



CHP Opportunities

Midwest CHP Application Center

University of Illinois
at Chicago



Energy Resource Center



Industrial Assessment Center

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What is CHP?

- ✦ Integrated System
- ✦ Located At or Near A Building/Facility
- ✦ Provides a Portion of the Electrical Load
- ✦ Utilizes the Thermal Energy
 - ✦ Cooling
 - ✦ Heating
 - ✦ Dehumidification
 - ✦ Process Heat



CHP Technologies

- ★ Cooling Equipment
 - Mechanical Chillers
 - Absorption Chillers
 - Thermal Storage
 - Desiccant Dehumidification
- ★ Heat Recovery Systems
 - Hot Water
 - Steam
- ★ Electric Generation Equipment
 - Reciprocating Engines
 - Turbines/Microturbines
 - Fuel Cells



Why Is There An Opportunity?

- ☀️ DOE/EIA Projects Over 360 GW of New Capacity
 - To Meet Growing Demand
 - To Compensate for Plant Retirements
- ☀️ Today's Central Station Plants Lose 23 Quads of Thermal Energy
- ☀️ Aging Electric Transmission/Distribution System
 - Difficult to Site New Lines
 - Capacity Constrained
 - Costly to Maintain

Why is There an Opportunity?

★ Rising Concerns Over

- Blackouts/Brownouts
- Power Supply Constraints
- Electricity Prices

★ Selected Power Outage Costs

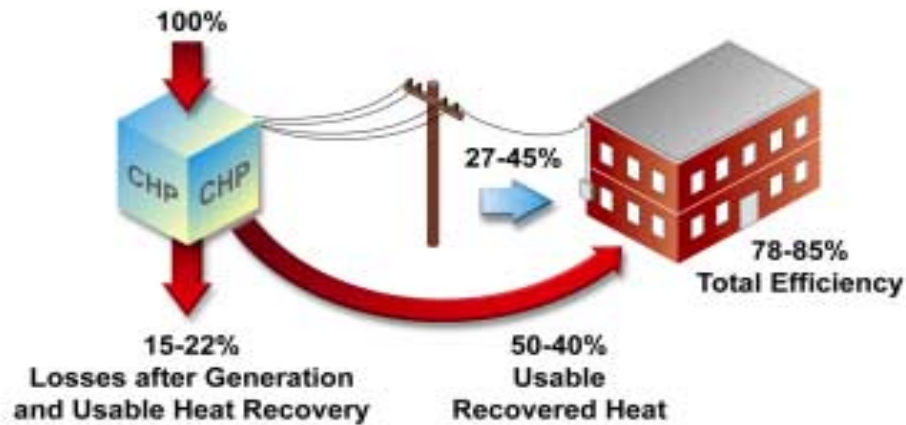
Industry	Avg. Cost of Downtime
Cellular Communications	\$41,000 per hour
Telephone Ticket Sales	\$72,000 per hour
Airline Reservations	\$90,000 per hour
Credit Card Operations	\$2,580,000 per hour
Brokerage Operations	\$6,480,000 per hour

Why Consider CHP?

- ★ Peak Electric Power Reduction
- ★ High Efficiency – Up to 80%
- ★ Power Security and Quality
- ★ Significant Emissions Reductions
 - ★ 40% Less than Central Plants
 - ★ Improved Indoor Air Quality
- ★ Supports the Electric Grid Infrastructure
 - ★ Grid Reliability
 - ★ Defers Costly Grid Updates
 - ★ Provides Price Stability



How CHP Saves Energy



75 Years of Thinking to Change

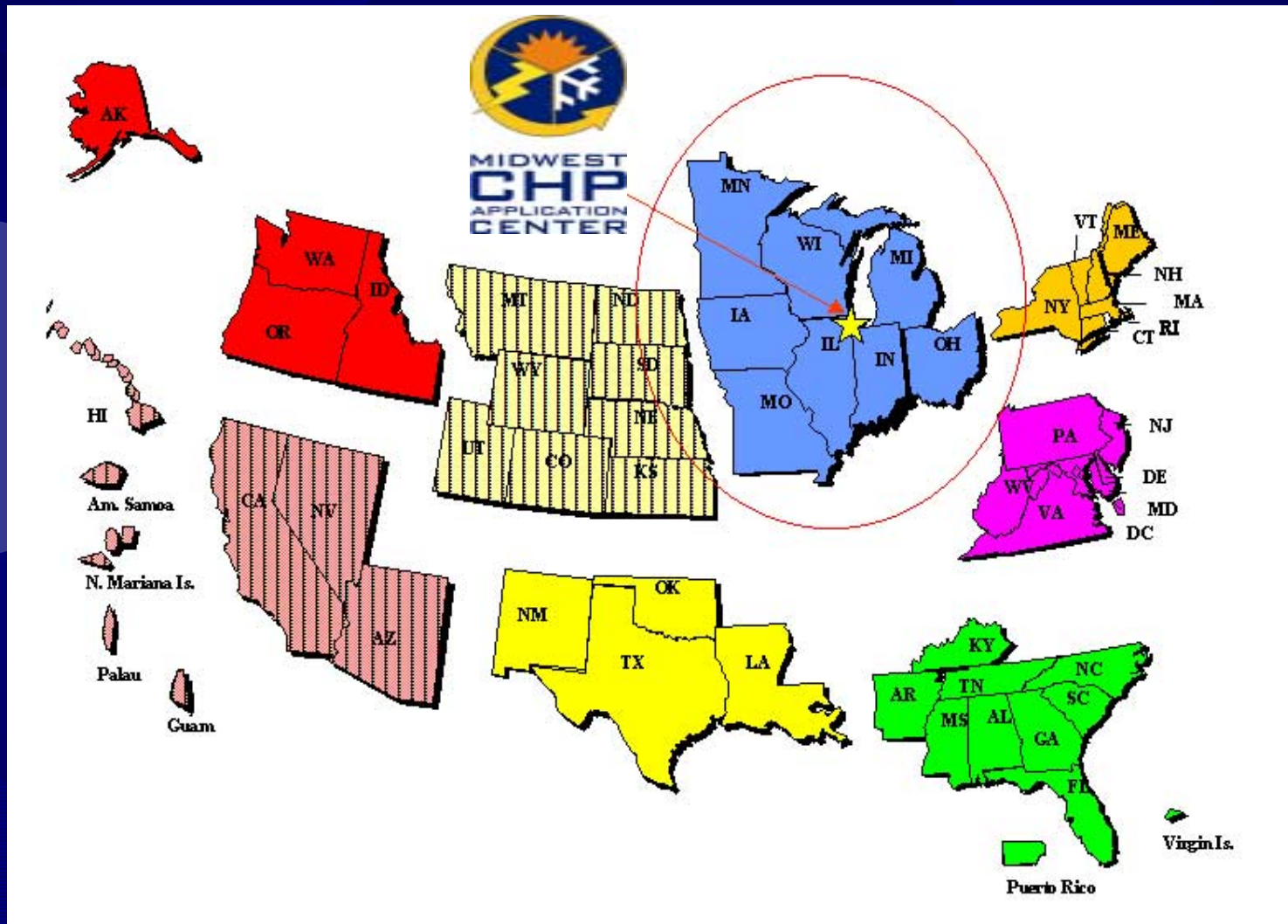
★ Old

- ★ Electric and Heating/Cooling Separate
- ★ Based on Improving Component Efficiency

★ New

- ★ Integrated Energy Systems
- ★ Focus on Increasing Overall Efficiency

Midwest Regional Application Center



Midwest CHP Application Center

The "MAC"

★ **Mission:**

Develop Technology Application Knowledge and the Educational Infrastructure Necessary to:

- Reduce Perceived Risks
- Foster CHP as a Viable Option
 - Technical and Financial
 - Energy and Environmental

★ **Focus:**

- Technology Transfer
- Education
- Information
- Project Assistance



Project Support

- ★ Technology Education
- ★ Case Studies
- ★ Viable Site Assessment Visits
- ★ Initial Screening Assessments
- ★ Feasibility Assessments
- ★ Assist in Project Justification
- ★ Partnership Assistance
- ★ SWAT Team Assistance



MAC/IAC Interface

★ MAC Can Provide

- Training on Screening Techniques for Potential CHP Sites
- Tools Necessary to Consider/Evaluate CHP as One of the Auditor's Energy Efficiency Options
- Backup and/or Follow-Up Technical and Analysis Support for Audit Customers
- CHP Information/Case Studies Through CHP Website

★ IAC Can Provide

- First Cut Screen for Applicability for CHP
- Source for Potential CHP Application Sites
- Conduit for Information Transfer to Industrial Users



Status of Interface

- ★ Interface Successfully Demonstrated at University of Illinois at Chicago
 - Refrigeration Coil Manufacturer (SIC 3585)
 - Corrugated Cardboard (SIC 2653)
 - Teflon Products (SIC 3479)
 - Gear Manufacturer (SIC 3566)
 - Metal Plating (SIC 3471)
- ★ Need to Establish a Program to Conduct Similar Interface with
 - Other IACs in the Midwest
 - IACs Outside of the Midwest

Visit Our Website

www.CHPCenterMW.org

- ☀ Audience Focused
- ☀ Regional and 8 State Specific Information
- ☀ Integrated with National CHP Site
 - Interactive Database of Site Installations and Contacts
 - Technology Animations
 - Interactive Virtual Tours of Test Site
 - Assessment Tools
 - Emissions Estimator
 - Screening Tools (Under Development)



For Further Information

Midwest CHP Application Center

www.CHPCenterMW.org

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