Better Buildings Webinar Series

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Better Buildings
U.S. DEPARTMENT OF ENERGY

Strategies for Controlling Energy and Water Use in Leased Spaces

April 5, 2016
3:00-4:00 PM ET

U.S. DEPARTMENT OF ENERGY

Overview and Agenda

- Welcome & Introductions
- Presentations
  - U.S. Department of Energy
  - Cushman & Wakefield
  - Sprint
- Additional Resources
- Question & Answer Session

Today's Presenters

Name		Organization
Cody Taylor		U.S. Department of Energy
Eric Duchon		Cushman & Wakefield
Darrel Carter		Sprint

Cody Taylor

U.S. Department of Energy

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Increasing Energy Efficiency in Tenant Spaces Trends and Feasibility

Cody Taylor
Commercial Buildings Team Lead

U.S. DEPARTMENT OF ENERGY

Is Increasing Energy Efficiency Feasible?

- Achieving greater levels of energy efficiency in tenant spaces is feasible through the use of technologies that exist in the market today

- However, historic challenges have prevented wide-spread adoption of separate space efficiency measures:
  1. The timing and process of leasing and tenant build outs
  2. Significant portion of the market remains unaware of the financial benefits
  3. Tenant market demographics
  4. Owner-tenant “split-incentive”
  5. Inability to collect tenant-specific energy use data

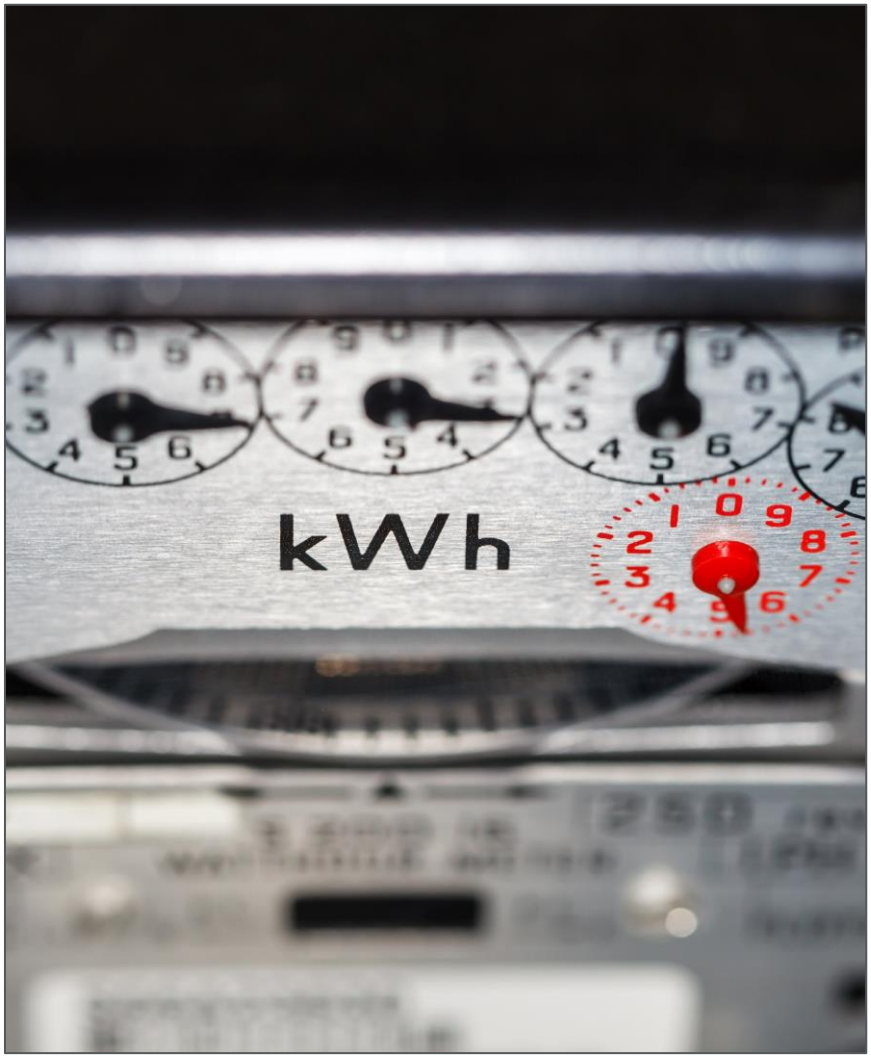
Key Takeaways

There are ways to address the common barriers to improved energy efficiency in tenant spaces, including:

1. Submetering of tenant spaces
2. Tools and resources to compare packages of energy efficient technologies
3. Quantifying the business case for energy efficiency
4. Simple, low-cost energy simulation models for tenant spaces
5. Improving leasing language
6. Recognition of energy efficiency tenant spaces

Submetering of Tenant Spaces

- Submetering is a key foundation for efficiency
- Accurately measure individual tenant-level energy usage – aligning usage and cost
- Submetering helps ensure that each tenant:
  1. Pays for their own energy consumption
  2. Receives the full benefit of their energy cost reductions



Tools and Resources to Compare Packages of Energy Efficient Technologies

- There is a need for interactive tools or guidance checklists for build-out to help design teams create efficient spaces
- A good design process will consider energy efficiency technologies as a package of solutions rather than individual measures during a tenant fit-out
- However, comparing the costs and benefits of energy efficiency technology packages is complicated and time consuming, requiring the design team to understand:
  1. The energy saving attributes of individual products
  2. The interactive effects between technologies

Expanding the Business Case for Energy Efficiency

- Even in lease structures with a split incentive for energy efficiency, building owners can benefit from increased energy efficiency through market differentiation - and in certain markets - command higher rents and longer leases:
  - A growing body of research has shown that energy efficient buildings:
    - Rent for an average premium of 2-6%,
    - Can sell for a premium of as much as 16%,
    - Attract high-quality tenants, and
    - Have lower default rates for commercial mortgages
- More building owners can recognize these benefits by emphasizing energy efficiency's role in:
  - Reducing total cost of occupancy
  - Making spaces more comfortable and attractive
  - Contributing to improved performance of workers
  - Increasing asset value at time of sale

Accessible, Rapid Energy Modeling for Tenant Spaces

- Investment in accessible, rapid modeling software and guidance will help make energy modeling cost effective for smaller tenant applications

- With energy modeling, design teams can:
  1. Compare different energy efficiency measures
  2. Decide which package of measures is most appropriate for an individual space

Improving Leasing Language

- Energy efficiency-aligned language can be added to traditional building leases to mitigate the landlord-tenant split-incentive problem
- Where tenants emphasize the value they place on energy efficiency, building owners respond with more efficient spaces
- Owners and tenants can both make energy-aligned language their default for new leases and find opportunities to increase collaboration around energy efficiency in existing leases

Federal Recognition of High Performance Tenant Spaces

- A federal recognition program can allow direct comparison of buildings based on energy performance
- This provides the market with ways to:
  - Evaluate building performance
  - Broadcast the value of energy efficiency measures
  - Distinguish high-performance buildings from the rest of the market

Developing A Federal Recognition Program for Efficient Tenant Spaces

***Possible* dates: uncertain and dependent on congressional funding**

- 2016-2017
  - EPA "may develop" a voluntary program to recognize commercial building owners and tenants for energy efficient design & construction in separate spaces.
- 2017-2018
  - EIA to collect tenant energy use data as part of CBECs

  or
  - EIA to develop capabilities and begin collecting tenant data in future CBECS
- 2021
  - Earliest likely date of tenant data public release from EIA
  - EPA to receive data and begin developing occupancy-based recognition for tenants
- 2022 or after
  - EPA to develop voluntary tenant space recognition program modeled after ENERGY STAR for

Eric Duchon

Cushman & Wakefield

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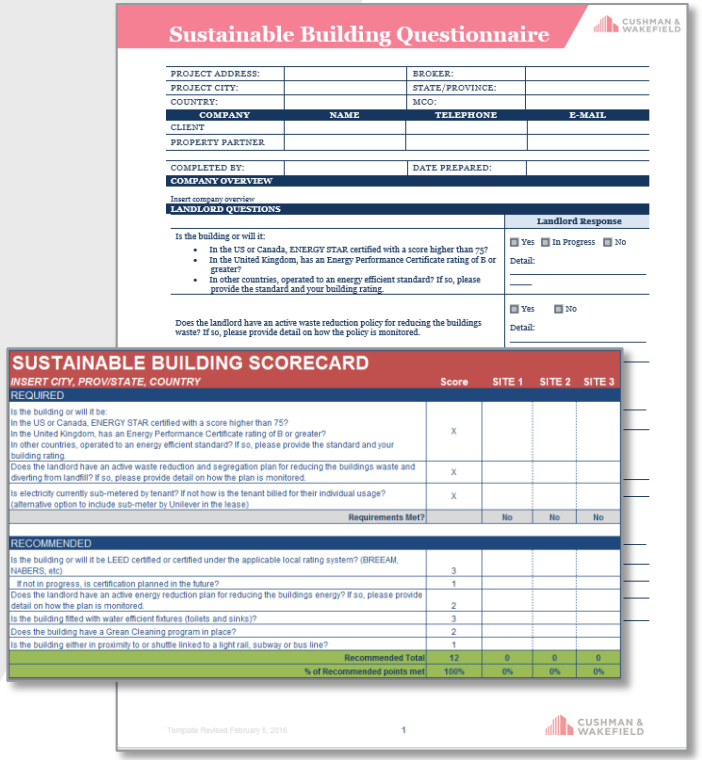
Sustainable Site Selection

SUSTAINABLE SITE SELECTION PROCESS:

- C&W Sustainability Strategies and Transaction Management Teams work with our Clients to customize the Landlord Questionnaire and Scorecard to client sustainability requirements:
  - Landlord Questionnaire
    - Based on the LEED rating system
    - Sent to landlords to determine the sustainability qualifications of potential sites
  - Sustainable Site Selection Scorecard
    - By developing a weighting system and scoring methodology, the sustainability qualifications of all sites are compared



Sustainable Building Questionnaire

PROJECT ADDRESS:		BROKER:	
PROJECT CITY:		STATE/PROVINCE:	
COUNTRY:		MCO:	

COMPANY	NAME	TELEPHONE	E-MAIL
CLIENT			
PROPERTY PARTNER			

COMPLETED BY:		DATE PREPARED:	

COMPANY OVERVIEW

Insert company overview

LANDLORD QUESTIONS

	Landlord Response
Is the building or will it: • In the US or Canada, ENERGY STAR certified with a score higher than 75? • In the United Kingdom, has an Energy Performance Certificate rating of B or greater? • In other countries, operated to an energy efficient standard? If so, please provide the standard and your building rating.	☐ Yes ☐ In Progress ☐ No Detail:
Does the landlord have an active waste reduction policy for reducing the buildings waste? If so, please provide detail on how the policy is monitored.	☐ Yes ☐ No Detail:

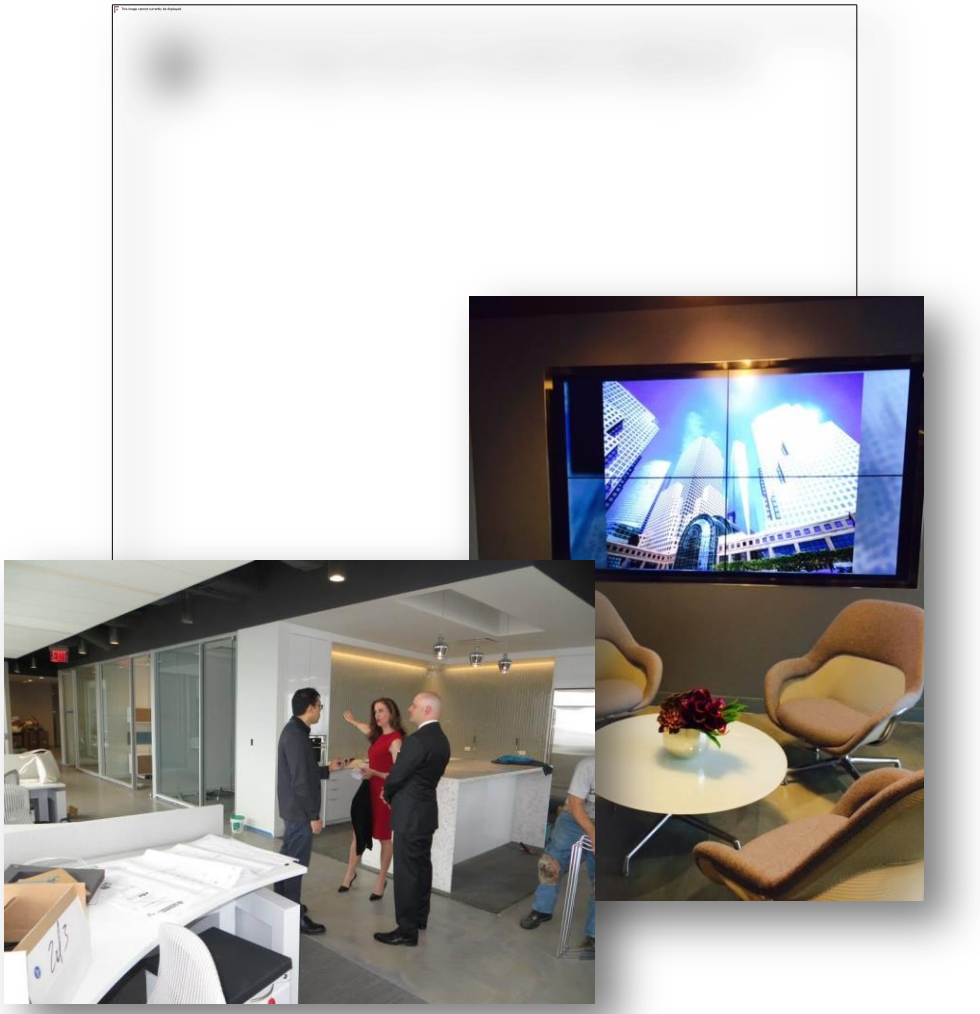
SUSTAINABLE BUILDING SCORECARD

INSERT CITY, PROV/STATE, COUNTRY	Score	SITE 1	SITE 2	SITE 3
REQUIRED				
Is the building or will it be: In the US or Canada, ENERGY STAR certified with a score higher than 75? In the United Kingdom, has an Energy Performance Certificate rating of B or greater? In other countries, operated to an energy efficient standard? If so, please provide the standard and your building rating.	X			
Does the landlord have an active waste reduction and segregation plan for reducing the buildings waste and diverting from landfill? If so, please provide detail on how the plan is monitored.	X			
Is electricity currently sub-metered by tenant? If not how is the tenant billed for their individual usage? (alternative option to include sub-meter by Unilever in the lease)	X			
Requirements Met?		No	No	No
RECOMMENDED				
Is the building or will it be LEED certified or certified under the applicable local rating system? (BREEAM, NABERS, etc)	3			
If not in progress, is certification planned in the future?	1			
Does the landlord have an active energy reduction plan for reducing the buildings energy? If so, please provide detail on how the plan is monitored.	2			
Is the building fitted with water efficient fixtures (toilets and sinks)?	3			
Does the building have a Grean Cleaning program in place?	2			
Is the building either in proximity to or shuttle linked to a light rail, subway or bus line?	1			
Recommended Total	12	0	0	0
% of Recommended points met	100%	0%	0%	0%

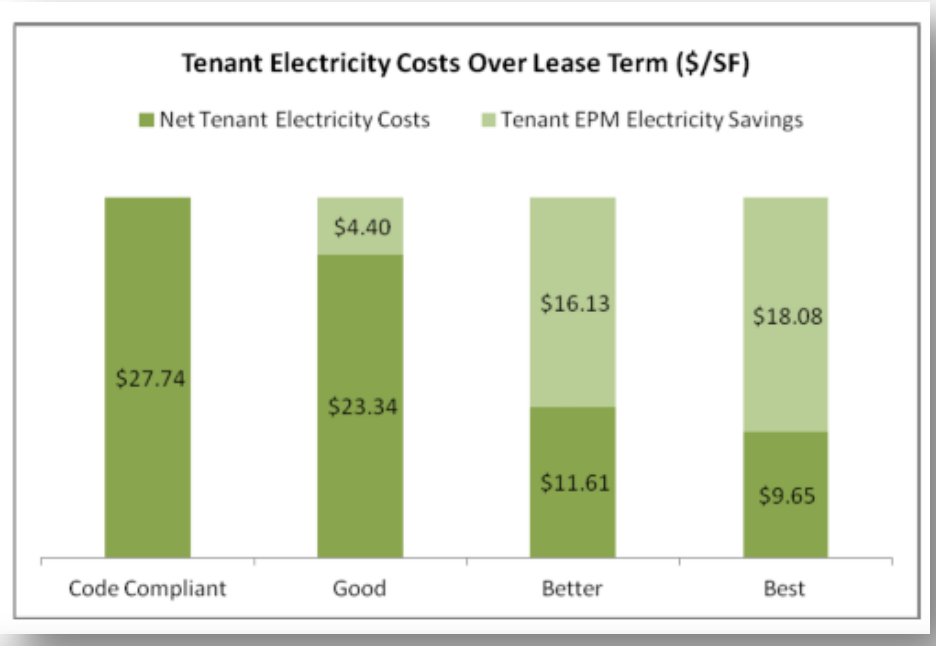
Template Revised February 8, 2016 1

1 World Trade Center

- CUSHMAN & WAKEFIELD WILL REDUCE ITS ENERGY COSTS BY AN ESTIMATED $16.13 PER SQUARE FOOT OVER THE 10 YEAR TERM OF OUR LEASE AT 1 WTC
  - Lighting: $4.40
  - Plug loads & controls: $11.73
- AN INVESTMENT OF ~$14,000 WAS REQUIRED TO ACHIEVE:
  - Payback: 1.6 years
  - Expected ROI is 404% over the 10 year lease term
  - Annual IRR of 21.3%



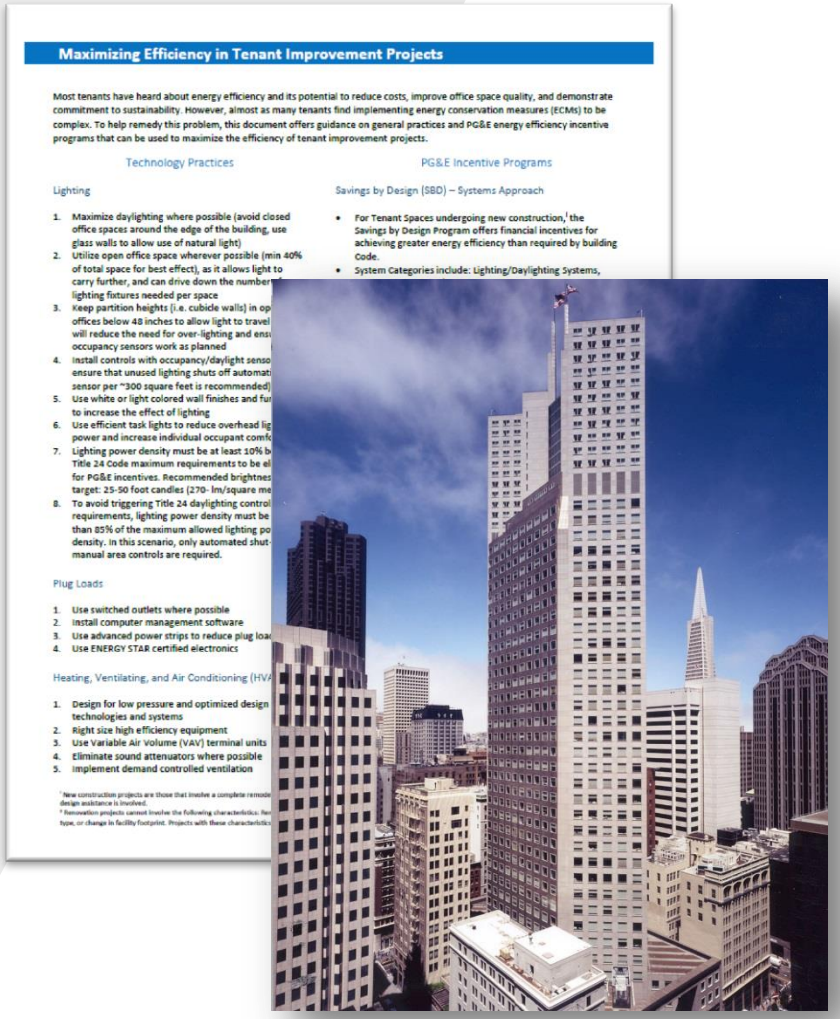
1 World Trade Center



Energy Performance Measure (EPM)		Good	Better	Best
1.1	LED lighting	Y	Y	Y
1.2	Daylight harvesting	Y	Y	Y
1.3	No humidity control in IDF room	Y	Y	Y
1.4	High efficiency Tenant HVAC and motors	Y	Y	Y
2.1	Energy Star Equipment		Y	Y
2.2	Server Power Management		Y	Y
2.3	Allow IDF room fans to cycle off		Y	Y
2.4	Raise IDF room setpoint from 77 °F to 79 °F		Y	Y
2.5	Temperature Setpoints (77 °F cooling, 70 °F heating)		Y	Y
3.1	Equipment Power Management (CISCO Energywise or similar)			Y
3.2	Lighting Control System (Timeclock and Vacancy sensors)			Y

345 California, San Francisco

- High performing downtown office building with highest level of past PG&E program participation in portfolio, engaged us for tenant improvement guidance and incentive support for upcoming project proposals to ownership
- We developed unique tenant improvement guidance document with input from National Resources Defense Council and leveraged for future building assessments



Maximizing Efficiency in Tenant Improvement Projects

Most tenants have heard about energy efficiency and its potential to reduce costs, improve office space quality, and demonstrate commitment to sustainability. However, almost as many tenants find implementing energy conservation measures (ECMs) to be complex. To help remedy this problem, this document offers guidance on general practices and PG&E energy efficiency incentive programs that can be used to maximize the efficiency of tenant improvement projects.

Technology Practices

Lighting

1. Maximize daylighting where possible (avoid closed office spaces around the edge of the building, use glass walls to allow use of natural light)
2. Utilize open office space wherever possible (min 40% of total space for best effect), as it allows light to carry further, and can drive down the number
3. Keep partition heights (i.e. cubicle walls) in op offices below 48 inches to allow light to travel will reduce the need for over-lighting and ens occupancy sensors work as planned
4. Install controls with occupancy/daylight senso ensure that unused lighting shuts off automat sensor per ~300 square feet is recommended)
5. Use white or light colored wall finishes and fu to increase the effect of lighting
6. Use efficient task lights to reduce overhead lig power and increase individual occupant comf
7. Lighting power density must be at least 10% b Title 24 Code maximum requirements to be el for PG&E incentives. Recommended brightnes target: 25-50 foot candles (270- lm/square me
8. To avoid triggering Title 24 daylighting control requirements, lighting power density must be than 85% of the maximum allowed lighting po density. In this scenario, only automated shut manual area controls are required.

Plug Loads

1. Use switched outlets where possible
2. Install computer management software
3. Use advanced power strips to reduce plug loa
4. Use ENERGY STAR certified electronics

Heating, Ventilating, and Air Conditioning (HV

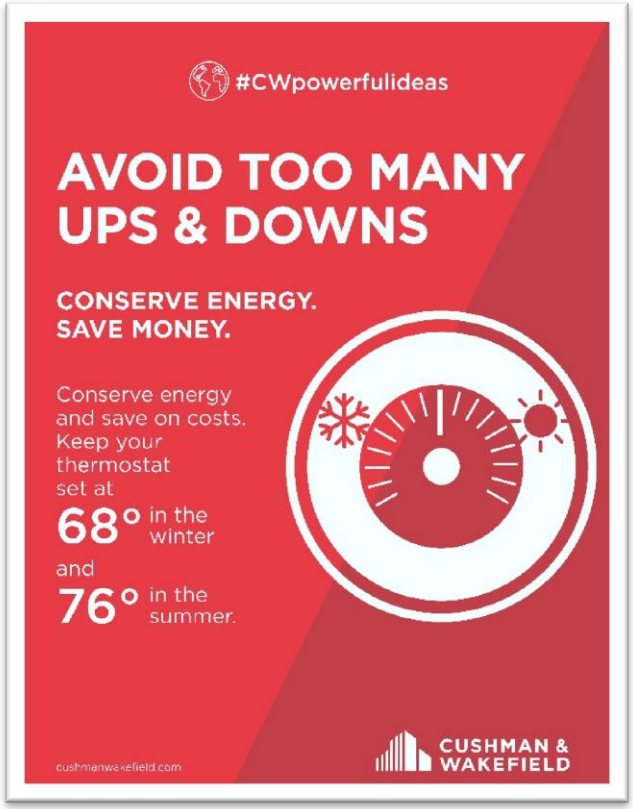
1. Design for low pressure and optimized design technologies and systems
2. Right size high efficiency equipment
3. Use Variable Air Volume (VAV) terminal units
4. Eliminate sound attenuators where possible
5. Implement demand controlled ventilation

PG&E Incentive Programs

Savings by Design (SBD) – Systems Approach

- For Tenant Spaces undergoing new construction,[1] the Savings by Design Program offers financial incentives for achieving greater energy efficiency than required by building Code.
- System Categories include: Lighting/Daylighting Systems,

Powerful Ideas Campaign



CUSHMAN & WAKEFIELD

THANK YOU

Eric Duchon
Director
Cushman & Wakefield

Darrel Carter

Sprint

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Sprint Retail Energy Management
DOE Better Buildings

Sprint's Environmental Program Participation & Awards

- DOE Better Buildings Challenge
- DOE Workplace Charging Challenge
- USGBC LEED
- Carbon Disclosure Project
- Global Reporting Initiative
- Dow Jones Sustainability Index
- Newsweek Magazine Green Rankings
- EPA Electronics Recycling
- EPA Waste Wise
- Energy Star Portfolio Manager

Sprint's Energy Goals & Progress

From 2007 through 2014, Sprint reduced, greenhouse gas (GHG) emissions by **43 percent** and electricity use by **37 percent**.

Cumulative Electricity Use Reduction (2007-2014)
1,448,036,000 kWh

Cumulative Cost savings (2007-2014)
$167,919,428

Sprint Retail Portfolio

Total Retail Portfolio: (2,492 Stores):

- Total Sprint Retail ft^2 : 6.7 M ft^2
- Average Retail size: 2,700 ft^2
- Annual Energy Spend: $10.6M
- Average cost/kWh: $0.13

Sprint Corporate Retail Profile (1,061 Stores):

- Corporate Retail ft^2 : 3.3M ft^2
- Average Retail size: 3,200 ft^2
- Average Annual Cost/Store: $8,300
- Average cost/ ft^2 2.59

Sprint/Radio Shack Retail Portfolio (1,431 Stores)

- Sprint/Radio Shack ft^2 : 3.4M ft^2
- Average Retail size: 2,400 ft^2
- Average Annual Cost/Store: $7,500
- Average cost/ ft^2 3.12

Retail Energy Management System (EMS)

Retail **Energy Management System** (EMS) implemented at **1,000+** Stores in **2013**

- 15% in total energy cost reduction
- 11M kwh saved/year
- 18 month payback

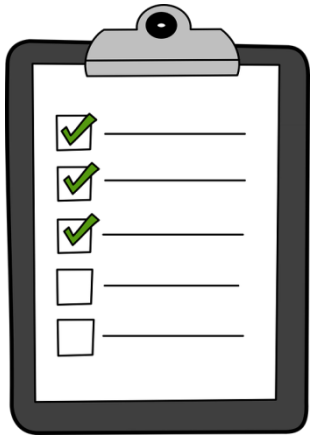
Other projected Retail EMS benefits include:

- Reduction in response time for HVAC reported issues. The Retail EMS can identify mechanical issues before they affect our retail locations.
- Reduction of maintenance costs and reduced time on site for maintenance technicians.
- Sprint will also implement a proactive unit replacement plan based on unit efficiency

Roof Top Unit Projects

Roof Top Unit Replacement Drivers:

- HVAC Maintenance savings
- Business operation continuity
- Energy savings



Internal Standard Requirements for RTU End of Life Replacement:

- Sprint's current rooftop unit policies comply with and exceed the requirements outlined in the DOE Rooftop Unit Challenge.
- All Sprint Retail HVAC units are to be reviewed and assessed at least one year prior to end of life expiration.
  - Condition assessment report of HVAC
  - Maintenance History
  - End of Life Expiration
  - Length of lease remaining

Roof Top Unit End of Life Replacement Program 2013 & 2014

- Total Number of Locations: 197
- Total Number of Units: 259
- Total ft^2 Impacted: 614,332
- kWh reduction: 35%

#moveforward

LED Lighting Program

Sprint has strategically installed **LED lighting in 600**+ retail stores

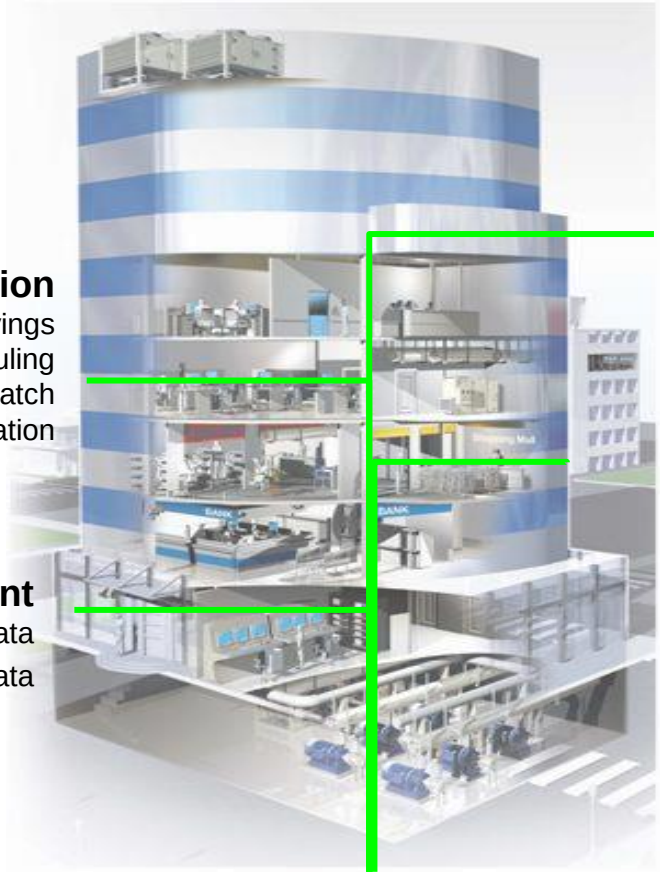
- reduce electrical usage by **2.8M kWh/year**
- **$290,000** in energy savings/year
- 16 month payback

Sprint has also implemented standards for lighting replacements to ensure energy efficiency lighting upgrades are pursued.

Future State: Intelligent Building Systems

Sprint Energy & Building Analytics - SEBA:

SEBA analyzes the building automation system to identify energy and operational savings.



Energy & Building Optimization

- Energy Savings
- Remote Operation/Scheduling
- Diagnostics/Programming/Dispatch
- Site Optimization

Workflow Management

- CMMS Data
- Operating Data

Data Analysis

- Fault Detection Rules
- Advanced Analytics
- Predictive Modeling

Data Visualization

- Dashboards
- Performance Reports

Additional Resources

U.S. DEPARTMENT OF ENERGY

For More Information

- Sprint
  - Better Buildings Challenge Partner Profile
  - Implementation Model: Corporate Goal is a Catalyst for Custom Efficiency Strategies for Office, Retail and Data Assets
- Institute for Market Transformation
  - Green Lease Leaders
- Seventhwave
  - Technology Profiles
  - HPB Magazine: 749 University Row: Madison, Wis. How Development Pays Back

Q & A

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One energy team from Whole Foods Market.

One energy team from Hilton Worldwide.

Swap buildings, in San Francisco, CA.

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Additional Questions? Please Contact Us

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