

Anexo 16

Salidas del Caso REGMHTTLA8: Medio Hidrotérmico con Carbón, Proyectos Eólicos y Gas vía Gasoducto a partir de 2015.

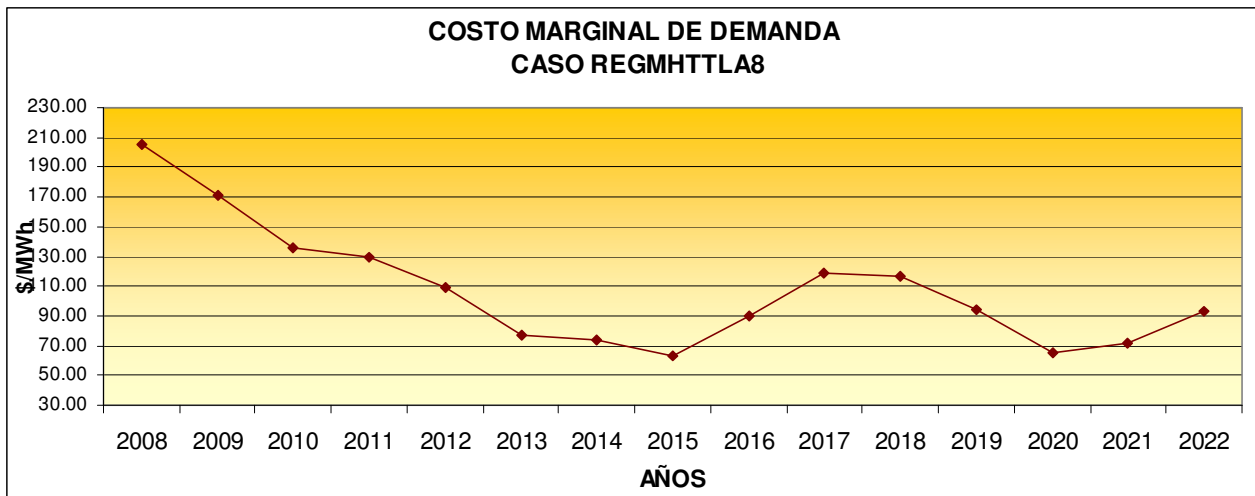


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CAPACIDAD FIRME (MW) - REGMITL88		Capacidad Efectiva	Factor Disponib.	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EGE FORTUNA		300		284	284	284	284	284	284	284	284	284	284	284	284	284	284	284
Fortuna		300		284	284	284	284	284	284	284	284	284	284	284	284	284	284	284
AES PANAMA		482		305	305	305	305	305	305	305	305	305	305	305	305	305	305	305
Bayano		260		160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
La Estrella		47		16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Los Valles		55		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Canjilonés		120		112	112	112	112	112	112	112	112	112	112	112	112	112	112	112
BLM CORP.		440		252	252	252	263	263	263	263	263	263	263	263	263	263	263	263
Bahia las Minas 2		40	0.83	33	33	33	0	0	0	0	0	0	0	0	0	0	0	0
Bahia las Minas 3		40	0.71	28	28	28	0	0	0	0	0	0	0	0	0	0	0	0
Bahia las Minas 4		40	0.89	36	36	36	0	0	0	0	0	0	0	0	0	0	0	0
Bahia las Minas Carbón 2		40	0.90	0	0	0	36	36	36	36	36	36	36	36	36	36	36	36
Bahia las Minas Carbón 3		40	0.90	0	0	0	36	36	36	36	36	36	36	36	36	36	36	36
Bahia las Minas Carbón 4		40	0.90	0	0	0	36	36	36	36	36	36	36	36	36	36	36	36
Ciclo Combinado BLM Diesel Marino		160	0.37	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
Ciclo Combinado BLM GAS NATURAL		160	0.37	0	0	0	0	0	0	0	155	155	155	155	155	155	155	155
AUTORIDAD DEL CANAL DE PANAMA (ACP)		175		80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
ACP		175		80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
TURBINAS DE GAS PANAMA (EGESA)		43		39	39	39	39	39	39	39	39	39	39	0	0	0	0	0
EGESA		43	0.90	39	39	39	39	39	39	39	39	39	39	0	0	0	0	0
COPESA		44		43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
Copesa		44	0.98	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
PAN AM GENERATING		96		92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Pan_Am		96	0.96	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
PEDREGAL POWER PROJECT		53.5		52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Pacora PP		53.5	0.97	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
PROYECTOS HIDROELECTRICOS		695		0	0	0	164	239	346	349	349	349	349.22	349.22	349.22	349.22	349.22	349.22
Gualaca 1 - Gualaca		28	22.2	0	0	0	22	22	22	22	22	22	22	22	22	22	22	22
Gualaca 2 - Lorena		36	30.62	0	0	0	0	31	31	31	31	31	31	31	31	31	31	31
Gualaca 3 - Prudencia		56	50	0	0	0	0	50	50	50	50	50	50	50	50	50	50	50
Pedregalito		20	3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pando		33	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monte Lirio		52	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
El Alto		60	24.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bonyic		30	18.5	0	0	0	19	19	19	19	19	19	19	19	19	19	19	19
Bajo Mina		52	29	0	0	0	0	29	29	29	29	29	29	29	29	29	29	29
Chan 1 (Chan 75)		223	118.9	0	0	0	119	119	119	119	119	119	119	119	119	119	119	119
Mandre		19	4	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4
Batón		86	57	0	0	0	0	57	57	57	57	57	57	57	57	57	57	57
Tabasará II		35	16	0	0	0	0	16	16	16	16	16	16	16	16	16	16	16
Barro Blanco		20	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sindigo		10	3	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3
PROYECTOS TERMOELECTRICOS		3334		0	120	230	455	473	473	473	473	473	473	708	708	943	943	943
Pana Power		68	0.91	0	0	62	62	62	62	62	62	62	62	62	62	62	62	62
Motores Media Velocidad-2		100	0.90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Motores Media Velocidad-3		100	0.90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Motores Media Velocidad-4		100	0.90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Motores Media Velocidad-1F		50	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Motores Media Velocidad-2F		50	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turbina de Gas Natural-1		50	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turbina de Gas Natural-2		50	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ciclo Combinado de Gas Natural-1		100	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ciclo Combinado de Gas Natural-2		100	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ciclo Combinado de Gas Natural-3		100	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ciclo Combinado de Gas Natural-1		250	0.94	0	0	0	0	0	0	0	0	0	0	235	235	235	235	235
Ciclo Combinado de Gas Natural-2		250	0.94	0	0	0	0	0	0	0	0	0	0	0	235	235	235	235
Ciclo Combinado de Gas Natural-2		250	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Edifica TOABRE		120	0.15	0	0	0	0	0	18	18	18	18	18	18	18	18	18	18
Edifica Santa Fe Energy		81	0.15	0	0	0	0	12	12	12	12	12	12	12	12	12	12	12
Termo Colón		130	0.85	0	0	111	111	111	111	111	111	111	111	111	111	111	111	111
El Giral		50	0.85	0	43	43	43	43	43	43	43	43	43	43	43	43	43	43
Cativá		83	0.93	0	77	77	77	77	77	77	77	77	77	77	77	77	77	77
Carbón 1a		150	0.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbón 1b		150	0.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbón 2a		250	0.85	0	0	0	0	213	213	213	213	213	213	213	213	213	213	213
Carbón 2b		250	0.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbón 2c		250	0.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARBÓN GLOBELEG		270	0.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
POTENCIA FIRME				1147	1267	1377	1552	1852	1977	1980	1980	1980	1980	1980	2176	2176	2411	2411
Demanda Máxima de Generación				1081	1185	1281	1357	1431	1506	1581	1657	1738	1823	1912	2005	2103	2203	2306
BALANCE				66	81	96	195	421	471	399	323	242	157	264	171	309	209	105
RESERVA				6.13%	6.87%	7.47%	14.39%	29.40%	31.27%	25.23%								

CUADRO No.A4.1: Costos marginales del caso REGMHTTLA8

COSTO MARGINAL DE DEMANDA EN \$/MWh													
Año	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dic	Prom
2008	203.27	209.99	205.54	235.06	207.12	209.22	210.03	213.81	223.34	190.76	177.13	173.99	204.94
2009	171.09	175.73	179.31	237.01	199.34	183.78	176.49	164.92	156.00	144.24	133.32	134.35	171.30
2010	129.68	139.43	141.89	153.47	154.22	138.24	130.27	131.18	132.02	129.62	128.75	128.12	136.41
2011	125.76	127.89	154.05	176.83	138.31	118.02	113.23	119.67	115.59	116.26	119.10	124.32	129.09
2012	124.11	104.07	145.48	163.88	130.99	119.92	94.50	107.61	94.43	75.69	67.85	77.35	108.82
2013	94.08	109.49	131.97	162.23	128.95	41.22	36.67	39.26	54.20	38.08	38.33	51.44	77.16
2014	68.60	75.29	112.17	137.64	124.46	71.36	48.41	78.44	38.00	50.85	35.76	46.52	73.96
2015	48.51	61.60	77.70	98.15	84.56	63.44	61.16	62.11	52.54	46.14	46.87	60.94	63.64
2016	97.65	120.05	130.03	141.82	116.03	74.84	67.99	73.04	48.41	68.57	67.56	78.51	90.38
2017	100.72	145.80	146.84	172.34	145.14	123.90	115.08	103.45	82.01	87.78	92.30	110.79	118.85
2018	118.00	123.48	157.82	167.58	169.69	132.95	93.38	97.81	76.87	80.62	86.44	94.63	116.61
2019	97.49	108.03	144.70	142.31	129.30	118.72	66.71	86.23	49.25	66.96	55.11	67.78	94.38
2020	57.46	59.64	61.14	109.29	84.82	60.55	59.96	59.53	57.93	57.06	56.67	56.97	65.09
2021	57.84	60.00	76.43	97.26	103.68	86.16	62.18	76.17	59.25	60.79	59.75	59.64	71.59
2022	67.40	87.47	134.10	129.68	115.06	92.54	86.42	86.79	70.12	78.83	81.14	87.61	93.10
Prom	104.11	113.86	133.28	154.97	135.45	108.99	94.83	100.00	87.33	86.15	83.07	90.20	



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CUADRO No. A4.2: Informe final de generación del caso REGMHTTLA8

CASO : REGMHTTLA8															
Informe Final de Generación en GWh															
Planta	Total por año														
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fortuna	1604.5	1544.5	1555.1	1849.2	1583.8	1593.3	1638.1	1648.2	1572.3	1539.1	1603.6	1511.9	1521.1	1657.2	1611.2
Bayano	542.2	516.48	562.17	766.23	530.33	381.32	561.78	426.27	511.89	466.52	519.75	412.06	411.64	575.43	518.26
La Estrella	224.65	246.53	259.74	244.93	252.71	258.36	253.03	239.56	246.61	226.75	256.72	241.83	232.62	241.35	267.98
Los Valles	275.38	297.85	292.19	286.82	294.41	302.93	291.18	277.62	295.79	266.35	296	281.78	281.14	279.13	308.48
Estí	902.24	905.58	913.3	925.16	891.86	890.81	911.06	904.9	898.08	888.1	905.7	888.77	910.39	900.88	924.34
Gualaca	0	0	0	183.17	176.97	176.99	181.38	179.85	178.41	176.89	179.92	176.7	180.94	179.16	183.11
Lorena	0	0	0	244.95	244.98	251.07	248.94	246.95	244.85	249.04	244.58	250.39	247.99	253.44	
Prudencia	0	0	0	0	367.8	381.62	377.69	375.6	374.43	376.67	372.9	378.25	372.02	384.64	
Chan I	0	0	0	1010.9	1272	1339.7	1300.5	1332.2	1280.2	1237.3	1255.3	1253	1275.5	1201.8	1368.5
Bonyic	0	0	0	172.03	171.67	177.59	173.15	178.6	168.36	165.73	171.26	165.79	170.3	168.68	170.8
Bajo de Mina	0	0	0	349.71	347.17	354.33	345.13	351.62	354.19	350.6	352.13	348.27	347.15	354.85	
Siíndigo	0	0	0	0	0	57.76	55.46	59.827	56.527	56.499	54.987	53.655	57.783	56.884	
Mendre	0	0	0	114.25	115.06	111.25	115.54	116.1	115.56	108.02	108.16	108.41	108.1	112.93	114.69
Baitún	0	0	0	0	622.71	632.92	605.32	617.66	624.01	617.14	621.62	610.15	615.2	618.34	
Tabasará II	0	0	0	165.95	161.25	170.07	155.89	171.44	172.14	167.02	157.32	171.07	154.94	174.6	
BLM #2	199.69	86.441	0	0	0	0	0	0	0	0	0	0	0	0	0
BLM #3	197.66	84.433	0	0	0	0	0	0	0	0	0	0	0	0	0
BLM #4	193.55	83.523	0	0	0	0	0	0	0	0	0	0	0	0	0
Ciclo-C BLM	654.44	258.78	8.0804	24.223	8.9594	6.9553	0	0	0	0	0	0	0	0	0
Copesa	70.06	12.887	0	0	1.2679	0	0	0	0	0	0	0	0	0	2.5357
EGESA-TG	5.0632	3.6446	0	0	0	0	0	0	0	0	0	0	0	0	0
PanAm	735.81	673.71	525.25	259.91	145.57	50.354	28.186	19.442	34.357	56.962	112.5	70.355	14.933	14.472	45.78
BLM-Carbón	0	0	946.08	946.08	894.54	584.18	718.62	736.36	820.56	860.35	881.94	901.86	906.17	932.32	931.73
CB 250A	0	0	0	0	1804.6	1511.8	1582.2	1680.3	1711.7	1774.2	1809.6	1820.5	1848.7	1852.9	1857.5
CCGD-BLM	0	0	0	0	0	0	0	868.21	957.2	1034.8	1072.5	959.77	717.21	853.35	926.93
CCGN 250A	0	0	0	0	0	0	0	0	0	0	1605.9	1657.7	1770.3	1769	
CCGN 250B	0	0	0	0	0	0	0	0	0	0	0	0	1365	1546.2	1596
PACORA-PP	421.8	418.5	409.45	289.22	134.66	57.383	60.763	27.312	54.039	79.306	124.36	75.564	21.491	24.414	58.884
ACP1	339.54	339.54	338.48	334.64	257.88	113.22	127.74	82.082	124.82	205.76	223.69	153	33.38	74.199	137.88
ACP 2	58.539	33.051	3.7681	7.6651	4.5599	2.0747	0.2318	0.6955	0.937	1.7137	5.1166	2.8174	0.2318	0.4133	2.6984
ACP 3	3.0926	3.8856	0	0	0	0	0	0	0	0	0	0	0	0	1.0972
ACP 4	86.795	46.796	2.0152	4.6329	6.5302	3.1046	0.3974	0.8244	1.1009	2.4324	8.4702	4.3134	0.3974	0.5432	4.0332
El Giral	105.94	364.17	261.43	143.51	82.298	48.699	40.489	36.951	46.758	51.899	75.26	54.086	35.736	38.082	53.142
T. Cativá	145.68	679.54	629.43	416.33	228.08	126.15	116	93.597	121.95	155.13	209.85	156.12	90.407	89.605	116.73
Termo Colón	0	565.33	960.47	828.78	535.98	223.87	225.89	122.48	191.48	298.75	473.45	253.09	71.778	114.16	230.65
Pana Power	0	0	2.1073	2.5532	2.1073	2.1073	0	0	0	0	0	0	0	0	6.6571
Santa Fe Energy	0	0	0	0	695.07	690.84	691.33	691.67	688.69	692.1	693.49	695.13	692.24	694.4	693.87
Toabré	0	0	0	0	1027.6	1028.2	1029.5	1027.9	1029.8	1029.6	1030.3	1030.1	1030.5	1028.8	
Total Hidro	3549	3511	3583	5553	6049	6976	7273	7092	7090	6901	7113	6844	6904	7112	7310
Total Term.	3217.7	3654.2	4086.6	3257.5	4107	2729.9	2900.5	3668.3	4064.9	4521.3	4996.7	6057.4	6763.1	7311	7741.2
Total Eólico	0	0	0	0	695.07	1718.4	1719.5	1721.2	1716.6	1721.9	1723.1	1725.4	1722.3	1724.9	1722.7
Total Gener	6767	7165	7669	8810	10851	11424	11894	12481	12872	13144	13833	14627	15389	16148	16774
Import.	168	338	496	211	16	15	43	38	31	69	46	49	54	35	43
Export.	159	170	207	605	1971	2056	2064	2151	2007	1762	1847	2034	2164	2250	2210
Pérdidas	5	10	15	6	0	0	1	1	1	2	1	1	2	1	1
Demanda	6773	7323	7944	8410	8896	9383	9872	10368	10895	11449	12031	12641	13278	13931	14606
Déficit	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

