

Middletown Technology Center Public Workshop

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August 31, 2016



Blue Skies Delaware; Clean Air for Life

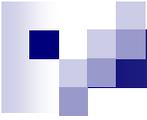


Public Workshop Agenda

- Welcome and Introductions
- Review Purpose
- Division of Air Quality Air Permitting Process
- Applicant Presentation
- Questions & Answers

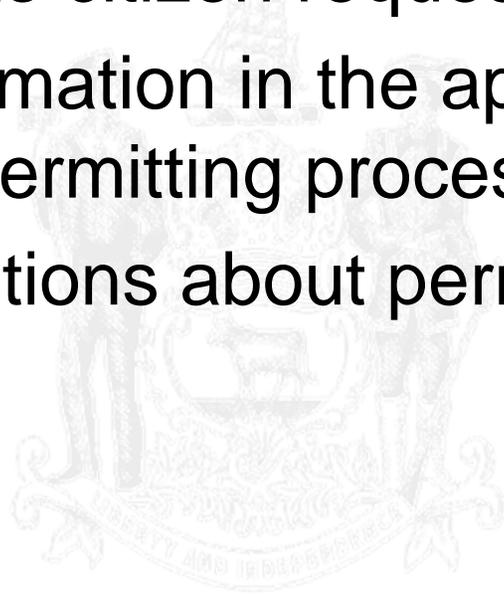


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Purpose

- We are holding this public workshop
 - In response to citizen requests
 - Present information in the application and explain our permitting process
 - Answer questions about permitting and the project



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Public Workshop

- A public workshop is an informal process
 - No hearing officer
 - No official record (we will be taking notes)
 - Official comments should be sent to the project email:
 - DAQPERMITTINGINFO@state.de.us
 - Public hearing will come later – after publication of draft permit



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Air Permit Process

- Sources that emit air pollutants need to obtain a permit before they are built
- The amount of pollution asked to be emitted dictates the level of scrutiny:
 - Major (threshold varies by pollutant)
 - Synthetic Minor (source takes a limit)
 - Minor



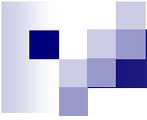
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Air Permit Process

- Once we receive a complete application:
 - Review technical accuracy
 - Confirm pollutants and emission rates
 - Determine what regulations apply
 - Confirm that the source can comply with the regulations
 - Assess air quality impact
 - Will only issue a permit if public health is protected



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Air Permit Process

- Received application – April 2016
 - Set up website for public review
 - Asked for comments on initial application
- Review for completeness
 - Modeling results submitted – June 2016
 - Application now complete



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Air Permit Process

- Over 30 Comments already received
 - Express concern about air quality and effect on health from MTC considering our grade from American Lung Association
 - Ask why Middletown, especially with the 301 project ongoing
 - Concern about noise from the plant
 - Why IC engines instead of combustion turbines or green power



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Project Summary

- Five 10 MW & five 2.5 MW natural gas fired reciprocating engines
- Selective catalytic reduction (SCR) to control Nitrogen oxides (NO_x) emissions
- Oxidation catalyst to control carbon monoxide (CO), Volatile Organic Compounds (VOC), and formaldehyde emissions



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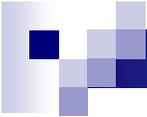


Project Summary

- Running time for each engine limited to 3,300 hours per year.
- Planned operational periods
 - Loss of power from the grid
 - When asked by DEMEC to run for grid stability
 - When more economical to run than buying from the grid.

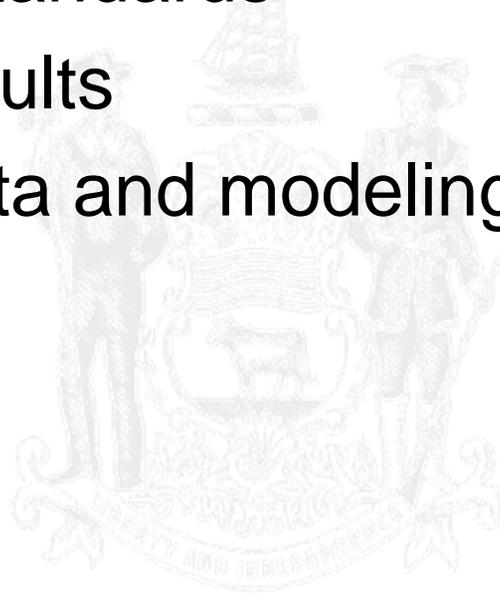


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Air Quality Impact Analysis

- Fine Particulate Matter (PM_{2.5}) - Example
 - Air Quality Standards
 - Modeling results
 - Delaware data and modeling



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Fine Particulate Matter – PM_{2.5}

- Definition – particles < 2.5 microns in diameter (PM_{2.5})
- Small size so penetrate more deeply into lungs
- Thus more concern about health effects.



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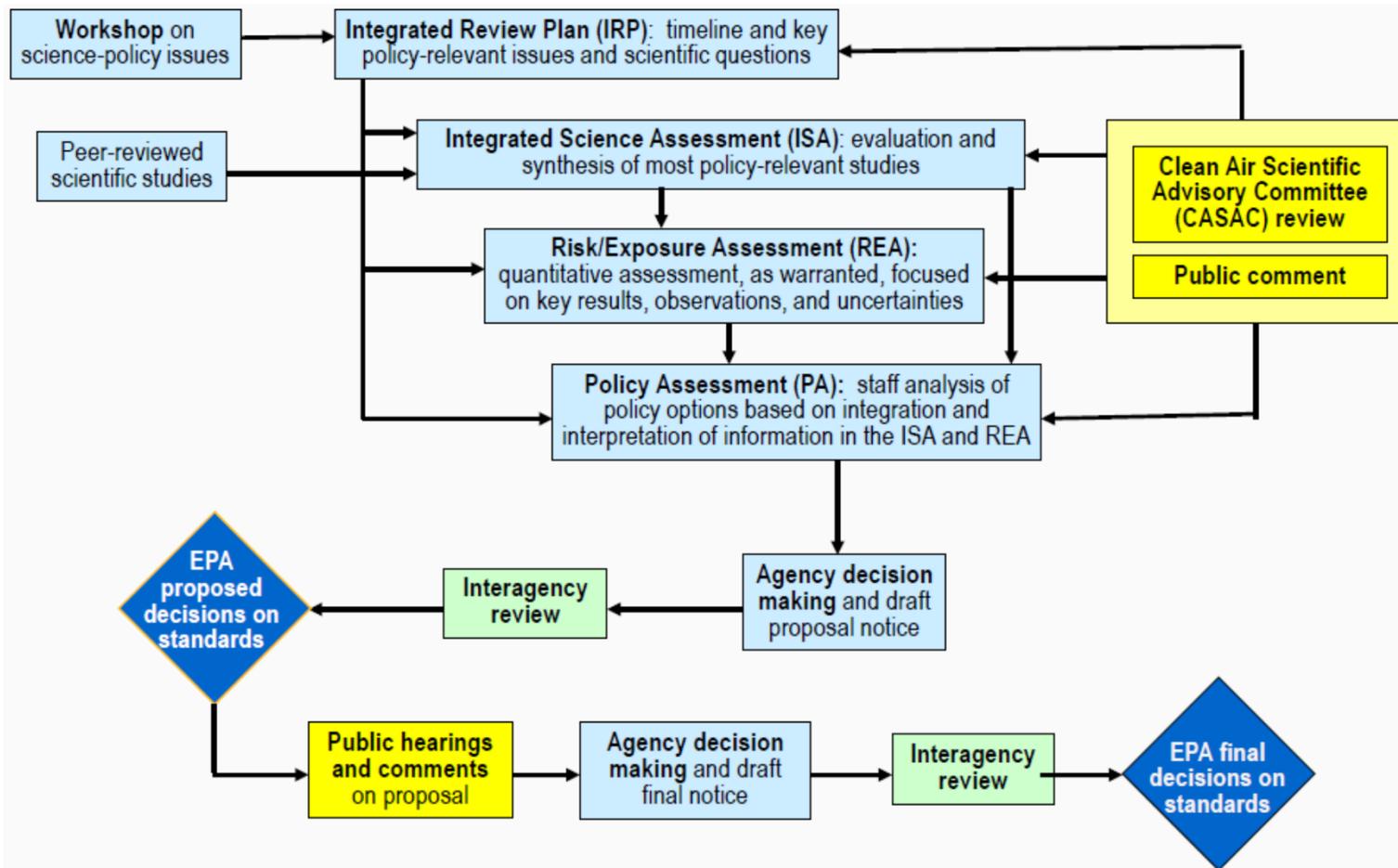
Fine Particulate Matter – PM_{2.5}

- Ambient air quality standards (AAQS)
 - standards are designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory diseases.
- Annual 12 $\mu\text{g}/\text{m}^3$ arithmetic mean
- 24-hour maximum 35 $\mu\text{g}/\text{m}^3$



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Setting Air Quality Standards



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Fine Particulate Matter – PM_{2.5}

■ Typical sources

□ Combustion

- Industrial
- Residential
- Cars & Trucks

□ Also Precursors

- SO₂ and NO_x



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PM_{2.5} Modeling

- Worst case modeling done
 - All 10 engines start up at same time
 - Worst meteorological period
 - Highest background concentration
- Modeling results
 - 5.5 $\mu\text{g}/\text{m}^3$ 24-hour average
 - 0.24 $\mu\text{g}/\text{m}^3$ annual average



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What is an Air Quality Model

- Mathematical relationship between emissions and air quality that incorporates the transport, dispersion and transformation of compounds emitted into the air.
- Input: emissions, meteorology, source parameters → Air Quality Impact
- Air Quality = Model + Background



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PM_{2.5} Modeling

■ Background Concentrations – Wilmington

µg/m³	24-hour	Annual
In Modeling	28	11
DNREC design value	25	9.6

- Design value is EPA directed level to use for background.



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PM_{2.5} Modeling

- Comparison to Air Quality Standards based on Wilmington background

Total	µg/m³	24-hour	Annual
In Modeling		33	11
DNREC design value		30.5	9.9
AAQS for PM2.5		35	12

- Design value is EPA directed level to use for background.
- Both analyses show compliance with the standards



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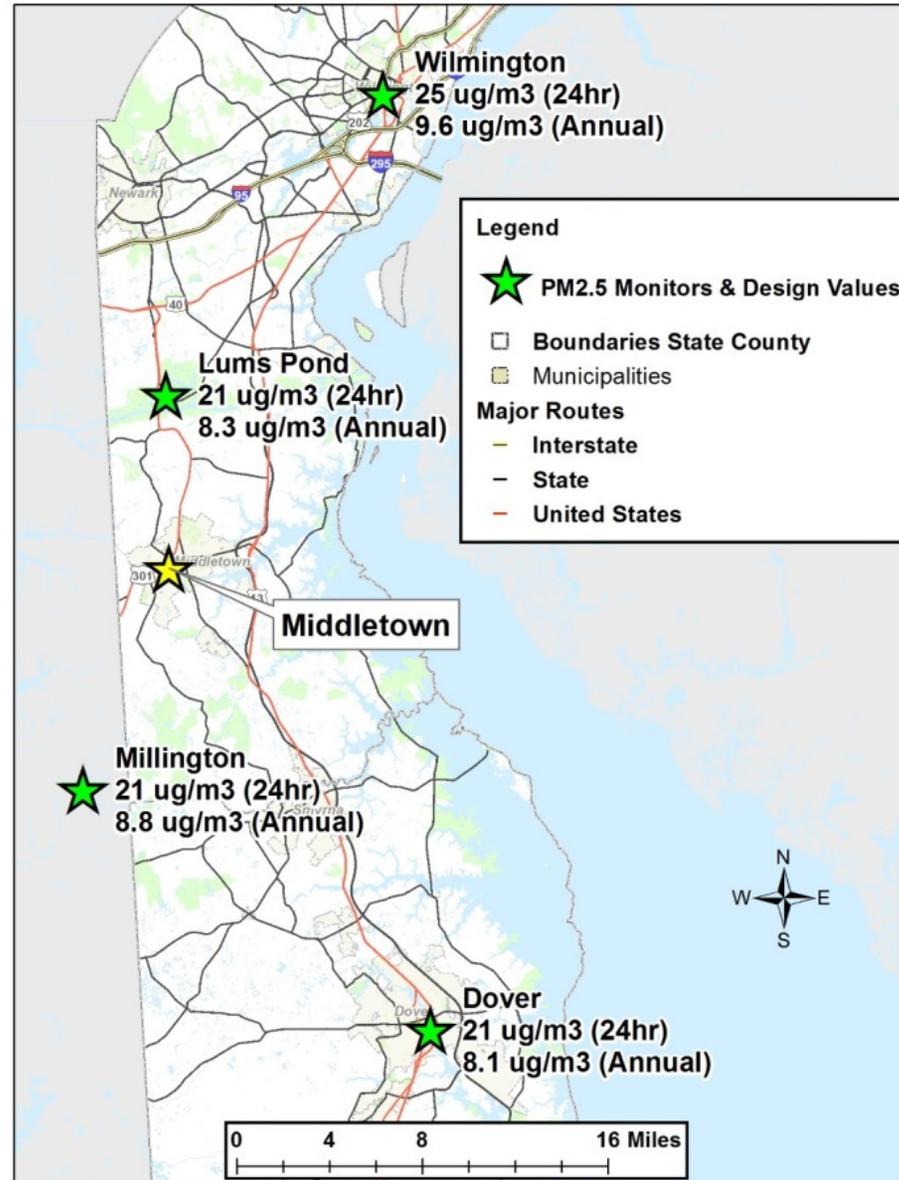
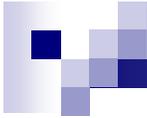
PM_{2.5} Modeling

- PM_{2.5} Background closer to Middletown

All Design Basis µg/m ³	24-hour	Annual
Lums Pond	21	8.3
Millington, MD	21	8.8
Dover	21	8.1



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PM_{2.5} Modeling

- Comparison to Air Quality Standards based on more local background

µg/m³	24-hour	Annual
Using Local DNREC design values	26.5	9.0
AAQS for PM _{2.5}	35	12



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PM_{2.5} Modeling

■ Middletown data

- We took screening samples in Middletown to compare to results from the continuous sampler in Wilmington
- As expected, Middletown samples trend lower

Day ($\mu\text{g}/\text{m}^3$)	8/23	8/24	8/25	8/26	8/27	8/28
Wilmington	8.7	8.5	5.7	10.5	10.9	6.9
Middletown	2.6	3.5	5.2	8.9	8.0	5.5



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PM_{2.5} Modeling Summary

- All models showed compliance with air quality standards.
- Application used slightly higher levels for Wilmington background
- Background in Middletown is lower than Wilmington, resulting in larger margin when total is compared to standards



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Permits by Other States

- Other states have issued a number of data center permits with much higher emissions

Pollutant	MTC (Nat Gas)	N Carolina (Diesel)	Virginia (Nat Gas)	Washington (Diesel)
NOx	0.06	6.4	1.34	6.4
CO	0.104	3.5	2.68	3.5
PM	0.052	0.20	0.015	0.2
VOC	0.05		0.94	

- All rates in g/kW-hr



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Permitting Status

- Applicant seeking a Synthetic Minor permit
 - Permitted emissions less than major source thresholds in New Castle County
 - 25 tons/year NOx
 - 25 tons/year VOCs
 - Most other states' thresholds much higher
 - 100 tons/year NOx
 - 100 tons/year VOCs



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Permitting Status

- We are preparing a draft permit
 - The Company is required to meet strict air quality standards under the Federal Clean Air Act and Delaware regulations.
 - We are conducting a rigorous permitting process with a detailed technical review of the application and development of permit conditions that will protect the environment and public health from risk or harm



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Permit Content

- Draft permit will have conditions that:
 - Require the plant and controls to meet strict emissions limits protective of human health and the environment
 - Require the plant to record data to show proper operation
 - Keep the data for 5 years
 - Report deviations from permitted conditions



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Permitting Process

- Draft permit will be advertised and sent to the EPA for a 30-day comment period.
- Public Hearing will be advertised at the same time. We plan to hold a hearing.
 - All comments will be considered as part of the public hearing process.



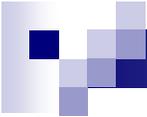
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After the Public Hearing

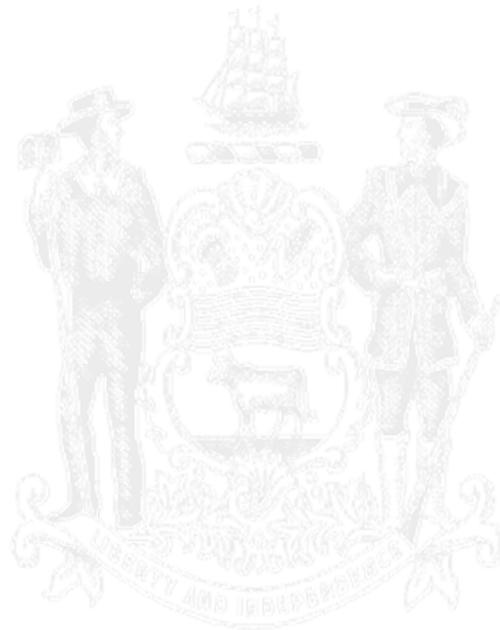
- Public comment period closed by Hearing Officer
- Division of Air Quality staff will respond to comments and questions raised.
- Hearing Officer prepares a report for the Secretary.
- Secretary makes decision to issue or deny permit via a Secretary's Order.



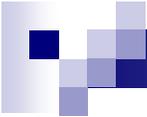
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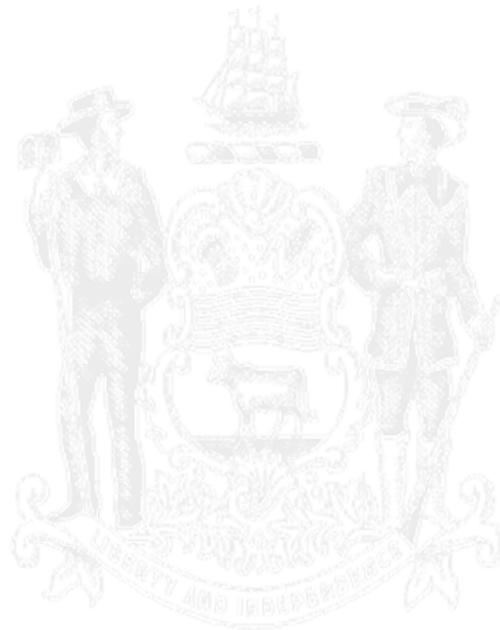
Applicant Presentation



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Questions?



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