
Total Investment Cost	**1,530**	**M.US$**	
2. Construction Cost for HVDC	510	$/kW	Divided by 3000 MW
3. Construction Cost of C6H	1,481	$/kW	Referred to P3B Data
4. Total Investment Cost	**1,991**	**$/kW**	

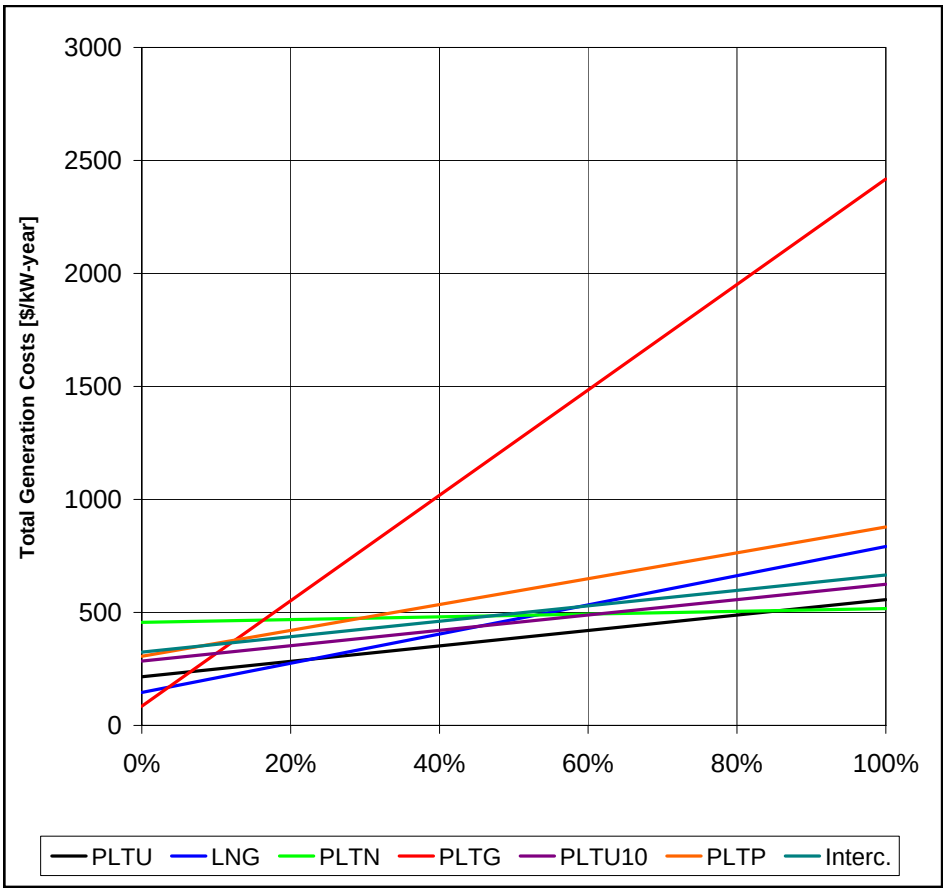
Source: Updated Feasibility Study Jawa - Sumatera Interconnection, Sep. 2007

WASP IV Screening Curve

Fuel Prices Scenario Index	2	Medium Scenario						
		PLTU	LNG	PLTN	PLTG	PLTU10	PLTP	Interc.
Installed Capacity	MW	600	750	1000	150	1000	55	3000
Fuel Type		coal	LNG	nuclear	HSD	coal	Geothermal	HVDC T/L
Fuel Price	$/MMBTU	3.80	10.00	0.63	23.24	3.80	16.20	3.80
Thermal Efficiency	%	35%	47%	33%	30%	35%	86%	35%
Variabel O&M	$/MWh	2.0	1.0	0.4	2.0	2.0	1.0	2.0
Fixed O&M	$/KW.year	31.32	19.2	55.92	11.64	31.32	30.00	31.68
Investment Cost inc. IDC	$/KW	1,481	999	3,296	548	2,036	2,220	2,359
Construction Period	Years	4	3	6	2	4	3	4
Book Life	Years	30	25	40	20	30	30	30
Discount Rate		12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
Capital Recovery Factor (CRF)		12.41%	12.75%	12.13%	13.39%	12.41%	12.41%	12.41%
Interest During Construction (IDC)		18.46%	14.13%	26.60%	9.60%	18.46%	14.13%	14.13%
Annual Investment cost	$/KW.year	183.86	127.37	399.82	73.37	252.76	275.60	292.75
Annual Fixed Cost	**$/KW.year**	**215.18**	**146.57**	**455.74**	**85.01**	**284.08**	**305.60**	**324.43**
Annual Fuel Cost	$/KW.year	324.58	636.07	57.07	2315.88	323.65	563.14	323.65
Annual Variable O&M	$/KW.year	17.52	8.76	3.59	17.52	17.52	8.76	17.52
Annual Variable Cost	**$/KW.year**	**342.10**	**644.83**	**60.66**	**2333.40**	**341.17**	**571.90**	**341.17**
Annual Fixed Cost	$/KW.year	215.18	146.57	455.74	85.01	284.08	305.60	324.43
Total	**$/KW.year**	**557.28**	**791.40**	**516.40**	**2418.41**	**625.25**	**877.50**	**665.60**
CF	0%	215.18	146.57	455.74	85.01	284.08	305.60	324.43
	100%	557.28	791.40	516.40	2418.41	625.25	877.50	665.60

	Fuel Prices $/MMBTU		
	Low	Medium	High
Index	**1**	**2**	**3**
Coal	3.33	3.80	4.28
LNG	8.00	10.00	12.00
N.Gas	4.00	5.00	6.00
Nuclear	0.57	0.63	0.69
HSD	19.57	23.24	26.91
MFO	11.50	13.70	15.90
Geothemal	14.58	16.20	17.82

Note: $/MMBTU is referred to "Fuel Price Sheet" except Nuclear.



INPUT REMERSIM (Fuel Comsumption per GWh)

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) at FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo
1	SRL1	PLTU	4	240	381	2,622	2,452	2,559	0	5,100	0.502			
2	SRL2	PLTU	3	340	579	2,560	2,309	2,456	0	5,100	0.482			
3	MKR1	PLTU	3	44	84	3,273	3,194	3,235	3	9,598			0.337	
4	MKR2	PLTG	2	90	165	2,948	2,884	2,919	1	2,520		11.58		
5	MKR3	PLTGU	1	300	465	2,433	2,018	2,286	1	2,520		9.07		
6	MKRR	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
7	PRK1	PLTU	2	25	48	3,229	2,957	3,099	3	9,598			0.323	
8	PRK2	PLTGU	2	315	560	2,319	1,994	2,177	4	9,095			0.239	
9	PRK3	PLTG	2	10	20	4,711	3,930	4,321	4	9,095			0.475	
10	PRKE	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
11	MTR1	PLTGU	1	315	605	2,555	2,246	2,407	4	9,095			0.265	
12	MTR2	PLTG	2	72	138	3,376	3,204	3,294	4	9,095			0.362	
13	MTR3	PLTG	6	72	143	3,376	3,204	3,291	4	9,095			0.362	
14	MTRR	PLTGU	-	150	225	2,433	2,018	2,295	1	2,520		9.11		
15	SLK1	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
16	SLK2	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
17	CLND	PLTG	1	50	150	4,465	3,200	3,622	1	2,520		14.37		
18	CLGN	PLTGU	1	240	740	2,175	1,800	1,922	1	2,520		7.63		
19	SRL3	PLTU	-	340	600	2,560	2,309	2,451	0	4,200	0.584			
20	LBHN	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
21	TLNG	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
22	KMJ1	PLTP	1	26	26	1,000	1,000	1,000	5	7,308				-
23	KMJ2	PLTP	2	47	47	1,000	1,000	1,000	5	7,308				-
24	KMJ3	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
25	DRJ1	PLTP	1	44	44	1,000	1,000	1,000	5	7,308				-
26	DRJ2	PLTP	1	70	70	1,000	1,000	1,000	5	5,300				-
27	DRJ3	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
28	WW1	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
29	SRG1	PLTG	2	8	18	4,700	4,084	4,358	1	2,520		17.29		
30	SRG2	PLTG	2	8	20	4,700	4,084	4,330	4	9,095			0.476	
31	PTH1	PLTP	-	60	60	1,000	1,000	1,000	5	7,308				-
32	JBSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
33	JBUT	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
34	CRBN	PLTU	-	360	600	2,560	2,160	2,400	0	5,300	0.453			
35	TBK1	PLTGU	2	297	496	2,632	2,015	2,384	4	9,095			0.262	
36	TBK2	PLTU	2	25	41	3,229	3,127	3,189	3	9,598			0.332	
37	TBK3	PLTU	1	125	192	3,229	3,127	3,193	3	9,598			0.333	
38	CLC1	PLTG	2	10	22	4,700	4,079	4,361	4	9,095			0.479	
39	CLC2	PLTU	2	150	300	2,772	2,285	2,529	0	5,215	0.485			
40	TJB1	PLTU	2	330	660	2,772	2,285	2,529	0	5,215	0.485			
41	TJB2	PLTU	-	360	600	2,560	2,160	2,400	0	4,500	0.533			
42	DIEN	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
43	RMBG	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
44	PTN1	PLTU	2	225	370	2,579	2,412	2,514	0	5,100	0.493			
45	PTN2	PLTU	-	340	600	2,560	2,309	2,451	0	4,500	0.545			
46	PEC	PLTU	2	368	615	2,772	2,285	2,576	0	5,215	0.494			
47	JPOW	PLTU	2	355	610	2,700	2,310	2,537	0	5,500	0.461			
48	GSK1	PLGU	3	250	480	2,318	1,990	2,161	1	2,520		8.58		
49	GSK2	PLTG	2	5	16	4,456	4,284	4,338	1	2,520		17.21		
50	GSK3	PLTU	2	43	85	2,882	2,709	2,797	1	2,520		11.10		
51	GSK4	PLTU	2	90	175	2,826	2,601	2,717	1	2,520		10.78		
52	PRAK	PLTU	2	25	48	4,323	3,517	3,937	3	9,598			0.410	
53	GRT1	PLTGU	1	270	462	2,632	2,083	2,404	4	9,095			0.264	
54	GRT2	PLTG	3	40	100	3,376	3,310	3,336	4	9,095			0.367	
55	PMRN	PLTG	2	12	48	4,439	4,035	4,136	4	9,095			0.455	
56	GLMR	PLTG	2	5	16	4,456	4,284	4,338	4	9,095			0.477	
57	GLMK	PLTG	1	56	133	4,439	4,035	4,205	4	9,095			0.462	
58	BLI1	PLTG	4	6	20	4,700	4,131	4,302	4	9,095			0.473	
59	BLI2	PLTD	10	2	5	3,880	3,576	3,698	4	9,095			0.407	
60	BLUT	PLTU	-	65	130	2,590	2,115	2,353	0	5,300	0.444			
61	BDGL	PLTP	-	10	10	1,000	1,000	1,000	5	7,308				-
62	TJAW	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
63	JTSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) a FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo Nuclear
1	C6H	PLTU	0	300	600	2510	2389	2,450	0	4,766	0.514			
2	C10H	PLTU	0	500	1000	2510	2389	2,450	0	4,766	0.514			
3	LNG	PLTG	0	375	750	1911	1741	1,826	2	2,520		7.25		
4	N10H	PLTN	0	1000	1000	2606	2606	2,606	6	0				-
5	GE55	PLTP	0	44	55	1000	1000	1,000	5	0				-
6	G150	PLTG	0	75	150	3150	2625	2,888	4	9,095			0.318	
7	J-SIC	J-SI	5	300	600	2510	2389	2,450	7	0				-

Assumption of Fuel Prices (Medium Scenario)

Kind of Fuel	Price			Heat Content	
	USD		Cents/mKcal		
Coal	80.0	per Ton	1,509	5,300	Kcal/kg
LNG	10.0	per MMBTU	3,968	252,000	Kcal/mmbtu
Gas	5.0	per MMBTU	1,984	252,000	Kcal/mmbtu
HSD	133.0	per Barrel	9,222	9,070	Kcal/l
MFO	81.0	per Barrel	5,437	9,370	Kcal/l
Geothermal	0.0553	per kWh	6,430		
Nuclear			250		

Price	Crude Oil	95	$/barrel			
	HSD	133	$/barrel	23.24	$/mmbtu	
	MFO	81	$/barrel	13.70	$/mmbtu	
	LNG+transport	10.0	$/mmbtu			
	transport	0.7	$/mmbtu			
	LNG	9.3	$/mmbtu	9.30	$/mmbtu	
	Gas	5.0	$/mmbtu	5.00	$/mmbtu	
	Coal+transport	80	$/ton	3.80	$/mmbtu	
	transport	18	$/ton	Note: Coal price at P/S is CIF Price.		
	Coal	74	$/ton	6,300	Kcal/kg	
		62	$/ton	5,300	Kcal/kg	
Heat (	HSD	19,500	btu/lb	1 kg =	2.2	lb
		10,811	Kcal/kg	berat jenis =	0.839	kg/l
		9,070	Kcal/l			
	MFO	18,000	btu/lb	1 kg =	2.2	lb
		9,979	Kcal/kg	berat jenis =	0.939	kg/l
		9,370	Kcal/l			

Reference 2: Relationship between MOPS and Domestic Prices

MOPS (2008/03/31 ~ 2008/04/04)	
	$/barrel
High Speed Diesel Oil (0.05%)	132.02
Kerosene	128.36
Crude Oil	**104.30**

Note: HSD and Kerosene are FOB at Singapore
MOPS means Mean of Platts Singapore
Source://www.gu-goon.com/

PERTAMINA Price	$/barrel	Price Index (IP)
HSD	**145.93**	**1.40**
MFO	**89.14**	**0.85**
Crude Oil	**104.30**	**1.00**

Note : 1 barrel = 159 liter

New Fuel Prices for Industry in April 2008 released by PERTAMINA on March 31, 2008						
Fuel Type	Economical Selling Fuel Price - Non Tax (Base Price)					
	Region 1		Region 2		Region 3	
	Rp/KL	US$/KL	Rp/KL	US$/KL	Rp/KL	US$/KL
Gasoline	7080.13	768.17	7352.107	797.68	7508.057	814.60
Kerosene	8532.07	925.76	8718.104	945.94	8903.029	966.01
High Speed Diesel	8458.78	**917.77**	8819.464	956.91	9006.539	977.20
Marine Diesel Fuel	8284.08	898.88	8464.705	918.48	8644.250	937.97
Marine Fuel Oil	5166.53	**560.60**	5278.949	572.80	5390.924	584.95
Pertamina DEX	8757.37	950.14	-	-	-	-

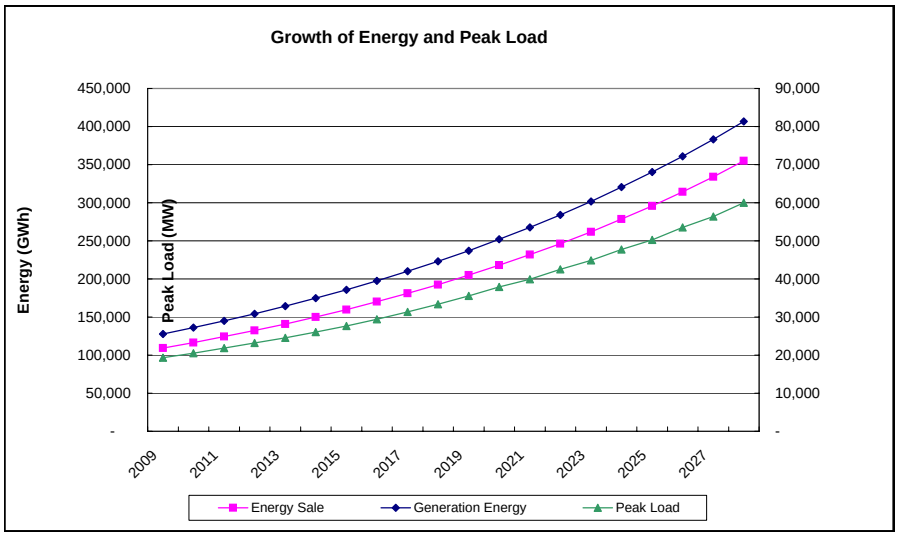
Source: www.pertamina.com/
Note : Fuel prices released by PERTAMINA depend on MOPS.

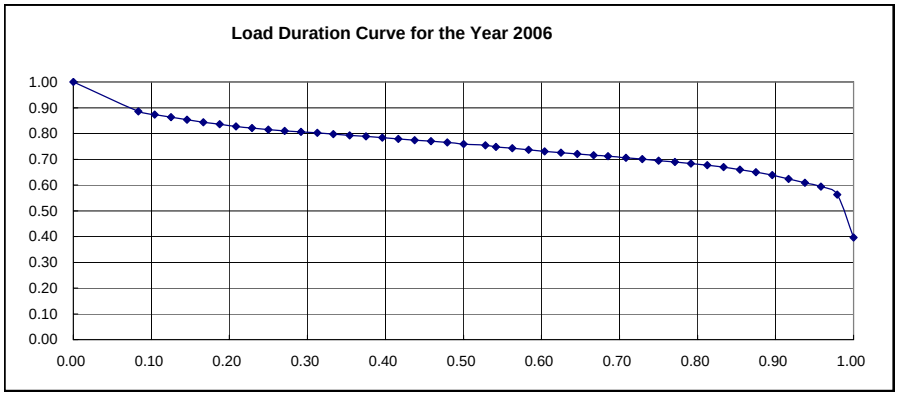
Peak Load Ratio

Period	Peak Load Ratio

Generation Energy and Peak Load

Year	Energy Sale	Station Use	T & D Loss	Generation Energy	Less 4 % in 2008 due toPV,Wind,Bio	Generation Energy afterLess	Load Factor	Peak Load	Growth Rate of P.L.
	GWh	% of Generation Energy		GWh	GWh	GWh		MW	%
2009	109,227	4%	11.00%	127,841	-	127,841	75.5%	19,329	
2010	116,480	4%	10.90%	136,177	-	136,177	75.7%	20,535	6.2%
2011	124,169	4%	10.80%	145,003	-	145,003	75.9%	21,809	6.2%
2012	132,320	4%	10.70%	154,349	-	154,349	76.1%	23,153	6.2%
2013	140,962	4%	10.60%	164,245	-	164,245	76.3%	24,573	6.1%
2014	150,124	4%	10.50%	174,725	-	174,725	76.5%	26,073	6.1%
2015	159,838	4%	10.40%	185,824	-	185,824	76.7%	27,657	6.1%
2016	170,137	4%	10.30%	197,576	-	197,576	76.7%	29,406	6.3%
2017	181,057	4%	10.20%	210,023	-	210,023	76.5%	31,340	6.6%
2018	192,636	4%	10.10%	223,206	-	223,206	76.3%	33,395	6.6%
2019	204,913	4%	10.00%	237,168	-	237,168	76.1%	35,577	6.5%
2020	217,933	4%	9.90%	251,957	-	251,957	75.9%	37,895	6.5%
2021	231,738	4%	9.80%	267,621	1%	264,945	75.7%	39,954	5.4%
2022	246,379	4%	9.70%	284,214	1%	281,372	75.5%	42,543	6.5%
2023	261,905	4%	9.60%	301,790	2%	295,754	75.3%	44,836	5.4%
2024	278,371	4%	9.50%	320,409	2%	314,001	75.1%	47,730	6.5%
2025	295,834	4%	9.40%	340,133	3%	329,929	74.9%	50,285	5.4%
2026	314,355	4%	9.30%	361,029	3%	350,198	74.7%	53,517	6.4%
2027	333,999	4%	9.20%	383,167	4%	367,840	74.5%	56,364	5.3%
2028	354,835	4%	9.10%	406,622	4%	390,357	74.3%	59,975	6.4%





LDC for the Year 2006
(Based on P3B 2006 Data)

No.	Load	Duration	Area
1	1.0000	0.00000	
5	0.8855	0.08333	0.0186
6	0.8736	0.10417	0.0183
7	0.8632	0.12500	0.0181
8	0.8532	0.14583	0.0179
9	0.8437	0.16667	0.0177
10	0.8357	0.18750	0.0175
11	0.8275	0.20833	0.0173
12	0.8213	0.22917	0.0172
13	0.8155	0.25000	0.0170
14	0.8102	0.27083	0.0169
15	0.8060	0.29167	0.0168
16	0.8019	0.31250	0.0167
17	0.7977	0.33333	0.0167
18	0.7930	0.35417	0.0166
19	0.7889	0.37500	0.0165
20	0.7839	0.39583	0.0164
21	0.7790	0.41667	0.0163
22	0.7744	0.43750	0.0162
23	0.7697	0.45833	0.0161
24	0.7646	0.47917	0.0160
25	0.7593	0.50000	0.0159
26	0.7535	0.52803	0.0212
27	0.7479	0.54167	0.0102
28	0.7425	0.56250	0.0155
29	0.7367	0.58333	0.0154
30	0.7309	0.60417	0.0153
31	0.7255	0.62500	0.0152
32	0.7203	0.64583	0.0151
33	0.7154	0.66667	0.0150
34	0.7112	0.68522	0.0132
35	0.7058	0.70833	0.0164
36	0.7006	0.72917	0.0147
37	0.6949	0.75000	0.0145
38	0.6893	0.77083	0.0144
39	0.6830	0.79167	0.0143
40	0.6770	0.81250	0.0142
41	0.6694	0.83333	0.0140
42	0.6599	0.85417	0.0139
43	0.6499	0.87500	0.0136
44	0.6380	0.89583	0.0134
45	0.6242	0.91667	0.0132
46	0.6086	0.93750	0.0128
47	0.5932	0.95833	0.0125
48	0.5631	0.97917	0.0120
49	0.3957	1.00000	0.0100
50			
51			
52			
Area (Load Factor) =			0.7551

Addition/Retirements

No.	Name	No. of Sets	Available Capacity MW	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Supply Balance Information				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Available capacity of thermal				18,816																					
installed capacity of hydro				2,573																					
Gross available capacity				21,389	21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208
Addition/Retirement						3,000	3,916	1,683	967			110		(1,553)	(701)	(998)			(605)						
Gross available capacity(year end)				21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208	27,208
Peak Load at Power Station				-	-	19,329	20,535	21,809	23,153	24,573	26,073	27,657	29,406	31,340	33,395	35,577	37,895	39,954	42,543	44,836	47,730	50,285	53,517	56,364	59,975
				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
C6H	PLTU	600																							
C10H	PLTU	1000							1	1	1	1	1	5	5	7	7	9	10	13	13	16	17	20	24
LNG	PLTG	750										1	2	3	4	4	6	6	8	8	10	10	12	12	12
N10H	PLTN	1000													1	1	1	2	2	2	3	3	4	4	5
GE55	PLTP	55						6	6	6	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
G150	PLTG	150														3	4	4	6	6	8	8	10	12	12
PS	Pumped S.	500										1	2	2	4	6	6	6	6	6	6	6	6	6	6
CIB3	PLTA	172															1	1	1	1	1	1	1	1	1
CPSG	PLTA	400															1	1	1	1	1	1	1	1	1
CMD3	PLTA	238															1	1	1	1	1	1	1	1	1
MANG	PLTA	360															1	1	1	1	1	1	1	1	1
PLTA	PLTA	300																	3	3	6	6	6	7	7
Java-Sumatra I.C.		600									4	5	5	5	5	5	5	5	5	5	5	5	5	5	5

C6H	PLTU	600																							
C10H	PLTU	1000							1,000	1,000	1,000	1,000	1,000	5,000	5,000	7,000	7,000	9,000	10,000	13,000	13,000	16,000	17,000	20,000	24,000
LNG	PLTG	750										750	1,500	2,250	3,000	3,000	4,500	4,500	6,000	6,000	7,500	7,500	9,000	9,000	9,000
N10H	PLTN	1000													1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000
GE55	PLTP	55						330	330	330	550	660	770	880	990	1,100	1,210	1,320	1,430	1,540	1,650	1,760	1,870	1,980	2,090
G150	PLTG	150														450	600	600	900	900	1,200	1,200	1,500	1,800	1,800
PS	Pumped S.	500										500	1,000	1,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
CIB3	PLTA	172															172	172	172	172	172	172	172	172	172
CPSG	PLTA	400															400	400	400	400	400	400	400	400	400
CMD3	PLTA	238															238	238	238	238	238	238	238	238	238
MANG	PLTA	360															360	360	360	360	360	360	360	360	360
PLTA	PLTA	300																	900	900	1,800	1,800	1,800	2,100	2,100
Java-Sumatera I.C.		600									2,400	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Total Additional Capacity						-	-	330	1,330	1,330	3,950	5,910	7,270	12,130	14,990	18,550	21,480	24,590	28,400	31,510	35,320	38,430	42,340	46,050	51,160
Total Supply Capacity at year end						24,389	28,305	30,318	32,285	32,285	34,905	36,975	38,335	41,642	43,801	46,363	49,293	52,403	55,608	58,718	62,528	65,638	69,548	73,258	78,368
Reserve Margin		%				26.2%	37.8%	39.0%	39.4%	31.4%	33.9%	33.7%	30.4%	32.9%	31.2%	30.3%	30.1%	31.2%	30.7%	31.0%	31.0%	30.5%	30.0%	30.0%	30.7%

FIXSYS HYDRO

PLTA	Index	Installed Cap. [MW]	Energy Storage (GWh)	Inflow Energy				Min. Generation				Average Capacity			
				I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [MW]	II(Dry) [MW]	III [MW]	IV [MW]
Jatiluhur #1-6	JTLH	180	842.6	315.8	376.9			204.3	298			180	180		
Saguling	SAGL	700.7	2,520.7	1292	680.8			999.2	400.6			701	701		
IP- Area I	IPA1	37.26	-	70.5	53.9			61.8	37.8			37	37		
IP- Area II	IPA2	59.38	-	143.1	78.9			112.3	56.7			59	59		
Sudirman	MRTC	180.9	489.8	356.9	79.7			277.3	18			181	181		
IP-Area III	APA3	125.54	-	264.1	199			235.8	166.3			126	126		
Sutami	STMI	105	451.1	263.2	155.5			164.6	127.5			105	105		
EP Non Suami	EPNS	134.5	563.5	312.3	175.8			223	115.8			135	135		
Brantas Non EP	BNEP	41.9	-	47.3	41.2			17.1	11.3			42	42		
Cirata	CRI2	1008	1,377.0	648.2	444.9			487.8	256			1008	1008		
Rajamandala	RJMD	47	90.0	82.0	61.8			70.0	52.5			47	47		
Jatigede	JTGD	110	620.0	216.8	72.3			184.3	61.4			110	110		

INPUT VARSYS

No.	Name	No. of Sets	Min. Load MW	Capacity MW	Heat Rates Kcal/kWh Base Load	Heat Rates Kcal/kWh Average Incremental	Fuel Costs Cents/Million Kcal Domestic	Fuel Costs Cents/Million Kcal Foreign	Fuel Type	Spinning Reserveas	FOR	Days Scheduled Maintenance Days	Maintenance Class Size MW	O&M (FIX) $/kWm	O&M (VAR) $/MWh	FLD HEAT RT KCAL/KWH	UNIT GENERATION COSTS ($/MWH) BASE DOM	BASE FRGN	FLD DOM	FLD FRGN	FLD TOT
1	C6H	0	300	600	2510	2389	1509	0	0	5	7	42	600	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
2	C10H	0	500	1000	2510	2389	1509	0	0	5	7	42	1000	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
3	LNG	0	375	750	1911	1741	0	3968	2	7	7	42	750	1.60	1.00	1826	1.0	75.8	1.0	72.5	73.5
4	N10H	0	1000	1000	2606	2606	0	250	6	0	7	28	1000	4.66	0.41	2606	0.4	6.5	0.4	6.5	6.9
5	GE55	0	44	55	1000	1000	6430	0	5	0	7	28	55	2.50	1.00	1000	65.3	0.0	65.3	0.0	65.3
6	G150	0	75	150	3150	2625	9222	0	4	10	7	28	150	0.97	2.00	2888	292.5	0.0	268.3	0.0	268.3
7	J-SIC	5	300	600	2510	2389	1509	0	7	5	8	45	600	2.64	2.00	2450	39.9	0.0	39.0	0.0	39.0

PUMP STORAGE
(Upper Cisokan)

PS1

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2015	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

PS2

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2016	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

Hydropower Project

		MANG (Maung)		CIB3 (Cibuni-3)		CPSG (Cipasang)		CMD3(Cimandiri-3)	
Construction Cost	$/kW	1872	Inc.IDC	2,865	Inc.IDC	1,636	Inc.IDC	1,998	Inc.IDC
Installed Caapcity	MW	360		172		400		238	
Reservoir Energy	GWh	535		568		751		600	
Inflow Energy									
wet	GWh	430		450		600		480	
dry	GWh	160		170		230		180	
Minimum Generation									
wet	GWh	320		340		450		360	
dry	GWh	80		90		110		90	
Average Capacity									
wet	MW	360		172		400		238	
dry	MW	360		172		400		238	
Construction Period									
	year	5		5		5		5	
	I.D.C (%)	22.6		22.6		22.6		22.6	

Source: Hydro Inventory and Pre-feasibility Studies, June 1999, Nippon Koei Co., Ltd.

PUMP STORAGE
(Matenggeng)

PS3

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	450
2	530	500	450

PUMP STORAGE
(Grindulu)

PS4

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap MW	Gen. Cap MW	Max. Energy GWh
1	530	500	450
2	530	500	450

Construction Cost inc. IDC

PLANT	CAPITAL COSTS ($/kW) DEPRECIABLE PART DOMESTIC	DEPRECIABLE PART FOREIGN	NON-DEPRECIABLE PART DOMESTIC	NON-DEPRECIABLE PART FOREIGN	PLANT LIFE YEARS	D.R=12% I.D.C. (%)	CONSTR. TIME (YEARS)
C6H	444	1,037	0	0	30	18.46	4
C10H	611	1,425	0	0	30	18.46	4
LNG	300	699	0	0	25	14.13	3
N10H	659	2,637	0	0	40	26.6	6
G150	82	466	0	0	20	9.6	2
PS 1&2	271	584	0	0	50	22.6	5
PS 3	252	541	0	0	50	22.6	5
PS 4	268	579	0	0	50	22.6	5
GE55	444	1,776	0	0	30	14.13	3
J-SIC	308	2,051	0	0	30	18.46	4

Java - Sumatra Interconnection (HVDC)

1. Investment Cost for HVDC			Note
EPC Cost	1,370	M.US$	
Land Acquisition + ROW	160	M.US$	
Total Investment Cost	**1,530**	**M.US$**	
2. Construction Cost for HVDC	510	$/kW	Divided by 3000 MW
3. Construction Cost of C6H	1,481	$/kW	Referred to P3B Data
4. Total Investment Cost	**1,991**	**$/kW**	

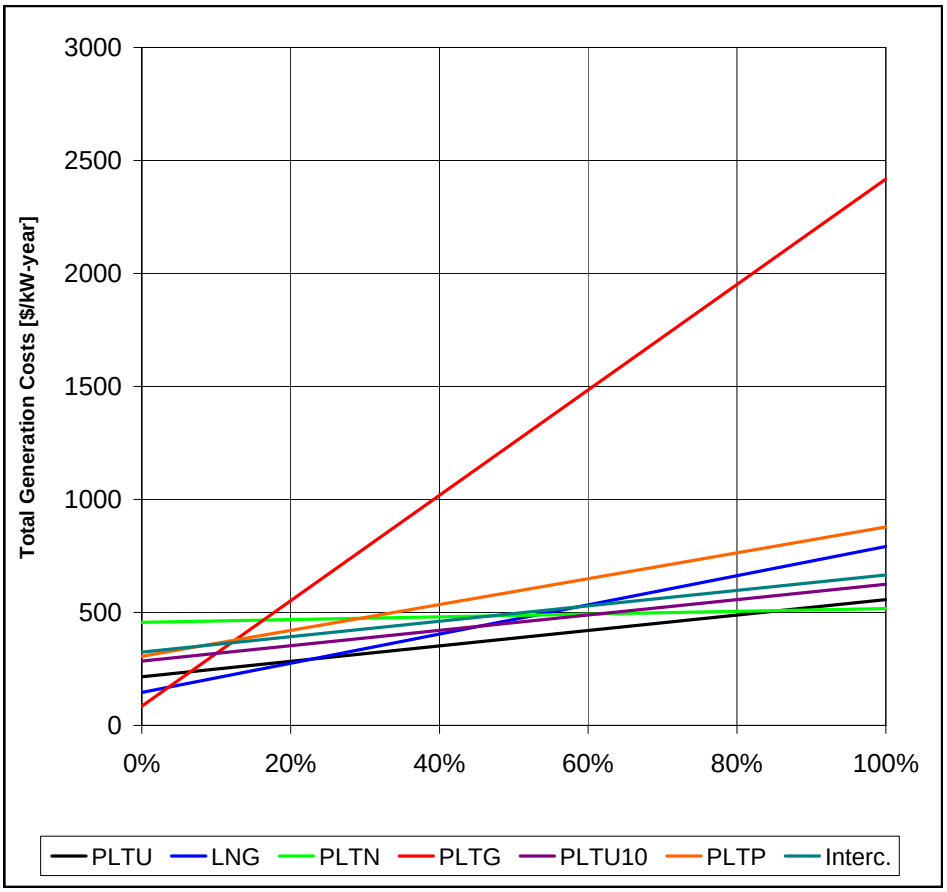
Source: Updated Feasibility Study Jawa - Sumatera Interconnection, Sep. 2007

WASP IV Screening Curve

Fuel Prices Scenario Index	2	Medium Scenario						
		PLTU	LNG	PLTN	PLTG	PLTU10	PLTP	Interc.
Installed Capacity	MW	600	750	1000	150	1000	55	3000
Fuel Type		coal	LNG	nuclear	HSD	coal	Geothermal	HVDC T/L
Fuel Price	$/MMBTU	3.80	10.00	0.63	23.24	3.80	16.20	3.80
Thermal Efficiency	%	35%	47%	33%	30%	35%	86%	35%
Variabel O&M	$/MWh	2.0	1.0	0.4	2.0	2.0	1.0	2.0
Fixed O&M	$/KW.year	31.32	19.2	55.92	11.64	31.32	30.00	31.68
Investment Cost inc. IDC	$/KW	1,481	999	3,296	548	2,036	2,220	2,359
Construction Period	Years	4	3	6	2	4	3	4
Book Life	Years	30	25	40	20	30	30	30
Discount Rate		12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
Capital Recovery Factor (CRF)		12.41%	12.75%	12.13%	13.39%	12.41%	12.41%	12.41%
Interest During Construction (IDC)		18.46%	14.13%	26.60%	9.60%	18.46%	14.13%	14.13%
Annual Investment cost	$/KW.year	183.86	127.37	399.82	73.37	252.76	275.60	292.75
Annual Fixed Cost	**$/KW.year**	**215.18**	**146.57**	**455.74**	**85.01**	**284.08**	**305.60**	**324.43**
Annual Fuel Cost	$/KW.year	324.58	636.07	57.07	2315.88	323.65	563.14	323.65
Annual Variable O&M	$/KW.year	17.52	8.76	3.59	17.52	17.52	8.76	17.52
Annual Variable Cost	**$/KW.year**	**342.10**	**644.83**	**60.66**	**2333.40**	**341.17**	**571.90**	**341.17**
Annual Fixed Cost	$/KW.year	215.18	146.57	455.74	85.01	284.08	305.60	324.43
Total	**$/KW.year**	**557.28**	**791.40**	**516.40**	**2418.41**	**625.25**	**877.50**	**665.60**
CF	0%	215.18	146.57	455.74	85.01	284.08	305.60	324.43
	100%	557.28	791.40	516.40	2418.41	625.25	877.50	665.60

	Fuel Prices $/MMBTU		
	Low	Medium	High
Index	**1**	**2**	**3**
Coal	3.33	3.80	4.28
LNG	8.00	10.00	12.00
N.Gas	4.00	5.00	6.00
Nuclear	0.57	0.63	0.69
HSD	19.57	23.24	26.91
MFO	11.50	13.70	15.90
Geothemal	14.58	16.20	17.82

Note: $/MMBTU is referred to "Fuel Price Sheet" except Nuclear.



INPUT REMERSIM (Fuel Comsumption per GWh)

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) at FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo
1	SRL1	PLTU	4	240	381	2,622	2,452	2,559	0	5,100	0.502			
2	SRL2	PLTU	3	340	579	2,560	2,309	2,456	0	5,100	0.482			
3	MKR1	PLTU	3	44	84	3,273	3,194	3,235	3	9,598			0.337	
4	MKR2	PLTG	2	90	165	2,948	2,884	2,919	1	2,520		11.58		
5	MKR3	PLTGU	1	300	465	2,433	2,018	2,286	1	2,520		9.07		
6	MKRR	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
7	PRK1	PLTU	2	25	48	3,229	2,957	3,099	3	9,598			0.323	
8	PRK2	PLTGU	2	315	560	2,319	1,994	2,177	4	9,095			0.239	
9	PRK3	PLTG	2	10	20	4,711	3,930	4,321	4	9,095			0.475	
10	PRKE	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
11	MTR1	PLTGU	1	315	605	2,555	2,246	2,407	4	9,095			0.265	
12	MTR2	PLTG	2	72	138	3,376	3,204	3,294	4	9,095			0.362	
13	MTR3	PLTG	6	72	143	3,376	3,204	3,291	4	9,095			0.362	
14	MTRR	PLTGU	-	150	225	2,433	2,018	2,295	1	2,520		9.11		
15	SLK1	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
16	SLK2	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
17	CLND	PLTG	1	50	150	4,465	3,200	3,622	1	2,520		14.37		
18	CLGN	PLTGU	1	240	740	2,175	1,800	1,922	1	2,520		7.63		
19	SRL3	PLTU	-	340	600	2,560	2,309	2,451	0	4,200	0.584			
20	LBHN	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
21	TLNG	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
22	KMJ1	PLTP	1	26	26	1,000	1,000	1,000	5	7,308				-
23	KMJ2	PLTP	2	47	47	1,000	1,000	1,000	5	7,308				-
24	KMJ3	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
25	DRJ1	PLTP	1	44	44	1,000	1,000	1,000	5	7,308				-
26	DRJ2	PLTP	1	70	70	1,000	1,000	1,000	5	5,300				-
27	DRJ3	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
28	WW1	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
29	SRG1	PLTG	2	8	18	4,700	4,084	4,358	1	2,520		17.29		
30	SRG2	PLTG	2	8	20	4,700	4,084	4,330	4	9,095			0.476	
31	PTH1	PLTP	-	60	60	1,000	1,000	1,000	5	7,308				-
32	JBSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
33	JBUT	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
34	CRBN	PLTU	-	360	600	2,560	2,160	2,400	0	5,300	0.453			
35	TBK1	PLTGU	2	297	496	2,632	2,015	2,384	4	9,095			0.262	
36	TBK2	PLTU	2	25	41	3,229	3,127	3,189	3	9,598			0.332	
37	TBK3	PLTU	1	125	192	3,229	3,127	3,193	3	9,598			0.333	
38	CLC1	PLTG	2	10	22	4,700	4,079	4,361	4	9,095			0.479	
39	CLC2	PLTU	2	150	300	2,772	2,285	2,529	0	5,215	0.485			
40	TJB1	PLTU	2	330	660	2,772	2,285	2,529	0	5,215	0.485			
41	TJB2	PLTU	-	360	600	2,560	2,160	2,400	0	4,500	0.533			
42	DIEN	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
43	RMBG	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
44	PTN1	PLTU	2	225	370	2,579	2,412	2,514	0	5,100	0.493			
45	PTN2	PLTU	-	340	600	2,560	2,309	2,451	0	4,500	0.545			
46	PEC	PLTU	2	368	615	2,772	2,285	2,576	0	5,215	0.494			
47	JPOW	PLTU	2	355	610	2,700	2,310	2,537	0	5,500	0.461			
48	GSK1	PLGU	3	250	480	2,318	1,990	2,161	1	2,520		8.58		
49	GSK2	PLTG	2	5	16	4,456	4,284	4,338	1	2,520		17.21		
50	GSK3	PLTU	2	43	85	2,882	2,709	2,797	1	2,520		11.10		
51	GSK4	PLTU	2	90	175	2,826	2,601	2,717	1	2,520		10.78		
52	PRAK	PLTU	2	25	48	4,323	3,517	3,937	3	9,598			0.410	
53	GRT1	PLTGU	1	270	462	2,632	2,083	2,404	4	9,095			0.264	
54	GRT2	PLTG	3	40	100	3,376	3,310	3,336	4	9,095			0.367	
55	PMRN	PLTG	2	12	48	4,439	4,035	4,136	4	9,095			0.455	
56	GLMR	PLTG	2	5	16	4,456	4,284	4,338	4	9,095			0.477	
57	GLMK	PLTG	1	56	133	4,439	4,035	4,205	4	9,095			0.462	
58	BLI1	PLTG	4	6	20	4,700	4,131	4,302	4	9,095			0.473	
59	BLI2	PLTD	10	2	5	3,880	3,576	3,698	4	9,095			0.407	
60	BLUT	PLTU	-	65	130	2,590	2,115	2,353	0	5,300	0.444			
61	BDGL	PLTP	-	10	10	1,000	1,000	1,000	5	7,308				-
62	TJAW	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
63	JTSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) a FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo Nuclear
1	C6H	PLTU	0	300	600	2510	2389	2,450	0	4,766	0.514			
2	C10H	PLTU	0	500	1000	2510	2389	2,450	0	4,766	0.514			
3	LNG	PLTG	0	375	750	1911	1741	1,826	2	2,520		7.25		
4	N10H	PLTN	0	1000	1000	2606	2606	2,606	6	0				-
5	GE55	PLTP	0	44	55	1000	1000	1,000	5	0				-
6	G150	PLTG	0	75	150	3150	2625	2,888	4	9,095			0.318	
7	J-SIC	J-SI	5	300	600	2510	2389	2,450	7	0				-

Assumption of Fuel Prices (Medium Scenario)

Kind of Fuel	Price			Heat Content	
	USD		Cents/mKcal		
Coal	80.0	per Ton	1,509	5,300	Kcal/kg
LNG	10.0	per MMBTU	3,968	252,000	Kcal/mmbtu
Gas	5.0	per MMBTU	1,984	252,000	Kcal/mmbtu
HSD	133.0	per Barrel	9,222	9,070	Kcal/l
MFO	81.0	per Barrel	5,437	9,370	Kcal/l
Geothermal	0.0553	per kWh	6,430		
Nuclear			250		

Price	Crude Oil	95	$/barrel			
	HSD	133	$/barrel	23.24	$/mmbtu	
	MFO	81	$/barrel	13.70	$/mmbtu	
	LNG+transport	10.0	$/mmbtu			
	transport	0.7	$/mmbtu			
	LNG	9.3	$/mmbtu	9.30	$/mmbtu	
	Gas	5.0	$/mmbtu	5.00	$/mmbtu	
	Coal+transport	80	$/ton	3.80	$/mmbtu	
	transport	18	$/ton	Note: Coal price at P/S is CIF Price.		
	Coal	74	$/ton	6,300	Kcal/kg	
		62	$/ton	5,300	Kcal/kg	
Heat (	HSD	19,500	btu/lb	1 kg =	2.2	lb
		10,811	Kcal/kg	berat jenis =	0.839	kg/l
		9,070	Kcal/l			
	MFO	18,000	btu/lb	1 kg =	2.2	lb
		9,979	Kcal/kg	berat jenis =	0.939	kg/l
		9,370	Kcal/l			

Reference 2: Relationship between MOPS and Domestic Prices

MOPS (2008/03/31 ~ 2008/04/04)	
	$/barrel
High Speed Diesel Oil (0.05%)	132.02
Kerosene	128.36
Crude Oil	**104.30**

Note: HSD and Kerosene are FOB at Singapore
MOPS means Mean of Platts Singapore
Source://www.gu-goon.com/

PERTAMINA Price	$/barrel	Price Index (IP)
HSD	**145.93**	**1.40**
MFO	**89.14**	**0.85**
Crude Oil	**104.30**	**1.00**

Note : 1 barrel = 159 liter

New Fuel Prices for Industry in April 2008 released by PERTAMINA on March 31, 2008						
Fuel Type	Economical Selling Fuel Price - Non Tax (Base Price)					
	Region 1		Region 2		Region 3	
	Rp/KL	US$/KL	Rp/KL	US$/KL	Rp/KL	US$/KL
Gasoline	7080.13	768.17	7352.107	797.68	7508.057	814.60
Kerosene	8532.07	925.76	8718.104	945.94	8903.029	966.01
High Speed Diesel	8458.78	**917.77**	8819.464	956.91	9006.539	977.20
Marine Diesel Fuel	8284.08	898.88	8464.705	918.48	8644.250	937.97
Marine Fuel Oil	5166.53	**560.60**	5278.949	572.80	5390.924	584.95
Pertamina DEX	8757.37	950.14	-	-	-	-

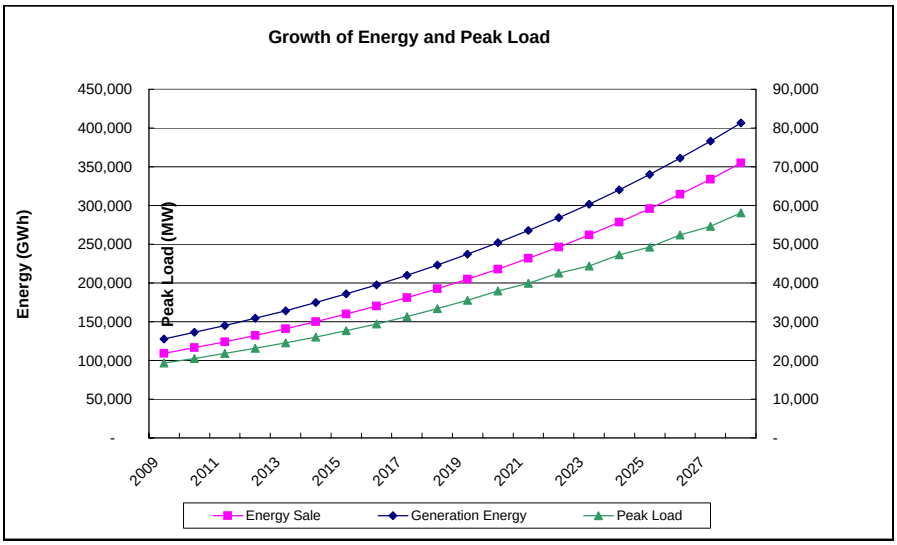
Source: www.pertamina.com/
Note : Fuel prices released by PERTAMINA depend on MOPS.

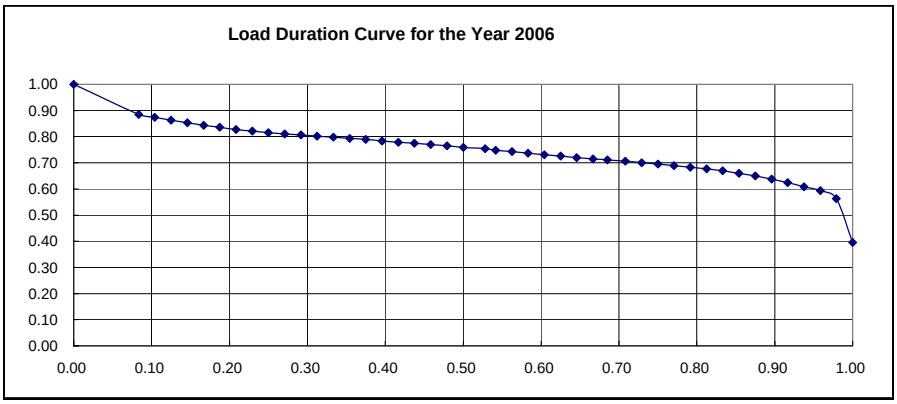
Peak Load Ratio

Period	Peak Load Ratio

Generation Energy and Peak Load

Year	Energy Sale	Station Use	T & D Loss	Generation Energy	Less 7 % in 2008 due toPV,Wind,Bio	Generation Energy afterLess	Load Factor	Peak Load	Growth Rate of P.L.
	GWh	% of Generation Energy		GWh	GWh	GWh		MW	%
2009	109,227	4%	11.00%	127,841	-	127,841	75.5%	19,329	
2010	116,480	4%	10.90%	136,177	-	136,177	75.7%	20,535	6.2%
2011	124,169	4%	10.80%	145,003	-	145,003	75.9%	21,809	6.2%
2012	132,320	4%	10.70%	154,349	-	154,349	76.1%	23,153	6.2%
2013	140,962	4%	10.60%	164,245	-	164,245	76.3%	24,573	6.1%
2014	150,124	4%	10.50%	174,725	-	174,725	76.5%	26,073	6.1%
2015	159,838	4%	10.40%	185,824	-	185,824	76.7%	27,657	6.1%
2016	170,137	4%	10.30%	197,576	-	197,576	76.7%	29,406	6.3%
2017	181,057	4%	10.20%	210,023	-	210,023	76.5%	31,340	6.6%
2018	192,636	4%	10.10%	223,206	-	223,206	76.3%	33,395	6.6%
2019	204,913	4%	10.00%	237,168	-	237,168	76.1%	35,577	6.5%
2020	217,933	4%	9.90%	251,957	-	251,957	75.9%	37,895	6.5%
2021	231,738	4%	9.80%	267,621	1%	264,945	75.7%	39,954	5.4%
2022	246,379	4%	9.70%	284,214	1%	281,372	75.5%	42,543	6.5%
2023	261,905	4%	9.60%	301,790	3%	292,736	75.3%	44,379	4.3%
2024	278,371	4%	9.50%	320,409	3%	310,797	75.1%	47,242	6.5%
2025	295,834	4%	9.40%	340,133	5%	323,126	74.9%	49,248	4.2%
2026	314,355	4%	9.30%	361,029	5%	342,978	74.7%	52,413	6.4%
2027	333,999	4%	9.20%	383,167	7%	356,345	74.5%	54,602	4.2%
2028	354,835	4%	9.10%	406,622	7%	378,158	74.3%	58,101	6.4%





LDC for the Year 2006
(Based on P3B 2006 Data)

No.	Load	Duration	Area
1	1.0000	0.00000	
5	0.8855	0.08333	0.0186
6	0.8736	0.10417	0.0183
7	0.8632	0.12500	0.0181
8	0.8532	0.14583	0.0179
9	0.8437	0.16667	0.0177
10	0.8357	0.18750	0.0175
11	0.8275	0.20833	0.0173
12	0.8213	0.22917	0.0172
13	0.8155	0.25000	0.0170
14	0.8102	0.27083	0.0169
15	0.8060	0.29167	0.0168
16	0.8019	0.31250	0.0167
17	0.7977	0.33333	0.0167
18	0.7930	0.35417	0.0166
19	0.7889	0.37500	0.0165
20	0.7839	0.39583	0.0164
21	0.7790	0.41667	0.0163
22	0.7744	0.43750	0.0162
23	0.7697	0.45833	0.0161
24	0.7646	0.47917	0.0160
25	0.7593	0.50000	0.0159
26	0.7535	0.52803	0.0212
27	0.7479	0.54167	0.0102
28	0.7425	0.56250	0.0155
29	0.7367	0.58333	0.0154
30	0.7309	0.60417	0.0153
31	0.7255	0.62500	0.0152
32	0.7203	0.64583	0.0151
33	0.7154	0.66667	0.0150
34	0.7112	0.68522	0.0132
35	0.7058	0.70833	0.0164
36	0.7006	0.72917	0.0147
37	0.6949	0.75000	0.0145
38	0.6893	0.77083	0.0144
39	0.6830	0.79167	0.0143
40	0.6770	0.81250	0.0142
41	0.6694	0.83333	0.0140
42	0.6599	0.85417	0.0139
43	0.6499	0.87500	0.0136
44	0.6380	0.89583	0.0134
45	0.6242	0.91667	0.0132
46	0.6086	0.93750	0.0128
47	0.5932	0.95833	0.0125
48	0.5631	0.97917	0.0120
49	0.3957	1.00000	0.0100
50			
51			
52			
Area (Load Factor) =			0.7551

Addition/Retirements

No.	Name	No. of Sets	Available Capacity MW	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Supply Balance Information				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Available capacity of thermal				18,816																					
installed capacity of hydro				2,573																					
Gross available capacity				21,389	21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208
Addition/Retirement						3,000	3,916	1,683	967			110		(1,553)	(701)	(998)			(605)						
Gross available capacity(year end)				21,389	21,389	24,389	28,305	29,988	30,955	30,955	30,955	31,065	31,065	29,512	28,811	27,813	27,813	27,813	27,208	27,208	27,208	27,208	27,208	27,208	27,208
Peak Load at Power Station				-	-	19,329	20,535	21,809	23,153	24,573	26,073	27,657	29,406	31,340	33,395	35,577	37,895	39,954	42,543	44,379	47,242	49,248	52,413	54,602	58,101
				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
C6H	PLTU	600																							
C10H	PLTU	1000							1	1	1	1	1	5	5	7	7	9	10	12	12	15	16	18	21
LNG	PLTG	750										1	2	3	4	4	6	6	8	8	10	10	12	12	12
N10H	PLTN	1000													1	1	1	2	2	2	3	3	4	4	5
GE55	PLTP	55						6	6	6	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
G150	PLTG	150														3	4	4	6	6	8	8	10	12	12
PS	Pumped S.	500										1	2	2	4	6	6	6	6	6	6	6	6	6	6
CIB3	PLTA	172															1	1	1	1	1	1	1	1	1
CPSG	PLTA	400															1	1	1	1	1	1	1	1	1
CMD3	PLTA	238															1	1	1	1	1	1	1	1	1
MANG	PLTA	360															1	1	1	1	1	1	1	1	1
PLTA	PLTA	300																	3	3	6	6	6	8	8
Java-Sumatra I.C.		600									4	5	5	5	5	5	5	5	5	5	5	5	5	5	5
C6H	PLTU	600																							
C10H	PLTU	1000							1,000	1,000	1,000	1,000	1,000	5,000	5,000	7,000	7,000	9,000	10,000	12,000	12,000	15,000	16,000	18,000	21,000
LNG	PLTG	750										750	1,500	2,250	3,000	3,000	4,500	4,500	6,000	6,000	7,500	7,500	9,000	9,000	9,000
N10H	PLTN	1000													1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000
GE55	PLTP	55						330	330	330	550	660	770	880	990	1,100	1,210	1,320	1,430	1,540	1,650	1,760	1,870	1,980	2,090
G150	PLTG	150														450	600	600	900	900	1,200	1,200	1,500	1,800	1,800
PS	Pumped S.	500										500	1,000	1,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
CIB3	PLTA	172															172	172	172	172	172	172	172	172	172
CPSG	PLTA	400															400	400	400	400	400	400	400	400	400
CMD3	PLTA	238															238	238	238	238	238	238	238	238	238
MANG	PLTA	360															360	360	360	360	360	360	360	360	360
PLTA	PLTA	300																	900	900	1,800	1,800	1,800	2,400	2,400
Java-Sumatera I.C.		600									2,400	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Total Additional Capacity						-	-	330	1,330	1,330	3,950	5,910	7,270	12,130	14,990	18,550	21,480	24,590	28,400	30,510	34,320	37,430	41,340	44,350	48,460
Total Supply Capacity at year end						24,389	28,305	30,318	32,285	32,285	34,905	36,975	38,335	41,642	43,801	46,363	49,293	52,403	55,608	57,718	61,528	64,638	68,548	71,558	75,668
Reserve Margin	%					26.2%	37.8%	39.0%	39.4%	31.4%	33.9%	33.7%	30.4%	32.9%	31.2%	30.3%	30.1%	31.2%	30.7%	30.1%	30.2%	31.3%	30.8%	31.1%	30.2%

FIXSYS HYDRO

PLTA	Index	Installed Cap. [MW]	Energy Storage (GWh)	Inflow Energy				Min. Generation				Average Capacity			
				I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [GWh]	II(Dry) [GWh]	III [GWh]	IV [GWh]	I(Wet) [MW]	II(Dry) [MW]	III [MW]	IV [MW]
Jatiluhur #1-6	JTLH	180	842.6	315.8	376.9			204.3	298			180	180		
Saguling	SAGL	700.7	2,520.7	1292	680.8			999.2	400.6			701	701		
IP- Area I	IPA1	37.26	-	70.5	53.9			61.8	37.8			37	37		
IP- Area II	IPA2	59.38	-	143.1	78.9			112.3	56.7			59	59		
Sudirman	MRTC	180.9	489.8	356.9	79.7			277.3	18			181	181		
IP-Area III	APA3	125.54	-	264.1	199			235.8	166.3			126	126		
Sutami	STMI	105	451.1	263.2	155.5			164.6	127.5			105	105		
EP Non Suami	EPNS	134.5	563.5	312.3	175.8			223	115.8			135	135		
Brantas Non EP	BNEP	41.9	-	47.3	41.2			17.1	11.3			42	42		
Cirata	CRI2	1008	1,377.0	648.2	444.9			487.8	256			1008	1008		
Rajamandala	RJMD	47	90.0	82.0	61.8			70.0	52.5			47	47		
Jatigede	JTGD	110	620.0	216.8	72.3			184.3	61.4			110	110		

INPUT VARSYS

No.	Name	No. of Sets	Min. Load MW	Capacity MW	Heat Rates Kcal/kWh Base Load	Heat Rates Kcal/kWh Average Incremental	Fuel Costs Cents/Million Kcal Domestic	Fuel Costs Cents/Million Kcal Foreign	Fuel Type	Spinning Reserveas	FOR	Days Scheduled Maintenance Days	Maintenance Class Size MW	O&M (FIX) $/kWm	O&M (VAR) $/MWh	FLD HEAT RT KCAL/KWH	UNIT GENERATION COSTS ($/MWH) BASE DOM	BASE FRGN	FLD DOM	FLD FRGN	FLD TOT
1	C6H	0	300	600	2510	2389	1509	0	0	5	7	42	600	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
2	C10H	0	500	1000	2510	2389	1509	0	0	5	7	42	1000	2.61	2.00	2450	39.9	0.0	39.0	0.0	39.0
3	LNG	0	375	750	1911	1741	0	3968	2	7	7	42	750	1.60	1.00	1826	1.0	75.8	1.0	72.5	73.5
4	N10H	0	1000	1000	2606	2606	0	250	6	0	7	28	1000	4.66	0.41	2606	0.4	6.5	0.4	6.5	6.9
5	GE55	0	44	55	1000	1000	6430	0	5	0	7	28	55	2.50	1.00	1000	65.3	0.0	65.3	0.0	65.3
6	G150	0	75	150	3150	2625	9222	0	4	10	7	28	150	0.97	2.00	2888	292.5	0.0	268.3	0.0	268.3
7	J-SIC	5	300	600	2510	2389	1509	0	7	5	8	45	600	2.64	2.00	2450	39.9	0.0	39.0	0.0	39.0

PUMP STORAGE
(Upper Cisokan)

PS1

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2015	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

PS2

Installed Capacity	500	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2016	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	600
2	530	500	600

Hydropower Project

		MANG (Maung)		CIB3 (Cibuni-3)		CPSG (Cipasang)		CMD3(Cimandiri-3)	
Construction Cost	$/kW	1872	Inc.IDC	2,865	Inc.IDC	1,636	Inc.IDC	1,998	Inc.IDC
Installed Caapcity	MW	360		172		400		238	
Reservoir Energy	GWh	535		568		751		600	
Inflow Energy									
wet	GWh	430		450		600		480	
dry	GWh	160		170		230		180	
Minimum Generation									
wet	GWh	320		340		450		360	
dry	GWh	80		90		110		90	
Average Capacity									
wet	MW	360		172		400		238	
dry	MW	360		172		400		238	
Construction Period									
	year	5		5		5		5	
	I.D.C (%)	22.6		22.6		22.6		22.6	

Source: Hydro Inventory and Pre-feasibility Studies, June 1999, Nippon Koei Co., Ltd.

PUMP STORAGE
(Matenggeng)

PS3

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap. MW	Gen. Cap. MW	Max. Energy GWh
1	530	500	450
2	530	500	450

PUMP STORAGE
(Grindulu)

PS4

Installed Capacity	1000	MW
Efficiency	76	%
O&M (Fix)	0.55	$/kW-month
Available Year	2019	

Period	Pump Cap MW	Gen. Cap MW	Max. Energy GWh
1	530	500	450
2	530	500	450

Construction Cost inc. IDC

PLANT	CAPITAL COSTS ($/kW) DEPRECIABLE PART DOMESTIC	DEPRECIABLE PART FOREIGN	NON-DEPRECIABLE PART DOMESTIC	NON-DEPRECIABLE PART FOREIGN	PLANT LIFE YEARS	D.R=12% I.D.C. (%)	CONSTR. TIME (YEARS)
C6H	444	1,037	0	0	30	18.46	4
C10H	611	1,425	0	0	30	18.46	4
LNG	300	699	0	0	25	14.13	3
N10H	659	2,637	0	0	40	26.6	6
G150	82	466	0	0	20	9.6	2
PS 1&2	271	584	0	0	50	22.6	5
PS 3	252	541	0	0	50	22.6	5
PS 4	268	579	0	0	50	22.6	5
GE55	444	1,776	0	0	30	14.13	3
J-SIC	308	2,051	0	0	30	18.46	4

Java - Sumatra Interconnection (HVDC)

1. Investment Cost for HVDC			Note
EPC Cost	1,370	M.US$	
Land Acquisition + ROW	160	M.US$	
Total Investment Cost	**1,530**	**M.US$**	
2. Construction Cost for HVDC	510	$/kW	Divided by 3000 MW
3. Construction Cost of C6H	1,481	$/kW	Referred to P3B Data
4. Total Investment Cost	**1,991**	**$/kW**	

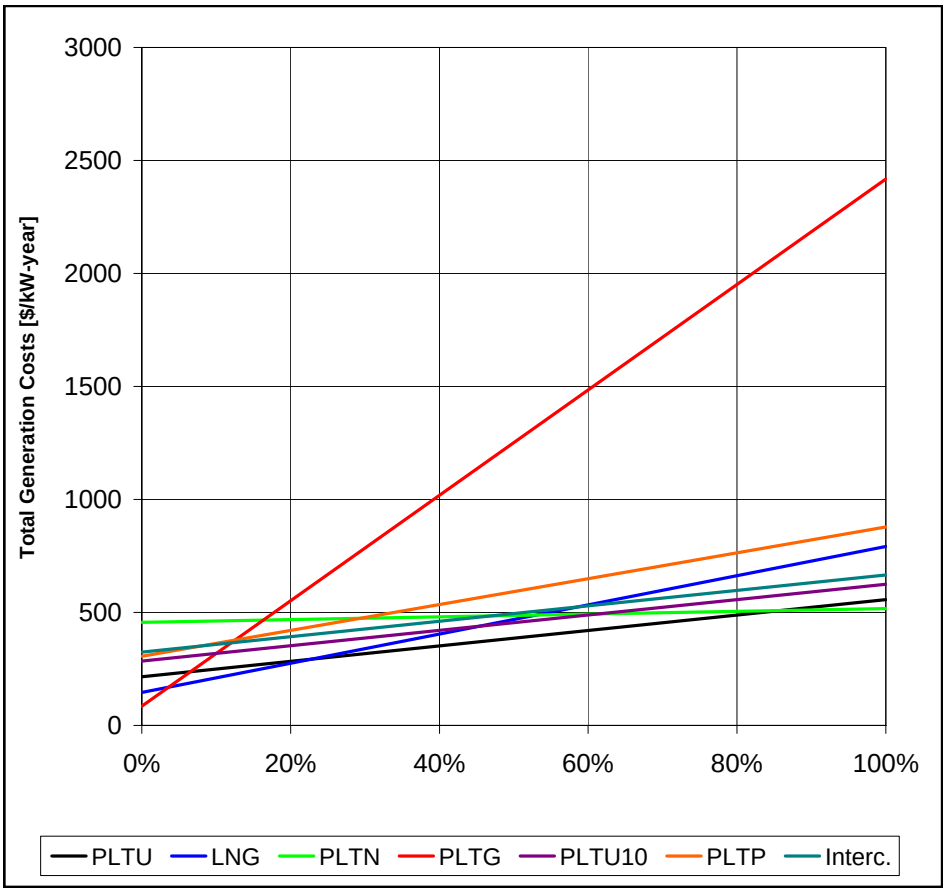
Source: Updated Feasibility Study Jawa - Sumatera Interconnection, Sep. 2007

WASP IV Screening Curve

Fuel Prices Scenario Index	2	Medium Scenario						
		PLTU	LNG	PLTN	PLTG	PLTU10	PLTP	Interc.
Installed Capacity	MW	600	750	1000	150	1000	55	3000
Fuel Type		coal	LNG	nuclear	HSD	coal	Geothermal	HVDC T/L
Fuel Price	$/MMBTU	3.80	10.00	0.63	23.24	3.80	16.20	3.80
Thermal Efficiency	%	35%	47%	33%	30%	35%	86%	35%
Variabel O&M	$/MWh	2.0	1.0	0.4	2.0	2.0	1.0	2.0
Fixed O&M	$/KW.year	31.32	19.2	55.92	11.64	31.32	30.00	31.68
Investment Cost inc. IDC	$/KW	1,481	999	3,296	548	2,036	2,220	2,359
Construction Period	Years	4	3	6	2	4	3	4
Book Life	Years	30	25	40	20	30	30	30
Discount Rate		12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
Capital Recovery Factor (CRF)		12.41%	12.75%	12.13%	13.39%	12.41%	12.41%	12.41%
Interest During Construction (IDC)		18.46%	14.13%	26.60%	9.60%	18.46%	14.13%	14.13%
Annual Investment cost	$/KW.year	183.86	127.37	399.82	73.37	252.76	275.60	292.75
Annual Fixed Cost	**$/KW.year**	**215.18**	**146.57**	**455.74**	**85.01**	**284.08**	**305.60**	**324.43**
Annual Fuel Cost	$/KW.year	324.58	636.07	57.07	2315.88	323.65	563.14	323.65
Annual Variable O&M	$/KW.year	17.52	8.76	3.59	17.52	17.52	8.76	17.52
Annual Variable Cost	**$/KW.year**	**342.10**	**644.83**	**60.66**	**2333.40**	**341.17**	**571.90**	**341.17**
Annual Fixed Cost	$/KW.year	215.18	146.57	455.74	85.01	284.08	305.60	324.43
Total	**$/KW.year**	**557.28**	**791.40**	**516.40**	**2418.41**	**625.25**	**877.50**	**665.60**
CF	0%	215.18	146.57	455.74	85.01	284.08	305.60	324.43
	100%	557.28	791.40	516.40	2418.41	625.25	877.50	665.60

	Fuel Prices $/MMBTU		
	Low	Medium	High
Index	**1**	**2**	**3**
Coal	3.33	3.80	4.28
LNG	8.00	10.00	12.00
N.Gas	4.00	5.00	6.00
Nuclear	0.57	0.63	0.69
HSD	19.57	23.24	26.91
MFO	11.50	13.70	15.90
Geothemal	14.58	16.20	17.82

Note: $/MMBTU is referred to "Fuel Price Sheet" except Nuclear.



INPUT REMERSIM (Fuel Comsumption per GWh)

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) at FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo
1	SRL1	PLTU	4	240	381	2,622	2,452	2,559	0	5,100	0.502			
2	SRL2	PLTU	3	340	579	2,560	2,309	2,456	0	5,100	0.482			
3	MKR1	PLTU	3	44	84	3,273	3,194	3,235	3	9,598			0.337	
4	MKR2	PLTG	2	90	165	2,948	2,884	2,919	1	2,520		11.58		
5	MKR3	PLTGU	1	300	465	2,433	2,018	2,286	1	2,520		9.07		
6	MKRR	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
7	PRK1	PLTU	2	25	48	3,229	2,957	3,099	3	9,598			0.323	
8	PRK2	PLTGU	2	315	560	2,319	1,994	2,177	4	9,095			0.239	
9	PRK3	PLTG	2	10	20	4,711	3,930	4,321	4	9,095			0.475	
10	PRKE	PLTGU	-	500	750	2,433	2,018	2,295	1	2,520		9.11		
11	MTR1	PLTGU	1	315	605	2,555	2,246	2,407	4	9,095			0.265	
12	MTR2	PLTG	2	72	138	3,376	3,204	3,294	4	9,095			0.362	
13	MTR3	PLTG	6	72	143	3,376	3,204	3,291	4	9,095			0.362	
14	MTRR	PLTGU	-	150	225	2,433	2,018	2,295	1	2,520		9.11		
15	SLK1	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
16	SLK2	PLTP	3	52	52	1,000	1,000	1,000	5	7,308				-
17	CLND	PLTG	1	50	150	4,465	3,200	3,622	1	2,520		14.37		
18	CLGN	PLTGU	1	240	740	2,175	1,800	1,922	1	2,520		7.63		
19	SRL3	PLTU	-	340	600	2,560	2,309	2,451	0	4,200	0.584			
20	LBHN	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
21	TLNG	PLTU	-	150	300	2,622	2,452	2,537	0	4,200	0.604			
22	KMJ1	PLTP	1	26	26	1,000	1,000	1,000	5	7,308				-
23	KMJ2	PLTP	2	47	47	1,000	1,000	1,000	5	7,308				-
24	KMJ3	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
25	DRJ1	PLTP	1	44	44	1,000	1,000	1,000	5	7,308				-
26	DRJ2	PLTP	1	70	70	1,000	1,000	1,000	5	5,300				-
27	DRJ3	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
28	WW1	PLTP	1	110	110	1,000	1,000	1,000	5	7,308				-
29	SRG1	PLTG	2	8	18	4,700	4,084	4,358	1	2,520		17.29		
30	SRG2	PLTG	2	8	20	4,700	4,084	4,330	4	9,095			0.476	
31	PTH1	PLTP	-	60	60	1,000	1,000	1,000	5	7,308				-
32	JBSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
33	JBUT	PLTU	-	150	300	2,590	2,115	2,353	0	4,200	0.560			
34	CRBN	PLTU	-	360	600	2,560	2,160	2,400	0	5,300	0.453			
35	TBK1	PLTGU	2	297	496	2,632	2,015	2,384	4	9,095			0.262	
36	TBK2	PLTU	2	25	41	3,229	3,127	3,189	3	9,598			0.332	
37	TBK3	PLTU	1	125	192	3,229	3,127	3,193	3	9,598			0.333	
38	CLC1	PLTG	2	10	22	4,700	4,079	4,361	4	9,095			0.479	
39	CLC2	PLTU	2	150	300	2,772	2,285	2,529	0	5,215	0.485			
40	TJB1	PLTU	2	330	660	2,772	2,285	2,529	0	5,215	0.485			
41	TJB2	PLTU	-	360	600	2,560	2,160	2,400	0	4,500	0.533			
42	DIEN	PLTP	1	60	60	1,000	1,000	1,000	5	7,308				-
43	RMBG	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
44	PTN1	PLTU	2	225	370	2,579	2,412	2,514	0	5,100	0.493			
45	PTN2	PLTU	-	340	600	2,560	2,309	2,451	0	4,500	0.545			
46	PEC	PLTU	2	368	615	2,772	2,285	2,576	0	5,215	0.494			
47	JPOW	PLTU	2	355	610	2,700	2,310	2,537	0	5,500	0.461			
48	GSK1	PLGU	3	250	480	2,318	1,990	2,161	1	2,520		8.58		
49	GSK2	PLTG	2	5	16	4,456	4,284	4,338	1	2,520		17.21		
50	GSK3	PLTU	2	43	85	2,882	2,709	2,797	1	2,520		11.10		
51	GSK4	PLTU	2	90	175	2,826	2,601	2,717	1	2,520		10.78		
52	PRAK	PLTU	2	25	48	4,323	3,517	3,937	3	9,598			0.410	
53	GRT1	PLTGU	1	270	462	2,632	2,083	2,404	4	9,095			0.264	
54	GRT2	PLTG	3	40	100	3,376	3,310	3,336	4	9,095			0.367	
55	PMRN	PLTG	2	12	48	4,439	4,035	4,136	4	9,095			0.455	
56	GLMR	PLTG	2	5	16	4,456	4,284	4,338	4	9,095			0.477	
57	GLMK	PLTG	1	56	133	4,439	4,035	4,205	4	9,095			0.462	
58	BLI1	PLTG	4	6	20	4,700	4,131	4,302	4	9,095			0.473	
59	BLI2	PLTD	10	2	5	3,880	3,576	3,698	4	9,095			0.407	
60	BLUT	PLTU	-	65	130	2,590	2,115	2,353	0	5,300	0.444			
61	BDGL	PLTP	-	10	10	1,000	1,000	1,000	5	7,308				-
62	TJAW	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			
63	JTSL	PLTU	-	150	300	2,590	2,115	2,353	0	4,500	0.523			

No.	Name	Type	No. of Sets	Min. Load	Capacity	Heat Rates (kcal/kWh)			Fuel Type	Heat Value kcal/kg 100kcal/MMBTU kcal/liter	Fuel Consumption (unit/GWh) a FLD			
				MW	MW	Base Load	Average Incremental	At FLD			1,000 ton	1,000 MMBTU	1,000 KL	Geo Nuclear
1	C6H	PLTU	0	300	600	2510	2389	2,450	0	4,766	0.514			
2	C10H	PLTU	0	500	1000	2510	2389	2,450	0	4,766	0.514			
3	LNG	PLTG	0	375	750	1911	1741	1,826	2	2,520		7.25		
4	N10H	PLTN	0	1000	1000	2606	2606	2,606	6	0				-
5	GE55	PLTP	0	44	55	1000	1000	1,000	5	0				-
6	G150	PLTG	0	75	150	3150	2625	2,888	4	9,095			0.318	
7	J-SIC	J-SI	5	300	600	2510	2389	2,450	7	0				-

Assumption of Fuel Prices (Medium Scenario)

Kind of Fuel	Price			Heat Content	
	USD		Cents/mKcal		
Coal	80.0	per Ton	1,509	5,300	Kcal/kg
LNG	10.0	per MMBTU	3,968	252,000	Kcal/mmbtu
Gas	5.0	per MMBTU	1,984	252,000	Kcal/mmbtu
HSD	133.0	per Barrel	9,222	9,070	Kcal/l
MFO	81.0	per Barrel	5,437	9,370	Kcal/l
Geothermal	0.0553	per kWh	6,430		
Nuclear			250		

Price	Crude Oil	95	$/barrel			
	HSD	133	$/barrel	23.24	$/mmbtu	
	MFO	81	$/barrel	13.70	$/mmbtu	
	LNG+transport	10.0	$/mmbtu			
	transport	0.7	$/mmbtu			
	LNG	9.3	$/mmbtu	9.30	$/mmbtu	
	Gas	5.0	$/mmbtu	5.00	$/mmbtu	
	Coal+transport	80	$/ton	3.80	$/mmbtu	
	transport	18	$/ton	Note: Coal price at P/S is CIF Price.		
	Coal	74	$/ton	6,300	Kcal/kg	
		62	$/ton	5,300	Kcal/kg	
Heat (	HSD	19,500	btu/lb	1 kg =	2.2	lb
		10,811	Kcal/kg	berat jenis =	0.839	kg/l
		9,070	Kcal/l			
	MFO	18,000	btu/lb	1 kg =	2.2	lb
		9,979	Kcal/kg	berat jenis =	0.939	kg/l
		9,370	Kcal/l			

Reference 2: Relationship between MOPS and Domestic Prices

MOPS (2008/03/31 ~ 2008/04/04)	
	$/barrel
High Speed Diesel Oil (0.05%)	132.02
Kerosene	128.36
Crude Oil	**104.30**

Note: HSD and Kerosene are FOB at Singapore
MOPS means Mean of Platts Singapore
Source://www.gu-goon.com/

PERTAMINA Price	$/barrel	Price Index (IP)
HSD	**145.93**	**1.40**
MFO	**89.14**	**0.85**
Crude Oil	**104.30**	**1.00**

Note : 1 barrel = 159 liter

New Fuel Prices for Industry in April 2008 released by PERTAMINA on March 31, 2008						
Fuel Type	Economical Selling Fuel Price - Non Tax (Base Price)					
	Region 1		Region 2		Region 3	
	Rp/KL	US$/KL	Rp/KL	US$/KL	Rp/KL	US$/KL
Gasoline	7080.13	768.17	7352.107	797.68	7508.057	814.60
Kerosene	8532.07	925.76	8718.104	945.94	8903.029	966.01
High Speed Diesel	8458.78	**917.77**	8819.464	956.91	9006.539	977.20
Marine Diesel Fuel	8284.08	898.88	8464.705	918.48	8644.250	937.97
Marine Fuel Oil	5166.53	**560.60**	5278.949	572.80	5390.924	584.95
Pertamina DEX	8757.37	950.14	-	-	-	-

Source: www.pertamina.com/
Note : Fuel prices released by PERTAMINA depend on MOPS.

6.2 Output Data

Base Scenario (Policy Oriented)

YEAR	PRESENT WORTH COST OF THE YEAR (K$)					OBJ.FUN.	LOLP	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP
	CONCST	SALVAL	OPCOST	OP-Coal	TOTAL	(CUMM.)	%								
2009	-	-	6,019,205	-	6,019,205	6,019,205	0.029	-	-	-	-	-	-	-	-
2010	-	-	4,899,357	-	4,899,357	10,918,562	0.027	-	-	-	-	-	-	-	-
2011	584,024	58,402	4,655,034	-	5,180,656	16,099,218	0.028	-	-	6	-	-	-	-	-
2012	1,449,185	168,314	4,456,589	-	5,737,460	21,836,678	0.028	-	-	6	-	1	-	-	-
2013	-	-	4,266,500	(1,364)	4,265,136	26,101,814	0.029	-	-	6	-	1	-	-	-
2014	3,489,675	539,066	4,148,529	(19,034)	7,080,104	33,181,918	0.027	-	-	10	-	1	4	-	-
2015	1,436,983	251,476	4,013,061	(52,615)	5,145,953	38,327,871	0.027	1	-	12	-	1	5	-	1
2016	642,766	127,520	3,937,326	(82,181)	4,370,391	42,698,262	0.030	2	-	14	-	1	5	-	2
2017	3,690,462	846,235	3,878,421	(179,366)	6,543,282	49,241,544	0.029	3	-	16	-	5	5	-	2
2018	1,832,782	502,776	3,801,422	(181,411)	4,950,017	54,191,561	0.030	4	1	18	-	5	5	-	3
2019	2,317,949	697,791	3,727,594	(262,416)	5,085,336	59,276,897	0.029	4	1	20	-	8	5	-	4
2020	1,917,688	662,641	3,625,065	(307,148)	4,572,964	63,849,861	0.029	4	1	22	-	10	5	4	4
2021	1,953,862	760,847	3,427,301	(325,347)	4,294,969	68,144,830	0.029	4	2	24	-	12	5	4	4
2022	1,937,782	848,107	3,298,525	(376,012)	4,012,188	72,157,018	0.029	4	2	26	-	15	5	7	4
2023	1,189,803	578,293	3,225,698	(404,629)	3,432,579	75,589,597	0.029	6	2	28	-	17	5	7	4
2024	1,403,016	786,478	3,039,239	(398,816)	3,256,960	78,846,557	0.029	6	3	30	-	18	5	10	4
2025	1,280,619	795,249	2,960,542	(420,187)	3,025,725	81,872,282	0.029	8	3	32	-	21	5	10	4
2026	1,405,205	989,483	2,808,038	(425,804)	2,797,956	84,670,238	0.029	8	4	34	-	24	5	10	4
2027	1,112,072	878,219	2,723,275	(435,811)	2,521,317	87,191,555	0.029	10	4	36	-	27	5	11	4
2028	1,356,615	1,207,217	2,584,914	(439,529)	2,294,783	89,486,338	0.029	10	5	38	-	31	5	11	4

Scenario 1 (Coal Power Acceleration)

YEAR	PRESENT WORTH COST OF THE YEAR (K$)					OBJ.FUN.	LOLP	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP
	CONCST	SALVAL	OPCOST	OP-Coal	TOTAL	(CUMM.)	%								
2009	-	-	6,019,205	-	6,019,205	6,019,205	0.029	-	-	-	-	-	-	-	-
2010	-	-	4,899,357	-	4,899,357	10,918,562	0.027	-	-	-	-	-	-	-	-
2011	584,024	58,402	4,655,034	-	5,180,656	16,099,218	0.028	-	-	6	-	-	-	-	-
2012	1,449,185	168,314	4,456,589	-	5,737,460	21,836,678	0.028	-	-	6	-	1	-	-	-
2013	-	-	4,266,500	(1,364)	4,265,136	26,101,814	0.029	-	-	6	-	1	-	-	-
2014	3,212,544	496,255	4,147,409	(23,907)	6,839,791	32,941,605	0.028	-	-	6	-	1	4	-	-
2015	1,313,264	229,556	4,013,965	(60,501)	5,037,171	37,978,776	0.028	1	-	6	-	1	5	-	1
2016	1,453,285	291,695	3,938,238	(105,974)	4,993,854	42,972,630	0.029	2	-	6	-	2	5	-	2
2017	2,769,528	633,492	3,908,800	(201,899)	5,842,937	48,815,567	0.030	3	-	6	-	5	5	-	2
2018	2,478,923	672,626	3,816,995	(213,425)	5,409,867	54,225,434	0.029	4	1	6	-	6	5	-	3
2019	2,239,324	674,316	3,742,177	(299,293)	5,007,891	59,233,325	0.029	4	1	6	-	9	5	-	4
2020	1,262,186	440,731	3,661,677	(338,139)	4,144,993	63,378,318	0.029	4	1	6	-	10	5	4	4
2021	2,413,772	937,132	3,446,940	(363,982)	4,559,598	67,937,916	0.029	4	2	6	-	13	5	4	4
2022	1,866,394	808,966	3,337,636	(430,453)	3,964,611	71,902,527	0.029	4	2	6	-	17	5	4	4
2023	986,523	480,879	3,266,052	(464,021)	3,307,675	75,210,202	0.028	5	2	6	-	19	5	4	4
2024	1,718,075	955,387	3,090,336	(471,186)	3,381,838	78,592,040	0.028	5	3	6	-	22	5	4	4
2025	1,328,463	827,539	3,006,373	(504,961)	3,002,335	81,594,375	0.028	5	3	6	-	26	5	4	4
2026	1,666,171	1,172,638	2,847,643	(507,067)	2,834,109	84,428,484	0.028	5	4	6	-	30	5	4	4
2027	1,059,042	836,849	2,763,199	(528,500)	2,456,892	86,885,376	0.027	5	4	6	-	34	5	4	4
2028	1,328,261	1,182,002	2,621,172	(524,173)	2,243,259	89,128,635	0.027	5	5	6	-	38	5	4	4

Scenario 2 (Power Source Diversification)

YEAR	PRESENT WORTH COST OF THE YEAR (K$)					OBJ.FUN.	LOLP	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP
	CONCST	SALVAL	OPCOST	OP-Coal	TOTAL	(CUMM.)	%								
2009	-	-	6,019,205	-	6,019,205	6,019,205	0.029	-	-	-	-	-	-	-	-
2010	-	-	4,899,357	-	4,899,357	10,918,562	0.027	-	-	-	-	-	-	-	-
2011	584,024	58,402	4,655,034	-	5,180,656	16,099,218	0.028	-	-	6	-	-	-	-	-
2012	1,449,185	168,313	4,456,651	-	5,737,522	21,836,740	0.028	-	-	6	-	1	-	-	-
2013	-	-	4,267,108	(1,138)	4,265,970	26,102,710	0.029	-	-	6	-	1	-	-	-
2014	3,489,675	539,064	4,155,456	(23,572)	7,082,494	33,185,204	0.027	-	-	10	-	1	4	-	-
2015	1,436,983	251,475	4,030,534	(46,810)	5,169,232	38,354,436	0.027	1	-	12	-	1	5	-	1
2016	642,766	127,521	3,964,651	(87,316)	4,392,580	42,747,016	0.030	2	-	14	-	1	5	-	2
2017	3,690,462	846,234	3,937,643	(182,096)	6,599,776	49,346,792	0.029	3	-	16	-	5	5	-	2
2018	1,832,782	502,776	3,860,806	(183,764)	5,007,048	54,353,840	0.030	4	1	18	-	5	5	-	3
2019	1,741,811	521,413	3,854,422	(260,781)	4,814,039	59,167,879	0.030	4	1	20	3	7	5	-	4
2020	1,201,499	411,259	3,782,688	(259,923)	4,313,005	63,480,884	0.030	6	1	22	4	7	5	4	4
2021	1,953,862	760,850	3,517,136	(280,966)	4,429,182	67,910,066	0.029	6	2	24	4	9	5	4	4
2022	1,385,679	601,874	3,434,939	(295,528)	3,923,216	71,833,282	0.029	8	2	26	6	10	5	7	4
2023	1,299,786	636,367	3,323,517	(350,701)	3,636,235	75,469,517	0.029	8	2	28	6	13	5	7	4
2024	1,334,852	744,452	3,152,904	(316,621)	3,426,683	78,896,200	0.029	10	3	30	8	13	5	10	4
2025	1,036,181	645,474	3,043,621	(359,364)	3,074,964	81,971,164	0.029	10	3	32	8	16	5	10	4
2026	1,054,334	740,919	2,911,153	(342,165)	2,882,403	84,853,567	0.028	12	4	34	10	17	5	10	4
2027	938,587	741,885	2,814,338	(370,067)	2,640,973	87,494,540	0.028	12	4	36	12	20	5	11	4
2028	1,356,615	1,207,212	2,673,134	(391,778)	2,430,758	89,925,298	0.028	12	5	38	12	24	5	11	4

Note: Construction Cost (CONCST) and Operation Cost (OPCOST) do not include those of RENEWBALE ENERGY.

Scenario 3 (CO2 Emission Reduction)

YEAR	PRESENT WORTH COST OF THE YEAR (K$)					OBJ.FUN.	LOLP	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP
	CONCST	SALVAL	OPCOST	OP-Coal	TOTAL	(CUMM.)	%								
2009	-	-	6,019,205	-	6,019,205	6,019,205	0.029	-	-	-	-	-	-	-	-
2010	-	-	4,899,357	-	4,899,357	10,918,562	0.027	-	-	-	-	-	-	-	-
2011	584,024	58,402	4,655,034	-	5,180,656	16,099,218	0.028	-	-	6	-	-	-	-	-
2012	1,449,185	168,313	4,456,651	-	5,737,522	21,836,740	0.028	-	-	6	-	1	-	-	-
2013	-	-	4,267,108	(1,138)	4,265,970	26,102,710	0.029	-	-	6	-	1	-	-	-
2014	3,489,675	539,064	4,155,456	(23,572)	7,082,494	33,185,204	0.027	-	-	10	-	1	4	-	-
2015	1,436,983	251,475	4,030,534	(46,810)	5,169,232	38,354,436	0.027	1	-	12	-	1	5	-	1
2016	642,766	127,521	3,964,651	(87,316)	4,392,580	42,747,016	0.030	2	-	14	-	1	5	-	2
2017	3,690,462	846,234	3,937,643	(182,096)	6,599,776	49,346,792	0.029	3	-	16	-	5	5	-	2
2018	1,832,782	502,776	3,860,806	(183,764)	5,007,048	54,353,840	0.030	4	1	18	-	5	5	-	3
2019	1,741,811	521,413	3,854,422	(260,781)	4,814,039	59,167,879	0.030	4	1	20	3	7	5	-	4
2020	1,201,499	411,259	3,782,688	(259,923)	4,313,005	63,480,884	0.030	6	1	22	4	7	5	4	4
2021	1,953,862	760,850	3,517,136	(280,966)	4,429,182	67,910,066	0.029	6	2	24	4	9	5	4	4
2022	1,385,679	601,874	3,434,939	(295,528)	3,923,216	71,833,282	0.029	8	2	26	6	10	5	7	4
2023	883,180	432,397	3,275,657	(328,198)	3,398,242	75,231,524	0.029	8	2	28	6	12	5	7	4
2024	1,334,852	744,451	3,106,903	(295,944)	3,401,360	78,632,884	0.029	10	3	30	8	12	5	10	4
2025	1,036,181	645,472	2,948,251	(328,139)	3,010,821	81,643,705	0.029	10	3	32	8	15	5	10	4
2026	1,054,334	740,912	2,820,059	(313,723)	2,819,757	84,463,462	0.029	12	4	34	10	16	5	10	4
2027	764,997	605,287	2,680,707	(323,764)	2,516,652	86,980,114	0.029	12	4	36	12	18	5	12	4
2028	1,120,221	997,022	2,551,425	(342,052)	2,332,572	89,312,686	0.028	12	5	38	12	21	5	12	4

Note: Construction Cost (CONCST) and Operation Cost (OPCOST) do not include those of RENEWBALE ENERGY.

Base Scenario (Policy Oriented)

YEAR	Peak Load (MW)	Supply Cap. (MW)	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP	RENEW Wind+Bio	RES. %
2009	19,329	24,390	-	-	-	-	-	-	-	-	-	26.2%
2010	20,535	28,306	-	-	-	-	-	-	-	-	-	37.8%
2011	21,809	30,319	-	-	330	-	-	-	-	-	-	39.0%
2012	23,153	32,286	-	-	-	-	1,000	-	-	-	-	39.4%
2013	24,573	32,286	-	-	-	-	-	-	-	-	-	31.4%
2014	26,073	34,906	-	-	220	-	-	2,400	-	-	-	33.9%
2015	27,657	36,976	750	-	110	-	-	600	-	500	-	33.7%
2016	29,406	38,336	750	-	110	-	-	-	-	500	-	30.4%
2017	31,340	41,643	750	-	110	-	4,000	-	-	-	-	32.9%
2018	33,395	43,802	750	1,000	110	-	-	-	-	500	-	31.2%
2019	35,577	46,914	-	-	110	-	3,000	-	-	500	-	31.9%
2020	37,895	50,194	-	-	110	-	2,000	-	1,170	-	-	32.5%
2021	40,357	53,304	-	1,000	110	-	2,000	-	-	-	-	32.1%
2022	42,973	56,709	-	-	110	-	3,000	-	900	-	-	32.0%
2023	45,751	60,319	1,500	-	110	-	2,000	-	-	-	-	31.8%
2024	48,703	63,329	-	1,000	110	-	1,000	-	900	-	-	30.0%
2025	51,840	67,939	1,500	-	110	-	3,000	-	-	-	-	31.1%
2026	55,172	72,049	-	1,000	110	-	3,000	-	-	-	-	30.6%
2027	58,712	76,959	1,500	-	110	-	3,000	-	300	-	-	31.1%
2028	62,474	82,069	-	1,000	110	-	4,000	-	-	-	-	31.4%
TOTAL			7,500	5,000	2,090	-	31,000	3,000	3,270	2,000	-	

Scenario 1 (Coal Power Acceleration)

YEAR	Peak Load (MW)	Supply Cap. (MW)	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP	RENEW Wind+Bio	RES. %
2009	19,329	24,390	-	-	-	-	-	-	-	-	-	26.2%
2010	20,535	28,306	-	-	-	-	-	-	-	-	-	37.8%
2011	21,809	30,319	-	-	330	-	-	-	-	-	-	39.0%
2012	23,153	32,286	-	-	-	-	1,000	-	-	-	-	39.4%
2013	24,573	32,286	-	-	-	-	-	-	-	-	-	31.4%
2014	26,073	34,686	-	-	-	-	-	2,400	-	-	-	33.0%
2015	27,657	36,646	750	-	-	-	-	600	-	500	-	32.5%
2016	29,406	38,896	750	-	-	-	1,000	-	-	500	-	32.3%
2017	31,340	41,093	750	-	-	-	3,000	-	-	-	-	31.1%
2018	33,395	44,142	750	1,000	-	-	1,000	-	-	500	-	32.2%
2019	35,577	47,144	-	-	-	-	3,000	-	-	500	-	32.5%
2020	37,895	49,314	-	-	-	-	1,000	-	1,170	-	-	30.1%
2021	40,357	53,314	-	1,000	-	-	3,000	-	-	-	-	32.1%
2022	42,973	56,709	-	-	-	-	4,000	-	-	-	-	32.0%
2023	45,751	59,459	750	-	-	-	2,000	-	-	-	-	30.0%
2024	48,703	63,459	-	1,000	-	-	3,000	-	-	-	-	30.3%
2025	51,840	67,459	-	-	-	-	4,000	-	-	-	-	30.1%
2026	55,172	72,459	-	1,000	-	-	4,000	-	-	-	-	31.3%
2027	58,712	76,459	-	-	-	-	4,000	-	600	-	-	30.2%
2028	62,474	81,459	-	1,000	-	-	4,000	-	-	-	-	30.4%
TOTAL			3,750	5,000	330	-	38,000	3,000	1,770	2,000	-	

Scenario 2 (Power Source Diversification)

YEAR	Peak Load (MW)	Supply Cap. (MW)	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP	RENEW Wind+Bio	RES. %
2009	19,329	24,390	-	-	-	-	-	-	-	-	-	26.2%
2010	20,535	28,306	-	-	-	-	-	-	-	-	-	37.8%
2011	21,809	30,319	-	-	330	-	-	-	-	-	-	39.0%
2012	23,153	32,286	-	-	-	-	1,000	-	-	-	-	39.4%
2013	24,573	32,286	-	-	-	-	-	-	-	-	-	31.4%
2014	26,073	34,906	-	-	220	-	-	2,400	-	-	-	33.9%
2015	27,657	36,976	750	-	110	-	-	600	-	500	-	33.7%
2016	29,406	38,336	750	-	110	-	-	-	-	500	-	30.4%
2017	31,340	41,643	750	-	110	-	4,000	-	-	-	-	32.9%
2018	33,395	43,802	750	1,000	110	-	-	-	-	500	-	31.2%
2019	35,577	46,364	-	-	110	450	2,000	-	-	500	-	30.3%
2020	37,895	49,294	1,500	-	110	150	-	-	1,170	-	-	30.1%
2021	40,357	52,939	-	1,000	110	-	2,000	-	-	-	535	31.2%
2022	42,973	56,176	1,500	-	110	300	1,000	-	900	-	32	30.7%
2023	45,751	59,926	-	-	110	-	3,000	-	-	-	640	31.0%
2024	48,703	63,810	1,500	1,000	110	300	-	-	900	-	74	31.0%
2025	51,840	67,677	-	-	110	-	3,000	-	-	-	757	30.5%
2026	55,172	70,713	1,500	1,000	110	300	1,000	-	-	-	126	28.2%
2027	58,712	76,322	-	-	110	300	3,000	-	300	-	899	30.0%
2028	62,474	81,619	-	1,000	110	-	4,000	-	-	-	187	30.6%
TOTAL			9,000	5,000	2,090	1,800	24,000	3,000	3,270	2,000	3,250	

Note: Renewable Energy comes on line in 2021 with Capacity Factor of 20 %.

Scenario 3 (CO2 Emission Reduction)

YEAR	Peak Load (MW)	Supply Cap. (MW)	LNG	N10H	GE55	G150	C10H	J-SI	Hydro	PUMP	RENEW Wind+Bio	RES. %
2009	19,329	24,390	-	-	-	-	-	-	-	-	-	26.2%
2010	20,535	28,306	-	-	-	-	-	-	-	-	-	37.8%
2011	21,809	30,319	-	-	330	-	-	-	-	-	-	39.0%
2012	23,153	32,286	-	-	-	-	1,000	-	-	-	-	39.4%
2013	24,573	32,286	-	-	-	-	-	-	-	-	-	31.4%
2014	26,073	34,906	-	-	220	-	-	2,400	-	-	-	33.9%
2015	27,657	36,976	750	-	110	-	-	600	-	500	-	33.7%
2016	29,406	38,336	750	-	110	-	-	-	-	500	-	30.4%
2017	31,340	41,643	750	-	110	-	4,000	-	-	-	-	32.9%
2018	33,395	43,802	750	1,000	110	-	-	-	-	500	-	31.2%
2019	35,577	46,364	-	-	110	450	2,000	-	-	500	-	30.3%
2020	37,895	49,294	1,500	-	110	150	-	-	1,170	-	-	30.1%
2021	40,357	52,939	-	1,000	110	-	2,000	-	-	-	535	31.2%
2022	42,973	56,176	1,500	-	110	300	1,000	-	900	-	32	30.7%
2023	45,751	59,527	-	-	110	-	2,000	-	-	-	1,241	30.1%
2024	48,703	63,449	1,500	1,000	110	300	-	-	900	-	112	30.3%
2025	51,840	68,037	-	-	110	-	3,000	-	-	-	1,478	31.2%
2026	55,172	72,155	1,500	1,000	110	300	1,000	-	-	-	208	30.8%
2027	58,712	76,917	-	-	110	300	2,000	-	600	-	1,752	31.0%
2028	62,474	81,355	-	1,000	110	-	3,000	-	-	-	328	30.2%
TOTAL			9,000	5,000	2,090	1,800	21,000	3,000	3,570	2,000	5,686	

Note: Renewable Energy comes on line in 2021 with Capacity Factor of 20 %.

Base Scenario (Policy Oriented)

Operation Cost of Coal-fired in VarSys Adjustment (Net Present Value)

YEAR	t'-0.5	NPV Conv.	C10H Generation (1000 GWh)				JS-I Generation (1000 GWh)				T. Generation (1000 GWh)		OP Cost	OP Cost
		12.0%	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	BASE	PEAK	K$	(NPV) K$
2009	-0.5	0.94491	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2010	-1.5	0.84367	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2011	-2.5	0.75328	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2012	-3.5	0.67257	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2013	-4.5	0.60051	0.02	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.08	0.00	-2,272	-1,364
2014	-5.5	0.53617	0.40	0.00	0.33	0.00	0.15	0.00	0.37	0.00	1.25	0.00	-35,500	-19,034
2015	-6.5	0.47872	0.76	0.00	0.60	0.00	1.12	0.00	1.39	0.00	3.87	0.00	-109,908	-52,615
2016	-7.5	0.42743	1.12	0.00	0.91	0.00	2.28	0.00	2.46	0.00	6.77	0.00	-192,268	-82,181
2017	-8.5	0.38163	6.42	0.02	5.51	0.01	2.10	0.00	2.49	0.00	16.52	0.03	-469,999	-179,366
2018	-9.5	0.34074	7.12	0.03	5.85	0.11	2.59	0.00	3.05	0.00	18.61	0.14	-532,402	-181,411
2019	-10.5	0.30424	12.68	0.70	10.13	0.89	2.79	0.00	3.22	0.00	28.82	1.59	-862,531	-262,416
2020	-11.5	0.27164	16.23	1.01	14.29	1.67	3.13	0.00	3.55	0.00	37.20	2.68	########	-307,148
2021	-12.5	0.24254	19.52	1.63	17.59	1.90	3.39	0.00	3.29	0.00	43.79	3.53	########	-325,347
2022	-13.5	0.21655	25.21	2.55	22.90	3.54	3.40	0.00	3.69	0.00	55.20	6.09	########	-376,012
2023	-14.5	0.19335	29.84	4.04	27.06	4.97	3.86	0.01	4.13	0.00	64.89	9.02	########	-404,629
2024	-15.5	0.17263	31.51	5.37	29.46	6.93	4.10	0.01	4.26	0.01	69.33	12.32	########	-398,816
2025	-16.5	0.15414	37.09	6.54	35.27	8.60	4.27	0.01	4.57	0.01	81.20	15.16	########	-420,187
2026	-17.5	0.13762	43.01	8.20	39.89	9.40	4.40	0.01	4.46	0.01	91.76	17.62	########	-425,804
2027	-18.5	0.12288	49.50	10.07	44.82	11.75	4.55	0.01	4.71	0.01	103.58	21.84	########	-435,811
2028	-19.5	0.10971	56.05	11.55	52.31	12.52	4.56	0.01	4.65	0.01	117.57	24.09	########	-439,529
TOTAL														

Scenario 1 (Coal Power Acceleration)

Operation Cost of Coal-fired in VarSys Adjustment (Net Present Value)

YEAR	t'-0.5	NPV Conv.	C10H Generation (1000 GWh)				JS-I Generation (1000 GWh)				T. Generation (1000 GWh)		OP Cost	OP Cost
		12.0%	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	BASE	PEAK	K$	(NPV) K$
2009	-0.5	0.94491	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2010	-1.5	0.84367	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2011	-2.5	0.75328	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2012	-3.5	0.67257	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2013	-4.5	0.60051	0.02	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.08	0.00	-2,272	-1,364
2014	-5.5	0.53617	0.44	0.00	0.38	0.00	0.22	0.00	0.53	0.00	1.57	0.00	-44,588	-23,907
2015	-6.5	0.47872	0.82	0.00	0.66	0.00	1.37	0.00	1.60	0.00	4.45	0.00	-126,380	-60,501
2016	-7.5	0.42743	2.39	0.00	1.78	0.00	2.29	0.00	2.27	0.00	8.73	0.00	-247,932	-105,974
2017	-8.5	0.38163	6.93	0.04	6.50	0.03	2.27	0.00	2.86	0.00	18.56	0.07	-529,043	-201,899
2018	-9.5	0.34074	9.13	0.12	7.03	0.09	2.78	0.00	2.91	0.00	21.85	0.21	-626,357	-213,425
2019	-10.5	0.30424	14.57	1.02	11.88	1.06	2.97	0.00	3.19	0.00	32.61	2.08	-983,740	-299,293
2020	-11.5	0.27164	17.19	2.23	14.61	2.59	3.63	0.00	3.70	0.00	39.13	4.82	########	-338,139
2021	-12.5	0.24254	21.76	2.27	19.45	2.52	3.48	0.00	3.48	0.00	48.17	4.79	########	-363,982
2022	-13.5	0.21655	29.06	3.53	26.34	4.09	3.49	0.00	3.67	0.00	62.56	7.62	########	-430,453
2023	-14.5	0.19335	33.22	5.84	31.05	6.56	3.97	0.01	4.14	0.02	72.38	12.43	########	-464,021
2024	-15.5	0.17263	38.54	6.68	35.98	7.18	4.01	0.02	4.03	0.01	82.56	13.89	########	-471,186
2025	-16.5	0.15414	46.01	8.86	43.23	9.31	4.14	0.01	4.23	0.01	97.61	18.19	########	-504,961
2026	-17.5	0.13762	52.62	9.16	50.21	10.00	4.07	0.01	4.14	0.00	111.04	19.17	########	-507,067
2027	-18.5	0.12288	61.10	12.59	56.85	12.88	4.29	0.01	4.34	0.01	126.58	25.49	########	-528,500
2028	-19.5	0.10971	68.19	13.98	63.82	14.31	4.24	0.01	4.38	0.00	140.63	28.30	########	-524,173
TOTAL														

Scenario 2 (Power Source Diversification)

Operation Cost of Coal-fired in VarSys Adjustment (Net Present Value)

YEAR	t'-0.5	NPV Conv.	C10H Generation (1000 GWh)				JS-I Generation (1000 GWh)				T. Generation (1000 GWh)		OP Cost	OP Cost
		12.0%	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	BASE	PEAK	K$	(NPV) K$
2009	-0.5	0.94491	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2010	-1.5	0.84367	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2011	-2.5	0.75328	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2012	-3.5	0.67257	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2013	-4.5	0.60051	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.00	-1,895	-1,138
2014	-5.5	0.53617	0.37	0.00	0.32	0.00	0.14	0.00	0.33	0.00	1.16	0.00	-43,964	-23,572
2015	-6.5	0.47872	0.64	0.00	0.52	0.00	0.56	0.00	0.86	0.00	2.58	0.00	-97,782	-46,810
2016	-7.5	0.42743	0.90	0.00	0.78	0.00	1.71	0.00	2.00	0.00	5.39	0.00	-204,281	-87,316
2017	-8.5	0.38163	5.25	0.01	4.13	0.00	1.49	0.00	1.71	0.00	12.58	0.01	-477,152	-182,096
2018	-9.5	0.34074	5.69	0.01	4.63	0.00	1.78	0.00	2.12	0.00	14.22	0.01	-539,308	-183,764
2019	-10.5	0.30424	10.02	0.15	7.52	0.01	2.40	0.00	2.52	0.00	22.46	0.16	-857,154	-260,781
2020	-11.5	0.27164	10.96	0.12	8.24	0.00	2.93	0.00	3.00	0.00	25.13	0.12	-956,867	-259,923
2021	-12.5	0.24254	13.60	0.15	11.12	0.04	2.84	0.00	2.82	0.00	30.38	0.19	########	-280,966
2022	-13.5	0.21655	15.44	0.14	13.75	0.36	3.03	0.00	3.30	0.00	35.52	0.50	########	-295,528
2023	-14.5	0.19335	20.79	0.36	19.08	0.99	3.26	0.00	3.41	0.00	46.54	1.35	########	-350,701
2024	-15.5	0.17263	21.03	0.26	19.27	0.87	3.40	0.00	3.59	0.00	47.29	1.13	########	-316,621
2025	-16.5	0.15414	26.88	0.94	24.56	1.80	3.51	0.00	3.89	0.00	58.84	2.74	########	-359,364
2026	-17.5	0.13762	28.58	0.97	26.60	1.91	3.74	0.00	3.87	0.00	62.79	2.88	########	-342,165
2027	-18.5	0.12288	34.01	1.79	32.58	3.18	3.92	0.00	4.10	0.00	74.61	4.97	########	-370,067
2028	-19.5	0.10971	41.61	2.58	38.60	3.63	3.80	0.00	4.15	0.00	88.16	6.21	########	-391,778
TOTAL														

Scenario 3 (CO2 Emission Reduction)

Operation Cost of Coal-fired in VarSys Adjustment (Net Present Value)

YEAR	t'-0.5	NPV Conv.	C10H Generation (1000 GWh)				JS-I Generation (1000 GWh)				T. Generation (1000 GWh)		OP Cost	OP Cost
		12.0%	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	P-1 Base	P1-Peak	P-2 Base	P-2 Peak	BASE	PEAK	K$	(NPV) K$
2009	-0.5	0.94491	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2010	-1.5	0.84367	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2011	-2.5	0.75328	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2012	-3.5	0.67257	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2013	-4.5	0.60051	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.00	-1,895	-1,138
2014	-5.5	0.53617	0.37	0.00	0.32	0.00	0.14	0.00	0.33	0.00	1.16	0.00	-43,964	-23,572
2015	-6.5	0.47872	0.64	0.00	0.52	0.00	0.56	0.00	0.86	0.00	2.58	0.00	-97,782	-46,810
2016	-7.5	0.42743	0.90	0.00	0.78	0.00	1.71	0.00	2.00	0.00	5.39	0.00	-204,281	-87,316
2017	-8.5	0.38163	5.25	0.01	4.13	0.00	1.49	0.00	1.71	0.00	12.58	0.01	-477,152	-182,096
2018	-9.5	0.34074	5.69	0.01	4.63	0.00	1.78	0.00	2.12	0.00	14.22	0.01	-539,308	-183,764
2019	-10.5	0.30424	10.02	0.15	7.52	0.01	2.40	0.00	2.52	0.00	22.46	0.16	-857,154	-260,781
2020	-11.5	0.27164	10.96	0.12	8.24	0.00	2.93	0.00	3.00	0.00	25.13	0.12	-956,867	-259,923
2021	-12.5	0.24254	13.60	0.15	11.12	0.04	2.84	0.00	2.82	0.00	30.38	0.19	########	-280,966
2022	-13.5	0.21655	15.44	0.14	13.75	0.36	3.03	0.00	3.30	0.00	35.52	0.50	########	-295,528
2023	-14.5	0.19335	18.91	0.32	17.77	1.07	3.23	0.00	3.52	0.00	43.43	1.39	########	-328,198
2024	-15.5	0.17263	19.15	0.22	17.91	0.92	3.37	0.00	3.69	0.00	44.12	1.14	########	-295,944
2025	-16.5	0.15414	24.79	0.43	22.59	1.26	3.36	0.00	3.78	0.00	54.52	1.69	########	-328,139
2026	-17.5	0.13762	26.79	0.51	24.31	1.23	3.60	0.00	3.75	0.00	58.45	1.74	########	-313,723
2027	-18.5	0.12288	30.15	0.83	28.75	2.13	3.76	0.00	3.97	0.00	66.63	2.96	########	-323,764
2028	-19.5	0.10971	36.41	1.98	33.17	2.93	3.82	0.00	4.07	0.00	77.47	4.91	########	-342,052
TOTAL														

PRODUCTION MIX (1000 GWh)

Base Scenario (Policy Oriented)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	87.34	24.29	-	1.41	2.86	4.17	-	-	-	6.00	126.07
2010	#####	13.06	-	-	0.02	0.15	-	-	-	6.00	133.93
2011	#####	15.02	-	-	0.02	0.05	-	-	-	6.00	142.23
2012	#####	21.34	-	-	0.02	0.31	-	-	-	6.14	151.01
2013	#####	27.47	-	0.01	0.06	2.15	-	-	-	6.14	160.25
2014	#####	32.38	-	0.02	0.09	5.20	-	0.52	-	6.14	170.04
2015	#####	36.58	0.07	0.02	0.13	8.12	-	2.51	0.70	6.43	181.28
2016	#####	39.35	1.65	0.11	0.38	12.10	-	4.74	1.73	6.43	194.06
2017	#####	38.70	2.32	-	0.38	14.81	-	4.58	1.38	6.43	206.19
2018	#####	37.57	4.03	-	2.70	15.23	7.52	5.64	0.38	6.43	218.29
2019	#####	37.92	4.55	-	2.59	16.98	7.52	6.02	0.30	6.43	232.41
2020	#####	38.04	5.34	-	3.32	18.25	7.52	6.68	0.24	9.13	247.43
2021	#####	38.05	5.42	-	3.46	19.10	15.05	6.68	0.23	9.13	263.47
2022	#####	38.10	5.97	-	3.02	20.17	15.05	7.09	0.15	10.99	280.45
2023	#####	38.13	10.13	-	3.39	21.06	15.05	8.00	0.04	10.99	298.41
2024	#####	38.15	10.94	-	3.79	21.97	22.57	8.38	0.03	12.85	317.65
2025	#####	38.23	15.48	-	3.99	22.88	22.57	8.87	0.02	12.85	338.09
2026	#####	38.23	15.70	-	4.11	23.74	30.09	8.88	0.02	12.85	359.83
2027	#####	38.25	20.86	-	4.37	24.71	30.09	9.29	0.02	13.47	382.91
2028	#####	38.25	20.79	-	4.40	25.52	37.62	9.23	0.02	13.47	407.45

PRODUCTION MIX (1000 GWh)

Scenario 1 (Coal Power Acceleration)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	87.34	24.29	-	1.41	2.86	4.17	-	-	-	6.00	126.07
2010	#####	13.06	-	-	0.02	0.15	-	-	-	6.00	133.93
2011	#####	15.02	-	-	0.02	0.05	-	-	-	6.00	142.23
2012	#####	21.34	-	-	0.02	0.31	-	-	-	6.14	151.01
2013	#####	27.47	-	-	0.06	2.15	-	-	-	6.14	160.24
2014	#####	32.38	-	0.02	0.11	4.87	-	0.75	-	6.14	170.04
2015	#####	36.77	0.14	0.03	0.17	7.27	-	2.97	0.81	6.43	181.44
2016	#####	39.34	1.58	0.09	0.28	10.27	-	4.56	1.59	6.43	193.86
2017	#####	38.72	2.73	-	0.78	12.03	-	5.13	1.80	6.43	206.74
2018	#####	37.57	4.06	-	2.80	11.77	7.52	5.69	0.39	6.43	218.28
2019	#####	37.92	4.67	-	2.70	12.47	7.52	6.16	0.30	6.43	232.40
2020	#####	38.07	6.05	-	3.99	12.84	7.52	7.33	0.24	9.13	247.50
2021	#####	38.06	5.72	-	3.72	12.90	15.05	6.96	0.23	9.13	263.47
2022	#####	38.10	6.04	-	3.07	13.01	15.05	7.16	0.14	9.13	280.43
2023	#####	38.14	8.80	-	3.67	13.08	15.05	8.15	0.02	9.13	298.42
2024	#####	38.14	8.80	-	3.72	13.10	22.57	8.07	0.10	9.13	317.72
2025	#####	38.21	9.39	-	4.06	13.20	22.57	8.40	0.01	9.13	338.09
2026	#####	38.21	9.22	-	4.02	13.23	30.09	8.22	0.01	9.13	359.82
2027	#####	38.23	9.94	-	4.43	13.29	30.09	8.64	0.01	9.13	382.89
2028	#####	38.23	10.00	-	4.49	13.30	37.62	8.64	0.01	9.13	407.43

PRODUCTION MIX (1000 GWh)

Scenario 2 (Power Source Diversification)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	87.34	24.29	-	1.41	2.86	4.17	-	-	-	6.00	-	126.07
2010	#####	13.06	-	-	0.02	0.15	-	-	-	6.00	-	133.93
2011	#####	15.02	-	-	0.02	0.05	-	-	-	6.00	-	142.23
2012	#####	21.34	-	-	0.02	0.31	-	-	-	6.14	-	151.01
2013	#####	27.49	-	-	0.06	2.15	-	-	-	6.14	-	160.23
2014	#####	32.47	-	0.02	0.09	5.20	-	0.48	-	6.14	-	170.05
2015	#####	37.00	1.02	0.02	0.13	8.12	-	1.41	0.90	6.43	-	181.55
2016	#####	39.44	2.94	0.11	0.38	12.10	-	3.71	1.73	6.43	-	194.05
2017	#####	38.89	6.09	-	0.38	14.81	-	3.20	1.38	6.43	-	206.19
2018	#####	37.77	8.33	-	2.70	15.23	7.52	3.91	0.37	6.43	-	218.27
2019	#####	38.27	11.13	-	3.41	17.02	7.52	4.93	0.30	6.43	-	232.42
2020	#####	38.45	18.11	-	4.70	18.32	7.52	5.93	0.24	9.13	-	247.43
2021	#####	38.44	18.20	-	4.48	19.06	15.05	5.66	0.24	9.13	2.68	263.55
2022	#####	38.56	26.12	-	4.86	20.17	15.05	6.34	0.17	10.99	2.84	280.51
2023	#####	38.61	27.89	-	5.25	21.04	15.05	6.67	0.09	10.99	6.04	298.55
2024	#####	38.64	35.00	-	6.22	21.86	22.57	7.00	0.07	12.85	6.41	317.76
2025	#####	38.71	37.01	-	6.74	22.78	22.57	7.40	0.03	12.85	10.20	338.17
2026	#####	38.74	44.61	-	7.70	23.63	30.09	7.62	0.02	12.85	10.83	359.86
2027	#####	38.78	46.36	-	8.98	24.60	30.09	8.02	0.02	13.47	15.33	382.91
2028	#####	38.79	46.79	-	8.96	25.41	37.62	7.95	0.02	13.47	16.27	407.42

PRODUCTION MIX (1000 GWh)

Scenario 3 (CO2 Emission Reduction)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	87.34	24.29	-	1.41	2.86	4.17	-	-	-	6.00	-	126.07
2010	#####	13.06	-	-	0.02	0.15	-	-	-	6.00	-	133.93
2011	#####	15.02	-	-	0.02	0.05	-	-	-	6.00	-	142.23
2012	#####	21.34	-	-	0.02	0.31	-	-	-	6.14	-	151.01
2013	#####	27.49	-	-	0.06	2.15	-	-	-	6.14	-	160.23
2014	#####	32.47	-	0.02	0.09	5.20	-	0.48	-	6.14	-	170.05
2015	#####	37.00	1.02	0.02	0.13	8.12	-	1.41	0.90	6.43	-	181.55
2016	#####	39.44	2.94	0.11	0.38	12.10	-	3.71	1.73	6.43	-	194.05
2017	#####	38.89	6.09	-	0.38	14.81	-	3.20	1.38	6.43	-	206.19
2018	#####	37.77	8.33	-	2.70	15.23	7.52	3.91	0.37	6.43	-	218.27
2019	#####	38.27	11.13	-	3.41	17.02	7.52	4.93	0.30	6.43	-	232.42
2020	#####	38.45	18.11	-	4.70	18.32	7.52	5.93	0.24	9.13	-	247.43
2021	#####	38.44	18.20	-	4.48	19.06	15.05	5.66	0.24	9.13	2.68	263.55
2022	#####	38.56	26.12	-	4.86	20.17	15.05	6.34	0.17	10.99	2.84	280.51
2023	#####	38.61	27.90	-	5.31	21.05	15.05	6.75	0.10	10.99	9.05	298.59
2024	#####	38.64	34.94	-	6.27	21.87	22.57	7.06	0.09	12.85	9.61	317.81
2025	#####	38.67	36.06	-	6.42	22.68	22.57	7.15	0.04	12.85	17.01	338.23
2026	#####	38.70	43.43	-	7.34	23.50	30.09	7.35	0.03	12.85	18.05	359.89
2027	#####	38.75	44.90	-	8.53	24.42	30.09	7.73	0.02	14.09	26.82	382.92
2028	#####	38.77	46.19	-	8.84	25.31	37.62	7.89	0.02	14.09	28.46	407.38

PRODUCTION MIX (%)

Base Scenario (Policy Oriented)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	69.3	19.3	-	1.1	2.3	3.3	-	-	-	4.8	100.0
2010	85.6	9.8	-	-	0.0	0.1	-	-	-	4.5	100.0
2011	85.2	10.6	-	-	0.0	0.0	-	-	-	4.2	100.0
2012	81.6	14.1	-	-	0.0	0.2	-	-	-	4.1	100.0
2013	77.6	17.1	-	0.0	0.0	1.3	-	-	-	3.8	100.0
2014	73.9	19.0	-	0.0	0.1	3.1	-	0.3	-	3.6	100.0
2015	69.9	20.2	0.0	0.0	0.1	4.5	-	1.4	0.4	3.5	100.0
2016	65.7	20.3	0.9	0.1	0.2	6.2	-	2.4	0.9	3.3	100.0
2017	66.7	18.8	1.1	-	0.2	7.2	-	2.2	0.7	3.1	100.0
2018	63.6	17.2	1.8	-	1.2	7.0	3.4	2.6	0.2	2.9	100.0
2019	64.6	16.3	2.0	-	1.1	7.3	3.2	2.6	0.1	2.8	100.0
2020	64.2	15.4	2.2	-	1.3	7.4	3.0	2.7	0.1	3.7	100.0
2021	63.1	14.4	2.1	-	1.3	7.2	5.7	2.5	0.1	3.5	100.0
2022	64.2	13.6	2.1	-	1.1	7.2	5.4	2.5	0.1	3.9	100.0
2023	64.2	12.8	3.4	-	1.1	7.1	5.0	2.7	0.0	3.7	100.0
2024	62.6	12.0	3.4	-	1.2	6.9	7.1	2.6	0.0	4.0	100.0
2025	63.1	11.3	4.6	-	1.2	6.8	6.7	2.6	0.0	3.8	100.0
2026	62.9	10.6	4.4	-	1.1	6.6	8.4	2.5	0.0	3.6	100.0
2027	63.2	10.0	5.4	-	1.1	6.5	7.9	2.4	0.0	3.5	100.0
2028	63.4	9.4	5.1	-	1.1	6.3	9.2	2.3	0.0	3.3	100.0

PRODUCTION MIX (%)

Scenario 1 (Coal Power Acceleration)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	69.3	19.3	-	1.1	2.3	3.3	-	-	-	4.8	100.0
2010	85.6	9.8	-	-	0.0	0.1	-	-	-	4.5	100.0
2011	85.2	10.6	-	-	0.0	0.0	-	-	-	4.2	100.0
2012	81.6	14.1	-	-	0.0	0.2	-	-	-	4.1	100.0
2013	77.6	17.1	-	-	0.0	1.3	-	-	-	3.8	100.0
2014	74.0	19.0	-	0.0	0.1	2.9	-	0.4	-	3.6	100.0
2015	69.9	20.3	0.1	0.0	0.1	4.0	-	1.6	0.4	3.5	100.0
2016	66.9	20.3	0.8	0.0	0.1	5.3	-	2.4	0.8	3.3	100.0
2017	67.3	18.7	1.3	-	0.4	5.8	-	2.5	0.9	3.1	100.0
2018	65.1	17.2	1.9	-	1.3	5.4	3.4	2.6	0.2	2.9	100.0
2019	66.4	16.3	2.0	-	1.2	5.4	3.2	2.7	0.1	2.8	100.0
2020	65.6	15.4	2.4	-	1.6	5.2	3.0	3.0	0.1	3.7	100.0
2021	65.2	14.4	2.2	-	1.4	4.9	5.7	2.6	0.1	3.5	100.0
2022	67.3	13.6	2.2	-	1.1	4.6	5.4	2.6	0.0	3.3	100.0
2023	67.8	12.8	2.9	-	1.2	4.4	5.0	2.7	0.0	3.1	100.0
2024	67.4	12.0	2.8	-	1.2	4.1	7.1	2.5	0.0	2.9	100.0
2025	69.0	11.3	2.8	-	1.2	3.9	6.7	2.5	0.0	2.7	100.0
2026	68.8	10.6	2.6	-	1.1	3.7	8.4	2.3	0.0	2.5	100.0
2027	70.3	10.0	2.6	-	1.2	3.5	7.9	2.3	0.0	2.4	100.0
2028	70.2	9.4	2.5	-	1.1	3.3	9.2	2.1	0.0	2.2	100.0

PRODUCTION MIX (%)

Scenario 2 (Power Source Diversification)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	69.3	19.3	-	1.1	2.3	3.3	-	-	-	4.8	-	100.0
2010	85.6	9.8	-	-	0.0	0.1	-	-	-	4.5	-	100.0
2011	85.2	10.6	-	-	0.0	0.0	-	-	-	4.2	-	100.0
2012	81.6	14.1	-	-	0.0	0.2	-	-	-	4.1	-	100.0
2013	77.6	17.2	-	-	0.0	1.3	-	-	-	3.8	-	100.0
2014	73.9	19.1	-	0.0	0.1	3.1	-	0.3	-	3.6	-	100.0
2015	69.7	20.4	0.6	0.0	0.1	4.5	-	0.8	0.5	3.5	-	100.0
2016	65.6	20.3	1.5	0.1	0.2	6.2	-	1.9	0.9	3.3	-	100.0
2017	65.5	18.9	3.0	-	0.2	7.2	-	1.6	0.7	3.1	-	100.0
2018	62.3	17.3	3.8	-	1.2	7.0	3.4	1.8	0.2	2.9	-	100.0
2019	61.7	16.5	4.8	-	1.5	7.3	3.2	2.1	0.1	2.8	-	100.0
2020	58.6	15.5	7.3	-	1.9	7.4	3.0	2.4	0.1	3.7	-	100.0
2021	57.1	14.6	6.9	-	1.7	7.2	5.7	2.1	0.1	3.5	1.0	100.0
2022	55.4	13.7	9.3	-	1.7	7.2	5.4	2.3	0.1	3.9	1.0	100.0
2023	55.9	12.9	9.3	-	1.8	7.0	5.0	2.2	0.0	3.7	2.0	100.0
2024	52.6	12.2	11.0	-	2.0	6.9	7.1	2.2	0.0	4.0	2.0	100.0
2025	53.2	11.4	10.9	-	2.0	6.7	6.7	2.2	0.0	3.8	3.0	100.0
2026	51.1	10.8	12.4	-	2.1	6.6	8.4	2.1	0.0	3.6	3.0	100.0
2027	51.5	10.1	12.1	-	2.3	6.4	7.9	2.1	0.0	3.5	4.0	100.0
2028	52.1	9.5	11.5	-	2.2	6.2	9.2	2.0	0.0	3.3	4.0	100.0

PRODUCTION MIX (%)

Scenario 3 (CO2 Emission Reduction)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	69.3	19.3	-	1.1	2.3	3.3	-	-	-	4.8	-	100.0
2010	85.6	9.8	-	-	0.0	0.1	-	-	-	4.5	-	100.0
2011	85.2	10.6	-	-	0.0	0.0	-	-	-	4.2	-	100.0
2012	81.6	14.1	-	-	0.0	0.2	-	-	-	4.1	-	100.0
2013	77.6	17.2	-	-	0.0	1.3	-	-	-	3.8	-	100.0
2014	73.9	19.1	-	0.0	0.1	3.1	-	0.3	-	3.6	-	100.0
2015	69.7	20.4	0.6	0.0	0.1	4.5	-	0.8	0.5	3.5	-	100.0
2016	65.6	20.3	1.5	0.1	0.2	6.2	-	1.9	0.9	3.3	-	100.0
2017	65.5	18.9	3.0	-	0.2	7.2	-	1.6	0.7	3.1	-	100.0
2018	62.3	17.3	3.8	-	1.2	7.0	3.4	1.8	0.2	2.9	-	100.0
2019	61.7	16.5	4.8	-	1.5	7.3	3.2	2.1	0.1	2.8	-	100.0
2020	58.6	15.5	7.3	-	1.9	7.4	3.0	2.4	0.1	3.7	-	100.0
2021	57.1	14.6	6.9	-	1.7	7.2	5.7	2.1	0.1	3.5	1.0	100.0
2022	55.4	13.7	9.3	-	1.7	7.2	5.4	2.3	0.1	3.9	1.0	100.0
2023	54.9	12.9	9.3	-	1.8	7.0	5.0	2.3	0.0	3.7	3.0	100.0
2024	51.6	12.2	11.0	-	2.0	6.9	7.1	2.2	0.0	4.0	3.0	100.0
2025	51.7	11.4	10.7	-	1.9	6.7	6.7	2.1	0.0	3.8	5.0	100.0
2026	49.6	10.8	12.1	-	2.0	6.5	8.4	2.0	0.0	3.6	5.0	100.0
2027	49.0	10.1	11.7	-	2.2	6.4	7.9	2.0	0.0	3.7	7.0	100.0
2028	49.1	9.5	11.3	-	2.2	6.2	9.2	1.9	0.0	3.5	7.0	100.0

CAPACITY FACTOR (%)

Base Scenario (Policy Oriented)

YEAR	FUEL TYPE									
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD
2009	87.68	74.68	-	22.42	6.37	53.73	-	-	-	26.61
2010	84.31	40.15	-	-	0.04	1.51	-	-	-	26.61
2011	85.04	36.57	-	-	0.04	0.37	-	-	-	26.61
2012	81.48	44.80	-	-	0.04	2.09	-	-	-	26.74
2013	82.28	57.67	-	0.59	0.13	14.47	-	-	-	26.74
2014	83.12	67.97	-	1.19	0.20	30.98	-	2.47	-	26.74
2015	83.81	76.79	1.07	1.19	0.29	45.75	-	9.55	15.98	26.88
2016	84.37	82.60	12.56	6.54	0.85	64.67	-	18.04	19.75	26.88
2017	73.88	84.36	11.77	-	1.11	75.27	-	17.43	15.75	26.88
2018	74.52	84.56	15.33	-	9.11	73.79	85.84	21.46	2.17	26.88
2019	70.63	85.35	17.31	-	12.40	78.60	85.84	22.91	1.14	26.88
2020	69.08	85.62	20.32	-	15.90	80.87	85.84	25.42	0.91	26.72
2021	67.19	85.64	20.62	-	16.57	81.18	85.90	25.42	0.88	26.72
2022	65.70	85.75	22.72	-	19.38	82.35	85.90	26.98	0.57	26.13
2023	65.77	85.82	25.70	-	21.75	82.73	85.90	30.44	0.15	26.13
2024	66.30	85.86	27.75	-	24.32	83.16	85.88	31.89	0.11	25.73
2025	65.32	86.04	29.45	-	25.60	83.55	85.88	33.75	0.08	25.73
2026	64.14	86.04	29.87	-	26.37	83.75	85.87	33.79	0.08	25.73
2027	63.82	86.09	31.75	-	28.04	84.30	85.87	35.35	0.08	25.62
2028	62.35	86.09	31.64	-	28.23	84.30	85.89	35.12	0.08	25.62

CAPACITY FACTOR (%)

Scenario 1 (Coal Power Acceleration)

YEAR	FUEL TYPE									
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD
2009	87.68	74.68	-	22.42	6.37	53.73	-	-	-	26.61
2010	84.31	40.15	-	-	0.04	1.51	-	-	-	26.61
2011	85.04	36.57	-	-	0.04	0.37	-	-	-	26.61
2012	81.48	44.80	-	-	0.04	2.09	-	-	-	26.74
2013	82.28	57.67	-	-	0.13	14.47	-	-	-	26.74
2014	83.18	67.97	-	1.19	0.25	32.78	-	3.57	-	26.74
2015	83.89	77.19	2.13	1.78	0.38	48.93	-	11.30	18.49	26.88
2016	81.09	82.58	12.02	5.35	0.63	69.13	-	17.35	18.15	26.88
2017	74.70	84.40	13.85	-	2.27	80.97	-	19.52	20.55	26.88
2018	72.84	84.56	15.45	-	9.45	79.22	85.84	21.65	2.23	26.88
2019	69.70	85.35	17.77	-	12.93	83.93	85.84	23.44	1.14	26.88
2020	70.56	85.68	23.02	-	19.11	86.42	85.84	27.89	0.91	26.72
2021	66.98	85.66	21.77	-	17.81	86.83	85.90	26.48	0.88	26.72
2022	64.77	85.75	22.98	-	19.70	87.57	85.90	27.25	0.53	26.72
2023	65.52	85.84	26.79	-	23.55	88.04	85.90	31.01	0.08	26.72
2024	63.88	85.84	26.79	-	23.87	88.17	85.88	30.71	0.38	26.72
2025	62.97	86.00	28.58	-	26.05	88.85	85.88	31.96	0.04	26.72
2026	61.12	86.00	28.07	-	25.80	89.05	85.87	31.28	0.04	26.72
2027	61.13	86.04	30.26	-	28.43	89.45	85.87	32.88	0.04	26.72
2028	60.17	86.04	30.44	-	28.81	89.52	85.89	32.88	0.04	26.72

CAPACITY FACTOR (%)

Scenario 2 (Power Source Diversification)

YEAR	FUEL TYPE										
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW
2009	87.68	74.68	-	22.42	6.37	53.73	-	-	-	26.61	-
2010	84.31	40.15	-	-	0.04	1.51	-	-	-	26.61	-
2011	85.04	36.57	-	-	0.04	0.37	-	-	-	26.61	-
2012	81.48	44.80	-	-	0.04	2.09	-	-	-	26.74	-
2013	82.27	57.71	-	-	0.13	14.47	-	-	-	26.74	-
2014	83.10	68.16	-	1.19	0.20	30.98	-	2.28	-	26.74	-
2015	83.67	77.67	15.53	1.19	0.29	45.75	-	5.37	20.55	26.88	-
2016	84.13	82.79	22.37	6.54	0.85	64.67	-	14.12	19.75	26.88	-
2017	72.49	84.77	30.90	-	1.11	75.27	-	12.18	15.75	26.88	-
2018	73.03	85.01	31.70	-	9.11	73.79	85.84	14.88	2.11	26.88	-
2019	70.38	86.13	42.35	-	13.74	78.79	85.84	18.76	1.14	26.88	-
2020	71.17	86.54	45.94	-	17.98	81.18	85.84	22.56	0.91	26.72	-
2021	68.06	86.52	46.17	-	17.14	81.01	85.90	21.54	0.91	26.72	20.01
2022	67.56	86.79	49.70	-	20.71	82.35	85.90	24.12	0.65	26.13	20.01
2023	65.12	86.90	53.06	-	22.37	82.65	85.90	25.38	0.34	26.13	19.99
2024	65.21	86.97	53.27	-	23.84	82.74	85.88	26.64	0.27	25.73	19.99
2025	63.65	87.12	56.33	-	25.83	83.19	85.88	28.16	0.11	25.73	20.00
2026	65.03	87.19	56.58	-	26.81	83.36	85.87	29.00	0.08	25.73	20.00
2027	62.10	87.28	58.80	-	28.64	83.93	85.87	30.52	0.08	25.62	20.00
2028	60.15	87.30	59.35	-	28.58	83.93	85.89	30.25	0.08	25.62	20.00

CAPACITY FACTOR (%)

Scenario 3 (CO2 Emission Reduction)

YEAR	FUEL TYPE										
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW
2009	87.68	74.68	-	22.42	6.37	53.73	-	-	-	26.61	-
2010	84.31	40.15	-	-	0.04	1.51	-	-	-	26.61	-
2011	85.04	36.57	-	-	0.04	0.37	-	-	-	26.61	-
2012	81.48	44.80	-	-	0.04	2.09	-	-	-	26.74	-
2013	82.27	57.71	-	-	0.13	14.47	-	-	-	26.74	-
2014	83.10	68.16	-	1.19	0.20	30.98	-	2.28	-	26.74	-
2015	83.67	77.67	15.53	1.19	0.29	45.75	-	5.37	20.55	26.88	-
2016	84.13	82.79	22.37	6.54	0.85	64.67	-	14.12	19.75	26.88	-
2017	72.49	84.77	30.90	-	1.11	75.27	-	12.18	15.75	26.88	-
2018	73.03	85.01	31.70	-	9.11	73.79	85.84	14.88	2.11	26.88	-
2019	70.38	86.13	42.35	-	13.74	78.79	85.84	18.76	1.14	26.88	-
2020	71.17	86.54	45.94	-	17.98	81.18	85.84	22.56	0.91	26.72	-
2021	68.06	86.52	46.17	-	17.14	81.01	85.90	21.54	0.91	26.72	20.01
2022	67.56	86.79	49.70	-	20.71	82.35	85.90	24.12	0.65	26.13	20.01
2023	66.16	86.90	53.08	-	22.63	82.69	85.90	25.68	0.38	26.13	20.00
2024	66.21	86.97	53.18	-	24.03	82.78	85.88	26.86	0.34	25.73	20.00
2025	63.82	87.03	54.89	-	24.60	82.82	85.88	27.21	0.15	25.73	20.00
2026	63.18	87.10	55.09	-	25.55	82.90	85.87	27.97	0.11	25.73	20.00
2027	62.50	87.21	56.95	-	27.21	83.31	85.87	29.41	0.08	25.53	20.00
2028	61.33	87.26	58.59	-	28.20	83.60	85.89	30.02	0.08	25.53	20.00

FUEL CONSUMPTIO

Base Scenario (Policy Oriented)

TYPE OF PLANT	COAL			GAS	LNG	MFO	HSD
	Million Tones	Million Tones	Million Tones	Million MMBTU	Million MMBTU	Million KL	Million KL
YEAR	Coal	J-SI	Sub total				
2009	44.1	-	44.1	221.1	-	0.5	0.7
2010	59.4	-	59.4	111.8	-	-	-
2011	62.4	-	62.4	128.0	-	-	-
2012	63.4	-	63.4	185.9	-	-	-
2013	64.0	-	64.0	244.1	-	-	-
2014	64.6	0.3	64.9	290.9	-	-	-
2015	65.1	1.3	66.4	331.1	0.5	-	-
2016	65.5	2.4	67.9	359.6	11.9	-	0.1
2017	70.1	2.4	72.5	351.1	16.8	-	0.1
2018	70.6	2.9	73.5	337.8	29.2	-	0.8
2019	75.7	3.1	78.8	341.3	33.0	-	0.9
2020	79.7	3.5	83.2	342.7	38.7	-	1.1
2021	83.0	3.5	86.5	342.8	39.3	-	1.2
2022	89.1	3.7	92.8	343.3	43.3	-	1.1
2023	94.4	4.2	98.6	343.8	73.4	-	1.3
2024	97.7	4.4	102.1	344.1	79.3	-	1.4
2025	104.2	4.6	108.8	344.9	112.3	-	1.5
2026	110.0	4.6	114.6	345.0	113.8	-	1.6
2027	117.0	4.9	121.9	345.3	151.2	-	1.7
2028	124.4	4.8	129.2	345.3	150.7	-	1.7
TOTAL	1,604.4	50.6	1,655.0	5,999.9	893.4	0.5	15.2

CO2 Emission

Base Scenario (Policy Oriented)

YEAR	Coal+JSI	Gas	LNG	MFO	HSD	Total CO2 Emission
	CO2 Emission 887 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	
	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2
	887	443	443	704	704	
2009	77,471	10,760	0	993	2,013	91,237
2010	101,739	5,786	0	0	14	107,539
2011	107,451	6,654	0	0	14	114,119
2012	109,278	9,454	0	0	14	118,746
2013	110,361	12,169	0	7	42	122,579
2014	111,948	14,344	0	14	63	126,369
2015	114,627	16,205	31	14	92	130,969
2016	117,359	17,432	731	77	268	135,867
2017	126,105	17,144	1,028	0	268	144,545
2018	128,109	16,644	1,785	0	1,901	148,439
2019	138,478	16,799	2,016	0	1,823	159,116
2020	146,878	16,852	2,366	0	2,337	168,433
2021	153,478	16,856	2,401	0	2,436	175,171
2022	165,869	16,878	2,645	0	2,126	187,518
2023	177,063	16,892	4,488	0	2,387	200,830
2024	183,919	16,900	4,846	0	2,668	208,333
2025	196,976	16,936	6,858	0	2,809	223,579
2026	208,525	16,936	6,955	0	2,893	235,309
2027	222,761	16,945	9,241	0	3,076	252,023
2028	237,166	16,945	9,210	0	3,098	266,419
TOTAL	2,935,561	295,531	54,601	1,105	30,342	3,317,140

SOx and NOx Emission

Base Scenario (Policy Oriented)

YEAR	Coal+JSI		Gas		LNG		MFO+HSD		Total	
	SOx Emission 2.0	NOx Emission 4.4	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 2.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission	NOx Emission
	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton
	2.0	4.4	0.0	4.4	0.0	4.4	2.0	4.4		
2009	175	384	0	107	0	0	9	19	184	510
2010	229	505	0	57	0	0	0	0	229	562
2011	242	533	0	66	0	0	0	0	242	599
2012	246	542	0	94	0	0	0	0	246	636
2013	249	547	0	121	0	0	0	0	249	668
2014	252	555	0	142	0	0	0	0	252	697
2015	258	569	0	161	0	0	0	1	258	731
2016	265	582	0	173	0	7	1	2	266	764
2017	284	626	0	170	0	10	1	2	285	808
2018	289	635	0	165	0	18	5	12	294	830
2019	312	687	0	167	0	20	5	11	317	885
2020	331	729	0	167	0	23	7	15	338	934
2021	346	761	0	167	0	24	7	15	353	967
2022	374	823	0	168	0	26	6	13	380	1,030
2023	399	878	0	168	0	45	7	15	406	1,106
2024	415	912	0	168	0	48	8	17	423	1,145
2025	444	977	0	168	0	68	8	18	452	1,231
2026	470	1,034	0	168	0	69	8	18	478	1,289
2027	502	1,105	0	168	0	92	9	19	511	1,384
2028	535	1,176	0	168	0	91	9	19	544	1,454
TOTAL	6,617	14,560	0	2,933	0	541	90	196	6,707	18,230

FUEL CONSUMPTIO

Scenario 1 (Coal Power Acceleration)

TYPE OF PLANT	COAL			GAS	LNG	MFO	HSD
	Million Tones	Million Tones	Million Tones	Million MMBTU	Million MMBTU	Million KL	Million KL
YEAR	Coal	J-SI	Sub total				
2009	44.1	-	44.1	221.1	-	0.5	0.7
2010	59.4	-	59.4	111.8	-	-	-
2011	62.4	-	62.4	128.0	-	-	-
2012	63.4	-	63.4	185.9	-	-	-
2013	64.0	-	64.0	244.1	-	-	-
2014	64.7	0.4	65.1	290.9	-	-	-
2015	65.2	1.6	66.8	333.3	1.0	-	-
2016	66.5	2.4	68.9	359.6	11.4	-	0.1
2017	70.7	2.7	73.4	351.4	19.8	-	0.2
2018	72.1	3.0	75.1	337.9	29.5	-	0.1
2019	77.6	3.2	80.8	341.3	33.8	-	0.9
2020	81.2	3.8	85.0	343.0	43.9	-	1.4
2021	85.4	3.6	89.0	342.9	41.5	-	1.3
2022	93.1	3.7	96.8	343.3	43.8	-	1.2
2023	99.3	4.3	103.6	343.7	63.8	-	1.4
2024	104.6	4.2	108.8	343.9	63.8	-	1.4
2025	113.1	4.4	117.5	344.6	68.0	-	1.5
2026	119.7	4.3	124.0	344.6	66.8	-	1.5
2027	129.4	4.5	133.9	344.9	72.1	-	1.7
2028	137.0	4.5	141.5	344.9	72.5	-	1.7
TOTAL	1,672.9	50.6	1,723.5	6,001.1	631.7	0.5	15.1

CO2 Emission

Scenario 1 (Coal Power Acceleration)

YEAR	Coal+JSI	Gas	LNG	MFO	HSD	Total CO2 Emission
	CO2 Emission 887 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	
	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2
	887	443	443	704	704	
2009	77,471	10,760	0	993	2,013	91,237
2010	101,739	5,786	0	0	14	107,539
2011	107,451	6,654	0	0	14	114,119
2012	109,278	9,454	0	0	14	118,746
2013	110,361	12,169	0	0	42	122,572
2014	112,223	14,344	0	14	77	126,658
2015	115,150	16,289	62	21	120	131,642
2016	119,106	17,428	700	63	197	137,494
2017	127,950	17,153	1,209	0	549	146,861
2018	131,045	16,644	1,799	0	1,971	151,459
2019	142,266	16,799	2,069	0	1,901	163,035
2020	150,488	16,865	2,680	0	2,809	172,842
2021	158,471	16,861	2,534	0	2,619	180,485
2022	173,754	16,878	2,676	0	2,161	195,469
2023	186,740	16,896	3,898	0	2,584	210,118
2024	197,056	16,896	3,898	0	2,619	220,469
2025	214,228	16,927	4,160	0	2,858	238,173
2026	226,992	16,927	4,084	0	2,830	250,833
2027	246,382	16,936	4,403	0	3,119	270,840
2028	261,355	16,936	4,430	0	3,161	285,882
TOTAL	3,069,506	295,602	38,602	1,091	31,672	3,436,473

SOx and NOx Emission

Scenario 1 (Coal Power Acceleration)

YEAR	Coal+JSI		Gas		LNG		MFO+HSD		Total	
	SOx Emission 2.0	NOx Emission 4.4	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 2.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission	NOx Emission
	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton
	2.0	4.4	0.0	4.4	0.0	4.4	2.0	4.4		
2009	175	384	0	107	0	0	9	19	184	510
2010	229	505	0	57	0	0	0	0	229	562
2011	242	533	0	66	0	0	0	0	242	599
2012	246	542	0	94	0	0	0	0	246	636
2013	249	547	0	121	0	0	0	0	249	668
2014	253	557	0	142	0	0	0	1	253	700
2015	260	571	0	162	0	1	0	1	260	735
2016	269	591	0	173	0	7	1	2	270	773
2017	289	635	0	170	0	12	2	3	291	820
2018	295	650	0	165	0	18	6	12	301	845
2019	321	706	0	167	0	21	5	12	326	906
2020	339	747	0	168	0	27	8	18	347	960
2021	357	786	0	167	0	25	7	16	364	994
2022	392	862	0	168	0	27	6	14	398	1,071
2023	421	926	0	168	0	39	7	16	428	1,149
2024	444	978	0	168	0	39	7	16	451	1,201
2025	483	1,063	0	168	0	41	8	18	491	1,290
2026	512	1,126	0	168	0	41	8	18	520	1,353
2027	556	1,222	0	168	0	44	9	19	565	1,453
2028	589	1,296	0	168	0	44	9	20	598	1,528
TOTAL	6,921	15,227	0	2,935	0	386	92	205	7,013	18,753

FUEL CONSUMPTIO

Scenario 2 (Power Source Diversification)

TYPE OF PLANT	COAL			GAS	LNG	MFO	HSD
	Million Tones	Million Tones	Million Tones	Million MMBTU	Million MMBTU	Million KL	Million KL
YEAR	Coal	J-SI	Sub total				
2009	44.1	-	44.1	221.1	-	0.5	0.7
2010	59.4	-	59.4	111.8	-	-	-
2011	62.4	-	62.4	128.0	-	-	-
2012	63.4	-	63.4	185.9	-	-	-
2013	64.0	-	64.0	244.4	-	-	-
2014	64.6	0.2	64.8	292.1	-	-	-
2015	65.0	0.7	65.7	336.1	7.4	-	-
2016	65.4	1.9	67.3	361.0	21.3	-	0.1
2017	68.9	1.7	70.6	353.9	44.2	-	0.1
2018	69.3	2.0	71.3	340.9	60.4	-	0.8
2019	72.7	2.6	75.3	346.3	80.7	-	1.1
2020	73.4	3.1	76.5	348.5	131.3	-	1.6
2021	75.9	3.0	78.9	348.4	131.9	-	1.5
2022	78.1	3.3	81.4	349.9	189.4	-	1.7
2023	83.3	3.5	86.8	350.6	202.2	-	1.9
2024	83.4	3.7	87.1	351.1	253.8	-	2.2
2025	89.1	3.9	93.0	351.9	268.3	-	2.4
2026	90.9	4.0	94.9	352.3	323.4	-	2.7
2027	97.0	4.2	101.2	352.9	336.1	-	3.1
2028	103.7	4.2	107.9	352.9	339.2	-	3.1
TOTAL	1,474.0	42.0	1,516.0	6,080.0	2,389.6	0.5	23.0

CO2 Emission

Scenario 2 (Power Source Diversification)

YEAR	Coal+JSI	Gas	LNG	MFO	HSD	Total CO2 Emission
	CO2 Emission 887 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	
	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2
	887	443	443	704	704	
2009	77,471	10,760	0	993	2,013	91,237
2010	101,739	5,786	0	0	14	107,539
2011	107,451	6,654	0	0	14	114,119
2012	109,278	9,454	0	0	14	118,746
2013	110,334	12,178	0	0	42	122,554
2014	111,877	14,384	0	14	63	126,338
2015	113,474	16,391	452	14	92	130,423
2016	116,126	17,472	1,302	77	268	135,245
2017	122,592	17,228	2,698	0	268	142,786
2018	124,109	16,732	3,690	0	1,901	146,432
2019	131,578	16,954	4,931	0	2,401	155,864
2020	133,902	17,033	8,023	0	3,309	162,267
2021	138,611	17,029	8,063	0	3,154	166,857
2022	143,472	17,082	11,571	0	3,421	175,546
2023	153,974	17,104	12,355	0	3,696	187,129
2024	154,462	17,118	15,505	0	4,379	191,464
2025	166,117	17,149	16,395	0	4,745	204,406
2026	169,763	17,162	19,762	0	5,421	212,108
2027	182,083	17,180	20,537	0	6,322	226,122
2028	195,220	17,184	20,728	0	6,308	239,440
TOTAL	2,663,633	298,034	146,012	1,098	47,845	3,156,622

SOx and NOx Emission

Scenario 2 (Power Source Diversification)

YEAR	Coal+JSI		Gas		LNG		MFO+HSD		Total	
	SOx Emission 2.0	NOx Emission 4.4	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 2.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission	NOx Emission
	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton
	2.0	4.4	0.0	4.4	0.0	4.4	2.0	4.4		
2009	175	384	0	107	0	0	9	19	184	510
2010	229	505	0	57	0	0	0	0	229	562
2011	242	533	0	66	0	0	0	0	242	599
2012	246	542	0	94	0	0	0	0	246	636
2013	249	547	0	121	0	0	0	0	249	668
2014	252	555	0	143	0	0	0	0	252	698
2015	256	563	0	163	0	4	0	1	256	731
2016	262	576	0	174	0	13	1	2	263	765
2017	276	608	0	171	0	27	1	2	277	808
2018	280	616	0	166	0	37	5	12	285	831
2019	297	653	0	168	0	49	7	15	304	885
2020	302	664	0	169	0	80	9	21	311	934
2021	313	688	0	169	0	80	9	20	322	957
2022	324	712	0	170	0	115	10	21	334	1,018
2023	347	764	0	170	0	123	11	23	358	1,080
2024	348	766	0	170	0	154	12	27	360	1,117
2025	375	824	0	170	0	163	13	30	388	1,187
2026	383	842	0	170	0	196	15	34	398	1,242
2027	411	903	0	171	0	204	18	40	429	1,318
2028	440	968	0	171	0	206	18	39	458	1,384
TOTAL	6,007	13,213	0	2,960	0	1,451	138	306	6,145	17,930

FUEL CONSUMPTIO

Scenario 3 (CO2 Emission Reduction)

TYPE OF PLANT	COAL			GAS	LNG	MFO	HSD
	Million Tones	Million Tones	Million Tones	Million MMBTU	Million MMBTU	Million KL	Million KL
YEAR	Coal	J-SI	Sub total				
2009	44.1	-	44.1	221.1	-	0.5	0.7
2010	59.4	-	59.4	111.8	-	-	-
2011	62.4	-	62.4	128.0	-	-	-
2012	63.4	-	63.4	185.9	-	-	-
2013	64.0	-	64.0	244.4	-	-	-
2014	64.6	0.2	64.8	292.1	-	-	-
2015	65.0	0.7	65.7	336.1	7.4	-	-
2016	65.4	1.9	67.3	361.0	21.3	-	0.1
2017	68.9	1.7	70.6	353.9	44.2	-	0.1
2018	69.3	2.0	71.3	340.9	60.4	-	0.8
2019	72.7	2.6	75.3	346.3	80.7	-	1.1
2020	73.4	3.1	76.5	348.5	131.3	-	1.6
2021	75.9	3.0	78.9	348.4	131.9	-	1.5
2022	78.1	3.3	81.4	350.0	189.4	-	1.7
2023	81.9	3.5	85.4	350.6	202.2	-	1.9
2024	81.9	3.7	85.6	351.0	253.3	-	2.2
2025	86.8	3.7	90.5	351.4	261.4	-	2.3
2026	88.5	3.8	92.3	351.8	314.9	-	2.6
2027	92.6	4.0	96.6	352.4	325.5	-	3.0
2028	98.3	4.1	102.4	352.8	334.9	-	3.1
TOTAL	1,456.6	41.3	1,497.9	6,078.4	2,358.8	0.5	22.7

CO2 Emission

Scenario 3 (CO2 Emission Reduction)

YEAR	Coal+JSI	Gas	LNG	MFO	HSD	Total CO2 Emission
	CO2 Emission 887 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 443 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	CO2 Emission 704 t-CO2/GWh	
	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2	1,000 ton-CO2
	887	443	443	704	704	
2009	77,471	10,760	0	993	2,013	91,237
2010	101,739	5,786	0	0	14	107,539
2011	107,451	6,654	0	0	14	114,119
2012	109,278	9,454	0	0	14	118,746
2013	110,334	12,178	0	0	42	122,554
2014	111,877	14,384	0	14	63	126,338
2015	113,474	16,391	452	14	92	130,423
2016	116,126	17,472	1,302	77	268	135,245
2017	122,592	17,228	2,698	0	268	142,786
2018	124,109	16,732	3,690	0	1,901	146,432
2019	131,578	16,954	4,931	0	2,401	155,864
2020	133,902	17,033	8,023	0	3,309	162,267
2021	138,611	17,029	8,063	0	3,154	166,857
2022	143,472	17,082	11,571	0	3,421	175,546
2023	151,260	17,104	12,360	0	3,738	184,462
2024	151,650	17,118	15,478	0	4,414	188,660
2025	161,372	17,131	15,975	0	4,520	198,998
2026	164,893	17,144	19,239	0	5,167	206,443
2027	173,231	17,166	19,891	0	6,005	216,293
2028	184,567	17,175	20,462	0	6,223	228,427
TOTAL	2,628,987	297,975	144,135	1,098	47,041	3,119,236

SOx and NOx Emission

Scenario 3 (CO2 Emission Reduction)

YEAR	Coal+JSI		Gas		LNG		MFO+HSD		Total	
	SOx Emission 2.0	NOx Emission 4.4	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 0.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission 2.0 t/GWh	NOx Emission 4.4 t/GWh	SOx Emission	NOx Emission
	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton	1,000 ton
	2.0	4.4	0.0	4.4	0.0	4.4	2.0	4.4		
2009	175	384	0	107	0	0	9	19	184	510
2010	229	505	0	57	0	0	0	0	229	562
2011	242	533	0	66	0	0	0	0	242	599
2012	246	542	0	94	0	0	0	0	246	636
2013	249	547	0	121	0	0	0	0	249	668
2014	252	555	0	143	0	0	0	0	252	698
2015	256	563	0	163	0	4	0	1	256	731
2016	262	576	0	174	0	13	1	2	263	765
2017	276	608	0	171	0	27	1	2	277	808
2018	280	616	0	166	0	37	5	12	285	831
2019	297	653	0	168	0	49	7	15	304	885
2020	302	664	0	169	0	80	9	21	311	934
2021	313	688	0	169	0	80	9	20	322	957
2022	324	712	0	170	0	115	10	21	334	1,018
2023	341	750	0	170	0	123	11	23	352	1,066
2024	342	752	0	170	0	154	13	28	355	1,104
2025	364	800	0	170	0	159	13	28	377	1,157
2026	372	818	0	170	0	191	15	32	387	1,211
2027	391	859	0	171	0	198	17	38	408	1,266
2028	416	916	0	171	0	203	18	39	434	1,329
TOTAL	5,929	13,041	0	2,960	0	1,433	138	301	6,067	17,735

SUMMARY OF FIXED SYSTEM (NOMINAL CAPACITY (MW))

Base Scenario (Policy Oriented)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	11,371	3,713	-	718	5,128	886	-	-	-	2,574	24,390
2010	15,531	3,713	-	274	5,078	1,136	-	-	-	2,574	28,306
2011	16,261	4,688	-	192	5,078	1,526	-	-	-	2,574	30,319
2012	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	32,286
2013	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	32,286
2014	17,261	5,438	-	192	5,078	1,916	-	2,400	-	2,621	34,906
2015	17,261	5,438	750	192	5,078	2,026	-	3,000	500	2,731	36,976
2016	17,261	5,438	1,500	192	5,078	2,136	-	3,000	1,000	2,731	38,336
2017	21,261	5,237	2,250	-	3,918	2,246	-	3,000	1,000	2,731	41,643
2018	21,261	5,072	3,000	-	3,382	2,356	1,000	3,000	2,000	2,731	43,802
2019	24,261	5,072	3,000	-	2,384	2,466	1,000	3,000	3,000	2,731	46,914
2020	26,261	5,072	3,000	-	2,384	2,576	1,000	3,000	3,000	3,901	50,194
2021	28,261	5,072	3,000	-	2,384	2,686	2,000	3,000	3,000	3,901	53,304
2022	31,261	5,072	3,000	-	1,779	2,796	2,000	3,000	3,000	4,801	56,709
2023	33,261	5,072	4,500	-	1,779	2,906	2,000	3,000	3,000	4,801	60,319
2024	34,261	5,072	4,500	-	1,779	3,016	3,000	3,000	3,000	5,701	63,329
2025	37,261	5,072	6,000	-	1,779	3,126	3,000	3,000	3,000	5,701	67,939
2026	40,261	5,072	6,000	-	1,779	3,236	4,000	3,000	3,000	5,701	72,049
2027	43,261	5,072	7,500	-	1,779	3,346	4,000	3,000	3,000	6,001	76,959
2028	47,261	5,072	7,500	-	1,779	3,456	5,000	3,000	3,000	6,001	82,069

SUMMARY OF FIXED SYSTEM (NOMINAL CAPACITY (MW))

Scenario 1 (Coal Power Acceleration)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	11,371	3,713	-	718	5,128	886	-	-	-	2,574	24,390
2010	15,531	3,713	-	274	5,078	1,136	-	-	-	2,574	28,306
2011	16,261	4,688	-	192	5,078	1,526	-	-	-	2,574	30,319
2012	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	32,286
2013	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	32,286
2014	17,261	5,438	-	192	5,078	1,696	-	2,400	-	2,621	34,686
2015	17,261	5,438	750	192	5,078	1,696	-	3,000	500	2,731	36,646
2016	18,261	5,438	1,500	192	5,078	1,696	-	3,000	1,000	2,731	38,896
2017	21,261	5,237	2,250	-	3,918	1,696	-	3,000	1,000	2,731	41,093
2018	22,261	5,072	3,000	-	3,382	1,696	1,000	3,000	2,000	2,731	44,142
2019	25,261	5,072	3,000	-	2,384	1,696	1,000	3,000	3,000	2,731	47,144
2020	26,261	5,072	3,000	-	2,384	1,696	1,000	3,000	3,000	3,901	49,314
2021	29,261	5,072	3,000	-	2,384	1,696	2,000	3,000	3,000	3,901	53,314
2022	33,261	5,072	3,000	-	1,779	1,696	2,000	3,000	3,000	3,901	56,709
2023	35,261	5,072	3,750	-	1,779	1,696	2,000	3,000	3,000	3,901	59,459
2024	38,261	5,072	3,750	-	1,779	1,696	3,000	3,000	3,000	3,901	63,459
2025	42,261	5,072	3,750	-	1,779	1,696	3,000	3,000	3,000	3,901	67,459
2026	46,261	5,072	3,750	-	1,779	1,696	4,000	3,000	3,000	3,901	72,459
2027	50,261	5,072	3,750	-	1,779	1,696	4,000	3,000	3,000	3,901	76,459
2028	54,261	5,072	3,750	-	1,779	1,696	5,000	3,000	3,000	3,901	81,459

SUMMARY OF FIXED SYSTEM (NOMINAL CAPACITY (MW))

Scenario 2 (Power Source Diversification)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	11,371	3,713	-	718	5,128	886	-	-	-	2,574	-	24,390
2010	15,531	3,713	-	274	5,078	1,136	-	-	-	2,574	-	28,306
2011	16,261	4,688	-	192	5,078	1,526	-	-	-	2,574	-	30,319
2012	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	-	32,286
2013	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	-	32,286
2014	17,261	5,438	-	192	5,078	1,916	-	2,400	-	2,621	-	34,906
2015	17,261	5,438	750	192	5,078	2,026	-	3,000	500	2,731	-	36,976
2016	17,261	5,438	1,500	192	5,078	2,136	-	3,000	1,000	2,731	-	38,336
2017	21,261	5,237	2,250	-	3,918	2,246	-	3,000	1,000	2,731	-	41,643
2018	21,261	5,072	3,000	-	3,382	2,356	1,000	3,000	2,000	2,731	-	43,802
2019	23,261	5,072	3,000	-	2,834	2,466	1,000	3,000	3,000	2,731	-	46,364
2020	23,261	5,072	4,500	-	2,984	2,576	1,000	3,000	3,000	3,901	-	49,294
2021	25,261	5,072	4,500	-	2,984	2,686	2,000	3,000	3,000	3,901	535	52,939
2022	26,261	5,072	6,000	-	2,679	2,796	2,000	3,000	3,000	4,801	567	56,176
2023	29,261	5,072	6,000	-	2,679	2,906	2,000	3,000	3,000	4,801	1,207	59,926
2024	29,261	5,072	7,500	-	2,979	3,016	3,000	3,000	3,000	5,701	1,281	63,810
2025	32,261	5,072	7,500	-	2,979	3,126	3,000	3,000	3,000	5,701	2,038	67,677
2026	32,261	5,072	9,000	-	3,279	3,236	4,000	3,000	3,000	5,701	2,164	70,713
2027	36,261	5,072	9,000	-	3,579	3,346	4,000	3,000	3,000	6,001	3,063	76,322
2028	40,261	5,072	9,000	-	3,579	3,456	5,000	3,000	3,000	6,001	3,250	81,619

Note: Capacity Factor of Renewable is assumed 20 %.

SUMMARY OF FIXED SYSTEM (NOMINAL CAPACITY (MW))

Scenario 3 (CO2 Emission Reduction)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	11,371	3,713	-	718	5,128	886	-	-	-	2,574	-	24,390
2010	15,531	3,713	-	274	5,078	1,136	-	-	-	2,574	-	28,306
2011	16,261	4,688	-	192	5,078	1,526	-	-	-	2,574	-	30,319
2012	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	-	32,286
2013	17,261	5,438	-	192	5,078	1,696	-	-	-	2,621	-	32,286
2014	17,261	5,438	-	192	5,078	1,916	-	2,400	-	2,621	-	34,906
2015	17,261	5,438	750	192	5,078	2,026	-	3,000	500	2,731	-	36,976
2016	17,261	5,438	1,500	192	5,078	2,136	-	3,000	1,000	2,731	-	38,336
2017	21,261	5,237	2,250	-	3,918	2,246	-	3,000	1,000	2,731	-	41,643
2018	21,261	5,072	3,000	-	3,382	2,356	1,000	3,000	2,000	2,731	-	43,802
2019	23,261	5,072	3,000	-	2,834	2,466	1,000	3,000	3,000	2,731	-	46,364
2020	23,261	5,072	4,500	-	2,984	2,576	1,000	3,000	3,000	3,901	-	49,294
2021	25,261	5,072	4,500	-	2,984	2,686	2,000	3,000	3,000	3,901	535	52,939
2022	26,261	5,072	6,000	-	2,679	2,796	2,000	3,000	3,000	4,801	567	56,176
2023	28,261	5,072	6,000	-	2,679	2,906	2,000	3,000	3,000	4,801	1,808	59,527
2024	28,261	5,072	7,500	-	2,979	3,016	3,000	3,000	3,000	5,701	1,920	63,449
2025	31,261	5,072	7,500	-	2,979	3,126	3,000	3,000	3,000	5,701	3,398	68,037
2026	32,261	5,072	9,000	-	3,279	3,236	4,000	3,000	3,000	5,701	3,606	72,155
2027	34,261	5,072	9,000	-	3,579	3,346	4,000	3,000	3,000	6,301	5,358	76,917
2028	37,261	5,072	9,000	-	3,579	3,456	5,000	3,000	3,000	6,301	5,686	81,355

Note: Capacity Factor of Renewable is assumed 20 %.

SUMMARY OF FIXED SYSTEM (%)

Base Scenario (Policy Oriented)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	46.6	15.2	-	2.9	21.0	3.6	-	-	-	10.6	100.0
2010	54.9	13.1	-	1.0	17.9	4.0	-	-	-	9.1	100.0
2011	53.6	15.5	-	0.6	16.7	5.0	-	-	-	8.5	100.0
2012	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	100.0
2013	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	100.0
2014	49.4	15.6	-	0.6	14.5	5.5	-	6.9	-	7.5	100.0
2015	46.7	14.7	2.0	0.5	13.7	5.5	-	8.1	1.4	7.4	100.0
2016	45.0	14.2	3.9	0.5	13.2	5.6	-	7.8	2.6	7.1	100.0
2017	51.1	12.6	5.4	-	9.4	5.4	-	7.2	2.4	6.6	100.0
2018	48.5	11.6	6.8	-	7.7	5.4	2.3	6.8	4.6	6.2	100.0
2019	51.7	10.8	6.4	-	5.1	5.3	2.1	6.4	6.4	5.8	100.0
2020	52.3	10.1	6.0	-	4.7	5.1	2.0	6.0	6.0	7.8	100.0
2021	53.0	9.5	5.6	-	4.5	5.0	3.8	5.6	5.6	7.3	100.0
2022	55.1	8.9	5.3	-	3.1	4.9	3.5	5.3	5.3	8.5	100.0
2023	55.1	8.4	7.5	-	2.9	4.8	3.3	5.0	5.0	8.0	100.0
2024	54.1	8.0	7.1	-	2.8	4.8	4.7	4.7	4.7	9.0	100.0
2025	54.8	7.5	8.8	-	2.6	4.6	4.4	4.4	4.4	8.4	100.0
2026	55.9	7.0	8.3	-	2.5	4.5	5.6	4.2	4.2	7.9	100.0
2027	56.2	6.6	9.7	-	2.3	4.3	5.2	3.9	3.9	7.8	100.0
2028	57.6	6.2	9.1	-	2.2	4.2	6.1	3.7	3.7	7.3	100.0

SUMMARY OF FIXED SYSTEM (%)

Scenario 1 (Coal Power Acceleration)

YEAR	FUEL TYPE										TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	
2009	46.6	15.2	-	2.9	21.0	3.6	-	-	-	10.6	100.0
2010	54.9	13.1	-	1.0	17.9	4.0	-	-	-	9.1	100.0
2011	53.6	15.5	-	0.6	16.7	5.0	-	-	-	8.5	100.0
2012	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	100.0
2013	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	100.0
2014	49.8	15.7	-	0.6	14.6	4.9	-	6.9	-	7.6	100.0
2015	47.1	14.8	2.0	0.5	13.9	4.6	-	8.2	1.4	7.5	100.0
2016	46.9	14.0	3.9	0.5	13.1	4.4	-	7.7	2.6	7.0	100.0
2017	51.7	12.7	5.5	-	9.5	4.1	-	7.3	2.4	6.6	100.0
2018	50.4	11.5	6.8	-	7.7	3.8	2.3	6.8	4.5	6.2	100.0
2019	53.6	10.8	6.4	-	5.1	3.6	2.1	6.4	6.4	5.8	100.0
2020	53.3	10.3	6.1	-	4.8	3.4	2.0	6.1	6.1	7.9	100.0
2021	54.9	9.5	5.6	-	4.5	3.2	3.8	5.6	5.6	7.3	100.0
2022	58.7	8.9	5.3	-	3.1	3.0	3.5	5.3	5.3	6.9	100.0
2023	59.3	8.5	6.3	-	3.0	2.9	3.4	5.0	5.0	6.6	100.0
2024	60.3	8.0	5.9	-	2.8	2.7	4.7	4.7	4.7	6.1	100.0
2025	62.6	7.5	5.6	-	2.6	2.5	4.4	4.4	4.4	5.8	100.0
2026	63.8	7.0	5.2	-	2.5	2.3	5.5	4.1	4.1	5.4	100.0
2027	65.7	6.6	4.9	-	2.3	2.2	5.2	3.9	3.9	5.1	100.0
2028	66.6	6.2	4.6	-	2.2	2.1	6.1	3.7	3.7	4.8	100.0

SUMMARY OF FIXED SYSTEM (%)

Scenario 2 (Power Source Diversification)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	46.6	15.2	-	2.9	21.0	3.6	-	-	-	10.6	-	100.0
2010	54.9	13.1	-	1.0	17.9	4.0	-	-	-	9.1	-	100.0
2011	53.6	15.5	-	0.6	16.7	5.0	-	-	-	8.5	-	100.0
2012	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	-	100.0
2013	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	-	100.0
2014	49.4	15.6	-	0.6	14.5	5.5	-	6.9	-	7.5	-	100.0
2015	46.7	14.7	2.0	0.5	13.7	5.5	-	8.1	1.4	7.4	-	100.0
2016	45.0	14.2	3.9	0.5	13.2	5.6	-	7.8	2.6	7.1	-	100.0
2017	51.1	12.6	5.4	-	9.4	5.4	-	7.2	2.4	6.6	-	100.0
2018	48.5	11.6	6.8	-	7.7	5.4	2.3	6.8	4.6	6.2	-	100.0
2019	50.2	10.9	6.5	-	6.1	5.3	2.2	6.5	6.5	5.9	-	100.0
2020	47.2	10.3	9.1	-	6.1	5.2	2.0	6.1	6.1	7.9	-	100.0
2021	47.7	9.6	8.5	-	5.6	5.1	3.8	5.7	5.7	7.4	1.0	100.0
2022	46.7	9.0	10.7	-	4.8	5.0	3.6	5.3	5.3	8.5	1.0	100.0
2023	48.8	8.5	10.0	-	4.5	4.8	3.3	5.0	5.0	8.0	2.0	100.0
2024	45.9	7.9	11.8	-	4.7	4.7	4.7	4.7	4.7	8.9	2.0	100.0
2025	47.7	7.5	11.1	-	4.4	4.6	4.4	4.4	4.4	8.4	3.0	100.0
2026	45.6	7.2	12.7	-	4.6	4.6	5.7	4.2	4.2	8.1	3.1	100.0
2027	47.5	6.6	11.8	-	4.7	4.4	5.2	3.9	3.9	7.9	4.0	100.0
2028	49.3	6.2	11.0	-	4.4	4.2	6.1	3.7	3.7	7.4	4.0	100.0

SUMMARY OF FIXED SYSTEM (%)

Scenario 3 (CO2 Emission Reduction)

YEAR	FUEL TYPE											TOTAL
	COAL	GAS	LNG	MFO	HSD	GEO	NUC	J-SI	PUMP	HYD	RENEW	
2009	46.6	15.2	-	2.9	21.0	3.6	-	-	-	10.6	-	100.0
2010	54.9	13.1	-	1.0	17.9	4.0	-	-	-	9.1	-	100.0
2011	53.6	15.5	-	0.6	16.7	5.0	-	-	-	8.5	-	100.0
2012	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	-	100.0
2013	53.5	16.8	-	0.6	15.7	5.3	-	-	-	8.1	-	100.0
2014	49.4	15.6	-	0.6	14.5	5.5	-	6.9	-	7.5	-	100.0
2015	46.7	14.7	2.0	0.5	13.7	5.5	-	8.1	1.4	7.4	-	100.0
2016	45.0	14.2	3.9	0.5	13.2	5.6	-	7.8	2.6	7.1	-	100.0
2017	51.1	12.6	5.4	-	9.4	5.4	-	7.2	2.4	6.6	-	100.0
2018	48.5	11.6	6.8	-	7.7	5.4	2.3	6.8	4.6	6.2	-	100.0
2019	50.2	10.9	6.5	-	6.1	5.3	2.2	6.5	6.5	5.9	-	100.0
2020	47.2	10.3	9.1	-	6.1	5.2	2.0	6.1	6.1	7.9	-	100.0
2021	47.7	9.6	8.5	-	5.6	5.1	3.8	5.7	5.7	7.4	1.0	100.0
2022	46.7	9.0	10.7	-	4.8	5.0	3.6	5.3	5.3	8.5	1.0	100.0
2023	47.5	8.5	10.1	-	4.5	4.9	3.4	5.0	5.0	8.1	3.0	100.0
2024	44.5	8.0	11.8	-	4.7	4.8	4.7	4.7	4.7	9.0	3.0	100.0
2025	45.9	7.5	11.0	-	4.4	4.6	4.4	4.4	4.4	8.4	5.0	100.0
2026	44.7	7.0	12.5	-	4.5	4.5	5.5	4.2	4.2	7.9	5.0	100.0
2027	44.5	6.6	11.7	-	4.7	4.4	5.2	3.9	3.9	8.2	7.0	100.0
2028	45.8	6.2	11.1	-	4.4	4.2	6.1	3.7	3.7	7.7	7.0	100.0

Breakdown of Renewable Energ

	Energy Share (%)	in 2028 (MW) Sc 2	Sc 3
PV	65.0%	6,036	10,560
Wind	34.4%	3,194	5,589
Biomass	0.6%	56	97