



## **Integrating Environmental Reporting with Existing Business Processes and Systems**

Chris Mines – Senior Vice President, Research Director, Forrester

Jon Chorley – Chief Sustainability Officer & Vice President of Product Strategy, Oracle

Rich Kroes – Director of Product Strategy, Oracle

# Agenda

- The Evolving Carbon & Energy Software Market
  - Market Drivers
  - Common Challenges
  - Stakeholder Engagement
  - Market Overview
- Oracle Environmental Accounting & Reporting
  - Addressing the Operational Challenges
  - Key Features & Benefits
- Q&A

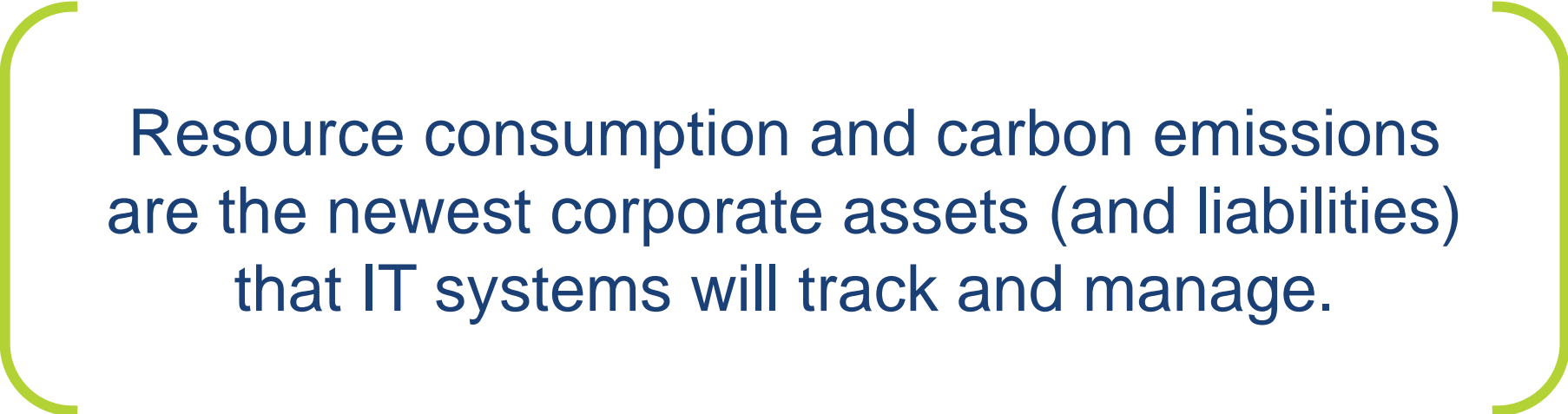


# The Evolving Carbon & Energy Software Market

Christopher Mines, Senior VP, Research Director  
Forrester Research

October, 2011

FORRESTER®



Resource consumption and carbon emissions  
are the newest corporate assets (and liabilities)  
that IT systems will track and manage.

# Corporate sustainability cuts across all business functions and organizations



It's a business **process** and business **performance** issue!

# Interviews with corporate sustainability leaders find a variety of sustainability drivers....

- **Belief:**

- “Our CEO took a heart-felt approach to it – he is a believer.”
- “There were no specific drivers, it is just the right thing to do.”

- **Transparency:**

- “To respond to stakeholder requests”
- “To meet regulatory requirements”

- **Differentiation & Innovation:**

- “To differentiate from our competitors”
- “For attracting the best R&D talent”
- “For identifying new revenue opportunities”

Source: Forrester interviews with 15 corporate sustainability leaders in Q2 2011.

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## ... and a variety of quick wins from ECEM software implementation

- **Reduce energy costs by:**
  - Identifying and eliminating billing anomalies
  - Turning up the temperature in data centers
  - Identifying inefficient equipment
  
- **Improve transparency and compliance by:**
  - Making data gathering faster and more granular
  - Normalizing data from disparate sources
  - Generating multiple reports faster

## But early adopters also face a variety of barriers

- **Skills:**

- “We lack experience.”
- “We are uncertain about our ability to implement.”

- **Data Sourcing and Integration:**

- “We don’t see how to link non-financial with financial systems.”
- “We’re not sure how to pull enterprise-wide data into a coherent picture.”
- “We have to consolidate and verify data from several business units.”
- “No data standards exist yet.”



# Different stakeholders will expect different types of returns on ECEM investments

## Potential motivations

Saving money through energy efficiency



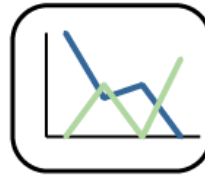
Meeting customer requirements



Improving brand perception



Responding to investor pressure



Complying with regulations



## Organizational stakeholders

Sustainability and corporate social responsibility (CSR) teams

Facilities owners

CIO and IT leadership

Risk and compliance officers

CFO and executive officers

Business operations owners



Source: November 17, 2009, "Market Overview: The Advent Of Enterprise Carbon And Energy Management Systems" Forrester report

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# Sustainability alone won't drive investment; it must be linked with other corporate priorities

**“What are your firm’s five most important corporate business priorities over the next 12 months?”**

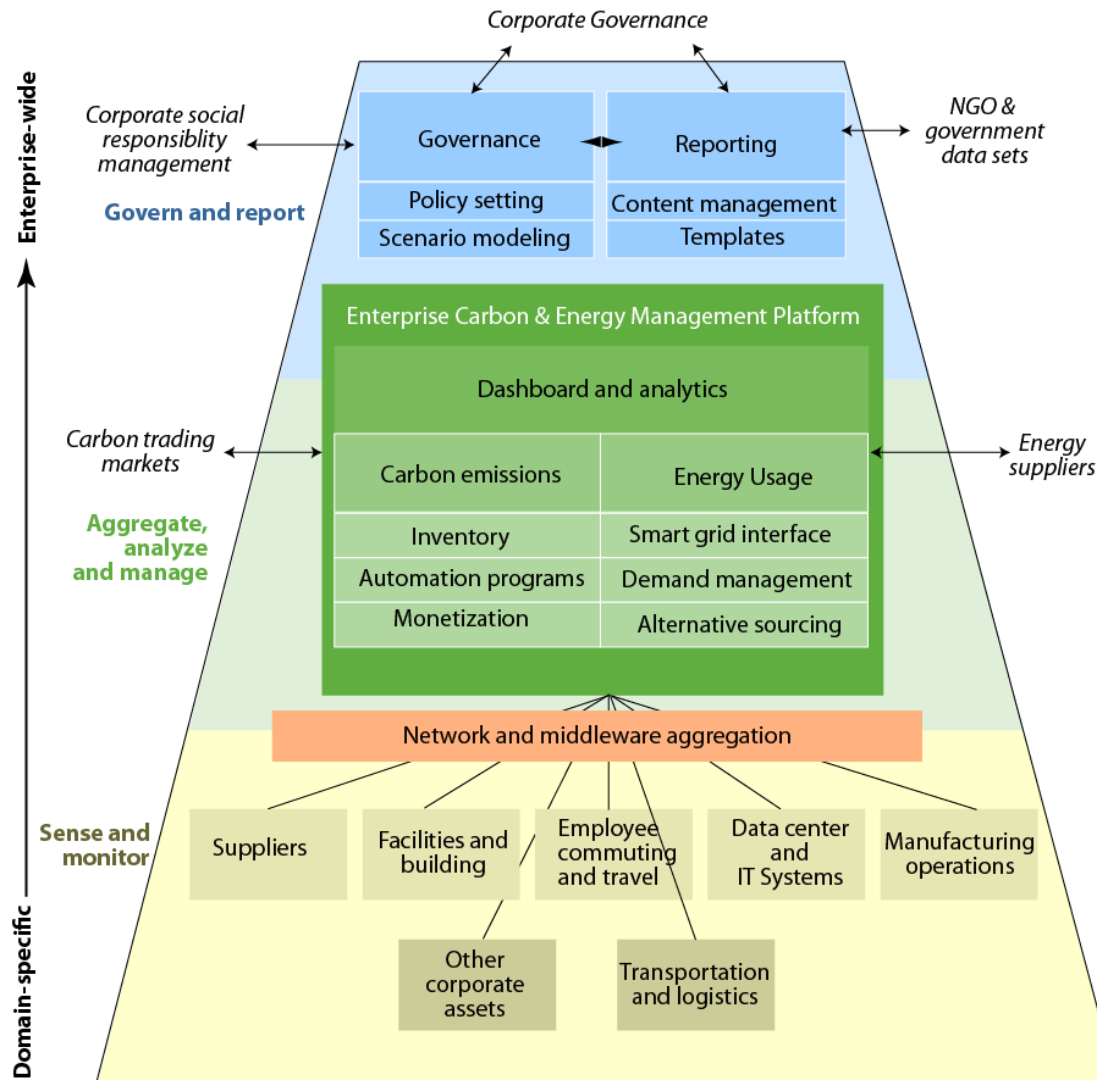
Issue	Top Two Priorities by Issue	% Selecting
Growth	Grow overall company revenue	64%
	Acquire and retain customers	54%
Efficiency	Lower the firm’s overall operating costs	44%
	Improve quality of products and/or processes	37%
Innovation	Improve our ability to innovate as an organization	32%
	Drive new market offerings or business practices	28%
Talent	Acquire and retain talent	38%
	Improve workforce productivity	31%
Responsibility	Comply with government regulations and requirements	14%
	Improve corporate environmental sustainability and social responsibility	10%

Base: 2,691 business decision-makers

Source: Forrester Forrsights Business Decision-Makers Survey, Q4 2010

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# Enterprise carbon & energy management links sustainability with overall performance management



Source: November 17, 2009, "Market Overview: The Advent Of Enterprise Carbon And Energy Management Systems" Forrester report

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# Carbon and energy management software adoption lags other similar categories – and will likely catch up

**“What are your business group’s/department’s use of the following software applications?”**

Software category	Using	Planning to use in the next 12 months	Interested in using	Total
Carbon and energy management software	8%	5%	11%	<b>24%</b>
Risk and compliance management software	27%	8%	18%	<b>53%</b>
Business performance management software	43%	10%	18%	<b>71%</b>

Base: 2,691 business decision-makers

# ECEM product functionality will evolve rapidly

- From carbon reporting to energy management to a broader scope of resource and emission planning & management
- From facility to enterprise to entire value chain carbon measurement
- From descriptive to predictive analyses
- From historical to real-time data acquisition
- From pure software vendor to platform-based ECCEM service provider
  - Often in partnership with IT services or BPO provider

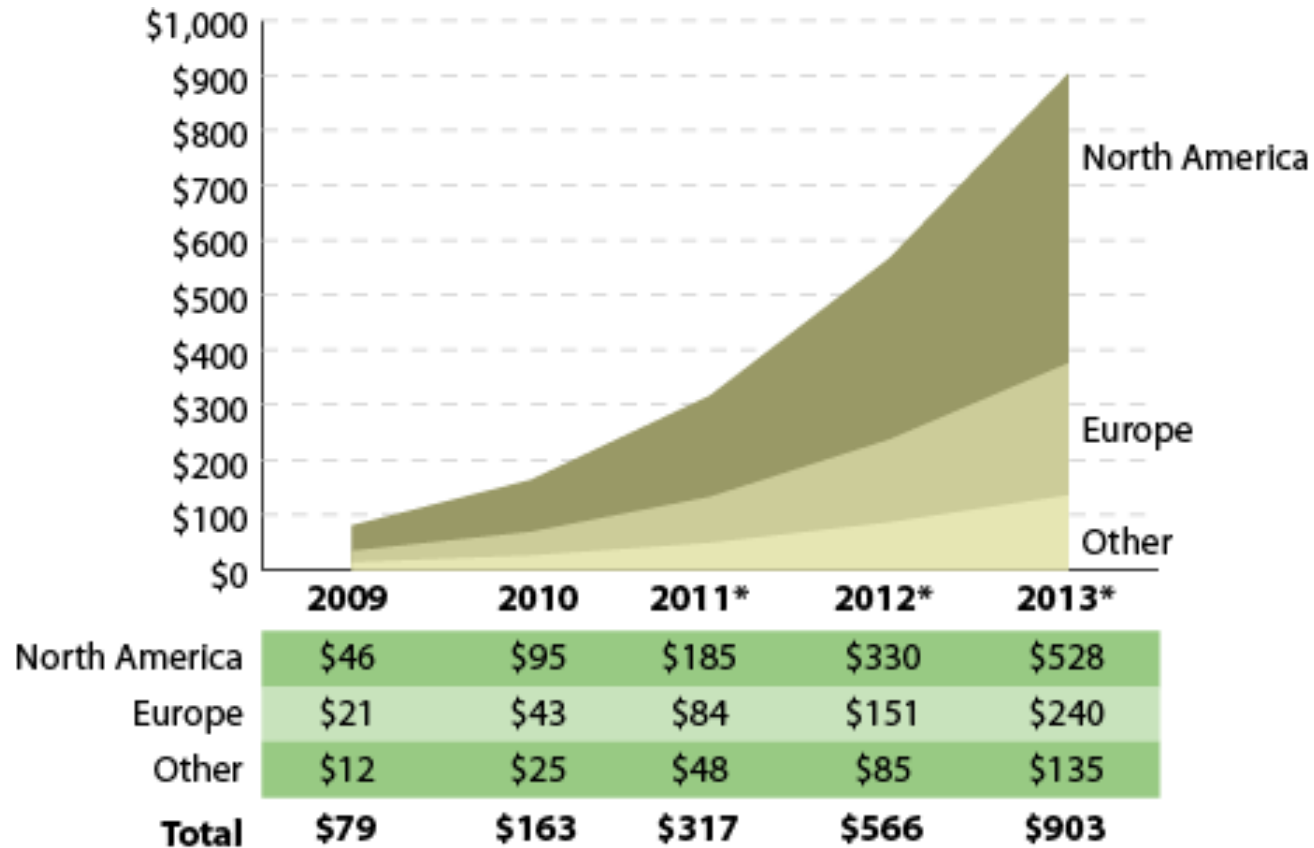
# Vendors approach the ECEM market from different angles, and with different strengths

Approaching from:	Example vendors	Strengths	Weaknesses
Building and infrastructure management	Johnson Controls, Schneider Electric, Siemens	<ul style="list-style-type: none"> <li>• Instrument and control of energy-intensive systems like HVAC</li> <li>• Understanding of facilities buyers</li> </ul>	<ul style="list-style-type: none"> <li>• Analytics</li> <li>• Interfaces with other systems</li> </ul>
IT systems and network management	Cisco, HP, IBM, JouleX, Viridity Software	<ul style="list-style-type: none"> <li>• Instrument and control systems like data centers</li> <li>• Product development resources</li> <li>• Understanding of IT buyers</li> </ul>	<ul style="list-style-type: none"> <li>• Connections to non-IT systems and assets</li> <li>• Understanding of non-IT buyers</li> </ul>
Enterprise software	CA, Microsoft, Oracle, SAP, SAS	<ul style="list-style-type: none"> <li>• Tracking and analysis of other corporate assets</li> <li>• Database, analytics, presentation-layer expertise</li> <li>• Product development resources</li> <li>• Links with systems integrator</li> </ul>	<ul style="list-style-type: none"> <li>• Instrumentation</li> <li>• No return path for company to take action on physical assets</li> <li>• Complex and pricey enterprise software systems</li> </ul>
Corporate GRC and EHS software	Enablon, Enviance, IHS	<ul style="list-style-type: none"> <li>• Regulatory compliance and reporting</li> <li>• Understanding of compliance/risk management/CSR buyers</li> <li>• Customer base in heavy-emitter industries</li> </ul>	<ul style="list-style-type: none"> <li>• Energy monitoring and management</li> <li>• Instrumentation and monitoring of assets</li> </ul>
Startup, pure plays	C3, ENXSUITE, Hara, Verisae	<ul style="list-style-type: none"> <li>• Focus on data integration and display</li> <li>• Lean, SaaS-model products</li> </ul>	<ul style="list-style-type: none"> <li>• Visibility and credibility</li> </ul>

Source: November 17, 2009, "Market Overview: The Advent Of Enterprise Carbon And Energy Management Systems" Forrester report

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# Rapid growth for ECEM market, \$1 B by 2013



Source: Forrester market estimates and forecast based on supply and demand-side data

Note: ECEM software revenues only; no services

\*Forrester forecast

Source: December 21, 2010, "The Evolution Of Enterprise Carbon And Energy Management Software" Forrester report

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# Projecting the coming shifts in important dimensions of the ECEM market

		2009 to 2012	2012 to 2015
<b>Supplier</b>	Dominant supplier type	EH&S	Enterprise software companies, with a startup or two
	Number of enterprise implementations	100s	1,000s
	IT supplier value proposition	Energy cost reduction, carbon reporting compliance	Company and product differentiation
	Principal buyer	Facilities Sustainability	Operations Finance
<b>Buyer</b>	Functionality requirement	Descriptive, data aggregation	Predictive and prescriptive analysis
	Scope	Single facility	Enterprisewide
	Data source	Spreadsheets, manual input	Asset instrumentation
	Leading industries	Energy & Utilities Public sector	Retail Consumer packaged goods Transportation

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## In summary . . .

- Resource consumption and carbon emissions are the newest corporate assets (and liabilities) that IT systems will track.
- Enterprise carbon and energy management (ECEM) software will become the corporate system of record for managing sustainability metrics.
- Corporate finance and operations execs will emerge as the key influencers for ECEM purchasing; enterprise software companies will be the dominant suppliers.

# Thank you

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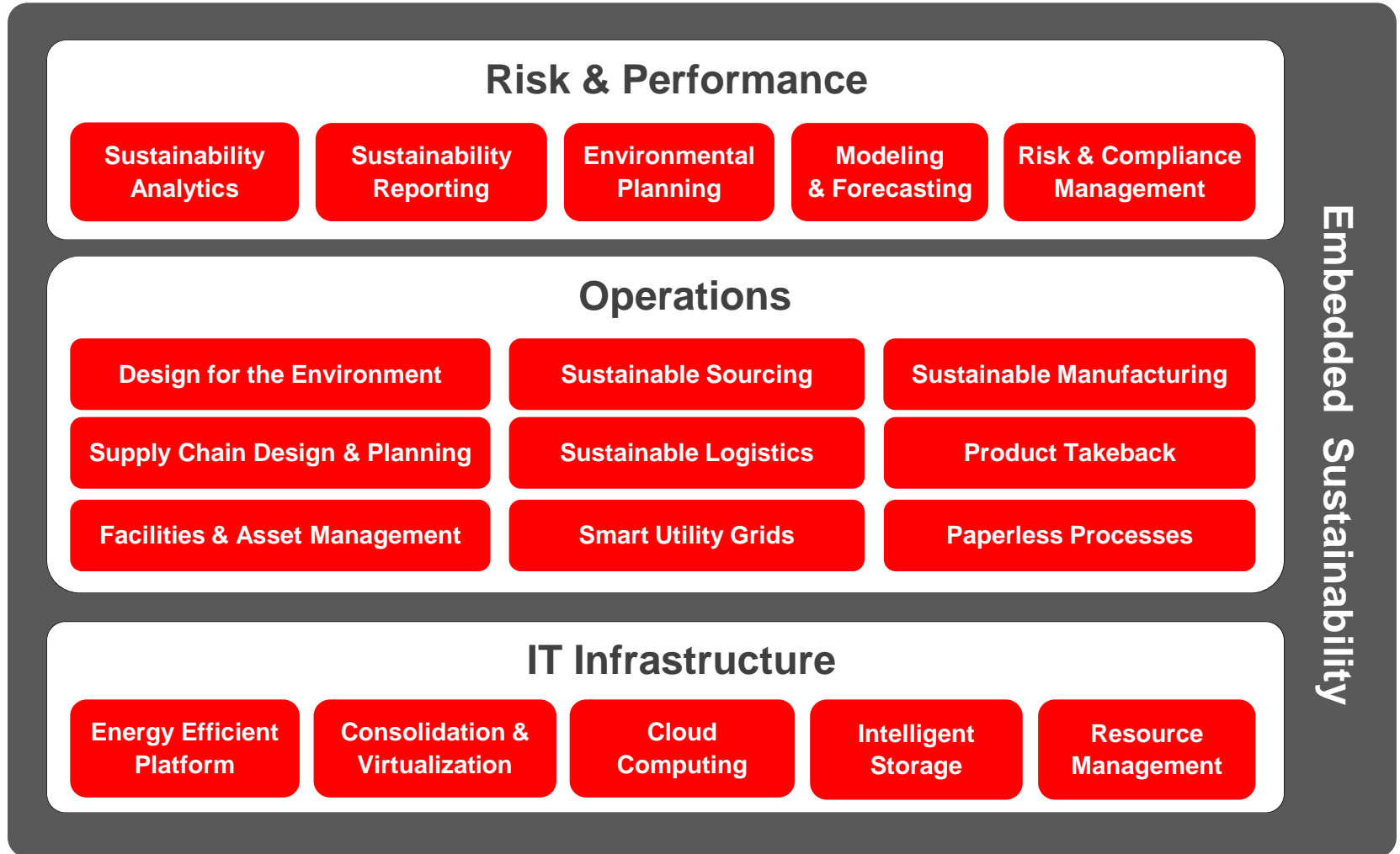
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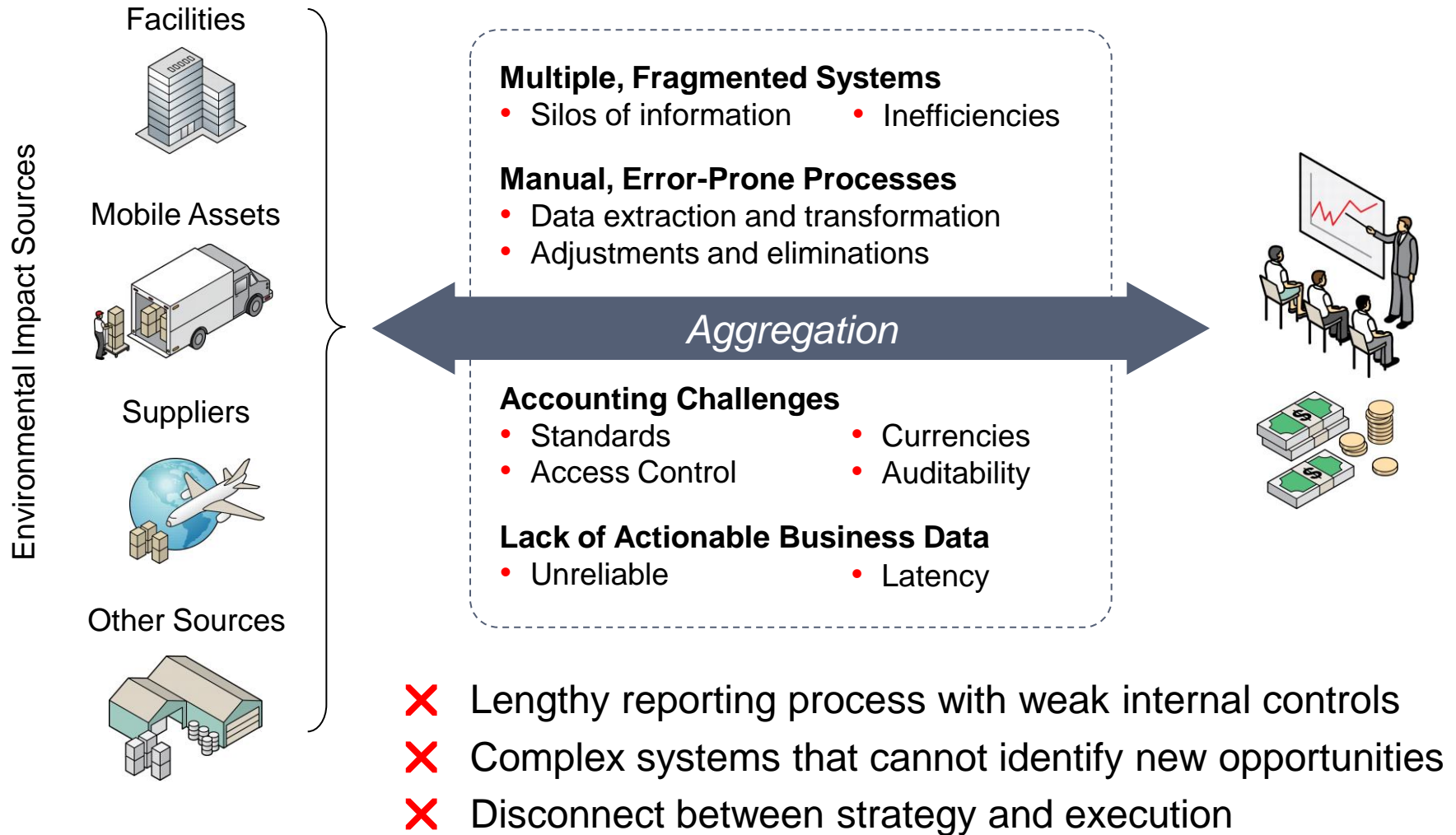


# Oracle's View of Environmental Sustainability

*Embedded Management of Carbon, Energy & Other Natural Resources*



# Environmental Reporting Operational Challenges

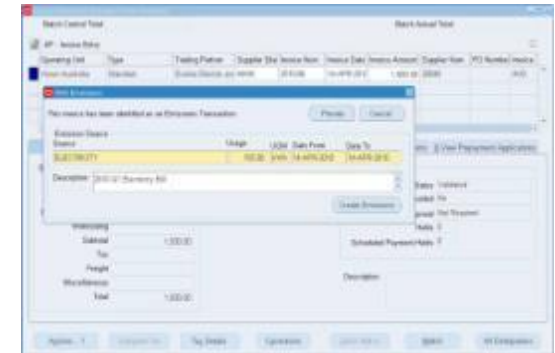


# Oracle Environmental Accounting & Reporting

## *Automated, Auditable Collection of GHG and Environmental Data*

### New Oracle Solution for Greenhouse Gas and Environmental Data Collection and Reporting

- Data collection using EBS or JDE Financials
- Emissions calculation following Greenhouse Gas Protocol
- Pre-built OBIEE reporting and analytics tools, including responses to the Carbon Disclosure Project
- Rapid implementation as embedded ERP system component
- Proven solution built on market leading technology

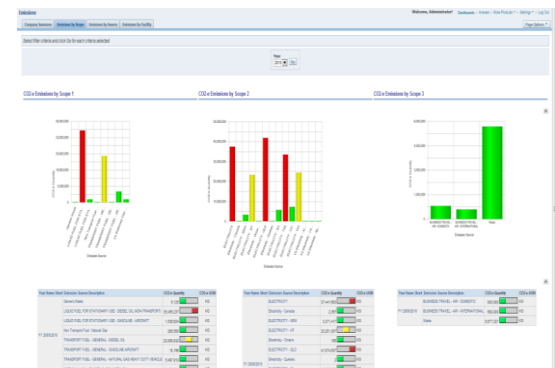


Data collection in Financials

✓ Increase Data Collection Efficiency and Reliability

✓ Comply with Global Greenhouse Gas Regulations

✓ Improve Environmental and Financial Performance



OBIEE Dashboards

# Oracle Environmental Accounting & Reporting

*Enables you to...*

**① Automate Environmental Data Collection**

*Leveraging Existing Business Processes*

**② Calculate Greenhouse Gas Emissions**

*Auditable and in Line with Global Standards*

**③ Analyze KPIs and Comply with Regulations**

*Meet Internal Reduction Targets and Report Externally*

# Key Features for Data Collection

## *Leveraging Existing Business Processes*

- New, native modules for Oracle e-Business Suite and Oracle JD Edwards EnterpriseOne
- Leveraging and extending existing setups, transactions and business processes
- Reliable and scalable platform with full audit trail



# Integration Into Invoice Entry Screen

*Capturing Necessary Data Directly in Existing Business Processes*

- Automatically detects when additional data needs to be entered
- Values default data based on setup

On detecting an invoice as being a GHG transaction, a pop screen automatically appears to enter usage

Invoice Workbench (Payables, Vision Operations (USA))

Batch Control Total  Batch Actual Total

Demo

Operating Unit	Type	Trading Partner	Supplier Num	Supplier Site	Invoice Date	Invoice Num	Invoice Curr	Invoice Amount	Tax Amount
Vision Operations	Standard	Consolidated Electric	8059	MAIN	02-JUN-2011	CE556677	USD	10,750.00	750.00

**Environmental Emissions**

Auto Allocate Manually Allocate

Line Num	Account	Source	Usage	UOM	From Date	To Date
1 1	01-560-7740-0000	ELECTRICITY	7,000.00	kWh	01-MAY-2011	31-MAY-2011
1 2	01-570-7740-0000	ELECTRICITY	3,000.00	kWh	01-MAY-2011	31-MAY-2011

Create Emissions

Subtotal 10,000.00  
Tax 750.00  
Freight  
Miscellaneous  
Total 10,750.00

Scheduled Payment Holds 0

Description

Validated No  
Not Required 0

Actions... 1 Calculate Tax Tax Details Corrections Quick Match Match All Distributions

# Allocate Environmental Impacts to Assets

*Using the Standard Miscellaneous Transaction Screen In Inventory*

**Miscellaneous Transaction (AU)**

Transaction

Date: 23-AUG-2010 17:18:38

Type: GHG Inventory Issue to GHG Asset

Source: BIG TRUCK2 (E3)

Account: 01-401-0000

☐ Serial-Triggered

Transaction Lines

On selecting the type, user is automatically prompted for the associated Asset

The system will determine the Item code, sub -inventory and unit of measure based on setup

The User enters the usage & commits the transaction

[illegible]

# Uploads Via WebADI Templates from Excel

## *Leverage Existing Data Sources From Spreadsheets*

- Enables for mass upload of historical data from flat files
- Provide Users with the option of using a familiar tool
- Allows interim use of existing manual tools prior to shift to automation
- Data can be batch uploaded from flat file output of meter or sensor systems

Book1 - Microsoft Excel

</

# Oracle Environmental Accounting & Reporting

*Enables you to...*

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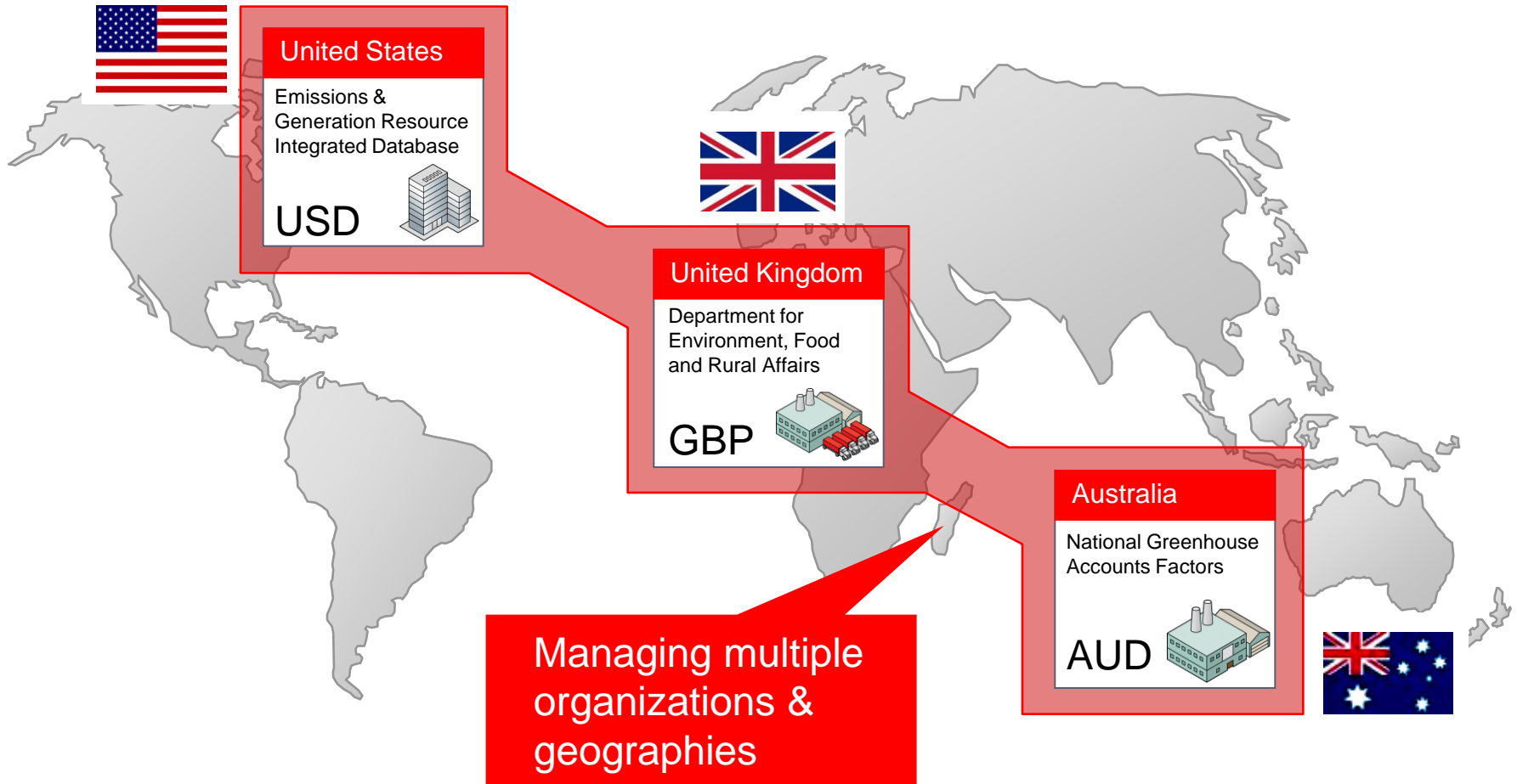
# Key Features for Emissions Calculations

*Auditable and in Line with Global Standards*

- Automates the process of converting raw inputs to emissions and their associated aggregation
- Simultaneously supports multiple greenhouse gas protocols
- Supports differences by date, source, asset type, organization

# Emissions Sources: Set Up

*Define By Scope and Region*



# Emission Sources & Factors Setup

Environmental Sources (Environmental Accounting and Reporting Administrator)

Sources

Operating Unit	Source	UOM	UOM Classification	Applied Formula	Active
Vision Operations	COAL	Ton	SOLIDS	Standard	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Vision Operations	ELECTRICITY	kWh	ELECTRICITY	Electricity	<input checked="" type="checkbox"/>
Vision Operations	GASOLINE (AIR TRANSPORT)	Kiloliter	LIQUIDS	Standard	<input checked="" type="checkbox"/>
Vision Operations	KILOMETERS TRAVELLED (BUSINESS)	Kilometer	DISTANCE	None	<input checked="" type="checkbox"/>

Source Combinations

Code Alias	Description	Reporting Combination	Scope	Location	Transport Type	Method	Override	Start Date	End Date
<input type="checkbox"/> ELALL	ELECTRICITY	NA.NA.NA	2	ALL	DEFAULT	1		01-JAN-1900	
<input type="checkbox"/> ELAT	ELECTRICITY - ACT	OFC.EC.77	2	ACT	DEFAULT	1		01-JAN-1900	
<input checked="" type="checkbox"/> ELCA	ELECTRICITY - CA (US)	NA.NA.NA	2	CA	DEFAULT	1		01-JAN-1900	
<input type="checkbox"/> ELNT	ELECTRICITY - NT	OFC.EC.77	2	NT	DEFAULT	1		01-JAN-1900	
<input type="checkbox"/> ELNW	ELECTRICITY - NSW	OFC.EC.77	2	NSW	DEFAULT	1		01-JAN-1900	
<input type="checkbox"/> ELNY	ELECTRICITY - NY (US)	NA.NA.NA	2	NY	DEFAULT	1		01-JAN-1900	
<input type="checkbox"/> ELQL	ELECTRICITY - QLD	OFC.EC.77	2	QLD	DEFAULT	1		01-JAN-1900	
<input type="checkbox"/> ELSA	ELECTRICITY - SA	OFC.EC.77	2	SA	DEFAULT	1		01-JAN-1900	

1 Emissions 2 Energy

Type	Factor (KG/kWh)
CO2	.30890
CH4	.00027
N2O	.00088

Override & Justification

Method Justification

eGRID2010 Version 1.1 Year 2007 GHG Annual Output Emission Rates, US EPA

# Example: Scope 2 Emissions Calculation

Environmental Specifications				
Source	Emission Factor (kg CO2-e/kWh)			
Electricity	Location	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
	CA	0.30890	0.00027	0.00088
	NY	0.30993	0.00017	0.00139

Data Source: eGRID2010 Version 1.1 Year 2007 GHG Annual Output Emission Rates, US EPA

Environmental Transactions				
Source	Transaction Quantity (kWh)	Source Type	Scope	Transaction Mode
Electricity	10,000 (7,000 CA & 3,000 NY)	Consumed	2 (Indirect)	AP Invoice Entry

Environmental Accounting		
Emissions		
Emission Type	Emissions in kg of CO2-e	Scope
CO <sub>2</sub>	3,092.09 [(7,000 x 0.30890) + (3,000 x 0.30993)]	2 (Indirect)
CH <sub>4</sub>	2.4 [(7,000 x 0.00027) + (3,000 x 0.00017)]	
N <sub>2</sub> O	10.33 [(7,000 x 0.00088) + (3,000 x 0.00139)]	
Cumulative Total	3,104.82	

Environmental  
Emissions  
Calculation



# Viewing Emissions Integrated to Invoice Entry

## *Emissions 'Ledger' Stores Emissions Associated With Invoice*

Environmental Emissions (Payables, Vision Operations (USA)) - CE556677-Consolidated Electric

Main

Organization	Source	Scope	Usage Quantity	UOM	From	To	CO2-e (kg)	Energy (GJ)	Measurement Criteria	Source Type
California Office	ELECTRICITY	2	7,000.00	kWh	01-MAY-2011	31-MAY-2011	2,170.35	25.20	A	CONSUMED
New York Plant	ELECTRICITY	2	3,000.00	kWh	01-MAY-2011	31-MAY-2011	934.47	10.80	A	CONSUMED

Usage 10,000.00  
CO2-e (kg) 3,104.82  
Energy (GJ) 36.00

Actions... 1 Calculate Tax Tax Details

Environmental Ledger

Emissions Energy

Date	Type	CO2-e (Kg)	Source Combination
01-MAY-2011	N2O	.1345	ELNY-ELECTRICITY - NY (US)
01-MAY-2011	CO2	29.9932	ELNY-ELECTRICITY - NY (US)
01-MAY-2011	CH4	.0165	ELNY-ELECTRICITY - NY (US)
02-MAY-2011	N2O	.1345	ELNY-ELECTRICITY - NY (US)
02-MAY-2011	CO2	29.9932	ELNY-ELECTRICITY - NY (US)
02-MAY-2011	CH4	.0165	ELNY-ELECTRICITY - NY (US)
03-MAY-2011	N2O	.1345	ELNY-ELECTRICITY - NY (US)
03-MAY-2011	CO2	29.9932	ELNY-ELECTRICITY - NY (US)
03-MAY-2011	CH4	.0165	ELNY-ELECTRICITY - NY (US)
04-MAY-2011	N2O	.1345	ELNY-ELECTRICITY - NY (US)

# Oracle Environmental Accounting & Reporting

*Enables you to...*

- ① Automate Environmental Data Collection  
*Leveraging Existing Business Processes*
- ② Calculate Greenhouse Gas Emissions  
*Auditable and in Line with Global Standards*
- ③ **Analyze KPIs and Comply with Regulations**  
***Meet Internal Reduction Targets and Report Externally***

# Key Features for Analytics and Reporting

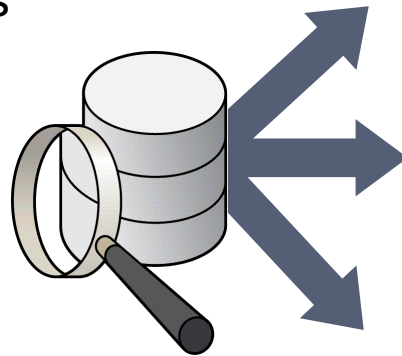
*Meet Internal Reduction Targets and Report Externally*

- Leverages OBIEE – Oracle's standard BI analytic tool
- Extensive, easy to extend pre-built KPI's and reports
- Exposes the data for both internal performance improvement and for external compliance purposes

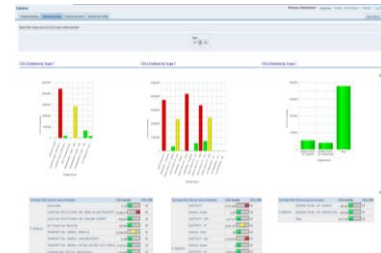
# Provide Visibility & Drive Performance

*With Oracle Business Intelligence Analytics*

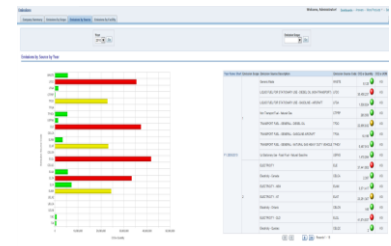
- View pre-built OBIEE reporting and analytics tools
- Configurable OBIEE dashboards to track areas of risk
- Manage performance against targets
- Drill down into graphical output of past, current, and projected data
- Analyze historical trends
- Define variance thresholds and receive alerts
- Publish and distribute reports in multiple formats



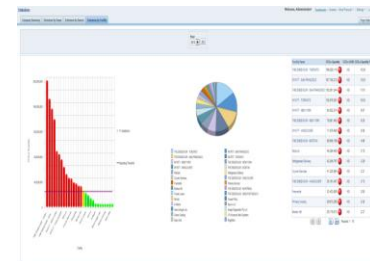
Emissions by Scope



Emissions by Facility



Emissions by Source



# Create Custom KPIs

## *User Defined Metrics*

- Define custom key performance indicators to more deeply analyze key metrics
- Normalize data to operational metrics
- Use drag-and-drop environment in OBIEE to create custom reports
- Rich end user interaction features

Environmental KPI Definitions (Environmental Accounting and Reporting Administrator)

KPI Definition

Operating Unit	Code	Name
Vision Operations	KPI	DIESEL OIL CONSUMED (IN KL) PER DISTANCE TRAVELLED (IN KM)

Numerator

UOM Classification	Value Type	Function
LIQUIDS	USAGE	SUM

Denominator

UOM Classification	Value Type	Function
DISTANCE	USAGE	SUM

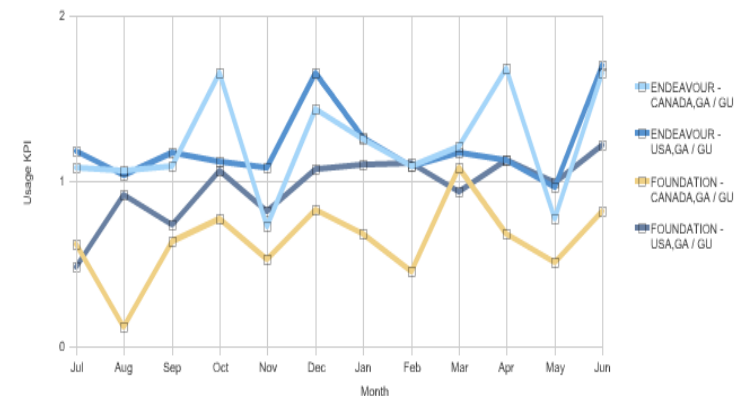
Data Source

TRANSPORT DIESEL OIL

DISTANCE TRAVELLED

Creating Custom KPIs

Example: Water Usage per Number of Guests



# What Customers Are Saying...

*Customers Successfully Using the Solution*



Because our GHG emission reporting is now incorporated into our financial reporting systems, and based around accounts payable data entry, we now have complete confidence that the data is an accurate measurement of energy consumption. Oracle Environmental Accounting and Reporting Solution provides a solid foundation for meeting Abigroup's internal and external reporting requirements and also feeding into our clients' own energy and emissions reporting obligations"

– Sarah Marshall, National Environment and Sustainability Manager



"We can view the greenhouse gas and energy figures for each of our facilities on a daily basis. Before we had this solution in place, we had to download the data from the JD Edwards system and manipulate it in Microsoft Excel, which would take a couple of months. Now, it takes a couple of days to get the data and enter it into the Australian Government Web site. Data accuracy is far better too."

– Ian Wade, Executive General Manager

# Oracle Environmental Accounting & Reporting

**Integrated with financial accounting to leverage existing business processes and maintain a single source of truth**

**Increase Data Collection Efficiency and Reliability**

**Accurate, repeatable, and verifiable methodologies for greenhouse gas calculation in accordance with global standards**

**Comply with Global Greenhouse Gas Regulations**

**Support for multiple reporting standards, shorter reporting cycle times, internal KPI tracking, and flexible ad hoc reporting**

**Improve Environmental and Financial Performance**





# Wrap Up

- Environmental Account & Reporting has become a part of the “New Normal”
- Embedding this in your existing business processes maximizes rigor & value while minimizing cost of ownership
- Oracle has excellent out-of-the box solutions to address these requirements

For more information visit [www.oracle.com/green](http://www.oracle.com/green)

# **Hardware and Software**

## **Engineered to Work Together**