CONDITIONS of SERVICE

Version 3.0

Issued: March 15, 2013

Kingston Hydro Corporation

PREFACE

CONDITIONS OF SERVICE

The Distribution System Code (DSC) requires that every distributor produce its own "Conditions of Service" document. The purpose of this document is to provide a means of communicating the types and level of service available to the customers within the distributor's service territory. The DSC requires that the Conditions of Service be readily available for review by the general public. In addition, the most recent version of the document must be provided to the Ontario Energy Board (OEB), who in turn will retain it on file for the purpose of facilitating dispute resolutions in the event that a dispute cannot be resolved without the Board's intervention.

The acceptance of electricity or related services from Kingston Hydro constitutes the acceptance of a binding contract with Kingston Hydro which includes this Conditions of Service and all terms thereunder. The person so accepting the supply of electricity or related services shall be liable for payment of same, and such contract shall be binding upon the person's heirs, administrators, executors, successors, or assigns.

This Conditions of Service document outlines the operating practices and the connection policies of Kingston Hydro. The document is intended to provide details that supplement Kingston Hydro's obligations under the *Electricity Act*, the *Ontario Energy Board Act* and its *Distribution Licence*.

Kingston Hydro will ensure that Customer/Consumers have ready access to this document. Changes will occur to this document from time to time. An up-to-date copy of this document including a list of recent revisions can be found at www.kingstonhydro.com and is available upon request in hard copy by contacting Customer Service at (613) 546-0000.

Kingston Hydro's Conditions of Service is revised periodically to reflect changes in electricity sector regulation and Kingston Hydro policies and procedures. Revisions of Kingston Hydro's Conditions of Service come into effect 30 days after the date of the revision listed in the "Table of Revisions" to allow for a customer review and comment in line with Distribution System Code guidelines. This table is posted on Kingston Hydro's website under the Conditions of Service section.

Comments, suggestions, or questions regarding Kingston Hydro's Conditions of Service should contact by email, mail, or telephone:

Attention: Regulatory Affairs
Kingston Hydro Corporation

By Email: info@kingstonhydro.com

By Mail: P.O. Box 790
1211 John Counter Boulevard
Kingston, ON, Canada, K7L 4X7

By Telephone: (613) 546-0000

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SECTION 1 - INTRODUCTION

1.1. Identification of Distributor and Territory

Kingston Hydro Corporation (formerly Kingston Electricity Distribution Limited) was incorporated under the laws of the Province of Ontario. Founded in 2000 to meet the regulatory requirements of the Province of Ontario, Kingston Hydro is wholly owned by the City of Kingston.

Kingston Hydro is licensed by the Ontario Energy Board (OEB), to supply electricity to Customer/Consumers as described in the Distribution License (ED-2003-0057).

Kingston Hydro serves most electricity customers in the City of Kingston's centre, south of McAdoo's Lane to Lake Ontario and east of Cataraqui Creek to the Cataraqui River (including Barriefield and CFB Kingston). Maps of Kingston Hydro's service territory and distribution system are available on Kingston Hydro's website (refer to Section 1.5).

1.2. Related Codes and Governing Laws

These following statutes and Codes form the basis for Kingston Hydro operations and have been considered in formulating this document. The list is not exhaustive and other statutory requirements may also apply:

- Electricity Act
- Ontario Energy Board Act
- Distribution License (ED-2003-0057)
- Affiliate Relationships Code (ARC)
- Transmission System Code (TSC)
- Distribution System Code (DSC)
- Retail Settlement Code (RSC)
- Standard Supply Service Code (SSS)
- Unit Sub-Metering Code (USC)
- Ontario Electrical Safety Code
- Electricity Distribution Rates Handbook
- Applicable Canadian Standards Association (CSA) codes
- Business Corporations Act
- Electricity and Gas Inspection Act (Federal)
- Weights and Measures Act (Federal)
- Environmental Protection Act
- Electric Safety Association (ESA) Bulletins

When planning and designing electricity services, Customer/Consumers and their agents must refer to this Conditions of Service, all applicable Provincial and Canadian electrical codes, and Federal, Provincial, and Municipal laws, regulations, codes and bylaws to ensure that the electricity service is compliant with all applicable requirements. All electrical work done by both the customer and Kingston Hydro shall be conducted in accordance with the Ontario Occupational Health and Safety Act (OH&S), the Regulations for Construction Projects, the Electrical & Utility Safety Association (EUSA) Rulebook, and traffic requirements.

In the event of a conflict between this document and the Distribution License or any statutory requirement, the Distribution License or statutory or obligation shall prevail.

1.3. Interpretation

Unless otherwise defined in this document, words and phrases shall have the meaning ascribed to them in statutes or Codes, as the case may be. Headings are for convenience only and shall not affect the interpretation of this document. Words importing the singular include the plural and vice versa. A reference to a document or a provision of a document includes any amendment or supplement to, or any replacement of that document, or that provision of that document.

1.4. Amendments and Changes

The provisions of this Conditions of Service and any amendments made from time to time form part of any Contract made between Kingston Hydro and any connected Customer/Consumer, Retailer, or Generator, and this Conditions of Service supersedes all previous Conditions of Service, oral or written, of Kingston Hydro or any of its predecessor municipal electric utilities as of its effective date.

In the event of changes to this Conditions of Service, Kingston Hydro will issue notice by posting the revised version of the Conditions of Service to its website. The Customer/Consumer is solely responsible for contacting Kingston Hydro to obtain or to ensure that the Customer/Consumer has the current version of Kingston Hydro's Conditions of Service.

Kingston Hydro performs ongoing consultation with its Customers/Consumers with respect to its Conditions of Service. Comments, suggestions, questions, or expressions of concern should be sent in writing to the address listed in the header of this document, to the attention of **"Regulatory Affairs"**. Kingston Hydro's Conditions of Service is reviewed and amended as necessary based on the feedback gathered through Customer/Consumer consultations, regulatory developments, and operational changes. Revisions are effective as of the date a version is issued.

The current version of the document is available for download free of charge on Kingston Hydro's Website at www.kingstonhydro.com.

1.5. Contact Information & Hours of Operation

Mail or in person:

Kingston Hydro c/o Utilities Kingston
P.O. Box 790
1211 John Counter Boulevard
Kingston Ontario
K7L 4X7

Business Hours	8:00 a.m. to 4:30 p.m, Monday to Friday.
General Inquiries:	(613) 546-0000
24 hour Emergency Service:	(613) 546-1181
Facsimile	(613) 546-7816 Customer Inquiries (613) 542-1463 Administrative Offices
e-mail	info@kingstonhydro.com
Web Site	www.kingstonhydro.com

Underground Cable Locating:

Call before you dig to locate Kingston Hydro's underground cables and other utility underground infrastructure.

Ontario One Call (ON1Call) became a Statutory Corporation, regulated by the Ontario Government, with the passage of the Ontario Underground Infrastructure Notification System Act 2012, on June 19, 2012.

Persons and/or contractors who intend to excavate any portion of a property are required to first obtain underground cable locates to ensure personal safety and avoid damage. Ontario One Call receives excavation locate requests and notifies registered owners of underground facilities within the vicinity of the dig-site of the planned excavation. Further information about this service is outlined within The Ontario Underground Infrastructure Notification System Act.

To obtain underground cable locates in Kingston Hydro's service area, contact Ontario One Call at the website and phone number below or such other numbers as Kingston Hydro may advise through its website or otherwise.

Ontario One Call	Telephone: 1-800-400-2255 Website: http://on1call.com/

1.6. Customer Rights

1.6.1. Connection

The Customer/Consumer has the right to have a building connected to the distribution system if the building "lies along" any of the lines of the distribution system and the owner, occupant, or other person in charge of the building requests connection in writing.

1.6.2. Disconnection at Customer/Consumer's request

The Customer/Consumer has the right to have their electric service disconnected for the purpose of maintenance of the service by means of a meter pull performed by staff authorized by Kingston Hydro. Sufficient notification must be provided to Kingston Hydro by the Customer/Consumer stating both the time and date of the disconnection request. There will be no charge for one disconnect per calendar year to facilitate maintenance to the Customer/Consumer's electric service, provided it is performed during normal working hours. Disconnection for the purpose of connecting customer embedded generation may or may not be possible by means of a meter pull depending on the configuration of the customer embedded generator. Upgrades to the existing services are not considered maintenance under this section and are dealt with in Section 2 of this Conditions of Service.

1.6.3. Claims

Where the Customer/Consumer has incurred loss or damage, the Customer/Consumer has the right to submit a claim for damages.

The claim must be submitted in writing to the attention of the Clerk of the Municipality at City Hall, 216 Ontario Street, Kingston, Ontario. All claims must be filed within ten (10) days of the occurrence. Claims must include copies of all receipts for repairs, replacements or estimate of damage.

The following claim process will be followed:

1. Claim is submitted in writing to the attention of the Clerk of the Municipality at City Hall, 216 Ontario Street, Kingston, Ontario. All claims must include copies of all receipts for repairs or replacements, or estimates.
2. The claim will be forwarded to the Insurance Broker for further investigation.
3. The Insurance Broker will notify the claimant of the status of their claim.

1.7. Distributor Rights

1.7.1. Liabilities

Kingston Hydro shall only be liable to a Customer/Consumer and a Customer/Consumer shall only be liable to Kingston Hydro for any damages that arise directly out of willful misconduct or negligence:

- of Kingston Hydro in providing distribution services to the Customer/Consumer;
- of the Customer/Consumer in being connected to the distribution system;

OR

- of Kingston Hydro or the Customer/Consumer in meeting their respective obligations under this Conditions of Service, their licenses and any other applicable law.

Notwithstanding the above, neither Kingston Hydro nor the Load Customer shall be liable under any circumstances whatsoever for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or from any indirect, consequential, incidental or special damages, including but not limited to punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, tort or otherwise.

The Customer/Consumer or any Embedded Generator shall indemnify and hold harmless Kingston Hydro, its' directors, officers, employees and agents from any claims made by any third parties in connection with the construction, installation and operation of a generator by or on behalf of the Customer or the Embedded Generator.

1.7.2. Access to Customer Property & Information

Kingston Hydro shall have access to Customer/Consumer's property in accordance with Section 40 of the Electricity Act. In some circumstances, Kingston Hydro may request information from a customer necessary to verify the customer's identity, address, and place of residence, including, in certain circumstances, residential or commercial leases for a serviced property.

1.7.3. Safety of Equipment

The Customer/Consumer will comply with all aspects of the Ontario Electrical Safety Code with respect to ensuring that equipment is properly identified and connected for metering and operation purposes and will take whatever steps necessary to correct any deficiencies, in particular cross-wiring situations, in a

timely fashion. If the Customer does not take such action within a reasonable time, Kingston Hydro may disconnect the supply of power to the Customer.

The Customer/Consumer shall not build, plant or maintain or cause to be built, planted or maintained, any structure, tree, shrub or landscaping that would or could, in the sole opinion of Kingston Hydro, obstruct the running of distribution lines, endanger the equipment, interfere with the proper and safe operation of the facilities or adversely affect compliance with any applicable legislation. If obstructions are found, the customer/consumer shall remove at their cost to the satisfaction of Kingston Hydro.

1.7.4. Underground Locates

Customer/Consumers, Developers, Contractors, etc. must request and receive locates for all underground facilities prior to excavating in the road allowance. Kingston Hydro will provide locates within five (5) days of the request.

1.7.5. Connects/Disconnects

Only employees, agents or contractors under authority of Kingston Hydro shall connect a Customer/Consumer's service to the electrical distribution system. Unauthorized connection by others shall be treated as theft of power and immediately disconnected.

Only employees, agents or contractors under authority of Kingston Hydro shall disconnect a Customer/Consumer's electrical service from the distribution system.

1.8. Disputes

1.8.1. Complaint Resolution Process

The Customer/Consumer can contact the Customer Service Centre, open weekdays 8am to 5pm, in one of the following ways:

- By telephone: 613-546-0000
- By mail: P.O. Box 790
  1211 John Counter Boulevard,
  Kingston ON K7L 4X7
- By facsimile: 613-546-7816
- By e-mail: info@kingstonhydro.com

A Customer Service Representative (CSR) reviews complaints with the Customer/Consumer, investigates, then initiates a resolution. This may include issuing a service order to verify a reading or examination of equipment, providing

a consumption history report, bill review, and consultation with a representative of Kingston Hydro. The CSR takes ownership of the complaint and follows up directly with the Customer/Consumer.

If the written complaint is not resolved at the CSR level, the Customer/Consumer's concern is then escalated as follows:

1. First Level Escalation Process: Senior CSR, Customer Service Centre for attention and resolution.
2. Second Level Escalation Process: Manager of the appropriate department at Utilities Kingston or Kingston Hydro.
3. Third Level Escalation Process: If resolution has not been achieved, depending on the nature of the complaint, the issue may be referred to the President and C.E.O. and be elevated to the Dispute Resolution Process outlined below
4. Copies of all documents will be kept in the Customer/Consumer's file.

1.8.2. Dispute Resolution Process

Complaints which have not been resolved to the satisfaction of all those involved will proceed to the Dispute Resolution Process.

The following process will then be followed:

1. The Customer/Consumer will be asked to document their dispute in writing and submit it to the office of the President and C.E.O. This may be accompanied by a phone call to the office of the President and C.E.O.
2. Once received, the dispute will be dated and contact will be made with the Customer/Consumer, at which time efforts will be made to resolve the dispute within ten (10) business days of receipt.
3. If resolution cannot be achieved, and the nature of the complaint involves policy issues, the dispute may be forwarded to the Board of Directors.
4. A written response shall be provided to the Customer/Consumer.
5. All disputes will be documented, including the results of the dispute and the time lines.

1.8.3. Complaint & Dispute Resolution Process for Retailers

The Retailer Service Agreement outlines how disputes between Kingston Hydro and the Retailer will be settled.

2. DISTRIBUTION ACTIVITIES (GENERAL)

2.1. Connections - Process and Timing

2.1.1. Connection Process for Load Customer/Consumer

Under the terms of the *Distribution System Code* (DSC) and the *Electricity Act*, Kingston Hydro has the obligation to either connect or to make an Offer to Connect any Customer/Consumer that lies in its service area.

The Customer/Consumer or its representative shall consult with Kingston Hydro concerning the availability of supply, the supply voltage, service location, metering, and any other details. These requirements are separate from and in addition to those of the Electrical Safety Authority. Kingston Hydro will confirm, in writing, the characteristics of the electric supply.

2.1.1.1. Request for New or Upgraded Service

The Customer/Consumer or its authorized representative shall apply for new or upgraded electric services and/or temporary power services in writing, including the "Electric Service Request Form" which is available from Utilities Kingston Services Advisors at (613) 546-1181 ext 2285 or available to download from the Kingston Hydro website at:

http://www.kingstonhydro.com/pdf_downloads/UK_140110-Electric%20Service%20Request%20Form%20vs1.1.pdf

The Customer/Consumer is required to provide Kingston Hydro with sufficient lead-time in order to ensure:

- the timely provision of supply to new and upgraded premises or,
- the availability of adequate capacity for additional loads to be connected in existing premises;
- the system reliability and quality of service is not adversely impacted by additional embedded generation.

2.1.1.2. Response to Request for Service

Kingston Hydro shall make every reasonable effort to respond promptly to a Customer/Consumer's request for connection. Kingston Hydro shall respond to a Customer/Consumer's written request for a connection within timelines prescribed within the Distribution System Code, Section. 7, Service Quality Requirements.

2.1.1.3. Offer to Connect

Once all information has been received, Kingston Hydro will make an Offer to Connect within timelines prescribed within the Distribution System Code, Section 7, Service Quality Requirements.

2.1.1.4. Connection Denial

Customer/Consumer may be refused Connection under the following circumstances:

1. Failure to pay for any outstanding fees or capital contributions.
2. Failure of Customer installed electrical equipment to pass ESA inspection.
3. Failure of Customer to sign the Connection Agreement.
4. Contravention of the laws of Canada, the Province of Ontario or Municipal Bylaws.
5. Violation of conditions in Kingston Hydro's Distributor's License.
6. If, in the opinion of Kingston Hydro, the connection of the new load would have an adverse effect on the reliability or safety of the distribution system.
7. If, in the opinion of Kingston Hydro, the connection of the new load would impose an unsafe worker situation beyond normal risks inherent in the operation of the distribution system.
8. If the connection of the new load would result in a material decrease in the efficiency of Kingston Hydro's electrical distribution system.
9. If the connection of the new load would have an adverse effect on the quality of distribution services received by an existing connection.
10. If the connection of the new load would result in discriminatory access to the distribution services.
11. Kingston Hydro shall ensure that all electrical connections to its system meet its design requirements, unless the electrical connections are separated by a protection device that has been approved by Kingston Hydro. If an electrical connection does not meet the design requirements, connection will be refused.
12. If all requirements of the Offer to Connect are not fulfilled to the satisfaction of Kingston Hydro.
13. Violation of any conditions documented in this Conditions of Service.

14. Where the Customer/Consumer has not secured the appropriate licensing from the Ontario Energy Board and/or the Independent Electricity Market Operator.
15. If the Customer/Consumer has arrears with Kingston Hydro that have not been paid or cleared.

In the event that Kingston Hydro refuses to connect a building or facility, Kingston Hydro shall inform the person requesting the connection of the reason(s) in writing, for not connecting and, where Kingston Hydro is able to provide a remedy, make an Offer to Connect. If no remedy is possible, it is the responsibility of the Customer/Consumer to do so before a connection may be made.

2.1.1.5. Connection Agreement

Kingston Hydro, in its discretion, may require a Customer/Consumer, Embedded Generator, Embedded Distributor, Embedded Market Participant, or responsible person for a Multi-Unit Residential Rental Building and Condominiums (MURB developer, condominium board of directors, or landlord) to enter into a Connection Agreement with Kingston Hydro including terms and conditions in addition to those expressed in this Conditions of Service. This will be identified in the Offer to Connect. If a Connection Agreement is not entered into once service has commenced, the provision of service by Kingston Hydro shall imply acceptance of Kingston Hydro's Conditions of Service and the terms of any applicable Connection Agreement or Offer to Connect delivered by Kingston Hydro to the customer.

Where an owner proposes the development of premises that require Kingston Hydro to place orders for equipment for a specific project and before actual construction starts the owner is required to sign the necessary Connection Agreement and furnish a suitable deposit before such equipment is ordered by Kingston Hydro.

The following can be made in lieu of cash deposits:

- an irrevocable letter of credit;
- a letter of guarantee, provided that it is issued with no expiration date by a Chartered Bank or a Trust Company or a Credit Union

Only after the Offer to Connect has been signed by both Parties will equipment be ordered and/or the work be scheduled for completion. Kingston Hydro shall make every reasonable effort to respond promptly to construct the necessary facilities to connect to the Customer/Consumer's facilities.

Where a Connection Agreement exists between Kingston Hydro and the Customer/Consumer, its contents shall take precedence over the provisions in this Conditions of Service except where such contents contravene relevant legislation and/or regulations.

2.1.1.6. Inspections before Connections

In addition to meeting Kingston Hydro's requirements, all Customer/Consumer's electrical installations shall be inspected by and receive connection authorization from the Electrical Safety Authority (ESA), prior to the connection of a Customer/Consumer's service. Services that have been disconnected for the purposes of upgrade, change, or repair, or, services that have been altered subsequent to ESA approval must be re-inspected and approved by the ESA prior to reconnecting. Services that have been disconnected for a period of six months or longer shall also be re-inspected and approved by ESA prior to reconnection.

Customer/Consumer owned substations must be inspected by both the ESA and Kingston Hydro.

All facilities installed by the Customer/Consumer including but not limited to trenches, duct systems, transformer bases, transformer vaults and rooms, electrical generation facilities and provision for metering are subject to Kingston Hydro inspection and approval prior to installation of supply facilities.

Provision for metering shall be inspected and approved by Kingston Hydro prior to energization and must comply with Kingston Hydro Metering Requirements. For further information, please refer to Kingston Hydro's Metering Specifications document.

2.1.1.7. Connection

Upon receipt of final passed inspection from ESA, Kingston Hydro will connect the new service within timelines prescribed within the Distribution System Code, s. 7, Service Quality Requirements.

2.1.2. Connection Process of an Embedded Generator

Under the terms of the *Electricity Act*, Kingston Hydro has the obligation to permit connection of an Embedded Generator. Those interested in connecting Embedded Generation to Kingston Hydro's distribution system should read Kingston Hydro's "Guide for Embedded Generators" (Appendix B) to this document. This guide outlines regulatory requirements of Kingston Hydro in respect to connection requests from embedded generators, and outlines our

process for processing such requests. It also outlines the potential connection and settlement configurations available to embedded generators, as well as references to Kingston Hydro's obligations to generators under the Distribution System Code, Retail Settlement Code, and other relevant regulation or legislation.

2.1.3. Connection of an Embedded Distributor or an Exempt Distributor

Under the terms of the *Distribution System Code*, and the *Electricity Act*, Kingston Hydro has the obligation to permit connection of an Embedded Distributor or an Exempt Distributor for the purpose of enabling unit smart sub-metering by the exempt distributor.

Kingston Hydro is not obliged to connect an Embedded Distributor or to connect an Exempt Distributor for the purpose of enabling unit smart sub-metering by the exempt distributor, where compliance with all relevant legislation and regulations cannot be demonstrated. The Embedded Distributor must currently be licensed by the Ontario Energy Board. And where a unit sub-metering provider is providing unit sub-metering services on behalf of the exempt distributor, the unit sub-metering provider must be currently licensed by the Ontario Energy Board.

2.1.3.1. Request to Connect an Embedded Distributor

Kingston Hydro shall make every reasonable effort to respond promptly to another Distributor's request for connection. Kingston Hydro shall provide an initial consultation with another Distributor regarding the connection process within thirty (30) calendar days of receiving a written request for connection.

2.1.3.2. Offer to Connect for an Embedded Distributor

A Final Offer to Connect Kingston Hydro to the Embedded Distributor's distribution system shall be made in writing within ninety (90) calendar days of receiving the written requests for connection, unless other necessary information outside the Distributor's control is required before the offer can be made. See Section 2.1.3 and Section 2.20 for specific details.

2.1.3.3. Request to Connect an Exempt Distributor

Kingston Hydro shall process requests to connect a customer who chooses smart unit sub-metering. More information on smart sub-metering is available in Section 2.7.1.1.

2.1.4. Connections that "Lies Along"

For the purpose of these Conditions, "lies along" means a Customer property or parcel of land that is directly adjacent to or abuts onto the public road allowance where Kingston Hydro has distribution facilities of the appropriate voltage and capacity and no further addition or expansion is required. The connection would not include plant required to connect the service such as switches, insulators, cable, etc.

Under the Electricity Act, Kingston Hydro has the obligation to connect a building or facility that "lies along" its distribution line provided that:

- The building can be connected to Kingston Hydro's distribution system without an expansion or enhancement and,
- The service installation meets the conditions listed in this Conditions of Service.

A connection that "lies along" a distribution line may be refused connection to that line should the distribution line not have sufficient capacity for the requested connection or in the opinion of Kingston Hydro, be considered unsafe. In the cases of insufficient capacity Kingston Hydro will provide alternate supply options to the Customer/Consumer, which may include an expansion of Kingston Hydro's system (see Section 2.1.5).

Any new service located along an existing distribution system shall be connected to the most convenient and closest point of connection as determined by Kingston Hydro. Alternate points of connection are possible but may incur a fee.

The location of the Customer/Consumer's service entrance equipment will be subject to the approval of Kingston Hydro and the Electrical Safety Authority.

In general, Kingston Hydro will, depending on Customer Class and type of service connection, recover costs associated with the installation of "Connection Assets" via a Basic Connection Fee or a Variable Connection Charge. Connection charges and connection types for Residential and General Service class Customer/Consumers are further described in Section 2.13.

2.1.5. Connections Requiring Distribution System Expansions

2.1.5.1. Expansion Process

Under the terms of the DSC, Kingston Hydro has the obligation to make an Offer to Connect any service that is in its service territory that "lies along" its distribution system.

As Kingston Hydro's distribution system is close to capacity throughout its geographically limited service territory, many connections require distribution system expansions upstream of the requested connection point. In addition, some customers request expansion of the distribution system beyond the requested connection point in order to service newly developed land or buildings.

In such a case, the Customer/Consumer is responsible for contributing towards the capital costs of system expansions or reinforcements necessary to service the additional load placed on Kingston Hydro's system by the proposed connection which is not recoverable through the collection of regulated distribution rates over the reasonable projected life of the requested connection.

Appendix A, (Economic Evaluation Model for Distribution System Expansion), contains details on the methodology Kingston Hydro uses to calculate such "Capital Contributions", and meets the intent and requirements of the DSC.

Connection fees outlined in Section 2.1 and Section 2.13 of this document will apply in addition to any Capital Contribution required from the Customer/Consumer.

For the purpose of an economic evaluation, expansion costs are considered to be the incremental costs associated with supplying additional system capacity for the proposed connection, plus any costs to expand Kingston Hydro's distribution system beyond the requested point of connection to the existing distribution system.

2.1.5.2. Offer to Connect for Connections Requiring Expansions

An Offer to Connect will include all applicable charges and fees associated with connecting the new or upgraded load including connection cost as described in Section 2.1.1 and any capital contribution associated with system expansion.

As outlined in Appendix A, calculations of any capital contribution required will be based on the connection load projected by the Customer/Consumer. The

Customer/Consumer is responsible for providing Kingston Hydro with an accurate prediction of their electrical loads. Kingston Hydro may evaluate such load predictions against historical precedence and comparator connections, and may, in its sole discretion, adjust the timeline, magnitude, or risk classification of load predictions for the purposes of the capital contribution calculations.

The Offer to Connect will be valid for a 6 month period. If the Customer/Consumer has not begun to construct their facilities within this period the Offer to Connect may be considered void at the discretion of Kingston Hydro. A new submission by the Customer/Consumer will be required as described above. Kingston Hydro may charge for processing a second submission.

The Customer/Consumer may seek alternate bids when there is a capital contribution required for the connection, and where expansion work does not take place in the vicinity of existing Kingston Hydro electrical facilities and/or rights of way. If the Customer/Consumer proceeds with an alternate bid to undertake the work related to the expansion, Kingston Hydro will continue to be responsible for the maintenance and reliability of the system and will carry out planning, preliminary design, verification and inspection to ensure that the installed system meets Kingston Hydro's' standards. The costs associated with these functions may be recovered from the Customer/Consumer. Where construction is required on the Municipal Right of Ways, the Developer and/or Contractor will be required to obtain municipal consent.

If special equipment is required or equipment delivery problems occur then longer lead times may be necessary. In the Offer to Connect, Kingston Hydro will notify the Customer/Consumer of any extended lead times.

In addition to any other requirements in these Conditions of Service, the supply of electricity is conditional upon Kingston Hydro being permitted and able to provide such a supply, obtaining the necessary apparatus and material, and constructing works to provide the service. Should Kingston Hydro not be permitted or able to do so, it is under no responsibility to the Customer whatsoever and the Customer releases Kingston Hydro from any liability in respect thereto. In such cases, an explanation will be provided in the Offer to Connect to the Customer/Consumer.

In cases where an expansion of Kingston Hydro's distribution system beyond the point of connection to the existing system is required, Kingston Hydro will require the customer/consumer to furnish an expansion deposit of up to 100% of the projected distribution revenues projected from the new connection. This

expansion deposit will be returned as load promised by the customer is connected according to the schedule they submit to Kingston Hydro as part of the connection application process.

2.1.5.3. Acceptance of Offer to Connect for Connections Requiring Expansions

Upon acceptance of an Offer to Connect, Kingston Hydro will begin engineering and construction of the expansion required to service the new load. Final connection will only be completed when:

- The Customer/Consumer installed electrical system passes all relevant inspections (e.g. ESA, etc.);
- The Customer/Consumer signs the Connection Agreement, when required;
- The Customer/Consumer pays any outstanding capital contributions, fees, and/or expansion deposits. (as applicable).

2.1.5.4. Subdivision Connections

Subdivision Developments are considered an expansion project and the work is limited up to the service drop at the property line of each individual lot.

In the circumstances of a subdivision development, ESA inspection may not be required for the expansion but Kingston Hydro may still inspect, and prove the system via appropriate tests as determined by Kingston Hydro at the cost of the Developer.

2.2. Relocation of Plant

If requested to relocate the distribution plant, Kingston Hydro will exercise its rights and discharge its obligations in accordance with existing acts, bylaws and regulations including the *Public Service Works on Highways Act (MTO&C clarification of October 1974)* for road authorities, formal agreements, easements and law. In the absence of existing agreements, Kingston Hydro is not obligated to relocate the plant.

If a Customer/Consumer requests the relocation of the Kingston Hydro plant, Kingston Hydro will, if possible, accommodate such a request if it will not result in degradation to system reliability.

All costs associated with the relocation shall be borne by the Customer/Consumer requesting the repositioning, unless an existing agreement is in place. Where such relocation of the Kingston Hydro plant will require replacement facilities on lands not owned by the Customer/Consumer requesting the transfer, it shall be the responsibility of the Customer/Consumer to complete negotiations, to the satisfaction of Kingston

Hydro, with the landowner over whose lands the new facilities will reside, to the satisfaction of and at no cost to Kingston Hydro.

Where a new swimming pool is to be installed it will be necessary to relocate, at the Customer/Consumer's expense, any electrical conductors located directly above the area extending 3 metres horizontally from the pool edge as defined by the Ontario Electrical Safety Code. It is the Customer/Consumer's responsibility to contact Kingston Hydro and arrange for the service to be relocated where overhead service conductors are in place over an existing swimming pool.

2.3. Easements

The Customer/Consumer shall grant, at no cost to Kingston Hydro, easements as required to permit installation, operation, and maintenance of the distribution plant. Kingston Hydro shall determine the width and extent of the easement. The easement shall be registered on title prior to energizing of the service, re-arrangement and/or relocation of the distribution plant.

It shall be the responsibility of the Customer/Consumer to maintain the easement free of any permanent structure, (i.e. garages, sheds, fences, etc.), and to clear the easement of any trees, shrubs, buildings, etc. to allow access to Kingston Hydro's' plant at any time.

2.4. Contracts

Commercial Customer - All Customer/Consumers setting up a commercial account are required to complete a Commercial Account Application form.

Connection Agreements – All new general service and large users are required to complete a Connection Agreement prior to connecting to Kingston Hydro's electrical system.

Embedded Distributor Agreements – Agreements with embedded distributors will be developed on an 'as required' basis and are not included in these Conditions of Service.

Embedded Generation Agreements – Agreements with embedded generators will be developed on an 'as required' basis and will be specific to each generation site.

Implied Contract - In all cases the taking and/or use of electricity from Kingston Hydro by any Person or Persons shall be deemed as acceptance of a binding contract with Kingston Hydro, including the acceptance of this Conditions of Service and all conditions and rates established by Kingston Hydro from time to time.

Meter Relocation Agreement - Customer/Consumers and/or Kingston Hydro may request that an indoor meter(s) be relocated to the outside of the premises through a cost sharing arrangement.

Retailer Agreements – All retailers operating in Kingston Hydro's service area are required to enter into a separate retailer agreement with Kingston Hydro. These agreements are in accordance with the Retail Settlement Code and are not included in these Conditions of Service.

Special Contracts – Special contracts that are customized in accordance with the service requested by the Customer/Consumer include, but are not limited to the following examples:

- Construction sites
- Mobile facilities
- Special occasions

Subdivision Servicing Agreement - The Developer is required to enter into a Subdivision Servicing Agreement with Kingston Hydro.

2.5. Disconnection

2.5.1. Disconnection for Cause

Kingston Hydro reserves the right to disconnect the supply of electrical energy to a Customer/Consumer for causes including but not limited to:

- Contravention of the laws of Canada or the Province of Ontario;
- Adverse effect on the reliability and safety of the distribution system;
- Imposition of an unsafe worker situation beyond normal risks inherent in the operation of the distribution system;
- Contravention of the Ontario Electrical Safety Code;
- A material decrease in the efficiency of Kingston Hydro's distribution system;
- A materially adverse effect on the quality of distribution services received by an existing connection;
- Discriminatory access to distribution services;
- Inability of Kingston Hydro to perform planned inspections and maintenance;

- Failure of the Customer/Consumer to comply with a directive Kingston Hydro makes for purposes of meeting its license obligations;
- Overdue amounts payable to Kingston Hydro for the distribution or retail of electricity;
- Electrical disturbance propagation caused by Customer equipment that is not corrected in a reasonable amount of time;
- Any tampering with Kingston Hydro's distribution or metering equipment;
- Any other condition identified in this Conditions of Service document.

Kingston Hydro may disconnect the supply of electricity to a Customer/Consumer without notice in accordance with a court order, or for emergency, safety or system reliability reasons.

2.5.2. Disconnection for Unauthorized Use of Energy

Kingston Hydro reserves the right to disconnect the supply of electrical energy to a Customer for all unauthorized use of electricity including but not limited to energy diversion, fraud or abuse on the part of the Customer. Such service will not be reconnected until the Customer rectifies the condition and provides full payment of energy (estimated or actual), any costs for repair and inspection, and the disconnection and reconnection costs.

2.5.3. Disconnection for Non-Payment

Kingston Hydro reserves the right to disconnect a Customer/Consumer for non-payment of account.

The Customer/Consumer will be provided with a minimum of ten (10) days notice of the pending disconnection except in the case of a residential customer that has provided the distributor with documentation from a physician confirming that disconnection poses a risk of significant adverse effects on the physical health of the customer or on the physical health of the customer's spouse, dependent family member or other person that regularly resides with the customer. Where this documentation is provided the minimum notice of pending disconnection will be extended to 60 days.

Where a residential customer requests prior to the issuance of the disconnection notice that Kingston Hydro also provide a copy of any disconnection notice to a third party, Kingston Hydro shall suspend any disconnection action for a period of 21 days from the date of notification by the third party that he, she or it is attempting to arrange assistance with the bill payment, provided such notification

is made within 10 days from the date on which the disconnection notice is received by the customer.

Disconnection action with respect to a residential customer for non-payment is suspended for 21 days if Kingston Hydro is notified during the disconnection notice period that the residential customer is being assessed for Emergency Financial Assistance by a social service or government agency.

Upon notification by a Social Service Agency or Government Agency that a customer is not eligible to receive such assistance, or if another third party who was considering the provision of bill assistance decides not to proceed, Kingston Hydro will continue its disconnection process.

If it is known by Kingston Hydro that disconnection of the electricity service will affect other tenants' service, then the owner and other tenants will be advised of the pending disconnection. The tenants will receive a minimum of ten (10) days notice by way of posting notice of disconnects in a conspicuous place on the property such that all tenants receive notification. Alternatively, where practical and at the discretion of Kingston Hydro, they may be notified by way of registered or hand-delivered letter.

2.5.4. Fire & Public Safety Notice

Prior to disconnection of an electrical service for non-payment or other causes as stipulated in section 4.2 of the Distribution System Code as amended from time to time, Kingston Hydro shall provide Fire Safety and Public Safety notices to the customer as required by the Distribution System Code.

2.6. Conveyance of Electricity

2.6.1. Limitations on the Guaranty of Supply

Kingston Hydro will endeavor to supply our Customer/Consumer with uninterrupted power within the Voltage Guidelines referenced in Section 2.6.7, with Standard Voltage offerings. Kingston Hydro does not guarantee a constant power supply or assurance that voltages and frequency will be unvaried. Furthermore, we will not be liable for damages to the Customer/Consumer's equipment by reason of any failure in respect thereof.

Kingston Hydro will practice reasonable diligence in maintaining power levels but will not be responsible for any variations caused by external forces, such as operating contingencies, exceptionally high loads, or low voltage supply from the transmitter, host distributor, or an Embedded Generator. Kingston Hydro will not

be held responsible for failure of any of its obligations as outlined in these Conditions of Service to supply power due to any events beyond the reasonable control of Kingston Hydro, including, without limitation, severe weather, flood, fire, lightning, other forces of nature, acts of animals, epidemic, quarantine restriction, war, sabotage, act of a public enemy, earthquake, insurrection, riot, civil disturbance, strike, restraint by court or public authority, or action or non-action by or inability to obtain authorization or approval from any governmental authority, or any combination of these causes (“Force Majeure”).

Customers/Consumers that require a higher degree of security (i.e. uninterrupted supply of electricity) are responsible to provide their own back-up or standby facilities. A Customer/Consumer may require special protective equipment at their premises to minimize the effect of momentary power interruptions.

Customer/Consumer’s requiring a three-phase supply should install protective apparatus to avoid damage to their equipment, which may be caused by the interruption of one phase, or non-simultaneous switching of phases of Kingston Hydro’s supply.

Kingston Hydro will occasionally be required to interrupt the power supply to a Customer/Consumer, typically during emergency repairs, or while performing construction and maintenance duties. Power interruptions initiated by Kingston Hydro shall be based on practical and cost effective considerations as well as the extent of inconvenience to the Customer/Consumer. Kingston Hydro will attempt to provide the Customer/Consumer with reasonable advance notice of planned power interruptions, with the exception of an emergency situation.

Kingston Hydro shall have the right to access a property, in accordance with section 40 of the *Electricity Act,* and any successor acts thereto. Kingston Hydro may require a Customer/Consumer to provide emergency access to their premises in order to operate distribution equipment that is either owned by the Customer/Consumer or by Kingston Hydro which is normally under Kingston Hydro’s operating control.

2.6.2. Power Quality

2.6.2.1. Power Quality Testing

In response to a Customer/Consumer is power quality concern, where the utilization of electric power adversely affects the performance of electrical equipment, Kingston Hydro will perform a preliminary investigative analysis to attempt to identify the underlying cause. Upon determination of the cause which resulted in the power quality concern, where it is deemed to be a

system delivery issue and where industry standards are not met, Kingston Hydro will recommend and/or take appropriate mitigation measures. Kingston Hydro will take appropriate actions to control power disturbances found to be detrimental to the Customer/Consumers. If Kingston Hydro is unable to correct the problem without adversely affecting other Kingston Hydro Customer/Consumers, then it is not obligated to make the corrections. Kingston Hydro will use appropriate industry standards (such as IEC or IEEE standards) and good utility practice as a guideline.

If the power quality problem is on the Customer/Consumer's side, the Customer/Consumer will be responsible for rectification. The Customer/Consumer may be provided with the option to have Kingston Hydro pursue an investigation/rectification process, for a fee. The Customer/Consumer will not be charged for the initial verification, however, the Customer/Consumer will be charged for subsequent site visits when the problem is on the Customer/Consumer's side.

Kingston Hydro will perform tests on Customer/Consumer equipment at the Customer/Consumer's request. Customer/Consumers will be charged for all such requests; unless it is determined that Kingston Hydro's distribution system is adversely affecting the Customer/Consumer's equipment.

2.6.2.2. Power Quality Customer Obligations

- It is the responsibility of the Customer/Consumer to ensure that their electrical usage does not have an adverse effect on the distribution system. Customers/Consumers with large non-linear loads must install proper corrective measures, such as filtering and/or grounding techniques. Kingston Hydro follows the industry standard, IEEE 519. The harmonic voltage distortion limits are 3% on any individual frequency, and 5% on the total.
- It is the responsibility of the Customer/Consumer to ensure that their motor's starting current shall not exceed their associated supply circuit limitations. Reduced voltage starting may be required if satisfactory transformer fusing cannot be obtained due to excessive starting current, or a relatively long starting cycle. It should be noted that objectionable voltage flicker on the Customer/Consumer's secondary system may be experienced if the motor(s) are supplied from a transformer bank which also supplies lighting or other sensitive equipment in the building.

- A three phase Customer/Consumer shall ensure their load is balanced between the three phases within 15% of each phase, unless specific unbalancing is approved by Kingston Hydro.
- With respect to older services with ground fault detection for 3 phase, 3 wire, delta services: ground fault detection, (phase indication lights) is required on the load side of the revenue metering for each individual service. In event of bulk metering, ground fault detection would be required on the load side of the bulk metering.
- If Kingston Hydro determines that the Customer/Consumer's equipment is causing unacceptable power quality on Kingston Hydro's distribution system, the Customer/Consumer will be required to cease operation of the equipment until such time that the problem is rectified at the Customer/Consumer's cost. If the Customer/Consumer does not comply and remedy the situation within a reasonable time as defined by Kingston Hydro, Kingston Hydro may disconnect the supply of power.
- A Customer/Consumer is obligated to assist Kingston Hydro with power quality investigations by providing the required equipment information, relevant data and necessary access for the installation of monitoring equipment.

2.6.3. Notification for Interruptions

Kingston Hydro will attempt to provide affected Customer/Consumers with reasonable notice of any planned power interruptions. Kingston Hydro will endeavor to communicate outage information during unplanned and storm related outages. Depending on the outage duration and the number of Customer/Consumers affected, Kingston Hydro may issue a news release to advise the general public of the outage.

Notice may not be given when work is of an emergency nature involving the possibility of injury to a person(s) or damage to property or in response to a shortage of supply. Service interruption without prior notice may take place if an unsafe or hazardous condition is found to exist or if the use of electricity by apparatus, appliances, or other equipment is found to be unsafe or damaging to Kingston Hydro or the public.

Customer/Consumers who require an uninterrupted source of power for life support equipment must provide their own equipment for these purposes. Kingston Hydro will not be liable for interruption of service to these Customer/Consumers.

2.6.4. Emergency Service (Trouble Calls)

Kingston Hydro will exercise reasonable diligence and care to deliver a continuous supply of electrical energy to the Customer/Consumer. However, Kingston Hydro cannot guarantee a supply that is free from interruption. When power is interrupted, the Customer/Consumer should first ensure that failure is not due to blowing of fuses or open breakers within their internal power system. If there is a partial power failure, the Customer should obtain the services of an Electrical Contractor to carry out necessary repairs. If it then appears that Kingston Hydro's main source of supply has failed, the Customer should report these conditions immediately to Kingston Hydro's Emergency Call Centre (See Section 1.5).

Kingston Hydro will not be liable for Electrical Contractor costs incurred by the Customer/Consumer if the problem is found to be on Kingston Hydro's system unless the Customer/Consumer was instructed to contact an electrician by Kingston Hydro personnel.

Generally, Kingston Hydro will not perform work on the Customer/Consumer's service during emergency calls. In the unusual circumstances where work is performed, the Customer/Consumer will be charged the exact cost for the service call, work performed and any materials utilized.

Kingston Hydro operates a Call Centre 24 hours a day to provide emergency service to the Customer/Consumer. Kingston Hydro will initiate electricity service restoration efforts as rapidly as possible.

2.6.5. Electrical Disturbances

Kingston Hydro shall practice reasonable diligence to maintain voltages as described in the *Voltage Guidelines,* See Section 2.6.7. Typical voltage disturbances that can be expected on the distribution system are Capacitor Switching Transients, Voltage Sags caused by Faults on Adjacent Feeders, and Auto Re-closure Operations. It is the Customers/Consumer's responsibility to protect their equipment and belongings from any external disturbance.

Customers/Consumers must ensure that their equipment does not cause any disturbances such as harmonics, spikes, or sags that might interfere with the operation of adjacent Customer/Consumer equipment. Examples of equipment that may cause disturbance may include; large motors, welders and variable speed drives. In planning the installation of such equipment, the Customer/Consumer must consult with Kingston Hydro.

Customer/Consumers who require an uninterrupted source of power supply or a supply free from disturbances are responsible for their own equipment for these purposes.

Some types of electronic equipment, such as video display terminals, can be affected by the close proximity of high electrical currents that may be present in transformer rooms. Kingston Hydro will assist in attempting to resolve any such difficulties at the Customer/Consumer's expense.

The utility will investigate the cause of any disturbance to an electrical supply. Customer/Consumers who are found to cause system disturbances will be responsible for resolution of the disturbance at their expense. Failure to do so may result in a disconnection from Kingston Hydro's distribution system.

2.6.6. Standard Voltage Offerings

The following Secondary voltages may be made available depending on the capacity requested and the type of distribution plant that "lies along":

- 120/240V, single phase
- 120/208V, three phase, 4 wire, in the Downtown Network Area;
- 347/600V, three phase 4 wire.

The following Primary Services may be made available depending on the type of distribution plant that 'lies along' and capacity requested:

- 2,400 /4,160V
- 13,800V
- 44,000V

The voltage of the plant which 'lies along' Kingston Hydro's distribution system will determine the preferred Secondary Voltage. The limit of supply capacity for any Customer/Consumer is governed by the Customer/Consumer load.

General guidelines for supply from street circuits are as follows:

- 120/240V, single phase up to 400A or 75kVA demand load;
- 347/600V, three phase, four wire up to 200A or 112.5kVA demand load;
- 120/208V, three phase four wire up to 400A or 112.5kVA demand load.

For Loads greater than that of the above, where the Customer/Consumer/Developer provides:

A pad on private property; Kingston Hydro will provide the following service from a pad-mount transformer supplied at 2400/4160V;

- At 120/240V, single phase, supply is available up to 100kVA,
- At 120/208V, three phase, four wire, supply is available for loads up to 750kVA
- At 347/600V, three-phase, four-wire, supply is available for loads up to 750kVA

When the Customer or Developer provides a transformer vault on private property:

- 120/208V or 347/600V, three phase, four wire supply is available for loads up to 750kVA demand load.

For loads greater than 750kVA, service shall be supplied at 13,800 or 44,000V.

Customer/Consumers or Developer shall be responsible for all requirements of this service.

The above is summarized in the following table "Available Voltages and Service Limitations"

Table 1 - Available Voltages and Service Limitations

Secondary Service			Pad-Mounted Transformers		Transformer Vault	
Maximum Service Size	Maximum Service Size	Maximum Service Capacity	Maximum Service Size	Maximum Service Capacity	Maximum Service Size	Maximum Service Capacity
120/240V Single Phase 3 wire	400A	75kVA	600A	100kVA	600A	100kVA
120/208V Three Phase 4 wire	400A	112.5kVA	2600A	750kVA	2600A	750kVA
347/600V Three Phase 4 wire	200A	112.5kVA	1000A	750kVA	1000A	750kVA

Note: *Not all Secondary voltages are available in all areas*

2.6.7. Voltage Guidelines

Kingston Hydro maintains service voltage at the Customer/Consumer's service entrance within the guidelines of C.S.A. Standard CAN3-C235-87 (latest edition), which allows variations from nominal voltage of:

- 5% for Normal Operating Conditions
- 8% for Extreme Operating Conditions

Where voltages lie outside the indicated limits for Normal Operating Conditions but within the indicated limits for Extreme Operating Conditions, improvement or corrective action should be taken on a planned and programmed basis, but not necessarily on an emergency basis. Where voltages lie outside the indicated limits for Extreme Operating Conditions, improvement or corrective action should be taken on an emergency basis. The urgency for such action will depend on many factors such as the location and nature of load or circuit involved, the extent and duration to which limits are exceeded with respect to voltage levels, etcetera.

Table 2 - Recommended Voltage Variation Limits

For Circuits up to 1000 V, at Service Entrances

Nominal System Voltages	Voltage Variation Limited Application at Service Entrances			
	Extreme Operating Conditions			
	Minimum	Operating Conditions Minimum	Operating Conditions Maximum	Maximum
Single Phase 3-Conductor 120/240V	106/212V	110/220V	125/250V	127/254V
Three-Phase 4-Conductor 120/208V 347/600V	110/190V 306/530V	112/194V 318/550V	125/216V 360/625V	127/220V 367/635V
Three- Phase 3-Conductor 600V	530V	550V	625V	635V

2.6.8. Back-up Generators

Customer/Consumers with portable or permanently connected generation capability used for emergency back-up shall comply with all applicable criteria of Kingston Hydro and the Ontario Electrical Safety Code. In particular, the Customer/Consumer shall ensure that Customer/Consumer's emergency generation does not parallel with Kingston Hydro's system without a proper interface protection and cannot backfeed or adversely affect Kingston Hydro's system.

Customer/Consumers with permanently connected emergency generation equipment or other non-grid sources of electric supply shall notify Kingston Hydro regarding the presence of such equipment. Customer/Consumers must provide a disconnect device accessible to Kingston Hydro personnel at all times which will provide visible isolation and ground connections of such sources of supply from Kingston Hydro's system.

All those interested in having any type of generation at a site serviced by Kingston Hydro should read Appendix B – Kingston Hydro's Guide for Distributed Generators.

2.7. Metering

2.7.1. General

Kingston Hydro will supply, install, own, and maintain all meters, instrument transformers, ancillary devices, and secondary wiring required for revenue metering except where the Customer elects to be an Embedded Market Participant. Additional metering requirements are listed in the DSC and Kingston Hydro's *Metering Specifications* document available as Appendix C to this document. Metered Market Participants in the Independent Electricity System Operator ("IESO") administered wholesale market, must meet or exceed all IESO metering requirements.
Metering locations are subject to approval by Kingston Hydro and shall not be located in an environment which could be hazardous to the health or safety of Kingston Hydro personnel or equipment. Meters shall be located outside with limited exceptions at Kingston Hydro's discretion. For exceptions, metering facilities are to be located in an electrical room or contained in appropriate cabinets or protective housing.

The Meter Installation may be comprised of telecommunications equipment, to facilitate remote meter consumption data retrieval, in accordance with applicable regulations and directions from the Smart Meter Entity. Kingston Hydro, or its

authorized agents, will select the form and location of telecommunications equipment.

Kingston Hydro will install metering equipment at the Customer/Consumer's supply voltage, provided there is a means of disconnection. The Customer/Consumer must provide a convenient, safe and sanitary location satisfactory to Kingston Hydro for the installation of meters, wires and ancillary equipment. Meters for new or upgraded residential services will be mounted outdoors on a meter socket approved by Kingston Hydro. No person, except those authorized by Kingston Hydro, may remove, connect, tamper, or otherwise interfere with meters, wires, seals, or ancillary equipment owned by Kingston Hydro.

The Customer/Consumer will be responsible for the care and safekeeping of Kingston Hydro meters, wires and ancillary equipment on the Customer/Consumer's premises. If any Kingston Hydro equipment installed on the Customer/Consumer's premises is lost, damaged, or destroyed, other than by ordinary wear and tear, tempest or lightning, the Customer/Consumer will be liable to pay to Kingston Hydro the value of such equipment, or at the option of Kingston Hydro, the cost of repairing the same.

Any compartments, cabinets, boxes, sockets, or other work-space provided for the installation of Kingston Hydro's metering equipment shall be for the exclusive use of Kingston Hydro only.

Where Kingston Hydro is not regularly provided access as described, or if equipment tampering or theft of electricity occurs, Kingston Hydro reserves the right to have the metering equipment moved to another suitable location at the cost of the Customer/Consumer.

All specifications pertaining to main switches and main switch locations, meter sockets and socket location, instrument transformer and metering cabinets, special enclosures, meter loops, barriers, doors, auxiliary connections, working space, metering of multi-unit sites and apartments, and Interval Metering are found in Kingston Hydro's Metering Specifications available as Appendix C to this document.

2.7.1.1. Smart Metering

Kingston Hydro has replaced conventional metering as required with Smart Meters, to comply with the government's smart meter initiatives. For those customers mandated to be on time-of-use pricing, the processes for meter consumption data retrieval and billing align with applicable regulations and directions from the Smart Meter Entity. If Customers require access to his or

her real-time and invalidated data from a Smart Meter, access will be provided under the conditions listed in the Retail Settlement Code, including that additional costs are addressed by the Customer, and, access does not hinder Kingston Hydro's access to the meter data.

The advanced smart metering infrastructure requires that power be consistently applied to the meter base. If a customer wishes to disconnect their service before the meter please contact Customer Service (613) 546-0000 in advance. The Metering Services department monitors smart meter health daily and visits meters which do not communicate. If during a meter health investigation it is discovered that a customer has disconnected their service without advance notification the customer may be charged a service fee for the investigation.

2.7.1.2. Metering Requirements for Multi-Residential Rental Buildings and Condominiums

Developers of new multi-unit residential rental buildings and new and existing condominiums (collectively, "MURBs"), or boards of directors of condominiums, or authorized persons in charge of any other applicable class of unit under Ontario Regulation 389/10, may choose to have Kingston Hydro install unit smart metering, or to have Kingston Hydro install a bulk interval meter for the purpose of enabling unit sub-metering by a licensed unit sub-meter provider.

Installation of Unit Smart Metering

Upon the request of a MURB developer or a condominium board of directors, Kingston Hydro will install unit smart metering that meets the functional specification of Ontario Regulation 425/06 – *Criteria and Requirements for Meters and Metering Equipment, Systems and Technology* (smart metering). In that case, each separate residential and commercial unit, as well as common areas, will become direct individual customers of Kingston Hydro, with the common area accounts held by the developer, the condominium corporation, or the landlord as the case may be.

Refer to Kingston Hydro's Metering Specifications available as Appendix C to this document or contact the Utilities Kingston's Services Advisors for current specifications at (613) 546-1181 ext 2285.

Common Area Metering

Where units in a MURB are to be unit smart metered, the responsible party (MURB developer, condominium board of directors, or landlord) shall enter

into a contract with Kingston Hydro for the supply of electrical energy for all common or shared services. Common or shared services typically include lighting of all common areas shared by the tenants, or unit owners, and common services such as heating, air conditioning, water heating, elevators, and common laundry facilities. In such cases, consumption for all common areas will be separately metered.

Installation of Bulk Interval Metering

Where bulk interval metering is supplied by Kingston Hydro to an exempt distributor for the purpose of enabling unit sub-metering, the responsible party (i.e., the developer, condominium corporation, or landlord, but not the unit sub-meter provider) shall enter into a contract with Kingston Hydro for the supply of electrical energy to the building. The MURB continues to be the Customer of Kingston Hydro and will receive a single bill based on the measurement of the bulk (master) meter. The exempt distributor is responsible for the distribution of electricity on the consumer side of the bulk (master) meter. The unit sub-metering provider will then issue a bill to each unit and the common areas based on the consumption of the unit or common area.

2.7.1.3. Metering Requirements for Distributed Generators

A generation facility connected to the Kingston Hydro distribution system shall follow the conditions as specified in Appendix B – “Guide for Distributed Generators”.

2.7.2. Current Transformer Boxes

Refer to Kingston Hydro’s Metering Specifications available as Appendix C to this document or contact the Utilities Kingston’s Services Advisors for current specifications at (613) 546-1181 ext 2285.

2.7.3. Interval Metering

Refer to Kingston Hydro’s Metering Specifications available as Appendix C to this document or contact the Utilities Kingston’s Services Advisors for current specifications at (613) 546-1181 ext 2285.

2.7.4. Meter Reading

The Customer/Consumer must permit an authorized representative of Kingston Hydro ready and easy access at all reasonable hours to the meter for the

purpose of reading. Such access must be unobstructed, safe, and sanitary. The Customer/Consumer may provide a key to Kingston Hydro for this purpose. Where access is not provided during Kingston Hydro's regular business hours, and necessitates a special read, the customer/consumer, must on reasonable notice, arrange such access at a mutually convenient time. A special meter read fee based on the actual cost of the meter read may be charged.

The meter must be read by a representative of Kingston Hydro, at minimum, once every six (6) months. Failure to provide access as described will result in an estimated reading being used for billing purposes and may lead to service interruption - See *Section 1.7.1* Distributor Rights - Section 40 of the *Electricity Act*.

If upon inspection of metering equipment, it is found that the Customer/Consumer has in any way tampered with the installation of this equipment, the supply of electricity may be disconnected until the Customer/Consumer relocates the meter to an outside location and reimburses Kingston Hydro for an estimated amount of all unmetered electricity.

2.7.5. Final Meter Reading

A minimum of five (5) business days' notification of a Customer/Consumer's request to terminate service is required. Final readings will be taken on the requested final day of service whenever possible. Final readings taken within seven (7) calendar days of the termination of service will be used without pro-ration; otherwise the final read will be calculated using a pro-rated amount between two actual readings. If access cannot be gained to the meter within a reasonable timeframe, the final reading will be estimated.

2.7.6. Faulty Registration of Meters

Metering electricity usage for the purpose of billing is governed by the federal *Electricity and Gas Inspection Act* and associate regulations under the jurisdiction of Measurement Canada, a division of Industry Canada. Kingston Hydro's revenue meters are required to comply with the accuracy specifications established by the regulations under the said Act. When a measurement dispute arises, the Customer/Consumer and/or Kingston Hydro may request intervention by Measurement Canada.

In the event of incorrect electricity usage registration, Kingston Hydro will determine the correction factors based on the specific cause of the metering error and the Customer/Consumer's electricity usage history. The Customer/Consumer shall pay a reasonable sum for all of the energy supplied

based on the reading of any meter formerly or subsequently installed on the premises by Kingston Hydro. Due regard shall be given to any change in the character of the installation and/or the demand.

When a billing error has resulted in over-billing and Measurement Canada is not involved, the Customer/Consumer will be credited with the erroneously paid amount for a period not exceeding two years.

When a billing error has resulted in under-billing and Measurement Canada is not involved, the Customer/Consumer will normally be charged with the amount erroneously not billed for a period not exceeding:

- Two years, in the instance of an individual residential Customer/Consumer who was not responsible for the error, or the duration of the defect for any proven cases of willful damage or power diversion;

Or

- The duration of the defect, for a non-residential Customer/Consumer.

In the instance of under-billing, the Customer/Consumer, upon request, will be permitted to re-pay the amount over a period of time mutually agreed upon by both Kingston Hydro and the Customer/Consumer, but no longer than the duration of the error.

In the instance of under-billing a residential Customer, the customer shall be allowed to pay the under-billed amount in equal installments over a period at least equal to the duration of the billing error, up to a maximum of 2 years.

In the instance of under-billing of an individual eligible low-income Customer, the eligible low-income customer has the option of paying the under-billed amount as follows:

i) Kingston Hydro shall allow the customer to pay the under-billed amount in equal instalments over a period at least equal to the duration of the billing error, up to a maximum of 2 years.;
or
ii) over a period of 10 months where the under-billed amount is less than twice the customer's average monthly billing and over a period of 20 months where the under-billed amount equals or exceeds twice the customer's average monthly billing.

In instances of over-billing, Kingston Hydro will refund the amount owed to the Customer/Consumer immediately upon the completion of the investigation.

In instances in which Measurement Canada is involved, Measurement Canada will act as an arbitrator and shall determine the appropriate time period for adjustment.

2.7.7. Meter Dispute Testing

Metering inaccuracy is an extremely rare occurrence. Most billing inquiries can be resolved between the Customer/Consumer and Kingston Hydro without resorting to the meter dispute test.

Either Kingston Hydro or the Customer/Consumer may request the service of Measurement Canada to resolve a dispute. If the Customer/Consumer initiates the dispute, Kingston Hydro will charge the Customer/Consumer a meter dispute fee if the meter is found to be accurate and Measurement Canada rules in favor of the utility.

2.8. Tariffs and Charges

2.8.1. Service Connection

Kingston Hydro will charge a service connection fee as detailed in the Conditions of Service for new and upgraded service connections.

Where a Customer/Consumer or Developer proposes the development of a premise that requires Kingston Hydro to place orders for equipment for a specific project and prior to actual construction, the Customer/Consumer or Developer is required to sign the necessary Connection Agreement and provide a suitable deposit prior to such equipment being ordered by Kingston Hydro.

The following can be made in lieu of cash deposits:

- an irrevocable letter of credit;
- a letter of guarantee, provided that it is issued with no expiration date, by either a Chartered Bank, a Trust Company, or a Credit Union.

2.8.2. Energy Supply

2.8.2.1. Standard Service Supply (SSS)

All existing Kingston Hydro Customer/Consumers are Standard Service Supply (SSS) Customer/Consumers until Kingston Hydro is informed of their transfer to a competitive electricity retailer.

The Service Transfer Request (STR) must be made by the Customer/Consumer or the Customer/Consumer's authorized retailer.

2.8.2.2. Retailer Supply

Customer/Consumers transferring from SSS to a retailer shall comply with the STR requirements as outlined in Section 10 of the RSC.

2.8.2.3. Customer/Consumer Switching to Retailer

There are no physical Service Connection differences between SSS Customer/Consumers and third party retailers Customer/Consumers. Both Customer/Consumer energy supplies are delivered through the local Distributor with the same distribution requirements. Therefore, all service connections requirements applicable to the SSS Customer/Consumers are applicable to third party retailers' Customer/Consumers.

2.8.2.4. Wheeling of Energy

All Customer/Consumers considering delivery of electricity through the Distributor's distribution system are required to contact Kingston Hydro for technical requirements and applicable tariffs.

2.8.3. Security Deposits

2.8.3.1. General

Security Deposits provide a measure of security to Kingston Hydro for financial loss due to default of Customer/Consumer payments.

Security Deposits act to mitigate this financial impact, as the Utility must recover from all other Customer/Consumers, losses resulting from non-payment.

Security Deposits may be required at the time of application for service, at the time of the customer's annual review as outlined herein or as soon as the customer fails to meet the definition of good payment history.

Security Deposits shall not constitute payment of an outstanding account, in whole or in part, and will be held by Kingston Hydro and may be returned to the customer during its review or upon closure of an account as outlined below.

All security payments shall be calculated according to the prescribed methodology as outlined in the Ontario Energy Board's Distribution System Code (DSC) as amended from time to time.

2.8.3.2. Calculation of Security Deposit

The maximum amount of the required Security Deposit will be based on 2.5 times the customer's average monthly bill for that service address during the most recent 12 months within the past two years. In circumstances where valid or appropriate consumption history is not available, Kingston Hydro will estimate the loads or average consumption using data from similar properties.

Notwithstanding section 2.8.3.4, for those customers who have received more than one disconnection notice in the past 12 months, Kingston Hydro may use the customer's highest actual monthly load for the most recent 12 months within the past two years.

2.8.3.3. Timing of Payment of Security Deposit

A Security Deposit, as required as set out below, shall be paid in equal instalments over a maximum of four months, or over a period of six months for residential Customers (including where a new security deposit is required due to Kingston Hydro having to apply the existing security deposit against amounts owing). The first instalment is due either at the time of application for service or on the customer's first bill, and the remaining instalments will be applied to the customer's account in three equal amounts over the next three bills, or applied to the customer's account in five equal amounts over the next five bills for residential Customers. A customer may, in its discretion, choose to pay the Security Deposit over a shorter period of time.

2.8.3.4. Waiver of Security Deposit

The Security Deposit may be waived based on the following criteria:

a) The Customer has a good payment history based on the most recent period of time and some of that time must have occurred in the previous 24 months.

   The minimum time period for good payment history is as follows:

- 1 year - residential customers
- 5 years – non-residential customers in a <50kW demand rate class
- 7 years – all other customers

   Or

b) The customer is a bulk-metered residential condominium as defined in the Condominium Act, 1998 and has provided Kingston Hydro with a signed

declaration attesting to their legal status as a residential condominium corporation.

Or

c) The customer is a residential Customer. *Note: Currently Kingston Hydro typically waives security deposits for residential customers of different risk profiles however at all times reserves the right to exceptions where there is positive evidence of real financial risk to Kingston Hydro and the security deposit requirement is expressly permitted under the Distribution System Code.*

A customer is deemed to have a good payment history with Kingston Hydro unless during the relevant time period set out in 2.8.3.4, any of the following has occurred:

- the customer has received more than one disconnection notice from Kingston Hydro,
- more than one cheque given to Kingston Hydro was returned for insufficient funds,
- more than one pre-authorized payment to Kingston Hydro has been returned for insufficient funds
- a disconnect/collect trip has occurred.

If any of the foregoing occurred as a result of an error by Kingston Hydro, then the customer's good payment history shall not be affected.

Kingston Hydro shall not require a Security Deposit from a customer where that customer:

- provides a letter from another electricity distributor or gas distributor in Canada confirming the customer's good payment history for the period noted in 2.8.3.4 above; or
- is a residential Customer that has been qualified as an "eligible low income customer" in accordance with the Distribution System Code requirements and requests a waiver; or
- a customer, other than a customer in a >5000 kW demand rate class provides a satisfactory credit check made at the customer's expense. A satisfactory credit check will be a credit check submitted with a FICO score of not less than 700.

Deposit waivers are voided immediately if at any time, the customer fails to meet the definition of a good payment history.

2.8.3.5. Review and Update of Security Deposits

Commencing February 1, 2005, Kingston Hydro will review every customer's Security Deposit once every calendar year to determine whether the entire amount of the Security Deposit is to be returned to the customer as the customer would now be exempt from the Security Deposit requirements noted above. If eligible, Kingston Hydro shall return the Security Deposit to the customer by way of a credit on the customer's account or otherwise.

Notwithstanding the foregoing, in the case of a customer in a >5000kW demand rate class, Kingston Hydro shall only return 50% of the Security Deposit held by Kingston Hydro.

As a result of the review, customers may be required to pay a Security Deposit or increase the amount of their Security Deposit. If required, Kingston Hydro shall charge the required increase in the Security Deposit on the customer's bill. Kingston Hydro may apply the full amount of the adjustment on the next bill to the customer.

2.8.3.6. Interest on Security Deposits

Interest shall accrue monthly on Security Deposits made by way of cash or cheque commencing upon receipt of the total deposit. The interest rate shall be the Bank of Canada Prime Business Rate published on the Bank of Canada website less 2%, updated quarterly commencing August 1, 2004. Kingston Hydro shall pay out the interest by crediting the customer's account or otherwise on the earlier of:

- once every 12 months
- on return of the security deposit
- on applying the security deposit to the account
- on closure of the account

2.8.3.7. Return of Security Deposits upon Closure of an Account

Kingston Hydro shall return any Security Deposit within 6 weeks of the closure of an account subject to Kingston Hydro's right to use the Security Deposit to set off other amounts owing to Kingston Hydro.

The Security Deposit will normally be applied as a credit to the account or a cheque will be issued if the account has been finalized.

For the purposes of these Conditions of Service, closure of an account will be when the final bill has been processed.

2.8.3.8. Acceptable Forms of Security - Residential Customers

The form of payment of a Security Deposit for a residential customer shall be one of the following:

- cash,
- cheque.
- such other form that is acceptable to Kingston Hydro at the time of payment.

2.8.3.9. Acceptable Forms of Security – Non-Residential Customers

The form of payment of a security deposit for a non-residential customer shall be:

- cash,
- cheque,
- an automatically renewing, irrevocable letter of credit issued by a Chartered Bank; a Trust Company; or a Credit Union,
- such other form of security acceptable to Kingston Hydro

2.8.3.10. Limits on Amounts of Security Required

Where a non residential customer in any rate class other than a <50 kW demand rate class has a credit rating from a recognized credit rating agency, the maximum amount of a Security Deposit which Kingston Hydro requires the non residential customer to pay shall be reduced in accordance with the following table:

Table 3 – Allowable Reduction in Security Deposits by Credit Rating

Credit Rating	Allowable Reduction in Security Deposit
(Using Standard and Poor's Rating Terminology)	
AAA- and above or equivalent	100%

AA-, AA, AA+ or equivalent	95%
A-, From A, A+ to below AA or equivalent	85%
BBB-, From BBB, BBB+ to below A or equivalent	75%
Below BBB- or equivalent	0%

2.8.3.11. Enforcement Where Security Deposits are not Paid

In the event a Security Deposit is not paid by the due date, Kingston Hydro may use collection activities to enforce payment that include, but are not limited to, disconnection of service (see Section 2.5).

2.8.4. Billing

Kingston Hydro may, at its option, render bills to its Customer/Consumers on either a monthly, bi-monthly or quarterly basis. Bills for the use of electrical energy may be based on either a meter reading or an estimated reading, or a flat rate or estimated rate, as determined by Kingston Hydro.

The Customer/Consumer may dispute charges shown on the Customer/Consumer's bill or other matters by contacting and advising Kingston Hydro of the reason for the dispute.

Kingston Hydro will promptly investigate all disputes and advise the Customer/Consumer of the results.

2.8.5. Account Set-up Charge

When a Customer establishes a new account, a charge is applied to their first bill. This charge applies to both those Customers who are new to Kingston Hydro's distribution territory and those who have moved locations within Kingston Hydro's distribution territory.

2.8.6. Arrears Certificate

A charge is levied to provide a certificate of arrears per service address. This is typically provided to lawyers during a property purchase.

2.8.7. Payment Plans

Kingston Hydro shall offer the following payment plans:

2.8.7.1. Equal Payment Plan (EPP)

The Customer/Consumer's estimated yearly charges will be divided into 11 equal payments, with the 12th month being the 'settle-up' month. Throughout the 12-month period, the equal payment amount may be adjusted upwards or downwards, as actual billings warrant. Customers/Consumers shall be notified in advance on their monthly statement of any required adjustments.

The equal payment plan shall be reconciled annually. At that time, Customer/Consumers will receive notification on their monthly statement of the charge or credit for the difference between the monthly installments billed and the actual cost of the consumption that they used.

Upon request, the Customer/Consumer may opt out of this plan at any time, at which point, standard billing and collection timelines shall apply. Also, if monthly payments are not maintained, Customer/Consumers shall be removed from the plan.

This plan is available to Residential and small Commercial Customer/Consumers (<50kw) on Standard Supply Service only. In order to participate in the Equal Payment Plan, the Customer/Consumer must have a zero balance on their account.

A customer may choose to enroll with an EPP plan commencing any month of the year – there is no limitation in terms of a certain start month.

2.8.7.2. Pre-authorized Payment (PAP)

A pre-authorized bank debit of the net billed amount shall be withdrawn from the Customer/Consumer's bank account on the due date of the bill, according to the billing cycle.

If payments are not maintained or remain outstanding, the Customer/Consumer shall be automatically removed from the plan within thirty (30) days of the due date.

Upon request, the Customer/Consumer may opt out of this plan, at any time.

This plan is available to all Customer/Consumers, with the exception of those who currently have retailer-consolidated billing.

Further terms and conditions are provided on the payment plan application, which must be authorized and returned with a void cheque.

Customer/Consumers who default on their payments shall be required to restore payment by the next month's withdrawal date, in addition to the current monthly payment. If the Customer/Consumer cannot update their

payments, the plan will be suspended until the balance is cleared. If a security deposit is not already applied to the Customer/Consumer's account, a request will be initiated at that time.

2.8.8. Late Payment Charges & N.S.F. Cheques

Overdue accounts are subject to interest charges. Bills are payable in full by the due date; otherwise, Late Payment Charges will apply.

Where a payment has been made by the Customer/Consumer on or before the due date, Late Payment Charges will apply only to the amount outstanding at the due date. Outstanding bills are subject to the collection process and may ultimately lead to the service being discontinued. Service will be restored once satisfactory payment has been made. Discontinuation of service does not relieve the Customer/Consumer of the liability for arrears.

All residential customers *excluding* eligible low-income customers must pay initial late payment charges and may face additional late payment charges during course of a formal standard arrears agreement.

Eligible low-income customers must pay initial late payment charges and additional late payment charges are waived during course of a formal standard arrears agreement. Service charges related to collection, disconnection, non-payment are waived when an eligible low-income customer enters into a formal standard low-income arrears agreement for the first time or after he or she has successfully completed a previous such agreement.Kingston Hydro shall not be liable for any damage on the Customer/Consumer's premises resulting from such discontinuance of service. A reconnection charge will apply where the service has been disconnected due to non-payment except where residential low-income code provisions may apply.

The Customer/Consumer will be required to pay additional charges for the processing of non-sufficient fund (N.S.F.) cheques.

2.8.9. Special Charges

The Customer/Consumer will pay special charges and deposits, on request, which may arise from a variety of conditions such as:

2.8.9.1. Energy Deposit

As a guarantee of payment of energy bills, some Customers will be required to pay a deposit to Kingston Hydro.

2.8.9.2. Standby Capacity Charge

In some cases, it may be deemed reasonable for Kingston Hydro to charge for standby capacity.

2.8.9.3. Transfer Charge

A change of occupancy charge will apply to all accounts taken over by a new Customer.

2.9. Customer Information

A third party who is not a retailer may request historical usage information with the written authorization of the Customer/Consumer to provide their historical usage information.

Kingston Hydro will provide information appropriate for operational purposes that has been aggregated sufficiently, such that an individual's Customer/Consumer information cannot reasonably be identified, at no charge to another Distributor, a transmitter, the IESO or the OEB. Kingston Hydro may charge a fee that has been approved by the OEB for all other requests for aggregated information.

At the request of a Customer/Consumer, Kingston Hydro will provide a list of retailers who have Service Agreements in effect within its distribution service area. The list will inform the Customer/Consumer that an alternative retailer does not have to be chosen in order to ensure that the Customer/Consumer receives electricity and the terms of service that are available under Standard Supply Service.

Upon receiving an inquiry from a Customer/Consumer connected to its distribution system, Kingston Hydro will either respond to the inquiry if it deals with its own distribution services or provide the Customer/Consumer with contact information for the entity responsible for the item of inquiry, in accordance with Chapter 7 of the Retail Settlement Code.

An embedded distributor that receives electricity from Kingston Hydro shall provide load forecasts or any other information related to the embedded distributor's system load to Kingston Hydro, as determined and required by Kingston Hydro.

A Distributor shall not require information from another distributor unless it is required for the safe and reliable operation of either the Distributor's distribution system or to meet a Distributor's license obligations.

2.10. Service Connection Types Overview

This section defines Kingston Hydro's Customer Classes (also referred to as Distribution Rate Groups). Customer Classes determine distribution rates. It also makes reference to additional documentation defining the technical interfaces between Kingston Hydro and its Customer/Consumers, typical demarcation points, and connection charge methodology.

This section also defines Kingston Hydro's main Service Connection Type categories. Service Connection Types identify the physical interface requirements with the distribution network. The Service Connection Type also determines how requests for new or upgraded services from Customer/Consumers are processed, approved and financed.

Service Connection Types **do not necessarily correspond** to Customer Classes. For example, an apartment building may have a General Secondary Service Connection Type with individually metered apartment dwelling units that are billed according to Residential Class rates.

Service Connection Types may be referred to as either "Primary" or "Secondary". These distinctions are based on the nominal service voltage, regardless of the location of the service meter, as outlined in Section 3.2 – Definitions.

This section also defines further aspects of Kingston Hydro's Customer Classes and Service Connection Types.

2.11. Customer Classes (Distribution Rate Groups)

A brief description of the Customer Classes taken from Kingston Hydro's OEB approved Rate Order is provided for clarification purposes.

2.11.1. Residential Class

This classification refers to an account taking electricity at 750 volts or less where the electricity is used exclusively in a separately metered living accommodation. Customers shall be residing in single-dwelling units that consist of a detached house or one unit of a semi-detached, duplex, triplex or quadruplex house, with a residential zoning. Separately metered dwellings within a town house complex or apartment building also qualify as residential customers. All customers are single phase.

2.11.2. General Service < 50kW

This classification refers to a non-residential account taking electricity at 750 volts or less whose monthly average peak demand is less than, or is forecast to be less than, 50kW.

2.11.3. General Service 50 to 4,999 kW

This classification refers to a non-residential account whose monthly average peak demand is equal to or greater than 50kW and less than 5,000 kW, or is forecast to be equal to or greater than 50 kW and less than 5,000 kW.

2.11.4. Large Use

This classification refers to an account whose monthly average peak demand is equal to or greater than, or is forecast to be equal to or greater than, 5,000 kW.

2.11.5. Unmetered Scattered Load

This classification refers to an account taking electricity at 750 volts or less whose monthly average peak demand is less than, or is forecast to be less than, 50 kW and the consumption is unmetered. Such connections include cable TV power packs, bus shelters, telephone booths, traffic lights, railway crossings, etc. The customer will provide detailed manufacturer information/documentation with regard to electrical demand/consumption of the proposed unmetered load.

2.11.6. Standby Power – APPROVED on an Interim Basis

This classification refers to an account that has load Displacement Generation and requires Kingston Hydro to provide back-up service.

2.11.7. Street Lighting

This classification refers to an account for roadway lighting with a Municipality, Regional Municipality, Ministry of Transportation and private roadway lighting operation, controlled by photo cells. The consumption for these customers will be based on the calculated connected load times the required lighting times established in the approved OEB street lighting load shape template.

2.11.8. microFIT Generator Service

This classification applies to an electricity generation facility contracted under the Ontario Power Authority's microFIT program and connected to the distributor's distribution system.

2.12. Reference Documents

The following stand-alone documents are considered appendices to this Conditions of Service, providing additional, detailed information targeted to Consumers/Customers interested in obtaining more detailed information than is available in this Conditions of Service. These documents shall be made available to Consumers/Customers or Embedded Generators upon request, or can be accessed online at www.kingstonhydro.com

2.12.1. Appendix A – Economic Evaluation Model for Distribution System Expansion

As per the requirements of the DSC, this document contains Kingston Hydro's Capital Contribution policies and methodology for conducting Economic Evaluations of proposed connections which require an expansion of its distribution system.

2.12.2. Appendix B – Kingston Hydro Guide for Distributed Generators

This document contains information about Kingston Hydro's process for connecting all types of generation to its distribution system, including technical specifications, safety concerns, financial settlement options, and Kingston Hydro's process for connecting Embedded Generators, Load Displacement Facilities, Backup Generators, and all other types of generators in line with OEB regulations.

2.12.3. Appendix C – Kingston Hydro Metering Specifications

This document provides additional information about Kingston Hydro's requirements and conventions for metering. Please contact Kingston Hydro for the latest specifications and requirements. Nothing contained in these specifications shall prejudice or supersede any regulation or requirement of the Ontario Electrical Safety Code for Customer/Consumer's owned equipment.

2.12.4. Appendix D – Sample Connection Agreements

This appendix contains examples of connection agreements typically executed between Kingston Hydro and some of its customers. It should be noted that these agreements may or may not be modified at the sole discretion of Kingston Hydro depending on the individual characteristics of a requested connection.

2.13. Typical Demarcation Points and Connection Charge Methodology

2.13.1. Basic Connection Charges

In general, Kingston Hydro defines a basic connection and recovers the cost of this basic connection as part of its revenue from rates. Basic Connection Charges are reviewed annually. A service layout fee will be charged to cover the cost of providing the connection documentation to the Customer/Consumer.

2.13.1.1. Residential

For residential services, the basic connection is defined as a 120/240V, single phase service up to 200A in size supplied with up to 30 metres of overhead cable.

Note: Over 200 amps will be treated as a Non-Residential Service.

The Basic Residential Allowance represents the maximum amount that Kingston Hydro will consider for recovery through revenue from rates. It is calculated as the actual cost to supply and install a 200A, 120/240V, single phase service including transformation capacity, standard meter and 30 metres of overhead cable. Any connection cost for residential Customer/Consumers exceeding the Basic Residential Allowance shall be recovered through a Variable Connection Charge.

2.13.1.2. Non-Residential

For non-residential services, the basic connection charge does not apply. The Basic Non-Residential Allowance is zero. The cost of connection is recovered solely through a Variable Connection Charge.

2.13.2. Variable Connection Charge

For all Customer/Consumer classes, a Variable Connection Charge is calculated as the costs associated with the installation of Connection Assets. This Variable Connection Charge is based on 100% of actual costs following completion of the work.

2.13.3. Demarcation Points

The “ownership demarcation point”, as defined by Electrical Distribution Safety Regulation (O.Reg 22/04) and the DSC, is the point where responsibility for electrical installation and inspection passes from Kingston Hydro to the Consumer/Customer. In most cases, this is analogous to the distribution system side of the Customer /Consumer’s dedicated revenue meter. On the distribution system side of the ownership demarcation point, electrical installations and equipment must be installed and inspected in accordance with the Electrical Distribution Safety Regulation (O.Reg 22/04). On the Customer/Consumer side of the ownership demarcation point electrical installations and equipment must be installed and inspected in accordance with the Ontario Electrical Safety Code.

Examples of ownership demarcation points for different customer classes are outlined in table below. The ownership demarcation point may vary from that in the table as per a separate written connection agreement between Kingston Hydro and the Customer/Consumer.

The “connection demarcation point” is the boundary between the Customer/Consumer’s service connection assets and distribution system assets. This is defined as the first point of isolation between the distribution system and connection assets which solely service a given customer.

In some cases, Kingston Hydro is solely responsible for the maintenance and replacement of connection assets. In other cases, some portion of the costs for maintenance and replacement of specific components may be the responsibility of the Customer/Consumer. In these cases, the respective responsibilities of both Kingston Hydro and the Customer/Consumer shall be outlined in a Connection Agreement between the Customer/Consumer and Kingston Hydro.

TABLE 4 – Typical Demarcation Points and Connection Charge Methodology

Connection Type	Routing Method	Ownership Demarcation Point	Connection Charges Applicable at "Time of Hook-up"
Residential Service (Secondary) Up to 200 amps	Overhead Service from Overhead System	Connections at top of mast	Variable Connection Charge less Basic Residential Allowance (Typically, no charge up front for 120/240V services up to 200A with up to 30m of overhead cable
	Underground Service from Overhead System	Connection of underground line to Kingston Hydro pole mast.	Variable Connection Charge less Basic Residential Allowance
	Underground Service from Underground System	Line side of main switch or exterior meter socket where applicable	Variable Connection Charge less Basic Residential Allowance
	Underground Service from Underground System (Subdivision Development)	Line side of main switch or exterior meter socket where applicable	Variable Connection Charge less Basic Residential Allowance Developer pays expansion costs. Exceptions the Basic Residential Allowance may apply.
General Secondary Service – Small	Overhead Service from Overhead System	Connections at top of mast	Variable Connection Charge
	Underground Service from Overhead System	Connection of underground line to Kingston Hydro pole mast.	Variable Connection Charge
	Underground Service from Underground System	Line side of main switch or exterior meter socket where applicable	Variable Connection Charge
General Secondary Service - Large	Underground Service from Pad Mount Transformer	Secondary Connections at load side of transformer	Variable Connection Charge
	Service from Vault Transformer	Secondary Connections at load side of transformer.	Variable Connection Charge
Primary Service	Overhead Supplied	First point of attachment on customer/consumer's property	Variable Connection Charge
	Underground Supplied	Primary termination at first point of isolation	Variable Connection Charge

Note: If the 'Variable Connection Charge' less than he 'Basic Residential Allowance' no connection charge is applicable

2.14. Residential Service Connections

Residential Secondary Service Connections that qualify to deduct the Basic Residential Allowance from the Variable Connection Charge and whose service requirements fall within the limits identified in the following table:

Table 5 - Residential Secondary Services

Phase & Wires	Supply Voltage	Max. Service Size	Max. Service Capacity	Standard Service Availability Areas
1phase 3wire	120/240V	200A	37.5kVA	All Areas except Downtown Network
	120/208V[1]	200A	33.3kVA	Downtown Network
3phase 4wire	120/208V[1]	200A	50kVA	Downtown Network

Notes:

1. Should non-standard service voltage or configurations be desired by the customer, they may request such a service. Additional costs and requirements may apply to such connections. Kingston Hydro reserves the right to refuse connection of a given service voltage or configuration where provision of such a service is not possible or a functionally equivalent service voltage or configuration is already available
2. Customers should check the ratings of electric heating appliances, motors and other equipment connected to a 208V supply voltage to ensure compatibility and proper operation.

2.14.1. Residential Service with One Supply and One Meter

This section applies to single family dwelling units (i.e. detached and semi-detached homes or freehold townhouses) receiving one supply that has one meter and whose service requirements fall within the limits identified in Table 5.

This section also applies to small apartment buildings with three or less dwelling units receiving one supply that has one meter (bulk-metered) and whose service requirements fall within the limits identified in Table 5.

Where electricity service is provided to combined residential and non-residential and the wiring does not provide for separate metering, residential rates will not normally be applicable for the purposes of billing.

2.14.1.1. Service Requirements

Kingston Hydro will provide one secondary electrical service per residential civic address.

In circumstances where one property has multiple civic addresses, Kingston Hydro will provide one secondary electrical service per property/development.

In circumstances where two existing services are installed to a single dwelling and one service is set to be upgraded, the upgraded service will replace both of the existing services.

Kingston Hydro may, at its discretion, provide additional electrical services to separate detached buildings sharing a common residential civic address (i.e. another residence, garage, shop, pool house, etc.). The classification of additional services shall be at the discretion of Kingston Hydro. Additional electrical services will be registered under separate Customer/Consumer accounts.

Residential connections will be offered services as indicated in Table 5. 120/208V is available in the downtown network only.

The Basic Residential Allowance covers the cost of supplying a 120/240V, 3 wire, overhead residential service up to 200A in size and up to 30 metres in length. Residential Customer/Consumers requesting services greater than 200A will not be eligible for the Basic Residential Allowance and will be serviced according to the General Secondary Service Connection requirements.

Kingston Hydro shall designate the point of supply.

The Customer/Consumer shall provide a meter socket as described in the Metering Specifications document.

The Meter Socket shall be located outside and be easily accessible. The Meter Socket shall be located within 1 metre of the front corner of the building. The mounting height above finished grade shall be 1.7 metres to the centre of the meter. The actual point of supply, location of the service entrance (i.e. overhead standpipe or underground riser conduit) and the Meter Socket will be established during the service layout process through consultation with

Kingston Hydro. Failure to comply with the final service layout may result in relocation of the service at the customer/consumer's expense.

Where existing revenue metering is located inside a residence, the Customer/Consumer will be required to relocate the meter to the exterior of the building when upgrading the electrical service, working on service conductors within standpipes, or relocating the service entrance.

The routing of a service (i.e. overhead or underground) shall generally be determined by the type of distribution that "lies along". For example, an overhead service would typically be proposed in locations where the distribution is supplied overhead from a pole line. Similarly, an underground service would typically be proposed in locations where the distribution is supplied underground from a pad mount transformer. In some cases, underground service may be stipulated by Kingston Hydro.

2.14.1.2. Overhead Service

Kingston Hydro will provide up to 30m of overhead service conductor from the street line to the demarcation point as part of the basic connection. The Customer/Consumer shall pay the cost of services exceeding 30 m or standard cable size. In some circumstances the Customer/Consumer may be required to construct a private pole line.

2.14.1.3. Underground Service

Kingston Hydro will install secondary service conductors, to a maximum length of standard secondary conductors (voltage drop and ampacity characteristics), at the Customer/Consumer's expense from the street line to the demarcation point less the Basic Residential Allowance.

All road cuts and permits shall be coordinated and approved by Kingston Hydro in the case of underground services crossing a roadway.

Restrictions may apply to recently paved roads.

2.14.1.4. Servicing Costs

The Connection Charge methodology is summarized in Section 2.13.

Additional variable charges may apply for residential Customer/Consumers serviced from the downtown underground network.

The Basic Residential Allowance shall not apply to additional services installed at a civic address.

The Expansion Charge methodology is summarized in Appendix A.

Metering costs shall be applied in accordance with Metering Specifications.

2.14.1.5. Site Information

Prior to establishing service details, Kingston Hydro will require the following information from the Customer/Consumer:

- Civic address;
- Customer/Consumer billing information;
- Requested energization date;
- Amperage of the service;
- Completed "Electric Service Request" form
- A site plan (may be requested).

2.14.1.6. Metering

Please refer to Appendix C – Kingston Hydro Metering Specifications or contact the Utilities Kingston Services Advisors at (613) 546-1181 ext 2285.

2.14.1.7. Inspection

Kingston Hydro requires notification from ESA indicating that an inspection has been conducted and approved prior to energization.

The service entry components, including the Meter Socket, shall be inspected and approved by Kingston Hydro prior to energization.

2.14.2. Residential - Subdivision Developments

This section pertains to the supply of electrical energy to homes that are built as part of a subdivision development.

The Developer is required to enter into a Subdivision Agreement and provide up-front payment for the ordering of equipment and associated design and construction work for the installation of the proposed underground electrical distribution system. This amount will be paid concurrently with the signing of the Subdivision Servicing Agreement.

In case of conflict between the Subdivision Servicing Agreement and the terms herein, the Subdivision Servicing Agreement shall be binding. All design work including service locations and trench routes must be approved by Kingston Hydro.

2.14.2.1. Service Requirements

The distribution systems and services shall be underground.

The Customer/Consumer shall provide a meter socket(s) as described in the Metering Specifications document.

The Meter Socket shall be located outside and be easily accessible. The meter socket shall be located within 1 metre of the front corner of the building. The mounting height above finished grade shall be 1.7 metres to the centre of the meter. The actual point of supply, location of the service entrance (i.e. overhead standpipe or underground riser conduit) and the Meter Socket will be established during the service layout process through consultation with Kingston Hydro. Failure to comply with the final service layout may result in relocation of the service at the customer/consumer's expense.

The Developer is responsible for the supply and installation of the portion of the distribution system within the development property that benefits only the Developer. This portion of the distribution system may be installed entirely by the Developer. Where the Developer carries out the work, they shall warranty the work for a 1 year period commencing upon acceptance of the work by the Kingston Hydro.

Alternatively, the Developer may request Kingston Hydro to complete the portion of the distribution system within the development property that benefits only the Developer. Kingston Hydro will provide a cost estimate for this work.

When Kingston Hydro installs the secondary service conductors, they will be installed to a maximum length of standard secondary conductors (voltage drop and ampacity characteristics), at the Customer/Consumer's expense from the street line to the demarcation point less the Basic Residential Allowance.

Service Requirements for residential Customer/Consumers in subdivision developments shall generally be the same as those outlined in 2.14.1.1.

Kingston Hydro will own and operate the distribution system after installation regardless of who carries out the work.

2.14.2.2. Servicing Costs

Expansion costs shall be paid entirely by the Developer. The Expansion Charge methodology is summarized in Appendix A, (Economic Evaluation Model for Distribution System Expansion).

Costs within the development property that benefit only the Developer will be paid entirely by the Developer. Kingston Hydro will own and operate the distribution system after installation regardless of who carries out the work.

The Connection Charge methodology is summarized in Section 2.13.

Residential subdivisions involving creation of new lots, blocks and/or public road allowances are considered as expansions and will require a Subdivision Agreement between the distributor and the owner.

Metering costs shall be applied in accordance with the Appendix C – Kingston Hydro Metering Specifications.

2.14.2.3. Site Information

Prior to establishing service details, Kingston Hydro will require the following information from the Customer/Consumer:

- A site plan;
- Civic address;
- Customer/Consumer billing information
- Requested energization date
- Amperage of the service
- Completed "Electric Service Request" form
- Load summary sheet
- Engineering Plans
- Proposed Utility Service
- All subdivision engineering documents

2.14.2.4. Metering

Refer to Appendix C – Kingston Hydro Metering Specifications or contact the Utilities Kingston Services Advisors at (613) 546-1181 ext 2285.

2.14.2.5. Inspection

Kingston Hydro requires notification from ESA indicating that an inspection has been conducted and approved prior to energization. The service entry components, including the meter socket shall be inspected and approved by Kingston Hydro prior to energization.

2.15. General Services – Secondary

This section applies to general secondary services where the Customer/Consumer's responsibility is limited to the facilities associated with the secondary service feed.

2.15.1. Service Requirements

Kingston Hydro will provide one secondary service per property.

Kingston Hydro may, at its discretion, provide additional electrical services to separate detached buildings sharing a common civic address (i.e. a garage, shop etc.). The classification of additional services shall be at the discretion of Kingston Hydro. Additional electrical services will be registered under separate Customer/Consumer accounts.

Customer/Consumers requesting a general secondary service of the 'small transformation' will be offered secondary services with voltages, service size, capacity and availability as described in the following table.

Table 6 - General Services – Secondary

Phase & Wires	Supply Voltage	Max. Service Size	Max. Service Capacity	Availability of Service
1 Phase 3 Wire	120/240V	400A	75kVA	Generally, in All Areas except Downtown Network
	120/208V[1]	200A	33.3kVA	Downtown Network Only
3 Phase 4 Wire	120/208V[1]	400A	112.5kVA	Downtown Network Only
	347/600V	200A	112.5kVA	Industrial Park Areas Only

Notes:

1. Should non-standard service voltage or configurations be desired by the customer, they may request such a service. Additional costs and requirements may apply to such connections. Kingston Hydro reserves the right to refuse connection of a given service voltage or configuration where provision of such a service is not possible or a functionally equivalent service voltage or configuration is already available
2. Customers should check the ratings of electric heating appliances, motors and other equipment connected to a 208V supply voltage to ensure compatibility and proper operation.

Kingston Hydro shall designate the point of supply.

The Customer/Consumer shall provide a meter socket(s) as described in the Metering Specifications document.

The meter socket shall be located outside and be easily accessible. The meter socket shall be located within 1 metre of the front corner of the building. The mounting height above finished grade shall be 1.7 metres to the centre of the Meter Socket. The actual point of supply, location of the service entrance (i.e. overhead standpipe or underground riser conduit) and the meter socket will be established during the service layout process through consultation with Kingston Hydro. Failure to comply with the final service layout may result in relocation of the service at the Customer/Consumer's expense.

Where existing revenue metering is located inside a building, the Customer/Consumer will be required to relocate the meter to the exterior of the building when upgrading the electrical service, working on service conductors within standpipes, or relocating the service entrance.

The routing of a service (i.e. overhead or underground) shall generally be determined by the type of distribution that "lies along" or shall adhere to Municipal Development Standards. For example, an overhead service would typically be proposed in locations where the distribution network is supplied overhead from a pole line. Similarly, an underground service would typically be proposed in locations where the distribution network is supplied underground from a pad mount transformer. In some cases, underground service may be stipulated by Kingston Hydro.

2.15.2. Overhead Service

Kingston Hydro shall designate the pole from which the service will be supplied and the location of the standpipe. In some circumstances the Customer/Consumer may be required to construct a private pole line.

2.15.3. Underground Service

Kingston Hydro will install secondary service conductors, to a maximum length of standard secondary conductors (voltage drop and capacity characteristics), at the Customer/Consumer's expense from the street line to the demarcation point.

All road cuts and permits shall be coordinated and approved by Kingston Hydro in the case of underground services crossing a roadway. Restrictions may apply to recently paved roads.

2.15.4. Servicing Costs

The Connection Charge methodology is summarized in Section 2.13.

Additional variable charges may apply for Customer/Consumers serviced from the downtown underground network.

The Expansion Charge methodology is summarized in Appendix A, (Economic Evaluation Model for Distribution System Expansion).

Metering costs shall be applied in accordance with Appendix C (Kingston Hydro Metering Specifications).

2.15.5. Site Information

Prior to establishing service details, Kingston Hydro will require the following information from the Customer/Consumer:

- A site plan;
- Civic address;
- Customer/Consumer billing information;
- Requested energization date;
- Amperage of the service;
- Completed "Electric Service Request" form;
- Service entrance and metering equipment details prior to ordering;
- A load summary sheet for connections with monthly demand greater than 50kw.

2.15.6. Metering

Refer to Appendix C – Kingston Hydro Metering Specifications or contact the Utilities Kingston Services Advisors at (613) 546-1181 ext 2285.

2.15.7. Inspection

Kingston Hydro requires notification from ESA indicating that an inspection has been conducted and approved prior to energization. The service entry components, including the meter socket shall be inspected and approved by Kingston Hydro prior to energization.

2.16. General Services – Primary

This section applies to general services where the Customer/Consumer is responsible for civil works and facilities associated with the transformer, primary feed and/or secondary feed. Either Kingston Hydro or the customer may own the transformer dedicated to the customer/consumer's electricity service. In all cases, customer-owned transformers and civil works must be compliant with all relevant safety regulations and legislation, and be installed in a manner consistent with good utility practice.

Kingston Hydro will provide one primary service per property/development. Primary services are typically reserved for apartments, commercial, industrial, and institutional developments upon customer request. Primary services may be fed from Kingston Hydro's 44 kV, 13.8 kV (where available), or 4.16/2.4 kV networks. Determination of the appropriate network for servicing of a given customer shall be at the sole discretion of Kingston Hydro. Kingston Hydro shall designate the point of supply.

Table 7 - General Service Availability – Primary

Phase & Wires	Supply Voltage	Max. Service Size	Max. Service Capacity	Availability of Service
1 phase 3 wire	120/240V	600A	100 kVA	Pole and/or Pad Mount Transformer
3 phase 4 wire	120/208V[1]	1800A	500 kVA	
	347/600V	600A	500 kVA	
1phase 3 wire	120/240V	600A	100 kVA	Vault or Pad Mount Transformers Consult Kingston Hydro for availability
3 phase 4 wire	120/208V[1]	2600A	750 kVA	
	347/600V	1000A	750 kVA	

Notes:
1. Customers should check the ratings of electric heating appliances, motors and other equipment connected to a 208V supply voltage to ensure compatibility.

2.16.1. Site Information

Prior to establishing service details, Kingston Hydro will require the following information from the Customer/Consumer:

- A site plan;
- Civic address;
- Customer/consumer billing information;
- Requested energization date;
- Amperage of the service;
- Completed "Electric Service Request" form;
- Service entrance and metering equipment details prior to ordering;
- A load summary detailing the facility's projected monthly electricity consumption and peak demand over a 12 month period.

2.16.2. From Pad-Mounted Transformer

The decision to require a pad mount or vault transformer shall rest solely with Kingston Hydro, and under no circumstances are Customer/Consumers to be advised in this regard without consultation with Kingston Hydro.

The distribution system for secondary services from pad mount transformers shall be underground. In the case of vaults, the Customer/Consumer's secondary service entrance shall be located in a room adjacent to the transformer vault.

The Customer/Consumer shall provide conduit system on private property, service cable and transformer base complete with grounding, guard posts and/or protective barriers (where specified by Kingston Hydro) in accordance with the Distributor's standards.

Kingston Hydro may supply and install the transformer, connectors for the service cable, primary cable and all facilities on the road allowance.

The transformer shall be located on the Customer/Consumer's property in a location approved by Kingston Hydro and in general the location shall be:

- Within 3.0 metres of a driveway accessible to Kingston Hydro vehicles;

- Not less than 6.0 metres from a door, window or ventilation opening and 3.0 metres from combustible surfaces on a building in accordance with the Ontario Electrical Safety Code;
- In compliance with the City of Kingston's Zoning Bylaws.

2.16.3. From Transformer Vault

The Customer/Consumer shall provide conduit system on private property and transformer vault in accordance with Kingston Hydro's standards and the Ontario Building Code.

The transformer vault shall be located at grade level with direct access to a driveway accessible to Kingston Hydro vehicles.

Kingston Hydro may supply and install supply facilities including transformers, primary cable, fusing, switching and all facilities on the road allowance.

2.16.4. Servicing Costs

The Connection Charge methodology is summarized in Section 2.13.

Additional variable charges may apply for Customer/Consumers serviced from the downtown underground network.

Primary connections may require local or upstream expansion of the distribution system and as such all primary connections are subject to an economic evaluation by Kingston Hydro. (see Appendix A). A capital contribution may be required from the customer in addition to the variable connection charge.

Metering costs shall be applied in accordance with Kingston Hydro Metering Specifications.

2.16.5. Metering

The Customer/Consumer shall provide a meter socket(s) as described in the Metering Specifications.

The meter socket shall be located outside and be easily accessible. The meter socket shall be located within 1 metre of the front corner of the building. The mounting height above finished grade shall be 1.7 metres to the centre of the Meter Socket. The actual point of supply, location of the service entrance (i.e. overhead standpipe or underground riser conduit) and the meter socket will be established during the service layout process through consultation with Kingston Hydro. Failure to comply with the final service layout may result in relocation of the service at the Customer/Consumer's expense.

Where existing revenue metering is located inside a building, the Customer/Consumer will be required to relocate the meter to the exterior of the building when upgrading the electrical service, working on service conductors within standpipes, or relocating the service entrance.

2.16.6. Inspection

Kingston Hydro requires notification from ESA indicating that an inspection has been conducted and approved prior to energization. The service entry components, including the meter socket shall be inspected and approved by Kingston Hydro prior to energization.

2.17. Customer-owned Transformation

This section pertains to apartments, commercial, industrial, and institutional developments where a primary service is requested and the customer/consumer assumes full responsibility for transformation from 13.8kV or 44kV primary voltages, all associated civil works and secondary servicing.

In rare cases, primary service connections with customer-owned transformation can be made from 4.16/2.4kV voltages at the sole discretion of Kingston Hydro.

In all cases, customer-owned transformers and civil works must be compliant with all relevant safety regulations and legislation, and be installed and maintained in a manner consistent with good utility practice.

Refer to Table 7 for primary service limitations.

Services with Customer-owned transformation shall be subject to all requirements and specifications outlined in Section 2.16.

2.17.1. Customer-owned Transformation Service Requirements

Kingston Hydro will provide one primary service per civic address.

The service voltage will be established by Kingston Hydro and depending upon the size of the service, location of the building and the type of distribution plant that "lies along" will be one of the following:

- 4.16/2.4kV overhead or underground;
- 13.8kV overhead or underground;
- 44kV overhead or underground.

Table 8 - Maximum Capacity Provided

Phase & Wires	Supply Voltage	Max. Service Size	Max. Service Capacity	Availability of Service
3 phase	4.16/2.4kV	130A	750 kVA	Consult Distributor. Limitations may exist in Downtown Network
	44kV	TBD	TBD	Consult Distributor

Services with Customer-owned transformation shall utilize primary metering.

The point of supply and meter arrangement will be established through consultation with Kingston Hydro for both new and upgraded electrical services. Failure to comply with the final service layout may result in relocation of the service at the Customer/Consumer's expense.

Additional charges may apply for Customer/Consumers serviced from the downtown underground network.

Customer owned primary switchgear and distribution equipment forming part of the Customer/Consumers service entrance shall meet Kingston Hydro's standards and shall not be ordered without prior approval from Kingston Hydro in writing.

2.17.2. Customer/Consumer Owned Transformer Credits

In the case where a customer/consumer has a primary connection to Kingston Hydro's 44kV system, they will be entitled to a transformer ownership credit

based on the monthly peak demand serviced by the transformer in accordance with Kingston Hydro's rate order from the Ontario Energy Board in effect at the time.

In all other cases, costs avoided by Kingston Hydro as a result of the customer/consumer owned transformer shall be accounted for in the connection's economic evaluation.

2.18. Embedded Generation

Kingston Hydro will provide a connection to its local distribution network where it is technically feasible, for the purpose of selling energy or for load displacement within the Customer/Consumer's premise.

The electrical service shall be in accordance with Kingston Hydro's Conditions of Service and the service requirements for Embedded Generation described below.

The connection and operation of a Customer's Embedded Generator must not endanger workers or jeopardize public safety, or adversely affect or compromise equipment owned or operated by Kingston Hydro or the security, reliability, efficiency and the quality of electrical supply to other Customers connected to Kingston Hydro's distribution system. If damage or increased operating costs result from a connection with an Embedded Generator, Kingston Hydro shall be reimbursed for these costs by the Embedded Generator.

When an Embedded Generator is connected to Kingston Hydro's distribution system, the Customer shall provide an interface protection that minimizes the severity and extent of disturbances to Kingston Hydro's distribution system and the impact on other Customers. The interface protection shall be capable of automatically isolating the Embedded Generator(s) from Kingston Hydro's distribution system for the following situations:

- Internal faults within the generator;
- External faults in Kingston Hydro's distribution system;

Certain abnormal system conditions, such as over/under voltage, over/under frequency.

The Customer shall disconnect the Embedded Generator from Kingston Hydro's distribution system when:

- A remote trip or transfer trip is included in the interface protection, and
- The Customer affects changes in the normal feeder arrangements other than those agreed upon in the operating agreement between Kingston Hydro and the Customer.

The requirements for embedded generation are further described in the Appendix B of this Conditions of Service (Kingston Hydro Guide for Distributed Generators)

Servicing requirements, servicing costs, metering requirements, site information and site inspection requirements will be assessed on an individual basis.

2.19. Embedded Market Participant

Under the "Market Rules for the Ontario Electricity Market", Chapter 2, Section 1.2.1, "No persons shall participate in the IESO-administered markets or cause or permit electricity to be conveyed into, through or out of IESO-controlled grid unless that person has been authorized by the IESO to do so".

All Embedded Market Participants, within the service jurisdiction of Kingston Hydro, once approved by the IESO are required to inform Kingston Hydro of their approved status in writing, 30 days prior to their participation in the Ontario Electricity market.

2.20. Embedded Distributor

All Embedded Distributors within the service jurisdiction of Kingston Hydro are required to inform Kingston Hydro of their status in writing 30 days prior to the supply of energy from Kingston Hydro. The terms and conditions applicable to the connection of an Embedded Distributor shall be included in the Supply Agreement with Kingston Hydro.

2.21. Unmetered and Miscellaneous Connections

This section applies to un-metered scattered loads, such as street lighting, traffic signals, pedestrian signals, telephone booths, bus shelters, billboards and cable TV amplifiers.

2.21.1. Service Requirements

Servicing requirements shall generally be similar to Section 2.15 General Secondary Services – Small Transformation with the exception that the service may be un-metered.

2.21.2. Servicing Cost

The Customer/Consumer shall pay the full connection cost. The Connection Charge methodology is summarized in Section 2.13.

Variable charges may apply for Customer/Consumers serviced from the downtown underground network.

The Expansion Charge methodology is summarized in Appendix A, (Economic Evaluation Model for Distribution System Expansion).

Metering costs typically do not apply for this type of connection.

2.21.3. Site Information

Prior to establishing service details, Kingston Hydro will require the following information from the Customer/Consumer:

- A site plan
- civic address
- customer/consumer billing information
- requested energization date
- amperage of the service
- completed "Electric Service Request" form

2.21.4. Inspection

Kingston Hydro requires notification from ESA indicating that an inspection has been conducted and approved prior to energization. The service entry components shall be inspected and approved by Kingston Hydro prior to energization.

2.22. Customer-Owned and/or Controlled Equipment Operation

Kingston Hydro customers are responsible for operating, connecting, or disconnecting equipment or load devices on their side of the service demarcation point under their control in a manner that allows safe operation of the distribution system at all times. Kingston Hydro reserves the right to require customers to operate, connect, or disconnect such equipment at the customer's cost should such action be required to maintain or initiate safe operation of the distribution system, except where an agreement exists between Kingston Hydro and the customer specifically allowing Kingston Hydro operation of such equipment.

3. GLOSSARY OF TERMS

The Conditions of Service document may contain a variety of terms that should be defined in the context of this document. Where possible, glossary terms should reflect definitions in existing documents that apply to the distributor, such as this Code, the distributor's License and Standard Supply Service Code. The text of the Conditions of Service document should be used to expand on these definitions as applicable to the distributor.

3.1. Sources for Definitions

The Electricity Act, 1998, Schedule A, Section 2, Definitions – "A"

IESO Market Rules for the Ontario Electricity Market, Chapter 11, Definitions – "MR"

Transitional Distribution License, Part I, Definitions – "TDL"

Transitional Transmission License, Part I, Definitions – "TTL"

Ontario Energy Board Distribution System Code, Definitions – "DSC"

Ontario Energy Board Retail Settlement Code, Definitions – "RSC"

Ontario Energy Board Unit Sub-metering Code, Definitions – "USC"

Energy Consumer Protection Act, 2010, S.O. 2010, c. 8, Definitions – "ECPA"

3.2. Definitions

"Accounting Procedures Handbook"
The handbook approved by the Board and in effect at the relevant time, which specifies the accounting records, accounting principles and accounting separation standards to be followed by Kingston Hydro (TDL, DSC).

"Affiliate Relationships Code"
The code, approved by the Board and in effect at the relevant time, which among other things, establishes the standards and conditions for the interaction between electricity distributors or transmitters and their respective affiliated companies (TDL, DSC).

"Ancillary Services"
Services necessary to maintain the reliability of the IESO controlled grid; including frequency control, voltage control, reactive power and operating reserve services; (MR, TDL, DSC).

"Apparent Power"
The total power measured in kilovolt Amperes (kVA).

"Bandwidth"
A distributor's defined tolerance used to flag data for further scrutiny at the stage in the VEE (validating, estimating and editing) process where a current reading is compared to a reading from an equivalent historical billing period. For example, a 30 percent bandwidth means a current reading that is either 30 percent lower or 30 percent higher than the measurement from an equivalent historical billing period will be identified by the VEE process as requiring further scrutiny and verification; (DSC).

"Billing Demand"
The metered demand or connected load after necessary adjustments have been made for power factor, intermittent rating, transformer losses and minimum billing. A measurement in kiloWatts (kW) of the maximum rate at which electricity is consumed during a billing period.

"Board" or "OEB"
The Ontario Energy Board (A, TDL, DSC).

"Building"
A building, portion of a building, structure or facility.

"Complex Metering Installation"
A metering installation where instrument transformers, test blocks, recorders, pulse duplicators and multiple meters may be employed (DSC).

"Conditions of Service"
The document developed by a distributor in accordance with subsection 2.4 of the Code that describes the operating practices and connection rules for Kingston Hydro (DSC).

"Connection"
The process of installing and activating connection assets in order to distribute electricity to a Customer (DSC).

"Connection Agreement"
An agreement entered into between a distributor and a person connected to its distribution system that delineates the conditions of the connection and delivery of electricity to that connection (DSC).

"Connection Assets"
That portion of the distribution system used to connect a Customer to the existing main distribution system, and consists of the assets between the connection demarcation point on a distributor's main distribution system and the ownership demarcation point with that Customer (DSC).

"Consumer"
A person who uses, for the person's own consumption, electricity that the person did not generate (A, MR, TDL, DSC).

"Customer"
A person that has contracted for or intends to contract for connection of a building. This includes Developers of residential or commercial subdivisions; (DSC), as well as embedded generators and distributors.

"Demand"
The average value of power measured over a specified interval of time, usually expressed in kilowatts (kW). Typical demand intervals are 15, 30 and 60 minutes (DSC).

"Demand Meter"
A meter that measures a Customer/Consumer's peak usage during a specified period of time (DSC).

"Developer"
A person or persons owning property for which new or modified electrical services are to be installed.

"Disconnection"
A deactivation of connection assets that results in cessation of distribution services to a Customer/Consumer (DSC).

"Distribute"
With respect to electricity, means to convey electricity at voltages of 50 kilovolts or less; (A, MR, TDL, DSC).

"Distribution Losses"
Energy losses that result from the interaction of intrinsic characteristics of the distribution network such as electrical resistance with network voltages and current flows (DSC).

"Distribution Loss Factor"
A factor or factors by which metered loads must be multiplied such that when summed equal the total measured load at the supply point(s) to the distribution system (RSC).

"Distribution Services"
Services related to the distribution of electricity and the services the Board has required distributors to carry out, for which a charge or rate has been approved by the Board under Section 78 of the Ontario Energy Board Act (RSC, DSC).

"Distribution System"
A system for distributing electricity, and includes any structures, equipment or other things used for that purpose. A distribution system is comprised of the main system capable of distributing electricity to many Customer/Consumer and the connection assets used to connect a Customer to the main distribution system (A, MR, TDL, and DSC).

"(DSC)"
The code, approved by the Board, and in effect at the relevant time, which, among other things, establishes the obligations of Kingston Hydro with respect to the services and terms of service to be offered to Customer/Consumer and retailers and provides minimum technical operating standards of distribution systems (TDL, DSC).

"Distributor"
A person who owns or operates a distribution system (A, MR, TDL, DSC).

"Duct Bank"
Two or more ducts that may be encased in concrete used for the purpose of containing and protecting underground electric cables.

"Dwelling Unit"
A suite operated as a housekeeping unit, used or intended to be used as a domicile by 1 or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

"Electricity Act"

The Electricity Act, 1998, S.O. 1998, c.15, Schedule A (MR, TDL, DSC).

"Electrical Safety Authority" or "ESA"
The person or body designated under the Electricity Act regulations as the Electrical Safety Authority (A).

"Electric Service"
The Customer's conductors and equipment for energy from Kingston Hydro.

"Eligible Low-income Customer" means, effective October 1, 2011,
(a) a residential electricity customer who has a pre-tax household income at or below the pre-tax Low Income Cut-Off, according to Statistics Canada, plus 15%, taking into account family size and community size, as qualified by a Social Service Agency or Government Agency; or
(b) a residential electricity customer who has been qualified for Emergency Financial Assistance,

and said Customer shall remain an Eligible Low-Income Customer for a period of two (2) years from the date on which the Customer first qualified as an Eligible Low-Income Customer.(DSC)

"Embedded Distributor"
A distributor who is not a wholesale market participant and that is provided electricity by a host distributor (RSC, DSC).

"Embedded Generator" or "Embedded Generation Facility"
A generator whose generation facility is not directly connected to the IESO-controlled grid but instead is connected to a distribution system (DSC).

"Embedded Retail Generator"
An embedded generator that settles through a distributor's retail settlements system and is not a wholesale market participant (DSC).

"Embedded Wholesale Customer/Consumer"
A Customer/Consumer who is a wholesale market participant whose facility is not directly connected to the IESO-controlled grid but is connected to a distribution system (DSC).

"Embedded Wholesale Generator"
An embedded generator that is a wholesale market participant (DSC).

"Emergency"
Any abnormal system condition that requires remedial action to prevent or limit loss of a distribution system or supply of electricity that could adversely affect the reliability of the electricity system (DSC).

"Emergency Backup"
A generation facility that has a transfer switch that isolates it from a distribution system (DSC).

"Emergency Financial Assistance"
Any Board-approved emergency financial assistance program made available by a distributor to eligible low-income residential customers (DSC).

"Energy"

The product of power multiplied by time, usually expressed in kilowatt-hours (kWH).

"Energy Competition Act"
The Energy Competition Act, 1998, S.O. 1998, c. 15 (MR).

"Energy Diversion"
The electricity consumption unaccounted for but that can be quantified through various measures upon review of the meter mechanism, such as unbilled meter readings, tap off load(s) before revenue meter or meter tampering.

"Enhancement"
A modification to an existing distribution system that is made for purposes of improving system operating characteristics such as reliability or power quality or for relieving system capacity constraints resulting, for example, from general load growth (DSC).

"Exempt Distributor"
A distributor as defined in section 3 of the Act who is exempted from various requirements in the Act by Ontario Regulation 161/99 (USC).

"Expansion"

Reinforcements, capital works system additions, or equipment upgrading necessary to service the additional load placed on Kingston Hydro's system by proposed connections that would not otherwise be made as a system enhancement.

"Extreme Operating Conditions"
Extreme operating conditions as defined in the Canadian Standards Association ("CSA") Standard CAN3-C235-87 (latest edition).

"Four-Quadrant Interval Meter"
Means an interval meter that records power injected into a distribution system and the amount of electricity consumed by the Customer (DSC).

"Freehold Townhouse"
Refers to a residential unit of a townhouse development that does not share common services with other townhouse units in the same townhouse development. An easement from adjacent townhouse units may be required for supply of utility services to individual units.

"General Service"
Any service supplied to premises other than those designated as Residential and less than 50kW, Large User, or Municipal Street Lighting. This includes multi-unit residential establishments such as apartments buildings supplied through one service (bulk-metered).

"Generate"
With respect to electricity, means to produce electricity or provide ancillary services, other than ancillary services provided by a transmitter or distributor through the operation of a transmission or distribution system (A, TDL, DSC).

"Generation Facility"
A facility for generating electricity or providing ancillary services, other than ancillary services provided by a transmitter or distributor through the operation of a transmission or distribution system, and includes any structures, equipment or other things used for that purpose (A, MR, TDL, DSC).

"Generator"
A person who owns or operates a generation facility (A, MR, TDL, DSC).

"Geographic Distributor"
With respect to a load transfer, means a distributor that is licensed to service a load transfer Customer and is responsible for connecting and billing the load transfer Customer (DSC).

"Good Utility Practice"
Any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry in North America during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good practices, reliability, safety and expedition. Good utility practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in North America; (MR, DSC)

"Host Distributor"
The registered wholesale market participant distributor who provides electricity to an embedded distributor; (RSC, DSC).

"House Service"
That portion of the electrical service in a multiple occupancy facility which is common to all occupants, (i.e. parking lot lighting, sign service, corridor and walkway lighting, et cetera)

"IEC"
International Electrotechnical Commission.

"IEEE"
Institute of Electrical and Electronics Engineers.

"IESO"
The Independent Electricity System Operator established under the Electricity Act; (A, TDL, DSC).

"IESO-controlled Grid"
The transmission systems with respect to which, pursuant to agreements, the IESO has authority to direct operation; (A, TDL, DSC).

"Interval Meter"
A meter that measures and records electricity use on an hourly or sub-hourly basis; (RSC, DSC).

"Large User"
A Customer with a monthly peak demand of 5000 kW or greater, regardless of whether the demand occurs in the peak or off-peak periods, averaged over 12 months.

"Load Factor"
The ratio of average demand for a designated time period (usually one month) to the maximum demand occurring in that period.

"Load Transfer"
A network supply point of one distributor that is supplied through the distribution network of another distributor and where this supply point is not considered a wholesale supply or bulk sale point. (DSC).

"Load transfer Customer"
A Customer that is provided distribution services through a load transfer (DSC).

"Main Service"
Refers to Kingston Hydro's incoming cables, bus duct, disconnecting and protective equipment for a Building or from which all other metered sub-services are taken.

"Market Rules"
The rules made under section 32 of the Electricity Act; (MR, TDL, DSC).

"Measurement Canada"

The Special Operating Agency established in August 1996 by the Electricity and Gas Inspection Act, 1980-81-82-83, c. 87., and Electricity and Gas Inspection Regulations (SOR/86-131), (DSC).

"Meter Service Provider"
Any entity that performs metering services on behalf of a distributor (DSC).

"Meter Installation"
The meter and, if so equipped, the instrument transformers, wiring, test links, fuses, lamps, loss of potential alarms, meters, data recorders, telecommunication equipment and spin-off data facilities installed to measure power past a meter point, provide remote access to the metered data and monitor the condition of the installed equipment (RSC, DSC).

"Meter Socket"
The mounting device for accommodating a socket type revenue meter.

"Metering Services"
Installation, testing, reading and maintenance of meters (DSC).

"MIST Meter"
An interval meter from which data is obtained and validated within a designated settlement timeframe. MIST refers to "Metering Inside the Settlement Timeframe" (RSC, DSC).

"MOST Meter"
An interval meter from which data is only available outside of the designated settlement timeframe. MOST refers to "Metering Outside the Settlement Timeframe" (RSC, DSC).

"Multiple Dwelling"
A building which contains more than one self-contained dwelling unit.

"Municipal Street Lighting"
All services supplied to street lighting equipment owned and operated for a municipal corporation.

"Non-Competitive Electricity Costs"
Costs for services from the IESO that are not deemed by the Board to be competitive electricity services plus costs for distribution services, other than Standard Supply Service (SSS); (RSC).

"Normal Operating Conditions"
Means the operating conditions comply with the standards set by the Canadian Standards Association ("CSA") Standard CAN3-C235- 87 (latest edition).

"Ontario Energy Board Act"
The Ontario Energy Board Act, 1998, S.O. 1998, c.15, Schedule B; (MR, DSC).

"Connection Demarcation Point"
The "connection demarcation point" is the boundary between the Customer/Consumer's service connection assets and distribution system assets. Generally speaking, this is defined as the first point of isolation between the rest of the distribution system and service connection assets which solely service a given customer.

"Ownership Demarcation Point"
The "ownership demarcation point", as defined by Electrical Distribution Safety Regulation (O.Reg 22/04), is the point where responsibility for electrical installation and inspection passes from Kingston Hydro to the Consumer/Customer. In most cases, this is analogous to the distribution system side of the Customer /Consumer's dedicated revenue meter.

"Performance Standards"
The performance targets for the distribution and connection activities of Kingston Hydro as established by the Board pursuant to the Ontario Energy Board Act and in the Rate Handbook; (DSC).

"Person"
Includes an individual, a corporation, sole proprietorship, partnership, unincorporated organization, unincorporated association, body corporate, and any other legal entity.

"Physical Distributor"
With respect to a load transfer, means a distributor that provides physical delivery of electricity to a load transfer Customer, but is not responsible for connecting and billing the load transfer Customer directly; (DSC).

"Plaza"
Any Building containing two or more commercial business tenants.

"Point of Supply"
With respect to an embedded generator, means the connection point where electricity produced by the generator is injected into a distribution system; (DSC).

"Power Factor"
The ratio between Real Power and Apparent Power (i.e. kW/kVA).

"Primary Service"
Any service which is supplied with a nominal voltage greater than 750 volts, regardless of meter location.

"Private Property"
The property beyond the existing public street allowances.

"Primary Voltage"
When describing service voltages, this refers to the class of voltages greater than 750V (i.e. 4.16kV or 44kV). When describing transformation, this refers to the nominal voltage level as measured at the primary terminals of a step-down transformer. The voltage level measured across the primary terminals of a step-down transformer may be primary voltage class (i.e. 4.16kV) or secondary voltage class (i.e. 750V and under).

"Rate"
Any rate, charge or other consideration, and includes a penalty for late payment; (TDL, DSC).

"Rate Handbook"
The document approved by the Board that outlines the regulatory mechanisms that will be applied in the setting of distributor rates; (RSC, DSC).

"Reactive Power"
The power component which does not produce work but is necessary to allow some equipment to operate, and is measured in kilovolt Amperes Reactive (kVAR).

"Real Power"
The power component required to do real work, which is measured in kiloWatts (kW).

"Regulations"
The regulations made under the Ontario Energy Board Act or the Electricity Act;

"Residential Service"

This classification refers to an account taking electricity at 750 volts or less where the electricity is used exclusively in a separately metered living accommodation such as a single-dwelling unit consisting of a detached house or one unit of a semi-detached, duplex, triplex or quadruplex house, with a residential zoning, separate dwellings within a town house complex or newly constructed apartment buildings or condominium complexes

"Retail", with Respect to Electricity
a) to sell or offer to sell electricity to a Customer/Consumer

b) to act as agent or broker for a retailer with respect to the sale or offering for sale of electricity, or

c) to act or offer to act as an agent or broker for a Customer/Consumer with respect to the sale or offering for sale of electricity; (A, MR, TDL, DSC).

"Retail Settlement Code"
The code approved by the Board and in effect at the relevant time, which, among other things, establishes a distributor's obligations and responsibilities associated with financial settlement among retailers and Customer/Consumers and provides for tracking and facilitating Customer/Consumers transfers among competitive retailers; (TDL, DSC).

"Retailer"
A person who retails electricity; (A, MR, TDL, DSC).

"Secondary Service"
Any service which is supplied with a nominal voltage less than 750 Volts.

"Secondary Voltage"
When describing service voltages, this refers to the voltage class of 750V and under. When describing transformation, this refers to the nominal voltage level as measured at the secondary terminals of a step-down transformer. The voltage level measured across the secondary terminals of a step-down transformer may be primary voltage class (i.e. 4.16 kV) or secondary voltage class (i.e. 750V and under).

"Service Agreement"
The agreement that sets out the relationship between a licensed retailer and a distributor, in accordance with the provisions of Chapter 12 of the Retail Settlement Code; (RSC).

"Service Area" with Respect to a Distributor,
The area in which Kingston Hydro is authorized by its license to distribute electricity; (A, TDL, DSC).

"Service Date"
The date that the Customer and Kingston Hydro mutually agree upon to begin the supply of electricity.

"Single Family Home"
A permanent structure or structures located on a single parcel of land and approved by the Building Department as a dwelling and occupied for domestic or household purposes by a single customer/consumer.

"Smart Meter"
A meter that is part of an advanced metering infrastructure that meets the functional specification referenced in the Criteria and Requirements for Meters and Metering Equipment, Systems and Technology Regulation, O. Reg. 425/06 (RSC).

"Smart Metering Entity" or "SME"
The corporation incorporated, the limited partnership or the partnership formed or the entity designated pursuant to Section 53.7 of the *Electricity Act* to accomplish the government's smart metering initiative;

"Standard Metering"

A 4 Jaw 240volt 100 or 200amp Socket Base Meter Approved and sealed by Industry Canada for revenue metering.

"Standard Supply Service Code"
The code approved by the Board and in effect at the relevant time, which, among other things, establishes the minimum conditions that a distributor must meet in carrying out its obligations to sell electricity under section 29 of the Electricity Act; (TDL).

"Sub-Service"
A separately metered service that is taken from the main building service.

"Supply Voltage"

The voltage measured at the Customer's main service entrance equipment (typically below 750 volts). Operating conditions are defined in the Canadian Standards Association ("CSA") Standard CAN3-C235 (latest edition).

"Temporary Service"
An electrical service granted temporarily for such purposes as construction, real estate sales, trailers, et cetera.

"Terminal Pole"
Refers to the Kingston Electricity Distributions Limited's (Kingston Hydro) distribution pole on which the service supply cables are terminated.

"Total Losses"

The sum of distribution losses and unaccounted for energy; (DSC).

Townhouse Development
A structure or complex of structures, each containing more than two residential units. Each unit should be occupied by at least one residential Customer/Consumer and have direct outside access at ground level. (see also Freehold Townhouse).

"Transformer Room"
An isolated enclosure built to applicable codes to house transformers and associated electrical equipment.

"Transmission System"
A system for transmitting electricity, and includes any structures, equipment or other things used for that purpose; (A, MR, TDL, DSC).

"Transmission System Code"
The code, approved by the Board, that is in force at the relevant time, which regulates the financial and information obligations of the Transmitter with respect to its relationship with Customer/Consumer, as well as establishing the standards for connection of Customer/Consumer to, and expansion of a transmission system; (DSC).

"Transmit", with respect to electricity,
To convey electricity at voltages of more than 50 kilovolts; (A, TDL, DSC).

"Transmitter"
A person who owns or operates a transmission system; (A, MR, TDL, DSC).

"Unaccounted for Energy"
All energy losses that cannot be attributed to distribution losses. These include measurement error, errors in estimates of distribution losses and unmetered loads, energy theft and non-attributable billing errors; (DSC).

"Unit Sub-meter Provider"
A person, including a distributor, licensed by the Board to engage in unit sub-metering services on behalf of an exempt distributor, or such other persons or classes of persons as may be prescribed. (ECPA)

"Unmetered Loads"
Electricity consumption that is not metered and is billed based on estimated usage; (DSC).

"Validating, Estimating and Editing (VEE)"
The process used to validate, estimate and edit raw metering data to produce final metering data or to replicate missing metering data for settlement purposes; (MR, DSC).

"Wheeling"
Refers to the process of delivering energy supplied by one party over a distribution system owned or controlled by another party. The party that controls the distribution system is entitled to charge the customer/consumer for the use of the transmission system.

"Wholesale Buyer"
A person that purchases electricity or ancillary services in the IESO-administered markets or directly from a generator; (TDL, DSC).

"Wholesale Market Participant",
A person that sells or purchases electricity or ancillary services through the IESO-administered markets; (RSC, DSC).

"Wholesale Settlement Cost"
Costs for both competitive and non-competitive electricity services billed to a distributor by the IESO or a host distributor, or provided by an embedded retail generator or by a neighboring distributor; (RSC, DSC).

"Wholesale Supplier"
A person who sells electricity or ancillary services through the IESO-administered markets or directly to another person, other than a Customer/Consumer; (TDL, DSC).

4. APPENDICES

The following appendices to Kingston Hydro's Conditions of Service Document are available upon request or online at www.kingstonhydro.com

Appendix A:	**Economic Evaluation Model for Distribution System Expansions**
Appendix B:	**Kingston Hydro Guide for Distributed Generators**
Appendix C:	**Kingston Hydro Metering Specifications**
Appendix D:	**Sample Connection Agreements**

Appendix A:
Economic Evaluation Model & Capital Contribution Policy
for
New or Upgraded Connections

Version 3.0

Issued: March 15, 2013

P.O. Box 790, Kingston, ON, Canada, K7L 4X7, p: 613.546.0000, www.kingstonhydro.com

Appendix A: Economic Evaluation Model & Capital Contribution Policy for New or Upgraded Connections

Policy Statement

Connections of new customers and/or additional loads to Kingston Hydro's existing distribution system may create requirements to expand the distribution system. Customers responsible for contributing towards uneconomic expansion of the distribution system must be responsible for the costs of providing additional capacity through distribution system expansions.

Where an expansion is required to allow for the connection, Kingston Hydro will perform an Economic Evaluation to determine whether the present value of the future revenues for the connection will pay for the capital investment and on-going maintenance of the expansion. Should the economic evaluation identify a revenue shortfall for the expansion, Kingston Hydro will require the customer to provide a capital contribution, thereby ensuring that existing customers will not bear the burden of subsidizing the connection of new customers.

The requirement of capital contributions from customers when new or upgraded connections result in a financial loss to Kingston Hydro safeguards the financial and operational sustainability of the electricity distribution system while providing all customers who wish to connect to the electricity distribution system the opportunity to do so on a "user-pay" basis.

The amount of the capital contribution required from the customer for a given connection shall be calculated using the Economic Evaluation process described below.

Definitions

For further information, please refer to section 3 of the Distribution System Code.

- **CAPITAL CONTRIBUTION**
  An amount paid up front by a new or expanded customer when an economic evaluation determines that the forecasted revenue of the requested connection does not cover the expected cost of upgrading or expanding and maintaining the distribution system to allow for such a connection.

- **CONNECTION CHARGES**
  Charges to a customer to cover the work required for connection of the electricity service or distribution system expansion to Kingston Hydro's existing distribution system. These charges can vary with the customer's projected rate class and/or connection voltage. These charges are not included in a customer's economic evaluation.

- **CONNECTION HORIZON**
  A period of time, 1 to 5 years in length, over which the new customer is expected to connect all new load to Kingston Hydro's distribution system.

- **ECONOMIC EVALUATION**
  A process by which the new customer's electrical loads are analyzed to determine the amount (if any) of their capital contribution. Kingston Hydro's Economic Evaluation is based on the new customer's specific electrical load forecast and revenue characteristics and a contributed capital model that is updated to reflect most current distribution rates and assumptions available.

- **EXPANSION**
  A modification or addition to the main distribution system in response to one or more requests for one or more additional customer connections that otherwise could not be made, for example, by increasing the length of the main distribution system, and includes the modifications or additions to the main distribution system identified in section 3.2.30 (DSC) but in respect of a renewable energy generation facility excludes a renewable enabling improvement. Costs associated with Expansions include but are not necessarily limited to:

    a. the capital cost of expanding or modifying the distribution system to accommodate the customer connection. These modifications include additions or capacity increases to existing distribution lines, stations, transformers, secondary busses, services and land or land rights and are referred to as "Capital Costs".

    b. the incremental operating, maintenance and administration costs attributable to the addition of new customers to the system. Kingston Hydro's average system operating,

maintenance and administration costs are used for this purpose and referred to as "OM&A Costs".

- **EXPANSION DEPOSIT**
  An amount that may be required of a new customer who requests connection to Hydro's distribution system to cover Kingston Hydro's risk in the case that projected load from the expansion is not brought on line within the connection horizon. A pro-rated portion of an expansion deposit is returned annually as loads are connected on schedule to Kingston Hydro's distribution system over the connection horizon.
- **NEW CUSTOMER**
  A customer that requests a new service connection to Kingston Hydro's electricity distribution system, or an existing customer that is requesting a significant increase in the capacity of their existing service and/or an increase in their connection voltage and/or a significant increase in their consumption or demand for electricity.
- **REVENUE HORIZON**
  A period of time, 5-25 years in length, over which a new customer is projected to pay rates to Kingston Hydro for electricity distribution. The length of the Revenue Horizon is relative to the risk classification of the connection. New customers whose business risk class is greater will be given shorter revenue horizons, while low-risk customers will have longer revenue horizons. The Revenue Horizon is used in the new customer's economic evaluation and/or calculation of the new customer's expansion deposit.

Scope & Applicability

New individual Residential service and individual GS<50 kW connections are not subject to an economic evaluation and will not be assessed a capital contribution, however they are subject to applicable connection charges. All other customers shall be subject to an economic evaluation to assess a capital contribution.

Calculation of Capital Contribution Amounts – the Economic Evaluation Process

In order to perform an Economic Evaluation, Kingston Hydro shall request an electrical load forecast from the customer to determine the appropriate distribution system connection voltage, the size in kVa of the new connection or upgrade, and the probable revenues over time from the new connection or upgrade. Such a load forecast shall include an indication of the probable electrical consumption and demand for the new or upgraded connection, as well as an indication of the electrical loads that will be drawn from the connection in each of the first five (5) years after the connection is made. At a minimum, the customer will be required to fill out the "Electric Service Request" form available at:

http://www.kingstonhydro.com/Forms.aspx

Kingston Hydro may request additional information from the customer that may be necessary to determine load characteristics or the business risk affecting the cost or revenues for a given connection or upgrade. Kingston Hydro may modify the customer's load forecast based on historical experience with similar connections or other information at it sole discretion.

Kingston Hydro will determine the time horizon over which the Economic Evaluation will occur. This revenue horizon may be between 5 and 25 years based on the risk profile of the customer.

Kingston Hydro will then employ a discounted cash flow model to calculate the Net Present Value of costs and revenues of the proposed connection or upgrade over the chosen revenue horizon. The weighted average cost of capital and electricity distribution rates to be employed by Kingston Hydro in this discounted cash flow model shall be that which is stipulated by the Ontario Energy Board at the time of the connection request. If an extension of the distribution system is necessary, actual costs for the extension will be used.

Connection costs may be reduced by Kingston Hydro's avoided costs in special cases where the customer is allowed by Kingston Hydro to own and maintain equipment related to the connection, such as a customer-owned transformer, if they are not eligible for credits specifically called for in Kingston Hydro's rate order from the Ontario Energy Board.

There are two different methods for calculating connection revenues depending on the customer class. For larger demand customers (>50 kVa), the revenue stream is the sum of the variable demand charges corresponding to the load profile of the customer and the fixed monthly charge for the customer class. For energy only customers (<50 kVa), the revenue will be based upon the customer's estimated energy consumption multiplied by the appropriate distribution rates, plus the fixed monthly charge for the customer class.

The Economic Evaluation is completed by performing the following calculation:

Capital Contribution = NPV of Expansion Costs – NPV of Connection Revenues

This calculation is in accordance with the Distribution System Code's "Appendix B – Methodology and Assumptions for an Economic Evaluation", which is included as an attachment to this document.

If the Capital Contribution amount is greater than zero, the customer may be required to pay this amount to Kingston Hydro as a condition of connection to the distribution system. If the Capital Contribution amount is less than zero, no capital contribution is required from the customer.

Offer to connect (Expansions)

A customer's offer to connect will consist of the following components:

1. Based on the results of the economic evaluation, Kingston Hydro's "Offer to Connect" will include:
    a. a description of work required to build the Expansion to connect the Customer if a capital contribution is required from the Customer;
    b. a firm price for the cost of Expansion that would be revised in the event the nature or scope of the expansion changes;
    c. a statement of the capital contribution to be charged to the Customer to construct the Expansion along with the calculation used to determine the amount of the capital contribution including all of the assumptions and inputs used in the discounted cash flow model;
    d. a description and statement of the connection charges that would apply;

e. identification of work for which the Customer may seek alternative bids (the "Competitive Works") along with the process to be followed to obtain an alternative bid;

f. a description of, and costs for, the competitive works and the non-competitive work associated with the expansion broken down into labour, materials, equipment and overheads;

g. the amount of any additional costs that will apply as a result of the customer electing an alternative bidder to complete the competitive works. These costs would include but not be limited to engineering design costs, coordination of Kingston Hydro's work with the contractor's work, inspection of the contractor work to ensure that it meets Kingston Hydro's design and construction standards and the costs of making the final connection to Kingston Hydro's system;

h. terms and conditions for payments and deposits required; and

i. an agreement to transfer all competitive works undertaken by the customer to Kingston Hydro for $1 plus additional costs related to ensuring that the customer-built facilities are built to Kingston Hydro standards and can be valued accurately for accounting purposes; and

j. any additional information pertinent to the offer.

k. Once a customer accepts an Offer to Connect, Kingston Hydro will provide, upon the customer's request, an itemized list of the costs for the major items in each of the categories referred to in part (f). If the customer has not chosen an alternative bid for the work, the list will include all of the work involved in the expansion. If the customer has chosen an alternative bid for the work the list will include only the non-competitive work to be performed by Utilities Kingston on behalf of Kingston Hydro. The customer will be charged the actual cost of preparing the itemized list.

2. An Expansion Deposit (if required)
    - Maximum amount is the Present Value of all revenues projected from the expansion based on the rate class of the connections, projected loads, and the projected connection schedule provided by the developer.
    - This expansion deposit shall be returned to the customer should all competitive works undertaken by the customer be up to Kingston Hydro's standards and should loads promised by the customer materialize on schedule. Refunds of the deposit shall be made annually based upon the pro-rated portion of total build-out load connected in the past year.
3. Connection Costs
    - Connection Costs are those costs incurred to execute the physical connection of the expansion or new/expanded load to the distribution system at the point of connection.

At a minimum, execution of a Connection Agreement (if required) and payment of any Capital Contribution assessment and any Expansion Deposit is required before Kingston Hydro can commence work to connect a new customer's electrical service.

Further Information

Customers have a right to review Kingston Hydro's economic evaluation for their connection, and Kingston Hydro may work with the customer to suggest ways to reduce the impact their connection or upgrade will have on the distribution system. In order to minimize the capital contribution that may be required, potential and existing customers are encouraged to investigate electricity conservation and demand management and distributed electricity generation options that can minimize the size in kVa of their proposed connection or upgrade. By minimizing the electricity demand required for a given connection, customers can improve their own bottom line while helping the environment and prolonging the life of the existing distribution system.

Attachment 1: Distribution System Code (DSC) Appendix B

Appendix B – Methodology and Assumptions for an Economic Evaluation

DSC Appendix B also available to view or download on the Ontario Energy Board's website:

http://www.ontarioenergyboard.ca/OEB/_Documents/Regulatory/Distribution_System_Code_AppB.pdf

APPENDIX B

Methodology and Assumptions for

An Economic Evaluation

Last Revised October 21, 2009

APPENDIX B –

METHODOLOGY AND ASSUMPTIONS FOR AN OFFER TO CONNECT ECONOMIC EVALUATION

B.1 COMMON ELEMENTS OF THE DISCOUNTED CASH FLOW MODEL

To achieve consistent business principles for the development of the elements of an economic evaluation model, the following parameters for the approach are to be followed by all distributors.

The discounted cash flow (DCF) calculation for individual projects will be based on a set of common elements and related assumptions listed below.

Revenue Forecasting

The common elements for any project will be as follows:

(a) Total forecasted customer additions over the Customer Connection Horizon, by class as specified below;

(b) Customer Revenue Horizon as specified below;

(c) Estimate of average energy and demand per added customer (by project) which reflects the mix of customers to be added - for various classes of customers, this should be carried out by class;

(d) Customer additions, as reflected in the model for each year of the Customer Connection Horizon; and

(e) Rates from the approved rate schedules for the particular distributor reflecting the distribution (wires only) rates.

Capital Costs

Common elements will be as follows:

(a) An estimate of all capital costs directly associated with the expansion to allow forecast customer additions.

(b) For expansions to the distribution system, costs of the following elements, where applicable, should be included:

- distribution stations;
- distribution lines;
- distribution transformers;

- secondary busses;
- services; and - land and land rights.

Note that the "Ownership Demarcation Point" as specified in the distributor's Condition of Service would define the point of separation between a customers' facilities and distributor's facilities.

(c) Estimate of incremental overheads applicable to distribution system expansion.

(d) A per kilowatt enhancement cost estimate – the per kilowatt enhancement cost estimate shall be set annually and shall be based on a historical three to five year rolling average of actual enhancement costs incurred in system expansions.

(d.1) paragraph (d) shall cease to apply to a distributor as of the date on which the distributor's rates are set based on a cost of service application for the first time following the 2010 rate year.

(e) For residential customers, the amount the cost of the basic connection referred to in section 3.1.4 of the Code.

(f) For non-residential customers, if the distributor has chosen to recover the non-residential basic connection charge as part of its revenue requirement, a description of, and the amount for, the connection charges referred to in section 3.1.5 of the Code that have been factored into the economic evaluation.

Expense Forecasting

Common elements will be as follows:

(a) Attributable incremental operating and maintenance expenditures - any incremental attributable costs directly associated with the addition of new customers to the system would be included in the operating and maintenance expenditures.

(b) Income and capital taxes based on tax rates underpinning the existing rate schedules.

(c) Municipal property taxes based on projected levels.

Specific Parameters/Assumptions

Specific parameters of the common elements include the following:

(a) A maximum customer connection horizon of five (5) years, calculated from the energization date of the facilities.[1]

(b) A maximum customer revenue horizon of twenty five (25) years, calculated from the in service date of the new customers.[2]

(c) A discount rate equal to the incremental after-tax cost of capital, based on the prospective capital mix, debt and preference share cost rates, and the latest approved rate of return on common equity.

(d) Discounting to reflect the true timing of expenditures. Up-front capital expenditures will be discounted at the beginning of the project year and capital expended throughout the year will be mid-year discounted. The same approach to discounting will be used for revenues and operating and maintenance expenditures.[3]

[1] For customer connection periods of greater than 5 years an explanation of the extension of the period will be provided to the Board

[2] For example, that the revenue horizon for customers connected in year 1, is 25 years while for those connected in year 3, the revenue horizon is 22 years.

[3] For certain projects Capital Expenditures may be staged and can occur in any year of the five year Connection Horizon.

B.2 DISCOUNTED CASH FLOW (DCF) METHODOLOGY

Net Present Value ("NPV")	=	Present Value ("PV") of Operating Cash Flow + PV of CCA Tax Shield - PV of Capital
1. PV of Operating Cash Flow	=	P V of Net Operating Cash (before taxes) - P V of Taxes
a) PV of Net Operating Cash	=	PV of Net Operating Cash Discounted at the Company's discount rate for the customer revenue horizon. Mid-year discounting is applied. Incremental after tax weighted average cost of capital will be used in discounting.
Net (Wires) Operating Cash	=	(Annual(Wires) Revenues - Annual (Wires) O&M)
Annual (Wires) Revenue	=	Customer Additions * [Appropriate (Wires) Rates * Rate Determinant]
b) PV of Taxes	=	PV of Municipal Taxes + PV of Capital Taxes + PV of Income Taxes (before Interest tax shield)
Annual Municipal Tax	=	Municipal Tax Rate * (Total Capital Cost)
Total Capital Cost	=	Distribution Capital Investment + Customer Related Investment + overheadsd at the project level
Annual Capital Taxes	=	(Capital Tax Rate) * (Closing Undepreciated Capital Cost Balance)
Annual Capital Tax	=	(Capital Tax Rate) * (Net Operating Cash - Annual Municipal Tax B Annual Capital Tax)

The Capital Tax Rate is a combination of the Provincial Capital Tax Rate and the Large Corporation Tax (Grossed up for income tax effect where appropriate).

2. PV of Capital	=	P V of Total Annual Capital Expenditures

a) PV of Total Annual Capital Expenditures

Total Annual Capital Expenditures over the customer's revenue horizon discounted to time zero

Total Annual Capital Expenditure	=	(for New Facilities and/or Reinforcement Investments + Customer Specific Capital + Overheads at the project level). This applies for implicated system elements at the utility side of the “Ownership Demarcation Line”.

Note: Above is discounted to the beginning of year one over the customer addition horizon

3. PV of CCA Tax Shield

P V of the CCA Tax Shield on [Total Annual Capital]

The PV of the perpetual tax shield may be calculated as:

PV at time zero of: $\frac{[(\text{Income tax Rate}) * (\text{CCA Rate}) * \text{Annual Total Capital}]}{(\text{CCA Rate} + \text{Discount Rate})}$

or,

Calculated annually and present valued in the PV of Taxes calculation.

Note: An adjustment is added to account for the ½ year CCA rule.

4. Discount Rate

PV is calculated with an incremental, after-tax discount rate.

Appendix B:
Guide for Distributed Generators

Version 3.0
Issued: March 15, 2013

P.O. Box 790, Kingston, ON, Canada, K7L 4X7, p: 613.546.0000, www.kingstonhydro.com

Table of Contents

Introduction

Kingston Hydro Corporation has been providing the residents of Kingston safe, reliable utility services for more than 100 years. Over this time our name and corporate structure have changed, but one thing has remained constant - we are a city-owned company accountable to citizens of Kingston.

As such, Kingston Hydro is committed to improving the economic and environmental sustainability of our community. As the entity responsible for supplying, distributing and metering electricity in central Kingston, Kingston Hydro has prepared this information package for those parties interested in learning more about connecting distributed electricity generation facilities to our grid. Kingston Hydro services most electricity customers in the city's centre, south of McAdoo's Lane to Lake Ontario and east of Cataraqui Creek to the Cataraqui River (including Barriefield and CFB Kingston). Residents in the city's east, west, and north are serviced by Hydro One. Those interested in distributed energy generation in these areas should contact Hydro One.

Currently, most of our electricity comes from large, centralized generation facilities connected to the high voltage provincial transmission grid. Local energy generation connected to Kingston Hydro's electricity grid can help keep energy dollars within our community, reduce energy losses created by transmission over long distances, and create opportunities for homeowners, businesses, and institutions to earn revenue while helping Ontario meet its energy needs. Electricity generation that is connected to local distribution grids is called "Distributed Generation".

Technological improvements, regulatory reform, increased environmental consciousness, and Ontario's Green Energy Act have allowed increased contributions from wind, solar, bioenergy, and small hydro generation systems into the provincial energy mix. In order to encourage development of renewable electricity generation facilities, the Ontario Power Authority administers the Feed-In Tariff program offering a premium, guaranteed price for electricity produced by grid connected renewable energy generators. Renewable energy generators may also connect to the grid and be paid the Hourly Ontario Electricity Price (HOEP) through Ontario's wholesale market for electricity.

The challenge of meeting Ontario's increasing energy demand means that there are also opportunities for other technologies play an increased role in our energy supply mix. Prospective distributed generators of non-renewable energy responding to

requests from the Ontario Power Authority for electricity supply or who plan to become suppliers in Ontario's wholesale market for electricity may also connect to Kingston Hydro's electricity distribution grid. Other distributed generators may not wish to connect to the Kingston Hydro grid and use their generation facilities for backup generation or off-grid electrification.

This information package contains the following information:

- A description of the way electricity is typically generated, transmitted, and distributed in Ontario and the resulting technical considerations for prospective distributed generators.
- An overview of the options available for connecting different types of electricity generation facilities to Kingston Hydro's grid and the different programs in Ontario through which generators can sell their electrical output.
- An overview of the technical, safety, and regulatory considerations that prospective distributed generators must be aware of.
- A description of the administrative process for connecting electricity generation facilities to Kingston Hydro's grid.
- The Initial Consultation Request form that starts the connection process and other helpful resources for distributed generators.

Read through this information package carefully. If you are interested in connecting a distributed electricity generation facility to Kingston Hydro's distribution grid, or have any questions about the content of this package, please contact Kingston Hydro's Services Advisors at 613-546-1181 ext 2285.

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This information package is intended as a starting point for those interested in connecting distributed generation facilities to Kingston Hydro's electrical grid. It provides high level outlines and simplifications of processes and regulations that are described in detail in a number of publicly available documents, the content of which will change from time to time. A list of some of these documents and the agencies that publish them is available in Appendix A. It is recommended that anyone interested in connecting an electricity generation system to Kingston Hydro's grid read all relevant

documentation carefully. Should there be a conflict between this information package and the rules, regulations, and specific information as laid out in relevant documents regarding the connection of electricity generation facilities to a distribution system in Ontario, the rules, regulations, and specific documents shall take precedence.

Kingston Hydro's electricity distribution system

Currently, Ontario's electricity transmission system consists primarily of large, centrally located generating stations linked over long distances by high voltage transmission wires. Higher voltages (over 50 kV capacity) are efficient for transmitting large quantities of power, but the voltage must be reduced to supply end users of electricity such as homes and businesses. Lower voltage wires (under 50 kV capacity) connected to the transmission system at transformer stations are owned and operated by "local distribution companies" (LDC's). Kingston Hydro is a local distribution company.

The Kingston Hydro electricity distribution system, or "grid" moves electricity around central Kingston for delivery to end users through 44 kV primary distribution lines, 5 kV secondary distribution lines, and less than 5 kV (usually around 1 kV) sub-distribution lines. These lines deliver electricity to large (industrial scale), medium (institutional scale) and small (home scale) consumers, respectively.

For those unfamiliar with electricity transmission and distribution systems, it can help to compare them to our community's system of roads. The transmission system is analogous to Highway 401, carrying large numbers of "electron cars" to our area. The exits off the 401 into our community represent transformer stations that allow "electron cars" to travel safely onto our City's main arterial roads. These main arterial roads are like primary and secondary transmission lines that in turn are linked to quiet residential streets and deliver small numbers of "electron cars" to our residential neighborhoods.

Like the roads in our community, Kingston Hydro's grid is not only a one way street. While the system is designed primarily to deliver electricity from the transmission grid to end users, it is possible for electricity generators to feed electricity into the grid to be distributed around the city and, in some cases, all the way back to the transmission grid. Just as a quiet residential street can't handle a large volume of traffic without disturbing the local residents, lower voltage distribution lines cannot take on large amounts of electricity generation without disrupting electricity service to other customers.

In general the maximum amount of distributed generation that can be connected to Kingston Hydro's electricity distribution lines is as follows:

1 kV lines	-	small amounts of distributed generation
5 kV lines	-	between 500 kW and 1 MW
44 kV lines	-	between 15 MW and 20 MW

While these are general guidelines, it is important to remember that 44 kV lines are connected to 5 kV lines, which are in turn connected to 1 kV lines. The capacity of a 44kV line may be reduced by the cumulative distributed generation on the 5kV and 1kV feeder lines connected to it.

Due to the complexity of the Kingston Hydro's grid, the actual capacity of a specific distribution line to accept electricity generation at a given point can only be determined by an engineering review. Protection systems or modifications to Kingston Hydro's network of distribution lines may be necessary to protect the grid and other customers from events that can be triggered by distributed generation facilities. Studies to determine the impact of a generation facility connected at a given location and modifications to the grid required to mitigate these impacts are paid for by either Kingston Hydro or the generator according to the Ontario Energy Board's Distribution System Code.

Maps of the distribution system are available to assist prospective generators at:

www.kingstonhydro.com/Generation/

Kingston Hydro 44 kV Map

Kingston Hydro 5 kV Map

Kingston Hydro Secondary Map

Size classifications for distributed generation facilities

Those interested in connecting distributed generation to a local distribution grid should first determine the size of the facility they are planning to develop. The connection process, technical considerations for connection, connection costs, and regulatory issues each vary depending on the size of your generation facility under consideration.

Micro

A Micro generation facility is defined as an electricity generation system with a nameplate generation capacity of 10kW or less. All but the very largest of home or small business-based energy generation systems will fit into this category. Micro generation facilities are subject to a simplified connection process. If the generation facility is non-renewable, its owners can receive financial benefits by displacing energy consumption from the grid. If it is a renewable energy generation facility, its owners can participate in either Net Metering or the Feed-In Tariff program. The technical and financial requirements of other financial settlement options are often too onerous for Micro generators to consider. Micro generation is subject to a simplified connection process due to its relatively minimal impacts on the electricity distribution system when installed according to Electrical Safety Authority specifications.

Under the Ontario Power Authority's Feed-In Tariff Program, renewable micro-generators are subject to simplified contracts, registration processes, and rules. For more information, visit http://microfit.powerauthority.on.ca/

Small

Small generation facilities are defined as having a nameplate capacity of 500 kW or less when connected to distribution system voltages less than 15 kV, or as having a nameplate capacity of 1 MW or less when connected to distribution system voltages of more than 15 kV. These facilities can include larger solar arrays, small biogas, wind, and co-generation facilities, commercial scale wind turbines, or industrial sized backup electricity generators. If eligible, small generators can participate in any one of the financial settlement options listed in this guide. Depending on the results of an Initial Consultation with Kingston Hydro staff, prospective Small Generators may be subject to a simplified connection process.

Mid-Sized

Mid-sized generation facilities have nameplate capacities of more than 500 kW when connected to a distribution system voltage of under 15 kV or more than 1 MW when connected to distribution system voltages over 15 kV. In all cases, they will have a nameplate generation capacity of no more than 10MW. Mid-Sized generation facilities are typically commercial or industrial scale endeavours. The capital cost for these facilities can range from thousands of dollars to the multi-million dollar range. Mid-sized projects can experience complex technical and financial issues and should only be considered if a generator has access to considerable expertise in the area of mid to large scale generation. In order to connect mid-sized generators, system upgrades may

be required. These upgrades may result in additional costs or time delays for prospective generators. Mid-size generators are not eligible for Net Metering, but can participate in all other financial settlement mechanisms.

Large

Large distributed generators are those with nameplate capacities of over 10 MW. These facilities are typically only connected to the highest distribution voltages, are subject to the most complex and costly connection process, and typically generate financial returns by supplying very large energy consumers with power, taking the wholesale Hourly Ontario Energy Price, or by bidding into tenders by the Ontario Power Authority for electricity supply. Large distributed generation projects are multi-million dollar initiatives requiring a high level of technical and financial sophistication. Large sized generators are not eligible for Net Metering or the Standard Offer Program.

Non-Capacity Allocation Exempt

Renewable electricity generators larger than 250 kW connected to distribution feeders with capacity less than 15 kW, larger than 500 kW connected to distribution feeders with capacity between 15 kV and 50 kV, and all generators connected to the transmission system are non-capacity allocation exempt. As these generators are large enough to have regional impacts on the local transmission and distribution systems, the Ontario Power Authority and Local Distribution Companies perform Transmission and Distribution Availability Tests to determine which generators can fit on the local system and can be offered Feed-In Tariff contracts and which must await require grid upgrades. Those that do not receive Feed-In Tariff contracts due to lack of grid capacity are considered when the OPA develops long term distribution and transmission system capacity upgrade plans to accommodate renewable energy generators. Renewable electricity generators that are non-capacity allocation exempt face a more complex, lengthy, and risky connection process than smaller generators.

Capacity Allocation Exempt

Renewable electricity generation projects that have a nameplate capacity less than 250 kW connected to distribution feeders with a capacity of less than 15 kV or less than 500 kW connected to distribution feeders with capacity between 15 kV and 50 kV are classified as “Capacity Allocation Exempt” by the OPA and OEB. Capacity Allocation Exempt projects are not subject to Transmission and Distribution System Availability Tests before being offered Feed-In Tariff contracts.

Earning revenue from distributed generation facilities

Ontario's electricity market offers a number of different methods for financial settlement with distributed electricity generators depending on their individual choices of generator size, fuel source, technical sophistication, and financial risk tolerance. Each of these options carries with it differing connection costs and requirements, as well as different opportunities for earning revenue from distributed generation. There are many industry associations that provide assistance to distributed generators using various technologies. Prospective distributed generators should consult with these associations in order to develop realistic financial forecasts for the costs and revenues that can be associated with their preferred technology. Combinations of these configurations are also possible.

Load displacement

Load displacement facilities are eligible to receive payments from Kingston Hydro, the Ontario Power Authority, or the wholesale market for the electricity they produce. Their function is to reduce the amount of electricity purchased by an electricity load customer from an electricity distributor. Load displacement facilities may qualify to receive compensation under other government programs such as the Ontario Power Authority's "Demand Response" initiatives. Please visit the Ontario Ministry of Energy and Ontario Power Authority's websites for more information. Web links to these sites are contained in Appendix B.

Hourly Ontario Energy Price – The Wholesale Market

In Ontario, there is an open wholesale market for electricity administered by the Independent Electricity System Operator (IESO). Throughout the day and night, Ontario electricity suppliers submit offers to sell electricity and wholesale buyers submit bids to buy electricity. The IESO then uses these offers and bids to match electricity supply with demand, establishing the Hourly Ontario Energy Price (HOEP) paid by wholesale customers. This spot market energy price changes from hour to hour, day to night, from season to season, and for short periods in response to high levels of demand or sudden changes on the IESO-controlled grid. Every five minutes, the IESO calculates a new spot market price by balancing the supply of electricity with demand. As demand increases, more expensive offers from generators are accepted, which raises the price of electricity. As demand drops, only the less expensive offers are accepted, which reduces the price.

Once a distributed generator is connected to Kingston Hydro's distribution system through the applicable connection process determined by the facility's size and technology, and acquires the appropriate licenses and certifications from a number of provincial agencies, it can offer its energy for sale in the wholesale market for electricity. Those offering energy for sale on the wholesale market should be very advanced in their understanding of Ontario's energy market and prepared to undertake increased levels of risk corresponding with acceptance of a system in which there is no guarantee of a long term contract for energy supply and no fixed pricing.

Provincial RFP's for energy supply or conservation measures

The Ontario Power Authority (OPA) is responsible for conducting the planning and procurement necessary to ensure Ontario has a reliable and economical supply of electricity to fuel its future growth. From time to time the OPA will issue "Requests for Proposals" (RFPs) for energy supply, renewable energy supply, or conservation initiatives related to specific technologies or geographic locations. These RFPs invite energy project developers to submit bids to the province in order to win long term, fixed price contracts. Generators who are responding to OPA requests for proposals and plan to connect to Kingston Hydro's distribution system have to follow the same connection processes that all other generators are subject to. Depending on the type of RFP issued, they may be subject to financial settlement directly with the OPA, or through some combination of the OPA, the Wholesale Market, and Kingston Hydro. More information on past, current, and future RFP's for Energy and Conservation can be found on the OPA's website listed in Appendix B.

Financial settlement options for renewable electricity generators

Renewable Electricity Generation is defined as electricity generated from any one or a combination of the following sources: wind, solar thermal, solar photovoltaic; renewable biomass; bio-gas, bio-fuel, landfill gas, or water (hydro) power. Increasing the proportion of renewable energy in our province's electricity generation mix can have a positive impact on our health by lessening air, water, and soil contamination while addressing climate change. By becoming a leader in the implementation of renewable energy systems, Ontario can develop economic strength in a growing worldwide industry. As such, renewable electricity generation facilities are eligible to participate in Net Metering and Feed-In Tariff programs developed by Ontario's government. Some renewable electricity sources are eligible for additional federal incentives and can generate emission reduction credits for their owners if certified through programs such as EcoLogo™.

Net Metering

Net Metering is a simplified financial settlement process for those who are interested in generating a portion of their own energy needs with distributed renewable electricity generation. Net metering is handy for those who are looking to avoid the need for expensive batteries or backup generators often necessary for off-grid renewable electricity systems. Net metering may also be a option for those not interested in the more complex application process required to participate in the Standard Offer Program. Net metering is only available to those who are installing renewable distributed electricity generation systems up to 500 kW nameplate capacity.

Once a net metered generator is connected to Kingston Hydro's system, they will only be billed for the difference between the value of the electricity exported to the grid and the value of the energy taken from the grid each month. Regulated electricity charges will only apply to the net consumption of electricity. If the difference reflects zero energy consumption or a net export of electricity by the customer, only the fixed monthly customer charge will apply and a credit for the value of the energy exported will appear on the net metered customer's bill. Energy credits can be carried forward for one year and will be applied to future bills.

Since credits can only be carried forward for one year, there is no incentive for installing generation facilities that consistently export more power to the grid than is consumed by the net metered customer. Net metering customers cannot participate in other forms of financial settlement, although a net metering customer can cancel a net metering agreement with 90 days notice if they wish to expand their systems and/or participate in other programs. If the prospective generator decides to be net metered after an initial consultation with Kingston Hydro staff, a simplified connection process may be applicable. For those electricity customers that have electricity supply contracts with licensed retailers other than Kingston Hydro, consultation with and a sign-off from the retailer will be required before any net-metering arrangement can be made.

Feed-In Tariff Program

In order to encourage distributed renewable electricity generation, the Government of Ontario introduced the Feed-In Tariff (FIT) program in late 2009. The goal of this program is to encourage development of a renewable energy industry in the province by giving renewable energy developers long term financial security and a right to connect their generators to the grid. The program avoids the complexity, costs, and administrative burdens of a competitive bidding process for provincial power purchase agreements, providing Ontario businesses, individuals, community power groups,

farmers, and others the ability to contribute towards our province's energy needs by becoming generators of electricity.

To be eligible to receive a 20-year Feed-In Tariff power purchase contract, a generator must:

- Generate electricity from wind, solar photovoltaic (PV), renewable biomass, biogas, bio-fuel, landfill gas or water power.
- Be located in Ontario and connected to an eligible electricity distribution system.
- Meet the applicable "domestic content" regulations described in the Feed-In Tariff rules.

Once a Feed-In Tariff generator completes the appropriate connection process as described below, Kingston Hydro will pay the distributed generator the appropriate Feed-In Tariff price for all the electricity produced by the generator. If the generator is located at a premises that is also a Kingston Hydro electricity customer, these customers will be billed for all the electricity they consume, regardless of whether it comes from the grid or directly from the generator. Both the generator and the electricity customer will have their own revenue meter and billing accounts with Kingston Hydro, and will be subject to monthly service charges according to Kingston Hydro's Ontario Energy Board Rate Order.

Prospective generators interested supplying electricity under the Standard Offer Program should carefully review the program rules, contracts and pricing available from the Ontario Power Authority (OPA) at http://fit.powerauthority.on.ca/. In some areas of the province, the Ontario Power Authority (OPA) may impose limits on eligible projects because of transmission system constraints.

Other considerations

Costs and risks for prospective distributed generators are not limited to the purchase, installation, and operation of generation equipment. There are costs and risks associated with technical considerations listed below, connection to Kingston Hydro's grid, obtaining regulatory approvals, gaining the necessary licenses and contracts associated with their preferred financial settlement option, and potential tax and business structuring issues. Prospective distributed generators are advised not to purchase or install electricity generation equipment until they have fully apprised themselves of these and any other costs and risks.

It is wise to check with business professionals such as an accountant about the tax implications of becoming a distributed generator. Businesses may be required to charge GST/HST for the energy they produce, and homeowners may experience property tax implications. There is a growing industry in Ontario of professionals that have experience with distributed generation. While micro and small sized distributed generation projects can often be handled by homeowners or small businesses, professional engineering and consulting help may be required for most small, medium, and large sized projects. It is wise to be sure that one has carried out a realistic analysis of potential costs, revenues, and risks before undertaking distributed generation projects.

Technical considerations for distributed generators

All distributed generation facilities will have impacts on the local electricity distribution system and almost all electricity generation systems have the potential to harm people and property. Depending on the type, size, and location of a distributed generation facility, it may encounter any one of the technical or safety considerations outlined in this section. Any one or a combination of these considerations can affect an application to connect to a distribution system. To find out if any of the following issues apply to the generation facility you may be considering, contact the manufacturer of the generation system or refer to materials outlining the requirements prepared by relevant provincial and federal agencies including the Ontario Energy Board, Institute of Electrical and Electronics Engineers, the Canadian Standards Association and the Electrical Safety Authority. Information on these organizations is available in Appendix B. The following is by no means a complete list of the issues that may arise. It is intended to give prospective generators a high level understanding of typical technical issues related to distributed generation.

Static inverters, induction generators, and synchronous generators

There are a number of distinct types of electricity generators. These include static inverters, induction generators, and synchronous generators. Many smaller renewable energy systems produce grid quality AC power through an inverter. Induction and synchronous generators, on the other hand, are generally grouped together as “rotating machines,” but their different configurations give them different start-up and operational characteristics. Induction machines cannot begin operating without an initial supply of startup energy from the grid and normally have a lagging “power factor” (defined below). Synchronous machines on the other hand can operate without the grid and can have a zero or leading power factor. In general, inverter based systems are less likely

than induction or synchronous generators to have detrimental impacts to the local electricity grid and often require little or no additional protection equipment.

Safety

Islanding

Islanding is one of the most important safety concerns for distributors when connecting distributed generation. Islanding occurs when a portion of the distribution system that contains both electricity consumers and generators becomes separated from the remainder of the distribution system for safety reasons but remains energized. Often, portions of the distribution system become separated from the rest of the system in order to clear temporary faults. It is essential that a generator disconnects from the distribution system before its portion of the system becomes separated. If the distributed generation facility does not disconnect fast enough it may make the temporary fault worse, damaging distribution equipment or the generation equipment itself.

From time to time, Kingston Hydro needs to isolate and de-energize sections of a distribution system for maintenance purposes. If a distributed electricity generator exists in a de-energized section of the distribution system, it too must be shut down and de-energized to ensure the safety of Kingston Hydro personnel.

Grounding

Distributed generators must be grounded in accordance with equipment manufacturers and relevant agency guidelines. Distributed generation must not disrupt any coordination of ground fault protection or cause over-voltages that exceed the rating of equipment connected to the distribution system or part of the distribution system.

Protection of a distributed generation facility

A distributed generator is responsible for protecting their own equipment in such a manner that distribution system faults - such as outages, short circuits, automatic separation of distribution circuits or other disturbances - do not damage the distributed generation facility. The equipment protection shall also prevent the distributed generation facility from adversely affecting the distribution system's capability of providing reliable service to other customers.

Standardized or certified equipment

It is a requirement that the design for a distributed generation installation be approved by a professional engineer and that all equipment be Canadian Standards Association (CSA) approved and inspected by the Electrical Safety Authority. If the connection equipment used is a standard package or certified for use by the CSA or some other recognized agency, this will expedite and simplify the connection process. The safety, power quality and reliability of interconnected distributed generations is ensured through design standards, inspection, testing and the provision of switches, breakers and other protective equipment as required.

Some common types of equipment that may be required depending on the type and size of distributed generation under consideration include:

- A device capable of interrupting the maximum available fault current at the generation facility.
- An interconnection device that is manual, lockable, accessible, and visible disconnection.
- A generator disconnect device.
- Anti-islanding protection.
- A protective relay that will operate the load interruption device with an Over and Under voltage trip.
- An Over/under frequency trip.
- Over current protection.
- Ground fault protection.
- Reclosing co-ordination to ensure that the generator ceases to energize the grid when necessary.
- Power Factor correction (if required).
- Synchronizing equipment that will limit voltage fluctuation, frequency variation and phase angle when the distributed generation parallels with the distribution system.
- A Transfer Trip.
- Feeder Relay Directioning to prevent inadvertent tripping of a protective device.

At the initial consultation stage of the interconnection process, Kingston Hydro will provide information to the generator that will help determine the equipment required. For further information about all safety requirements, please refer to the Ontario Energy Board's Distribution System Code Appendix F.2.

Power quality

Power quality is another significant technical concern for Kingston Hydro and distributed generators. Electricity must be supplied at a standard voltage and frequency. In North America, residences receive single-phase alternating current (AC) power at 120/240 Volts at 60 cycles per second (60 Hz), and commercial buildings typically receive either 120/240 Volts single phase or three-phase power depending on the size of the building and the types of electrical loads in the building.

Power quality is important because electronic devices and appliances have been designed to receive power at or near rated voltage and frequency. Deviations may cause equipment and appliance malfunction or damage. Additional power quality considerations include harmonics, power factor, DC injection, and voltage flicker.

Each type of distributed generation device has its own output characteristics based on its technology. Some will have more power quality issues than others. For more information, please refer to the Ontario Energy Board's Distribution System Code App. F.2 and Electrical Safety Association guidelines.

Voltage fluctuations, regulation, unbalance and frequency

Voltage fluctuations can result from a distributed generator connecting to or disconnecting from the distribution system or because of its individual operating characteristics. The presence of distributed generation must have no detrimental impact on the ability to regulate these voltages. Distributed generation must follow the distribution voltage and disconnect for any abnormality. Kingston Hydro tries to operate its three phase lines with voltages balanced as closely as possible. The presence of a distributed generator should not contribute to additional voltage unbalance. As with voltage fluctuations, frequency variations are a reliability and power quality issue. Distributed generation shall operate within the range of 59.3 to 60.5 Hz and disconnect for any abnormality.

Harmonics

Harmonics generically refer to distortions in the voltage and current waveforms caused by the overlapping of the standard waveforms at 60 hertz (Hz) with waves at multiples of 60 Hz. Harmonics can be caused by the electronic equipment used in some distributed generators such as “soft start” units and inverters. Harmonics can cause equipment to fail or overheat and can also degrade electricity service to other customers. Distributed generators must not impose harmonic distortions on Kingston Hydro’s distribution system in excess of applicable standards.

Power factor

Power factor is a measure of apparent power delivered when the voltage and current waveforms are out of synch. Power factor is the ratio of true electric power, as measured in kilowatts (kW), to the apparent power, as measured in kilovolt-amperes (kVA). The power factor can range from a worst case of zero when the current and voltage are completely out of synch to the optimal value of 100% when the current and voltage are entirely in synch. The terms “leading” and “lagging” refer to whether the current wave (in this case from a distributed generator) contributes to or is detrimental to the efficiency of Kingston Hydro’s electricity distribution system. Distributed generators connected to the distribution system must operate between a 0.9 lagging to 0.95 leading power factor.

DC injection

DC Injection is a potential issue for inverter-based systems. It occurs when an inverter passes unwanted DC current into the AC or output side. This can be prevented by the incorporation of equipment and design to prevent or limit the effect.

Voltage flicker

Somewhat like voltage fluctuations, voltage flicker refers to short-lived spikes or dips in line voltage. Voltage flicker can be noticeable to the eye and annoying to customers. For example, it can create a pulse in the light coming from a light bulb. Voltage flicker can occur when the outputs from a distributed generator vary over time. This can happen with small wind turbines if the wind is gusting or turbulent or with other intermittent sources of power.

Monitoring

For distributed generation with a capacity of greater than 250 kW Kingston Hydro may require remote monitoring of the distributed generation connection status, real power

output, reactive power output and voltage at the point of generator connection. For distributed generation with nameplate capacity greater than 10 MW, the monitoring must be in real time.

Other regulatory approvals

In addition to satisfying applicable technical requirements listed above for connecting to the distribution system, generators also have to obtain regulatory approvals for their generation facilities as may be required by relevant municipal, provincial, or federal agencies. It is the prospective distributed generator's responsibility to obtain all required approvals, licenses, certifications, or other clearances necessary to operate their facilities.

In order to connect to the distribution system the owner or developer of a distributed generation facility must demonstrate that is has the necessary legal rights to build and operate an electricity generation facility at the location it proposes. This may include proof of ownership or permission and/or leased rights to use the land, buildings, and behind-the-meter electricity system in question for distributed generation purposes.

Regardless of the financial settlement method chosen it is the sole responsibility of the distributed generator to ensure that it is in compliance with all municipal zoning and land use by-laws. This can be done by contacting the City of Kingston's Planning and Building Inspection Departments.

The Ministry of the Environment may require the prospective generator to carry out an environmental screening or assessment depending on the type and size of generation facility it plans to build. Distributed generators should consult the Ministry of the Environment directly to determine if the potential requirements and costs to fulfill them. Contact information for the Ministry is included in Appendix B.

If you are planning to seek funding from federal government sources, or if your facility falls under federal jurisdiction (ex – small hydro may require approval by Fisheries and Oceans) you may also be required to complete a federal environmental screening and/or assessment. It is the sole responsibility of the distributed generator to ensure compliance with relevant provincial and federal legislation. Environmental screenings and/or assessments can become time consuming and costly endeavors. Be sure that you have a good understanding of the potential costs and timelines for these processes before approaching Kingston Hydro to start the connection process.

All distributed generators, with the exception those operating micro-sized load displacement facilities, must apply to the Ontario Energy Board for a generator's

license. Obtaining a generator's license from the OEB entails filling out an application and payment of a licensing fee. For smaller generators, there is a $100, one-time fee. For larger generators, the fee is $800 per year. A link to information on generator licensing is included in Appendix B.

One of the key regulatory agencies to consult very early on in the development of a distributed generation facility is the Electrical Safety Authority (ESA). ESA approval will also be required before a distributed generator is allowed to connect, and may be required for the engineering design of larger connections. The distributed generator is responsible for the cost of inspections and approvals, which can vary with facility type and size. A link to the ESA's website and a booklet for electricity generators is included in Appendix B.

This is by no means an exhaustive list of requirements for every prospective distributed generator. Please consult with one of the industry associations listed in Appendix B or the agencies listed above to learn more about the approvals, licenses, certifications, or other clearances necessary to operate distributed electricity generation facilities.

Metering

Depending on the size and desired financial settlement options chosen by a distributed generator, different electricity metering configurations are required to measure the amount and value of electricity delivered to and from the Kingston Hydro grid. While efforts will be made to keep the cost and complexity of metering arrangements to a minimum, Kingston Hydro has the right to determine what type of metering arrangement is required for accurate measurement and billing in accordance with the Ontario Energy Board's Distribution and Retail Settlement Codes. Metering options will also depend on the physical setup of the current or proposed connection. Metering requirements for those who choose to sell their electricity on the wholesale market or whose generation facilities are deeply embedded in a load customer's distribution system can be quite complicated.

In most cases, Kingston Hydro is required to measure not only the amount of electricity delivered to its system by distributed generators, but also the time at which it is delivered. This enables Kingston Hydro to settle its accounts through the Independent Electricity System Operator. Depending on the metering configuration, Kingston Hydro may apply loss factors to the metered electricity supply that reflect line or voltage transformation losses before electricity is delivered to Kingston Hydro's grid. All meters and must be Measurement Canada approved and connected in accordance with Measurement Canada and OEB policies and procedures. Metering and

communications hardware required for measurement and settlement of electricity delivered by a distributed generator to Kingston Hydro's system shall be paid for by the prospective generator and owned by Kingston Hydro.

Other Technical Information

Hydro One has published a comprehensive technical guide for distributed generators of various sizes and technologies. While Kingston Hydro's connection standards may vary from those outlined in this guide on a case by case basis, in general connection standards will conform to these industry standard practices.

http://www.hydroone.com/Generators/FITmicroFIT/Documents/Hydro%20One%20Networks%20Inc.%20DG%20Technical%20Interconnection%20Require.pdf

Connecting Distributed Generators to Kingston Hydro's Grid

If you are planning to connect a distributed generation facility to Kingston Hydro's electricity distribution system, the first step is to read this guide, and contact Kingston Hydro to discuss your proposed application. While information requests and initial consultations are typically free to the generator, the engineering studies required to safely connect a distributed generation facility to the Kingston Hydro system are provided at cost to the generator. Where required, Kingston Hydro will furnish the generator with reasonable estimates of the costs involved throughout each step of the connection process.

The scope and complexity of the process will depend on the size and type of generation facility to be connected. No matter which settlement option the distributor wishes to participate in, they will be subject to this process. The process that Kingston Hydro will follow for connecting a distributed generator to the LDC's distribution system is detailed in the Ontario Energy Board's Distribution System Code. It is highly recommended that a prospective distributed generator review the interconnection process guidelines for their size of facility as outlined in Appendix F.1 of the Ontario Energy Board's Distribution System Code.

Information requests

In order to help prospective distributed generators determine the feasibility of a potential project, Kingston Hydro can provide the following information upon request, without charge, and within 15 days for up to three locations to the prospective generator:

- A description of the relevant portion of the distribution system

- Schematics showing major transmission, distribution and sub-distribution lines
- Transformer and distribution stations
- Distribution voltage levels
- Geographic references compatible with a road map
- Information on voltage level, fault level, and minimum/maximum feeder loadings

Most of the information listed above is publicly available at:
www.kingstonhydro.com/generators

If a prospective generator requests information for more than 3 locations, Kingston Hydro will recover the costs of providing such information from the prospective generator and provide such information within 30 days of receiving the request. Kingston Hydro may withhold certain information if is commercially sensitive to another customer of the distribution system. Most information requests will be handled by a conference call with the generator and required staff, but some larger generators or unique requested connections may be handled through an in-person meeting.

Grid-connected Micro Generators (<10kW)

If a micro generator plans to participate in the Feed-In Tariff Program, it should first apply to the Ontario Power Authority for microFIT contract. Once the generator receives and accepts a Conditional Offer of a microFIT contract from the Ontario Power Authority, it should ensure it returns a completed "Request for Initial Consultation" form, along with a single line diagram of their proposed installation, any manufacturer specifications available for their generation and inverter equipment, and photographs of their electricity service entrance and panel to Utilities Kingston's service advisors. This form is available at www.kingstonhydro.com/generators. Non-FIT program microgenerators can apply for an Initial Consultation as soon as they have their preliminary design completed.

Within 15 days of receiving the completed form, Kingston Hydro will arrange an in-person meeting between the prospective distributed generator and its staff to discuss the proposed generation facility, provide preliminary information on the connection options, and explain the connection process, and provide information about billing and settlement.

Kingston Hydro will provide the prospective generator with a connection agreement or provide reasons for refusing to connect the facility within the timeframes set out in the Distribution System Code. There is no cost to the prospective generator up to this point.

Once the prospective generator and Kingston Hydro have executed a connection agreement, the generator is responsible for obtaining all necessary approvals from municipal, provincial, or federal agencies, including authorization to connect from the Electrical Safety Authority and performing any work required to meet the terms of the connection agreement. In addition, the generator must pay Kingston Hydro for the costs of any required metering changes. Once the generator has completed all the tasks listed above and provided Kingston Hydro with any documentation required in the connection agreement, the facility will be connected to the distribution system within 5 days.

All Other Grid Connected Generators (>10kw)

Initial Consultation or Pre-FIT Consultation

The Initial Consultation offers the prospective generator the opportunity to ask questions of Kingston Hydro regarding the connection process and potential facility location, connection, and metering options and related costs. The goal of the initial consultation is to provide the prospective generator with enough information to evaluate the financial, technical, and time risks so as to determine the feasibility of the desired connection.

The Initial Consultation will also provide Kingston Hydro staff with the information they will need to determine whether or not a generator requires a formal Connection Impact Assessment, or whether it can be connected by a simplified process analogous to that of microgenerators. If it is likely that the prospective generator will have to go through an impact assessment with a Transmitter or another distributor, Kingston Hydro will let the prospective generator know.

Generators intending to apply for Feed-In Tariff Contracts MUST request and attend an initial consultation before applying for their FIT contracts. It is at the initial consultation that the generator will be given the Transformer Station ID and Feeder number that they require to apply for a FIT contract. An Initial Consultation sets up the rest of the connection process, providing important information up-front to the generator and Kingston Hydro that will allow processing of applications within regulated timelines. Should a generator apply for a FIT contract before conducting an initial consultation, Kingston Hydro can make no guarantee as to the accuracy of the information the

generator has submitted to Ontario Power Authority, and may not have the details regarding the prospective generator needed to confirm distribution system availability to the Ontario Power Authority.

Connection Impact Assessment

Once the prospective generator has decided to proceed with its project based on the results of the initial consultation, or if it has received a conditional offer of a Feed-In Tariff Contract, it must complete an application form requesting a Connection Impact Assessment. The application forms will require the generator to provide much more detailed technical information on the proposed facility including diagrams and descriptions of the proposed facility and its connection certified by a licensed professional engineer and any other information required by Kingston Hydro staff to complete their engineering review. Forms are available upon request. A completed application for a Connection Impact Assessment includes:

A complete CIA application consists of:

- Completed and signed CIA Form
- Payment in full by cheque or money order payable to "Hydro One Networks Inc." (see Connection Impact Assessment Fee Schedule below)
- Signed Study Agreement
- Single Line Diagram (SLD)

Kingston Hydro has the right to require that technical submissions for projects greater than 10 kW must be signed and sealed by a licensed Ontario Professional Engineer (P.ENG).

A Connection Impact Assessment (CIA) will establish the exact requirements for the connection and operation of the proposed generation facility. CIA's are carried out by Kingston Hydro at the prospective generator's cost. The prospective generator must pay Kingston Hydro the estimated cost for the CIA when it submits its application. Once it is determined that the application form is complete and that the appropriate payment has been made, Kingston Hydro will perform the assessment setting out the impact of the proposed facility on the distribution system, other Kingston Hydro customers, and neighboring distribution and transmission systems. Distributed generation facilities with a nameplate capacity greater than 1 MW connected to the Kingston Hydro system may require consultation with other electricity distributors connected to our grid or, for large projects, a separate impact assessment by the local transmitter, Hydro One.

Kingston Hydro is required to ensure that the safety, reliability, and efficiency of the distribution and transmission systems are not materially adversely affected by a distributed generation facility. It must also ensure that the proposed facility is in compliance with the technical requirements of the Distribution System Code and other applicable regulations. The CIA will set out the necessary design parameters of the connection, any necessary equipment to be installed by the generator, and outline any upgrades or modifications necessary to distribution or transmission systems. It should also outline necessary metering configurations and operational parameters for the generation facility.

The costs and timelines for the Connection Impact Assessment will vary greatly depending on the size, function, and financial settlement choices made by the prospective generator. In general, the smaller the output of the proposed facility, the less complex and costly the Connection Impact Assessment will be. Depending on the size and complexity of the CIA, it must be delivered to the prospective generator within the timeframes set out in the Distribution System Code and upon receipt of initial CIA payment. If the actual cost of the CIA differs from the estimated cost, a final settlement between Kingston Hydro and the prospective generator will be made upon completion of the CIA. Once settlement is completed, the prospective generator will be offered a connection agreement including a Connection Cost Estimate or given reasons for a refusal to connect.

Connection Agreements

Once the CIA is complete, a connection agreement may be offered to the generator by Kingston Hydro. The connection agreement contains the results of the CIA along with two legal agreements titled “Offer to Connect” and “Connection Cost Agreement”. The goal of the legal agreements is to set out the roles and responsibilities of the both prospective generator and Kingston Hydro throughout the remainder of the connection process and the operating life of the generator. The complexity of this process varies based on the size of the prospective generator and the complexity of the connection as outlined in the CIA.

The generator may propose changes to the final design, work schedule, costs, milestones, and other requirements proposed by Kingston Hydro. If Kingston Hydro and the generator are able to come to an agreement, it will include, at a minimum:

- A commitment by the generator to cover all connection costs incurred by Kingston Hydro and a payment schedule.

- A commitment by both the generator and Kingston Hydro to work schedules, information exchange, and the scope of work to be performed by both parties.
- A commitment by the generator to obtain regulatory approvals or agreements within a certain timeframe.
- Final detailed engineering drawings including a single line diagram, interface protection, metering, and other required design parameters.
- An outline of any upgrades, line extensions, changes to transformer capacity or switching hardware, or any other modifications to the distribution system necessary to connect the distributed generation.
- A commitment by Kingston Hydro to perform the work required to connect the generator within a reasonable timeframe.
- Other legal covenants standard to this type of agreement (ex. Force Majure clauses).
- A commitment as to the costs that must be borne for any necessary grid upgrades or connection components by both Kingston Hydro and the prospective generator.

There are two categories of costs that a generator may be asked to contribute towards. The first are connection assets, including the physical connection and protection equipment needed to physically connect the generator to the grid, the metering and communications equipment necessary for billing, and any other costs to cover connection elements solely devoted to a particular generator. Upstream or green energy enabling costs apply to upgrades or modifications to the distribution system necessary to ensure the continued safety and reliability of the system. If the generator is a renewable electricity producer with a FIT contract, Kingston Hydro will cover upstream costs up to $90/kW of installed capacity required to enable connection of renewable electricity producers.

Once the prospective generator has this agreement signed with Kingston Hydro, they can proceed together with the design and building of the distributed generation facility. The prospective generator is not guaranteed a connection before this agreement is signed. Kingston Hydro has a requirement to connect the generator within a reasonable timeframe once the facility has obtained regulatory approvals. If the prospective generator does execute and return the connection agreement negotiated with Kingston Hydro within the timeframes set out in the Distribution System Code of

completing a CIA, or if there are material technical changes to the design of the facility or connection, the generator will lose its position in the connection queue and may have to perform another CIA.

Standard form connection agreements between Kingston Hydro and generators of various sizes are available in Appendix F of the Ontario Energy Board's Distribution System Code.

Commissioning & Ongoing Monitoring

Once Kingston Hydro and the prospective generator have completed the work and made the payments called for in the Offer to Connect, it is time to commission the distributed generation facility. The prospective generator must obtain authorization from the ESA to connect the system. Kingston Hydro staff has the right to be present at the commissioning of the system and perform testing of the generation facility, connection and metering equipment, and any modifications to the distribution system. Once the ESA, Kingston Hydro, and other distributors or transmitters impacted by the facility are satisfied with the tests, the generator will be allowed freedom to operate and earn revenue for the production from its distributed generation facility.

Non-Grid Connected Distributed Generation

For those planning to install a generator for isolated operation, with no connection to the Kingston Hydro distribution system, please refer to the following information and determine any applicable requirements for notifying or working with Kingston Hydro on such installations. This type of installation is primarily used for emergency backup purposes. Please email info@kingstonhydro.com, **Attention: Utilities Engineering,** to fulfill any notification obligations or contact the Customer Service Centre at (613) 546-0000.

Backup Generators

Be sure to notify Kingston Hydro of any backup generation or battery banks that are connected to loads also serviced by Kingston Hydro's grid. This responsibility is included as a customer's covenant in Kingston Hydro's Conditions of Service, and as such, failure to notify Kingston Hydro of the existence of or plans for a backup generator could result in disconnection of your electricity service. If the proposed distributed generation facility is intended to be used for emergency backup generation or to charge a battery bank and also to be connected to the grid taking advantage of financial settlement options, there may be additional technical requirements to ensure

proper isolation of your backup generator or battery bank. Feed-In Tariff generators are not allowed to be connected to battery backup systems.

Small isolated generators - less than 5 kW

While small isolated generators, typically emergency generators that run on gasoline or diesel fuel oil, are not typically interconnected to Kingston Hydro's grid, it is important that any installation is safe to the user, safe to other customers, and safe for utility workers. It also should not interfere with Kingston Hydro's reliable supply of electric power to your premises. To accomplish this, a generator must either only start up to serve your entire electrical load after full disconnection from Kingston Hydro's grid, or only serve isolated electrical loads while they are disconnected from circuits connected to the Kingston Hydro grid. Kingston Hydro staff are available to help review installation plans to help ensure that small emergency generators are installed properly. If your generator has a capacity of 5 kW or less, there is no charge for Kingston Hydro engineers to review your installation plans.

Mid-sized isolated generators – 5 to 30 kW

If installing a mid-size isolated generator of 5 to 30kW capacity intended for emergency backup or electrical load supply purposes at a location that is serviced by Kingston Hydro, one must notify Kingston Hydro of its plans. The prospective generator may be required to fill out an application form or meet with Kingston Hydro engineering staff. There may be requirements for inspection of the system or notification of its operation. There may be a nominal fee for some components of the Kingston Hydro's engineering review.

Large isolated generators - Greater than 30 kW

Installation of larger generators within a Kingston Hydro serviced customer's facilities has the potential to impact our community's distribution grid. If you are planning to install a large generator, you must contact Kingston Hydro and submit any information required to perform an engineering review of the system. There may be a nominal fee associated with this engineering review. Kingston Hydro will need to ensure that the planned generation facility is not interconnected with grid tied circuits, while also ensuring that the facility's operation will not endanger the safety or reliability of Kingston Hydro's grid. In most cases, Kingston Hydro can process such engineering reviews within 15 days if it is provided with complete and accurate information about the planned generation facility.

Conclusion

Distributed electricity generation from conventional and renewable energy generation technologies can help Ontario meet its electricity needs while mitigating the environmental effects of traditional electricity production and consumption methods. With the advent of provincial government policies that support increasing amounts of distributed generation connected to local electricity distribution systems, there are many opportunities for individuals, businesses, institutions, or co-operatives to supply electricity to the grid while generating financial returns.

Those interested in becoming a distributed generator must first decide upon the size and financial settlement options that fit their individual goals, technical and financial resources, and risk tolerances. There are many technical and safety issues that must be taken into consideration before connecting to the grid. The process for connecting distributed generators varies greatly depending on the size and financial settlement options chosen by the prospective generator. In order to fill out the Initial Consultation Request Form and start the connection process with Kingston Hydro, a prospective generator must decide upon the technology, location, size, and financial settlement options it wishes to use. Information is available from Kingston Hydro's Customer Service Centre to help prospective generators make these decisions, and individuals with further questions may contact Kingston Hydro's Service Advisors at (613) 546-1181 ext 2285 or by email at info@kingstonhydro.com, **Attention: Services Advisors**.

Ontario's energy market is very complex. There are a number of agencies that have some jurisdiction in the process of connecting distributed generation. There are also a great number of resources that one can turn to for help in understanding the ins and outs of distributed generation. Appendix B – Additional Resources for Distributed Generators contains web links and contact information for documents and organizations that can help preparations to become a distributed electricity generator.

Kingston Hydro supports distributed generation and we are here to help guide you through the connection process. If you have any questions regarding the information presented in this guide, please feel free to contact Kingston Hydro.

Resources for Distributed Generators

The Ontario Energy Board - http://www.ontarioenergyboard.ca

Distribution System Code & Retail Settlement Code

http://www.ontarioenergyboard.ca/OEB/Industry/Rules+and+Requirements/Information+for+Generators

http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory%20Proceedings/Policy%20Initiatives%20and%20Consultations/Green%20Energy%20Initiatives

The Ontario Power Authority - http://www.powerauthority.on.ca/

FIT and MicroFIT program information

http://fit.powerauthority.on.ca/

Electrical Safety Authority - http://www.esa-safe.com/

Information for FIT program generators

http://www.esa-safe.com/GeneralPublic/sgi_001.php?s=22

Industry Associations and Other Vital Resources

SWITCH – Kingston's Sustainable Energy People – www.switchkingston.ca

The City of Kingston – http://www.cityofkingston.ca

Ontario Sustainable Energy Association –www.ontario-sea.org

Canadian Solar Industries Association - www.cansia.ca

Canadian Wind Energy Association – www.canwea.ca

Ontario Water Power Association – www.owa.ca

Association of Power Producers of Ontario – www.appro.org

Canadian Standards Association – www.csa.ca

The Ontario Ministry of Energy - http://www.energy.gov.on.ca/

Information on Ontario's electricity markets, government programs, and the Green Energy and Green Economy Act

Independent Electricity System Operator - http://www.ieso.ca/

Ontario's wholesale market operator – information about selling distributed energy generation to the grid at the Hourly Ontario Electricity Price.

Ontario Ministry of the Environment - http://www.ene.gov.on.ca/index.htm

Guide to Environmental Assessment Requirements for Electricity Projects

http://www.ene.gov.on.ca/envision/gp/4021e.pdf

Generator Request for Initial Consultation & Micro-Generator Connection Application Form

Instructions

Completion and submission of this form is the first step for distributed generators interested in connecting to Kingston Hydro's electricity distribution system. Please ensure that this form is filled out completely and accurately. It is recommended that prospective distributed generators read Kingston Hydro's "Guide for Distributed Generators" and relevant documents listed in its Appendix B before requesting an Initial Consultation.

In order to assist prospective distributed generators in determining the feasibility of a generation facility at a given location and filling out the Initial Consultation Request Form, the following information is available upon request for a maximum of 3 potential locations per applicant:

- A description of the relevant portion of the distribution system
- Schematics showing major transmission, distribution and sub-distribution lines
- Transformer and distribution stations
- Distribution voltage levels
- Geographic references compatible with a road map
- Information on voltage level, fault level, and minimum/maximum feeder loadings

The purpose of an initial consultation is to assist the prospective distributed generator in determining the basic feasibility of the proposed facility for a given location, provide information on connection options and the connection process, and furnish the prospective generator with estimates of the timeline and cost for completing a connection.

If you have any questions regarding this form or the process for connecting distributed generation to the Kingston Hydro distribution system, please contact Utilities Kingston's Service Advisors at (613) 546-1181 ext 2285.

Date: _____

(dd / mm / yyyy)

1. Generation Facility Location:

Street Address:

_____

Postal Code:

_____

Description:

_____

Kingston Hydro Account #:

_____

Residential ☐ Commercial ☐ Industrial ☐

2. Generation Facility Owner:

Contact Name: _____

Company: _____

H.S.T. # _____

Mailing Address: _____

_____

Telephone: _____

Fax: _____

E-mail: _____

3. Generation Facility Developer (if not the same as Generation Facility Owner):

Contact Name: _____

Company: _____

H.S.T. # _____

Mailing Address: _____

Telephone: _____

Fax: _____

E-mail: _____

4. Generation Facility Description:

Fuel Source: **Conventional**

Gas engine	☐
Diesel engine	☐
Micro turbine	☐
Other	_____

Renewable

Photovoltaic	☐
Wind	☐
Hydro	☐
Biogas / Biomass	☐
Other	_____

Total Rated Capacity (kW): _____

Estimated Capacity Factor (%) _____

Number of Generation Units: _____

Rated Capacity of Each Unit (kW): _____

Number of Phases (one or three): _____

Will this facility be directly connected to Kingston Hydro's distribution grid or will it be behind the meter of a Kingston Hydro customer's electricity service?

Direct ☐
Embedded ☐

Do you intend to use the generation facility to supply battery backup or emergency backup generation?

Yes ☐
No ☐

5. Generator Voltage and Type:

a. Generation Voltage: _____ Volts

AC ☐
DC ☐

b. Generation Type:

Synchronous ☐
Induction ☐
Inverter ☐

6. Desired Financial Settlement Option

Load Displacement ☐
Net Metered ☐
FIT or Micro FIT Program ☐

If so, FIT Reference # _____

IESO Wholesale Market	☐
Provincial RFP	☐

If the entity receiving payment for generation is a H.S.T. Registrant

H.S.T.# : _____

7. Other Relevant Information

Please attach any other information on your prospective distributed generation facility that you feel may assist Kingston Hydro staff in evaluating the technical feasibility of connecting your facility to Kingston Hydro's grid. Include single line diagrams or engineering diagrams of the facility, equipment manufacturer specifications, photographs of your existing electricity service including the meters and Kingston Hydro grid connection, or anything else you feel may be of interest to Kingston Hydro in evaluating your connection:

Appendix C:
Metering Specifications

Version 3.0
Issued: March 15, 2013

P.O. Box 790, Kingston, ON, Canada, K7L 4X7, p: 613.546.0000, www.kingstonhydro.com

Appendix C:

Metering Specifications to Kingston Hydro's Conditions of Service is currently under review.

Please contact Kingston Hydro's affiliate Utilities Kingston to request electric metering information.

Attention: Services Advisors

Email: info@kingstonhydro.com

Telephone: (613) 546-1181 ext 2285

Appendix D:
Sample Connection Agreements

Version 3.0
Issued: March 15, 2013

P.O. Box 790, Kingston, ON, Canada, K7L 4X7, p: 613.546.0000, www.kingstonhydro.com

Introduction

The following connection agreements represent typical agreements Kingston Hydro may enter into with customers as a condition of providing connections to the electricity distribution system. Under some circumstances consideration may be given to making modifications appropriate for the specific operating scenarios of the customer making the request.

There are two steps to the Kingston Hydro's process of securing connection agreements with its customers: The Offer to Connect and the Connection Agreement.

The *Offer to Connect* will include a "Service Layout" that provides a diagram of the proposed connection, identifies demarcation points, describes the service location, identifies any overhead or underground components of the connection, outlines the service size and relevant component specifications, shows the customer's info, outlines the connection costs, and may also contain information regarding the capital contribution required from the customer (if applicable). See Appendix A for more information about Offers to Connect.

Kingston Hydro will typically offer 3 types of connection agreements:

For smaller residential or commercial customers with standard connection requests, a connection agreement may consist of the Offer to Connect, and a reference to our Conditions of Service.

For more complex connections, an agreement may consist of the Offer to Connect, our Supplemental General Terms and Conditions and reference to Kingston Hydro's Conditions of Service for further terms and conditions of service,

For customers requesting connections to the distribution system at greater than 5kV, an agreement in addition to the standard terms and conditions may be required. In this case, the Offer to Connect, Standard Terms and Conditions with reference to the Conditions of Service, our Supplemental General Terms and Conditions and/or a Supplementary Supply Agreement with specific terms and conditions shall form the contents of the Connection Agreement.

A sample of our Supplemental General Terms and Conditions along with a typical Supplementary Supply Agreement are contained in this appendix.

Supplemental General Terms & Conditions for Connection

This connection agreement conforms to the Distribution System Code and to Kingston Hydro's "Conditions of Service"

Contact Information

Customer Name: _____

Customer Class: _____

Customer Account #: _____

Service Address and Postal Code: _____

_____

_____

Billing Address and Postal Code: _____

_____

_____

Customer Contact Information:

Phone #: _____

Fax #: _____

Email: _____

The Customer agrees to abide by Kingston Hydro's Conditions of Service, in effect and as amended from time to time.

The Customer further agrees to:

1. Pay Kingston Hydro for the distribution services used by the Customer at the location covered by this connection agreement from the date herein until such time as the customer cancels its service by notifying Kingston Hydro as per its Conditions of Service.

2. To commence payment in accordance with the approved rates prescribed based on the appropriate customer class rating of its connection, on or before the due date shown on the first account rendered, and thereafter to pay all accounts either monthly or bi-monthly as specified.

General Terms and Conditions

Space & Access

The customer agrees to provide suitable space for Kingston Hydro's meters, wires, and, where necessary, poles, cables, transformers, seals, and all other appliances and equipment on the said premises and further agrees that no one who is not an agent of Kingston Hydro shall be permitted to remove, inspect or tamper with the same. Authorized agents of Kingston Hydro shall have reasonable access to the said premises for the purpose of reading, examining, preparing, or removing Kingston Hydro's meters, wires, poles, cables, transformers and other appliances and equipment and for the inspection of all the customer's appliances and wiring.

Responsibility for Equipment

Meters, wires, poles, cables, transformers and other appliances and equipment owned by Kingston Hydro on the said premises shall be in the care and risk of the customer. If destroyed or damaged by fire or any other cause whatsoever, other than ordinary wear and tear, the customer shall pay to Kingston Hydro the value of such meters, wires, poles, cables, transformers and other appliances and equipment, or the cost of repairing or replacing the same.

Disconnection

The customer hereby expressly authorizes and empowers Kingston Hydro and Kingston Hydro's option to remove the meters, wires, poles, cables, transformers and other appliances and equipment installed on the customer's premises at Kingston Hydro's expense and to discontinue the supply of electricity and terminate this agreement whenever the customer's account for the service is in arrears, or upon any violation by the customer of any of the general terms and conditions or Kingston Hydro's Conditions of Service.

Reliability

Kingston Hydro agrees to use reasonable diligence in providing a regular and uninterrupted service but does not guarantee a constant service or the maintenance of unvaried frequency of voltage and will not be liable in damages to the customer by reason of any failure in respect thereof. It is the customer's responsibility to provide for the protection of this equipment from voltage variations, transient operations, and single phasing.

Conditions of Service

The customer must be supplied with electrical energy at the location provided for under this agreement according to Kingston Hydro's Conditions of Service.

Binding

This agreement shall not be binding upon Kingston Hydro until accepted by a designated agent of Kingston Hydro and shall not be modified or affected by any promise, agreement, or representation by any agent or employee of Kingston Hydro unless incorporated in writing into this agreement before such acceptance by Kingston Hydro's designated agent.

Maintenance Requirements

The customer shall maintain the connection and associated installations in efficient condition with proper devices, according to the requirements and rules of the Electrical Safety Authority (ESA). If the electrical installation is found to be inadequate, the supply of electricity shall be suspended until such time as the proof of the above requirements for ESA inspection and approval of the customer's installation is provided to Kingston Hydro.

Security Deposit

Kingston Hydro reserves the right to require security for payment of future charges in compliance with Kingston Hydro's Conditions of Service.

Termination

This agreement shall continue in force until terminated by notice in writing given by either party hereto thirty days in advance of termination.

Successors

It is agreed that the signatures of the parties hereto shall be binding upon their successors or assigns and that the vacating of the premises herein named shall not release the customer from this agreement except at the option and by written consent of Kingston Hydro.

Approval of Equipment

All electrical and mechanical equipment such as motors and welders used by the customer shall be subject to the reasonable approval of Kingston Hydro and the customer shall take and use the electrical energy provided under this agreement in a manner so as not to endanger any portion of the distribution system or other apparatus owned and/or operated by Kingston Hydro or to cause any wide or abnormal fluctuations of Kingston Hydro's distribution system voltage, frequency, or other distribution system tolerances. Where practical, equipment with the highest power factor should be chosen and motors should be sized to match the load. Equipment performance characteristics shall be in accordance with Kingston Hydro's Conditions of Service.

Fire or Other Casualty

In case fire or other casualty occurs in said premises, rendering the premises wholly unfit for occupancy, the supply of electricity shall thereupon be suspended until such time as the electrical wiring and equipment of the customer has been repaired and approved for use by the ESA.

Supplementary Supply Agreement

SUPPLY AGREEMENT

Between

Kingston Hydro

And

[customer] “the Customer”

[date]

It is mutually agreed by both parties that all conditions and policies as outlined herein will take effect on the DATE and be binding on both parties.

Revision	A	B	C	D	E	F	G
Date							

INDEX

1 INTRODUCTION

Receipt of a written request from a customer for connection to the electricity distribution system will be acknowledged in writing.

This Supply Agreement shall be governed by the laws of the Province of Ontario and the laws of Canada applicable therein.

Failure or delay by Kingston Hydro in enforcing any right under, or provision of this Connection and Supply Agreement, shall not be deemed a waiver of such provision or right with respect to the instant, or any previous, or subsequent, breach.

The customer shall provide access at all reasonable times to the Property and any other property owned by the Customer for purposes of performing the services as set forth in this Supply Agreement.

Kingston Hydro warrants that services it provides are in accordance with good utility practice.

The customer agrees to abide by Kingston Hydro's Conditions of Service, in effect and as amended from time to time.

Kingston Hydro may require the customer to operate a secondary main disconnect switch at its own cost in order to allow for work to be performed on the distribution system. The customer will be notified of the need to operate this switch with as much notice as possible, but it is acknowledged that advance notice may not be possible in the case of an emergency situation.

The customer further agrees to pay Kingston Hydro for connection costs described in the letter dated _____ referred to herein as the "Offer to Connect".

2 DEFINITIONS

2.1 Ontario Energy Board

The Ontario Energy Board (OEB) is a Crown corporation responsible for regulating natural gas and electricity utilities in the province of Ontario, Canada.

2.2 Local Distribution Company

The Local Distribution Company (LDC) is licensed by the OEB to distribute and retail power in accordance with the Distribution System Code and Retail Settlement Code. Kingston Hydro Corporation (Kingston Hydro) is the licensed LDC for this connection agreement.

2.3 Condition Guarantee

A Condition Guarantee is a formal guarantee issued in support of a Work Permit guaranteeing that apparatus or devices under the control of the issuer have been placed and will remain in a fixed condition. A Condition Guarantee must never be issued in place of a Work Permit, because it does not, of itself, guarantee a safe work condition.

2.4 Conditions of Service

The OEB Distribution System Code requires that every local electricity distributor maintain a Conditions of Service document. The purpose of this document is to communicate the terms and conditions of electricity service for the various types and levels of services available within a distributor's territory. Kingston Hydro's Conditions of Service contains terms and conditions of the electricity service requested by the customer that are supplemented by this Connection and Supply Agreement. The most recent version of Kingston Hydro's Conditions of Service is available at www.utilitieskingston.com/electric

2.5 Distribution Line

A distribution line is any electrical power line operating at a nominal voltage of 15 kV or less (phase to neutral).

2.6 Sub-transmission

Sub-transmission refers to Kingston Hydro's 44 kV, (44 kV phase to phase), three phase, three wire electrical power distribution system.

2.7 Distribution Feeder

A distribution feeder is any electrical power line operating at a nominal voltage of 50 kV or less (phase to neutral). Kingston Hydro employs both 5kV and 13.8 kV Distribution Feeders.

2.8 Property

"Property" means the lands municipally known as [address], Kingston, Ontario.

2.9 Utility Work Protection Code

Utility Work Protection Code "A Code to Live" is published periodically by the Electrical & Utilities Safety Association of Ontario (E&USA) and its ultimate goal is to establish conditions which, when combined with appropriate work practices, procedures and work methods, will provide workers with a safe work area when working on the local distribution system. It is Kingston Hydro's policy to follow the Utility Work Protection Code. The following definitions are taken from this code:

2.9.1 Controlling Authority

The "Controlling Authority" has the authority to perform, direct or authorize the operation of Apparatus in a specified manner. Utilities Kingston is the Controlling Authority.

2.9.2 Issuing Authority

The "Issuing Authority" has the authority to issue Work Permits for the local distribution system in accordance with the Utility Work Protection Code. Utilities Kingston is the

Issuing Authority. For the purposes of this agreement, the Controlling and Issuing Authority are the same.

2.9.3 Operating Control

"Operating Control" is that control exercised by the Controlling Authority. Operating Control is NOT synonymous with ownership.

2.9.4 Holder

The Holder is the person who has accepted the Work Permit or Supporting Guarantee and therefore has attained working and/or testing rights for the work group.

2.9.5 Agent

An "Agent" is a person used to perform operations under the direction of the Controlling Authority.

2.9.6 Work Permit

A "Work Permit" is a written guarantee that an isolated (and in some instances isolated and de-energized) condition has been established for work and will continue to exist, except for authorized tests.

2.9.7 Supporting Guarantee

A Supporting Guarantee is a guarantee issued in support of a Work Permit(s) and/or another Supporting Guarantee(s). It certifies that an isolated or isolated and de-energized condition exists at points under the control of the Issuer of the Supporting Guarantee. Refer to the E&USA Utility Work Protection Code for further details.

2.9.8 Apparatus

"Apparatus" is considered to be all non-portable devices used in the supply and distribution of electric power.

2.9.9 Hold-Off

'Hold-off' is a formal procedure to limit the operation of apparatus in order to facilitate work or reduce work hazards. The prospective Holder will contact the Controlling Authority requesting an assurance that a specified device(s) will not be operated to re-energize apparatus that has been removed from service automatically. Under no circumstances will a Hold-Off be issued in place of a Work Protection.

3 ASSIGNMENT OF CONTROL RESPONSIBILITY

In the operation and maintenance of a power system, specific responsibilities must be clearly defined to ensure prompt and efficient operation under all circumstances. To ensure safety, Operating Control of Apparatus must be assigned to a specific authority and this authority is non-transferable, except in those cases where such a transfer would be of a permanent nature and authorized by the Kingston Hydro.

3.1 Utilities Kingston Operating Control

For the purposes of this agreement Kingston Hydro delegates Operating Control to Utilities Kingston for the following interface switches and transformer fuses that may be owned by the Customer. These switches include _____ and associated fusing.

3.2 Ownership and De-marcation

Both Kingston Hydro and the customer recognize that all conductors, equipment (except Kingston Hydro's metering equipment) and civil structures on the customer's properties, including the connections to Kingston Hydro's distribution lines, are owned by the customer. The de-marcation point for ESA inspection purposes is the line side of the ___kV interface switches called _____.

3.3 Responsibility for Equipment

Meters, wires, cables, transformers and all other appliances and equipment of Kingston Hydro on the customer's premises shall be in the care and at the risk of the customer and if destroyed or damaged by fire or any other cause whatsoever other than ordinary wear and tear, the customer shall pay to Kingston Hydro the value of such meters, wires, cables, transformers, appliances and equipment, or the cost of repairing or replacing same.

4 MAINTENANCE RESPONSIBILITIES

4.1 Maintenance Work

The Customer will perform all necessary maintenance to the satisfaction of Utilities Kingston as required to maintain the integrity of all Apparatus owned by Customer that are governed by this agreement. Copies of all maintenance reports relevant to the utility interface control equipment will be forwarded to Utilities Kingston. Utilities Kingston agrees to maintain and control the customer owned section of powerline from the line side of the Customer owned switches to the point of attachment on the street side to satisfy ESA requirements. The Customer shall be responsible for all reasonable costs associated with maintaining the customer owned section of powerline.

4.2 Emergency Work

During emergency conditions, Utilities Kingston will take the necessary steps to restore or maintain power as expeditiously as possible.

4.3 Utility Switching Costs

Utilities Kingston may be requested by the Customer to perform switching on their apparatus to accommodate required maintenance or emergency repairs. In these situations Utilities Kingston will be compensated for associated costs.

Such charges are subject to change and will be based on the latest revision of the Utilities Kingston Master Fee Schedule. Utilities Kingston will advise the Customer of charges prior to commencing work except in the case of emergencies or exceptional circumstances.

5 WORK CO-ORDINATION

5.1 Timely exchange of information on upcoming work is essential for proper co-ordination with other work programs. The Utilities Kingston, the System Operator, will co-ordinate requests into their planned work programs.

5.2 From time to time Utilities Kingston schedules power outages for maintenance and upgrades to KINGSTON HYDRO's sub-transmission and distribution systems. If the customer requests this work be done at times other than those planned by Utilities Kingston, the customer will be responsible for all extra costs, including overtime, to complete the work.

5.3 Utilities Kingston and the Customer will inform each other at least two (2) working days in advance of any planned work which could have an effect on the other's operation. Discussion in detail should be carried out at this advance date. 'On-site' discussions will be held as required.

5.4 Switching will normally be carried out on equipment by the authority having Operating Control of the equipment in question. If it is advantageous to use an Agent for switching, then the orders to carry out the switching must originate with the Controlling Authority for the equipment.

5.5 Work Protections will normally be issued by the authority on apparatus under their control. When required, the other authority will issue a supporting Condition Guarantee.

6 EMERGENCY OPERATION - RESPONSIBILITIES AND COOPERATION

6.1 Utilities Kingston will respond to all emergency situations. The following are the parties' respective contact representatives:

Company	Contact	Telephone	Fax
Utilities Kingston	System Operator	613-546-1181	613-546-6144
[Customer]	[contact]	[phone]	[fax]

Either party may change the contact information above by providing written notice of changes of the same to other party.

7 ACCESS TO CUSTOMER PREMISES AND REPORTING

7.1 When Utilities Kingston personnel wish to enter the customer's property, prior arrangements will be made by Utilities Kingston with the Customer except in the case of emergency. For the purpose hereof, Property does not include the building premises located thereon.

7.2 Upon arrival and when leaving Customer's Property, Utilities Kingston personnel must notify Customer.

8 POWER QUALITY / EQUIPMENT APPROVAL

The customer agrees to ensure all electrical and mechanical equipment, such as motors and welders, shall be subject to the reasonable approval of Kingston Hydro and the connection of the equipment will not cause interference with the electricity supply to other customers. The customer shall also take and use the electrical energy as not to endanger the apparatus of Kingston Hydro or cause any wide or abnormal fluctuations of its line voltage. Where practical, equipment with the highest power factor should be chosen and motors should be sized to match the load. Equipment performance characteristics shall be in accordance Kingston Hydro's Conditions of Service. The customer may be required at Kingston Hydro's discretion to install power filters to remove electrical noise interfering with the electricity supply.

9 REVISIONS

From time to time, revisions to the appendices of this Supply Agreement can be revised without re-issuing the complete Supply Agreement. The parties shall initial and date any such revisions.

10 TERMINATION

Each of the following shall constitute an event of default

- the Customer fails to make any payment due under this Supply Agreement.
- the Customer fails to comply with any other covenant or obligation set forth in this Supply Agreement and such failure has not been remedied (where it is possible to remedy such action) within 15 days of the initial failure to perform.

11 INDEMNITY

The Customer shall indemnify and save harmless Kingston Hydro and Utilities Kingston against all actions, causes of action, suits, claims and demands whatsoever, which may arise either directly or indirectly by reason of construction, maintenance or repairs related to the Project. The Customer shall ensure that Kingston Hydro and Utilities Kingston are "additionally insured" on the Customers liability insurance policy – proof of this insurance to be forwarded to Utilities Kingston. Utilities Kingston acknowledges this will be implemented in the context of the Customer's self insurance program.

12 DAMAGES TO THE ELECTRICAL DISTRIBUTION SYSTEM

The cost of repairing any damage whatsoever caused to the electrical distribution system by the Customer, will be billed to the Customer.

Where possible, the Customer or his agents will be notified of any damage caused prior to their repairs being carried out so that they may observe the nature of the damage. In the instances where Utilities Kingston is unable to contact the Customer (or agents), for example, at night, weekends or holidays, repairs will be carried out to restore service, but written notification of said damage and repairs will be given immediately, so that the Customer will be aware of a forthcoming charge.

13 BINDING EFFECT

This Agreement shall enure to the benefit of and shall be binding upon the Parties and their respective heirs, executors, administrators, successors and permitted assigns.

IN WITNESS WHEREOF this Agreement has been executed.

For Kingston Hydro:

_____	_____
Name:	Name:
Title:	Title:
Date:	Date:

(I/we have the authority to bind the company)

For the Customer:

_____	_____
Name:	Name:
Title:	Title:
Date	Date:

(I/we have the authority to bind the company)