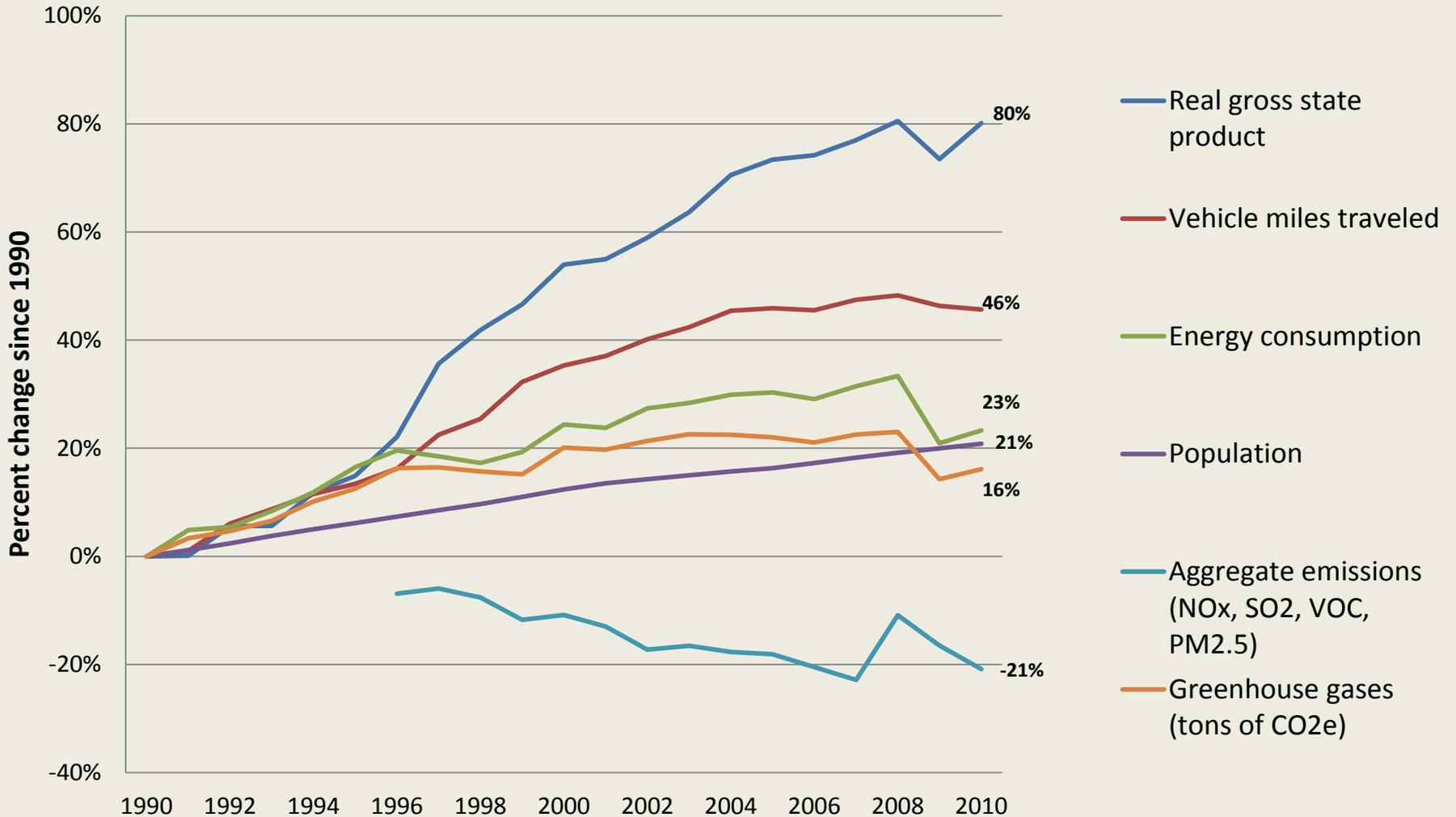


# Air Pollutant Emissions from Minnesota's Energy Sector

Overview for House Energy  
Committee



# Comparison: Growth Areas and Emissions in Minnesota

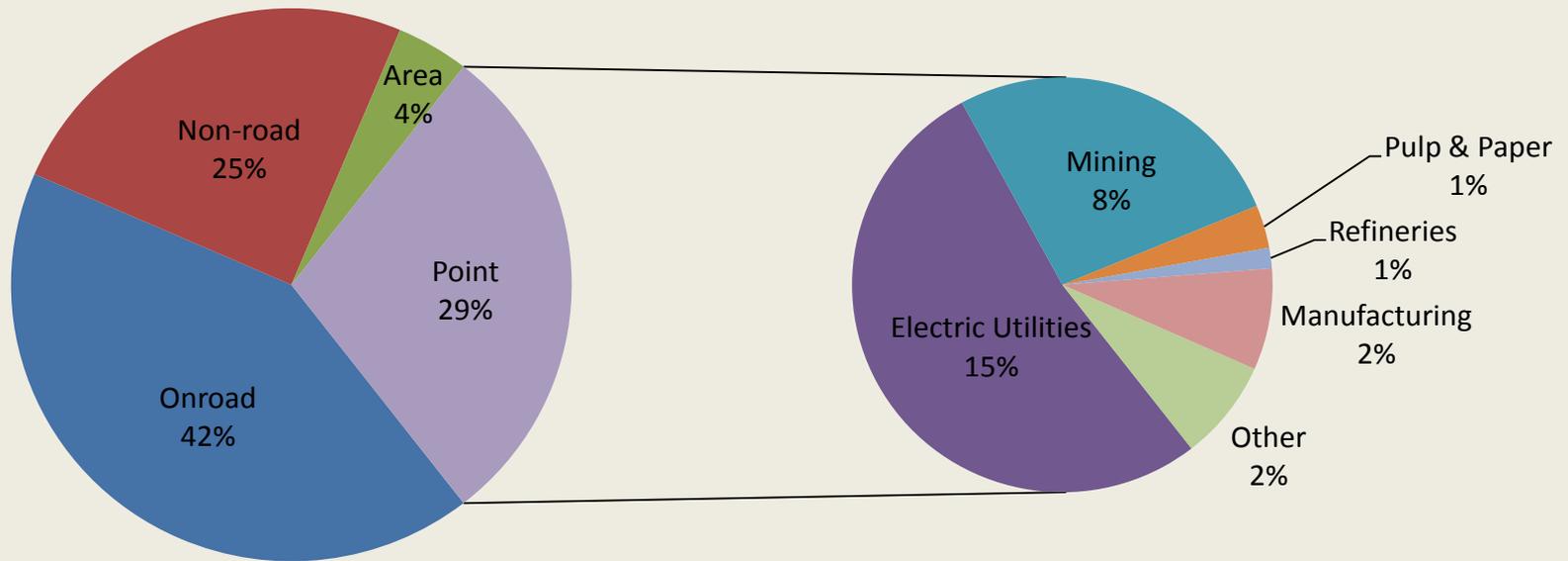


# Pollutant Focus

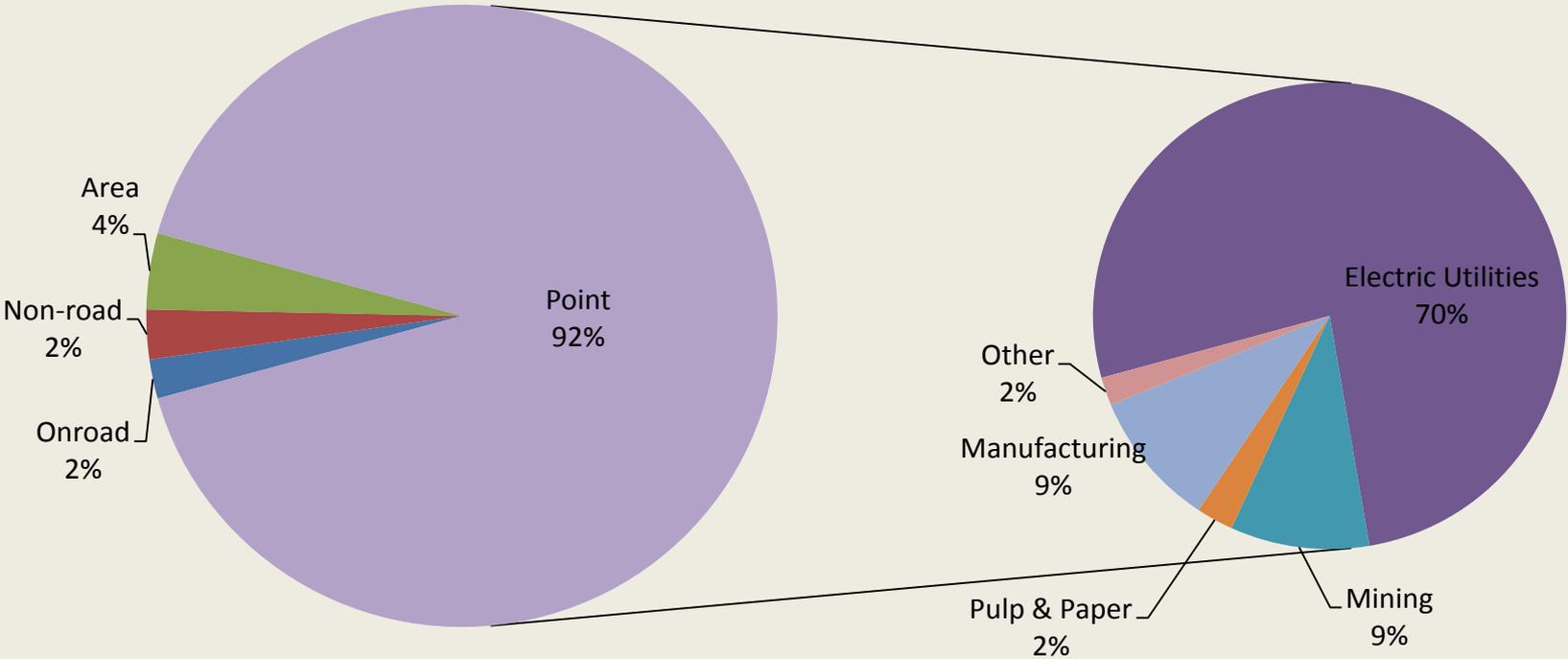
- Presentation will focus on four key pollutants
  - Nitrogen Oxides ( $\text{NO}_x$ )
  - Sulfur Dioxide ( $\text{SO}_2$ )
  - Greenhouse Gases (GHGs)
  - Mercury



# Minnesota NO<sub>x</sub> Emissions by Source Category

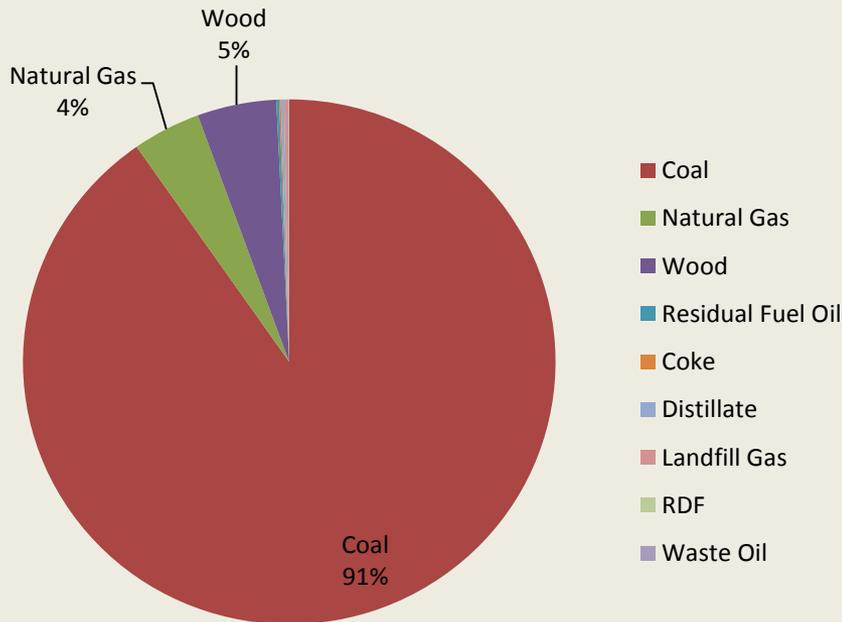


# Minnesota SO<sub>2</sub> Emissions by Source Category

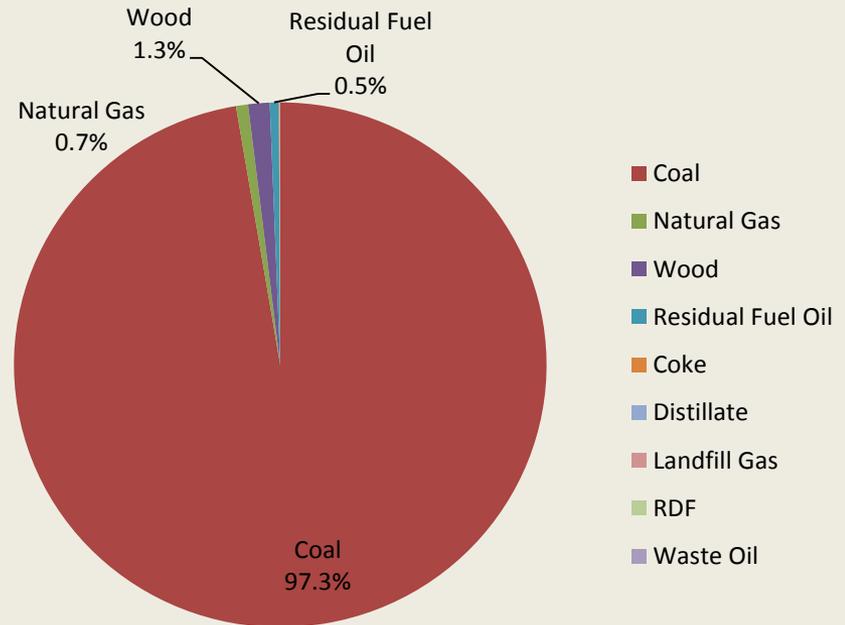


# SO<sub>2</sub> and NO<sub>x</sub> Emissions in Minnesota from Electricity Generation by Fuel

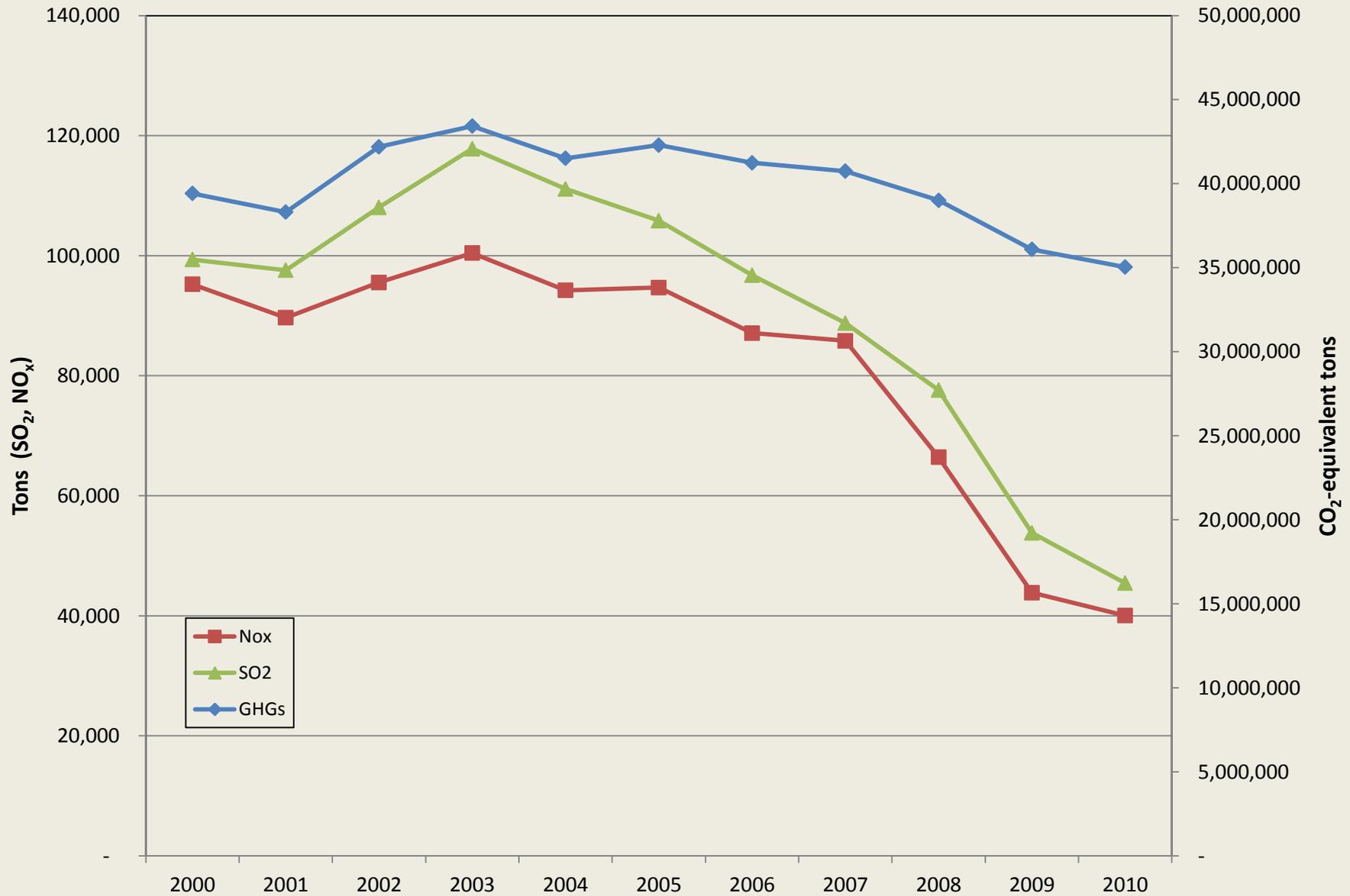
2010 NO<sub>x</sub>



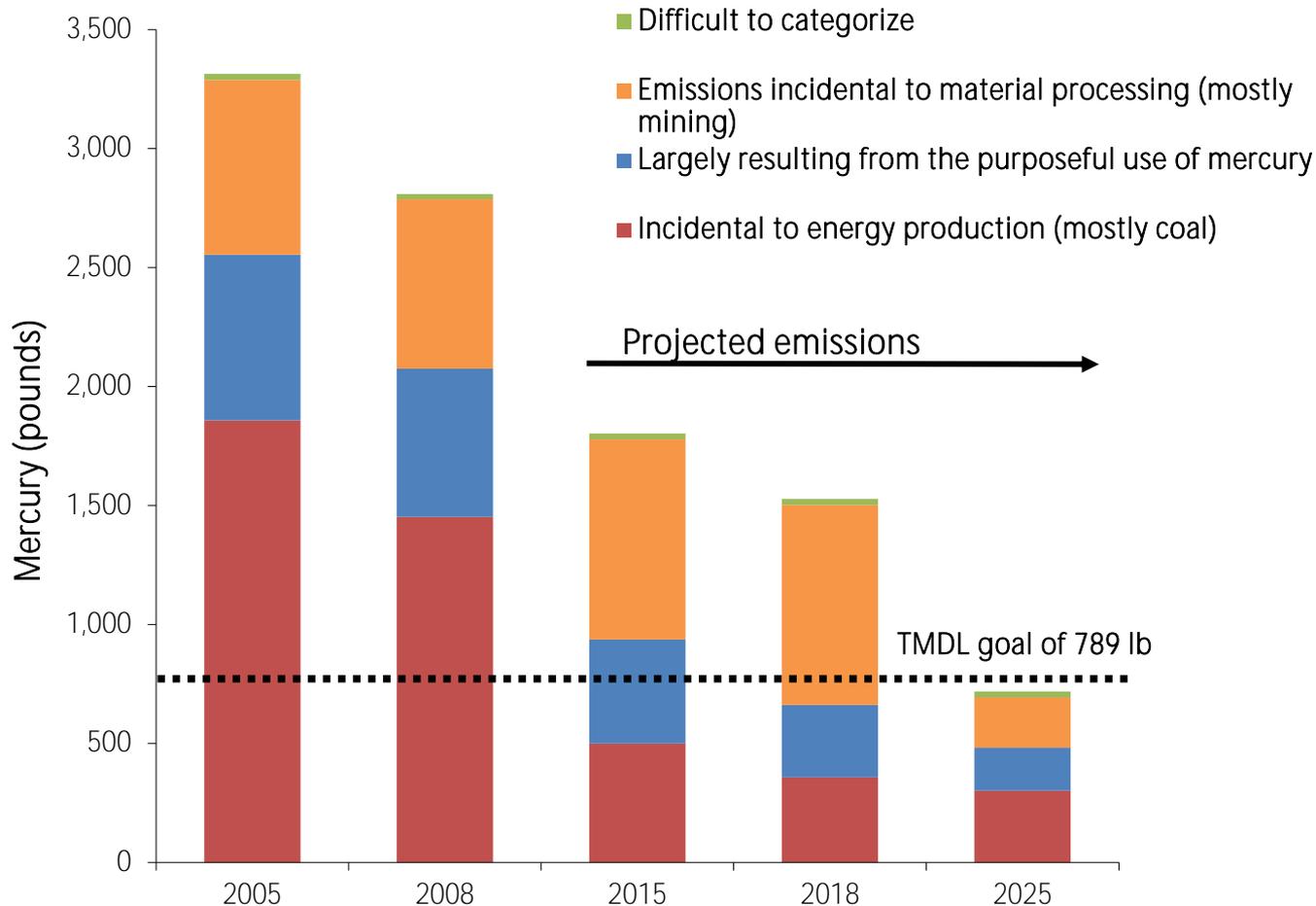
2010 SO<sub>2</sub>



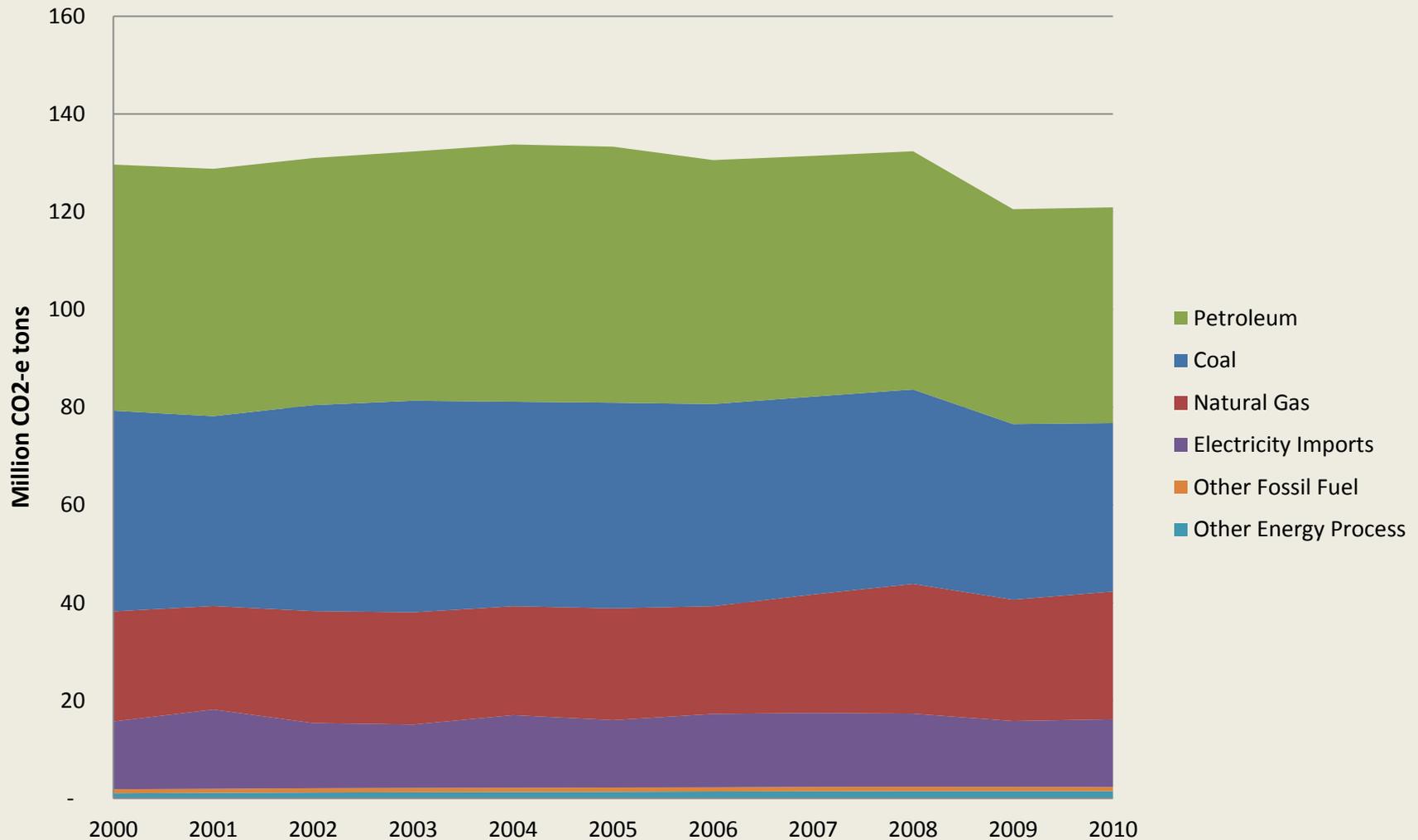
# Air Pollutant Emissions from Minnesota Power Plants



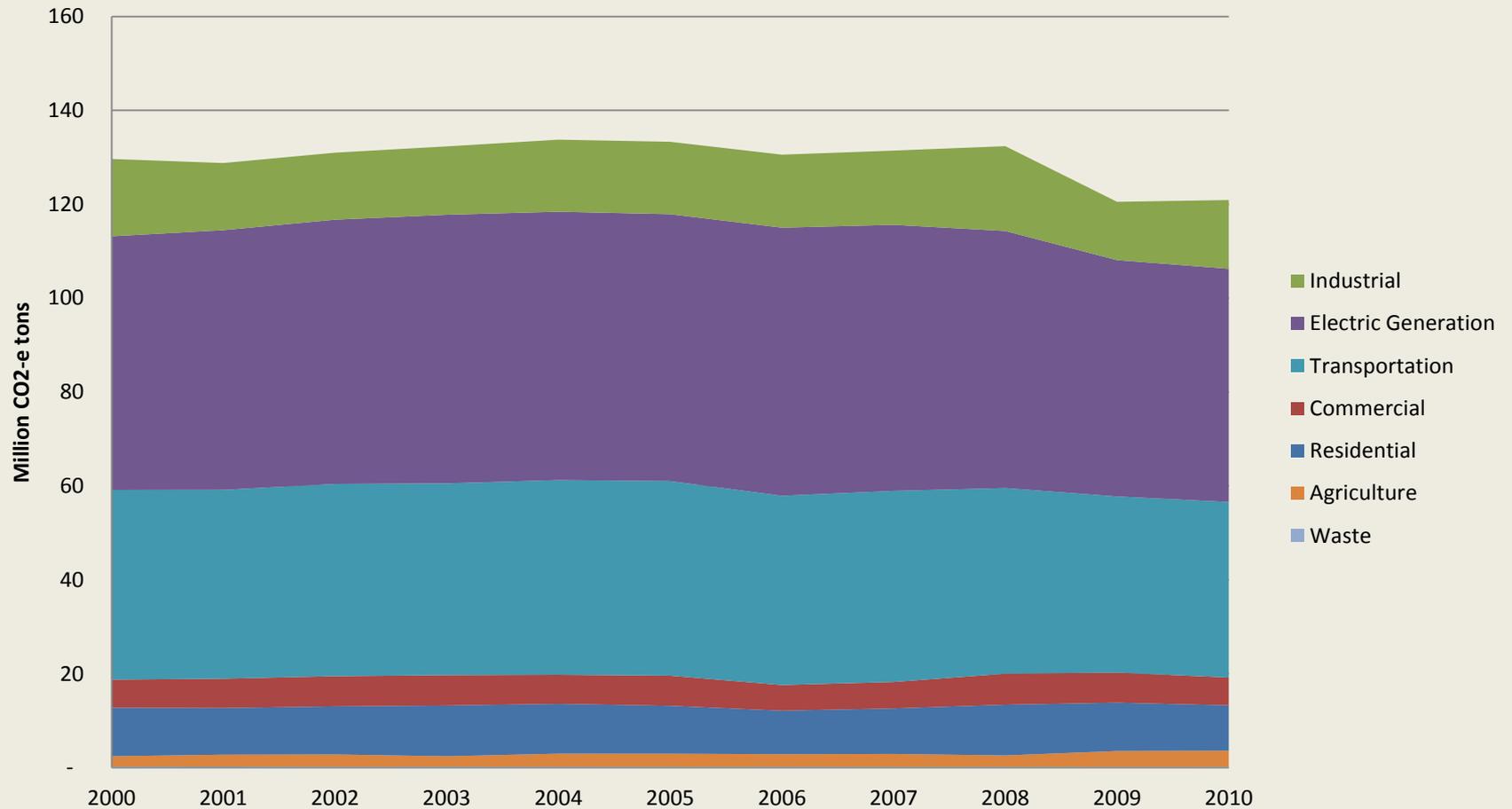
# Mercury Emissions in Minnesota



# GHG Emissions in Minnesota from Energy Use by Fuel



# GHG Emissions in Minnesota from Energy Use by Sector



# EPA Rules Impacting Power Plants (Air, Climate, Water, and Land)

Rule	Regulatory Action	Compliance Deadline
Revised Cooling Water Intake Rule	Proposed March 2011	
Coal Combustion Residuals Rule	Proposed June 2010	
Greenhouse Gas New Source Performance Standard (New plants)	Proposed April 2012	
Regional Haze/Visibility (BART)	July 1999	Five years after EPA approval
Cross-State Air Pollution Rule (CSAPR)	Adopted August 2011 Stayed and appealed 2012	March 2015
Mercury and Air Toxics Standard (MATS)	Adopted February 2012	April 2015 or 2016



# EPA Power Plant Rules Under Development

<b>Rule</b>	<b>Regulatory Action</b>	<b>Compliance Deadline</b>
Revised Effluent Limitation Guidelines	To Be Proposed December 2012	
Greenhouse Gas Emission Guidelines (Existing plants)	Not Yet Scheduled	



# Minnesota Utilities Well-Prepared for Air Pollution Rules

- Emission Reductions underway since 2002:
  - Metropolitan Emissions Reduction Project (MERP)
  - Arrowhead Regional Emissions Abatement (AREA)
  - Minnesota's Mercury Reduction Act of 2006
    - Minnesota's six largest coal-fired boilers:
      - Boswell 3
      - Sherco 3
      - AS King
      - Sherco 1, 2
      - Boswell 4
  - NO<sub>x</sub> reductions in preparation for visibility and CSAPR

