






# Seize the Day- Using Building Milestones as Energy Efficiency Opportunities

October 6, 2015  
3:00-4:00 PM ET

# Overview and Agenda

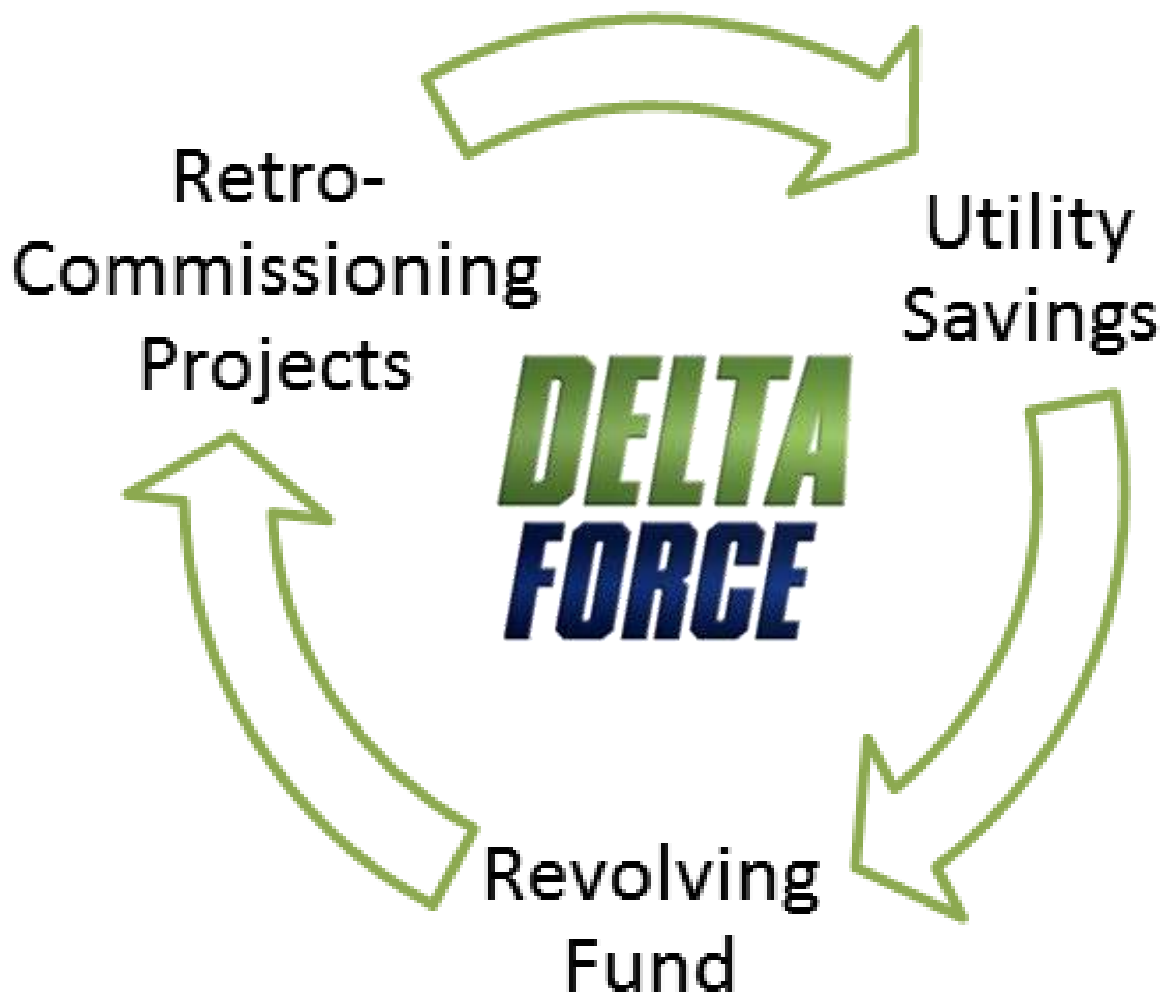
- Welcome and Overview
- University of Virginia
- City of Hillsboro, OR
- Arby's Restaurant Group
- Additional Resources
- Question & Answer Session

# Today's Presenters

Name		Organization
Jesse Warren		University of Virginia
Peter Brandom		City of Hillsboro, OR
Frank Inoa		Arby's Restaurant Group

**Jesse Warren**

**University of Virginia**



## Turning Building Lifecycle Milestones Into Energy Efficiency Opportunities

Jesse Warren, Sustainability Program Manager – Buildings & Operations

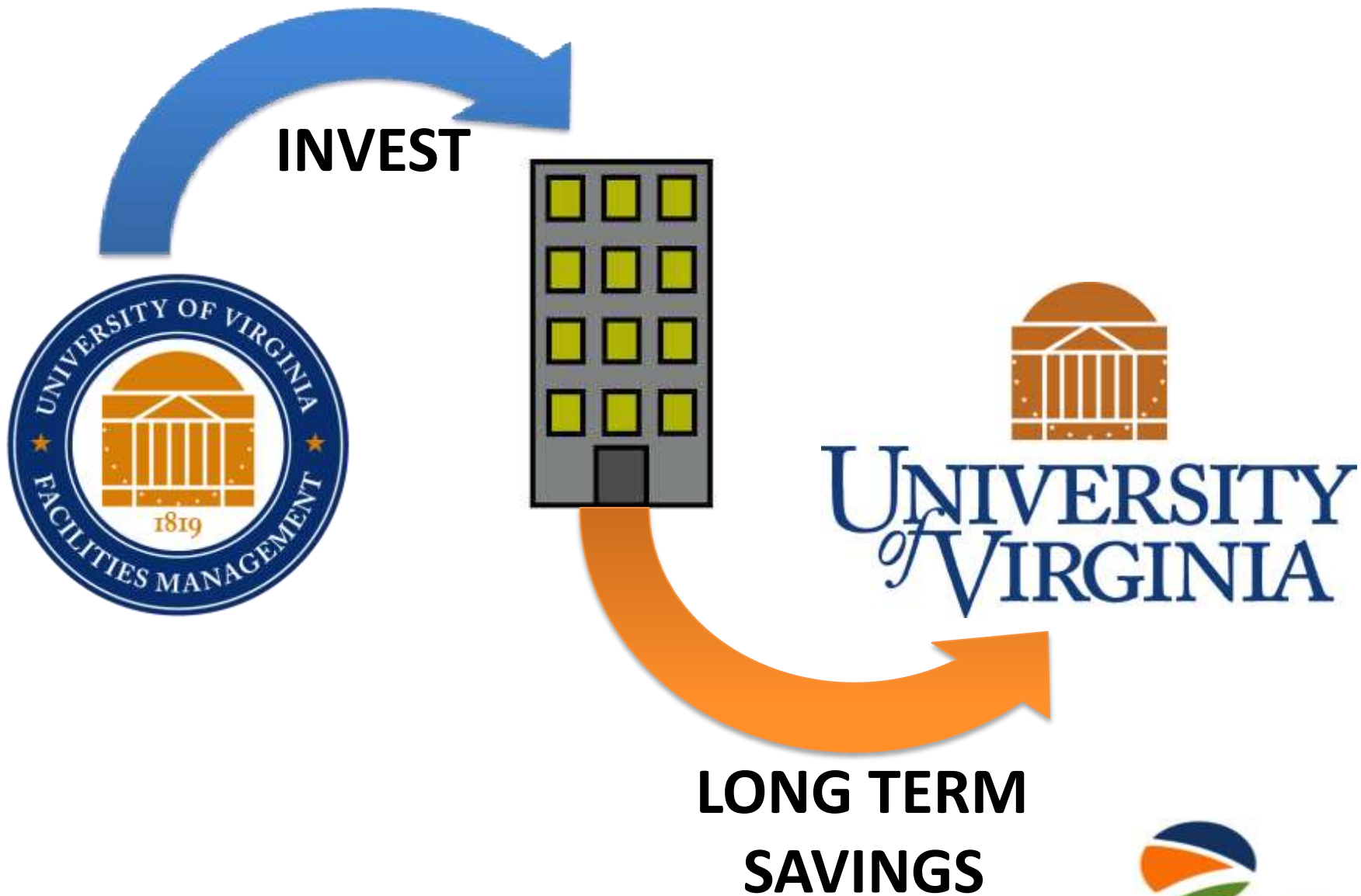
Better Buildings Webinar Series

October 6, 2015

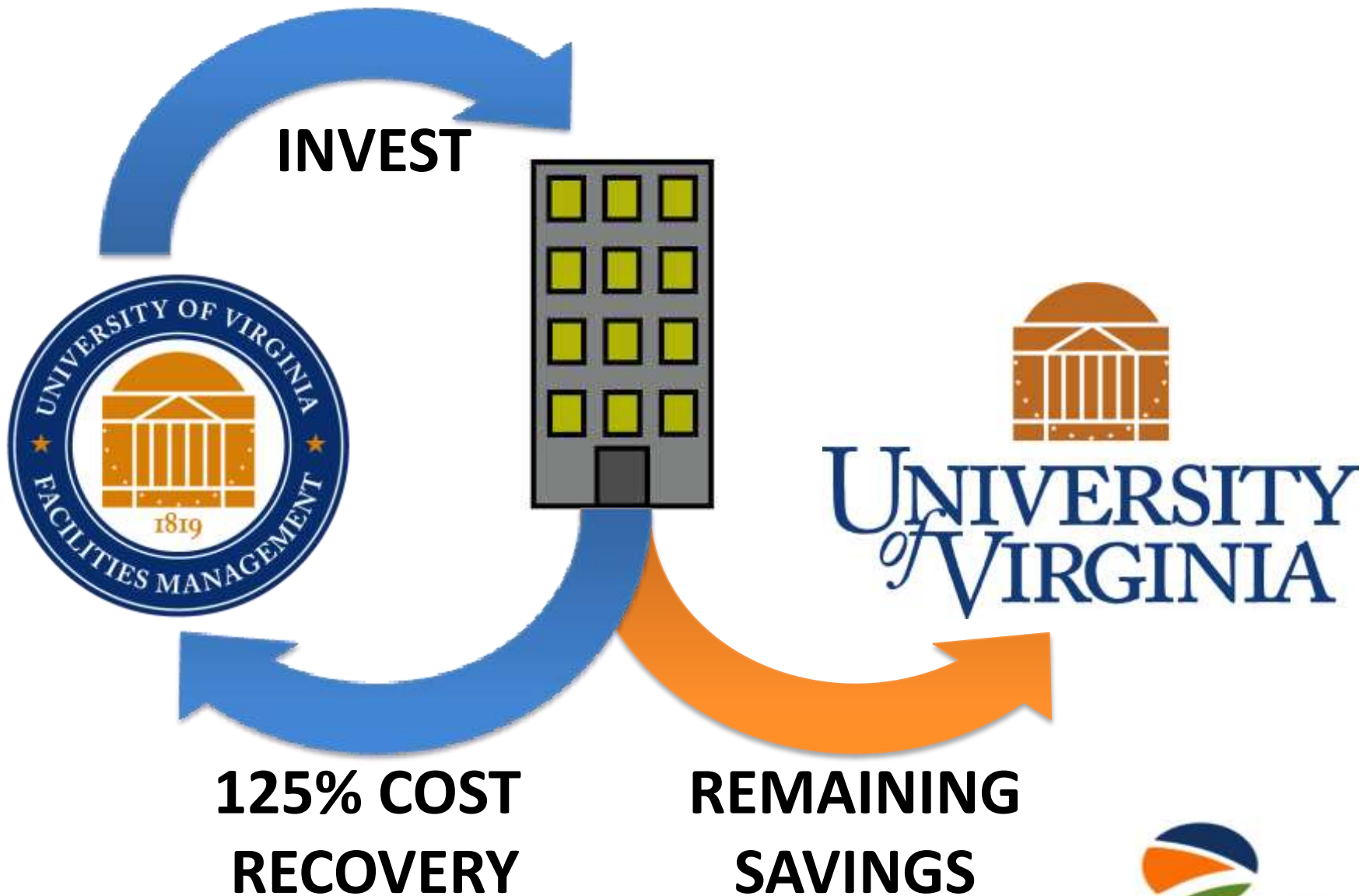
# Office For Sustainability



# The Problem



# The Solution





# Bryan Hall



# Bryan Hall Relamping



L-PRIZE®  
WINNER



SUSTAINABILITY · UVA

# Bryan Hall

## Repair Insulation and Add Insulating Jackets

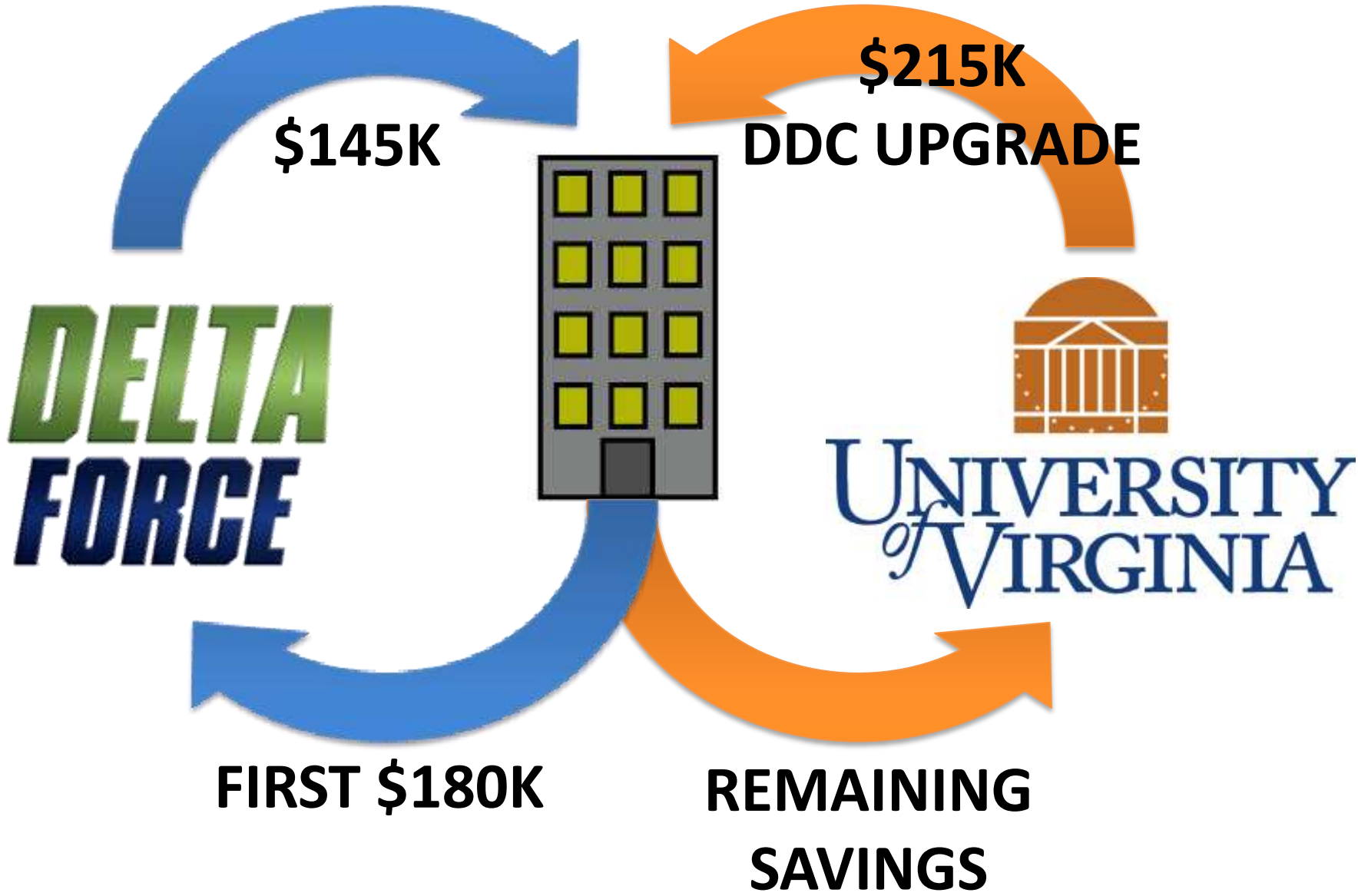


# Bryan Hall

## Upgrade to Digital Controls

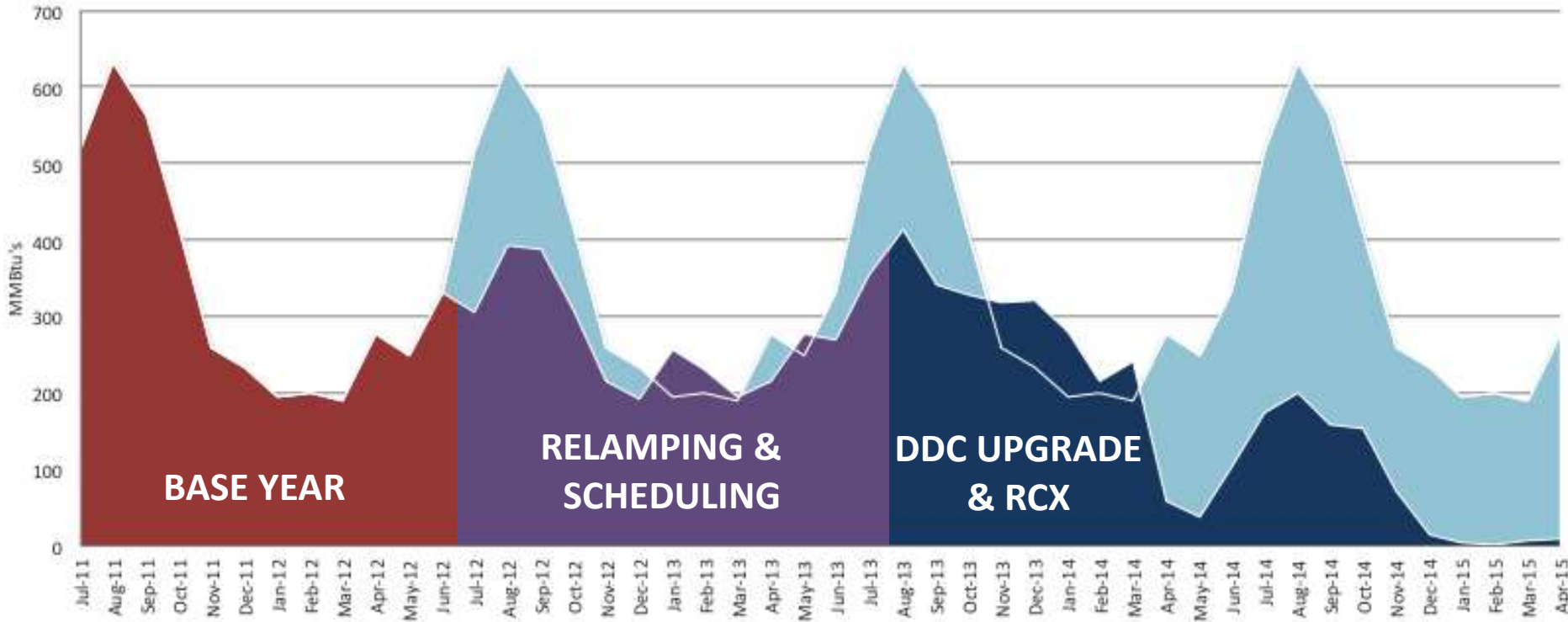


# Bryan Hall Funding



# Chilled Water Use

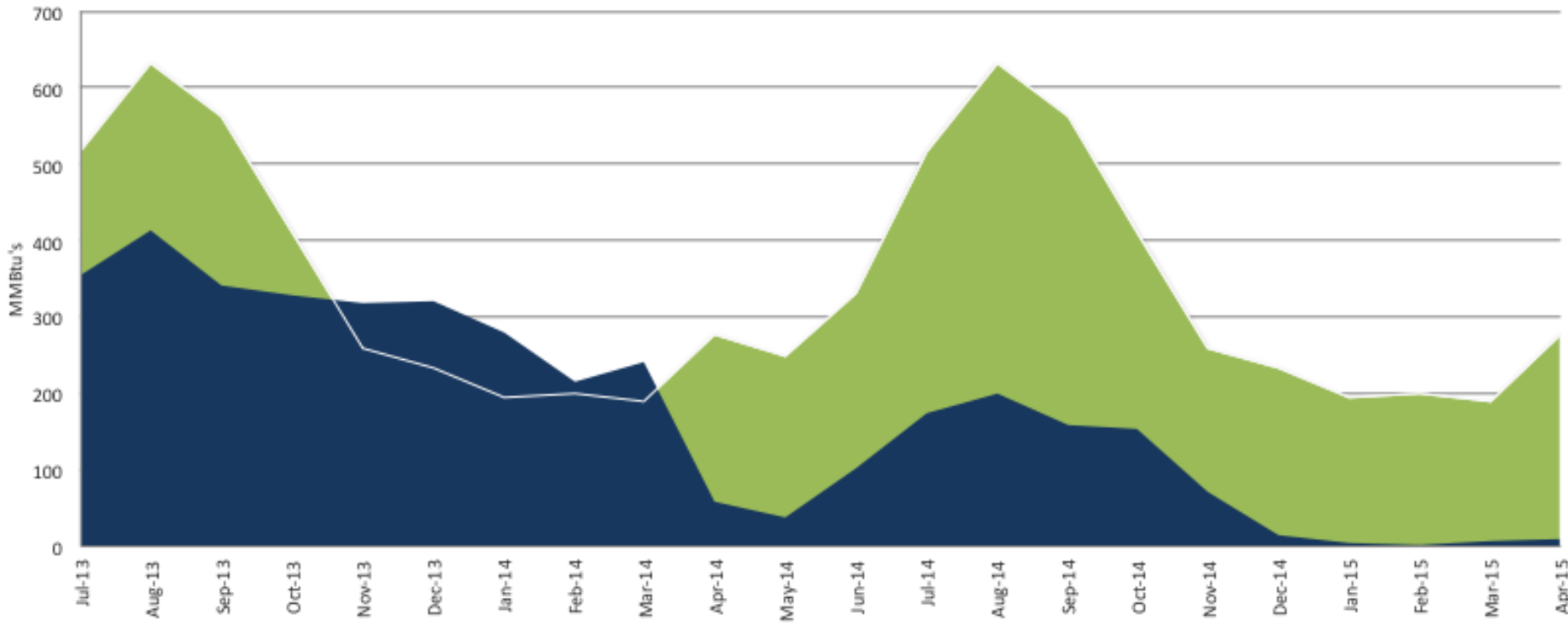
### Chilled Water Use at Bryan Hall



# Chilled Water Use

## Over 75% Reduction Last Year

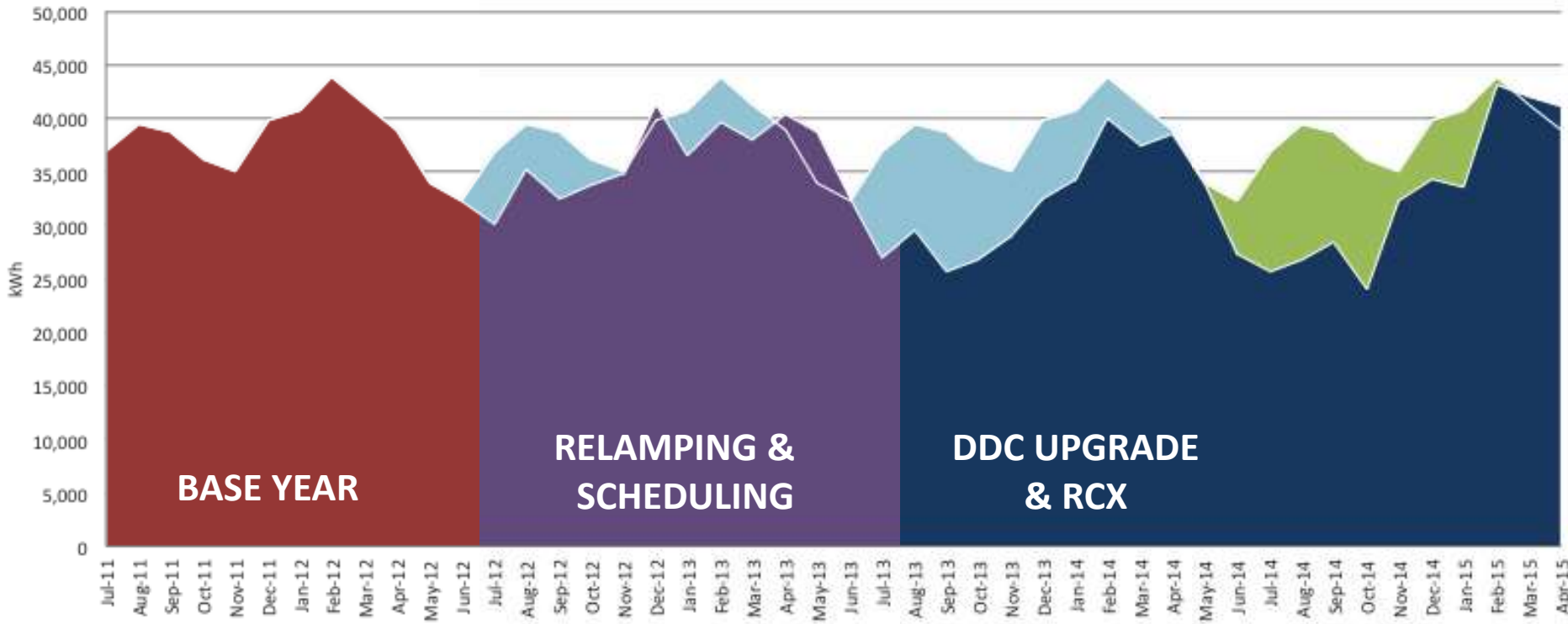
Chilled Water Use at Bryan Hall



# Electricity Use

14% Reduction Last Year

### Electricity Use at Bryan Hall

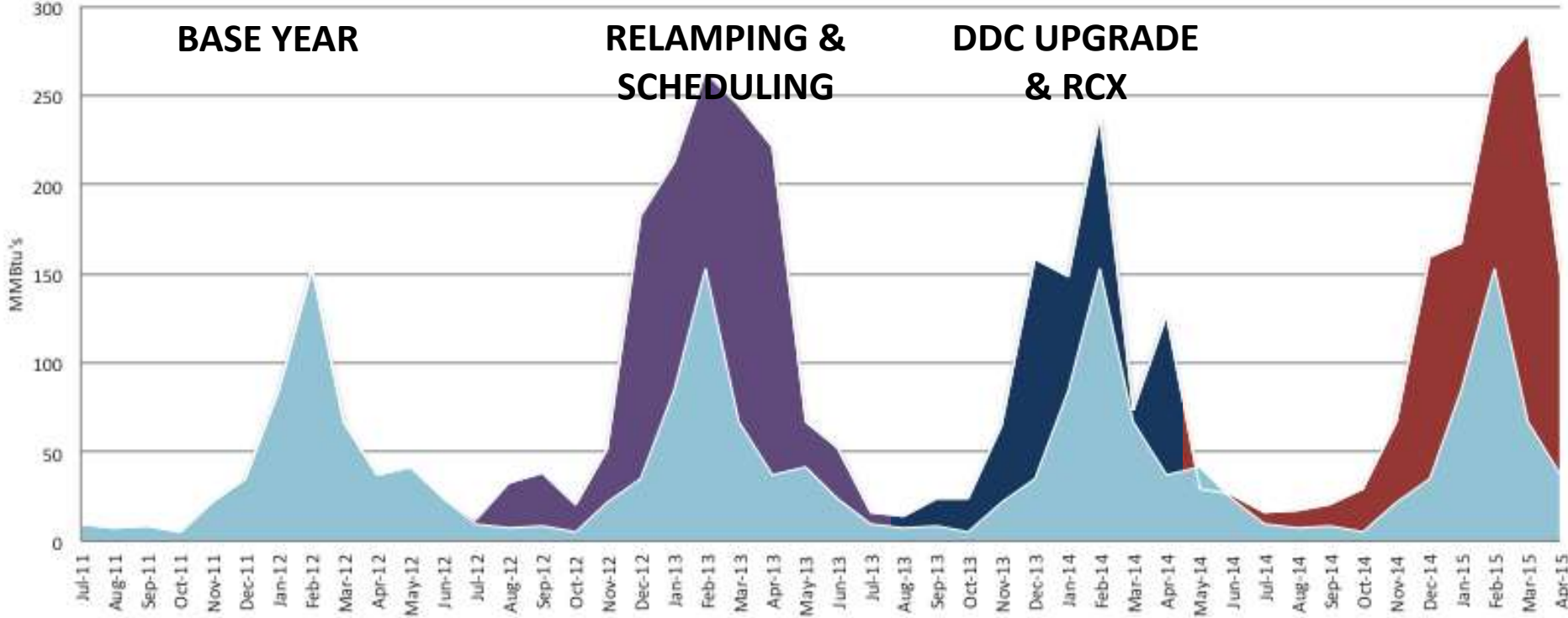




# Heating Hot Water Use

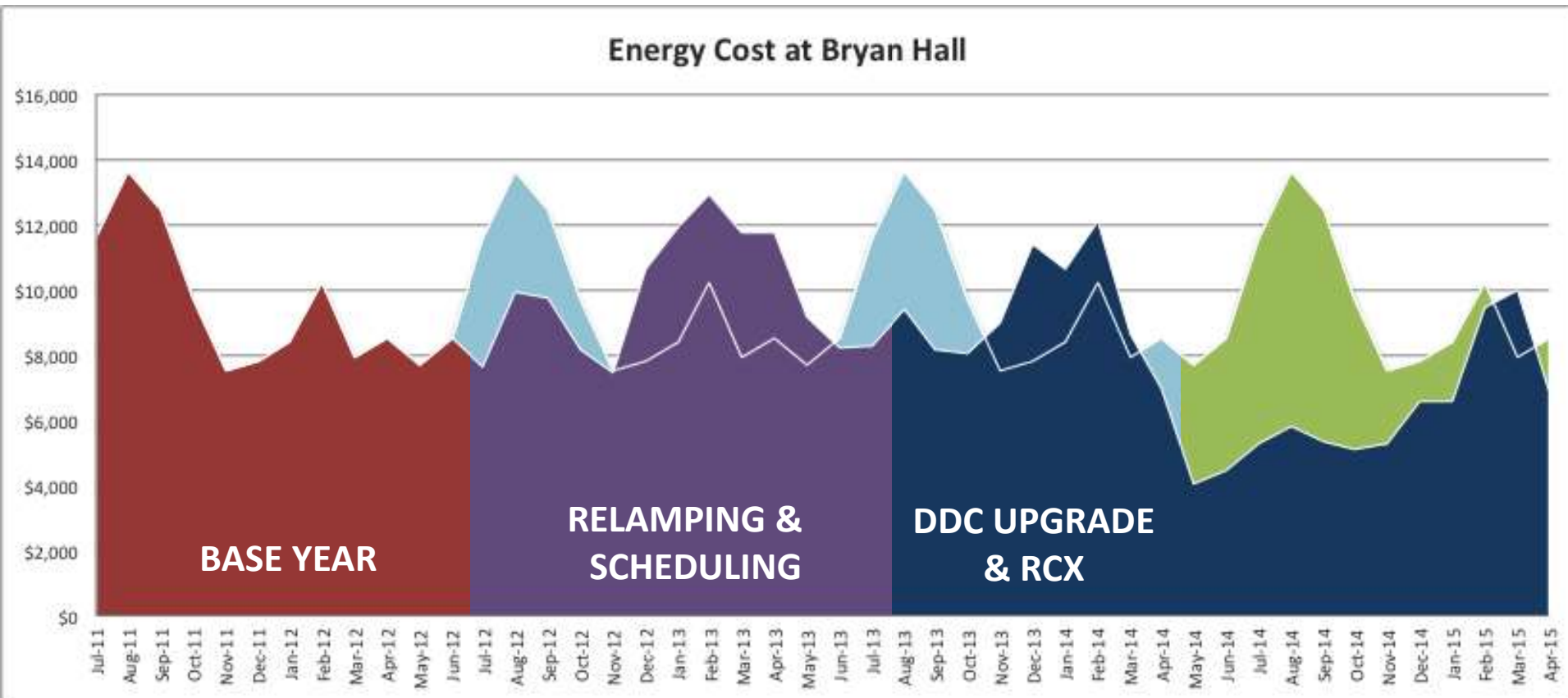
150% Increase Last Year

Heating Hot Water Use at Bryan Hall



# Energy Cost

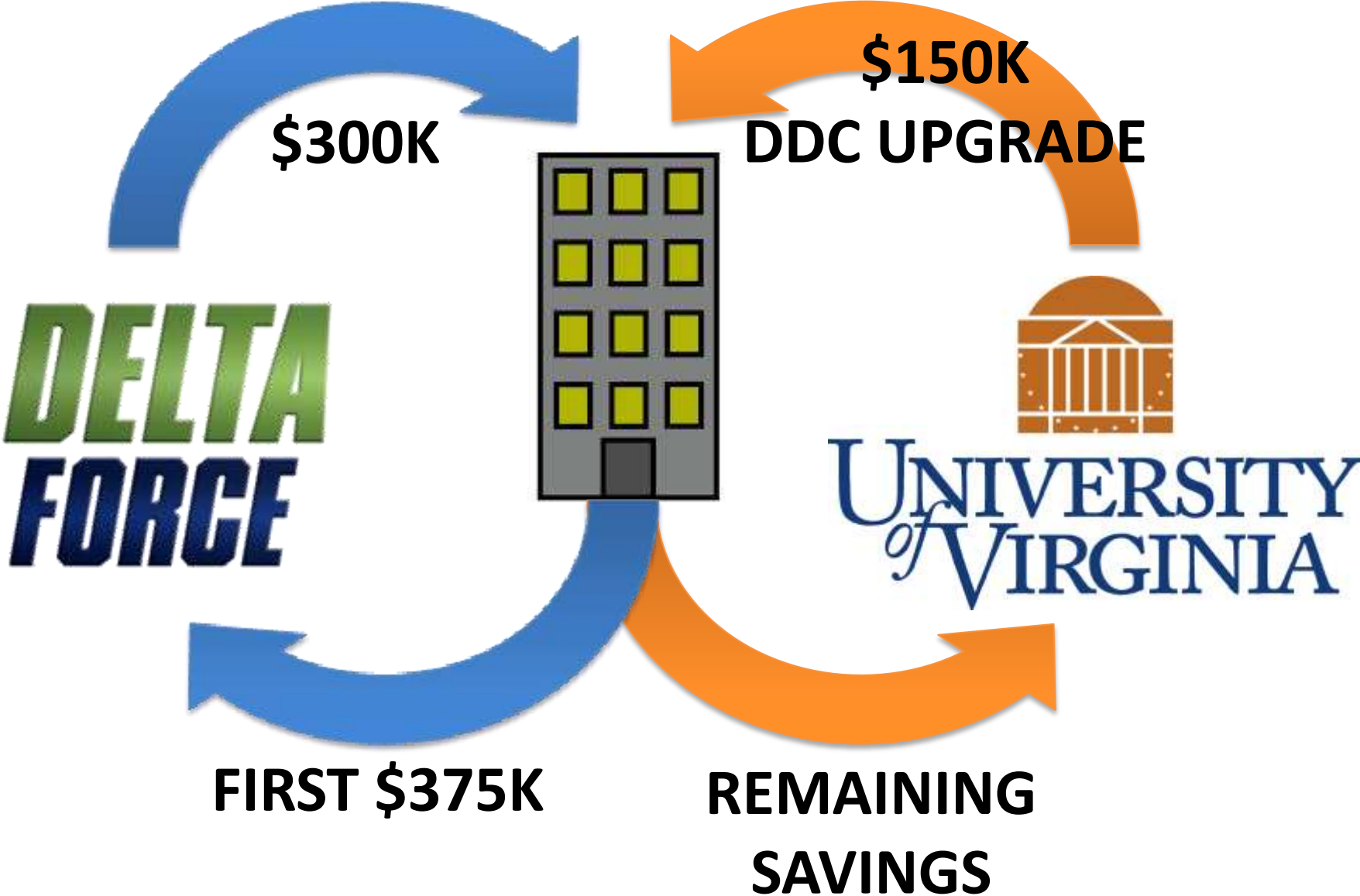
\$38k (34%) Reduction Last Year



# Clark Hall



# Clark Hall Funding



# Building Sustainability

**BUILDING  
OPERATIONS AND  
MAINTENANCE**



*Image: USGBC*

**DELTA  
FORCE**

**B.O.T.**

**Green Labs »**

*Image: Harvard Office for Sustainability*

UNIVERSITY OF VIRGINIA  
GREEN WORKPLACE  
**PROGRAM**

# Delta Force Update

BUILDING SUSTAINABILITY

## Project Update



500 CFL lightbulbs replaced with T8 bulbs.



Fitted insulation jackets on steam valves.



Installed efficient control valves on water systems.

\*building tracker link

# Questions

**Contact:**

**University of Virginia – Facilities Management  
Office for Sustainability**

<http://www.virginia.edu/sustainability/>

**Jesse Warren, PE, CEM, LEED AP BD+C, O+M**

Sustainability Program Manager – Buildings & Operations

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[jmw4ub@virginia.edu](mailto:jmw4ub@virginia.edu)



**Peter Brandom**

**City of Hillsboro, OR**



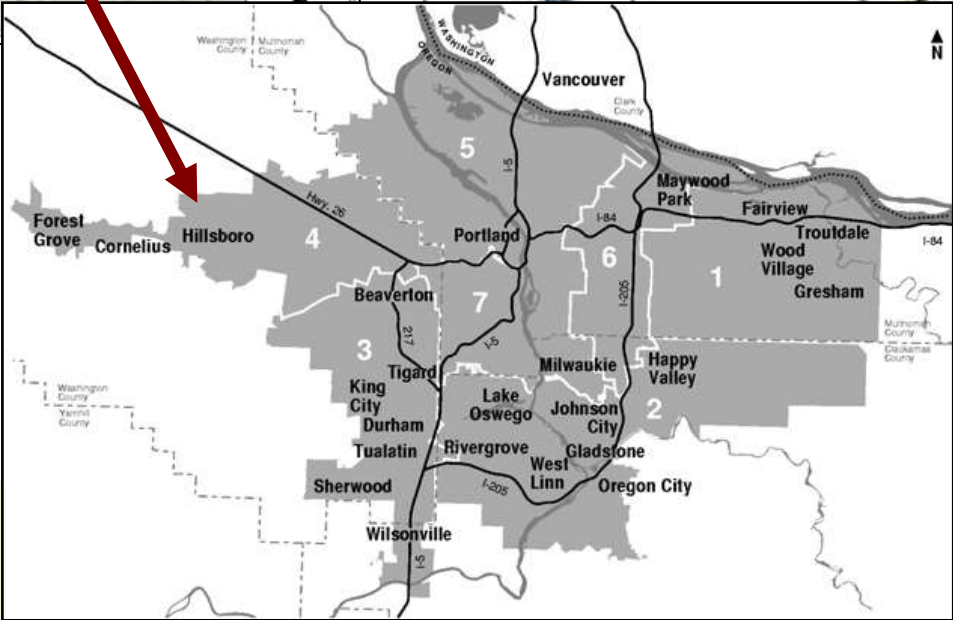
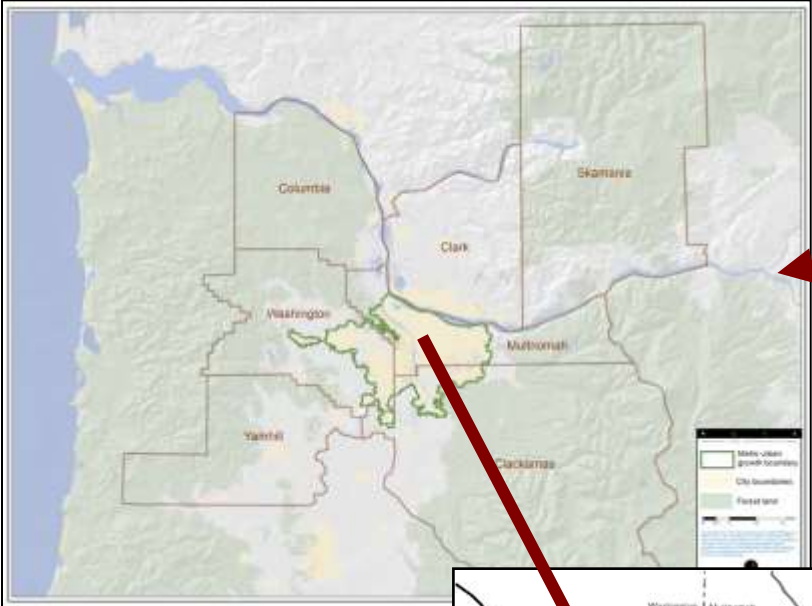


# Energy Efficiency with Building Milestones

Better Buildings Program Webinar October 6, 2015



# Hillsboro, Oregon



# City Portfolio

- 13 departments
  - 800 employees
  - 60 facilities
  - 400 vehicles
  - 4,000 streetlights
  - 30 City-maintained traffic intersections
  - Water treatment and distribution system
- 
- ❖ 565,722 total sq ft
  - ❖ 475,000 sq ft in BBC
  - ❖ 200+ kW on-site renewables
  - ❖ 35 City-installed electric vehicle charging stations



# 2030 Sustainability Goals – City Operations

## Materials management:

- Achieve a rate of construction material consumption that meets internal standards for sustainability
- 100% of all inputs purchased by the City are sourced from sustainable sources or meet internally established criteria (e.g., zero waste, zero toxins) where technologically and financially feasible
- Zero toxic emissions
- 100% recycling of waste from City operations
- Zero construction and maintenance waste (no waste from construction and maintenance activities is sent to landfill). May be accomplished via public/private partnerships

## Policy:

- 100% of City development investments meet a standard set for sustainable development, and City promotes and encourages sustainable development by others
- 100% of applicable City policies incorporate the principles of sustainability
- All city facilities constructed or renovated shall meet current Leadership in Energy and Environmental Design (LEED) standards or equivalent, unless cost prohibitive based on Return on Investment (ROI) or cost/benefit

## Energy and air quality:

- **60% reduced City facility energy consumption per square foot (2007 baseline)**
- **100% of electricity and natural gas sourced from renewable sources for City facilities and exterior lighting infrastructure**
- **80% reduction in greenhouse gas emissions; 100% of remaining emissions offset (2007 baseline)**
- **80% production of energy for City facilities from renewable energy sources**
- 100% fossil fuel-free staff vehicles and 40% reduction for other exempt vehicles (non-passenger emergency response, etc.) [Based on available technologies and cost effectiveness] (2007 baseline)
- **All City facilities zero net energy consumption, if feasible based on Return on Investment (ROI) or cost/benefit analysis**

## Natural Resources:

- **25% reduction in water consumption by City facilities against established baseline (including re-use and other measures) (2007 baseline)**

# Building Milestones

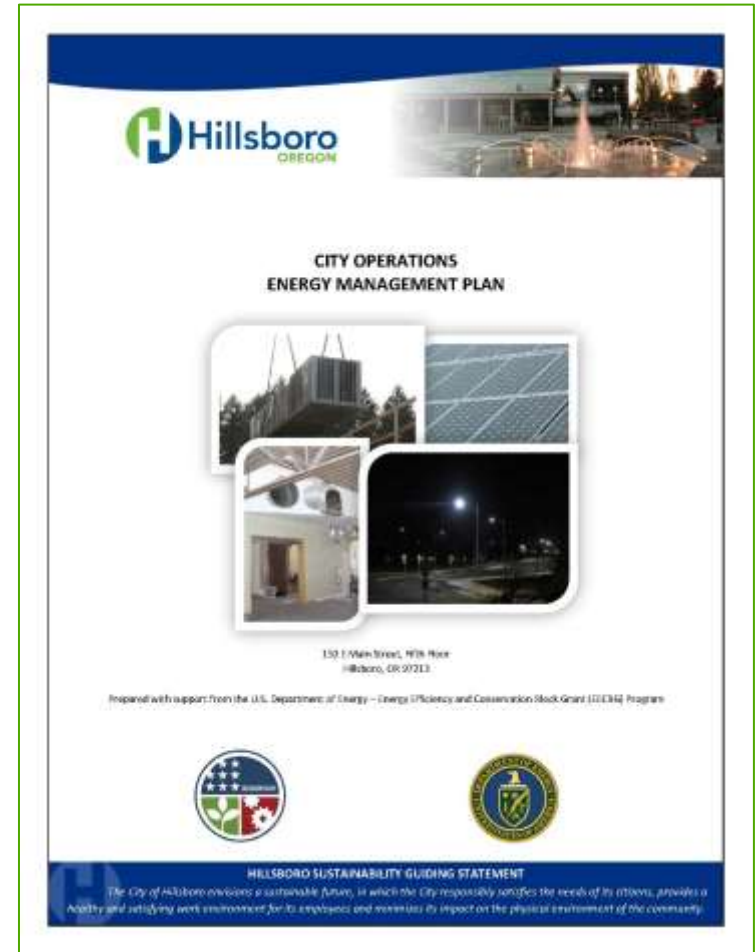
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- New construction & renovation
- Operations & Maintenance
- Related Policy Opportunities



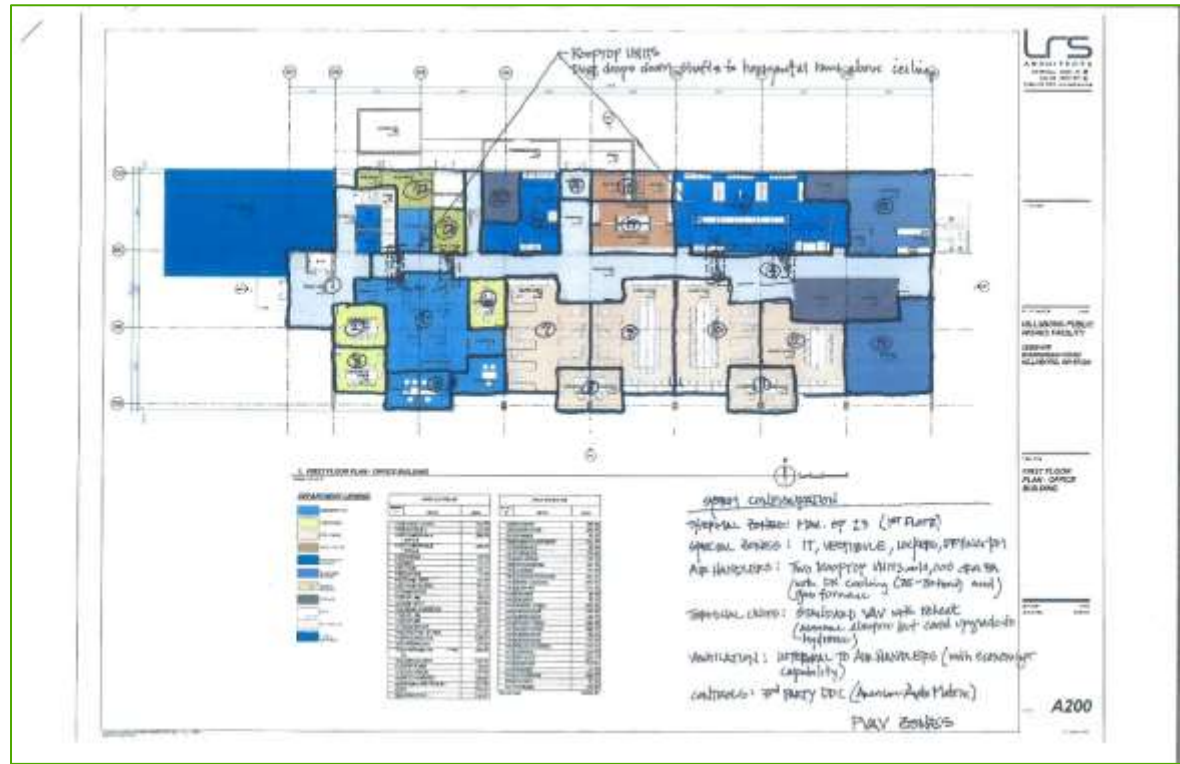
# Milestone – New Construction & Renovation

- Policy
  - LEED useful for design, but...
  - Energy modeling
  - 3<sup>rd</sup> party commissioning



# Milestone – New Construction & Renovation

- Design
  - Must marry designers with operators



# Milestone – New Construction & Renovation

- Renovations (*ren-uh-veyt*)
  - “to restore to good condition; make new or as if new again; repair”
  - “to reinvigorate; refresh, revive”
- Shute Park Library BBC Showcase Project



Before





# Milestone – New Construction & Renovation

- Shute Park Library BBC Showcase Project

After



# Milestone – Operations & Maintenance

- Policy
  - 3<sup>rd</sup> party commissioning
  - *How* buildings are maintained – focus on energy management, occupant behavior
- Operations
  - EMP prescribes process, calendar
  - Controls
  - Data, facility energy use tracking, reporting



# Milestone – Operations & Maintenance

- Seasonal maintenance opportunities
- Shute Park Aquatic Center

**Recreation Center** [Certification](#)

953 SE Maple Street, Hillsboro, OR 97123 | [Map It](#)

Portfolio Manager Property ID: 1630704 | Primarily: **Other - Recreation**

Year Built: 1981

**Current EUI:** 654.1  
*(554.6% higher than median.)*


**Baseline EUI:** 735.6  
*(672.9% higher than median.)*

Summary Details Meters Goals Design

**Notifications (0)**

You have no new notifications.

**Property Profile**

 SHARC offers aquatics including three pools, a spa pool, dry suana, and water exercise classes as well as a full complement of group fitness classes and recreation amenities on land.

**Metrics Summary** [Change Time Period](#)

Metric	Baseline (Jun 2007)	Current (Feb 2015)	Change
ENERGY STAR score (1-100)	<a href="#">Not Available</a>	<a href="#">Not Available</a>	N/A
Source EUI (kBtu/ft <sup>2</sup> )	748.3	633.7	-114.6(-15.3%)
Site EUI (kBtu/ft <sup>2</sup> )	482.8	397.9	-84.9(-17.6%)
Energy Cost (\$)	280,123.74	212,983.51	-67140.23(-24.0%)
Total GHG Emissions (Metric Tons CO <sub>2</sub> e)	1,413.6	1,186.1	-227.5(-16.1%)

# Milestone – Related Policy Opportunities

- Dark sky and energy efficient lighting



# Additional Segment – Implementation Model

The screenshot displays the Better Buildings Challenge website for the City of Hillsboro. The page features the following content:

- Header:** Better Buildings CHALLENGE U.S. DEPARTMENT OF ENERGY logo on the left; U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy logo on the right.
- Section Header:** COMMUNITY PARTNER
- Navigation:** Home, Partners, Allies, Media, About, Contact, and a search bar.
- Page Title:** Home » City of Hillsboro, OR (il)
- Main Content:**
  - CITY OF HILLSBORO:** A photograph of a suburban town with mountains in the background.
  - Implementation Model: Sustainability Revolving Fund:**
    - COMMUNITY SIZE:** Small suburban, population 93,000
    - GOAL:** To achieve a 60% reduction in City facility EUI by 2030, based on a 2007 baseline
    - BARRIERS:** Inconsistent access to capital for energy efficiency projects
    - SOLUTION:** Creation of Sustainability Revolving Fund (SRF), a dedicated internal fund established to finance projects that address one or more goals in the City's Sustainability Plan
    - OUTCOME:** The fund has provided more than \$45,000 to support five projects that will produce an estimated \$24,000 in annual cost savings; it has also served to advertise the benefits of the sustainability program to City employees, increased awareness of the savings potential

The browser's taskbar at the bottom shows the Windows Start button, several open applications (HillPAWC, Project Management, Microsoft Office, Microsoft PowerPoint), and the City of Hillsboro website. The system tray indicates the time is 8:06 AM.

# Thank You

*“The City of Hillsboro envisions a sustainable future, in which the City responsibly satisfies the needs of its citizens, provides a healthy and satisfying work environment for its employees and minimizes its impact on the physical environment of the community”*

[peter.brandom@hillsboro-oregon.gov](mailto:peter.brandom@hillsboro-oregon.gov)

[hillsboro-oregon.gov/sustainability](http://hillsboro-oregon.gov/sustainability)



**Frank Inoa**

**Arby's Restaurant Group**

# ARBY'S EFFICIENCY MATTERS BEHAVIOR-BASED INITIATIVES

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## **Behavior-Based Efficiency**

Estimated \$769 annual per store savings

## **Hot Water Temperature Management**

10° adjustment can yield \$167 savings per year





# ARBY'S EFFICIENCY MATTERS LOW COST INITIATIVES

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## **Gaskets**

*Can help save up to \$150 on electricity bills per year*

## **Hot Water Temperature Management**

*10° adjustment can yield \$167 savings per year*

## **Low Flow Aerators**

*Estimated \$427 annual per store savings*

## **Pre-Rinse Spray Valves**

*Inexpensive installation pays for itself in less than 1 year*

## **Programmable Thermostats/Asset Management Systems**

*Estimated \$1,700 savings possible per year*

## **Electronically Commutated Motors**

*New specification and low cost retrofit for walk-ins*

## **Vinyl Strip Curtains**

*Save 10% on walk-in energy usage*



# ARBY'S EFFICIENCY MATTERS LONG-TERM INVESTMENTS

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## **Low Oil, Energy-Efficient Fryers**

*Save up to 49% on energy*

## **Lighting Upgrades: Neon to LED Banding**

*Save up to \$2,500+ in utilities, \$2,000 on maintenance*

## **Lighting Upgrades: Interior Lighting T12 to T8 Conversion**

*Save approximately 50% on lighting-related energy bills*

## **Roofing (White)**

*Earn 5% rebate and reduce energy consumption by 40%*



## ARG ENERGY GOALS & SAVINGS (2011 BASE LINE)

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### GOALS

15% Reduction in Total Energy Consumption in Company-Owned Restaurants by the end of 2015 (Arby's Efficiency Matters)

20% Reduction in Total Energy Consumption in Company-Owned Restaurants by 2020 (DOE's Better Buildings Challenge)

### CURRENT SAVINGS (EOY 2014)

11% Reduction in Total Energy Consumption

10% Reduction in Total Energy Costs



## PARTNERSHIPS/AFFILIATIONS

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ecova®

 **Powerhouse**  
*Dynamics*

 **Better Buildings**  
**CHALLENGE**  
U.S. DEPARTMENT OF ENERGY



# Additional Resources

# For More Information

- University of Virginia
  - <http://sustainability.virginia.edu>
  - <http://betterbuildingsolutioncenter.energy.gov/partners/university-virginia>
- City of Hillsboro, OR
  - [www.hillsboro-oregon.gov/sustainability](http://www.hillsboro-oregon.gov/sustainability)
  - <http://betterbuildingsolutioncenter.energy.gov/partners/hillsboro-or>
- Arby's Restaurant Group
  - [www.arbys.com/corporate-responsibility](http://www.arbys.com/corporate-responsibility)
  - <http://betterbuildingsolutioncenter.energy.gov/partners/arby%E2%80%99s-restaurant-group-inc>

# Q & A

# Join us for the next Better Buildings Webinar

**Registration is now open!**

**November 3, 3:00 – 4:00 PM ET**

**Taming the Energy Hog: What Every Organization Should Know to Address Data Center Energy Use**

Think you are not an IT company? Think again. As sales move online, email archives grow, and more information is collected and stored, many organizations are seeing dramatic increases in energy use from data centers. Attend this webinar to learn how Better Buildings Challenge and Accelerator partners are forming partnerships within their organizations and implementing measures to dramatically reduce data center energy usage.

Register [here](#).



# Join us for the Better Buildings Alliance Annual Open House

**Registration is now open!**

**October 19, 2:00 – 3:00 PM ET**

## **Better Buildings Alliance – Annual Open House**

Join us for an overview of the new energy efficiency resources and upcoming opportunities available this year through the U.S. Department of Energy's Better Buildings Alliance. We'll present the hot topics each sector group (Commercial Real Estate, Healthcare, Higher Education, Hospitality, Retail/Food Service/Grocery) has selected to address this year and highlight the latest from the Technology Solutions and Market Solutions teams. Learn about new solutions that can help reduce energy costs for your organization. Open to existing members and interested organizations.

Register [here](#).

# 2016

# SAVE THE DATE

## BETTER BUILDINGS SUMMIT

WASHINGTON, DC ■ MAY 9-11



# Additional Questions? Please Contact Us

[betterbuildingswebinars@ee.doe.gov](mailto:betterbuildingswebinars@ee.doe.gov)

<b>Today's Presenters</b>	Jesse Warren University of Virginia <a href="mailto:jmw4ub@virginia.edu">jmw4ub@virginia.edu</a>  Peter Brandom City of Hillsboro, OR <a href="mailto:Peter.Brandom@hillsboro-oregon.gov">Peter.Brandom@hillsboro-oregon.gov</a>	Frank Inoa Arby's Restaurant Group <a href="mailto:InoaF@arbys.com">InoaF@arbys.com</a>
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