St. Thomas energy inc.
We're Your Local Power Distributor

Connection Impact Assessment Application

This form is for generators applying for Connection Impact Assessment (CIA) and for generators with a project size >10 kW.

Please return the completed form by email, mail or fax to:

St. Thomas Energy Inc. (STEI)
135 Edward Street
St. Thomas, ON N5P 4A8
FAX: 519-631-2243
Email: fit@sttenergy.com

NOTES:

1) Applicants are cautioned NOT to incur major expenses until STEI approves to connect the proposed generation facility.
2) All technical submissions (CIA forms, single line diagrams, etc.) must be signed and sealed by a licensed Ontario Professional Engineer (P.Eng.).
3) All fields below are mandatory, except where noted. Incomplete applications shall be returned by STEI.

Application Date: _____

1. **Project Name:** _____
2. **Feed-In Tariff (FIT) Reference Number:** _____
3. **Proposed In-Service Date:** _____
4. **Project Size:** _____ kW
5. **Project Location:** _____ **Postal Code:** _____
6. **Project Information:**

	Generator *(Mandatory)*	Owner *(Mandatory)*	Consultant *(Optional)*
Company/Person			
Contact Person			
Mailing Address Line 1			
Mailing Address Line 2			
Telephone			
Cell			
Fax			
E-mail			

7. Customer Status:

- Existing STEI Customer? ☐ Yes ☐ No
- If yes, STEI Account Number: _____
- Customer name registered in this Account: _____
- Are you a HST registrant? ☐ Yes ☐ No
- If yes, provide your HST registration number: _____- _____ RT _____

8. Fuel / Renewable Energy Type:

☐ Biomass ☐ Solar ☐ Water ☐ Wind

☐ Diesel Engine ☐ Gas Turbine ☐ Other _____

9. Mode of Operation:

☐ Sale of Power 24 hour
☐ Load Displacement
☐ Base Load Peak Period Only
☐ Emergency Backup
Will Emergency Backup generator be synchronized to STEI's system at any time?
☐ Yes ☐ No
☐ Other _____

10. Single Line Diagram (SLD):

Provide a SLD of the Generator's facilities including the Point of Common Coupling (PCC), the point where the Generator's facilities are to connect to STEI's distribution system. This drawing shall include, but not be limited to:

- Electrical equipment at Generator's facilities, their principal ratings, impedances, winding configurations, neutral grounding methods, etc.
- Protective relaying, synchronizing and revenue metering arrangements. The device numbers should be in accordance with those adopted in the ANSI / IEEE Standard C37.2 – 1979: IEEE Standard Electrical Power System Device Function Numbers.

The SLD shall include the following, as applicable:

- Disconnecting device at the connection point with STEI's distribution system
- Load break switches
- Fuses and Circuit breakers
- Interface step-up transformer
- Intermediate transformer(s)
- CTs and VTs (quantity, location, connection, ratio)
- Generators (rotating / static)
- Power factor correction capacitors and their switching arrangements (particularly for induction units)
- Motors
- Power cables
- Surge arresters and any other relevant electrical equipment.

SLD Drawing Number: _____, Rev. _____

11. Connection to STEI Distribution System: (to be completed by STEI)

- Proposed or existing connection voltage to STEI's distribution system: _____kV
- Station Name: _____
- Feeder Name: _____
- Feeder Max Load (Ampere): _____
- Feeder Min Load (Ampere): _____
- Total number of Generators on the feeder:
  Number of units _____ Total Capacity _____kW _____kVA

12. Provide Impact Assessment of the Generator's facility

13. Protection Philosophy:

- Provide a document describing the protection philosophy for detecting and clearing:
  - Internal faults within the EG facility
  - External phase and ground faults (in STEI's distribution system)
  - Certain abnormal system conditions such as over/under voltage, over/under frequency, open phase
  - Islanding
- Document Number: _____ Rev: _____

Note: Generator shall install utility grade relays for the interface protection. The protection design shall incorporate facilities for testing and calibrating the relays by secondary injection.

14. Connection and Operation Information:

- Synchronizing and paralleling scheme/procedure _____ Doc./Dwg. No
- The generator is designed with auto-connection scheme ☐ Yes ☐ No

15. Generator Characteristics:

- Number of generating unit(s): _____
- Manufacturer/Type or Model No: _____
- Rated capacity of each unit: _____kW _____kVA

If unit outputs are different, please fill in additional sheets to provide the information.

- Type of generating unit:
  ☐ Synchronous ☐ Induction ☐ Static Power Converters (SPC) ☐ Other _____
- Rated frequency Hz _____Hz
- Number of phases: ☐ One ☐ Three

For Synchronous Units:

- Nominal machine voltage: _____kV
- Minimum power limit for stable operation: _____kW
- Unsaturated reactance on: _____kVA base _____kV base
  - Direct axis subtransient reactance, Xd'' _____p.u.
  - Direct axis transient reactance, Xd' _____p.u.
  - Direct axis synchronous reactance, Xd _____p.u.
  - Zero sequence reactance, X0 _____p.u.
- Provide a plot of generator capability curve (MW output vs. MVAR)
  Document Number: _____ Rev. _____

For Induction Units:

- Nominal machine voltage: _____kV
- Unsaturated reactances on: _____kVA base _____kV base
  - Direct axis subtransient reactance, Xd'' _____p.u.
  - Direct axis transient reactance, Xd' _____p.u.
- Total power factor correction installed: _____kVAR
  - Number of regulating steps _____
  - Power factor correction switched per step _____kVAR
  - Power factor correction capacitors are automatically switched off when generator breaker opens ☐ Yes ☐ No

For SPC / Inverter type units:

- Terminal voltage V: _____V
- Line - interactive type (i.e. intended for parallel operation with electric utility) ☐ Yes ☐ No
- Power factor _____p.u.
- Battery backup provided ☐ Yes ☐ No
- Maximum fault current for terminal faults _____A
- Standards according to which built _____
- Provide Manufacturer's technical brochure and specification sheet Doc. No. _____

16. Interface Step-Up Transformer Characteristics:

- Transformer ownership: ☐ Customer ☐ STEI
- Transformer rating: _____kVA
- Nominal voltage of high voltage winding: _____kV
- Nominal voltage of low voltage winding: _____kV
- Transformer type: ☐ Single phase ☐ Three phase
- % Impedances: _____ %Z

- High voltage winding connection: ☐ Delta ☐ Star
  - Grounding method of star connected high voltage winding neutral:
    ☐ Solid ☐ Ungrounded ☐ Impedance: R:_____ohms X: _____ohms
  - Nameplate rating and impedance values of High Voltage Grounding Transformer (If applicable):
    Voltage: _____V Rating: _____kVA R:_____p.u. X: _____p.u.
- Low voltage winding connection: ☐ Delta ☐ Star
  - Grounding method of star connected low voltage winding neutral:
    ☐ Solid ☐ Ungrounded ☐ Impedance: R: _____ohms X: _____ohms

Note: The term 'High Voltage' refers to the connection voltage to STEI's distribution system and 'Low Voltage' refers to the generation or any other intermediate voltage.

17. Intermediate Transformer Characteristics (If applicable):

- Transformer ownership: ☐ Customer ☐ STEI
- Transformer rating: _____kVA
- Nominal voltage of high voltage winding: _____kV
- Nominal voltage of low voltage winding: _____kV
- Transformer type: ☐ Single phase ☐ Three phase
- % Impedance: _____%Z

- High voltage winding connection: ☐ Delta ☐ Star
  - Grounding method of star connected high voltage winding neutral:
    ☐ Solid ☐ Ungrounded ☐ Impedance: R:_____ohms X: _____ohms
  - Nameplate rating and impedance values of High Voltage Grounding Transformer (If applicable):
    Voltage: _____V Rating: _____kVA R:_____p.u. X: _____p.u.
- Low voltage winding connection: ☐ Delta ☐ Star
  - Grounding method of star connected low voltage winding neutral:
    ☐ Solid ☐ Ungrounded ☐ Impedance: R: _____ohms X: _____ohms

Note: The term 'High Voltage' refers to the connection voltage to STEI's distribution system and 'Low Voltage' refers to the generation or any other intermediate voltage.

18. Load information:

- Maximum load of the facility _____kVA _____kW
- Maximum load current (nominal voltage at the connection point to STEI system) _____A
- Maximum inrush current (nominal voltage at the connection point to STEI system) _____A

19. Expected Monthly Generation, Consumption and Output from Generator facility:

Expected	**Total Generation (a)**		**Total Internal Consumption (b)**		**Total Output (To STEI's distribution System) (a-b)***	
	kWh	**Peak kw**	**kWh**	**Peak kW**	**kWh**	**Peak kWh**
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

*This value would be negatives when the generators are not in operation or when the internal consumption exceeds generation.

Attached Documents:

Item No.	Description	Document No.	No. of Pages
1			
2			
3			
4			
5			

Attached Drawings:

Item No.	Description	Document No.	No. of Pages
1			
2			
3			
4			
5			