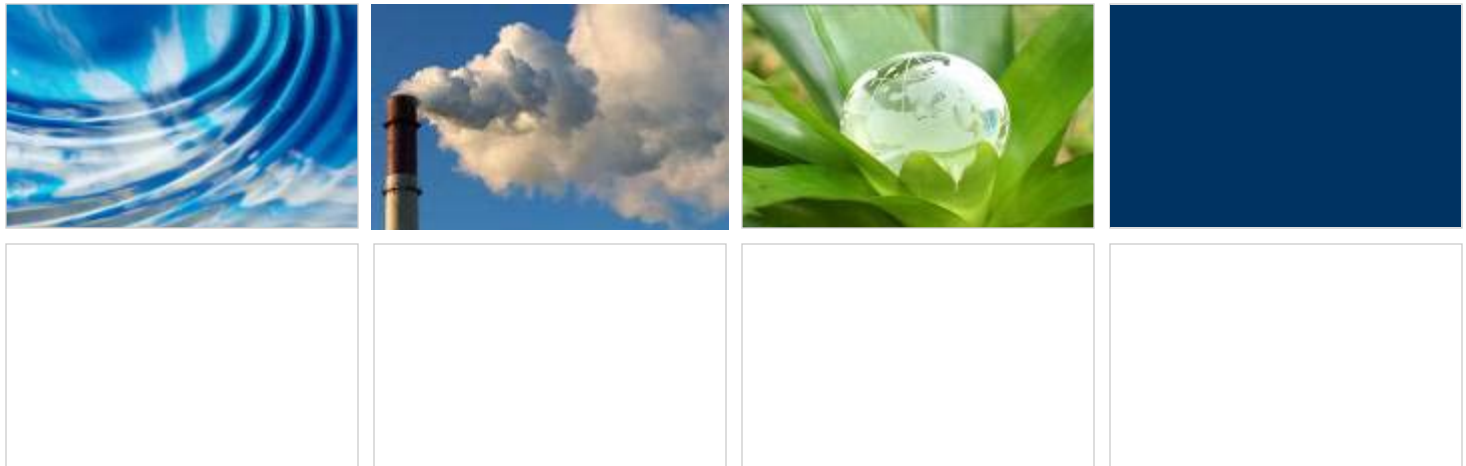


Green House Gas Updates: Regulatory and Non-Regulatory

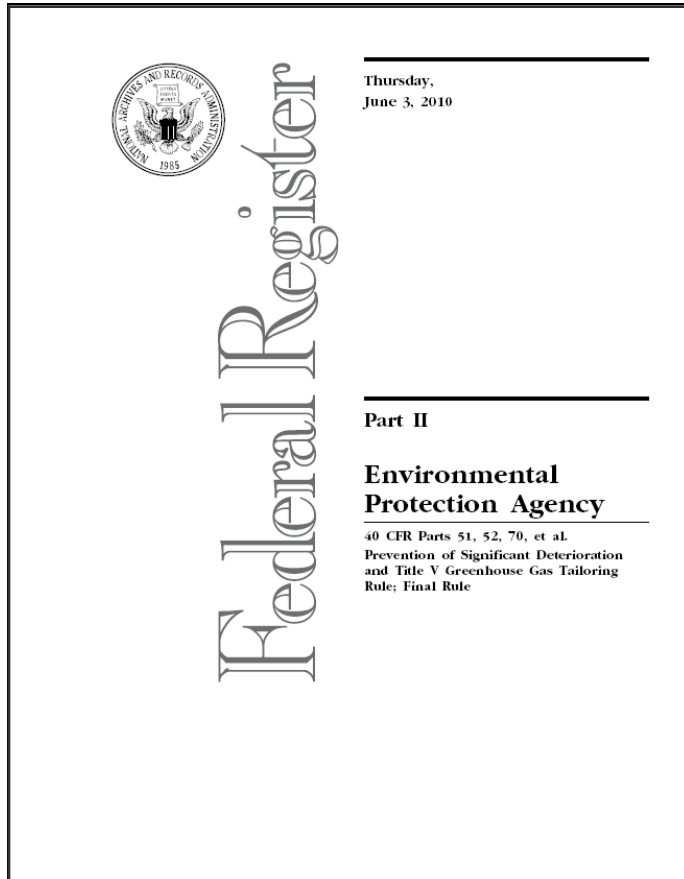
Tom Rarick, Dave Jordan, Elsie Rivera Palabrica
Environmental Resources Management

AWMA 9th Annual Winter Technical Meeting

December 9, 2010



GHG Tailoring Rule - Getting Ready

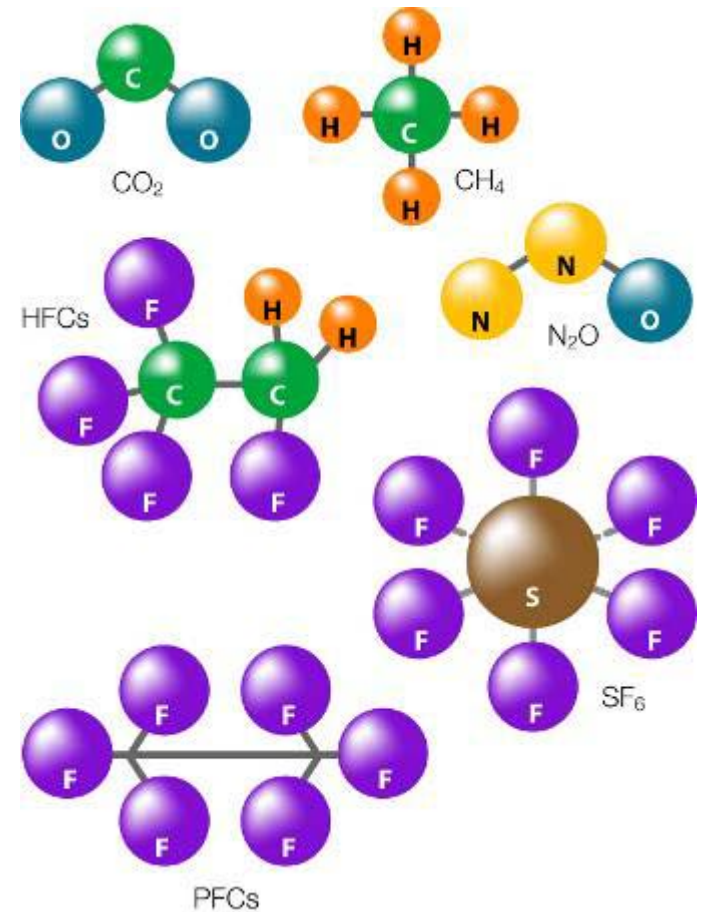


Impacts

- PSD as Early as January 2011
- BACT for GHG Emissions
- Title V upon renewal
- Six GHGs Treated as One PSD or Title V Regulated Pollutant

GHG - The Regulated Pollutant

- **The Regulated Pollutant:**
 - Kyoto six: CO₂, CH₄, N₂O, SF₆, Perfluorocarbons (PFCs), Hydrofluorocarbons (HFCs)
 - Other fluorinated gases: Nitrogen trifluoride (NF₃), Hydrofluorinated ethers (HFEs)
 - This is nearly **100** chemical compounds when added together
- **All converted to CO₂ equivalent emissions using Global Warming Potentials (GWP)**
 - CO₂ = 1
 - CH₄ = 21
 - N₂O = 310
 - SF₆ = 23,900



How did we get to the Tailoring Rule?

- **May 2007** – Supreme Court Ruling
- **October 7 2009** - Proposed Tailoring Rule
- **December 2009** – Endangerment Finding on GHGs
- **April 2010** – GHG Emissions Standards for Light-Duty Vehicles; Stationary Source Permitting Triggered Beginning Jan. 2, 2011
- **June 3, 2010**–Final Tailoring Rule
- **November 2010**–Guidance, Technical Resources and Training to States and Sources on Implementation of GHG Permitting

Permitting Thresholds

Pollutant	Title V	PSD	PSD Significance Level
PM ₁₀	100	100 or 250	15
PM	NA	100 or 250	25
SO ₂	100	100 or 250	40
NO _x	100	100 or 250	40
CO	100	100 or 250	100
Ozone/VOC	100	100 or 250	40
Lead	100	100 or 250	0.6
HAP	10 - individual 25 - combination	Not regulated under PSD.	
GHG (no Tailoring)	100	100 or 250	Any increase.
GHG (with Tailoring)	100,000	100,000	75,000

The Magnitude of CO2 Emissions

100 MMBtu/hr Natural Gas-Fired Boiler PTE

<u>Pollutant</u>	<u>LBS/MMBTU</u>	<u>TPY</u>
NOx	0.035	15
PM	0.01	4.4
CO	0.08	35
CO2	117	51,246

A boiler with a heat input rate of about 0.5 MMBtu/hr would trigger PSD and require an Operating Permit without the Tailoring Rule

Why Tailor?

- **PSD Permits**

- Currently about 380 per year
- With GHG, but no tailoring, about 40,000 per year

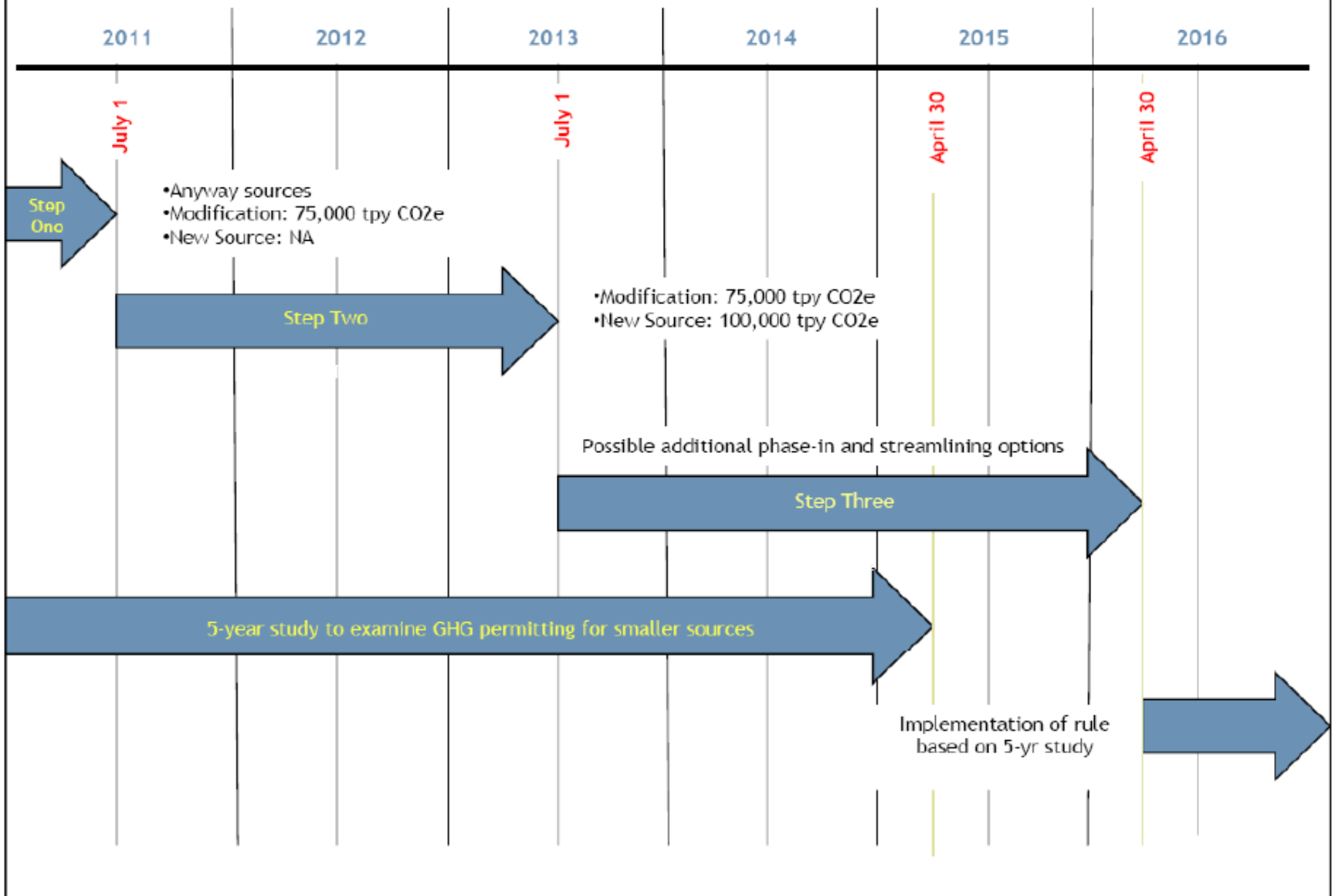
- **Title V Permits**

- Currently about 15,000 sources
- With GHG, but no tailoring, about 6 million sources

How Large A Modification

- **75,000 Tons CO₂e**
 - 144 MMBtu/hr Natural Gas
 - 102 MMBtu/hr Diesel
 - 80 MMBtu/hr Coal

EPA Timeline for the GHG Tailoring Rule



Phase 1: 2 January 2011 – 30 June 2011

- **PSD Applies to “Anyway Sources”**
 - New Source Construction or Modification already subject to PSD due to other regulated pollutant emissions
 - GHG Significance Level – 75,000 tpy CO₂e triggers need for BACT evaluation
- **Update Title V to include GHG if Permit is Renewed**
 - No applicable requirements - so hollow permit
 - Part 98 GHG Reporting Rule is not an applicable requirement
 - Be careful - avoid creating applicable requirements

Phase 2: 1 July 2011 – 30 June 2013

- **PSD Applicability (BACT)**

- New Sources with CO₂e PTE \geq 100,000 tpy
- Modifications with CO₂e Projected Actual \geq 75,000 tpy
- No requirement to be major for other regulated pollutant
- EPA estimates 900 new PSD permits vs. current baseload of approximately 350 per year

- **Title V Applicability (No applicable requirements)**

- All Sources with CO₂e PTE \geq 100,000 tpy
- It's not just combustion
- EPA estimates additional 550 Title V permits

Phase 3: 2011 to 2015

- **Potential phase-in of requirements for small sources**
 - EPA is seeking input on lower applicability thresholds
 - Phase-in beginning no earlier than 1 July 2013
 - Rulemaking to address streamlining options
- **Small sources (CO₂e < 50,000 tpy) deferred to no earlier than May 2016**

The GHG PSD Applicability Determination

- **GHG applicability determinations are based on both mass and CO2e Calculations**
 - PSD can only apply if mass emissions exceed the statutory thresholds (e.g. 100/250 tpy for new sources), and
 - CO2e emissions exceed the Tailoring Rule GWP threshold (75,000 tpy for modifications)

**Creates an Opportunity to Net Out e.g.
Trading CO2 for CH4**

Implementation Issues

- **September 2, 2010 – EPA Proposes Backstop Regulations**
 - SIP Call for 13 SIPs unable to regulate GHGs as part of PSD program
 - Proposed FIP to apply if SIP can't be updated
 - States failing to accept FIP risk “construction ban”
- **EPA Tailoring Rule applies in those areas where EPA has delegated PSD permitting authority – Illinois**
- **Remaining states have adequate authority or expect to complete rulemakings before January 2011**

BACT Guidance: November 2010

- **EPA guidance document “PSD and Title V Permitting Guidance for Greenhouse Gases” released November 2010**
- **EPA guidance documents also released for seven sectors with more specific discussions of how to address BACT**
 - Sector guidance documents are aimed at what should be considered as opposed to what is BACT i.e. information source
 - EGUs, ICI Boilers, Pulp & Paper, Refining, Iron & Steel, Cement, Nitric Acid Production
- **Ambient monitoring, modeling and “Other Impacts” analyses are not required**

BACT Implementation Issues

- **Retains current top-down BACT framework**
 - Five Step BACT process
 - Case-by-case determinations considering technical feasibility and environmental, economic and energy impacts
 - BACT Guidance is aimed at what should be considered as opposed to what is BACT
 - State training in December

The Top Down BACT Process for GHGs

- **Step 1: Identify all available options.**
- **Step 2: Eliminate technically infeasible options – consider availability and applicability**
- **Step 3: Rank remaining options by GHG CO₂e reduction potential**
- **Step 4: Evaluate most effective options – economic, energy and environmental impacts**
 - » CAAAC recommended cost threshold of \$3 to \$150 per ton although guidance does not specify.
- **Step 5: Incorporate selected option into GHG BACT emissions limit**

Scope of BACT for GHGs

- **Focuses on emission reductions within the source boundary**
 - External Impacts may be analyzed in Step 4
- **Process-line based**
- **Focus is on energy efficiency**
 - Use of industry-established benchmarking tools to assist in comparing efficiency of control options and determining BACT limits
- **Carbon Capture and Storage is considered an “Available Technology”, but is likely to be eliminated in Steps 2 or 4 (for now)**
- **Can require look at alternative fuels unless that would “Fundamentally Redefine” the source**

GHG PSD Issues

- **Potential to Emit Calculations:**
 - Scope and Units differ from GHG Reporting Rule
 - Source wide tons/year
- **Turning energy efficiency into permit language and determining permanent emissions reductions**
- **Breadth of BACT**
- **Credits for current energy efficiency projects**
- **Treatment of Biomass Fuels**
- **Tradeoff of GHG BACT for increases of other criteria pollutant emissions**
- **Projected project delays**

Transition Issues and Timing

- **The Tailoring Rule includes no grandfathering provisions**
- **PSD and Title V applications pending on January 2, 2011 will need to be updated to include CO₂e data and potentially BACT**
- **Assuming nine months to process an application, it would be wise to include CO₂e data routinely even now**
- **Sources with synthetic permits to avoid PSD must also “begin actual construction” prior to 1 July 2011 to avoid need to address PSD applicability for GHG emissions**
- **Some Sources may become “Major PSD Sources” solely for GHGs, which impacts applicability for other PSD regulated pollutants**

Avoiding BACT for CO₂e

- **Same tools available for CO₂e applicability as for other PSD regulated pollutants**
 - Synthetic Minor
 - Actual to Projected Actual Emissions
 - Netting
 - PALs
- **Energy efficiency projects could provide netting credits**

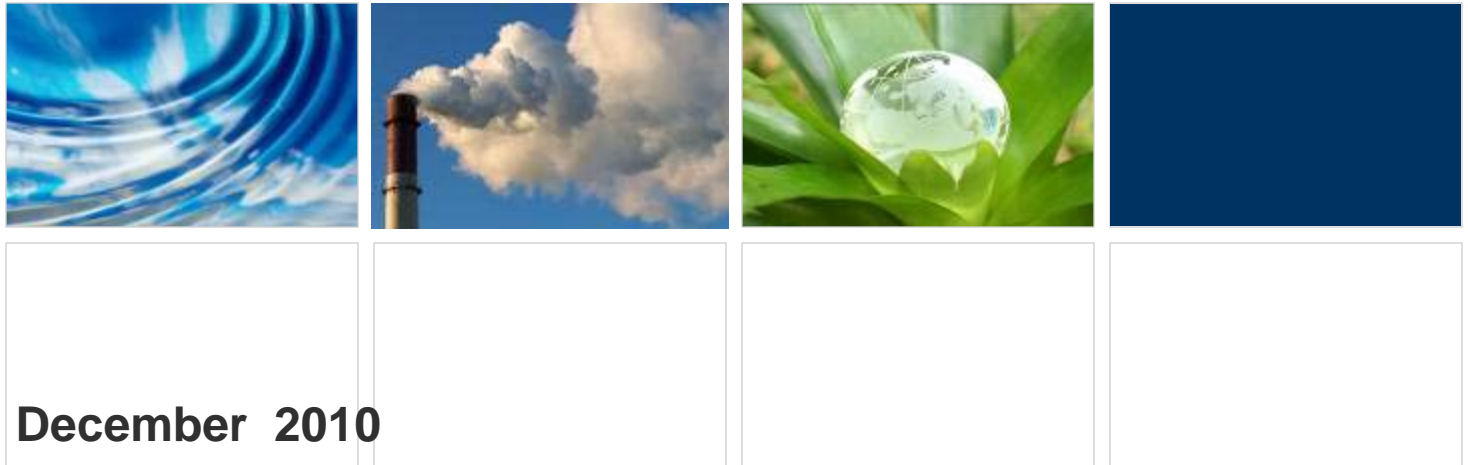
IDEM and the Tailoring Rule

- **General Authority to Implement**
- **Emergency Rule Revisions by January 1 to incorporate tailoring rule changes**
- **FESOP Sources; general limit of 100 tpy on any “regulated pollutant” will need to be addressed**

Path Forward

- **Examine existing and short-term future permit applications to ensure they address CO₂e**
- **Add CO₂e permitting to project planning SOPs**
- **Capture sufficient records to document and quantify netting credits due to energy efficiency projects**
- **Do not forget BACT implications of post July 2011 projects**
- **Allow time in project schedules**
- **Track legislative changes and court decisions**

GHG Reporting Rule Changes and Legislative Update



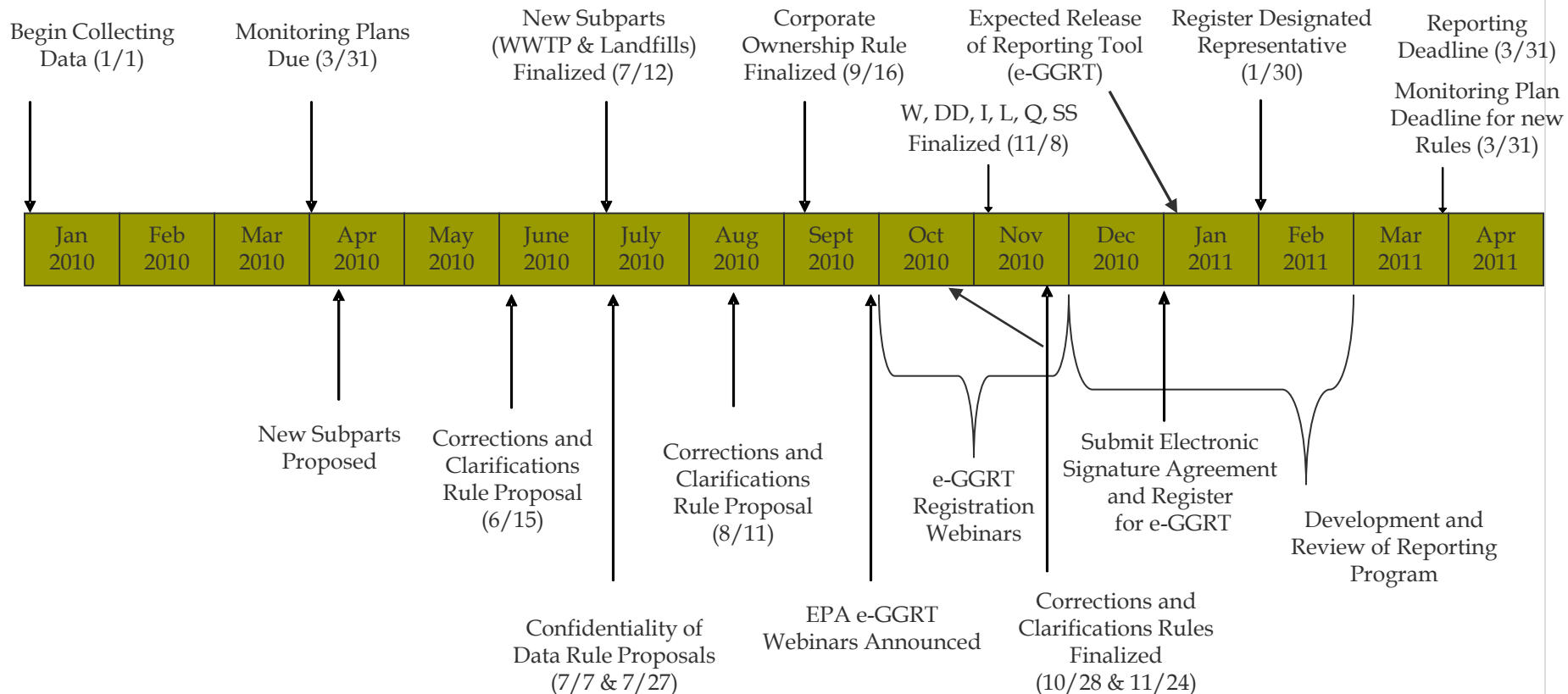
Mandatory Reporting Rule

Let's Summarize...

- **Lot's of changes, revisions, clarifications since rule issued in October 2009**
- **Not expecting EPA will release e-GGRT until late this year, early next**
- **The reporting tool has complexity**
- **Leave today with ideas for actions to ensure accurate and complete submittal in March 2011**



2010 GHG Reporting - Regulatory Timeline



2010 RULE CHANGES

Date	Status	Name	Impact
July 7 and 27	Proposed	Confidentiality of Data	Major
July 12	Final	Magnesium Production (T), Underground Mining (FF) Industrial Wastewater (II), and Landfill (TT) Subparts	Major (but deferred initial reporting for CY2011)
September 22	Final	Corporate Ownership	Minor
October 28	Final	Technical Edits and Clarifications (From June 15 Proposal)	Minor
November 8	Final	Final Versions of several Subparts (W, DD, I, L, Q, SS)	Major
November 22	Final	Final Version of Subpart RR (Sequestration)	Minor
November 24	Final	Technical Edits and Clarifications (Address issues from Settlement Agreements – August 11 Proposal)	Major

Technical Revisions Finalized 28 October

- **Finalizes in a consolidated manner proposals made in June**
- **Provides additional clarification where Part 98 was vague or lead to confusion**
- **Corrections to terms, definitions in equations and other technical corrections**
- **Affects numerous subparts including general provisions, stationary combustion sources, ammonia production, pulp and paper, and suppliers of CO₂**
- **Some changes positive, some not**

Technical Edits and Clarifications Finalized November 24 – Subpart A

- **Retroactive to January 1**



- **Removes requirement to describe QA/QC and keep maintenance records for fuel billing meters**



- **Provides relief from having to resubmit annual report for every error within 45 days of discovery**

- Limited to substantive error, i.e. one that affects reported emissions
- Would still notify the EPA of the nonsubstantive error but not have to resubmit report
- Can get a 30-day extension upon request



- **Missing data records reduced**

- Old: Cause, duration, actions to restore, actions to prevent
- New: Cause, actions to restore

Technical Edits and Clarifications Finalized November 24– Subpart C



- **Adds new Equation C-1a to allow fuel bills measured in therms (0.1 MMBTU) or MMBTU to be used directly, rather than having to get heating value data from suppliers to convert therms or MMBTU to scf**
- **Clarifies definition of “natural gas” by removing reference to fuel gas and process gas, and instead specifies that the gas has at least 70% methane and a heating value of 910 to 1150 BTU/scf (similar to Parts 60 and 75)**
- **Fuel lot defined as all deliveries within a calendar month**
- **Tier 2 allows for facility choice of arithmetic vs. weighted average of HHV values for sources less than 100 MMBTU/hr**
- **Confirms pilot gas does not need to be reported**

Technical Edits and Clarifications Finalized November 24 – Subpart C

- **Clarifies Tier 1 and 2 calibration methods (i.e. company records and not Subpart A) also apply to common pipe arrangement with only Tier 1 and 2 units**
- **Substantial changes in what must be reported for Subpart C to support EPA electronic reporting**



- Added:

- Start and end dates of when calculation methodologies are used
- Additional data on heat inputs and HHV for fuel blends



- Removed:

- Heat input, customer meter number, and ID number of each unit on a common pipe → Just report heat input of largest unit

Technical Edits and Clarifications Finalized November 24 – Subpart C



- **Do not have to report small sources on a common pipe with large sources, e.g. water heaters on same line as process heaters**
 - Attribute the small sources to a large source(s)
 - Allowed if common fuel is measured and large sources account for 95% of fuel used
 - Can use company records for confirming 95% split, documented in GHG Monitoring Plan

EPA Webinar



Electronic Reporting



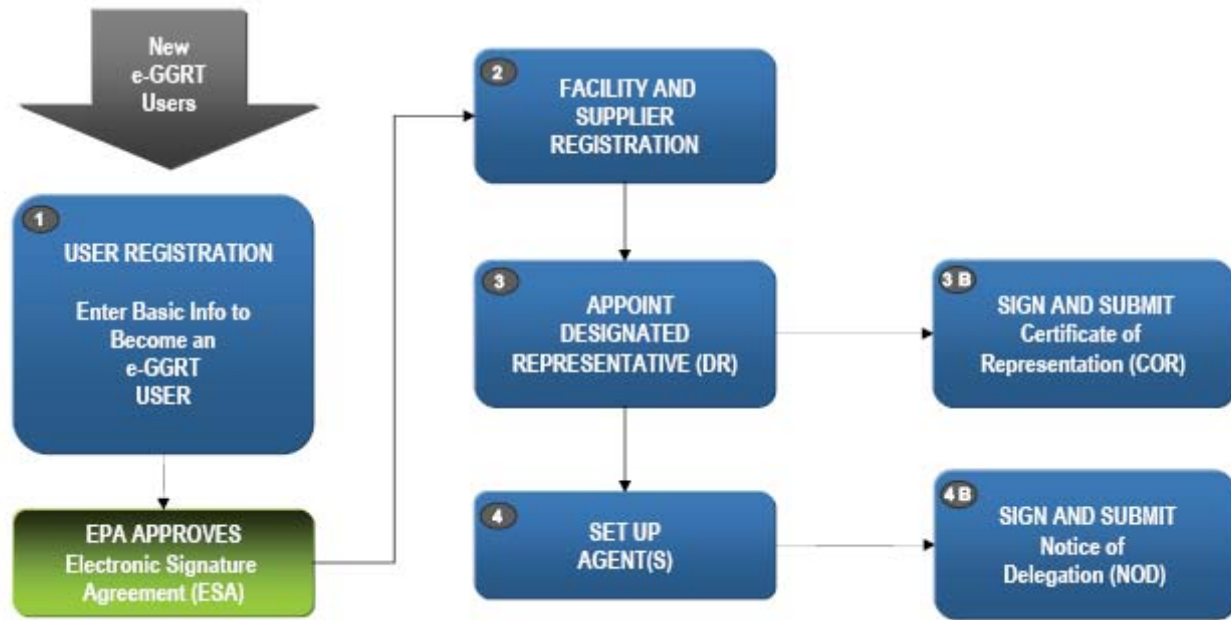
- **All reporting under the GHG Reporting Program will be electronic.**
- **EPA's Electronic Greenhouse Gas Reporting Tool (e-GGRT) is under development.**
 - Web-based system for facility/supplier to EPA reporting
 - Web-forms will guide reporters through data entry and submission
 - Built-in emissions calculations
 - Will include a mechanism to submit file directly using Extensible Markup Language (XML) format

e-GGRT Registration

- **e-GGRT will handle user and facility registration**
- **Beginning in fall 2010, facility or supplier representatives can create e-GGRT user accounts and Register facilities and suppliers**
 - Identify Designated Representatives and Alternate Designated Representatives
 - Submit Certificates of Representation to EPA
 - Identify Agents
 - Submit Notices of Delegation to EPA
- **Deadline for the 2010 reporting year: Certificates of Representation must be submitted to EPA no later than January 30, 2011.**
- **Register early !**
 - User account set-up includes electronic signature agreement processing; allow **at least 10 days** before the deadline to set-up user account and register facilities or suppliers.

e-GGRT Flowchart for Registration

Registration: Overview



Extensible Markup Language (XML) Reporting Schema

- EPA is developing an XML reporting schema that will allow facilities to upload their greenhouse gas (GHG) data directly in lieu of using the web forms provided through the Electronic Greenhouse Gas Reporting Tool (e-GGRT).
- XML is a set of specifications designed to create common electronic data formats in order to facilitate data sharing and comparison.
- The XML reporting schema will contain all of the data elements needed to comply with the Greenhouse Gas Reporting Program (GHGRP)
 - [e-GGRT Draft XML Reporting Schema v1.0 \(ZIP\)](#)
 - e-GGRT Final XML Reporting Schema v1.0 [Available December, 2010]
 - e-GGRT XML Reporting Schema Data Dictionary [Available December, 2010]

Training Opportunities

- **EPA will host a number of in-person and Web-based training sessions for people involved with reporting under the Greenhouse Gas Reporting Program. Individuals interested in attending any of the sessions must register in advance as space is limited.**
 - [e-GGRT Training Sessions \(Webinar\)](#)
 - [Regional Training Sessions](#)
 - [Detailed Training Session \(Webinar\)](#)
 - [Overview Session \(Webinar\)](#)
 - [Applicability Tool Training Session \(Webinar\)](#)

2010 GHG Reporting - What Should I Do Now?



What should I be doing now (yesterday)?

- **Identify gaps in managing inventory**
 - Applicability analysis and compliance plan
 - Equipment needs and documentation of changes
 - Monitoring plan with updated procedures and training requirements
- **Set up system to calculate emissions and manage recordkeeping with change log**
- **Attempt to emulate report requirements specified in regulations**
 - This will identify more gaps

2010 GHG Reporting - ROADMAP TO COMPLIANCE

Step 1 – Prepare Tools

- Prepare calculation tool
- Procedures for review and sign off
- Training for team and management

2010 CO ₂ Emissions							
Client Name - Location							
Facility Equipment		2010 Fuel Information		Source Heat Input mmbtu	2010 GHG Emission Calcs		
Equipment ID	Equipment Size	Fuel Usage	Fuel Type		metric ton CO ₂	metric ton CH ₄	metric ton N ₂ O
CB Boiler 1	30 MMBtu/hr	gallons	No. 6 fuel oil	0	0	0.000	0.000
		mcf	Natural gas	0	0	0.000	0.000
CB Boiler 2	30 MMBtu/hr	gallons	No. 6 fuel oil	0	0	0.000	0.000
		mcf	Natural gas	0	0	0.000	0.000
CB Boiler 3	50 MMBTU/hr	gallons	No. 2 fuel oil	0	0	0.000	0.000
		mcf	Natural gas	0	0	0.000	0.000
CB Boiler 4	50 MMBTU/hr	gallons	No. 2 fuel oil	0	0	0.000	0.000
		mcf	Natural gas	0	0	0.000	0.000
Dryers 1-4	9 MMBTU/hr x 4	mcf	Natural gas	0	0	0.000	0.000
Total GHG Emissions (metric tons):					0	0.000	0.000
Global Warming Equivalent ² :					1	21	310
Total Metric Tons CO ₂ e in 2010					0	0	0
					0		

Dec
2010

Jan
2011

Feb
2011

Mar
2011

Mar 31,
2011

Develop Procedures and Train

- **Field Data Collection**
- **Review/QA/QC/Sign-off Process**
- **Review Existing Systems**
- **Define Roles and Responsibilities**
- **Identify Where Supporting Data Maintained**
- **Auditing Protocols**
- **Training**

2010 GHG Reporting - ROADMAP TO COMPLIANCE

Step 1 – Prepare Tools

Prepare calculation tool

Procedures for review and sign off

Training for team and management

Step 2 – Review and Update

- Review rule changes
- Update Monitoring Plan
- Perform readiness review

Dec
2010

Jan
2011

Feb
2011

Mar
2011

Mar 31,
2011

Check and Update

- **Readiness review**
 - Activities scheduled
 - All records available
 - Devil is in the details
 - » Management of fuels
 - » Missing data management
 - » Exceptions and inclusions
 - » Aggregated reporting - Common Pipe, etc.
 - Personnel in place for review

Check and Update, cont.

- **Monitoring Plan Updates**
 - Rule updates, new subparts
- **Management of change over time is biggest obstacle**
- **Submit Electronic Signature Agreement and Register for e-GGRT**

2010 GHG Reporting - ROADMAP TO COMPLIANCE

Step 1 – Prepare Tools

Prepare calculation tool

Procedures for review and sign off

Training for team and management

Step 2 – Review and Update

Review 2010 rule changes

Perform readiness review

Update Monitoring Plan

Step 3 – Start Using e-GGRT

- **Submit paper Electronic Signature Agreement**
- **Register Designated Representative, users, agents (before Jan. 30th)**
- **Attend EPA e-GGRT training**
- **Get familiar with reporting functions when the full online tool is available**

Dec
2010

Jan
2011

Feb
2011

Mar
2011

Mar 31,
2011

When will it be available?

“The e-GGRT registration module will be available in early fall 2010 in anticipation of reporting deadlines in 2011 “



2010 GHG Reporting - ROADMAP TO COMPLIANCE

Step 1 – Prepare Tools

Prepare calculation tool

Procedures for review and sign off

Training for team and management

Step 2 – Review and Update

Review 2010 rule changes

Perform readiness review

Update Monitoring Plan

Step 3 – Start Using e-GGRT

Step 4 – Compile Report and Submit

- Fuel consumption, CEM data, carbon content, molecular weight, HHV data, etc., etc., as applicable
- Run through calculations
- Brief management and obtain certification authority
- Load e-GGRT

line

Dec
2010

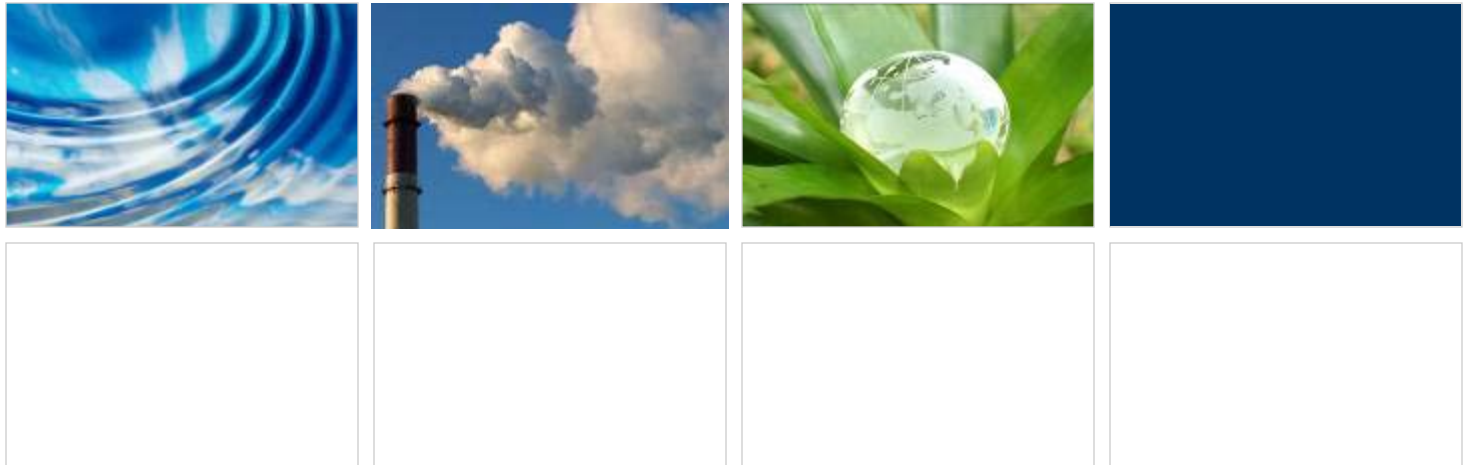
Jan
2011

Feb
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Mar
2011

Mar 31,
2011

Energy and GHG Management Non-Regulatory Drivers



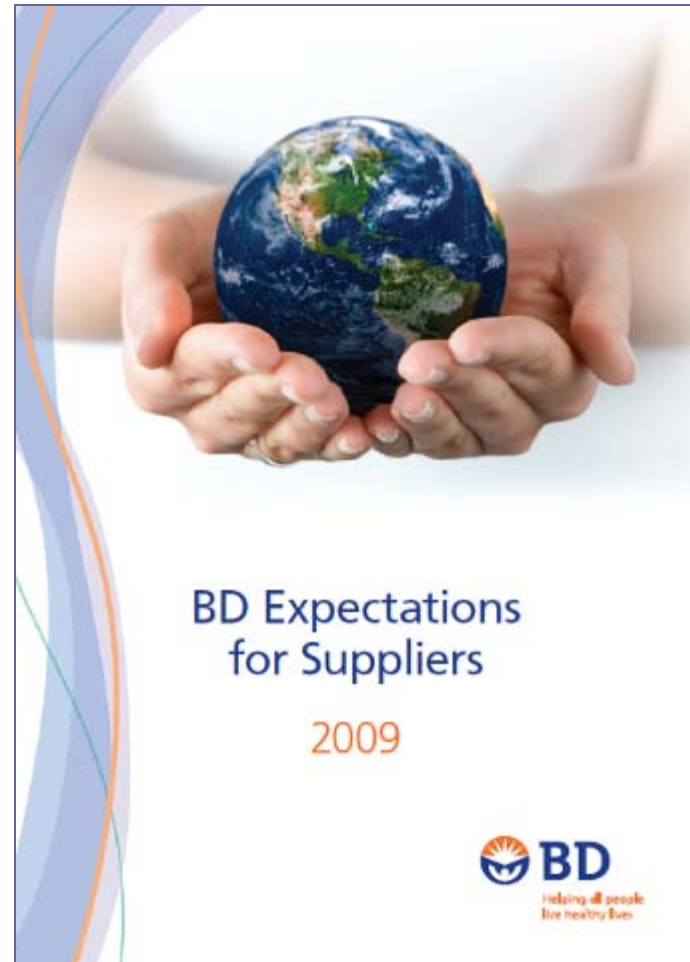
Energy and Corporate Citizenship

Comprehensive energy management programs are increasingly the hallmark of the progressively managed, responsible company.



Other GHG Management Drivers

- **Cost**
If you're implementing energy saving projects, might as well make use of the good will offered to good stewards
- **Shareholders**
 - Record 101 energy/climate related resolutions filed with 88 U.S. and Canadian companies in 2010
 - 51 withdrawn after negotiations
 - More attention to non-energy companies – consumer goods and medical products
- **Customer supply chain initiatives**
 - Expanding expectations
 - Most in the discovery phase
- **Life Cycle Management Approach**
- **Product Ratings and Eco-labels**



Customer Supply Chain Initiatives

- **Walmart**

- Sustainability Scorecard
- Sustainability Index
- Earthster collaboration



- **Ford**

- Working with key suppliers (35)
- Measuring supply chain carbon footprint
- Goal is collaboration, sharing



- **Proctor & Gamble**

- Requiring a GHG inventory
- Plans to integrate into decision making



Supplier Engagement

We collaborate closely with suppliers across the entire supply chain. We recently implemented our supplier sustainability scorecard, which assesses the environmental footprint of our suppliers, enabling P&G to partner and help reduce the environmental impact along the supply chain.

- **Kaiser Permanente**

- First health care sustainability scorecard
- Other health care purchasing organizations are looking at KP's work

Life Cycle Management Approach



Life Cycle Management Approach

The New York Times

How Green Is My Orange?



Above, oranges are processed at a Tropicana plant in Bradenton, Fla. [More Photos >](#)
Chip Litherland for The New York Times

The Environmental Cost of Orange Juice

Tropicana has calculated the carbon footprint of its Pure Premium orange juice — that is, the amount of greenhouse gases produced in its manufacture and use.

Carbon footprint of Tropicana Pure Premium orange juice

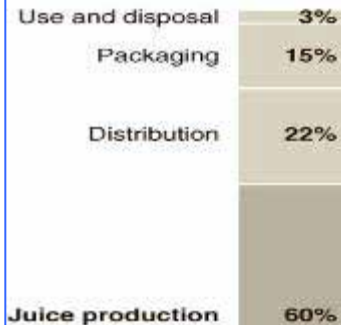
One half gallon Tropicana not-from-concentrate orange juice

=

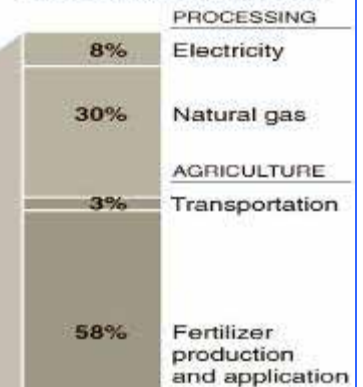
3.75 pounds (1.7 kg) carbon dioxide equivalent

Sources of carbon dioxide emissions

THROUGHOUT PRODUCT LIFE CYCLE



DURING JUICE PRODUCTION*



*Percentages do not total 100 percent, because of rounding.

Source: Tropicana

THE NEW YORK TIMES

Product Ratings and Eco Labeling



Did you know?

Almost half of your carbon footprint comes from the products and services you buy and use.



FLEXBUMIN Life Cycle Assessment

Albumin is processed from human plasma to treat critically ill patients by replacing lost fluid and maintaining adequate blood volume and pressure. Although typically packaged in glass bottles such as with BUMINATE [Albumin (Human)] Solutions marketed by Baxter, the company's FLEXBUMIN [Albumin (Human)] is the first and only albumin available globally, in a flexible, lighter plastic container called GALAXY, also produced by Baxter. FLEXBUMIN represents an innovative combination of the company's BioScience and Medication Delivery core competencies in bringing together a life-saving therapy in a unique packaging system. The GALAXY container of FLEXBUMIN is a 4-layer system and is a proven technology used extensively with other pharmaceutical products. It helps maintain albumin quality and is validated for storage and use in frozen settings and at room temperature, while also providing strength, inertness, a water vapor barrier and other benefits to healthcare facilities.

reducing with the Carbon Trust



carbon-label.com

The carbon footprint of the container of FLEXBUMIN represents the carbon dioxide (CO₂) and other greenhouse gases emitted during the life cycle of this container, from manufacture to disposal

We have committed to reduce the carbon footprint of this product



Other GHG Management Drivers

- **Reputation and brand equity**
 - Less and less attractive to be seen as a laggard
 - Not about greener products
 - Increasing number of functions want tangible evidence of effective energy management
 - Public affairs, investor relations
 - Human resources
 - Sales and marketing

- **Raters and rankers**
This may be all your senior management cares about

- DowJones Sustainability Index
- Carbon Disclosure Project
- Global Reporting Initiative



MOST ADMIRED COMPANIES

Best & worst in: Social responsibility

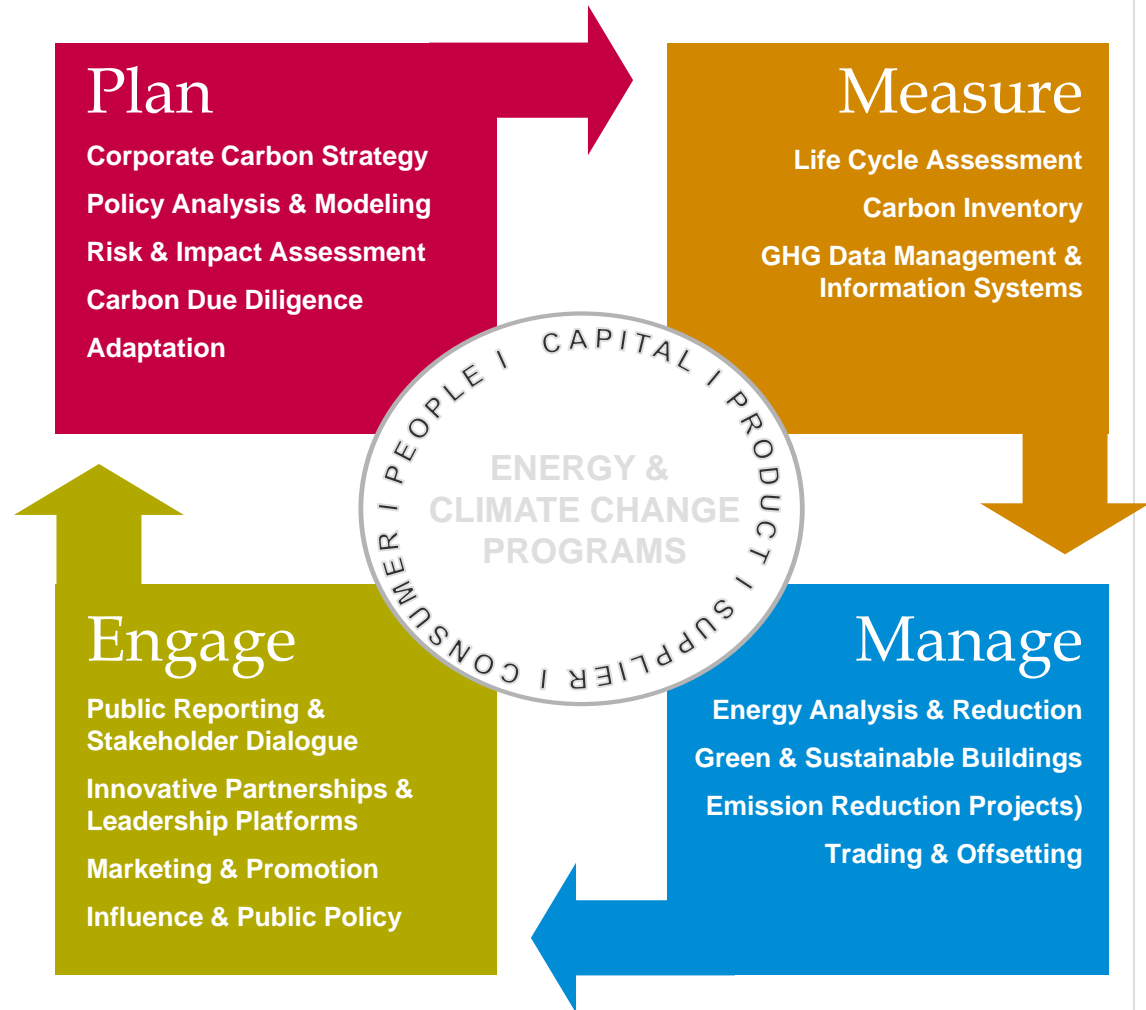
MOST ADMIRED		LEAST ADMIRED	
Rank	Company	Industry rank	
1	UPS	1	
2	Starbucks	3	
3	Marriott International	1	
4	Walt Disney	1	
5	Statoil	7	
6	Procter & Gamble	1	
7	Yahoo!	4	
8	Intel	1	
9	Target	2	
10	Royal Dutch Shell	2	

From the March 22, 2010 issue

Common Elements Become Essential Elements

- Policy
- Governance and accountability
 - Performance Indicators
 - Goals
- Risk assessment
- Transparency
- Supply chain initiatives
- Product stewardship

**Water is the
other major
environmental
impact issue
today**



Best in Class is Standard for Leaders

Best in Class Framework

Communication and Engagement

Sustainable
Supply Chain

Sustainable
Operations

Sustainable
Products

Governance & Accountability

Best in Class Results

- Low cost and eco-efficient operations
- Respected corporate citizen
- Preferred industry supplier
- Investment and employer of choice

Energy and GHG Management

Policy...Positioning...Strategy

- Involve key decision makers, agree on a process
- Review relevant information
 - Current emissions and immediate issues
 - Regulatory/risk scenarios
 - Peer company activity
- Reach consensus
- Create talking points for internal stakeholders
- Communicate broadly

The EHS Professional

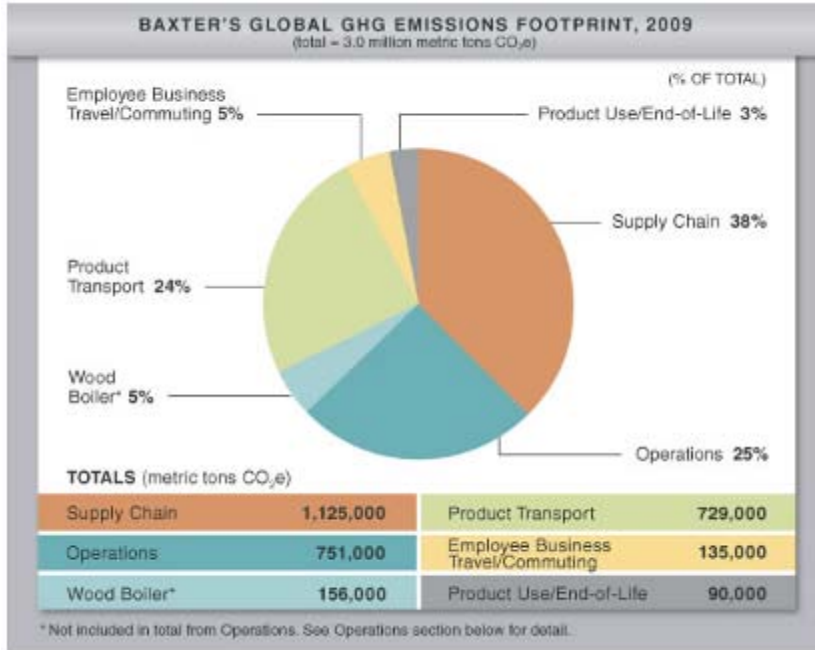
- Keep engaging internally, be nice
- Document cost, energy, and emission reductions
- Stay current!

Requires Collaborative Leadership!

- Conduct energy audits
- Set up energy monitoring and reporting system
- Improve energy contracts, evaluate hedge funds
- Evaluate and influence policy
- Communicate best practice
- Review engineering stds
- Evaluate new technologies
- Engage external stakeholders

Snapshots

Baxter – Leadership Level Metrics

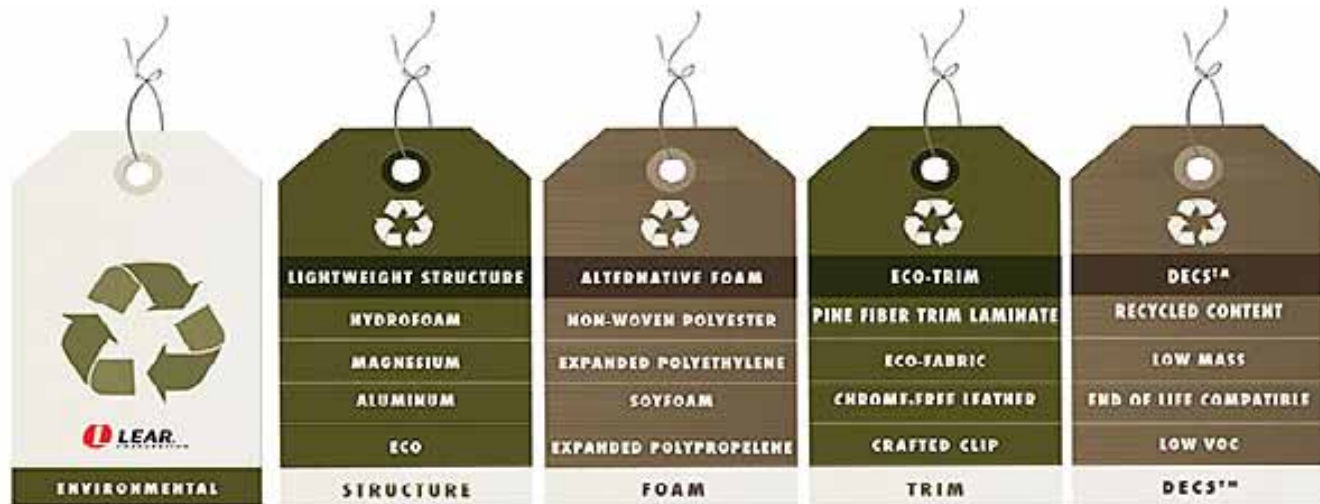


Baxter 2009 Environmental Financial Statement

Estimated Environmental Costs, Income, Savings and Cost Avoidance Worldwide¹

	2009	2008	2007	2006
ENVIRONMENTAL COSTS (dollars in millions)				
<i>Basic Program</i>				
CORPORATE ENVIRONMENTAL – GENERAL AND SHARED BUSINESS UNIT COSTS*	\$2.0	\$1.9	\$1.9	\$1.7
AUDITOR AND ATTORNEY FEES	0.4	0.3	0.4	0.4
ENERGY PROFESSIONALS AND ENERGY REDUCTION PROGRAMS	1.2	1.2	1.1	1.1
CORPORATE ENVIRONMENTAL – INFORMATION TECHNOLOGY	0.4	0.4	0.3	0.3
BUSINESS UNIT/REGIONAL/FACILITY ENVIRONMENTAL PROFESSIONALS AND PROGRAMS	7.1	7.0	6.7	6.6
POLLUTION CONTROLS – OPERATION AND MAINTENANCE	3.5	3.3	3.4	3.4
POLLUTION CONTROLS – DEPRECIATION	3.1	2.4	0.9	0.8
BASIC PROGRAM TOTAL	\$17.7	\$16.5	\$14.7	\$14.9
<i>Remediation, Waste and Other Response (proactive environmental action will minimize these costs)</i>				
ATTORNEY FEES FOR CLEANUP CLAIMS AND NOTICES OF VIOLATION	\$0.1	\$0.1	\$0.1	\$0.1
SETTLEMENTS OF GOVERNMENT CLAIMS	0.0	0.0	0.0	0.0
WASTE DISPOSAL	7.6	7.7	8.2	6.5
CARBON OFFSETS*	0.2	0.2	0.1	0.0
ENVIRONMENTAL FEES FOR PACKAGING*	1.0	0.9	0.9	0.9
ENVIRONMENTAL FEES FOR ELECTRONIC GOODS AND BATTERIES	0.1	0.1	0.1	0.1
REMEDIATION/CLEANUP – ON-SITE	0.1	0.2	0.5	0.1
REMEDIATION/CLEANUP – OFF-SITE	0.4	0.1	0.0	0.3
REMEDIATION, WASTE AND OTHER RESPONSE TOTAL	\$9.5	\$9.3	\$9.9	\$8.0
TOTAL ENVIRONMENTAL COSTS	\$27.2	\$25.8	\$24.6	\$22.9
ENVIRONMENTAL INCOME, SAVINGS AND COST AVOIDANCE (dollars in millions; see Detail on Income, Savings and Cost Avoidance from 2009 Activities below)				
<i>From Initiatives in Stated Year</i>				
REGULATED WASTE DISPOSAL	\$(0.5)	\$(0.1)	\$(0.7)	\$0.1
RAW MATERIALS ASSOCIATED WITH REGULATED WASTE*	(1.1)	(1.5)	(3.1)	0.5
NON-HAZARDOUS WASTE DISPOSAL	0.3	0.7	0.1	(0.1)
RAW MATERIALS ASSOCIATED WITH NON-HAZARDOUS WASTE*	2.9	1.7	1.6	(1.9)
RECYCLING (INCOME)	3.6	5.6	4.4	4.4
ENERGY CONSERVATION	5.1	5.7	3.6	3.6
WATER CONSERVATION	0.6	0.8	0.6	0.6
FROM INITIATIVES IN STATED YEAR TOTAL*	\$10.9	\$12.9	\$6.5	\$7.2
AS A PERCENTAGE OF BASIC PROGRAM COSTS	62%	79%	44%	51%
COST AVOIDANCE FROM INITIATIVES STARTED IN THE SIX YEARS PRIOR TO AND REALIZED IN STATED YEAR*	\$96.9	\$107.8	\$80.7	\$83.0
TOTAL ENVIRONMENTAL INCOME, SAVINGS AND COST AVOIDANCE IN STATED YEAR	\$107.8	\$120.7	\$87.2	\$93.0
DETAIL ON INCOME, SAVINGS AND COST AVOIDANCE FROM 2009 ACTIVITIES (dollars in millions)				
	Income and Savings	Cost Avoidance	Total Financial Benefit	
REGULATED WASTE DISPOSAL COST REDUCTION	\$0.0	\$(0.5)	\$(0.5)	
REGULATED WASTE MATERIALS COST REDUCTION	(1.6)	0.5	(1.1)	
NON-HAZARDOUS WASTE DISPOSAL COST REDUCTION	0.1	0.2	0.3	
NON-HAZARDOUS WASTE MATERIALS COST REDUCTION	1.7	1.2	2.9	
RECYCLING INCOME	3.6	0.0	3.6	
ENERGY CONSUMPTION COST REDUCTION	10.0	(4.9)	5.1	
WATER CONSUMPTION COST REDUCTION	(0.7)	1.3	0.6	
TOTAL	\$19.1	\$(2.2)	\$10.9	
COST AVOIDANCE DETAIL FROM EFFORTS INITIATED IN THE SIX YEARS PRIOR TO REPORT YEAR (dollars in millions)				
	2009	2008	2007	2006
REGULATED WASTE DISPOSAL	\$0.1	\$0.2	\$0.2	\$1.3
REGULATED WASTE MATERIALS	0.1	(1.2)	0.3	5.0
NON-HAZARDOUS WASTE DISPOSAL	3.2	4.9	3.3	2.6
NON-HAZARDOUS WASTE MATERIALS	25.3	24.7	18.3	19.5
ENERGY CONSUMPTION	61.7	73.0	54.1	50.7
WATER CONSUMPTION	6.5	6.2	4.5	3.9
TOTAL	\$96.9	\$107.8	\$80.7	\$83.0

Green marketing...to a manufacturing customer



At Lear, we continue to pave the way for environmentally friendly first-to-market technologies, such as SoyFoam™, which conserves over 100,000 pounds of petroleum annually on a typical vehicle. Our patented DECS™ – short for Dynamic Environmental Comfort System™ – utilizes a 100% recyclable structural foam layer. DECS™ reduces weight by up to 85%, and reduces CO₂ emissions by an average of 60%.

Questions?

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