Better Buildings®
U.S. DEPARTMENT OF ENERGY

Retail, Food Service & Grocery Breakout Session

Monday, May 9th from 2:00 - 3:15 PM
Room: Columbia 09
Level: Terrace

U.S. DEPARTMENT OF ENERGY

Agenda

2:00	Welcome & Introductions
2:30	Program Updates, New Resources & Activities
2:45	Sessions of Interest & Dinner
2:50	Sector Priorities
2:55	Partner Highlights: Havertys, Arby's
3:05	Group Discussion

Welcome & Introductions

Holly Carr
DOE, Partnerships, Retail Sector Lead

Zach Abrams
ICF, Retail Sector Account Manager

Sara Lisauskas
ICF, Retail Expert

Sultan Latif
DOE, Food Service & Grocery Sector Lead

Nyla Khan
ICF, Food Service & Grocery Sector Account Manager

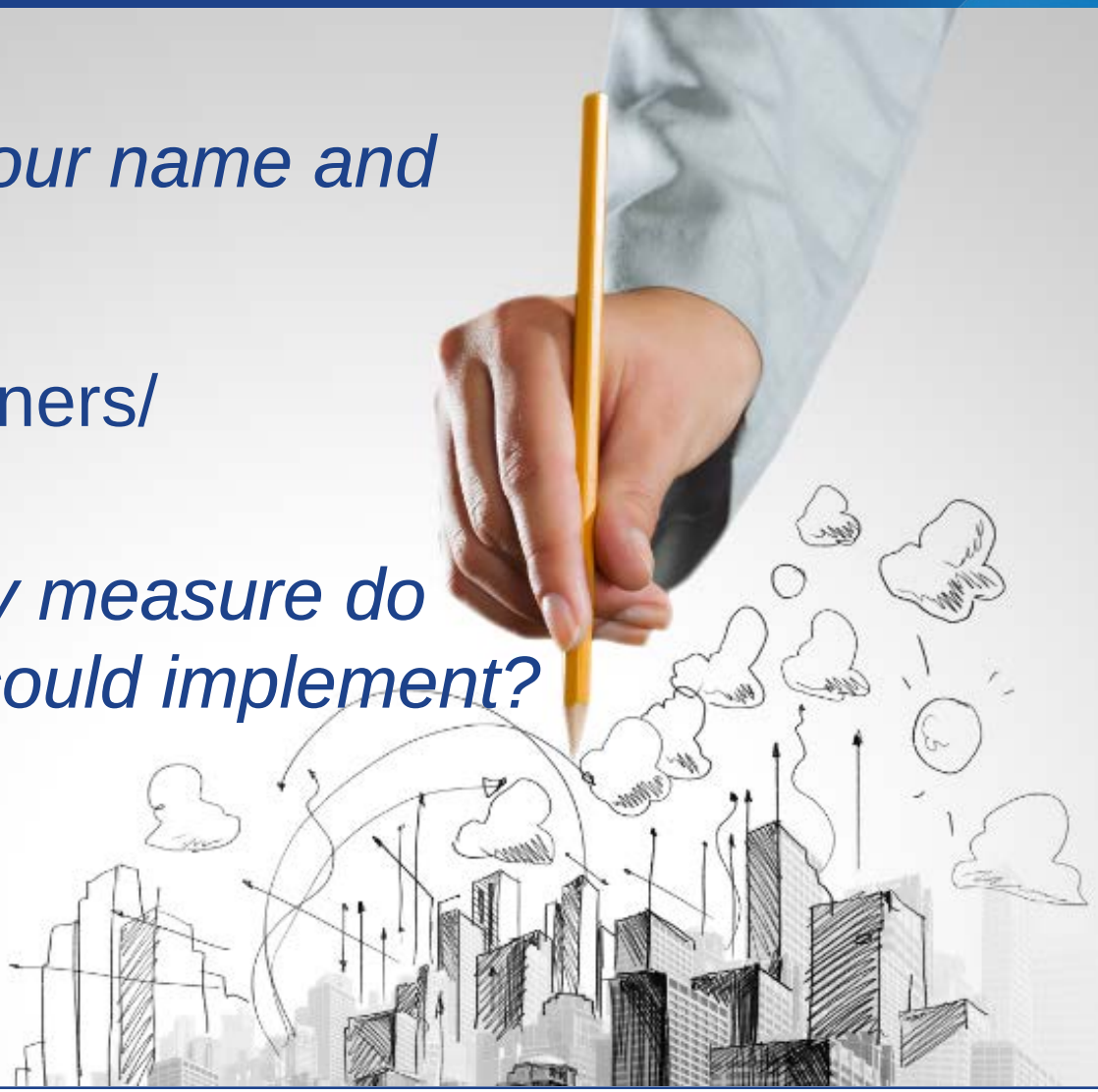
Adam Spitz
ICF, Food Service Expert

“Wish I Could”

- For everyone:
  Please share your name and organization.

- For building owners/ managers:

  What efficiency measure do you wish you could implement?



Steering Committee Members (2014-2016)

- Kyle Wilkes JCPenney - Chair
- Bill Balsamo Luxottica North America
- Mike Ellinger Whole Foods Market
- Pat Hagan Wawa
- David Harpring Yum! Brands
- Erin Hiatt Retail Industry Leaders Association (RILA)
- Frank Inoa Arby's
- David Oshinski The Home Depot, Inc.
- James P. McClendon Walmart Stores, Inc.
- Juliann Rogers CKE Restaurants
- Bob Valair Staples

2016-2018 Steering Committee Nominations can be submitted to bba@ee.doe.gov by **June 15th**

Program Updates

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Better Buildings 2015 Snapshot

Better Buildings Challenge

Partnership	
Number of Partners and Allies	310+
Square Feet Represented	4.2 billion
New Partners in the past year	60+
Solutions	
Partner Solutions Available for Replication	400+
Results	
Energy Saved (Btus)	161 trillion
Dollars Saved	$1.3 billion
Avoided C02e emissions (tons)	10.1 million
Funding Committed/Placed	$5.5 billion / $5.4 billion
Water Savings (gallons)	2.1 billion

Better Buildings Alliance

Membership	
Number of Member Organizations	202
Square Feet Represented	11+ billion
Percent of U.S. Commercial Buildings	13%
New Partners and Affiliates in 2015	19
New Resources Developed	
Business partners, technology and procurement specifications, user guides, rebate resources and case studies	40+

BBA Sector Snapshot

48 partners

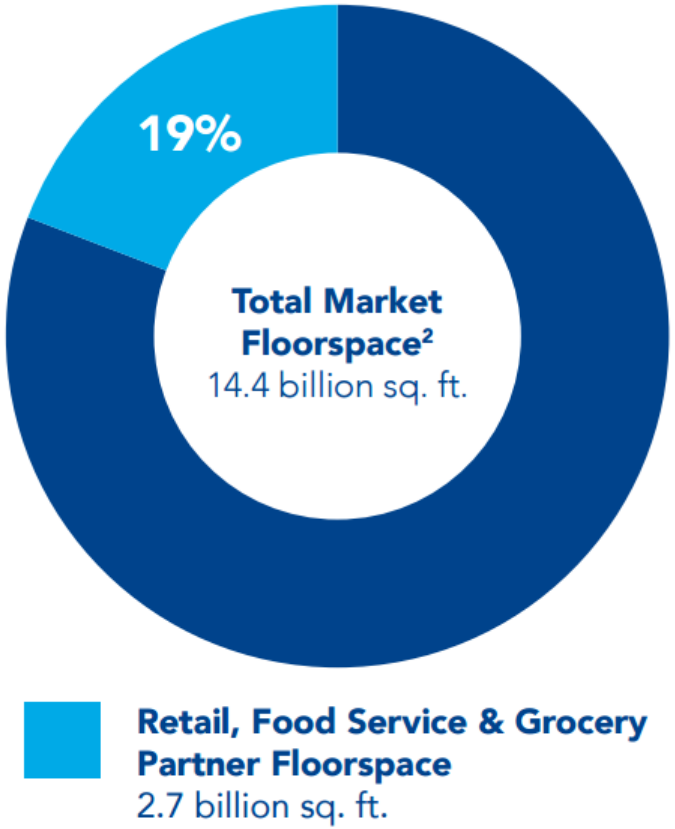
who own or manage

2.7 billion

square feet

of commercial space

Retail, Food Service & Grocery Members as a Percent of Market Floorspace



New BBA Members in 2015

New BBC Commercial Partners in 2015

Wendy's

STEVENS
INSTITUTE of TECHNOLOGY
THE INNOVATION UNIVERSITY®

University of Nebraska
Medical Center
BREAKTHROUGHS FOR LIFE®

Saunders Hotel Group

NORTHWESTERN
UNIVERSITY

CCAC
Community College of Allegheny County

General Program Updates

- Annual Progress Update Reports
  - Better Buildings Alliance - 2016 Winter Progress Update
  - Better Building Challenge – 2016 Progress Update
- New Better Buildings Challenge Implementation Models
  - RILA Retail Energy Management Program
    - adidas Group GreenENERGY Fund Invests $5.5 Million in Energy Efficiency and Renewable Energy since 2012
    - Landlord-Retailer PPA
  - Havertys: Building Internal Support for Energy Efficiency Projects
- Retail, Food Service & Grocery LinkedIn Group
- Better Buildings Challenge SWAP

Technology Team Update

- New Resources Relevant to Sector:
  - Business Case for Proactive Advanced RTU Replacement
  - Decision Guides for Plug and Process Load Controls
  - Energy Management Systems (EMS) for Food Service Applications
  - Case Study: Implementing Solar – Leased Retail Building
  - Green Leasing: Retail RTU Lease Language
- Interior Lighting Campaign (ILC)
  - Awards to be presented at BOMA national conference in June
- LEEP Campaign
  - Awards to be presented at Greenbuild conference in October
- Advanced Roof-top Unit (ARC) Campaign
  - Awards presented at PRSM national conference in April

Market Solutions Update

- Apply for Green Lease Leaders by May 18th! www.greenleaseleaders.com

- Financial Data Working Group
  - Objective: Catalyze further research on the relationship between sustainability, building performance, and financial returns
- Appraisal Working Group
  - Objective: Increase awareness, promote the exchange of information, and improve practices, Evaluate challenges and potential interventions in appraisal process, Develop resources to reduce barriers

Retail RTU Lease Language – Efficiency Considerations

- **RTU Usage and Operations**: Determination of tenant space usage, hours of operation, metering and sub-metering, temperature, humidity, ventilation requirements, and energy performance
- **RTU Repairs, Maintenance, and Retrofits**: Payment and responsibility for ongoing regular maintenance and repairs, as well as for advanced controls retrofit of existing units
- **RTU Capital Replacement**: Payment and responsibility for new equipment, when to replace early vs. upon failure, and who decides what efficiency level of replacement unit

Retail RTU Lease Language – Barriers to Address

- Landlord/Tenant Split Incentive
- RTU Service Book Life Compared to RTU Efficiency Service Life
- Recouping Costs for RTU Replacement
- Addressing RTUs at Time of Lease Start
- Enforcing Lease Provisions
- Sequencing Lease Language Finalization and TI Design Finalization

Retail RTU Lease Language – Solutions via Lease Clauses

- Monitoring Energy Consumption
- Determination of RTU End-Of-Useful-Service-Life
- Assigning Replacement Responsibility
- Cost-Share/ Cost-Pass-Through for RTU Capital Repairs
- Acquisition of New RTUs upon Lease Start
- Setting Efficiency Specifications for New Units
- RTU Usage and Operation
- Quality of Maintenance and Frequency of Inspections
- Improvements to RTU Efficiency Mid-Life
- Engineer Verification
- Fit-Out RTU Documentation
- Tenant Space Commissioning
- Aligning monetary incentives for RTU expenses with the investing party
- Communication and Flexibility between Brokers and Designers

Smart Energy Analytics Campaign

The Smart Energy Analytics Campaign promotes the adoption of analytics software and ongoing monitoring.

Join the Campaign to receive:

- Energy Management and Information Systems (EMIS) best practice resources and technical support
- Peer-to-peer learning network focusing on EMIS technology topic areas
- Recognition for exemplary performance

What does Campaign Participation look like?

- Participants pledge to install or use existing EMIS to analyze data and identify energy-saving improvements

www.smart-energy-analytics.org

Campaign is delivered in partnership with:

BOMA International · IFMA International Facility Management Association · ComEd An Exelon Company powering lives · BCxA Building Commissioning Association · CA Cx Commissioning Collaborative

New Webpage!

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PARTNERSHIPS

Alliance Home | Sectors | Activities | Partners | Solutions | Get Involved | Newsroom | About

Better Buildings Initiative » Better Buildings Alliance » Retail, Food Service & Grocery

Sector: Retail, Food Service & Grocery

The Retail, Food Service and Grocery sectors spend over $41 billion on energy costs a year, and represent 14 billion square feet of floorspace in the U.S. Collectively, Better Buildings Alliance sector members account for almost 3 billion square feet of building space, or 19% of retail floor space nationwide. Through their engagement with the program, these organizations share tips and strategies for overcoming energy efficiency barriers and meeting their organization's energy use reduction goals.

Summit Sessions of Interest & Networking Dinner

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Summit Sessions of Interest

- Energy to Finance: Understanding the CFO & Translating Metrics
  - Workshop with Affiliate RILA
  - Part 1 - Wednesday May 11th – 9:45 to 11:00 AM
  - Part 2 - Wednesday May 11th – 11:15 AM to 12:30 PM

- Cleanup on Energy Savings on Aisle 7! Saving Energy in Supermarket Design and Operation
  - ASHRAE, Southeastern Grocers, Whole Foods Market
  - Monday, May 9th – 3:45 to 5:00 PM

- How Can Brands Partner with Owners on Efficiency?
  - Wendy's, HEI Hotels & Resorts
  - Monday, May 9th – 3:45 to 5:00 PM

Summit Sessions of Interest (continued)

- It's a Solar Panel!: Tenants and Owners Working Together to Get Solar on the Roof, Reduce Energy Costs
  - Kilroy Realty, Regency Centers, TJ Maxx
  - Monday, May 9th – 3:45 to 5:00 PM
- Refrigeration Systems: How Smart is Yours?
  - Danfoss, Emerson Climate Technologies
  - Tuesday, May 10th – 9:45 to 11:00 AM
- Making the Cut: Slicing Through Food Service Energy Costs with Cutting-Edge Technologies
  - ECOVA, Powerhouse Dynamics, The Food Service Technology Center
  - Tuesday, May 10th – 11:15 AM to 12:30 PM
- Are You Forgetting About Rooftop Units? Efficiency for Packaged HVAC
  - Starbucks, Walmart
  - Wednesday, May 11th – 2:00 to 3:15 PM

TONIGHT! Sector Networking Event

Monday, May 9th at 5:00 PM

Bistro Du Coin

1738 Connecticut Ave NW,
Washington, DC 20009

Sector Priorities Discussion

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Sector Priorities

- **Priority 1:** Green leasing for small box retail and restaurants in collaboration with RILA and ARC
  - Activity: Created RTU lease language document for the retail sector with example clauses, currently under review.
- **Priority 2:** Analysis Paralysis - Making data actionable, what to do with the data retailers collect
  - Activity: Summit sessions, followed by a summer peer networking call on EMIS success stories
- **Priority 3:** Partnering with your utility on customized incentives/Technology Performance Exchange (TPex)
  - Activity: Seeking feedback on what would be most useful as an activity.

Partner Highlights

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2016 RTU Efficiency Leaders

Congratulations to Better Buildings RTU Efficiency Leaders of the Advanced RTU Campaign

Sector Goal Achievers

Congratulations to Better Buildings Challenge goal achievers

Partner Highlight: Havertys Furniture

HAVERTYS FURNITURE®

PROGRESS

22%

Cumulative (vs. Baseline)

Goal Achieved

CHALLENGE COMMITMENT

5.1

Million Square Feet

Havertys Playbook: Buy-in + Bright Inspirations

HAVERTYS FURNITURE®

- Secure buy-in across organization
- Fold EE into store image upgrades
- Combine lighting/ RTU retrofits – huge $
- Havertys Showcase
- Havertys Implementation Model
- Havertys Better Buildings Challenge video

Havertys Virginia Beach Showroom

SECTOR TYPE
Commercial

LOCATION
Virginia Beach, Virginia

PROJECT SIZE
59,000 Square Feet

FINANCIAL OVERVIEW
Project Cost: $394,000

Annual Energy Use

Energy Savings:
44%

Annual Energy Cost

Cost Savings:
44%

Partner Highlight: Arby's

PROGRESS

24%

Cumulative (vs. Baseline)

Goal Achieved

CHALLENGE COMMITMENT

2.7

Million Square Feet

Arby's Recipe for Success

- Retrofit of existing store, will save 38% energy
- Exterior lighting alone saves $2500/ yr
- LEEP campaign participant
- Arby's Showcase
- Key resource: Exterior lighting specification

Arby's 1751 Howell Mill Road

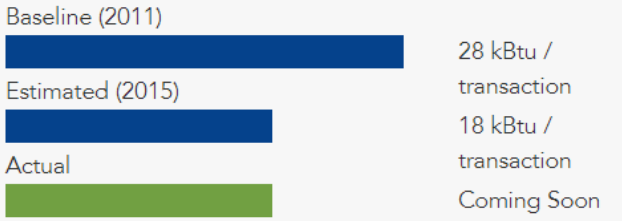
SECTOR TYPE
Commercial

LOCATION
Atlanta, Georgia

PROJECT SIZE
3,200 Square Feet

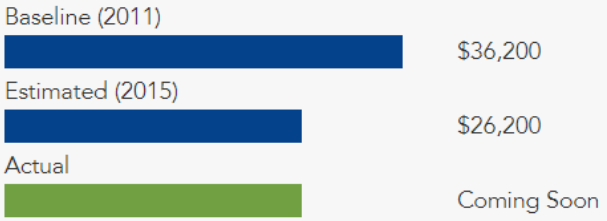
FINANCIAL OVERVIEW
Project Cost: $80,000

Annual Energy Use



Energy Savings:
38%

Annual Energy Cost



Cost Savings:
$10,000

Group Discussion

Thank You

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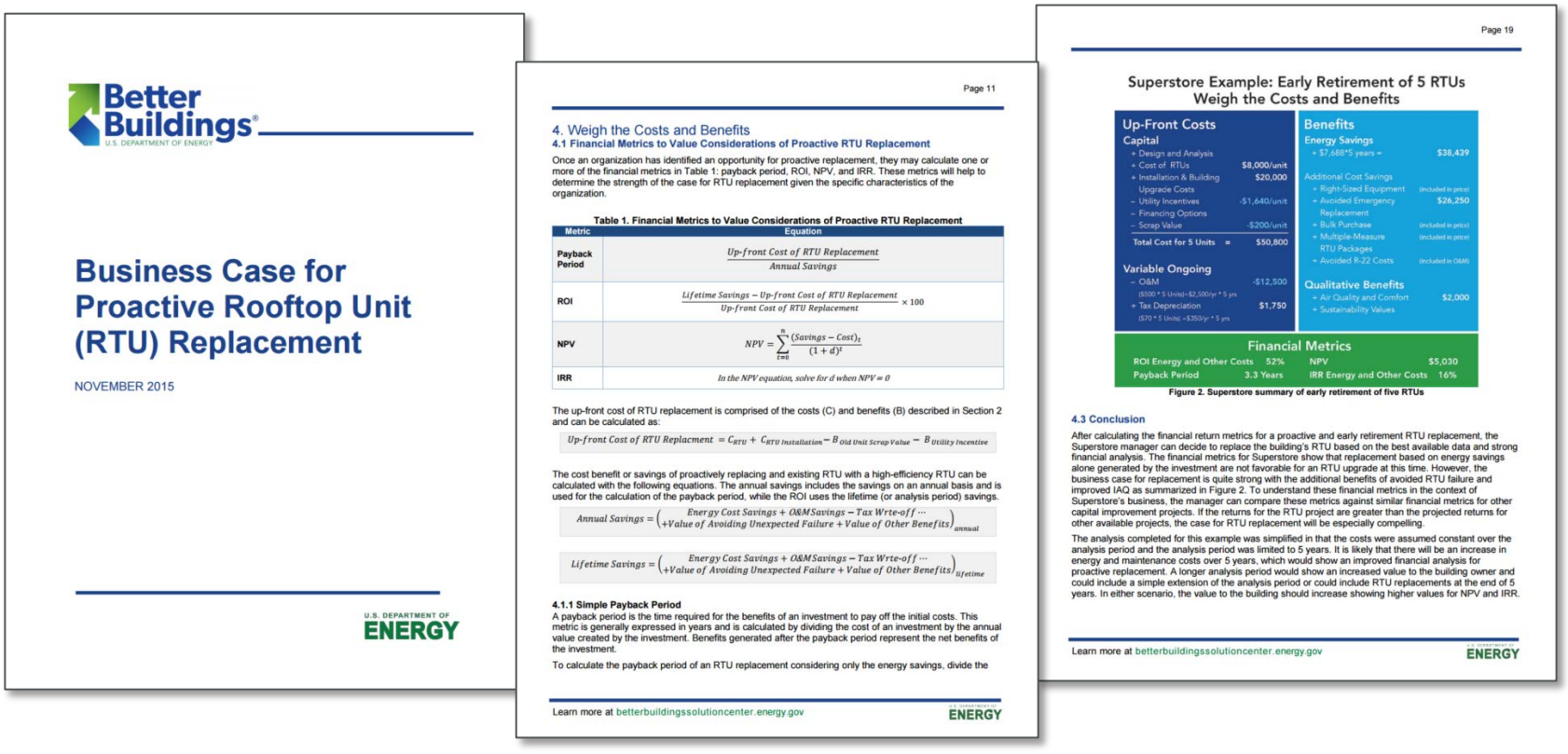
Appendix: Rooftop Units (RTUs)

- RTUs cool 60% of commercial building floor space nationwide
- State of the art RTUs are up to 50% more efficient than RTUs available ten years before
- RTUs can last up to 15-20 years depending on climate conditions, but lose ~1% efficiency annually

Appendix: Rooftop Units (RTUs)

Business Case for Proactive RTU Replacement



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Business Case for Proactive Rooftop Unit (RTU) Replacement

NOVEMBER 2015

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4. Weigh the Costs and Benefits

4.1 Financial Metrics to Value Considerations of Proactive RTU Replacement

Once an organization has identified an opportunity for proactive replacement, they may calculate one or more of the financial metrics in Table 1: payback period, ROI, NPV, and IRR. These metrics will help to determine the strength of the case for RTU replacement given the specific characteristics of the organization.

Table 1. Financial Metrics to Value Considerations of Proactive RTU Replacement

Metric	Equation
Payback Period	$\frac{Up\text{-}front\ Cost\ of\ RTU\ Replacement}{Annual\ Savings}$
ROI	$\frac{Lifetime\ Savings - Up\text{-}front\ Cost\ of\ RTU\ Replacement}{Up\text{-}front\ Cost\ of\ RTU\ Replacement} \times 100$
NPV	$NPV = \sum_{t=0}^{n} \frac{(Savings - Cost)_t}{(1+d)^t}$
IRR	*In the NPV equation, solve for d when NPV = 0*

The up-front cost of RTU replacement is comprised of the costs (C) and benefits (B) described in Section 2 and can be calculated as:

$$Up\text{-}front\ Cost\ of\ RTU\ Replacement = C_{RTU} + C_{RTU\ Installation} - B_{Old\ Unit\ Scrap\ Value} - B_{Utility\ Incentive}$$

The cost benefit or savings of proactively replacing and existing RTU with a high-efficiency RTU can be calculated with the following equations. The annual savings includes the savings on an annual basis and is used for the calculation of the payback period, while the ROI uses the lifetime (or analysis period) savings.

$$Annual\ Savings = \left(\begin{matrix}Energy\ Cost\ Savings + O\&M\ Savings - Tax\ Wrte\text{-}off \cdots \\ + Value\ of\ Avoiding\ Unexpected\ Failure + Value\ of\ Other\ Benefits\end{matrix}\right)_{annual}$$

$$Lifetime\ Savings = \left(\begin{matrix}Energy\ Cost\ Savings + O\&M\ Savings - Tax\ Wrte\text{-}off \cdots \\ + Value\ of\ Avoiding\ Unexpected\ Failure + Value\ of\ Other\ Benefits\end{matrix}\right)_{lifetime}$$

4.1.1 Simple Payback Period

A payback period is the time required for the benefits of an investment to pay off the initial costs. This metric is generally expressed in years and is calculated by dividing the cost of an investment by the annual value created by the investment. Benefits generated after the payback period represent the net benefits of the investment.

To calculate the payback period of an RTU replacement considering only the energy savings, divide the

Learn more at betterbuildingssolutioncenter.energy.gov

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Superstore Example: Early Retirement of 5 RTUs Weigh the Costs and Benefits

Up-Front Costs		Benefits	
Capital		**Energy Savings**	
+ Design and Analysis		+ $7,688*5 years =	$38,439
+ Cost of RTUs	$8,000/unit		
+ Installation & Building Upgrade Costs	$20,000	Additional Cost Savings	
– Utility Incentives	-$1,640/unit	+ Right-Sized Equipment	(included in price)
– Financing Options		+ Avoided Emergency Replacement	$26,250
– Scrap Value	-$200/unit	+ Bulk Purchase	(included in price)
Total Cost for 5 Units =	$50,800	+ Multiple-Measure RTU Packages	(included in price)
		+ Avoided R-22 Costs	(included in O&M)
Variable Ongoing			
– O&M ($500 * 5 Units)–$2,500/yr * 5 yrs	-$12,500	**Qualitative Benefits**	
+ Tax Depreciation ($70 * 5 Units) +$350/yr * 5 yrs	$1,750	+ Air Quality and Comfort	$2,000
		+ Sustainability Values	

Financial Metrics

ROI Energy and Other Costs	52%	NPV	$5,030
Payback Period	3.3 Years	IRR Energy and Other Costs	16%

Figure 2. Superstore summary of early retirement of five RTUs

4.3 Conclusion

After calculating the financial return metrics for a proactive and early retirement RTU replacement, the Superstore manager can decide to replace the building's RTU based on the best available data and strong financial analysis. The financial metrics for Superstore show that replacement based on energy savings alone generated by the investment are not favorable for an RTU upgrade at this time. However, the business case for replacement is quite strong with the additional benefits of avoided RTU failure and improved IAQ as summarized in Figure 2. To understand these financial metrics in the context of Superstore's business, the manager can compare these metrics against similar financial metrics for other capital improvement projects. If the returns for the RTU project are greater than the projected returns for other available projects, the case for RTU replacement will be especially compelling.

The analysis completed for this example was simplified in that the costs were assumed constant over the analysis period and the analysis period was limited to 5 years. It is likely that there will be an increase in energy and maintenance costs over 5 years, which would show an improved financial analysis for proactive replacement. A longer analysis period would show an increased value to the building owner and could include a simple extension of the analysis period or could include RTU replacements at the end of 5 years. In either scenario, the value to the building should increase showing higher values for NPV and IRR.

Learn more at betterbuildingssolutioncenter.energy.gov

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