

## **MEETING NOTICE**

### **Governor's Task Force on Global Warming Industry Work Group**

**Date: Monday, September 24, 2007, 1:00 pm – 4:00 pm**

**Location: room G09, GEF 2,  
101 South Webster St., Madison**

## **DRAFT AGENDA**

- 1) Welcome and review of agenda
- 2) Open Meetings issues and questions
- 3) Presentation by each Subgroup on their rough policy template, including committee discussion and identification of data needs.
- 4) WRI will join the meeting by telephone about 2:30 p.m. to discuss how to meet data needs of the Subgroups and answer additional questions.
- 5) Presentation by Ed Wilusz on the paper industry's efforts to control greenhouse gas emissions, around 3:30.
- 6) Timeline and agendas for future meetings.

**This meeting is open to the public.**

**For more information, or if you need special accommodations to attend this meeting, contact Nick Sayen, DNR, at (608) 267-2466 or [Nick.Sayen@wisconsin.gov](mailto:Nick.Sayen@wisconsin.gov).**

**Wisconsin Global Warming Task Force Workgroup-“Emissions Data Feedback Policy”**

Draft 9-24-2007 (Stringham)

**1. Workgroup:**

Industry Work Group

**2. Policy Name:**

**Provide Feedback to Industry on Emissions (smart meters) - immediate, medium, long term.** These programs focus on baseline and periodic industry emissions data collection and reporting; identification of tools to help industry measure and quantify emissions; establishing sector goals for GHG emissions reductions; adopting energy auditing and budgeting by industrial sector; providing convenient-to-use measuring devices; and, finally, setting emissions reduction targets and measuring reductions in relation to the impact on “quality” job growth metrics.

**3. Policy Types:**

- a. Legislation and funding authorization;
- b. Voluntary industry best practices systems;
- c. Legislation: special study of relationship between GHG reduction & quality job growth

**4. Affected Sectors, Sub-Sectors and/or Entities:**

- a. All Industry Sectors, Sub-Sectors, and Entities (Facilities) using on-site power generating sources

**5. Estimated Greenhouse Gas Emissions Reduction Impact:**

- a. Target should be 3-5% reduction annually from all sectors.

**6. Estimated Costs:**

- a. Companies investing in GHG emissions monitoring/reporting will see an initial investment of ?% on their present capital and operating budgets. ROI's will depend on linkage between implementing GHG reduction initiatives and improving core production efficiencies.
- b. State government should add incentives (i.e. grants, loans, tax credits, etc.) and technical assistance through UWEX etc. to help businesses, especially medium to small-size, design and execute energy auditing and GHG measuring programs that will in part provide GHG emissions data.
- c. Industry associations should create their own technical assistance programs and, possibly, revolving loan programs, for use by members in purchasing or renting special measuring devices.

**7. Specific Description of Policy Proposal:**

- a. The Wisconsin Legislature should authorize and fund a program to collect baseline GHG emissions data and updated emissions data from facilities in key industrial sectors to establish and update a comprehensive, empirical emissions inventory. Ideally, this inventory will provide a reliable macro-measure of state industry emissions of GHG, as well as a facility-specific micro baseline measure, that will accomplish two objectives: 1. quantify, using empirical means, the GHG gas emissions loading into the atmosphere from facilities and industry sectors for a specific baseline year in the near future; and 2. establish GHG measurement protocol and industry reporting process, procedure, and schedule to enable valid, empirical measurement of progress in reducing GHG emissions at the micro (facility) level and the macro (industry) level. Include GHG reduction target and measuring in relation to quality job growth metrics.

- b. Industry, through voluntary adoption of best practices and government encouragement, should adopt energy auditing and budgeting systems, including the establishment of publicized goals (reduction targets) for annual, short-term and long-term GHG emissions reductions. Industry should report results, either by sector or by facility.

#### **8. Timetables, Duration and Stringency Option:**

- a. Annual, depending on data collection/reporting costs and effectiveness for GHG emissions reporting. The scope, level of detail, types of GHG to be reported, frequency of data collection and reporting, and other details will establish the “stringency” of the requirement.

#### **9. Explanation of Rough Estimate of GHG Reduction:**

- a. If Wisconsin Industry could average a 3% reduction annually, it would reduce CO<sub>2</sub> by 2.9 million tons annually. NB: At some companies, Toxic Release Inventory (TRI) reductions, by comparison, have averaged over 5% per year over 10+ year period.

#### **10. Rough Estimate of Costs for Selected Years:**

- a. Program management costs for State Government, presumably the DNR, are minor, but still need to be estimated.
- b. Costs to private industry will be significantly larger and need to be carefully assessed and estimated on a facility level where business units in both large and small companies are typically defined. These estimates, including data collection and reporting burden that needs to be generated as part of the initial program design process, will help determine precisely the type and detail of information to be collected from industry, the reporting periods, and format.

#### **11. Barriers to Implementation:**

- a. Reluctance of industry to adopt yet another self-reporting requirement due to direct expense of periodic data collection and reporting, and concern that data will result in future imposition of GHG emissions control requirements and expenditures.
- b. Adequate funding of government program resources, especially resources to administer data collection and reporting program; gather, collate, evaluate, and disseminate reported data from/to industry and the public; and ensure compliance with emissions data reporting requirements.
- c. Energy auditing protocols and procedures with respect to GHG emissions widely unknown to many small and medium businesses, especially.
- d. Lack of resources for energy auditing and GHG emissions monitoring and reporting.
- e. Lack of perceived short-term economic value from periodic GHG emissions data collection and reporting activity.

#### **12. Other Factors:**

- a. To be determined.

**Wisconsin Global Warming Task Force Workgroup Template for Presentation Policy Options**

1. Workgroup:
  - Industry Work Group
  
2. Policy Name:
  - a. Utilize, Emphasis, Expand Existing Programs, Especially Targeting Small to Medium Business. These programs are: Focus on Energy, Green Tier and WMEP.
  
3. Policy Type:
  - a. Legislation and Funding Continuous
  
4. Affected Sectors, Sub-Sectors and/or Entities:
  - a.
  
5. Estimated Greenhouse Gas Emissions Reduction Impact:
  - a. Target should be 3% reduction annually from all sectors.
  
6. Estimated Costs:
  - a. Companies investing in Energy Management will see an initial investment of 5% on their present capital budget. ROI's will vary between 1-3 yrs in most instances; Focus on Energy is a key contributor to rebates and cost reductions of these investments. The government needs to add incentives similar to Focus on Energy for small and medium size businesses that do not meet the ROI's required for funding today.
  
7. Specific Description of Policy Proposal:
  - a. The legislature of Wisconsin should continue its funding and support of the above mentioned programs already in place today. These programs provide education, training, funding and resources for businesses to reduce energy and power consumption, thus saving money for the business and reducing GHG emissions. Legislature needs to bring the DNR into support of these programs and allow industries who are investing for GHG reduction to work within regulations without the time constraints in the system today.
  
8. Timetables, Duration and Stringency Option:
  - a. There should be no timetable set for elimination of these programs. They are well established organizations that have proven their effectiveness. Each group should report their results to the Legislature semi-annually.
  
9. Explanation of Rough Estimate of GHG Reduction:
  - a. If Wisconsin Industry could average a 3% reduction annually, it would reduce CO2 by 2.9 million tons annually.
  
10. Rough Estimate of Costs for Selected Years:
  - a.
  
11. Barriers to Implementation:
  - a. DNR regulations inhibit quick response of industry to invest and make changes in their operations.
  - b. Reluctance of Industry to believe in return on investments.

- c. Energy costs are not part of capital budgets, thus unnoticed at many small and medium businesses.
- d. Lack of internal education on what is available for industry
- e. Lack of resources to focus on energy management

12. Other Factors:

- a.

# Perspectives on Paper Industry CO2 Emissions, Reduction Potential, and Reduction Options

Ed Wilusz

Wisconsin Paper Council

John Piotrowski

Packaging Corporation of America

# General

- Paper industry ~70% of industrial (non-utility) CO<sub>2</sub> emissions (DNR AEI, 2005)
  - Roughly 7 million tons of the 10 million tons of industry-wide CO<sub>2</sub> emissions
- CO<sub>2</sub> reduction potential from industry sector largely tied to paper industry

# General

- What are the sources of CO<sub>2</sub> emissions in the paper industry?
  - Fossil fuel v. carbon neutral (bio)
  - Coal v. other fuels
- In general, what is the magnitude of CO<sub>2</sub> reductions that can be achieved by various options?
- What specific options exist for reducing major source(s) of CO<sub>2</sub> emissions?
  - Costs v. benefits

# Disclaimers -1

- Very rough overview
  - Much more analysis is required
- Emission reduction potentials and cost estimates are for model facility and are ballpark estimates
  - Need to determine site-specific costs/benefits
- Reduction options are examples; not exhaustive
- Perspective is that of paper industry

# Disclaimers - 2

- The emissions inventory data are flawed, but overall assessment probably close
  - DNR data missing companies, boilers, and some entries incorrect; data not corrected for companies or boilers, but corrected for errors
    - Not necessarily DNR fault; lack of time to resolve questions
  - ~96% of DNR AEI 2005 total accounted for

# Methodology

- DNR AEI data 1999-2005
- Sent to companies for verification and
  - % carbon neutral v. fossil fuel
  - % of fossil fuel that is coal
- Data averaged over 2001-2005
  - More problems with 1999-2000 data

# Emissions Characterization

- On average from 2001-2005
  - 31% of paper industry CO<sub>2</sub> emissions carbon-neutral
  - 55% of paper industry CO<sub>2</sub> emissions from coal combustion
  - 14% of paper industry CO<sub>2</sub> emissions from gas, oil combustion
- Greatest potential for reduction: Coal

# Industry Reduction Potentials

- Target: 60-80% below 1990
  - 1990 emissions?
- ~70% reduction from industry 2005 levels
  - Shut down pulp and paper industry
  - Bad idea (just our opinion)
- ~46% reduction from industry 2005 levels
  - Convert all paper industry fossil fuel combustion to biomass

# Fossil Fuel to Biomass

- Cost – unknown
- Capital cost exercise
  - 83 boilers in DNR AEI 2005 (paper)
  - Boiler rebuild or replacement likely
    - Rebuild = ~\$23 million @ 200,000 #/hr steam
    - Replacement = ~\$33 million @ 200,000 #/hr steam
    - 2001 estimates; current costs would be higher
  - If 15 replacements and 45 rebuilds, total capital cost = \$1.53 billion
    - Boiler costs only, doesn't include controls, etc.
    - Cost needs to be scaled for steam demand

# Fossil Fuel to Biomass

- Operation costs
  - Likely to decrease
    - \$1.24 million/yr @ \$10/ton wood cost
    - Total reduction ~\$103 million/yr
    - 2001 estimates for model facility
  - WI wood costs higher; cost reduction smaller
  - Does not consider potential raw material cost increase resulting from wood price increases due to increased demand for wood as fuel
    - Wood as raw material v. fuel

# Industry Reduction Potentials

- ~16% reduction from industry 2005 levels
  - Convert paper industry coal combustion to natural gas
  - 24% reduction from pulp and paper
  - Natural gas CO<sub>2</sub> emissions assumed to be 56% of coal emissions (adjusted for efficiency)

# Economics of Coal to Gas

- Wisconsin Energy Statistics 2006
  - Coal -- \$2.55/MMBtu in 2005
  - Gas -- \$9.41/MMBtu in 2005
- Natural gas ~3.7 times more expensive than coal
  - Not adjusted for efficiency

# Economics of Coal to Gas

- Assume:
  - \$600 = production cost per ton of paper
  - Energy (coal) = 25% of production cost = \$150/ton
  - \$650 = selling price per ton of paper
- If:
  - Energy costs increase by factor of 3.7, to \$555/ton
- Then:
  - Cost of production rises to \$1,005 per ton
- Caution: Historical cost differential less than 3.7, but over 3 in recent years; cost increase would drive energy efficiency to control costs; cost increase would drive biomass conversions

# Real World Fuel Switching Examples - PCA

- Coal to Gas
  - Capital cost \$30 million
  - Annual operating cost: \$5.6 million
  - CO<sub>2</sub> reduction: 301,000 tons/yr
- Coal to Wood
  - Capital cost \$40 million
  - Annual operating cost: \$2 million
  - CO<sub>2</sub> reduction: 693,000 tons/yr

# Industry Reduction Potentials

- Energy efficiency options for boilers
  - All options evaluated on a sample calculation basis
    - Costs and benefits need to be scaled to specific situation
  - Capital costs in all cases are unknown
    - Dependent on unknown site-specific conditions
  - Boiler efficiency options may trigger the need for additional controls
    - Controls could be very costly and are not considered here

# Boiler Efficiency Options

- Preheat demineralized water with secondary heat before steam heating
  - Operational cost savings ~\$830,000/year
  - CO2 reduction ~14,600 tons/year
- Install steam accumulator to facilitate efficient control of steam header pressure
  - More effective with larger steam demand swings
  - Operational cost savings ~\$290,000/year
  - CO2 reduction ~10,500 tons/year

# Boiler Efficiency Options

- Install ash reinjection system in a hog fuel boiler
  - Applies only to wood waste boilers
  - Operational cost savings ~\$205,000/year
  - CO2 reduction ~6,000 tons/year
- Install a bark press or dryer to increase utilization of biofuels
  - Applies only to wood boilers
  - Operational cost savings ~\$580,000/year
  - CO2 reduction ~25,000 tons/year

# Boiler Efficiency Options

- Install additional heat recovery systems to lower losses with flue gases
  - Boiler performance concerns
  - Operational cost savings ~\$845,000/year
  - CO2 reduction ~24,500 tons/year
- Implement an Energy Management System
  - Operational cost savings ~\$640,000/year
  - CO2 reduction ~18,500 tons/year

# Other Reduction Potentials

- Energy Efficiency
  - Reduction potential unknown
- Examples
  - Heat recovery to generate hot water
  - Tertiary & quaternary combustion air
  - Eliminate compressed air/water/steam leaks
  - Use variable frequency/high efficiency motors
  - Collect/reuse hot water
- You're in business if your minding the energy efficiency business!

# PCA Biogas Project

- Recovers wastewater treatment gas for use in process boiler
  - Displaces 29 MMBtu/hr natural gas
  - Eliminates ~ 75,000 tpy GHG
  - Saves ~ \$1 million/yr energy costs
  - Took 6 years to get permit for precursor project
  - Only mill in WI with anaerobic treatment





# Resources

- Technologies for Reducing Carbon Dioxide Emissions: A Resource Manual for Pulp, Paper, and Wood Products Manufacturers, NCASI and EKONA, December 2001
- Pulp and Paper Industry Energy Best Practice Guidebook, Wisconsin Focus on Energy, May 2005

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Industry Work Group  
Date: Monday, September 24, 2007, 1:00 pm – 4:00 pm  
Location: room G09, GEF 2,  
101 South Webster St., Madison**

**MEETING NOTES**

**Attendance:** Steve Steinpreis, John Piotrowski, Scott Manley, Nina Plaushin, Caryl Terrell, John Imes, Marc Bentley, Ed Wilusz, Satya Rhodes-Conway, Dave Boyd, Dave Oughton, Nick Sayen, Charles Cole, Tia Nelson, Paul Linzmeyer, John Larsen (conference call)

**I) Welcome and review of agenda**

**II) Open Meetings issues and questions**

There were no Open Meetings issues or questions

**III) Presentation by each Subgroup on their rough policy template, including committee discussion and identification of data needs.**

There were 6 policy templates presented most of which were in early, rough, draft stages. These were presented by the authors and discussed by the group – the group offered feedback. Authors were requested to finish/revise/edit templates going forward. Handouts were provided.

- 1) Satya Rhodes-Conway presented her material on encouraging distributed generation of renewable energy and combined heat and power.
- 2) Dave Oughton presented his template on investing in and linking together R&D and pilot projects.
- 3) Steve Steinpreis presented his template on expanding/utilizing existing programs
- 4) Scott Manley presented his template on general incentives for conservation and efficiency and infrastructure.
- 5) Paul Linzmeyer presented his template on exploring opportunities for recognition of early actions. A digital copy was projected on the screen.
- 6) Dave Stringham was absent. The group discussed handouts of his template Questions/issues included whether or not the templates should include single policies or portfolios (answer: single policies) and how to quantify the impacts on GHGs?

Dave Boyd spoke briefly about his research into high GWP gases.

A theme emerged in discussion that the policies seemed to fit together in addressing the following questions:

- 1) If something was not KNOWN, R&D should play a role, perhaps incentivized
- 2) Whether something was KNOWN (technologically)
- 3) Whether something was AFFORDABLE

- 4) Whether something was ALLOWABLE/PERMISSIBLE
- 5) Whether something should be REWARDED/RECOGNIZED

**PLEASE NOTE THAT DUE TO THE INCOMPLETE NATURE OF THESE TEMPLATES THE CO-CHAIRS HAVE DECIDED TO DELAY POSTING TO THE WEBSITE UNTIL THE AUTHORS ARE ABLE TO PROVIDE MORE COMPLETE DRAFTS. IT IS ANTICIPATED THAT THESE WILL BE POSTED BEFORE THE NEXT MEETING.**

**IV) WRI will join the meeting by telephone about 2:30 p.m. to discuss how to meet data needs of the Subgroups and answer additional questions.**

John Larsen joined conversation and spoke for some time about quantification. He discussed making defensible assumptions (e.g. who would participate – *coverage* and what kind of results may be expected – *participation*) and placing boundaries/brackets on estimates – usually in a high/low fashion. He suggested the importance of transparency in this process.

He reminded the group that estimates are mainly for guiding the Task Force on priorities and not a substitute for analysis.

He suggested that cost estimates are harder to find than emissions reductions estimates.

He provided examples from the Illinois Industry group

- methane capture - \$.01 per kWh or BTU
- CHP, up to 10 MWh, installed, rebates for buy down
  - o \$.50 per kWh for fossil fueled
  - o \$1 per kWh for renewably fueled

**V) Presentation by Ed Wilusz on the paper industry's efforts to control greenhouse gas emissions, around 3:30.**

PowerPoint presentation by (mainly) Ed Wilusz and case studies by (mainly) John Piotrowski.

Tia Nelson joined the meeting at 3:45.

**PLEASE NOTE THAT DUE TO THE INCOMPLETE NATURE OF THE PRESENTATION THE CO-CHAIRS HAVE DECIDED TO DELAY POSTING TO THE WEBSITE UNTIL THE AUTHORS ARE ABLE TO PROVIDE A MORE COMPLETE VERSION. IT IS ANTICIPATED THAT THIS WILL BE POSTED BEFORE 10/5/07.**

**VI) Timeline and agendas for future meetings.**

Meetings will be required each of the next two weeks.

After the meeting adjourned, the next meeting was set by email as: Wednesday Oct. 3<sup>rd</sup> at 9:00 a.m. in Madison, GEF II, Rm 413.