



APRIL 30
- MAY 2
2025



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U.S. DEPARTMENT
of **ENERGY**



Money Talks: Financial Analysis for Industrial Improvement Projects

May 1, 2025

2:30 – 3:30 pm ET

Agenda

- 1** Welcome: John O' Neill, U.S. Department of Energy
- 2** Working Group Outcomes: Paul Lemar, Oak Ridge National Lab
- 3** Break Out Activity
- 4** Presentation #1: Electrolux
- 5** Presentation #2: Weatherford
- 6** Closing and Q&A

Today's Presenters



Paul Lemar

Technical Account Manager
Oak Ridge National Laboratory



Tara Helms

Director of Sustainability
Electrolux



Aditi Ilanthodi

Sustainability Specialist
Weatherford



Paul Lemar

Oak Ridge National Laboratory

Working Group Lessons Learned

- Common financial analysis metrics such as simple payback period have pitfalls
- Robust, structured financial analysis framework allows for more thorough evaluation of sometimes complex investments
 - Account for the time value of money using discount rates to assess the present value of future costs and benefits
 - Incorporate principles of both techno-economic analysis (TEA) and life-cycle cost assessment (LCCA)
 - Evaluate and quantify non-energy benefits
 - If relevant, incorporate an internal carbon price or marginal cost of emissions reduction, to place a value on emissions reductions

Approach to Structured Financial Analysis

Step 1: Determine Structural Parameters

Step 2: Identify Options and Estimate Impacts

Step 3: Quantify Additional Impacts

Step 4: Determine Total Lifecycle Cost and Develop Recommendations

Step 1: Determine Structural Parameters

- Define parameters to organize financial decision-making and the minimum project performance
- Other metrics may be relevant and should be determined at this stage, such as marginal cost of abatement
- Establish values for key calculation parameters and project impacts (e.g., emissions factors for energy use, equipment lifetime, or internal carbon price)

Step 2: Identify Options and Estimate Impacts

- Identify potential system alternatives (e.g., energy efficiency, electrification, fuel switching) and evaluate their technical feasibility
- Compare the baseline system and alternatives for expected capital/operating costs, along with estimated energy and/or emissions impacts

Step 3: Quantify Additional Impacts

- Identify additional project costs and benefits, such as non-energy benefits
 - Productivity or quality improvements from alternative technologies
 - Labor or material savings
- Quantify these costs/benefits as financial flows where possible, and provide justification

Step 4: Determine Total Lifecycle Cost and Develop Recommendations

- Apply an appropriate discount rate to each alternative being considered, to convert to current year cash flow
- Sum all costs and benefits for each alternative from year zero through the project's expected lifetime
- Identify the alternative with the most attractive present value after incorporating all costs and benefits

Working Group Deliverables and Status

Deliverable	Status
Fact Sheet: Non-Energy Benefits	Available now
Fact Sheet: Structured Financial Analysis	Under review
Structured Financial Analysis Tool	Ready for pilot testing

Working Structured Financial Analysis Spreadsheet Tool Deliverables and Status

- Tool used by Working Group to illustrate structured financial analysis
- Incorporates all facets of structured financial analysis, including discounting cash flows, capturing non-energy benefits, and value of emissions reduction
- We are looking for organizations to pilot test the Structured Financial Analysis Tool. Please send an email to lemarpl@ornl.gov if interested

Present Value Life-Cycle Cost Analysis for GHG Emission Reduction Measures				
Analysis Life Cycle =	20	years	Note: GHG reductions are calculated based on change in energy related emissions.	
Discount Rate (i) =	8.25%	annually		
Analysis Start Date Year =	2031			
	Baseline or Existing Condition		Option 3	
	Existing Natural Gas Convection Oven		New Electric IR Oven	
Cost and Impact Summary	Cost Element	Cost	Cost Element	Cost
	Initial Installed Cost	\$ -	Initial Installed Cost	\$ 457,475
	Energy Costs	\$ 12,609,966	Energy Costs	\$ 10,825,527
	Operation Costs	\$ 2,529,463	Operation Costs	\$ 2,529,463
	Maintenance and Repair Costs	\$ 183,285	Maintenance and Repair Costs	\$ 183,285
	Material Costs	\$ 238,654	Material Costs	\$ 238,654
	Miscellaneous Costs	\$ 19,974	Miscellaneous Costs	\$ (282,030)
	Environmental Costs	\$ 3,335,958	Environmental Costs	\$ 170,053
	Net Present Value (NPV)	NA	Net Present Value (NPV)	\$ 4,794,873
	Total Life Cycle Cost	\$ 18,917,300	Total Life Cycle Cost	\$ 14,122,427
	Internal Rate of Return (IRR)	NA	Internal Rate of Return (IRR)	80%
	LEAST LIFE CYCLE COST (YES/NO)	NO	LEAST LIFE CYCLE COST (YES/NO)	YES
	Marginal Cost of Abatement (Total Cost/Total Reduction in GHG Metric Tons)	NA	Marginal Cost of Abatement (Total Cost/Total Reduction in GHG Metric Tons)	\$ 68
Impact on GHG Reduction Goal	0.00%	Impact on GHG Reduction Goal	6.00%	

Breakout Activity

Breakout Activity – Process for Financial Decision Making

1. Review each topic on the worksheet. Jot down how your organization currently conducts its financial decision-making process in the “Current Process” column.
2. As you fill this section out, discuss with others at your table. Use the “Challenges” column to write down one or two aspects of your current process that you think are preventing you from accomplishing your goals.
3. Throughout the rest of this session (presentations and Q&A panel), listen for potential improvements to your process. Write these down in the “Action Items” column.
4. Take your ideas back to your organization and work to implement them!

Worksheet

Question	Key Considerations	Current Process	Challenges	Action Items
What parameters does your organization use to evaluate energy and/or emissions reduction projects?	Financial metrics (e.g. ROI, equipment lifetimes, value of emissions reductions)			
How are decisions made about which projects or initiatives are prioritized to receive funding?	Corporate v. plant-level, specific steps, timeline, parties involved, asset lifetimes, replacement schedules			
How do you identify financing options and collect data on initial costs?	Available incentives/ rebates, parties involved, at what point in the process is financing considered?			

Worksheet

Question	Key Considerations	Current Process	Challenges	Action Items
How do you evaluate energy and emissions reduction impacts?	What tools are used, long run emissions factors, interaction of multiple measures (e.g. renewables + electrification)			
Do you evaluate non-energy benefits? If so, which ones, and are these incorporated into project evaluations?	Safety, product quality, productivity, material use, etc.			



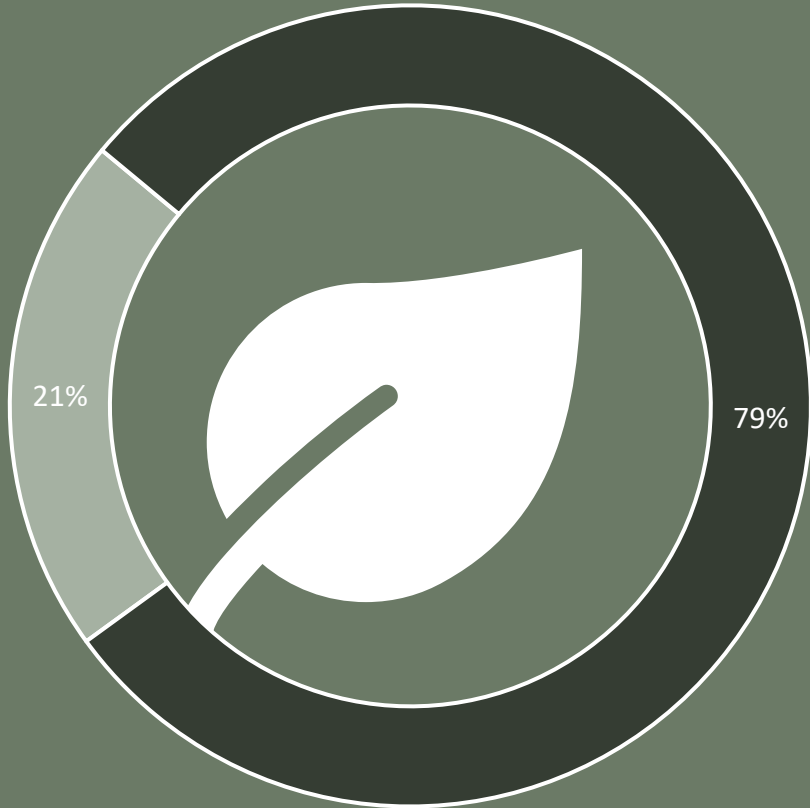
Tara Helms

Electrolux

Green Bonds in North America



Group Green Bonds



■ BA EA ■ BA NA

Dec 2024, SEK million

Eligible Category	Eligible Green Assets	Issued Green Bonds
Drive resource-efficient operations	3 129	1 819
Lead in energy-and resource-efficient solutions	1 219	1 219
Offer circular products and business solutions		
Eliminate harmful materials	406	406
Supporting the UN Sustainable Development Goals and Climate Goals	55	55
Total	4 810	3 500

Investments in buildings and manufacturing equipment with improved energy efficiency in a new factory manufacturing cookers in the US.

Development of a new platform for dishwashers in Europe. The energy efficiency for the new models need to be at least 15% more energy efficient compared to previous models to meet the eligibility criteria

Investments to eliminate HFC as refrigerants and foam blowing agents in the manufacturing of refrigerators and freezers, as well as the conversion of a R&D laboratory to test products with alternative refrigerants

Investments in several photovoltaic installations at Electrolux factories in Australia, Thailand, Italy, Sweden and Mexico.



Green Financing Framework – Eligible categories

To be eligible for financing from Electrolux Green Financing proceeds, projects must fall within any one of the five categories listed below

Drive resource-efficient operations

Reduce the impact from the Group's operations on the environment related to energy, water, waste and emissions

Lead in energy-and resource-efficient solutions

Reduce environmental impact resulting from the use of products

Offer circular products and business solutions

Improve efficiency of materials and increase the use of recycled materials

Eliminate harmful materials

Phase out substances that could have a negative impact on health and/or the environment

Supporting the UN Sustainable Development Goals and Climate Goals

Reduce greenhouse gases produced by the Group through the generation of renewable energy



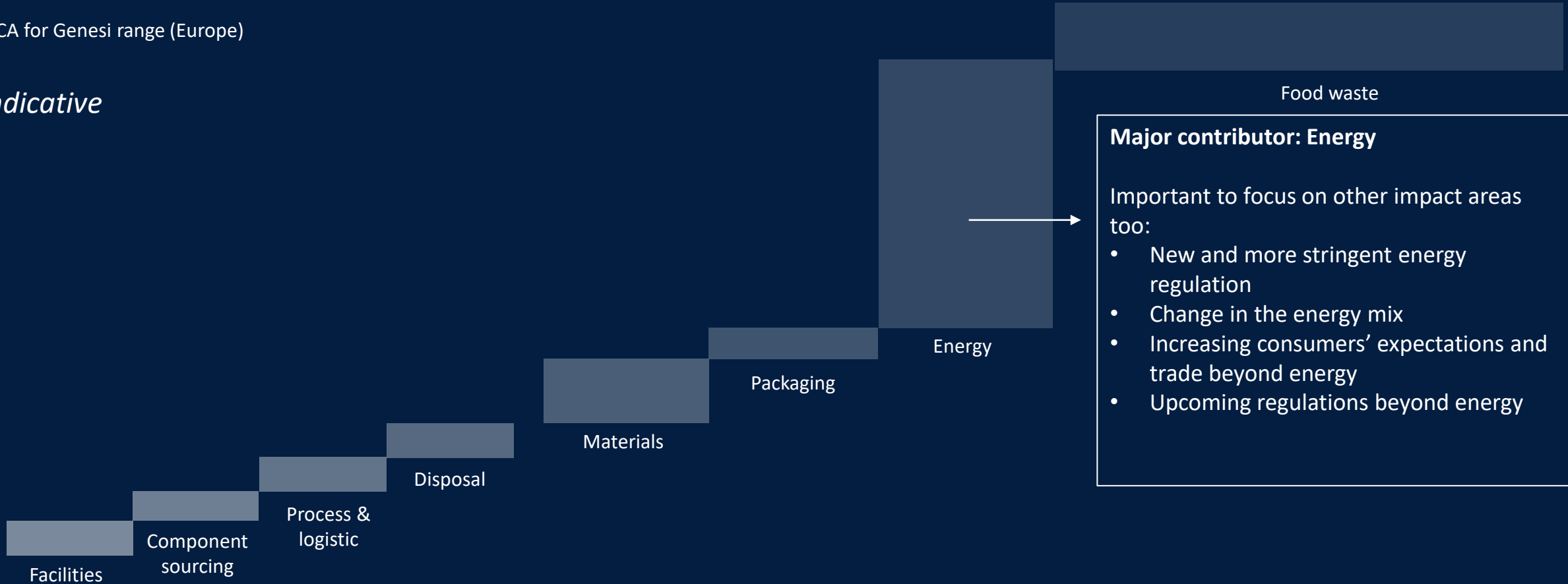
Life Cycle Analysis is our compass

Foundational understanding of refrigerator category impact on the planet.



LCA for Genesi range (Europe)

Indicative



Major contributor: Energy

Important to focus on other impact areas too:

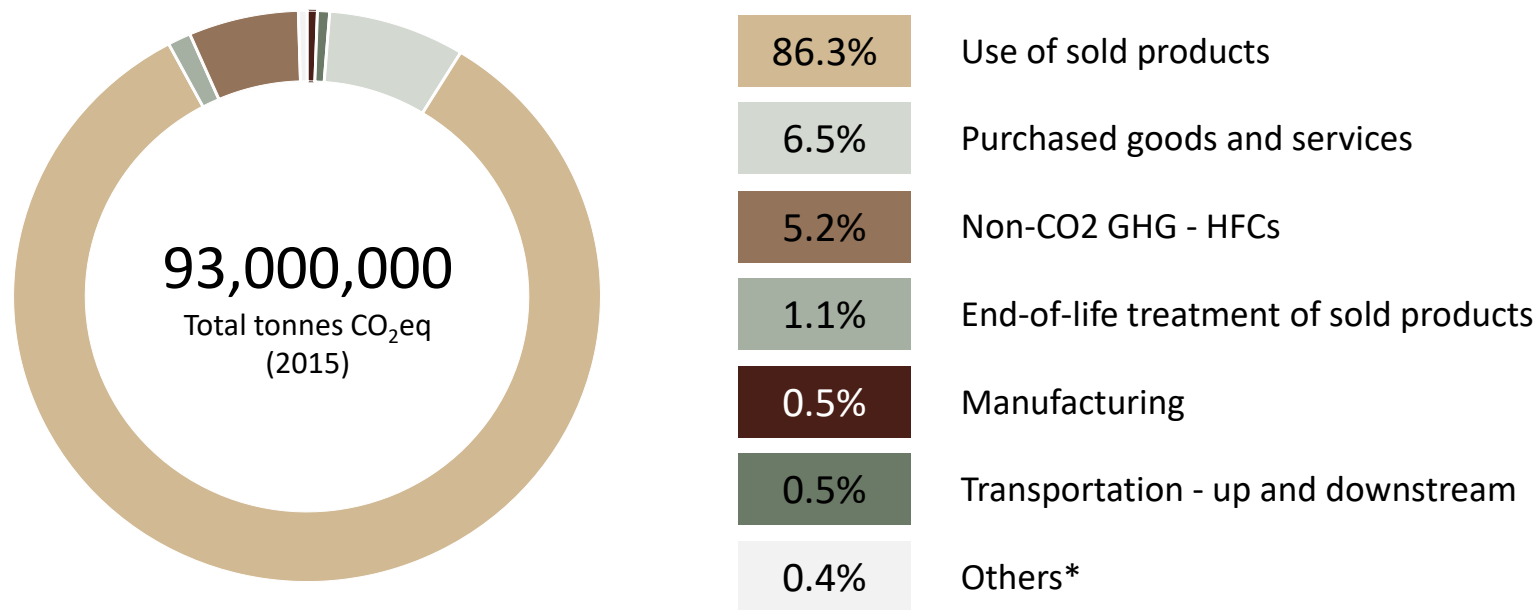
- New and more stringent energy regulation
- Change in the energy mix
- Increasing consumers' expectations and trade beyond energy
- Upcoming regulations beyond energy



Product use phase accounts for largest climate impact



Life cycle climate impact

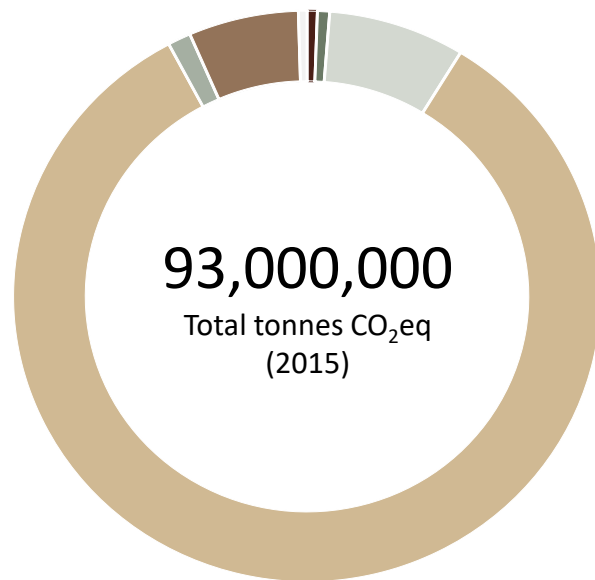


* Others includes capital goods (0.20%), Fuel and energy related activities (0.07%), Waste generated in operations (0.01%), Business travel (0.02%), Employee commuting (0.10%)

Product use phase accounts for largest climate impact



Life cycle climate impact



86.3%	Use of sold products
6.5%	Purchased goods and services
5.2%	Non-CO2 GHG - HFCs
1.1%	End-of-life treatment of sold products
0.5%	Manufacturing
0.5%	Transportation - up and downstream
0.4%	Others*

SBT	LTI
SBT	
SBT	LTI
SBT	LTI
SBT	LTI

* Others includes capital goods (0.20%), Fuel and energy related activities (0.07%), Waste generated in operations (0.01%), Business travel (0.02%), Employee commuting (0.10%)



Green Financing

Scope 3, Use of Products Sold

Science Based Target

Long Term Incentive

Performance Scorecard

Strategic Planning

Public Facing Commitment

Incentive Metric

Organization Metric

Forecast Vehicle

CAP EX

Scope 1 & 2





Aditi Ilanthodi

Weatherford



WHO WE ARE

Our Mission

Producing energy for today and tomorrow.

Our Vision

As a global leader in energy services, operators trust Weatherford to drive maximum value, streamline operations, and enhance safety. In partnership with our customers, we are committed to producing innovative energy solutions that are environmentally and economically sustainable to drive our industry forward.

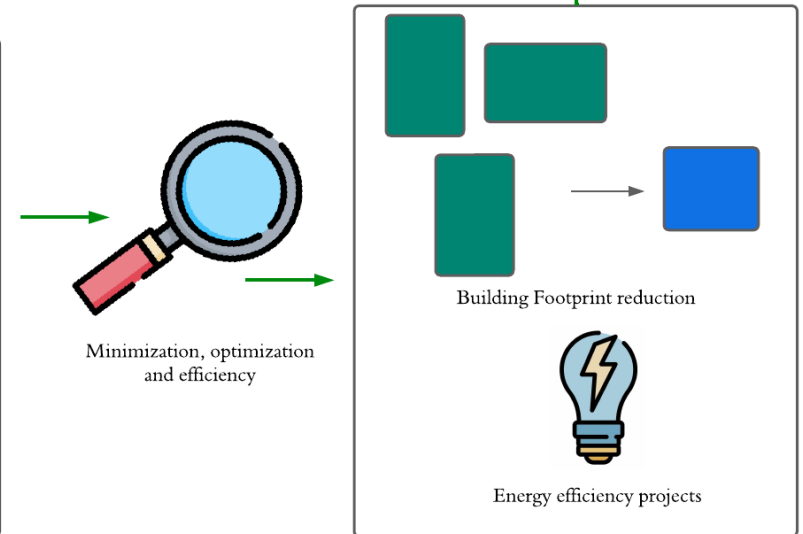
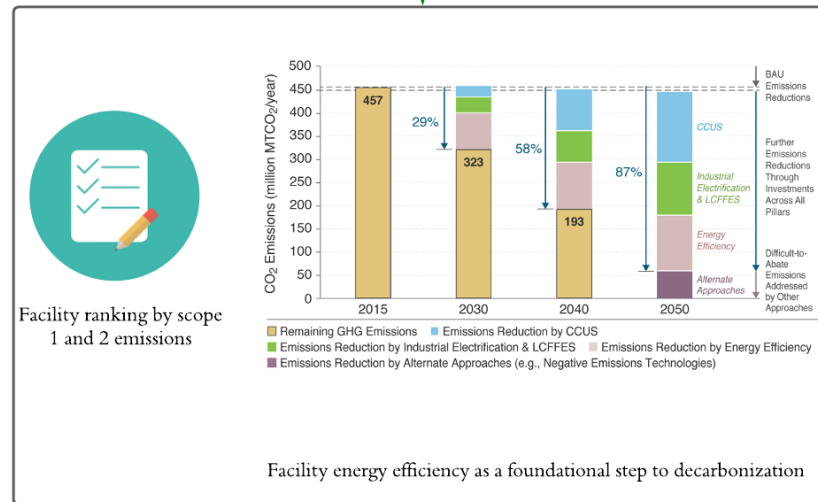
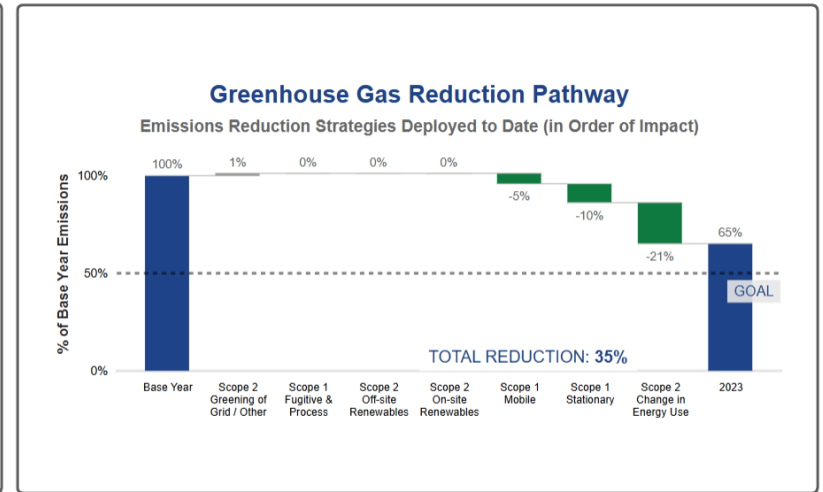
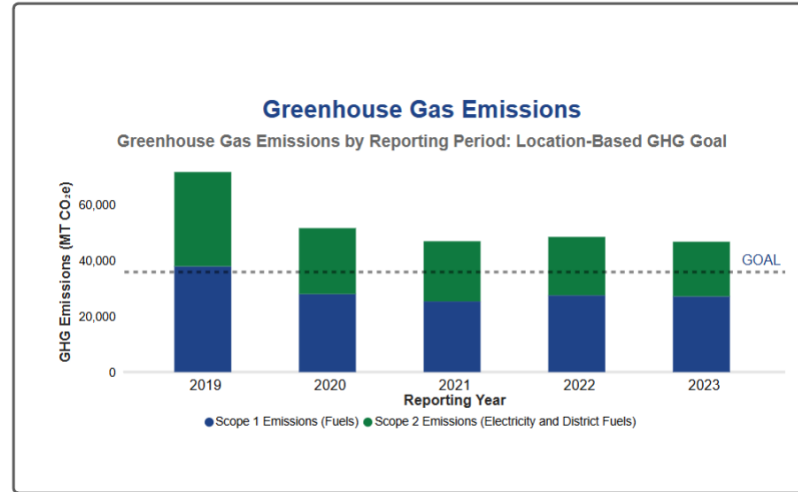




Through The Weatherford Lens : Money Meets Moment



Climate Goals Progress & Planning



(a) Reported progress on WFRDs location based GHG goal; (b) Sources of GHG reduction as of 2023; (c) Source : DOE Industrial decarbonization roadmap



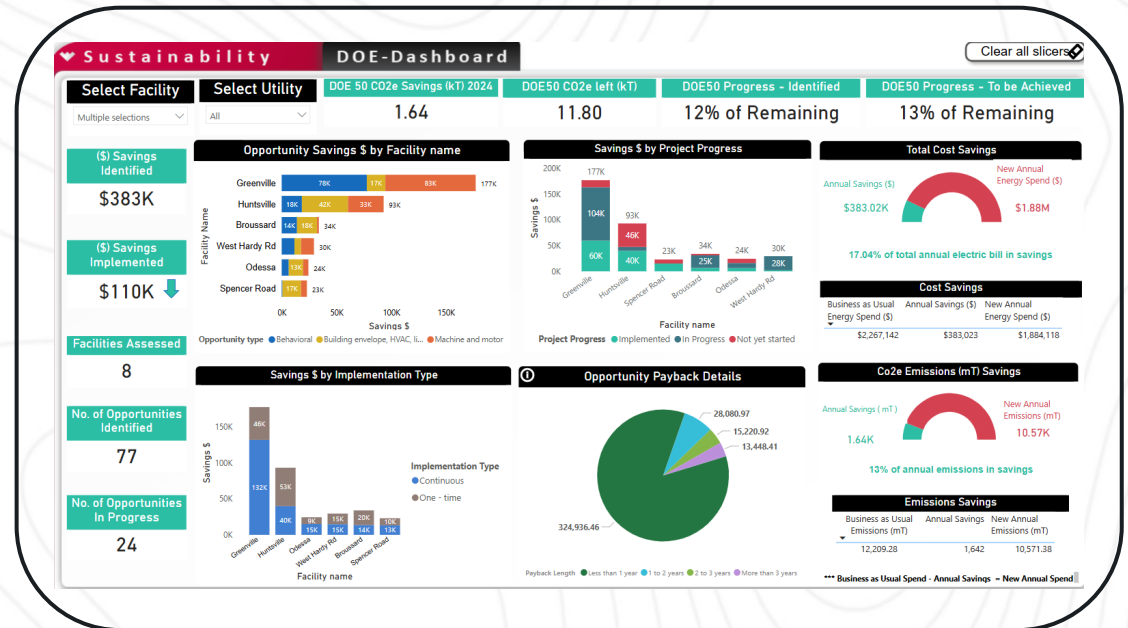
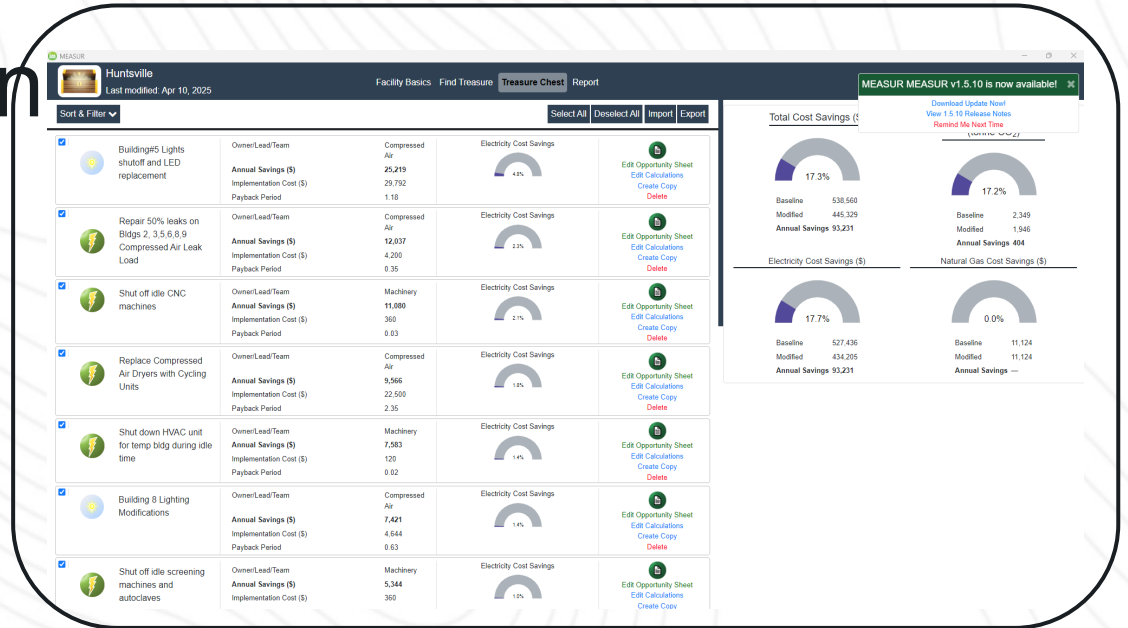
Projects, Metrics, Quantification



- Techno-Economic Analysis : CapEx, OpEx, ROI, Payback, Incentive \$.
- Project buckets –no cost, low cost, capital.

- Prioritizing high value capital projects.
- Grouped payback period.

- TEAcentric with plans to incorporate LCCA metrics.



Top : MEASURtreasure chest –Huntsville energy assessment, Bottom : Internal dashboard to track progress against DOE goal.



TEA Example

Scenario : Lighting project in Facility X

Implementation cost (CapEx) = material cost + labor cost + other cost ;

Net savings = Annual energy savings – OpEx → Use MEASUR to estimate net savings.

Payback period = (CapEx – Incentive \$) / (Net savings)

Total material cost = (\$ / per bulb for LED ballast) * number of bulbs

Total labor cost = cost / hour * hours

Total material cost = \$ 19,648

Total labor cost = \$ 25,500

Incentive = \$ 6,000

Net savings = \$ 35,518

CapEx = \$19,648 + \$25,500 = \$45,148

Payback period = (\$45,148 - \$6,000) / (\$35,518) = 1.1 yr



Decision Making : Corporate vs Plant Level



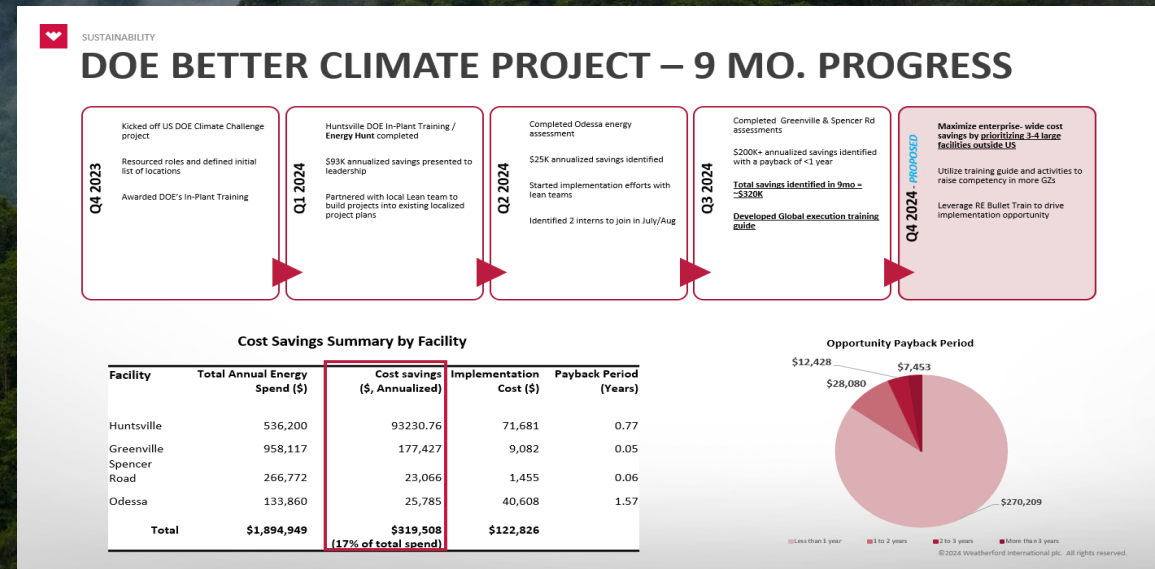
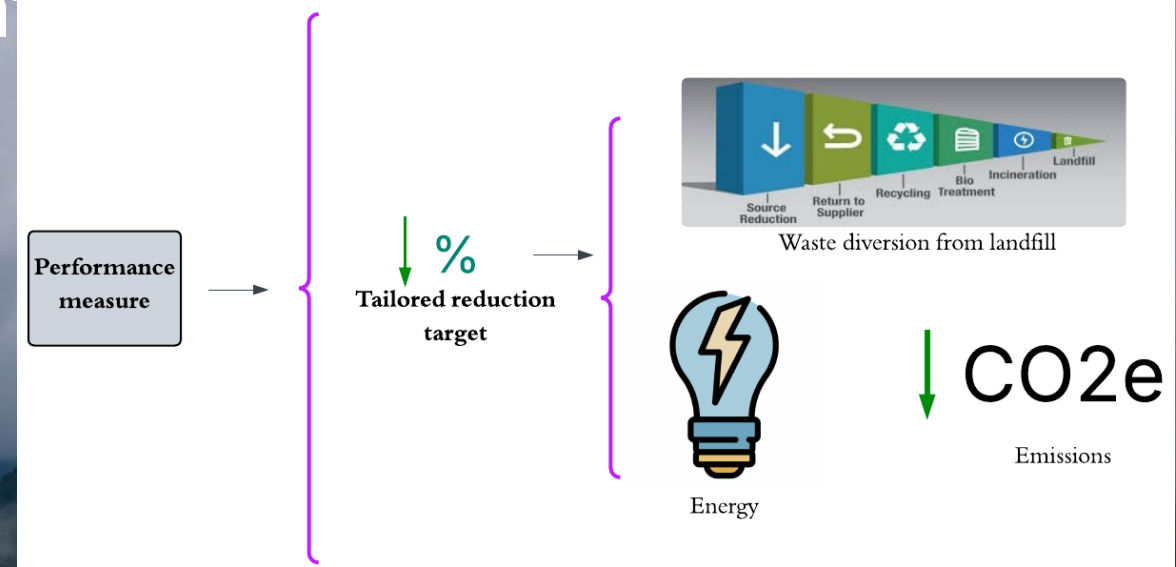
Engagement at multiple organizational levels.



Internal tailored target setting linked to performance metric.



Plant centric action, corporate level engagement via 'bullet train'.



(a) Corporate decision-making framework; (b) Progress check-ins with internal stakeholders reflecting NEBs.

Assessing Options, Costs, Impact

- Data Analysis for gap identification.
- Hierarchy of opportunities for prioritization & scaling.
- Vendor quote comparison, market rate & labor cost assessment.
- Utility programs, rebates, ITA Assessments : Entergy, CenterPoint, CPS.

ELECTRICAL ESTIMATE

GOOD FOR 30 DAYS

CUSTOMER: Weatherford Williston, ND

DATE: 12-13-2021

PROJECT DESCRIPTION: convert existing fixtures to LED

DESCRIPTION	AMOUNT	
This estimate includes all labor and material to complete this project:		
Convert existing fixture bulbs to LED bulbs in building's 4,8,11,21,23,24,27 and 31 558 fixtures total with 3,348 bulbs to replace Remove florescent bulbs and ballast in each fixture. Install new LED bulbs in each fixture 2,160 T-8 bulbs to be replaced 1,188 T-5 bulbs to be replaced		
	LABOR: 25,979.93	
	BULBS: 35,153.31	
	MISC. MATERIAL: 200.00	
	LIFTS: 1,500.00	
	WIRE CERT: 340.00	
	TAX: 2,103.16	
ESTIMATE DOES NOT INCLUDE ANY SHIPPING CHARGES		
	TOTAL AMOUNT 65,276.40	

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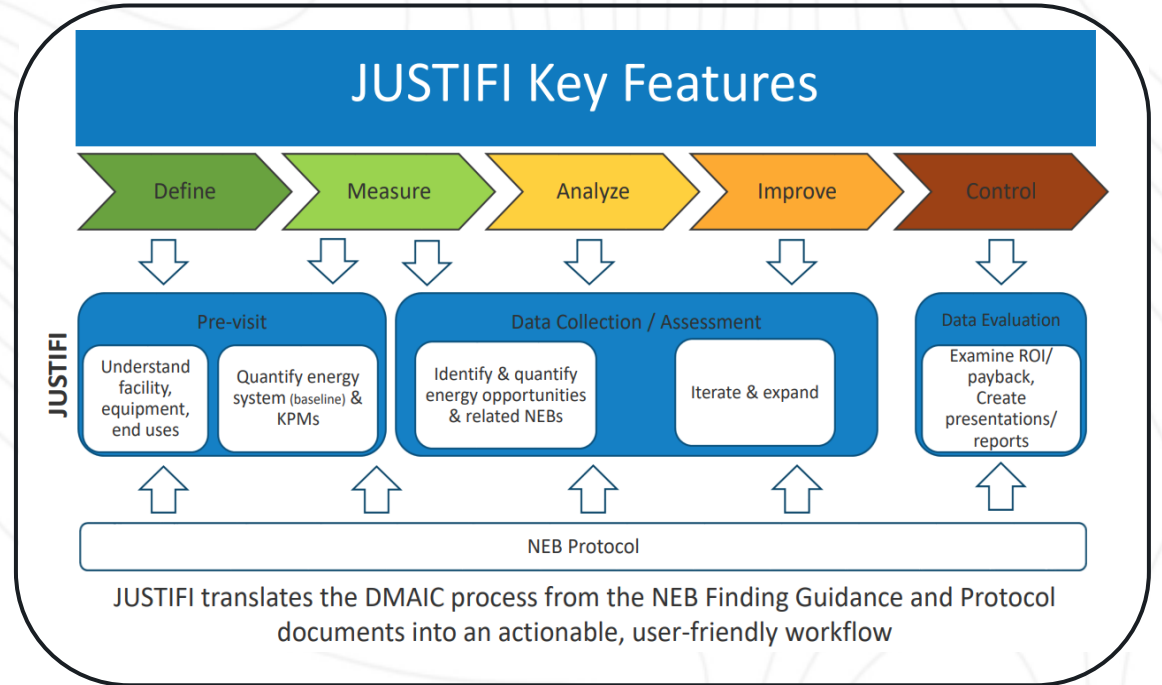
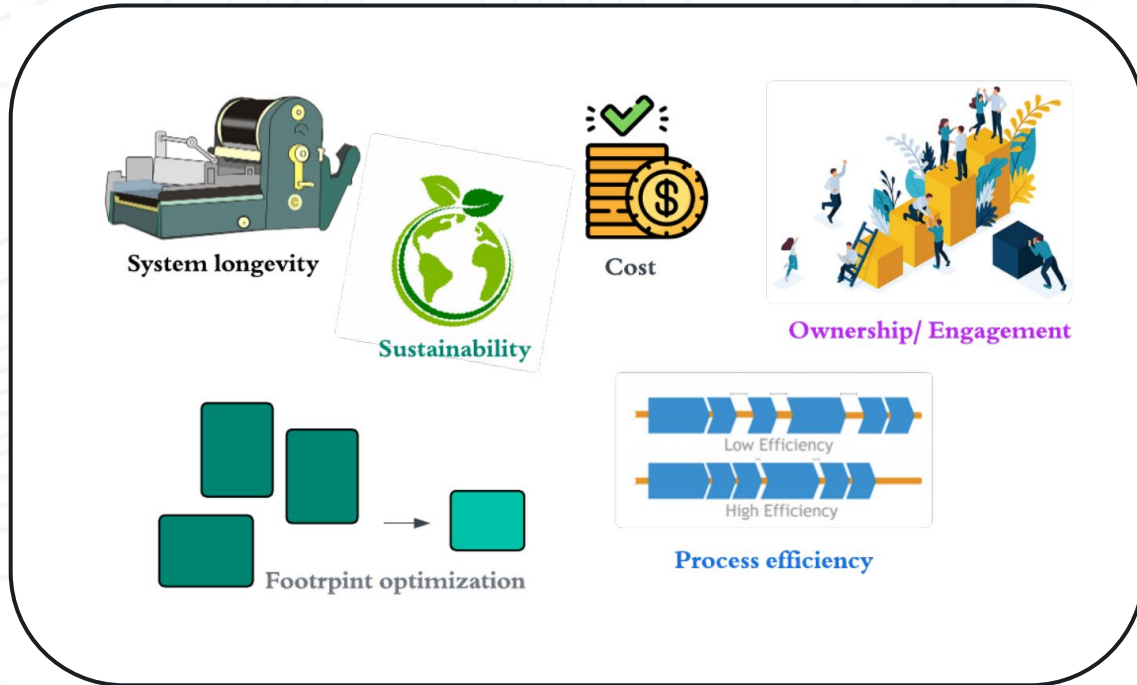
Enhance efficiency and drive savings with Strategic Energy Management (SEM) solutions

Commercial and industrial (C&I) businesses are challenged by limited time and budget constraints and can benefit from tailored guidance about what specific changes are needed to lower their energy use.



(a) Sample Vendor Quote; (b) SEM program offered by utility provider.

Role Of Non Energy Benefits (NEBs)



Source : Session 5 financial analysis for decarbonization –working group



Q & A

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