Energy Management 101

Walgreens & AEP

October 2018 - EEI
Forward-Looking Statements

Certain statements and projections of future results made in this presentation constitute forward-looking statements that are based on current market, competitive and regulatory expectations that involve risks and uncertainties which may cause actual results to vary materially. Except to the extent required by the law, WBA undertakes no obligation to update publicly any forward-looking statement after this presentation, whether as a result of new information, future events, changes in assumptions or otherwise.

Please see Walgreens Boots Alliance’s latest Annual Report on Form 10-K and subsequent filings with the U.S. Securities and Exchange Commission for a discussion of risk factors as they relate to forward-looking statements.
Outline

- Energy Management at Walgreens
- Importance of Energy Company Partnerships
  - Case Study: Rates
  - Case Study: Business Continuity
  - Case Study: Efficiency
  - Case Study: Data Management
Our Growing Global Presence

*Countries where the Company’s products are available for purchase or there are Company franchises (other than those countries where there are owned businesses, equity method investments or joint ventures)

As of August 31, 2018
Two great retail pharmacy brands: Walgreens and Duane Reade

9,560* drugstores in 50* states, the District of Columbia, Puerto Rico and the US Virgin Islands

Approximately eight* million instore and online daily customer interactions each day

One of the largest drugstore chains in the U.S.
At Walgreens Boots Alliance we have the ability to drive large-scale initiatives and positively impact our environment, which is why we aim to protect it and do our part to help ensure it flourishes for future generations.

-Walgreens Boots Alliance CSR Report, 2017
Our energy reduction strategy objectives are to:

**Engagement:** Create a culture where team members are empowered to take the lead in reducing our energy dependency.

**Efficient Technology:** Deploy and invest in efficient technology that reduces energy and resources and benefits our environment.

**Energy Supply:** Take a proactive, strategic lead to make smarter agreements that will benefit People, Planet and Profit.
Engagement

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Efficiency - Process

Group Procurement  
Engineering  
Finance & Accounting  
Legal  
Cost Mgmt  
Operations  
CSR  
EnergyCare  
StoreCare  
One Plan  
Projects

Number of locations
Financial filters
Operational filters
Eligible

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Efficiency Programs*

LED Exterior
Reduce exterior lighting load by up to 70%

HVAC
25%

LED Interior
Reduce interior lighting load by up to 50%

Refrigeration
20%

Plug Load
20%

EMS integration across all systems to improve building performance over time

Lighting
25%

*Efficiency Programs

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HVAC Efficiency
Accelerate HVAC Efficiency Program to offset years of deferred investment

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Refrigeration
As a member of the CGF, Walgreens Boots Alliance has pledge its commitment to the group’s second Refrigeration Resolution as well its other resolutions and commitments on environmental sustainability, social sustainability and health and wellness.

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*Savings targets and energy load breakdown are based on a Walgreens typical store and may vary based on geographic region and store format.
Supply
Importance of Energy Company Partnerships

What Energy Companies Offer:

National Customer Program – Single point of contact
Rate or Tariff choices
Voltage & Service choices
Billing options
Energy Efficiency incentives
Energy Lexicon Highlights

**Kilowatt Hour**: (kWh) A quantity of electricity designated as 1000 watts of power used over a period of one...similar to the odometer on your car which measures miles traveled.

**Kilowatt Demand**: (kW) The rate that electricity is consumed and typically is measured in a fifteen minute interval. It is not an instantaneous measurement within a fraction of a second...similar to the speedometer of your car that records the rate at which miles are traveled.

**Basic Charge or Customer Charge**: A base charge for an account, regardless of energy consumption.

**Minimum Billing**: With a rate selection for billing, there may be a minimum charge which could be applied on a monthly or annual basis.

**Ratchet Charge**: This is a way to calculate current demand charges based upon previously set peak demands, that depends on your rate schedule or actual usage.

**Fuel Adjustment**: Typically a pass through expense based on the type of fuel your energy company utilizes in generation.

**Contract Riders**: A temporary fee or charge, typically based on consumption, that covers an expenditure incurred by the energy company. Or, this can be for contracted service outside the normal filed tariff or rate.
1 cubic foot (cf) = 1,000 BTUs
1 ccf = 100cf = One Therm
One Therm = one hundred cubic feet or one Ccf.
Mcf = one thousand cubic feet = ten Ccf
Mmbtu = one thousand cubic feet = one Mcf = one million btus = 1 Dekatherm
1 watt = 3.413 btu/h
1 hp = 2545 btu/h
1 hp = 746 kW
1 Mcf = one million btus
5.8 Mcf in a barrel of oil
25 Mcf in a ton of big sandy coal (12,500 btus per pound)
293 kWhs in one Mcf (at resistance heat value)
1760 kWhs in one barrel of oil
4.16 barrels of oil in a ton of coal
Rate Structures

- General Service
- Demand Based
- Seasonal
- Time of Day
- Real Time
- Curtailment
- Renewable
All about the details....

- Rate Comparisons
- Reports showing demand variances
- Cash deposits on electric accounts.....substitute ILOC or Surety Bond?
- Rates/tariff schedules for your accounts.....be familiar with how they are structured
Case Study: Rate Review

• Best Practices
  • Annual rate reviews with national accounts or 3rd party supplier
  • Evaluate tariff impacts from efficiency programs and other operational changes
  • Activate alarms for bill errors and usage anomalies using utility bill management
    - Find the right metric for your organization
  • Understanding tariff activity to your annual budgets

There are savings opportunities from proactively monitoring rates. Optimizing rates and tariffs can yield six figure savings opportunities.
Understanding Load Factor

- **Load Factor** – The ratio of electricity consumed measured in kWh divided by the maximum amount of energy used at peak demand (kW) in every hour of a billing cycle.

\[
\text{Load Factor} = \frac{\text{Kilowatt hours measured}}{\text{Peak kW demand} \times 24 \text{ hours in a day} \times \# \text{ days in the billing period}}
\]

- Quantity is always a percentage.
- Factors are referred to as “high” or “low”, depending on the quotient.
Understanding Power Factor

• Power Factor – Power consumed in inductive or capacitive loads that requires specialized metering to measure in terms of kVAR (reactance).

• Based on this calculation with metered demand (kW) an adjustment may occur on your bill.

• In some situations customers capture data with kW, but the energy company provides kVA. This will take a conversion to calculate for billing.
Causes of Poor Power Factor

- Inductive loads present in circuits.
- Equipment – motors, ballasts and other machinery that contains magnetic wiring coils to induce load.
- Inductive loads can be brought into a lagging scenario with capacitors added to a circuit.
- Capacitors can be installed at equipment locations, sub-panel locations or at the service entrance to correct the variance.

Work with your energy company on these issues
Reliability of a circuit is measured and reported to respective state commissions in three main calculations:

- **SAIDI** – System Average Interruption Duration Index (The average outage duration for each customer served).
- **SAIFI** – System Average Interruption Frequency Index (The average number of interruptions that a customer would experience).
- **CAIDI** – Customer Average Interruption Duration Index (SAIDI/SAIFI, which gives the average outage duration that any given customer would experience.....also viewed as the average restoration time).
Power Quality problems

- 80% of Power Quality issues are caused internally
- Customer issues for poor power quality –
  - Start/Stop of sensitive equipment
  - Harmonics & transient voltage
  - Wiring or grounding errors
  - Overloaded circuits
  - Incorrectly sizing equipment
Causes of service interruptions

• Weather
• Trees in ROW (right of way)
• Trees outside of ROW
• Trees anywhere NEAR ROW (jk)
• Car Hit a Pole
• Animal contact
Case Study: Business Continuity – Power Quality

• Best Practices
  
  • Leveraging power quality data, where available, to make business decisions that impact your operations
    - Go/ No Go investment in UPS
    - Engineering support to evaluate solutions
  
  • Negotiate planned outages with your account manager to minimize impacts to your customers and team members

Leverage free resources by partnering with your account manager to understand root causes of system power quality issues and impacts to your operations.
What is your plan for a major storm impact?

- Corporate level –
  - Communication plan

- Energy company account manager contact information

- Location information accurate with energy company

- Back up generation plan, electrician, quick connect, etc…
What is your plan for a major storm impact?

• Store level -
  • System check plan -
    • Check breakers.
    • Report outage to energy company.
    • Activate corporate emergency communications plan.
  • Be prepared for days versus hours for restoration.
    • Keep in mind, energy companies must assess the damage first before identifying realistic restoration time frames.
Case Study: Business Continuity – Storm Recovery

• Best Practices
  • Have a plan – Partner with Business Continuity or Disaster Response and Recovery teams to set expectations
  • Share the plan with your account managers. We are all here to serve our communities.

Walgreens helped customers access essential medications by reminding patients of special refill rules during a state of emergency, setting up mobile clinics and staffing shelters with pharmacists to assist evacuees in some areas.
Case Study: Energy Efficiency

• Best Practices
  • Engage utility account managers early
    - Understand requirements and prioritize execution accordingly to maximize in year savings
  • Attend EEI to keep up to date on industry trends, conduct peer benchmarking, and find quality partners experienced with national accounts

In the U.S., 264 Walgreens stores were retrofitted with exterior LED lighting during fiscal 2017, and more efficiency and right-sized HVAC units were installed at 496 stores.
Case Study: Data Management

• Best Practices
  • You can’t manage what you can’t measure. Centralizing utility and energy data is key to identifying and validating energy savings.
  • Garbage in, garbage out. Establish data quality metrics and methods to ensure credible analyses.
  • Align on unique identifier to manage multi-site portfolio (e.g. store numbers) with key partners.

Through our energy goal we are committed to doing our part to help mitigate global warming by measuring our direct and indirect emissions, working to reduce energy use in our buildings and stores and promoting the use of energy from sustainable sources.
Key Takeaways

For Energy Managers

• Get to know your account managers – **ATTEND THE MEET AND GREET TOMORROW**
• You are not alone! EEI is a huge support system – **ATTEND THE MEET AND GREET TONIGHT**

For Utilities

• Be an extension of the Energy team – look for cost savings and operational efficiencies
• Understand customer’s business and storm recovery plan

For Trade Allies

• Understand customer’s goals and objectives
• Understand customer’s internal and external barriers
• Be the expert
  • Be honest and forthcoming about your strengths and weaknesses
• Plan for a long road ahead – No SPOC / Decision Maker
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