4.3.1 "BAU" Meter Wiring Diagrams

The following Meter Wiring Diagrams provide details of the wiring of metering on "New Connections" for new customer installations, and "Additions / Alterations" to existing customer installations undertaken as Business as Usual (BAU) activities, and to comply with the CitiPower and Powercor Tariff rules. New Connection customers typically receive a single element, single meter for connection to a General Power and Light Time of Use Network Tariff, such as C13R in CitiPower or P13R in Powercor, or a Flat Rate Network Tariff, such as C1R in CitiPower or D1 in Powercor.

Those single phase New Connection customers installing an approved off-peak storage electric hot water service can chose to connect via use of a single phase single element meter on a Time of Use Network Tariff or access a Dedicated Circuit Controlled Load Tariff arrangement through via use of a single phase two element meter and relevant Network Tariffs such as C1RCDS in CitiPower or D1DD1 in Powercor.

Note: Customers undertaking a meter exchange as part of an Additions / Alterations retain all existing tariffs and dedicated circuit load control arrangements.

Load Switching - **Single Phase New Connections & Additions / Alterations**.
Single phase New Connection customers, and existing customers undertaking an addition/alteration but remaining as single phase installations will be provided with a switching service for eligible single phase off-peak hot water units up to 30A, inclusive of boost tails (if permitted by the Retailer).

For those Single phase New Connection customers with an approved off-peak storage hot-water unit and requesting access to a Flexi tariff such as C13R in CitiPower or P13R in Powercor will be connected via a single phase single element meter , with the HWS connected to the meter's contactor (inclusive of boost tails if permitted by the retailer), and the hot-water unit will continue to be switched and charged at the off-peak rates each night between 11pm and 7am, any re-heat consumption will be charged at the prevailing Time of Use rates. All consumption will be recorded on the E1 data stream and display register #3.

For those Single phase New Connection customers with an approved off-peak Electric Hot Water service and requesting access to a Dedicated Circuit Controlled Load Tariff arrangement, will be undertaken via a single phase two element Meter, with the HWS connected to the meter's contactor (inclusive of boost tails if permitted by the retailer), with the HWS consumption charged at the Dedicated Circuit Network Tariff off-peak rate, including any HWS top element "re-heat". GP&L consumption will be recorded on the E1 data stream and display register #3, while HWS consumption will be recorded on the E2 data stream and display register #7.

Load Switching - **Multi Phase New Connections & Additions / Alterations**.
Multiphase New Connection customers, and existing customers undertaking an addition/alteration resulting in multiphase phase installations will be provided with a 2A switching service for single or multiphase loads controlled by a customer owned contactor. Customers will need to provide a 2A circuit breaker and their own load control contactor within the customer's own switchboard in accordance with **Figure 1**.

Loads controlled by the 2A Switching Service will continue to be switched and charged at the off-peak rates each night between 11pm and 7am, any boost consumption will be charged at the prevailing Time of Use rates. All consumption will be recorded on the E1 data stream and display register #3 of the Meter.

Multiphase meters are only available in a single element form, and consequently New Connection customers cannot access a Dedicated Circuit Load Control Tariff, and hence those sites using load control are recommended to apply for a ToU tariff such as Flexi tariff C13R in CitiPower or P13R in Powercor.

Boost Button:

All AMI meters with contactors have a boost button, and in all HWS applications cases, the customer can press the manual “boost” button on the meter, which will close the contactor for up to 6 hours (or until the HWS thermostat disconnects supply) however that consumption will be recorded on the E1 data stream and display register #3 of the Meter and on the prevailing rate of the General Power and Light Tariff.

Approved Off-Peak Electric Storage Hot Water Services

The dedicated circuit controlled load tariff and switching times are designed around the heating requirements of an 8 hour hot water storage unit, limited to a 30 amperes, resistive current rating and turned off and on in accordance with the applicable CitiPower and Powercor load control strategy.

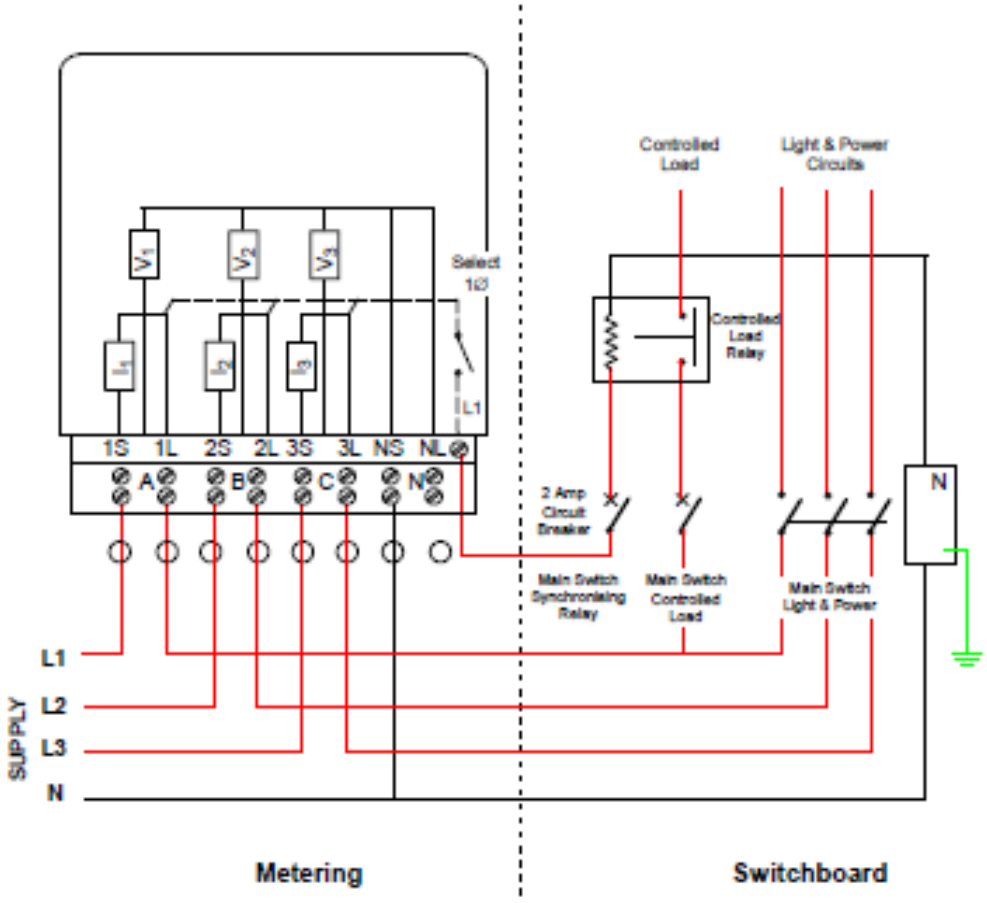
Smaller storage hot water services (i.e. less than 8 hour heating times) will switch-off via their thermostats (as will an electric boosted solar hot water service) and therefore, will operate satisfactorily on two element meters and tariffs.

These controlled load tariffs are not suitable, nor available for use with heat pump technology hot water services, or slab heating / heat bank equipment requiring an afternoon boost. (Existing customers are able to retain their existing Slab/Heat bank arrangements)

Figure 1

2A Load Switching for Multiphase New Connections and Additions / Alterations

Note: This Drawing is indicative only; switchboard wiring must comply with Australian wiring regulations, contactor may control multiple phases, controlled load supply to be taken from general “light and power” circuits. Boost tails for any controlled load such as off-peak storage hot water units shall be wired to the customer’s un-controlled general “light and power” circuits.



Notes

- All Metering Conductors to have:
  - sheath removed & 100mm / 150mm single insulated through correct panel holes
  - colour identified phases, eg red, white and blue
  - function permanently labelled on conductor behind panel
- Line and Load conductors to be:
  - not less than 4mm2 or greater than 35mm^2
  - not less than 18 strand for 25mm^2 and 35mm^2 conductors
- Contactor control conductor to be 4mm^2 or 6mm^2 at meter
- Neutral link to meter conductor to be 4mm2
- Meter installer to bridge unused phases as required.
- 2 Amp Circuit Breaker must be used as a Main Switch Synchronising Control (to protect metering contacts))
- Main Switch and switchboard wiring to be in accordance with Australian wiring regulations.

VSIR Figures

The Victorian Service and Installation Rules are available online at http://www.victoriansir.org.au/

The CitiPower and Powercor Specific requirements provided in this document are to be used particularly in conjunction with the following VSIR figures 8.10-H and 8.10-I in the CitiPower and Powercor Network areas, and where relevant to VSIR figures 8.10-J, 8.10-K, 8.10-L, 8.10-M, 8.10-N, and 8.10-P.

CitiPower / Powercor Specific Requirements

The following Specific Requirements apply to New Connections and Add/Alt Customers within CitiPower and Powercor Network areas. Refer to VSIR figures 8.10-H and 8.10-I for relevant meter panel layouts.

MWD-1, **MWD-2.1**, **MWD-2.2, MWD-3** and **MWD-4** are available to all "New", "Add/Alt", (including any of those customers connecting to "VFIT") in the CitiPower and Powercor Network areas.

MWD – 1 Single phase 1 Element Meter
MWD – 2.1 Single phase 1 Element Meter with load contactor (30A)
MWD – 2.2 Single phase 2 Element Meter with load contactor (30A)
MWD – 3 Three phase Meter (installed as 2 phase)*
MWD – 4 Three phase Meter

Note: **MWD-5** and **MWD-6** require the customer to install their own heavy current contactor and a 2A circuit breaker in accordance with Figure 1.

MWD – 5 Three phase Meter (installed as 2 phase)* with 2A switching service
MWD – 6 Three phase Meter with 2A switching service

Bi-directional Metering for Embedded Generation

All bi-directional metering in CitiPower / Powercor is provided as net metering, and connected on the General Power and Light supply, gross metering for embedded generation is not provided.

Solar (VFIT) Metering, and Load Control

The Victorian Feed in Tariff (**VFIT**) is available to new solar customers (and existing solar customers transferring from PFIT, TFIT or SFIT) and provides a feed in price from the Retailer in the order of @6c/kWh.

VFIT applications are permitted to remain on their existing Network consumption tariffs and to retain all existing load control arrangements via the metering.

VFIT applications for existing customers will have their existing AMI metering reconfigured remotely for bi-directional metering. New solar customers with old analogue metering are required to have it replaced with a “like for like” bi-directional AMI metering installation to maintain access to existing tariffs and those existing load control arrangements.

Requirement for Bi-Directional Metering:

The requirements to upgrade the existing meter to a bi-directional meter arises from the National Electricity Rules, administered by the Australian Energy Market Commission (AEMC), an independent authority of the Federal Government and under the guidance of the Council of Australian Governments (COAG).

NER Chapter 7 – clause 7.3.1 Metering installation components

(a) A metering installation, unless it is classified as an unmetered connection point in accordance with schedule 7.2, must:

(7) be capable of separately recording energy data for energy flows in each direction where bi-directional active energy flows occur or could occur;
Note
This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

Note 1: The Premium Feed in Tariff (**PFIT**) was closed from 1 January 2012 –. PFIT metering was required to be instantaneous net metering and therefore single element, single meter solution, and will finish on 1 November 2014

Note 2: The Transitional Feed in Tariff (**TFIT**) was closed from 1 January 2013 – TFIT metering was required to be instantaneous net metering and therefore single element, single meter solution, and will finish on 31 December 2016, with those customers transferring to VFIT.

Note 3: The ("one for one") Standard Feed in Tariff (**SFIT**) was closed to new customers from 1 January 2013, permitted customers to retain "like for like" metering and will finish on 31 December 2016, with those customers transferring to VFIT

Note 4: The Victorian Feed in Tariff (**VFIT**) is available to new solar customers (and existing solar customers transferring from PFIT, TFIT or SFIT) and provides a feed in price from the Retailer in the order of @6c/kWh.

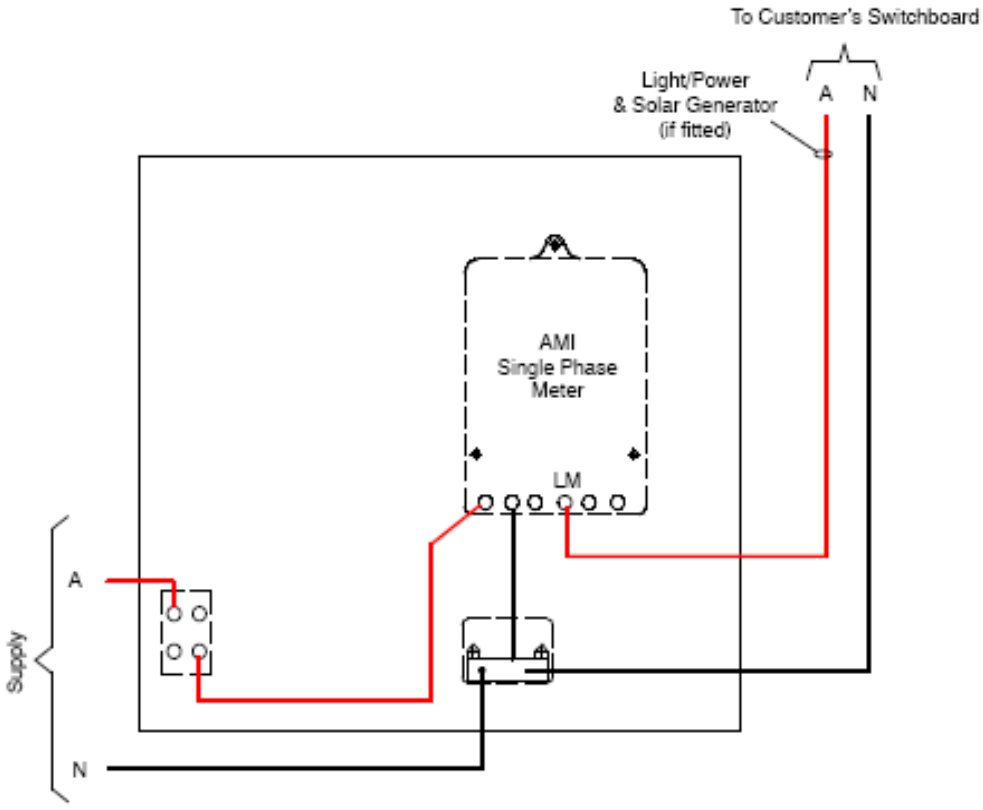
Note 5: "Like for like" metering installations for VFIT are not covered by the following Meter Wiring Diagrams, other than for New Connections, or Additions/Alterations required for other reasons, and resulting in a single element, single meter solution.

Note 6: A "2" phase AMI Meter does not exist, and installations of 3 Phase meters at 2 phase premises shall be installed by Distributor Metering Personnel in accordance with the "Installation of "Two Phase" Interval Meters Policy in section 4.1 of the Connection Standards Manual with reference to Meter Terminal Drawing AMT-4.

Note 7: "New Connection" and "Adds/Alt" Installations are to be connected in accordance with the current Victorian Service and Installation Rules.

METER WIRING DIAGRAM

MWD – 1 Single Phase 1 Element AMI Meter

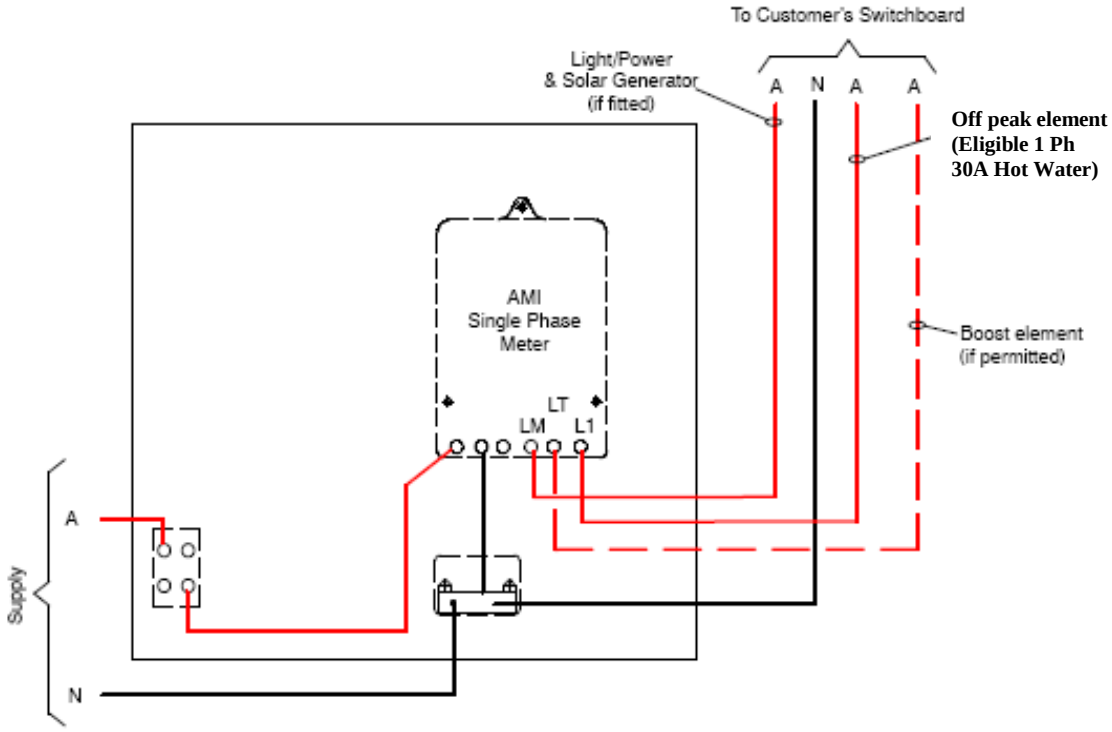


Notes

1. Available for Single phase "New Connection" and "Additions/Alterations" customers in CitiPower and Powercor, including **"VFIT"*** (*Existing Customers moving to "**VFIT**" retain existing tariffs and metering configurations)
2. Solar Generator (if fitted) to be connected to power circuits in customer's main switch board.
3. Refer to VSIR Figure 8.10-H for meter panel layout.
4. Refer figure AMT-1 for Meter Terminal Drawing.

METER WIRING DIAGRAM

MWD – 2.1 Single Phase 1 Element AMI Meter with contactor

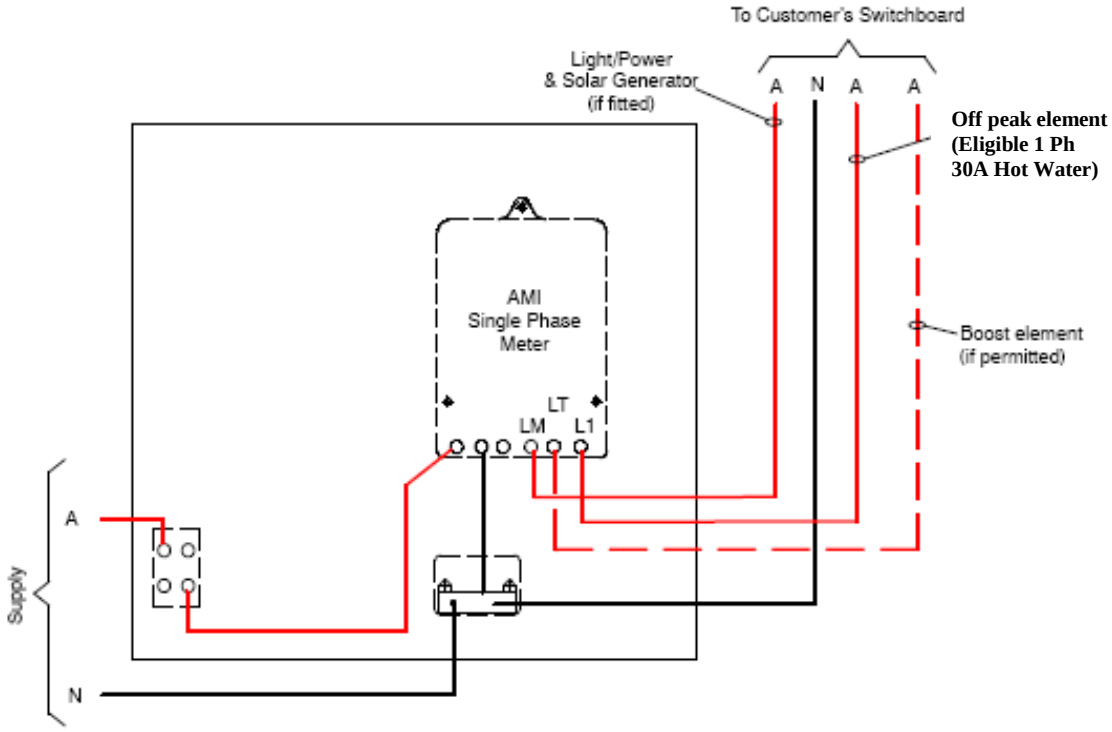


Notes

1. Available for Single phase "New Connection" and "Additions/Alterations" customers in CitiPower and Powercor, including **"VFIT"*** (*Existing Customers moving to "**VFIT**" retain existing tariffs and metering configurations)
2. Single Phase Eligible Off-peak storage Hot Water Service maybe connected to meter.
3. Switching service will require contacting meter to be installed.
4. Boost element, (if fitted) may be connected to meter.
5. Controlled load current must not exceed 30 Amperes.
6. Solar Generator (if fitted) to be connected to power circuits in customer's main switch board.
7. Refer to VSIR Figure 8.10-H for meter panel layout.
8. Refer figure AMT-2 for Meter Terminal Drawing.

METER WIRING DIAGRAM

MWD – 2.2 Single Phase 2 Element AMI Meter with contactor

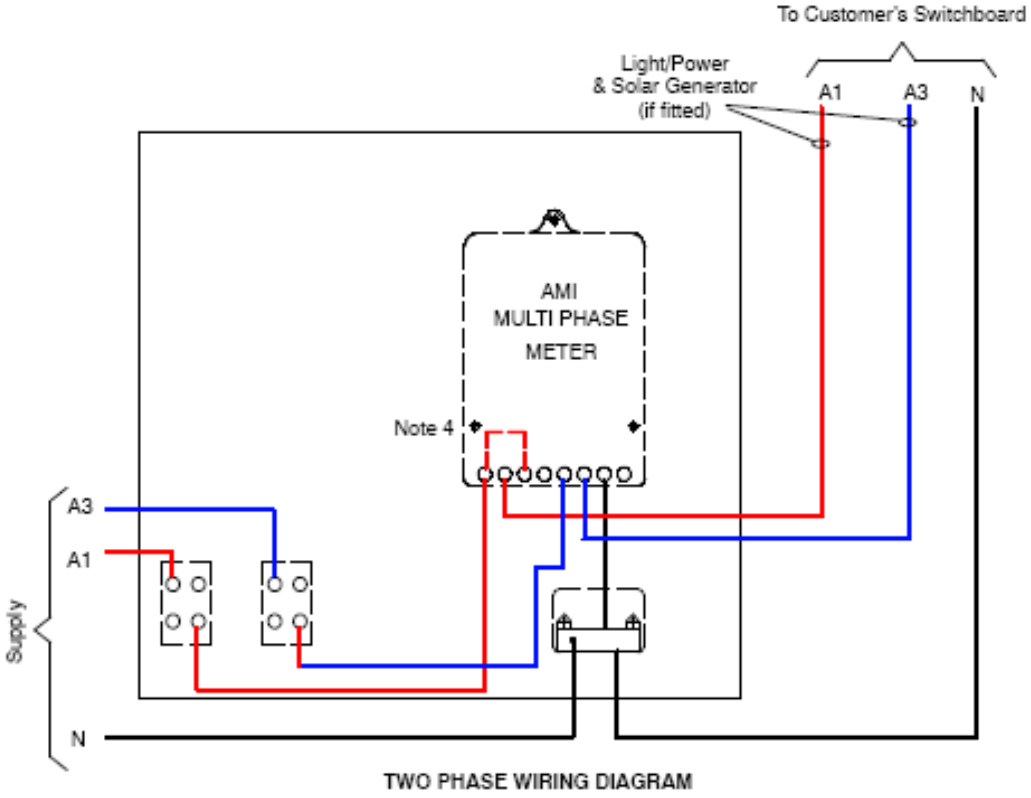


Notes

9. Available for Single phase "New Connection" and "Additions/Alterations" customers in CitiPower and Powercor, including **"VFIT"*** (*Existing Customers moving to "**VFIT**" retain existing tariffs and metering configurations)
10. Single Phase Eligible Off-peak storage Hot Water Service maybe connected to meter.
11. Switching service will require contacting meter to be installed.
12. Boost element, (if fitted) may be connected to meter.
13. Controlled load current must not exceed 30 Amperes.
14. Solar Generator (if fitted) to be connected to power circuits in customer's main switch board.
15. Refer to VSIR Figure 8.10-H for meter panel layout.
16. Refer figure AMT-2 for Meter Terminal Drawing.

METER WIRING DIAGRAM

MWD – 3 Three Phase AMI Meter (as 2 Phase)



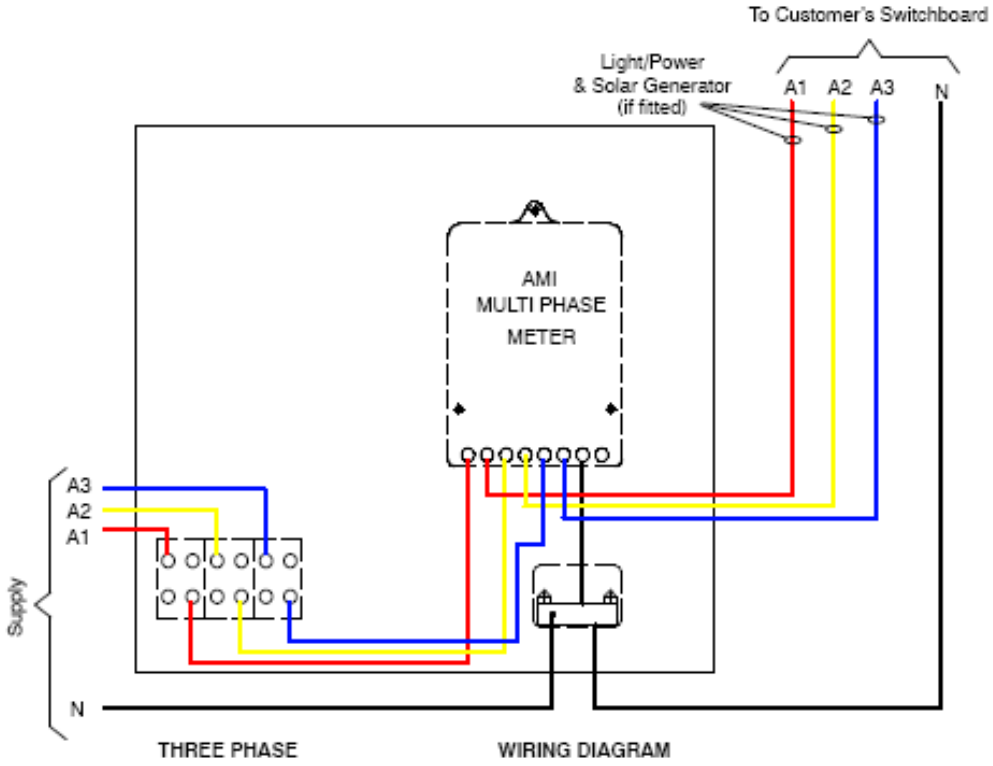
TWO PHASE WIRING DIAGRAM

Notes

1. Available for Multiphase "New Connection" and "Additions/Alterations" customers in CitiPower and Powercor, including **"VFIT"***
   (*Existing Customers moving to "**VFIT**" retain existing tariffs and metering configurations)
2. Solar Generator (if fitted) to be connected to power circuits in customer's main switch board.
3. Refer to VSIR Figure 8.10-I for meter panel layout.
4. Unused phase on 2 Ph supply to be bridged at potential terminal of 3 Ph meter.
5. Unused Phase:
   Distributor metering personnel to install 2.5mm^2 stranded cable
   marked - - - - as per figure AMT-4.
6. Refer figure AMT-4 for Meter Terminal Drawing.

METER WIRING DIAGRAM

MWD – 4 Three Phase AMI Meter



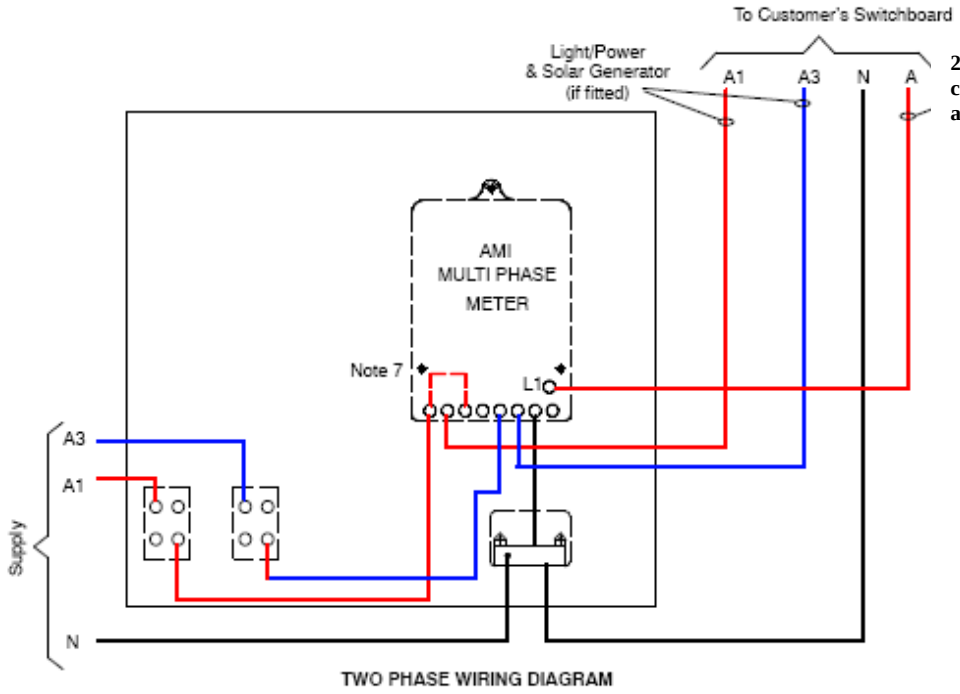
Notes

1. Available for Multiphase "New Connection" and "Additions/Alterations" customers in CitiPower and Powercor, including "**VFIT**"*
   (*Existing Customers moving to "**VFIT**" retain existing tariffs and metering configurations)
2. Solar Generator (if fitted) to be connected to power circuits in customer's main switch board.
3. Refer to VSIR Figure 8.10-I for meter panel layout.
4. Refer figure AMT-6 for Meter Terminal Drawing.

METER WIRING DIAGRAM

MWD – 5 Three Phase AMI Meter (as 2 Phase) with 2A Switching Service

Note: Multi-phase New Connection customers, and existing customers undertaking an addition/alteration resulting in multiphase phase installations will need to provide a 2A circuit breaker and their own load control contactor within the customer's own switchboard in accordance with **Figure 1**



TWO PHASE WIRING DIAGRAM

2A Switching Service supplying customer owned contactor in accordance with Figure 1

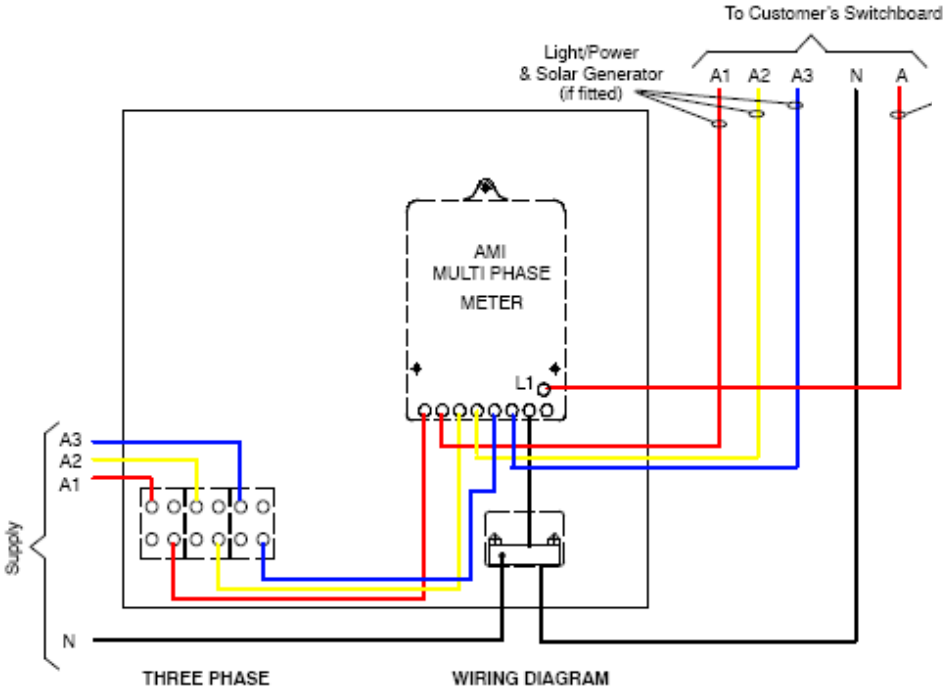
Notes

1. Available for Multiphase "New Connection" and "Additions/Alterations" customers in CitiPower and Powercor, including **"VFIT"*** (*Existing Customers moving to "**VFIT**" retain existing tariffs and metering configurations)
2. Only a 2A, circuit breaker limited switching service can be connected to meter.
3. Customer must supply 2A circuit breaker and heavy current contactor in customer switchboard.
4. 2A switching circuit to be wired generally in accordance with Figure 1.
5. Switching service will require contacting meter to be installed.
6. Customer's heavy current contactor may control multiple phases sourced from the MSB light and power circuits.
7. Unused phase on 2 Ph supply to be bridged at potential terminal of 3 Ph meter.
8. Unused Phase:
   Distributor metering personnel to install 2.5mm^2 stranded cable marked - - - - as per figure AMT-5. .
9. Boost element, (if fitted) must be wired to the customer's switchboard.
10. Solar Generator (if fitted) to be connected to power circuits in customer's main switch board.
11. Refer to VSIR Figure 8.10-I for meter panel layout.
12. Refer figure AMT-5 for Meter Terminal Drawing.

METER WIRING DIAGRAM

MWD – 6 Three Phase AMI Meter with 2A Switching Service

Note: Multi-phase New Connection customers, and existing customers undertaking an addition/alteration resulting in multiphase phase installations will need to provide a 2A circuit breaker and their own load control contactor within the customer's own switchboard in accordance with **Figure 1**.



2A Switching Service supplying customer owned contactor in accordance with Figure 1

Notes

1. Available for Multiphase "New Connection" and "Additions/Alterations" customers in CitiPower and Powercor, including "**VFIT**"*
   (*Existing Customers moving to "**VFIT**" retain existing tariffs and metering configurations)
2. Only a 2A, circuit breaker limited switching service can be connected to meter.
3. Customer must supply 2A circuit breaker and heavy current contactor in customer switchboard.
4. 2A switching circuit to be wired generally in accordance with Figure 1.
5. Switching service will require contacting meter to be installed.
6. Customer's heavy current contactor may control multiple phases sourced from the MSB light and power circuits.
7. Boost element, (if fitted) must be wired to the customer's switchboard.
8. Solar Generator (if fitted) to be connected to power circuits in customer's main switch board.
9. Refer to VSIR Figure 8.10-I for meter panel layout.
10. Refer figure AMT-7 for Meter Terminal Drawing.