

Ultra Low Sulfur Diesel Air Emissions Review

February 12, 2007

Federal rules for diesel fuel

- In 2001 and 2004, the Environmental Protection Agency (EPA) adopted rules mandating cleaner diesel fuel
- Specifically, these new rules mandated dramatic decreases in sulfur levels for diesel fuel.
- Diesel fuel cannot exceed a maximum sulfur level of 15 ppm.

Federal rules for diesel fuel

- The new rules are being phased in between 2006 and 2010.
- All refiners in the U.S. will need to meet these new federal rules for diesel fuel.
- The new diesel rules should also help improve the ground-level ozone problem nationwide.

Benefits of the new federal rules for diesel fuel

- EPA estimates that tailpipe emissions from vehicles running on diesel fuel will be reduced by 95 percent.
- EPA estimates that by 2020 Minnesota will see a 35,000 ton per year reduction in nitrogen oxide (NOx) emissions (1.8 million tons nationwide).

Benefits of the new federal rules for diesel fuel

- Equivalent of eliminating the air emissions from 13 million of today's trucks nationwide
- An immediate benefit of low sulfur diesel fuel will be a modest reduction in fine particulates.
- Pine Bend started up the hydrocracker in 2006 to meet these mandates.

Ultra Low Sulfur Diesel Project

To meet the new diesel rules, Pine Bend constructed:

- Hydrocracker
- Hydrogen Plant
- 2 Storage Tanks

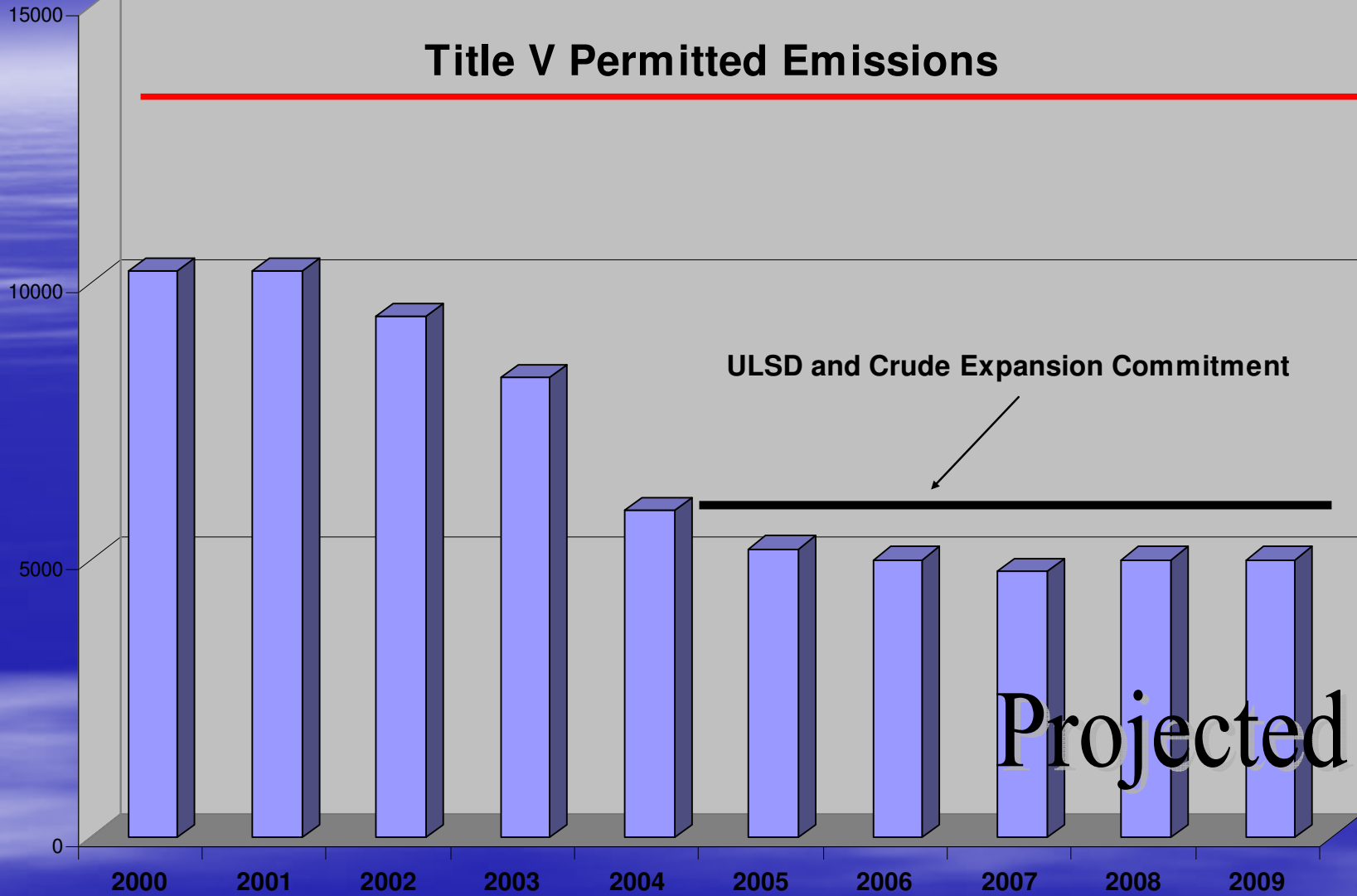
Hydrocracker

- This unit is where sulfur is removed from the diesel fuel.
- Hydrogen is used to remove the sulfur from fuel, which is why another hydrogen plant was needed as part of this project.
- Allowed Pine Bend to make all diesel grades below 15 ppm in 2006, instead of phasing in the sulfur reductions.

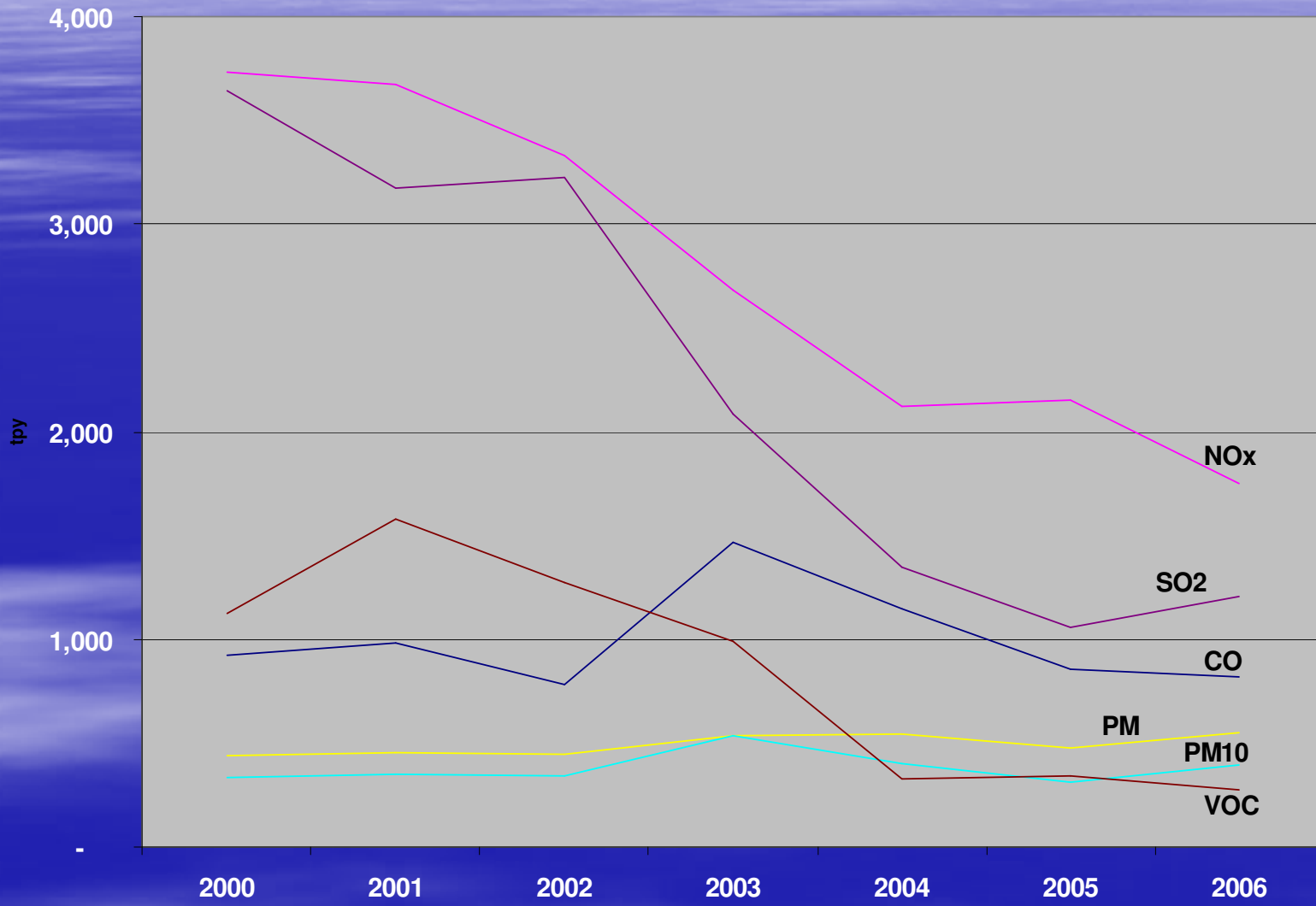
How are refinery emissions impacted by Hydrocracker start-up?

- Air emissions increases from the new units were permitted to be 550 tons per year.
- Increases were projected for nitrogen oxide (NO_x), sulfur dioxide (SO₂), & carbon monoxide (CO).
- FHR committed to maintaining emissions at post-ERI levels through the hydrocracker and crude expansion projects.
- Other emission reduction projects in the refinery were installed to offset these increases.

Title V Permitted Emissions



FHR Air Emissions Trend



Crude Expansion Project Update

- Project will increase crude processing capacity by 50,000 barrels per day
- Modifying existing #3 crude unit to add a new heater, a new large vessel, more piping and heat exchangers
- Construction started in Summer 2006 with startup planned this fall
- Emission Offset Projects on Track
 - ultra low NOx burners on heaters
 - State of the art pump seals and valves to reduce hydrocarbon emissions

Future Projects

- Coke Drum Replacement Project
- Hydrotreater Modifications
- FCC Modifications
- Changes due to Regulatory Demands:
 - Low Benzene Fuel: New Processing Unit
 - Renewables: Biodiesel/Ethanol Mandates
- New Office Buildings