

**Energy Savings Opportunities for Indiana WWTFs
Energy Efficiency and CHP**

**Northern Indiana Public Service Company
Distribution Level Generator Interconnections**

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Energy Savings Opportunities for Indiana WWTFs: Energy Efficiency and CHP
NIPSCO's Distribution Level Generator Interconnections

- **Background Information on NIPSCO**
- **Impact of NIPSCO's Integration into the Midwest ISO**
- **Generator Interconnections to NIPSCO's Distribution System**
 - Classification of generators
 - Interconnection procedures by classification
 - Interconnection documents
- **A Market for the Power**

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- **NIPSCO**
 - **Subsidiary of NiSource**
 - NiSource gas customers – 3,382,000 across 9 states (721,000 in northern third of Indiana)
 - NIPSCO electric customers – 457,000 in northern third of Indiana
 - **Vertically Integrated Utility**
 - Generation, Transmission and Distribution facilities
 - Balancing Authority (i.e. Control Area Operator)
 - **Load Structure**
 - 3,629 MW control area peak
 - NIPSCO retail customers were about 89% of the peak
 - » Major industrials were about 20% of the peak
 - Three wholesale customers were about 11% of the peak
 - Indiana is a non-retail wheeling state

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- **NIPSCO**

- **Generation**

- NIPSCO's current owned generation totals 2,787 MW
 - 92.4% coal, 7.3% natural gas and 0.4% hydro
 - Five operational IPPs – 1 Combined Cycle at 525 MW, 1 Wind Generation Facility at 130 MW and three Waste-Gas Diesel Facilities totaling 14 MW
 - Significant behind the meter customer generation (over 800 MW)

- **Transmission**

- 354 miles 345 kV
 - 764 miles 138 kV
 - 1,660 miles 69 kV

- **Distribution**

- 423 miles 34.5 kV
 - 9,877 miles 12.5 kV and 4 kV

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- **NIPSCO**
 - **Interconnections**
 - Commonwealth Edison
 - 5,761 MW on 8 tie lines at 345 kV and 138 kV
 - American Electric Power
 - 5,502 MW on 15 tie lines at 345 kV, 138 kV, 69 kV and 34.5 kV
 - Duke Indiana
 - 1,195 MW on 4 tie lines at 345 kV, 138 kV and 69 kV
 - METC
 - 273 MW on 1 tie line at 138 kV
 - Ameren
 - 239 MW on 1 tie line at 138 kV

- **NIPSCO Integration into the Midwest ISO**
 - NIPSCO transferred operational control of its transmission facilities to the Midwest Independent System Operator on October 1, 2003
 - all 345 kV, 138 kV and 69 kV transmission facilities
 - MISO is NIPSCO's reliability coordinator and transmission service provider
 - MISO coordinates transmission planning and transmission level generator interconnections
 - MISO operates a day ahead and real time energy market

- **Generator Interconnections to the NIPSCO system**

- Interconnections to NIPSCO's transmission system (69 kV and above) must follow MISO procedures:

- <http://www.midwestiso.org/page/Generator+Interconnection>
- Based on procedures filed with the Federal Energy Regulatory Commission

- Interconnections to NIPSCO's distribution system (34.5 kV and below) are handled directly by NIPSCO based on procedures filed with the Indiana Utility Regulatory Commission

- Generators are classified into three categories
 - Level 1 – inverter based generator facilities rated 10kW or less
 - Level 2 – generator facilities rated 2 MW or less
 - Level 3 - generator facilities which do not qualify for either Level 1 or 2

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- **Level 1 Generators**

- Generators must be inverter based facilities less than 10 kW and meet certain certification requirements per Indiana Administrative Code
- Eligible for net metering

- **Level 2 Generators**

- Generators with capacity less than 2 MW must meet certain certification requirements per Indiana Administrative Code
- Generator capacity less than 15% of the distribution line annual peak
- Generator contribute less than 10% of maximum fault current

- **Level 3 Generators**

- Generators not meeting requirements for Level 1 or 2

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- **Certification Requirements**

- 170 Indiana Administrative Code 4-4.3
 - <http://www.in.gov/legislative/iac/T01700/A00040.PDF?>
- Generator package must comply with IEEE 1547 and UL 1741 Standards
- Generator package must have been tested and listed by nationally recognized testing and certification laboratory
- Certification provides assurance that generator package is viable and provides a ready source of modeling data.

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- **Generator Interconnection Procedures**
 - Contact NIPSCO Customer Service Department by phone
 - Initial documents sent to customer by mail

 - Interconnection Standards Document on NIPSCO web site:
 - http://www.nipsco.com/rates/tariffs/e_rates/grr-28.htm

- **Generator Interconnection Procedures**
 - **Procedures for Level 1 generators**
 - Interconnection Application and associated documentation completed and sent to NIPSCO
 - Application reviewed and approved for Level 1 interconnection
 - Interconnection Agreement and associated documents (e.g. net metering document) sent to customer for signature
 - Engineering supervision provided for interconnection to system.
 - **Procedures for Level 2 generators**
 - Interconnection Application and associated documentation completed and sent to NIPSCO
 - Application reviewed and approved for Level 2 interconnection
 - Interconnection Agreement and associated documents (e.g. avoided cost contract) sent to customer for signature
 - Engineering supervision provided for interconnection to system.

- **Generator Interconnection Procedures**
 - **Procedures for Level 3 generators**
 - Interconnection Application and associated documentation completed and sent to NIPSCO
 - Application reviewed and approved for Level 3 interconnection
 - Interconnection Evaluation Study Agreement send to customer for signature
 - System Impact study and Facilities study completed by NIPSCO and reviewed with customer
 - Interconnection Agreement and associated documents (e.g. Excess Facilities agreement) sent to customer for signature
 - Engineering supervision provided for interconnection to system.

- **Generator Interconnection Procedures**

- Applications for Interconnections are to be forwarded to:

NIPSCO

Attn: Business Link

801 E. 86th Avenue, Merrillville, IN 46410

- **Interconnection review fees**

- Level 1 - No charge
- Level 2 - \$50 plus \$1 per kW of generator capacity
- Level 3 - \$100 plus \$2 per kW of generator capacity plus \$100 per hour of engineering work done for system impact or facilities study.

- **Generator Interconnection Documents**

- **Interconnection Agreement**

- Details the facilities to be built for interconnection
 - Specifies the construction schedule
 - Covers operating procedures
 - Normal
 - Emergency

- **Associated Documents**

- Excess Facilities Agreement
 - Net Metering Document
 - Avoided Cost contract
 - Meter Data Management Agent Agreement

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- **Interconnection Documents on NIPSCO web site:**

- Application for Interconnection – Level 1
 - http://www.nipsco.com/rates/tariffs/e_rates/60FF.pdf
- Application for Interconnection – Level 2 or 3
 - http://www.nipsco.com/rates/tariffs/e_rates/60HH.pdf
- Interconnection Agreement – Level 1
 - http://www.nipsco.com/rates/tariffs/e_rates/60KK.pdf
- Interconnection Agreement – Level 2 or 3
 - http://www.nipsco.com/rates/tariffs/e_rates/60NN.pdf
- Interconnection Agreement – Exhibit A Document Requirements
 - http://www.nipsco.com/rates/tariffs/e_rates/60TT.pdf
- Excess Facilities
 - http://www.nipsco.com/rates/tariffs/e_rates/grr-19.htm
- Net Metering
 - http://www.nipsco.com/rates/tariffs/e_rates/grr-27.htm

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- **A Market for the Power**

- **Internal use**

- Reduce net load on local utility and reduce your electric bill

- **NIPSCO purchases under its Avoided Cost Tariff**

- Prices updated annually

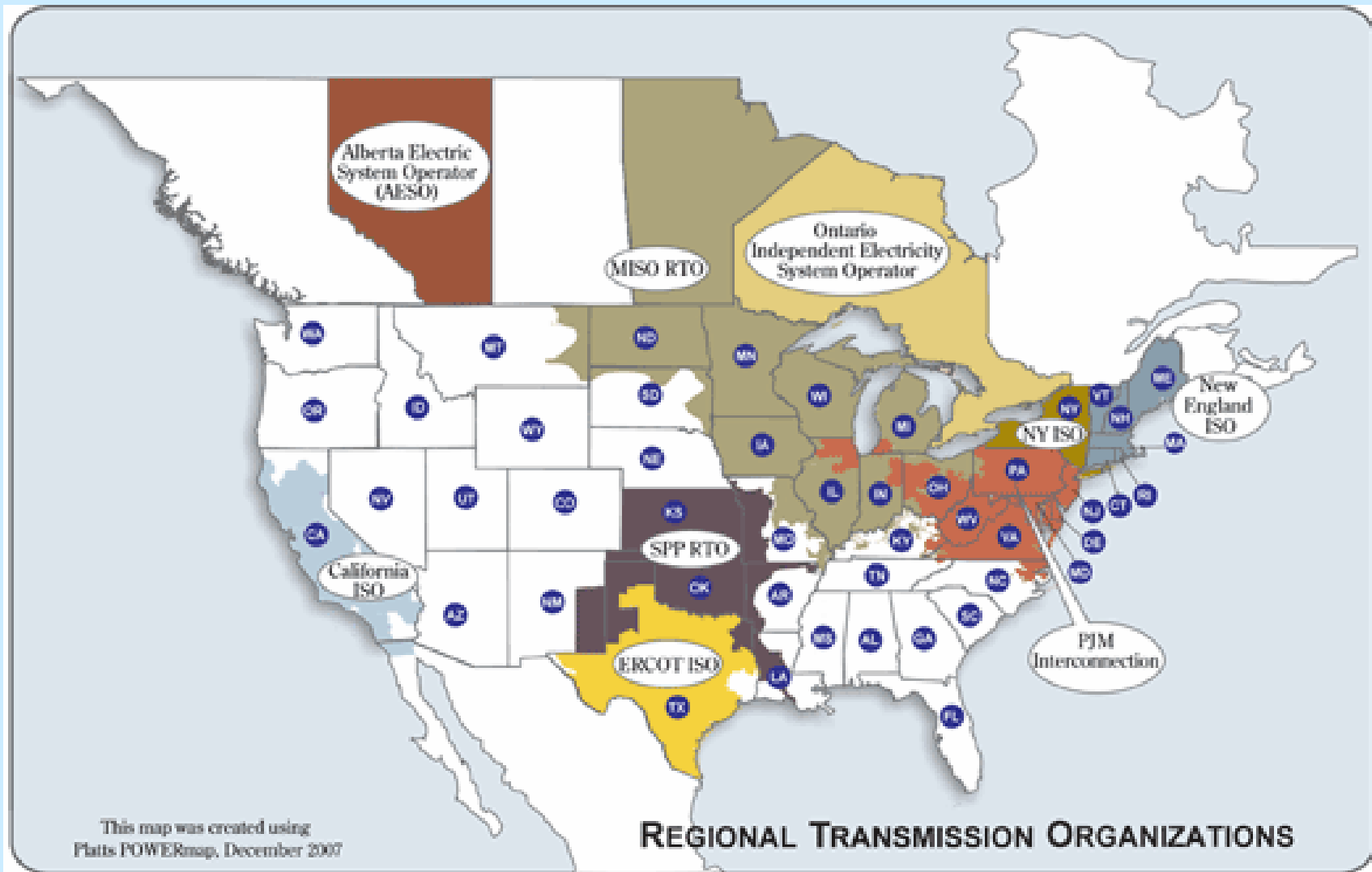
- http://www.nipsco.nisource.com/rates/tariffs/e_rates/cogentariffhistory.htm

- **Wholesale Purchaser of “Green Power”**

- Internal to MISO / PJM
 - External to MISO / PJM

- **MISO Market**

- 5 MW minimum for generators to participate in the market
 - Must be registered market participant or have agent who is
 - Additional cost of communication and control requirements



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- **Questions?**

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