

2. Energy Supply

Electricity Demand Forecast For Samui Island Time Series Analysis

INTRODUCTION

Samui is the second largest island located in the Gulf of Thailand, and it is a very popular destination for visitors from around the world. Less than one hour's flying time from Bangkok, the island has wonderful beaches, waterfalls, forests, and the potential to remain one of the world's most popular destinations for vacations. It is expected that the island will enjoy unprecedented growth in the next decade, which seems to be a good news in terms of increased wealth and greater employment for the island and the country. However, the main problem facing Samui currently is whether it could maintain in a position to support growth due to its limited natural resources and infrastructures.

The Provincial Electricity Authority (PEA) is in charge of power distribution and customer services on Samui. At the beginning of development in 1960, a small diesel power plant had been used as a main power production supplying electricity for the whole island; however, it was shut down later due to its uneconomical operating cost. Since 1988, the first 33 KV submarine cable has been installed to transmit electrical power from Khanom Power Plant in Nakhon Sri Thammarat province (approximately 25 kilometers) to the island. This transmission line has become a main bloodline supplying electricity to the island with capacity of 18 MW for several years. Due to the rapid growth in economic development, electricity demand had exceeded its capacity. Consequently since 2000, the new 115 KV submarine cable has been installed adding up electricity power about 55 MW to the island. As a result, the total power supply capacity on the island has become 73 MW. However, it is expected that the second transmission cable

could support growth just for next couple years. Presently, the PEA has planned to run another 115 KV submarine cable from the mainland and it is expected to be finished by the end of 2006. The extension project will increase power capacity to 128 MW.

Since the power supply on Samui completely relies on the two submarine cables—33 KV and 115 KV, system reliability has become a critical problem for the island. Recently, the 115 KV submarine cable was damaged resulting in a major power cut for three days during September 15 – 18, 2005. During the maintenance period, more than 30 units of the PEA's mobile generators from other provinces were brought in to minimize affect on Samui people and businesses. Large hotels and resorts had to run their standby generators. In addition, the PEA had asked everyone for cooperation to reduce the unnecessary power by turning off the air-conditioning units in order to avoid blackout.

The objective of this section is to forecast the electricity and energy demand for Samui in the next 20 years (2005 – 2025). The demand forecast will be useful for the authorities in energy sector and also the policy makers to make a proper decision and long-term planning. In this analysis, a time series technique will be used to construct a demand forecast model. As a result, the forecast demand will be in term of:

- Electricity peak demand in MW
- Energy demand and energy produced in KWh/Y
- Natural gas demand for electricity generation in MMBTU/Y and MMSCF/Y

HISTORICAL DATA

Historical peak demand and energy demand retrieved from the PEA during the previous five years are shown in Table-1 and Table-2, respectively. Note that the energy demand figures shown in the table represent only the sum of customers' demand measured

via the PEA's meters. In fact, energy loss in transmission, energy demand of free-of-charge customers, and energy supply for public lighting are not included. Generally, this portion accounts for approximately 10% of the energy demand figure. Due to the rapid growth in numbers of tourists, electricity demand on the island has increased dramatically during the last several years. According to Table-1 and Table-2, peak demand and energy demand at the end of 2000 are 28.4 MW and 9,266,834 KWh/M, respectively. Consequently, peak demand in December 2004 is 55.47 MW while energy demand for the same period is 19,744,608 KWh/M. Apparently, both peak and energy demand figures turn double within only four years.

TABLE1 : HISTORICAL PEAK DEMAND

Year	Peak Demand (MW)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	19.60	14.40	14.50	19.60	19.20	17.60	25.40	26.90	26.30	24.90	22.70	28.40
2001	28.10	28.90	28.90	31.20	29.30	27.20	29.04	30.40	25.66	27.00	30.00	31.34
2002	29.19	31.51	33.85	33.98	33.61	32.11	34.25	34.25	33.14	32.28	31.81	37.07
2003	35.79	37.24	37.84	40.44	37.32	35.87	37.41	40.57	37.03	37.15	35.40	39.63
2004	40.00	42.24	44.66	48.68	46.87	44.53	46.03	49.18	47.09	45.73	44.11	55.47
2005	55.04	55.59	57.60	57.30	57.30	55.60	n/a	n/a	n/a	n/a	n/a	n/a

Note: 1. Historical data retrieved from PEA

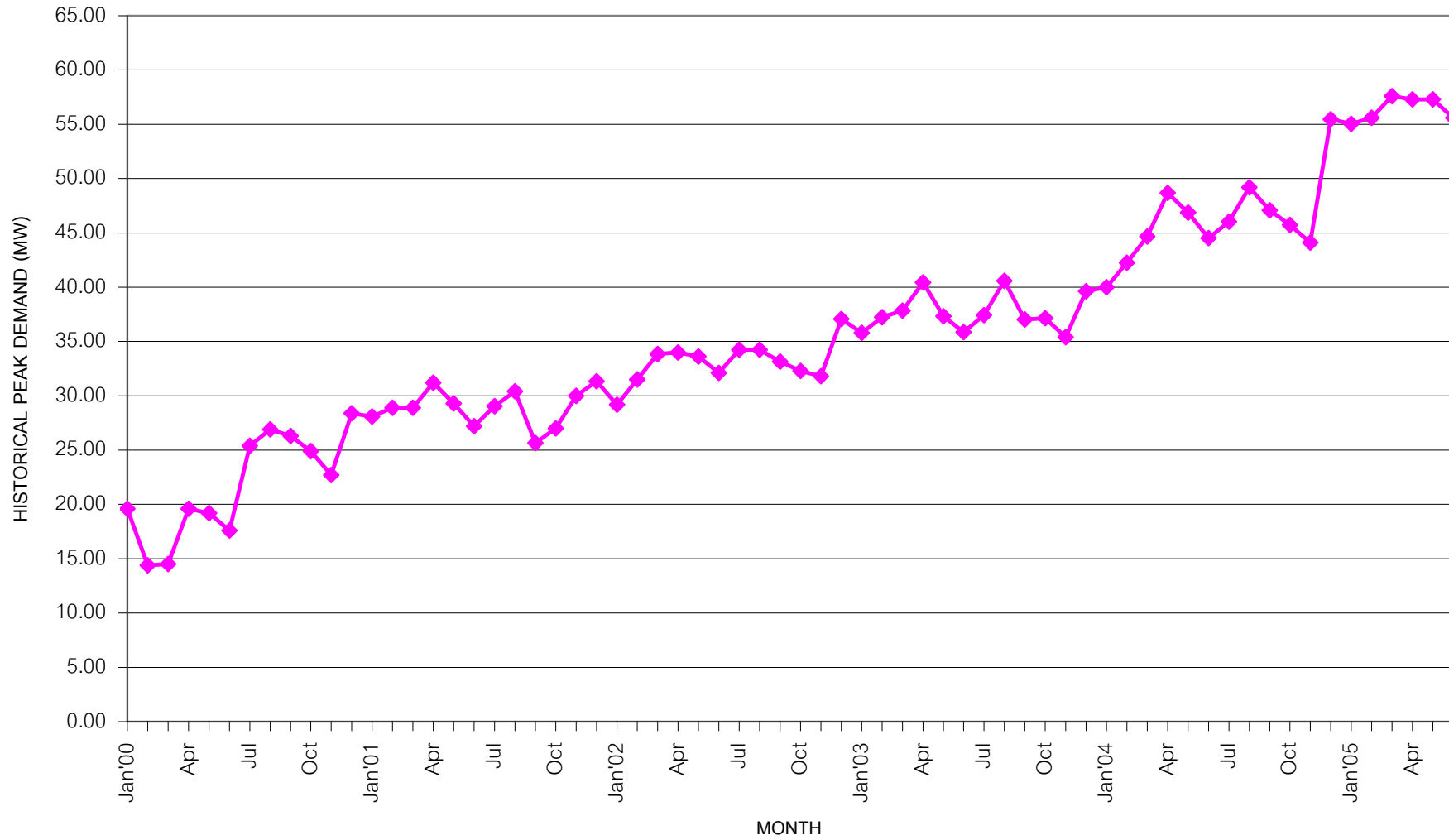
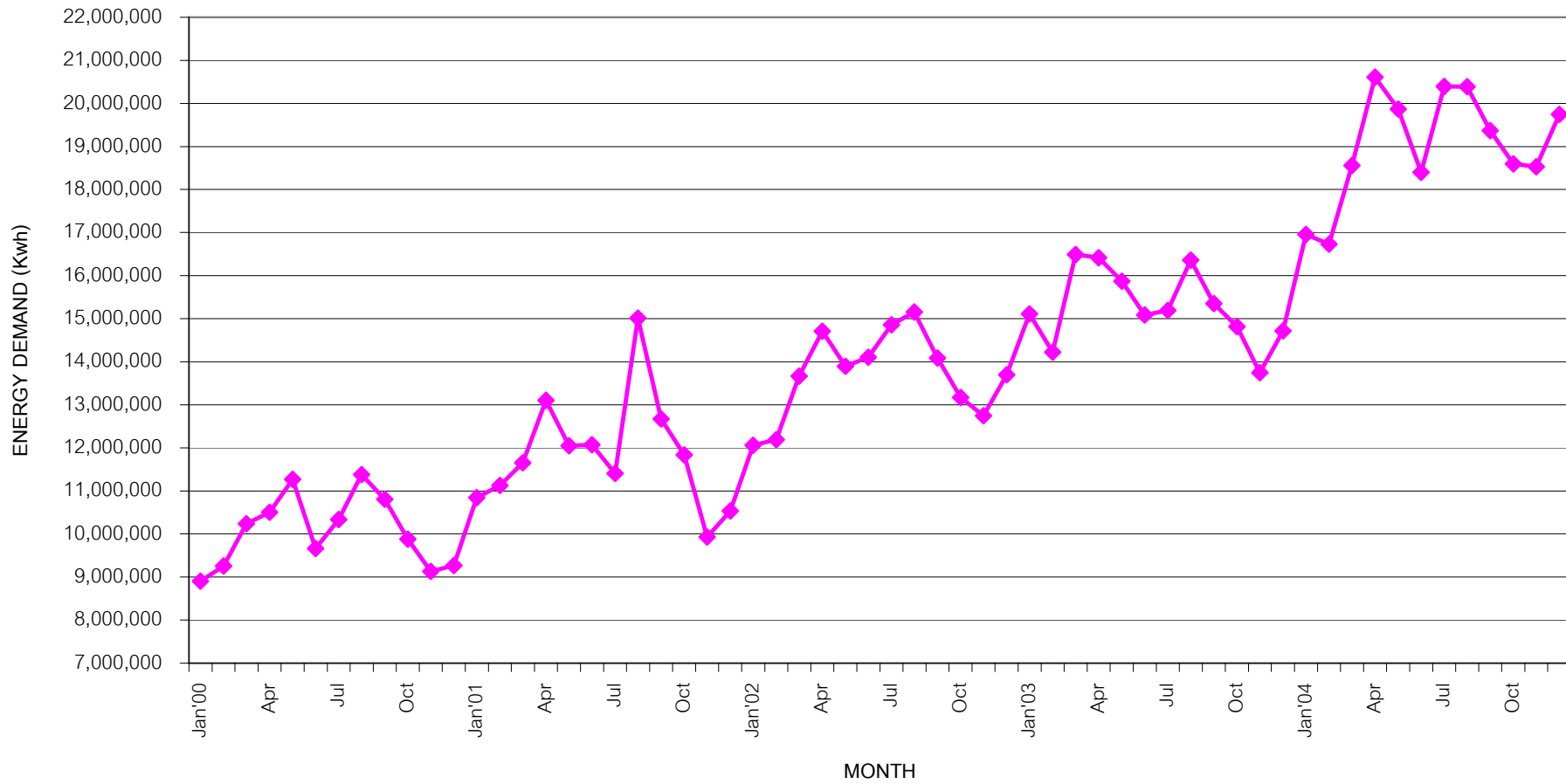


TABLE 2 : HISTORICAL ENERGY DEMAND

Year	Energy Demand (KWh)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	8,901,386	9,254,853	10,238,752	10,500,930	11,269,388	9,665,585	10,334,468	11,378,227	10,807,471	9,881,138	9,131,285	9,266,834
2001	10,841,857	11,125,006	11,652,998	13,105,384	12,048,388	12,069,374	11,404,996	15,009,773	12,670,613	11,835,918	9,930,840	10,532,002
2002	12,061,796	12,188,346	13,664,104	14,711,718	13,896,592	14,105,202	14,857,321	15,157,001	14,085,945	13,171,685	12,745,221	13,699,752
2003	15,112,746	14,222,377	16,486,236	16,412,590	15,874,263	15,085,247	15,193,847	16,360,328	15,349,950	14,812,861	13,744,309	14,715,300
2004	16,957,287	16,729,290	18,557,540	20,611,543	19,866,680	18,400,712	20,391,498	20,385,625	19,368,068	18,596,338	18,527,645	19,744,608

Note:

1. Historical data retrieved from PEA
2. Energy demand figures above represent only demand of the customers measured via PEA's meters.
Energy loss in transmission / distribution system and energy demand of public lighting are not included (approximately 10% of energy demand).



FORECAST METHODOLOGY

A time series is a collection of data recorded over a period of time weekly, monthly, or yearly. In general, there are four components to a time series: 1) the secular trend, 2) the cyclical variation, 3) the seasonal variation, and 4) the irregular variation. To identify a long-term trend, it is necessary to remove all the variations in a time series by various smoothing techniques. Once the secular trend is identified, forecast for future values of the time series is easily obtained by extension the period of time. In this analysis, a moving average method will be used in smoothing out a time series so that a typical monthly index can be identified. Then, the historical data will be deseasonalized before performing a linear regression analysis. As a result, the linear regression for the trend line of the peak demand and energy demand can be described by the following equations.

$$\text{Deseasonalized Peak Demand (MW)} = 17.6677 + 0.5357 (t) (g) \dots \dots \dots (1)$$

$$\text{Deseasonalized Energy Demand (KWh)} = 8,671,996 + 173,952 (t) (g) \dots \dots \dots (2)$$

Where, t = period of time, monthly

g = growth factor

According to the regression analysis, the R² values of the peak demand and energy demand regression are 0.9202 and 0.8811, respectively. The relatively high R² values demonstrate that the linear regression equation is a very good explanation of the previous demand. By using the linear equations to predict future values, the hidden assumption is that the trend of future demand will be in line with that of the past. However, this might not always be practical in some circumstances when there is a major change in economy or social. In fact, after the Asian tsunami tragedy on December 26, 2004, it is expected that investors will be more diversified and will shift some of their investments from Andaman coastal region to the Gulf of Thailand. Thus, according to the equations above, growth factor (g) has been added to reflex an expected growth in economic development when comparing with the past. In this analysis, growth factors for normal, low, and high growth economy are 1.00, 0.80, and 1.20, respectively. Lastly, the monthly forecast demand can be obtained by multiplying the predicted deseasonalized data with the monthly typical index in order to reflex seasonal variation.

PEAK DEMAND FORECAST FOR SAMUI ISLAND

TIME SERIES ANALYSIS

Linear Regression Equation for Trend Line:
$Y' = 17.6677 + 0.5357(t)$
where, Y' = Predicted Deseasonalized Peak Demand (MW)
t = Period of Time, Monthly

Modified Linear Regression Equation for Trend Line:
$Y' = 17.6677 + 0.5357(t)(g)$
where, Y' = Predicted Deseasonalized Peak Demand (MW)
t = Period of Time, Monthly
g = Growth Factor

	Growth Factor, g
Low Growth	0.80
Normal Growth	1.00
High Growth	1.20

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
2005	Jul	67	1.0207	46.38	53.56	60.74	47.34	54.67	62.00
	Aug	68	1.0435	46.81	54.10	61.38	48.85	56.45	64.05
	Sep	69	0.9820	47.24	54.63	62.02	46.39	53.65	60.90
	Oct	70	1.0037	47.67	55.17	62.67	47.84	55.37	62.90
	Nov	71	0.9455	48.10	55.70	63.31	45.47	52.67	59.86
	Dec	72	1.0600	48.52	56.24	63.95	51.43	59.61	67.79
2006	Jan'06	73	0.9810	48.95	56.77	64.59	48.02	55.69	63.37
	Feb	74	0.9854	49.38	57.31	65.24	48.66	56.47	64.28
	Mar	75	0.9821	49.81	57.84	65.88	48.92	56.81	64.70

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Apr	76	1.0434	50.24	58.38	66.52	52.42	60.91	69.41
	May	77	1.0082	50.67	58.92	67.17	51.08	59.40	67.72
	Jun	78	0.9447	51.10	59.45	67.81	48.27	56.16	64.06
	Jul	79	1.0207	51.52	59.99	68.45	52.59	61.23	69.87
	Aug	80	1.0435	51.95	60.52	69.09	54.21	63.16	72.10
	Sep	81	0.9820	52.38	61.06	69.74	51.44	59.96	68.48
	Oct	82	1.0037	52.81	61.59	70.38	53.00	61.82	70.64
	Nov	83	0.9455	53.24	62.13	71.02	50.34	58.74	67.15
Dec	84	1.0600	53.67	62.67	71.67	56.89	66.43	75.96	
2007	Jan'07	85	0.9810	54.10	63.20	72.31	53.07	62.00	70.93
	Feb	86	0.9854	54.52	63.74	72.95	53.73	62.81	71.88
	Mar	87	0.9821	54.95	64.27	73.59	53.97	63.12	72.28
	Apr	88	1.0434	55.38	64.81	74.24	57.78	67.62	77.46
	May	89	1.0082	55.81	65.34	74.88	56.27	65.88	75.49
	Jun	90	0.9447	56.24	65.88	75.52	53.13	62.23	71.34
	Jul	91	1.0207	56.67	66.42	76.17	57.84	67.79	77.75
	Aug	92	1.0435	57.09	66.95	76.81	59.58	69.86	80.15
	Sep	93	0.9820	57.52	67.49	77.45	56.49	66.27	76.05
	Oct	94	1.0037	57.95	68.02	78.09	58.16	68.27	78.38
	Nov	95	0.9455	58.38	68.56	78.74	55.20	64.82	74.45
	Dec	96	1.0600	58.81	69.09	79.38	62.34	73.24	84.14
2008	Jan'08	97	0.9810	59.24	69.63	80.02	58.11	68.31	78.50
	Feb	98	0.9854	59.67	70.17	80.67	58.79	69.14	79.49
	Mar	99	0.9821	60.09	70.70	81.31	59.02	69.44	79.85
	Apr	100	1.0434	60.52	71.24	81.95	63.15	74.33	85.50
	May	101	1.0082	60.95	71.77	82.59	61.45	72.36	83.27
	Jun	102	0.9447	61.38	72.31	83.24	57.98	68.31	78.63
	Jul	103	1.0207	61.81	72.84	83.88	63.09	74.36	85.62
	Aug	104	1.0435	62.24	73.38	84.52	64.95	76.57	88.20

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Sep	105	0.9820	62.67	73.92	85.17	61.54	72.58	83.63
	Oct	106	1.0037	63.09	74.45	85.81	63.33	74.72	86.12
	Nov	107	0.9455	63.52	74.99	86.45	60.06	70.90	81.74
	Dec	108	1.0600	63.95	75.52	87.09	67.79	80.05	92.32
2009	Jan'09	109	0.9810	64.38	76.06	87.74	63.16	74.61	86.07
	Feb	110	0.9854	64.81	76.59	88.38	63.86	75.47	87.09
	Mar	111	0.9821	65.24	77.13	89.02	64.07	75.75	87.43
	Apr	112	1.0434	65.67	77.67	89.67	68.51	81.03	93.55
	May	113	1.0082	66.09	78.20	90.31	66.64	78.84	91.05
	Jun	114	0.9447	66.52	78.74	90.95	62.84	74.38	85.92
	Jul	115	1.0207	66.95	79.27	91.59	68.34	80.92	93.49
	Aug	116	1.0435	67.38	79.81	92.24	70.31	83.28	96.25
	Sep	117	0.9820	67.81	80.34	92.88	66.59	78.90	91.20
	Oct	118	1.0037	68.24	80.88	93.52	68.49	81.18	93.86
	Nov	119	0.9455	68.67	81.42	94.17	64.92	76.98	89.03
	Dec	120	1.0600	69.09	81.95	94.81	73.24	86.87	100.49
2010	Jan'10	121	0.9810	69.52	82.49	95.45	68.20	80.92	93.63
	Feb	122	0.9854	69.95	83.02	96.09	68.93	81.81	94.69
	Mar	123	0.9821	70.38	83.56	96.74	69.12	82.06	95.00
	Apr	124	1.0434	70.81	84.09	97.38	73.88	87.74	101.60
	May	125	1.0082	71.24	84.63	98.02	71.82	85.32	98.83
	Jun	126	0.9447	71.67	85.17	98.67	67.70	80.45	93.20
	Jul	127	1.0207	72.09	85.70	99.31	73.59	87.48	101.37
	Aug	128	1.0435	72.52	86.24	99.95	75.68	89.99	104.30
	Sep	129	0.9820	72.95	86.77	100.59	71.64	85.21	98.78
	Oct	130	1.0037	73.38	87.31	101.24	73.65	87.63	101.61
	Nov	131	0.9455	73.81	87.84	101.88	69.79	83.06	96.33
	Dec	132	1.0600	74.24	88.38	102.52	78.69	93.68	108.67
2011	Jan'11	133	0.9810	74.67	88.92	103.16	73.24	87.22	101.20

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Feb	134	0.9854	75.09	89.45	103.81	74.00	88.14	102.29
	Mar	135	0.9821	75.52	89.99	104.45	74.17	88.38	102.58
	Apr	136	1.0434	75.95	90.52	105.09	79.24	94.45	109.65
	May	137	1.0082	76.38	91.06	105.74	77.01	91.80	106.60
	Jun	138	0.9447	76.81	91.59	106.38	72.56	86.53	100.49
	Jul	139	1.0207	77.24	92.13	107.02	78.84	94.04	109.24
	Aug	140	1.0435	77.67	92.67	107.66	81.04	96.70	112.35
	Sep	141	0.9820	78.09	93.20	108.31	76.69	91.52	106.35
	Oct	142	1.0037	78.52	93.74	108.95	78.81	94.08	109.35
	Nov	143	0.9455	78.95	94.27	109.59	74.65	89.13	103.62
	Dec	144	1.0600	79.38	94.81	110.24	84.14	100.49	116.85
2012	Jan'12	145	0.9810	79.81	95.34	110.88	78.29	93.53	108.77
	Feb	146	0.9854	80.24	95.88	111.52	79.06	94.48	109.89
	Mar	147	0.9821	80.67	96.42	112.16	79.22	94.69	110.16
	Apr	148	1.0434	81.09	96.95	112.81	84.61	101.15	117.70
	May	149	1.0082	81.52	97.49	113.45	82.19	98.29	114.38
	Jun	150	0.9447	81.95	98.02	114.09	77.42	92.60	107.78
	Jul	151	1.0207	82.38	98.56	114.74	84.09	100.60	117.12
	Aug	152	1.0435	82.81	99.09	115.38	86.41	103.40	120.40
	Sep	153	0.9820	83.24	99.63	116.02	81.74	97.83	113.93
	Oct	154	1.0037	83.67	100.16	116.66	83.97	100.53	117.09
	Nov	155	0.9455	84.09	100.70	117.31	79.51	95.21	110.91
Dec	156	1.0600	84.52	101.24	117.95	89.59	107.31	125.03	
2013	Jan'13	157	0.9810	84.95	101.77	118.59	83.33	99.84	116.34
	Feb	158	0.9854	85.38	102.31	119.24	84.13	100.81	117.49
	Mar	159	0.9821	85.81	102.84	119.88	84.27	101.00	117.73
	Apr	160	1.0434	86.24	103.38	120.52	89.98	107.86	125.75
	May	161	1.0082	86.67	103.91	121.16	87.38	104.77	122.16
	Jun	162	0.9447	87.09	104.45	121.81	82.27	98.67	115.07

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Jul	163	1.0207	87.52	104.99	122.45	89.34	107.16	124.99
	Aug	164	1.0435	87.95	105.52	123.09	91.78	110.11	128.45
	Sep	165	0.9820	88.38	106.06	123.74	86.79	104.15	121.50
	Oct	166	1.0037	88.81	106.59	124.38	89.13	106.98	124.83
	Nov	167	0.9455	89.24	107.13	125.02	84.37	101.29	118.21
	Dec	168	1.0600	89.67	107.66	125.66	95.04	114.12	133.20
2014	Jan'14	169	0.9810	90.09	108.20	126.31	88.38	106.14	123.90
	Feb	170	0.9854	90.52	108.74	126.95	89.20	107.15	125.09
	Mar	171	0.9821	90.95	109.27	127.59	89.32	107.32	125.31
	Apr	172	1.0434	91.38	109.81	128.24	95.34	114.57	133.80
	May	173	1.0082	91.81	110.34	128.88	92.56	111.25	129.93
	Jun	174	0.9447	92.24	110.88	129.52	87.13	104.74	122.35
	Jul	175	1.0207	92.67	111.41	130.16	94.59	113.73	132.86
	Aug	176	1.0435	93.09	111.95	130.81	97.14	116.82	136.50
	Sep	177	0.9820	93.52	112.49	131.45	91.84	110.46	129.08
	Oct	178	1.0037	93.95	113.02	132.09	94.29	113.44	132.58
	Nov	179	0.9455	94.38	113.56	132.74	89.23	107.37	125.50
	Dec	180	1.0600	94.81	114.09	133.38	100.49	120.94	141.38
2015	Jan'15	181	0.9810	95.24	114.63	134.02	93.42	112.45	131.47
	Feb	182	0.9854	95.67	115.16	134.66	94.27	113.48	132.69
	Mar	183	0.9821	96.09	115.70	135.31	94.37	113.63	132.88
	Apr	184	1.0434	96.52	116.24	135.95	100.71	121.28	141.84
	May	185	1.0082	96.95	116.77	136.59	97.75	117.73	137.71
	Jun	186	0.9447	97.38	117.31	137.24	91.99	110.82	129.64
	Jul	187	1.0207	97.81	117.84	137.88	99.84	120.29	140.74
	Aug	188	1.0435	98.24	118.38	138.52	102.51	123.53	144.55
	Sep	189	0.9820	98.67	118.91	139.16	96.89	116.77	136.65
	Oct	190	1.0037	99.09	119.45	139.81	99.46	119.89	140.32
	Nov	191	0.9455	99.52	119.99	140.45	94.10	113.45	132.79

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
	Dec	192	1.0600	99.95	120.52	141.09	105.95	127.75	149.56
2016	Jan'16	193	0.9810	100.38	121.06	141.74	98.47	118.75	139.04
	Feb	194	0.9854	100.81	121.59	142.38	99.33	119.81	140.30
	Mar	195	0.9821	101.24	122.13	143.02	99.42	119.94	140.46
	Apr	196	1.0434	101.66	122.66	143.66	106.07	127.98	149.89
	May	197	1.0082	102.09	123.20	144.31	102.93	124.21	145.49
	Jun	198	0.9447	102.52	123.74	144.95	96.85	116.89	136.93
	Jul	199	1.0207	102.95	124.27	145.59	105.09	126.85	148.61
	Aug	200	1.0435	103.38	124.81	146.23	107.88	130.24	152.60
	Sep	201	0.9820	103.81	125.34	146.88	101.94	123.08	144.23
	Oct	202	1.0037	104.24	125.88	147.52	104.62	126.34	148.06
	Nov	203	0.9455	104.66	126.41	148.16	98.96	119.52	140.09
Dec	204	1.0600	105.09	126.95	148.81	111.40	134.56	157.73	
2017	Jan'17	205	0.9810	105.52	127.49	149.45	103.51	125.06	146.60
	Feb	206	0.9854	105.95	128.02	150.09	104.40	126.15	147.90
	Mar	207	0.9821	106.38	128.56	150.73	104.47	126.25	148.04
	Apr	208	1.0434	106.81	129.09	151.38	111.44	134.69	157.94
	May	209	1.0082	107.24	129.63	152.02	108.11	130.69	153.27
	Jun	210	0.9447	107.66	130.16	152.66	101.71	122.96	144.21
	Jul	211	1.0207	108.09	130.70	153.31	110.34	133.41	156.49
	Aug	212	1.0435	108.52	131.24	153.95	113.24	136.94	160.65
	Sep	213	0.9820	108.95	131.77	154.59	106.99	129.39	151.80
	Oct	214	1.0037	109.38	132.31	155.23	109.78	132.79	155.80
	Nov	215	0.9455	109.81	132.84	155.88	103.82	125.60	147.38
Dec	216	1.0600	110.24	133.38	156.52	116.85	141.38	165.91	
2018	Jan'18	217	0.9810	110.66	133.91	157.16	108.56	131.37	154.17
	Feb	218	0.9854	111.09	134.45	157.81	109.47	132.48	155.50
	Mar	219	0.9821	111.52	134.99	158.45	109.52	132.57	155.61
	Apr	220	1.0434	111.95	135.52	159.09	116.80	141.40	165.99

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	May	221	1.0082	112.38	136.06	159.73	113.30	137.17	161.04
	Jun	222	0.9447	112.81	136.59	160.38	106.56	129.03	151.50
	Jul	223	1.0207	113.24	137.13	161.02	115.59	139.97	164.36
	Aug	224	1.0435	113.66	137.66	161.66	118.61	143.65	168.70
	Sep	225	0.9820	114.09	138.20	162.31	112.04	135.71	159.38
	Oct	226	1.0037	114.52	138.74	162.95	114.94	139.24	163.55
	Nov	227	0.9455	114.95	139.27	163.59	108.68	131.68	154.67
	Dec	228	1.0600	115.38	139.81	164.23	122.30	148.19	174.09
2019	Jan'19	229	0.9810	115.81	140.34	164.88	113.60	137.67	161.74
	Feb	230	0.9854	116.24	140.88	165.52	114.54	138.82	163.10
	Mar	231	0.9821	116.66	141.41	166.16	114.58	138.88	163.19
	Apr	232	1.0434	117.09	141.95	166.81	122.17	148.10	174.04
	May	233	1.0082	117.52	142.49	167.45	118.48	143.65	168.82
	Jun	234	0.9447	117.95	143.02	168.09	111.42	135.11	158.79
	Jul	235	1.0207	118.38	143.56	168.73	120.83	146.53	172.23
	Aug	236	1.0435	118.81	144.09	169.38	123.98	150.36	176.75
	Sep	237	0.9820	119.24	144.63	170.02	117.09	142.02	166.95
	Oct	238	1.0037	119.66	145.16	170.66	120.10	145.70	171.29
	Nov	239	0.9455	120.09	145.70	171.31	113.55	137.76	161.97
	Dec	240	1.0600	120.52	146.23	171.95	127.75	155.01	182.26
2020	Jan'20	241	0.9810	120.95	146.77	172.59	118.65	143.98	169.31
	Feb	242	0.9854	121.38	147.31	173.23	119.60	145.15	170.70
	Mar	243	0.9821	121.81	147.84	173.88	119.63	145.19	170.76
	Apr	244	1.0434	122.24	148.38	174.52	127.54	154.81	182.09
	May	245	1.0082	122.66	148.91	175.16	123.67	150.13	176.60
	Jun	246	0.9447	123.09	149.45	175.81	116.28	141.18	166.08
	Jul	247	1.0207	123.52	149.98	176.45	126.08	153.10	180.11
	Aug	248	1.0435	123.95	150.52	177.09	129.34	157.07	184.79
	Sep	249	0.9820	124.38	151.06	177.73	122.14	148.33	174.53

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Oct	250	1.0037	124.81	151.59	178.38	125.26	152.15	179.03
	Nov	251	0.9455	125.24	152.13	179.02	118.41	143.84	169.26
	Dec	252	1.0600	125.66	152.66	179.66	133.20	161.82	190.44
2021	Jan'21	253	0.9810	126.09	153.20	180.31	123.69	150.28	176.87
	Feb	254	0.9854	126.52	153.73	180.95	124.67	151.49	178.30
	Mar	255	0.9821	126.95	154.27	181.59	124.68	151.51	178.34
	Apr	256	1.0434	127.38	154.81	182.23	132.90	161.52	190.14
	May	257	1.0082	127.81	155.34	182.88	128.85	156.61	184.38
	Jun	258	0.9447	128.24	155.88	183.52	121.14	147.25	173.36
	Jul	259	1.0207	128.66	156.41	184.16	131.33	159.66	187.98
	Aug	260	1.0435	129.09	156.95	184.81	134.71	163.78	192.84
	Sep	261	0.9820	129.52	157.48	185.45	127.19	154.64	182.10
	Oct	262	1.0037	129.95	158.02	186.09	130.43	158.60	186.77
	Nov	263	0.9455	130.38	158.56	186.73	123.27	149.91	176.55
	Dec	264	1.0600	130.81	159.09	187.38	138.65	168.63	198.62
2022	Jan'22	265	0.9810	131.24	159.63	188.02	128.74	156.59	184.44
	Feb	266	0.9854	131.66	160.16	188.66	129.74	157.82	185.90
	Mar	267	0.9821	132.09	160.70	189.30	129.73	157.82	185.91
	Apr	268	1.0434	132.52	161.23	189.95	138.27	168.23	198.18
	May	269	1.0082	132.95	161.77	190.59	134.04	163.10	192.15
	Jun	270	0.9447	133.38	162.31	191.23	126.00	153.32	180.65
	Jul	271	1.0207	133.81	162.84	191.88	136.58	166.22	195.86
	Aug	272	1.0435	134.24	163.38	192.52	140.07	170.48	200.89
	Sep	273	0.9820	134.66	163.91	193.16	132.24	160.96	189.68
	Oct	274	1.0037	135.09	164.45	193.80	135.59	165.05	194.51
	Nov	275	0.9455	135.52	164.98	194.45	128.13	155.99	183.85
	Dec	276	1.0600	135.95	165.52	195.09	144.10	175.45	206.79
2023	Jan'23	277	0.9810	136.38	166.06	195.73	133.78	162.90	192.01
	Feb	278	0.9854	136.81	166.59	196.38	134.81	164.16	193.50

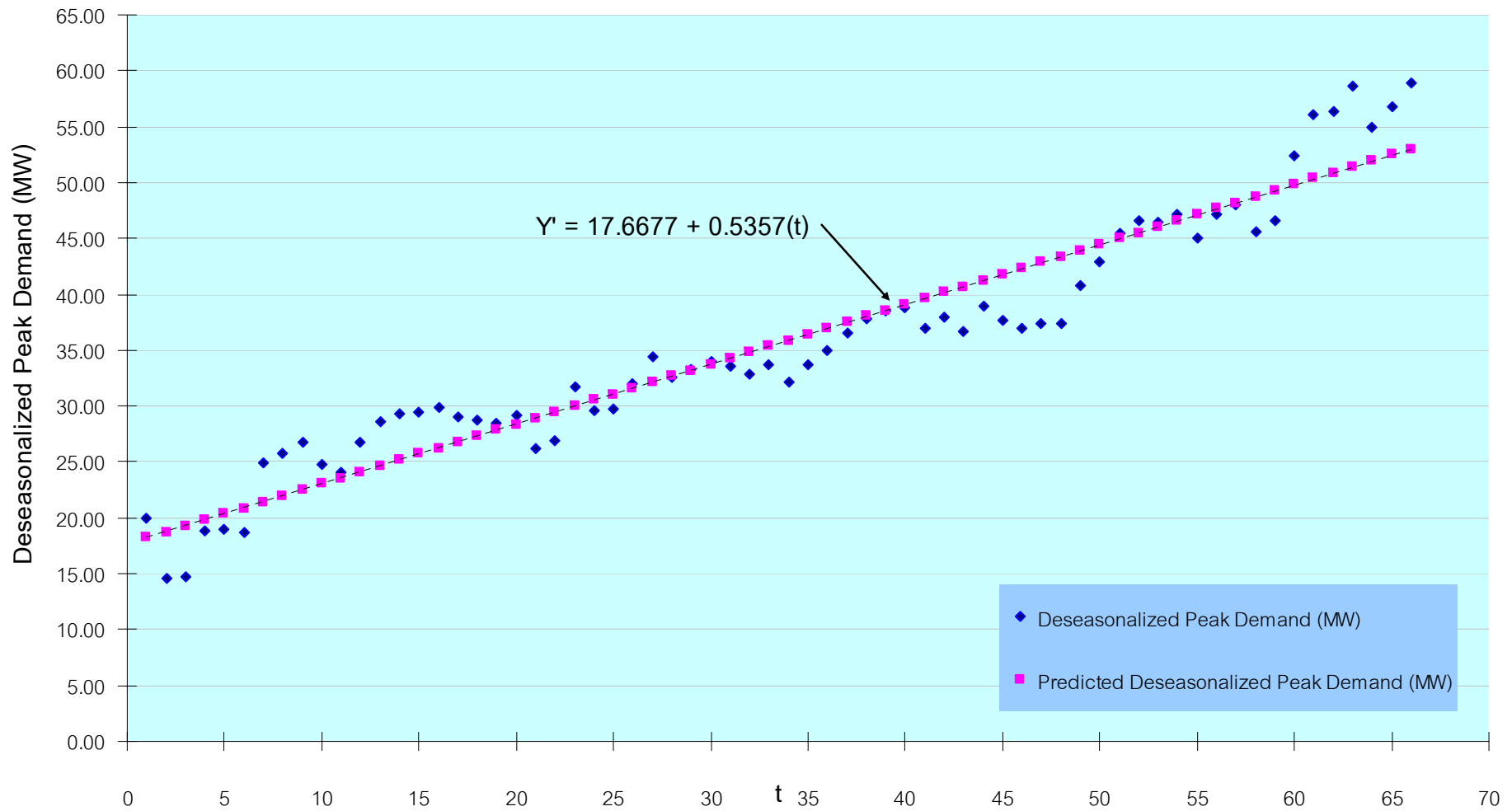
PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Mar	279	0.9821	137.24	167.13	197.02	134.78	164.13	193.49
	Apr	280	1.0434	137.66	167.66	197.66	143.63	174.93	206.23
	May	281	1.0082	138.09	168.20	198.30	139.22	169.58	199.93
	Jun	282	0.9447	138.52	168.73	198.95	130.86	159.40	187.94
	Jul	283	1.0207	138.95	169.27	199.59	141.83	172.78	203.73
	Aug	284	1.0435	139.38	169.81	200.23	145.44	177.19	208.94
	Sep	285	0.9820	139.81	170.34	200.88	137.29	167.27	197.25
	Oct	286	1.0037	140.24	170.88	201.52	140.75	171.50	202.26
	Nov	287	0.9455	140.66	171.41	202.16	133.00	162.07	191.14
	Dec	288	1.0600	141.09	171.95	202.80	149.56	182.26	214.97
2024	Jan'24	289	0.9810	141.52	172.48	203.45	138.83	169.20	199.58
	Feb	290	0.9854	141.95	173.02	204.09	139.87	170.49	201.11
	Mar	291	0.9821	142.38	173.56	204.73	139.83	170.45	201.07
	Apr	292	1.0434	142.81	174.09	205.38	149.00	181.64	214.28
	May	293	1.0082	143.23	174.63	206.02	144.41	176.06	207.71
	Jun	294	0.9447	143.66	175.16	206.66	135.71	165.47	195.22
	Jul	295	1.0207	144.09	175.70	207.30	147.08	179.34	211.61
	Aug	296	1.0435	144.52	176.23	207.95	150.81	183.90	216.99
	Sep	297	0.9820	144.95	176.77	208.59	142.34	173.58	204.83
	Oct	298	1.0037	145.38	177.31	209.23	145.91	177.95	210.00
	Nov	299	0.9455	145.81	177.84	209.88	137.86	168.15	198.44
	Dec	300	1.0600	146.23	178.38	210.52	155.01	189.08	223.15
2025	Jan'25	301	0.9810	146.66	178.91	211.16	143.87	175.51	207.14
	Feb	302	0.9854	147.09	179.45	211.80	144.94	176.82	208.71
	Mar	303	0.9821	147.52	179.98	212.45	144.88	176.76	208.64
	Apr	304	1.0434	147.95	180.52	213.09	154.36	188.35	222.33
	May	305	1.0082	148.38	181.06	213.73	149.59	182.54	215.48
	Jun	306	0.9447	148.81	181.59	214.38	140.57	171.54	202.51
	Jul	307	1.0207	149.23	182.13	215.02	152.33	185.90	219.48

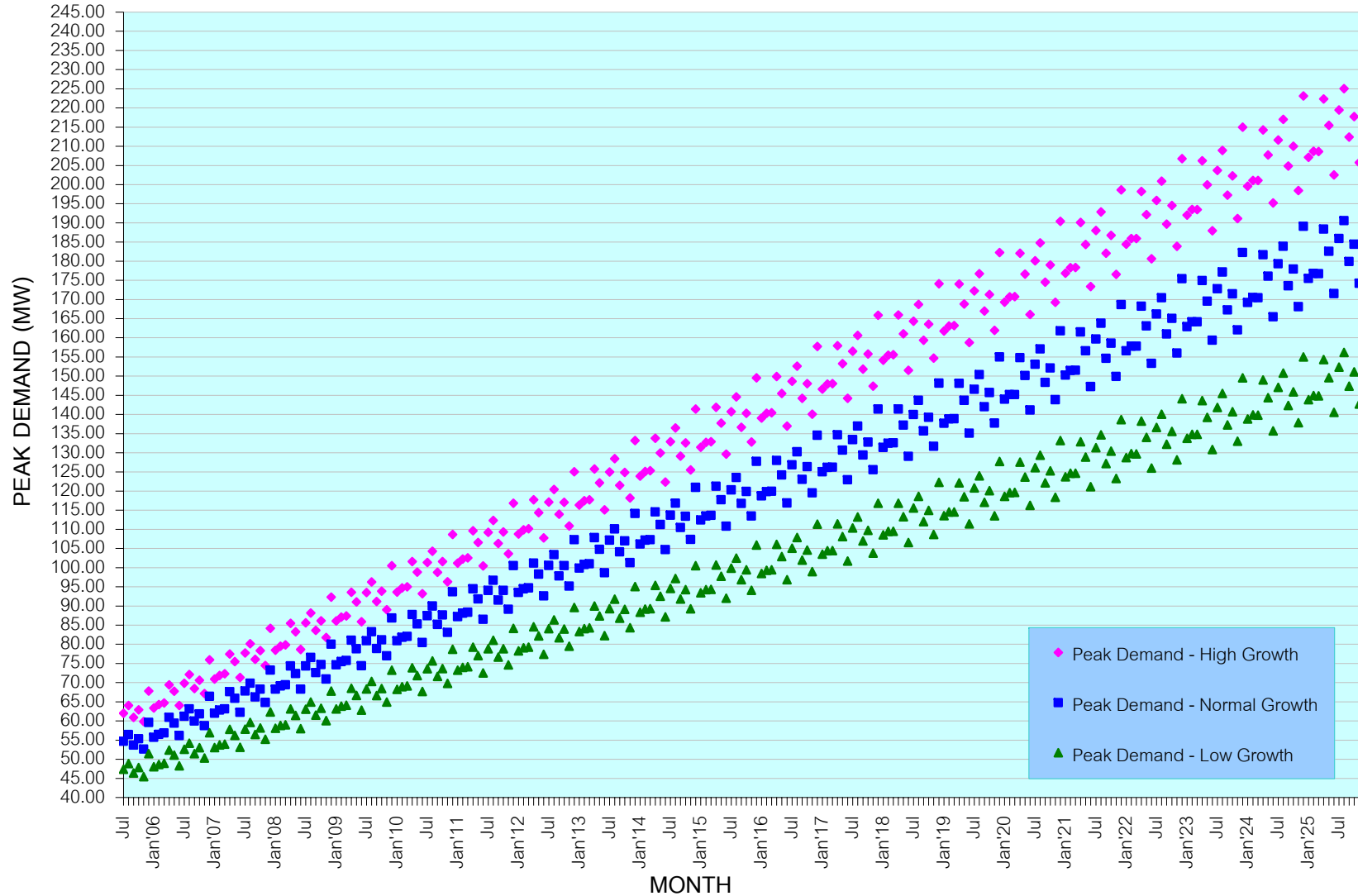
PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Peak Demand (MW)			Peak Demand (MW)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
	Aug	308	1.0435	149.66	182.66	215.66	156.17	190.61	225.04
	Sep	309	0.9820	150.09	183.20	216.30	147.39	179.89	212.40
	Oct	310	1.0037	150.52	183.73	216.95	151.07	184.41	217.74
	Nov	311	0.9455	150.95	184.27	217.59	142.72	174.22	205.73
	Dec	312	1.0600	151.38	184.81	218.23	160.46	195.89	231.32

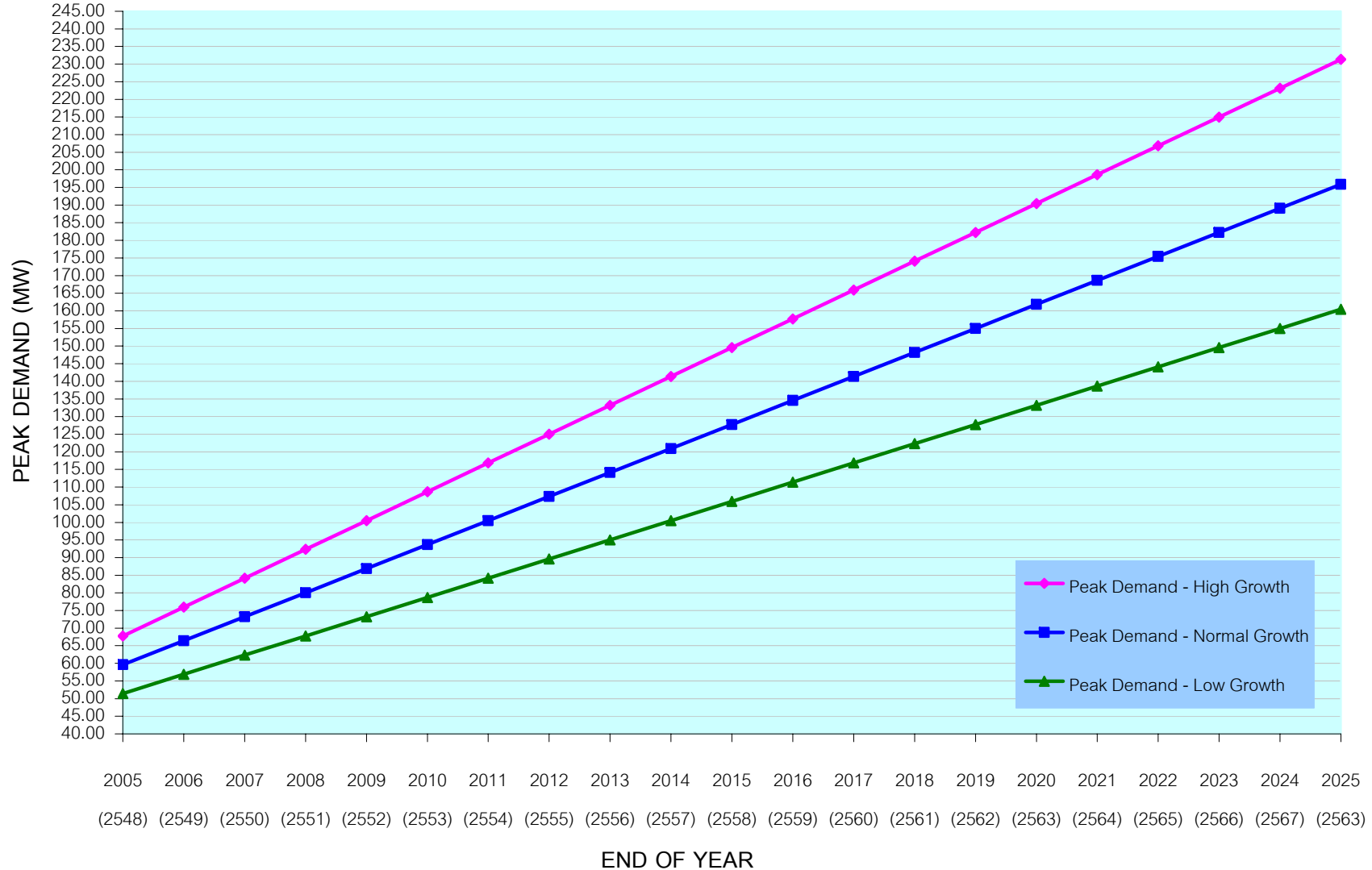
t Line Fit Plot



MONTHLY PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)



PEAK DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)



ENERGY DEMAND FORECAST FOR SAMUI ISLAND

TIME SERIES ANALYSIS

Linear Regression Equation for Trend Line:
$Y' = 8,671,996 + 173,952(t)$
where, Y' = Predicted Deseasonalized Energy Demand (KWh)
t = Period of Time, Monthly

Modified Linear Regression Equation for Trend Line:
$Y' = 8,671,996 + 173,952(t)(g)$
where, Y' = Predicted Deseasonalized Energy Demand (KWh)
t = Period of Time, Monthly
g = Growth Factor

	Growth Factor, g
Low Growth	0.80
Normal Growth	1.00
High Growth	1.20

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
2005	Jan'05	61	1.0472	17,160,876	19,283,096	21,405,316	17,970,301	20,192,620	22,414,938
	Feb	62	0.9659	17,300,038	19,457,048	21,614,059	16,710,142	18,793,603	20,877,063
	Mar	63	1.0115	17,439,200	19,631,001	21,822,801	17,639,161	19,856,093	22,073,025
	Apr	64	1.0313	17,578,362	19,804,953	22,031,544	18,127,958	20,424,164	22,720,371
	May	65	1.0086	17,717,524	19,978,906	22,240,287	17,869,805	20,150,623	22,431,441
	Jun	66	0.9717	17,856,686	20,152,858	22,449,030	17,350,794	19,581,914	21,813,035
	Jul	67	0.9803	17,995,848	20,326,810	22,657,773	17,640,433	19,925,360	22,210,287
	Aug	68	1.0598	18,135,010	20,500,763	22,866,516	19,219,784	21,727,048	24,234,313
	Sep	69	0.9916	18,274,172	20,674,715	23,075,259	18,119,880	20,500,156	22,880,431

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
	Oct	70	1.0031	18,413,333	20,848,668	23,284,002	18,470,462	20,913,353	23,356,243
	Nov	71	0.9578	18,552,495	21,022,620	23,492,745	17,770,507	20,136,516	22,502,525
	Dec	72	0.9714	18,691,657	21,196,573	23,701,488	18,156,308	20,589,480	23,022,652
2006	Jan'06	73	1.0472	18,830,819	21,370,525	23,910,231	19,719,011	22,378,507	25,038,003
	Feb	74	0.9659	18,969,981	21,544,478	24,118,974	18,323,144	20,809,855	23,296,566
	Mar	75	1.0115	19,109,143	21,718,430	24,327,717	19,328,252	21,967,457	24,606,662
	Apr	76	1.0313	19,248,305	21,892,382	24,536,460	19,850,113	22,576,858	25,303,604
	May	77	1.0086	19,387,467	22,066,335	24,745,203	19,554,101	22,255,994	24,957,886
	Jun	78	0.9717	19,526,629	22,240,287	24,953,946	18,973,427	21,610,206	24,246,984
	Jul	79	0.9803	19,665,791	22,414,240	25,162,689	19,277,396	21,971,563	24,665,730
	Aug	80	1.0598	19,804,953	22,588,192	25,371,431	20,989,618	23,939,341	26,889,064
	Sep	81	0.9916	19,944,115	22,762,145	25,580,174	19,775,724	22,569,961	25,364,197
	Oct	82	1.0031	20,083,277	22,936,097	25,788,917	20,145,587	23,007,258	25,868,930
	Nov	83	0.9578	20,222,439	23,110,050	25,997,660	19,370,063	22,135,961	24,901,858
	Dec	84	0.9714	20,361,601	23,284,002	26,206,403	19,778,423	22,617,123	25,455,823
2007	Jan'07	85	1.0472	20,500,763	23,457,955	26,415,146	21,467,721	24,564,394	27,661,067
	Feb	86	0.9659	20,639,925	23,631,907	26,623,889	19,936,145	22,826,107	25,716,069
	Mar	87	1.0115	20,779,087	23,805,859	26,832,632	21,017,343	24,078,821	27,140,300
	Apr	88	1.0313	20,918,249	23,979,812	27,041,375	21,572,268	24,729,552	27,886,836
	May	89	1.0086	21,057,411	24,153,764	27,250,118	21,238,398	24,361,364	27,484,331
	Jun	90	0.9717	21,196,573	24,327,717	27,458,861	20,596,060	23,638,497	26,680,933
	Jul	91	0.9803	21,335,735	24,501,669	27,667,604	20,914,358	24,017,766	27,121,174
	Aug	92	1.0598	21,474,897	24,675,622	27,876,347	22,759,451	26,151,633	29,543,814
	Sep	93	0.9916	21,614,059	24,849,574	28,085,090	21,431,568	24,639,766	27,847,963
	Oct	94	1.0031	21,753,221	25,023,527	28,293,833	21,820,712	25,101,164	28,381,617
	Nov	95	0.9578	21,892,382	25,197,479	28,502,576	20,969,618	24,135,405	27,301,191
	Dec	96	0.9714	22,031,544	25,371,431	28,711,318	21,400,537	24,644,766	27,888,995
2008	Jan'08	97	1.0472	22,170,706	25,545,384	28,920,061	23,216,430	26,750,281	30,284,131
	Feb	98	0.9659	22,309,868	25,719,336	29,128,804	21,549,147	24,842,359	28,135,572

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
	Mar	99	1.0115	22,449,030	25,893,289	29,337,547	22,706,435	26,190,186	29,673,937
	Apr	100	1.0313	22,588,192	26,067,241	29,546,290	23,294,423	26,882,246	30,470,069
	May	101	1.0086	22,727,354	26,241,194	29,755,033	22,922,694	26,466,735	30,010,776
	Jun	102	0.9717	22,866,516	26,415,146	29,963,776	22,218,693	25,666,788	29,114,883
	Jul	103	0.9803	23,005,678	26,589,099	30,172,519	22,551,320	26,063,969	29,576,618
	Aug	104	1.0598	23,144,840	26,763,051	30,381,262	24,529,285	28,363,925	32,198,565
	Sep	105	0.9916	23,284,002	26,937,004	30,590,005	23,087,412	26,709,571	30,331,729
	Oct	106	1.0031	23,423,164	27,110,956	30,798,748	23,495,836	27,195,070	30,894,304
	Nov	107	0.9578	23,562,326	27,284,908	31,007,491	22,569,173	26,134,849	29,700,524
	Dec	108	0.9714	23,701,488	27,458,861	31,216,234	23,022,652	26,672,409	30,322,167
2009	Jan'09	109	1.0472	23,840,650	27,632,813	31,424,977	24,965,140	28,936,168	32,907,196
	Feb	110	0.9659	23,979,812	27,806,766	31,633,720	23,162,149	26,858,612	30,555,074
	Mar	111	1.0115	24,118,974	27,980,718	31,842,463	24,395,526	28,301,550	32,207,574
	Apr	112	1.0313	24,258,136	28,154,671	32,051,206	25,016,578	29,034,940	33,053,302
	May	113	1.0086	24,397,298	28,328,623	32,259,948	24,606,991	28,572,106	32,537,221
	Jun	114	0.9717	24,536,460	28,502,576	32,468,691	23,841,326	27,695,079	31,548,832
	Jul	115	0.9803	24,675,622	28,676,528	32,677,434	24,188,283	28,110,172	32,032,061
	Aug	116	1.0598	24,814,784	28,850,480	32,886,177	26,299,119	30,576,217	34,853,316
	Sep	117	0.9916	24,953,946	29,024,433	33,094,920	24,743,256	28,779,376	32,815,495
	Oct	118	1.0031	25,093,108	29,198,385	33,303,663	25,170,961	29,288,976	33,406,991
	Nov	119	0.9578	25,232,270	29,372,338	33,512,406	24,168,729	28,134,293	32,099,857
	Dec	120	0.9714	25,371,431	29,546,290	33,721,149	24,644,766	28,700,053	32,755,339
2010	Jan'10	121	1.0472	25,510,593	29,720,243	33,929,892	26,713,849	31,122,055	35,530,260
	Feb	122	0.9659	25,649,755	29,894,195	34,138,635	24,775,151	28,874,864	32,974,577
	Mar	123	1.0115	25,788,917	30,068,148	34,347,378	26,084,617	30,412,914	34,741,211
	Apr	124	1.0313	25,928,079	30,242,100	34,556,121	26,738,733	31,187,634	35,636,534
	May	125	1.0086	26,067,241	30,416,053	34,764,864	26,291,288	30,677,477	35,063,666
	Jun	126	0.9717	26,206,403	30,590,005	34,973,607	25,463,959	29,723,370	33,982,782
	Jul	127	0.9803	26,345,565	30,763,957	35,182,350	25,825,245	30,156,375	34,487,505

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
	Aug	128	1.0598	26,484,727	30,937,910	35,391,093	28,068,953	32,788,510	37,508,067
	Sep	129	0.9916	26,623,889	31,111,862	35,599,836	26,399,100	30,849,180	35,299,261
	Oct	130	1.0031	26,763,051	31,285,815	35,808,578	26,846,086	31,382,882	35,919,678
	Nov	131	0.9578	26,902,213	31,459,767	36,017,321	25,768,284	30,133,737	34,499,191
	Dec	132	0.9714	27,041,375	31,633,720	36,226,064	26,266,881	30,727,696	35,188,511
2011	Jan'11	133	1.0472	27,180,537	31,807,672	36,434,807	28,462,559	33,307,942	38,153,325
	Feb	134	0.9659	27,319,699	31,981,625	36,643,550	26,388,153	30,891,116	35,394,080
	Mar	135	1.0115	27,458,861	32,155,577	36,852,293	27,773,709	32,524,278	37,274,848
	Apr	136	1.0313	27,598,023	32,329,529	37,061,036	28,460,888	33,340,328	38,219,767
	May	137	1.0086	27,737,185	32,503,482	37,269,779	27,975,584	32,782,847	37,590,110
	Jun	138	0.9717	27,876,347	32,677,434	37,478,522	27,086,592	31,751,661	36,416,731
	Jul	139	0.9803	28,015,509	32,851,387	37,687,265	27,462,208	32,202,578	36,942,949
	Aug	140	1.0598	28,154,671	33,025,339	37,896,008	29,838,787	35,000,802	40,162,817
	Sep	141	0.9916	28,293,833	33,199,292	38,104,751	28,054,944	32,918,985	37,783,027
	Oct	142	1.0031	28,432,995	33,373,244	38,313,494	28,521,210	33,476,788	38,432,365
	Nov	143	0.9578	28,572,157	33,547,197	38,522,237	27,367,840	32,133,182	36,898,524
	Dec	144	0.9714	28,711,318	33,721,149	38,730,980	27,888,995	32,755,339	37,621,682
2012	Jan'12	145	1.0472	28,850,480	33,895,102	38,939,723	30,211,268	35,493,829	40,776,389
	Feb	146	0.9659	28,989,642	34,069,054	39,148,465	28,001,155	32,907,369	37,813,583
	Mar	147	1.0115	29,128,804	34,243,006	39,357,208	29,462,800	34,635,643	39,808,485
	Apr	148	1.0313	29,267,966	34,416,959	39,565,951	30,183,043	35,493,022	40,803,000
	May	149	1.0086	29,407,128	34,590,911	39,774,694	29,659,881	34,888,218	40,116,555
	Jun	150	0.9717	29,546,290	34,764,864	39,983,437	28,709,225	33,779,953	38,850,680
	Jul	151	0.9803	29,685,452	34,938,816	40,192,180	29,099,170	34,248,781	39,398,392
	Aug	152	1.0598	29,824,614	35,112,769	40,400,923	31,608,621	37,213,094	42,817,568
	Sep	153	0.9916	29,963,776	35,286,721	40,609,666	29,710,788	34,988,790	40,266,793
	Oct	154	1.0031	30,102,938	35,460,674	40,818,409	30,196,335	35,570,693	40,945,052
	Nov	155	0.9578	30,242,100	35,634,626	41,027,152	28,967,395	34,132,626	39,297,857
	Dec	156	0.9714	30,381,262	35,808,578	41,235,895	29,511,110	34,782,982	40,054,854

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
2013	Jan'13	157	1.0472	30,520,424	35,982,531	41,444,638	31,959,978	37,679,716	43,399,453
	Feb	158	0.9659	30,659,586	36,156,483	41,653,381	29,614,157	34,923,621	40,233,085
	Mar	159	1.0115	30,798,748	36,330,436	41,862,124	31,151,892	36,747,007	42,342,122
	Apr	160	1.0313	30,937,910	36,504,388	42,070,867	31,905,198	37,645,715	43,386,232
	May	161	1.0086	31,077,072	36,678,341	42,279,610	31,344,177	36,993,589	42,643,000
	Jun	162	0.9717	31,216,234	36,852,293	42,488,353	30,331,858	35,808,244	41,284,630
	Jul	163	0.9803	31,355,396	37,026,246	42,697,095	30,736,133	36,294,984	41,853,836
	Aug	164	1.0598	31,494,558	37,200,198	42,905,838	33,378,454	39,425,387	45,472,319
	Sep	165	0.9916	31,633,720	37,374,150	43,114,581	31,366,632	37,058,595	42,750,559
	Oct	166	1.0031	31,772,882	37,548,103	43,323,324	31,871,460	37,664,599	43,457,739
	Nov	167	0.9578	31,912,044	37,722,055	43,532,067	30,566,950	36,132,070	41,697,190
	Dec	168	0.9714	32,051,206	37,896,008	43,740,810	31,133,224	36,810,625	42,488,026
2014	Jan'14	169	1.0472	32,190,367	38,069,960	43,949,553	33,708,688	39,865,603	46,022,518
	Feb	170	0.9659	32,329,529	38,243,913	44,158,296	31,227,158	36,939,873	42,652,588
	Mar	171	1.0115	32,468,691	38,417,865	44,367,039	32,840,983	38,858,371	44,875,759
	Apr	172	1.0313	32,607,853	38,591,818	44,575,782	33,627,353	39,798,409	45,969,465
	May	173	1.0086	32,747,015	38,765,770	44,784,525	33,028,474	39,098,959	45,169,445
	Jun	174	0.9717	32,886,177	38,939,723	44,993,268	31,954,490	37,836,535	43,718,579
	Jul	175	0.9803	33,025,339	39,113,675	45,202,011	32,373,095	38,341,188	44,309,280
	Aug	176	1.0598	33,164,501	39,287,627	45,410,754	35,148,288	41,637,679	48,127,070
	Sep	177	0.9916	33,303,663	39,461,580	45,619,497	33,022,476	39,128,400	45,234,325
	Oct	178	1.0031	33,442,825	39,635,532	45,828,240	33,546,584	39,758,505	45,970,426
	Nov	179	0.9578	33,581,987	39,809,485	46,036,982	32,166,506	38,131,514	44,096,523
	Dec	180	0.9714	33,721,149	39,983,437	46,245,725	32,755,339	38,838,268	44,921,198
2015	Jan'15	181	1.0472	33,860,311	40,157,390	46,454,468	35,457,397	42,051,490	48,645,582
	Feb	182	0.9659	33,999,473	40,331,342	46,663,211	32,840,160	38,956,126	45,072,091
	Mar	183	1.0115	34,138,635	40,505,295	46,871,954	34,530,074	40,969,735	47,409,396
	Apr	184	1.0313	34,277,797	40,679,247	47,080,697	35,349,509	41,951,103	48,552,698
	May	185	1.0086	34,416,959	40,853,199	47,289,440	34,712,770	41,204,330	47,695,890

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
	Jun	186	0.9717	34,556,121	41,027,152	47,498,183	33,577,123	39,864,826	46,152,529
	Jul	187	0.9803	34,695,283	41,201,104	47,706,926	34,010,058	40,387,391	46,764,724
	Aug	188	1.0598	34,834,445	41,375,057	47,915,669	36,918,122	43,849,971	50,781,820
	Sep	189	0.9916	34,973,607	41,549,009	48,124,412	34,678,320	41,198,205	47,718,091
	Oct	190	1.0031	35,112,769	41,722,962	48,333,155	35,221,709	41,852,411	48,483,113
	Nov	191	0.9578	35,251,931	41,896,914	48,541,898	33,766,061	40,130,958	46,495,856
	Dec	192	0.9714	35,391,093	42,070,867	48,750,641	34,377,453	40,865,911	47,354,370
2016	Jan'16	193	1.0472	35,530,255	42,244,819	48,959,384	37,206,107	44,237,377	51,268,647
	Feb	194	0.9659	35,669,416	42,418,772	49,168,127	34,453,162	40,972,378	47,491,594
	Mar	195	1.0115	35,808,578	42,592,724	49,376,870	36,219,166	43,081,099	49,943,033
	Apr	196	1.0313	35,947,740	42,766,676	49,585,612	37,071,664	44,103,797	51,135,930
	May	197	1.0086	36,086,902	42,940,629	49,794,355	36,397,067	43,309,701	50,222,335
	Jun	198	0.9717	36,226,064	43,114,581	50,003,098	35,199,756	41,893,117	48,586,478
	Jul	199	0.9803	36,365,226	43,288,534	50,211,841	35,647,020	42,433,594	49,220,167
	Aug	200	1.0598	36,504,388	43,462,486	50,420,584	38,687,956	46,062,263	53,436,571
	Sep	201	0.9916	36,643,550	43,636,439	50,629,327	36,334,164	43,268,010	50,201,857
	Oct	202	1.0031	36,782,712	43,810,391	50,838,070	36,896,834	43,946,317	50,995,800
	Nov	203	0.9578	36,921,874	43,984,344	51,046,813	35,365,616	42,130,403	48,895,189
	Dec	204	0.9714	37,061,036	44,158,296	51,255,556	35,999,568	42,893,555	49,787,541
2017	Jan'17	205	1.0472	37,200,198	44,332,248	51,464,299	38,954,816	46,423,264	53,891,711
	Feb	206	0.9659	37,339,360	44,506,201	51,673,042	36,066,164	42,988,630	49,911,097
	Mar	207	1.0115	37,478,522	44,680,153	51,881,785	37,908,257	45,192,464	52,476,670
	Apr	208	1.0313	37,617,684	44,854,106	52,090,528	38,793,819	46,256,491	53,719,163
	May	209	1.0086	37,756,846	45,028,058	52,299,271	38,081,364	45,415,072	52,748,780
	Jun	210	0.9717	37,896,008	45,202,011	52,508,014	36,822,389	43,921,408	51,020,427
	Jul	211	0.9803	38,035,170	45,375,963	52,716,757	37,283,983	44,479,797	51,675,611
	Aug	212	1.0598	38,174,332	45,549,916	52,925,500	40,457,790	48,274,556	56,091,322
	Sep	213	0.9916	38,313,494	45,723,868	53,134,242	37,990,008	45,337,815	52,685,623
	Oct	214	1.0031	38,452,656	45,897,821	53,342,985	38,571,959	46,040,223	53,508,487

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Nov	215	0.9578	38,591,818	46,071,773	53,551,728	36,965,172	44,129,847	51,294,522
	Dec	216	0.9714	38,730,980	46,245,725	53,760,471	37,621,682	44,921,198	52,220,713
2018	Jan'18	217	1.0472	38,870,142	46,419,678	53,969,214	40,703,526	48,609,151	56,514,775
	Feb	218	0.9659	39,009,304	46,593,630	54,177,957	37,679,166	45,004,883	52,330,599
	Mar	219	1.0115	39,148,465	46,767,583	54,386,700	39,597,348	47,303,828	55,010,307
	Apr	220	1.0313	39,287,627	46,941,535	54,595,443	40,515,974	48,409,185	56,302,396
	May	221	1.0086	39,426,789	47,115,488	54,804,186	39,765,660	47,520,442	55,275,224
	Jun	222	0.9717	39,565,951	47,289,440	55,012,929	38,445,022	45,949,699	53,454,377
	Jul	223	0.9803	39,705,113	47,463,393	55,221,672	38,920,945	46,526,000	54,131,055
	Aug	224	1.0598	39,844,275	47,637,345	55,430,415	42,227,624	50,486,848	58,746,073
	Sep	225	0.9916	39,983,437	47,811,297	55,639,158	39,645,851	47,407,620	55,169,389
	Oct	226	1.0031	40,122,599	47,985,250	55,847,901	40,247,083	48,134,128	56,021,174
	Nov	227	0.9578	40,261,761	48,159,202	56,056,644	38,564,727	46,129,291	53,693,855
	Dec	228	0.9714	40,400,923	48,333,155	56,265,387	39,243,797	46,948,841	54,653,885
2019	Jan'19	229	1.0472	40,540,085	48,507,107	56,474,129	42,452,236	50,795,038	59,137,840
	Feb	230	0.9659	40,679,247	48,681,060	56,682,872	39,292,168	47,021,135	54,750,102
	Mar	231	1.0115	40,818,409	48,855,012	56,891,615	41,286,440	49,415,192	57,543,944
	Apr	232	1.0313	40,957,571	49,028,965	57,100,358	42,238,129	50,561,879	58,885,628
	May	233	1.0086	41,096,733	49,202,917	57,309,101	41,449,957	49,625,813	57,801,669
	Jun	234	0.9717	41,235,895	49,376,870	57,517,844	40,067,655	47,977,991	55,888,326
	Jul	235	0.9803	41,375,057	49,550,822	57,726,587	40,557,908	48,572,203	56,586,498
	Aug	236	1.0598	41,514,219	49,724,774	57,935,330	43,997,457	52,699,140	61,400,823
	Sep	237	0.9916	41,653,381	49,898,727	58,144,073	41,301,695	49,477,425	57,653,154
	Oct	238	1.0031	41,792,543	50,072,679	58,352,816	41,922,208	50,228,034	58,533,861
	Nov	239	0.9578	41,931,705	50,246,632	58,561,559	40,164,282	48,128,735	56,093,188
	Dec	240	0.9714	42,070,867	50,420,584	58,770,302	40,865,911	48,976,484	57,087,057
2020	Jan'20	241	1.0472	42,210,029	50,594,537	58,979,045	44,200,945	52,980,925	61,760,904
	Feb	242	0.9659	42,349,191	50,768,489	59,187,788	40,905,170	49,037,387	57,169,605
	Mar	243	1.0115	42,488,353	50,942,442	59,396,531	42,975,531	51,526,556	60,077,581

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

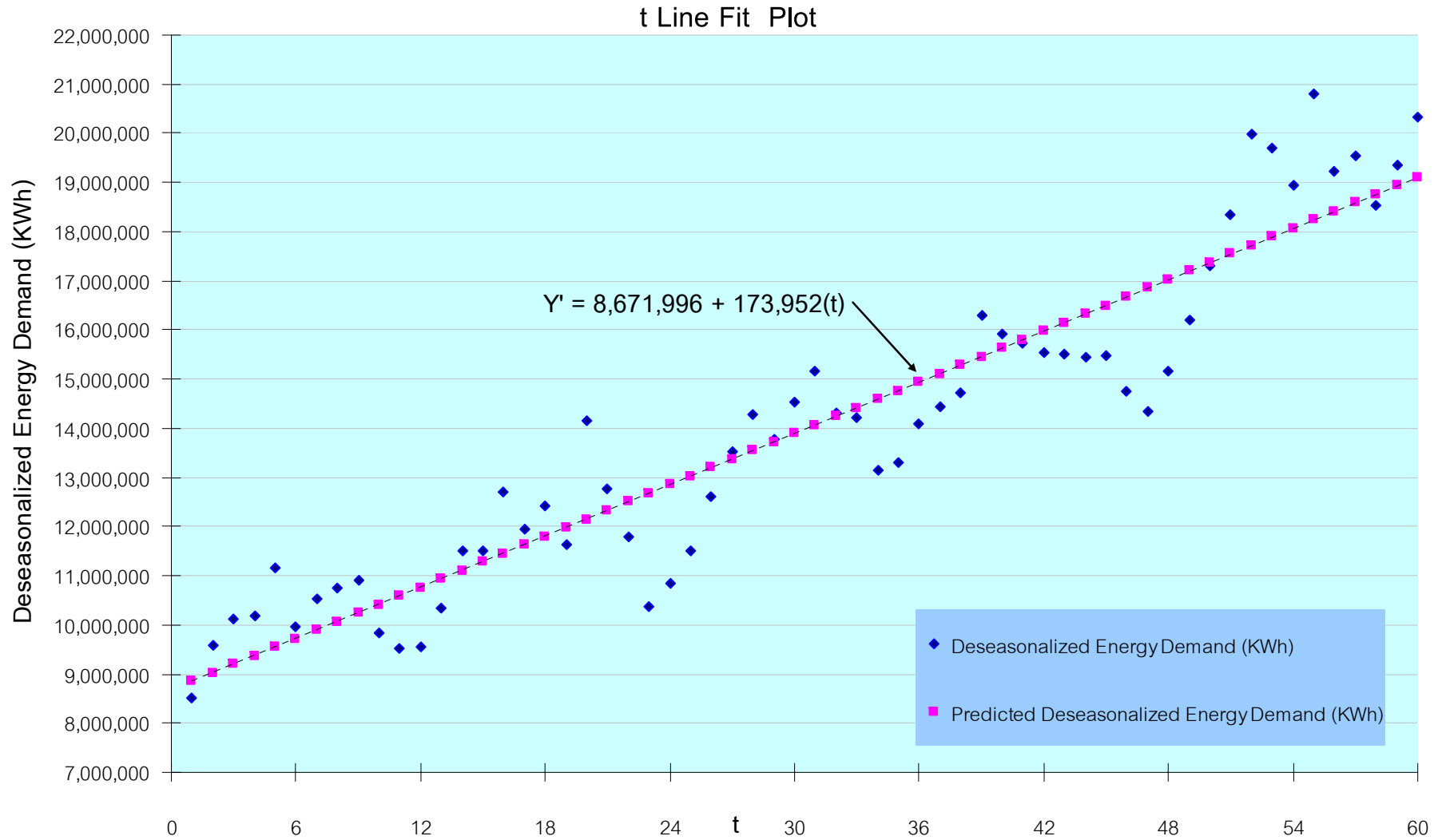
Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
	Apr	244	1.0313	42,627,514	51,116,394	59,605,274	43,960,284	52,714,573	61,468,861
	May	245	1.0086	42,766,676	51,290,346	59,814,017	43,134,253	51,731,184	60,328,114
	Jun	246	0.9717	42,905,838	51,464,299	60,022,759	41,690,288	50,006,282	58,322,276
	Jul	247	0.9803	43,045,000	51,638,251	60,231,502	42,194,870	50,618,406	59,041,942
	Aug	248	1.0598	43,184,162	51,812,204	60,440,245	45,767,291	54,911,433	64,055,574
	Sep	249	0.9916	43,323,324	51,986,156	60,648,988	42,957,539	51,547,230	60,136,920
	Oct	250	1.0031	43,462,486	52,160,109	60,857,731	43,597,333	52,321,940	61,046,548
	Nov	251	0.9578	43,601,648	52,334,061	61,066,474	41,763,838	50,128,179	58,492,521
	Dec	252	0.9714	43,740,810	52,508,014	61,275,217	42,488,026	51,004,127	59,520,229
2021	Jan'21	253	1.0472	43,879,972	52,681,966	61,483,960	45,949,655	55,166,812	64,383,968
	Feb	254	0.9659	44,019,134	52,855,919	61,692,703	42,518,171	51,053,640	59,589,108
	Mar	255	1.0115	44,158,296	53,029,871	61,901,446	44,664,623	53,637,920	62,611,218
	Apr	256	1.0313	44,297,458	53,203,823	62,110,189	45,682,439	54,867,266	64,052,094
	May	257	1.0086	44,436,620	53,377,776	62,318,932	44,818,550	53,836,554	62,854,559
	Jun	258	0.9717	44,575,782	53,551,728	62,527,675	43,312,921	52,034,573	60,756,225
	Jul	259	0.9803	44,714,944	53,725,681	62,736,418	43,831,832	52,664,609	61,497,386
	Aug	260	1.0598	44,854,106	53,899,633	62,945,161	47,537,125	57,123,725	66,710,325
	Sep	261	0.9916	44,993,268	54,073,586	63,153,904	44,613,383	53,617,035	62,620,686
	Oct	262	1.0031	45,132,430	54,247,538	63,362,646	45,272,457	54,415,846	63,559,235
	Nov	263	0.9578	45,271,592	54,421,491	63,571,389	43,363,393	52,127,624	60,891,854
	Dec	264	0.9714	45,410,754	54,595,443	63,780,132	44,110,141	53,031,770	61,953,400
2022	Jan'22	265	1.0472	45,549,916	54,769,395	63,988,875	47,698,364	57,352,699	67,007,033
	Feb	266	0.9659	45,689,078	54,943,348	64,197,618	44,131,173	53,069,892	62,008,610
	Mar	267	1.0115	45,828,240	55,117,300	64,406,361	46,353,714	55,749,285	65,144,855
	Apr	268	1.0313	45,967,402	55,291,253	64,615,104	47,404,594	57,019,960	66,635,326
	May	269	1.0086	46,106,563	55,465,205	64,823,847	46,502,846	55,941,925	65,381,004
	Jun	270	0.9717	46,245,725	55,639,158	65,032,590	44,935,554	54,062,864	63,190,174
	Jul	271	0.9803	46,384,887	55,813,110	65,241,333	45,468,795	54,710,812	63,952,829
	Aug	272	1.0598	46,524,049	55,987,063	65,450,076	49,306,959	59,336,017	69,365,076

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

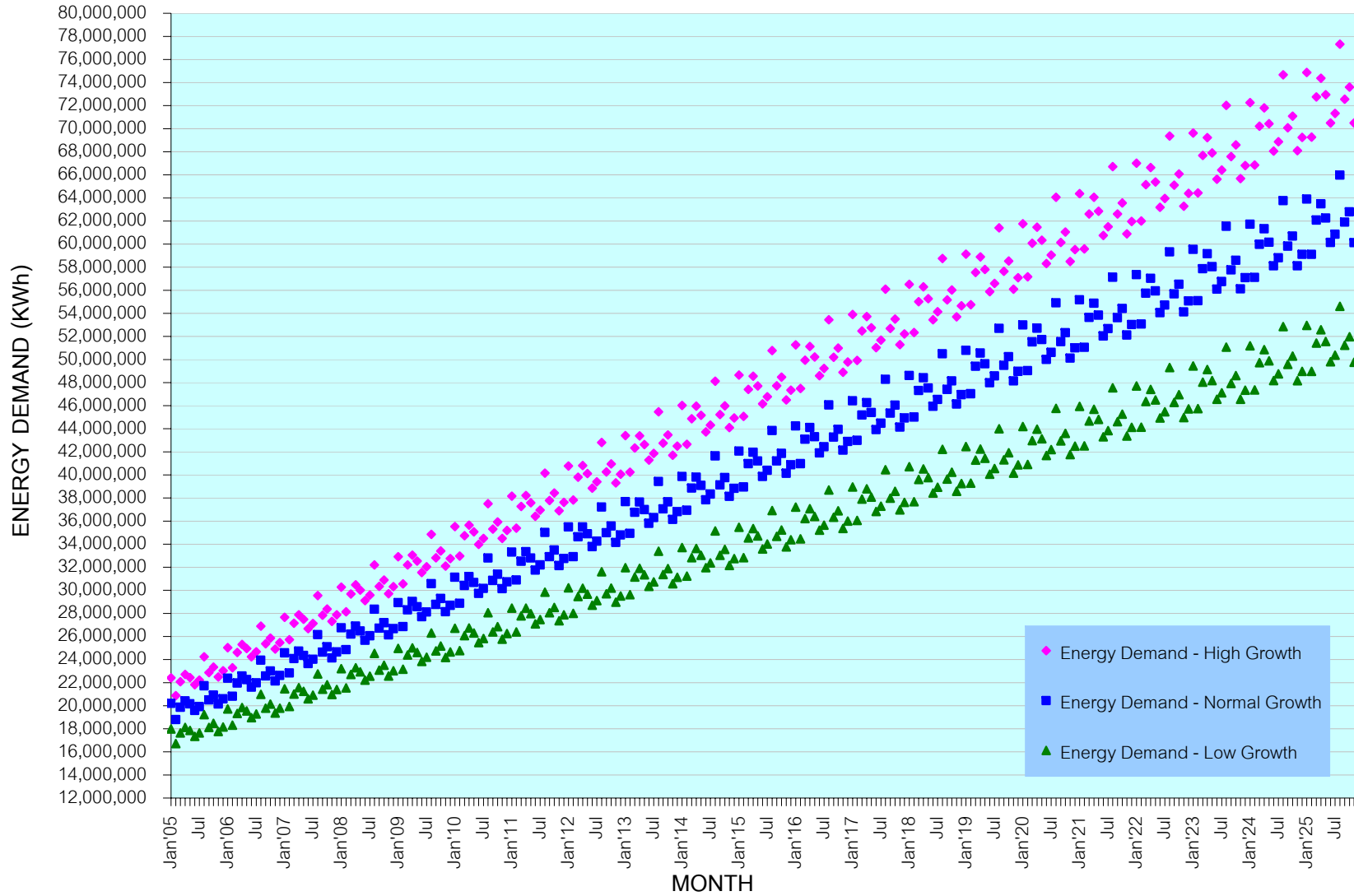
Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low	Normal	High	Low	Normal	High
				Growth	Growth	Growth	Growth	Growth	Growth
	Sep	273	0.9916	46,663,211	56,161,015	65,658,819	46,269,227	55,686,840	65,104,452
	Oct	274	1.0031	46,802,373	56,334,968	65,867,562	46,947,582	56,509,752	66,071,922
	Nov	275	0.9578	46,941,535	56,508,920	66,076,305	44,962,949	54,127,068	63,291,187
	Dec	276	0.9714	47,080,697	56,682,872	66,285,048	45,732,255	55,059,414	64,386,572
2023	Jan'23	277	1.0472	47,219,859	56,856,825	66,493,791	49,447,074	59,538,586	69,630,097
	Feb	278	0.9659	47,359,021	57,030,777	66,702,534	45,744,175	55,086,144	64,428,113
	Mar	279	1.0115	47,498,183	57,204,730	66,911,276	48,042,805	57,860,649	67,678,493
	Apr	280	1.0313	47,637,345	57,378,682	67,120,019	49,126,749	59,172,654	69,218,559
	May	281	1.0086	47,776,507	57,552,635	67,328,762	48,187,143	58,047,296	67,907,449
	Jun	282	0.9717	47,915,669	57,726,587	67,537,505	46,558,187	56,091,155	65,624,124
	Jul	283	0.9803	48,054,831	57,900,540	67,746,248	47,105,757	56,757,015	66,408,273
	Aug	284	1.0598	48,193,993	58,074,492	67,954,991	51,076,793	61,548,309	72,019,826
	Sep	285	0.9916	48,333,155	58,248,444	68,163,734	47,925,071	57,756,645	67,588,218
	Oct	286	1.0031	48,472,317	58,422,397	68,372,477	48,622,707	58,603,658	68,584,609
	Nov	287	0.9578	48,611,479	58,596,349	68,581,220	46,562,504	56,126,512	65,690,520
	Dec	288	0.9714	48,750,641	58,770,302	68,789,963	47,354,370	57,087,057	66,819,744
2024	Jan'24	289	1.0472	48,889,803	58,944,254	68,998,706	51,195,784	61,724,473	72,253,162
	Feb	290	0.9659	49,028,965	59,118,207	69,207,449	47,357,177	57,102,396	66,847,616
	Mar	291	1.0115	49,168,127	59,292,159	69,416,192	49,731,897	59,972,013	70,212,130
	Apr	292	1.0313	49,307,289	59,466,112	69,624,935	50,848,904	61,325,348	71,801,792
	May	293	1.0086	49,446,451	59,640,064	69,833,678	49,871,440	60,152,667	70,433,894
	Jun	294	0.9717	49,585,612	59,814,017	70,042,421	48,180,820	58,119,446	68,058,073
	Jul	295	0.9803	49,724,774	59,987,969	70,251,164	48,742,720	58,803,218	68,863,717
	Aug	296	1.0598	49,863,936	60,161,921	70,459,906	52,846,626	63,760,602	74,674,577
	Sep	297	0.9916	50,003,098	60,335,874	70,668,649	49,580,915	59,826,450	70,071,984
	Oct	298	1.0031	50,142,260	60,509,826	70,877,392	50,297,831	60,697,563	71,097,296
	Nov	299	0.9578	50,281,422	60,683,779	71,086,135	48,162,059	58,125,956	68,089,853
	Dec	300	0.9714	50,420,584	60,857,731	71,294,878	48,976,484	59,114,700	69,252,916

ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

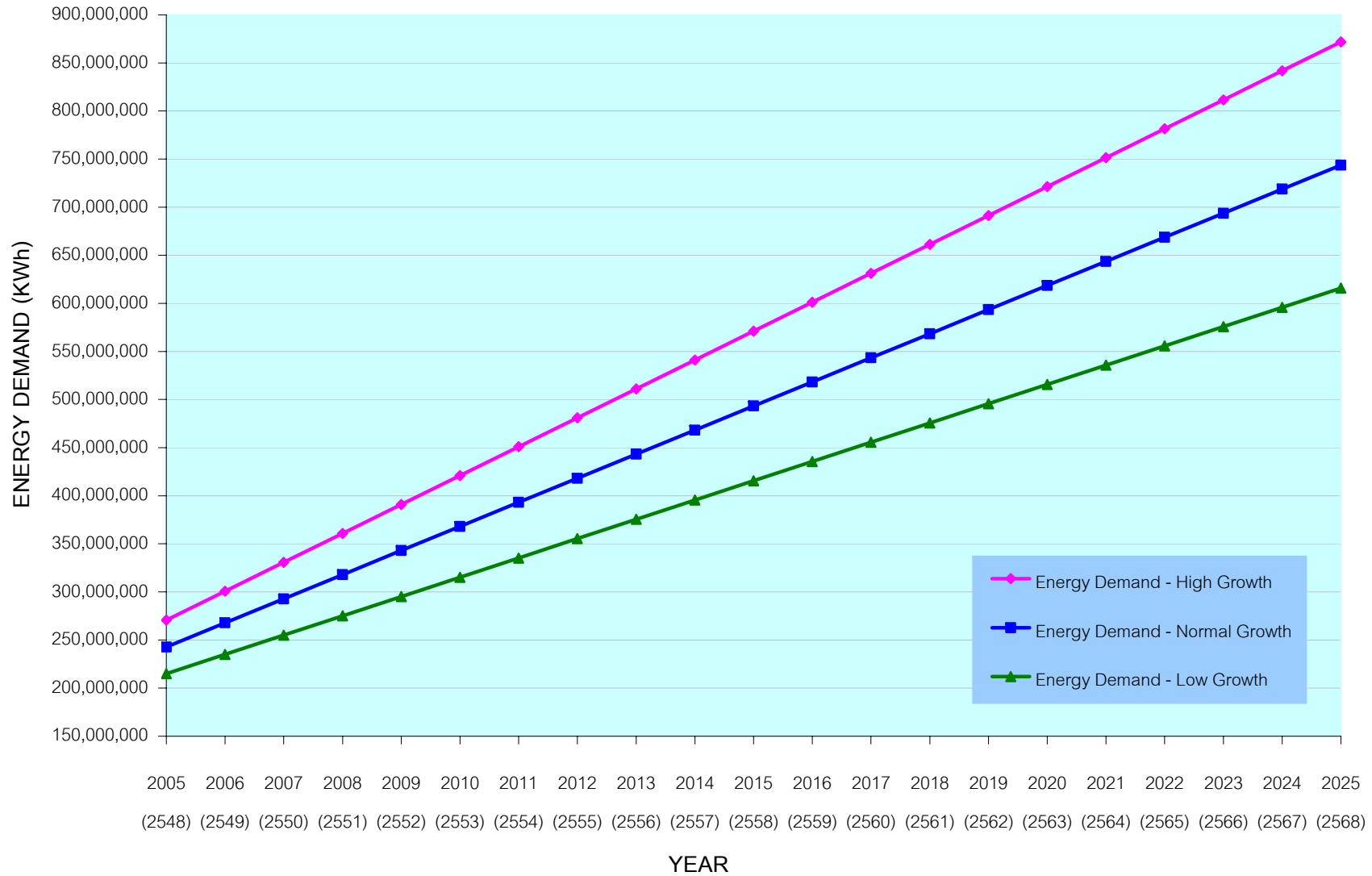
Year	Month	t	Typical Index	Deseasonalized Energy Demand (KWh)			Energy Demand (KWh)		
				Low Growth	Normal Growth	High Growth	Low Growth	Normal Growth	High Growth
2025	Jan'25	301	1.0472	50,559,746	61,031,684	71,503,621	52,944,493	63,910,360	74,876,226
	Feb	302	0.9659	50,698,908	61,205,636	71,712,364	48,970,179	59,118,649	69,267,119
	Mar	303	1.0115	50,838,070	61,379,589	71,921,107	51,420,988	62,083,377	72,745,767
	Apr	304	1.0313	50,977,232	61,553,541	72,129,850	52,571,060	63,478,042	74,385,024
	May	305	1.0086	51,116,394	61,727,493	72,338,593	51,555,736	62,258,037	72,960,338
	Jun	306	0.9717	51,255,556	61,901,446	72,547,336	49,803,453	60,147,738	70,492,023
	Jul	307	0.9803	51,394,718	62,075,398	72,756,079	50,379,682	60,849,421	71,319,160
	Aug	308	1.0598	51,533,880	62,249,351	72,964,822	54,616,460	65,972,894	77,329,328
	Sep	309	0.9916	51,673,042	62,423,303	73,173,565	51,236,759	61,896,255	72,555,750
	Oct	310	1.0031	51,812,204	62,597,256	73,382,308	51,972,956	62,791,469	73,609,983
	Nov	311	0.9578	51,951,366	62,771,208	73,591,051	49,761,615	60,125,400	70,489,186
	Dec	312	0.9714	52,090,528	62,945,161	73,799,793	50,598,599	61,142,343	71,686,087



MONTHLY ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)



ENERGY DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)



FORECAST SUMMARY

Note that the energy demand obtained from the previous section represents just only the demand of the PEA's customers excluding loss in transmission, demand of free-of-charge customers, and energy supply for public lighting. Therefore, to determine the total energy produced, an additional 10% of the energy demand must be included. In Table-3, the forecast peak demand in MW and energy demand and produced in KWh/Y during 2005 – 2025 are provided. Furthermore, the forecast natural gas demand for power generation in term of MMBTU/Y and MMSCF/Y are also provided in the table. In this analysis, it is assumed that electricity on Samui is entirely produced by a combined cycle power plant with an average plant heat rate (HHV) of 8,000 BTU/KWh. Besides, it is assumed that an average heating value (HHV) of the natural gas is 950 BTU/SCF.

According to Chart-1, peak demand for normal growth is expected to reach the current capacity of 73 MW by the end of 2007. Besides, the demand is expected to reach 100 MW by 2011 and will reach the PEA's extension capacity of 128 MW by the end of 2015. However for high growth economy, peak demand is expected to reach the existing capacity by the end of 2006. In addition, it is expected that peak demand will reach 100 MW and 128 MW by 2009 and 2012, respectively. In conclusion, the existing PEA's submarine transmission cables could support growth just only for the next one or two years. To avoid power supply shortage and blackout, capacity expansion requires immediate action since many new project developments on the island are underway.

TABLE-3: ELECTRICITY AND NATURAL GAS DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

Year	Low Economic Growth						Normal Economic Growth						High Economic Growth					
	Electricity Demand			NG Demand			Electricity Demand			NG Demand			Electricity Demand			NG Demand		
	Peak Demand	Energy Demand ¹ (KWh/Y)	Energy Produced ² (KWh/Y)	MMBTU/ Y	MMSCF/ Y	Peak Demand	Energy Demand ¹ (KWh/Y)	Energy Produced ² (KWh/Y)	MMBTU/ Y	MMSCF/ Y	Peak Demand	Energy Demand ¹ (KWh/Y)	Energy Produced ² (KWh/Y)	MMBTU/ Y	MMSCF/ Y			
2005 (2548)	51.43	215,045,535	236,550,088	1,892,401	1,992	59.61	242,790,930	267,070,023	2,136,560	2,249	67.79	270,536,325	297,589,957	2,380,720	2,506			
2006 (2549)	56.89	235,084,857	258,593,343	2,068,747	2,178	66.43	267,840,083	294,624,091	2,356,993	2,481	75.96	300,595,308	330,654,839	2,645,239	2,784			
2007 (2550)	62.34	255,124,179	280,636,597	2,245,093	2,363	73.24	292,889,235	322,178,159	2,577,425	2,713	84.14	330,654,291	363,719,720	2,909,758	3,063			
2008 (2551)	67.79	275,163,502	302,679,852	2,421,439	2,549	80.05	317,938,388	349,732,227	2,797,858	2,945	92.32	360,713,275	396,784,602	3,174,277	3,341			
2009 (2552)	73.24	295,202,824	324,723,106	2,597,785	2,735	86.87	342,987,541	377,286,295	3,018,290	3,177	100.49	390,772,258	429,849,484	3,438,796	3,620			
2010 (2553)	78.69	315,242,146	346,766,361	2,774,131	2,920	93.68	368,036,694	404,840,363	3,238,723	3,409	108.67	420,831,241	462,914,365	3,703,315	3,898			
2011 (2554)	84.14	335,281,468	368,809,615	2,950,477	3,106	100.49	393,085,846	432,394,431	3,459,155	3,641	116.85	450,890,225	495,979,247	3,967,834	4,177			
2012 (2555)	89.59	355,320,790	390,852,869	3,126,823	3,291	107.31	418,134,999	459,948,499	3,679,588	3,873	125.03	480,949,208	529,044,129	4,232,353	4,455			
2013 (2556)	95.04	375,360,113	412,896,124	3,303,169	3,477	114.12	443,184,152	487,502,567	3,900,021	4,105	133.20	511,008,191	562,109,010	4,496,872	4,734			
2014 (2557)	100.49	395,399,435	434,939,378	3,479,515	3,663	120.94	468,233,305	515,056,635	4,120,453	4,337	141.38	541,067,175	595,173,892	4,761,391	5,012			
2015 (2558)	105.95	415,438,757	456,982,633	3,655,861	3,848	127.75	493,282,458	542,610,703	4,340,886	4,569	149.56	571,126,158	628,238,774	5,025,910	5,290			
2016 (2559)	111.40	435,478,079	479,025,887	3,832,207	4,034	134.56	518,331,610	570,164,771	4,561,318	4,801	157.73	601,185,141	661,303,655	5,290,429	5,569			
2017 (2560)	116.85	455,517,402	501,069,142	4,008,553	4,220	141.38	543,380,763	597,718,839	4,781,751	5,033	165.91	631,244,125	694,368,537	5,554,948	5,847			
2018 (2561)	122.30	475,556,724	523,112,396	4,184,899	4,405	148.19	568,429,916	625,272,907	5,002,183	5,265	174.09	661,303,108	727,433,419	5,819,467	6,126			
2019 (2562)	127.75	495,596,046	545,155,651	4,361,245	4,591	155.01	593,479,069	652,826,975	5,222,616	5,497	182.26	691,362,091	760,498,300	6,083,986	6,404			
2020 (2563)	133.20	515,635,368	567,198,905	4,537,591	4,776	161.82	618,528,221	680,381,044	5,443,048	5,730	190.44	721,421,075	793,563,182	6,348,505	6,683			
2021 (2564)	138.65	535,674,690	589,242,159	4,713,937	4,962	168.63	643,577,374	707,935,112	5,663,481	5,962	198.62	751,480,058	826,628,064	6,613,025	6,961			
2022 (2565)	144.10	555,714,013	611,285,414	4,890,283	5,148	175.45	668,626,527	735,489,180	5,883,913	6,194	206.79	781,539,041	859,692,945	6,877,544	7,240			
2023 (2566)	149.56	575,753,335	633,328,668	5,066,629	5,333	182.26	693,675,680	763,043,248	6,104,346	6,426	214.97	811,598,025	892,757,827	7,142,063	7,518			
2024 (2567)	155.01	595,792,657	655,371,923	5,242,975	5,519	189.08	718,724,832	790,597,316	6,324,779	6,658	223.15	841,657,008	925,822,709	7,406,582	7,796			
2025 (2568)	160.46	615,831,979	677,415,177	5,419,321	5,705	195.89	743,773,985	818,151,384	6,545,211	6,890	231.32	871,715,991	958,887,590	7,671,101	8,075			

CHART-1: ENERGY PRODUCED AND PEAK DEMAND FORECAST FOR SAMUI ISLAND(2005 - 2025)

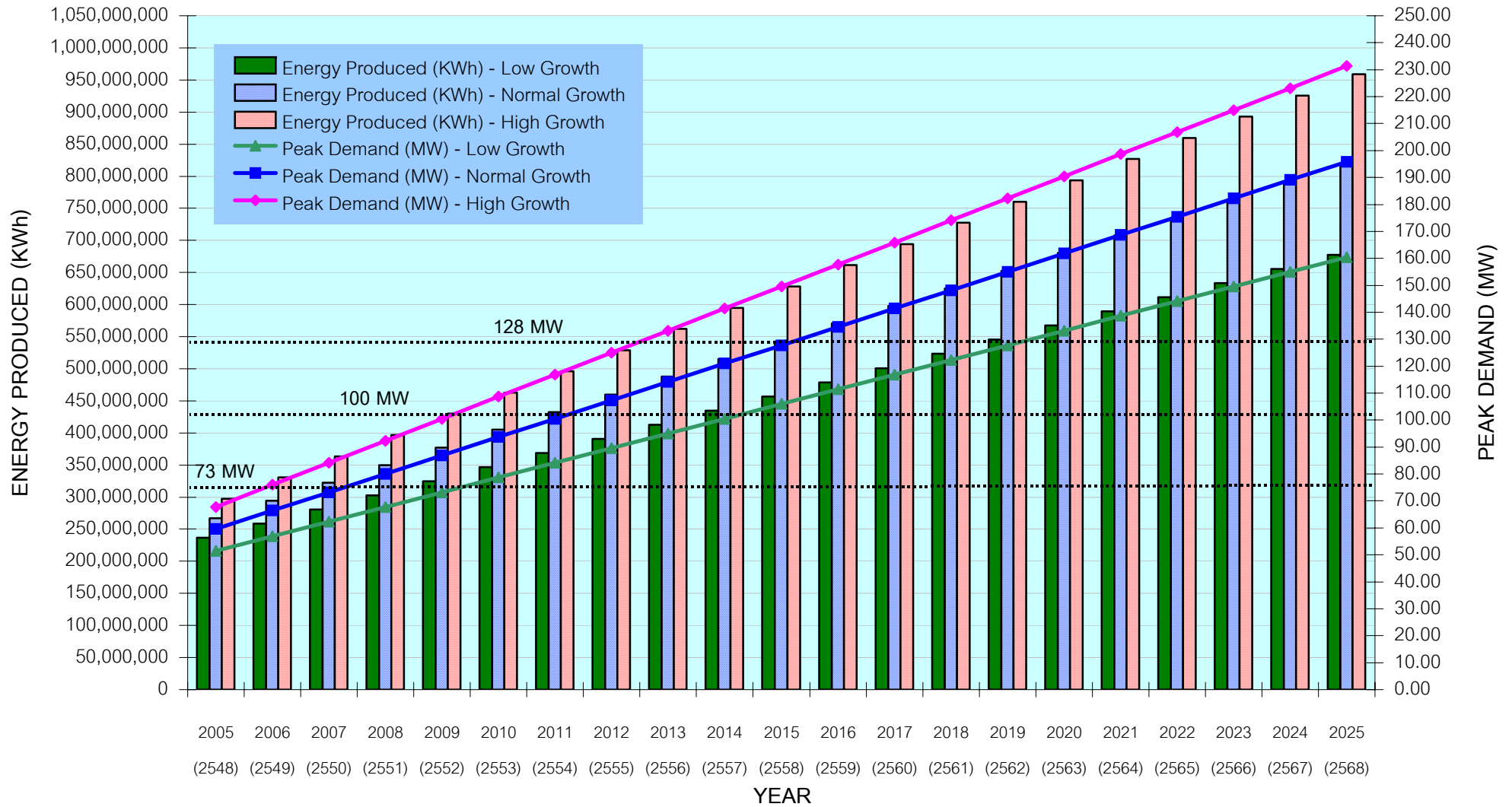


CHART-2: NATURAL GAS DEMAND FORECAST FOR SAMUI ISLAND (2005 - 2025)

