

Energy Plans: Turning Savings Ideas into Reality

February 28, 2017



Meet Your Presenters:

Mike Carter



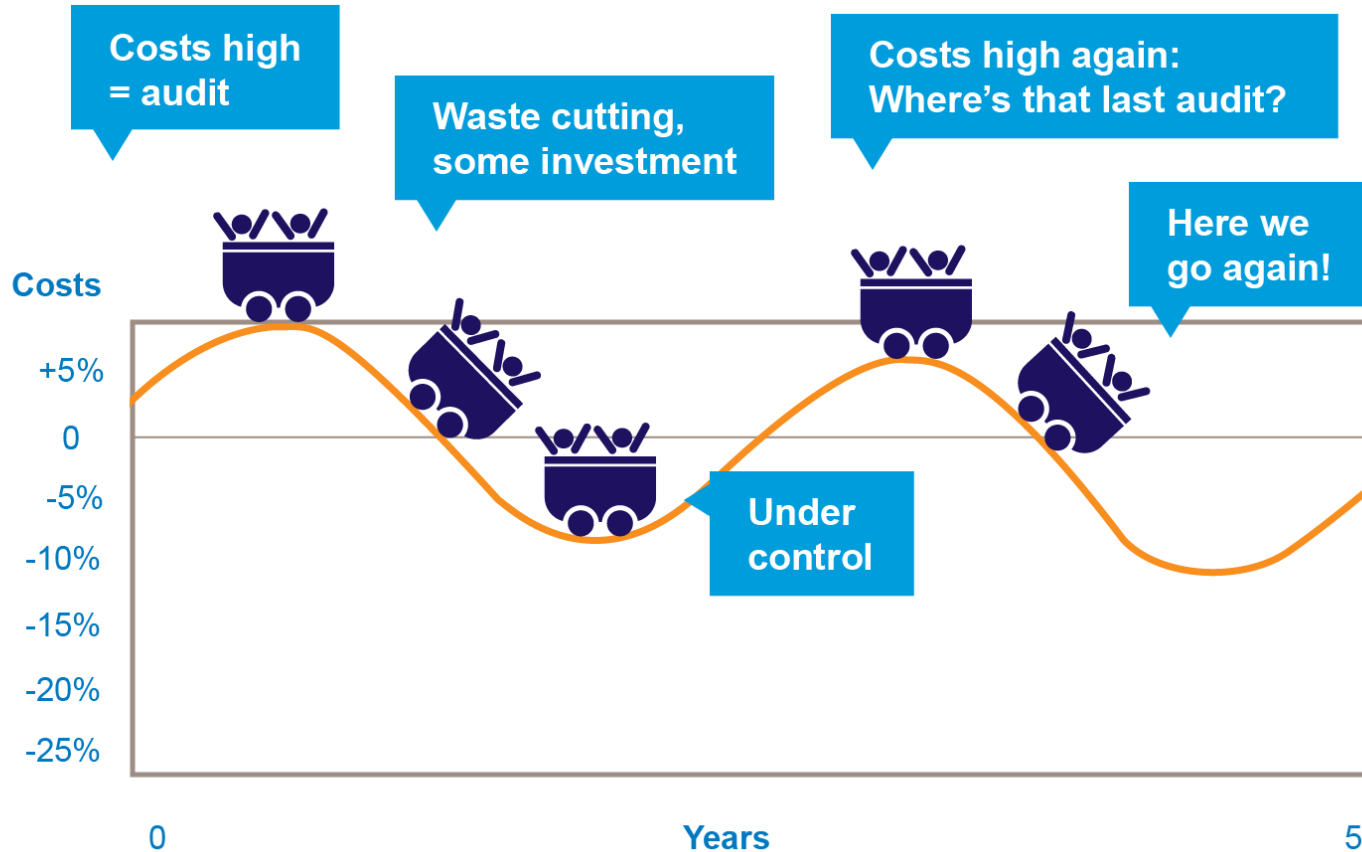
Why Plan?

Energy Planning is Good Business

- ↓ Operations and maintenance costs
- ↑ Competitive edge and image
- ↓ Waste and emissions
- ↑ Workplace environment

Why Plan?

Ad Hoc Approach to Energy Management



Source: UNIDO 2010

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Source:
Paul Scheihing,
Technology Manager

Why Plan?

Danger!

- Activity versus planning



Why Plan?



Source: Creative Commons Leslie Sigal Javorek

Why Plan?

**“Then it really, really
doesn't matter
which way you go!”**



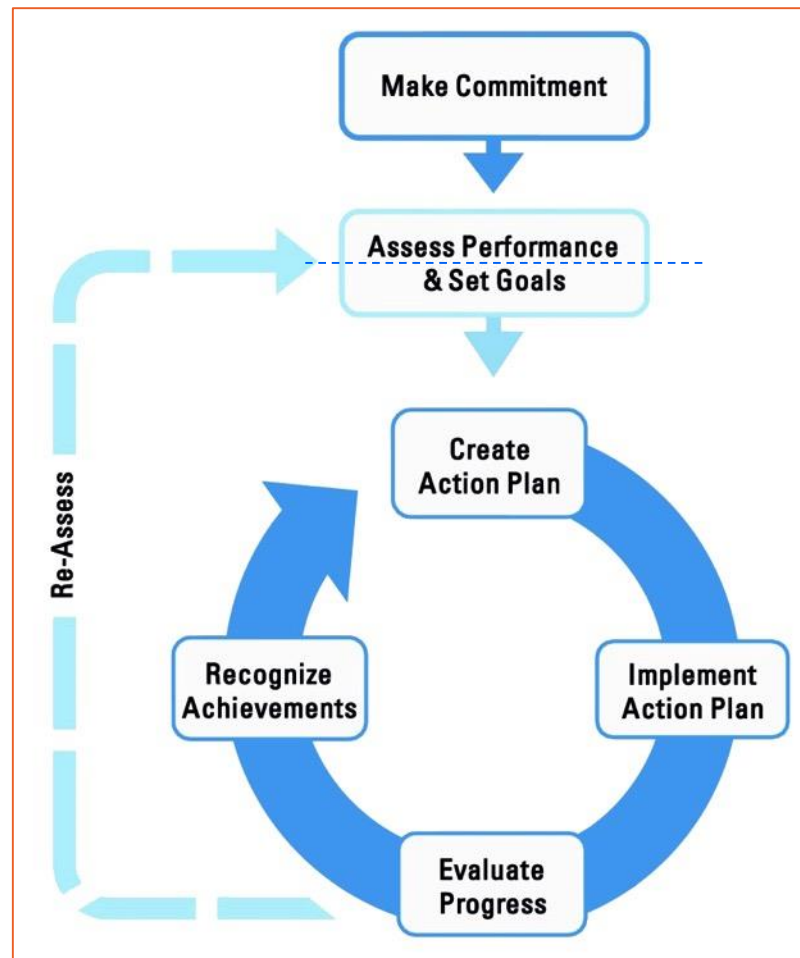
Source: Creative Commons Leslie Sigal Javorek

Why Plan?

Lay Down Some Track

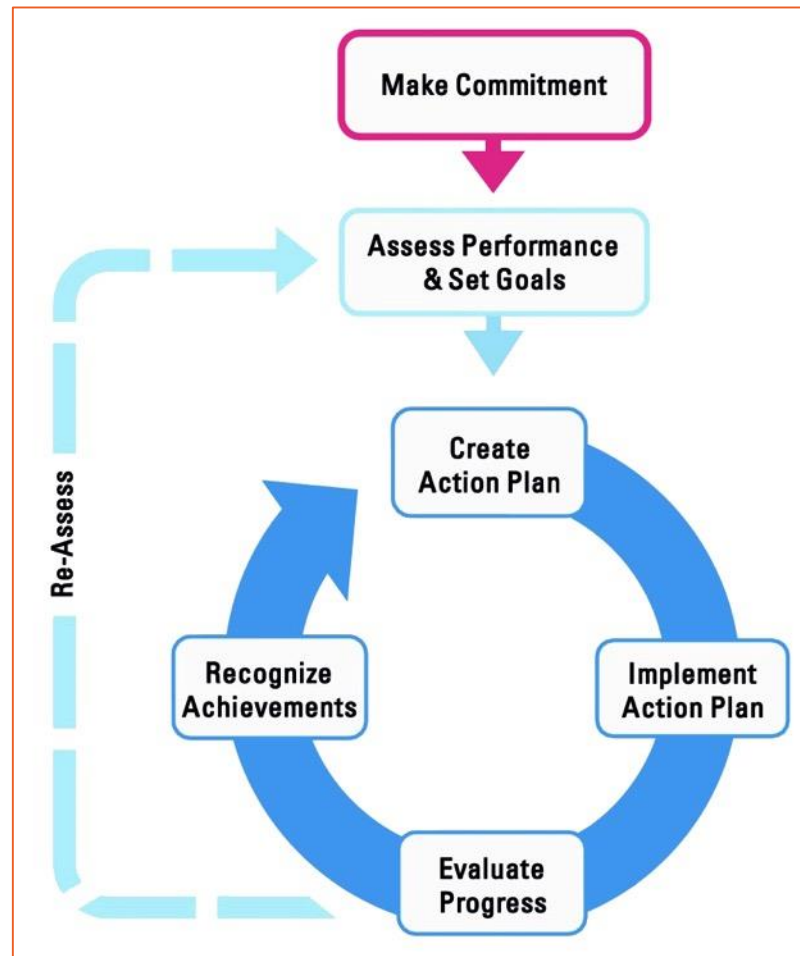


Seven Elements of a Successful Plan



Source: [ENERGY STAR®](#)

1. Make a Commitment



1. Make a Commitment

Form a Cross-Functional Energy Team



Research and Development



Engineering and Process



Purchasing



Financial Management



Operations and Maintenance



Utilities



Contractors and Suppliers



Construction Management



Corporate Real Estate and Leasing



Environmental Health and Safety



Building Design and Facilities Management

1. Make a Commitment

CASE STUDY:

Kentucky Energy Efficiency Program for Schools

- Administration/Superintendent/
Asst. Superintendent
- District Energy Manager
- Finance/Purchasing
- Facilities/Maintenance
- Information Technology
- Curriculum
- Faculty
- Student Body
- Custodial
- Food Services
- Environmental Health and Safety
- Construction Management
- Contractors and Suppliers
- Utilities
- Marketing/Public Relations

- Principal/Department Chair
- Teacher/Coordinator
- Student Energy Team
- Custodian
- Parent Volunteer

1. Make a Commitment

CASE STUDY: Cleveland Clinic



1. Make a Commitment

Institute an Energy Policy/Mandate

Example of an energy policy from ABC Inc. Energy Mandate

We recognize energy as a controllable operating expense wherein lower energy consumption results in decreased operating expense, environmental emissions and maintenance costs. Energy management is the responsibility of all staff in our facility, guided and supported by the facility/energy manager. We will assess our energy performance and share energy use data with all employees. We will create and implement an energy plan to achieve our energy goals. Our use of equipment and controls for energy savings will be a showpiece in our industry.

- ABC Reduce kBtu energy consumption Inc. has established three key energy goals:
 - Per square foot by 20% in one year
 - Reduce kW peak demand per month by 10%
 - Obtain a minimum 20% IRR on efficiency investments

Established this _____ day of _____, 2016.

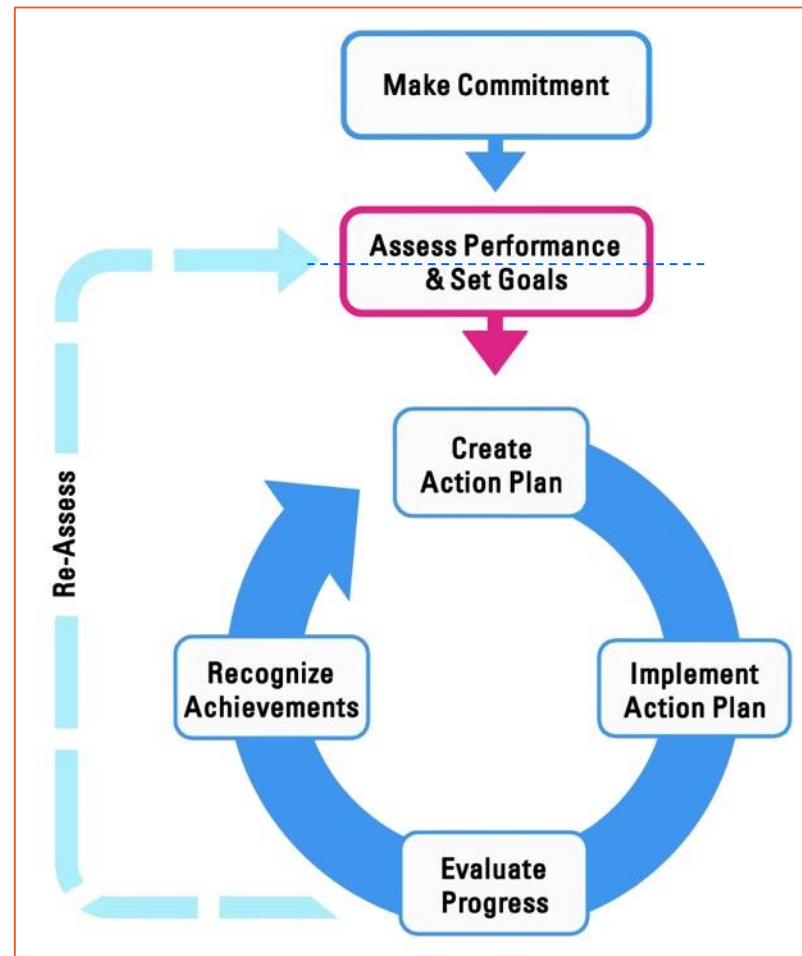
President/CEO/Director of Ops/Facility/Energy Manager/Financial Manager

Poll Question

Have you ever created and implemented a formal energy savings plan?

- a) Never
- b) Once
- c) More than once

2. Assess Performance



2. Assess Performance

- Take inventory
- Review energy bills (3 years)
 - Highest use
 - Trends



2. Assess Performance

CASE STUDIES: Bridgestone, DuPont and Nissan

■ Wrestle

Establish evaluation metrics and selection criteria

Source: Duke University CGGC

	Bridgestone	DuPont	Nissan
Motivation	Environmental impact of operations; efficiency of operations	Environmental impact of operations; cost savings	Environmental impact of operations
Goal Setting			
Top-down (corporate-level mandate)	X (2010)	X	X
Bottom-up (goals primarily at plant-level)	X (1990-2009)		
Implementation (primary responsibility)			
Company-wide energy services	X	X	
Plant energy team			X
Measurement, benchmarking and reporting			
SKU level		X	
Company level	X		X
Use of industry benchmarks			X
Internal reporting	X	X	X
External reporting		X	X

2. Assess Performance

Benchmark

MyPortfolio | [Sharing](#) | [Planning](#) | [Reporting](#) | [Recognition](#)

Questline, Inc.
2025 Riverside Drive, Columbus, OH 43221 | [Map It](#)
Portfolio Manager Property ID: 4478338
Year Built: 1955
[Edit](#)

[Apply for ENERGY STAR Certification](#)

ENERGY STAR Score (1-100)

Current Score: 86

Baseline Score: 90

Summary | [Details](#) | [Meters](#) | [Goals](#) | [Design](#)

Notifications (0)

You have no new notifications.

Property Profile

You haven't created a profile for your property yet. Profiles are a way to supplement the information in Portfolio Manager with additional information about your property, including a photo.

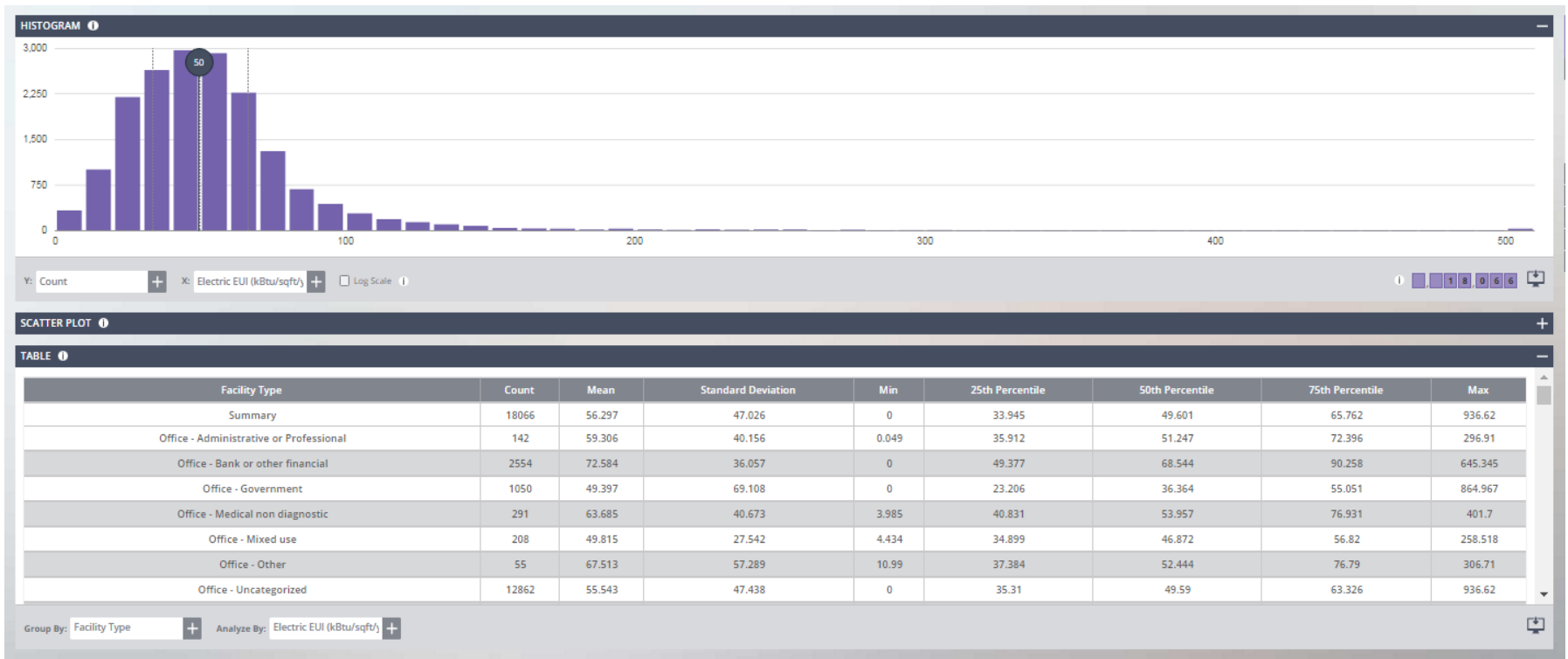
[+ Create Profile](#)

Metrics Summary [Change Time Period](#)

Metric	Baseline (Dec 2011)	Current (Jun 2015)	Change
ENERGY STAR score (1-100)	90	86	-4(-4.4%)
Source EUI (kBtu/ft ²)	120.8	134.9	14.1(11.7%)
Site EUI (kBtu/ft ²)	57.1	62.2	5.1(8.9%)
Energy Cost (\$)	9,740.51	8,127.09	-1613.42(-16.6%)
Total GHG Emissions (Metric Tons CO ₂ e)	57.2	64.2	7.0(12.2%)

2. Assess Performance

BPD Benchmark Data - Offices



2. Assess Performance

How to Calculate Your Usage for Comparison

- Fabricated metal products example

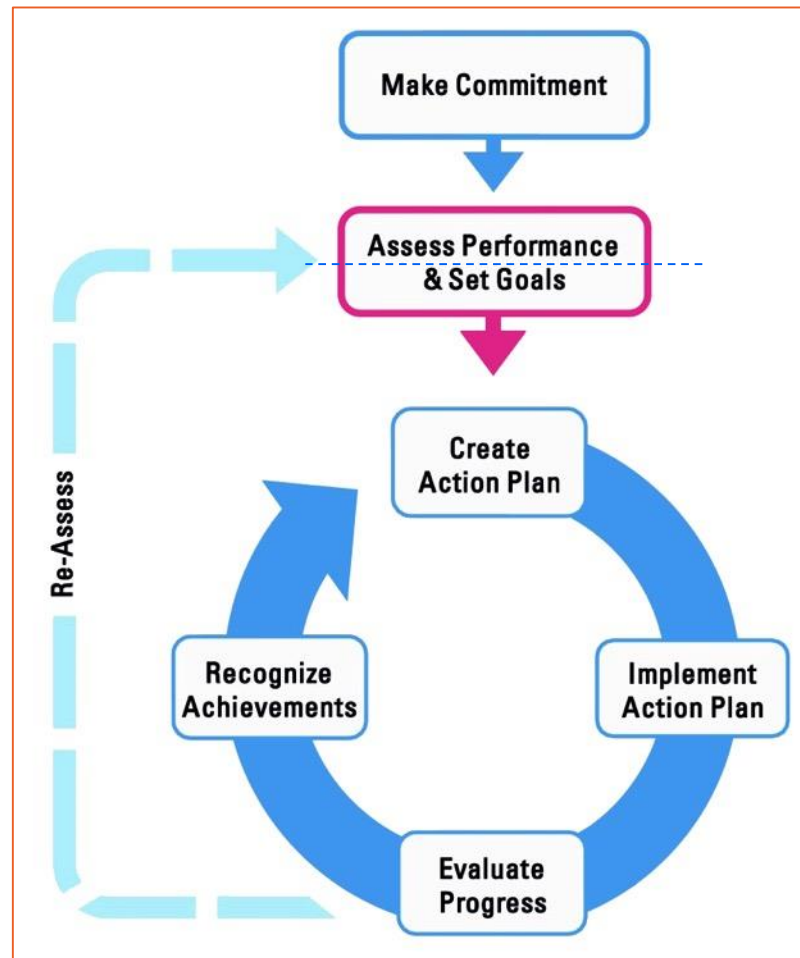
$$\frac{1,500,000 \text{ kWh}}{30,000 \text{ ft}^2} = 50.0 \text{ kWh/ft}^2$$

$$50.0 \text{ kWh/ft}^2 > 36.9 \text{ kWh/ft}^2$$

- Possible improvement opportunities



3. Set Performance Goals



3. Set Performance Goals

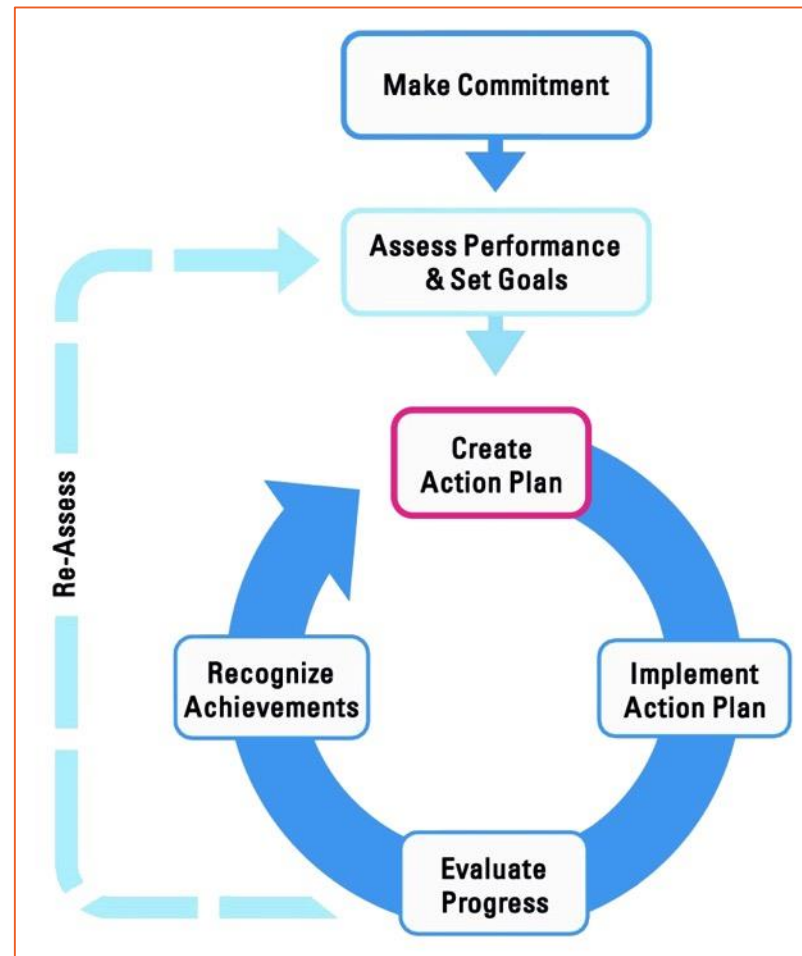
CASE STUDIES:

PepsiCo and Toyota

- PepsiCo
 - 2015 Energy savings targets (2006 baseline)
 - Electricity – 20%
 - Fuel – 25%
 - Water – 20%

- Toyota Motor Engineering and Manufacturing
 - Use less than 6.3 million Btus of energy per vehicle produced

4. Create an Action Plan



4. Create an Action Plan

Develop an Accounting/Reporting System

- Manual Excel spreadsheet
- ENERGY STAR® Portfolio Manager
- Commercial products

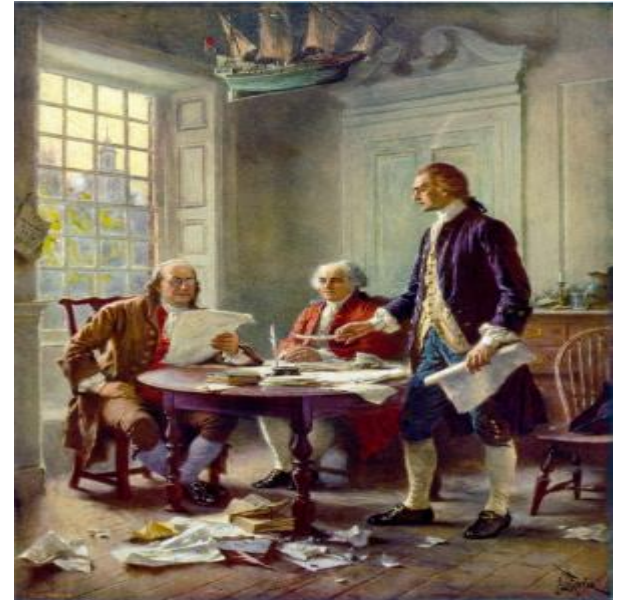


Source: Stock Exchange

4. Create an Action Plan

More Wrestling

- Budget
- Rate optimization
- Maintenance plan
- Commissioning



4. Create an Action Plan

CASE STUDIES:

Toyota Motor

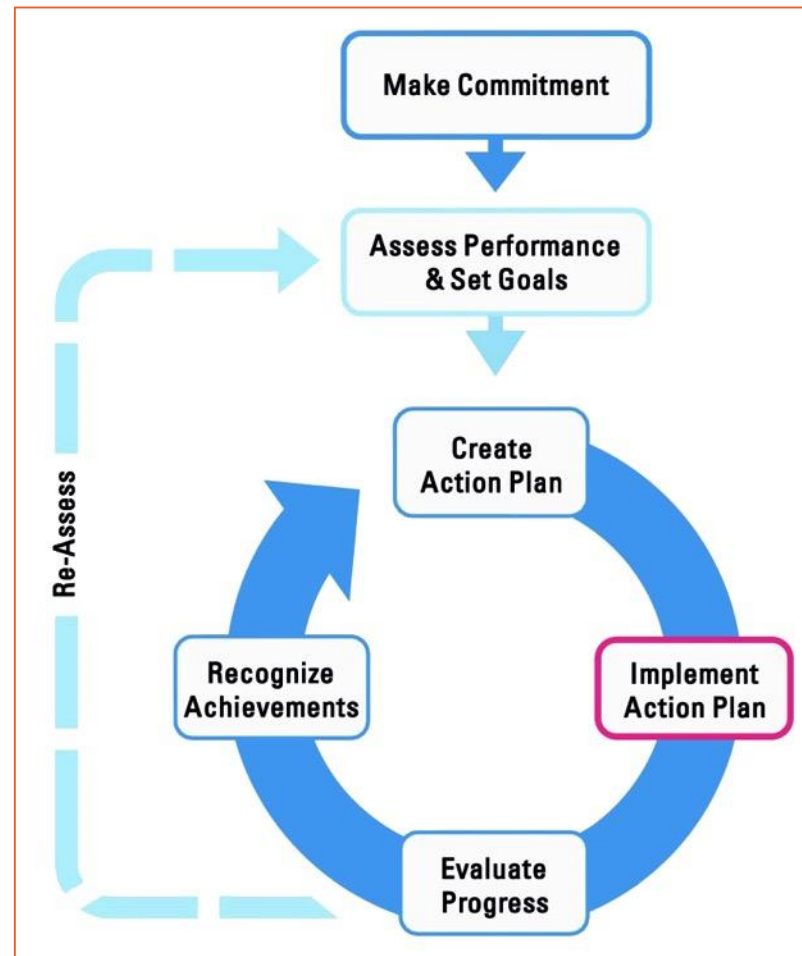
- Instituted a “Race for the Greenest” contest
- Engaged people
- Rethink operating practices
- Pilot projects
- “Treasure-hunt” process

Poll Question

What kind of energy benchmarking have you conducted for your facility?

- a) None
- b) External industry benchmarking
- c) Internal benchmarking

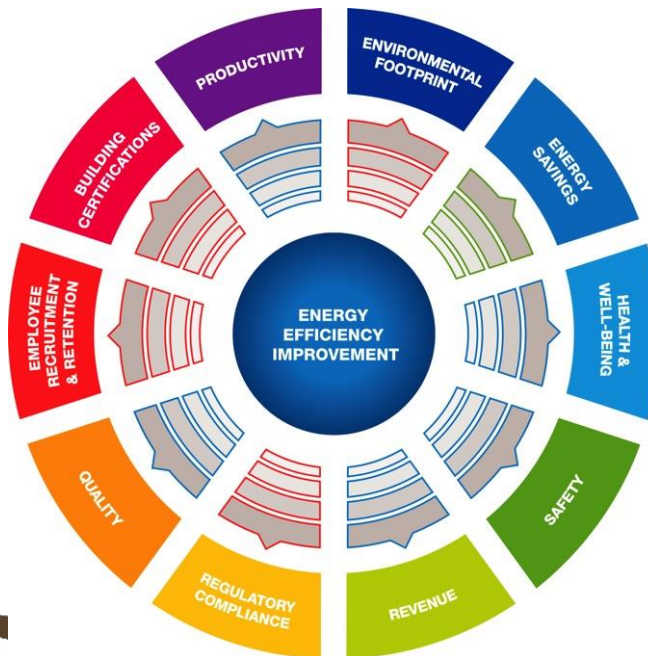
5. Implement the Action Plan



5. Implement the Action Plan

Get Approval at The Top

- Speak ~~Btu or kWh~~ dollars
- Lifecycle cost
- Non-utility benefits



- Utility cost savings
- Non-utility cost savings
- Non-financial benefits

5. Implement the Action Plan

CASE STUDIES:

Raytheon

- Grow the grassroots

"We focused on employee awareness of energy savings at their homes, since people tend to be more interested when they're paying the bill."

- David Chamberlain, principal energy engineer



Source: ENERGY STAR

5. Implement the Action Plan

CASE STUDIES:

Eastman Kodak, California Portland Cement

- Network
 - Industry- and energy-focused associations
 - Eastman Kodak
 - Exhaust hoods with ENERGY STAR
 - Partnered with Toyota
 - California Portland Cement
 - DOE motors project

"We learn from each other all the time. We just did a two-day benchmark exercise with Toyota, with a day in each plant, and we learned a lot from them and them from us. So now we're sending a person to participate in a Toyota energy treasure hunt in California."

- Kodak's George Weed

5. Implement the Action Plan

CASE STUDIES:

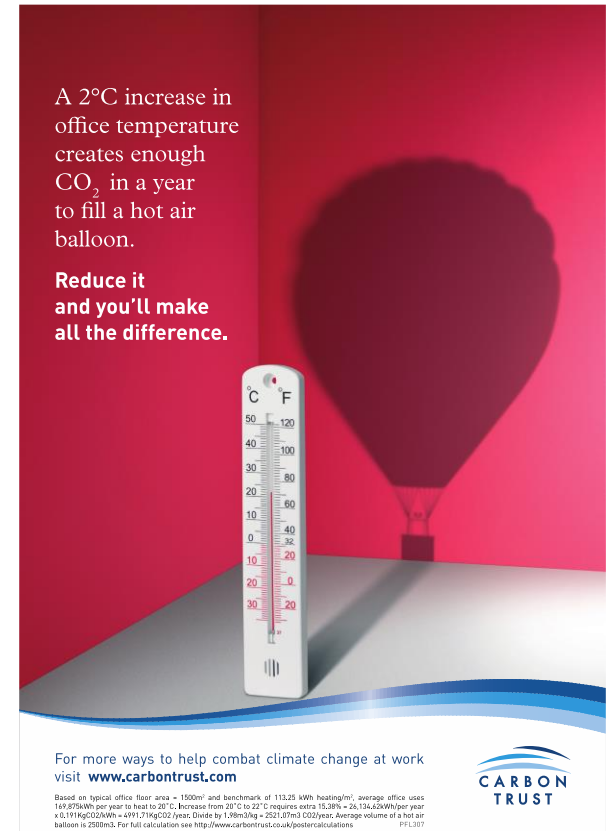
Toyota, Frito-Lay, United Technologies, GlaxoSmithKline

- Motivate!
 - Toyota targets versus actuals reports
 - Plant as a whole
 - By shops
 - By unit of production
 - Non-production energy use
 - Multi-day annual energy summits
 - Frito-Lay
 - United Technologies
 - GlaxoSmithKline



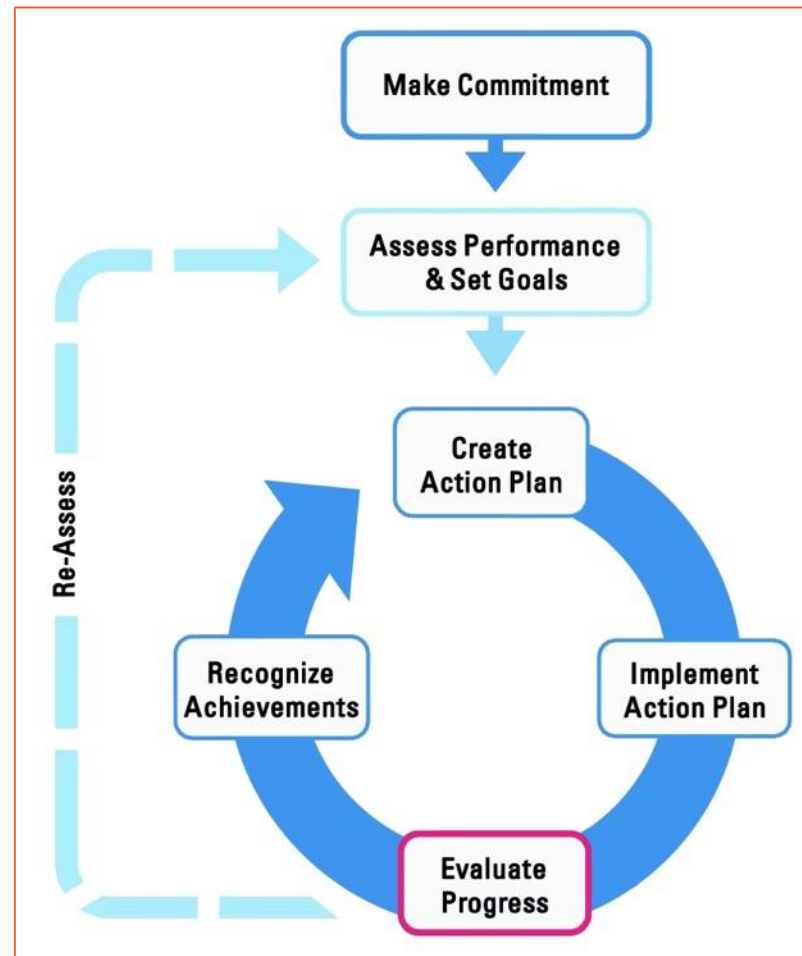
5. Implement the Action Plan

- Motivate!
 - Energy posters



Source: Carbon Trust

6. Evaluate Progress



6. Evaluate Progress

CASE STUDIES: General Motors

- Energy use data
 - General Motors scorecard
 - Actual
 - Target
 - Status
- Technology
- People

GM	Energy per Unit Production (MWh/Unit)						Water per Unit Production (M ³ /Unit)					
	Monthly Energy			YTD Energy			Monthly Water			YTD Water		
	Actual	Target	Status	Actual	Target	Status	Actual	Target	Status	Actual	Target	Status
	1,236	1,282	●	1,517	1,579	●	2,182	2,327	●	2,138	2,212	●
Assembly	0.812	0.824	●	0.568	1.004	●	1.661	1.819	●	1.671	1.738	●
Plant 1	0.798	0.793	●	0.642	0.840	▲	1.876	2.078	●	1.557	1.984	●
Plant 2	1.850	1.905	●	2.589	2.687	●	5.192	4.803	✘	5.487	5.427	▲
Plant 3	0.354	0.443	●	0.553	0.616	●	1.088	1.349	●	1.127	1.305	●
Plant 4	0.606	0.678	●	0.753	0.788	●	1.823	1.749	▲	1.951	1.749	●
Plant 5	0.774	1.006	●	1.415	1.488	●	2.115	2.258	●	2.362	2.432	●
Plant 6	0.691	0.655	●	0.890	0.912	●	1.390	1.392	●	1.561	1.435	✘
Plant 7	2.877	4.956	●	3.765	4.180	●	10.443	12.647	●	6.574	6.797	●
Plant 8	0.540	0.582	●	0.672	0.685	●	1.289	1.334	●	1.358	1.349	▲
Plant 9	1.526	1.215	✘	1.816	1.809	▲	2.410	1.782	✘	2.236	2.068	✘
Plant 10	0.621	0.893	●	1.010	1.147	●	1.586	1.783	●	1.918	1.683	✘

Daily pro-rated information for 07/29/2013:

Resource	Daily Actual	Daily Target	MTD Actual	MTD Target
Electricity	0.46	0.61	0.77	0.61
Heating	0.32	0.83	0.44	0.83
Total	0.78	1.44	1.21	1.44

6. Evaluate Progress

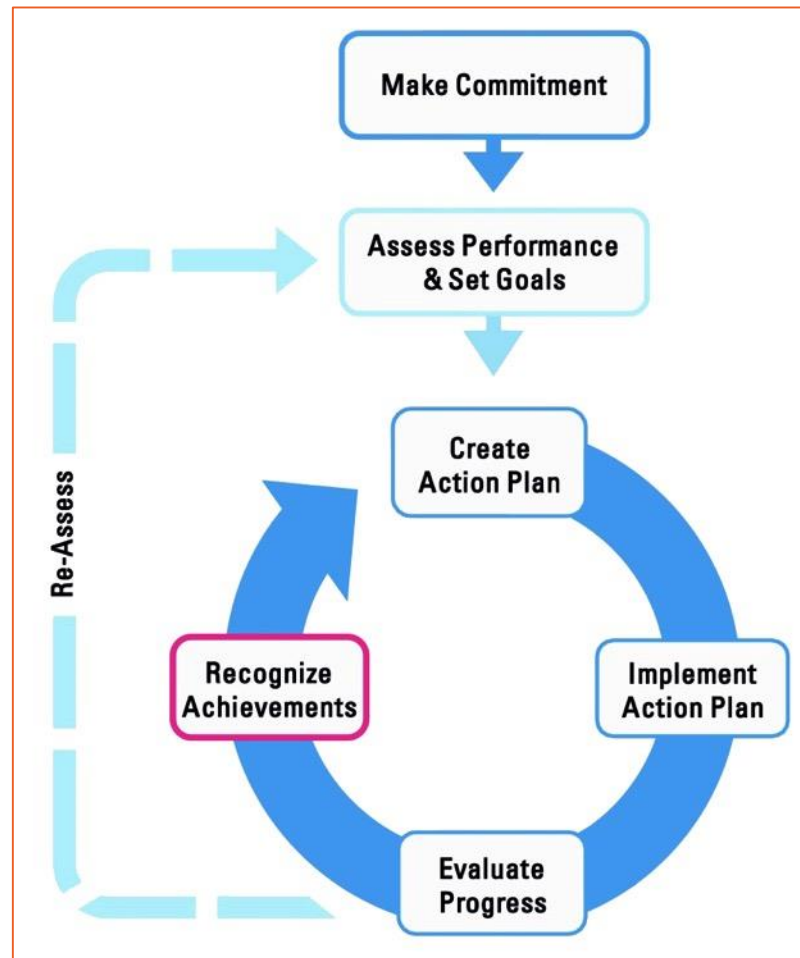
CASE STUDIES: Michigan State University

- People



Source: Lynda J. Boomer, Michigan State University

7. Recognize Achievements



7. Recognize Achievements

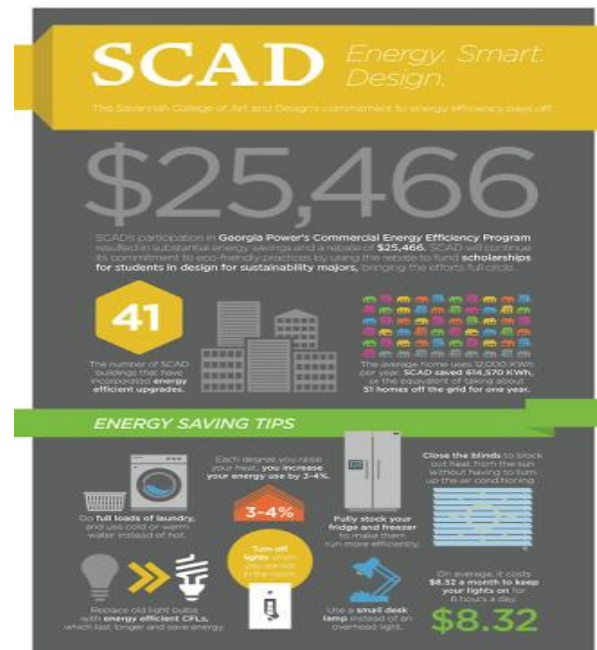
CASE STUDIES:

City of Yucaipa, Savannah College of Art and Design, Merck

- Brand your program



City of Yucaipa



SCAD Energy Smart Design.
The Savannah College of Art and Design's commitment to energy efficiency goes off.

\$25,466

SCAD's participation in Georgia Power's Commercial Energy Efficiency Program resulted in substantial energy savings and a rebate of **\$25,466**. SCAD will leverage its commitment to sustainability practices by using the rebate to fund **scholarships for students in design for sustainability majors**, bringing the efforts full circle.

41

The number of SCAD buildings that have participated in energy efficient upgrades.

ENERGY SAVING TIPS

- Each device you use you heat, you increase your energy use by 3-4%.
- Do full loads of laundry, and use cold or warm water instead of hot.
- Turn off lights when you're done.
- Recessed cans hold less energy efficient CFLs, which last longer and save energy.
- Close the blinds to block out heat from the sun without having to turn up the air cond for long.
- Fully stock your fridge and freezer to make them run more efficiently.
- On average, it costs \$8.32 a month to keep your lights on for 61 hours a day.
- Use a small desk lamp instead of an overhead light.

\$8.32

Savannah College of Art and Design (SCAD)

“Creating a unique name and logo is critical for building awareness of your program and marketing it effectively. We include our program logo and the address of our internal energy web page on all energy communications.”

- Vincent Gates, Merck energy manager



7. Recognize Achievements

CASE STUDIES:

Starwood Hotels, Food Lion

- Publicize often
 - Starwood Hotels
- Keep a high profile
 - Food Lion



What is your plan?



“Then it really, really
doesn't matter
which way you go!”

Source: Creative Commons, Leslie Sigal Javorek

Poll Question

- ▶ Would you like someone from PSE&G to contact you?
 - a) Yes
 - b) No

- ▶ How valuable has this Webinar been to you?
 - a) Not valuable at all.
 - b) Slightly valuable.
 - c) Moderately valuable.
 - d) Very valuable.
 - e) Extremely valuable.



Upcoming PSE&G Webinars:

- ▶ Money Talks: Energy-Efficiency Investment Analysis
Tuesday, March 28, 2017 2:00 pm
[REGISTER HERE](#)
- ▶ From Symptoms to Solutions: Managing Power Quality Issues
Tuesday, April 25, 2017 2:00 pm
[REGISTER HERE](#)
- ▶ The Best in Energy-Efficient Commercial Lighting
Tuesday, May 23, 2017 2:00 pm
[REGISTER HERE](#)

Q&A Session



Questions?

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- Websites:

- http://www.pseg.com/business/small_large_business/index.jsp

- <http://www.njcleanenergy.com/>

