

# Magat Hydropower Plant

## BACKGROUND

The 360 MW Magat hydropower plant is fed by the Magat River in Northern Luzon, and its watershed is composed of about 430 000 hectares, straddling two provinces, Ifugao Province and Isabela Province. The Magat reservoir covers an area of about 117 sq km. As a sizeable plant, Magat plays a strategic role in Luzon as provider of water for irrigation, flood control, peaking power and ancillary services.

Magat has a contract with the System Operator that makes it possible for the plant to offer daily ancillary services to the Philippine grid. The daily approved ancillary services are paid in accordance to the contract for the various services.

## FACTS

### THE PLANT

Magat's main purpose is irrigation as it serves as the water source for almost 85 000 hectares of rice fields downstream. The plant's large reservoir has a usable storage capacity of 933 million cubic meters, equivalent to about two months' production. The reservoir and dam are owned and operated by the National Irrigation Authority (NIA), who also dictates the water level in Magat's reservoir.

<b>LOCATION:</b>	Ifugao and Isabela Provinces, Luzon. 350 km Northeast of Manila, Philippines
<b>INSTALLED CAPACITY:</b>	360 MW
<b>TYPE:</b>	Earth and rock-fill dam; Multipurpose plant for irrigation, flood control and electricity generation
<b>AVERAGE ANNUAL OUTPUT:</b>	1000 GWh
<b>DAM HEIGHT:</b>	114m
<b>GROSS HEAD:</b>	Rated head is 81m
<b>RATED FLOW:</b>	128 m <sup>3</sup> /sec per unit. Designed as a peaking power plant.
<b>EQUIPMENT:</b>	Four Francis units of 90 MW each
<b>COMMERCIAL OPERATION:</b>	Late 1983
<b>CAPITAL COST:</b>	USD 530 million
<b>POWER PURCHASE:</b>	25% PPA, 75% of electricity generated is sold at Wholesale Electricity Spot Market
<b>SN POWER OWNERSHIP:</b>	50 %
<b>OTHER EQUITY OWNERS:</b>	Aboitiz Equity Ventures 50%
<b>PARTNER:</b>	Aboitiz Equity Ventures
<b>FINANCING:</b>	Significant foreign participation; lenders are IFC, NIB, HSBC and local banks

## OPERATION

Magat is designed as a peaking plant, and each generating unit has the capability to be on-line and deliver electricity to the system in less than two minutes. The units are started/stopped approximately 300 times a year. During periods of overflow, some energy is delivered outside peaking hours.

25 per cent of Magat's output has Power Purchase Agreements (PPA). The rest is sold at the Wholesale Electricity Spot Market (WESM). To optimize use of energy, Magat is operated mainly during peak hours when it can meet the need for electricity while also taking irrigation requirements into account.

## CONSTRUCTION

The Magat project was initiated in 1975, but it was not until 1980 that construction work started and three years later in 1983 the plant was in commercial operation

## DEVELOPMENT

The plant is prepared for extension. Inlet arrangements for two more units are built in the existing dam construction. Investigation into the expansion of Magat is ongoing and may enhance capacity from 70 to 100 per cent.

## SUSTAINABLE DEVELOPMENT

Magat forms an important backbone in the local community both from employment and local revenue perspectives. Upon taking over Magat, SN Aboitiz Power retained almost the entire workforce.

CSR programs are established to enable the company to do strategic development projects in all Magat's host communities. The programs focus the support on self-sustainable long-term projects strengthening Environmental Management, Livelihood and Eco-tourism, Primary Healthcare, Education and Social Infrastructure. Significant watershed management programs are also implemented.

