

Analysis of Alternative Subcategorization Options

Utility MACT Working Group

May 13, 2002

Note:

Levels of control presented do not represent any Workgroup or Agency conclusions on appropriate levels of control. Levels of control presented are hypothetical levels for purposes of analyzing subcategorization options.

MACT Cases Analyzed - Case I & II

- **Case I - No Subcategorization**
 - High:
 - 90% removal or 0.43 lbs/TBtu for all units
 - Med:
 - 80% removal or 0.79 lbs/TBtu for all units
 - Low:
 - 70% removal or 2.53 lbs/TBtu for all units
- **Case II - Categorization by Fuel Type**
 - High:
 - 90% removal or 0.43 lbs/TBtu for Bituminous fuels
 - 85% removal or 0.66 lbs/TBtu for Subituminous fuels
 - 55% removal or 3.98 lbs/TBtu for Lignite fuels
 - Med:
 - 80% removal or 0.81 lbs/TBtu for Bituminous fuels
 - 65% removal or 1.90 lbs/TBtu for Subituminous fuels
 - 45% removal or 6.90 lbs/TBtu for Lignite fuels
 - Low:
 - 70% removal or 2.07 lbs/TBtu for Bituminous fuels
 - 30% removal or 4.32 lbs/TBtu for Subituminous fuels
 - 35% removal or 10.8 lbs/TBtu for Lignite fuels

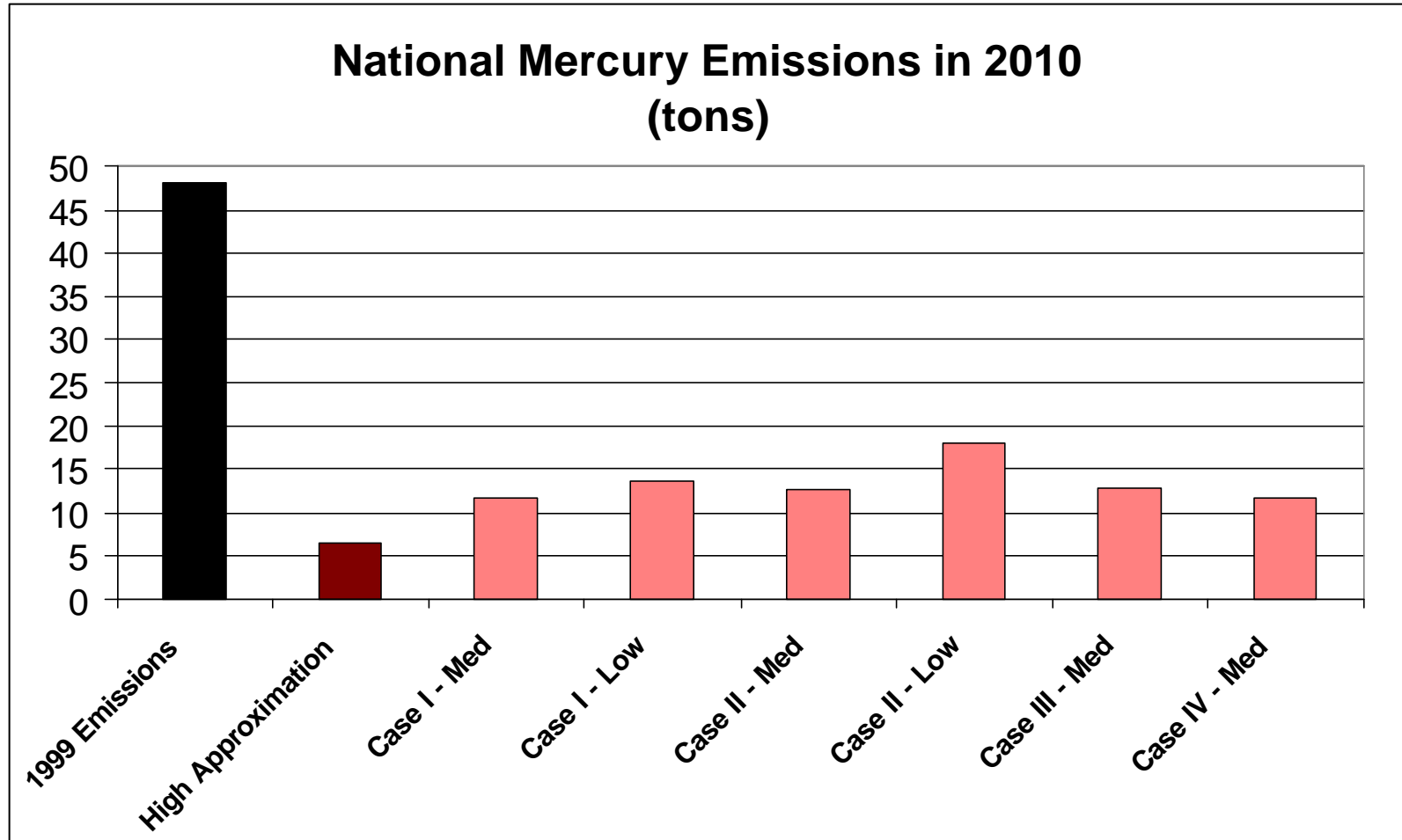
MACT Cases Analyzed - Cases III & IV

- **Case III - Categorization by Fuel Type**
 - Med:
 - 80% removal or 0.79 lbs/TBtu for Bituminous & Subbituminous fuels
 - 45% removal or 6.90 lbs/TBtu for Lignite fuels
- **Case IV - Categorization by Boiler Type**
 - Med:
 - 95% or 0.09 lbs/TBtu for FBC units
 - 80% removal or 0.79 lbs/TBtu for all other units

Modeling Assumptions

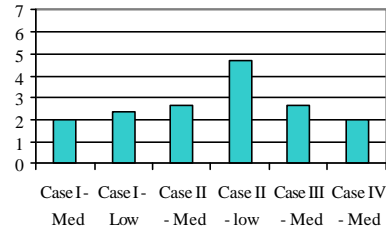
- Activated Carbon Injection
 - 80% removal
 - Capital costs between \$1/kW to \$55/kW
- Removal Efficiencies
 - SCR +FGD = 95% removal all coals
 - SNCR + FGD = 90% removal for all coals
- For more information:
 - <http://www.epa.gov/airmarkets/epa-ipm>

National Emissions

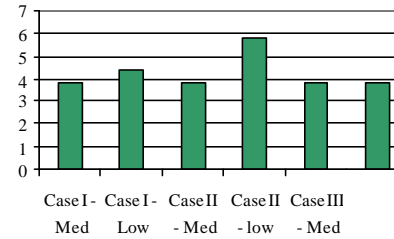


Regional Emissions

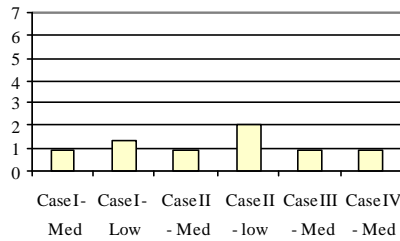
Central Hg Emissions (tons)



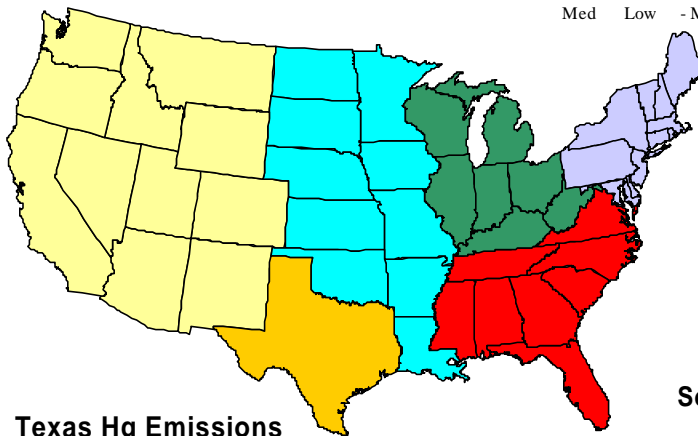
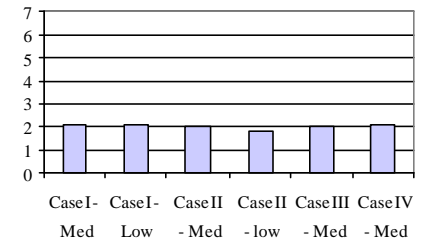
Midwest Hg Emissions (tons)



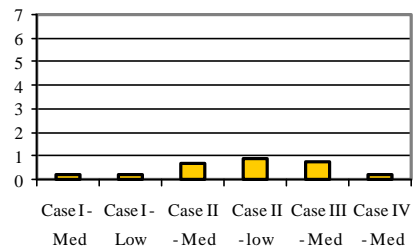
West Hg Emissions (tons)



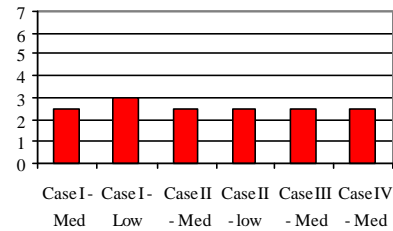
Northeast Hg Emissions (tons)



Texas Hg Emissions (tons)

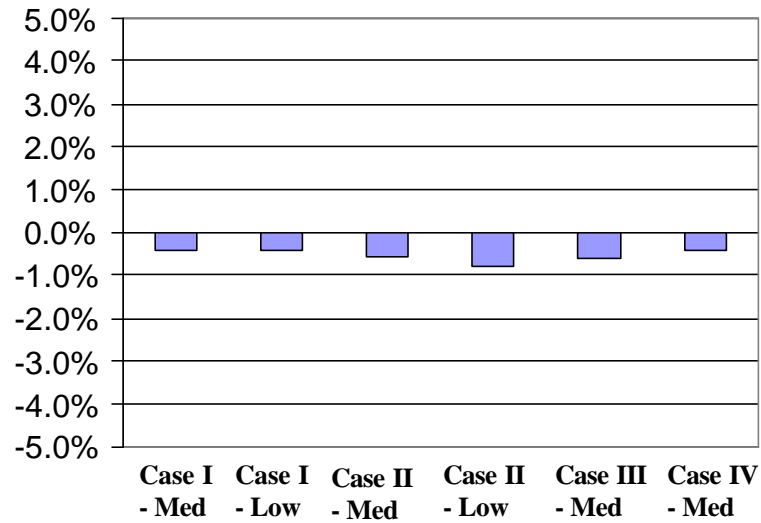


South Hg Emissions (tons)

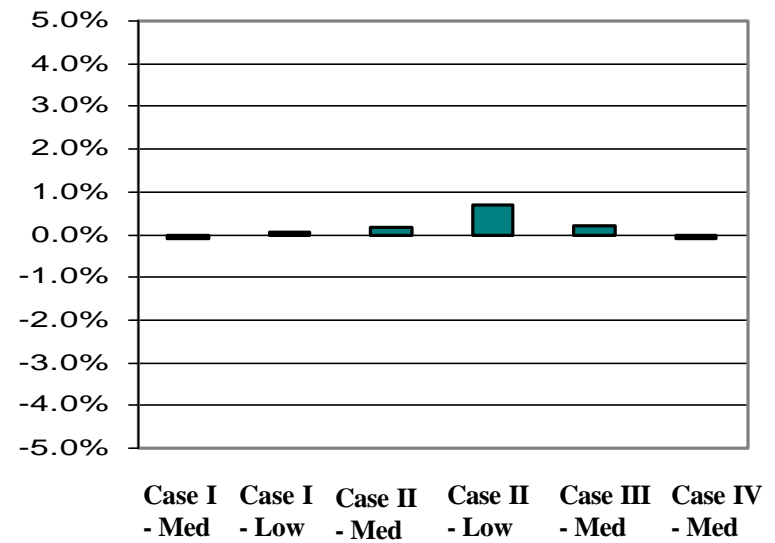


Generation Mix

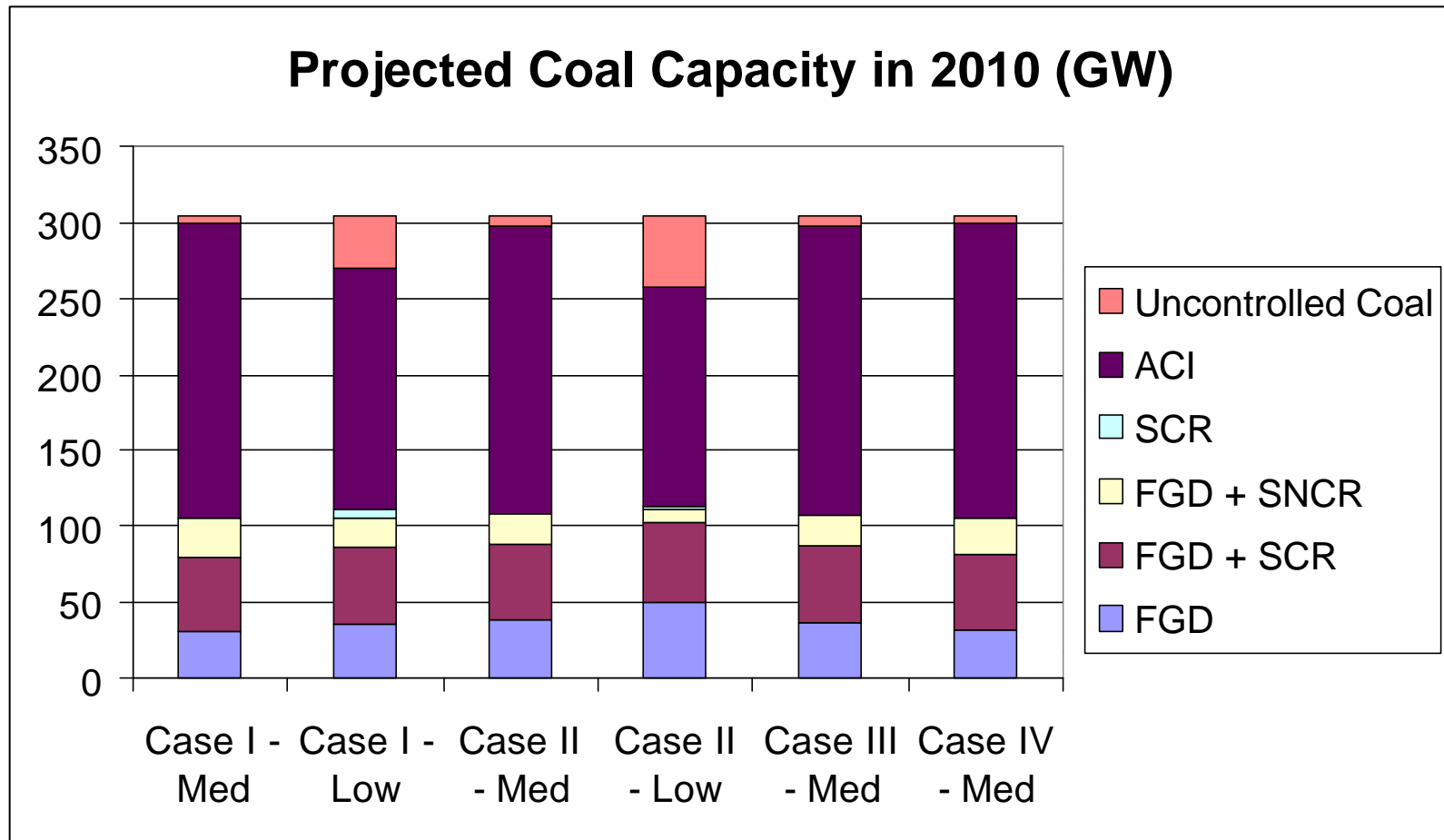
Coal Generation - Change From Basecase



Natural Gas Generation - Change From Basecase

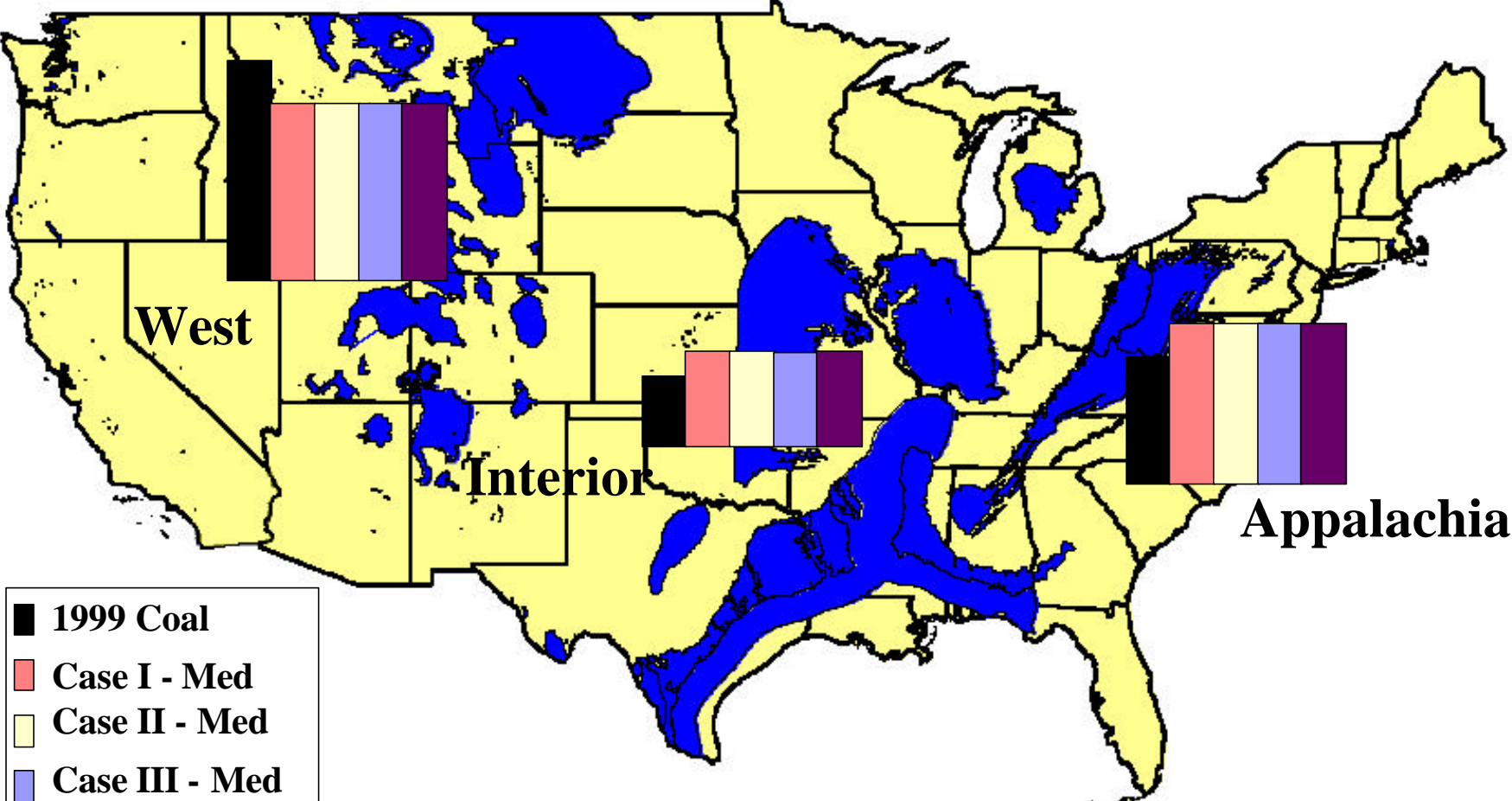


Installed Technology



Coal Impacts

Coal Produced for Power Generation Sector

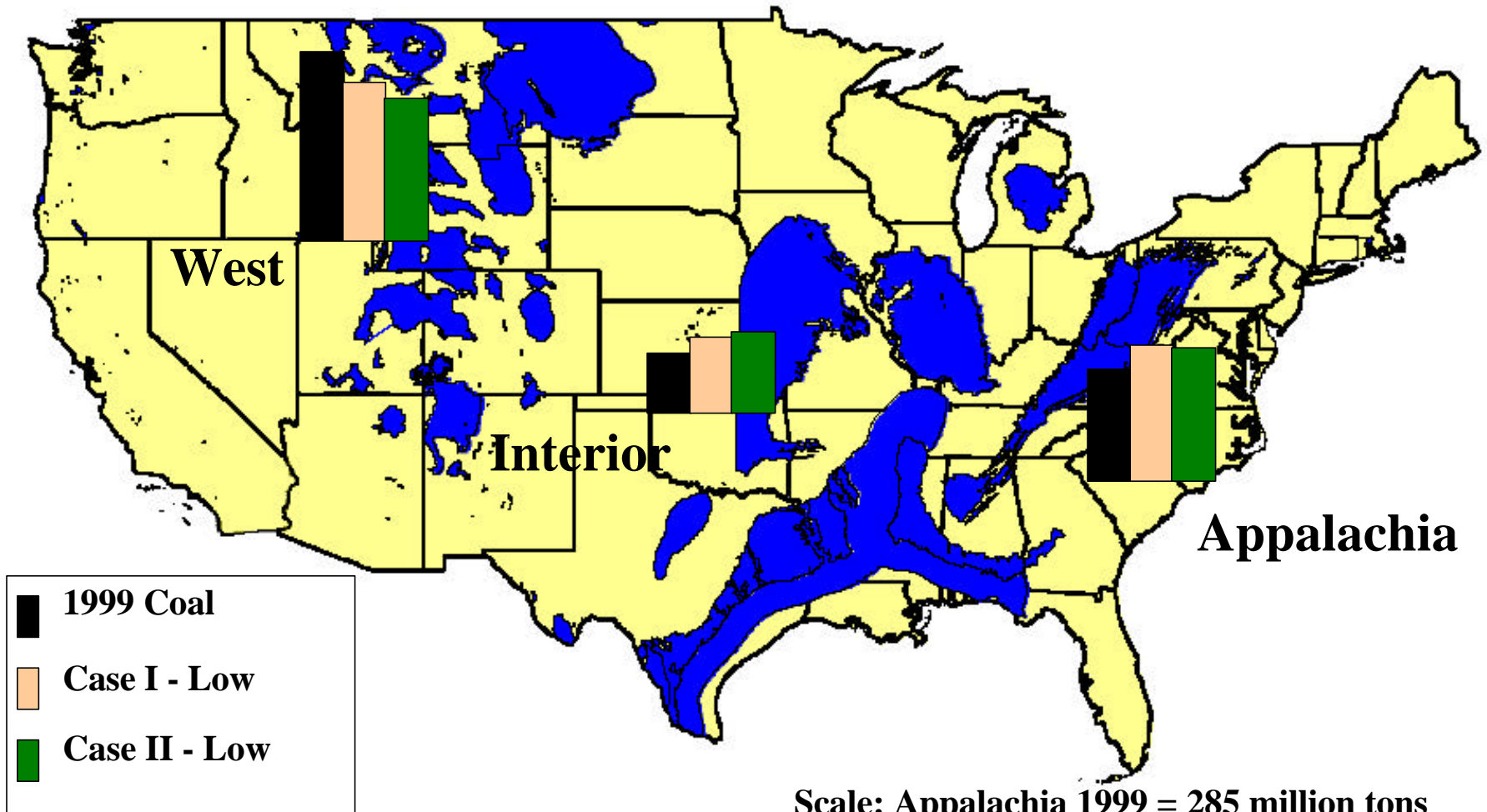


- 1999 Coal
- Case I - Med
- Case II - Med
- Case III - Med
- Case IV - Med

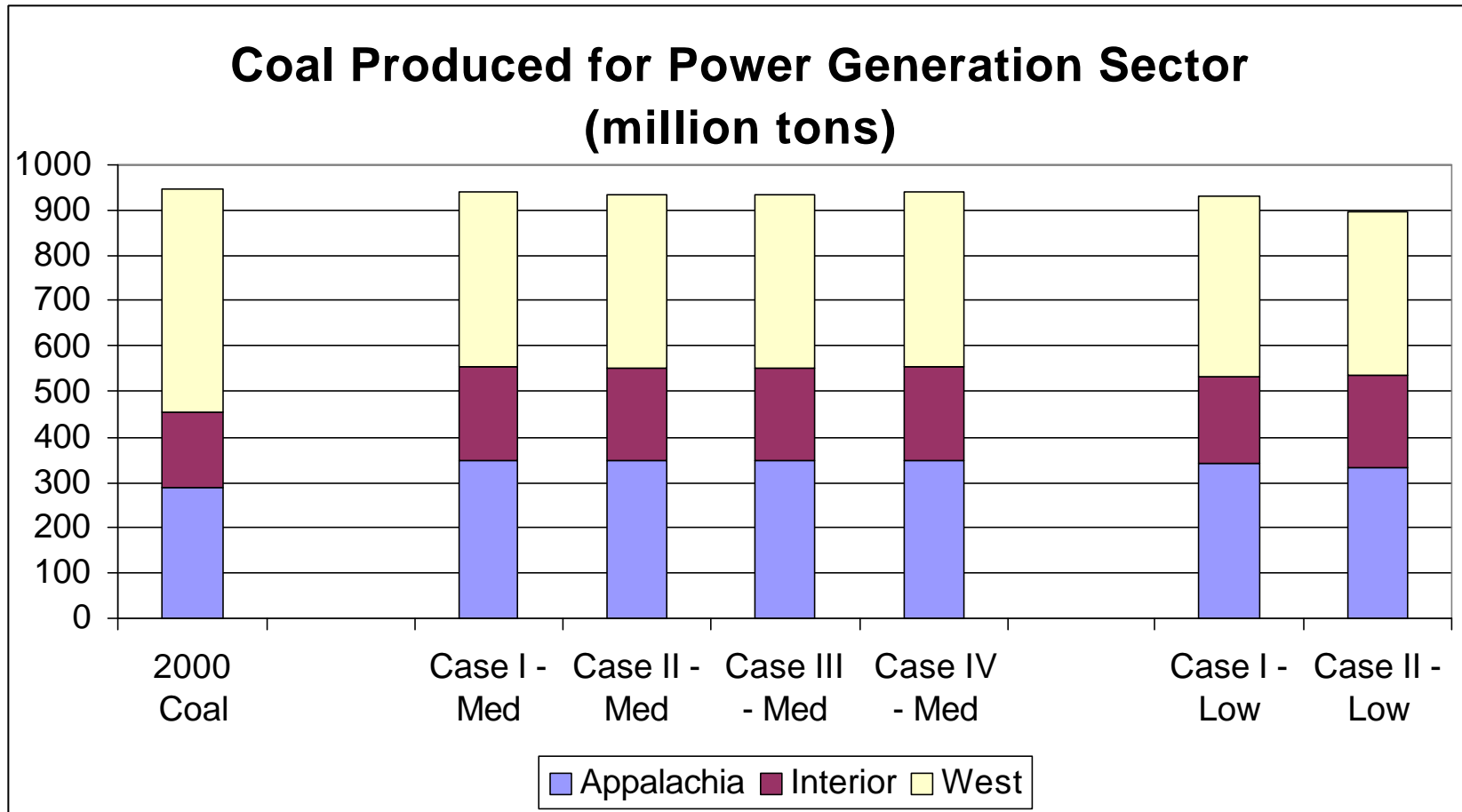
Scale: Appalachia 1999 = 285 million tons

Coal Impacts

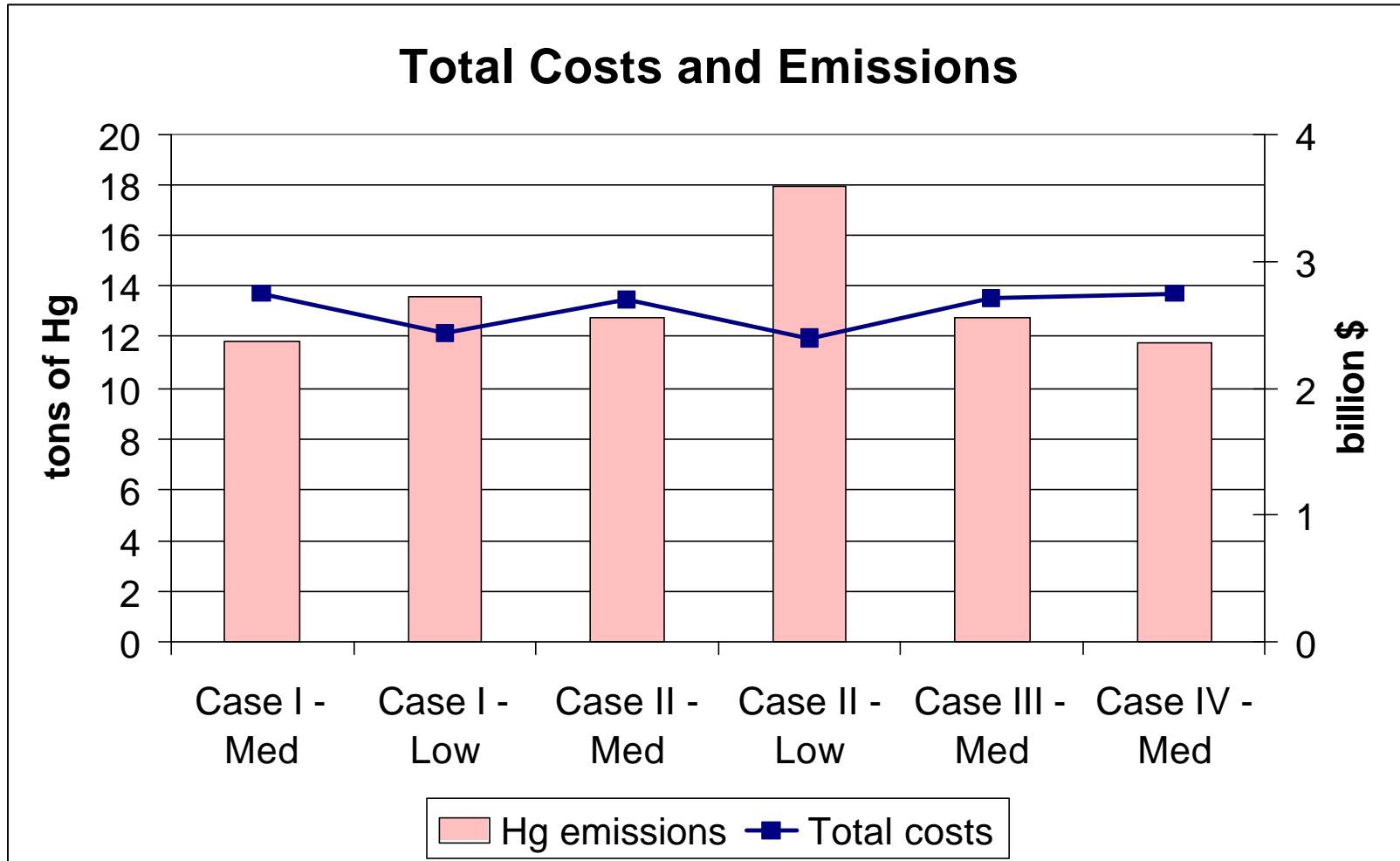
Coal Produced for Power Generation Sector



Coal Impacts



Total Costs and Emissions



Other Emissions Impacts

- No significant change in SO₂ and CO₂ emissions in all cases
- About 20% reduction in NO_x emissions in all cases