

Workgroup Recommendations and Other Potential Control Measures
Stationary Combustion Sources Workgroup

SCS004C – Fluid Catalytic Cracking Unit (FCCU) in a Petroleum Refinery

Control Measure Summary	Emissions (tons/year) in NJ State*	
2002 existing measure: Wet Gas Scrubber	VOC in 2002	134
	SO ₂ in 2002	3837
	NO _x in 2002	1675
Candidate Measure 1: Selective Catalytic Reduction (SCR) for NO _x control. Emission Reductions: About 40% of NO _x . Control Efficiency: 80 to 95% of NO _x Control Cost*: < \$2500 per ton of NO _x removed Timing of Implementation: Year 2009. Implementation Area: New Jersey	<p align="right"> NO_x 2002 Base: 1675 Reduction: - 520 2009 Remaining: 1155 </p>	
Candidate Measure 2: LoTO _x process for NO _x control. Emission Reductions: About 40% of NO _x Control Efficiency: 80 to 95% of NO _x Control Cost*: \$1700 to \$1950 per ton of NO _x removed. Timing of Implementation: Year 2009 Implementation Area: New Jersey		

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<p>Candidate Measure 3: Latest DeSO_x Additives in Regenerator and Improved efficiency of existing Wet Gas Scrubber for SO_x control</p> <p>Emission Reductions: About 90%</p> <p>Control Efficiency: Overall 97 to 99% of SO_x</p> <p>Control Cost*: Overall <\$1000 per ton of SO_x removed.</p> <p>Timing of Implementation: Year 2009</p> <p>Implementation Area: New Jersey</p>	SO₂ 2002 Base: Reduction: 2009 Remaining:	3837 <u>-3486</u> 351
<p>Candidate Measure 4: Optimum Temperature and oxygen content in Regenerator and Feed Quality Control for VOC and CO reduction at no extra cost.</p>	VOC 2002 Base: Reduction: 2009 Remaining:	134 <u>-114</u> 20

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

DeSO_x catalyst addition and scrubber efficiency improvements are recommended for SO_x control.

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

SCR has been successfully applied to refinery furnaces and FCCUs, and have high NO_x control efficiency at a reasonable cost. LoTO_x 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 SO_x control, improvement in SO_x reduction efficiency can be achieved by adding DeSO_x additives in the regenerator and improving the efficiency of the scrubber by special chemical addition.

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* - Data based on the Draft Technical Support Document for “Assessment of Control Technology Options for Petroleum Refineries in the Mid-Atlantic Region” by Mid-Atlantic Regional Air Management Association (MARAMA). NJDEP is working with other MARAMA States to further develop the regulatory strategy for this source category for the region. Further details on the MARAMA efforts can be found at www.marama.org.