

# REGION VII: Central Visayas

## At a Glance...

### SOCIO-ECONOMIC PROFILE

<b>Provinces</b>	Cebu, Bohol, Siquijor, Negros Oriental		
<b>Land Area</b>	15,875 sq. kms.		
<b>Population</b>	5,706,953		
<b>Density</b>	359 persons / sq. km.		
<b>GRDP</b>	PhP 81.2 billion		
<b>Top Three Sectors</b>	<ul style="list-style-type: none"> <li>▪ Agriculture, Fishery and Forestry Sector</li> <li>▪ Industry Sector</li> <li>▪ Service Sector</li> </ul>		
<b>Major Products</b>	<table border="0"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>▪ Agricultural (Raw and Manufactured)</li> <li>▪ Non-Agricultural</li> </ul> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>▪ Coconut</li> <li>▪ Rice</li> <li>▪ Corn</li> <li>▪ Gold</li> <li>▪ Copper</li> <li>▪ Iron</li> </ul> </td> </tr> </table>	<ul style="list-style-type: none"> <li>▪ Agricultural (Raw and Manufactured)</li> <li>▪ Non-Agricultural</li> </ul>	<ul style="list-style-type: none"> <li>▪ Coconut</li> <li>▪ Rice</li> <li>▪ Corn</li> <li>▪ Gold</li> <li>▪ Copper</li> <li>▪ Iron</li> </ul>
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Source: National Statistical Coordination Board (NSCB)

## A. ENERGY SITUATIONER

### A.1 ENERGY RESOURCES

#### a. Geothermal

Several geothermal exploration and development activities were conducted by the Philippine National Oil Company (PNOC) in the region which led to the construction of the 112.5-megawatt (MW) Negros Geothermal Power Plant (NGPP), also known as Palinpinon Geothermal Complex in Valencia, Negros Oriental. Other possible geothermal resources can be found in Dauin (40 MW), Negros Oriental.

#### b. Hydropower

There are four hydropower plants located in the region with a total installed capacity of 12 MW. For mini-hydropower potential resources, a total of 57 sites with a combined capacity of 78.2 MW have been identified by the National Electrification Administration (NEA). These sites are now open for further exploration and development (Table 1).

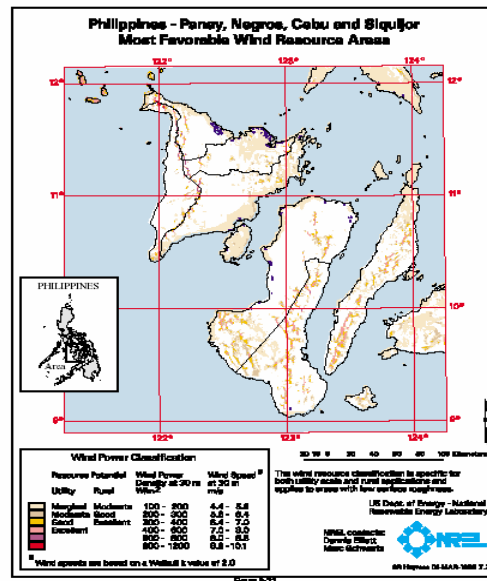
Table 1. LOCATIONS OF HYDROPOWER POTENTIAL RESOURCES

Province	Number of Sites	Estimated Capacity (MW)
Cebu	13	11.26
Bohol	12	14.38
Siquijor	2	0.35
Negros Oriental	30	52.18
<b>Total</b>	<b>57</b>	<b>78.17</b>

### c. Wind

A potential site in Carmen, Cebu is presently being considered under the Wind Investment Promotion Round. Good-to-excellent wind resource sites exist in the region, particularly in the hills and mountains, like Mt. Lanibga, Mt. Cabalasan, and Mt. Uling, which run north to south along the length of the island.

Figure 1. POTENTIAL WIND ENERGY SITES



### d. Coal

Total resource potential in Central Visayas as of 2004 stood at 165 million metric tons (MMMT), of which 6.9 MMMT is mineable reserves and 6.8 MMMT is positive reserves. Probable reserves are calculated at 7.2 MMMT while in-situ reserves are estimated to reach 11.5 MMMT. Local coal production in the region started in the late 70s with PNOC-Coal Corporation (PNOC-CC), Cebu Coal Corporation and Argonex as some of the major coal operating contractors.

The exploration, development and production of coal prospect in Candoni/Bayawan, Negros Oriental is also being offered under the Philippine Energy Contracting Round (PECR) 2005.

### A.2 DOWNSTREAM FACILITIES

Currently, the region hosts nine liquefied petroleum gas (LPG) bulk and nine refilling plants, 196 gas stations and 15 depots. Central Visayas has a storage capacity of 573 thousand barrels (MB) of oil (Table 2).

**Table 2. DISTRIBUTION OF DOWNSTREAM OIL FACILITIES**

Province	Depots		LPG Refilling Plants	Gasoline Stations
	Number of Units	Storage Capacity (MB)		
Cebu	10	458.45	7	127
Negros Oriental	3	75.08	1	34
Bohol	2	39.47	1	33
Siquijor	-	-	-	2
<b>Total</b>	<b>15</b>	<b>573.00</b>	<b>9</b>	<b>196</b>

For autogas supply infrastructure, Petron Corporation and Pilipinas Shell Corporation have five garage-based pumps for the taxi fleet operators in Cebu City. A total of 383 autogas units are operating in the area.

### A.3 POWER AND ELECTRIFICATION

Central Visayas currently hosts 19 power plants with an aggregate installed capacity of 717.6 MW, 28 percent or 201.2 MW of which is fueled by renewable resources. Table 3 breaks down the 19 existing power plants in the region and their respective capacities.

**Table 3. EXISTING POWER PLANTS**

Plant	Capacity (MW)		Location
	Installed	Dependable	
<b>Geothermal</b>			
Negros GPP2	80.00	80.00	Valencia, Negros Oriental
Negros GPP1	112.50	99.00	Valencia, Negros Oriental
<b>Hydropower</b>			
Mantayupan	0.50	0.50	Cebu
Basac	0.50	0.50	Cebu
Matutinao	0.72	0.72	Cebu
Loboc HEP	1.20	1.20	Loboc, Bohol
Janopol	5.00	5.00	Janopol, Bohol
Amlan HEP	0.80	0.80	Amlan, Negros Oriental
<b>Coal</b>			
Cebu TPP2	56.80	55.00	Naga, Cebu
Cebu TPP1	52.50	50.00	Naga, Cebu
Toledo Power Corp.	88.80	40.00	Toledo, Cebu
<b>Diesel</b>			
PB 101	32.00	24.00	Cortez, Cebu
Cebu Private Power	70.00	70.00	Cebu City
Cebu Land-based GT2	27.50	25.00	Cebu
Cebu Land-based GT1	27.50	25.00	Cebu
East Asia Utilities (MEPZA)	49.70	46.00	Cebu City
Toledo Power Corp.	45.80	35.00	Toledo, Cebu
Cebu DPP1	43.80	30.00	Naga, Cebu
Bohol DPP	22.00	18.00	Tagbilaran City, Bohol
<b>Total</b>	<b>717.62</b>	<b>605.72</b>	

Bantayan Island, which was formerly under the jurisdiction of the National Power Corporation - Small Power Utilities Group (NPC-SPUG), has been privatized as of December 2005.

As to the region's existing transmission facilities, power distribution in Central Visayas is made possible through 138-kilovolt (kV) overhead lines, except for Bohol, in which transmission network is rated at 69-kV overhead lines. The region's electricity distribution system is maintained and administered by 11 electric cooperatives (ECs) and four private investor-owned utilities (PIOUs).

#### REGIONAL ENERGY PROFILE

Region VII – Central Visayas

The 11 ECs are Bohol I Electric Cooperative (BOHECO I), Bohol II Electric Cooperative (BOHECO II), Bohol III Electric Cooperative (BOHECO III), Bantayan Electric Cooperative (BANELCO), Cebu I Electric Cooperative (CEBECO I), Cebu II Electric Cooperative (CEBECO II), Cebu III Electric Cooperative (CEBECO III), Camotes Electric Cooperative (CELCO), Negros Oriental I Electric Cooperative (NORECO I), Negros Oriental II Electric Cooperative (NORECO II), and Province of Siquijor Electric Cooperative (PROSIELCO) while the four PIOUs are Visayan Electric Corporation (VECO), Bohol Light Company Incorporated (BLCI), Panay Electric Corporation (PECO) and Mactan Electric Corporation (MECO)(Table 4).

**Table 4. REGIONAL ELECTRICITY PROFILE BY DISTRIBUTION UTILITY, 2005**

Name of Distribution Utility	Electricity Purchased/Generated (GWh)	Electricity Sales (GWh)	System Loss (%)	Classification
BANELCO	13	12	10.0	M
BOHECO I	76	70	7.4	EL
BOHECO II	55	99	10.4	EL
CEBECO I	92	87	5.8	EL
CEBECO II	147	133	9.7	ML
CEBECO III	106	99	6.8	EL
CELCO	6	5	11.6	M
NORECO I	40	35	11.9	L
NORECO II	159	140	12.0	ML
PROSIELCO	10	9	9.0	M
VECO	1,747	1,569	10.0	-
BLCI	69	62	9.5	-
PECO	386	335	12.2	-
MECO	No data			

ML-Mega Large, EL-Extra 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 region's power supply is shared through various interconnection projects which were established to facilitate the sharing of resources for the different islands and maximize the full utilization of indigenous resources in support of the Department of Energy (DOE) policy thrust for energy self-reliance. This would mean the utilization of surplus capacity in one island to address the supply gap in another.

The 100-MW Negros-Cebu interconnection project was commissioned in 1993 to transfer excess power from Cebu to Negros via submarine cable. On the other hand, the 100-MW Leyte-Bohol interconnection project was completed in year 2000 to provide reliable bulk of power supply to the island of Bohol from Leyte's geothermal plant in Tongonan. The Tongonan plant likewise exports power to Cebu via the 200-MW Leyte-Cebu interconnection project, which was established in 1997.

In terms of the region's barangay electrification level, 98.6 percent of barangays in Central Visayas have access to electricity. As of end-2005, only 43 out of the total 3,003 are yet to be energized by 2008 (Table 5).

**Table 5. STATUS OF BARANGAY ENERGIZATION BY PROVINCE, as of 2005**

Province	Coverage	Energized Barangays	Energization Level (%)
Bohol	1,109	1,109	100.00
Cebu	1,203	1,200	99.75
Negros Oriental	557	517	92.82
Siquijor	134	134	100.00
<b>Total</b>	<b>3,003</b>	<b>2,960</b>	<b>98.57</b>

In terms of the region's household energization, 70.0 percent of the total households have been energized as of 2004. This represents a total of 511,739 households energized out of the total 732,700 potential households.

#### A.4 BENEFITS TO HOST COMMUNITIES

As of 2005, the region has received an accumulated financial benefit of PhP 120.5 million (Table 6). These funds, which are sourced from one centavo for every kilowatt-hour sold, are used to fund the electrification (EF), development and livelihood (DLF) and reforestation, watershed management, health and/or environmental enhancement (RWMHEEF) of the host barangay, town or province.

Table 6. SUMMARY OF APPROVED PROJECTS, as of 2005

Type of Fund	Number of Projects	Total Amount (PhP million)
EF	37	44.49
DLF	38	27.62
RWMHEEF	31	48.35
<b>Total</b>	<b>106</b>	<b>120.46</b>

## B. ENERGY DEMAND FORECAST

Energy requirement of Central Visayas is foreseen to increase at an average rate of 3.6 percent, accounting for an average share of 6.3 percent of the country's total energy demand. It will reach an average volume of 12.8 MMBFOE (1.9 MTOE) (Figure 2). Sectoral activities will predominantly be fueled by petroleum, renewable energy and electricity, which will post respective shares of 60.7 percent, 24.5 percent and 10.9 percent in the overall sectoral requirements of the region (Table 7).

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

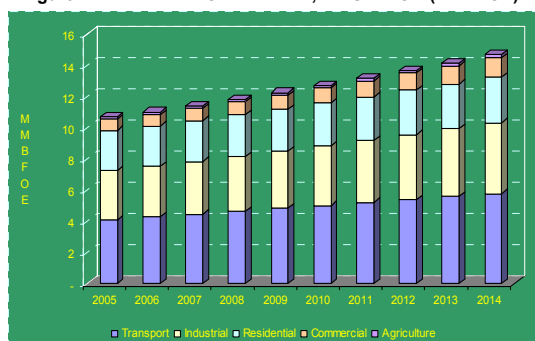


Table 7. SECTORAL ENERGY DEMAND (MMBFOE)

	2005	2006	2010	2014
<b>Grand Total</b>	<b>10.70</b>	<b>11.00</b>	<b>12.70</b>	<b>14.67</b>
Oil and Oil Products	6.41	6.59	7.72	8.96
Coal	0.47	0.47	0.50	0.52
Biomass and Other Renewables	2.83	2.88	3.11	3.42
Electricity	1.00	1.06	1.37	1.78
<b>Industrial</b>	<b>3.16</b>	<b>3.25</b>	<b>3.83</b>	<b>4.55</b>
Oil and Oil Products	1.58	1.60	1.86	2.19
Coal	0.47	0.47	0.50	0.52
Biomass and Other Renewables	0.96	1.02	1.29	1.62
Electricity	0.15	0.16	0.19	0.22
<b>Commercial</b>	<b>0.69</b>	<b>0.72</b>	<b>0.96</b>	<b>1.26</b>
Oil and Oil Products	0.32	0.33	0.45	0.60
Biomass and Other Renewables	0.03	0.03	0.04	0.04
Electricity	0.34	0.36	0.47	0.62
<b>Residential</b>	<b>2.59</b>	<b>2.59</b>	<b>2.74</b>	<b>2.93</b>
Oil and Oil Products	0.25	0.23	0.23	0.23
Biomass and Other Renewables	1.83	1.82	1.79	1.76
Electricity	0.51	0.54	0.71	0.94
<b>Transport</b>	<b>4.09</b>	<b>4.27</b>	<b>5.01</b>	<b>5.75</b>
Oil and Oil Products	4.09	4.27	5.01	5.75
<b>Agriculture</b>	<b>0.17</b>	<b>0.16</b>	<b>0.17</b>	<b>0.17</b>
Oil and Oil Products	0.17	0.16	0.17	0.17
Solar	nil	nil	nil	nil
Electricity	nil	nil	nil	nil

Total may not tally due to rounding off

#### Residential

The residential sector's energy demand is projected to account for 21.5 percent of the region's overall energy requirement for the planning period.

It will require an average volume of 2.7 MMBFOE (0.4 MTOE), which will grow at 1.4 percent rate. Biomass will have the highest demand, accounting for 65.2 percent of the sector's energy consumption. Electricity will account for 26.4 percent, while petroleum products (LPG and kerosene) will comprise 8.4 percent.

#### Transport

The transport sector will account for an average share of 39.3 percent of the region's energy demand, corresponding to an average demand volume of 5.0 MMBFOE (0.7 MTOE). Gasoline will be the primary fuel of the sector, accounting for an average share of 47.6 percent, followed by diesel and fuel oil at 44.4 percent and 7.9 percent, respectively.

#### Industrial

The industrial sector will account for 30.2 percent of the region's total energy consumption. Its energy demand is projected to reach an average volume of 3.9 MMBFOE (0.6 MTOE), with an average annual growth of 4.1 percent during the planning period. Petroleum and biomass will be the most used energy resources in the sector, with corresponding shares of 48.5 percent and 33.7 percent, respectively. Coal will register an average share of 12.9 percent of the total sectoral demand.

#### Commercial

Energy consumption in the commercial sector is projected to grow at an average rate of 6.8 percent annually, with a corresponding average volume of 1.0 MMBFOE (0.1 MTOE). The commercial activities in the region will account for about 7.6 percent of the region's total consumption.

Electricity and petroleum products (diesel, fuel oil and LPG) will be the major fuels of the sector, with their corresponding shares of 49.4 percent and 46.9 percent.

### Agricultural

As the least energy intensive among the sectors of the region, the agricultural sector will register an average fuel requirement of 0.2 MMBFOE (24.2 KTOE), increasing at an average annual rate of 0.4 percent. Energy consumption in the sector will account for 1.3 percent of the total regional demand. Diesel (86.2 percent) and fuel oil (11.2 percent) will be the dominant fuel for agricultural activities. Solar and electricity demand will be minimal.

## C. SECTORAL PLANS AND TARGETS

### ❖ POWER DEVELOPMENT PLAN

#### VISAYAS GRID

To support the growing energy demand in the Visayas grid, 600 MW of capacity additions will be put up within the planning period. The region can contribute 388 MW for this requirement. Table 8 lists the power projects found in the region.

Table 8. POTENTIAL CAPACITY ADDITIONS

Plant Addition	Capacity (MW)	Location	Year Available
Libertad Natural Gas	3	Bogo, Cebu	2006
Palinpinon Geothermal*	20	Palinpinon, Negros Oriental	2007
KEPCO Clean Coal	200	Naga, Cebu	2008
Bogo Bioenergy	25	Bogo, Cebu	2008
Toledo Power Expansion	100	Toledo, Cebu	2009
Dauin Geothermal	40	Dauin, Negros Oriental	2012
<b>Total</b>	<b>388</b>		

\*Committed Project

#### SMALL ISLAND GRIDS

### Electricity Demand Forecast

Electricity demand in Central Visayas' small island grids will grow at an average annual rate of 14 percent over the planning period, while peak demand and electricity sales are estimated to grow at an average annual rate of 12.3 percent and 13.0 percent, respectively (Table 9).

Table 9. SMALL ISLAND GRIDS DEMAND AND SUPPLY OUTLOOK

	2005	2006	2010	2014
Capacity Additions (MW)	5.85	0.50	4.80	4.50
Cumulative Installed Capacity (MW)	36.38	36.88	56.33	64.63
Peak Demand (MW)	7	8	14	22
Electricity Sales (GWh)	26	32	58	93
Gross Generation (GWh)	30	32	59	95
Dependable Capacity (MW)	21	19	5	40

### Generation Expansion Plan

Installation of additional stand-alone systems is expected to increase in the region, in view of the anticipated rising electricity demand. Thus, cumulative installed capacity is estimated to reach 65 MW by 2014.

### ❖ TRANSMISSION DEVELOPMENT PLAN

With the country's long-term goal of attaining a unified grid for the country, several transmission projects are lined-up for Region VII within the planning period (Table 10).

Table 10. TRANSMISSION LINE PROJECTS

Project Name	Description	Target Date of Completion
<b>Projects that will relieve constraints in the Visayas Grid</b>		
Cebu-Negros 138 KV Interconnection Upgrading	To relieve the Cebu-Negros 138 KV interconnection	2006
<b>Ongoing Transmission Projects</b>		
Cebu III Transmission	To provide reliable delivery of power in VECO area	2006
<b>Ongoing Sub-Transmission Projects</b>		
Visayas Capacitor Project 1 (Hamtic, Guihulungan, Alcoy)	To maintain voltage within limit set by the Grid Code	2007
<b>Ongoing Interconnection Projects</b>		
Cebu-Negros Interconnection	To transfer excess power from Tongonan Leyte Geo and increase the reliability of the existing link.	2006
<b>Transmission Project for Implementation (Priority 2)</b>		
New Naga S/S Project	To enhance reliability of Cebu grid, and will resolve the asset boundary between Transco and Naga (Saloon) complex.	2010
Power Circuit Replacement Program (Compostela, Sigpit SW, Amlan)	To replace defective and inadequate PCB's	2010
Bohol Backbone Project	To provide higher capacity of transmission system in Bohol grid.	2011
<b>Indicative Project – Generation Associated</b>		
Pal -2 Opti Asso. T/L – 20 MW	To transport power from additional generating plants.	2005
Kepeco Asso. T/L – 200 MW	To transport power from additional generating plants.	2008
Bogo Asso. T/L – 25 MW	To transport power from additional generating plants.	2008
Toledo Asso. T/L – 100 MW	To transport power from additional generating plants.	2008
Dauin Asso. T/L – 25 MW	To transport power from additional generating plants.	2012
Ubay Peaking Plant Asso. T/L 30 MW	To transport power from additional generating plants.	2014
<b>Indicative Project – Transmission</b>		
Banilad 138/69 KV S/S expansion	To address the increasing demand.	2012
Ubay 138/69 KV S/S expansion	To address the increasing demand.	2012
Visayas S/S Expansion – 2012 (Suba, Amlan)	To address the increasing demand.	2012
<b>Grid Code Compliance – Indicative</b>		
Visayas Reliability Phase – 1 (Naga, Suba, Quiot, Mandaue, Compostela)	This project aims to meet the requirement of the grid code, n-1 criteria.	2012
Visayas Reliability Phase – 2 (Amlan, Mabinay, Ubay)	This project aims to meet the requirement of the grid code, n-1 criteria.	3013
<b>Indicative - Subtransmission</b>		
Visayas Capacitor Project II part only of 35-7.5 Mvar (sites for further study)	To maintain voltage within limit set by the Grid Code	2013
<b>Indicative Project – Interconnection</b>		
Small Island Grids Projects (Negros-Siquijor), (Cebu-Bantayan)	To provide reliable supply in the island.	2014

## ❖ DISTRIBUTION DEVELOPMENT PLAN

To ensure reliability of supply at the distribution level, the distribution development plan of the cooperatives in Region VII is shown in Table 11.

**Table 11. DISTRIBUTION DEVELOPMENT PLAN**

Name of Cooperative	2005	2006	2010	2014
Number of Customers				
Residential	746,176	783,595	940,195	1,094,572
Commercial	70,611	74,697	93,083	116,216
Industrial	3,100	3,256	3,952	4,781
Others	44,895	47,120	56,645	66,302
<b>NORECO I</b>				
System Loss (%)	11.4	11.3	9.3	7.9
Electricity Purchase/Generated (Gwh)	40	44	70	112
Electricity Sales (Gwh)	35	39	63	103
<b>NORECO II</b>				
System Loss (%)	12.0	10.0	8.4	7.6
Electricity Purchase/Generated (Gwh)	159	163	182	201
Electricity Sales (Gwh)	140	146	166	183
<b>BANELCO</b>				
System Loss (%)	10.0	9.5	8.0	7.6
Electricity Purchase/Generated (Gwh)	13	14	17	20
Electricity Sales (Gwh)	12	12	15	18
<b>CEBECO I</b>				
System Loss (%)	8.3	8.0	7.0	6.9
Electricity Purchase/Generated (Gwh)	95	103	137	165
Electricity Sales (Gwh)	87	95	127	153
<b>CEBECO II</b>				
System Loss (%)	9.8	9.5	8.6	8.3
Electricity Purchase/Generated (Gwh)	147	160	201	237
Electricity Sales (Gwh)	133	144	184	217
<b>CEBECO III</b>				
System Loss (%)	6.8	6.5	5.3	4.7
Electricity Purchase/Generated (Gwh)	106	110	127	146
Electricity Sales (Gwh)	99	102	120	139
<b>PROSIELCO</b>				
System Loss (%)	9.0	8.4	6.4	5.0
Electricity Purchase/Generated (Gwh)	10	11	15	26
Electricity Sales (Gwh)	9	10	14	25
<b>CELCO</b>				
System Loss (%)	11.6	11.1	8.2	7.2
Electricity Purchase/Generated (Gwh)	6	6	9	16
Electricity Sales (Gwh)	5	6	9	15
<b>BOHECO I</b>				
System Loss (%)	7.4	7.1	6.7	6.3
Electricity Purchase/Generated (Gwh)	76	82	110	151
Electricity Sales (Gwh)	70	76	103	141
<b>BOHECO II</b>				
System Loss (%)	10.4	9.7	7.7	6.3
Electricity Purchase/Generated (Gwh)	55	61	94	127
Electricity Sales (Gwh)	49	55	86	119
<b>VECO</b>				
System Loss (%)	10.0	9.5	9.5	9.4
Electricity Purchase/Generated (Gwh)	1,747	1,861	2,457	3,260
Electricity Sales (Gwh)	1,569	1,681	2,220	2,947
<b>PECO</b>				
System Loss (%)	12.2	12.2	12.2	12.2
Electricity Purchase/Generated (Gwh)	386	398	448	504
Electricity Sales (Gwh)	335	345	388	437
<b>BLCI</b>				
System Loss (%)	9.5	9.5	9.5	9.5
Electricity Purchase/Generated (Gwh)	69	73	101	137
Electricity Sales (Gwh)	62	67	91	123
<b>MECO'</b>	No Data			

## ❖ EXPANDED RURAL ELECTRIFICATION

For this year's Plan Update, 43 unenergized barangays are scheduled for electrification by 2008. Table 12 shows the breakdown of this schedule, as well as the line extension and rehabilitation targets for the region.

**Table 12. EXPANDED RURAL ELECTRIFICATION PROGRAM**

Year	Barangays	Expansion		Line Rehabilitation (ckt.-kms.)
		Distribution Lines (ckt.-kms.)	Substations (MVA)	
2006	12	243.22	40	1,456.10
2007	16	102.56	20	1,411.04
2008	15	97.90	35	1,693.93
2009	-	48.47	10	794.72
2010	-	24.60	15	717.81
2011	-	25.48	20	782.80
2012	-	22.04	10	1,120.62
2013	-	23.52	10	1,214.13
2014	-	219.97	10	1,039.63
<b>Total</b>	<b>43*</b>	<b>807.76**</b>	<b>170**</b>	<b>10,230.78**</b>

\*Source: DOE  
\*\*Source: NEA

## ❖ ENERGY RESOURCE DEVELOPMENT

### Geothermal

To tap the estimated 3,039 MW geothermal steam available in Region VII, a total of 17 wells are targeted for drilling within the planning period. Steam availability is expected to reach 264 MW by 2014 (Table 13).

**Table 13. GEOTHERMAL MEASURABLE SECTORAL TARGETS**

	2005	2006	2010	2014
Number of wells to be drilled	-	-	5	1
Steam Availability (Cum. MW)	230.99	226.77	270.91	264.14

The potential geothermal power plants available as indicative capacity addition in Region VII include the 40-MW Dauin project and the committed 20-MW Nasulo geothermal project, which is a project of the PNOG-Energy Development Corporation targeted for commissioning in 2008 (Table 14).

**Table 14. INDICATIVE GEOTHERMAL CAPACITY ADDITIONS**

Plant	Location	Potential Capacity (MW)	Year Available
Nasulo*	Valencia, Negros Oriental	20	2008
Dauin	Dauin, Negros Oriental	40	2012
<b>Total</b>		<b>60</b>	

\* Committed Project

### Hydropower

A total of 68 MW of hydropower projects have been lined-up for development and implementation in Region VII, as shown in Table 15. These include three large and one mini-hydropower project.

**Table 15. INDICATIVE HYDROPOWER CAPACITY ADDITIONS**

Plant	Location	Classification	Potential Capacity (MW)	Year Available
Pacuan	La Libertad, Negros Oriental	Large	33.00	2007
Siaton	Siaton, Negros Oriental	Mini	5.40	2011
Sicopong	Sta. Catalina, Negros Oriental	Large	17.80	2012
Okoy	Valencia, Negros Oriental	Large	12.00	2012
<b>Total</b>			<b>68.20</b>	

### Natural Gas

In terms of projected indigenous gas production, Central Visayas is expected to produce 0.11 billion cubic feet (BCF) in 2006, reaching 0.12 BCF in 2014. Production will be from the La Libertad gasfield.

### Coal

Coal production in Central Visayas is expected to increase at an average annual growth rate of 20.0 percent. Production will reach 0.09 MMT in 2006, and will grow to 0.2 MMT in 2014 (Table 16).

**Table 16. COAL MEASURABLE SECTORAL TARGETS @ 10,000 BTU/lb**

	2005	2006	2010	2014
<b>In-Situ Reserves (MMMT)</b>	<b>5.45</b>	<b>5.45</b>	<b>5.17</b>	<b>4.80</b>
<b>Production (MMMT)</b>	<b>0.04</b>	<b>0.09</b>	<b>0.20</b>	<b>0.20</b>
Central Cebu	0.00	0.01	0.02	0.02
Northern Cebu	0.00	0.01	0.03	0.03
Southern Cebu	0.04	0.07	0.14	0.15

## ❖ DOWNSTREAM SECTOR DEVELOPMENT

### Natural Gas

In the event of a receptive market for natural gas, programs that will necessitate the acquisition of vehicles and construction of private-led infrastructure will be undertaken.

The availability of the 3-MW combined cycle power plant will be synchronized with the estimated commercial operation of a new onshore gas field in the Visayas by 2006.

About 250 units of public utility vehicles/buses plying within the province of Cebu are envisioned to run on compressed natural gas (CNG) by 2012. Possible sources of CNG in the region could come from surrounding gas wells, using emerging technologies from small-scale CNG and CNG marine vessels to tap this resource.

**Table 17. NATURAL GAS VEHICLES AND INFRASTRUCTURE REQUIREMENT**

	Year	Capacity/Unit
<b>Vehicles</b>		
CNG Vehicles	2012-2014	250 units
CNG Hauler Truck	2012	2 units
<b>Infrastructure</b>		
Power Plant	2006	3 MW
CNG Mother Station	2012	72,000m <sup>3</sup> /day
CNG Daughter Station	2012	46100m <sup>3</sup> /day

### Coal

The DOE is promoting coal utilization systems that are cleaner and more fuel-efficient. The commissioning of the RP-Japan Coal Briquetting Demonstration Plant in Cebu shows the government's resolve toward this objective. At full capacity, the plant is expected to produce 12 thousand metric tons (MMT) of coal briquettes annually, thereby boosting the local coal industry production.