Understanding Tariffs

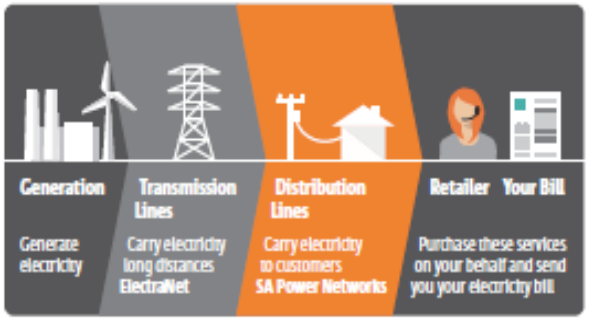
Business Tariffs

Agenda

- Background
- Tariff types
- Load profile discussion on moving loads out of peak demand periods.

SA Power Networks
Understanding the electricity industry in SA

We are just one link in the energy supply chain and therefore one component of your electricity bill.



As the distribution network manager, SA Power Networks builds and maintains the poles, wires and substations that deliver power reliably and safely to around 850,000 customers:

750,000 residential customers, 25% of whom have solar PV on their homes

95,000 small business customers

5000 large business customers

We operate and maintain a network of:

400 zone substations

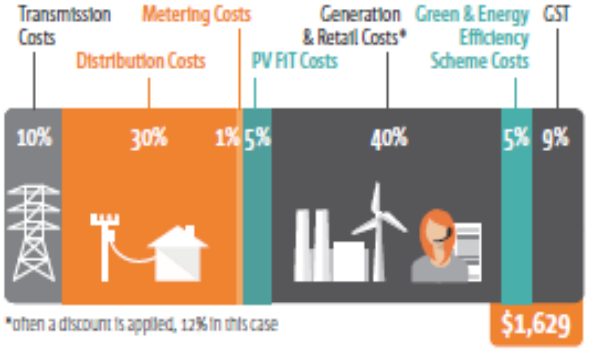
73,000 street transformers

720,000 stobie poles

200,000km of wires

Covering **178,000km²**

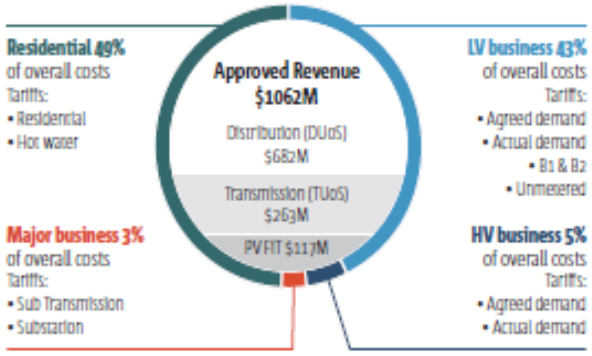
Typical Residential Customer's Annual Electricity Bill



*when a discount is applied, 12% in this case

2015 – 2016 tariff classes

As well as charging customers the cost of managing the distribution network, we are also responsible for charging customers for the transmission and Solar PV Feed In Tariff (PV FiT) costs. We do this by splitting these costs amongst the different customer segments (or tariff classes, as below):



Tariff class	Transmission (TUoS)	Distribution (DUoS)	PV FiT	Total
Residential	42%	52%	52%	49%
LV business	44%	43%	42%	43%
HV business	7%	4%	5%	5%
Major business	7%	1%	1%	3%

There are also a number agencies that govern the industry, both on a National and State level:

The Australian Energy Market Commission (AEMC) *makes* the policies and rules.

The Australian Energy Market Operator (AEMO) *manages* the wholesale market and B2B transactions in the National Electricity Market (NEM).

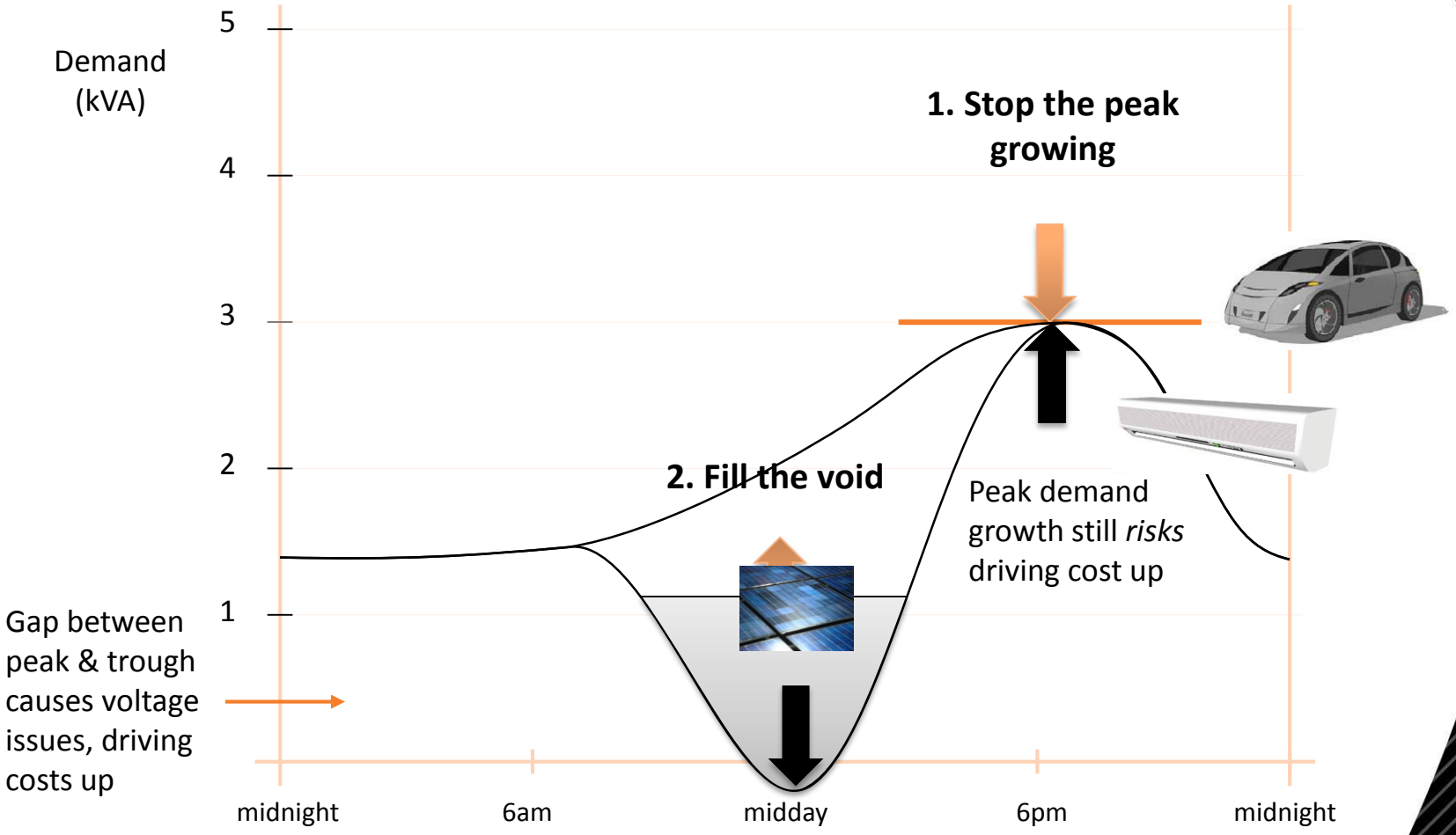
The Australian Energy Regulator (AER) *enforces* the rules and is responsible for the economic regulation of network businesses.

The Essential Services Commission of SA (ESCoSA) is responsible for *licensing and setting and enforcing customer service standards* in SA.

The Office of the Technical Regulator (OTR) is responsible for *technical* and safety regulations.

The Energy and Water Industry Ombudsman SA (EWoSA) handles complaints for residential and small business customers.

Network load challenges



Implications for tariff design

Peak demand

- Encourage customers to **avoid the peak** (4 – 9pm)
- This has to be sustainable on hot Summer days
- Therefore price '**monthly maximum demand**' (kVA)

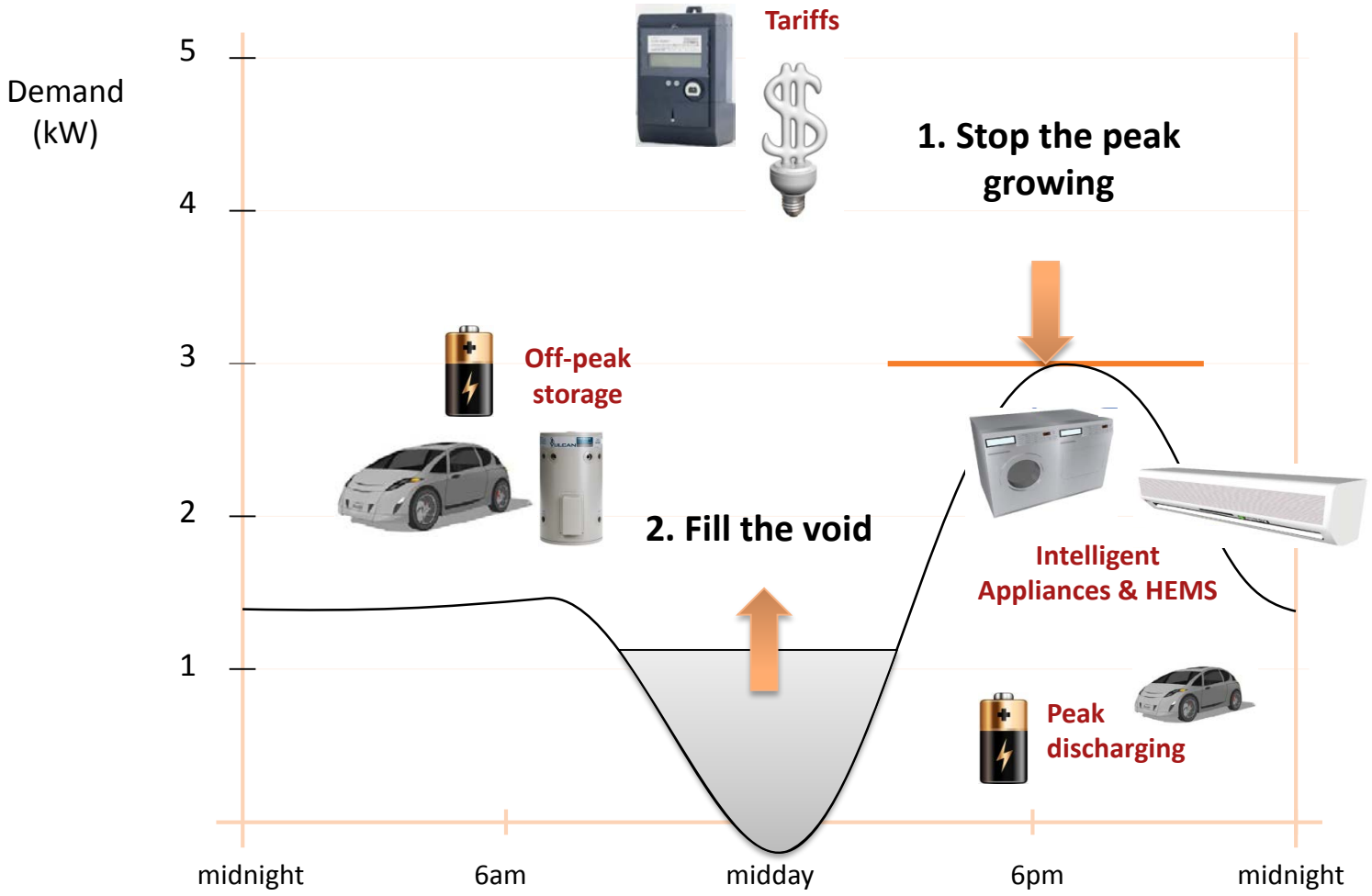
Energy

- Encourage customers to use energy outside of the peak times
- Therefore **reduced energy price** with demand tariffs

Should encourage …

- Shift pump loads out of the peak demand periods
- Look at thermal storage
- Use of solar generation for refrigeration loads through the day

Desired outcome



LV/HV *Agreed* Demand Tariff

The tariff provides for two demand periods:

- **1. Annual Demand Period**
  - This is any half hour period between 12noon and 9pm (local time) on work days, between
  - November and the end of March.
- **2. Anytime Demand Period**
  - This is any half hour period outside of the Annual demand period.

Note: Weekends and Public holidays are not considered work days and therefore are exempted from the Annual peak demand period.

LV/HV *Agreed* Demand Tariff

LV/HV *Actual* Demand Tariff

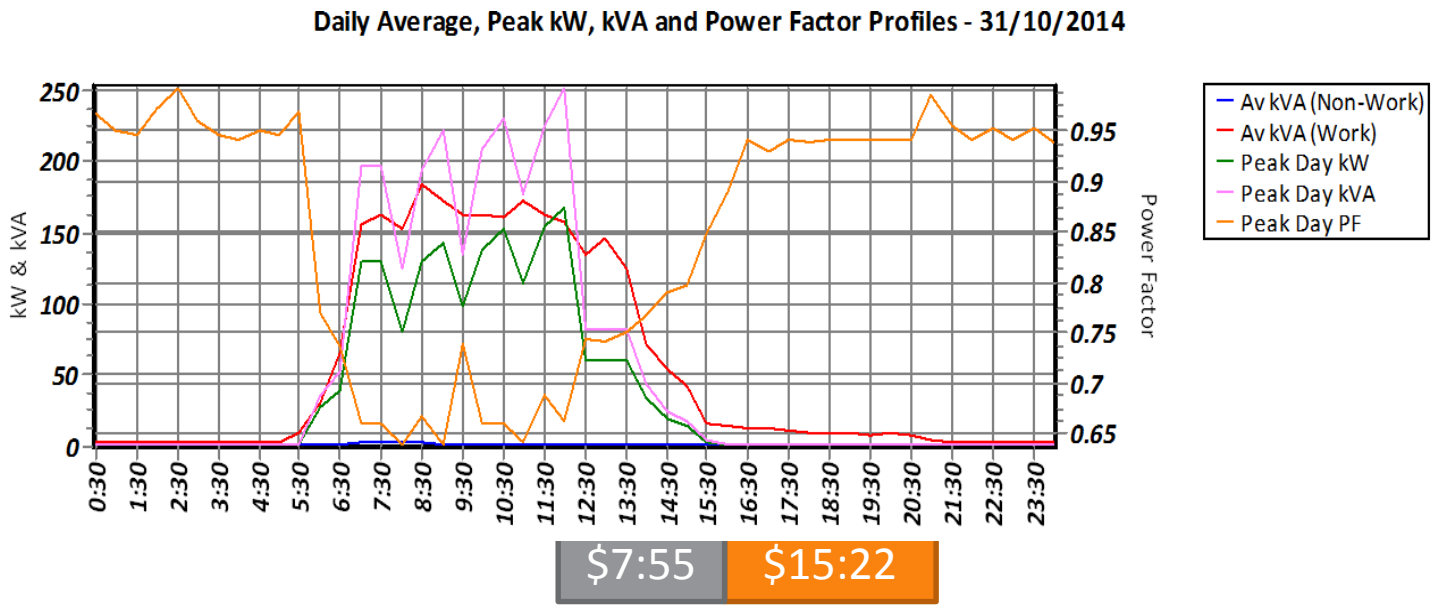
The tariff provides for three demand periods:

- **1. Peak Demand Period**
  - This is any half hour period between 4pm and 9pm (local time) on work days, between
  - November and the end of March.
- **2. Shoulder Demand Period**
  - This is any half hour period between 12noon and 4pm (local time) on work days,
  - All year round.
- **3. Off-peak Demand Period**
  - This is any half hour period outside of the Peak and Shoulder Demand periods.

Note: Weekends and Public holidays are not considered work days and therefore are exempted from shoulder and peak periods.

LV/HV *Actual* Demand Tariff

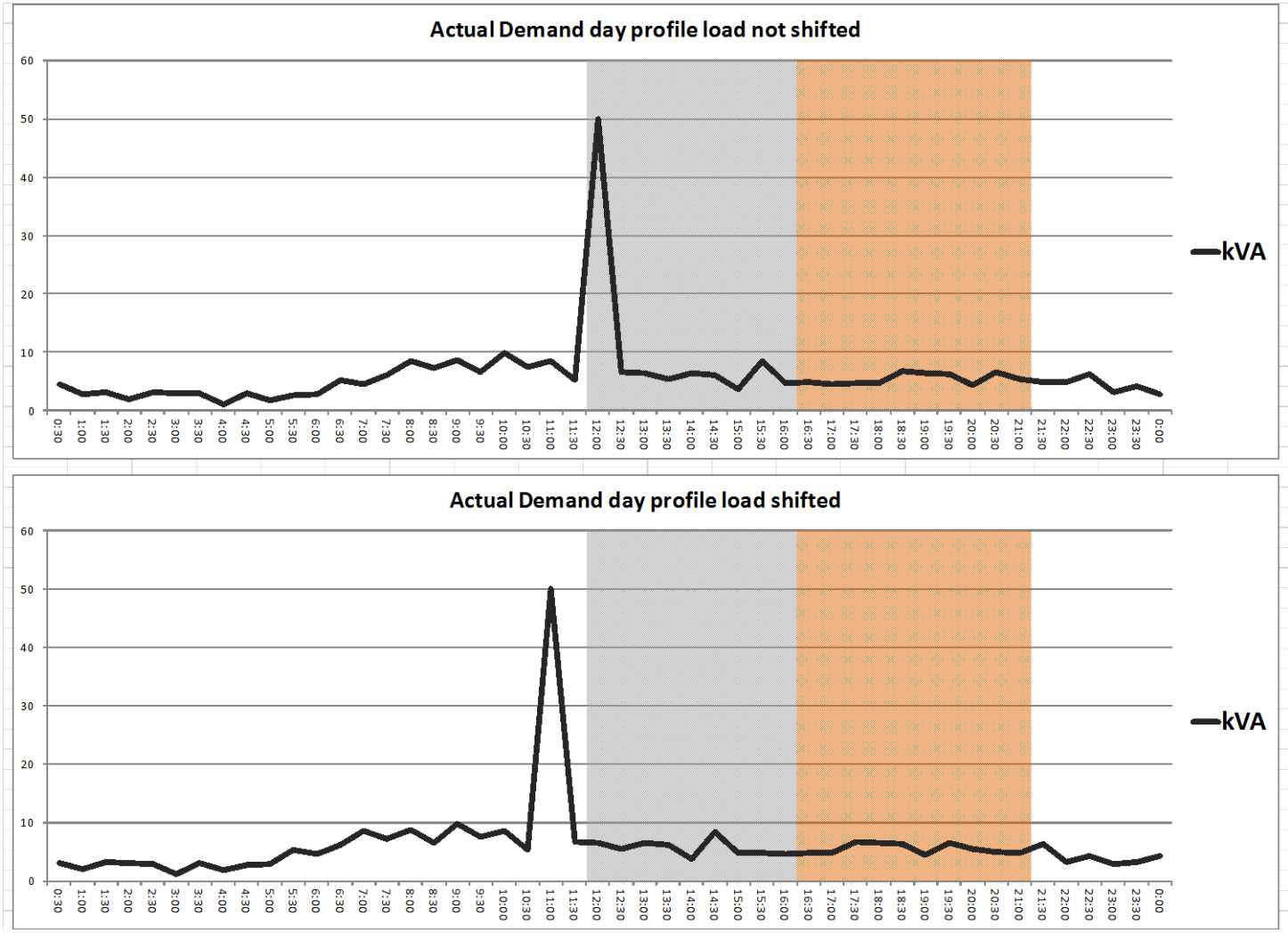
Load shifting and Power factor



By shifting the higher demand outside of the shoulder period the demand saving equates to 245-70 = 175kVA not being charged in the shoulder period.

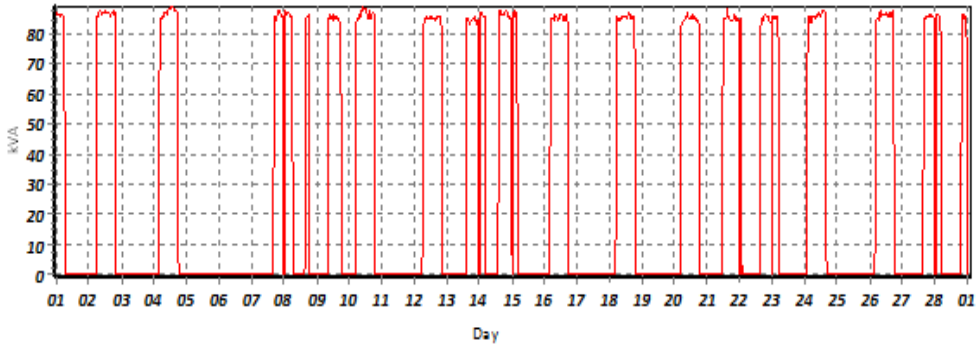
175kVA at $7:55 per kVA = $1,321 saving a month just by moving start/end times of loads.

Small Pump Load – shift saves $350/month

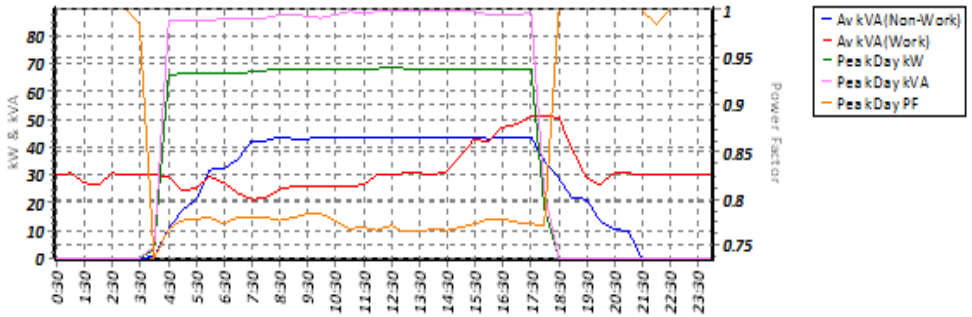


From 1 February 2017 to 28 February 2017 (Net - In) (MDA)

Network Load Profile - 01/02/2017 to 28/02/2017



Daily Average, Peak kW, kVA and Power Factor Profiles - 04/02/2017



Statistics

Total Consumption:	15,397.62 kWh
Peak Consumption:	7,374.6 kWh
Offpeak Consumption:	8,023.02 kWh
Summer Demand:	88.282 kVA / 67.6 kW at half-hour ending 07/02/2017 8:30 pm
Shoulder Demand:	88.799 kVA / 67.24 kW at half-hour ending 10/02/2017 1:00 pm
Offpeak Demand:	89.271 kVA / 68.32 kW at half-hour ending 04/02/2017 1:30 pm
Anytime Demand:	N/A
Total number of working days:	20
Total number of non-working days:	8
Total number of days:	28
Hours for Peak Consumption:	7:00 am to 9:00 pm during working days
Hours for Summer Demand:	16:00 to 21:00 on working days, November to March
Hours for Shoulder Demand:	12:00 to 16:00, working days, all year round

B2R tariff compared to Business Demand

Billing Period: From 29/02/2016 to 28/02/2017 inclusive

First Tariff: 15 Business 2 Rate (B2R)
Using Network rates effective as of July 2016

Second Tariff: Business Monthly Actual kVA Demand Trans. (obs. July 2016) (BDT)
Using Network rates effective as of July 2016

Month	Amount (First Tariff)	Amount (Second Tariff)	Estimated Savings
February 2016	$134.02	$120.97	$13.05
March 2016	$912.35	$1,710.85	-$798.50
April 2016	$461.45	$651.99	-$190.54
May 2016	$31.39	$96.57	-$65.19
June 2016	$18.12	$11.73	$6.39
July 2016	$18.69	$12.12	$6.57
August 2016	$19.01	$12.29	$6.72
September 2016	$18.18	$11.74	$6.44
October 2016	$20.77	$97.36	-$76.59
November 2016	$601.96	$1,404.81	-$802.85
December 2016	$1,188.22	$1,898.42	-$710.20
January 2017	$1,720.36	$2,286.67	-$566.32
February 2017	$1,747.01	$2,174.88	-$427.88
Totals:	**$6,891.52**	**$10,490.41**	**-$3,598.88**

Agreed Demand / Actual Demand

Billing Period:	From 29/02/2016 to 28/02/2017 inclusive
First Tariff:	Business Annual Agreed kVA Demand (LV) Using Network rates effective as of July 2016
Second Tariff:	Business Monthly Actual kVA Demand (BD) Using Network rates effective as of July 2016

Month	Amount (First Tariff)	Amount (Second Tariff)	Estimated Savings
February 2016	$67.43	$110.70	-$43.27
March 2016	$1,981.82	$3,250.90	-$1,269.08
April 2016	$1,551.54	$1,146.77	$404.77
May 2016	$1,323.88	$0.05	$1,323.83
June 2016	$1,281.15	$0.00	$1,281.15
July 2016	$1,323.85	$0.00	$1,323.85
August 2016	$1,323.85	$0.00	$1,323.85
September 2016	$1,281.15	$0.00	$1,281.15
October 2016	$1,429.10	$905.87	$523.22
November 2016	$2,010.40	$3,333.94	-$1,323.54
December 2016	$2,186.00	$3,609.51	-$1,423.51
January 2017	$2,270.64	$3,737.26	-$1,466.62
February 2017	$2,071.78	$3,414.45	-$1,342.67
Totals:	**$20,102.58**	**$19,509.46**	**$593.12**

Agreed Demand / Actual Demand

Billing Period:	From 29/02/2016 to 28/02/2017 inclusive
First Tariff:	Business Annual Agreed kVA Demand (LV) Using Network rates effective as of July 2016
Second Tariff:	Business Monthly Actual kVA Demand (BD) Using Network rates effective as of July 2016

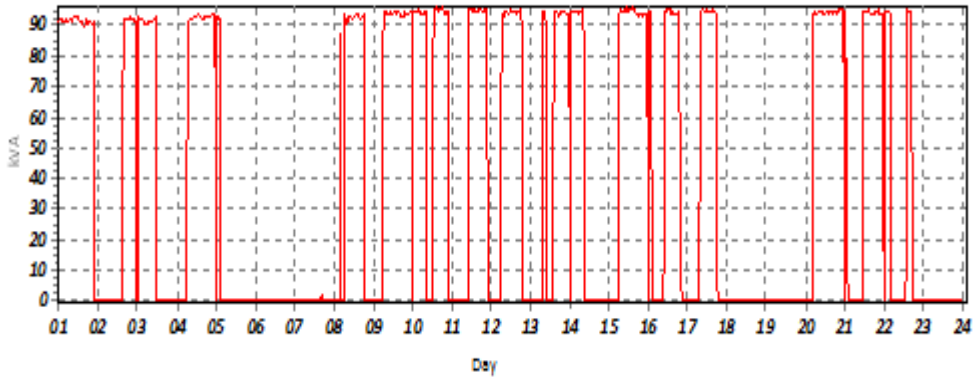
Month	Amount (First Tariff)	Amount (Second Tariff)	Estimated Savings
February 2016	$126.81	$189.56	-$62.75
March 2016	$4,045.14	$6,621.44	-$2,576.30
April 2016	$3,858.74	$3,628.34	$230.40
May 2016	$3,897.65	$3,685.83	$211.83
June 2016	$3,632.62	$3,196.65	$435.97
July 2016	$3,590.07	$2,842.79	$747.29
August 2016	$3,656.47	$3,127.99	$528.48
September 2016	$3,752.14	$3,358.39	$393.75
October 2016	$3,932.98	$3,474.81	$458.17
November 2016	$3,727.73	$5,159.50	-$1,431.76
December 2016	$3,759.24	$5,178.87	-$1,419.64
January 2017	$3,660.56	$5,125.26	-$1,464.70
February 2017	$3,430.52	$4,944.33	-$1,513.81
Totals:	**$45,070.67**	**$50,533.74**	**-$5,463.07**

Questions

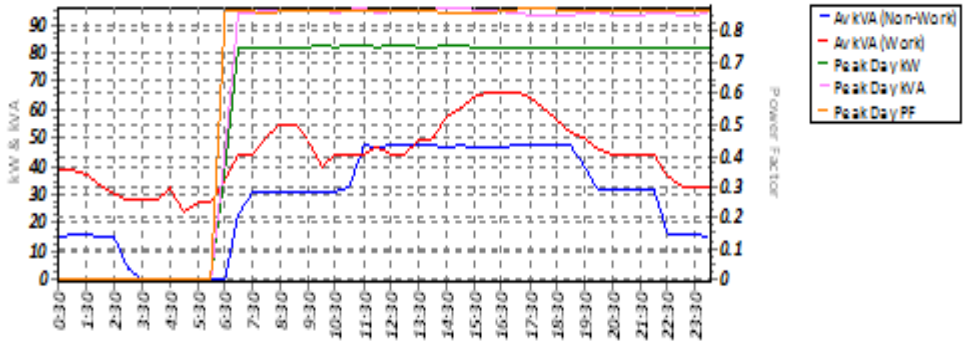
www.sapowernetworks.com.au

Example 1 – Small pump?

Network Load Profile - 01/02/2017 to 28/02/2017



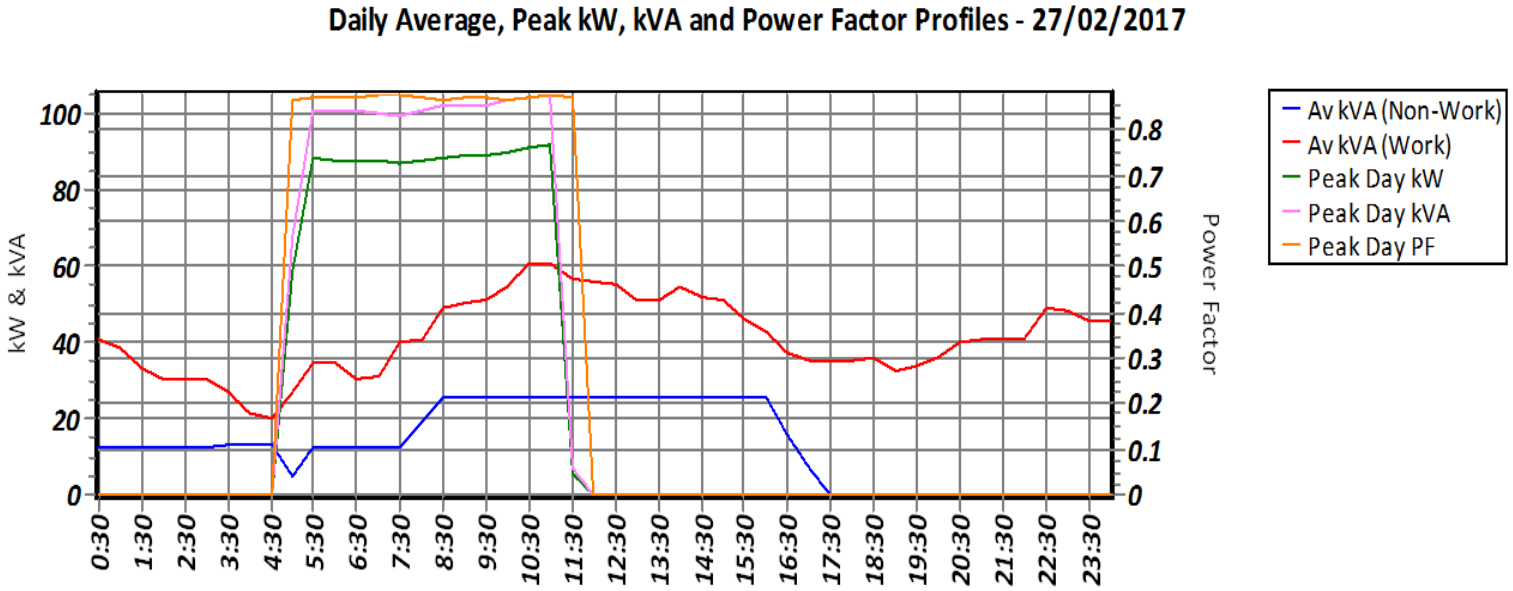
Daily Average, Peak kW, kVA and Power Factor Profiles - 15/02/2017



Statistics

Total Consumption:	19,096.25 kWh
Peak Consumption:	10,663.4 kWh
Offpeak Consumption:	8,432.85 kWh
Peak Demand:	96.006 kVA / 82.36 kW at half hour ending 15/02/2017 3:00 pm
Offpeak Demand:	95.882 kVA / 82.14 kW at half hour ending 11/02/2017 5:30 pm
Anytime Demand:	N/A

Load shifted but not all days in the month



Statistics

Total Consumption:	19,475.67 kWh
Peak Consumption:	11,197.87 kWh
Offpeak Consumption:	8,277.8 kWh
Summer Demand:	102.952 kVA / 89.94 kW at half-hour ending 08/02/2017 8:00 pm
Shoulder Demand:	104.691 kVA / 90.76 kW at half-hour ending 03/02/2017 1:00 pm
Offpeak Demand:	105.127 kVA / 92.06 kW at half-hour ending 27/02/2017 11:00 am