



# Combined Heat & Power and Ethanol Plants

## *Next Steps*

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# Workshop Messages

CHP Is Not Right For Every Application Or For Every Location, But Where CHP Makes Sense, It Can And Will:

- Lower Energy Costs
- Increase Power Reliability
- Increase Power Quality
- Provide Standby Power
- Lower Atmospheric Emissions



# Why Should You Consider CHP

- Potential To Increase Resource Efficiency
  - More Product Per Unit Fuel Input
- Potential To Lower Overall Operating Costs
  - Reduced Utility Costs
- Properly Designed System Provides Increased Reliability
  - With Equipment That Has An ROI
- Potential To Lower Overall Air Emissions
- Potential For Unique Partnerships With The Local Municipal or Rural Electrics

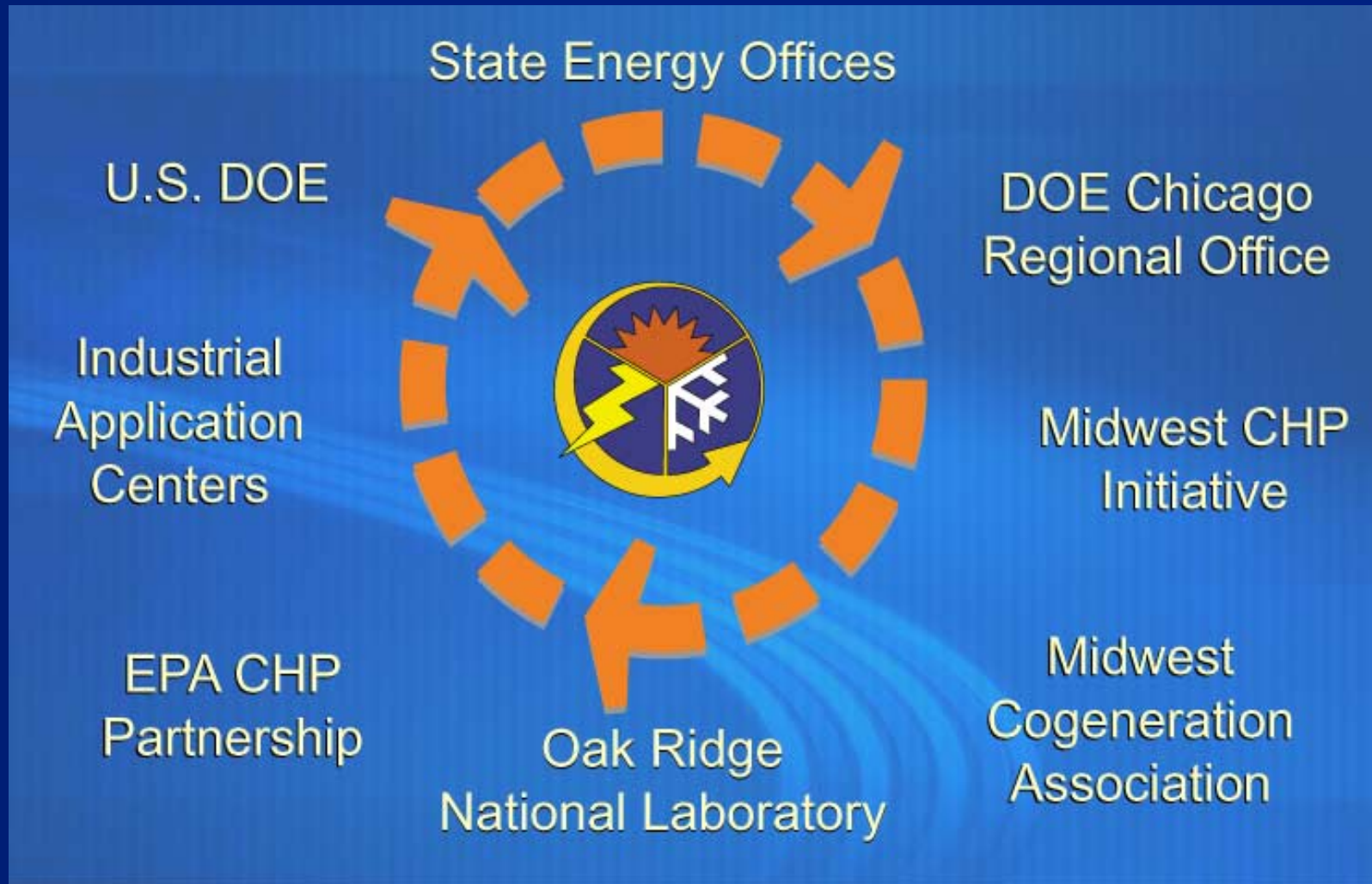


# Midwest CHP Application Center

- Partnership Between:
  - University of Illinois at Chicago Energy Resources Center (UIC/ERC)
  - Gas Technology Institute (GTI)
- Center Focus Is The Source Of Unbiased:
  - Information
  - Education
  - Technical Assistance



# Working Together In The Midwest



# Source of Info. / Education / Tech. Assistance

- Facility Walk Thru
  - What To Look For
  - What To Ask For
  - What To Discuss
  - Rules Of Thumb

## CHP Resource Guide



# Source Of Info. / Education / Tech. Assistance

- Prime Mover
  - Reciprocating Engine
  - Gas Turbine
  - Steam Turbine
  - Micro-Turbine
  - Fuel Cells
- Heat Recovery
  - Steam
  - Hot Water
  - Direct Exhaust
- Thermally Activated
  - Absorption Chillers
  - Desiccant Dehumidifiers
- Other Equipment
  - Controls
  - Interconnect



# Source Of Info. / Education / Tech. Assistance

## CHP Economic Analysis:

- Ability to Model Thermal & Electric Loads
- Ability to Accurately Input Electric & Natural Gas Tariffs
- Ability to Accurately Estimate Equipment & Installation Costs
- Ability to Compare CHP to Baseline (Non CHP) System
- Ability to Provide Cash Flow, Simple Payback, & Return on Investment Calculations





# Source Of Info. / Education / Tech. Assistance

- Environmental Permitting
  - Air Permits
  - Water Permits
  - Local Code / Zoning / OSHA Requirements
- Emissions Calculator
  - Based On EPA AP-42 Emission Factors
  - First Cut Estimate of Emission Levels

## Permitting Guidebook & Emissions Calculator



# Source Of Info. / Education / Tech. Assistance

- Training
  - Basic CHP Concepts
  - CHP Technology Workshops
  - Engineering Economics (CHP)
  - CHP Implementation
  - Site Instrumentation
  - College Credit Course (Under Development)



# Midwest CHP Application Center

- Services Offered
  - Website (Available & Updated)
    - » [www.CHPCenterMW.org](http://www.CHPCenterMW.org)
  - Site Evaluations (Screening)
  - Application Analysis (Tech. / Financial)
  - Technical Assistance
  - Case Studies
  - Training
  - Regulatory Interactions



# For Further Information

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