



Requirements for Distribution Wires Access

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Foreword

Introduction

This document outlines the terms and conditions for ENMAX Power Corporation (EPC) distribution facilities wires access including the EPC service area, but excluding the downtown network area. This document is supplemental to the [ENMAX Power Corporation Distribution Tariff Terms and Conditions](#). In case of discrepancies, the [ENMAX Power Corporation Distribution Tariff Terms and Conditions](#) document shall prevail.

Definitions/ Acronyms

Customer

The term “customer” includes developers, consultants, and electrical contractors during the design and construction phases. Once electrical service is established, “customer” is defined by the *Electric Utilities Act* as a person purchasing electricity for the person’s own use.

AECUC

Alberta Electrical and Communication Utility Code

EPC

ENMAX Power Corporation

CEC

Canadian Electrical Code

Network Area

For information concerning electrical servicing in the downtown network area, please refer to the *Network Servicing Policies and Guidelines*.

RCN

Replacement Cost New

Standards

EPC construction standards comply with the AECUC under the Alberta Safety Codes Act, CEC, and accepted electrical utility practices.

URW

Utility Right of Way

Note: The requirements outlined in this document must be met to connect to the distribution system. For more detail, please contact ENMAX Power Corporation – Distribution.

Section One: Making an Application for New Services, Upgrades or Changes

Written Notice

A customer must give EPC written notice of any changes in service requirements, including a change in load requiring an ampacity increase to the main breaker or the fuse size for main disconnect.

If a customer neither gives written notice nor obtains written approval from EPC for any additions or changes in load or location, the customer will be liable for any damage to EPC equipment caused by such additions or changes.

1. New Connections and Service Upgrades

New connections or service upgrades will be provided only after:

- an Acceptance Declaration form and the drawing indicating EPC's proposed facilities and location for wires service has been signed by the customer;
- the customer's electrical installation meets or exceeds the criteria outlined in this document, and the [ENMAX Power Corporation Distribution Tariff Terms and Conditions](#) document;
- an electrical permit has been obtained;
- site ID has been obtained; and
- the customer's electrical installation has been approved by The City of Calgary or other responsible authorities and the customer's account has been confirmed to be in good standing.

Where customer owned generation facilities are proposed, the customer must meet the requirements outlined in the *Guide for Generator Interconnection to the Wires Owner System* and *Guide for Micro-Generator Interconnection to the Wires Owner System*.

2. Joint Use Trenching

The cost of a joint use trench is shared equally amongst all parties utilizing the shared trench such as: communication, natural gas, electric utilities, and/or customer owned facilities. If an EPC customer wants the provision for a joint use trench and a company/utility will not invest in the trench, the customer is responsible for the remaining charges.

Note: The Investment Policy covers ENMAX's portion of a joint use trench.

3. Submission of Information

To enable EPC to start the planning process, the information listed below is required where applicable:

- date of required connection;
- type of electrical service installation (overhead or underground);
- secondary voltage and proposed kVA (for more information, see Section Three - [5. Maximum Service Size](#))
- metering requirements - primary or secondary metered (for more information, see Section Six: [Primary Metered Areas](#));
- main breaker or fuse ampacity for main fused disconnect;
- panel or main bus ampacity;
- calculated maximum demand;
- the type and loading of electrical equipment such as large motors, arc furnaces, harmonic producing loads, UPS or generation facilities;
- grounding details; and
- submission of drawings (see below [4. Drawing Requirements](#).)

4. Drawing Requirements

All of the drawings submitted must be fully dimensioned and to scale where applicable.

Residential Development

To enable EPC to begin the planning process, the developer must provide the following information and plans, which must be fully dimensioned and scaled where applicable:

- two copies of the tentative legal plan;
- Autocad or Microstation diskette with the subdivision's digital information;
- easement plan;
- deep utility plans;
- sidewalk cover sheet;
- overland drainage plan;
- shallow utilities plan;
- driveway plan;
- grade plan;
- size of the services (100 A, 200 A, or 400 A);
- extra coil length (i.e. more than 25 m) where required; and
- a tentative in-service date.

Commercial or Industrial Development

The customer is required to submit a set of plans and electrical details as follows:

- engineering site plan with legal property description showing all buildings on the property;
- electrical and mechanical site plans;
- site grading plan;
- drainage plan;
- street designations and municipal address;
- location of service entrance, switchgear, meter centres and other utilities (gas, communications, sewer, water, etc.);
- property boundary designations and dimensions of building to the property lines; and
- a single line diagram showing the following items:
 1. size of the main bus or panel
 2. size of the main fuse disconnect or breaker
 3. size, type, and number of service conductors
 4. metering provisions
 5. load summary
 6. power quality control equipment
 7. generation facilities

5. Acceptance of Drawings

Before construction commences, the customer must return a signed copy of EPC's design, indicating acceptance of the proposed EPC facility layout.

6. Payments

At the discretion of EPC, the customer shall pay in full (less EPC investment) prior to commencement of construction scheduling. Alternatively, the customer may complete a credit application. Upon successfully meeting EPC's credit criteria, full payment will be due at the completion of construction.

7. Environmental Information

The customer is required to supply EPC with information regarding potential or actual contamination, waste or hazardous materials, or other adverse environmental conditions on the customer's premises on or near where EPC facilities are to be located. The customer has a continuing obligation to provide EPC with copies of all environmental assessments relating to the premises.

The customer must ensure that EPC equipment, such as but not limited to: transformers, switching cubicles, and manholes, is protected from contact when disposal of wastes and deleterious materials occurs on the customer's property.

The customer must also ensure that access clearances to equipment are maintained.

8. Site Conditions

The grade along the entire area of easement or Utility Right-of-Way (URW) must be within 150 mm of final grade and free from obstruction before the electrical installation can begin. If installed facilities subsequently require setting, siting, or height adjustments because the final grades do not conform to the site grading plans, the cost of such adjustments will be the responsibility of the customer.

According to the above criteria, if the entire site is not ready for construction, extra costs surrounding construction set up may be applied.

Where it is necessary to use easements for electrical distribution the customer shall, in addition to the easement, register a restrictive covenant against each affected lot in the subdivision restricting the owner from changing grades as shown on the approved grade plan.

Transformer boxpads, switch cubicles, pullboxes etc. require subsoil material having a minimum bearing strength of 200 kPa. EPC must be informed of any poor subsoil material on site (i.e. slough, loose material, soft clay, etc.) that may cause unacceptable settlement of the transformer. Otherwise, the customer will be responsible for the expenses incurred in rectifying any resulting problems.

Frozen Ground Conditions

Once frozen ground conditions are encountered, the customer shall take action to provide digging conditions that are reasonably consistent with non-frozen soil. This action includes, but is not limited to, ripping and/or thawing of the ground along the trench line and excavation sites.

Compaction

Compaction is the responsibility of the developer, with the exception of road crossings installed by EPC.

9. Protection Equipment Information

Fault Level Consideration

The short-circuit rating of the customer's service panel and distribution protection must be higher than or equal to the design fault level at the connection point of the EPC distribution system. The customer is responsible for all fault calculations beyond the transformer secondary bushings. EPC may request the customer to provide these calculations prior to connecting electrical service.

Customer Relaying and Protection

The customer is responsible for providing protective devices such as fuses, circuit breakers, or relays, that are capable of protecting the customer's equipment against phase failure, low voltage, high voltage, and the maximum available short-circuit current. Short-circuit current levels at the transformer secondary bushings or delivery point for primary metered services and relevant protection characteristics are available from EPC.

The customer shall demonstrate to EPC that the customer's protective devices will coordinate with EPC's protective equipment for primary metered services. Under no circumstances will the customer's system be permitted to adversely affect other EPC customers or EPC's equipment.

The customer is responsible for commissioning the primary metered high voltage switchgear and associated customer owned equipment. To ensure the safety of EPC's employees and equipment, EPC reserves the right to observe the commissioning test, and requires a commissioning report certified by a Professional Engineer.

10. Customer's Equipment

The customer's electrical equipment must comply with all applicable standards, codes, and regulations.

11. Easements & Rights-Of-Way

A URW or easement provides immediate service access to electrical equipment and allows a utility to use the land within the URW in controlled ways. EPC will require a URW when EPC has to cross over, under, or upon a titled property other than the property that requires the proposed electrical service. When a URW is required, the owner of the property to be encumbered must agree to the URW or easement before EPC can proceed. For more information see www.enmax.com for a *Right of Way* brochure.

Customer's Land

The customer shall grant to The City of Calgary and/or EPC such easements or URW, in perpetuity, for erecting and maintaining its extension(s) on, over, or under the land of the customer, as may be necessary to complete and maintain any such extension(s) that EPC may require to enable it to supply and service other customers.

Intervening Land

The customer requesting electrical service is responsible for the granting of and delivery to The City of Calgary and/or EPC, free from cost, permanent easements or URW from the owners of private property on, over, or under whose property it is necessary to extend in order to supply and service the customer.

12. Construction Delays

Incremental cost incurred by EPC, due to changes to an approved design by the customer, shall be charged to the customer.

Delays caused by obstructions in the URW caused by the customer shall also be an additional charge to the customer.

13. Line Assignment and Crossing Agreements

Where new infrastructure is required within road allowance or public property, acceptance and authorization for line assignment and crossing agreements must be granted by the appropriate municipality or governing body prior to construction commencing.

14. Building Clearances – Public Safety

In accordance with the AECUC:

- anyone working near power lines must maintain safe limits of approach; and
- person(s) responsible for the design or construction of any infrastructure near powerlines must follow clearance requirements.

Any change(s) required to EPC's facilities in order to maintain the minimum clearances as stated within the AECUC shall be at the expense of the person(s) responsible for non-compliance. This is notwithstanding any City of Calgary or Municipality Authority approvals.

15. Electrical Permits

Permits and Licences

The customer's electrical installation must conform to all applicable legislation. The customer or the customer's representative must provide EPC all necessary permits, licences and authorizations before electrical service connection. At any time before or after electrical service connection, EPC may inspect the customer's installation, but is under no obligation to do so. Such inspection shall not relieve the customer from their responsibilities to conform to all applicable legislation.

16. Requested Upgrade or Relocation of EPC Equipment

If a customer requests the upgrade, relocation, or removal of distribution facilities, any associated costs are the responsibility of the customer. The customer is required to obtain all necessary approvals, URWs and easements. In addition, the customer is responsible to obtain consent from anyone who may be affected by the proposed change for reasons such as, but not limited to:

- alteration of viewsapes;
- access; and
- use and enjoyment of existing amenities.

EPC reserves the right to refuse the request to upgrade, relocate, or remove distribution facilities if such a change is not feasible.

Section Two: Access to ENMAX Power Corporation's Facilities

1. Right to Enter Property

Refer to the [ENMAX Power Corporation Distribution Tariff Terms and Conditions, Section 18.3.1](#)

2. Reasonable Access

The customer must provide ENMAX Power Corporation (EPC) with reasonable access to all EPC facilities located on or near the customer's or public property, as well as in road allowance. This includes all transformers, switches, pullboxes, and any other facilities owned, leased or operated by EPC.

The customer is required to give EPC permission to manage vegetation on the property owned or controlled by the customer, and the right to maintain proper clearances in accordance with the AECUC. EPC will make every effort to notify the customer before such work is performed.

The customer will maintain specified clearances in order to provide safe operating conditions. Specifically, the customer will not place any structures that interfere with the proper and safe operation of EPC facilities or affect compliance with any applicable legislation.

Section Three: Conditions of Service

1. Number of Services

The limitation on the number of services permitted to a building or a piece of land is determined by the CEC. If multiple services to one building are requested and comply with the CEC, EPC will require a single point of disconnection from EPC's distribution system. In cases where additional infrastructure is required, a URW or easement on a customer's property is required.

2. Service Locations

The transformer location proposed by the customer must be approved by EPC before design of electrical service commences.

EPC may request voltage drop calculations from the customer to ensure steady state voltage variation limits are met. (See Section Five [Table 4: Recommended Voltage Variation Limits at Service Entrances](#))

3. Underground Secondary Service Installations

Commercial

On private property outside of the URW boundary, the customer shall provide and install all necessary duct required for the secondary service cables from the building to EPC's duct at the secondary side of the transformer. The customer shall provide and install all secondary cables required. All work done at or near the transformer must be done under EPC's supervision and inspected by EPC before energization at the customer's expense.

Residential

On private property outside of the URW, the customer shall provide and install all necessary duct required for the secondary service cables from the building to EPC's duct at the URW. For single family, and semi-detached dwellings, a service coil is provided by EPC. For multi-family dwellings, the customer is responsible for installing secondary cable from the transformer to the service entrance panel. All work done at or near the transformer must be done under EPC's supervision and inspected by EPC before energization at the customer's expense.

4. Location of Surface Facilities

The customer shall provide the necessary space as determined by EPC, for all EPC’s facilities such as transformers, switchgear, poles, or anchors, as per EPC’s requirements.

5. Maximum Service Size

Table 1: Single Phase Secondary Metered Service – Maximum Allowable Service Size

Contact EPC for single phase voltage availability.

Maximum Allowable Service Size		
Single Phase Secondary Metered Service		
Supply Voltage	Size of Overhead Services Permitted	Size of Underground Services Permitted
7.6 kV-120/240 V 1 phase 3 wire	*400 A	**600 A
14.4 kV-120/240 V 1 phase 3 wire	*400 A	**600 A

* Based on 50 kVA transformer

** Based on 75 kVA transformer

Table 2: Three Phase Secondary Metered Service – Maximum Allowable Service Size

Contact EPC for three phase voltage availability.

Maximum Allowable Service Size		
Three Phase Secondary Metered Service		
Supply Voltage	Size of Overhead Services Permitted	Size of Underground Services Permitted
13.2 kV-120/208 V 3 phase 4 wire	400 A	3000 A
25 kV-120/208 V 3 phase 4 wire	400 A	2000 A
13.2 kV-277/480 V 3 phase 4 wire	Not available	2000 A
25 kV-277/480 V 3 phase 4 wire	Not available	2000 A
13.2 kV-347/600 V 3 phase 4 wire	Not available	2000 A
25 kV-347/600 V 3 phase 4 wire	Not available	2000 A

Table 3: Primary Metered Service – Minimum Allowable Service Size

Minimum Allowable Service Size		
New Commercial or Industrial Primary Metered Service		
Supply Voltage	Size of Overhead Services Permitted	Size of Underground Services Permitted
7.6/13.2 kV 3 phase 4 wire	Not available	Single electrical services greater than the ampacities shown in Table 2 must be primary metered. EPC will give consideration to supplying large customer loads with multiple services and transformers.
14.4/24.9 kV 3 phase 4 wire	Not available	

6. Sensitive and Special Loads

Special and specific requirements may apply to certain loads. Some examples of these requirements are as follows:

- A customer installed Uninterruptible Power Supply (UPS) may be necessary for critical loads to avoid power interruption in the event of a power outage.
- A customer may consider a separate service for special voltage sensitive loads which may be affected by voltage fluctuations caused by load distribution within the customer owned electrical equipment. This second service must meet CEC requirements and EPC's standards.

7. Connecting Generators to EPC Distribution System

A customer with a facility allowing any kind of electric generator to operate in parallel with the EPC system must follow the requirements described in the following documents: *Guide for Generator Interconnection to the Wires Owner System* and *Guide for Micro-Generator Interconnection to the Wires Owner System*. Parallel operation occurs whenever an electrical connection exists between the generator's terminals and EPC's connection point.

8. Motors

Refer to [Power Quality Specifications and Guidelines for Customers](#) available at www.enmax.com.

9. Power Quality

A customer may not use the electric service in such a manner as to cause power quality problems on the EPC system, such as undue interference with another customer's service or undue stress on EPC equipment caused by excessive harmonic distortion, voltage fluctuations or frequency deviations. A customer who causes such power quality problems is responsible for taking the action necessary to resolve them, at the customer's expense or to EPC's satisfaction.

All customers connected to the EPC system are responsible for adhering to harmonic and voltage fluctuation limits set out in the EPC document [Power Quality Specifications and Guidelines for Customers](#). These limits help to protect EPC customers from undue interference from other customers' electrical equipment. Electric service may be disconnected if a customer's facilities are operated in a way that causes these limits to be exceeded and results in power quality problems on the EPC system.

Refer to [Power Quality Specifications and Guidelines for Customers](#) available at www.enmax.com.

Protection Coordination

The customer is responsible for providing suitable protective equipment that can isolate the customer's system for faults on the customer's equipment. This protection must coordinate with EPC's system protection to ensure that the customer's system is isolated before EPC's protection operates.

If the customer's main breaker trip setting is adjustable, the customer must inform EPC if this setting is increased from the maximum value shown on the single line diagram provided to EPC by the customer.

10. Customer Load Balance

If a three phase imbalance caused by customer load distribution is discovered by EPC, the imbalance shall be rectified by the customer at the customer's expense.

11. Impedance Grounded Systems

The installation of impedance grounded systems must conform to all relevant and applicable legislation, IEEE Standards, and the AECUC. EPC will provide the labels indicating "Impedance Grounded System" for labeling the equipment. The customer is responsible for installing the label on customer owned equipment.

12. Overvoltage

Customers using capacitors for power factor correction or harmonic filters must ensure that these devices do not cause overvoltage conditions on the EPC system.

13. Service Installation Route

EPC determines the best route for all service installations on public and private property. If the customer requests a route different from that determined by EPC, EPC will, if possible, accommodate the request, provided that the customer agrees to pay EPC all additional costs accruing from the use of the requested route. EPC cannot fulfil a request for a different route if that route is contrary to EPC standards and practices.

EPC will service customers in a way deemed most practical by EPC. This includes both routing and service type (overhead or underground service). Any incremental costs in servicing customers across previously developed areas shall be at the cost of the customer.

14. Single and Three Phase Service Availability

EPC will only connect a single phase service from a three phase source when adequate protection and isolation means are in place. If the customer requires a single phase service at a location where only three phase underground distribution is available, the customer is responsible for all costs associated to provide incremental infrastructure, less applicable EPC investment.

Alternatively, if a three phase service is required where only single phase distribution is available, the customer is responsible for all costs associated to provide incremental infrastructure, less applicable EPC investment.

15. Dedicated Alternate Service

A dedicated alternate service is defined as the utility's reserved capability to supply a specified level of a customer's electrical requirements from a supply different than the customer's normal supply. In order to qualify for a dedicated alternate service, the customer's contracted demand must be 1 MVA or greater. A dedicated alternate service will be provided only under a contract between EPC and the customer.

Customers requesting a dedicated alternate service will pay the following costs:

- The cost of any new distribution facilities, and/or the Replacement Cost New (RCN) of existing distribution facilities, required to provide the dedicated alternate service. See section 18.5.2 of the [*ENMAX Power Corporation Distribution Tariff Terms and Conditions*](#). The cost attributed to the customer will be based on the percentage of the facilities' total capacity reserved for the alternate service. If the unused capacity of the dedicated alternate service is not required by EPC at the time of construction, then the customer must pay 100% of the construction cost.
- A one time pre-paid operations and maintenance charge of 20% of the customer's portion of the new construction cost and/or RCN of existing facilities.

In addition to the above costs, the customer will be responsible for any transmission and/or substation related charges that the Independent System Operator or EPC deems necessary.

The design and arrangement of both the normal and dedicated alternate services will be determined by EPC. The customer shall install and maintain an approved primary voltage transfer device. The characteristics, arrangement, and operation of this transfer switch and the associated circuits shall be subject to EPC's approval.

The customer shall provide an interlock scheme to ensure EPC's points of delivery cannot be paralleled or alternatively the customer shall sign an operating agreement with EPC which details the operations of the transfer switch and associated circuits.

16. Non-dedicated Alternate Facilities

A non-dedicated alternate facility is defined as an additional connection point to a customer in addition to the normal source. EPC will invest towards the capital cost of non-dedicated alternate facility as per EPC's Non-Residential Investment Policy.

17. Line Extensions

A line extension is defined as the installation on the existing EPC distribution system of new or additional distribution facilities adequate to serve the customer's additional load requirements in reaching a connection point determined by EPC.

Distribution Facilities

Distribution facilities are the structures and devices needed to distribute energy at any of the primary or secondary voltages provided by EPC. Distribution facilities must be installed in accordance with applicable laws, codes, and EPC standards and practices.

Line Extension Costs

The total line extension cost includes labour, material, and equipment involved in the design, installation, and inspection of the line extension. The total cost includes, but is not limited to, the costs of transformers, meters, conductor, permits, tree trimming/removal, EPC indirect charges, and any necessary rearrangement of existing distribution facilities. The total cost includes payments to a third party for easements or URWs.

Customers are responsible for all line extension costs, less the applicable investment under EPC's investment policy. In addition, any payments to a third party for easements, URWs, or other costs, will be the responsibility of the customer.

Route

EPC will determine the route of all line extensions. If the customer requests a route different from that determined by EPC, EPC may accommodate the request, provided that the following is met:

- 1) The customer pays EPC all additional costs accruing from the use of the requested route;
- 2) The route is not contrary to EPC standards and practices; and
- 3) The route is accepted by The City of Calgary Line Assignment Department.

Overhead Standard

New Development

Feeders are constructed to an overhead standard. Customers have the option of funding the incremental cost for an underground feeder.

If the construction of overhead facilities is not deemed feasible due to restrictions or conflicts imposed by existing development or EPC construction standards, then the customer will be accountable for the cost for any incremental facilities necessary.

Existing Development

Customers requesting existing overhead facilities to be placed underground must fund the entire cost of rebuilding the existing overhead facilities underground.

18. Optional Facilities

EPC's investment will only apply to facilities deemed reasonable, useful, and justifiable to EPC. Facilities requested by a customer that, in the opinion of EPC, are not reasonable, useful, or justifiable, shall be entirely at the cost of the customer.

19. Temporary Facilities

Where EPC reasonably believes that a requested service will be temporary, EPC will require the customer requesting the service to pay EPC's total estimated cost of installation and removal of the service, less the cost of the salvageable material.

When a commercial or residential development is not immediately adjacent to EPC's permanent supply infrastructure, EPC reserves the right to provide temporary supply infrastructure, at the cost of the customer, in such a way to maintain supply integrity and security. EPC may augment this temporary infrastructure to maintain adequate supply at the customer's expense.

EPC also reserves the right to utilize such temporary infrastructure to supply adjacent developments similarly located at a distance from EPC's permanent supply facilities.

Section Four: Disconnection and Reconnection of Service

1. Disconnection

Refer to Section 18.6 De-energization of Service in the [ENMAX Power Corporation Distribution Tariff Terms and Conditions](#) document.

2. Reconnection

EPC will reconnect the service when all corrections to those conditions identified in Section 18.6 De-energization of Service in the [ENMAX Power Corporation Distribution Tariff Terms and Conditions](#) document are implemented to the satisfaction of EPC and the customer's facilities are approved by The City of Calgary or other responsible authority.

A current permit for reconnection will not be required when the service has been cut off or had a current limiting device applied for non-payment or a change of occupant, provided that there have been no alterations or additions since the issuance of the most recent permit. See 18.6.5 Restoration of Service in the [ENMAX Power Corporation Distribution Tariff Terms and Conditions](#) document for more information.

Section Five: Service Characteristics

1. Steady State Voltage Variation Limits

EPC will, within the scope of the [ENMAX Power Corporation Distribution Tariff Terms and Conditions](#), endeavour to maintain the steady state voltage at the service entrance at a level within the limits presented below.

Note: Steady state is any condition on EPC's system that lasts for longer than one minute.

Table 4 is an overview of the recommended voltage variation limits at service entrances as per the most current Canadian Standards Association (CSA) CAN3-C235.

Table 4: Recommended Voltage Variation Limits at Service Entrances

Recommended Voltage Variation Limits at Service Entrances					
Nominal Systems Voltages		Low Extreme Operating Conditions	Low Normal Operating Conditions	High Normal Operating Conditions	High Extreme Operating Conditions
Single Phase	120/240	106/212	110/220	125/250	127/254
	240	212	220	250	254
Three Phase 4 Wire	120/208Y	110/190	112/194	125/216	127/220
	277/480Y	245/424	254/440	288/500	293/508
	347/600Y	306/530	318/550	360/625	367/635

- Voltages within the indicated limits for normal operating conditions do not require improvement or corrective action.
- Voltages outside the indicated limits for normal operating conditions (1), but within the indicated limits for extreme operating conditions (2), require improvement or corrective action on a planned and programmed basis, but not necessarily on an emergency basis.
- Voltages outside the indicated limits for extreme operating conditions require improvement or corrective action on an emergency basis. The urgency for such action will depend on factors such as location, nature of the load or circuit involved, extent to which voltage limits are exceeded, and the duration of the condition.

2. Frequency

The Alberta Interconnected System operates at a nominal frequency of 60 Hertz (Hz).

3. Power Quality

Refer to EPC's [*Power Quality Specifications and Guidelines for Customers*](#) document available at www.enmax.com.

4. Service Interruption and Shortage of Supply

EPC will exercise reasonable diligence and care to deliver a continuous and sufficient supply of electric energy to the customer, but does not guarantee continuity or sufficiency of supply.

Apportionment of Supply During Time of Shortages

In the event of a shortage of electrical energy supply, EPC will apportion the supply in the manner that in EPC's judgement is the most reasonable under the prevailing conditions.

Emergency Load Control

Whenever instability or cascading outages could result from actual or expected transmission overloads, other contingencies, or whenever such conditions exist in the system of another company with which EPC's system is interconnected, EPC will take reasonable steps as the time available permits to maintain system stability. Such steps shall include but are not limited to the reduction or interruption of service to one or more customers.

5. Restoration Priorities

During a major outage due to events such as a major storm, EPC has established priorities for service restoration. Restoration procedures are designed to get the greatest number of customers back in service as quickly as possible with special consideration given to customers that are essential to public welfare.

Section Six: Primary Metered Areas

1. 4 kV Service Area

Some areas of Calgary are served at a primary voltage of 4 kV. Since age and operational considerations are associated with this voltage, the following restrictions apply:

1. New customers will not be permitted primary metering when supplied from the 4 kV system.
2. Many existing primary metered 4 kV services no longer meet the minimum load requirements of 500 kVA. Therefore, when service to such a customer has been discontinued, the details of the service must be brought to the attention of EPC for review before the service may be re-established.
3. Existing customers planning to add load must have such load additions approved by EPC before proceeding. It may be necessary to convert such services to other voltages.

2. 13 kV and 25 kV Service Area

Single electrical services exceeding the ampacity shown in [Table 2: Three Phase Secondary Metered Service – Maximum Allowable Service Size](#) must be primary metered. EPC will give consideration to supply large customer loads with multiple services and transformers. The following is required for primary metered services:

1. When the service consists of two supply lines, the main breakers must be interlocked to ensure EPC's points of delivery cannot be paralleled. The customer shall provide an interlock scheme or the customer shall sign an operating agreement with EPC which details the operation of the transfer device and associated circuits.
2. Suitable relaying shall coordinate with EPC's system. The customer must provide a protection and coordination study which must be approved by EPC prior to energization.

3. The customer shall ensure that CSA-approved grounding facilities exist that meet EPC's requirements.
4. The customer shall provide suitable enclosures for EPC's Current Transformers (CTs), Potential Transformers (PTs), and meter. Single-point metering shall be standard. If extra metering equipment is required due to the design of the customer's facilities, then the excess metering cost is to be payable by the customer as a non-refundable contribution.
5. The customer is responsible for the installation and maintenance of the high voltage switchgear and all customer distribution equipment. The transformer(s) may be owned or leased.
6. The customer's switchgear shall have an interrupting capability as designated by EPC.

Section Seven: Specific Requirements for URD Developments

1. URD Servicing

In accordance with a City of Calgary bylaw, an underground electrical system shall be mandatory, except as otherwise authorized by the approving authorities. It may be either a modified underground system (i.e. main feeder overhead) or a total underground system at the developer's option.

Servicing shall be from the front street or lane only and the design shall be the most economical and efficient.

2. Pre-Installed Road Crossing Ducts

The developers, may at their option, install road crossing ducts for the use of EPC, telephone, cable television and gas installations in advance of the usual construction period for these facilities. If the developer chooses to do so, then the following conditions must be met:

- a) Duct requirements must be obtained from EPC, and the telephone, cable television, and gas utilities before any ducts are installed.
- b) The ducts must be installed in accordance with the current city specification regarding pre-installed road crossing ducts.
- c) If the installation of the road crossing duct does not meet specifications, the developer shall be responsible for the costs of repairing or replacing the road crossing. EPC or their subcontractor shall notify the developer or their agent of all incorrect road crossings.

3. Modified Underground System

The following conditions shall apply only to a modified underground system:

- a) The developer shall provide access, or electrical easement for the main overhead feeder suitable for twenty four (24) hour driveable vehicular access. Routing and physical design of the right-of-way shall conform to the design agreed to at the outline plan stage and be mutually satisfactory to both the developer and EPC.
- b) When the subdivision plan requires the use of an anchor for the overhead pole system not adjacent to a lot line, an underground span shall be installed instead of the overhead span. In such event, the developer shall pay the difference in cost between the underground span and the overhead span.

The developer shall be notified of this requirement, if any, at the time of circulation of the tentative plan and shall be given the opportunity to revise the plan of the subdivision so as to avoid, if possible, the installation of such underground span.

- c) Where within any portion of the subdivision the use of side yard easements or a street front main feeder is required due to the subdivision design, the main feeder shall be placed underground. The developer shall pay the difference in cost between the underground and overhead feeder. If possible, EPC and the developer will attempt to ensure that the subdivision can accommodate the overhead main feeder.

4. Total Underground System

Where the main feeder is placed underground at the request of the developer, the developer shall pay the actual cost of the underground feeder less EPC's allowance for an overhead feeder.

5. Sites Requiring Three Phase Power

Commercial development, apartment, multi-family residence and school sites which require three phase power may not necessarily be serviced by the most economical routing of the three phase feeder. Where the three phase feeder is not immediately adjacent to these sites, three phase infrastructure will be provided to these sites at an additional cost to the developer at the time of the initial servicing of the subdivision.

6. Conditions of Standard Subdivision, Detached and Semi-detached Dwelling Units

See Section 18.7.2 Conditions of Standard Subdivision Detached and Semi-detached Dwelling Units in [*ENMAX Power Corporation Distribution Tariff Terms and Conditions*](#).

7. Conditions for Non-Standard Subdivision

The cost to the developer shall be the actual cost of construction including the service coil, less the EPC residential investment level.

Section Eight: Responsibilities for Supplying Services

1. Responsibilities for Supplying Services

Based on the distribution systems in the area and the customer electrical service requirements, one of the following supply methods will be provided to the customer:

- overhead single or three phase secondary metered services (Table 5)
- underground single phase secondary metered services (Table 6)
- underground three phase secondary metered services (Table 7)
- underground three phase primary metered services (Table 8)

The tables on the following pages provide details of the activities for which EPC and the customer are responsible.

Table 5: Responsibilities for Supplying Overhead Single or Three Phase Secondary Metered Services

Responsibilities for Supplying <i>Overhead Single or Three Phase Secondary Metered Services</i>		
Activity	EPC	Customer
Installing civil structures	If road crossing is required, install service pole outside private property at customer's expense.	Install service pole on private property, if required Refer to EPC's Investment Policy for cost responsibilities.
Installing electrical equipment	Install service conductors to service head and make connections.	Install all necessary electrical equipment including meter base to receive service. Obtain electrical permit from The City of Calgary or other responsible authority. Refer to EPC's Investment Policy for cost responsibilities.
Maintaining distribution system	Repair or replace primary conductors and one span of secondary service as required. Repair metering equipment, as required. If requested by customer, replace metering equipment at customer's expense.	Maintain the service entrance equipment in a safe condition. Repair or replace service pole as required. Maintain proper clearances from EPC facilities. Exercise reasonable care to protect metering equipment.

Table 6: Responsibilities for Supplying Underground Single Phase Secondary Metered Services

Responsibilities for Supplying <i>Underground Single Phase Secondary Metered Services</i>		
Activity	EPC	Customer
Installing civil structures	Install pullboxes, transformer pads, ducts for primary cables and 3 rd Party Utility ducts where applicable.	Install secondary and 3 rd Party Utility ducts on private property outside URWs. Refer to EPC's Investment Policy for cost responsibilities.
Installing electrical equipment	Install transformers and primary cables. For residential single-family and semi-detached bareland condominiums, install secondary service cables to the customer's property. Leave the service coil in a box for the customer's contractor to install to the meter base.	Install all electrical equipment including meter base necessary to receive service. Install secondary service cable in duct to meter base and make connection. Make provision for metering installation. Obtain electrical permit from The City of Calgary or other responsible authorities. Refer to EPC's Investment Policy for cost responsibilities.
Maintaining distribution system	Maintain transformer and primary cables, and secondary cables within easement. Repair metering equipment, as required. If requested by customer, replace metering equipment at customer's expense.	Maintain the service entrance equipment in a safe condition. Maintain secondary cable on private property that is outside the URW. Maintain proper clearances from EPC facilities so as not to interfere with the proper and safe operation of these facilities. Exercise reasonable care to protect metering equipment.

Table 7: Responsibilities for Supplying Underground Three Phase Secondary Metered Services

Responsibilities for Supplying <i>Underground Three Phase Secondary Metered Services</i>		
Activity	EPC	Customer
Installing civil structures	Install pullboxes, transformer pads, switching cubicle base, ducts for primary cables and 3 rd Party Utility ducts where applicable	Install secondary and 3 rd Party Utility ducts on private property outside URWs. Refer to EPC's Investment Policy for cost responsibilities.
Installing electrical equipment	Install primary cables, switching cubicles and transformers. Install overhead pole lines as required.	Install all necessary electrical equipment including meter base to receive service. Install secondary cables. Make provision for metering installation. Obtain electrical permit from The City of Calgary or other responsible authorities. Refer to EPC's Investment Policy for cost responsibilities.
Maintaining distribution system	Maintain transformers and primary cables. Perform all maintenance of pullboxes, transformer pads, and primary duct. Repair metering equipment, as required. If requested by customer, replace metering equipment at customer's expense.	Maintain service entrance equipment in a safe condition. Maintain secondary ducts and cables, including mitigating concerns relating to water. Maintain proper clearances from EPC facilities. Exercise reasonable care to protect metering equipment.

Table 8: Responsibilities for Supplying Underground Three Phase Primary Metered services

Responsibilities for Supplying <i>Underground Three Phase Primary Metered Services</i>		
Activity	EPC	Customer
Installing civil structures	Install all facilities containing EPC owned primary cable including pullboxes, switching cubicle base, primary cable duct, and 3 rd Party Utility ducts upstream of the demarcation point as determined by EPC.	Install secondary and 3 rd Party Utility ducts on private property outside URWs. Install primary voltage switchgear base and all other necessary civil structures except as installed at the discretion of EPC. Refer to EPC's Investment Policy for cost responsibilities.
Installing electrical equipment	Install primary cables and switching cubicles up to the incoming cell of the customer's high voltage switchgear.	Install high-voltage switchgear and all other electrical equipment downstream of the high voltage switchgear. Make provision for metering installation. Obtain electrical permit from the City of Calgary or other responsible authority. Refer to EPC's Investment Policy for cost responsibilities.
Maintaining distribution system	Maintain distribution equipment up to the incoming cell of the customer's switchgear. Repair metering equipment, as required. If requested by customer, replace metering equipment at customer's expense.	Maintain service entrance equipment in a safe condition. Where polemount or padmount EPC metering tanks are used, customer is responsible for maintenance of distribution system downstream from metering point. Maintain proper clearances from EPC facilities. Exercise reasonable care to protect metering equipment.

2. Meter Equipment and Instrument Transformers

EPC will provide, own and maintain any meters and related equipment (*potential* or *current* type instrument transformers), required in the supply of service.

The supply of distribution transformers by EPC shall be limited to those required for a single standard transformation.

Secondary metered services installed by EPC shall have one meter per service. EPC reserves the right to refuse sub-metering

3. Ownership and Removal

All equipment supplied by EPC shall remain the exclusive property of EPC. In all cases of termination of service, EPC shall retain the right to remove its equipment from the customer's premises at any time after termination.