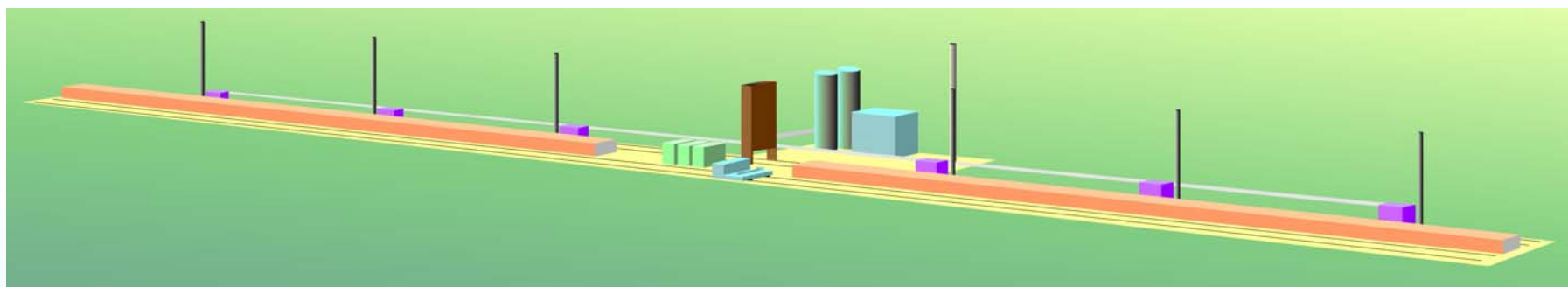


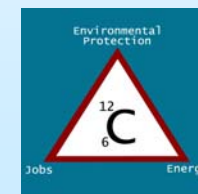


FDS Project – Toledo, Ohio

Jobs, Energy & Environmental Protection



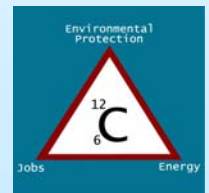
Presentation to Village of Harbor View Residents
January 2009





Topics of Discussion

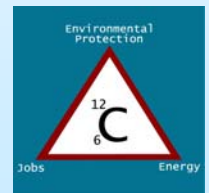
- ◆ Project Overview
 - ◆ Technology & Site Location
 - ◆ Environmental Performance
- ◆ Village of Harbor View Air Quality Analysis
 - ◆ Methodology
 - ◆ Specific Particulate and SO₂ Emission Impacts
- ◆ Proposed Community Improvement Program





Project Description

- ◆ **Non-Recovery Coke Plant**
 - ◆ Manufactures Industrial Coke from Coal
 - ◆ Uses Established Technology with Innovative Equipment Design
- ◆ **135 MW Power Plant**
 - ◆ Uses Steam From Coke Plant Excess Hot Waste Gas to Produce Electricity with STG
 - ◆ Advanced Energy Application
 - ◆ Zero Added Air Pollutant Emissions

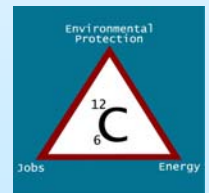




Project Site – Toledo, Lucas County

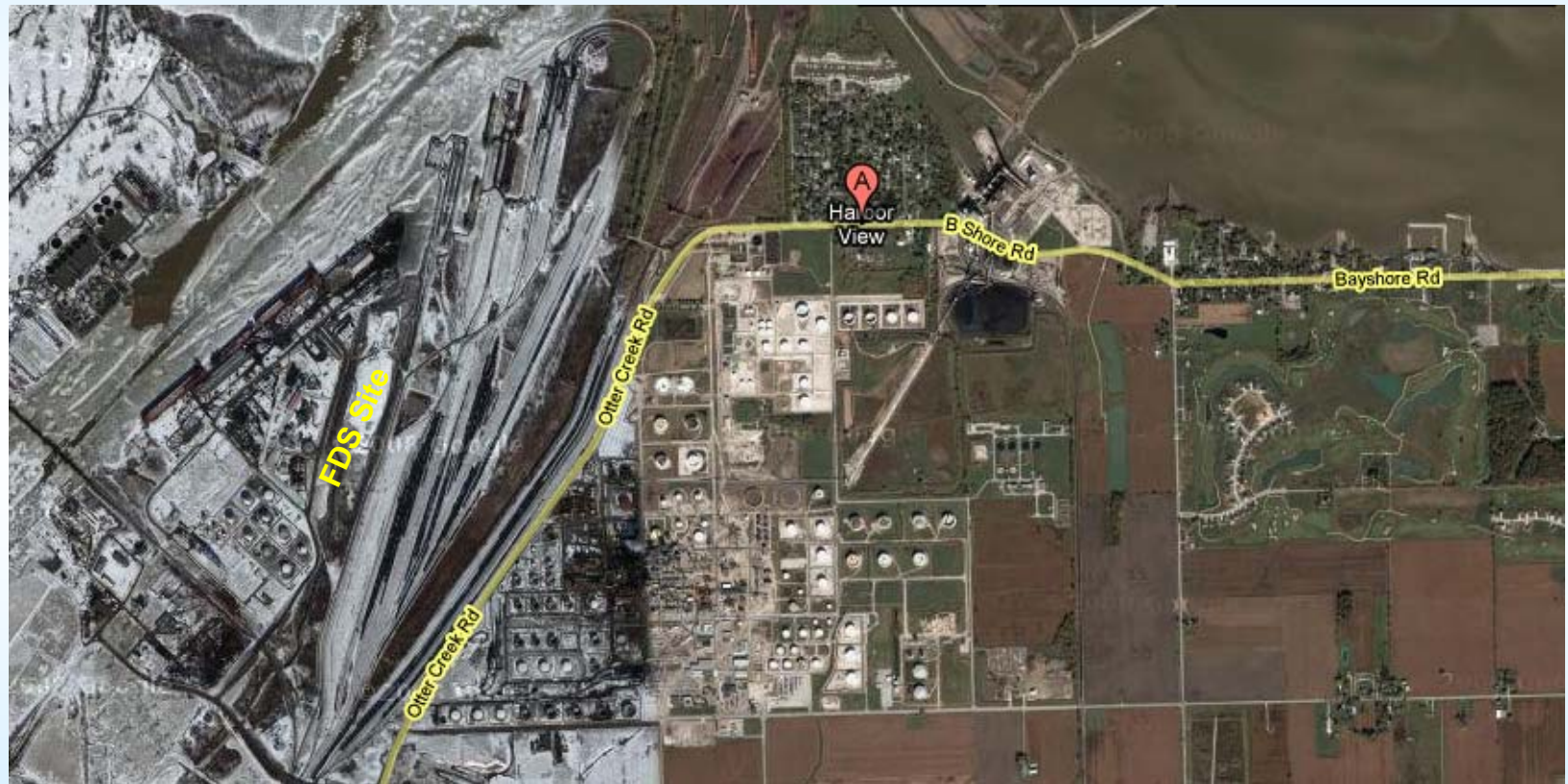


- ◆ Existing Undeveloped Industrial Property
- ◆ Located in NAAQS Attainment Areas:
 - ◆ SO₂
 - ◆ 8-hr Ozone
 - ◆ PM 10
 - ◆ PM 2.5
- ◆ Village of Harbor View > 1/2 to 3/4 Mile Away

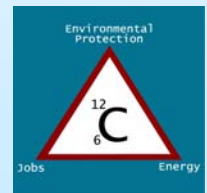


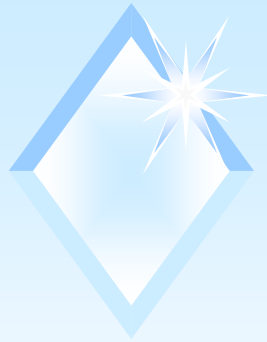


Project Site – Toledo, Lucas County



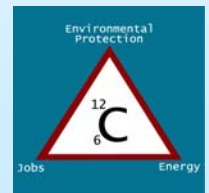
◆ Village of Harbor View > 1/2 to 3/4 Mile Away





Air Permit Contains The Most Stringent Requirements in US

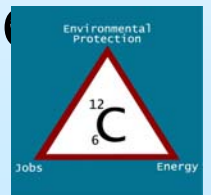
- ◆ Lowest Rate of Air Pollutant Emissions Per Ton of Coal Charged or Coke Produced in U.S.
- ◆ Requires State of the Art Controls for Air Pollutant Emissions Including Mercury
- ◆ Design Incorporates New Innovative Technologies
- ◆ Most Stringent Particulate Visible Emission (VE) Limits in Ohio





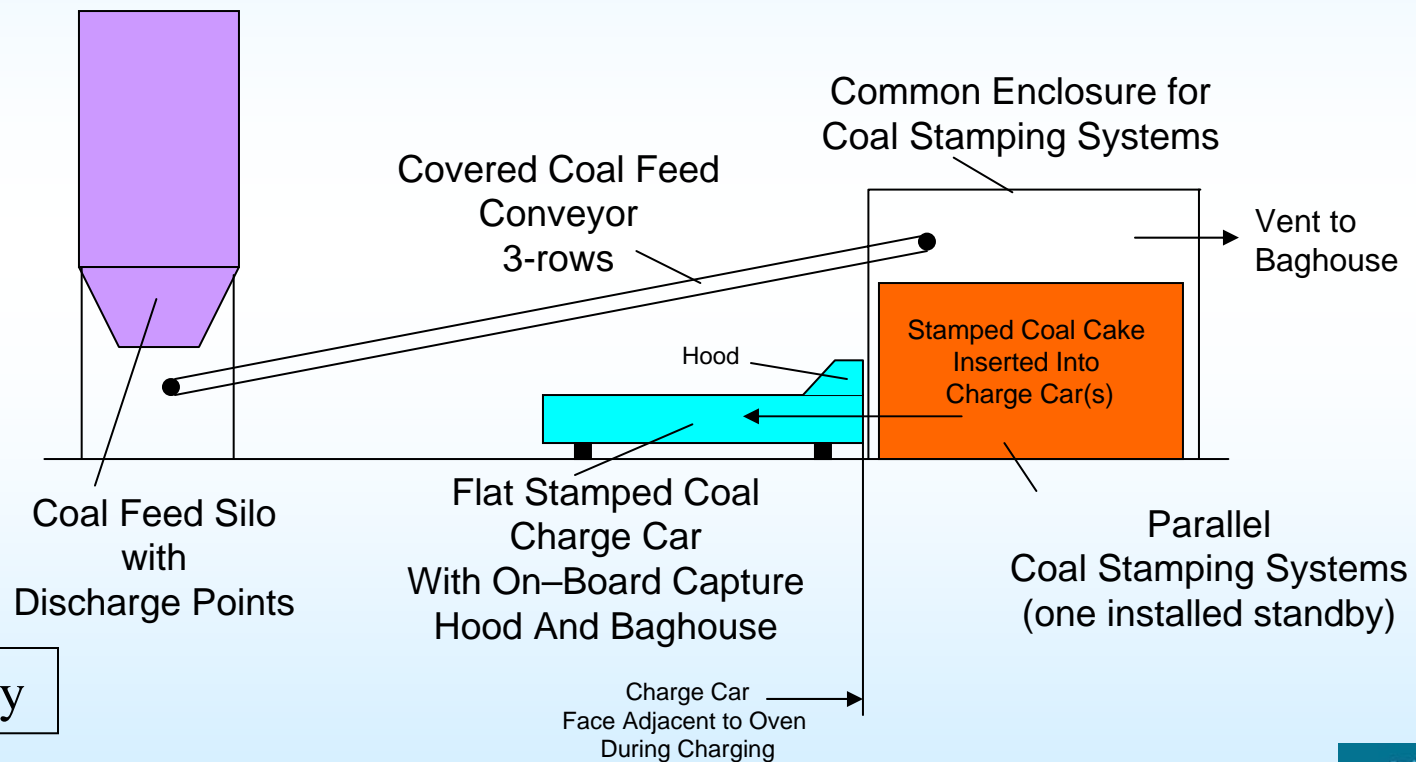
State of the Art Environmental Controls

- ◆ 90% or Greater Reduction in All Pollutants
- ◆ 100% Uptime for All Emission Controls
- ◆ Fully Enclosed Conveyors
- ◆ Point-of-Generation Dust Collection on Coal & Coke Processing Operations
- ◆ State of the Art Quenching Tower
- ◆ Water Sprays, Wetting Agents, Drop Tube



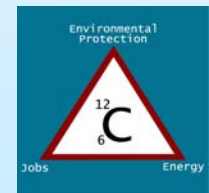


Innovative Particulate Emission Control: Flat Coal Cake Charging



Preliminary

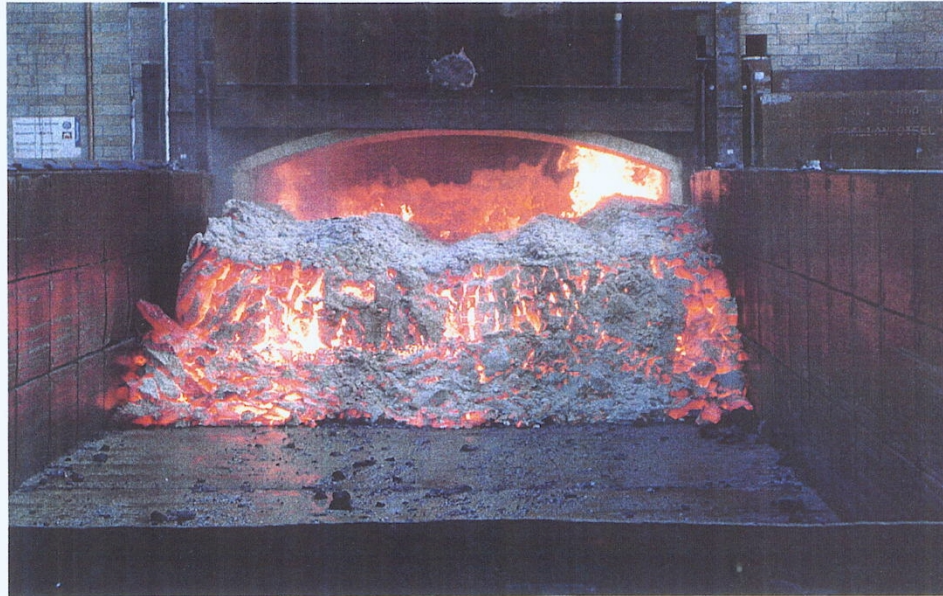
Less than 25% of the particulate air pollutant emissions of current loose coal charging





Innovative Particulate Emission Control: Stamped Coke Cake Push

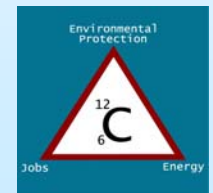
Heat / Non-Recovery Type Coke Ovens



Flat-Bed Pushing – Coke Side

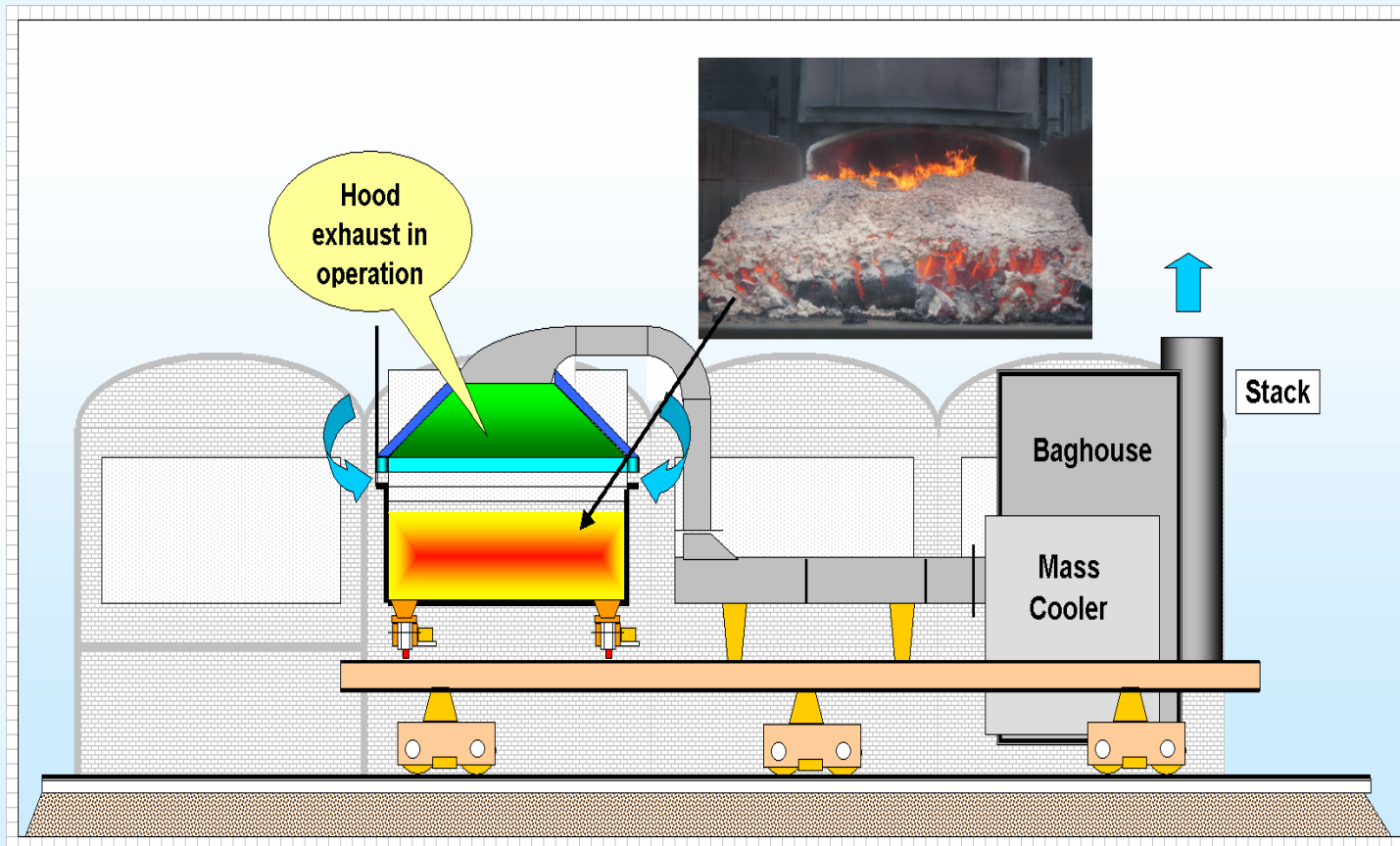
Note: No Hood or Other Coke Pushing Emission Control Device

Illawarra Coke Plant - Australia





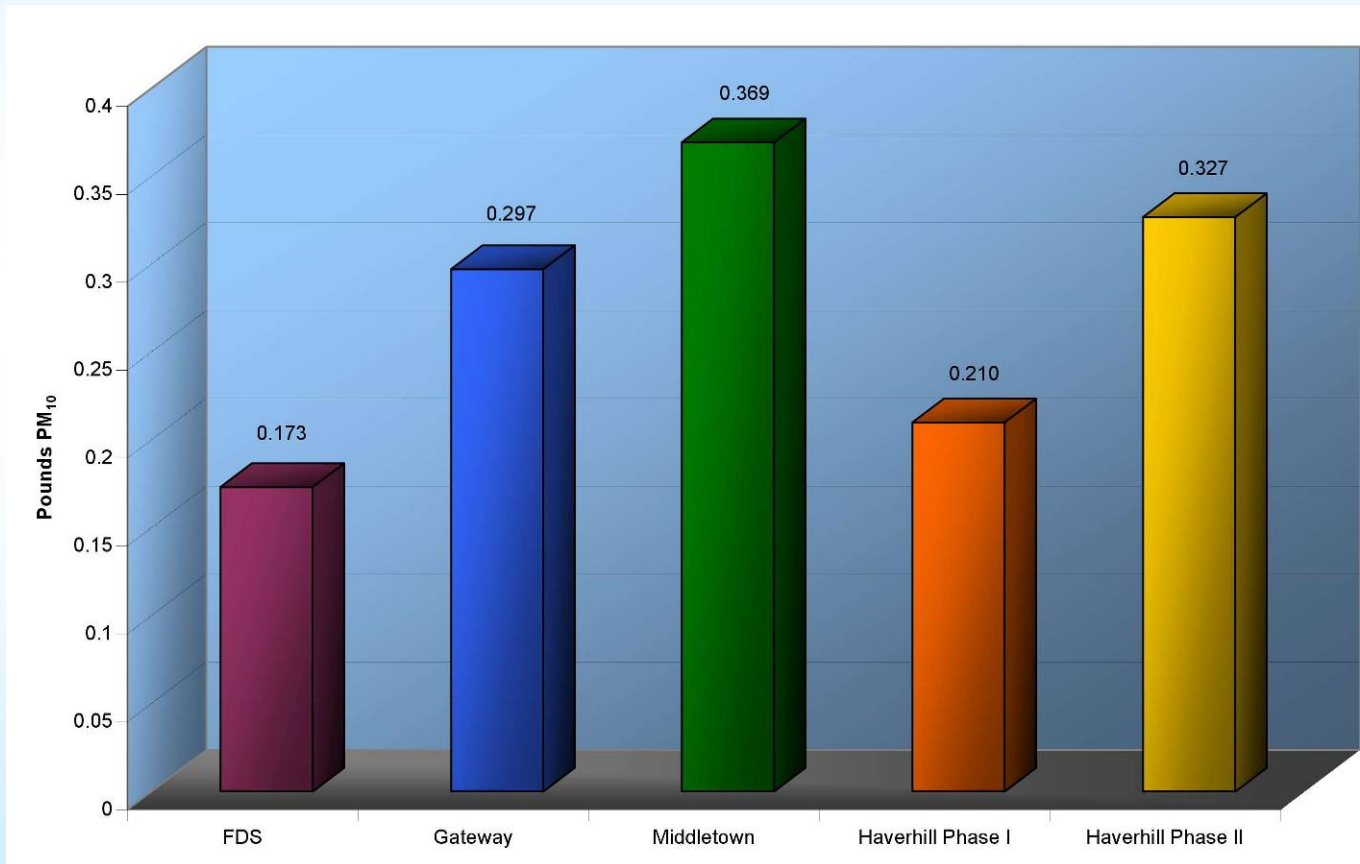
Innovative Particulate Emission Control: Flat Push Hot Car Baghouse



Less than 50% of the PM10 and estimated 90% less PM2.5 air pollutant emissions of current loose coke push operations



Non-Recovery Coke Plants: Comparison of Total PM₁₀ Emissions

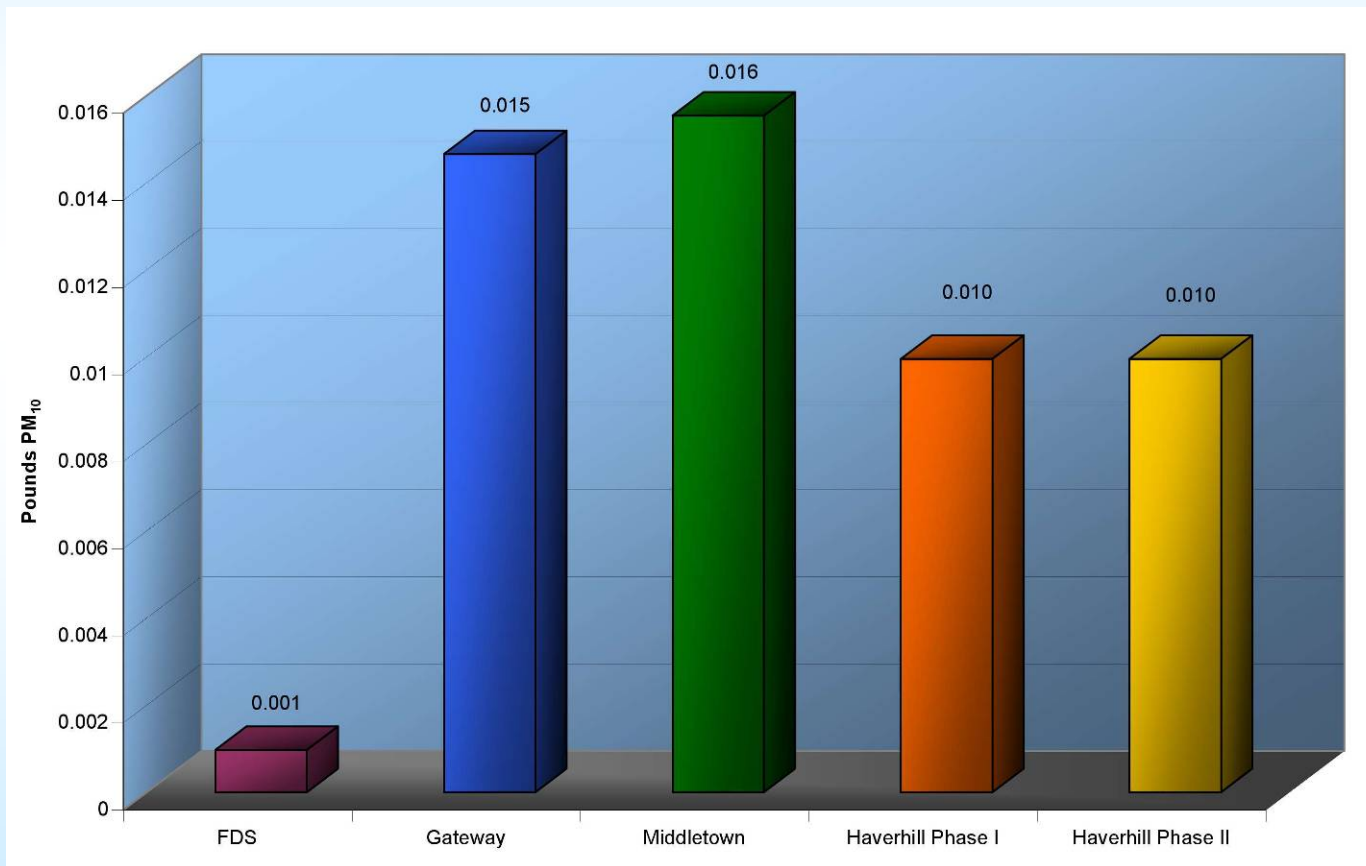


Sources: Middletown Coke Company PTI No. 14-06023, Gateway Energy Construction Permit No. 119040ATN,

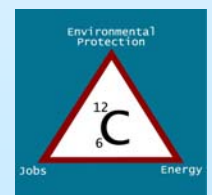




Non-Recovery Coke Plants: Comparison of PM₁₀ Charging Emissions

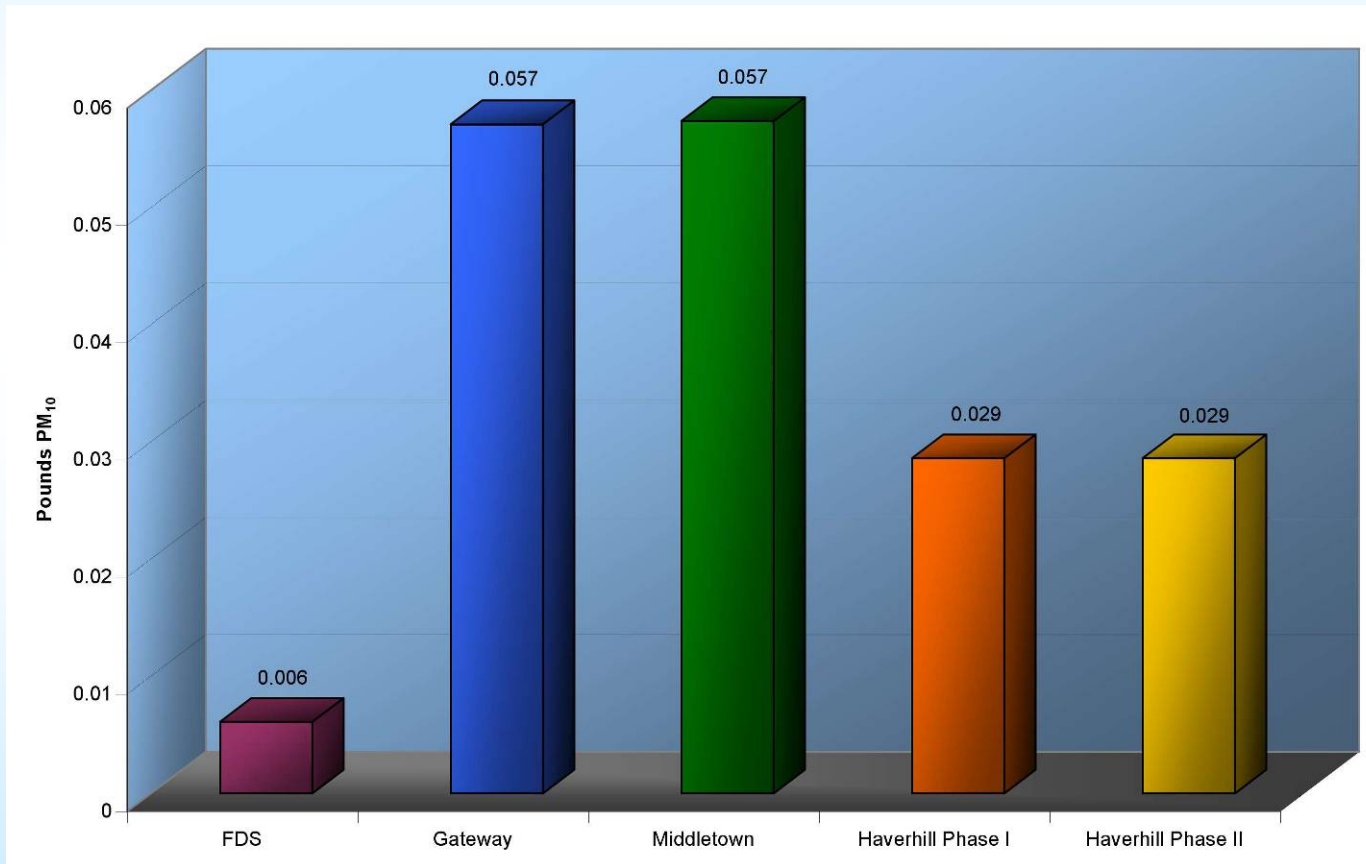


Sources: Middletown Coke Company PTI No. 14-06023, Gateway Energy Construction Permit No. 119040ATN,

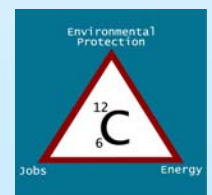




Non-Recovery Coke Plants: Comparison of PM10 Pushing Emissions

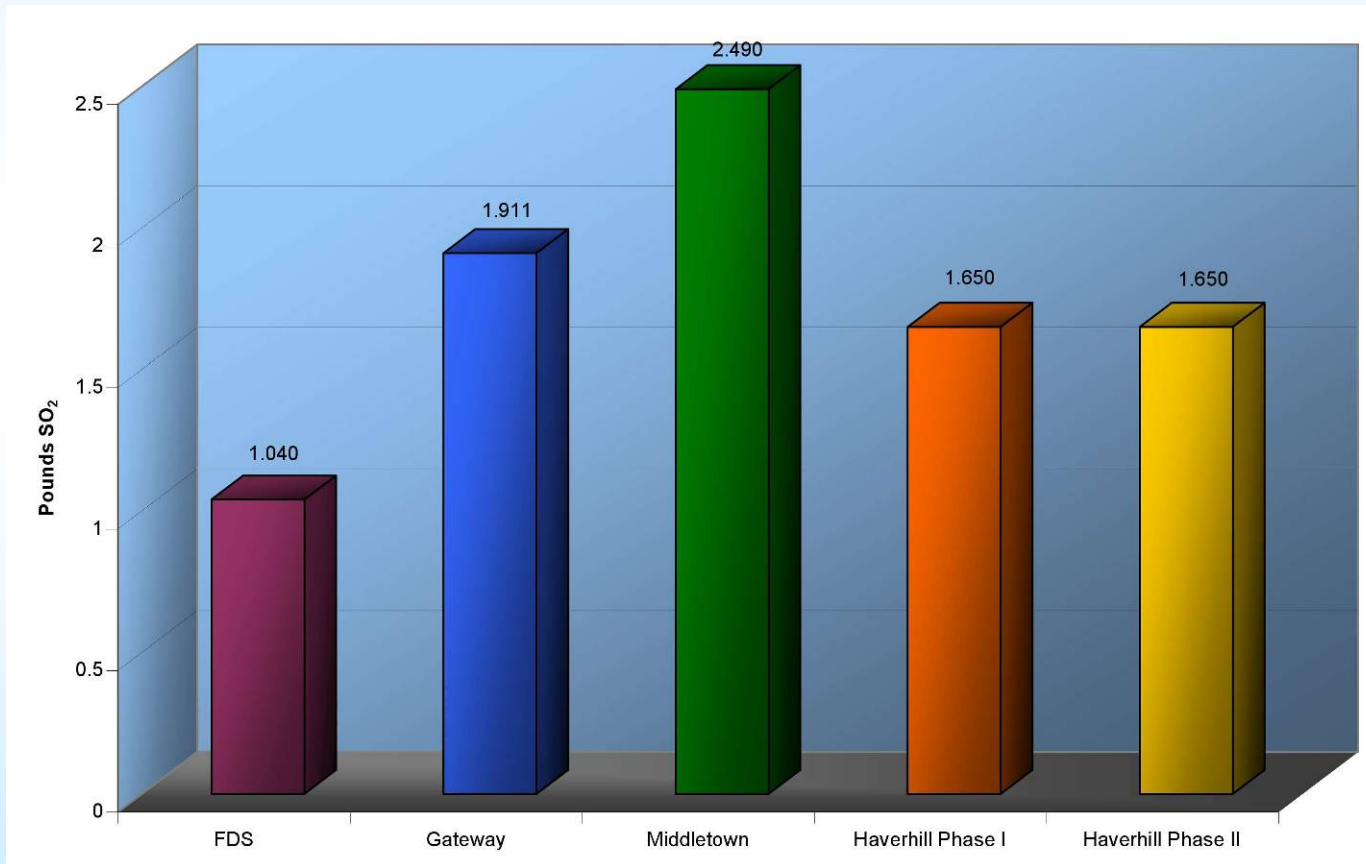


Sources: Middletown Coke Company PTI No. 14-06023, Gateway Energy Construction Permit No. 119040ATN,

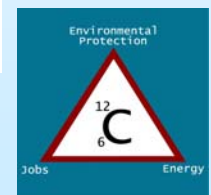


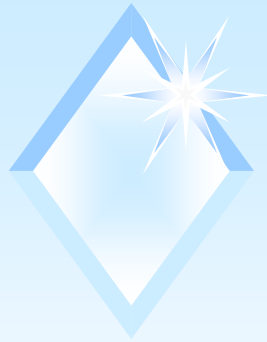


Non-Recovery Coke Plants: Comparison of Total SO₂ Emissions

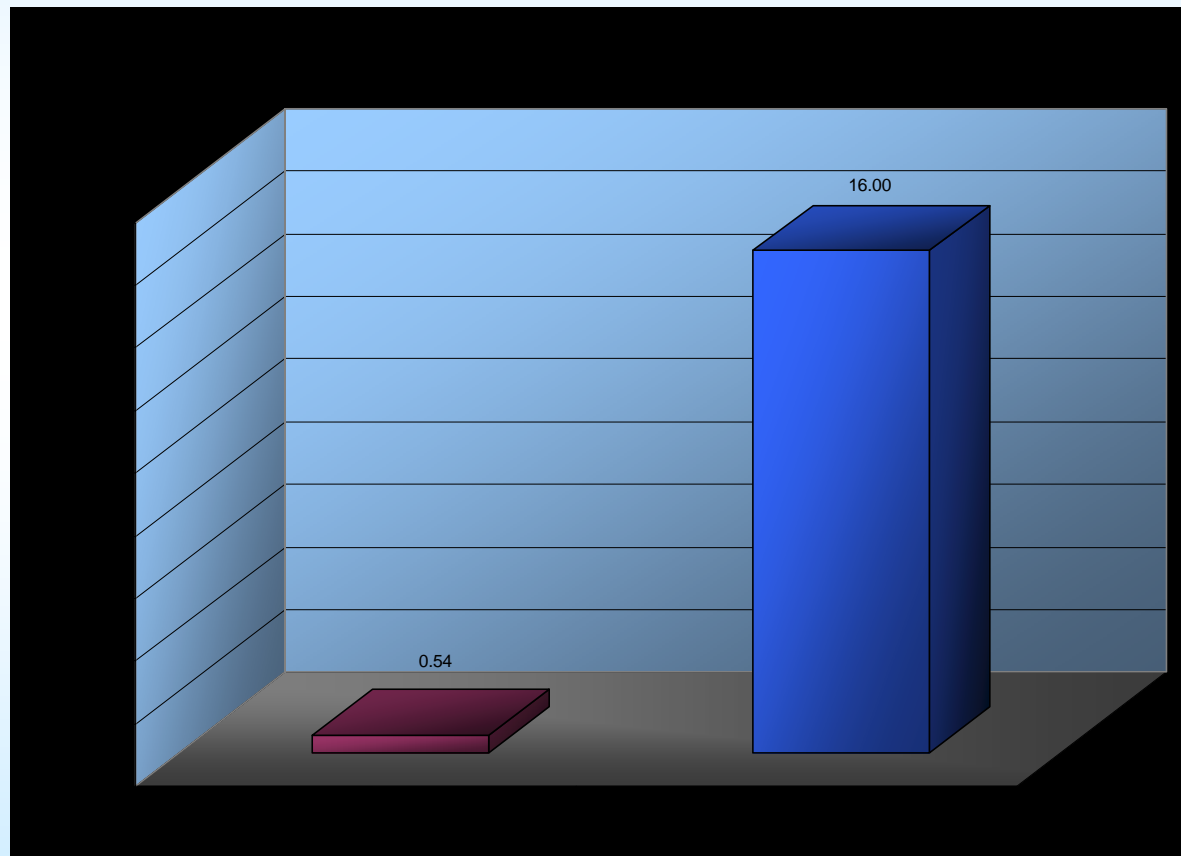


Sources: Middletown Coke Company PTI No. 14-06023, Gateway Energy Construction Permit No. 119040ATN,

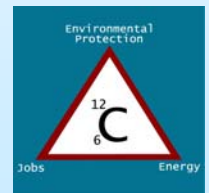




FDS vs. Byproduct Coke Plants: Comparison of CO₂ Emissions

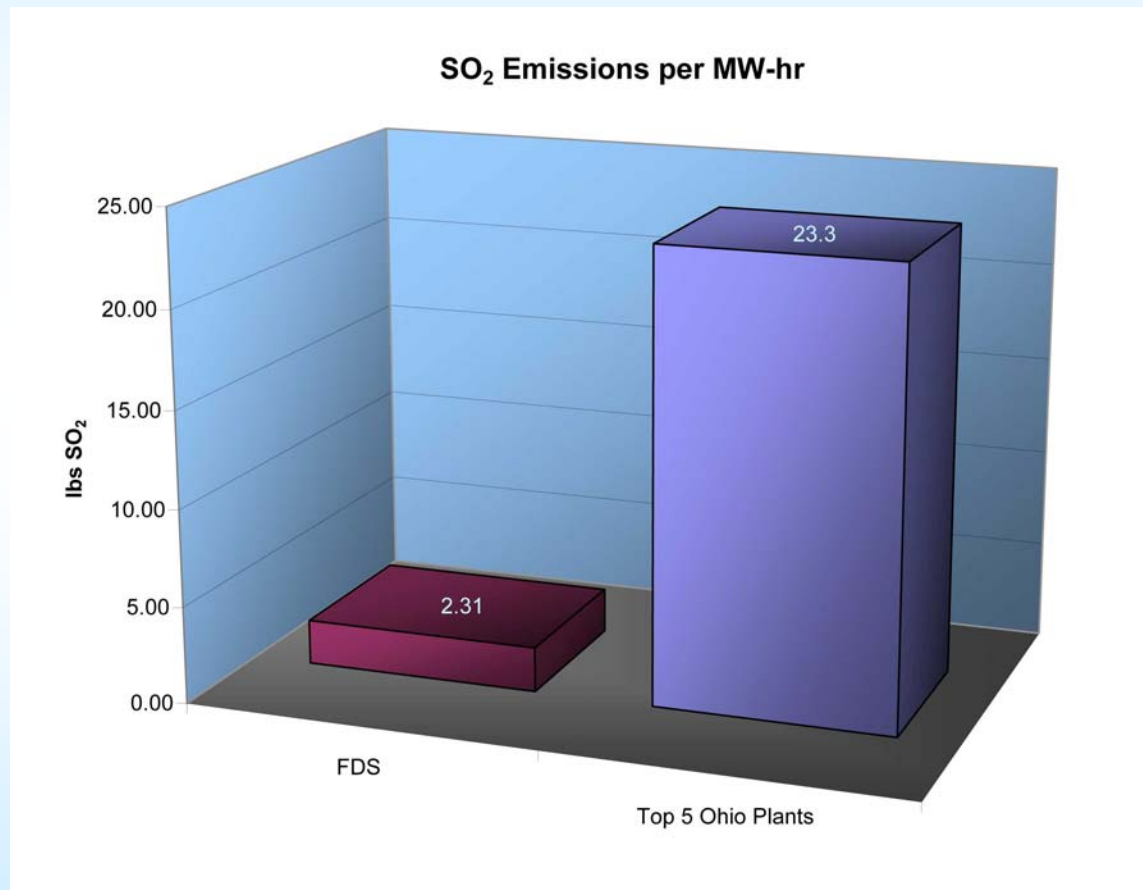


Sources: USEPA Inventory of U.S Greenhouse Gas Emissions & Sinks pg 4-6, DOE EIA, FDS internal estimates

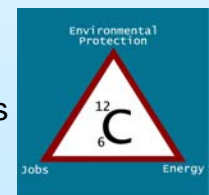




FDS Project vs. Ohio Coal-Fired Power Plants – SO₂ Emissions

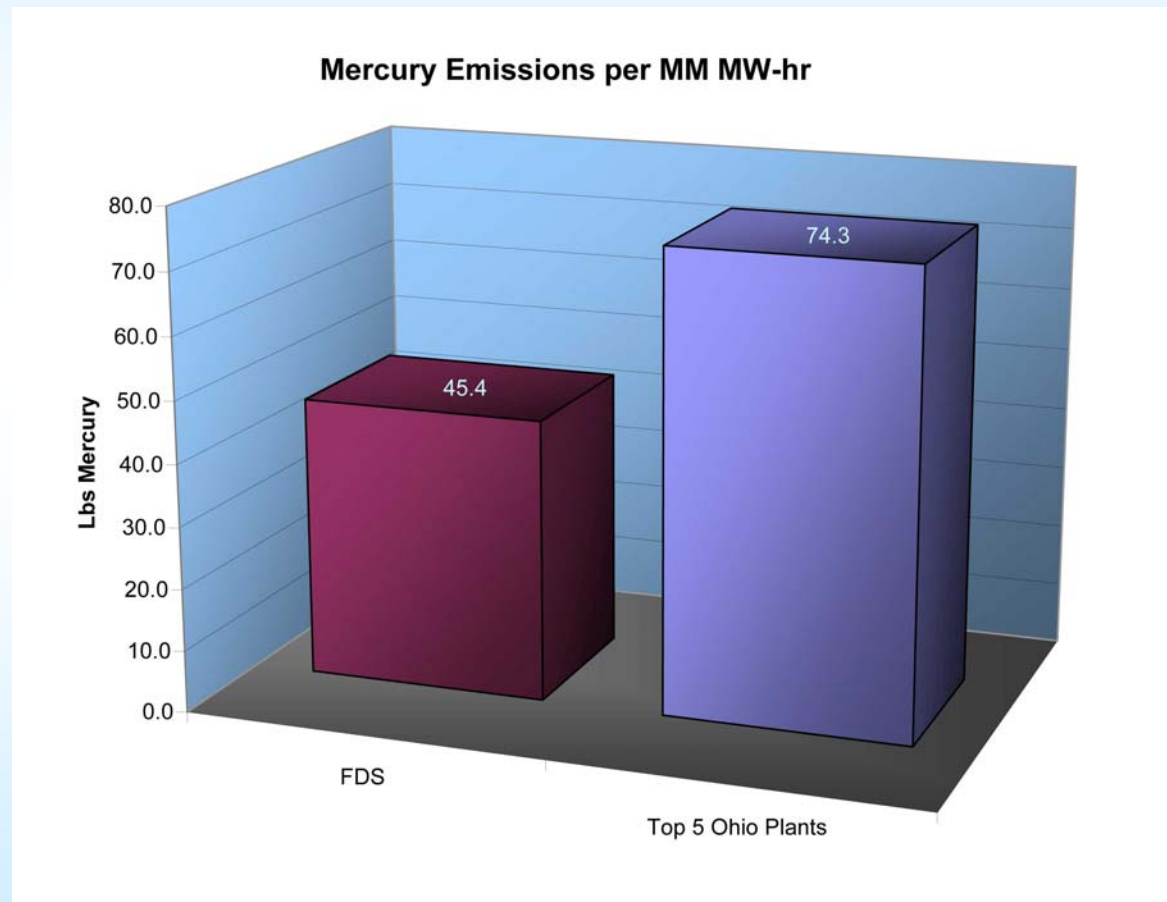


Sources: FDS Modified PTI/Co-Gen Electrical Generation Estimates & Dirty Kilowatts – America's Most Polluting Power Plants, Environmental Integrity Project, July 2007

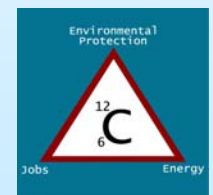




FDS Project vs. Ohio Coal-Fired Power Plants – Mercury Emissions

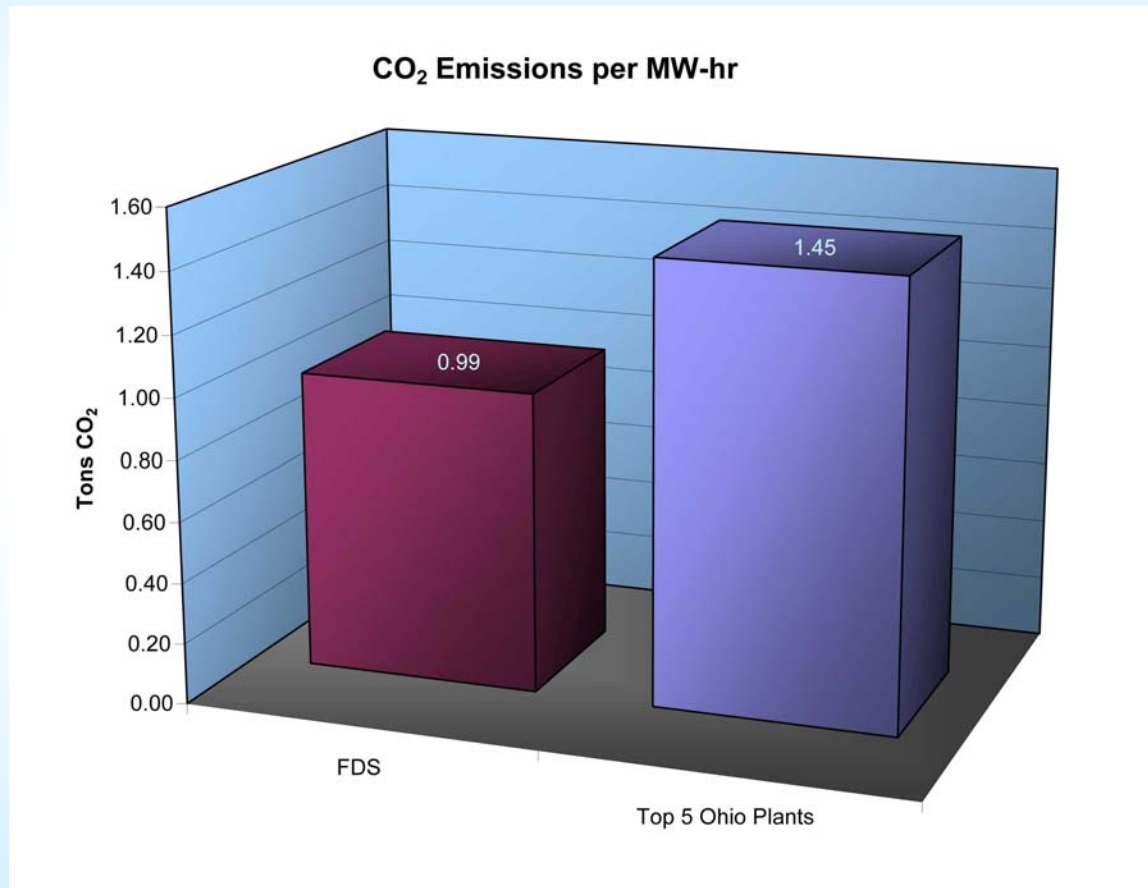


Sources: FDS Modified PTI/Co-Gen Electrical Generation Estimates & Dirty Kilowatts – America's Most Polluting Power Plants, Environmental Integrity Project, July 2007

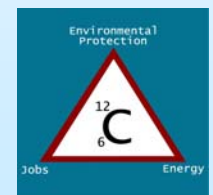




FDS Project vs. Ohio Coal-Fired Power Plants – CO₂ Emissions



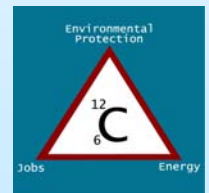
Sources: FDS Modified PTI/Co-Gen Electrical Generation Estimates & Dirty Kilowatts – America's Most Polluting Power Plants, Environmental Integrity Project, July 2007





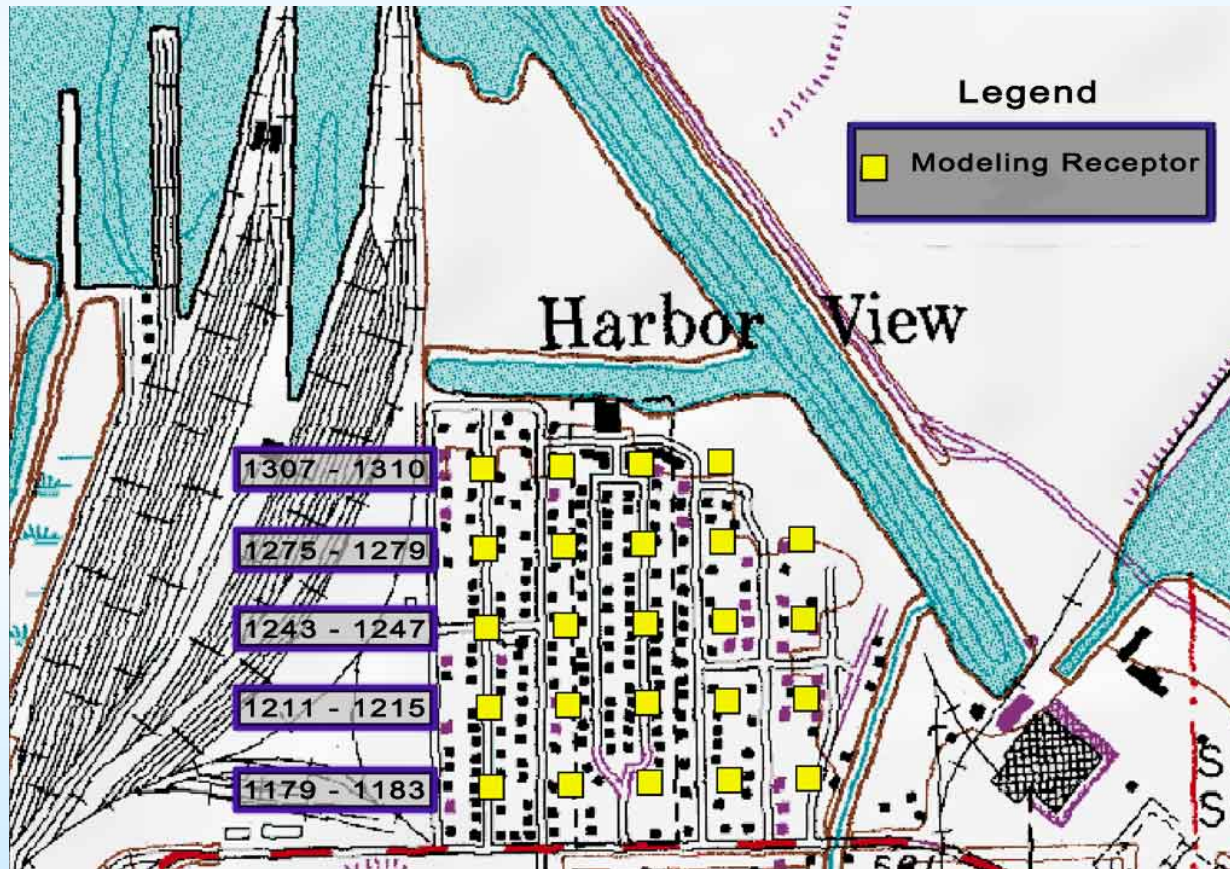
Village of Harbor View Ambient Air Quality Analysis

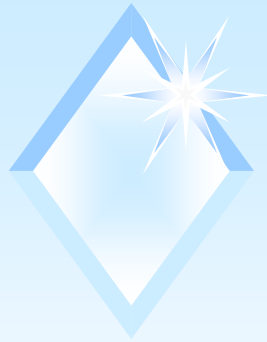
- ◆ Used USEPA/Ohio EPA-Approved Model and Ohio EPA Source Inventory
 - ◆ Model Inputs and Results Approved by Ohio EPA
 - ◆ Seven Operating Scenarios (each of 6 bypass scenarios and normal operation)
 - ◆ Emission Inventory Includes Over 90 Sources up to 90 Miles Away Including BP, Sunoco, Marsellex, Bayshore, Pilkington, Boilers at BGSU
- ◆ Input Air Pollutant Emission Rates Based on Very Conservative Scenario
 - ◆ Assumes All FDS Emission Units Operating at Maximum Permitted Emission Rate at Same Time
 - ◆ Assumes Other Inventory Sources (i.e., BP Refinery) Emissions at Maximum Rates
 - ◆ Does Not Incorporate Recent USEPA-Required Emission Reductions at Nearby Major SO₂ & PM₁₀ Sources (BP, Sunoco, Marsallex).





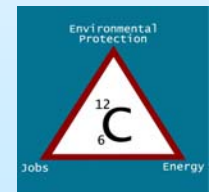
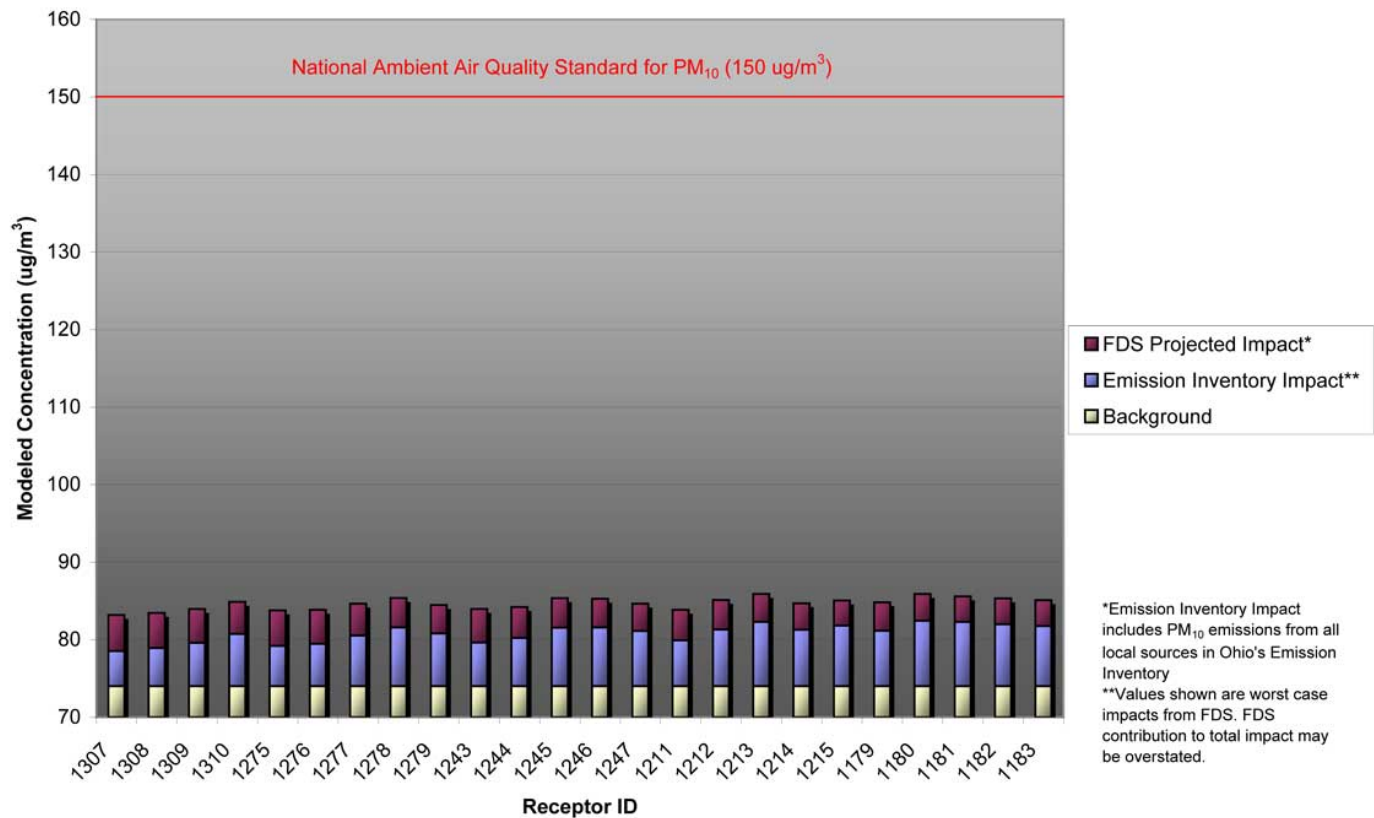
Village of Harbor View – FDS Model Receptor Locations





Modeled 24-Hr PM10 Results

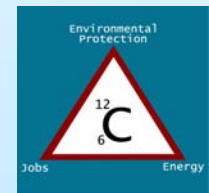
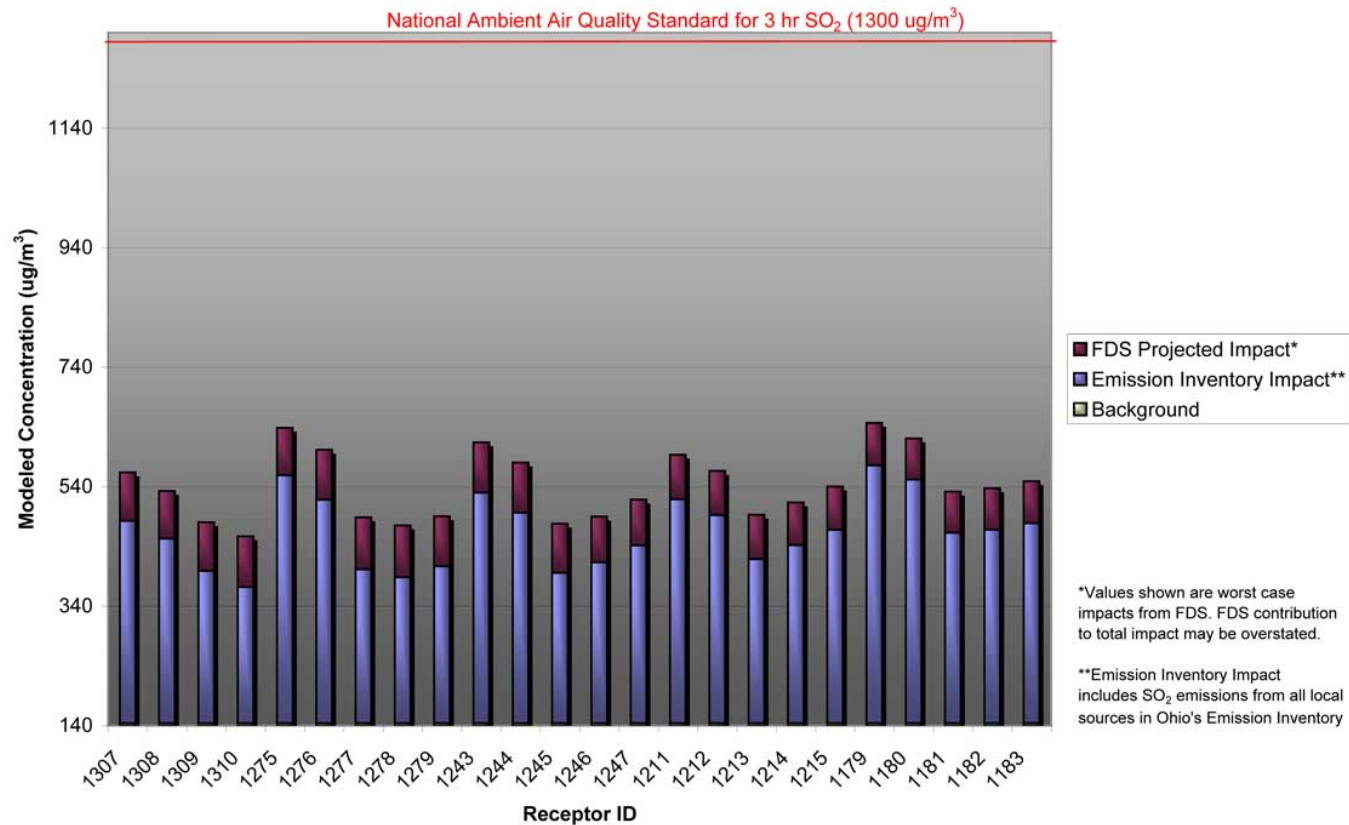
Modeled PM₁₀ Concentrations Above Background Near the Village of Harbor View





Modeled 3-Hr SO₂ Results

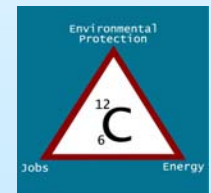
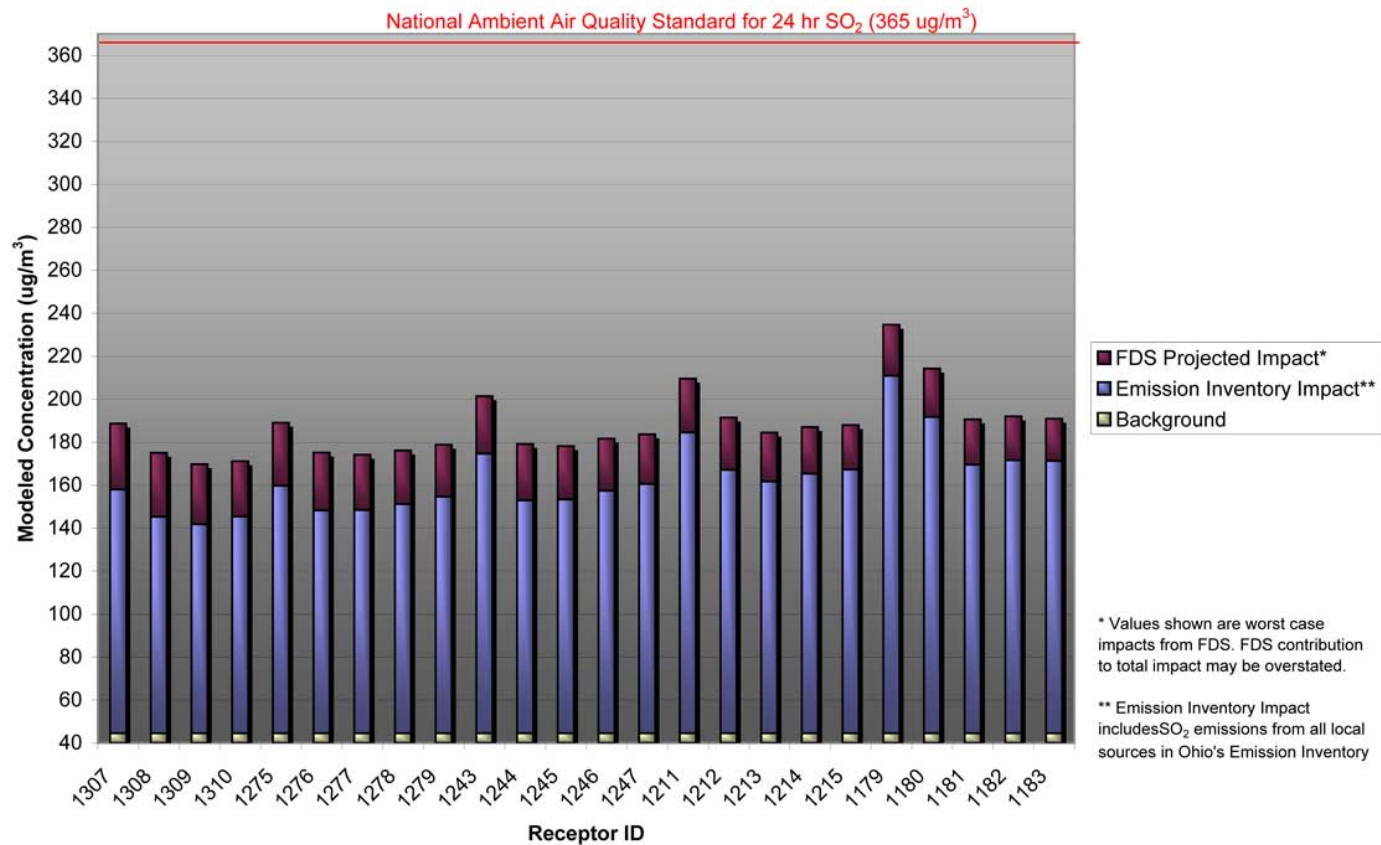
Modeled 3 Hour SO₂ Emissions Above Background Near the Village of Harbor View





Modeled 24-Hr SO₂ Results

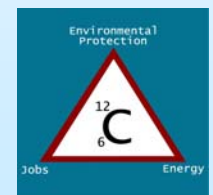
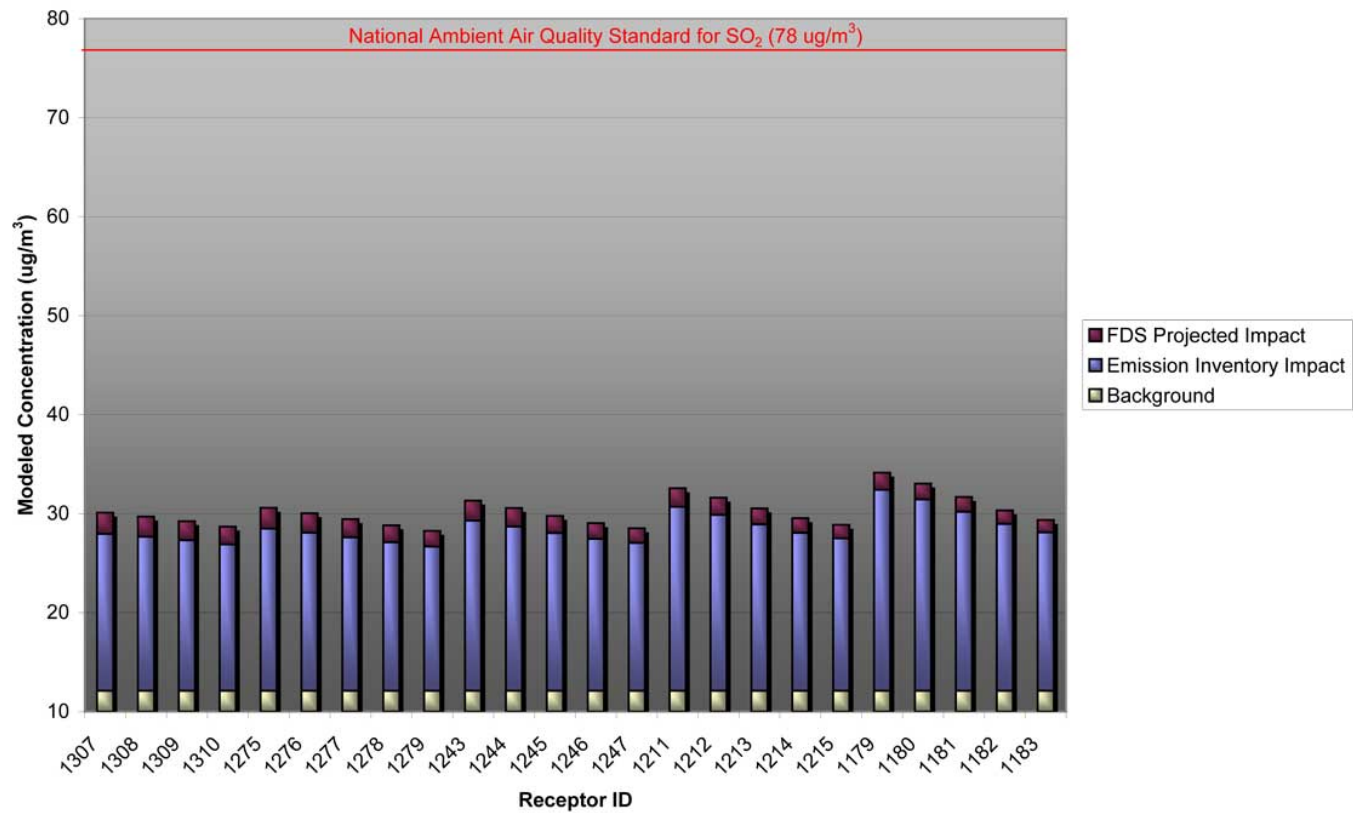
Modeled 24 Hour SO₂ Emissions Above Background Near the Village of Harbor View





Modeled Annual SO₂ Results

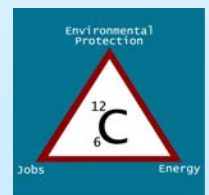
Modeled Annual SO₂ Emissions Above Background Near the Village of Harbor View





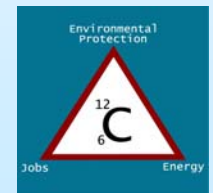
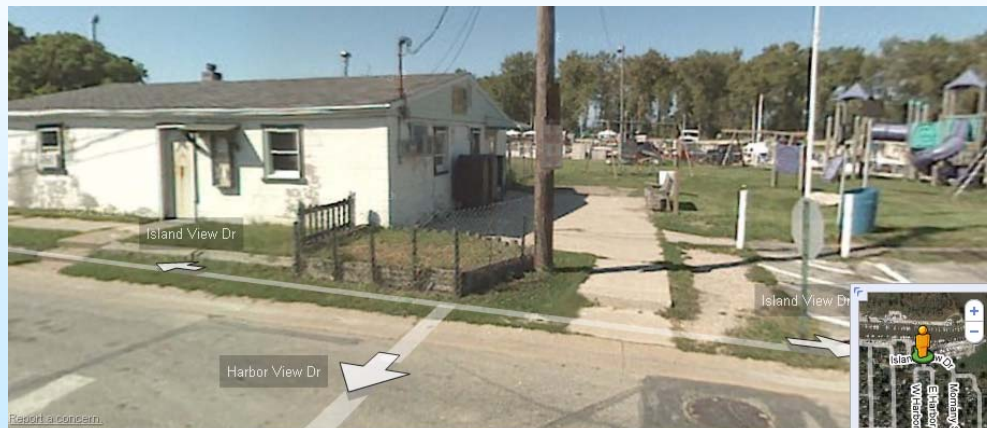
Summary of Modeling Results for Village of Harbor View

- ◆ Particulate (PM₁₀) Concentrations Less than 60% of Annual National Ambient Air Quality Standard (NAAQS)
 - ◆ FDS Max Contribution is About 5% of Total
- ◆ 3-Hr SO₂ Less Than 50% of NAAQS
 - ◆ FDS Max Contribution is About 12% of Total
- ◆ Average 24-Hr SO₂ Less Than 60% of NAAQS
 - ◆ FDS Max Contribution is About 12%
- ◆ Average Annual SO₂ Less Than 50% of NAAQS
 - ◆ FDS Max Contribution is About 6%
- ◆ All Air Toxics Less Than 20% to 30% of Conservative Applicable Standard (MAGLC)





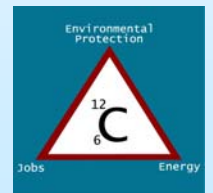
Proposed Harbor View Community Improvement Program





Proposed Harbor View Community Improvement Program

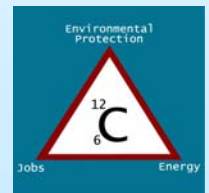
- ◆ Financially Supported by FDS
- ◆ Provides Direct Benefits to Village
- ◆ Entails Resident Membership & Control
- ◆ Incorporates Good Neighbor Approach





CIP – FDS Financial Support

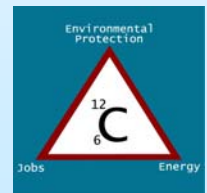
- ◆ Provided at Completion of Construction
- ◆ Annual Payment for Multiple Years
- ◆ Initial Proposal for \$100,000 for 5 Years
- ◆ Establishes “Good Neighbor” Approach





CIP – Direct Benefits to Residents

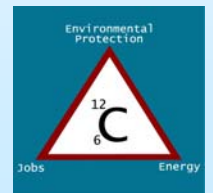
Public Area Upgrades





CIP – Direct Benefits to Residents

New Recreational Facilities





CIP – Direct Benefits to Residents

Home Improvement Grants

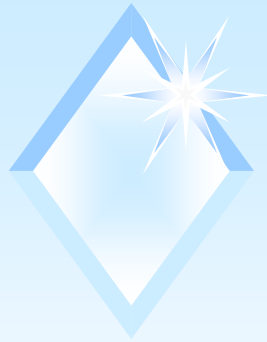




CIP – Direct Benefits to Residents

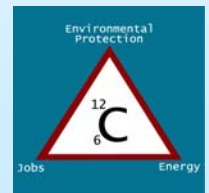
Educational Support





CIP - Resident Membership & Control

- ◆ Structure Established According to Village of Harbor View Design
 - ◆ Village Entity
 - ◆ Not-for-Profit
- ◆ Membership
 - ◆ Elected Officials
 - ◆ Appointed Residents
 - ◆ FDS
 - ◆ Others?





CIP - Good Neighbor Approach

- ◆ Formalize Process for FDS Environmental Performance Issues to be Evaluated
- ◆ Provide Routine Feedback to FDS from Village
- ◆ Identify and Prioritize Opportunities for FDS Improvements

