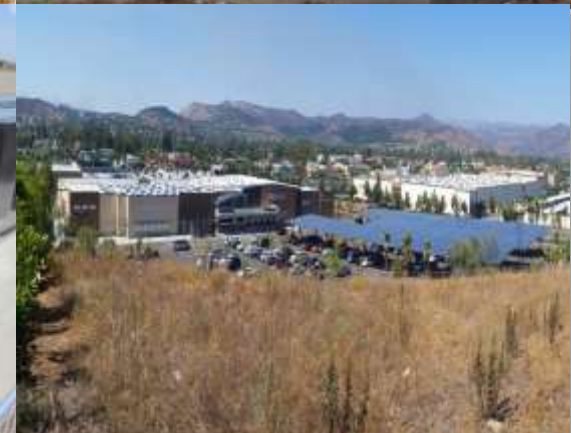


Walmart Energy

September 2015



Walmart

- Walmart Facilities Globally
 - Total Retail Units as of July 31 2015 – 11,532
 - Walmart U.S. – 4,588
 - Sam's Club – 651
 - Walmart international – 6,293
- Walmart employees more than 2.2 million associates around the world, including 1.4 million in the U.S. alone.



Walmart's Sustainability Goals

- To be supplied 100% by renewable energy.
- To create zero waste.
- To sell products that sustain people and the environment.

Renewable Energy & Energy Efficiency Goals

Walmart is on the path to being supplied by 100% renewable energy

Commitment 1: scale renewables



Drive the production or procurement of 7 billion kWh of renewable energy globally by December 31, 2020—an increase of over 600% versus 2010

Commitment 2: accelerate efficiency



By December 31, 2020, reduce the kwh/sqft. energy intensity required to power our buildings around the world by 20% versus 2010

Developing 2020 Vision for Energy Efficiency and Renewable Energy

- Drive innovation, scale, and lower cost
- Think Globally
- Two pronged attack:
 - Install renewable generation.
 - Reduce electrical usage through energy efficiency and load management.

Walmart Invests Significant Capital in Energy Efficiency



Energy Efficiency

- Daylighting
 - Skylights
 - Electronic Dimming Ballasts
 - Computer Controlled Daylight System
 - Energy Management System



Energy Efficiency

- LED Lighting

Advantages –

- Saves energy (at least 50% compared to metal halide conventional light fixtures, reduces maintenance, provides superior optics, improves illumination, improves lighting distribution, does not contain mercury or lead. LED lights are projected to last at least six years beyond conventional lighting, performs well in cold and produces less heat than fluorescent bulbs (less heat inside refrigeration equipment). LED fixtures provide noticeable reduction in both on and off-site glare.

Interior –

- LED lighting may be used in restrooms, sales floor, produce department, freezer and cooler boxes, food preparation areas, and many refrigerated food cases.

Exterior –

- Used for exterior building signage and security lighting.

Energy Efficiency

- Reduce interior nighttime lighting.
- Occupancy sensors installed in most non-sales areas of the facility.
- Heat reclaim systems from on-site refrigeration equipment.
- High efficiency HVAC systems.

Walmart Solar and Wind

Onsite Solar:

- Over 300 sites to date
- Financed through PPAs/leases
- Focus Capital on new stores
- Provide 10%-25% of store load



Onsite & Offsite Wind:

- Red Bluff, CA, DC (1 MW Turbine)
- Logan's Gap TX. 100 MW Wind PPA (Fall 2015)
- AKUO, TX 50 MW Wind PPA (Fall 2016)



Fuel Cells & Battery Storage

Current Status

- 46 sites (42 in CA; 4 in CT)
- Provide 40%-60% of store's electricity
- 42 financed through PPAs



Business Continuity Test Sites

- New Haven, Waterford, CT
- Provides portion of power during outages
- Walmart Owned



Battery Storage

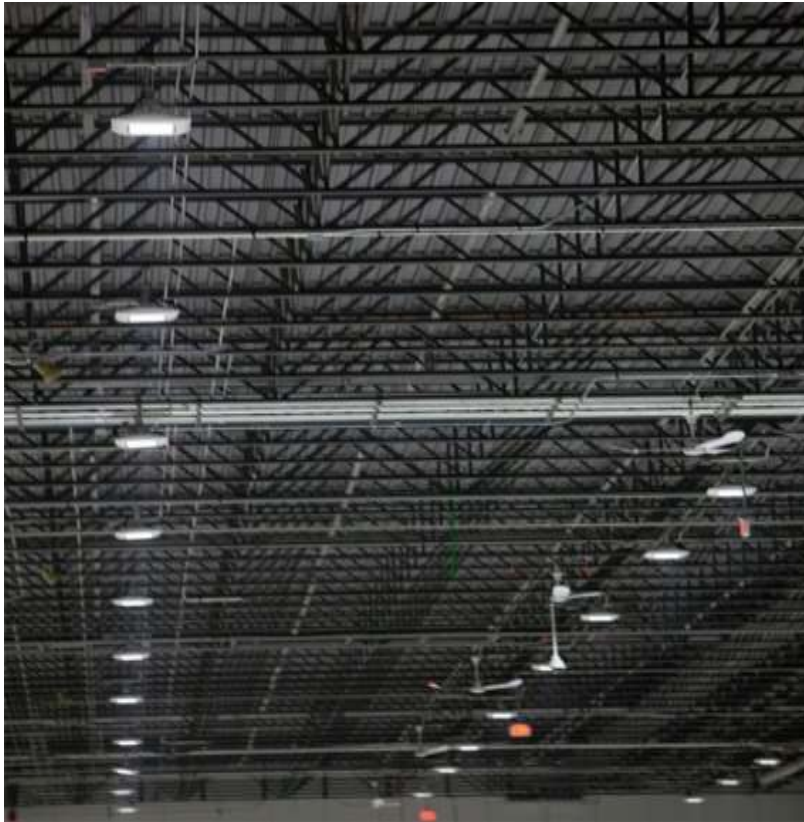
- Utility Peak Savings \$\$\$
- Power Outage Backup
- Utility GRID Support Services
- 11 small 30 KW Battery Pilot
- Up to 9 larger 200 KW Batteries (FY 16)





1 MW Ground Mounted Solar Tracking System at Apple Valley, CA distribution Center

Walmart's Broad Sustainability Goals



Energy Efficiency



Renewable Energy

Renewable Energy

Buckeye, AZ DC – Our Largest Solar System (Completed April, 2012)



System size (all arrays): 3,323 kw
Will generate 5.3 million kWh of electricity annually
Will produce ~30% of the facilities needed electricity

Renewable Energy

Casa Grande, AZ Distribution Center *Carport Concept New in FY 12*



Walmart Canada Roof Mounted Solar Tracking System



Renewable Energy

- **Red Bluff, California: Walmart's first onsite large wind project**
- **Turbine Height:**
 - 265 ft tower height, 250 ft blade diameter –
 - Equal to the height of a 25-story building
- **Electricity Production:**
 - 2,200,000 kWh each year
 - Approx. 15-20% of the DC's yearly electricity usage
 - (equivalent to the annual usage at a Division 1 Walmart store)
- A Power Purchase Agreement allows Walmart to save on utility costs and purchase green energy without requiring up-front capital expense.



Thank You