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## CHAPTER 1

### THE NEED FOR COAL-FIRED GENERATION

Currently, Armenia has electricity generation capacity that includes nuclear, hydro and natural gas/mazut fired-power stations. The generation capacity of Armenian power stations, based on the latest Hagler Bailly information, is summarized below (Table 1-1).

**Table 1-1**  
**Armenian Power Sector Generation Plants**

<u>Plant</u>	<u>Units</u>	<u>Year of Commissioning</u>	<u>Current Installed Capacity MW</u>	<u>Current Available Capacity (estimate) MW</u>
Medzamor Nuclear	2x440	1976, 1980	440	375
Yerevan 1 CHP TPP	5x50	1963 - 1965	200	180
Yerevan 2 Block TPP	2x160	1966 - 1968	320	300
Hrazdan 1 CHP TPP	2x50, 2x100	1966 - 1969	300	200
Hrazdan 2 Block TPP	3x200, 1x210	1971 - 1974	810	810
Sevan-Hrazdan Cascade	7 facilities	1949 - 1961	532	532
Vorotan Cascade	4 facilities	1970 - 1984	400	400
<u>Small Hydros</u>			<u>56</u>	<u>56</u>
Total			3,058	2,853

Nuclear comprises 14%, hydro 33%, and thermal (TPP) 53% of the current available capacity. Hydro plants are the only domestic power production capacity that provides a level of insurance against foreign fuel supply interruption. In theory, hydropower can provide only 33% of total electricity production capacity. However, the reality is that there are several generation restrictions such as water availability and environmental issues related to Lake Sevan. The total generation by fuel type in 1999 consisted of 36% nuclear, 19% hydro, and 45% thermal (Table 1-2).

**Table 1-2**  
**1999 Domestic Gross Electricity Generation**

Characteristic	Fuel Type			Total
	Nuclear	Hydro	Thermal	
Electricity GWh	2,078	1,074	2,438	5,716
Supply Percentage	36%	19%	45%	100%

Source: Energy Regulatory Commission (ERC)

The forecast developed by the Energy Regulatory Commission (ERC) estimates demand in year 2000 will be slightly higher than 1999 at 5,673 GWh. A system winter peak of about 1,100 MW is expected.

The generating units are generally rather old and may require replacement and/or decommissioning soon. It is generally accepted that the natural gas-fired power stations are relatively inexpensive to build and operate in this part of the world than coal-fired power stations, given projections for natural gas prices and capital costs.

The ethnic and political tension within the region, as is evidenced by the Nagorno-Karabakh, Abkhazia, Ossetia, and Chechnya conflicts, creates a need to protect one's economy from the problems caused by disruption of imports caused by conflicts. For this analysis, the concern is the disruption of the supply of natural gas that would result in a significant loss in the capacity to produce electricity and thereby harm the Armenian economy.

In conclusion, the purpose for constructing a coal-fired power station in Armenia is to replace old capacity while implementing an energy security policy aimed at increasing the insurance Armenia currently has against foreign fuel supply interruptions. Currently, hydro is providing the only domestic source of electricity by satisfying 21% of Armenia's demand for electricity. The remainder of electricity production comes from generation with nuclear fuel and natural gas, both of which are imported.

Assuming a peak demand of 1,100 MW, a 50 MW domestic coal-fired power station would represent less than 5% of the peak demand.