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What is Climate Leadership: Examples and Lessons Learned in Supply Chain Management Thursday, May 9, 2013

Presented by: Melissa Klein, U.S. EPA Verena Radulovic, U.S. EPA Tim Juliani, Center for Climate and Energy Solutions (C2ES) Guest Speakers:

Mike Ray, VP of Business Integration and Transformation, IBM Integrated Supply Chain Andy Renger, Supply Chain Manager, San Diego Gas & Electric

Supporting organizations in GHG measurement and management • www.epa.gov/climateleadership

Webinar Agenda

- Introduction and webinar logistics
- EPA's focus on reducing Supply Chain GHG emissions
- Supply Chain Leadership: Climate Leadership Award winner guest speakers
 - Tim Juliani (moderator), Director of Corporate Engagement, Center for Climate and Energy Solutions (C2ES)
 - Mike Ray, Vice President of Business Integration and Transformation, IBM Integrated Supply Chain
 - Andy Renger, Supply Chain Manager, San Diego Gas & Electric
- Q&A
- Post-webinar survey



Webinar Logistics

- Attendees are muted to reduce background noise.
- Submit questions and comments in writing via the online control panel. $\rightarrow \rightarrow \rightarrow$
- To minimize or maximize the control panel, click on the button at the top left of the tool bar.
- Post-webinar survey on this webinar and topics for future webinars.
- Today's presentations are available at:
 www.epa.gov/climateleadership/events/9may2013webinar.html

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About the Center

- A resource launched in 2012 to support organizations of all sizes in measuring and managing GHG emissions.
- Provide technical tools, ground-tested guidance, educational resources, and opportunities for information sharing (e.g., Webinars) and a platform for peer exchange.
- Promote practices and innovative approaches drawing upon the successes of Climate Leadership Award recipients and former Climate Leaders partners.
- Support the implementation of E.O. 13514.



Climate Leadership Awards

Climate Leadership Awards

- Co-sponsor Awards with the Association of Climate Change Officers, the Center for Climate and Energy Solutions (C2ES), and The Climate Registry.
- Awards recognize exemplary corporate, organizational, and individual leadership in addressing climate change.
 - Leadership in Supply Chain Managment is 1 of 5 categories
- EPA is also the headline sponsor for the Climate Leadership Conference.





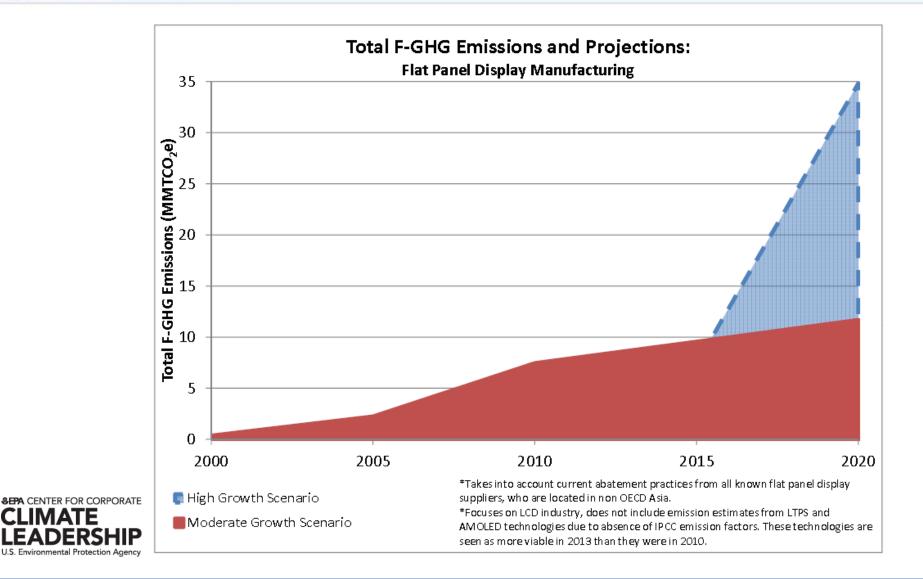
About the Center

- A new Supply Chain section on our website launched this week:
 - Highlights resources and case studies
 - Sector Spotlight: F-GHGs in electronics forthcoming
 - <u>http://epa.gov/climateleadership/supplychain</u>



- Sector Spotlight on the Electronics Industry
 - History of GHG reduction efforts throughout industry.
 - Industry focus on reducing supply chain impacts (individual efforts and collective (e.g. EICC) efforts).
- Spotlight will be on 12 major global **flat panel display** manufacturers that make large area panels used in today's computer monitors and televisions.
- Focus on reducing fluorinated GHG (F-GHG) emissions from panel manufacturing. F-GHGs (i.e. SF6, PFCs, HFCs, NF3) are among the most potent and persistent GHGs contributing to global climate change.





Examples of pages from supplier profiles:

Overviev

rom		Specific F-GHG emissions reduction efforts and/or goals			
			Sources: LG Display		
			LG Display's responses to the 2011 Carbon Disclosure Project Investor Questionnaire.		
			"Point of Use Abstement Device to Reduce SF4 emissions in LCD Manufacturing Operation in t (South Korea)." LG Display's SF4 Abstement Project. Clean Development Mechanism Project: 34 (https://cdm.unfccc.int/Projects/D8/SGS-UKL1266943063.39/view).		
		+ E GHG amissions	Etch and Clean processes		
AUO (AU Optronics)					
Overview	Specific F-GHG emissions reduction efforts and/or goals	considers itself a pioneer of F-GH F-GHG abatement devices with o	issions, namely F-GHGs, by 6.94 million metrictons of CO ₂ e from 2003-2011. AUO HG abatement in Taiwan. Since 2003, AUO voluntarily installed IPCC-recognized destruction removal efficiencies (DRE) over 90 percent in dry etching and chemical is for all newly built fabs to reduce emissions from gases such as SF ₆ and NF ₅ .		
			stalling abatement systems for fabs constructed prior to 2003. AUO is now the sted abatement system in all small to medium-sized LCD fab ranging from G3.5		
		Sources: AUO 2011 Corporate Social Resp (http://auo.com/upload/download	ionsibility Report. J/1/AUC_2011_CSR_EN_CH2_v1.pdf).	i an environmental ind initiatives. KDIA e (WLICC), an	
		AUO 2010 Corporate Social Resp (http://auo.com/upload/download	vonsibility Report. J/1/AUO_2010_CSR_EN_CH2_v0.pdf).	m Project to reduce	
		AUO's responses to the 2012 Car	rbon Disclosure Project Investor Questionnaire.		
	+ F-GHG emissions reduction efforts/goals target the following key processes that emit F-GHGs	Etch and Clean processes.			
		Reporting for GHG inventory" pu	s (HTFs): AUO follows the "Guidance for Greenhouse Gas Accounting and Jblished by Taiwan's Environmental Protection Administration. In the guidance, ses for semiconductor industry, but not for optoelectronics industry, meaning that or in AUO's process.		
		Sources: AUO TTLA presentation at APEC meet	ing, August 2012, Taiwan.		
	+ F-GHG emissions reduction efforts/goals target the following F-GHGs emitted	SFs, PFCs, HFCs, NFs. Source: AUO's responses to the 2	2012 Carbon Disclosure Project Investor Questionnaire.		

LG Display



Tool for Panel Purchasers (OEMs and Retailers):

Questions for suppliers on F-GHG reduction efforts

SEPA CENTER FOR CORPORATE CLIMATE LEADERSHIP U.S. Environmental Protection Agency

Reducing F-GHG Emissions from Flat Panel Display Suppliers

Questions for Suppliers: Tools for Panel Purchasers and Retailers

Product assemblers, brands and retailers can play an important role in reducing the climate impacts of the products they sell by sourcing from suppliers with a demonstrated commitment to reducing F-GHG emissions.

Important: Currently it is difficult and unadvisable to compare panel suppliers' F-GHG emissions due to a lack of consistency in estimating emissions, estimating emissions reductions, and monitoring the efficacy of installed abatement systems. Therefore, the following sets of questions are intended to be a starting point to help customers understand how their panel suppliers are reducing their F-GHG emissions and, in doing so, may help identify opportunities for furthering mitigation efforts. Customers are encouraged to understand the extent to which future flat panel display technologies will use F-GHGs in production, and if F-GHG emissions are expected to increase, decrease, or remain the same on a per panel basis.

- Describe the steps your company is currently taking and/or any goals that are in place to reduce F-GHG emissions. Describe how your company is reducing F-GHG emissions via process optimization, use of alternate chemistries, capture/recycling, and/or abstement technologies.
- Is your company reducing F-GHG emissions for each key manufacturing process (i.e. etch and chamber clean)? Where applicable, do your company's F-GHG emissions reduction efforts also address fluorina ted heat transfer fluids (F-HTFs) and N₂O used and emitted in the manufacture of flat panel displays?
- Is your company reducing emissions from all F-GHGs used (i.e. SFe, NF₂, PFCs, and HFCs)? If not, which F-GHGs are being reduced? Does your company plan to reduce those F-GHGs currently not addressed?
- 4. Are F-GHG emissions reduction efforts implemented across all of you company's fabs, across only new generation fabs, or only in select fabs? If applicable, what future reduction efforts does your company have planned for any F-GHG using fabs currently not addressed?
- 5. Does your company participate in any national or international consensus-based or voluntary efforts to reduce F-GHG emissions from flat panel display manufacturing? If not, are there any rational regulations in your country that require F-GHG emission reductions in flat panel display manufacturing? If so, when will they take effect?
- 6. What is the estimated aggregated amount of F-GHG emissions, in CO₂ equivalents (CO₂e), emitted across all flat panel display manufacturing fabs for the most recent year? Has this figure increased or decreased compared to prior years?
- What is the estimated annual F-GHG emissions intensity (if possible, in kg CO₂e per m² of flat panel displays (array glass) produced) across manufacturing fabs?

Developed by the U.S. Environmental Protection Agency's Office of Air and Radiation May 2013

Supply Chain Leadership

- How do we define supply chain?
 - It encompasses the entire value chain, including purchased goods, operations, transportation and distribution & product use.
- Reducing a company's internal GHG footprint should always be the first and most important step, yet much of an organization's impact may come from the supply chain.
- The Supply Chain Climate Leadership Award recognizes organizations that have set their own significant GHG reductions targets AND show outstanding leadership, innovation, commitment and technical achievements in managing and reducing GHG emissions throughout their organizational supply chain.



Supply Chain Leadership

Leading companies are taking both internal and external actions to engage their supply chain, including:

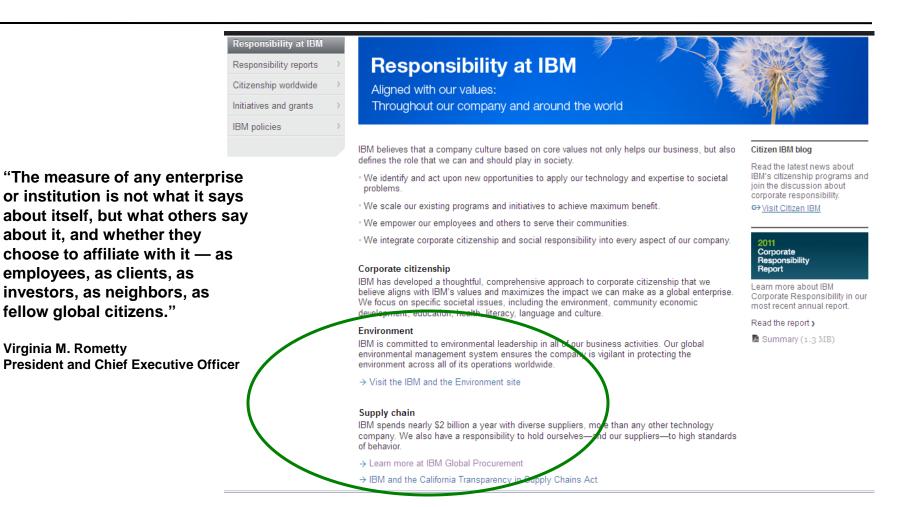
- Codifying & implementing GHG-related criteria in procurement processes
- Engaging in collaborative initiatives within its sector or across its supply chain, such as:
 - developing or delivering education resources on supplier
 GHG management
 - end-user engagement programs
 - product recycling and take-back programs
- Measuring and reporting supply chain emissions
- Ideally, demonstrating reductions in supply chain GHG emissions





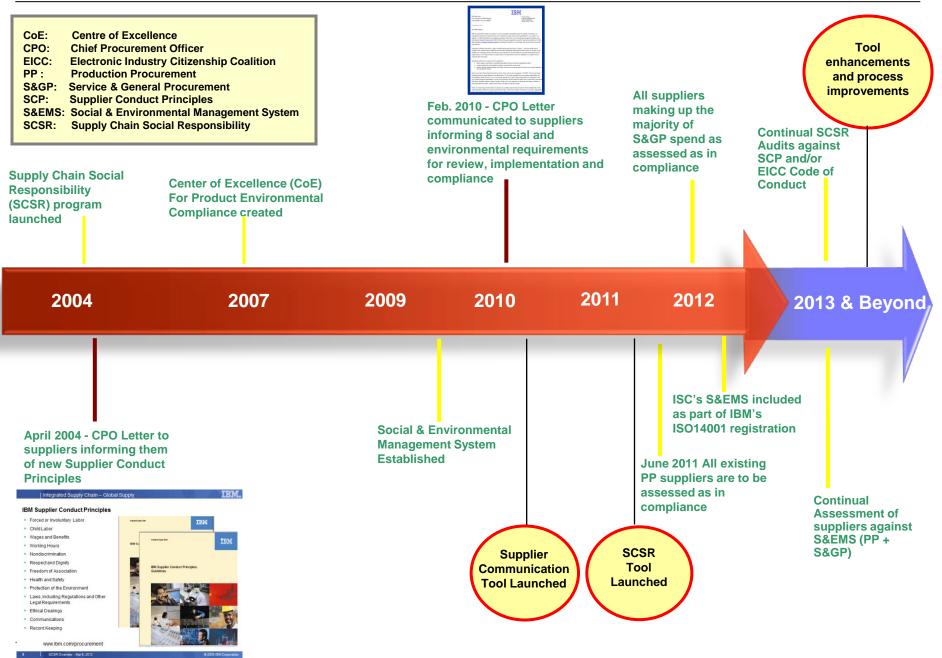
- to environmental leadership and corporate responsibility

"We accept our responsibilities as a corporate citizen in community, national and world affairs; we serve our interests best when we serve the public interest....We want to be at the forefront on those companies which are working to make our world a better place." ...Thomas J. Watson, Jr., IBM chairman and chief executive officer, 1969



ISC's Social & Environmental Programs - The Journey





Chief Procurement Officer Letter to Global Suppliers



5th Floor, 2# Tower

Great Wall Technology Building Science & Industry Park

Nanshan District, SZ 518057

Feb 22, 2010 to 28,000 suppliers in over 90 countries

http://www-

03.ibm.com/procurement/proweb.nsf/objectdocswebview/file22 +feb+10:++letter+to+suppliers+on+gs+s&ems/\$file/letter+to+s uppliers+on+gs+s&ems_22feb2010.pdf John Paterson Vice President of Global Supply and Chief Procurement Officer

22 February 2010

Dear IBM Supplier:

IBM has expected its suppliers to operate in an environmentally responsible manner for decades. Accordingly, our management system has included various environmental and supply chain social requirements for our suppliers. In addition, in 1998, IBM explicitly encouraged its suppliers to align their own environmental management systems with International Standards Organization (ISO) 14001 and to pursue registration under this international standard. In 2004, IBM published its <u>Supplier Conduct Principles</u> to articulate the company's overall supply chain social and environmental requirements.

These early initiatives and actions - taken well before the present day focus on "green" -- have served IBM and its suppliers well, underscoring how effective environmental management makes good business sense. As we begin a new decade and in recognition of the continually growing imperative for environmental and corporate responsibility across supply chains, I am writing to inform you about some new requirements we are now setting for our suppliers in this important part of business.

Specifically, IBM will now require all of its suppliers to:

- · define, deploy, and sustain a corporate responsibility and environmental management system;
- · measure performance and establish voluntary environmental numeric goals
- publicly disclose results associated with these voluntary environmental goals and other environmental aspects of the management system

Many of you have already been doing this for several years, and you have recognized -- like IBM -- that environmental leadership fosters business efficiency and effectiveness. You have also accepted that environmental responsibility and accountability resides at home, in your own business operations. For others, these requirements may represent a new way of doing business. Nevertheless, we trust you are familiar with the underlying issues since we previously wrote about ISO 14001 and IBM's Supplier Conduct Principles. What may be new, therefore, is taking the next steps to establish a formal management system, measure performance, set goals, and disclose results.

There are certain basic elements that are necessary to put these requirements into action. We have stated them in the attachment below. IBM's own practices are built upon them, yet they are certainly not exclusive or limited in applicability to any one company or any particular industry sector. Although we are now asking you to include these elements in your

Requirements for Suppliers

IBM's requirements for Suppliers regarding a Corporate Responsibility & Environmental Management System: measuring performance, setting goals, and disclosing results

- IBM asks its suppliers to:
 - Establish a corporate social responsibility and environmental management system that is defined, deployed, and sustainable, that identifies significant aspects of the Supplier's intersections with these matters, including those articulated in IBM's Supplier Conduct Principles (SCP) and the Electronic Industry Citizenship Coalition (EICC) Code of Conduct. Suppliers must be able to demonstrate that such a management system is in place and deployed at their sites where work for IBM is performed, such that should IBM choose to conduct an audit, either by IBM or an IBMdirected 3rd-party, of a Supplier's corporate social responsibly program and/or supplier's environmental program, Supplier will be able to demonstrate complete compliance to all elements of IBM's SCP and the EICC Code of Conduct.
 - 2. Establish programs (within the management system) to control operations that intersect with these matters and confirm compliance with applicable law, regulation and any particular contractual requirements.
 - 3. Measure performance associated with supplier's significant environmental aspects where applicable and include at a minimum each of the following aspects common to virtually all businesses:
 - Energy conservation;
 - Scope 1 and Scope 2 greenhouse gas emissions*;
 - Waste management and recycling.
 - 4. Set voluntary environmental goals to achieve positive results associated with significant aspects where applicable and include at a minimum one in each of the three aspects cited in item 3 above.
 - 5. Publicly disclose results associated with these voluntary environmental goals and other environmental aspects from the management system, including any regulatory fines or penalties that may have occurred.
 - 6. Train employees who are responsible for performing this work.
 - 7. Conduct self-assessments and audits as well as management reviews.
 - 8. Cascade this set of requirements to the supplier's suppliers who perform work that is material to the products, parts and/or services being supplied to IBM .

*Note:

Scope 1 greenhouse gas emissions: direct emissions generated by the company

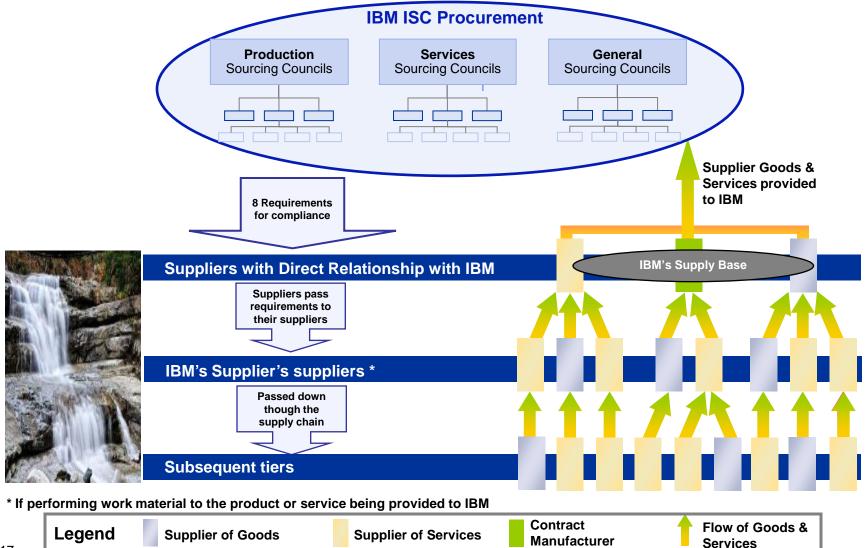
Scope 2 greenhouse gas emissions: indirect emissions that are associated with the generation of electricity that is purchased and consumed by the company

- Illustrative information about IBM's own Global Environmental Management System and Environmental Reporting and Disclosure can be found at:
 - http://www.ibm.com/ibm/environment/ems/ (IBM's Global Environmental Management System)
 - <u>http://www.ibm.com/ibm/environment/annual/</u> (Environmental Reporting and Disclosure)

Applicability of S&EMS requirements for suppliers



IBM's Social & Environmental Management System's set of 8 Requirements, are applicable to all suppliers that IBM has a Direct relationship with, and these suppliers are to cascaded the 8 requirements to their suppliers who perform work that is material to the products, parts and/or services being supplied to IBM



Tips for Creating and Implementing a Supply Chain "Sustainably" Program



- Vision needs to start at the top of the business
- Executive champion to lead the way, set expectations and stay the course
- Commission a strong implementation team to develop the program
- Create and roll out education material for internal staff and suppliers
- Line teams owns conveying requirements and follow through with suppliers
- Establish internal governance program inclusive of management system, processes, metrics, opportunities for improvements
- Establish requirement for suppliers, suppliers to
 - Collect data and measure significant environmental intersects
 - Establish voluntary environmental goals (numeric)
 - Publicly disclose results
 - Cascade these requirements to the supplier's suppliers
- Help suppliers build their capability to effectively manage these responsibilities, leading to
 - Acknowledging their own accountability for leadership and success, and
 - Establishment of permanent management system

SDG&E Supply Chain Sustainability

9 May 2013 EPA Center for Corporate Climate Leadership Webinar

San Diego Gas & Electric Co.

* Company Facts

SDG&E is a regulated public utility that provides energy service to 3.4 million people through 1.4 million electric meters and 860,000 natural gas meters in San Diego and southern Orange counties. Our service area spans 4,100 square miles.

* Employees

We employ about 5,000 people who work every day to deliver the energy our customers need.

* Our Parent Company

Sempra Energy is a San Diego-based Fortune 500 energy services holding company whose subsidiaries provide electricity, natural gas and value-added products and services. San Diego Gas & Electric and Southern California Gas Co. are <u>Sempra Energy's</u> regulated California utilities.

Sustainability at SDG&E

- * It's in our culture to go beyond environmental compliance
- * "Environmental stewardship really has become part of the fabric of SDG&E..." Pam Fair, VP Environmental & Support Services
- * Initiatives across all levels and departments in the organization
 - Sustainable energy solutions
 - Customer engagement
 - Community involvement
 - Minority supplier engagement

- Facilities enhancements
- "Greening" our fleet
- Habitat preservation
- Employee involvement
- * Supply Chain has been a focus and is still growing

Supply Chain Initiatives

RFP process

- Sustainability questions included in most major RFPs since 2011
- * Sustainability given weight in select sourcing events
- Sustainability responses of interest to Executive leadership
- * Sustainability incorporated in Code of Conduct¹

* Supplier quality assessment

- * Mfg Green Initiatives is a component of supplier qualification
- * ISO14001, pollution, energy, emissions, waste, manufacturing priority

* Internal efforts

- * Supply Management Sustainability team
- * Supply Management sustainability training, goals, & recognition
- * "Green" purchasing policy for office supplies, electronics, furniture

* Supplier Relationship Management

- * Sustainability discussed in SRM meetings
- Focus on product/service sustainability

1.) http://www.sempra.com/pdf/about/scc.pdf

Successes

Some highlighted activities to date

- * **Concrete structures** worked with supplier to increase fly ash content resulting in lower pricing & emissions savings
- Cable right-sizing supplier idea to reduce the nominal length of select cable reels yielded lower prices and decrease in metals & insulation
- Inbound freight emissions collaboratively developed quarterly inbound emissions profile and savings estimates with our 3rd party freight provider
- * **Office supplies** implemented "green" purchasing policy with measurable goals and eliminated non-recycled paper & styrofoam products in our online catalog.
- Investment Recovery in 2012 we recycled, repurposed, or donated almost 16 million pounds of metals, scrap transformers & oil, electronics, & other varied items
- * **Internal Fleet** on target to achieve 15% emissions reduction by 2012 through rightsizing & alternative fuel vehicles. Batteries, scrap metals, tires, & fluids are recycled.
- * **Green cleaning** sourced certified "green" chemicals for janitorial services
- * **Copy/Print Centers** significant use of certified/recycled paper, majority of copies duplex vs. single-sided, & toner bottles/cartridges recycling

Future Sustainability Goals

* Enhance programmatic aspects

- * Standardize & document RFP requirements for Supply Management
- * Document & communicate Supplier Sustainability Expectations
- * Develop & document supply base metric

* Highlight supplier efforts

* Evaluate implementation of supplier recognition

* Measure success

- * Develop baselines for supply base metric
- * Measure success of "green" purchasing policy

Challenges

Organizational resistance

- * "Sustainability is another flavor-of-the-month" it's going away
- * "I don't have time!" Another program = more work
- * "Global warming is a farce" arguments over the science
- * "Sustainability always costs more" no more low-hanging fruit

* How do you measure sustainability?

- * Many areas can be considered
- * What do you focus on?

* Where do you start?

Lessons Learned

* Sponsorship

- * Executive support is important
- Grass roots support is critical sustainability team(s)

* Get traction

- * Implement achievable "wins" to build credibility
- * Use these "wins" to evolve to higher impact initiatives

* You're not alone

- Involve other departments Environmental, Communications,
 Operations, Supply Management
- * Attend conferences, seminars, webinars, classes
- * Join industry organizations and university programs
- * Engage your suppliers and employees for ideas!





Resources

Voluntary EPA programs that address reducing GHG emissions have seen suppliers join after being encouraged to do so by their customers who are also active participants.

- <u>ENERGY STAR</u>: technical information and tools for organizations and consumers to choose energy-efficient solutions and best management practices.
 - Buildings & Plants
 - ENERGY STAR's Portfolio Manager
 - <u>Small Businesses</u>
 - <u>Products</u>
- EPA's Combined Heat and Power Partnership
- EPA's Green Power Partnership
- <u>The Green Suppliers Network</u>

Access the list: epa.gov/climateleadership/supplychain/resources.html



Resources, continued

- EPA's Landfill Methane Outreach Program
- <u>EPA's SmartWay</u>
- E3: Economy, Energy, Environment
- <u>The U.S. Department of Energy's Advanced</u> <u>Manufacturing Office</u> provides a variety of programs that identify opportunities for integrating energy-efficiency measures into industrial facilities.
- Some local utility rebate programs provide incentives that allow suppliers to recoup some upfront costs associated with improving energy efficiency and reducing GHG emissions.



Resources

- <u>LMI's GAIA Sustainable Supply Chain Maturity Model</u> provides companies with a framework to assess the maturity of their own organizations and programs for engaging suppliers on managing their GHG emissions, based on industry research.
- <u>The Carbon Disclosure Project</u> and its <u>CDP Supply Chain Project</u> initiative are programs for voluntary, public reporting of corporate GHG emissions inventories. The flagship CDP focuses on emissions disclosure by large corporations; CDP Supply Chain serves its member companies by collecting emissions inventories from their suppliers.
- World Resources Institute/World Business Council for Sustainable Development Product and Supply Chain Protocol Standards. WRI and WBCSD developed the GHG Corporate Protocol Standard, which is widely used to account for corporate-wide GHG emissions.
- <u>The 2011 Electronics Industry Citizenship Coalition Report: A Practical</u> <u>Approach to Greening the Electronics Supply Chain: Results from the 2011 EICC</u> <u>Carbon and Water Reporting Initiative.</u> Insights into how the electronics industry sector is engaging its suppliers on managing their GHG emissions.



Contact Us

Melissa Klein

Communications Director Center for Corporate Climate Leadership, U.S. EPA (202) 343-9207 klein.melissa@epa.gov

For more information, visit <u>www.epa.gov/climateleadership</u> Follow us on Twitter: @EPAClimateCTR

