Industrial Decarbonization Peer Exchange

June 21st, 2023

Please go to www.slido.com
Enter Event Code: #DOEDecarb

Slido Q&A

Please go to www.slido.com

Enter Event Code:

#DOEDecarb

2023-2024 Better Climate Challenge Working Groups

Registration is now Open for the new Better Climate Challenge Working Groups.

The goal of these working groups is to facilitate discussion among Better Climate Challenge partners and allies in a small group environment to discuss specific topics around GHG emissions reductions. The groups will share insights, strategies, and action plans, and DOE technical experts will support the working group participants with technical assistance on key issues and summarize the discussion outcomes. These working groups will meet every 6 weeks for approximately eight months in a series of 60-minute facilitated calls.

GHG Emission Reduction Audits and Assessments

Starting July 2023

Onsite Renewable Energy and Storage

Starting August 2023

Low-Emission Alternatives to Industrial Thermal Loads

Starting August 2023

Better Buildings, Better Plants Webinar Series

Paying the Price: How Internal Carbon Pricing Supports Emissions Reduction
June 22nd, 2023 - 11:00AM EST
Register here

It Takes a Village: Building a Culture of Energy Efficiency in Your Facilities
July 6th, 2023 - 11:00AM EST
Register here

It Just Gets Better and Better: Highlights from Better Project and Better Practice Award Winners
July 11th, 2023 - 11:00AM EST
Register here

Build your Workforce: Understanding Your Role in the Workforce Ecosystem
July 18th, 2023 - 11:00AM EST
Register here

For a full list of topics and dates visit the Better Buildings, Better Plants webinar website

Better Plants® U.S. DEPARTMENT OF ENERGY

U.S. DEPARTMENT OF ENERGY

slido

Polls

Please go to www.slido.com
Enter Event Code:
#DOEDecarb

U.S. DEPARTMENT OF ENERGY

Verifying Data Quality for Reporting Season

Today's Presenter

Kristina Armstrong

R&D Staff, Oak Ridge National Laboratory

David Reid

Senior Manager, Global Energy and Productivty, Celanese

Lisa Lambert

Group Leader, Global Natural Resource Management – Site Energy Coordinator, Eastman Chemical Company

Will Armington

Energy and Climate Change Specialist, Xerox

Celanese

Environmental Metrics Audits
Data Accuracy and Management Systems Assurance

Celanese Corporation

We are a global chemical and specialty materials company that engineers and manufactures a variety of products essential to everyday living.

- Global headquarters in Dallas, Texas, USA
- $9.7 billion in net sales in 2022 (highest in company history)
- Number 396 on the 2021 FORTUNE 500 list
- Approximately 13,300 employees globally
- 50 owned and operated manufacturing locations; operations in 27 countries worldwide
- Two leading businesses: Engineered Materials and Acetyl Chain
- Innovation is at the core of our differentiated business model

Recent Awards and Notable Progress

Celanese

AMERICA'S MOST RESPONSIBLE COMPANIES
Newsweek
2023 statista

DiversityInc

Named a Top Noteworthy Company by Diversity Inc.'s for a second consecutive year

Recent CDP Climate Score

Celanese	Chemicals	No. America	Global Avg.
B	B-	C	C
	Chemicals	North America	Global Average

Received a **grant from the Bill and Melinda Gates Foundation** to produce a prototype for a refillable contraceptive implant using our VitalDose drug delivery platform, which could **expand global access to women's health solutions in low-middle income communities**

Legal Disclaimer

Disclaimer

This publication was produced based on Celanese's present state of knowledge, and Celanese undertakes no obligation to update it. Because conditions of product use are outside Celanese's control, Celanese makes no warranties, express or implied, and assumes no liability in connection with any use of this information. Nothing herein is intended as a license to operate under or a recommendation to infringe any patents.

Contact Information

Global Headquarters

222 West Las Colinas Blvd. Suite 900N

Irving, Texas 75039, United States

European Regional Headquarters

The Atrium, Floor 6 Strawinskylaan 3105

1077 ZX Amsterdam, The Netherlands

Asia Regional Headquarters

4560 Jinke Road, Zhang Jiang Hi Tech Park

Shanghai 201203, China

GHG Data Collection and Verification

06/21/23

EASTMAN

A global industry leader

- Fortune 500 specialty materials company with 2022 revenue of ~$10.6B
- Global manufacturer and marketer of advanced materials and specialty additives
- Operates four business segments
- Global team of ~14,000
- Serves customers in >100 countries

EASTMAN

Motivation for improvement

Greenhouse gas data was mostly obtained via numerous spreadsheets, multiple data sources, other reporting metrics (very time consuming with ample opportunity for human error).

Resulted in:

- Sites not being consistent with unit conversion factors
- Standardized units not always reflecting country specific practices
- Environmental staff using familiar regulatory reporting criteria versus GHG Protocol
- Purchased fuel data not being verified against invoices (requirement for external verification)

Documentation was spotty which was problematic with staff turnover.

Lack of external verification limited some sustainability scoring. (ex. CDP A level)

Proposed SEC ruling will require auditable GHG emissions data as part of financial reporting. Similar expectations are developing in Europe.

EASTMAN

Improvements for 2022 GHG reporting

Met with contacts at each manufacturing site

Documented the sources for each site's data

Identified any issues or gaps for the next reporting cycle

Modified data entry – clarifying units and incorporating attachments

Provided a guidance document to assist the sites in providing the correct information

EASTMAN

Summary

Obtained third-party limited assurance in 2022 for Scope 1 and 2 and Scope 3 business travel. Verification in progress for 2023 and expected to continue going forward.

Site visits have not been required but may be in the future.

Expectations are likely to increase (transparency, reporting, etc.) requiring more rigorous approach.

Continuing to refine the process with increased automation and improved efficiencies. (ex. collecting data quarterly)

EASTMAN

Questions?

Xerox Greenhouse Gas Verification

Will Armington – Energy and Climate Change Specialist

xerox™

Xerox

Information technology company embracing the hybrid workforce

Printing

- Office multifunction devices
- Managed print service
- Graphics communication
- Printing presses

Digital Services

- Managed IT services
- Information and cybersecurity
- Workflow automations
- Data management solutions

There are many **frameworks** governing ESG and GHG information disclosure

- GHG Protocol/ Xerox Inventory Management Plan
- *New* Government Regulations
- Carbon Disclosure Project (CDP)
- Science Based Targets initiative (SBTi)
- Ecovadis
- S&P Corporate Sustainability Assessment → Dow Jones Sustain. Index
- Global Reporting Initiative (GRI)
- Task Force on Climate Related Financial Disclosures (TCFD)
- Customer supplier surveys!

xerox™

Greenhouse Gas Framework and Process – Scope 1 + 2

Framework

Xerox developed its first GHG inventory & goals in 2003, based on 2002 baseline.

Xerox follows *The GHG Protocol Corporate Accounting and Reporting Standard*, the globally-accepted standard published by **World Resources Institute**

https://ghgprotocol.org/corporate-standard

Process

Emission source	Data source	Data Processing
Facilities	Electricity (kWh), Natural Gas (therms) utility bills	Data compiled, checked by EHS&S, and entered into third party tool to calculate GHG emissions. Tool uses industry standard fuel conversion and region-specific electricity factors. Ex. 1 gal diesel → 10.21 kg CO2
Fleet	Gallons of fuel, Electricity (kWh) purchased	

xerox™

Scope 3 emissions – Data input

Upstream or downstream	Scope 3 category	Activity Data examples
Upstream scope 3 emissions	1. Purchased goods and services	Raw materials, Supplier GHG emissions, Office equipment
	2. Capital goods	Machinery, Land, Office renovation, other capital projects
	3. Fuel- and energy-related activities (not included in scope 1 or scope 2)	Emissions from delivering energy, Scope 1 and 2 data, Industry factors, ask energy suppliers
	4. Upstream transportation and distribution	Transporter GHG emissions, fuel used to deliver products, miles traveled, mode
	5. Waste generated in operations	Organic waste, distance to waste management facilities,
	6. Business travel	Airline travel, Hotel stays,
	7. Employee commuting	Employee distance, travel mode, commuting frequency,
	8. Upstream leased assets	Not relevant to Xerox
Downstream scope 3 emissions	9. Downstream transportation and distribution	Transportation we don't pay for (Amazon delivery), distance, fuel, mode
	10. Processing of sold products	Not relevant to Xerox.
	11. Use of sold products	Electricity used by our printers and other devices we may sell
	12. End-of-life treatment of sold products	Recycling of Xerox equipment
	13. Downstream leased assets	Not relevant to Xerox.
	14. Franchises	Not relevant to Xerox.
	15. Investments	*New to Xerox* Carbon emissions associated with financial investments

Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard (PDF), page 32.

xerox™

Verification process

- Xerox GHG inventory process – emails and spreadsheets
  - Verified against Xerox GHG Inventory Management Plan
  - Looking to upgrade to carbon accounting and ESG management software
- Send to verifier, Scopes 1+2 package and Scope 3 package
  - Include emails with raw data and message trail
- Verifier walkthrough of process if needed
- Meeting to discuss questions, verifier requests sample utility bills
- Archive files to create version 2, 3, 4, etc and address issues
- Verifier internal review ~ 2 weeks.
- Budget minimum 2 months from data submission to receipt of verification

Climate Change Basic Science

Climate Chemistry

The Greenhouse Effect

- First observed by Svante Arrhenius in 1896 - *On the Influence of Carbonic Acid in the Air upon the Temperature of the Ground* - **We need it to survive**

Greenhouse gases (GHGs)

- Reflects ~70% of solar energy from the atmosphere back to earth
- Global warming potential (GWP) based on energy absorption over time

The Carbon Cycle

The Earth is a giant buffer

- Excess carbon cycled into other environments
- Carbon reservoirs – biosphere, lithosphere, hydrosphere, atmosphere

Carbon Flux

- Carbon exchange depends on the conversion process
- Excess carbon is distributed to available reservoirs

Xerox Roadmap to Net Zero 2040

Energy Efficiency & Process Improvements

- Increase remote solve to reduce service miles
- Increase fleet fuel efficiency & CareAR
- Real estate optimization
- Process and facilities energy reduction projects
- Incorporate internal carbon pricing into decisions

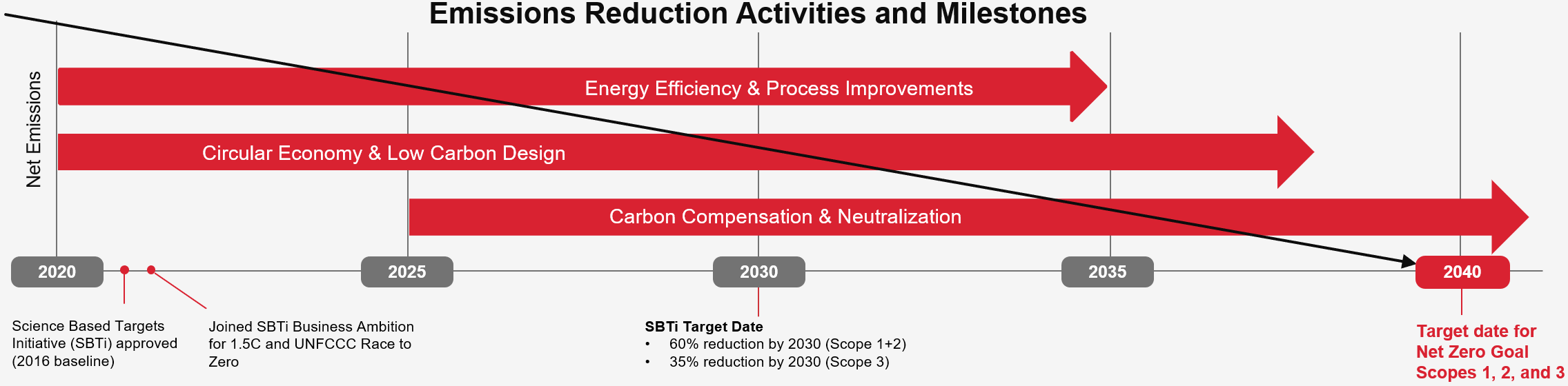
Circular Economy & Low Carbon Design

- Increase energy efficiency of products
- Increase post-consumer materials in products
- Expand take-back and remanufacturing
- Test and commercialize innovations
- Engage suppliers for lower carbon supply chain

Carbon Compensation & Neutralization

- Zero-carbon electricity
- Power Purchase Agreements (Solar / Wind)
- Renewable Energy Credits
- Renewable natural gas
- CO2 capture, sequestration, and re-forestation

Emissions Reduction Activities and Milestones



Core Principles

Partnerships & Collaborations

We will work with our partners and clients to improve our business to be a catalyst for wider change.

Leadership & Resilience

Integrate low carbon focus into business processes corporate-wide

Innovation-driven

Xerox's innovation areas have potential to reduce the world's carbon footprint, among other benefits.

xerox™

Electricity Consumption Improvements
Office A3

Xerox® WorkCentre® 7855	
Active :	862 W
Standby :	121 W
Sleep :	4.8 W
TEC v2 :	4.2 kWh/wk
TEC v3** :	1.47 kWh/wk

Active Ecolabels

None

Xerox® AltaLink® C8055		Energy Reduction
Active :	810 W	6%
Standby :	81.5 W	32%
Sleep :	1.6 W	67%
TEC v3 :	0.81 kWh/wk	

Active Ecolabels

ENERGY STAR®
EPEAT

Xerox® AltaLink® C8155		Energy Reduction
Active :	760 W	6%
Standby :	79 W	3%
Sleep :	0.75 W	53%
TEC v3 :	0.77 kWh/wk	

Active Ecolabels

BLUE ANGEL
ENERGY STAR
EPEAT

BLUE ANGEL – Similar criteria to EPEAT + ENERGY STAR with slightly different criteria
ENERGY STAR – Energy efficiency criteria
EPEAT – Materials and circular economy focused. Three tiers (gold, silver, bronze). Requires ENERGY STAR

** Estimated

xerox™

slido

Question & Answer

Please go to www.slido.com
Enter Event Code:
#DOEDecarb

U.S. DEPARTMENT OF ENERGY