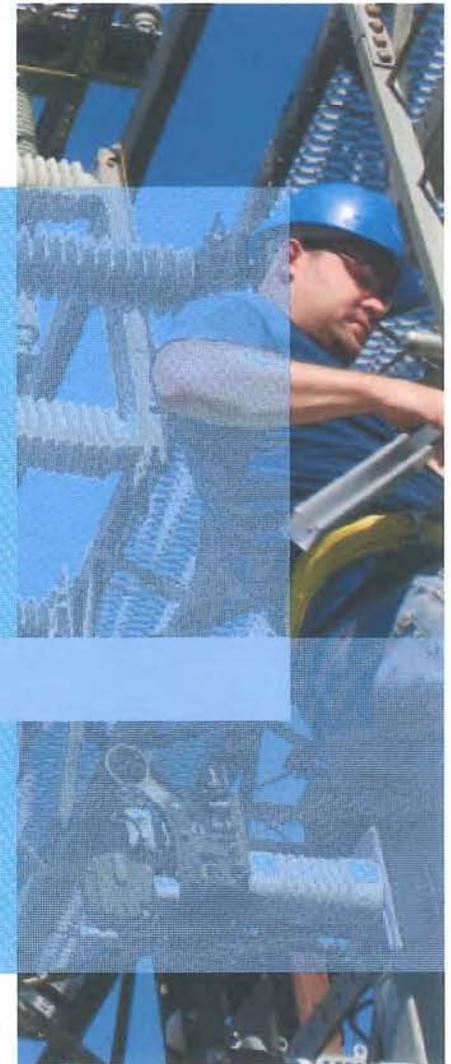


# Wolverine Power Cooperative Presentation to the OMB on GHG NSPS Standards for Utilities

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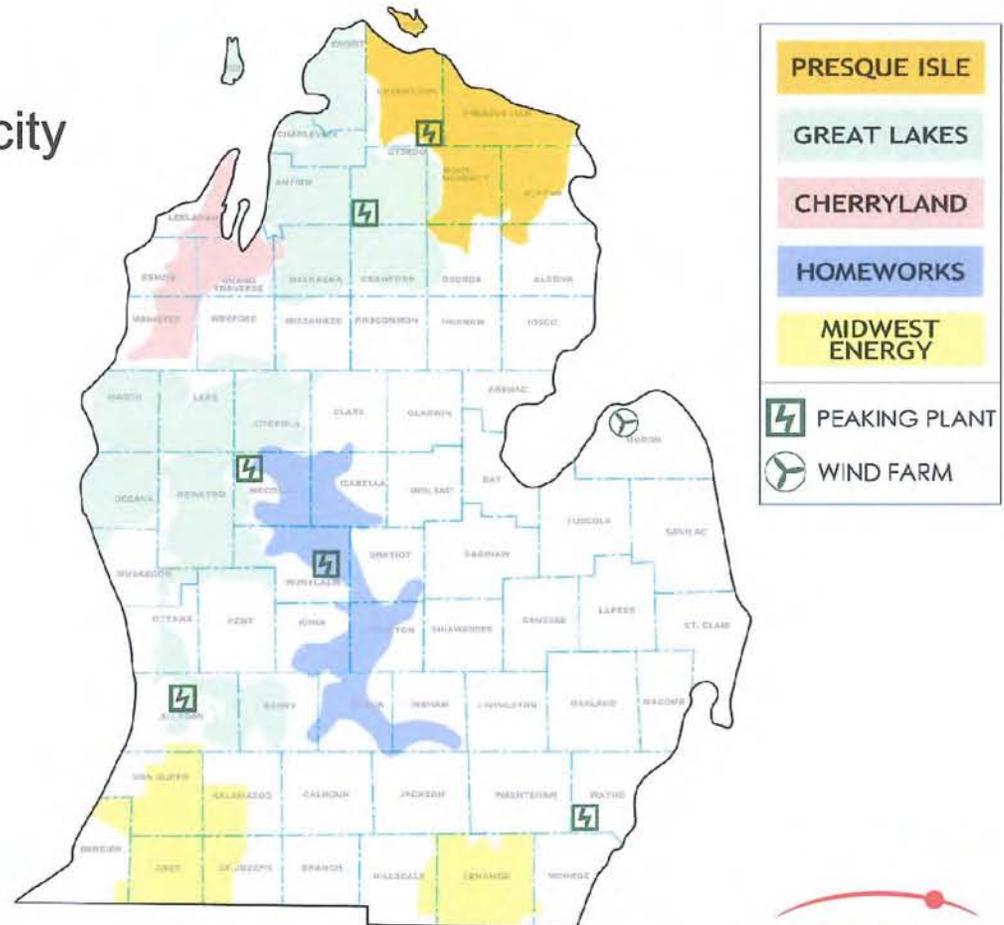


# Presentation Overview

- Wolverine overview
- Wolverine Clean Energy Venture (WCEV)
- WCEV GHG BACT
- GHG NSPS recommendations

# Wolverine Overview

- **Generation:**
  - 730 MW nameplate capacity
- **Transmission:**
  - 1,600 miles
  - 36 stations
- **Distribution:**
  - 130 stations
- **Additional stats:**
  - 265,000 members
  - Peak load of 650 MW
  - Energy: 3.1 million MWh
  - Growing energy demand



# WCEV Overview

- World-class site:
  - Rogers City, Michigan
  - Limestone quarry
- Two 300-MW circulating fluidized bed units:
  - Flexible fuel mix
  - Received air quality permit including GHG BACT in June 2011



# WCEV GHG BACT Contents

- Rejection of supercritical CFB and IGCC technology
- Rejection of CCS technology based on technical feasibility and cost (\$126/ton of CO<sub>2</sub>e)
- Cost estimate based on a DOE funded engineering study to capture CO<sub>2</sub> from 10% slip stream from one unit
- Hitachi, Dow Chemical, CORE Energy and Western Michigan University were CO<sub>2</sub> capture study partners
- Rejection of combined cycle as an option (gas transmission supply not available)

# WCEV GHG BACT Highlights

- First, and to date only, solid fuel steam electric plant to undergo GHG BACT determination
- EPA R5 May 19, 2011 comment letter raised no objection to the following CO<sub>2</sub>e BACT conditions:
  - 2.1 lbs/KWh (12 month rolling average)
  - 6,024,107 tons per year (12 month rolling average)
  - 5% biomass on heat input basis
- EPA permit comments limited to:
  - Clarifying emission factors for non-CO<sub>2</sub> GHGs
  - Clarifying recordkeeping for biomass firing

# GHG NSPS Recommendations

- No NSPS proposal should be made until EPA:
  - Assesses 2010 GHG reporting data
  - Finalizes regulatory treatment of GHG emissions from biogenic fuels
- NSPS must subcategorize for different combustion technologies and fuels
- Inadequate data/experience to set CFB standard based on supercritical technology
- CFB GHG NSPS standard should be 2.1lbs/gross KWh (12 month rolling average)

Thank You