Case Study #2
The Residences at Radian Boston
Boston, MA

300,000 ft², 26-story mixed-use residential high-rise
Case Study #2
Radian Boston

- 300,000 ft², 26-story mixed-use residential high-rise
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Energy Conservation Measures:
• High-performance envelope
• Energy Star appliances
• High-efficiency air distribution
• Energy recovery ventilation
• Condensing boiler plant
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Mechanical Highlights:

• Ventilation provided via ERU in combination with operable windows in residences

• Local space conditioning via water-source heat pumps (WSHPs) supplemented by a condensing boiler plant and cooling tower
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• Electrical Highlights:

• Mixed CFL and LED lighting scheme beat code-maximum lighting power by 10%

• Energy Star appliances specified in residences allowed credit against plug loads in Baseline energy model.
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- Plumbing Highlights:
  - Electric water heaters local to each dwelling unit; space constraints within the residences required suspension over washer/dryer setups
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Certified LEED Gold
• 32.2% energy savings compared to ASHRAE 90.1-2004
• 25.8% energy cost savings compared to ASHRAE 90.1-2004
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POE Highlights:

• Residence experience: overall thermal comfort, lighting, and layout.

• Maintenance clearance in mechanical penthouse

• Decentralized heating and cooling
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Issues raised:

• Electric water heater serviceability
• Energy recovery unit controls
• Thermostat placement in studio apartments
• Sound and vibration traveling from mechanical penthouse
• Window frames
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Lessons learned

- Importance of off-season commissioning
- Necessity of a thorough punchlist
- Impact of value engineering

Foam panel vibration isolation inside the Radian penthouse.
Agenda

Introduction

What is Post-Occupancy Evaluation?
  ◦ Value Proposition
  ◦ Process

Case Studies
  ◦ Non-Profit Office: Parks & People
  ◦ Multifamily Residential: Radian

Wrap-Up / Recap
Recap: Value Proposition

Keeps the design team engaged beyond the warranty period.

• 3.5 years after the building was initially occupied, the design team remains engaged in helping the owner.
Recap: Value Proposition

Owner gains better understanding of their building and why it was designed a certain way.

• Parks and People: DHW circulation pump
  Relatively small (and low-power) pump causes wait for HW in bathrooms but was designed to meet project’s energy efficiency goals and limit the DHW loop’s first cost.

• Radian: DHW heaters
  The need to maximize rentable square footage forced the DHW heaters into a tight space.
Recap: Value Proposition

Provides recommendations and corrective actions

Examples:
• Controls sequence modifications
• Upgrade lighting from CFL to LED
• Install vibration isolation hangers
Recap: Value Proposition
Incorporates lessons learned into future designs

Our plumbing engineers push back on placing equipment in access-challenged spaces.

- Domestic water heater
- Clothes dryer
- Clothes washer
Recap: Value Proposition

- Analyzes real-life performance data to evaluate design decisions
- Follows up on commitments made by the project (EUI, IEQ metrics, etc.)

<table>
<thead>
<tr>
<th></th>
<th>Energy Use per Square Foot (EUI; kBtu/ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Office Median EUI</td>
<td>67</td>
</tr>
<tr>
<td>Modeled Energy Use</td>
<td>51</td>
</tr>
<tr>
<td>Actual Energy Use</td>
<td>43</td>
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</tbody>
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Parks and People: performing 15% better than anticipated!
Recap: Value Proposition

Deepens client relationship

As part of our POE of Parks & People, we were able to engage the architect and the greater Baltimore sustainable design community in a celebration of the project’s LEED Platinum achievement.

We continue to work with that client and receive referrals due to this work.
Is POE Worth It?

• **Yes!** ...Assuming that:
  
  • The project team desires the data
  
  • The project team needs to follow up with and impress a good client
  
  • The project team believes there will be good lessons learned from the project