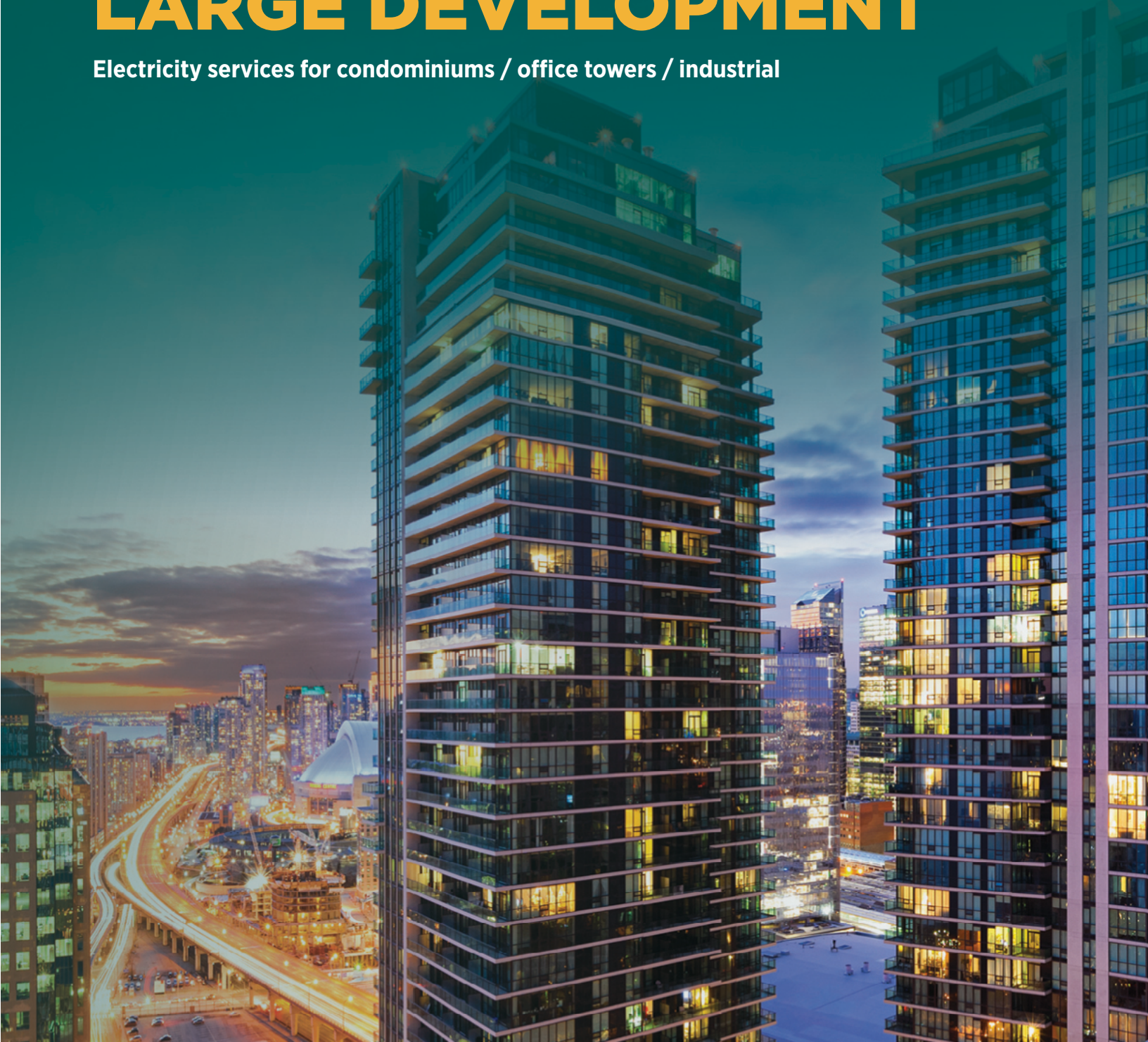




CUSTOMER CONNECTION GUIDE:

HOW TO POWER UP YOUR MEDIUM OR LARGE DEVELOPMENT

Electricity services for condominiums / office towers / industrial



This guide has been designed to help **medium to large business customers and general contractors** who are planning to install or replace their electricity services, such as:

- **New service installations** (including brand new service or rebuilds)
- **Upgrades to existing electricity service** (including supply voltage and service panel upgrades)

Each type of supply is distinct and suitable for different customer classes and geographic areas. Toronto Hydro will determine, at its sole discretion, the customer's type of supply based on factors that include (but are not limited to) reliability, capacity, and operational and system design considerations.

Refer to this guide for a quick overview to help you get started. It highlights key information you should be aware of regarding electrical service connections and upgrades, including your responsibilities and requirements to help ensure safety.

Detailed information regarding connection obligations is available in our Conditions of Service, the document governing Toronto Hydro's connection responsibilities to customers, at torontohydro.com/conditionsofservice.

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TIPS FOR GETTING STARTED

KEY INFORMATION

Service costs

Depending on the scope of work, the cost of the Service Request will vary. Toronto Hydro has a list of services with standard charges as defined by our regulator, the Ontario Energy Board. You can find this list at torontohydro.com/servicecharges.

Service connection times

The length of time it takes to connect electricity varies based on the type of service and where your business or project is located. Service connections can take anywhere from a few weeks to several months, so it's best to submit your Service Request as soon as possible.

Pad-mounted versus building vault transformers

Pad-mounted transformers are placed outside of buildings while building vault transformers are typically inside the building. Which type of transformer you're supplied from is often based on various considerations. For more information, please refer to our supply offerings, provided on pages 5 to 11 of this document or our Conditions of Service at torontohydro.com/conditionsofservice.

Equipment installation placement

Electrical equipment needs to be placed in a location on your property that allows sufficient access for work and maintenance. We'll work with you to determine the optimal location or placement of the equipment to meet Toronto Hydro's requirements.

Generator connections

Prior to connecting any generator (portable, permanent, standby or emergency), you must ensure all applicable criteria of the Ontario Electrical Safety Code are met and that the generator doesn't back-feed into Toronto Hydro's electrical system. Visit torontohydro.com/grid-connections/connection-process to submit a Service Request for review and approval prior to the installation of any generator connections.

TRANSFORMER ON PRIVATE PROPERTY

General

- Where the building vault or pad foundation isn't situated in a location where grounding can be applied directly below, external grounding in close proximity to the structure will be required, and is reviewed and accepted by Toronto Hydro on a case-by-case basis
- Structure and equipment stenciling must follow conventions set out by Toronto Hydro
- All customer civil structures containing Toronto Hydro assets shall be reviewed, inspected and accepted by Toronto Hydro
- Customer building structures (new or rebuilt) must ensure proper clearance to Toronto Hydro infrastructure on the public road allowance

Inspection

- Civil inspections, including but not limited to all civil structures housing or supporting Toronto Hydro assets (e.g. ducts, pad-mount foundations, rebars, grounding), must be reviewed and accepted by Toronto Hydro prior to pouring concrete
- Customers must provide a minimum of two business days' notice to arrange for civil inspection or re-inspection with Toronto Hydro
- Toronto Hydro has the right to refuse energization until inspections are performed and work is approved
- If deficiencies are found in existing customer-owned structures through inspection or other activities, they'll be documented and a Customer Action Form (CAF) will be issued to the customer to identify the deficiencies requiring correction

Maintenance

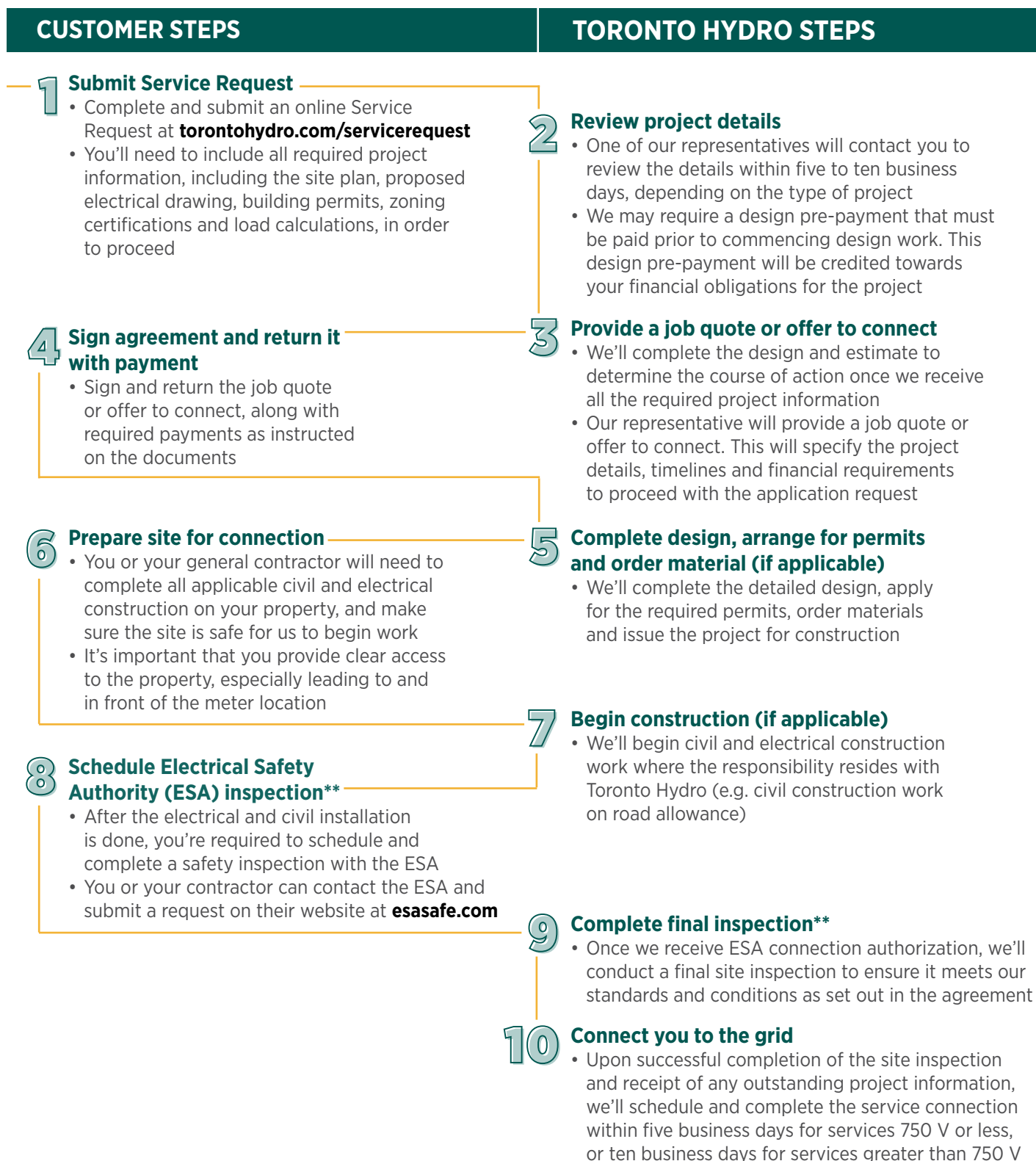
- Customers are expected to inspect and maintain their civil structures on private property — at a minimum, the customer should perform inspection and maintenance on an annual basis
- Customers are restricted from accessing building vaults containing Toronto Hydro equipment. For access, contact Toronto Hydro to arrange for a qualified crew member to accompany you for your safety. To schedule access, visit torontohydro.com/for-business/vault-access

Have questions?

We're here to help. Please contact us at 416-542-8000 (press 4, then press 1 for services east of Yonge Street or 2 for services west of Yonge Street), Monday to Friday, between 8 a.m. and 4 p.m., or visit us online at torontohydro.com/serviceconnections.

10 STEPS TO GET YOU CONNECTED

To help ensure a smooth process, the following steps* must occur in sequential order:



* Costs and durations vary greatly depending on location, type of request, amount of construction involved, etc. For a list of standard service charges, visit torontohydro.com/servicecharges.

** This step is not applicable for relocations or demolitions.

TORONTO HYDRO'S SUPPLY OFFERINGS

TRANSFORMER ON PRIVATE PROPERTY

Customers requesting electrical demand loads exceeding the available supply offerings from the road are required to pay for a Toronto Hydro-owned transformer (pad-mounted or in a building vault) and must accommodate this on customer/private property. Read through this section to learn about Toronto Hydro's transformer offerings.

Customers requesting peak demand loads exceeding the transformer offerings outlined in Table 1 are required to pay for and provide a customer-owned high voltage substation on private property in order to receive supply of electricity from Toronto Hydro*. Please refer to the *Requirements for the Design and Construction of Customer-Owned High Voltage Substations* (Conditions of Service reference document #4) for details, available online at torontohydro.com/conditionsofservice.



TABLE 1

PRIMARY VOLTAGE	SUPPLY VOLTAGE	PAD-MOUNTED TRANSFORMER		BUILDING VAULT TRANSFORMER	
		MAXIMUM SERVICE SIZE	MAXIMUM TRANSFORMER SIZE	MAXIMUM SERVICE SIZE	MAXIMUM TRANSFORMER SIZE
All	120/240 V (1ph, 3w)	—	167 kVA	—	167 kVA
13.8/8 kV	120/208 V (3ph, 4w)	1,600 A	500 kVA	—	1,500 kVA
	347/600 V (3ph, 4w)	600 A	500 kVA	2,500 A	2,500 kVA
27.6/16 kV	120/208 V (3ph, 4w)	2,000 A	750 kVA	—	1,500 kVA
	347/600 V (3ph, 4w)	3,000 A	3,000 kVA	2,500 A	2,500 kVA

ph = phase w = wire

* If the electrical demand load requested exceeds the above-noted thresholds and cannot accommodate the requirements (i.e. don't have sufficient space or clearances) indicated, we'll review on a case-by-case basis to consider alternative options.

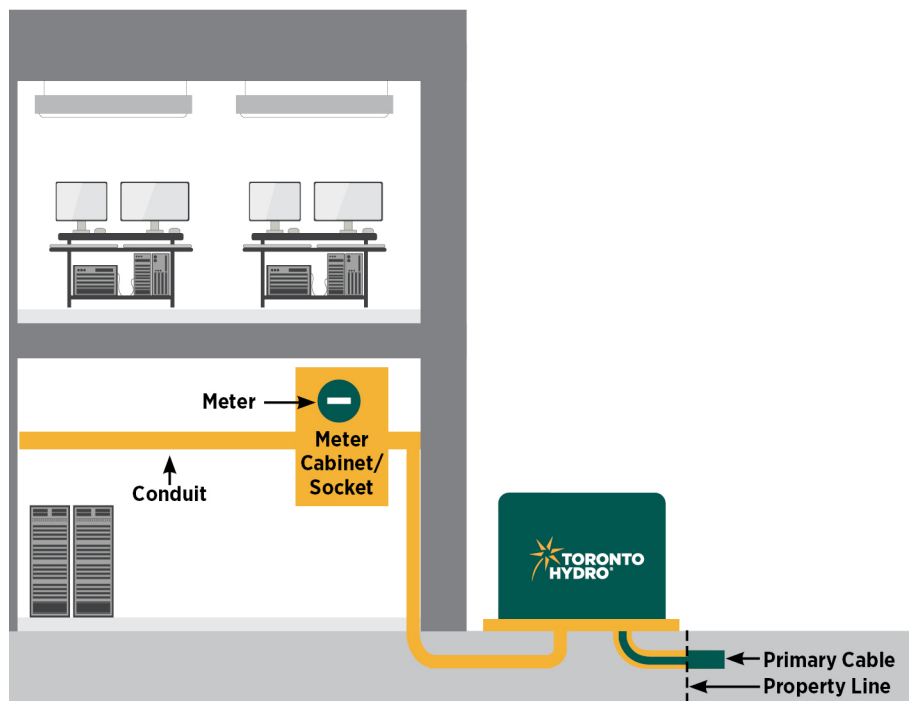
** Depending on system availability, customers located in the downtown core seeking an electrical demand load greater than 400 A (115 kVA) at 120/208 V may have the option of being supplied from our secondary network distribution system. Customers are expected to contact Toronto Hydro to discuss the feasibility of such connections.

TORONTO HYDRO'S SUPPLY OFFERINGS

TRANSFORMER ON PRIVATE PROPERTY Pad-mounted transformer supply

■ Customer's responsibility ■ Toronto Hydro's responsibility

Indoor electrical room



For reference only. Drawing is not to scale. Actual configuration/layout may vary.

Pad-mounted transformer



Pad-mounted transformer connection

This is an underground service with Toronto Hydro transformation placed at grade/ground level on private property.

CUSTOMER'S RESPONSIBILITY*

- Complete civil work on private property. This typically includes, but is not limited to, all civil work required to bring the Toronto Hydro feeder in from the property line to and including the pad-mounted foundation
- All electrical work past electrical demarcation

CIVIL DEMARCATION POINT

- Property line
- Customer owns all civil infrastructure on private property and is responsible for all construction, installation and maintenance

TORONTO HYDRO'S RESPONSIBILITY

- Complete all work on City property
- Supply and install transformers and primary cables to the customer pad-mounted foundation
- Supply and install meter

ELECTRICAL DEMARCATION POINT

- Secondary terminations of the pad-mounted transformer. Customer owns and is responsible for the secondary cable connecting from the transformer to the electrical room

* The pad-mounted transformer foundation, along with any other civil structures, shall be designed and constructed in accordance with the latest editions of the applicable codes, standards and by-laws referenced in the *Toronto Hydro Requirements for the Design and Construction of Customer-Owned Structures*. See Conditions of Service Reference 5a and 5b for details, available at torontohydro.com/conditionsofservice.

TORONTO HYDRO'S SUPPLY OFFERINGS

TRANSFORMER ON PRIVATE PROPERTY Pad-mounted transformer supply

TABLE 2

PRIMARY VOLTAGE	SUPPLY VOLTAGE	AVAILABLE TRANSFORMER SIZES*
All	120/240 V (1ph, 3w)	100 kVA 167 kVA
13.8/8 kV	120/208 V (3ph, 4w)	150 kVA 300 kVA 500 kVA
	347/600 V (3ph, 4w)	150 kVA 300 kVA 500 kVA
27.6/16 kV	120/208 V (3ph, 4w)	150 kVA 300 kVA 500 kVA 750 kVA
	347/600 V (3ph, 4w)	150 kVA 300 kVA 500 kVA 750 kVA 1,000 kVA 1,500 kVA 2,000 kVA 2,500 kVA 3,000 kVA

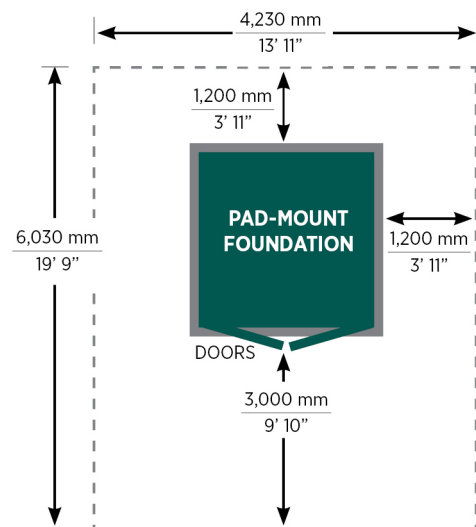
ph = phase w = wire

* Depending on the supply arrangement and vault setup, the available transformer sizes may be limited.

About Toronto Hydro pad-mounted transformers:

- Transformer foundation should be as close as practicable to Toronto Hydro's supply source and placed at grade/ground level
- Required clearance for pad-mounted transformers is indicated on the right
- Pad-mounted transformers should not be placed on top of underground parking lots, walkways or basements
- Pad-mounted transformer foundations should be located on a higher/elevated area to avoid the possibility of flooding
- Overhead clearances and access routes, truck access and crane operation facilities must be considered. Contact Toronto Hydro for more information on required location and clearances
- Guard posts or bollards should be installed where frequent vehicular access occurs near the pad-mounted transformer foundation
- For more information, please refer to the *Requirements for the Design and Construction of Customer-Owned Structures* (Conditions of Service reference documents 5a and 5b), available online at torontohydro.com/conditionsofservice.

Top view — pad-mounted transformer



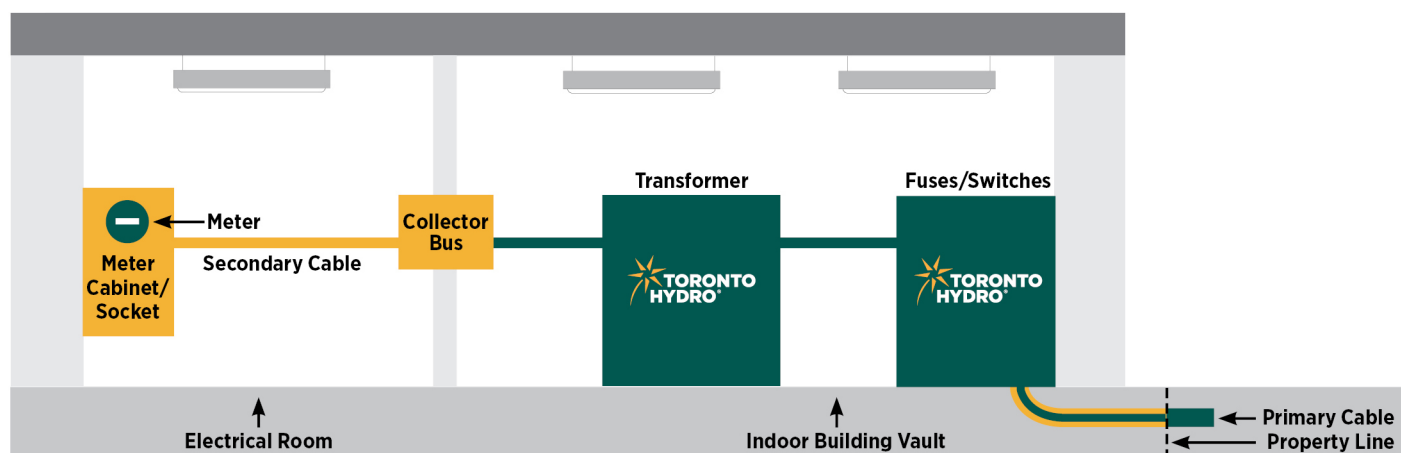
TORONTO HYDRO'S SUPPLY OFFERINGS

TRANSFORMER ON PRIVATE PROPERTY

Vault transformer supply

■ Customer's responsibility ■ Toronto Hydro's responsibility

Indoor electrical room



For reference only. Drawing is not to scale. Configuration/layout may vary.

Building vault connections

These are underground services where Toronto Hydro's transformation is housed in a customer-owned building vault on private property.

CUSTOMER'S RESPONSIBILITY*

- Complete civil work on private property. This typically includes, but is not limited to, all civil work required to bring the Toronto Hydro feeder in from the property line up to the building vault
- All electrical work past the electrical demarcation point

TORONTO HYDRO'S RESPONSIBILITY

- Complete all work on City property
- Supply and install transformers, primary and secondary cables to the electrical demarcation point

CIVIL DEMARCATION POINT

- Property line
- Customer owns all civil infrastructure on private property and is responsible for all construction, installation and maintenance

ELECTRICAL DEMARCATION POINT**

- Line side of the collector bus inside the vault

* The building vault shall be designed and constructed in accordance with the latest editions of the applicable codes, standards and by-laws referenced in the *Toronto Hydro Requirements for the Design and Construction of Customer-Owned Structures*. See Conditions of Service Reference 5a and 5b for details, available at torontohydro.com/conditionsofservice.

** Depending on the supply arrangement and vault setup, the electrical demarcation point may vary.

TORONTO HYDRO'S SUPPLY OFFERINGS

TRANSFORMER ON PRIVATE PROPERTY Vault transformer supply

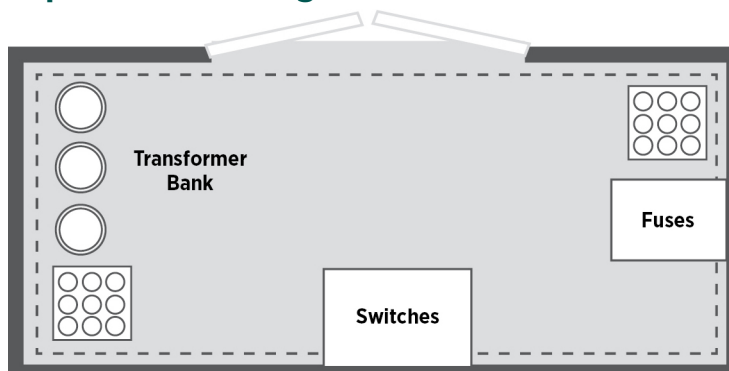
TABLE 3

PRIMARY VOLTAGE	SUPPLY VOLTAGE	AVAILABLE TRANSFORMER SIZES
All	120/240 V (1ph, 3w)	167 kVA
13.8/8 kV	120/208 V (3ph, 4w)	150 kVA 300 kVA 500 kVA 750 kVA 1,000 kVA 1,500 kVA
	347/600 V (3ph, 4w)	300 kVA 500 kVA 750 kVA 1,000 kVA 1,500 kVA 2,000 kVA 2,500 kVA
27.6/16 kV	120/208 V (3ph, 4w)	150 kVA 300 kVA 500 kVA 750 kVA 1,000 kVA 1,500 kVA
	347/600 V (3ph, 4w)	150 kVA 300 kVA 500 kVA 750 kVA 1,000 kVA 1,500 kVA 2,000 kVA 2,500 kVA

ph = phase w = wire

* Depending on the supply arrangement and vault setup, the available transformer sizes may be limited.

Top view — building vault



For reference only. Drawing is not to scale. Configuration/layout may vary.

TABLE 4

BUILDING VAULT SIZES (MINIMUM)			
TRANSFORMER SIZE (kVA)	LENGTH (mm)	WIDTH (mm)	DOORS (mm)
Up to 2,000	8,000	6,000	1,200 x 2,400
2,000 to 2,500	10,000	8,000	1,200 x 3,000

TORONTO HYDRO'S SUPPLY OFFERINGS

TRANSFORMER ON PRIVATE PROPERTY Vault transformer supply



■ Building vault option

About Toronto Hydro building vault transformers:

- Vaults housing Toronto Hydro-owned equipment within a building must be placed at grade/ground level
- Vaults adjacent to or below units occupied by tenants should be avoided
- Immediate access to the vault must be provided on a 24-hour basis. Doors leading to the vault must be equipped with Toronto Hydro locks. If this is impractical, the customer must provide Toronto Hydro with appropriate access keys or magnetic cards to enable entry from outside (e.g. street)
- In flood-prone or low floor plain areas, customers are expected to locate building vaults in higher elevated areas, or to seek preventative and mitigation methods to reduce the risk of flooding (e.g. drainage connections, retaining walls)
- Guard posts or bollards should be placed to protect entrances (e.g. doors and hatches) to help ensure security and prevent blocked access — this is particularly important for walk-in building vaults, where the vault is accessed through parking lots
- For cases of power outages or emergencies where access to the vault/electrical rooms is required by Toronto Hydro personnel, all routes must be sufficiently lit and labeled so our crews can address the issues as quickly as possible

If your project cannot accommodate the requirements in Toronto Hydro's Conditions of Service or the criteria specified above, you're required to provide justification to support the request for deviation. Toronto Hydro will review all deviations on a case-by-case basis.

For more information, please refer to the *Requirements for the Design and Construction of Customer-Owned Structures* (Conditions of Service reference documents 5a and 5b), available online at torontohydro.com/conditionsofservice.

* Below-grade vault installations are considered on a case-by-case basis and must be submitted to Toronto Hydro for approval. These installations aren't the preferred option due to concerns including, but not limited to, risk of flood, communication issues and access limitations in below-grade structures.

Learn more about customer connections

For further details, please refer to our Conditions of Service at **torontohydro.com/conditionsofservice**.

Alternatively, you can speak to a Customer Service Representative directly by calling 416-542-8000 (press 4, then press 1 for services east of Yonge Street or 2 for services west of Yonge Street) from Monday to Friday, 8 a.m. to 4 p.m.

Additional connections

- For Distributed Energy Resource connections (such as solar panels and back-up generators), please visit **torontohydro.com/gridconnections**
- For information on electric vehicles and charging stations, visit **torontohydro.com/electricvehicles**



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