

Illinois CHP/BCHP Permitting Guidebook

Presentation To:

Joint Task Force Meeting
Midwest CHP Application Center
and
Midwest Cogeneration Association
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Illinois CHP Permitting Guidebook

Sponsored By:

- Illinois Department of Commerce and Community Affairs (DCCA)
- U.S. Department of Energy

Principal Investigators:

- University of Illinois at Chicago, Energy Resources Center

Supporting Organizations:

- Midwest CHP Application Center
- Delta Institute
- Midwest CHP Initiative



Project Objectives

- **Develop a Roadmap for the Permitting Process**
- **Work with Illinois EPA and CHP Developers To:**
 - **Identify Permitting Issues**
 - **Identify Ways to Potentially Streamline the Process**
 - **Encourage Dialogue Between Parties**



Getting Started – Air Permitting

- **Two Types:**
 - Construction Permit
 - Operating Permit
- **Geographic Location:**
 - Attainment Area: Pollutant Level below Clean Air Act Standard
 - Nonattainment Area: Pollutant Level Above Clean Air Act Standard
- **Size of the Project:**
 - Amount of Pollution Emitted
 - Types of Pollutants in Play:
NO_x, VOM, SO_x, PM, CO, HAPs



Getting Started – Air Permitting

- **Site Classification:**
 - Compare Site Emission Levels to Appropriate Thresholds
 - Classifications:
 - Minor Source
 - New Major Source
 - Major Modification to an Existing Major Source
- **Objective – Qualify as Exemption or Minor Source:**
 - Exemption:
 - CHP Facilities < 1 MW as a Rule of Thumb
 - Minor Source:
 - Emissions Below Attainment/Nonattainment Thresholds
 - “Netting” Reduces Emissions Below Thresholds
 - “Operating Limits” Reduces Emissions Below Thresholds
 - Pollution Control Equipment Reduces Emissions Below Thresholds



Air Permitting Flow Chart

CHP Project

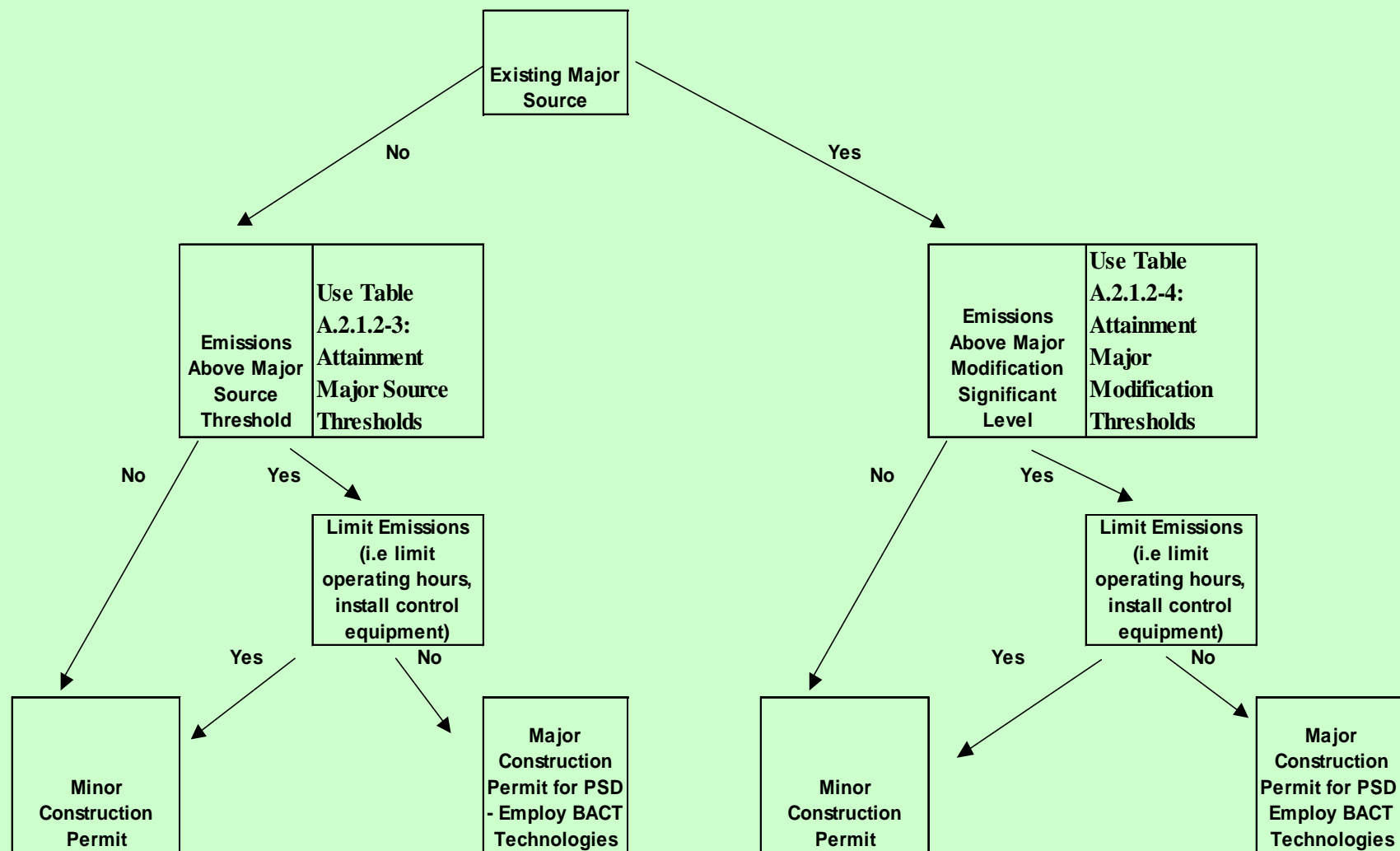
```
graph TD; A[CHP Project] --> B[Located in Attainment Area]; A --> C[Located in Nonattainment Area];
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**Located in Attainment
Area**

**Located in Nonattainment
Area**

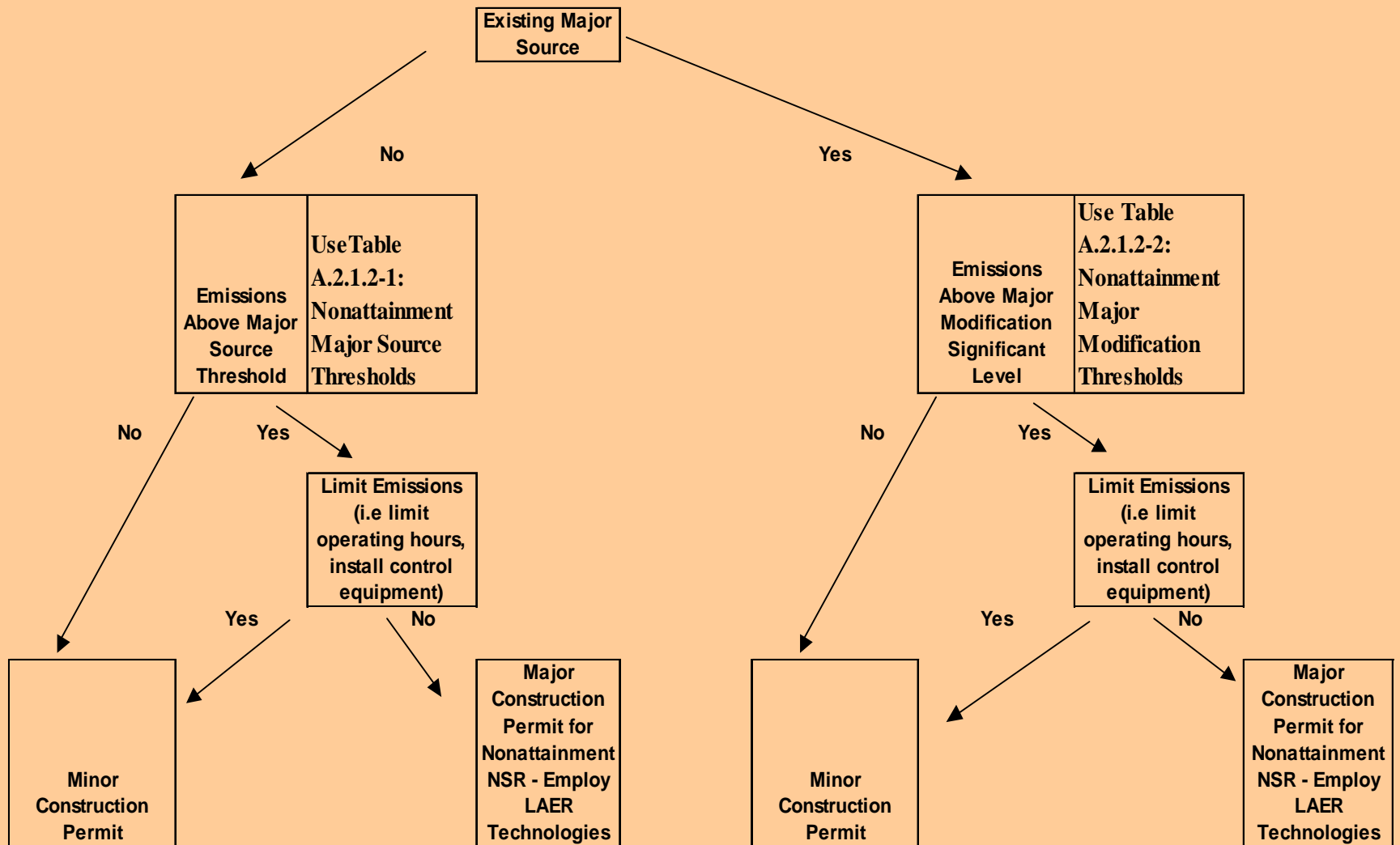
Air Permitting Flow Chart *(continued)*

Attainment Area



Air Permitting Flow Chart *(continued)*

Non-Attainment Area



Obtaining Emissions Data for Permitting Process

- **Manufacturer's Spec Sheet**
- **Engineering/Site Specific Modeling**
- **Emission Measurements of the Actual Equipment**
- **Emission Estimates Based on AP-42 Emission Factors**

MAC Developed "Emission Calculator" (Provides Rough First Cut Estimate) for the Following CHP Technologies:

- **Natural Gas Fired Engines**
- **Natural Gas Fired Turbines**
- **Diesel Engines > 600 hp**
- **Diesel Engines < 600 hp**
- **Gasoline Engines < 250 hp**



Emissions Calculator

Natural Gas Fired Turbine											
CHP Operation Per Year (hr):		6,000									
Fuel Input (MMBtu/hr):		90.00									
Attainment						Non-Attainment					
Pollutant	Emissions Factor* (lbs/MMBtu Fuel Input)	Emissions (tpy)	PSD Major Modification Significant Level (tpy)	PSD Major Source Thresholds (tpy)		Pollutant	Emissions Factor* (lbs/MMBtu Fuel Input)	Emissions (tpy)	Non-Attainment NSR Major Modification Significant Level (tpy)	Nonattainment NSR Major Source Thresholds (tpy)	
Uncontrolled Emissions:						Uncontrolled Emissions:					
PM	0.006600	1.78	15	250**		PM - McCook, Lake Calumet, Granite City	0.006600	1.78	25	100	
SOx	0.003400	0.92	40	250**		VOM - Metro East	0.002100	0.57	40	100	
NOx	0.320000	86.40	40	250**		NOx - Metro East	0.320000	86.40	40	100	
VOM	0.002100	0.57	40	250**		VOM - Chicago	0.002100	0.57	25	25	
CO	0.082000	22.14	100	250**							
Formaldehyde	0.000710	0.19	10	10							
With Water-Steam Injection:						With Water-Steam Injection:					
NOx	0.130000	35.10	40	250**		NOx - Metro East	0.130000	35.10	40	100	
CO	0.030000	8.10	100	250**							
With Lean-Premix:						With Lean-Premix:					
NOx	0.099000	26.73	40	250**		NOx - Metro East	0.099000	26.73	40	100	
CO	0.015000	4.05	100	250**							

** Emissions Factors exclude 28 Categories of Source

*Emissions Factors for Stationary Gas Turbines - Uncontrolled Emissions

*Emissions Factors for Stationary Gas Turbines - Uncontrolled Emissions



Air Permitting Process

- **Application Forms**
 - Emission Estimates
 - Site Plot
 - Flow Diagram
- **Average Processing Times**
 - Clearly a Minor Source: *Approximately 3 Months*
 - Clearly Major or Major Modification: *Approx. 6 Months*
 - Borderline and Requires Public Hearing: *6 Months Plus*
- **New Major or Major Modification Often Requires Outside Professional Assistance to Complete Permitting Process**



Other Potential Permitting Requirements

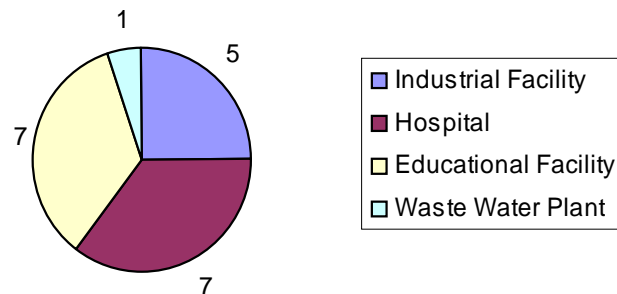
- **Water Permitting**
 - Discharge Water to the Surface of the Earth: *NPDES Permit*
 - Discharge to Sanitary Sewer System: *Illinois State Permit*
 - New Construction Disturbing > 5 Acres: *Stormwater Permit*
- **Local Codes/Zoning**
- **OSHA Requirements**
- **Endangered Species, Wetlands, and Historic Preservation**
- **Illinois Dept. of Public Health Licensing (Hospitals)**



Survey of the Permitting Process in Illinois

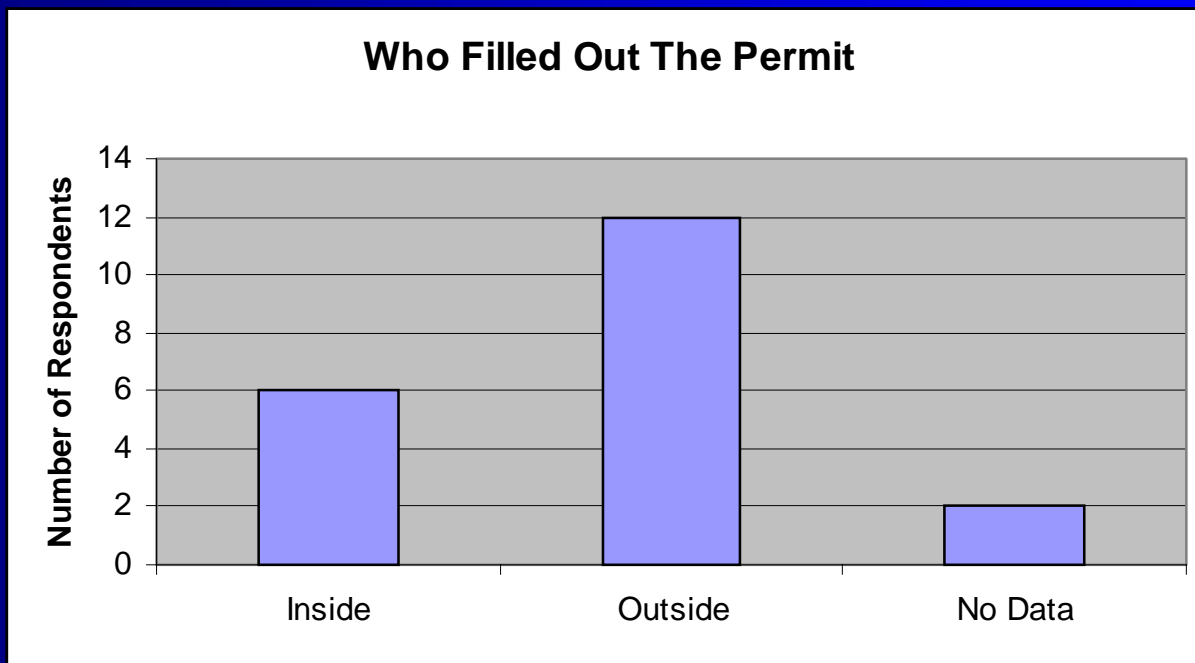
- 20 CHP facilities Responded to Survey
- Facilities Ranged in Capacity from 70 kW to 36,000 kW
- All Facilities Used Natural Gas or Natural Gas/Fuel Oil

Survey Response by Business Sector



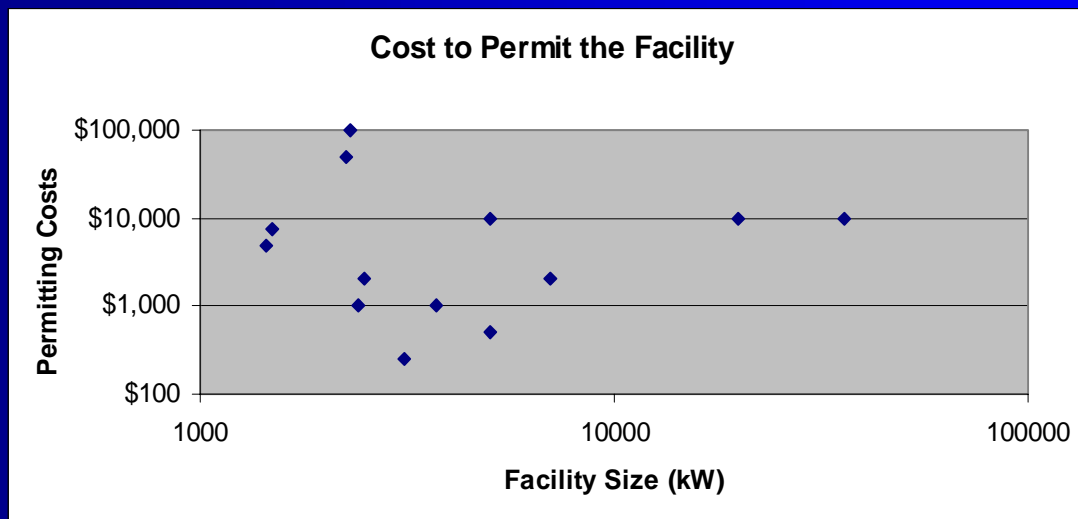
Survey Results

- **Out of 20 Facilities 9 Facilities Stated that they Obtained a “Major Source” Air Permit or a FESOP (Federally Enforceable State Operating Permit).**
- **Majority of the Facilities Used Outside Help to Apply for Permits.**



Survey Results *(continued)*

- **On Average it Took 5.5 Months to Permit a CHP Facility with Times Ranging from 2 Months to 24 Months**
- **On Average it Cost \$14,300 (including time and labor) to Permit a CHP Facility with Costs Ranging from \$1,500 to \$100,000**
- **The Estimated Permitting Costs Do Not Seem to be Related to Facility Capacity Size as Several Smaller Facilities Reported Relatively High Permitting Costs**



Survey Results *(continued)*

- **Respondents Rated the Ease or Complexity of the 4 Main Regulatory Approval Processes: Environmental Permitting, Rezoning, Electrical Interconnection, and Fire and Local Code Approval**
 - **Rating Scale: 1 (Not Complicated) to 10 (Very Complicated)**
- **Results Indicate Electric Interconnection process as “Most Complicated”**
 - **Closely Followed by Environmental Permitting.**
 - **Rezoning and Local Codes were Viewed Less Complicated**

Rating	Environmental Permitting	Rezoning	Electric Interconnection	Local and Fire Codes
Mean	4.9	2.1	5.4	2.8
Std. Dev.	3.9	4.0	3.9	3.0

Topics For Discussion

- **Is Air Permitting the Major Issue In CHP Projects ?**
- **Is the Air Permitting Process Well Understood ?**
- **What are the Key Issues (If Any) ?**
 - **Application Process (Forms) ?**
 - **Time Required for Permit Evaluation ?**
 - **Cost ?**
 - **Estimating Emission Levels ?**
- **Suggestions for Streamlining ?**