optera

Developing accurate GHG inventories to drive emissions action

Goals:

- Establish a strong foundation for Scope 1&2 emissions accounting
- Ensure your accounting practices are aligned with GHG Protocol
- Consider approaches to plan for near- and long-term emissions reductions
- Hear what leading organizations are doing to forecast their emissions and evaluate strategies to decarbonize

Agenda:

01 **GHG Inventory 101**

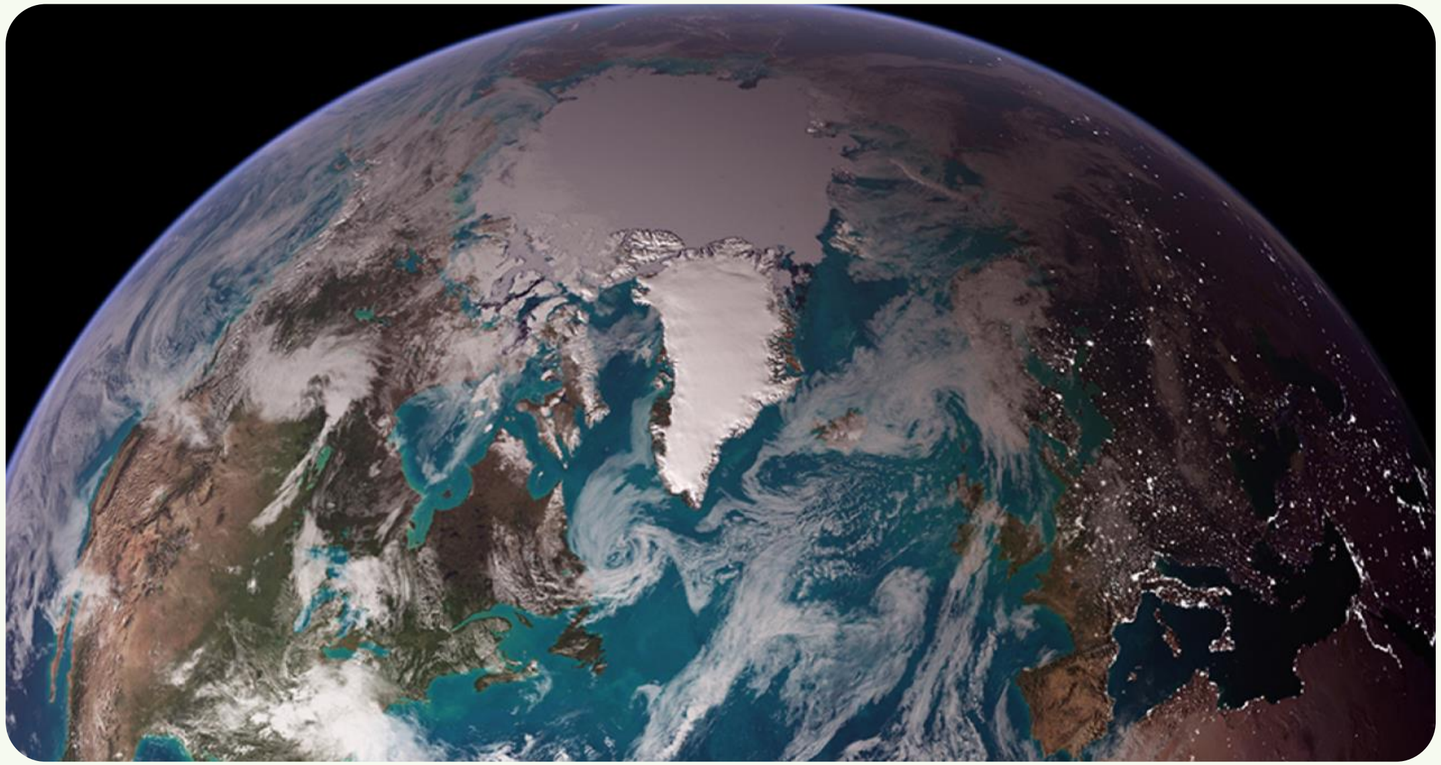
Emissions sources and calculation methods; alignment with GHG Protocol

02 **Planning Emissions Reduction Activities**

Developing emissions goals and roadmaps for decarbonization

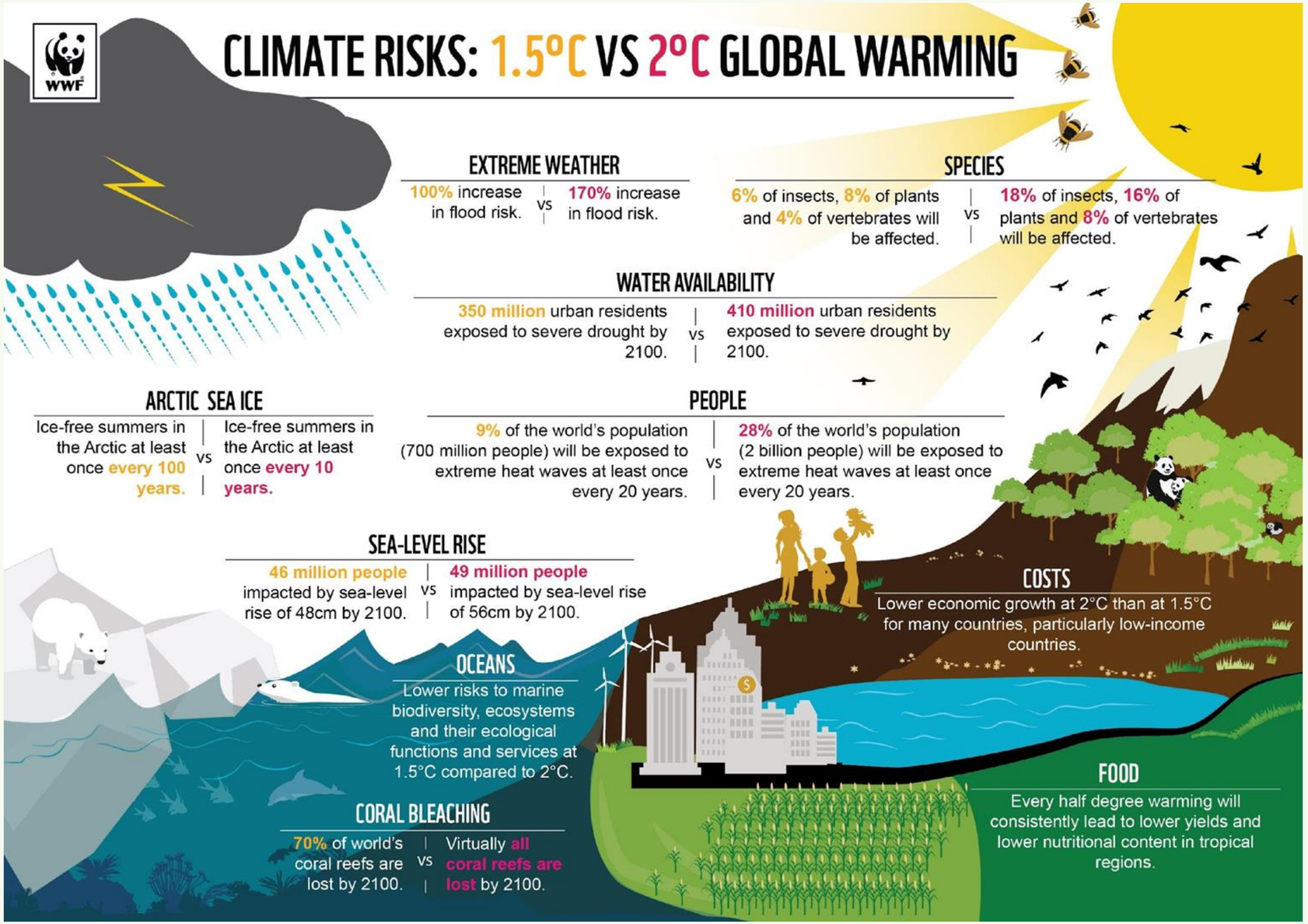
03 **Emissions Reductions in Action**

Real world examples of credit unions improving emissions performance



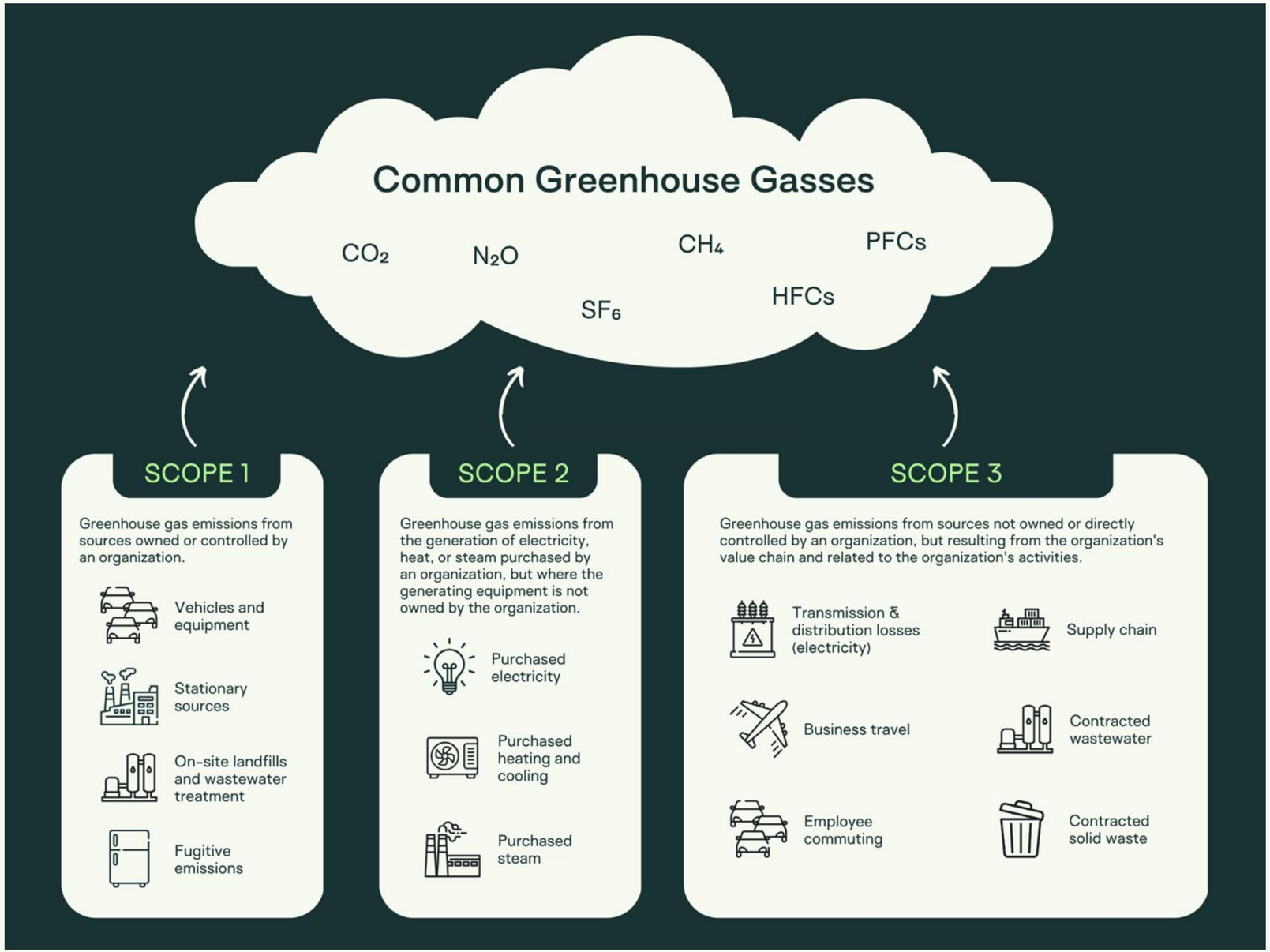
GHG Inventory 101

Emissions Pathways: Climate Risks



GHG Emissions Scopes

Based on the **GHG Protocol Corporate Standard**.



GHG Inventory: Step by Step

1. Identify emissions sources
2. Collect activity data for each emissions source
3. Apply emissions factors to activity data
4. Total emissions across all sources and scopes

Example: Regional Credit Union

Emissions Sources

Scope 1

Vehicle Fleet

Fuel for Office Heating

Refrigerants (HVAC systems)

Scope 2

Purchased Electricity

District Heating

Scope 3

Purchased Goods & Services

Business Travel

Employee Commuting

Use of Sold Products

Activity Data

Company fuel card	Gallons / $$
Utility bills	Therms
Landlord bills	Therms
HVAC service records	kilograms

Utility bills	kWh
Landlord bills	kWh
Data center	kWh

Procurement records

Travel agency

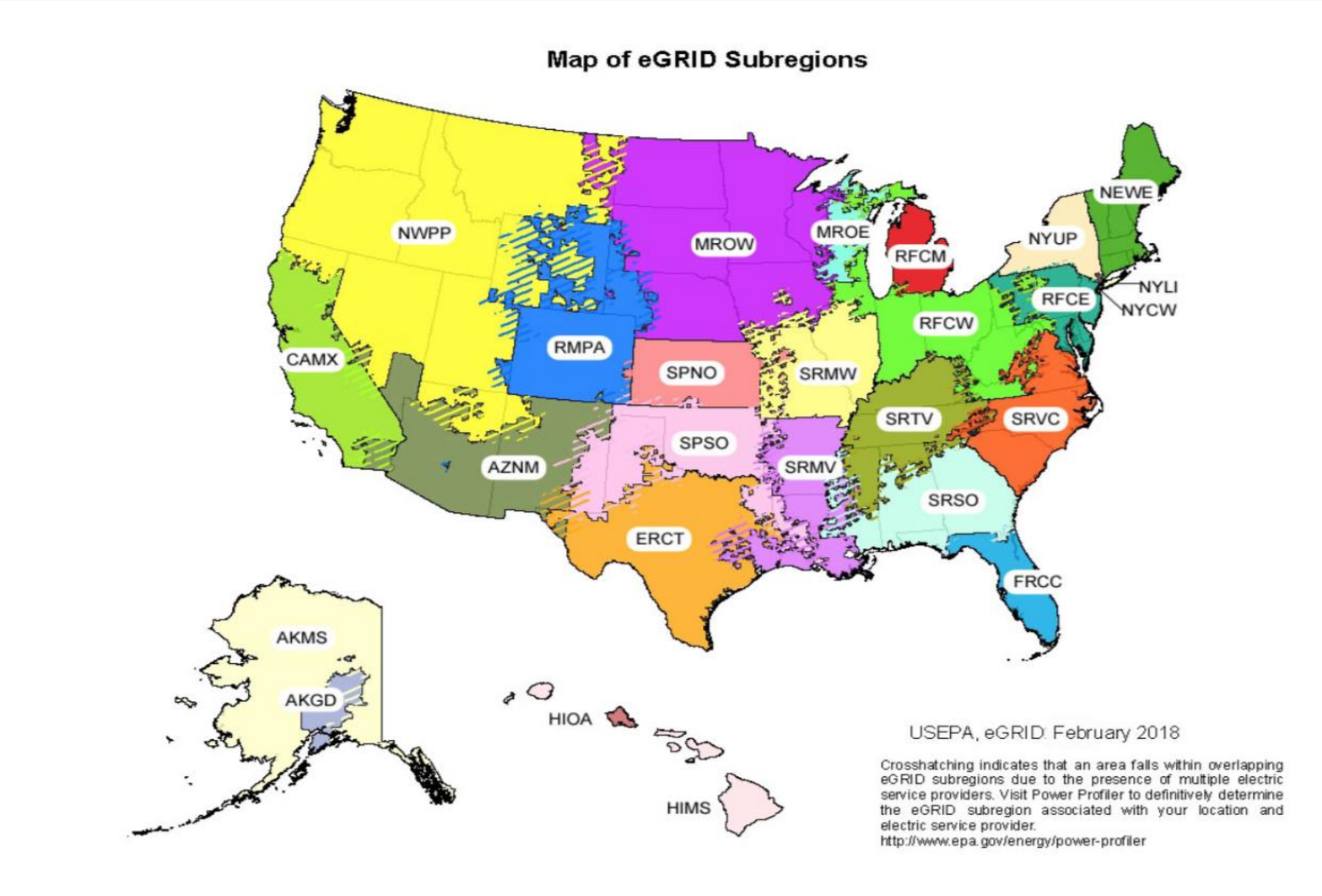
Employee survey

Sales data + product specs

Emissions Factor Sources

Source	Example	Sources	Updates
Fuels	Natural Gas Propane Transportation Fuels	• U.S. EPA *Emissions Factor Hub* • UK Government *GHG Reporting Conversion Factors* • The Climate Registry *Default Emissions Factors*	Periodic updates, check annually
Purchased Energy	Electricity Purchased Steam District Cooling	• U.S. EPA eGRID • IEA *Country-level Emissions Factors* • EU AIB *Residual Mix Emissions Rate* • Utility-specific Emissions Rate	Annual
Scope 3	Commercial Air Travel Purchased Goods & Services Employee Commute	• EPA, DEFRA • Fuels + Electricity + Custom • Fuels + Survey	Annual

US Grid Average Electricity Emissions Factors



Example Calculation

Resource Use, e.g. kWh	100,000 kWh
X	X
Average emission factor	0.00058 MTCO2e*/kWh (Rocky Mountain)
=	=
Resource emissions	58 MTCO2e

*CO2e includes carbon (CO2), methane (CH4), and nitrous oxide (N2O)

Example Calculation

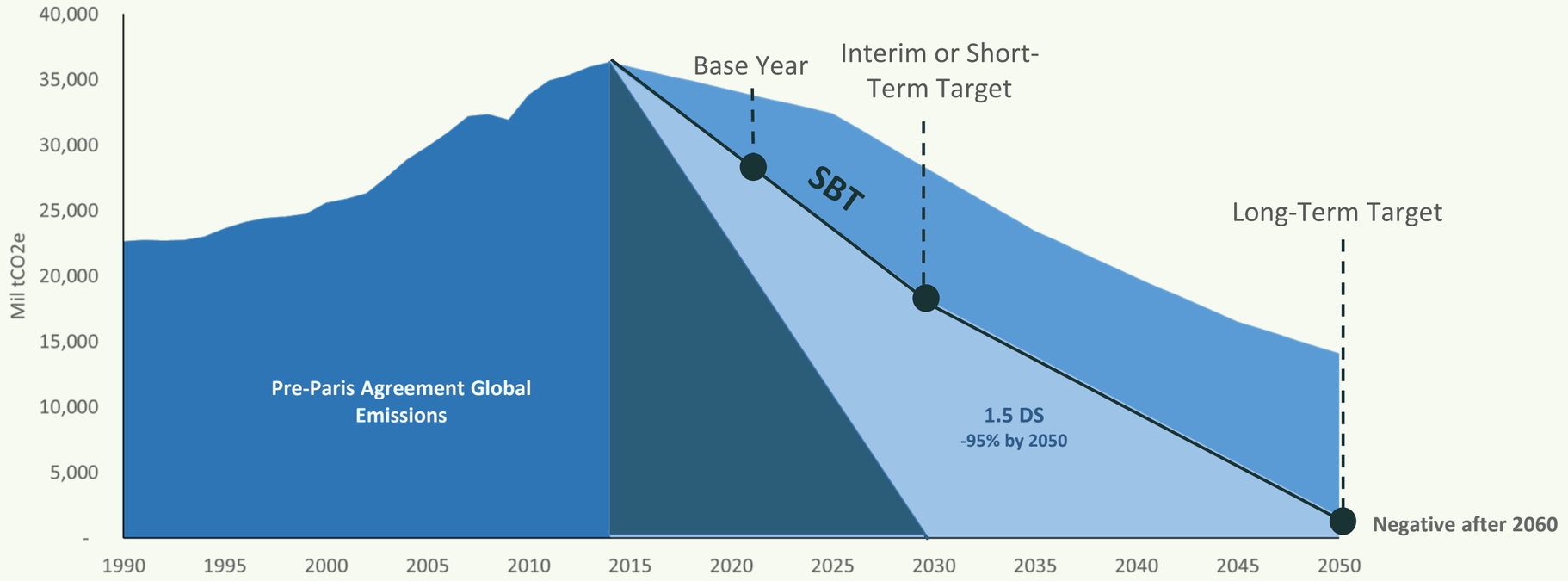
	Source	Activity Data		Emissions Factor		Emissions	
Scope 1	Vehicle Fleet	123	gallons	8.8	$kgCO_2e$/gal	1.1	metric tonne CO_2e
	Office Heating	6,927	therms	5.3	$kgCO_2e$/therm	36.8	$mtCO_2e$
	Refrigerants	12	kg	1,430	$kgCO_2e$/kg	17.2	$mtCO_2e$
Scope 2	Electricity (office)	39,712	kWh	423	$kgCO_2e$/kWh	16,784.6	$mtCO_2e$
	Electricity (data center)	97,927	kWh	468	$kgCO_2e$/kWh	45,818.2	$mtCO_2e$

Scope 1 Total	55.0	$mtCO_2e$
Scope 2 Total	62,602.8	$mtCO_2e$
Scope 1+2 Total	62,657.8	$mtCO_2e$

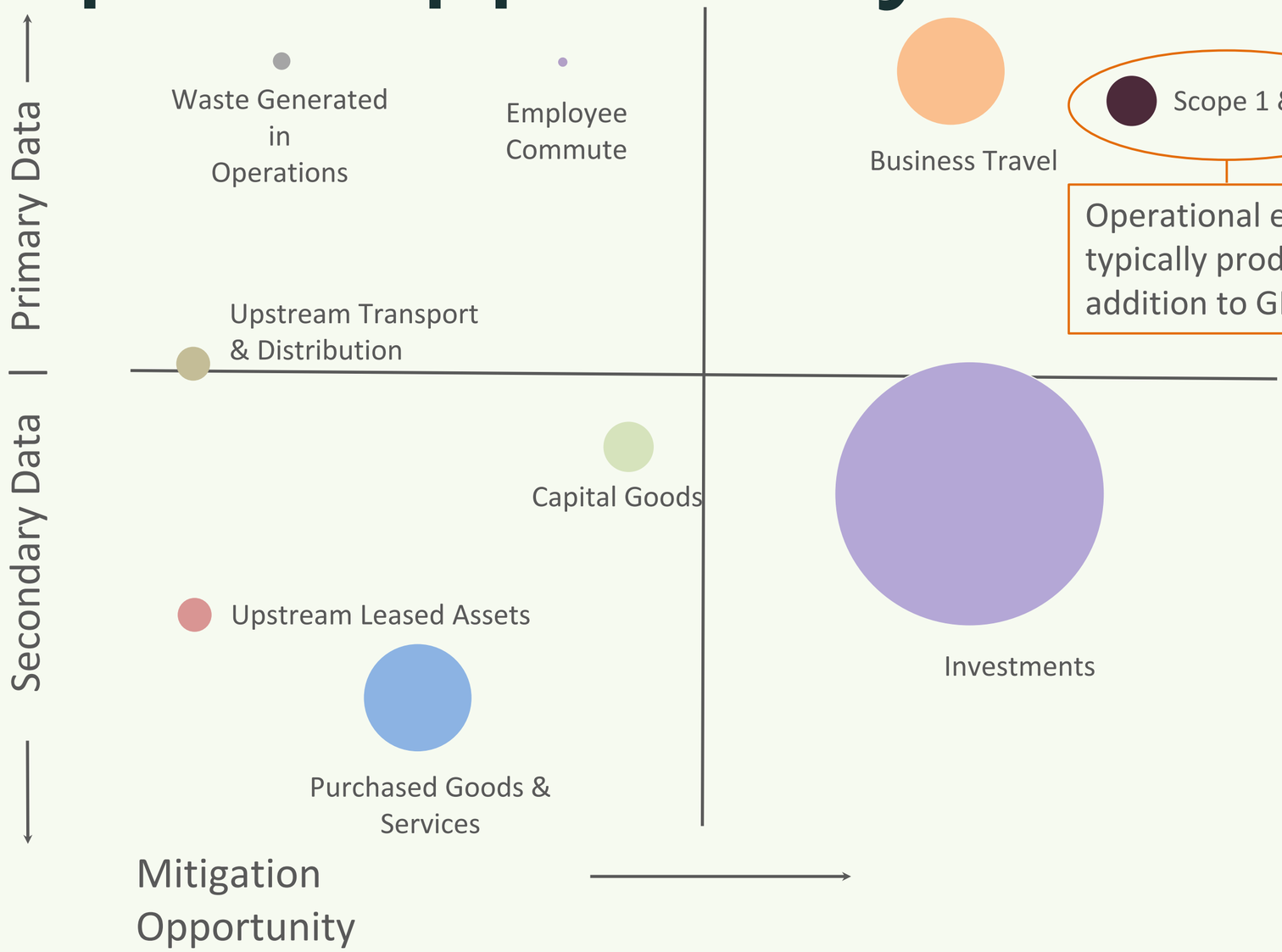
Planning Emissions Reduction Activities

Emissions Reduction Pathways

- 1.5°C and Net-Zero by seen as necessary and industry-standard to meet Paris Agreement Goals
- Absolute reduction of mtCO2e between the base year and the target year
- SBT trajectories reflect rates of reduction between a base year and target year, *e.g., 4.2% per year*



Sizing up the Opportunity



Operational emissions reduction activities typically produce financial benefits in addition to GHG savings

Bubble size represents relative GHG impact

Achieving Emissions Targets

Decarbonization Strategy	Examples	Pros	Cons
Conservation & Efficiency	• High efficiency lighting and controls, Fuel switching, Continuous improvement	• Capex or Opex savings • Longer duration savings	• Sophisticated engineering or facilities team to identify projects
Renewable Energy	• Green Power Purchase • Power Purchase Agreement • On-site Renewables • Energy Attribute Certificate (EAC)	• Easy to procure/broker (some markets) • Cost effective (based on type)	• Long-term deal aversion • Less attractive financial return (based on type) • Procurement challenges in some markets
Emissions Offsets	• Carbon sequestration • Avoided deforestation • Verified Emissions Reductions (VER)	• Easy to procure/broker	• Not applicable in most emissions accounting methodologies*

*WRI/GHG Protocol is currently engaging a group of technical experts to assess the long-term feasibility of emissions offset integration in current accounting practices

Recommended Decarbonization Approach

Ranked Order:

Scope 1 (Direct – Non-Electricity):

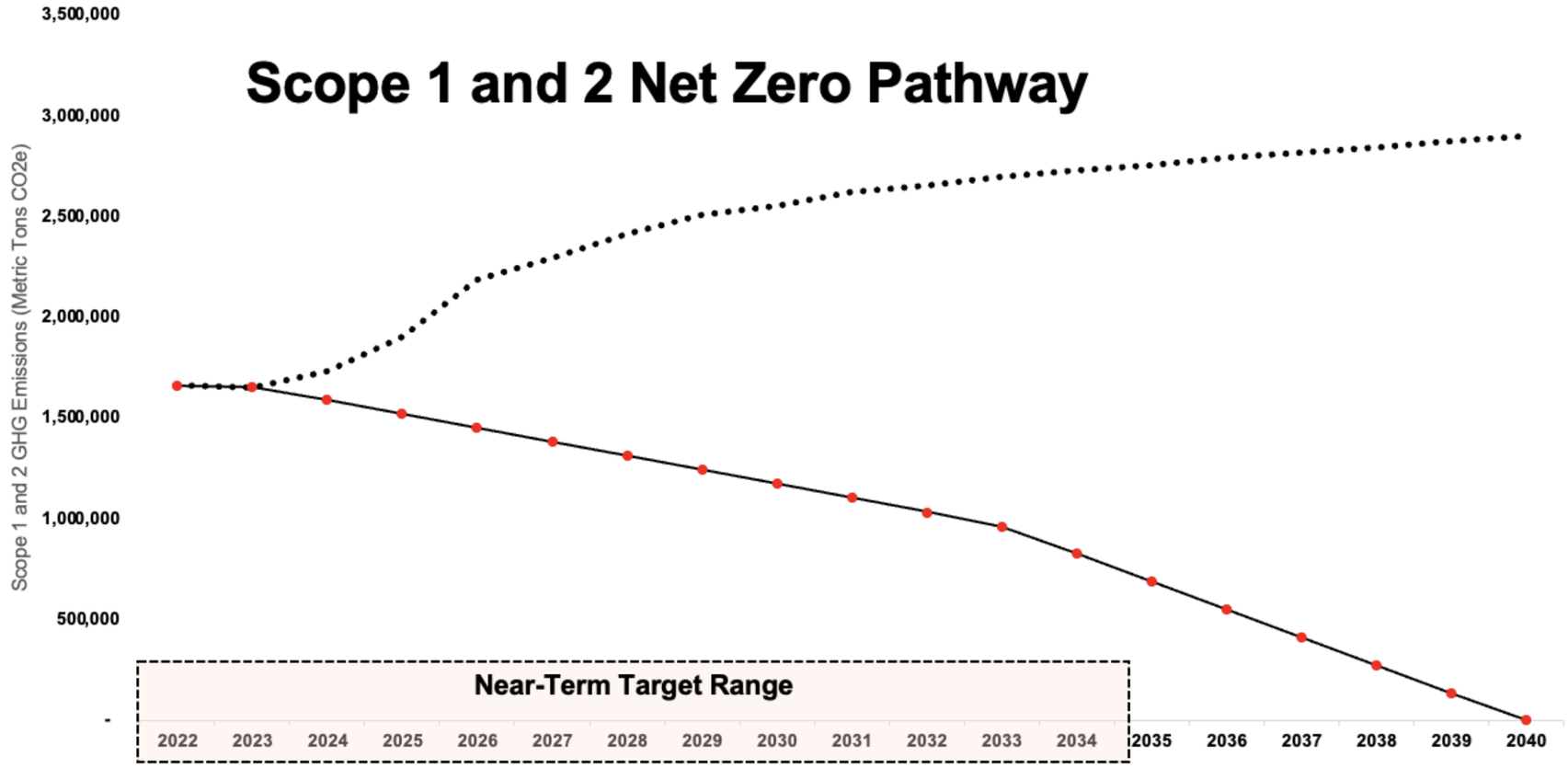
- *Energy Efficiency (EE)*
- *Fuel Switching*
- *Emissions Offsets*

Scope 2 (Indirect – Electricity):

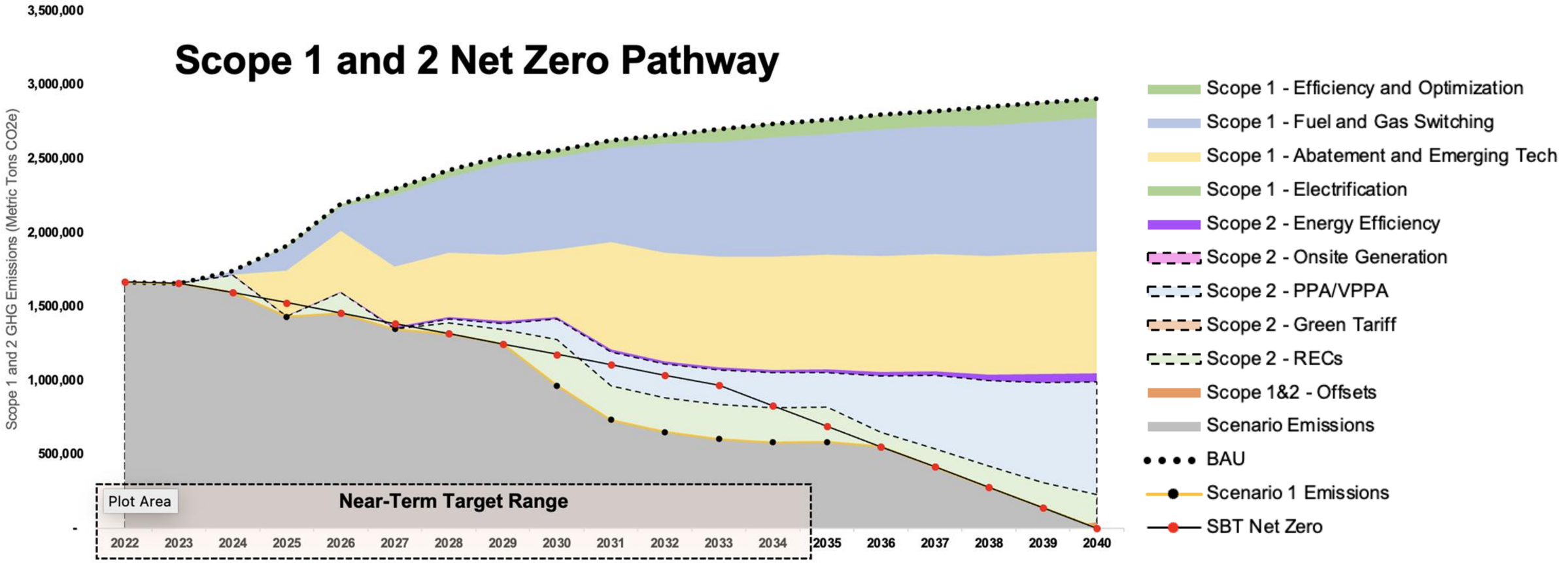
- *Energy Efficiency (EE)*
- *Green Power Purchase (GPP)*
- *Environmental Attribute Certificate (EAC)*
- *On-site Renewable Energy (RE)*

- Optera recommends **EE investments** in **all scenarios** for energy and emissions savings at facilities where such investment **has not already been made**.
- Signing up for a combination of **GPP and RECs** are **easy and low-cost** investments with off-site emissions reductions.
- **Fuel Switching** and **on-site RE** projects have **high upfront costs** but yield long-term benefits of positive payback. They payback the cost within **3-4 years** by reducing consumption.
- **Fuel Switching** is recommended for the **SBTi Net Zero scenario**.
- In a **Net Zero** target - emissions offsets can only account for **10%** of reductions through **SBTi** and must be **separately disclosed** in most regulatory frameworks.

Developing an SBT Roadmap



Developing an SBT Roadmap



UN Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

Emissions Reductions in Action

Placeholder for Paul intro & Clearwater slides

Regulations: When do they take effect?

		2024	2025	2026	2027	2028	2029	2030
[CA] SB 253	Scope 1 & 2			Data year 2025; **Limited assurance**	2026; **Limited assurance**	2027; **Limited assurance**	2028; **Limited assurance**	2029; **Reasonable assurance**
	Scope 3				Report 2026 data year	2027	2028	2029; **Limited assurance TBD**
[CA] SB 261	Release report			Yes		Yes		Yes
CSRD	Reporting & assurance		Data year 2024	2025; **Limited assurance**	2026; **Limited assurance**	2027; **Reasonable assurance**	2028; **Reasonable assurance**	2029; **Reasonable assurance**
	Who is subject		**Large listed companies**	**+ Non-SME companies**	**+ Listed EU SMEs**		**+ Non-EU firms**	
SEC	TBD	Expected passage		TBD				

Thank you.

888.540.5300

www.opteraclimate.com

info@opteraclimate.com