Single Unit Residential Guide 1 PHASE, 120/240 VOLT SERVICES

SERVICE CAPACITY	PROVISION FOR UTILITY OWNED METERING (Metering sockets and cabinets are supplied by Customer). Outdoor meter mounting height is 1730 mm (5'8") to center of meter ± 100 mm (4")	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.
* 60 – 100 amp (3 wire only) 101 – 200 amp	<u>60 – 100 amp</u> Overhead services require a minimum 100 Amp rated standard 4 jaw meter socket installed outdoors. All disconnecting devices to be installed on the load side of the meter. Underground services require a minimum 200 amp rated, heavy duty, stud style 4 jaw meter socket with provision for sealing ring installed outdoors. <u>101 – 200 amp</u> Overhead services require a minimum 200 amp rates standard 4 jaw meter socket installed outdoors. All disconnecting devices to be installed on the load side of the meter. Underground services require a minimum 200 amp rated heavy duty stud style, 4 jaw meter socket with sealing ring installed outdoors.	Secondary clevis or rack required. Aerial services supplied by ENWIN Utilities will have maximum tensions as follows: Triplex service – 400 kg (900 lbs.) Open wire secondary services up to 400 amp – 272 kg (600 lbs.) / cond.	Customer may request that ENWIN Utilities install an underground service from ENWIN's designated point of supply from either an overhead or underground system to the customer's first point of connection. Up to 200 amp ENWIN will install, own and maintain secondary cables to neutral and line side studs of outdoor metering socket. <u>201 – 400 amp</u> ENWIN will install, own and maintain parallel secondary cables to neutral and line side lugs of indoor main disconnect.
201 – 400 amp Maximum allowable service is 400 amperes	<u>201 – 400 amp</u> 910 mm x 910 mm x 250 mm (36" x 36" x 10") CT cabinet installed indoors on load side of main service switch. Socket installed outdoors. 32 mm (1 ¼") rigid steel conduit installed between CT cabinet and socket. ** See Note below		

- * Note: Minimum 60 amp services are only permitted at the discretion of the service spotter with respect to load and living areas as outlined in Rule 8.200 of the Ontario Hydro Electrical Code.
- ** Note: Cabinet height 1980 mm \pm 152 mm (78" \pm 6") from the finished floor to the top of the meter cabinet. For acceptable line/load cabinet connections refer to Appendix II of this document. Metering cabinet must have manufactured fixed backplate mounting studs.

Multi Unit Residential, Guide (Bulk Metering) 1 PHASE, 120/240 VOLT SERVICES

INDIVIDUAL SERVICE CAPACITY	PROVISION FOR UTILITY OWNED METERING (Metering sockets and cabinets are supplied by Customer) Outdoor meter mounting height is 1730 mm (5'8") to center of meter ± 100 mm (4")	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.
100 – 200 amp Minimum 100 amp (3 wire only) 201 – 400 amp	<u>100 – 200 amp</u> Meter socket (4 jaw) installed outdoors suitable for either overhead or underground supply. All disconnecting devices to be installed on the load side of the meter. <u>201 – 400 amp</u> 910 mm x 910 mm x 250 mm (36" x 36" x 10") CT cabinet installed indoors on load side of main service switch. An "A" base meter will be installed inside CT cabinet. * See Note below.	Secondary clevis or rack required. Aerial services supplied by ENWIN Utilities will have maximum tensions as follows: Triplex service – 400 kg (900 lbs.) Open wire secondary services up to 400 amp – 275 kg (600 lbs.) / cond. Open wire secondary services over 400 amp –	Customer may request that ENWIN Utilities install an underground service from ENWIN's designated point of supply from either an overhead or underground system to the customer's first point of connection. 100 – 200 amp ENWIN will install, own and maintain secondary cables to neutral and line side studs of outdoor metering socket.
Over 400 amp (Maximum load provided at this voltage is 100 KVA)	Over 400 amp 1220 mm x 1220 mm x 300 mm (48" x 48" x 12") CT cabinet installed indoors on load side of main service switch. An "A" base meter will be installed inside the CT cabinet. * See Note below	450 kg (1000 ibs.) / Cond.	ENWIN will install, own and maintain parallel secondary cables to neutral and line side lugs of indoor main disconnect. Over 400 amp ENWIN will install, own and maintain underground secondary cables up to demarcation point. ** See Note below

- IMPORTANT: For billing purposes, all multi-unit residential buildings with bulk meter are classified as General Services under the respective owner / landlord.
- * Note: Cabinet height 1980 mm \pm 150 mm (78" \pm 6") from the finished floor to the top of the meter cabinet. For acceptable line/load cabinet connections refer to Appendix II of this document. Metering cabinet must have manufactured fixed backplate mounting studs.
- ** Note: Connection of Commission conductors to customer owned cables at the property line will be made in a suitable handhole (Supplied and installed by ENWIN Utilities). ENWIN will determine most feasible connection with respect to distribution and location.

Residential Guide for Multi-Metering Not Exceeding 4 Units 1 PHASE, 120/240 VOLT SERVICES

	I PHASE, 120/240 VOL	I SERVICES	
NUMBER OF INDIVIDUALLY METERED UNITS AND INDIVIDUAL SERVICE CAPACITY	PROVISION FOR METERING (Metering sockets are supplied by Customer)	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.
ALL NEW INSTA	ALLATIONS		
2 – 4 DWELLING UNITS Minimum service capacity is 60 amperes per unit * See Note below Maximum service allowable is 400 amperes. ALL EX Number of existing units may vary Existing services may vary from 60, 100, 200, 400 or 600 amp (bulk metered services) or any combination of either.	Multiple Services Up to 200 amp Per Service Individual 4 jaw sockets grouped outdoors suitable for either overhead or underground supply. All disconnecting devices to be installed on the load side of the meter. Outdoor mounting height is 1730 mm (5'8") to center of meter ± 100 mm (4"). All disconnecting devices require a locking hasp to effectively lock the device in the off position 201 to 400 amp Service Using Indoor Main Disconnect Individual 4 jaw sockets grouped indoors, installed on lineside of individual unit service switches – normally off splitter. Indoor meter mounting height is Minimum 1370mm (4'6") to center of meter. Maximum 1830mm (6'0") to center of meter. KISTING CONDITIONS. All additional individual 4 jaw sockets suitable for either overhead or underground supply, will be grouped next to existing sockets. – outdoor location is preferred where feasible. ** See Note below. Indoor meter mounting height is minimum 1370mm (4'6") to center of meter. Maximum 1830mm (6'0") to	Secondary clevis or rack required. Aerial services supplied by ENWIN Utilities will have maximum tensions as follows: Triplex service – 400 kg (900 lbs.) Open wire secondary services up to 400 amp – 275 kg (600 lbs.) / cond.	Customer may request that ENWIN Utilities install an underground service from ENWIN's designated point of supply from either an overhead or underground system to the customer's first point of connection. <u>Multiple Services up to</u> <u>200 amp per service</u> ENWIN will install, own and maintain secondary cables to neutral and line side studs of outdoor metering socket. <u>201 – 400 amp Services Using Indoor Main Disconnect</u> ENWIN will install, own and maintain parallel secondary cables to neutral and line side lugs of indoor main disconnect.
	center of meter \pm 100 mm (4").		
+ KI_I_	*** Note:		of the Comise
* Note:	Minimum 60 amp services are only p Spotter with respect to load and livin Electrical Safety Code.	permitted at the discretion g areas as outlined in Rul	of the Service e 8.200 of the
** Note:	Meter and service location must be c installation.	confirmed by the Service S	Spotter prior to
*** Note	When converting from an existing bulk metered service to individual metering, all meters will be grouped indoors off splitter.		

Multi Unit Residential Guide - Multi-Metering to 5 or more Units 1 PHASE, 120/240 VOLT SERVICES

NUMBER OF INDIVIDUALLY METERED UNITS AND INDIVIDUAL SERVICE CAPACITY	PROVISION FOR METERING (Metering sockets are supplied by Customer)	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.
ALL NEW INSTA			
5 OR MORE DWELLING UNITS Minimum 400 amp 3 wire service Over 400 amp (maximum load provided at this voltage is 100 kVA).	Individual 4 jaw sockets grouped indoors, installed on line side of individual unit service switches – normally off splitter. Indoor meter mounting height is Minimum 1370mm (4'6") to center of meter. Maximum 1830mm (6'0") to center of meter. The owner(s) of a premise installing individual residential metering exceeding four (4) may be required to enter into Multi-Metering Agreement with ENWIN.	Secondary clevis or rack required. Aerial services supplied by ENWIN Utilities will have maximum tensions as follows: Triplex service – 400 kg (900 lbs.) Open wire secondary services up to 400 amp – 275 kg (600 lbs.) / cond. Open wire secondary services over 400 amp – 450 kg (1000 lbs.) / cond.	Customer may request that ENWIN Utilities install an underground service from ENWIN's designated point of supply from either an overhead or underground system to the customer's first point of connection. <u>Multiple Services up to</u> <u>200 amp per service</u> (Existing Conditions <u>Only)</u> ENWIN will install, own and maintain secondary cables to neutral and line side studs of outdoor metering socket.
ALL EXI Number of existing units may vary Existing services may vary from 60, 100, 200, 400 or 600 amp (bulk metered services) or any combination of either.	STING CONDITIONS. All additional individual 4 jaw sockets suitable for either overhead or underground supply, will be grouped next to existing sockets. * See Note below. Indoor meter mounting height is minimum 1370 mm (4'6") to center of meter. Maximum 1830 mm (6'0") to center of meter. Outdoor meter mounting height is 1730 mm (5'8") to center of meter ± 100 mm (4"). All disconnecting devices require a locking hasp to effectively lock the device in the off position.		400 amp Services Using Indoor Main Disconnect ENWIN will install, own and maintain parallel secondary cables to neutral and line side lugs of indoor main disconnect. Over 400 amp ENWIN will install, own and maintain underground secondary cables up to demarcation point. ** See Note below.

* Note: Meter and service location must be confirmed by the Service Spotter prior to installation.

** Note: Connection of ENWIN conductors to customer owned cables at the property line will be made in a suitable handhole (supplied and installed by ENWIN). ENWIN will determine most feasible connection with respect to distribution and location.

Single Phase, Single & Multi-Unit Commercial Guide 1 PHASE, 120/240 VOLT SERVICES

INDIVIDUAL SERVICE CAPACITY	PROVISION FOR UTILITY OWNED METERING (Metering sockets and cabinets are supplied by Customer)	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.	
<u>0 – 200 amp</u> 3 wire Services for traffic signals, telephone booths, bus shelters and other small services not metered.	<u>0 – 200 amp</u> 4 jaw socket suitable for either overhead or underground supply. All disconnecting devices to be installed on the load side of the meter and require a locking hasp to effectively lock the device in the off position. Indoors in Commercial Areas minimum 1370mm (4'6") to center of meter. Maximum 1830mm (6'0") to center of meter. Outdoors in Residential Areas or where indoor location not accessible. ** See Note below. Outdoor height is 1730mm (5'8") to center of meter ± 100mm (4").	Secondary clevis or rack required. Aerial services supplied by ENWIN Utilities will have maximum tensions as follows: Triplex service – 400 kg (900 lbs.) Open wire secondary services up to 400 amp – 275 kg (600 lbs.) / cond. Open wire secondary services over 400 amp – 450 kg (1000 lbs.) / cond.	Customer – owned underground services are normally terminated on poles owned and installed by the customer. The location of these poles must be satisfactory to the Utility. Where the customer requests to terminate on a Utility pole permission must be obtained from ENWIN. (Not exceeding 200 amps). Corflex (or similar) cable will not be accepted. In areas of underground distribution, ENWIN will	
201 – 400 amp Over 400 amp (Maximum load provided at this voltage is 100 KVA)	201 – 400 amp 910 mm x 910 mm x 250 mm (36" x 36" x 10") CT cabinet installed indoors on load side of main service switch. An "A" base meter will be installed inside CT cabinet. * See Note below. 220 mm x 1220 mm x 300 mm (48" x 48" x 12") CT cabinet installed indoors on load side of main service switch. An "A" base meter will be installed inside the CT cabinet.		install, own and maintain underground secondary cables up to the demarcation point.	
* See Note below Switchgear: Metering with switchgear – refer t of Padmount Transformers (Mete Metered services for billboards ar Supporting Information, Forms an Unmetered traffic signals, telepho to Section 3 – Customer Specific, * Note: For acceptable line/load cabinet o cabinet must have manufactured height 1980 mm ± 150 mm (78" ± meter cabinet.		to Contractor Information for tering). Ind commercial signs – refer to do the tering s, Subsection 8.6. Ind Drawings, Subsecti	the Instlalation o Section 8 – 4 others – refer < II. Metering uds. Cabinet o the top of the	
** Note:	Meter location at the discretion of	f the Service Spotter.		

Three Phase, 4 Wire 120/208 Volt Guide 3 PHASE, 120/208 VOLT SERVICES

INDIVIDUAL SERVICE CAPACITY	PROVISION FOR UTILITY OWNED METERING (Metering sockets and cabinets are supplied by Customer on load side of main disconnect.) Minimum 1370mm (4'6") to center of meter. Maximum 1830mm (6'0") to center of meter	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.
0 – 200 amps	7 – jaw socket	Secondary clevis or rack required.	Customer – owned underground services are normally terminated on
201 – 400 amps	1220 mm x 1220 mm x 300 mm (48" x 48" x 12") CT cabinet * See Note below	Aerial services supplied by ENWIN Utilities will have maximum tensions as follows:	by the customer. The location of these poles must be satisfactory to the
401 – 800 amps	1220 mm x 1220 mm x 300 mm (48" x 48" x 12") CT cabinet * See Note below	Triplex service – 400 kg (900 lbs.) Open wire secondary	Where the customer requests to terminate on a Utility pole permission must
Over 800 amps	Switchgear -Consult Utility.	services up to 400 amp – 275 kg (600 lbs.) / cond. Open wire secondary services over 400 amp – 450 kg (1000 lbs.) / cond.	be obtained from ENWIN. (Not exceeding 200 amps). Corflex (or similar) cable will not be accepted. In areas of underground distribution, ENWIN will install, own and maintain underground secondary cables up to the demarcation point.

Switchgear: Metering with switchgear – refer to Contractor Information for the Installation of Padmount Transformers (Metering).
5 jaw socket required when using only 2 line (hot) conductors and 1 neutral conductor for service from a 3 phase, 4 wire system. (ie. multi-metered apartment building)

 * Note: For acceptable line/load cabinet connections refer to Section 8 – Supporting Information, Forms and Drawings, Subsection 8.5.11 a, b, c and d. Metering cabinet must have manufactured fixed backplate mounting studs. Cabinet height 1980 mm ± 150 mm (78" ± 6") from the finished floor to the top of the meter cabinet.

Three Phase, 4 Wire 347/600 Volt Guide 3 PHASE, 347/600 VOLT SERVICES

INDIVIDUAL SERVICE CAPACITY	PROVISION FOR UTILITY OWNED METERING (Metering sockets and cabinets are supplied by Customer on load side of main disconnect.) Minimum 1370mm (4'6") to center of meter. Maximum 1830mm (6'0") to center of meter	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.
0 – 200 amps	7 – jaw socket	Secondary clevis or rack required.	Customer – owned underground services are normally terminated on
201 – 400 amps	1220 mm x 1220 mm x 300 mm (48" x 48" x 12") CT cabinet * See Note below	Aerial services supplied by ENWIN Utilities will have maximum tensions as follows:	by the customer. The location of these poles must be satisfactory to the
401 – 800 amps	1220 mm x 1220 mm x 300 mm (48" x 48" x 12") CT cabinet * See Note below	Triplex service – 400 kg (900 lbs.) Open wire secondary	Where the customer requests to terminate on a Utility pole permission must
Over 800 amps	Switchgear -Consult Utility.	services up to 400 amp – 275 kg (600 lbs.) / cond. Open wire secondary services over 400 amp – 450 kg (1000 lbs.) / cond.	be obtained from ENWIN. (Not exceeding 200 amps). Corflex (or similar) cable will not be accepted. In areas of underground distribution, ENWIN will install, own and maintain underground secondary cables up to the demarcation point.

Switch gear: Metering with switch gear – refer to Contractor Information for the Installation of Padmount Transformers (Metering).
5 jaw socket required when using only 2 line (hot) conductors and 1 neutral conductor for service from a 3 phase, 4 wire system. (ie. multi-metered apartment building)

* Note: For acceptable line/load cabinet connections refer to Appendix II of this document. Metering cabinet must have manufactured fixed back plate mounting studs. Cabinet height 1980 mm \pm 150 mm (78" \pm 6") from the finished floor to the top of the meter cabinet.

Three Phase, 3 Wire 600 Volt Guide 3 PHASE, 600 VOLT SERVICES

INDIVIDUAL SERVICE CAPACITY	PROVISION FOR UTILITY OWNED METERING (Metering sockets and cabinets are supplied by Customer on load side of main disconnect.) Minimum 1370mm (4'6") to center of meter. Maximum 1830mm (6'0") to center of meter.	PROVISION FOR UTILITY OWNED OVERHEAD SERVICE CONDUCTORS.	PROVISION FOR UTILITY OWNED UNDERGROUND SERVICE CONDUCTORS.
0 – 200 amps	5 – jaw socket	Secondary clevis or rack required.	Customer – owned underground services are normally terminated on
201 – 400 amps	910 mm x 910 mm x 300 mm (36" x 36" x 12") CT cabinet * See Note below	Aerial services supplied by ENWIN Utilities will have maximum tensions as follows:	by the customer. The location of these poles must be satisfactory to the Utility.
401 – 800 amps	1220 mm x 1220 mm x 300 mm (48" x 48" x 12") CT cabinet * See Note below	Triplex service – 400 kg (900 lbs.) Open wire secondary	Where the customer requests to terminate on a Utility pole permission must
Over 800 amps	Switchgear - Consult Utility.	Services up to 400 amp – 275 kg (600 lbs.) / cond. Open wire secondary services over 400 amp – 450 kg (1000 lbs.) / cond.	be obtained from ENWIN. (Not exceeding 200 amps). Corflex (or similar) cable will not be accepted. In areas of underground distribution, ENWIN will install, own and maintain underground secondary cables up to the demarcation point.

Switch gear: Metering with switch gear – refer to Contractor Information for the Installation of Padmount Transformers (Metering).
5 jaw socket required when using only 2 line (hot) conductors and 1 neutral conductor for service from a 3 phase, 4 wire system. (ie. multi-metered apartment building)

- * Note: For acceptable line/load cabinet connections refer to Appendix II of this document. Metering cabinet must have manufactured fixed back plate mounting studs. Cabinet height 1980 mm \pm 150 mm (78" \pm 6") from the finished floor to the top of the meter cabinet.
- * Note A neutral conductor must be installed in the stack for future 4 wire conversions

Three Phase, 27.6 kVolt Guide

3 PHASE, 27.6 KILO VOLT SERVICES

PROVISION FOR UTILITY OWNED AERIAL SERVICE CONDUCTORS	PROVISION FOR CUSTOMER OWNED UNDERGROUND SERVICE CONDUCTORS	PROVISION FOR METERING		MAXIMUM AVAILABLE FAULT KVA.
Termination hardware as provided by utility, installed to withstand a tension of 900 kg (2000 lbs) per conductor. Utility owned overhead services originate from a utility pole and normally extend no more than 30 meters (100 feet) over private property to the customer's structure.	Minimum conductor size as per Electrical Safety Code. Customer owned underground services are normally terminated on poles owned and installed by the customer. The location of these poles must be satisfactory to the Utility.	PRIMARY Provisions for installation of instrument transformers in customer owned high voltage switch gear on load side of main disconnect. Provisions for indoor remote metering cabinet	SECONDARY Refer to appropriate Secondary Voltage section of Appendix II 2.3.7.2	835,000 KVA symmetrical (17,000 A) Actual available fault current varies with respect to location and time. All customer switch gear must be rated for the 835 MVA maximum in any case.

Note: Primary winding configuration must be Delta

ADDITIONAL NOTES

FLOOR PLAN

A floor plan showing the location of the units in relation to the electrical room shall be posted in the electrical room and a copy submitted to ENWIN. The drawing shall be revised within three months of any change to the floor plan.

CONDUCTOR IDENTIFICATION

Each of the service conductors must be marked to identify the individual phases and neutral both at the main switch and at the service entrance. In cases of multiple metering installations (both residential and commercial), it is necessary to clearly and permanently identify each unit and their corresponding meter socket, disconnect switch and panel. In the case of remote disconnects in a meter centre or similar enclosure, the main disconnect switch handle and compartment must be identified.

The identification may be painted (oil based), engraved directly in the equipment, or consist of a permanently attached nameplate. Only the unit number or assigned municipal address may show on the equipment.

METER CABINET

All meters must be located in a secured electrical room or a weather proof cabinet.

Metering cabinets must have manufactured fixed backplate mounting studs. Self-tapping screws are not permitted. Cabinet height 1 metre (3 feet) between finished floor and bottom of the cabinet. The location allocated for the metering equipment shall be directly accessible to ENWIN. It shall have not less then 1219mm (48") clear space in front of the cabinet.

For service that will have a load of 50 kW or larger a 120 volt duplex receptacle should be within a 6 ft. (2 meter) proximity of the meter cabinet to provide power to the cellular modem required for remote interrogation of the interval metering system. The meter must be located in an area where a cellular signal is available.

PHONE LINE

For service that will have a load of 50 kW or larger a voice grade analog telephone line terminated with a RJ11 receptacle must be installed into the meter cabinet for remote interrogation of the interval metering system.

CABLE NOTES

Minimum length of cable looped inside the meter cabinet for instrument transformers shall be 1m (39"). This cable must be continuous i.e. it must not be cut.

For all CT connections, crimp type connectors up to 500MCM for copper wire only will be supplied by ENWIN. There should be a maximum of two conductors per phase.

CUSTOMER SWITCHGEAR

Where space is provided in a customers Switchgear for ENWIN provided CTs and PTs, a 508 mm x 762mm x 254mm (20"x30"x10") metering cabinet must be included in the switchgear or remotely located with 32mm (1 ¹/₄") rigid steel conduit connecting the cabinet and instrument transformer compartment. The maximum length of this conduit should be 32 metres (106 Feet).

In cases where Switchgear will be installed it will be the contractors responsibility to install CT's and PT's. These will be provided by ENWIN and can be picked up at the meter shop.

PULSE METERING

Where pulse metering is to be used the maximum length of the 32mm (1 ¹/₄") Rigid Steel conduit between the pulse metering cabinet and the instrument transformer compartment is 23 m (75 feet).

OUTDOOR METER CABINETS

For outdoor meter cabinets, a 200 watt heater bar (supplied from a 120V circuit), vent, and a thermostat are required inside the meter cabinet to prevent condensation build up. The outdoor cabinet must have a locking hasp to allow for an *ENWIN* lock. The cabinet must be deep enough to allow room for the meter base (4-5") and meter (6") therefore a 12" deep cabinet should suffice. All wire inside the cabinet must be inside conduit to prevent damage.

METER EQUIPMENT PICK UP AND DELIVERY

Two weeks prior to inspection bring the back plate to the meter shop located at 4545 Rhodes Drive. ENWIN will wire the meter cabinet backplate in all cases. If CTs and PTs are to be installed onto the backplate ENWIN will wire these also. You can call the meter shop at 251-7300 ext. 229. Please label the backplate with the following information

- Address (must be written directly on the back plate in black marker)
- Top/Bottom
- Line and Load Entry and Exit points (please refer to drawings for acceptable locations and acceptable door opening)
- Size of main
- Conductor size
- Voltage







