



Permit To Install Application for a 600 Megawatt (Net) Solid Fuel Steam Electric Power Plant



Wolverine Clean Energy Venture Rogers City, Michigan

Prepared for:
Wolverine Power Supply Cooperative, Inc.



September 26, 2007
Revised January 10, 2008
Project No. G06783B

Permit to Install Application No. 317-07

ftc&h
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scientists
architects
constructors

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Volume 1 of 2

**PERMIT TO INSTALL APPLICATION
600 MEGAWATT (NET) SOLID FUEL
STEAM ELECTRIC POWER PLANT**

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LIST OF ABBREVIATIONS/ACRONYMS

ACI	activated carbon injection
ADM	Archer Daniels Midland
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AQD	Air Quality Division
AQRV	air quality related values
BACI	bromated ACI
BACT	best available control technology
BCA	boiler chemical additives
BDT	best demonstrated technology
BPIP-Prime	Building Profile Input Program-Prime
Btu	British thermal units
CAA	Clean Air Act
CAM	compliance assurance monitoring
CAIR	Clean Air Interstate Rules
CaO	calcium oxide
CaSO ₄	calcium sulfate
CEM	Continuous Emissions Monitoring
CFB	circulating fluidized bed
CFR	Code of Federal Regulations
CI	compression ignition
Cl	atomic chlorine
CNF	Capacity Needs Forum
CO	carbon monoxide
CT	combustion turbine
CYL	cylinder
ECO™	Electro-Catalytic Oxidation
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
ESP	electrostatic precipitator
DAT	deposition analysis threshold
DOE	U.S. Department of Energy
F	fluoride
FDCP	Fugitive Dust Control Plan
FGD	flue gas desulfurization
FGR	flue gas recirculation
FIP	Federal Implementation Plan
FLAG	FLM's Air Quality Related Values Workgroup
FLM	Federal Land Manager
FTC&H	Fishbeck, Thompson, Carr & Huber, Inc.
ft/second	foot per second
g	gram
g/m ²	grams per square meter
GEP	Good Engineering Practice
gr/dscf	grains per dry square cubic foot
GWh	gigawatt-hour
HAP	hazardous air pollutant
HCl	hydrogen chloride
H ₂ S	hydrogen sulfide
H ₂ SO ₄	sulfuric acid
HgSO ₄	mercury sulfate
Hg ⁰	elemental mercury
Hg ²⁺	oxidized mercury compounds
Hg _{PB}	particle-bound mercury

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HF	hydrogen fluoride
Hg	mercury
HgCl ₂	mercuric chloride
HgO	mercury oxide
HHV	higher heating value
HP	horsepower
ICE	internal combustion engine
IGCC	integrated gasification combined cycle
ICR	Information Collection Request
IEUBK	Integrated Exposure Uptake Biokinetic Model
ILB coal	Illinois Basin coal
ISC3	Industrial Source Complex
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
IWAQM	Interagency Workgroup on Air Quality Modeling
kg/ha/yr	kilogram per hectare per year
km	kilometers
KWh	kilowatt hour
LAER	Lowest Achievable Emission Rate
L/cyl	liters per cylinders
lb/hr	pound per hour
lb/MWh	pound per megawatt-hour
lb/MMBtu	pound per million British thermal units
LOI	loss on ignition
MAERS	Michigan Air Emissions Reporting System
MACT	Maximum Achievable Control Technology
MAP	Malfunction Abatement Plan
MDEQ	Michigan Department of Environmental Quality
MET	meteorological monitoring
MIRIS	Michigan Resource Information System
mg/L	milligrams per liter
MMBtu	Million British thermal units
MMBtu/hr	Million British thermal units per hour
MMREM	Minnesota Mercury Risk Estimation Method
MPSC	Michigan Public Service Commission
MW	megawatt
MWh	megawatt per hour
N ₂	nitrogen
NAAQS	National Ambient Air Quality Standards
NESHAPs	National Emissions Standard for Hazardous Air Pollutants
NFPA	National Fire Protection Association
ng/J	nanogram per Joule
NH ₃	ammonia
NMHC	Non-methane Hydrocarbon
NPDES	National Pollutant Discharge Elimination System
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
NSR	New Source Review
OH	hydroxyl
O-N	Oglebay Norton
OAQPS	Office of Air Quality Planning and Standards
O&M	operation and maintenance
PAC	powdered activated carbon
PAH	polycyclic aromatic hydrocarbons
PAI	Predicted Ambient Impacts

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Pb	lead
PC	pulverized coal
PCDD	polychlorinated dibenzo(p)dioxin
PCDF	polychlorinated dibenzofuran
PEC	purchased equipment cost
pet coke	petroleum coke
Plan	Michigan's 21 st Century Electric Energy Plan
PM _{2.5}	Fine Particulate Matter less than 2.5 microns
PM ₁₀	Fine Particulate Matter less than 10 microns
PMP	Preventive Maintenance Plan
ppm	parts per million
PRB	Powder River Basin
PSD	Prevention of Significant Deterioration
PTE	potential to emit
RACT	Reasonably Available Control Technology
RBLC	RACT/BACT/LAER Clearinghouse
RICE	reciprocating internal combustion engine
RMP	Risk Management Plan
RP	relative potency
SCCFB	supercritical circulating fluidized bed
SCPC	supercritical pulverized coal
SCR	selective catalyst reduction
SCONO _x TM	SCONO _x TM Catalytic Absorption System
SDA	sprayer dryer absorber
Seney	Seney National Wildlife Refuge
SIL	Significant Impact Level
SO ₂	sulfur dioxide
SO ₃	sulfur trioxide
SNCR	Selective Non-Catalytic Reduction
SNG	synthetic natural gas
SRSL	Secondary Risk Screening Level
SRU	sulfur recovery unit
SSM	startup, shutdown, and malfunction
TAC	toxic air contaminant
TEC	Taylorville Energy Center
TEF	toxic equivalency factor
TDC	total direct cost
THC	total hydrocarbon
T-BACT	Toxic-Best Available Control Technology
tpd	tons per day
tph	tons per hour
tpy	tons per year
USCPC	ultra supercritical pulverized coal
µg/m ³	micrograms per cubic meter
µm	micrometer
VE	visible emissions
VOC	volatile organic compound
WESP	wet electrostatic precipitator
ZLD	zero liquid discharge