

Greenhouse Gas Mitigation from Power Plants

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McIlvaine Hot Topic Hour

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What ATP Does

What we do

- Consulting
 - Focused on Air Pollution Control/Monitoring
- Software and licensed reports

Proud member of



Clients

- Government
- Facility Owners
- Equipment suppliers
- Investment Community

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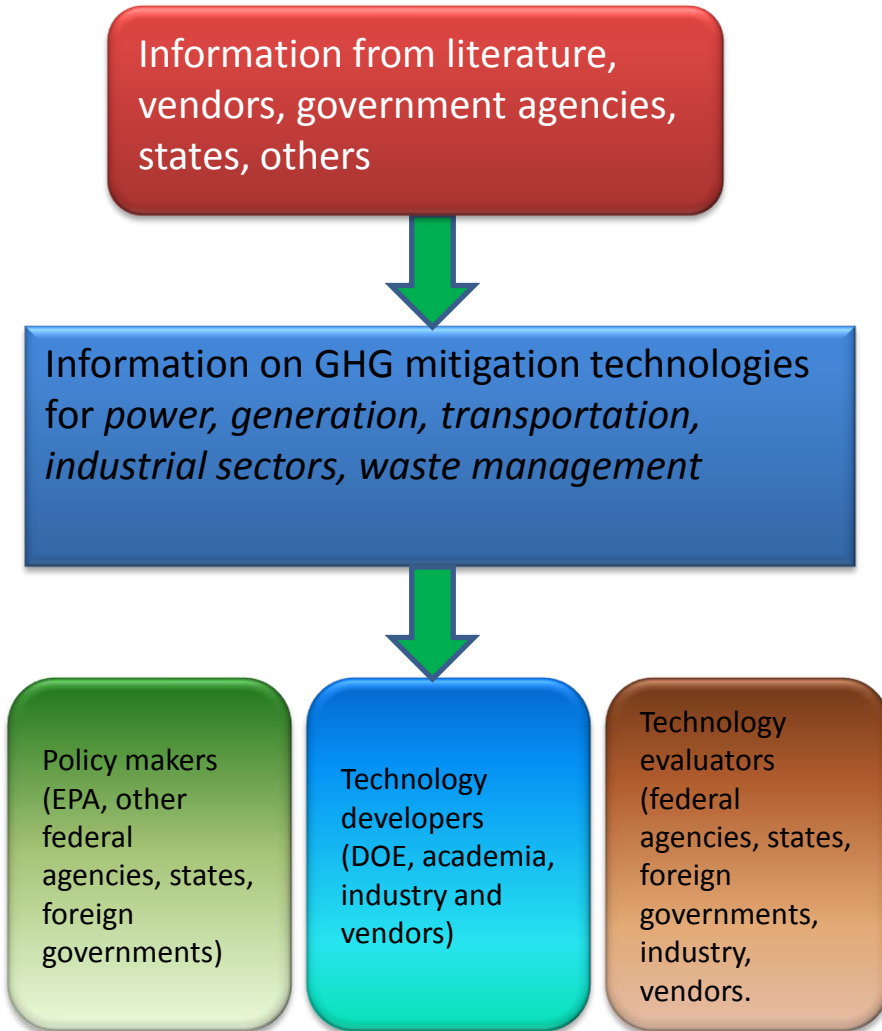
Current GHG Activities/Analysis

- **Private Sector** – independent analysis/benchmarking of GHG control technologies and other GHG mitigation strategies
- **US EPA's GHG technology database (G-MOD)**
 - Not to be confused with the GHG Inventory!
- **US EPA's Industrial Sector Integrated Solutions model** - GHG mitigation measures as well as criteria pollutant and HAP

Greenhouse Gas Mitigation Options Database G-MOD

- Under Development by US EPA's Office of Research and Development with input from Office of Air Quality Planning and Standards
- US EPA is supported by . . .
 - Eastern Research Group (prime)
 - Andover Technology Partners
 - Univ. of North Carolina
- Sectors currently under development
 - Power, Cement, Pulp/Paper, Iron and Steel

GHG Mitigation Options Database



The database will help answer the following questions for key technologies:

- *What is the stage of development / demonstration and availability?*
- *What are the projected utilization costs?*
- *What are the ancillary impacts of technology deployment?*
 - *Water use, parasitic power load, solid waste generation, other*

Database Development

- **Stakeholders Workshop – April 2009**
 - Government (federal, state, local) – incl. EPA, DOE, USDA, etc.
 - Technology providers / technology users
 - Energy Efficiency experts
 - Sector-specific experts
 - etc.
- **Power (Utility) Specific Workshop – November 2009**
 - Government (federal, state, local) – incl. EPA, DOE, GAO, etc.
 - Technology providers / technology users
 - Industry experts and advocacy groups
 - NGOs, etc.
- **Database Development Team**
 - Eastern Research Group (ERG) / Andover Technology Partners
 - University of North Carolina Institute for the Environment (UNC-IE)
 - EPA ORD (with input from OAR/OAQPS)

Database Development

- **Beta Version released for Review – April 2010**
 - Agency reviewers (ORD, OAR, Regional, etc.)
 - Small external group coordinated by CAAAC GHG BACT working group
 - State/local regulators
 - Comments / Suggestions are being addressed now
 - Current URL = <http://ghg.ie.unc.edu:8080/GHGMDB/>
- **Version 1.0 released – November 2010**
 - Power (Utility) and Cement Sectors only
- **Subsequent versions**
 - Additional industrial sectors (petroleum refineries, pulp & paper, iron & steel, etc.)
 - Transportation / mobile sources
 - Additional or refined information in the Power and Cement sectors

G-MOD

- Version 1.0
 - Web Based
 - Power and Cement sectors only
 - Limited data analysis capabilities
- Newer Version (2.0?)
 - Downloadable utility to run on computer
 - Greater flexibility in data analysis

G-MOD

- Searchable Database of GHG mitigation methods
- Search by
 - Industry Sector
 - Source Type
 - Stage of Development
 - Mitigation method/technology
- Analytical capabilities to compare options

G-MOD – Power Sector

- Options/Strategies/Technologies
 - Heat Rate Improvement Methods
 - Carbon Capture and Sequestration (Coal and Gas)
 - Renewables (wind, solar, biomass)
 - Nuclear
- Compare by
 - Generating Cost
 - CO₂ emissions per MW
 - Cost of CO₂ avoided
 - Other performance measures

G-MOD Going Forward

- Finalizing Database for Power and Cement Sectors
- Add Pulp & Paper and Iron & Steel sectors
- Refining and Landfills are next
- Continual Improvement/Updating
- Considering means for industry to provide data for possible incorporation into G-MOD
 - Vetting process
- Target release is late summer or fall 2011

Industrial Sector Modeling

- ATP assisting ORD and OAQPS in development of the Industrial Sector Integrated Solutions (ISIS) Model
- Used for modeling industrial sectors
 - Criteria pollutant, HAPs, GHGs
- Industrial sectors under development
 - Portland Cement (complete – used for PC MACT)
 - Pulp/Paper (boilers and furnaces)
 - Iron & Steel

ISIS Going Forward

- ISIS Model to be used for future analysis of industrial sector rules
- ISIS has been built to support GHGs as well as other pollutants
- More sectors to be added to ISIS

Summary

- ATP is assisting private sector and public sector clients in evaluation of GHG mitigation methods
 - Supporting private sector clients on benchmarking of GHG mitigation methods
 - ATP is supporting US EPA on its GHG knowledge base, especially GHG Mitigation Options Database and the Industrial Source Integrated Solutions model.