REGION IV-A: CALABARZON

At A Glance…

SOCIO-ECONOMIC PROFILE

Provinces	Calamba, Laguna, Batangas, Rizal, Quezon
Land Area	16,228.6 sq. kms.
Population	9,320,629
Density	574.8 persons / sq. km.
GRDP	PhP 143.3 billion
Top Three Sectors	▪ Agriculture, Fishery and Forestry Sector ▪ Industry Sector ▪ Services Sector
Major Products	
Agricultural (Raw and Manufactured)	▪ Palay ▪ Corn ▪ Coffee ▪ Coconut ▪ Sugarcane
Non-Agricultural	▪ Industrial equipment ▪ Electronics

Source: National Statistical Coordination Board (NSCB)

A. ENERGY SITUATIONER

A.1 ENERGY RESOURCES

a. Geothermal

The existing geothermal installed capacity in the region is the 442-megawatt (MW) Mak-ban Geothermal Power Plant (GPP). It was developed in 1973 by the Philippine Geothermal, Incorporated (PGI), a subsidiary of Union Oil of California (UNOCAL USA), under a service agreement with then state-owned National Power Corporation (NPC).

Another potential site for geothermal development can also be found in Mabini, Batangas, with an estimated capacity of 40 MW. This area was offered in the Philippine Energy Contracting Round (PECR 2005).

b. Hydropower

The hydropower potential capacity in CALABARZON is 159.5 MW, sourced from a total of 24 sites located in the provinces of Cavite, Batangas and Quezon (Table 1). Of the three, Quezon has the highest mini-hydorpower potential, with its Kaluya A site having the biggest capacity of 9.2 MW, followed by Tibag A at 5.5 MW and Guinhalinan M2 at 5 MW. In Batangas, the Malaking Ilog site has the highest potential capacity of 4 MW. The lone site in Cavite has a potential of 0.4 MW.

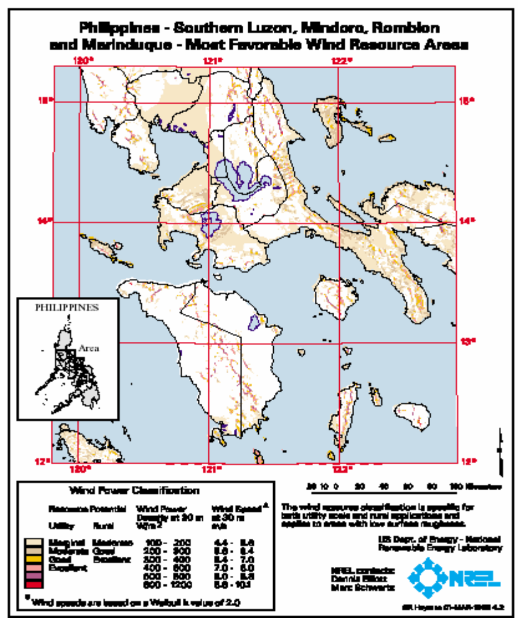
Table 1. LOCATIONS OF HYDROPOWER POTENTIAL RESOURCES

Province	Number of Sites	Estimated Capacity (MW)
Cavite	1	0.40
Batangas	6	11.92
Quezon	17	147.13
Total	**24**	**159.45**

c. Wind

Potential sites in Mauban, Quezon (50 MW) and Caliraya, Laguna (25 MW) are being considered under the Wind Investment Promotion Round. Additional wind energy potential in Tagaytay, Cavite is also being considered for promotion to investors. The potential wind sites in the region is shown in Figure 1.

Figure 1. POTENTIAL WIND ENERGY SITES



d. Coal

The region in-situ coal reserves stand at 258 thousand metric tons (MMT). These reserves are located in Quezon province, particularly in the municipalities of Polillio (165 MMT) and General Nakar (93 MMT). The areas are also being offered for exploration, development and production in the 2005 PECR.

A.2 DOWNSTREAM FACILITIES

The total storage capacity of depots, terminals and refineries in CALABARZON is 3,219.4 thousand barrels (MB) which represents 12 percent of the country's total storage capacity of 27,137.2 MB.

The region has an import/export terminal located in Tabangao, Batangas, which is owned and operated by Shell Gas Eastern, Inc. It also hosts the Pilipinas Shell Petroleum Inc. (PSPI) refinery. The Caltex Philippines, Inc. refinery was converted into an import terminal in September 2003. Table 2 lists the distribution of downstream oil facilities in CALABARZON.

Table 2. DISTRIBUTION OF DOWNSTREAM OIL FACILITIES

Province	Depots	Storage Capacity (MB)	LPG Refilling Plants	Gasoline Stations
Cavite	2	236.20	13	118
Laguna	1	1.25	9	115
Batangas	4	2,981.76	7	108
Rizal	-	-	4	84
Quezon	1	0.23	6	77
Total	8	3,219.44	39	502

In the retail industry sector, there are a total of 502 gas stations in CALABARZON as of 2005 along with three LPG bulk plants and 39 LPG refilling plants.

Two coal terminals are located in CALABARZON, the Batangas Interim Terminal located in Bauan, Batangas and the Calaca Coal Terminal situated in Calaca, Batangas. The two terminals have a combined stockyard capacity of 200 MMT (Table 3).

Table 3. COAL TERMINALS

Location	Stockyard Capacity (MMT)
Bauan, Batangas	120
Calaca, Batangas	80
Total	200

Groundbreaking ceremonies for the construction of the first compressed natural gas (CNG) mother refueling station was held in Tabangao, Batangas on March 5, 2005. This station is already completed and is under the supervision of Shell Philippines Exploration B.V. (SPEX). The daughter station, which is under the supervision of Pilipinas Shell Petroleum Corporation (PSPC) and situated in Sto.Tomas, Biñan, Laguna along South Luzon Tollway, is also technically complete. These mother-daughter refueling stations will initially serve the first batch of commercial CNG buses that will ply along the Manila-Laguna-Batangas routes.

A.3 POWER AND ELECTRIFICATION

CALABARZON is host to 17 power plants with an aggregate installed capacity of 6,129 MW and dependable capacity of 5,690 MW (Table 4).

Table 4. EXISTING POWER PLANTS

Plant	Capacity (MW)		Location
	Installed	Dependable	
Coal			
Pagbilao Unit 1	382.00	364.00	Pagbilao, Quezon
Pagbilao Unit 2	382.00	364.00	Pagbilao, Quezon
Calaca 1	300.00	174.00	Calaca, Batangas
Calaca 2	300.00	152.58	Calaca, Batangas
Quezon Power	511.00	500.00	Mauban, Quezon
Diesel			
Magellan Cogen (CEPZA)	63.00	60.00	Rosario, Cavite
Natural Gas			
Sta. Rita	1,060.00	1,000.00	Sta. Rita, Batangas
Ilijan	1,200.00	1,200.00	Ilijan, Batangas City
First Gas B	500.00	500.00	Sta. Rita, Batangas
Geothermal			
MakBan 1	63.20	62.00	Calauan, Laguna
MakBan 2	63.20	62.00	Calauan, Laguna
MakBan 3	55.00	62.00	Calauan, Laguna
MakBan 4	55.00	62.00	Calauan, Laguna
MakBan 5	55.00	38.97	Calauan, Laguna
MakBan 6	55.00	19.48	Calauan, Laguna
MakBan 7 (D)	20.00	19.48	Calauan, Laguna
MakBan 8 (D)	20.00	19.48	Calauan, Laguna
MakBan 9	20.00	19.48	Calauan, Laguna
Makban 10	20.00	19.48	Calauan, Laguna
MakBan Ormat	15.73	6.00	Bitin, Bay Laguna
Hydropower			
Kalayaan	300.00	300.00	Kalayaan, Laguna
Caliraya	32.00	23.50	Lumban, Laguna
Botocan	22.00	10.00	Laguna
Balugbog	0.65	0.65	Laguna
Palapaquin	0.40	0.40	Laguna
San Juan river	0.15	0.15	Laguna
Oil Thermal			Laguna
Malaya 1	300.00	300.00	Pililla, Rizal
Malaya 2	350.00	350.00	Pililla, Rizal
Total	6,128.93	5,689.55	

There are also Self-Generating Industries (SGIs) in CALABARZON which own and operate power plants for their own consumption. These companies include Epson Precision (Phils.) Inc. with its 3-MW diesel-fired plant at the Lima Technological Center (Lipa City, Batangas) and its 2-MW diesel-fed plant at the Light Industry Science Park (Cabuyao, Laguna); Solid Cement Corp. with its 20-MW Bunker C-fired plant (Antipolo City, Rizal); and Nippon Antenna (Phils.), Inc. with its 0.5- MW diesel-fired generator at the First Cavite Industrial Estate (Trece Martirez, Cavite).

Small island grids in Polillio, Jomalig and Patnanungan in Quezon and Tingloy in Batangas have total installed capacity of 3 MW as of February 2004.

Aside from MERALCO, there are five other electric cooperatives in the region, namely: Batangas I Electric Cooperative (BATELEC I), Batangas II Electric Cooperative (BATELEC II), First Laguna Electric Cooperative (FLECO), Quezon I Electric Cooperative (QUEZELCO I) and Quezon II Electric Cooperative (QUEZELCO II). There are also two private investor-owned utilities (PIOUs) in the region; these are Bauan Electric Light System (BELS) and Ibaan Electric Corporation (IEEC).

Table 5 shows the regional electricity profile of the DUs in Region IV-A.

Table 5. REGIONAL ELECTRICITY PROFILE BY DISTRIBUTION UTILITY, 2005

Name of Distribution Utility	Electricity Purchased/ Generated (GWh)	Electricity Sales (GWh)	System Loss (%)	Classification
BATELEC I	214	184	13.6	ML
BATELEC II	536	469	12.5	ML
FLECO	79	64	19.3	L
QUEZELCO I	123	106	13.8	ML
QUEZELCO II	19	17	12.4	M
BELS	38	22	38.7	-
IEEC	16	14	11.4	-

ML-Mega Large, L-Large, M-Medium
Note: Classification is based on the following criteria: (i) volume of average MWh Sales; (ii) number of service customers (iii) average kilometers of lines

The barangay electrification level in the region has reached 98.2 percent as of end-2005. The provincial standing is topped by Cavite and Rizal, with 100 percent electrification each (Table 6).

Table 6. STATUS OF BARANGAY ENERGIZATION BY PROVINCE, as of 2005

Province	Coverage	Energized Barangays	Energization Level (%)
Batangas	1,078	1,074	99.63
Cavite	828	828	100.00
Laguna	674	650	96.44
Quezon	1,242	1,196	96.30
Rizal	187	187	100.00
Total	4,009	3,935	98.15

The region's household energization level in 2004 was 88.0 percent. This represents a total 459,609 household energized out of the total 525,000 potential households.

A.4 BENEFITS TO HOST COMMUNITIES

As of 2005, the region has received an accumulated financial benefit amounting to PhP 423.9 million. These projects are implemented using the electrification fund (EF), development and livelihood fund (DLF) and reforestation, watershed management, health and/or environmental enhancement projects fund (RWMHEEF) (Table 7).

Table 7. SUMMARY OF APPROVED PROJECTS, as of 2005

Type of Fund	Number of Projects	Total Amount (PhP million)
EF	-	-
DLF	119	152.00
RWMHEEF	144	271.93
Total	263	423.93

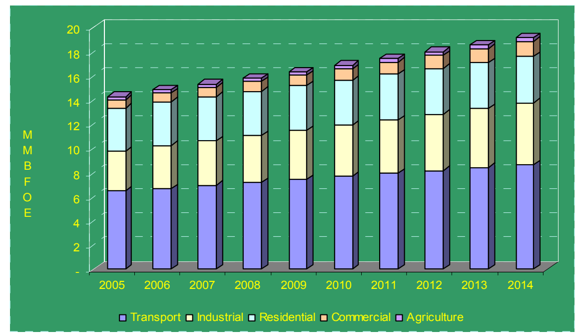
B. ENERGY DEMAND FORECAST

As the region hosts a number of industrial and economic zones, CALABARZON's economic performance is expected to be sustained with the influx of investments and consequently, parallel increase in energy requirements. Over the next decade, CALABARZON will account for 8.4 percent of the country's total energy demand.

To meet this demand, the region will require an average volume of 16.8 MMBFOE (2.4 MTOE) during the planning period. As energy demand will significantly be influenced by the establishment of basic infrastructure essential to the region's growing economic activities, the region's total requirement is projected to grow by an average rate of 3.4 percent during the reference period.

Figure 2 illustrates the energy demand by the residential, transport, industry, commercial, and agricultural sectors. The promising prospects in the industry and personal services sector will inevitably drive up the demand for petroleum products, electricity and biomass.

Figure 2. FINAL ENERGY DEMAND, BY SECTOR (MMBFOE)



Meanwhile, of the region's demand, petroleum products will account for the biggest share at 64.0 percent, followed by biomass at 23.4 percent and electricity at 5.4 percent.

Residential

Due to the influence of population growth and rapid urbanization, the residential sector will account for 22.1 percent of the total energy requirement of the region. Towards the end of the planning period, however, its share in the regional energy requirement will decline as industry and commerce emerge to take up a larger share. Over the planning period, the sector will require an average volume of 3.7 MMBFOE (0.5 MTOE), which will translate to an average increase of 0.9 percent.

Biomass will be the dominant fuel in households, accounting for more than two-thirds of the total sectoral demand during the planning period. However, demand for biomass is expected to decline as more households shift to more convenient fuel sources for lighting and cooking purposes. Electricity will account for 14.2 percent of the energy requirements of the sector.

Transport

Energy consumption for transportation remains the highest among all the economic sectors in the region, accounting for almost half of the region's total energy demand. It will require an average volume of 7.7 MMBFOE (1.1MTOE), with growth posted at 3.5 percent annually.

Diesel and gasoline will be the leading fuels in the transport sector, taking up 50.9 percent and 42.2, respectively, of the sector's total energy demand within the planning period.

Industry

The industry sector's energy requirement will account for approximately one fourth of the region's total energy demand. With energy demand growing at an average rate of 5.1 percent, the region's industrial sector will require an average volume of 4.3 MMBFOE (0.6 MTOE) over the planning period.

The energy requirement of the industrial sector will predominantly be comprised of petroleum products and biomass, accounting for almost one half and one third, respectively, of the total energy demand of the sector.

Commercial

The commercial sector's energy requirement will account for an average share of 5.7 percent of the region's total energy demand during the reference period. With the growing trend in personal services, the energy requirement of the sector will inevitably grow by 6.1 percent during the planning period, with an average volume requirement of 1.0 MMBFOE (0.1 MTOE). Petroleum and electricity consumption will be highest, accounting for about 71.1 percent and 27.5 percent, respectively, of the sector's energy requirements.

Agricultural

Predominantly an industrial and commercial region, CALABARZON energy consumption in agriculture will remain modest at an average volume of 0.3 MMBFOE (43.3 KTOE) during the reference period. It will grow by an average rate of 2.3 percent and account for an average share of 1.7 percent of the total sectoral demand.

With the ongoing agricultural modernization in the country, the sector will continue to depend on diesel for its energy requirements. Diesel will account for an average share of 85.0 percent of the total sectoral demand.

Table 8 summarizes the types of fuel requirements by sector in the CALABARZON during the planning period.

Table 8. SECTORAL ENERGY DEMAND (MMBFOE)

	2005	2006	2010	2014
Grand Total	**14.27**	**14.83**	**16.84**	**19.13**
Oil and Oil Products	9.11	9.31	10.79	12.47
Coal	0.50	0.50	0.53	0.55
Biomass	3.71	3.75	3.93	4.19
Other Renewables	0.00	0.00	0.00	0.01
Natural Gas	0.26	0.54	0.68	0.79
Electricity	0.69	0.73	0.90	1.12
Industry	**3.30**	**3.55**	**4.23**	**5.11**
Oil and Oil Products	1.52	1.47	1.85	2.35
Coal	0.50	0.50	0.53	0.55
Biomass	0.95	1.00	1.26	1.59
Natural Gas	0.24	0.48	0.48	0.48
Other Renewables	0.00	0.00	0.00	0.00
Electricity	0.09	0.09	0.11	0.14
Commercial	**0.70**	**0.73**	**0.94**	**1.23**
Oil and Oil Products	0.49	0.51	0.67	0.89
Biomass	0.01	0.01	0.01	0.01
Other Renewables	0.00	0.00	0.00	0.00
Electricity	0.20	0.21	0.26	0.33
Residential	**3.57**	**3.63**	**3.73**	**3.86**
Oil and Oil Products	0.42	0.47	0.54	0.61
Biomass	2.75	2.73	2.66	2.59
Other Renewables	0.00	0.00	0.00	0.00
Electricity	0.40	0.42	0.53	0.66
Transport	**6.45**	**6.66**	**7.66**	**8.64**
Oil and Oil Products	6.43	6.60	7.46	8.33
Natural Gas	0.02	0.06	0.20	0.31
Agriculture	**0.25**	**0.26**	**0.28**	**0.30**
Oil and Oil Products	0.25	0.26	0.28	0.30

Total may not tally due to rounding off

C. SECTORAL PLANS AND TARGETS

❖ *POWER DEVELOPMENT PLAN*

LUZON GRID

To support the growing demand in the Luzon grid, 1,950 MW of capacity addition is needed within the planning period. The region can contribute 950 MW to this requirement. Table 9 shows the list of potential capacity additions found in the region.

Table 9. POTENTIAL CAPACITY ADDITIONS

Plant Addition	Capacity (MW)	Location	Year Available
Ilijan Expansion	600	Ilijan, Batangas	2009
San Gabriel	550	Sta. Rita, Batangas	2009
Pagbilao Coal III	350	Pagbilao, Quezon	2010
Total	**950**		

SMALL ISLAND GRIDS

Electricity Demand Forecast

Peak demand for the small island grids in the region will grow three-fold at an average annual growth rate of 10.2 percent. Electricity sales will likewise be on the uptrend with a growth rate of 9.8 percent (Table 10).

Table10. SMALL ISLAND GRIDS DEMAND AND SUPPLY OUTLOOK

	2005	2006	2010	2014
Capacity Addition, MW	6	3.15	0 .65	-
Cumulative Installed Capacity, MW	26.13	28.04	37.29	41.74
Peak Demand, MW	9.04	10.11	14.72	20.79
Electricity Sales,GWh	39.86	43.07	63.28	92.98
Gross Generation, (MWh)	42.92	46.38	68.21	100.44
Dependable Capacity, MW	19.34	21.18	29.5	33.51

Generation Expansion Plan

To support the increasing power demand in the region's small island grids, the installation of additional 16 MW of generating capacity will be carried out within the planning period.

❖ TRANSMISSION DEVELOPMENT PLAN

To augment the growing electricity demand in the region, several transmission and substation projects are lined-up during the planning period, as shown in Table 11.

Table 11. TRANSMISSION LINE PROJECTS

Project Name	Description	Target Date of Completion
Projects that will relieve constraints in the Luzon Grid		
Mexico-Balintawak 230 kV T/L Project	To relieve Mexico-Balintawak	2010
San Jose-Balintawak Line 3 Project	To relieve San Jose-Balintawak line	2011
Luzon Substation Expansion Project 1	To relieve Zapote 300 MVA transformer	2005
Binan-Sucat 230 kV T/L Project	To relieve Binan-Sucat line	2005
Kalayaan-Makban Upgrading Project	To relieve Kalayaan-Calauan-Makban Line	2009
Pagbilao III 350 MW associated project	To relieve the Tayabas 600 MVA transformer	2012
Ilijan 600 MW associated project	To relieve the Dasmarinas 600 MVA transformer	2012
Projects to increase dispatch in Luzon		
Batangas Transmission Reinforcement Project & Binan-Sucat 230 KV line 4 Project	To relieve constraint element in Calaca-Binan Line, Calaca-Sta Rosa-Binan Line, Calaca-Dasmarinas Lines, Binan-Sucat 230 lines	May 2007
Luzon Substation Expansion Project 1	To relieve constraint element at Zapote 300 MVA transformer	Sep 2008
Pagbilao III – 350 MW associated project	To relieve constraint element at Tayabas & Dasmarinas 600 MVA 500/230 KV transformer	Dec 2012
Ongoing Generation Associated Projects		
Batangas Transmission Reinforcement Project	To transport power from Ilijan, Sta. Rita, & San Lorenzo and strengthen the transmission corridor in Southern Luzon	2007
Transmission Project for Implementation		
Dasmarinas-Rosario T/L project	To improve availability and provide additional capacity to the existing Dasma-Rosario Line.	Feb 2009
Transmission Project for Implementation (Priority 2)		
Kalayaan-Makban Upgrading Project	To strengthen the southern portion of the 230 kV ring round Metro Manila.	Dec 2011
Grid Code Compliance Project for Implementation		
Tap Hermosa-Balintawak	To address overloading problem of Mexico-Duhat line during outage of Duhat-Balintawak line.	*Sep 2005*
Binan-Sucat 230 kV T/L Project	To address the overloading problem of the remaining Binan-Sucat lines during tripping of ne of the line.	2008
Indicative Project – Generation Associated		
Pagbilao III 350 MW Associated Project	To Transport power from Pagbilao III	2012
Ilijan 600 MW Asso. Project	To transport power from new 600 MW Ilijan Plant.	2012
Alaminor 500 kV Switching Station	To maintain system stability during tripping of either Ilijan-Tayabas, Tayabas-Dasmarinas or Ilijan-Dasmarinas 500 kV lines after commissioning of the new 600 MW Ilijan plant.	2012
Indicative Project – Customer request		
Lima cut-in to batangas-Makban L1	To provide high quality and reliable source of power to Lima Land.	2006
Indicative Project – Transmission		
Mexico-Balintawak 230 kV T/L Project	To replace old, existing lines and avert overloading due to load growth.	2011
San Jose-Balintawak Line 3 Project	To avoid overloading of remaining circuit during N-1 condition as a result of larger power flows due to load growth and entry of new plants connected to the 500 kV backbone.	2011
New calaca 230 kV S/S	To remove transmission function from non-Transco S/S.	2014

❖ DISTRIBUTION DEVELOPMENT PLAN

Table 12 shows the Region IV –A distribution development plan that will ensure reliability of supply at the distribution level.

Table 12. DISTRIBUTION DEVELOPMENT PLAN

Name of Cooperative	2005	2006	2010	2014
Number of Customers				
Residential	423,252	448,017	562,722	682,444
Commercial	19,246	20,079	23,876	26,934
Industrial	198	203	228	261
Others	37,197	39,383	49,538	62,752
FLECO				
System Loss (%)	19.3	17.3	11.3	7.8
Electricity Purchase/Generated (GWh)	79	84	112	153
Electricity Sales (GWh)	64	69	99	141
BATELEC I				
System Loss (%)	13.6	12.8	9.0	9.0
Electricity Purchase/Generated (GWh)	214	222	262	324
Electricity Sales (GWh)	184	193	238	294
BATELEC II				
System Loss (%)	12.5	11.6	9.0	7.0
Electricity Purchase/Generated (GWh)	536	550	625	718
Electricity Sales (GWh)	469	486	568	667
QUEZELCO I				
System Loss (%)	13.8	12.5	9.1	9.0
Electricity Purchase/Generated (GWh)	123	131	175	250
Electricity Sales (GWh)	106	114	159	227
QUEZELCO II				
System Loss (%)	12.4	10.5	8.0	8.0
Electricity Purchase/Generated (GWh)	19	21	31	50
Electricity Sales (GWh)	17	18	28	46
BELS				
System Loss (%)	38.7	39.5	42.2	-
Electricity Purchase/Generated (GWh)				
Electricity Sales (GWh)	22	23	25	-
IEEC				
System Loss (%)	11.4	12.1	15.5	19.4
Electricity Purchase/Generated (GWh)	16	17	20	24
Electricity Sales (GWh)	14	15	17	19

❖ EXPANDED RURAL ELECTRIFICATION

The Expanded Rural Electrification Program aims to energize the region's remaining unelectrified barangays by 2008. Table 13 shows the region's energization schedule, including line expansion and rehabilitation targets:

Table 13. EXPANDED RURAL ELECTRIFICATION PROGRAM

Year	Barangay	Expansion		Line Rehabilitation (ckt.-kms.)
		Distribution Lines (ckt.-kms.)	Substations (MVA)	
2006	21	174.16	-	135.12
2007	27	131.20	5	117.78
2008	26	102.96	5	60.26
2009	-	71.93	-	95.48
2010	-	8.50	10	177.10
2011	-	10.20	-	49.06
2012	-	-	5	51.72
2013	-	22.00	-	57.52
2014	-	20.00	-	331.82
Total	**74***	**540.95****	**25****	**1,075.86****

* Source: DOE
**Source: NEA

❖ ENERGY RESOURCE DEVELOPMENT

Geothermal

A 20-MW geothermal capacity addition is available in Mabini, Batangas. This potential capacity is expected to be commissioned in 2010 and will involve the drilling of 34 wells. Steam availability will be 389 MW in 2010, which will grow to 418 MW in 2014 (Table 14).

Table 14. GEOTHERMAL MEASURABLE SECTORAL TARGETS

	2005	2006	2010	2014
Number of wells to be drilled	-	6	3	3
Steam Availability (Cum. MW)	315.17	342.86	389.25	418.23

Hydropower

To fill in the needed indicative capacity requirements, the Kanan hydropower plant in Infanta, Quezon is expected to be available by 2008. This large hydropower plant can contribute 113 MW of additional capacity to the Luzon grid.

Solar

The full operation of Sunpower Phils. Corp. will produce a maximum 150 MW equivalent capacity of solar wafers per year. This is expected to increase demand for solar systems, especially in the region.

Wind

Table 15. INDICATIVE WIND POWER CAPACITY ADDITIONS

Location	Potential Capacity (MW)	Year Available
Caliraya, Laguna	25	2008
Mauban, Quezon	50	2008
Total	**75**	

The Department of Energy (DOE) has targeted the commissioning of 75 MW wind power capacity (Table 15). These projects are in support of the DOE's United Nations Development Programme - Global Environmental Facility (UNDP-GEF) project titled: *Capacity Building to Remove Barriers to Renewable Energy Development (CBRED)*, specifically on its commitment to reduce carbon dioxide emissions from power generation facilities.

Natural Gas

The commercial operation of the mother and daughter CNG refilling stations will commence in early 2006, upon the completion of the technical standard/safety requirements set for the facilities. Consequently, the first 200 CNG buses, under the pilot phase stage of the Natural Gas Vehicle Program for Power Transport (NGVPPT) will ply along the major routes of Batangas, Laguna and Metro Manila.