



Instituto Nicaragüense de Energía

Diversification of the Energy Matrix – INE's Strategy and Experience

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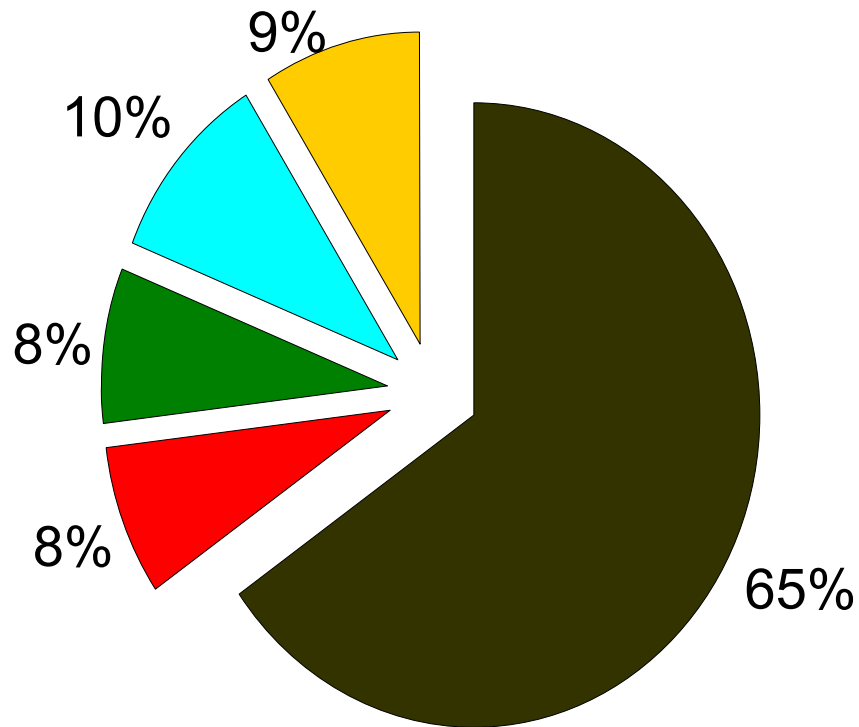
Austin, Texas – July 2008

Current Generation Matrix

- ▶ High reliance on oil prices
- ▶ Installation of new fossil fuel–based units.
- ▶ There is a need for
 - A change in the generation matrix
 - Investment in generation using renewable resources.

Generation Structure

Generation Structure 2007



Fuel Oil No.6	Fuel Oil No.2	Biomass
Hidroelectric	Geothermal	

Generation Potential

- ▶ Hidroelectric: Estimated at 1,700 MW using only a 6 %
- ▶ Geothermal has been estimated at 1000 MW making use of 4 %
- ▶ According to studies, wind energy has a 200 MW potential, of which 40 MW are currently being developed

Promotion Policy

- ▶ Incentive regime established by law
 - Import Tariff Exemption for pre-investment and construction, including required transmission lines
 - Value Added Tax Exemption for pre-investment and construction equipment and materials
 - 7-year Income Tax Exemption
 - 10-year Municipal Tax Exemption
 - 5-year Severance Tax Exemption
 - 10-year Stamp Tax Exemption

Promotion Policy

► Renewable Energy Contracting

- Distributing companies are required to include energy and/or power contracts with renewable resource-based generators in their bidding process.
- Contracts should have a minimum 10-year life.
- Direct contracting is allowed if higher cost generation is replaced.

Promotion Policy

- ▶ A recently approved reform to the General Environment and Natural Resource Act allows geothermal, water, and wind source prospection and exploitation in protected areas.
- ▶ Renewable Energy Prices
 - In addition to tax incentives, a price band was set for spot market (off-contract) sales ranging from US\$75/MWh to US\$85/MWh
 - Minimum geothermal generation contract energy value was set by law at US\$85/MWh

Promotion Policy

► Preference in Operation

- In electrical system operation, maximizing the use of renewable resource-based generators is favored
- Economic dispatch priority
- Special classification for Wind and run-of-river Hydroelectric power generation; these resources should be taken advantage of when present.
- Authorization to export surplus energy not covered under local contracts at Regional Market prices.

2007-2014 Expansion Plan

Proyectos	Tipo	Inversionista	Año															
			2007		2008		2009		2010		2011		2012		2013		2014	
			I S	II S	I S	II S	I S	II S	I S	II S	I S	II S	I S	II S	I S	II S	I S	II S
Hugo Chavez (Albanisa -diesel)	Térmico	Privado	48															
ALBANISA (Bunker)	Térmico	Privado			40	40												
Amayo	Eólico	Grupo Amayo				40												
San Jacinto 1	Geotérmico	Polaris Canada					13		44									
Hidro Pantasma (Filo de Agua)	Hidroeléctrica	Consorcio Santa Fe									17							
Larreynaga (Filo de Agua)	Hidroeléctrica	ENEL									17							
Salto Y-Y (Filo de Agua)	Hidroeléctrica	Compañía Cervecera de Nic.											25					
Boboke	Hidroeléctrica	No definido												70				
Tumarín	Hidroeléctrica	No definido										80			80			
El Hoyo I	Geotérmico	GeoNica											40		30			
Carbon	Térmico	No definido															150	
TOTAL	734		48	0	40	80	0	13	0	44	0	34	80	65	70	110	150	0

2007-2014 Expansion Plan

► New power plants

- Fossil fuel 278 MW
- Hidroelectric 289 MW
- Geothermal 127 MW
- Wind 40 MW

► Total 734 MW