LCCAid
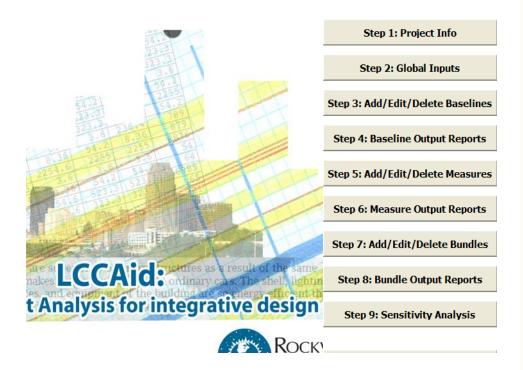
- **LCCA Excel Tool**
  - Designed for energy optimization of building retrofit projects
  - Applicable to new buildings and other projects

Step 1: Project Info

Step 2: Global Inputs

Step 3: Add/Edit/Delete Baselines

Step 4: Baseline Output Reports

Step 5: Add/Edit/Delete Measures

Step 6: Measure Output Reports

Step 7: Add/Edit/Delete Bundles

Step 8: Bundle Output Reports

Step 9: Sensitivity Analysis

LCCAid:
t Analysis for integrative design

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How to Use LCCAid:

Project Name:	Project Name		Discount	5%
Project Location:	Boulder, CO		Inflation	N/A
User Name:	Jane Doe		Nominal	5%
Base Year:	2012		Escalation	Constant 2%
Occupancy Date (Service Date):	2013			
Study Length:	31 years			

- Start by defining a baseline for the building
- Create energy model
- Bundle measures
- Iterate simultaneously with the energy model
- Offer sensitivities if needed

Run Model →

Outputs:
1. Measure (ECM) specific financial results
2. Bundle financial results
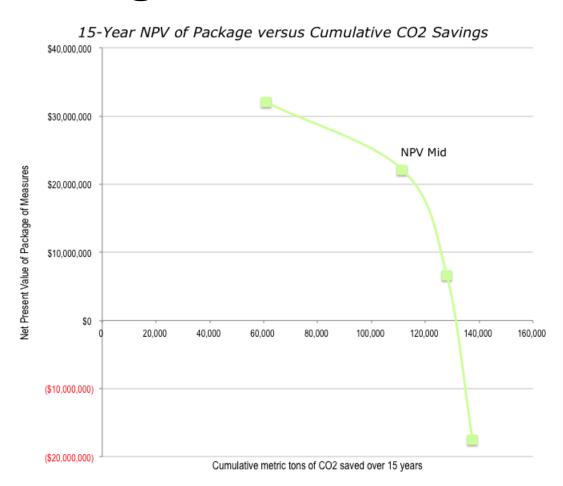3. Entire project NPV and cash flows
4. Charts
5. Sensitivity Ranges

Presenting Results

Empire State Building Example

Display the relevant metrics (here it's NPV and CO_2 savings

Include uncertainty and sensitivity about future projections

15-Year NPV of Package versus Cumulative CO2 Savings

NPV Mid

Net Present Value of Package of Measures

Cumulative metric tons of CO2 saved over 15 years

Example: Pharmaceutical Company

Project overview

Lab & manufacturing plant campus (offices as well)

Served by a central plant

Aiming for site net zero in the next 15 years

Site net zero specifies all energy consumption offset by site generation

$100 Million in Upfront Cost

Example: Pharmaceutical Company

Client typically funds projects with less than a 4 year simple payback

This project falls into a special category of funding

However, client requested a bundle of measures with four year simple payback- LCCA must convince client leadership

Client already uses some elements of LCC in their financial analyses

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"There's no time for thinking. We have to make a *management decision.*"

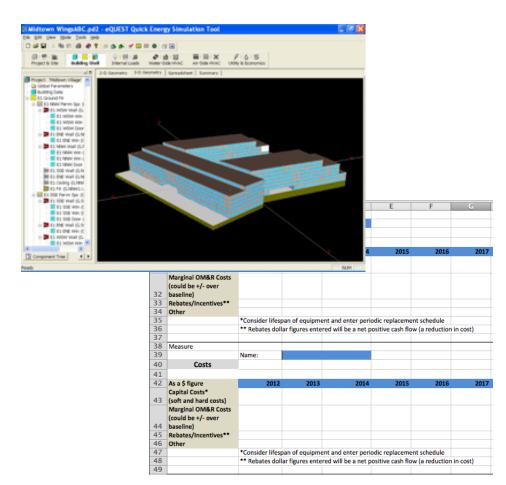# Example: Pharmaceutical Company

Our Approach

Using LCCAid for 20+ ECMs, and 8 bundles

Using a custom inputs spreadsheet

Assigning a dedicated cost estimator

Interfacing with an eQUEST team

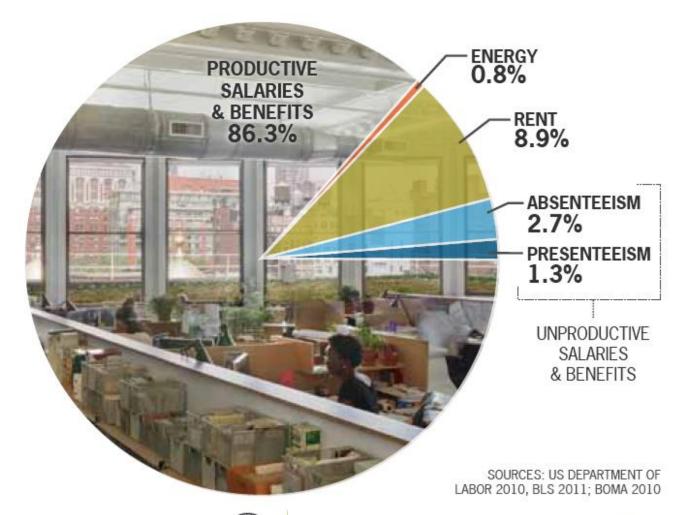Ongoing QC

Typical Uncertainty

- **Energy Uncertainty**
  - Interactive effects required
  - Weather, occupancy, space use are variables

- **Cost Uncertainty**
  - Dedicated cost estimator
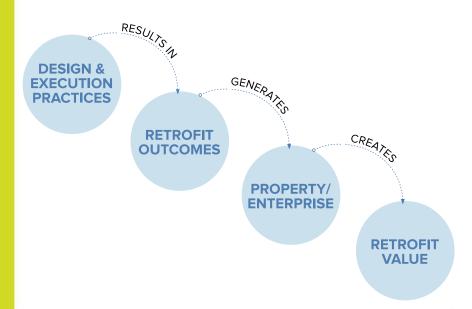 - Assessments of the impact of 'piggybacking' projects

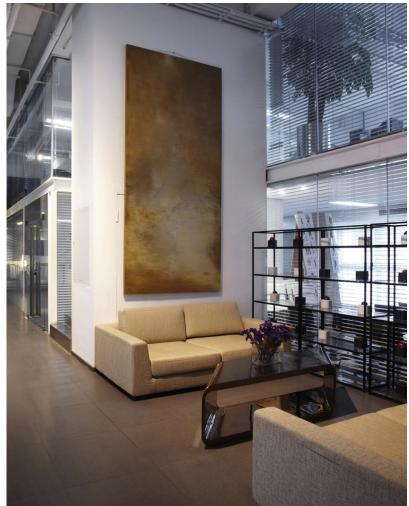Re-energizing buildings for the future.™

What We Spend in a Building

PRODUCTIVE SALARIES & BENEFITS 86.3%

ENERGY 0.8%

RENT 8.9%

ABSENTEEISM 2.7%

PRESENTEEISM 1.3%

UNPRODUCTIVE SALARIES & BENEFITS

SOURCES: US DEPARTMENT OF LABOR 2010, BLS 2011; BOMA 2010

VBECS

Consider any potential Values Beyond Energy Cost Savings (VBECS)

RMI RETROFIT VALUE MODEL

DESIGN & EXECUTION PRACTICES

RESULTS IN

RETROFIT OUTCOMES

GENERATES

PROPERTY/ ENTERPRISE

CREATES

RETROFIT VALUE

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Accessible at:

- Free Tool available at RMI.org:
  - http://www.rmi.org/ModelingTools

- Other tools include:
  - Energy Model Input Translator (EMIT)
  - Model Manager
  - Green Footstep
  - Elements

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