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Is an Audit & Retro-Cx an Rx for Energy Savings?

Course Number: CXENERGY1916



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April 18, 2019

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Is an Audit & Retro Commissioning a Rx for Energy Savings?



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Securing Today. Shaping Tomorrow.™



Course Description

Why do some energy management companies fail to achieve their goals, while others exceed them? This session will address common pitfalls and best practices, and apply those concepts to examine a recent successful audit and retro-Cx project, and why it was so successful that the local utility came out to replace the meter multiple times due to the reduced consumption readings.

Learning Objectives

At the end of the this course, participants will be able to:

1. Explain why some retro-commissioning Energy Conservation Measures (ECM's) fail to achieve their goals and others exceed.
2. Understanding that success does not happen by chance and how careful analysis and planning prior to execution can greatly enhance the odds of success in attaining objective relating to being a healthy building for occupants and an energy efficient building for its ownership (and society).
3. Understand methods of communication with the client to understand objectives and, when necessary, help them understand how they can align their objectives to outcomes to improve buildings' healthfulness, efficiency and compliance with energy, building and HSW codes.
4. Understand how to incorporate the lessons learned from successful projects described in the case studies in the presentation into your next project.

Knowledge is knowing that a tomato is a fruit.

Wisdom is not putting it in a fruit salad.

- Miles Kington





Is an Audit & Retro Commissioning a Rx for Energy Savings?-Part 1: The Consultants Side

Agenda

- ✓ What is An Audit?
- ✓ Understand Your Client and their Energy Needs
- ✓ How to conduct a Successful Audit/RCx!
 - The Client
 - The Opportunities
 - Prioritize
 - The Money
 - The Path
 - The Reality
 - The Pathway
- ✓ Non Energy Benefits
- ✓ Project Success



What is An Audit?

- Simply Put an energy audit is:

“The determination of how and where energy is being consumed within the building.”

Any more than this I would sound like Blah, Blah, Blah and like Drac





Understanding Your Client & Their Energy Efficiency Needs

► The Client is the Decision Maker!

- ❑ But Are you talking to the right person?
 - ✓ Corporate Sustainability Lead
 - ✓ Corporate Engineering Lead
 - ✓ Company Operations lead
 - ✓ Building Manager
 - ✓ Building Engineer

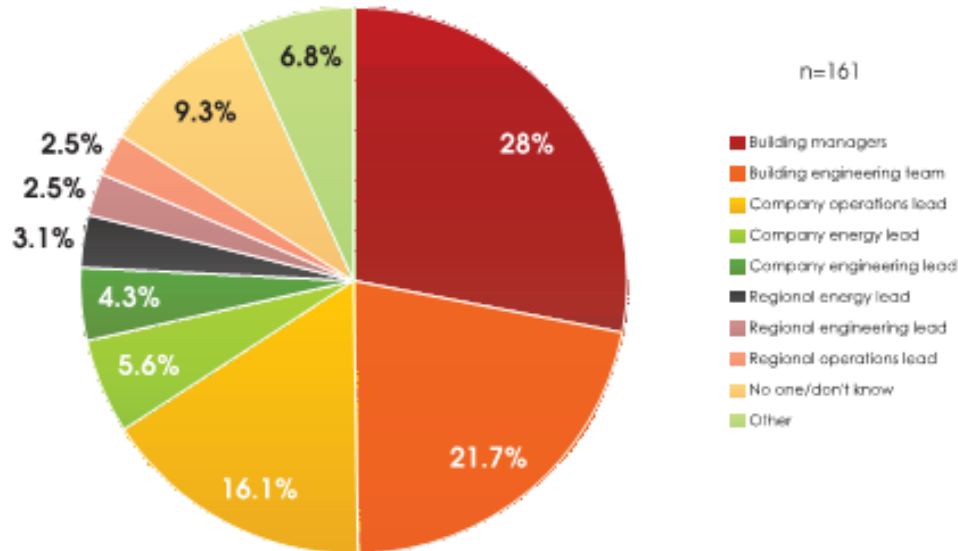
► Who Makes the Decisions For your Building?

- ❑ Per the Institute of Real Estate Management (IREM)
- ❑ It actually depends on who owns/operates the building
 - ✓ Portfolio Ownership
 - ✓ Third-Party Service

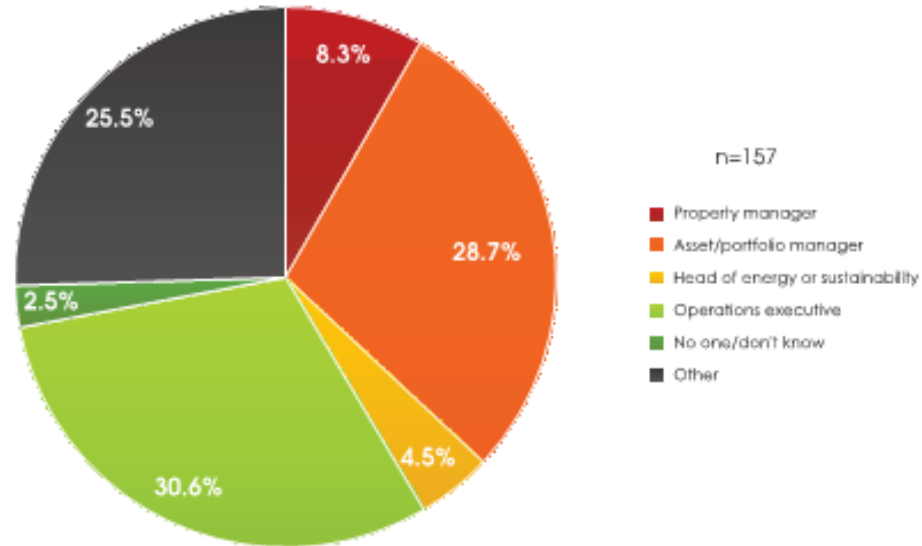


Understanding Your Client & Their Energy Efficiency Needs

► Portfolio Ownership



Who's Responsibility To Improve
On A Day-to-day Basis

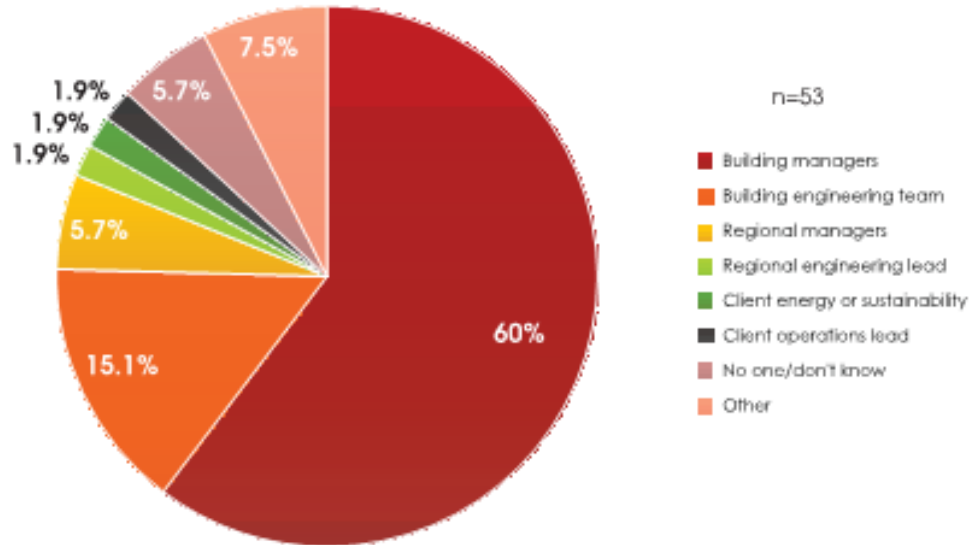


Who's responsibility is it to make the
Final Decision

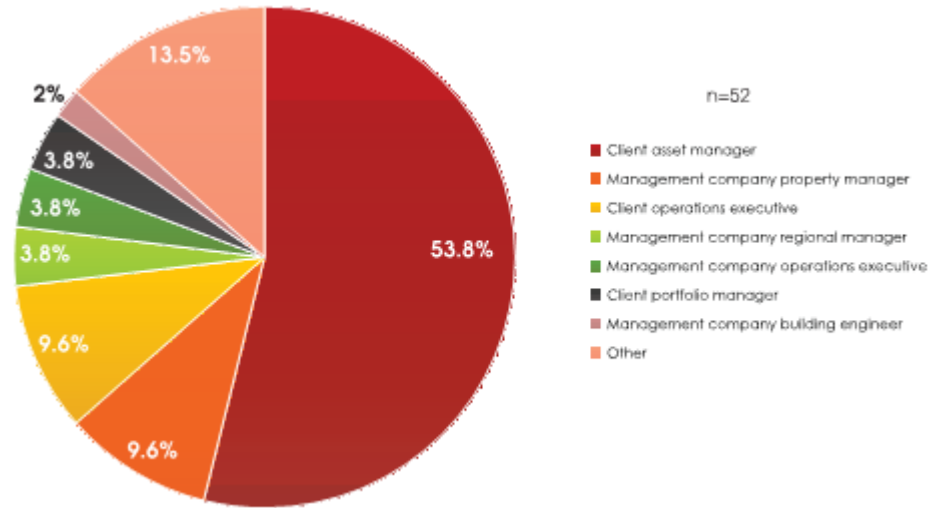


Understanding Your Client & Their Energy Efficiency Needs

► Third-Party Service



Who's Responsibility To Improve
On A Day-to-day Basis



Who's Responsibility Is It To Make
The Final Decision



How to Conduct a Successful Audit/Rcx?

► Rules of Engagement for a Successful Audit/RCx

❖ The Client

- Know Who Your Client is!
- Know What Your Client's Goals Are!

❖ The Reality

❖ The Pathway

❖ Opportunities

- Prioritize Them
- How to Prioritize ECM's

❖ Follow the \$\$\$\$\$



How to Conduct a Successful Audit/Rcx?- The Client!

Prioritization of Identified Energy Saving Opportunities or Energy Conservation Measures (ECM's) are critical to any projects success.

- ▶ The priorities shall reflect the clients priorities/direction --- NOT YOURS!
- ▶ Obviously your expert guidance is necessary!





How to Conduct a Successful Audit/Rcx?- The Opportunities!

How to Prioritize the ECM's

- ▶ Does the client have Published Sustainability Goals?
 - ✓ If so, how does it impact energy management goals?
 - ✓ Incorporate them into your plan.
- ▶ Its also essential, to determine if your client has any corporate energy saving mandates &/or goals!
 - ✓ IE: Mandate to reduce **x**% amount of energy by a certain year (such as 2020/2030). Be sure to determine what baseline year you will be basing this metric against.
 - ✓ Establish a mutually agreed upon measurable Metrix
 - ❑ EUI (kbtu/sf/yr)
 - ❑ KBTU/Person
 - ❑ ETC...





How to Conduct a Successful Audit/RCx?- The Opportunities!

How to Prioritize!

- ▶ Should such lofty sustainable & energy savings goals exist--- know them, embrace them & understand them.
- ▶ Your job is to provide the client with a masterplan or roadmap on how to achieve them!
- ▶ First and foremost you must manage your clients expectations!



Shari's Designs

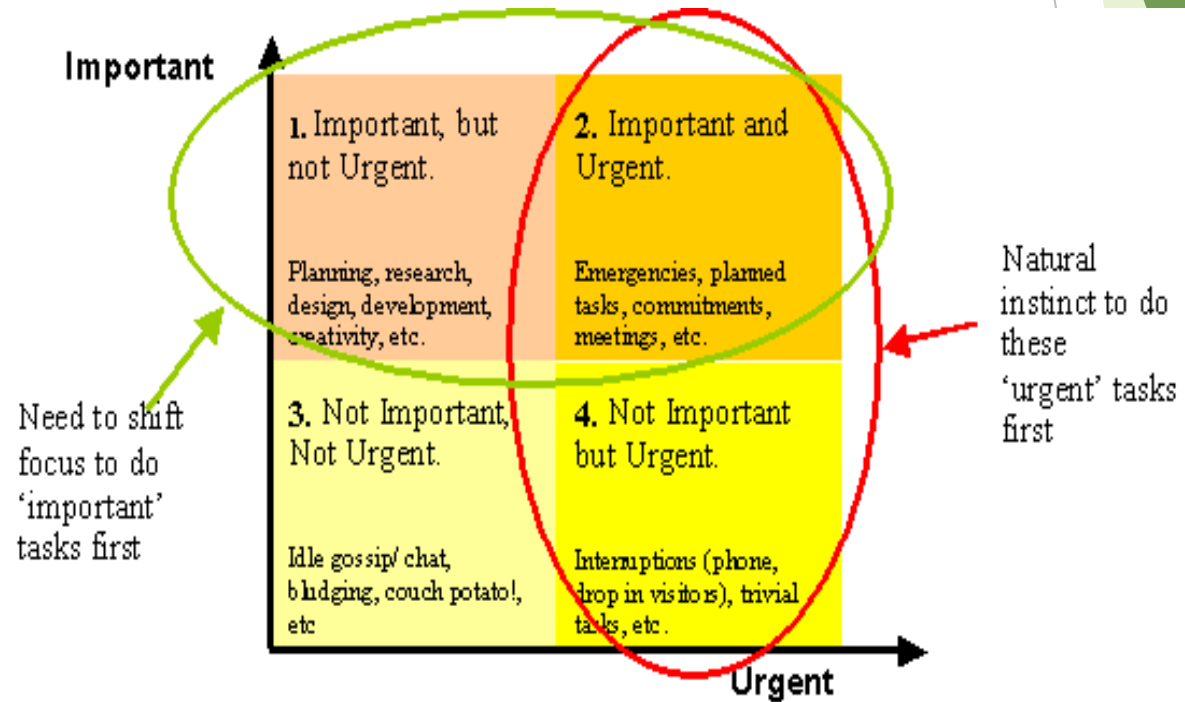


How to Conduct a Successful Audit/RCx?- The Opportunities!

How to Prioritize the ECM's !

- ▶ Investments Should be Ranked Based on NPV Analysis as Well as the Size of the Investment & Feasibility!
- ▶ Any & all measures shall be organized as follows:
 1. Feasibility
 2. Low Cost or No Cost.
 3. Short ROI to Longest ROI

NPV=Net Present Value





How to Conduct a Successful Audit/Rcx?- The Money!

How are Projects Funded?

- ▶ Self Funding by Client
- ▶ Bank Loan
- ▶ Specialty Loans
 - ✓ PACE Loans
- ▶ Financed thru a Performance Contract
- ▶ Lease Options

Note: This **must** be an upfront discussion w/your Client! Be sure the right stake holders are in the meeting. It is paramount to the projects success.





How to Conduct a Successful Audit/Rcx?- The Path!

How Do We Get There From Here!

- Effective & Achievable ECM's!
- Reading the clients commitment to success!
- Understanding the clients staffs strengths & weaknesses
- Good Rule to follow:
 - ✓ Under promise & Over Perform”
- **Well this task is kinda like...**





How to Conduct a Successful Audit/Rcx?- The Reality!

Are All ECM's Ever Unsuccessful?

- All too often ECM's **DO NOT** achieve their full projected impact!
- On average, RetroCx project under achieve their projected goals by a factor of 2!
- Sometimes the strategies for choosing ECM's contribute to their failure!





How to Conduct a Successful Audit/Rcx?- The Reality!

Why Sometimes ECM's **Do NOT** Achieve Their Projected Goals?

- ▶ Energy Audits are sometimes unreliable & Bias.
- ▶ Why?
 - ✓ Over estimating the ECM savings
 - ✓ Short cutting Building analysis
 - ✓ Under Estimated Construction costs!
 - ✓ Didn't evaluate all the possible improvements.
 - ✓ Did not look at all ECM's holistically.
 - ✓ Have a HVAC/Lighting Slant!





How to Conduct a Successful Audit/Rcx?- The Pathway!

What is the Right Pathway?

- ▶ Look @ Everything!
 - ✓ HVAC
 - ✓ Lighting
 - ✓ Building Envelope
 - ✓ Education
- ▶ Understanding Building Rating System Certifications since they can Visually demonstrate a clients commitment to sustainability.
- ▶ An Energized Client is your best advocate





How to Conduct a Successful Audit/Rcx?- The Pathway!

Your success is hinged on understanding the arena you are working in!

- ▶ Each has their own unique set of criteria.
- ▶ Office buildings are different than Retail projects
- ▶ Retail projects are different than residential high or midrise
- ▶ Industrial well is different from everything else all together





How to Conduct a Successful Audit/Rcx?- Non Energy Benefits !

ECM's Sometimes produce Non Energy Benefits (NEB's)

- ▶ Replacement or upgrade of equipment produce O & M Savings
- ▶ Improve lighting and Building environment improves building occupant productivity.





How to Conduct a Successful Audit/Rcx?- Non Energy Benefits !

Project success is a team effort!

- ▶ How is this achieved?
 - ✓ All Stake holders have a say
 - ✓ All Stake holders need to feel heard
 - ✓ Especially need backing and support of the facility engineering staff.





Is an Audit & Retro Commissioning a Rx for Energy Savings?-Part 2: The Clients Side