



Bi-directional Meters Explained

Available from Western Powers website at <https://westernpower.com.au/support/bi-directional-meters/> is the following information:

"When a grid connected photovoltaic (PV) or any other embedded generation system is installed on a house or building, our regulation requires that a bi-directional meter must be installed. This bi-directional meter measures and records the net amount of electricity that is consumed or generated."

The net amount of electricity is further explained; when your electricity consumption is higher than your electricity generation then the meter will record the difference between the two, this is the net consumption. When your electricity generation is higher than your electricity consumption then the meter will record the difference, this is the net generation. Over the billing period, two totals (accumulated registers) are stored - one total is the net consumption and the other is the net generation. These consumption and generation totals are net totals over all phases connected at the meter. These are the values which are read periodically and are used for billing."

Although the Electrical network (including the electricity meters) belongs to and is operated by Western Power, all bills are issued by Synergy using the information provided to them by Western Power.

The first paragraph is simply stating the need to have a bi-directional meter installed so that you can be charged for the amount of electricity imported into your house and credited for the amount of electricity that is exported back into the grid with the difference being the amount that you are billed. It is not the total amount of electricity imported and the total amount exported but the net amounts calculated in real time, which is explained by the second paragraph. Whether you have a single, two or three phase supply and a single, two singles, three singles or a three phase inverter installed your bill is based on your overall net amount of electricity imported or exported in real time. Your bill does not have a charge per phase connected to your house, just one total amount because your bills are not calculated per phase but as a total net amount.

Example 1:

You have a 5 Kw inverter mounted to your wall and during the middle of the day it is producing 5 Kw of electricity and no one is home to use any of it, assuming that your air conditioner is turned off, your pool isn't running and your fridge door is shut so that the compressor isn't running to keep it cool. At this point almost 100% of your 5 Kw production will be exported to the western power grid, if that is done for 1 hour you will have exported almost 5 Kwh or 5 units of power. This amount will be represented on the back of your bill in the "Renewable Energy Buyback Scheme" as a difference between your last and current meter reading.



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Example 2:

You have a 5 Kw inverter mounted to your wall but once the sun has set it is producing nothing and has turned itself off, you and your family are home, someone is cooking dinner in the kitchen with your electric oven, lights are on, the TV is on and it was a hot day so your air conditioner is on low. You are using 7 Kw of electricity in your home and 100% of that electricity is being imported directly from the Western Power network. If the same amount of power was used for 1 hour you would have used 7 Kwh of electricity or 7 units of power, this will be represented on the back of your electricity bill as “Anytime Usage” as the difference between your last and current meter reading.

That is the simplest way of explaining how your electricity meter reads your imported/exported amount of electricity to enable synergy to produce your bill. The following example is a more realistic way of looking at your system.

Example 3:

You have a 5 Kw inverter mounted to your wall, it is the middle of the day and it is producing 5 Kw of electricity, it is the weekend and people are home. Before lunch it is quite cool so your air conditioner is turned off, but someone has turned your dish washer on, the TV is on and the compressor on your fridge is running to cool it down after people opening and closing the door at breakfast time, you are currently using 3 Kw of electricity and this amount doesn't change for 1 hour. Your house is importing 3 Kw from the Western Power network but it is also exporting 5 Kw, the net amount is 2 Kw being exported and you will have a credit on your account for this amount.

After lunch it starts to heat up a bit so you turn the air conditioner on, the TV is still on and the fridge is still cooling down after the lunchtime rush, your dish washer has finished but now your washing machine is on instead, you are now using 6 Kw of electricity for the next hour. Your house is now importing 6 Kw from the Western Power network and exporting 5 Kw, the net amount is 1 Kw being imported and you will have a charge on your account for this amount.

Your energy supply details

Supply address: 123 Sample St, Sampleteown WA 1234

NMI: 80019728509

Next scheduled read date: 01 Dec 2016

Your usage summary for meter number: 012A23456

Supply period:	04 Aug 2016 - 30 Sep 2016	Previous meter reading	Current meter reading	Units imported (kWh)	Units exported (kWh)
Renewable Energy Buyback Scheme		3885	4109		224.0000
Anytime usage		17224	18077	853.0000	