



Interconnection of Customer Owned Generation Equipment with Electric Utility

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Utility Perspective – Two Main Considerations



- Interconnection Standards - with the Utility
- Payment To Project for Energy Provided (by the Utility) and Charges For Back-Up and Maintenance Power (by the Customer)

Note: IPL (like most Indiana utilities) has limited experience with CHP Projects. We currently have only one small power production (50 kW wind turbine) to which this applies.

Interconnection Standards

- IURC Rule 170 IAC (Indiana Administrative Code) 4-4.3 Customer - generator Interconnection standards
- This rule – was approved by the Indiana Utility Regulatory Commission in November 2005 after extensive input by utilities and customers
- Covers the connection of customer owned generation equipment to the utility *distribution* system – Note this rule is limited to *distribution* system interconnection

Process To Develop Rules

- Indiana utilities collaborated with Commission staff and customers on development of the interconnection requirements
- Interconnection requirements based on Federal requirements and models adopted in other states
- Generally the Applications and Interconnection Agreements are nearly identical for ALL Indiana *Investor Owned* Electric Utilities

IURC Rule 170 4-4.3

- General Provisions / Considerations:
 - IEEE 1547 or UL Standard 1741
 - Three Interconnection Levels I, II and III
 - Interconnection and Operation
 - Liability Insurance and Indemnity

Certification under IEEE 1547 and UL 1741

- Defines technical requirements
- IEEE standard 1547 is available from the Institute of Electrical and Electronics Engineers web site:
<http://www.ieee.org/web/standards/home/index.html>
- UL 1741 is available from Underwriters Laboratories at www.ul.com .
- Standards cover connection, backfeed, harmonics, islanding, protection and much more.

Level I Interconnection

- Inverter-Based Generation Equipment
- 10kW or Smaller
- For IPL -- To Date – All Level I have been solar installations seeking “Net-Metering” benefits

Level II and III Interconnection

- Level II Interconnection
 - Name plate capacity of 2 MW or less.
 - Application Fee is \$50.00 plus \$1.00 per kW of nameplate capacity.
- Level III Interconnection
 - All other facilities not covered by Levels I and II
 - Application Fee is \$100.00 plus \$2.00 per kW of nameplate capacity.
- Level II and III can be inverter based, induction and synchronous generators

Operation and Liability Insurance

- On site inspections may be required
- Safe operation
- Emergency procedures may occur
- Non compliance may be cause for disconnection
- Liability Insurance and Indemnity coverage
- A certificate of insurance is kept on file at IPL
- Covered under section 170 IAC 4-4.3-10

Interconnection Documents

- Available on the www.iplpower.com web site
- One contact for Level I Interconnection
- For Level II or III Interconnection call your IPL Account Manager
- Contacts posted for technical advice
- It is probably in your best interest to contact IPL and generally discuss your project before submitting an application. It may save you time and money

The Application Process



- Submit Application and fees
- Enclose Diagram and data sheets
- Utility review for completeness
- Customer submits missing data if necessary
- Utility review for technical, operational and metering requirements
- Customer addresses issues from Utility review.
- Customer complete all installation, construction and metering changes.
- Notify utility of anticipated start up date
- In Service date and utility internal documentation for ongoing operation

Payments and Charges

- Rates detailed in IPL's Rate "CGS" Cogeneration Service
- 3-Areas of discussion:
 - Connection Charges
 - IPL Purchase of Power
 - IPL Charges for Power

Connection Charges

- All interconnection costs to be born by customer.
 - Labor and Material for.....
 - Service connection cable work
 - Metering and wiring work
 - Relay work
 - IPL does not currently add additional monthly charges for additional meters required for billing purposes.

IPL Purchase of Power

- Payments to the customer for Level II and Level III

Capacity - \$3.17 per KW per mo.

Energy – On Peak 2.17cents per KWH
Off Peak 1.63cents Per KWH

IPL Charges for Power

- IPL charges for all power supplied per our standard rate tariffs.
 - Back-up Power
 - Supplementary Power
 - Maintenance Power
- IPL will have the facilities and capacity available when needed. The cost for this is included in standard rates.

Summary

- Visit IPL website for various info, applications, contracts and rate tariffs
- Contact IPL Account Manager to discuss your project
- Visit IURC web site for copy of Rule 170 IAC 4-4.3
- Use IEEE 1547 and UL 1741 standards and equipment (specs available on IEEE and UL websites)