

Navigating the Carbon Management Market: Picking a Tool and Making it Work



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UB is a charter signatory of the *American College and University Presidents Climate Commitment*

- We believe higher education should lead
- 677 institutions have now signed the pledge
- UB is already a sustainability leader
- It makes economic sense to conserve

UB's responsibilities to the ACUPCC

- Take immediate actions
(LEED, Energy Star, transit, etc.)
- Conduct a carbon inventory
(We did; UB has grown but emissions have not)
- Create a climate action plan
(We did, we continue to update it.)



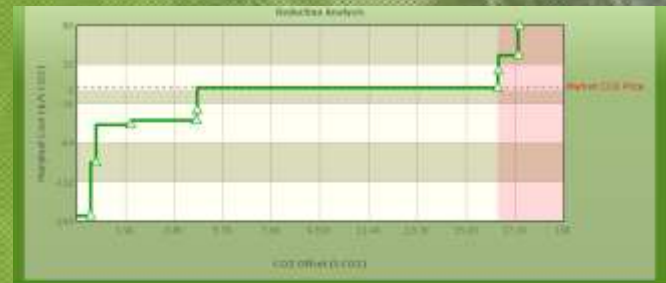
Timeline

- 2003-2009/Clean Air-Cool Planet calculator
- 2009-2010-SAP Carbon Impact
- 2011– new vendor



Why the Software as a Service Model?

- Web based tool
- Dashboard capability
- Tie into existing energy tracking systems
- Finer grain detail



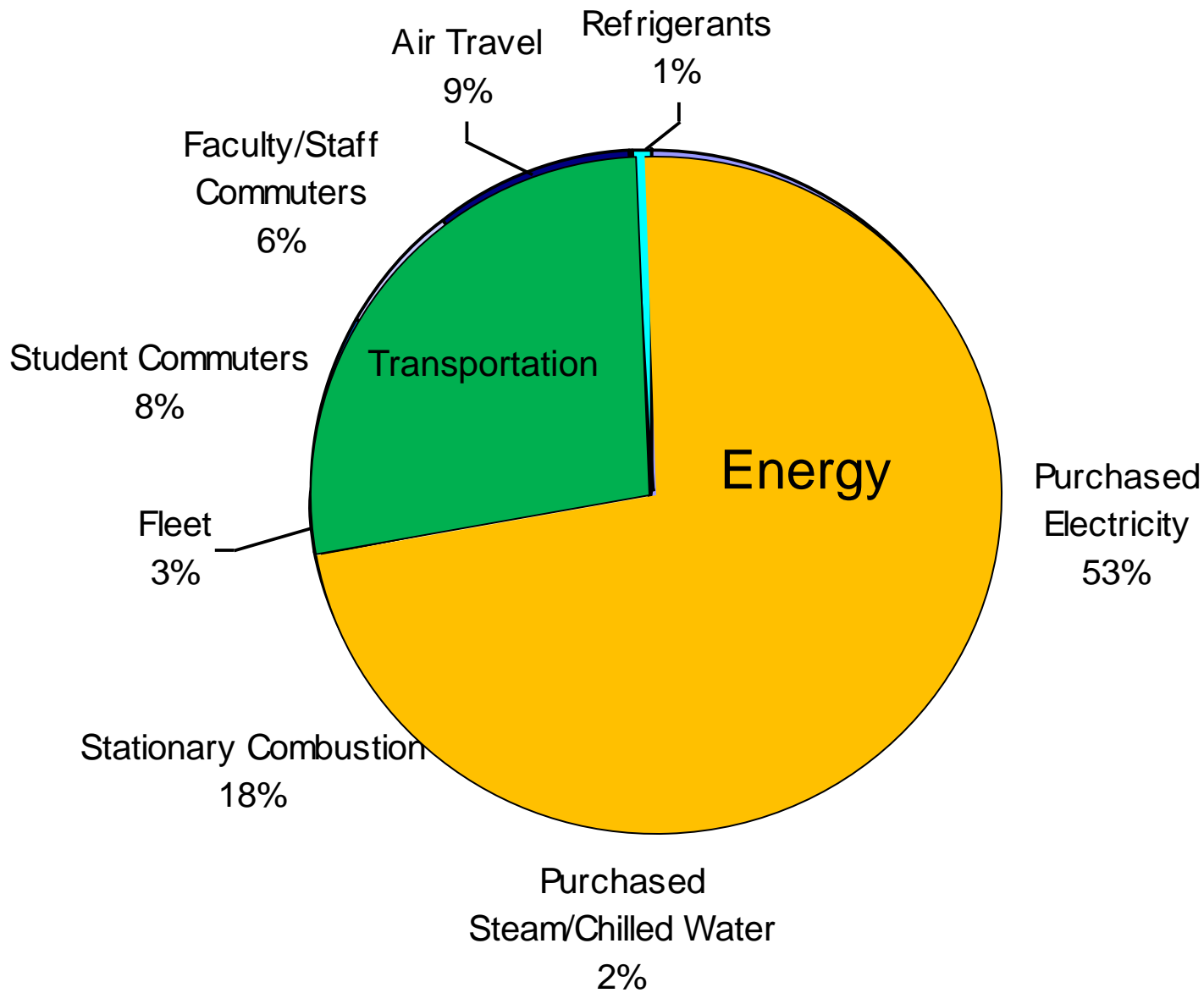
Project Proposal: Page 1 of 1

Item #	MRP Unit Carbon	MRP Unit Carbon	Project Unit Carbon	Project Unit Carbon	Original Business Unit Carbon	Project Carbon Offset
Water Treatment Project	187,007.20	188,232.30	4	4	5,153.40	984
Food Cell Project	312,340.80	313,109.10	6	6	2,888.40	338
Water Meter Fleet Upgrade Project	540,381.90	536,374.10	4	4	3,413.40	1,224
Lighting Efficiency Project	144,311.40	142,796.80	6	5	3,363.00	1,340
Energy Water Project	378.12	388.17	8	4	3,243.70	242
Water Laundry Project	111,536.40	114,000.10	6	6	3,127	11,700
Green Electricity Efficiency Project	570.07	540.17	6	4	103.14	28
Food Waste Project	3,45,111.30	3,41,142.10	7	7	341.10	180
Occupancy Sensor Project	5,239.20	5,270.40	8	4	378.37	81.9

What We Look For in a Tool

- **Project Tracking/KPI**
 - The Solution serves as an interface to plan and track carbon reduction projects
 - The Solution measures key performance indicators.
- **Monetization of Carbon**
 - The Solution monetizes carbon dioxide and assists users with making institutional decisions regarding carbon mitigation.
- **Survey Function**
 - The Solution incorporates a survey function.
 - The vendor provides a sound survey methodology





So if we know the big picture, why pay for a tool?

- Details help communicate our carbon footprint
- Competition
- Fine-tuning
- New low hanging fruit
- Forecasting

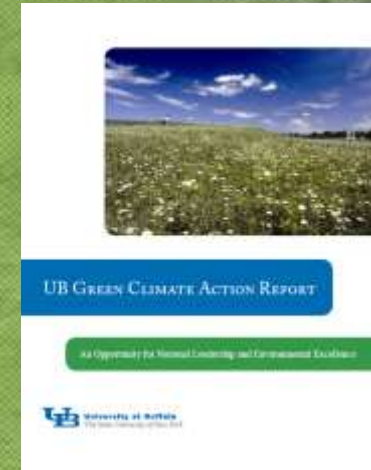
A Tale of Two Reports, Three Tools

UB Green Climate Action Report

- First of its kind
- Exploratory
- Big picture

UB Climate Action Plan

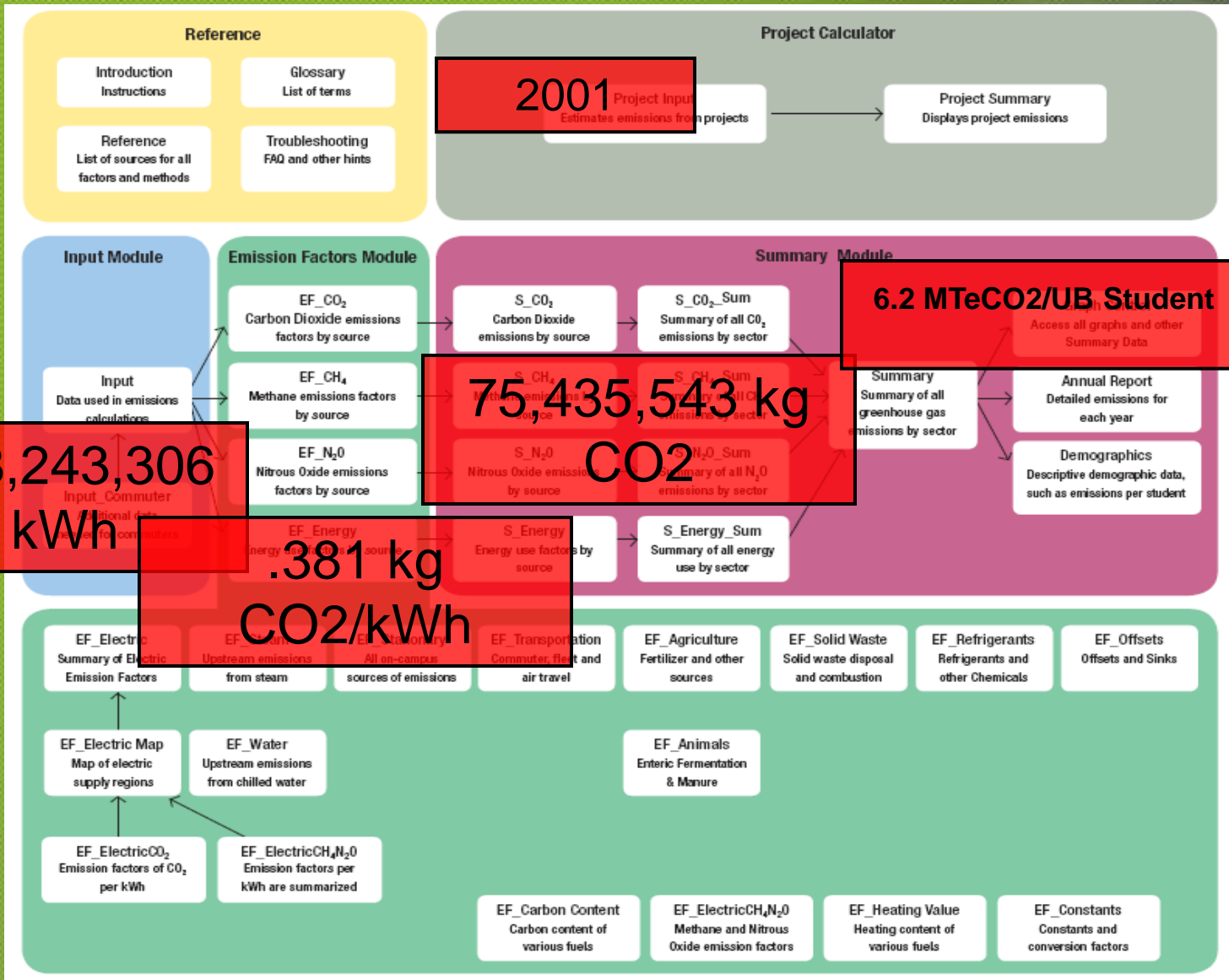
- Institutional response
- Consultant led
- Detail oriented



UB Climate Action Report

- **UB Green**
- **Clean Air-Cool Planet**
- **Staff/Faculty Advisory Panel**
- **Town hall meetings**
- **Released in 2007**





CA-CP/Transportation Data

- **Commuting**—calculating the roundtrip
 - **Survey**
- **Air Travel**
- **Fleet Vehicles**



CA-CP/Energy, Waste, and Refrigerants

- **Energy**
 - **From spreadsheets to EnergyCAP**
- **Waste**
 - **Where does it go?**
- **Refrigerants**
 - **Accounting for leaks**

Limitations of the Carbon Calculator

- Big picture perspective—
harder to get the fine grain.
- Updated less often than other
tools.
- Currently based in Microsoft
Excel, not online.

UB Climate Action Plan

- **Environmental Stewardship Committee**
- **Consultant Ecology & Environment as project leader**
- **Used combination of CA-CP carbon calculator and SAP Carbon Impact**
- **Two campus forums**
- **Released in 2009**

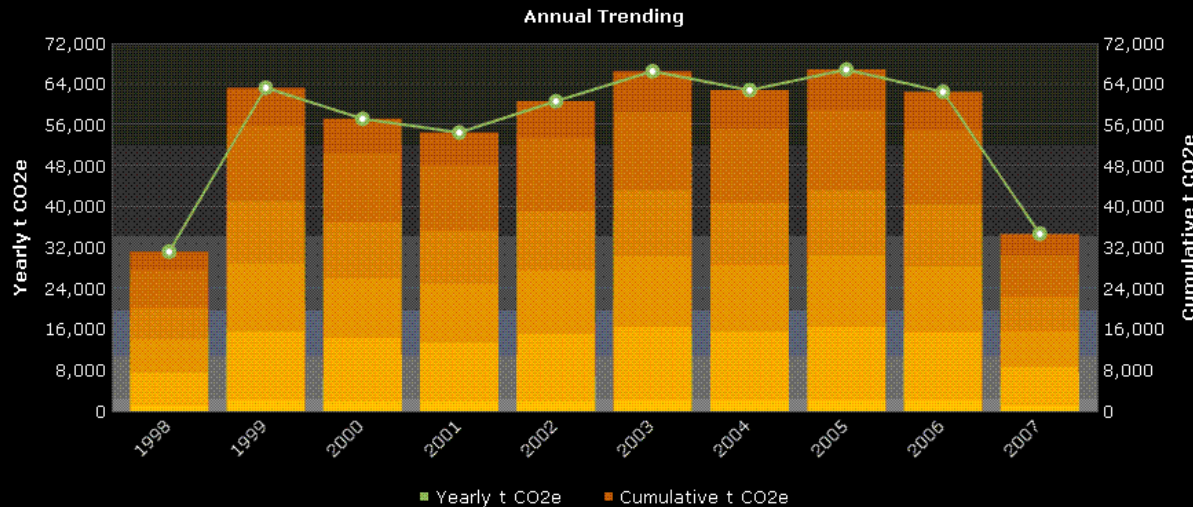
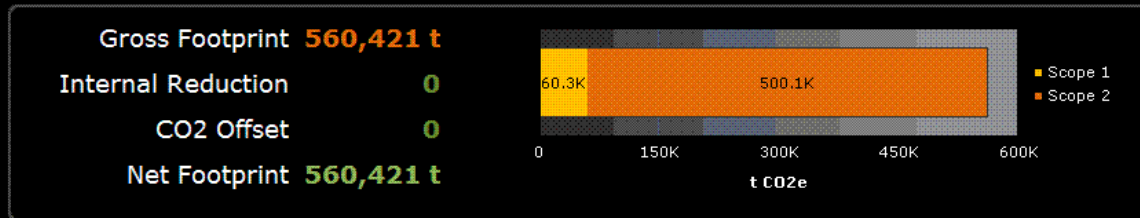
SAP Carbon Impact

- Spring 2009—On Board with Clear Standards
- June 2009—Clear Standards bought by SAP, rebranded as SAP Carbon Impact

SAP Carbon Impact



Organization:
 Operation:
 From:
 To:

Advanced Options



Carbon Management Software/SAP Carbon Impact


Organization: University at B... Operation: (All) Consolidation Method: (All) From: Jul 07 To: Jun 08
Advanced Options Apply

Gross Footprint **95,858 t** →  **52,381** Vehicles
Internal Reduction 0
CO2 Offset 0  **273,879** Acres
Net Footprint **95,858 t**

Comparison of CO2 Gross Footprint


Comparison Period: Jul 06 To Jun 07 (31,313 t) Compare

17,111 Vehicles removed from the road

( = 2,000 Vehicles)



89,466 Acres of forest preserved

( = 6,000 Acres)



SAP Carbon Impact

Windows Replacement Inputs **Results** Detail Flows

 Cost (USD 2.85) /tCO2e

PV Carbon Offset 4,972 tCO2e

Total Cost USD 11,000.00

Initial Cost USD 0.00

NPV

IRR

PayBack

With CO2  USD 9,208.03

Without CO2  USD 9,208.03

Cashflow **Reductions**

Years	0	1	2	3	4	5	6	7	8	9	10
With Carbon Reduction USD	0	(11,000)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Without Carbon Reduction USD	0	(11,000)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
With Carbon Reduction (acum) USD	0	(11,000)	(7,000)	(3,000)	1,000	5,000	9,000	13,000	17,000	21,000	25,000
Without Carbon Reduction (acum) USD	0	(11,000)	(7,000)	(3,000)	1,000	5,000	9,000	13,000	17,000	21,000	25,000



Limitations of SAP Carbon Impact

- At the time of our use, there was some catch up going on.
- Cost of the product
- Lack of University clients/traction

Hara Environmental and Energy Management

Overview Dashboard

[Help](#)

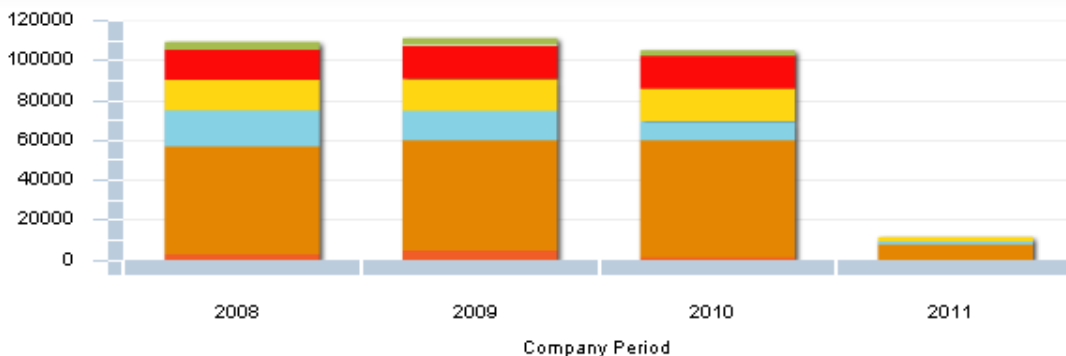
Activities [CO2e in tonnes]

Category



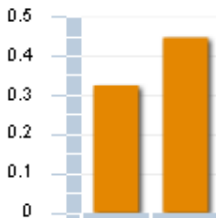
Net Activity over time [CO2e in tonnes]

Category

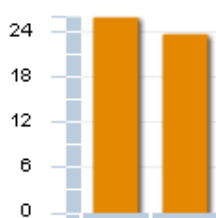


Benchmark [CO2e in tonnes]

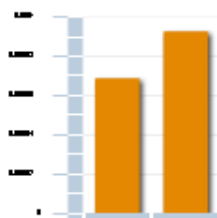
Office Space (per sqft)



per Employee

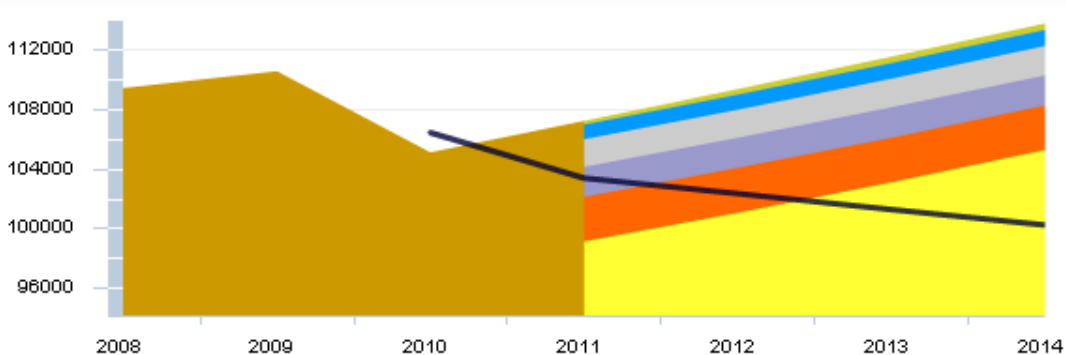


Revenue (per USD)



Company Forecasting [CO2e in tonnes]

Expected Results



Top Consumers

All



Initiative Tracking

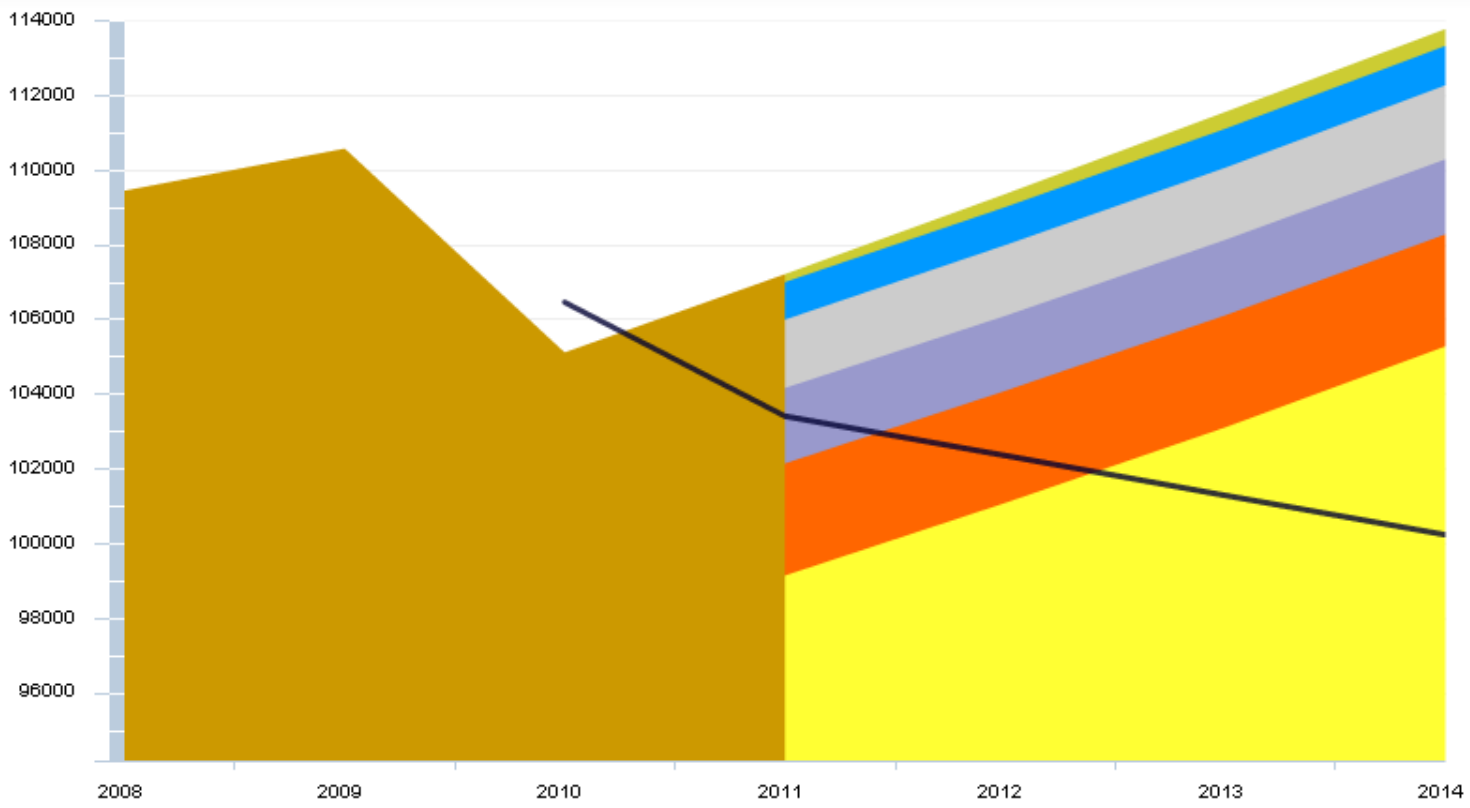


Overview Dashboard

[Help](#)

Company Forecasting [CO2e in tonnes]

Expected Results

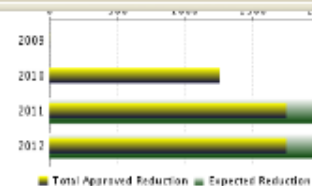


- Woodside - Actuals
- 2011 facility measures in USA
- 500 kW Renewable Energy Power F
- Employee Travel Reduction Project
- Facility Measures
- Purchase Carbon Credit
- Woodside - Forecasted
- Target

Name Facility Measures

Budget \$1,000,000.00

Description Energy reduction project to abate 3300 Mw hours per year in electricity consumption.



Expected reduction in 2009 0.0 tonnes CO2e

Expected reduction in 2010 0.0 tonnes CO2e

Expected reduction in 2011 2,016 tonnes CO2e

Expected reduction in 2012 2,016 tonnes CO2e

Initiatives for Strategy Facility Measures

Approved

	Initiative	Budget	Savings	Payback	NPV	Reduction 2009	Reduction 2010	Reduction 2011	Reduction 2012
<input checked="" type="checkbox"/>	Motion based Lights	\$10,000.00	\$366,280.00	~ 0.12 years	\$294,224.36	1 tonnes CO2e	343 tonnes CO2e	370 tonnes CO2e	370 tonnes CO2e
<input checked="" type="checkbox"/>	Retail Chiller Upgrades	\$800,000.00	\$1,433,440.00	~ 2.94 years	\$373,719.86	1 tonnes CO2e	917 tonnes CO2e	1,381 tonnes CO2e	1,381 tonnes CO2e

Draft

	Initiative	Budget	Savings	Payback	NPV	Reduction 2009	Reduction 2010	Reduction 2011	Reduction 2012
<input type="checkbox"/>	Hybrid HVAC with solar power	\$1,000,000.00	\$2,618,000.00	~ 1.91 years	\$1,266,913.98	0 tonnes CO2e	2,352 tonnes CO2e	2,352 tonnes CO2e	2,352 tonnes CO2e
<input type="checkbox"/>	IR reflective roof and skylights	\$128,571.00	\$276,080.00	~ 2.33 years	\$110,485.38	0 tonnes CO2e	248 tonnes CO2e	248 tonnes CO2e	248 tonnes CO2e
<input type="checkbox"/>	LED Lighting	\$593,165.92	\$380,800.00	> 16.00 years	-\$335,227.00	0 tonnes CO2e	107 tonnes CO2e	107 tonnes CO2e	107 tonnes CO2e
<input type="checkbox"/>	Process Automation Enhancements	\$100,000.00	\$544,000.00	~ 0.92 years	\$357,317.20	79 tonnes CO2e	489 tonnes CO2e	489 tonnes CO2e	489 tonnes CO2e
<input type="checkbox"/>	Smart Power Strips	\$10,000.00	\$61,336.00	~ 1.31 years	\$40,598.85	1 tonnes CO2e	55 tonnes CO2e	55 tonnes CO2e	55 tonnes CO2e
<input type="checkbox"/>	Solar Project	\$450,000.00	\$0.00	Forecast required	Forecast required	0 tonnes CO2e	0 tonnes CO2e	0 tonnes CO2e	0 tonnes CO2e
<input type="checkbox"/>	Trane Chiller w. Hartman Loop	\$800,000.00	\$2,763,656.00	~ 2.82 years	\$1,326,464.97	1 tonnes CO2e	1,552 tonnes CO2e	1,552 tonnes CO2e	1,552 tonnes CO2e

Totals		\$810,000.00				1 tonnes CO2e	1,260 tonnes CO2e	1,751 tonnes CO2e	1,751 tonnes CO2e
Remaining		\$190,000.00				-1 tonnes CO2e	-1,260 tonnes CO2e	265 tonnes CO2e	265 tonnes CO2e

Lessons Learned

- Carbon experts vs. technology experts
- Use the tools that are available at the time
- Document everything you do
- Work closely with stakeholders that have data
- Make sure the effort doesn't rely on one person
- Administrative and Institutional buy-in



Thank You!

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