# Customer Instructions for Completing the COVER Form

London Hydro’s Confirmation of Verification Evidence Report (COVER) process shall apply to all distribution connected/connecting generator/DER facilities that impact the London Hydro distribution systems. The requirements of the COVER may vary depending on generation capacity and the connection requirements associated with upstream impacts dictated by the Connection Impact Assessment (CIA).

## Pre-Requisites

The DER Owner shall submit design documentation (i.e. single line diagram, intertie protection settings, etc.) required by London Hydro for a design compatibility review four (4) months in advance, prior to the earliest proposed energization date.

## Part I: COVER Plan

1. Complete Facility and Customer Contact Information of the COVER Form by completing the highlighted portions of Section 1.

Identify the tests that will be conducted by completing the highlighted portions (Legend columns) of Sections 2 & 3, where applicable.

* 1. The intention of this is to outline a set of tests and verifications in order to demonstrate that the new or modified components work as designed.
1. Submit the draft COVER, along with a commissioning plan to the Project Manager at least three (3) months prior to the earliest proposed energization date.
2. Project Manager will review the proposed documents and respond to the acceptability of the proposed COVER/commissioning plan. London Hydro Project Manager approves the proposed COVER/commissioning plan by initialing Section 2E.

Note: The commissioning plan review must be finalized prior to commencing testing for the next step.

## Part II: Pre-Energization

1. Complete all applicable testing and requirements identified in Sections 2A, 2B, 2C and 2D.
	1. London Hydro may require one of their technical representatives to be on-site to witness such tests and shall be scheduled accordingly.
2. Depending on the type complexity of the DER, London Hydro may require specific connection procedures to be followed.
	1. For DERs that are required to run particular tests with load connected only and do not have permission to connect as a generator at this time, sign off the COVER in Section 2F by a Customer P.Eng. representative and submit it to the London Hydro Project Manager, together with the required attachments as outlined in Section 2D.
	2. If the DER is ready to run as a generator and the DER Owner is requesting testing rights, sign off the COVER in Section 2G by a Customer P.Eng. representative and submit it to the London Hydro Project Manager, together with the required attachments as outlined in Section 2D.
3. The Project Manager will review the certified COVER and recommend to the Controlling Authority for connection to the grid by signing Section 2E.
	1. Section 3 testing can only proceed when all salient comments have been resolved and tests have been completed from Section 2.
4. The customer will contact the Controlling Authority to request authorization to connect to the grid.
5. The Controlling Authority will sign off Section 2 upon acceptance of connection.

## Part III: Post-Energization

Applicable to DER connection completeness requirements:

1. Complete and sign Section 3 when all parts of the COVER form are complete and submit it to the Project Manager.
	1. Note: online load readings and power factor performance test to be performed within ten (10) business days of placing station in service as generator. Customer contacts Project Manager if constant power factor requirements cannot be met.
2. The Project Manager will review the completed COVER and respond to the acceptability of COVER within five (5) business days. Upon acceptance, the Project Manager will sign off the appropriate COVER Section 3 Signoff section and will distribute the completed COVER to distribution list found in Section 3.
3. Summary of testing results and certificates must be kept on file for a minimum period of 7 years by the Customer (as indicated by IESO Market Rules, Chp.4, 5.1.3). London Hydro may require this information, on an exception basis.

# SECTION 1 – FACILITIES & CONTACT INFORMATION

|  |  |
| --- | --- |
| Name of Customer |       |
| Hydro One Project ID# |       |
| Name of Generator Facility |       |
| Type Of Generator |       |
| Nameplate Capacity |       |
| Proposed Energization Dates | For Load Connection (Milestone #1) – if applicable:  |       |
| For Generation Connection (Milestone #2 or Modification) |       |
| Operating Designation |        |
| OEB Generator License Number |       |
| Supply Feeder |       |
| Station |       |
| Single Phase or Three Phase |       |
| **CUSTOMER CONTACT** | **LONDON HYDRO CONTACT** |
| Name (print): |       | Name (print): |       |
| Title: |       | Title: |       |
| Company: |       | Company: |       |
| Date: |       | Date: |       |
| Tel: |       | Tel: |       |
| Email: |       | Email: |       |

# SECTION 2A – VERIFICATION OF PROTECTIONS & CONTROLS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Legend:** New Connection: M1 = Test Required for Milestone 1 ; M2 = Test Required for Milestone 2Existing Connection: M = Test Required for Modification Results: P = Pass, F = FailAll Parts: N/A = Not Applicable  | Legend | Results | Initials | Datemm/dd/yyyy | Note # |
| Is commissioning in compliance with the submitted Commissioning plans? |       |       |       |       |       |
| Are reviewed relay settings applied and tested? |       |       |       |       |       |
| **Confirm that the following protection systems, as applicable, have been verified to function as per the design:**NOTE: Tests marked with an asterisk (\*) require London Hydro staff coordination |
| Feeder Protection – All elements used to protect feeder  |       |       |       |       |       |
| HV Breaker Failure Protection |       |       |       |       |       |
| LV Breaker Failure Protection |       |       |       |       |       |
| Transformer Differential Protection |       |       |       |       |       |
| Transformer Backup Protection |       |       |       |       |       |
| Under and Over Frequency  |       |       |       |       |       |
| Under and Over Voltage |       |       |       |       |       |
| Other Anti-islanding Protection  |       |       |       |       |       |
| Certified to CSA standard / Bears certification mark (applicable to Inverter based DER) |       |       |       |       |       |
| Transfer Trip / Remote Trip \* |       |       |       |       |       |
| Dead Zone Test Trip \* |       |       |       |       |       |
| DGEO (Generator End Open) \* |       |       |       |       |       |
| LSBS (Low Set Block Signal) |       |       |       |       |       |
| Reclosers (include configuration and testing details in notes) \* |       |       |       |       |       |
| Line Differential Protection \* |       |       |       |       |       |
| Blocking Scheme Circuits \* |       |       |       |       |       |
| Generation Rejection & Load Rejection Circuits \* |       |       |       |       |       |
| Reverse Power  |       |       |       |       |       |
| Gen. Protections that trip HV Sync Breakers  |       |       |       |       |       |
| Instrument Transformer (eg. CTs + VTs, etc.) |       |       |       |       |       |
| Monitoring Equipment (eg. DFR, SER, SOE, etc.) |       |       |       |       |       |
| Sustained Loss of Feeder Supply Test \* |       |       |       |       |       |
| Islanding / Microgrid / Operating Modes\* |       |       |       |       |       |
| Other (Specify):       |       |       |       |       |       |
| Other (Specify):       |       |       |       |       |       |

# SECTION 2B – TELEMETRY TESTS BEFORE ENERGIZATION AT DISTRIBUTION CONNECTED DER

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Confirm the following SCADA telemetry quantities, where applicable **Legend:** New Connection: M1 = Test Required for Milestone 1 ; M2 = Test Required for Milestone 2Existing Connection: M = Test Required for Modification Results: P = Pass, F = Fail All Parts: N/A = Not Applicable NOTE: Tests marked with an asterisks (\*) require London Hydro staff coordination | Legend | Results | Initials | Date mm/dd/yyyy | Note # | LH Initals |
| MW Flows and Directions \* |       |       |       |       |       |       |
| MVAR Flow and Directions \* |       |       |       |       |       |       |
| Phase to Phase and/or Phase to Neutral Voltages \* |       |       |       |       |       |       |
| Three Phase Currents \* |       |       |       |       |       |       |
| Frequency & Power Factor |       |       |       |       |       |       |
| HV switchers/HV breakers/Bus Tie Breakers Open/Close Status \* |       |       |       |       |       |       |
| HV Line Disconnect Switches Open/Close Status \* |       |       |       |       |       |       |
| Synchronizing Breakers Open/Close Status \* |       |       |       |       |       |       |
| Automatic Voltage Regulators, Power System Stabilizers status \* |       |       |       |       |       |       |
| Generation Rejection Selection Status \*  |       |       |       |       |       |       |
| LV Breakers/Interrupters/Switchers, Open/Close Status \* |       |       |       |       |       |       |
| LV Synchronizing Breakers, Open/Close Status \* |       |       |       |       |       |       |
| Protection Alarms (such as failure of interface protection, breaker failure, connection status) \* |       |       |       |       |       |       |
| Blocking Signals |       |       |       |       |       |       |
| Reset Signals |       |       |       |       |       |       |
| Other (specify):       |       |       |       |       |       |       |
| Other (specify):       |       |       |       |       |       |       |

# SECTION 2C – CONFIRMATION OF VERIFICATION POWER EQUIPMENT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Legend:** New Connection: M1 = Test Required for Milestone 1;M2 = Test Required for Milestone 2; W = WitnessExisting Connection: M = Test Required for Modification; W = WitnessResult: P = Pass, F = Fail All Parts: N/A = Not Applicable | Legend | Result |  Initial | Date mm/dd/yyyy  | Note # |
| **Verify the HV disconnect switches/circuit switchers are suitable as an isolation point per Utility Work Protection Code? \*** *Note: At the discretion of London Hydro, witnessing by London Hydro staff may be required when the test is performed.*NOTE: Any future modifications to the isolation device(s) used to provide supporting guarantees to London Hydro staff under the Utility Work Protection Code must be re-witnessed by London Hydro personnel. |       |       |       |       |       |
| **Name of London Hydro Staff Witnessing HV Disconnect:** |       |
| Confirm correct operation of the HV disconnect switches/circuit switchers/breakers. |       |       |       |       |       |
| Is closing time within manufacturer’s specification? |       |       |       |       |       |
| Is opening time within manufacturer’s specification? |       |       |       |       |       |
| Are the specified HV surge arrestors installed? |       |       |       |       |       |
| Confirm the power transformer Doble test results are within specification. |       |       |       |       |       |
| Confirm power transformers connected correctly as per the design. |       |       |       |       |       |
| Confirm the DC system installed (ie battery, charger, dc panel, dc monitoring) and verified. |       |       |       |       |       |
| Does the HV equipment (ie, disconnect switches, circuit switchers, breakers, CVTs, CTs) have the appropriate voltage class and current ratings as per the submitted Single Line Diagram? |       |       |       |       |       |
| Confirm Station Service transformers installed and verified. |       |       |       |       |       |
| Directional fault indicators installed at PCC as per TIR requirements. |       |       |       |       |       |
| Other (specify) |       |       |       |       |       |

# SECTION 2D – PRE-ENERGIZATION CONNECTION AUTHORIZATION

|  |  |  |
| --- | --- | --- |
| **Legend:**SD = Supporting Documentation, N/A = Not Applicable | Legend | Date mm/dd/yyyy |
| **New Connection (Milestone 1) - If applicable** Prior to energizing any new or modified load or portions of generator facilities (Milestone #1), the Customer must provide the following:1. Temporary Connection Authorization issued by Electrical Safety Authority (ESA) (Ontario Electrical Safety Code Article 2-014).
2. *Confirmation Letter* stamped by a Professional Engineer registered in the province of Ontario stating that their generator(s) has been physically disconnected from the electrical infrastructure.
3. A single line diagram identifying portions of generator facilities to be energized and the isolation point(s).
 |       |       |
| **New Connection (Milestone 2) or Existing Connection (Modification Project)** Prior to final in‑service of new or modified load or all generator facilities (Milestone #2), the Customer must provide the following:1. Grid Connection Authorization issued by Electrical Safety Authority (ESA) (Code Article 2-012).
 |       |       |

# SECTION 2 NOTES

|  |  |  |  |  |
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| # | Comments | Date Action Resolved:(mm/dd/yyyy) | Customer Initials | Project Manager Concurrence |
|       |       |       |       |       |
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# SECTION 2E – COVER REVIEW SIGN OFF

|  |  |
| --- | --- |
| **The Project Manager approves the proposed checks, verifications, tests and notes in Section 2 and Section 3 submitted by the customer for the scheduled COVER.**  | Print Name:      Date:       |

# SECTION 2F – SIGN OFF TO CONNECT AS A LOAD (IF APPLICABLE)

(New Connection – Milestone #1)

Please check: [ ]  Applicable [ ]  Not Applicable

|  |  |
| --- | --- |
| **By signing\* this form, the customer acknowledges the following:**1. **All required verifications in Section 2 specified under this COVER document have been completed.**
2. **The generator facility design and operation meets the minimum standards for generator facilities connected to a distribution system, as per the Distribution System Code.**
3. **The equipment and installation meet CSA and/or other applicable electrical safety standards.**
4. **The generator holds an OEB Electricity Generation License.**
 | (Note: Must be P.Eng. licensed in Ontario)Print Name:      Title:      Date:      Must affix P.Eng. seal (stamp here): |
| \*After signing the COVER, the customer shall submit it to London Hydro’s Project Manager. |

# SECTION 2F – CONTINUED

|  |  |
| --- | --- |
| **London Hydro’s Project Manager has reviewed the customer’s Certified COVER document and the customer’s facility may be connected to the grid, subject to Controlling Authority’s final review.** | Print Name:      Date:       |
| The Project Manager shall forward the completed document to the Controlling Authority to initiate the connection. The Project Manager shall contact the Controlling Authority, to notify them of the completed COVER. |

|  |
| --- |
| **ENGINEERING OPERATIONS COVER ACCEPTANCE OF CONNECTION** |
|  |      Dated |

# SECTION 2G – SIGN OFF TO CONNECT AS A LOAD WITH GENERATOR TESTING RIGHTS

(New Connection: Milestone #2 or Existing Connection: Modification)

|  |  |
| --- | --- |
| **By signing\* this form, the customer acknowledges the following:**1. **All required verifications in Section 2 specified under this COVER document have been completed.**
2. **The generator facility design and operation meets the minimum standards for generator facilities connected to a distribution system, as per the Distribution System Code.**
3. **The equipment and installation meet CSA and/or other applicable electrical safety standards.**
4. **The generator holds an OEB Electricity Generation License.**
 | (Note: Must be P.Eng. licensed in Ontario)Print Name:      Title:      Date:      Must affix P.Eng. seal (stamp here): |
| \*After signing the COVER, the customer shall submit it to London Hydro’s Project Manager. |

# SECTION 2G – CONTINUED

|  |  |
| --- | --- |
| **London Hydro’s Project Manager has reviewed the customer’s Certified COVER document and the customer’s facility may be connected to the grid, subject to Controlling Authority’s final review.** | Print Name:      Date:       |
| The Project Manager shall forward the completed document to the Controlling Authority to initiate the connection. The Project Manager shall contact the Controlling Authority, to notify them of the completed COVER. The Project Manager will ensure this document is placed within the Connection Agreement (CA). |

|  |
| --- |
|  **ENGINEERING OPERATIONS COVER ACCEPTANCE OF CONNECTION** |
|  |      Dated |

# SECTION 2H – FOR LONDON HYDRO INTERNAL USE ONLY

**PRE-CONNECT CHECKLIST**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Completed** | **Initials** | **Date (mm/dd/yyyy)** |
| Safe work practice |       |       |       |
| SCADA screens |       |       |       |
| Operating agreement finalized and signed |       |       |       |
| Operator(s) awareness |       |       |       |
| PC1 application created for LZTT test and generation test |       |       |       |
| DER Facility connected to correct feeder |       |       |       |

|  |
| --- |
| **SOC SUPERVISOR COVER ACCEPTANCE OF FINAL TESTING** |
|  |      Dated |

# SECTION 3A – POST ENERGIZATION CHECKS AT RATED SYSTEM VOLTAGE

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Legend:** New Connection: M3 = Test Required for Milestone 3Existing Connection: M = Test Required for Modification Result: P = Pass, F = Fail All Parts: N/A = Not ApplicableNOTE 1: Tests marked with an asterisks (\*) require London Hydro staff coordinationNOTE 2: Tests must be performed with the generator operating at a minimum of ten percent (10%) of its rated capacity. | Legend | Result | Initials | Date mm/dd/yyyy | Note # | LH Initials |
| Are phasor readings completed and analyzed by the customer for Protection listed in **Section 2A**? |       |       |       |       |       |       |
| Are phasor readings completed and analyzed by the customer for SCADA quantities listed in **Section 2B**? |       |       |       |       |       |       |
| On Load SCADA Values for London Hydro SCADA confirmed consistent with test(s) performed in **Section 2B**? \* |       |       |       |       |       |       |
| Post Energization Live Zone Test Trip of the distribution connected generator performed (applicable for DER with Transfer Trip / Remote Trip). \* |       |       |       |       |       |       |
| Post Energization Anti-Islanding Test (applicable for projects without Transfer Trip).  |       |       |       |       |       |       |
| Confirm compliance to TIR Section 2.3.6. iii (applicable for three-phase DER Facilities, including those using multiple three-phase inverters or multiple single-phase inverters).  |       |       |       |       |       |       |
| Micro Grid / Operating Modes Test (s) |       |       |       |       |       |       |

# SECTION 3 NOTES

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Comments** | **Date Action Resolved****(mm/dd/yyyy)** | **Customer Initials** | **Project Manager Concurrence** |
|       |       |       |       |       |
|       |       |       |       |       |
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# SECTION 3B – SIGN OFF TO CONNECT AS A GENERATOR

New Connection: Milestone #3 or Existing Connection: Modification

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| I/we acknowledge the completion of all sections of the COVER and the deficiencies identified in the “NOTES” section have been resolved.I/we acknowledge, in accordance with the Distribution System Code, Appendix F, for a Generation facility of Small size, Mid size, and Large size, the Customer shall, at London Hydro’s request, provide London Hydro with a summary of testing results, including any certificates of inspection or other applicable authorizations or approvals certifying that any of the Customer's new, modified or replacement facilities have passed the relevant tests and comply with all applicable instruments and standards referred to in the code. This information will be kept on file for a period of seven (7) years by the Customer. | Note: Must be P.Eng. licensed in OntarioPrint Name:      Title:      Date:      Affix P.Eng. seal (stamp here): |

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| **London Hydro’s Project Manager has reviewed the customer’s potential/on load checks at the rated system voltage.** | Print Name:      Date:       |

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| **DISTRIBUTION LIST (WHEN ALL SECTIONS ARE COMPLETED)** |
| [ ]  Controlling Authority [ ]  Customer [ ]  Project Manager [ ]  Engineering-Executive Assistant[ ]  Engineering Operations  |