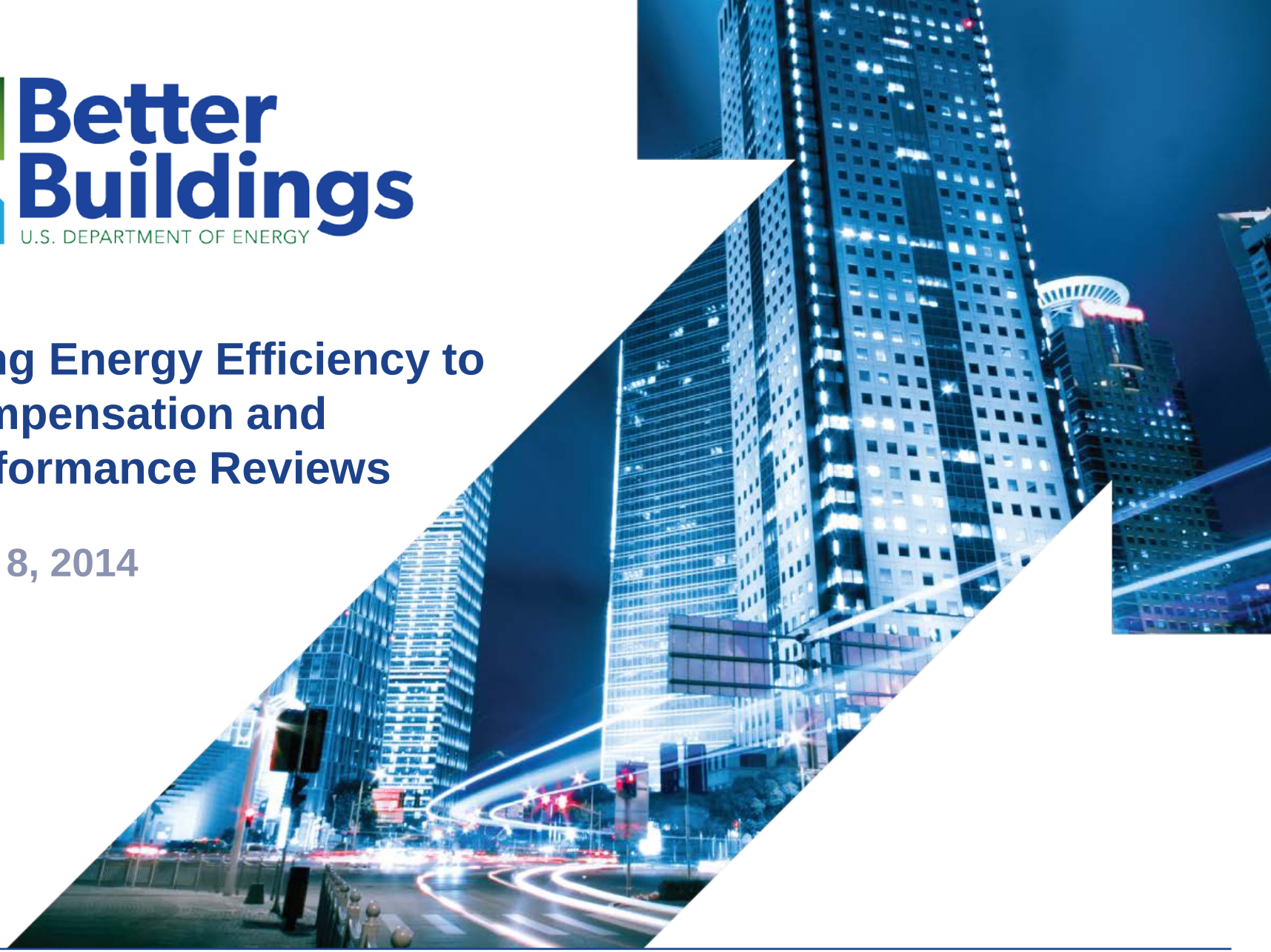
Better Buildings
U.S. DEPARTMENT OF ENERGY

Tying Energy Efficiency to Compensation and Performance Reviews

May 8, 2014



U.S. DEPARTMENT OF ENERGY

Overview and Agenda

- Welcome, Introductions, and Overview
- HEI's Energy Looking Glass Dashboard (Bob Holesko, HEI Hotels)
- Linking Energy Efficiency to Performance-Based Compensation (Walt Brockway, Alcoa)
- Tying Energy Performance to Compensation and Reviews (Bob Gonzalez, Land o' Lakes)
- Additional Resources
- Discussion

Today’s Presenters

Bob Holesko
Vice President of Construction and Facilities
HEI Hotels and Resorts

Walt Brockway
Manager, Global Energy
Alcoa, Inc.

Bob Gonzalez
Productivity Program Manager
Land O'Lakes

Bob Holesko
HEI Hotels and Resorts

U.S. DEPARTMENT OF ENERGY

Better Buildings Challenge
Implementation Model

HEI's Energy Looking Glass Dashboard and Energy Performance Incentives

- **ORGANIZATION TYPE**
  - Hospitality
- **BARRIER**
  - Lack of centralized information on energy, other key data
- **SOLUTION**
  - Energy management tracking tool
- **OUTCOME**
  - HEI is now able to recognize areas for improvement and realize savings

HEI's Model: Energy Looking Glass Dashboard

POLICIES

- Created tool to track impacts of energy efficiency initiatives and participation in best practices at each hotel
- Compared energy usage trends to changes in hotel occupancy rate and weather
- Made to be Excel based, centralized, and user-friendly

PROCESS

- Outlined data that must be collected and updated regularly
- Energy use, weather, occupancy rate, and capital project dates used as variables in regression analysis to establish daily consumption thresholds
- Staff trained through tutorials and BUZZ committees to coordinate and share ideas
- Annual tool revision process established to incorporate feedback

OUTREACH

- Interactive tool design that is highly visual and expresses energy savings in terms of environmental impact
- Incentivized staff through TV give away program and quarterly recognition gift card awards
- Executive level recognition of staff through letters of appreciation, features on HEI website, and photos on Wall of Fame

HEI's Model: Energy Looking Glass Dashboard

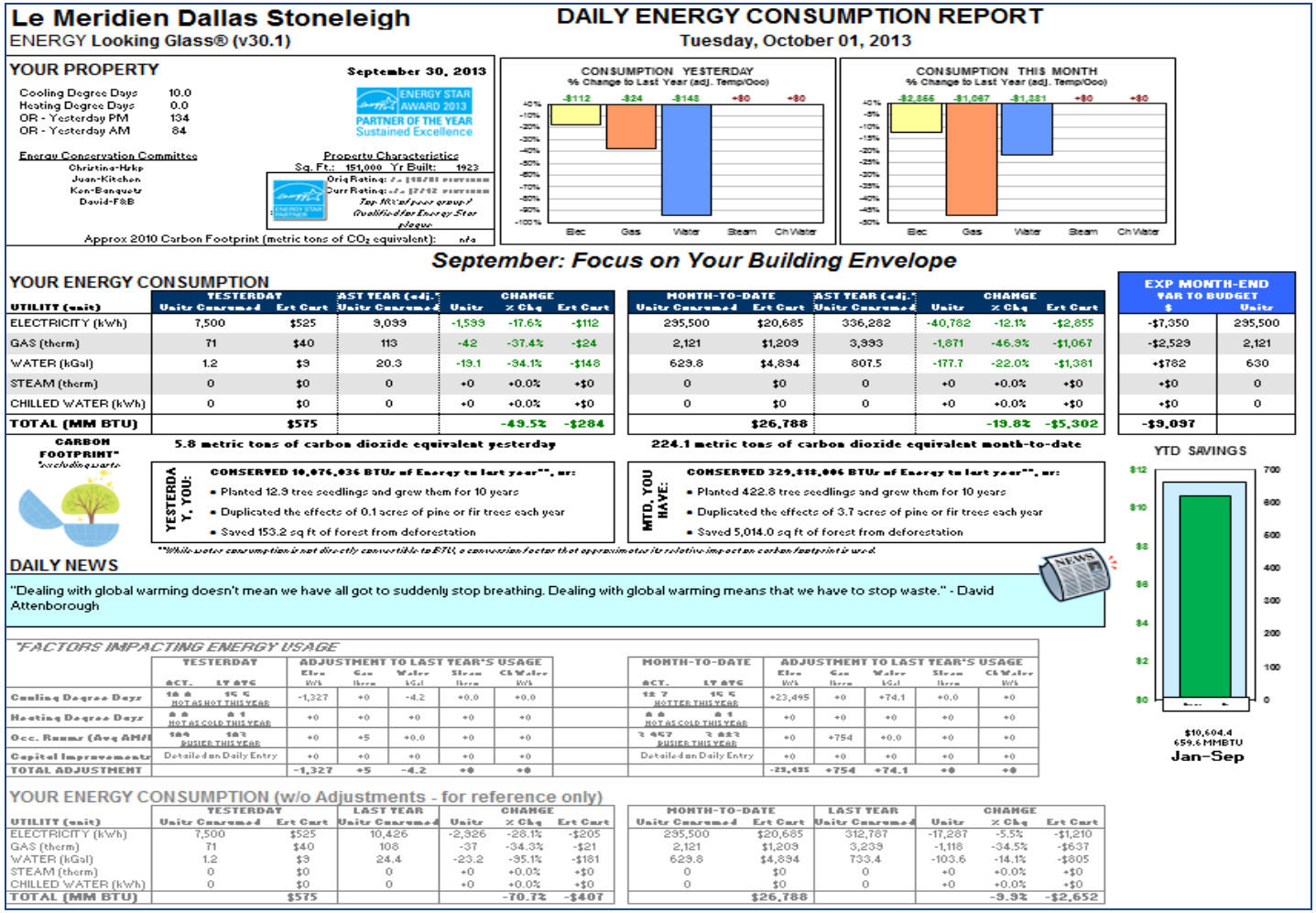
MEASURING SUCCESS

- Tool displays daily energy consumption as percentage difference and dollars saved or spent and provides month to date/previous year comparisons
- $17 million in energy projects completed between 2005-2013 delivered a 2.8yr ROI
- $2 million in DSM rebates
- Over $5 million saved per year
- 32% energy savings during this period

OUTCOMES

- Strengthened and supported management commitment to energy program
- Freed up capital funds for additional energy efficiency measures
- Tool being "Reviewed, Revised, & Refreshed" annually with Chief Engineer input

Energy Looking Glass Dashboard - ELG



Le Meridien Dallas Stoneleigh

ENERGY Looking Glass® (v30.1)

DAILY ENERGY CONSUMPTION REPORT

Tuesday, October 01, 2013

YOUR PROPERTY

September 30, 2013

Cooling Degree Days	10.0
Heating Degree Days	0.0
OR - Yesterday PM	134
OR - Yesterday AM	84

ENERGY STAR AWARD 2013 PARTNER OF THE YEAR Sustained Excellence

Energy Conservation Committee: Christina-Hskp, Juan-Kitchen, Ken-Banquets, David-F&B

Property Characteristics: Sq. Ft.: 151,000 Yr Built: 1923

Orig Rating: [illegible] Curr Rating: [illegible]

Top [illegible] of your group! Qualified for Energy Star plaque.

Approx 2010 Carbon Footprint (metric tons of CO_2 equivalent): n/a

CONSUMPTION YESTERDAY
% Change to Last Year (adj. Temp/Occ)

CONSUMPTION THIS MONTH
% Change to Last Year (adj. Temp/Occ)

September: Focus on Your Building Envelope

YOUR ENERGY CONSUMPTION

UTILITY (unit)	YESTERDAY Usage Consumed	YESTERDAY Est Cost	LAST YEAR (adj.) Usage Consumed	CHANGE Usage	CHANGE % Chg	CHANGE Est Cost	MONTH-TO-DATE Usage Consumed	MONTH-TO-DATE Est Cost	LAST YEAR (adj.) Usage Consumed	CHANGE Usage	CHANGE % Chg	CHANGE Est Cost	EXP MONTH-END $ VAR TO BUDGET $	EXP MONTH-END $ VAR TO BUDGET Usage
ELECTRICITY (kWh)	7,500	$525	9,099	-1,599	-17.6%	-$112	295,500	$20,685	336,282	-40,782	-12.1%	-$2,855	-$7,350	295,500
GAS (therm)	71	$40	113	-42	-37.4%	-$24	2,121	$1,209	3,993	-1,871	-46.9%	-$1,067	-$2,529	2,121
WATER (kGal)	1.2	$9	20.3	-19.1	-94.1%	-$148	629.8	$4,894	807.5	-177.7	-22.0%	-$1,381	+$782	630
STEAM (therm)	0	$0	0	+0	+0.0%	+$0	0	$0	0	+0	+0.0%	+$0	+$0	0
CHILLED WATER (kWh)	0	$0	0	+0	+0.0%	+$0	0	$0	0	+0	+0.0%	+$0	+$0	0
TOTAL (MM BTU)		$575			-49.5%	-$284		$26,788			-19.8%	-$5,302	-$9,097	

CARBON FOOTPRINT* *excluding water

5.8 metric tons of carbon dioxide equivalent yesterday

224.1 metric tons of carbon dioxide equivalent month-to-date

YESTERDAY, YOU:

CONSERVED 10,076,036 BTUs of Energy vs last year**, or:

- Planted 12.3 tree seedlings and grew them for 10 years
- Duplicated the effects of 0.1 acres of pine or fir trees each year
- Saved 153.2 sq ft of forest from deforestation

MTD, YOU HAVE:

CONSERVED 329,818,006 BTUs of Energy vs last year**, or:

- Planted 422.8 tree seedlings and grew them for 10 years
- Duplicated the effects of 3.7 acres of pine or fir trees each year
- Saved 5,014.0 sq ft of forest from deforestation

**While water consumption is not directly convertible to BTU, a conversion factor that approximates its relative impact on carbon footprint is used.

YTD SAVINGS

$10,604.4
659.6 MMBTU
Jan–Sep

DAILY NEWS

"Dealing with global warming doesn't mean we have all got to suddenly stop breathing. Dealing with global warming means that we have to stop waste." - David Attenborough

FACTORS IMPACTING ENERGY USAGE

	YESTERDAY ACT.	YESTERDAY LY ATC	ADJUSTMENT TO LAST YEAR'S USAGE Elec kWh	Gas therm	Water kGal	Steam therm	Ch Water kWh	MONTH-TO-DATE ACT.	MONTH-TO-DATE LY ATC	ADJUSTMENT TO LAST YEAR'S USAGE Elec kWh	Gas therm	Water kGal	Steam therm	Ch Water kWh
Cooling Degree Days	10.0	15.0 NOT AS HOT THIS YEAR	-1,327	+0	-4.2	+0.0	+0.0	12.7	15.0 HOTTER THIS YEAR	+23,495	+0	+74.1	+0.0	+0
Heating Degree Days	0.0	0.1 NOT AS COLD THIS YEAR	+0	+0	+0	+0	+0	0.0	0.1 NOT AS COLD THIS YEAR	+0	+0	+0	+0	+0
Occ. Rooms (Avg AM/PM)	184	182 BUSIER THIS YEAR	+0	+5	+0.0	+0	+0	2,457	2,453 BUSIER THIS YEAR	+0	+754	+0.0	+0	+0
Capital Improvements	Detailed on Daily Entry		+0	+0	+0	+0	+0	Detailed on Daily Entry		+0	+0	+0	+0	+0
TOTAL ADJUSTMENT			-1,327	+5	-4.2	+0	+0			-23,495	+754	+74.1	+0	+0

YOUR ENERGY CONSUMPTION (w/o Adjustments - for reference only)

UTILITY (unit)	YESTERDAY Usage Consumed	YESTERDAY Est Cost	LAST YEAR Usage Consumed	CHANGE Usage	CHANGE % Chg	CHANGE Est Cost	MONTH-TO-DATE Usage Consumed	MONTH-TO-DATE Est Cost	LAST YEAR Usage Consumed	CHANGE Usage	CHANGE % Chg	CHANGE Est Cost
ELECTRICITY (kWh)	7,500	$525	10,426	-2,926	-28.1%	-$205	295,500	$20,685	312,787	-17,287	-5.5%	-$1,210
GAS (therm)	71	$40	108	-37	-34.3%	-$21	2,121	$1,209	3,239	-1,118	-34.5%	-$637
WATER (kGal)	1.2	$9	24.4	-23.2	-95.1%	-$181	629.8	$4,894	733.4	-103.6	-14.1%	-$805
STEAM (therm)	0	$0	0	+0	+0.0%	+$0	0	$0	0	+0	+0.0%	+$0
CHILLED WATER (kWh)	0	$0	0	+0	+0.0%	+$0	0	$0	0	+0	+0.0%	+$0
TOTAL (MM BTU)		$575			-70.7%	-$407		$26,788			-9.9%	-$2,652

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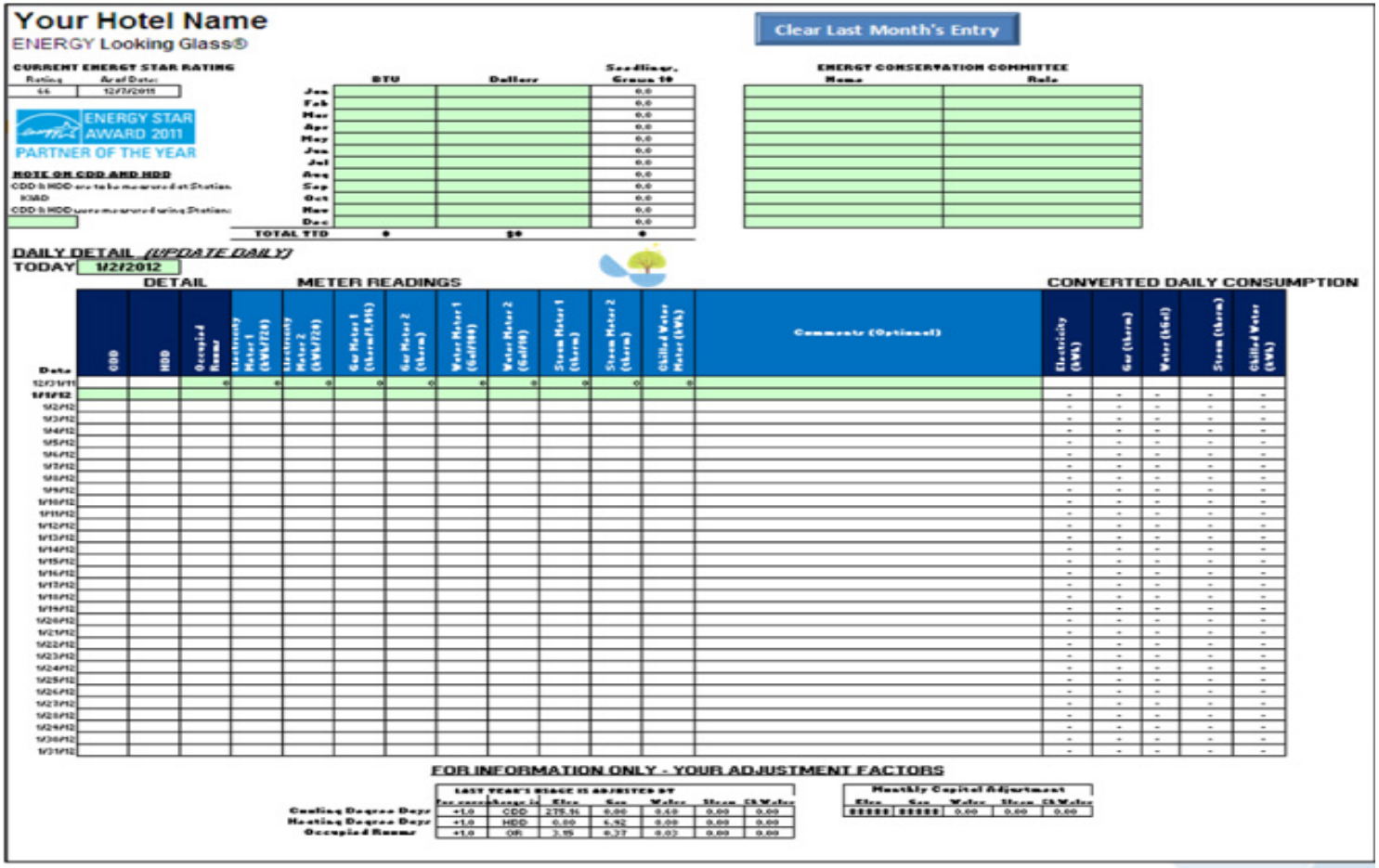
HEI HOTELS & RESORTS

U.S. DEPARTMENT OF ENERGY



Your Hotel Name

ENERGY Looking Glass®

Clear Last Month's Entry

CURRENT ENERGY STAR RATING

Rating	As of Date:
66	12/31/2011

ENERGY STAR AWARD 2011

PARTNER OF THE YEAR

NOTE ON CDD AND HDD

CDD & HDD are to be measured at Station:

KMAD

CDD & HDD were measured using Station:

	BTU	Dollars	Seedlings Grown to Date
Jan			0.0
Feb			0.0
Mar			0.0
Apr			0.0
May			0.0
Jun			0.0
Jul			0.0
Aug			0.0
Sep			0.0
Oct			0.0
Nov			0.0
Dec			0.0
TOTAL YTD	0	$0	0

ENERGY CONSERVATION COMMITTEE

Name	Role

DAILY DETAIL *(UPDATE DAILY)*

TODAY: 1/2/2012

DETAIL | METER READINGS | CONVERTED DAILY CONSUMPTION

Date	CDD	HDD	Occupied Rooms	Electricity Meter 1 (kWh/F20)	Electricity Meter 2 (kWh/F20)	Gas Meter 1 (therm/ft.cf/lb)	Gas Meter 2 (therm)	Water Meter 1 (Gal/F00)	Water Meter 2 (Gal/F00)	Steam Meter 1 (therm)	Steam Meter 2 (therm)	Chilled Water Meter (kWh)	Comments (Optional)	Electricity (kWh)	Gas (therm)	Water (kGal)	Steam (therm)	Chilled Water (kWh)
12/31/11			0	0	0	0	0	0	0	0	0	0		-	-	-	-	-
1/1/12														-	-	-	-	-
1/2/12														-	-	-	-	-
1/3/12														-	-	-	-	-
1/4/12														-	-	-	-	-
1/5/12														-	-	-	-	-
1/6/12														-	-	-	-	-
1/7/12														-	-	-	-	-
1/8/12														-	-	-	-	-
1/9/12														-	-	-	-	-
1/10/12														-	-	-	-	-
1/11/12														-	-	-	-	-
1/12/12														-	-	-	-	-
1/13/12														-	-	-	-	-
1/14/12														-	-	-	-	-
1/15/12														-	-	-	-	-
1/16/12														-	-	-	-	-
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1/18/12														-	-	-	-	-
1/19/12														-	-	-	-	-
1/20/12														-	-	-	-	-
1/21/12														-	-	-	-	-
1/22/12														-	-	-	-	-
1/23/12														-	-	-	-	-
1/24/12														-	-	-	-	-
1/25/12														-	-	-	-	-
1/26/12														-	-	-	-	-
1/27/12														-	-	-	-	-
1/28/12														-	-	-	-	-
1/29/12														-	-	-	-	-
1/30/12														-	-	-	-	-
1/31/12														-	-	-	-	-

FOR INFORMATION ONLY - YOUR ADJUSTMENT FACTORS

	LAST YEAR'S BASIS IS ADJUSTED BY					
	for weather &	Elec	Gas	Water	Steam	Ch Water
Cooling Degree Days	+1.0	CDD	275.31	6.86	0.00	0.00
Heating Degree Days	+1.0	HDD	0.00	6.42	0.00	0.00
Occupied Rooms	+1.0	OR	1.55	0.27	0.00	0.00

Monthly Capital Adjustment				
Elec	Gas	Water	Steam	Ch Water
$$$$$	$$$$$	0.00	0.00	0.00

HEI's Incentive Programs – TV Give-a-ways

- Year 1 – General Managers & Chief Engineers
- Year 2 – Fab 4 consisting of Chief Engineer, Executive Housekeeper, Banquet Managers & Executive Chef
- Year 3 – Chief Engineers
- Awarded 40 TV's valued at $50,000.00
- Saved over $2.7 million in energy over that 3 year period

Sheraton Music City

Le Meridien San Francisco

Marriott Boca Raton

Le Meridien Philadelphia

Enhanced Energy/Engineering Dashboard

- Built off ELG Dashboard success
- Energy Conservation main driver
- Expanded to include Operational Items
- Quarterly incentive shifted to gift cards vs. TV's
- Annual reviews and compensation tied to YOY improvement
- Goal is continual improvement, no slippage
- Positive impact on AOS scores

Engineering Compliance Dashboard (ECD)

HEI Hotels & Resorts
2013 Engineering eSKI Score Card
1st Quarter 2013

ENERGY STAR AWARD 2010 PARTNER OF THE YEAR
ENERGY STAR AWARD 2011 PARTNER OF THE YEAR
ENERGY STAR AWARD 2012 SUSTAINED EXCELLENCE

		ENERGY						Operational					PM Programs					
		Overall Energy YOY (2pts)	Monthly YOY Electricity (1pt)	Monthly YOY Gas/Steam/CW (1pts)	Monthly YOY Water (1pt)	ELG Score Card (1pt)	Quarterly BUZZ Activity (1pt)	% Below Budget Total Energy (1pts)	Department Accident Free GATEKEEPER (2pts)	Avendra Spend at or over 2012 (1pt)	GSS Scores at or Above 2012 (2pts)	Monthly Safety & Engineering Training Given (2 pts)	Total Required # of Room PMs Comp GATEKEEPER (5pts)	PM Works Report Green GATEKEEPER (5pts)	Energy	Operational	PM Programs	Total Score
	AMN														0	0	0	0
	EOD														0	0	0	0
	ESO														0	0	0	0

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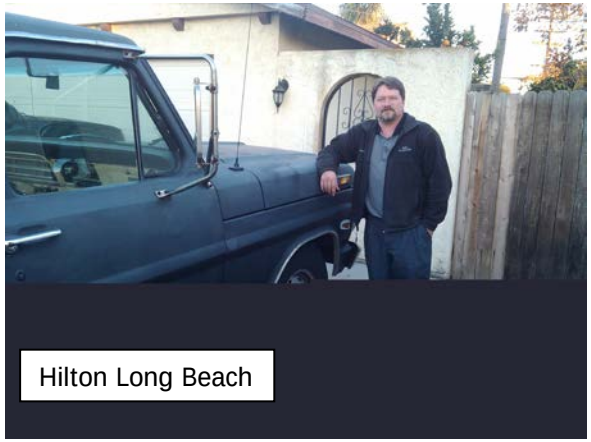
Gift Cards


Hilton Long Beach


Embassy Suites Orlando

Sheraton Dallas


Le Meridien Boston Cambridge

HEI's "Going Green Wall of Fame"

Walt Brockway
Alcoa

U.S. DEPARTMENT OF
ENERGY

Linking Energy Efficiency to Performance-Based Compensation

Walt Brockway

Better Buildings Challenge
Implementation Models

- **ORGANIZATION TYPE**
  - Primary and fabricated aluminum manufacturer
- **BARRIER**
  - Energy performance improvement crowded out by other business priorities
- **SOLUTION**
  - Link energy efficiency achievement to performance based compensation for Alcoa business leaders
- **OUTCOME**
  - Alcoa businesses are increasing their focus on energy efficiency and steadily reducing energy intensity to meet long-term sustainability goals

Environmental Focus Area – CO_2 and Energy

Issue	2030 Goal (from a baseline of 2005)	2020 Interim Goal
CO2 in Primary Operations	Reduce 2005 total CO2e intensity (direct & indirect) of Primary Ops by **30%** (mining/refining/smelting)	**20%**
Energy Intensity in Primary operations	Reduce 2005 Primary Ops energy intensity by **15%**	**10%**
Energy Intensity in all other Businesses	Reduce 2005 energy Intensity by **30%** for all other businesses	**20%**

- Corporate mandate to improve energy intensity
  - Business / Plant energy goals set annually
    - Business reporting system in place –
      - Energy
      - Spend reduction
      - "Pull" for help to achieve goals
        - Execution tools deployed
          - Standard practices
          - Assessments
          - Energy Kaizens
          - Training
          - Technical assistance

Alcoa's Playbook: Linking Energy Efficiency to Performance-Based Compensation

POLICIES

- Implemented CEO-championed policy linking energy performance and compensation to improve corporate energy performance
- Performance based pay calculation for business leaders now includes sustainability metrics for energy efficiency, incentivizing employees to set and achieve energy reduction targets

PROCESS

- Set corporate and business level energy targets – Year on Year set in December
- Each business appoints an energy leader with direct responsibility for promoting initiatives and meeting targets at the plant level
- Business units are given autonomy to determine the extent to which energy efficiency performance will contribute to incentive pay of employees within that business.
- Set up energy spend reduction team to review initiatives monthly using a common project implementation tool
- Track progress through monthly energy intensity calculations communicated to energy and business leaders

Alcoa's Playbook: Linking Energy Efficiency to Performance-Based Compensation

TOOLS & RESOURCES

- Global energy database containing utility information from all invoices when received
- Stand-alone energy services group provides expert resources for identifying and executing energy savings
- Sustainability scorecards used to align targets with business strategy
- Business-developed roadmaps to lay out steps necessary year-by-year to realize long term objectives

MEASURING SUCCESS

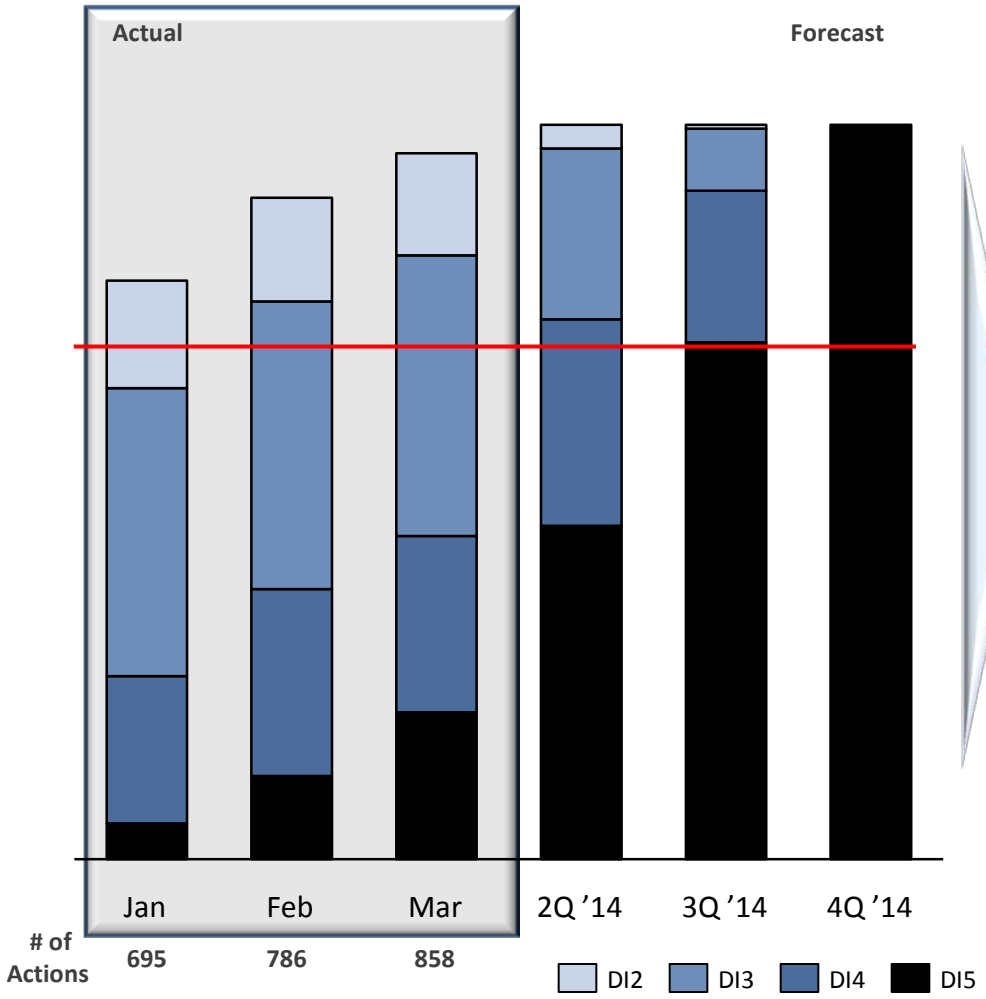
- Rigorous computation of energy intensity including baseline year level within each business
- Calculations reported to central database
- Overall success measured by achievement of reduction targets, progress communicated to all levels of management

OUTCOMES

- Increased attention to energy saving projects with an estimated 50% increase in energy cost reduction activities
- In 2012, the Global Primary Products business reduced its total energy intensity 2.6% against its 2005 baseline; the Global Rolled Products business achieved a 14.4% decline compared to baseline; and Engineered Products and Solutions realized a 8.4% decrease

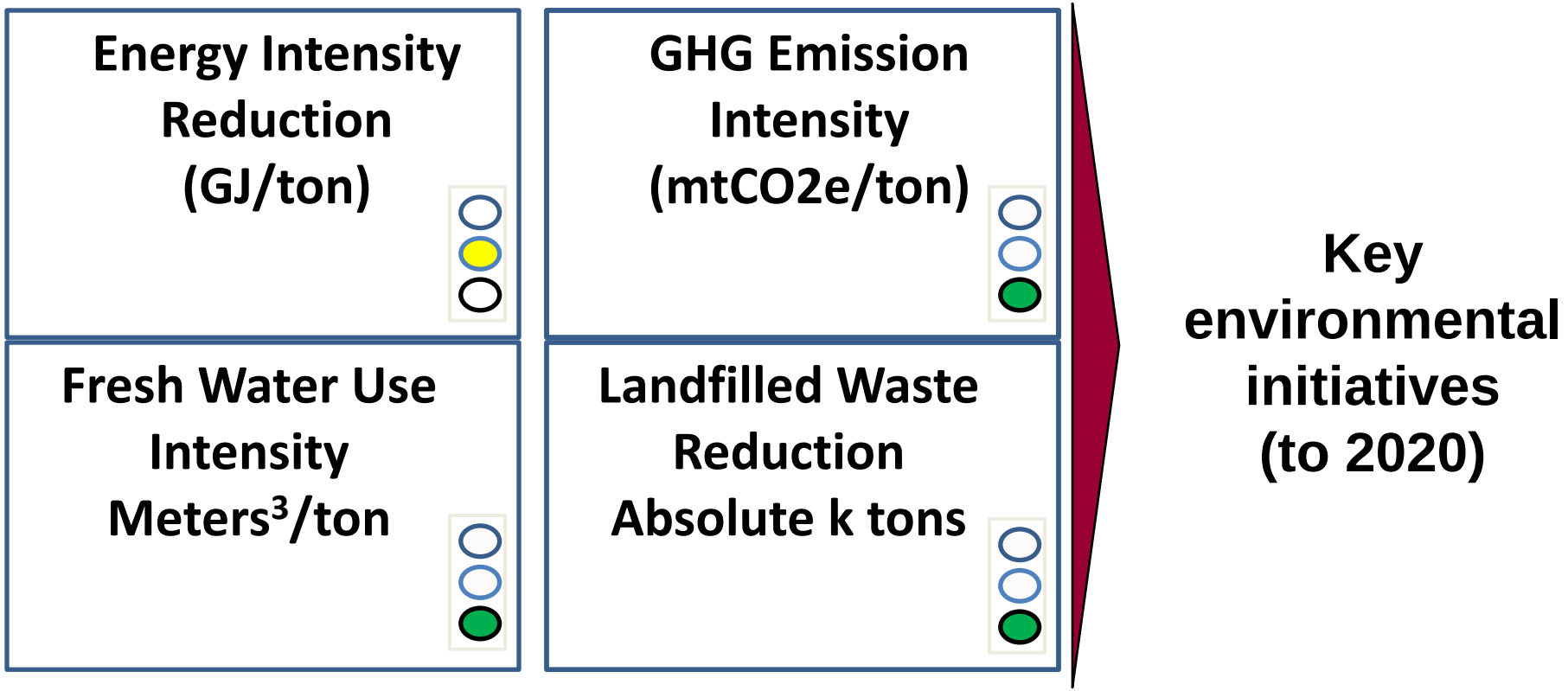
Energy Productivity achieved YTD

Pipeline build at > 100% of target

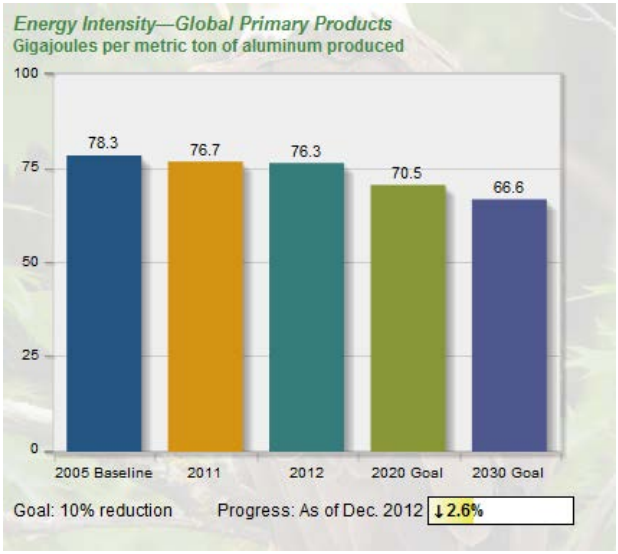


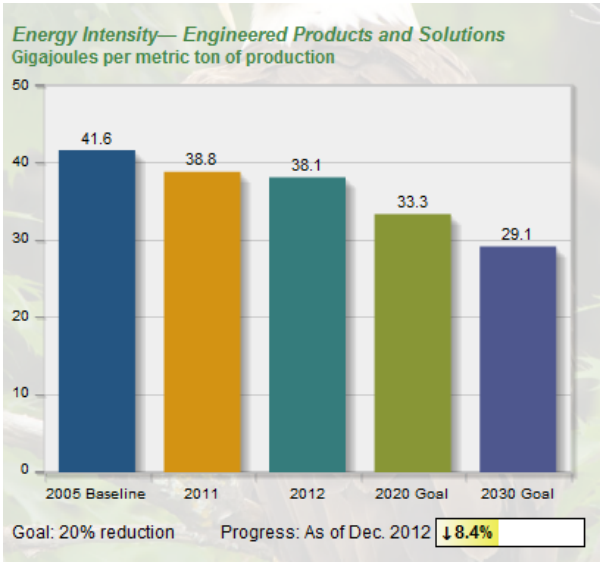
BU	Full Year			Year to Date (Mar)		
	Target	Fcst	%	Target	Actual	%
BU1						
BU2						
BU3						
BU4						
BU5						
BU6						
Business 1						
BU1						
BU2						
Business 2						
BU1						
BU2						
BU3						
BU4						
BU5						
Business 3						
CORP						
Total						

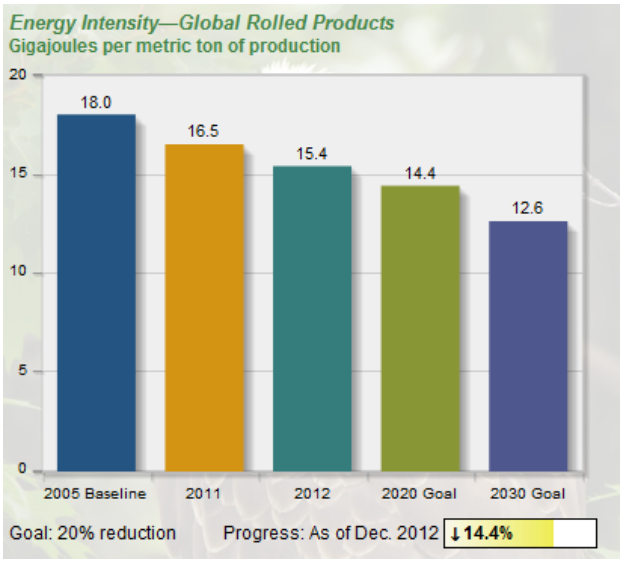
GPP: Environmental & Sustainability Scorecard (reviewed monthly)



Progress Toward 2020 Goals








Alcoa
Power and
Propulsion
Alcoa Howmet
Main Offices and Casting

Advancing each generation.

Bob Gonzalez
Land o’ Lakes

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Tying Energy Efficiency to Compensation and Performance Reviews

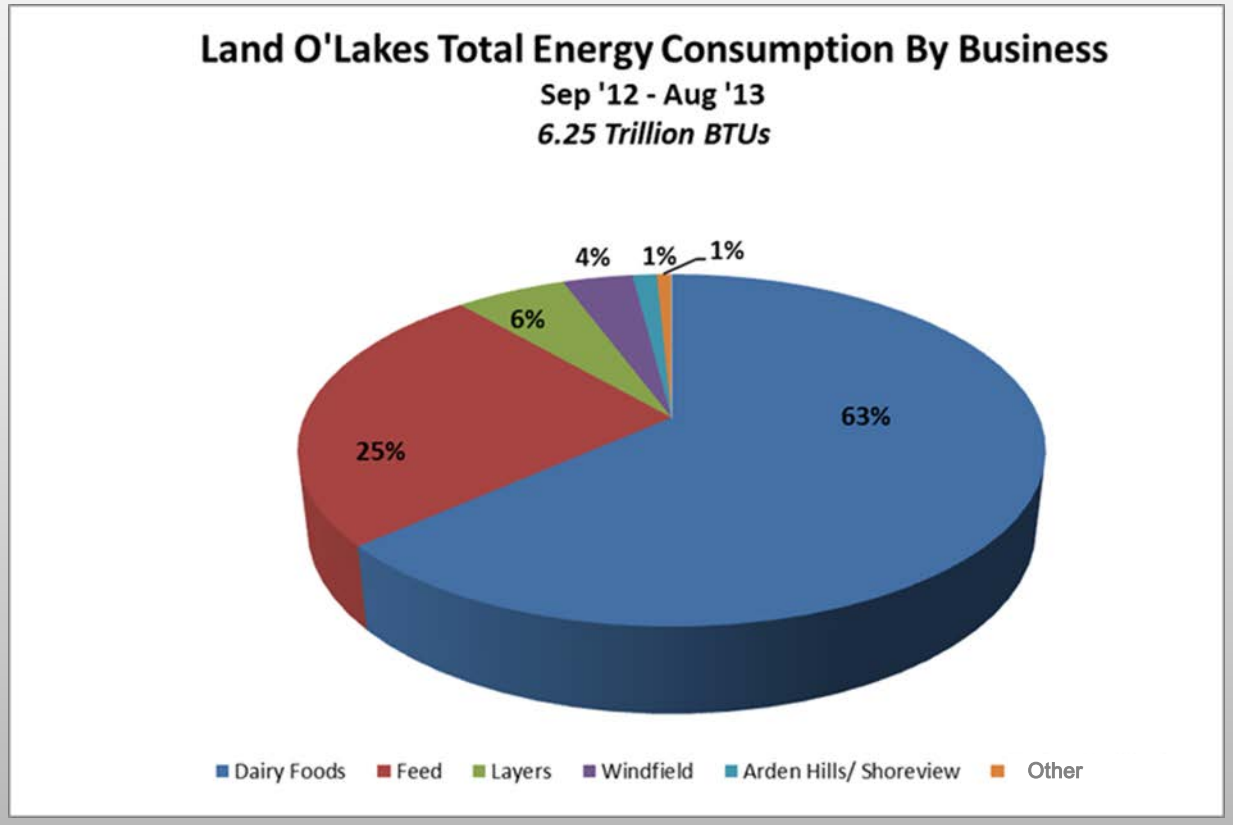
Better Buildings Summit - 2014

Presenter: Bob Gonzalez

Land O'Lakes, Inc.

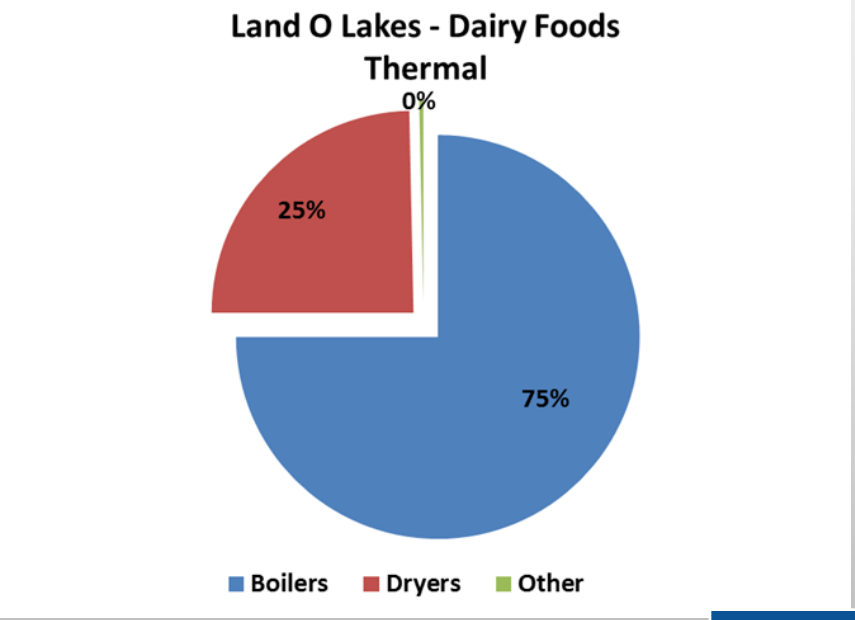
Background

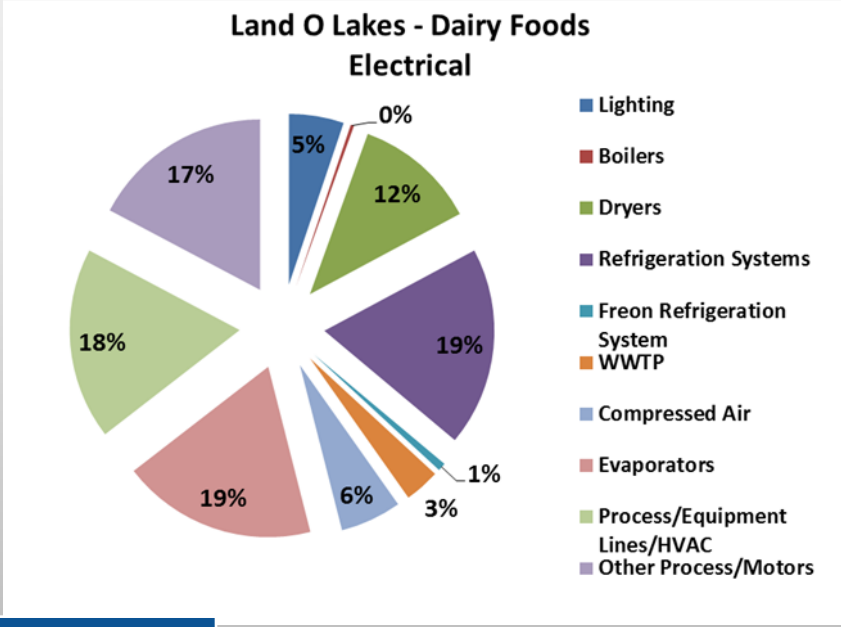
- **2009 Dairy Foods Manufacturing Declares Energy Reduction BHAG**
  - "25% Reduction of External Purchased Natural Gas and Electricity over 10 years vs. 2008"



Background

- ***Understanding Consumption Profiles & Identifying Opportunities In DFs***
  - Plant Energy Leads Identified – Primarily Plant EHS
  - Perform Gap Analysis & ID Opportunities
  - Gap Assessments of Top Dairy Manufacturing Sites





Major Users	
Boilers	Dryer
Evaporators	Refrigeration

Background

- **Identified Energy Reduction Measures and Investment Criteria**
  - Identified Potential Energy Efficiency Measures (Opportunities)
  - Established Energy Project Hurdle Rates

Total Energy Projects

Energy Efficiency Measure	*Saving Energy*	*Cost ('08)*	*CapEx*	*Payback*	*Upate Comments*
Carlisle					
Boiler					
Econimizer Kewuanees 1,2, 3	5,288 MMBTU	$55,875	$326,738	5.8	Does not meet hrudle rates
Blowdown Heat Recovery	3,257 MMBTU	$34,418	$133,456	3.9	Level 2 Development
COW Water Utilization	8,624 MMBTU	$42,126	$91,136	2.2	
Replace Kewuanees	20,018 MMBTU	$212,164	$1,200,000	5.7	Does not meet hurdle rates
Burner Upgrade / Sequence	18,971 MMBTU	$200,473	$550,920	2.7	Approved - Insallation in progress
Comp Air					
Repair Air Leaks	83,727 kWh	$6,028	$18,750	3.1	LOL Energy Team to Resource
Central Control & VFD for Trim	94,874 kWh	$6,631	$52,500	7.9	Does not meet hurdle rates
Reduce System Pressure	45,524 kWh	$3,278	$22,500	6.9	Revist after system improvements are implemented
Float Type Drain Valve	43,230 kWh	$3,113	$150,000	48.2	Does not meet hurdle rates
Outside Air Makeup	41,015 kWh	$2,953	$10,000	3.4	Does not meet hurdle rates
Pressure Differentcial Switch on B.H.	1,595 kWh	$2,275	$75,000	33.0	Does not meet hurdle rates
Air Storage for B.H.	51,428 kWh	$3,703	$110,000	29.7	Does not meet hurdle rates
Dryer					
Dryer Moisture Controls	2,610 kWh	$89,304	$164,188	1.8	Part of Rockwell MPC evaluation
HVAC					
Office Temperature Setback	5,109 kWh	$368	$5,000	13.6	Does not meet hurdle rates
Lighting					
Lighting Retrofit	768,053 kWh	$55,300	$120,286	2.2	Need To Complete Dryer Areas
Refrigeration					
Replace Chiller 1	216,164 kWh	$15,564	$450,000	28.9	Complete by Plant
Replace Freon Units	193,214 kWh	$13,911	$300,000	21.6	Does not meet hurdle rates
Freezer Door	126,527 kWh	$9,100	$55,500	6.1	Does not meet hurdle rates
Head / Suction Press Controls & VFDs	1,872,236 kWh	$134,801	$428,044	3.2	Approved
WWTP					
Biogas for Electricity	2,680,000	$548,716	$3,777,000	6.9	Does not meet hurdle rates
Control System Upgrades	850,634 kWh	$61,246	$84,558	1.4	Complete by Plant
Biogas for Boilers	1,636,297 kWh	$460,235	$2,772,000	6.0	Does not meet hurdle rates

- *Energy Assessments At TOP 5 Energy Intensive Sites*
- *Over 55% Of EEMs ID'd Considered*
- *29% Of EEMs Implemented or In Process of Implementation*

Background

- **Improving Utilization of BTUs and kWHs**
  - Identifying and Sharing BPs

Land O'Lakes Production Systems
Asset Effectiveness

Energy Efficiency Best Practices -

Boiler and Steam System

Two Coil Condensing Boiler Flue Gas Economizer – (Melrose)

LOL – Best Practices (Condensing Economizer)

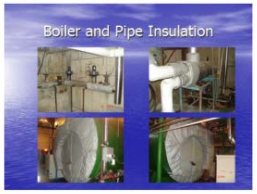
Kiel – Excess Air Control (O2 Trim)

Carlisle – New Burners and Controls

Spencer - New Burner and Controls

LOL – Best Practices (Combustion)

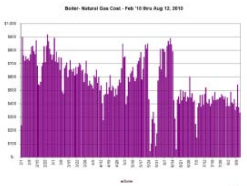
Insulation Blankets – Boiler Surfaces and Valves (Kiel)



Pipe Insulation – Steam and Condensate Piping (Tulare)

LOL – Best Practices (Insulation)

Instrumentation To Measure and Track Steam Pressures (Tulare)



Charts Used to Track Improvement On Boiler Shutdown – Generated Using Boiler Gas Usage (Pine Island)

LOL – Best Practices (Instrumentation)

100 HP Steam Driven Air Compressor – Use of Let Down Steam Turbine (Tulare)

LOL – Best Practices (Steam Driven Air Compressor)

Boiler Heat Recover (Tulare)

Powder 2 Dryer Air Preheat (Tulare)

LOL – Best Practices (Boiler Heat Recovery)

Balancing Focus - Leveraging EE Involvement

2014 Manufacturing Performance Targets
Plant Manager, Managers, and Supervisors

Manufacturing Performance Area	Weight Factor
People	30%
Quality	25%
Service	15%
Environment/ Sustainability Focus On Resource Conservation and Performance	5%
Cost	25%
Total	100%

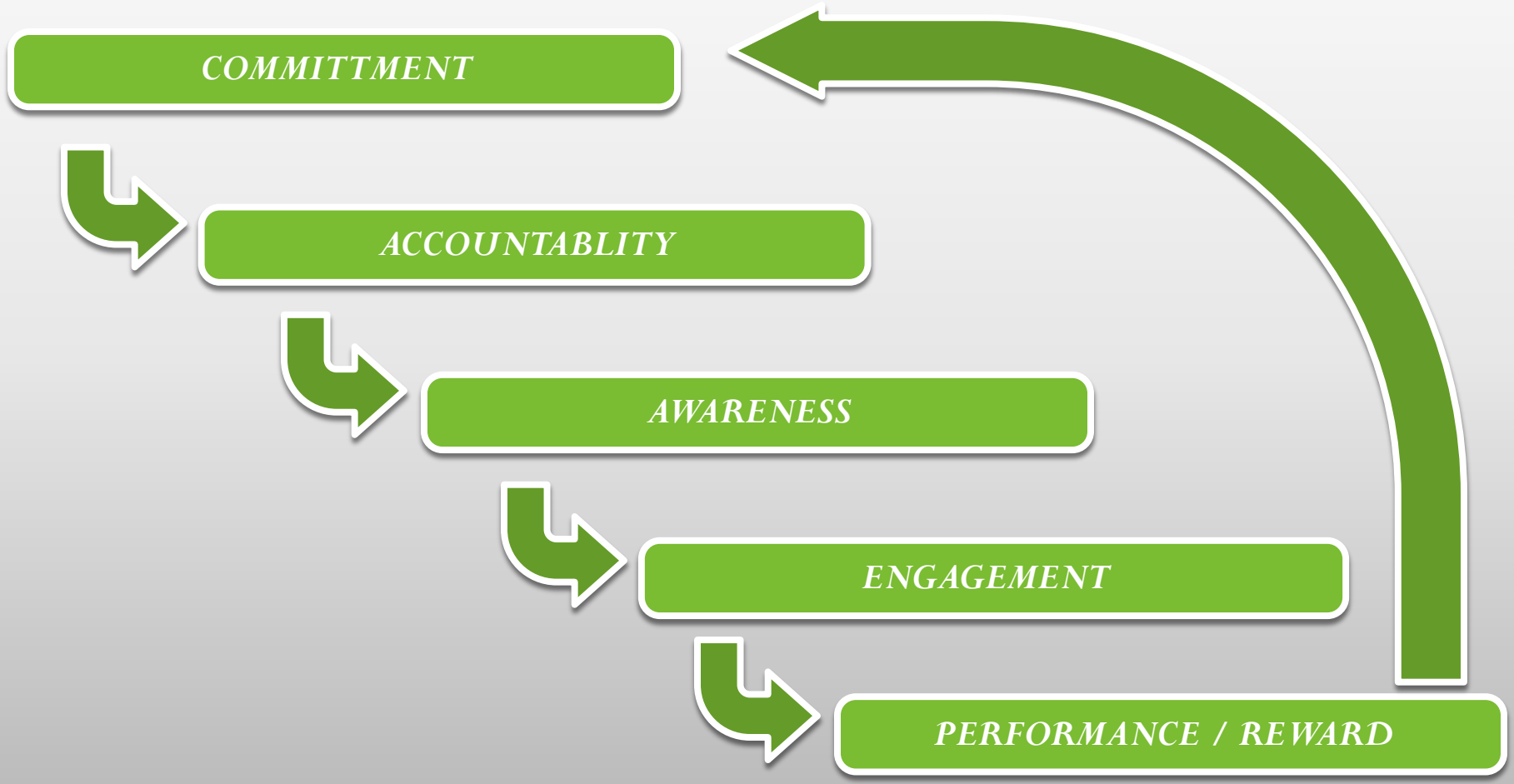
Incentives Focused On Intensity Improvements and Improving Engagement

Incentive Focused On Increasing Awareness and Engagement

2014 Manufacturing Performance Targets
Production and Support Employees

Manufacturing Performance Area	Weight Factor
People	30%
Quality	25%
Service	15%
Environment/ Sustainability Focus On Resource Conservation Portion of Environmental Scorecard	5%
Cost	25%
Total	100%

Driving Performance Though Engagement



Dairy Foods Environmental Scorecard

2014 DAIRY ENVIRONMENTAL SCORECARD

Category	Score	Comments
Management Commitment	**150 Pts.**	
1. Resource Conservation Employee Engagement	50	Objective is to focus more on those tasks that will result in employee's having a greater awareness of resource conservation in their plants. (See note 4 below).
2. Standards Self Audit	50	Standards – Training and Development Standards – Risk Reduction Standards – Employee Involvement Standards – Roles and Responsibilities Standards – Regulatory Compliance
3. Environmental Incident Investigation & Follow-up.	20	Timely Notification, Incident Investigation, and Implementation of Corrective Measures
4. E Coordinator Roles/Responsibilities	30	Training and Development
Compliance	**100 Pts.**	
1. Violations/Citations	40	No Violation or Permit Parameter Exceedence
2. Facility Self-Audit Compliance	40	
3. E Compliance Calendar, Audit Task List & BMP review.	20	Timely Completion of Environmental Calendar Tasks and Review/Implementation of Best Manufacturing Practice.
Performance Metrics	**50 Pts.**	
1. Effluent Water	10	2.5% Reduction from 2013
2. Electric	10	2.5% Reduction from 2013
3. BTUs (N Gas/Fuel Oil)	10	2.5% Reduction from 2013
5. Other Tracking Data	20	5 points each for entering COD, solid waste, recycling and potable water data all 12 months
Extra Credit	5	Each BMP submitted, max of 20 points. (See note 1 below)
Average Pts. Req.	**80**	▪ **240/300 = 80 points average**

COMMITMENT

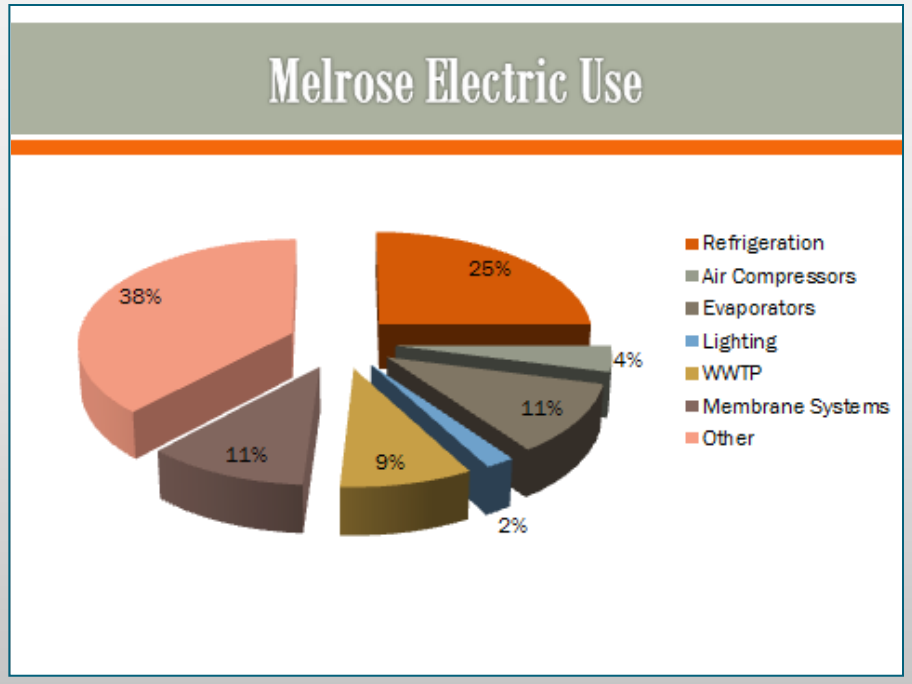
- Align Site and Corporate Goals and Objectives
- Tie Goals to Plant Performance Incentives

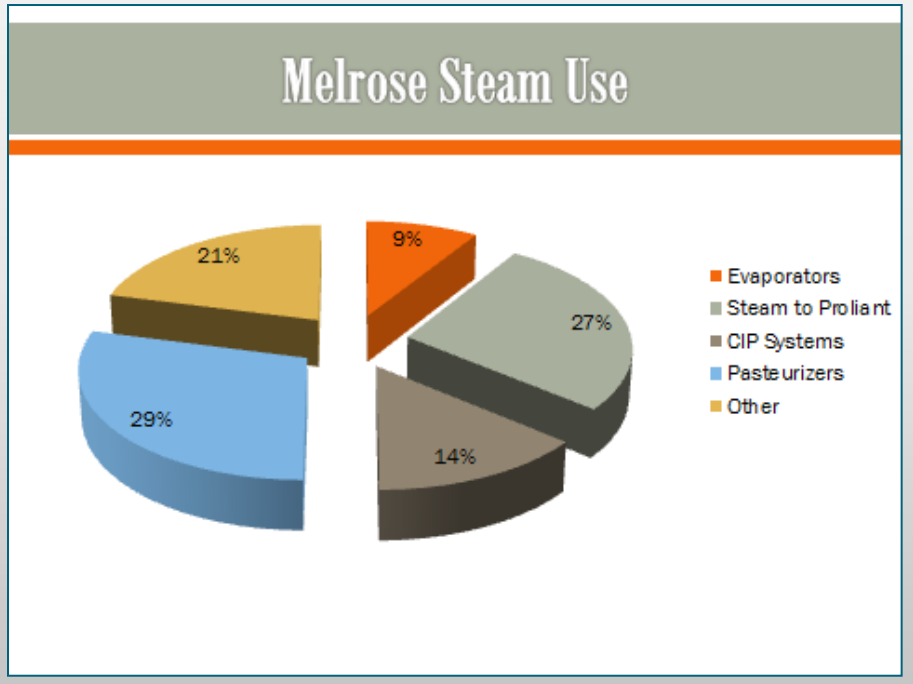
ACCOUNTABILITY

- Outline Responsibility and Accountability to Personal Commitment Plans (PCPs) and Manufacturing Incentive Plans: Plant Mgrs, Ops. Mgrs, Eng., Supervisor, EHS Mgrs, EEs

AWARENESS

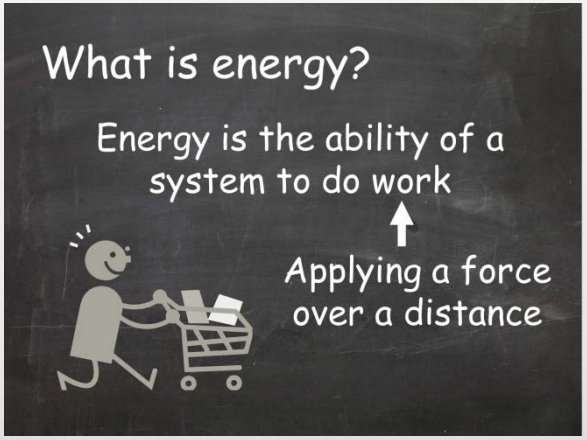
- Develop and Understand Site's Energy Profile

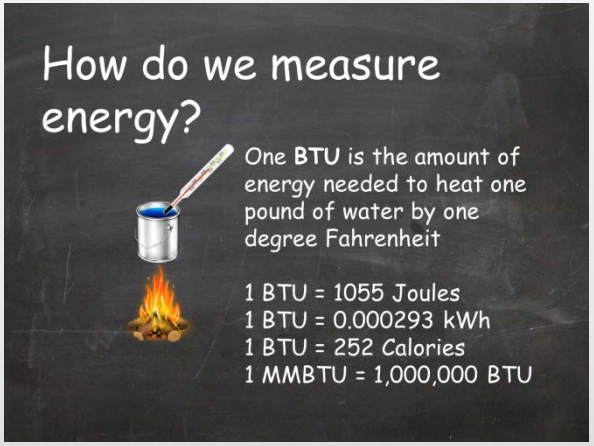


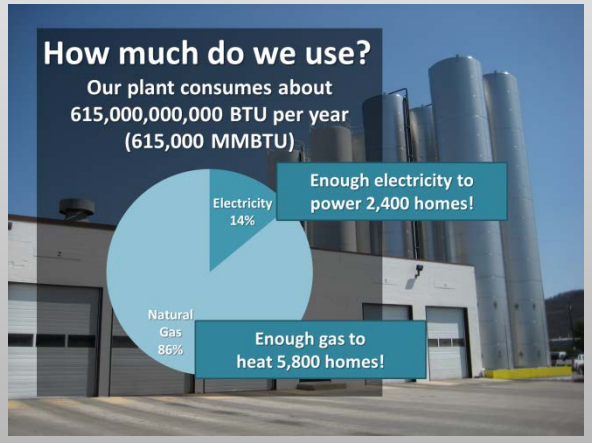


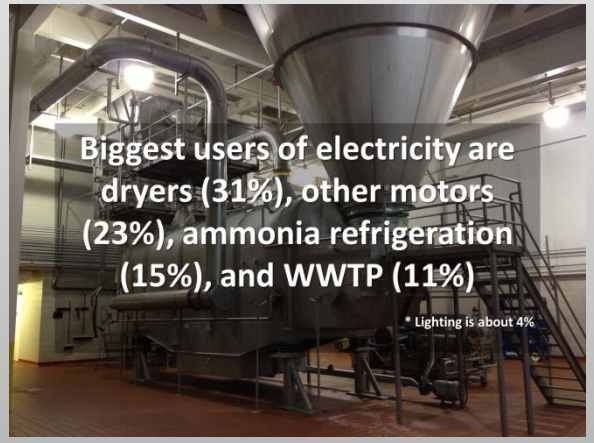
Awareness

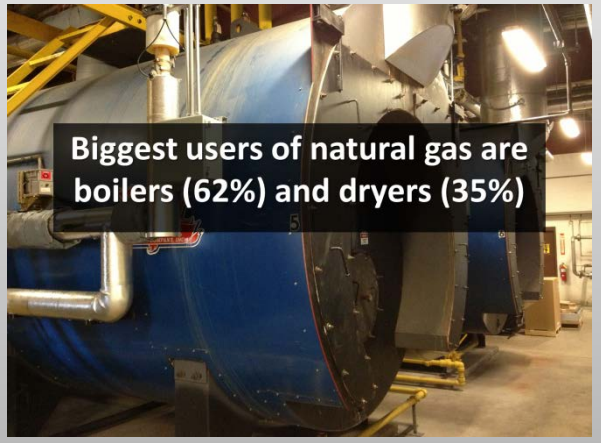
- "Energy 101"Training











Awareness

- Communication Of Site Specific Goals and Objectives, SEUs, and Systems

Energy Management System (EnMS)

- Systematic approach to achieving continual improvement of energy performance
- Using the ISO 50001 international standard
  - New standard, released in 2011
  - Getting help from PSU PennTAP
  - Goal is to implement by end of 2013
- Who is involved? Everyone!

Land O' Lakes – Carlisle Energy Policy

Land O' Lakes – Carlisle is committed to:

- Reducing energy per unit of production by 25% over 10 years
- Continual improvement in energy performance
- Providing the resources and information needed to achieve energy objectives and targets
- Compliance with all legal and other requirements related to energy use, consumption and efficiency
- Designing for energy performance improvement and supporting the purchase of energy-efficient products

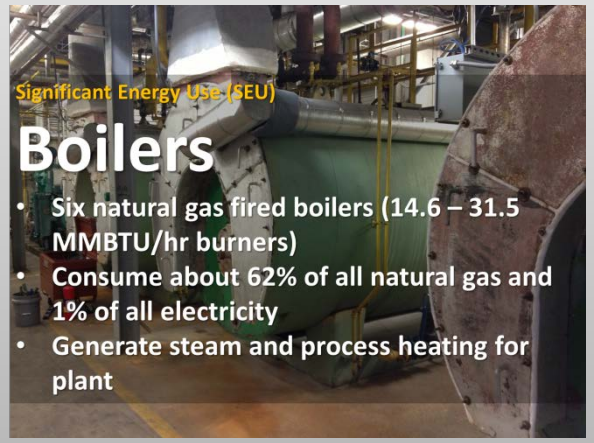
Energy Objectives & Targets

Objective:

Reduce overall energy intensity by 25% over 10 years, using 2008 as baseline

Targets:

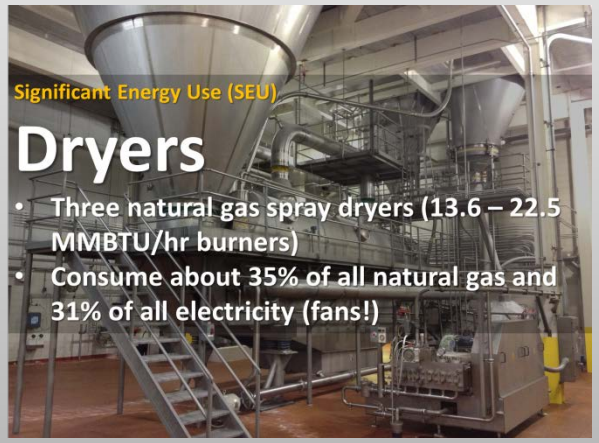
- Reduce electricity usage by 2.5% versus 2012
- Reduce gas usage by 2.5% versus 2012
- Reduce effluent water by 2.5% versus 2012



Significant Energy Use (SEU)

Boilers

- Six natural gas fired boilers (14.6 – 31.5 MMBTU/hr burners)
- Consume about 62% of all natural gas and 1% of all electricity
- Generate steam and process heating for plant



Significant Energy Use (SEU)

Dryers

- Three natural gas spray dryers (13.6 – 22.5 MMBTU/hr burners)
- Consume about 35% of all natural gas and 31% of all electricity (fans!)

Everyone is involved in energy!

- Energy awareness
  - Energy policy
  - Significant energy uses (SEUs)
  - Energy objectives and targets
  - The benefits of energy management
  - How your job impacts energy usage
- Following procedures and improving performance
- Running better = more efficient

Engagement

- Communicate Resource Conservation Goals To EEs - Q1, Q2; Energy Leads, Suprv.
- Develop Plant Energy/Water Footprint (profiles) – Q1, Q2; Energy Leads, Eng., Maint.
- ID 1-3 Significant Energy and Water Users (SEU/SWU) In Work Area – Q3; Suprv., EEs
- Develop Energy/Water SOPs For Identified SEU and SWUs - Q4; Suprv., EEs

Engagement – Energy Workshop

2/26/2014

Energy Awareness Training/Workshop

- Production Supervisors/Leads will be running two 30-minute Energy Awareness sessions each off-site training day. Each session will have about half day's the people in it (~50 people).

  FIRST SESSION: 12:15 PM – 12:45 PM @ STATION 8

  SECOND SESSION: 12:47 PM – 1:20 PM @ STATION 8

- There will be 6 tables labeled operating area (e.g. Receiving). Have the employees sit at their area. For example, Receivers should sit at the Receiving table. There are six (6) operating area groups/tables:

  1. Receiving
  2. Evaporators
  3. Dryers
  4. Power Packaging / Warehouse
  5. Churn / Butter Room / Printers / QA Lab
  6. Maintenance / Boiler Room / WWTP

  * Office / unaffiliated personnel should fill in at tables with room. *

- Mellisa Williams will provide initial training on how to use the Fishbone Diagram to brainstorm ideas.

- Production Supervisor should review the **goal to reduce energy consumption per pound of product by 25% over 10 years** (with 2008 as the baseline). Explain that to get there, we have **targets of reducing gas, electricity and water by 2.5% per year**. SEE TALKING POINTS.

- Hand out ENERGY AWARENESS SIGN-OFF SHEET and make sure everyone signs it!

- Explain that they will be using the fishbone method to come up with ways that their job impacts energy or water consumption.

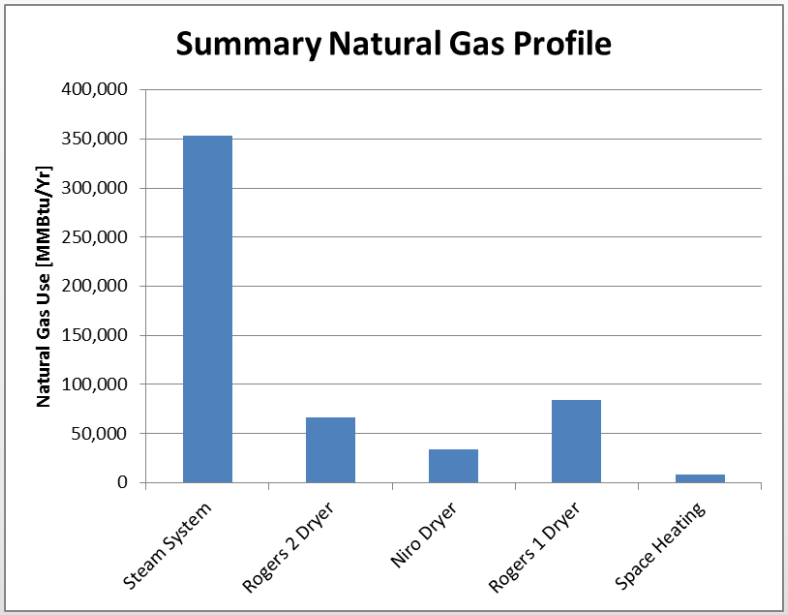
- Have employees write "NATURAL GAS, ELECTRICITY, WATER USAGE" in the "Problem" area on the right-hand side of the diagram. See example.

- Work with employees to use the fishbone diagram to list ways that their job impacts energy use or water use. One sheet per table. Make sure they are adding enough detail to be able to follow-up on the items! See example.

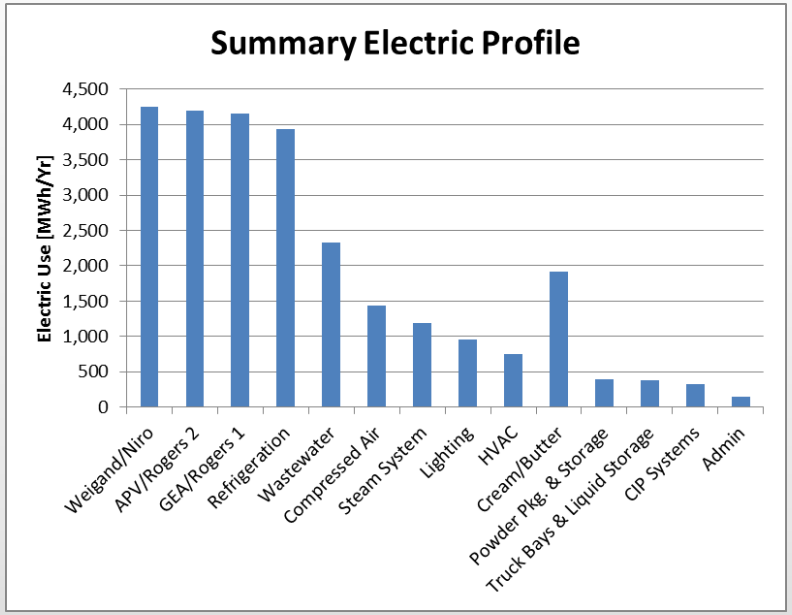
- Use new sheets for each session. Each new group should start with a blank sheet.

- Collect all sign-off sheets and fishbone diagrams at the end of the exercise and save them. Turn in to Holly at the end.

Engagement – Site Energy Profile



Site Energy Profile



End Users Consumption

	Motor/Load	Num	Location	HP	0/1	EFF	kW (inst.)	APLR	EFLH	kWh
Process Loads							**2,820**	**60%**	**5,291**	**14,919,027**
	Powder Transfer Blower Motor	M-1237	Rogers #1 3rd Floor	40	1	93%	21.8	63%	5,492	119,810
	Baghouse Return Rotary Valve	M-7518	Rogers #1 3rd Floor	1	1	83%	0.6	63%	5,492	3,376
	Inlet Fan	M-7505	Rogers #1 3rd Floor							
	Rogers 1 Cyclone West Rotary Valve	M-7608	Rogers #1 3rd Floor	1	1	83%	0.6	63%	5,492	3,376
	Fluid Bed Baghouse Cone Heater	M-7547	Rogers #1 3rd Floor	1.5	1	84%	0.9	63%	5,492	4,974
	Roger 1 Cyclone 1 East Rotary Valve	M-7607	Rogers #1 3rd Floor	1	1	83%	0.6	63%	5,492	3,376
	Startup Hopper Bin Vent Fan	M-5113	Rogers #1 3rd Floor							
	Baghouse Horizontal Conveyor	M-7545	Rogers #1 4th Floor	3	1	88%	1.7	63%	5,492	9,551
	Fluid Bed Exhaust Fan	M-7516	Rogers #1 4th Floor	60	1	94%	32.5	63%	5,492	178,563
	Combustion Blower Motor	M-7817	Rogers #1 4th Floor	60	1	94%	32.5	63%	5,492	178,563
	Main Exhaust Fan 2	M-7596	Rogers #1 5th Floor	250	1	95%	133.5	63%	5,492	733,049
	Main Exhaust Fan 1	M-7595	Rogers #1 5th Floor	250	1	95%	133.5	63%	5,492	733,049
	Rogers 1 Cooling Ring Fan	M-7512	Rogers #1 5th Floor							
	West Side CIP Return HP Pump	M-7828	Rogers #1 5th Floor	3	1	88%	1.7	63%	5,492	9,551
	Concentrate Heater Pump	M-7509	Rogers Dryer #1 1st Floor	15	1	91%	8.4	63%	5,492	45,916
	Feed Tank 1 Agitator	M-7601	Rogers Dryer #1 1st Floor	3	1	88%	1.7	63%	5,492	9,551
	Feed Tank 2 Agitator	M-7602	Rogers Dryer #1 1st Floor	3	1	88%	1.7	63%	5,492	9,551
	Fluid Bed Vibro B	M-7534B	Rogers Dryer #1 1st Floor	5	1	88%	2.9	63%	5,492	15,918
	Sifter Vibro	M-1320B	Rogers Dryer #1 1st Floor	20	1	91%	11.1	63%	5,492	61,222
	Sifter Vibro	M-1320A	Rogers Dryer #1 1st Floor	20	1	91%	11.1	63%	5,492	61,222
	Fluid Bed Vibro A	M-7534A	Rogers Dryer #1 1st Floor	5	1	88%	2.9	63%	5,492	15,918
	R1 CIP Return Pump	M-7827	Rogers Dryer #1 1st Floor	20	1	91%	11.1	63%	5,492	61,222
	High Pressure Pump	M-7507	Rogers Dryer #1 1st Floor	200	1	95%	106.8	63%	5,492	586,439
	HPP Oil Pump	M-7514	Rogers Dryer #1 1st Floor	1.5	1	84%	0.9	63%	5,492	4,974
	Startup Hopper Live Bottom	M-1350	Rogers Dryer #1 1st Floor	1.5	1	84%	0.9	63%	5,492	4,974
	Startup Hopper Rotary Vibro	M-1351	Rogers Dryer #1 1st Floor	1	1	83%	0.6	63%	5,492	3,376
	Fluid Bed Exhaust Rotary Valve	M-7535	Rogers Dryer #1 1st Floor	1	1	83%	0.6	63%	5,492	3,376

Engagement – Energy SOPs

STEPS:

1. **Boiler Operating Parameters:** The following operating parameters are monitored by mechanics to ensure energy efficient operation of the boilers:

Operating Parameter	Operating Range	Monitoring Frequency
Boiler steam pressure	120 – 130 psig	1x / shift
Condensate tank hardness	RECORD ONLY	1x / day
City water hardness	RECORD ONLY	1x / day
Boiler water neutralized conductivity	1000 – 1500 uMhos	1x / day
Boiler water P alkalinity	300 – 600 ppm	1x / day
Boiler water sulfite residual	30 – 50 ppm	1x / day
Hurst Boiler Economizers	ACTIVE / NOT BYPASSED	1x / shift
Blowdown Heat Recovery (BDHR)	ACTIVE / NOT BYPASSED	1x / shift

2. **Steam System Pressure**

   a. Steam boilers are designed to convert heated water to saturated steam at a specific pressure. Boiler combustion controls modulate to maintain the current boiler steam pressure setpoint. A boiler or system pressure measurement outside of the operating pressure range may indicate a malfunction in boiler, causing an inefficient or unsafe operating condition.

   b. Boiler system steam pressures are reviewed daily and recorded on Form 178 – PM Record Daily Boiler Readings.

   c. Record the steam "PSI Actual" pressure indicated on the Fireye/Nexus controller as shown:

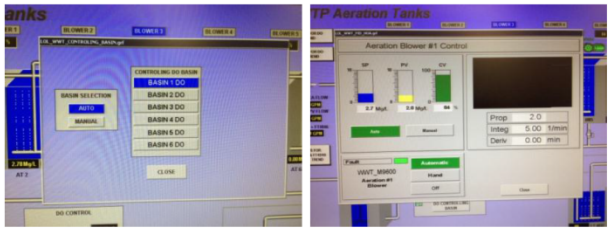
2. The aeration tank blowers are the largest energy use at the WWTP. Each 100 HP blower at full speed (100%) has an electrical demand of approximately 83 kW. Just one blower at 100% speed costs almost $60,000 a year in electrical costs.

3. The aeration tank blowers all go to a common header system and are on variable frequency drives (VFDs). The control system turns blowers on and off and/or speeds them up to maintain a minimum dissolved oxygen (DO) in the tanks. This control system saves energy by running the minimum number of blowers at the lowest necessary speed.

4. **Aeration Tank Dissolved Oxygen Set Point:** The aeration tank DO set point should be set in the range **2.5 – 3.0 mg/L** under normal operating conditions.

5. **Aeration Tank Blower Automatic Control:** WWTP Operators ensure that the blowers are under automatic control during normal operation as shown:

   a. Ensure the controlling DO basin "BASIN SELECTION" is set to AUTO, and each individual aeration blower control is in AUTOMATIC with the PID (SP/PV/CV) set to AUTO as shown:



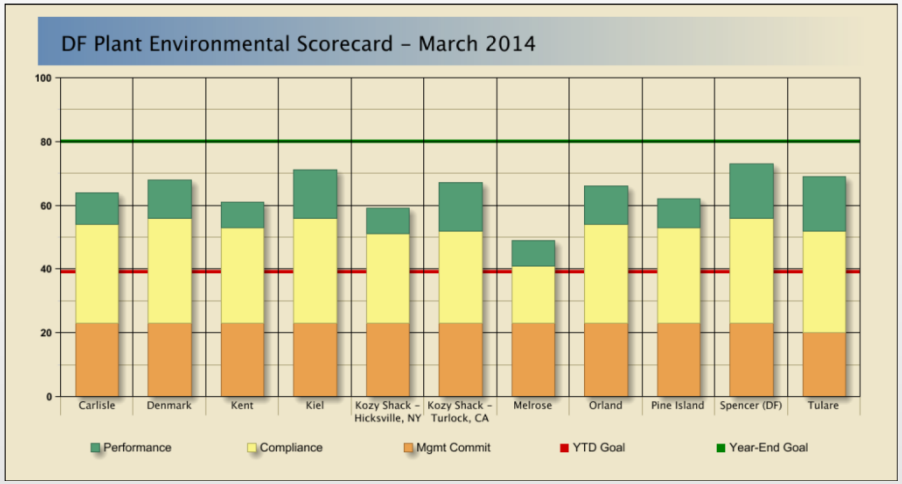
   b. The blowers should automatically speed up, slow down, and turn on/off as necessary when all are in automatic control.

6. **Aeration Tank Main Header Valves:** At least two of the main aeration tank header valves to the basins should be fully open at all times. The other valves should typically be open at least 30% or more. Valve locations are shown in Appendix B.

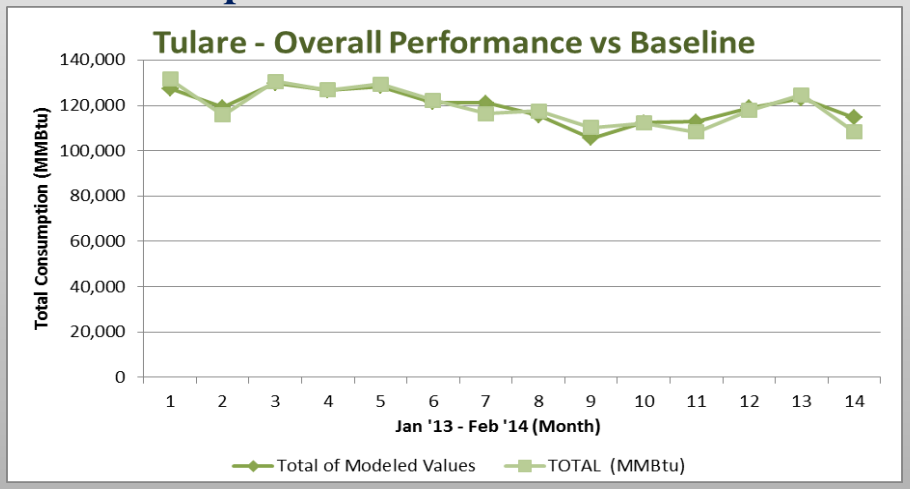
7. **Temporary Manual Control:** Certain conditions exist where blowers need to be temporarily put in manual control. For example, blowers may be temporarily turned off or run at a lower speed to control foam. These situations will be handled on a case by case basis, and control will be returned to automatic after the issue has been resolved.

Performance / Rewards

Overall Environmental Performance



Specific Site Performance



Energy Intensity Performance

LPS - Asset Effectiveness Butter and Powder Plants Energy Scorecard - Feb 2014		
		EnPI Model % Reduction vs YTD 2013
Tulare	Total	1.95%
	Natural Gas	3.39%
	Electricity	-6.15%
Carlisle	Total	1.35%
	Natural Gas	2.03%
	Electricity	-3.44%
Kent	Total	-0.17%
	Natural Gas	-6.56%
	Electricity	6.50%
Total Butter & Powder Plants	*Total*	1.68%
	Natural Gas	2.73%
	Electricity	-4.10%

- *Final Performance Is Evaluated And Reviewed To Consider Special Circumstances.*
- *Performance Will Influence Manufacturing Pay Incentives*

Summary

- Technology and Process Improvements Alone do not Drive Energy Efficiency
- Annual Energy and Sustainability Goals tied to Manufacturing Performance Incentives
- Goals are Geared toward Areas that EEs can Influence
- EE Awareness and Engagement is as Much a Factor in Energy Improvement Efforts as Technology and Processes.
- Our EE Journey is in its Infancy

Additional Resources

U.S. DEPARTMENT OF ENERGY

Additional Resources

- Alcoa: Linking Energy Efficiency to Performance-Based Compensation
- HEI Hotels & Resorts: Energy Looking Glass Dashboard

Discussion

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