



ETESA
Empresa de Transmisión Eléctrica, S.A.

Plan de Expansión del Sistema Interconectado Nacional 2016 – 2030

Plan Indicativo de Generación

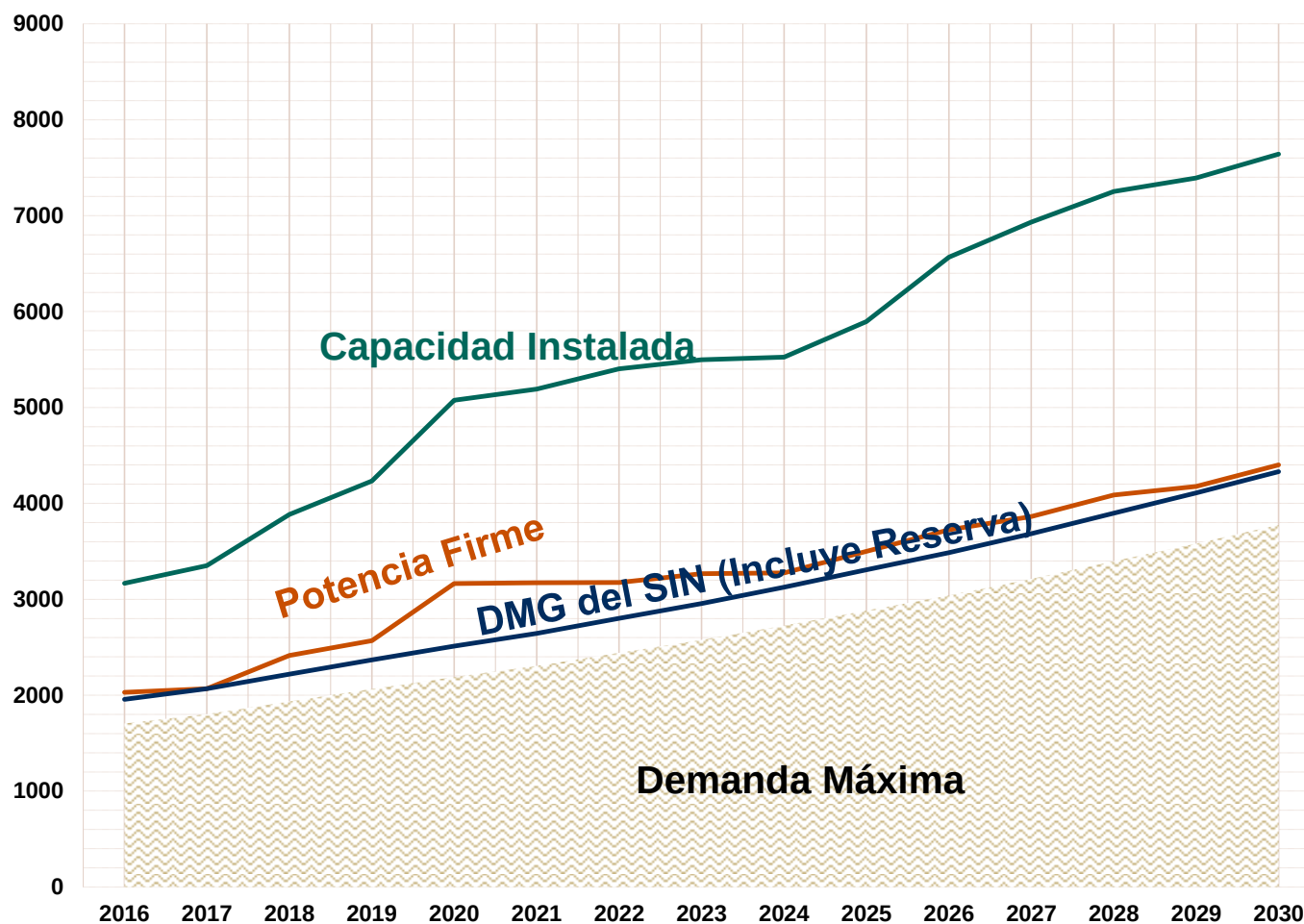
Tomo II - Anexo – 2

Salidas del Escenario Renovable:

Escenario renovable-térmico considerando:

- Proyectos renovables que incluyen hidroeléctricos, eólicos y solares con licencia o concesión definitiva o en trámite.
- Proyectos térmicos que incluyen los combustibles convencionales (bunker y diésel) y gas natural (incluyendo las facilidades de regasificación) con licencia definitiva o en trámite.
- Considerar fuentes eólicas, solares y gas natural adicional a partir del año 2019, considerando un mayor impulso en el nivel de penetración de fuentes renovables no convencionales.

Gráfico N° A2.1 Balance de Potencia vs Demanda del Escenario Renovable



Cuadro N° A2.1 Capacidad Firme Escenario Renovable

[illegible]

Cuadro N° A2.1 Capacidad Firme Escenario Renovable (Continuación)

Proyectos Hidroeléctricos (Futuros)		Nombre	Capacidad Instalada MW	Potencia Firme MW	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Hidroeléctrica Bajos del Totuma, S.A.		Bajo de Totumas	5.00	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42
Fuerza Eléctrica del Istmo, S.A.		Los Planetas 2	8.62	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
Desarrollos Hidroeléctricos Corp.		San Andres	10.00	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54
Electron Investment		Pando	33.30	25.13		25.13	25.13	25.13	25.13	25.13	25.13	25.13	25.13	25.13	25.13	25.13	25.13	25.13	25.13
Generadora del Istmo S.A.		Barro Blanco	26.59	11.57		11.57	11.57	11.57	11.57	11.57	11.57	11.57	11.57	11.57	11.57	11.57	11.57	11.57	11.57
Generadora del Istmo S.A.		Barro Blanco Minicentral	1.89																
HidroPiedra, S.A.		La Cuchilla	8.20	1.31		1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Navitas Internacional, S.A.		Chuspa	8.80	2.30			2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Los Naranjos Overseas, S.A.		El Sindigo	10.00	1.28				1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Hidroeléctrica Tizingal S.A.		Tizingal	4.50	2.55				2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
Hidro Burica, S.A.		Burica	65.30	22.31					22.31	22.31	22.31	22.31	22.31	22.31	22.31	22.31	22.31	22.31	22.31
Hidronorth Corp.		La Huaca	11.62	0.17					0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Hidroeléctrica Barriles, S.A.		Colorado	6.74	1.94					1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
Empresa Nacional de Energia, S.A		La Herradura	5.20	1.03					1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
Hidroeléctrica Barriles, S.A.		Barriles	1.00	0.13					0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Empresa Nacional de Energia, S.A		El Recodo	10.00	3.00					3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Bocas del Toro Energía, S.A.		Bocas del Toro (Changuinola II)	214.76	180.89					180.89	180.89	180.89	180.89	180.89	180.89	180.89	180.89	180.89	180.89	180.89
Bocas del Toro Energía, S.A.		Bocas del Toro Minicentral (Changuinola II)	13.70	12.95					12.95	12.95	12.95	12.95	12.95	12.95	12.95	12.95	12.95	12.95	12.95
Corporación de Energía del Istmo Ltd.		San Bartolo	19.44	5.64						5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64
Corporación de Energía del Istmo Ltd.		San Bartolo Minicentral	0.99																
Hidroeléctrica Río Piedra, S.A.		Río Piedra	9.00	2.70						2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
Argenta Resources Corp.		Caña Blanca	7.80	0.78						0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hidroeléctrica Barriles, S.A.		Cotito	5.00	4.00							4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Estrella del Sur, S.A.		Ojo de Agua	6.45	1.94								1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
Panama Hydroelectrical Development Co. S.A.		Santa Maria 82	28.35	8.51									8.51	8.51	8.51	8.51	8.51	8.51	8.51
Hidroecológica San Andrés, S.A.		San Andrés II	7.61	2.24												2.24	2.24	2.24	2.24
			474.65	283.21	8.31	46.32	48.62	52.45	274.87	283.99	287.99	289.92	298.43	298.43	298.43	300.66	300.66	300.66	300.66

Proyectos Termoeléctricos (Futuros)		Nombre	Fact. Disp.	Potencia Firme MW	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CERRO AZUL POWER GENERA TION CO. S.A.		Cerro Azul MT XQC1600	39.21	0.90		35.289	35.289	35.289	35.289	35.289	35.289	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CERRO AZUL POWER GENERA TION CO. S.A.		Cerro Azul MT PM1360	5.44	1.00		5.440	5.440	5.440	5.440	5.440	5.440	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Consorcio ENERGYST Panama International		Energyst El Sánchez	44.33	1.00		44.330	44.330	44.330	44.330	44.330	44.330	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Minera Panamá, S.A.		Punta Rincón	297.50	0.85	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente	Excedente
Gas Natural Atlantico de R.L.		Costa Norte I	381.00	0.90			342.900	342.900	342.900	342.900	342.900	342.900	342.900	342.900	342.900	342.900	342.900	342.900	342.900
Bahía Las Minas Corp.		Bahía las Minas (New CC GNL)	168.00	0.90				151.200	151.200	151.200	151.200	151.200	151.200	151.200	151.200	151.200	151.200	151.200	151.200
Martano Inc.		LP0215 (Gas de Martano)	413.00	0.90					371.700	371.700	371.700	371.700	371.700	371.700	371.700	371.700	371.700	371.700	371.700
		CC CNL	400.00	0.90								360.000	360.000	360.000	360.000	360.000	360.000	360.000	360.000
		Turbina de Gas Aeroderivada (GNL) 250A	250.00	0.90										225.000	225.000	225.000	225.000	225.000	225.000
		Turbina de Gas Aeroderivada (GNL) 250B	250.00	0.90											225.000	225.000	225.000	225.000	225.000
		Turbina de Gas Aeroderivada (GNL) 150A	150.00	0.90												135.000	135.000	135.000	135.000
		Turbina de Gas Aeroderivada (GNL) 100A	100.00	0.90													90.000	90.000	90.000
		Turbina de Gas Aeroderivada (GNL) 150B	150.00	0.90													135.000	135.000	135.000
		Turbina de Gas Aeroderivada (GNL) 100B	100.00	0.90														90.000	90.000
		Turbina de Gas Aeroderivada (GNL) 250C	250.00	0.90															225.000
					2435.86	0.00	85.06	427.96	579.16	950.86	950.86	950.86	1225.80	1225.80	1450.80	1675.80	1810.80	2035.80	2125.80

Cuadro N° A2.1 Capacidad Firme Escenario Renovable (Continuación)

Proyectos Solares (Futuros)		Nombre	Capacidad Instalada MW	Potencia Firme MW	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		Solar Fotovoltaica 01	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 02	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 03	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 04	10.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 07	10.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 08	10.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 09	20.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 10	6.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 11	20.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 12	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 13	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 14	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 15	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 16	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 17	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 18	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 19	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 20	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 21	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 22	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 23	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 24	10.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 25	10.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 26	10.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 27	10.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 28	5.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 29	10.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 30	20.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 43	100.00	0.00					0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 34	20.00	0.00						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 32	20.00	0.00						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 33	20.00	0.00						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 35	20.00	0.00						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 41	20.00	0.00							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 42	10.00	0.00							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 36	10.00	0.00								0.00	0.00		0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 37	20.00	0.00											0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 39	20.00	0.00											0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 44	50.00	0.00											0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 45	40.00	0.00											0.00	0.00	0.00	0.00	0.00
		Solar Fotovoltaica 31	5.00	0.00												0.00	0.00	0.00	0.00
		Solar Fotovoltaica 40	10.00	0.00												0.00	0.00	0.00	0.00
		Solar Fotovoltaica 46	20.00	0.00												0.00	0.00	0.00	0.00
		Solar Fotovoltaica 47	20.00	0.00												0.00	0.00	0.00	0.00
		Solar Fotovoltaica 48	20.00	0.00												0.00	0.00	0.00	0.00
		Solar Fotovoltaica 49	10.00	0.00												0.00	0.00	0.00	0.00
		Solar Fotovoltaica 38	20.00	0.00													0.00	0.00	0.00
		Solar Fotovoltaica 50	10.00	0.00													0.00	0.00	0.00
		Solar Fotovoltaica 51	10.00	0.00													0.00	0.00	0.00
		Solar Fotovoltaica 52	10.00	0.00													0.00	0.00	0.00
		Solar Fotovoltaica 53	30.00	0.00														0.00	0.00
		Solar Fotovoltaica 54	10.00	0.00														0.00	0.00
			819.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proyectos Eólicos (Futuros) MW		Nombre	Capacidad Instalada MW	Potencia Firme MW	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		Eólico 1	52.50	0.00		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Eólico 2	15.00	0.00		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Eólico 3	102.00	0.00				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Eólico 4	75.00	0.00							0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Eólico 7	100.00	0.00							0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Eólic 10	120.00	0.00								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Eólico 5	50.00	0.00									0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Eólico 6	100.00	0.00											0.000	0.000	0.000	0.000	0.000
		Eólic 11	130.00	0.00											0.000	0.000	0.000	0.000	0.000
		Eólico 9	123.00	0.00												0.000	0.000	0.000	0.000
		Eólico 8	20.00	0.00												0.000	0.000	0.000	0.000
			887.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proyectos Biomasa (Futuros) MW		Nombre	Capacidad Instalada MW	Potencia Firme MW	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Urbalia Panamá, S.A.	Cerro Patacón		10.00	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
			10.00	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Escenario de Referencia PEN2015-2050					2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Potencia Firme					2028.79	2068.74	2413.94	2568.97	3163.08	3172.20	3176.20	3266.07	3274.58	3499.58	3724.58	3861.81	4086.81	4176.81	4401.81
Demanda Máxima					1705.58	1803.60	1935.88	2065.09	2189.96	2305.43	2441.86	2576.50	2724.97	2882.79	3040.92	3211.86	3397.62	3582.37	3775.90
Balance (MW)					323.20	265.14	478.06	503.88	973.13	866.78	734.34	689.57	549.60	616.79	683.66	649.95	689.19	594.44	625.91
Reserva					18.95%	14.70%	24.69%	24.40%	44.44%	37.60%	30.07%	26.76%	20.17%	21.40%	22.48%	20.24%	20.28%	16.59%	16.58%
Reserva de Conf. 14.69 %					Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple	Cumple

Cuadro N° A2.2: Costos Marginales del Escenario Renovable



Costo Marginal de Demanda \$/MWh													
Año	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dic	Prom
2016	74.82	78.23	82.53	84.87	77.19	78.17	75.37	72.66	72.07	71.27	68.41	65.79	75.11
2017	72.54	76.89	78.51	81.95	78.43	80.86	77.62	75.13	73.70	69.66	66.35	66.09	74.81
2018	78.40	81.99	83.36	86.77	81.46	78.53	76.24	73.63	72.01	69.58	62.58	62.77	75.61
2019	73.03	77.08	78.85	83.00	82.11	78.36	77.03	75.46	75.04	74.58	72.82	70.09	76.45
2020	73.19	73.95	76.60	80.22	76.91	72.04	63.19	61.23	61.10	60.39	55.25	61.00	67.92
2021	68.44	75.78	77.75	81.01	78.26	74.28	71.42	69.74	67.03	63.66	60.05	66.03	71.12
2022	71.91	78.25	79.71	82.86	79.80	77.66	74.98	72.58	70.16	67.49	64.60	68.11	74.01
2023	71.62	78.39	80.96	82.85	80.97	77.69	75.55	73.27	70.26	68.16	64.04	65.18	74.08
2024	73.08	81.37	83.23	85.88	84.14	83.71	81.19	78.72	77.36	74.40	71.48	73.27	78.98
2025	81.23	86.49	87.19	89.07	87.80	87.06	83.71	79.71	75.96	72.38	67.37	72.11	80.84
2026	78.26	86.73	88.99	91.01	90.58	90.09	87.95	86.54	85.91	83.41	79.66	81.21	85.86
2027	85.80	90.32	92.32	94.15	94.05	93.62	91.83	90.14	89.42	87.85	84.92	85.32	89.98
2028	91.38	94.38	95.39	97.01	96.83	95.81	95.30	94.08	93.31	92.12	88.11	88.45	93.51
2029	94.27	96.59	98.21	99.96	99.49	98.49	97.98	97.16	96.77	95.61	93.38	94.39	96.86
2030	97.89	99.99	100.79	102.09	101.76	101.30	101.06	100.41	100.20	99.27	98.02	96.84	99.97

Cuadro N° A2.3: Informe Final de Generación del Escenario Renovable

Informe Final de Generación															
Planta	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
6-Algarrob-H	49.50	48.37	48.65	49.86	48.50	49.57	50.12	49.59	50.40	48.74	50.65	48.21	48.49	50.25	57.11
6-B.Toro-H	0.00	0.00	0.00	0.00	560.94	905.93	908.46	923.92	927.01	913.86	953.18	906.36	897.09	954.85	1029.17
6-B.Totuma-H	20.51	31.86	32.27	32.33	31.91	32.20	32.04	32.43	32.24	32.65	33.02	31.88	31.86	31.96	34.76
6-Baitun-H	373.40	396.32	395.42	396.61	396.49	397.92	397.56	396.77	401.21	393.08	398.53	395.64	397.41	395.58	414.33
6-BajoMina-H	249.62	257.54	257.12	258.44	257.67	258.71	259.32	258.10	260.91	255.90	259.77	257.48	258.71	257.44	270.86
6-Barriles-H	0.00	0.00	0.00	0.00	4.23	4.35	4.33	4.17	4.34	4.26	4.25	4.28	4.20	4.24	4.21
6-Bayano-H	478.50	597.34	648.60	667.76	588.44	596.72	655.32	611.50	575.24	626.95	644.53	618.68	630.94	639.94	673.05
6-BBlancG3-H	0.00	7.85	15.24	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.24	15.24	15.25	15.25
6-BBlanco-H	0.00	88.84	117.44	119.67	117.60	119.38	119.59	117.86	121.44	118.20	121.56	116.58	116.43	119.00	128.93
6-Bonyic-H	153.82	156.96	158.04	155.90	153.70	158.00	156.99	155.07	155.17	155.22	159.25	154.60	154.61	154.73	171.59
6-BToroG3-H	0.00	0.00	0.00	0.00	56.89	112.71	112.83	112.84	112.70	112.70	112.77	112.81	112.84	112.75	112.82
6-Bugaba-H	20.88	20.83	21.18	21.28	20.65	21.38	21.41	20.52	21.31	20.86	21.10	21.28	20.75	20.96	23.23
6-Bugaball-H	29.69	29.41	27.68	27.83	27.68	27.83	27.82	27.42	28.07	27.55	27.61	27.84	27.58	27.74	30.09
6-Burica-H	0.00	0.00	0.00	0.00	282.31	288.56	287.42	284.84	286.90	288.37	290.94	278.62	282.17	287.06	311.56
6-C.Blanca-H	0.00	0.00	0.00	0.00	0.00	27.40	27.75	27.83	28.35	28.17	28.43	26.91	27.76	27.41	27.33
6-Chani-H	848.40	895.53	880.83	908.72	876.53	905.31	901.70	914.65	906.73	904.94	936.05	889.30	885.75	929.90	1092.55
6-Chuspa-H	0.00	0.00	45.40	45.29	45.50	44.98	45.67	45.47	46.22	45.71	45.71	44.64	45.11	45.55	49.25
6-Cochea-H	64.57	63.49	65.37	65.07	63.69	65.65	65.16	63.87	64.96	64.17	66.64	62.86	63.41	63.47	70.33
6-Colorado-H	0.00	0.00	0.00	0.00	31.08	31.96	31.81	30.60	31.84	31.26	31.24	31.43	30.84	31.17	30.94
6-Concepci-H	58.38	60.56	60.53	60.95	60.29	60.63	61.24	60.54	61.33	60.02	60.65	60.44	60.88	60.37	64.14
6-Cotito-H	0.00	0.00	0.00	0.00	0.00	0.00	21.27	20.30	21.28	20.82	20.81	20.98	20.49	20.73	20.58
6-Cuchilla-H	0.00	13.50	40.50	40.31	41.21	40.49	40.87	40.88	41.64	41.41	40.82	39.99	40.87	41.54	43.36
6-Dolega-H	15.01	14.89	15.10	15.15	15.18	15.22	15.22	15.21	15.26	15.03	15.26	15.16	15.18	15.16	15.48
6-ElAlto-H	275.61	278.85	279.02	278.93	276.88	280.29	281.16	276.68	279.88	278.12	281.42	275.56	278.88	277.59	301.54
6-ElFraile-H	28.23	29.40	30.12	29.96	29.16	29.40	29.69	29.60	30.38	29.70	30.33	29.31	29.41	29.31	32.00
6-ElRecodo-H	0.00	0.00	0.00	0.00	34.13	42.67	42.95	42.72	43.90	43.79	43.24	42.05	42.60	42.56	42.36
6-Esperanz-H	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6-Estí-H	608.69	612.31	618.82	625.78	610.33	611.12	617.17	603.14	619.32	611.59	624.52	604.62	613.64	623.50	661.90
6-Estrella-H	287.99	273.82	275.79	277.46	272.22	278.37	278.99	275.01	282.80	272.92	278.64	270.68	267.61	275.01	274.03
6-Fortuna-H	1568.28	1593.90	1635.16	1680.22	1593.87	1625.43	1644.97	1634.42	1627.05	1597.96	1658.07	1572.85	1568.37	1651.28	1641.32
6-Gualaca-H	123.47	124.76	126.13	127.23	124.42	124.57	125.60	123.01	126.23	124.46	127.32	123.29	124.82	126.85	135.04
6-L.Cruces-H	44.55	46.91	46.69	46.76	45.52	47.87	46.96	46.36	47.04	46.60	47.30	44.14	44.76	45.99	50.92
6-L.Valles-H	334.38	321.82	328.49	330.15	326.88	331.57	333.01	325.87	334.10	328.06	333.18	322.14	320.73	325.60	326.18
6-LaHerrad-H	0.00	0.00	0.00	0.00	21.43	22.20	22.23	21.29	22.03	21.66	21.92	22.09	21.40	21.50	21.59
6-LaHuaca-H	0.00	0.00	0.00	0.00	43.60	44.22	43.44	43.88	42.50	43.36	42.78	43.63	42.08	43.80	42.68
6-LaPotra-H	119.93	122.74	117.74	117.95	117.99	118.06	118.23	117.77	119.16	116.81	118.35	117.75	118.30	117.70	122.99
6-LCruceG3-H	8.00	8.03	8.04	8.05	8.05	8.04	8.04	8.03	8.05	8.04	8.05	8.05	8.04	8.04	8.04
6-Lorena-H	163.50	164.88	166.91	166.97	165.48	165.07	166.57	164.21	167.58	164.60	167.81	164.41	165.33	167.05	176.90
6-LPotraG4-H	17.20	16.93	17.48	17.48	17.48	17.48	17.48	17.48	17.48	17.48	17.48	17.48	17.48	17.47	17.48
6-M.Lirio-H	253.39	261.26	257.37	258.81	257.89	259.93	260.50	258.05	260.29	257.36	262.27	256.35	259.18	257.39	276.78
6-M.Monte-H	10.28	11.04	11.02	11.06	11.22	11.16	11.18	11.28	11.23	11.06	11.01	11.29	11.10	11.11	11.11
6-Macano-H	17.92	18.82	18.60	18.85	19.31	18.90	18.83	18.52	19.27	18.86	19.01	19.07	18.42	18.84	20.70
6-Mendre2-H	37.47	37.37	37.56	37.60	37.74	37.54	37.83	37.41	38.13	37.52	38.03	37.29	37.20	37.65	39.82
6-Mendre-H	112.06	110.39	109.95	111.79	110.55	111.24	112.13	109.44	112.90	109.86	112.61	108.82	108.76	111.21	118.99
6-MiniChan-H	65.68	67.40	68.90	69.04	68.96	69.03	68.89	68.88	69.05	68.97	69.01	68.93	68.90	68.99	68.90
6-OjoAgua-H	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.08	34.39	32.74	33.81	32.20	32.53	33.06	33.12
6-P.Ancho-H	33.79	34.76	35.04	35.49	35.32	35.64	35.37	35.27	35.67	35.97	36.00	34.51	35.01	35.09	37.31
6-Pando-H	0.00	95.54	160.16	163.06	161.56	163.38	163.78	161.49	164.32	163.29	165.43	158.52	160.69	161.37	178.07
6-Pedrega2-H	51.91	51.23	51.01	51.62	51.91	50.85	51.32	51.54	52.18	51.44	51.69	51.25	50.55	51.98	54.71
6-Pedregal-H	101.44	97.98	98.26	99.12											