

**Workgroup Recommendations and Other Potential Control Measures**  
**Stationary Combustion Sources Workgroup**

**SCS004C – Fluid Catalytic Cracking Unit (FCCU) & Fluidized Coking Unit (FCU)**  
**in Petroleum Refinery**

Control Measure Summary	Emissions (tons/year) in NJ State	
<b>2002 existing measure:</b> Wet Gas Scrubber	VOC in 2002	134
	SO <sub>2</sub> in 2002	3837
	NO <sub>x</sub> in 2002	1675
<b>Candidate Measure 1:</b> Selective Catalytic Reduction (SCR) for NO <sub>x</sub> control.  <b>Emission Reductions:</b> 80 to 95% of NO <sub>x</sub> .  <b>Control Cost:</b> < \$2500 per ton of NO <sub>x</sub> removed  <b>Timing of Implementation:</b> By end of 2009.  <b>Implementation Area:</b> OTC	<p align="right"> <b>NO<sub>x</sub></b>            2002 Base: 1675            Reduction: - 520            2009 Remaining: 1155         </p>	
<b>Candidate Measure 2:</b> LoTO <sub>x</sub> process for NO <sub>x</sub> control.  <b>Emission Reductions:</b> 80 to 95% NO <sub>x</sub>  <b>Control Cost:</b> \$1700 to 2000 per ton of NO <sub>x</sub> removed.  <b>Timing of Implementation:</b> By end of 2009  <b>Implementation Area:</b> OTC		

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Contact – Partha Ganguli

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<p><b>Candidate Measure 3:</b> Latest DeSOx Additives in Regenerator and Improved efficiency of existing Wet Gas Scrubber for SOx control</p> <p><b>Emission Reductions:</b> Overall 97 to 99.95%</p> <p><b>Control Cost:</b> Overall &lt;\$1000 per ton of SOx removed.</p> <p><b>Timing of Implementation:</b> By end of 2009</p> <p><b>Implementation Area:</b> OTC</p>	<b>SO2</b> 2002 Base: Reduction: 2009 Remaining:	3837 <u>-2837</u> 1000
<p><b>Candidate Measure 4:</b> Optimum Temperature and oxygen content in Regenerator and Feed Quality Control for VOC and CO reduction at no extra cost.</p>	<b>VOC</b> 2002 Base: Reduction: 2009 Remaining:	134 <u>- 20</u> 114

**Policy Recommendation of State/Workgroup Lead:** Selective Catalytic Reduction (SCR) or LoTOx is recommended for NOx control.

DeSOx catalyst addition and scrubber efficiency improvement are recommended for SOx control.

**Brief Rationale for Recommended Strategy:** According to the current EPA Consent Decrees, facilities must achieve annual emission rates of 20 ppmvd NOx and 20 ppmvd SOx by the end of 2009.

SCR has been successfully applied to refinery furnaces and FCCUs, and have high NOx control efficiency at a reasonable cost. LoTOx is a relatively new technology to be installed in FCCUs at two facilities in the US. The technology has high control efficiency for a reasonable cost.

For SOx control, improvement in SOx reduction efficiency can be achieved by adding DeSOx additives in the regenerator and improving the efficiency of the scrubber by special chemical addition.