

# VI. INVESTMENT PORTFOLIO

The different energy programs lined-up for implementation within the planning period opens a vast range of business opportunities for investors specifically in the fields of upstream oil, gas and coal, renewable energy, alternative fuels, power generation, rural electrification, downstream oil, natural gas industries and energy efficiency. In addition, the government has a program of fiscal and non-fiscal incentives to encourage the entry of investors in the energy sector. Considering the huge demand for fresh capital, active private sector participation and more public-private partnerships are targeted. Table 6.1 shows the sectoral investment requirements for the implementation of energy projects covering the period 2005-2014.

**Table 6.1. SECTORAL INVESTMENT REQUIREMENTS, 2005 – 2014 (Billion PhP)**

Sector	Total	Gov't	Private
<b>Fossil Fuel Resources</b>	<b>580.01</b>		<b>580.01</b>
Oil and Gas	445.61	-	445.61
Coal	134.40	-	134.40
<b>Renewable Energy Resources</b>	<b>251.11</b>	<b>85.15</b>	<b>165.96</b>
Geothermal	87.37	49.01	38.36
Hydropower	104.77	36.14	68.63
Biomass	12.36	-	12.36
Wind	46.61	-	46.61
<b>Alternative Transport Fuels</b>	<b>64.55</b>	-	<b>64.55</b>
<b>Energy Efficiency and Conservation</b>	<b>56.39</b>	<b>8.78</b>	<b>47.61</b>
<b>Power and Transmission Development</b>	<b>257.63-261.95</b>	<b>27.95</b>	<b>229.68-234.00</b>
Main Grid	227.92-232.24	-	227.92-232.24
Small Island Grid*	25.24	25.24	-
Expanded Rural Electrification*	4.47	2.71	1.76
<b>Downstream</b>	<b>332.32</b>	-	<b>332.32</b>
Oil	28.40	-	28.40
Natural Gas	303.92	-	303.92

\* Based on Missionary Electrification Development Program (MEDP) 2005-2009

## FOSSIL FUEL RESOURCES

### Oil and Gas

The oil and gas sector foresees renewed interest in the exploration, development and production of petroleum resources in the country following the Supreme Court's ruling on December 29, 2004 allowing 100 percent foreign ownership. Compared to previous years, there was an immense influx of investments in 2005. For the first semester alone, total actual investment in petroleum amounted to US\$ 55.01 million. This upward trend is expected to continue in the succeeding years. The launching of the PECR 2005, which also covered the geothermal and coal sectors, is expected to further increase private sector interest in the industry. Under the said contracting round that ended in November 2005, four petroleum contract areas were offered covering a total of 49,789 sq. kms. in shallow to deep waters located near proven petroleum systems in Southwest Palawan, Sulu Sea basins and vast frontier areas in East Palawan ranging in sizes from 10,000 to 13,500 sq. kms.

Table 6.2 reveals that PhP 8.99 billion is allocated for onshore exploratory drilling by service contractors while PhP 48.14 billion is estimated for offshore location. On the other hand, the seismic acquisition program on 2D and 3D seismic data will entail investment of PhP 1.20 billion and PhP 3.25 billion, respectively. Meanwhile, development and production of domestic oil, gas and condensate will entail about PhP 384.03 billion. The private sector is expected to provide the huge capital requirement of the entire petroleum sector which amounts to PhP445.61 billion.

### Coal

For the first semester of 2005, the COCs brought in PhP 2.88 billion for the exploration, development and production of indigenous coal. Table 6.3 shows the total investment requirements for the coal sector for the entire planning period estimated at PhP 134.40 billion (Table 6.3). Of the said amount, PhP20.56 billion will be used to develop potential areas in Luzon, PhP 51.43 billion for Visayas and PhP 20.57 billion for Mindanao. In addition, the mine investments, which include the capital outlay and operating cost, would require PhP 41.84 billion.

**Table 6.2 OIL AND GAS INVESTMENT REQUIREMENTS**

Program/Project	Investment Requirements (Billion PhP)				Total
	2005 (Actual)	2006	2010	2014	
<b>Geophysical Data Acquisition</b>	<b>0.21</b>	<b>0.74</b>	<b>0.40</b>	<b>0.40</b>	<b>4.45</b>
2D Seismic	0.069	0.170	0.113	0.113	1.20
3D Seismic	0.141	0.565	0.283	0.283	3.25
<b>Exploration Well Drilling</b>	<b>0.17</b>	<b>3.22</b>	<b>10.17</b>	<b>3.39</b>	<b>57.13</b>
Onshore	0.170	0.509	1.356	0.678	8.99
Offshore	0.000	2.712	8.814	2.712	48.14
<b>Oil and Gas (including Condensate) Production</b>	<b>23.24</b>	<b>19.51</b>	<b>47.27</b>	<b>43.16</b>	<b>384.03</b>
Oil	0.081	0.089	10.252	6.401	65.25
Gas	20.354	16.618	34.360	34.788	292.58
Condensate	2.809	2.806	2.659	1.969	26.20
<b>Total</b>	<b>23.62</b>	<b>23.47</b>	<b>57.84</b>	<b>46.94</b>	<b>445.61</b>

## RENEWABLE ENERGY RESOURCES

The DOE is actively promoting the use of indigenous and renewable energy resources. Hence, for the entire planning period, the development and promotion of these resources will continue with a total investment requirement of PhP251.11 billion.

**Table 6.3 COAL INVESTMENT REQUIREMENTS**

Program/ Projects	Capacity (MW)	Location	Year Available	Investment Requirements (Billion PhP)				Total
				2005	2006	2010	2014	
<b>Luzon</b>	<b>200</b>			-	-	2.57	-	<b>20.56</b>
	50	Cauayan, Isabela	2009					5.14
	50	Cauayan, Isabela	2012					5.14
	50	Iguig, Cagayan	2010			2.57		5.14
	50	Iguig, Cagayan	2013					5.14
<b>Visayas</b>	<b>500</b>			-	-	8.57	5.14	<b>51.43</b>
	100	Antique	2010			8.57		20.57
	200	Antique	2012					20.58
	200	Antique	2014				5.14	10.28
<b>Mindanao</b>	<b>200</b>			-	-	3.43	-	<b>20.57</b>
	100	Sultan Kudarat	2009					10.29
	100	Surigao	2011			3.43		10.29
<b>Mine Investment</b>				<b>2.54</b>	<b>3.01</b>	<b>4.32</b>	<b>5.97</b>	<b>41.84</b>
<b>Total</b>	<b>900</b>			<b>2.54</b>	<b>3.01</b>	<b>18.89</b>	<b>11.11</b>	<b>134.40</b>

**Table 6.4 GEOTHERMAL INVESTMENT REQUIREMENTS**

Program/ Projects	Capacity (MW)	Location	Year Available	Investment Requirements (Billion PhP)								Total	
				2005		2006		2010		2014		Gov't	Priv
				Gov't	Priv	Gov't	Priv	Gov't	Priv	Gov't	Priv	Gov't	Priv
<b>Luzon</b>	<b>380</b>			0.012	0.293	0.578	2.063	2.114	5.137	0.158	0.817	10.52	32.91
Montelago	40	Montelago, Mindoro Or.	2010						0.560		0.004	-	3.72
Natib	40	Natib, Bataan	2010						0.567		0.004	-	3.73
Mabini	20	Mabini, Batangas	2010						0.558		0.003	-	3.11
Tanawon	40	Albay & Sorsogon	2010			0.565		0.005		0.004		3.36	-
Batong Buhay	60	Batong Buhay, Kalinga	2011				0.565		0.927		0.005	-	5.31
Rangas	40	Albay & Sorsogon	2012					1.045		0.004		3.05	-
Buguias-Tinoc	60	Benguet-Ifugao	2012						1.045		0.005	-	5.32
Daklan	20	Daklan, Benguet	2012						0.405		0.003	-	2.00
Baua	20	Baua, Cagayan	2012						0.405		0.003	-	2.00
Manito-Kayabon	40	Manito, Albay & Sorsogon	2011					0.927		0.130		3.60	-
Maintenance of Existing Power Plants				0.012	0.293	0.012	1.498	0.138	0.671	0.020	0.790	0.52	7.72
<b>Visayas</b>	<b>253.83</b>			<b>1.876</b>	-	<b>3.007</b>	-	<b>3.031</b>	-	<b>0.581</b>	<b>0.281</b>	<b>23.54</b>	<b>1.86</b>
Northern Negros	53.83	Bago City, Negros Occ.	2007	0.868		0.868		0.005		0.130		2.89	-
Nasulo	20	Palinpinon, Negros Occ.	2008	0.464		0.464		0.003		0.003		2.13	-
Biliran	20	Biliran, Leyte	2009			0.558		0.003		0.003		3.23	-
Southern Leyte	100	Cabalian, Southern Leyte	2011			1.053		1.415		0.008		7.97	-
Dauin	40	Dauin, Negros Oriental	2011					1.045		0.004		3.49	-
Mandalagan	20	Mandalagan, Negros Oriental	2014								0.281	-	1.86
Maintenance of Existing Power Plants				0.544		0.064		0.559		0.434		3.83	-
<b>Mindanao</b>	<b>190</b>			<b>0.007</b>	-	<b>0.133</b>	-	<b>2.394</b>	<b>1.045</b>	<b>0.831</b>	<b>0.004</b>	<b>14.95</b>	<b>3.59</b>
Mindanao Greenfield	50	Mt. Apo, North Cotabato	2011					0.927		0.130		4.95	-
NW Apo	20	Tiko, North Cotabato	2011					0.531		0.003		2.00	-
Optimization Project in Mindanao Geothermal Field	20	Kidapawan, North Cotabato	2009					0.281		0.003		1.85	-
Lakewood	40	Lakewood, Zamboanga del Sur	2012						1.045		0.004	-	3.59
Amacan	20	Amacan, North Davao	2013					0.649		0.129		1.99	-
SE Apo	40	Kapatagan, Davao del Sur	2014							0.560		3.58	-
Maintenance of Existing Power Plants				0.007		0.133		0.077		0.007		0.58	-
<b>Total (Gov't/Private)</b>				<b>1.90</b>	<b>0.29</b>	<b>3.72</b>	<b>2.06</b>	<b>7.54</b>	<b>6.18</b>	<b>1.57</b>	<b>1.10</b>	<b>49.01</b>	<b>38.36</b>
<b>Total</b>				<b>2.19</b>		<b>5.78</b>		<b>13.72</b>		<b>2.67</b>		<b>87.37</b>	

**Table 6.5. ANNUAL HYDROPOWER INVESTMENT REQUIREMENTS**

Location	Capacity (MW)	Location	Year Available	Investment Requirements (Billion PhP)				Total		Remarks
				2005	2006	2010	2014	Gov't	Private	
<b>Luzon</b>	<b>253.15</b>			<b>1.08</b>	<b>6.81</b>	<b>.576</b>		<b>27.61</b>	<b>21.91</b>	
Nalatang HEP	75	Benguet	2014					10.12		Revalidation of FS
Upper Agno MHP	5	Pangasinan	2008	0.38	0.57				0.95	Feasibility Study
San Luis MHP	0.75	Aurora						-		Ongoing construction
Batang-Batang MHP	3.50	Palawan	2006	0.66				0.66		Pre-FS revalidation
Catuiran HEP	24	Mindoro Or.	2011					-	4.51	FS conducted by West JEC
Kanan HEP	113	Infanta, Quezon	2008		6.1			15.24		FS conducted by West JEC
Longogan MHP	6.8	Palawan	2010					-	12.85	FS conducted by West JEC
Aglubang HEP	13.6	Mindoro Or.	2011					-	2.53	Revalidation of FS under Spanish Protocol
Colasi MHP	1	Camarines	2008		0.08			0.27		Feasibility Study
Dugui MHP	4	Catanduanes	2009					0.75		Revalidation of FS
Hitoma MHP	3	Catanduanes	2012			0.226		0.567		Revalidation of FS
Cawayan II MHP	2.5	Sorsogon	2012			0.35		-	0.87	Feasibility Study
Debutunan MHP	0.5	Aurora	2010					-	0.10	Recon Report
Dinalungan MHP	0.5	Aurora	2007	0.04	0.06			-	0.10	Recon Report
<b>Visayas</b>	<b>141.66</b>			<b>2.49</b>	<b>3.74</b>	<b>8.12</b>		<b>3.07</b>	<b>22.28</b>	
Cantingas	0.96	Romblon						-	-	Ongoing construction
Timbaban HEP	29	Aklan	2011			3.3		-	5.49	Under Feasibility Evaluation
Igbolo MHP	4	Iloilo	2010					-	-	Preparation of FS
Villasiga HEP	32	Antique	2012			2.419		-	6.049	Under Feasibility Evaluation
Sevilla MHP	2.5	Bohol						-	-	On-going construction
Pacuan HEP	33	Negros Or.	2007	2.49	3.74			-	6.23	Pre-FS revalidation
Sicopong HEP	17.8	Negros Or.	2012			1.34		-	3.36	FS to be completed
Siaton MHP	5.4	Negros Or.	2011			0.62		0.62	0.40	Feasibility Study
Okoy HEP	12	Negros Or.						2.26	-	Feasibility Study
Amandaraga MHP	4	Eastern Samar	2012			0.45		-	0.75	Reconnaissance Study
Bugtong MHP	1	Samat	2009					0.19	-	Revalidation of FS
<b>Mindanao</b>	<b>178.05</b>			<b>1.66</b>	<b>3.35</b>	<b>7.26</b>		<b>5.46</b>	<b>24.44</b>	
Lower Dapitan MHP	3.8	Zamboanga Del Norte	2006	0.72				-	0.72	Pre-FS
Middle Dapitan MHP	4.4	Zamboanga Del Norte	2008		0.33			-	0.83	Pre-FS
Upper Dapitan MHP	3.6	Zamboanga Del Norte	2011			0.4		-	0.67	Pre-FS
Salug Daku 1 MHP	2.5	Zamboanga Del Sur	2008		0.19			-	0.47	
Salug Daku 2 MHP	2.5	Zamboanga Del Sur	2008		0.19			-	0.47	
Salug Daku 3 MHP	6	Zamboanga Del Sur	2010					1.13	-	
Salug Daku 4 MHP	6	Zamboanga Del Sur	2010					1.13	-	
Liangan HEP	11.9	Lanao del Norte	2012			0.9		2.25	-	Detailed Engineering Completed
Tagoloan HEP	68	Bukidnon	2010			5.51		-	9.18	Revalidation of FS
Odiongan 2 MHP	5	Misamis Or.	2012			0.378		0.95		Feasibility Study
Odiongan 3 MHP	10	Misamis Or.	2008		0.76			-	1.90	Feasibility Study
Camanlangan MHP	1	Campostela Valley	2012			0.075		-	0.19	
Libungan MHP	10	North Cotabato	2010					-	1.89	Pre-FS revalidation
Lake Mainit MHP	22	Agusan del Norte	2009					-	4.15	
Hinubasan MHP	0.50	Surigao del Sur						-	-	
Kanapnapan Falls MHP	10	Lanao del Sur	2008		0.756			-	1.89	
Sipangpang MHP	1	Surigao del Sur		0.19				-	0.19	FS Completed under evaluation
Magpet MHP	10	Cotabato	2007	0.756	1.13			-	1.89	FS Completed under evaluation
<b>Total</b>	<b>572.86</b>			<b>5.23</b>	<b>13.90</b>	<b>15.96</b>		<b>36.14</b>	<b>68.63</b>	
								<b>104.77</b>		

Private

Government

### Geothermal

In 2005, PhP 2.23 billion was infused as a result of geothermal contracts for seven sites. In our effort

to become a leading producer of geothermal energy, a total of PhP 87.37 billion in investments is required for the operation and optimization of explored geothermal areas including the exploration and development of potential sites all over the country (Table 6.4). Of this

total amount, PhP 49.01 billion will come from the government and PhP 38.36 billion from the private sector. Table 6.4 outlines the investment requirements for the planning period. Projects in Luzon will entail about PhP 43.43 billion in which PhP 10.52 billion will be provided by the government and PhP 32.91 billion by the private sector. Further, the Visayas area will need PhP 25.40 billion, the breakdown of which is PhP 23.54 billion from the government and PhP 1.86 billion from the private sector. Lastly, the Mindanao area will require PhP 18.54 billion in capital investment with PhP 14.95 billion coming from the government sector and PhP 3.59 billion from the private investors.

Meanwhile, the 11 areas offered for exploration, development and direct utilization in last year's contracting round are expected to boost investments in this sector.

### Hydropower

The country can further tap the development of 43 potential hydropower sites with a total capacity of 572.9 MW. Activities related to this need PhP104.77 billion in capital investments over the entire planning period (Table 6.5). For Luzon, the capital requirement is PhP 49.52 billion, while Visayas and Mindanao need a capital infusion of PhP 25.35 billion and PhP 29.90 billion, respectively.

### Biomass, Solar and Wind

#### Biomass

The DOE is conducting an intensive IEC campaign on the social and economic benefits of other renewable energy sources like biomass. To date, ongoing projects initiated by the private sector for biomass are listed in Table 6.6. All of the 136 MW biomass projects, which are mostly

Table 6.6 BIOMASS INVESTMENT REQUIREMENTS

Program/Projects	Capacity (MW)	Location	Year Available	Investment Requirements (Billion PhP)	
				2005	2006
<b>Luzon</b>	<b>6</b>				<b>0.54</b>
Rice-Husk Fired Power Plant	5	Bocaue, Bulacan	2006		0.49
La Suerte Rice Hull	1	San Manuel, Isabela	2006		0.05
<b>Visayas</b>	<b>130</b>				<b>11.82</b>
Talisay Bioenergy Bagasse-fired Cogeneration	30	Talisay, Negros	2006		2.92
Bais (Bagasse)	25	Negros	2006		2.02
Panay (Bagasse)	25	Panay	2006		2.02
Victorias (Bagasse)	50	Negros	2006		4.86
<b>Total</b>	<b>136</b>				<b>12.36</b>

located in Visayas, are targeted to be operational by next year with a total investment estimated at PhP 12.36 billion.

#### Wind

Consistent with our objective to become the leading wind power producer in Southeast Asia, the government envisions to install at least 417 MW of wind-based power projects within the ten-year period. To attain this goal, the DOE highlighted various projects and opportunities for the development, utilization and commercialization of wind power in the country. The Wind Power Summit in December 2004 was conducted which further encouraged the private sector to enter into pre-commercial contracts for the development of wind energy resources in Pangasinan, Negros Occidental, Occidental Mindoro, Oriental Mindoro and Marinduque. The First Wind Contracting Round was conducted in March 2005 where 16 areas of total wind power capacity of 345 MW were offered requiring a capital investment of PhP 46.61 billion. Details of these sites are shown in Table 6.7. The private sector is expected to primarily provide these investments.

### ALTERNATIVE TRANSPORT FUELS

Total investments for coco-biodiesel production which amount to PhP 3.95 billion primarily include the investments of Chemrez, Inc. In the next five years, Chemrez has committed to upgrade its coco-biodiesel manufacturing facilities utilizing the highly advanced Lurgi High Efficiency Bio-diesel production process from Germany. In addition, three

Table 6.7. WIND INVESTMENT REQUIREMENTS

Program/Projects	Capacity (MW)	Location	Year Available	Investment Requirements (Billion PhP)				Total
				2005	2006	2010	2014	
<b>Luzon</b>	<b>245</b>							<b>33.10</b>
Caranglan	50	Caranglan, Nueva Ecija	2008		6.75			6.75
Pagudpud	40	Pagudpud, Ilocos Norte	2008		5.4			5.40
Burgos	15	Burgos, Ilocos Norte	2009					2.03
Sual	25	Sual, Pangasinan	2010					3.38
Mauban, Quezon	50	Mauban, Quezon	2008					6.75
Caliraya	25	Caliraya, Quezon	2008					3.38
Abra de Ilog	10	Occidental Mindoro	2010					1.35
Bulalakaw	20	Oriental Mindoro	2010					2.7
Mt. Payong-payong	5	Sta. Cruz, Marinduque	2008					0.68
Masbate	5	Baleno, Masbate	2012					0.67
<b>Visayas</b>	<b>85</b>			<b>4.05</b>				<b>11.48</b>
Tablas, Island	5	Tablas Island, Romblon	2012					0.67
Manoc-manoc, Catiklan, Aklan	10	Catiklan, Aklan	2012					1.35
Pandan	20	Pandan, Antique	2010					2.70
San Remigio, Antique	20	San Remigio, Antique						2.70
San Carlos, Negros Occidental	30	San Carlos, Negros Occidental		4.05				4.05
<b>Mindanao</b>	<b>15</b>				<b>2.03</b>			<b>2.03</b>
Nuventa, Surigao Del Norte	15	Surigao del Norte	2008		2.03			2.03
<b>Total</b>	<b>345</b>			<b>4.05</b>	<b>14.18</b>			<b>46.61</b>

other private companies, namely: Atsun Corporation, Sun Valley and Mount Holly Coco Industries, have applied for a registration with the Securities and Exchange Commission (SEC) as an initial step to venture into coco-biodiesel production. Similarly, Romtron Corporation, a joint venture between Saint Vincent Ferrer Parish Multi-Purpose Cooperative, an NGO and the Local Government of the Municipality of Odiongan, Romblon through the initiative of DOST-PCIERD, has applied for accreditation as coco-biodiesel manufacturer. Investment opportunities in the coco-biodiesel sector include expansion and construction of coco-biodiesel facilities in Metro Manila and establishment of nationwide coco-biodiesel blend refueling stations.

For fuel ethanol, a conservative estimate of PhP 36.80 billion of investments is expected in 2005-2014. San Carlos Bio-energy is taking the lead in ethanol production in San Carlos City, Negros

Occidental. Two companies, Green Energy, Inc. and Alcogreen, Inc. have applied for SEC registration to venture into fuel ethanol production as well. Investment areas for the development of fuel ethanol include supply infrastructure, consultation meetings, IEC, laboratory engine testing and capability building.

The implementation of the NGVPPT requires a total investment of PhP 23.80 billion for the acquisition of CNG buses for the period 2005 to 2014. Under the pilot phase implementation program, four out of seven accredited bus companies have acquired CNG buses while the Shell Group of Companies has put up the CNG mother and daughter refueling stations.

## ENERGY EFFICIENCY AND CONSERVATION

Amidst soaring global oil prices, the energy sector is currently undertaking an aggressive campaign to promote energy efficiency and

**Table 6.8 ENERGY EFFICIENCY & CONSERVATION INVESTMENT REQUIREMENTS (Billion PhP)**

Programs	Investment Requirements								Grand Total	
	2005		2006		2010		2014			
	Gov't	Private	Gov't	Private	Gov't	Private	Gov't	Private	Gov't	Private
<b>I. INFORMATION, EDUCATION AND COMMUNICATION (IEC) CAMPAIGN</b>	<b>0.145</b>	<b>-</b>	<b>0.151</b>	<b>-</b>	<b>0.175</b>	<b>-</b>	<b>0.205</b>	<b>-</b>	<b>1.733</b>	<b>-</b>
A. Road Transport Patrol	0.014	-	0.014	-	0.017	-	0.020	-	0.168	-
B. Fuel Economy Run and Seminars	0.006	-	0.006	-	0.007	-	0.008	-	0.068	-
C. Infomercials/Publications/Collaterals for Fuel Efficiency and Conservation	0.108	-	0.109	-	0.113	-	0.117	-	1.122	-
1. Radio and TV ads	0.048	-	0.049	-	0.053	-	0.057	-	0.525	-
2. Fuel Economy Cartoon Tips (GASFAR)	0.060	-	0.060	-	0.060	-	0.060	-	0.597	-
D. Power Patrol	0.126	-	0.130	-	0.152	-	0.176	-	1.497	-
<b>II. VOLUNTARY AGREEMENT</b>	<b>0.070</b>	<b>-</b>	<b>0.073</b>	<b>-</b>	<b>0.085</b>	<b>-</b>	<b>0.100</b>	<b>-</b>	<b>0.840</b>	<b>-</b>
A. Carless Day Program	0.028	-	0.030	-	0.035	-	0.041	-	0.344	-
B. Carpooling Program	0.028	-	0.030	-	0.035	-	0.041	-	0.344	-
C. Park and Wait Program	0.010	-	0.010	-	0.012	-	0.015	-	0.122	-
D. Park and Ride Program	0.003	-	0.003	-	0.003	-	0.003	-	0.032	-
<b>III. ENERGY LABELING &amp; EFFICIENCY STANDARDS</b>	<b>0.028</b>	<b>0.766</b>	<b>0.043</b>	<b>1.172</b>	<b>0.116</b>	<b>3.203</b>	<b>0.204</b>	<b>5.635</b>	<b>1.110</b>	<b>30.610</b>
A. Efficiency Standard and Labeling for RACs	0.010	0.265	0.010	0.270	0.016	0.436	0.019	0.537	0.146	4.034
B. Energy Labeling Program for Refrigerators and Freezers	0.003	0.093	0.004	0.123	0.009	0.252	0.012	0.334	0.084	2.314
C. Labeling for CFLs	0.011	0.307	0.022	0.619	0.069	1.908	0.128	3.517	0.661	18.226
D. Ballast loss std. & Labeling for Fluorescent Lamp Ballast	0.002	0.069	0.003	0.072	0.006	0.175	0.012	0.319	0.053	1.453
E. Luminaire Installation	-	0.004	0.000	0.009	0.001	0.034	0.002	0.068	0.012	0.327
F. Linear Fluorescent Lamp	0.001	0.026	0.002	0.044	0.005	0.129	0.012	0.335	0.053	1.453
G. Household Electric Fans	-	-	0.001	0.035	0.002	0.043	0.002	0.052	0.014	0.389
H. Television Stand-by Power Reduction	-	-	-	-	0.005	0.139	0.013	0.371	0.063	1.728
I. Performance Certification Of Fans and Blowers	-	-	-	-	0.002	0.053	0.002	0.060	0.016	0.433
J. Labeling of Electric Motors	-	-	-	-	0.001	0.034	0.002	0.042	0.009	0.253
<b>IV. GOVERNMENT ENERCON PROGRAM</b>	<b>0.282</b>	<b>-</b>	<b>0.282</b>	<b>-</b>	<b>0.282</b>	<b>-</b>	<b>0.282</b>	<b>-</b>	<b>2.816</b>	<b>-</b>
A. Fuel Conservation	0.107	-	0.107	-	0.107	-	0.107	-	1.073	-
B. Electricity Conservation	0.174	-	0.174	-	0.174	-	0.174	-	1.743	-
<b>V. ENERGY MANAGEMENT PROGRAMS</b>	<b>0.108</b>	<b>1.354</b>	<b>0.109</b>	<b>1.416</b>	<b>0.119</b>	<b>1.769</b>	<b>0.112</b>	<b>1.731</b>	<b>1.160</b>	<b>16.996</b>
A. Energy Audits/recognition Programs	0.000	0.708	0.000	0.715	0.000	0.745	0.000	0.775	0.000	7.412
B. Heat Rate Improvement of Power Plants	0.090	0.135	0.089	0.148	0.089	0.217	0.089	0.318	0.891	2.148
C. System Loss Reduction Program	0.012	0.339	0.013	0.358	0.018	0.487	0.023	0.638	0.172	4.755
D. Demand Side Management	0.006	0.172	0.007	0.195	0.012	0.320	0.000	0.000	0.097	2.681
<b>Total Per Sector</b>	<b>0.63</b>	<b>2.12</b>	<b>0.66</b>	<b>2.59</b>	<b>0.78</b>	<b>4.97</b>	<b>0.90</b>	<b>7.37</b>	<b>7.66</b>	<b>47.61</b>
<b>Total Investment</b>	<b>2.75</b>		<b>3.25</b>		<b>5.75</b>		<b>8.27</b>		<b>55.27</b>	

conservation. Towards this end, the DOE has lined up several activities which will require PhP 56.39 billion in capital investments (Table 6.8). Of this amount, PhP47.61 billion will be sourced from private investors while PhP 8.78 billion will come from the government. Activities on energy labeling and efficiency standards will constitute the biggest share at PhP 31.72 billion, followed by the energy management programs at PhP18.16 billion. Meanwhile, the continuing IEC campaign will entail PhP 2.86 billion. On the other hand, the government enercon program will need PhP2.82 billion while the voluntary agreement program will require PhP 840.40 million.

#### POWER AND TRANSMISSION DEVELOPMENT

In line with the power sector's objective of providing reliable, adequate and quality supply of electricity in the main grid and small island grids and expanding rural electrification as well, infusion of investments from both the government and private sector of PhP 257.63– 261.95 billion is required.

##### Main Grid

Based on the DOE, NPC and TransCo demand forecast, the total investment requirements for power generation projects for the main grid are expected to reach PhP 227.92 - 232.24 billion for the entire planning period (Table 6.9). Of this amount, PhP56.65 billion will be infused for committed projects

74.00 billion, for Visayas PhP 21.95 - 22.72 billion and for Mindanao, PhP 78.29 - 78.87 billion.

The capital investment for transmission projects will amount to PhP 50.42 billion. Of this amount, about PhP 17.36 billion will be utilized for the Luzon grid, while PhP 17.41 billion and PhP 15.66 billion will be spent for the Visayas and Mindanao grids, respectively. This investment cost will include the expansion of subtransmission lines, transmission projects associated with generating plants and other projects required to comply with the N-1 reliability criterion.

##### Small Island Grids

Based on the Missionary Electrification Development Plan (MEDP) 2005-2009, the capital investment for the development of small island grid's power requirements is estimated at PhP 25.24 billion. This amount consists of operation and maintenance, capital and other cost expenditures.

##### Expanded Rural Electrification

In attaining the government's target of 100 percent level barangay electrification by 2008, Table 6.10 shows that PhP 4.47 billion would be needed to finance the projects of the different implementing entities in 2,564 unenergized barangays in the country. Of this amount, PhP 1.76 billion will come

Table 6.9. POWER GENERATION INVESTMENT REQUIREMENTS

Projects	Capacity (MW)		Year Available	Investment Requirements (Billion PhP)	
	DOE	NPC/TransCo		Based on DOE Demand Forecast	Based on NPC/TransCo Demand Forecast
<b>Luzon</b>	<b>2,015</b>	<b>2,315<sup>a</sup></b>		<b>78.54</b>	<b>81.51<sup>a</sup></b>
Northwind Power	25	25	2005	2.640	2.640
North Luzon Wind Power	40	40	2007	4.869	4.869
Project Phase I					
<b>Total Committed Plants</b>	<b>65</b>	<b>65</b>		<b>7.509</b>	<b>7.509</b>
<b>Indicative Plants</b>	<b>1950</b>	<b>2250</b>		<b>71.033</b>	<b>74.003</b>
<b>Visayas</b>	<b>979</b>	<b>979<sup>b</sup></b>		<b>51.88</b>	<b>52.65<sup>b</sup></b>
Pinamucan Transfer	110	110	2005	0.633	0.633
Northern Negros Geothermal	49	49	2007	7.836	7.836
PNOC-Nasulo Geothermal	20	20	2008	2.212	2.212
KEPCO Coal	200	200	2008	19.250	19.250
<b>Total Committed Plants</b>	<b>379</b>	<b>379</b>		<b>29.931</b>	<b>29.931</b>
<b>Indicative Plants</b>	<b>600</b>	<b>600</b>		<b>21.945</b>	<b>22.715</b>
<b>Mindanao</b>	<b>1,080</b>	<b>1,230<sup>b</sup></b>		<b>97.50</b>	<b>98.08<sup>b</sup></b>
Transfer of PB 101 & 104	50	50	2005	0.033	0.033
Mindanao Coal	210	210	2007	16.775	16.775
Mt. Apo Optimization	20	20	2009	2.400	2.400
<b>Total Committed Plants</b>	<b>280</b>	<b>280</b>		<b>19.208</b>	<b>19.208</b>
<b>Indicative Plants</b>	<b>800</b>	<b>950</b>		<b>78.293</b>	<b>78.870</b>
<b>Total</b>	<b>4,074</b>	<b>4,524</b>		<b>227.92</b>	<b>232.24</b>

*a* Based on NPC's demand forecast

*b* Based on TransCo's demand forecast

to be segregated as follows: PhP 7.51 billion for Luzon, PhP 29.93 billion for Visayas and PhP 19.21 billion for Mindanao. The required capital investment for indicative plants will be PhP 171.27 - 175.59 billion to be distributed as follows: for Luzon PhP 71.03 -

from the private sector and the remaining amount of about PhP 2.72 billion will be borne by the government sector. For the year 2006, PhP 1.46 billion is required to energize 943 barangays, in 2007 PhP 1.68 billion will be utilized to energize 917

**Table 6.10. BARANGAY ELECTRIFICATION INVESTMENT REQUIREMENTS**

Project Implementor	2006		2007		2008		Total	
	No. of Brgys.	PhP (Billion)	No. of Brgys	PhP (Billion)	No. of Brgys	PhP (Billion)	No. of Brgys	PhP (Billion)
Government Agencies	571	0.827	624	1.054	504	0.834	1,699	2.715
Private Sector	372	0.632	293	0.628	200	0.5	865	1.76
<b>Total</b>	<b>943</b>	<b>1.459</b>	<b>917</b>	<b>1.683</b>	<b>704</b>	<b>1.334</b>	<b>2,564</b>	<b>4.47</b>

barangays, and finally in 2008, PhP 1.33 billion will be essential to realize the electrification of the remaining 704 unenergized barangays. Among the government agencies, NEA and the ECs will have the most number of barangays to energize while the balance will be shared among DOE, NPC-SPUG, PNOC-EDC and DAR. IPPs such as KEPCO, Mirant and Luzon Hydro and the PIOUs have also committed to implement barangay energization projects.

**DOWNSTREAM**

The capital investments required for the downstream oil and gas sector stand at PhP 332.32 billion for the entire planning period.

**Oil**

Total investment requirement for the downstream oil will entail about PhP 28.40 billion. Of this amount, the biggest share will go to liquefied fuel bulk marketing at PhP 9.55 billion while liquefied fuel retail marketing will need PhP 5.59 billion in capital investment. The LPG bulk marketing, terminalling and bunkering will necessitate a total funding of PhP 7.16 billion, PhP 4.28 billion and PhP 1.82, respectively. Specific plans are also underway for the relocation of oil depot facilities from Pandacan.

**Natural Gas**

The successful operation of the natural gas industry is largely dependent on the establishment of the infrastructure and related facilities needed in this sector totalling to PhP 303.92 billion for the entire planning period (Table 6.11). Of this amount, PhP17.49 billion will be allocated for the installation of transmission and distribution pipelines while for power generation, the estimated amount to be utilized is PhP141.68 billion. On the other hand, putting up of mother and daughter stations for the receipt and distribution of CNG for CNG-fed vehicles will need PhP 0.80 billion and PhP 2.21 billion, respectively. Meanwhile, the construction of LNG receiving terminals for bulk receipt and storage will require PhP116.54 billion and the purchase of CNG marine

**Table 6.11. NATURAL GAS INDUSTRY INVESTMENT REQUIREMENTS**

Program/ Projects	Investment Requirements (Billion PhP)				Total
	2005	2006	2010	2014	
Pipelines	-	-	6.89	-	17.49
Power Plant	-	-	32.06	24.40	141.68
Mother Station	-	-	0.40	-	0.80
Daughter Station	-	-	0.30	0.10	2.21
LNG Terminal	-	-	116.54	-	116.54
CNG Marine Vessel	-	-	-	-	25.20
<b>Total</b>	<b>-</b>	<b>-</b>	<b>156.19</b>	<b>24.50</b>	<b>303.92</b>

vessels to be used for the transport of CNG will cost PhP 25.20 billion.

**EXISTING INCENTIVES IN THE ENERGY SECTOR**

Generally, under Book I of E.O. 226 or the *Omnibus Investments*

*Code of 1987*, a qualified enterprise may enjoy certain benefits and incentives provided it invests in preferred areas of investments enumerated in the Investment Priorities Plan (IPP). The plan is issued annually by the BOI and contains the list of areas of investments eligible for government incentives. The 2005 IPP has been approved under Memorandum Order No. 169 and signed by President Arroyo on April 26, 2005. Listed as one of the preferred activities under the current IPP is Energy, which provides in part that:

*“Energy covers the exploration, development, and/or utilization of energy sources. This also covers activities using energy technologies leading to energy efficiency and conservation in accordance with the program of the DOE.”*

Upon registration with BOI, a qualified enterprise is entitled to the following fiscal and non-fiscal incentives:

**Fiscal Incentives:**

- ❖ Income tax holiday;
- ❖ Exemption from taxes and duties on imported spare parts;
- ❖ Exemption from wharfage dues and export tax, duty, impost and fees;
- ❖ Modified duty rate for capital equipment by virtue of E.O. 313;
- ❖ Tax credits; and,
- ❖ Additional deductions from taxable income.

**Non-fiscal incentives:**

- ❖ Employment of foreign nationals;
- ❖ Simplification of customs procedures;
- ❖ Importation of consigned equipment; and,
- ❖ The privilege to operate a bonded manufacturing/ trading warehouse subject to custom rules and regulations.

More specifically, the 2005 IPP covers the following areas:

- ❖ Power generation projects, including those under the NPC privatization plan
  - Those utilizing indigenous and renewable energy such as biomass, waste to energy conversion, solar, wind, geothermal, hydro and tidal;
  - Those using natural gas and LPG;
  - Those using fossil fuels as specified in the PDP using environment-friendly technology; and
  - Cogeneration or Combined Heat and Power plants producing electrical forms of useful thermal energy.

- ❖ Power transmission projects that cost at least PhP 1.0 billion
- ❖ Energy efficiency and conservation activities
  - Development of fuel blends such as coco bio-diesel, ethanol, etc.;
  - Services involving energy labeling and efficiency standards for appliances, vehicles, electrical devices and equipment;
  - Activities involving heat rate recovery and/or improvement of power plants in compliance with the heat rate standards set by the ERC;
  - Conversion shops providing converting, retrofitting, repairing and maintaining CNG/LPG vehicles in accordance with the relevant PNS; and
  - Installation and operation of CNG/LPG refueling stations and related infrastructures and facilities as endorsed by the DOE.
- ❖ Land transport which covers the operation of Public Utility Bus (PUBs) operations and Public Utility Articulated Buses (PUABs) including buses using CNG/LNG

The following are the qualifications for registration:

- Buses must be brand new (per LTRFB M.C. 2003-024 definition 1);
- Retrofitted/re-powered buses with brand new engines using CNG/LPG may be allowed;
- Operators must have their own terminals and garage that can accommodate the total number of buses under their franchises; and
- Operators must undertake to operate within the franchise routes.
- ❖ Pipeline operations or the application for registration on the establishment of infrastructure for transport of petroleum products, natural gas, petrochemicals, and similar products must include proof of filing of an application for Authority to Operate Pipeline System with the DOE and/or appropriate government agency.
  - The transport from mother station to daughter station should be in accordance with PNS standards.
- ❖ Mandatory Inclusions, all projects covered under this category shall only be entitled to the incentives provided for under their respective laws. R.A. 8479, otherwise known as Oil Deregulation is included under this category.
  - Refining, storage, marketing and distribution of petroleum products under R.A. 8479. This covers all activities under the downstream oil industry, specifically refining, storage, distribution and marketing of petroleum products.

## Oil and Gas

All service contractors may avail of the incentives or privileges under the following laws and issuances governing petroleum exploration:

- ❖ **Presidential Decree (PD) No. 87 or the Oil Exploration and Development Act of 1972**  
Provides the legal basis for the exploration and development of indigenous petroleum resources in the country by authorizing the grant of service contracts entered into through public bidding or through negotiations.
- ❖ **Office of the Energy Affairs Circular No. 87-12-003**  
The sliding scale allowance from 1.5 percent to 7.5 percent of the gross proceeds granted to the contractor when the aggregate participation in the contract by one or more Filipino Citizens and/or companies is at least 15.0 percent in respect to a Deepwater Contract.
- ❖ **DOE Circular No. 94-01-01**  
The allowance of 7.5 percent of the gross proceeds granted to the contractor when the aggregate participation in the contract by one or more Filipino citizens and/or companies is at least 15.0 percent in respect to the drilling of a well by the contractor in water depths beyond 200 meters, whether inside or outside a deepwater area.

## Coal

**P.D. 1174 amending P.D. 972, otherwise known as "The Coal Development Act of 1976"** provides for the following incentives to prospective coal operators:

- ❖ Recovery of operating expenses not exceeding 90.0 percent of the gross proceeds from production in any year with carry forward of unrecovered cost;
- ❖ Special allowance of up to 40.0 percent of the net proceeds;
- ❖ Exemption from all taxes except income tax;
- ❖ Exemption from payment of tariff duties and compensating tax on the importation of machinery, equipment, spare parts and all materials for coal operations;
- ❖ Entry of alien technical and specialized personnel; and,
- ❖ Right of ingress to and egress from the COC area.

## Geothermal

**P.D. 1442, or "An Act to Promote the Exploration and Development of Geothermal Resources"** provides for the following incentives to a geothermal service contractor:

- ❖ Recovery of operating expenses not exceeding 90.0 percent of the gross value in any year with carry forward of any unrecovered cost;

- ❖ Service fee of up to 40.0 percent of net proceeds;
- ❖ Exemption from all taxes except income tax;
- ❖ Income tax obligation paid out of government's share;
- ❖ Exemption from payment of tariff duties and compensating tax on the importation of machinery, equipment, spare parts and all materials for geothermal operation;
- ❖ Depreciation of capital equipment over a ten-year period;
- ❖ Easy repatriation of capital equipment investment and remittance of earnings; and,
- ❖ Entry of alien technical and specialized personnel (including members of family).

### Hydropower

**R.A. 7156, or "The Mini-Hydro Law"** grants the following incentives to mini-hydro developers:

- ❖ Special privilege tax rates  
Tax payable by developers/grantees to develop potential sites for hydroelectric power to generate, transmit and sell electric power shall be 2.0 percent percent of their gross receipts;
- ❖ Income tax holiday for seven years from the start of commercial operations;
- ❖ Tax and duty free importation of machinery, equipment and materials  
Exemption from payment of tariff duties and VAT on importation of machinery and equipment within seven years from the date of award of the contract;
- ❖ Tax credit on domestic capital equipment  
For developers who buy machinery, equipment, materials and parts from local manufacturers, tax credit are granted an amount equivalent to 100 percent of the value of VAT and customs duties that would have been paid to import the said machinery, equipment, etc.
- ❖ Special realty tax rates on equipment and machinery  
Realty and other taxes on civil works, equipment, machinery and other improvements of a registered mini-hydroelectric power developer shall not exceed 2.5 percent of their original cost;
- ❖ VAT exemption  
Exemption from payment of 10.0 percent VAT on gross receipts derived from the sale of electric power whether wheeled via the NPC grid or electricity utility lines.

### Wind

**E.O. 462 as amended by E.O. 232, "Enabling Private Sector Participation in the Exploration, Development, Utilization and Commercialization of Ocean, Solar And Wind Energy Resources For Power Generation and Other Energy Uses"**, embodies several incentives for proponents of wind energy projects, as follows:

- ❖ Additional deduction for labor expense;
- ❖ Unrestricted use of consigned equipment;

- ❖ Additional deduction for necessary and major infrastructure works;
- ❖ Reduced duty rates for imported capital equipment, spare parts and accessories under E.O. 313;
- ❖ The government shall waive the signature bonus on the first project to reduce pre-operating cost burden on the solar, wind and ocean production-sharing contract;
- ❖ Payment of production bonus shall be applied only after the project has fully recovered its pre-operating expenses;
- ❖ Ocean, wind and solar developers shall be allowed to charge the cost of assessment, field verification and feasibility studies of other sites to its current commercial projects; and,
- ❖ The government shall assist developers in obtaining all applicable fiscal and non-fiscal incentives, including registration as a pioneer industry under the BOI and securing of access to lands and offshore areas where ocean, wind and solar resources shall be harnessed.

### CNG

**Section 5 of E.O. 290 "Implementing the NGVPPT"** provides for the following privileges and incentives that may be availed of by NGVPPT participants:

- ❖ Income tax holiday for pioneering projects qualifying under the BOI Investments Priorities Plan;
- ❖ 1.0 percent rate of duty on imported NGV, NGV engines and other NGV industry related equipment, facilities, parts and components as certified by the DOE;
- ❖ Issuance by the Land Transportation Office (LTO) Certificates of Compliance with Emissions Standards to NGVs;
- ❖ Preferential and exclusive franchises from the Land Transportation Franchising Regulatory Board (LTFRB) for NGVs to newly opened routes;
- ❖ Accelerated issuance by the DENR of Environmental Compliance Certificate (ECC) for NGV facilities and refueling stations;
- ❖ Affordable and commercially tenable financial packages from Government Financing Institutions (GFIs);
- ❖ Manpower development and capability building through training and technology transfer programs;
- ❖ Attractive CNG prices which translate to a discount to diesel prices; and,
- ❖ Other privileges and incentives that may be subsequently provided.

### Use of Bioethanol

**E.O. 449 "Modifying the Rate of Import Duty on Bioethanol Fuel under Section 104 of the Tariff and Customs Code of 1978 (P.D. No. 1464), as Amended"** provides that the importation of ethanol strength by volume exceeding 99.0 percent shall be

subject to 1.0 percent Most Favored-Nation (MFN) rate of import duty when imported with certification from the DOE that the articles will be used for the Fuel Ethanol Program.

### **Oil**

**Section 9, Chapter II of R.A. 8479, or “An Act Deregulating The Downstream Oil Industry, and For Other Purposes”** provides that persons with new investments as determined by the DOE and registered with the BOI in refining, storage, marketing and distribution of petroleum products shall be extended the same incentives granted to BOI-registered enterprises engaged in a preferred area of investments pursuant to E.O. 226, or the Omnibus Investments Code of 1987, thus:

- ❖ Income tax holiday;
- ❖ Minimum tax and duty of 3.0 percent and value-added tax on imported capital equipment;
- ❖ Tax credit on domestic capital equipment;
- ❖ Exemption from contractor’s tax;
- ❖ Unrestricted use of consigned equipment;
- ❖ Exemption from taxes and duties on imported spare parts; and,
- ❖ Such other applicable incentives under Article 39 of E.O. No. 226.

### **Natural Gas**

**Under P.D. 87, otherwise known as “The Oil Exploration and Development Act of 1972”**, the following incentives may be availed of by prospective service contractors in the natural gas industry, to wit:

- ❖ Service fee of up to 40.0 percent of net production income;
- ❖ Cost reimbursement of up to 70.0 percent of gross production income;
- ❖ 7.5 percent participation incentive allowance for local investors; and,
- ❖ Tax and duty-free importation of materials and equipment.