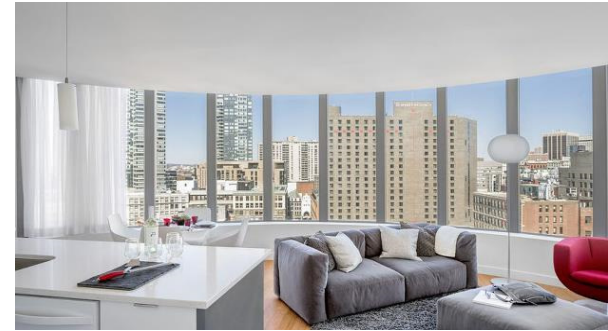
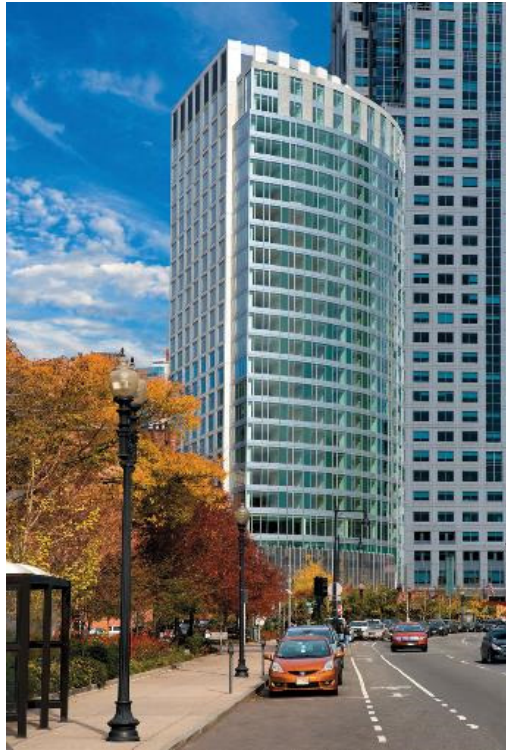


Case Study #2

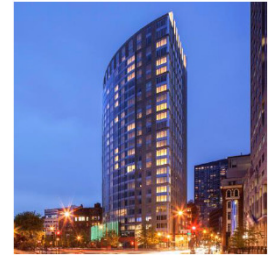
The Residences at Radian Boston Boston, MA



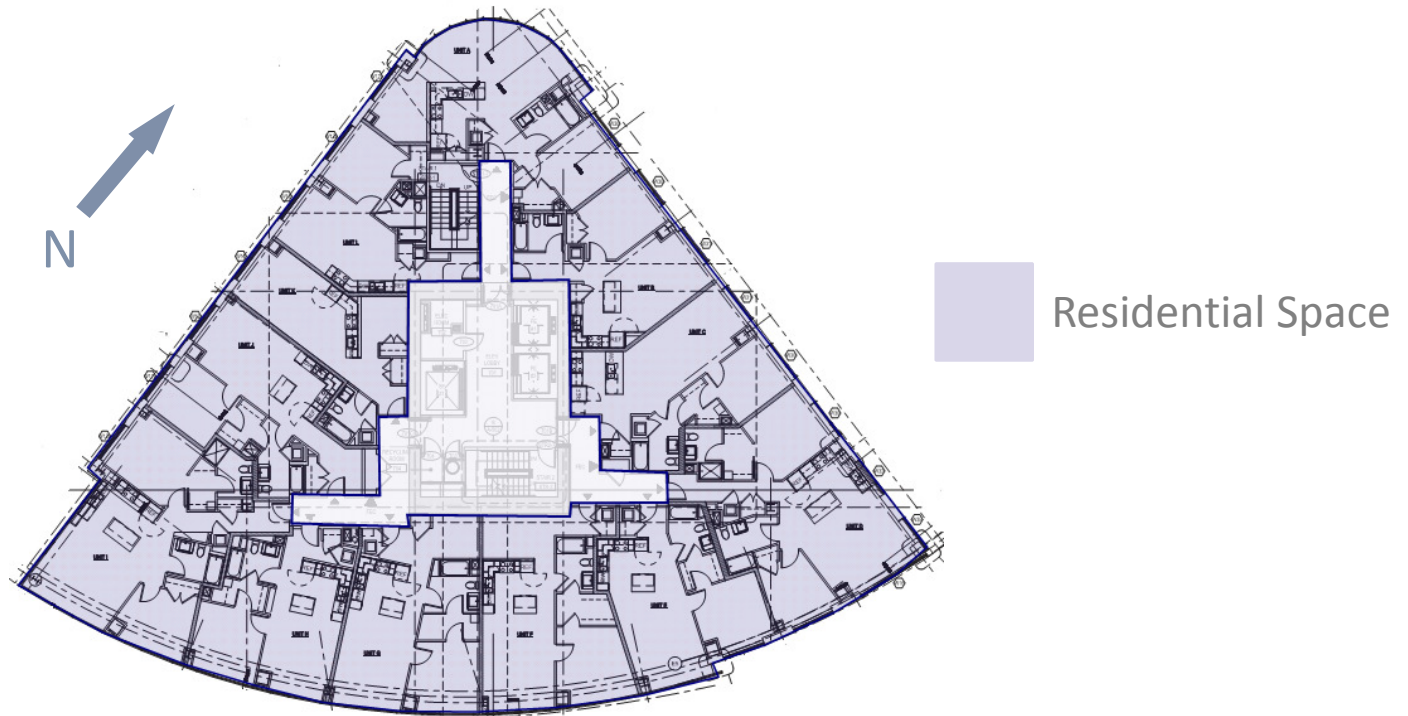
300,000 ft², 26-story mixed-use residential high-rise

Case Study #2

Radian Boston

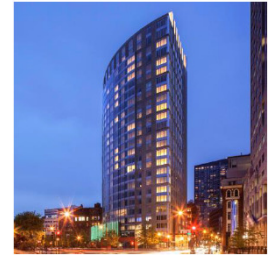


- 300,000 ft², 26-story mixed-use residential high-rise



Case Study #2

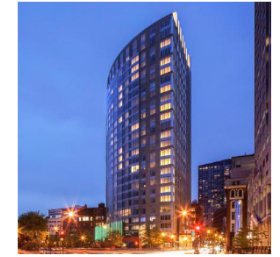
Radian Boston



Energy Conservation Measures:

- High-performance envelope
- Energy Star appliances
- High-efficiency air distribution
- Energy recovery ventilation
- Condensing boiler plant



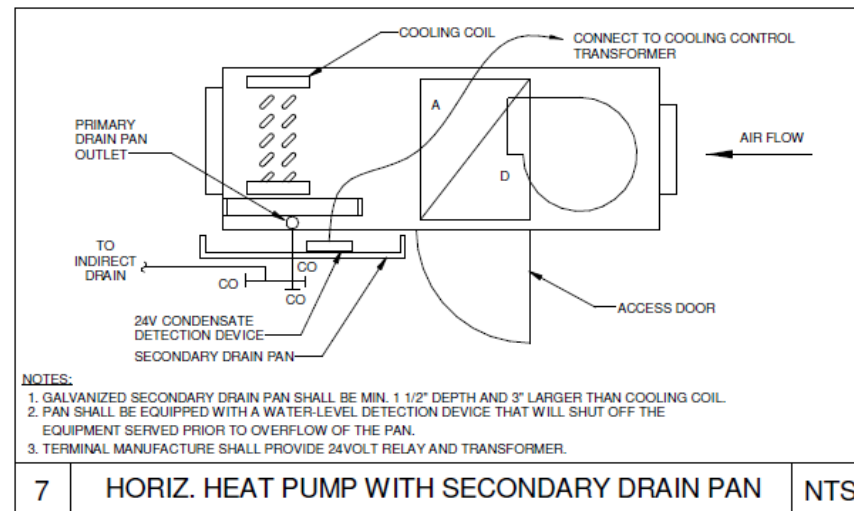


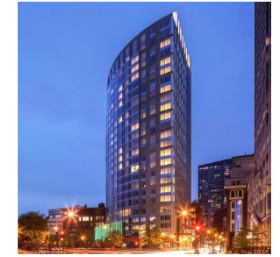
Case Study #2

Radian Boston

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

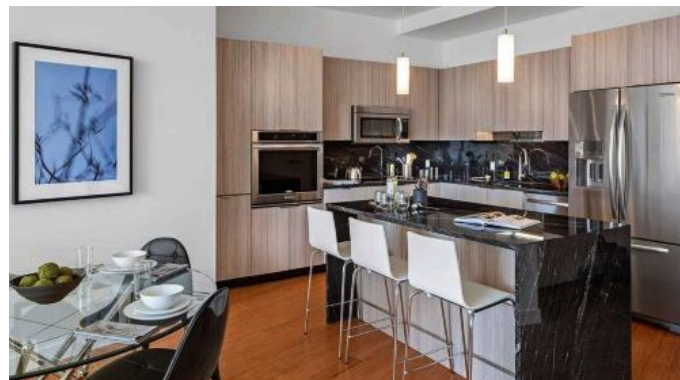


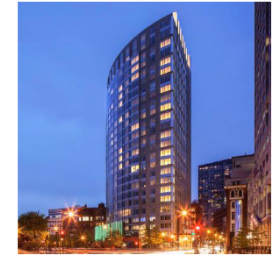


Case Study #2

Radian Boston

- 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.





Case Study #2

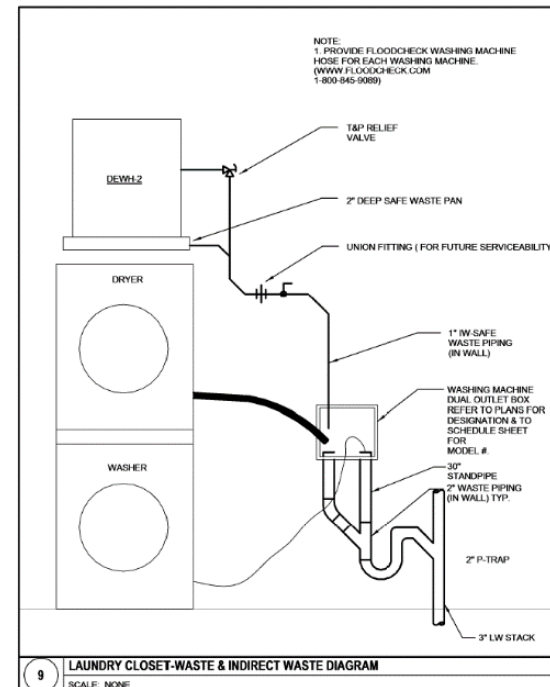
Radian Boston

- Plumbing Highlights:
 - Electric water heaters local to each dwelling unit; space constraints within the residences required suspension over washer/dryer setups

Domestic water heater

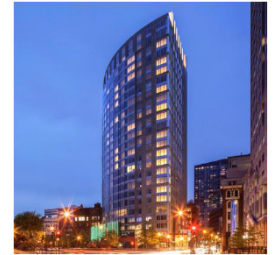
Clothes dryer

Clothes washer



Case Study #2

Radian Boston



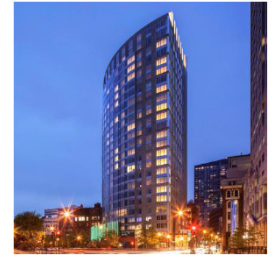
Certified LEED Gold

- 32.2% energy savings compared to ASHRAE 90.1-2004
- 25.8% energy cost savings compared to ASHRAE 90.1-2004



Case Study #2

Radian Boston



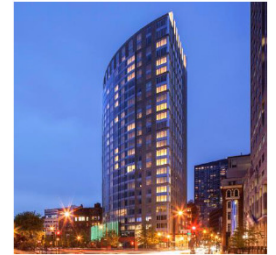
POE Highlights:

- Residence experience: overall thermal comfort, lighting, and layout.
- Maintenance clearance in mechanical penthouse
- Decentralized heating and cooling



Case Study #2

Radian Boston

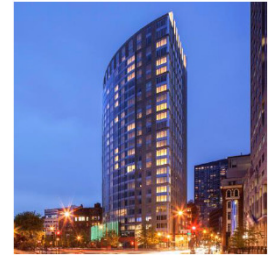


Issues raised:

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

Case Study #2

Radian Boston



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.

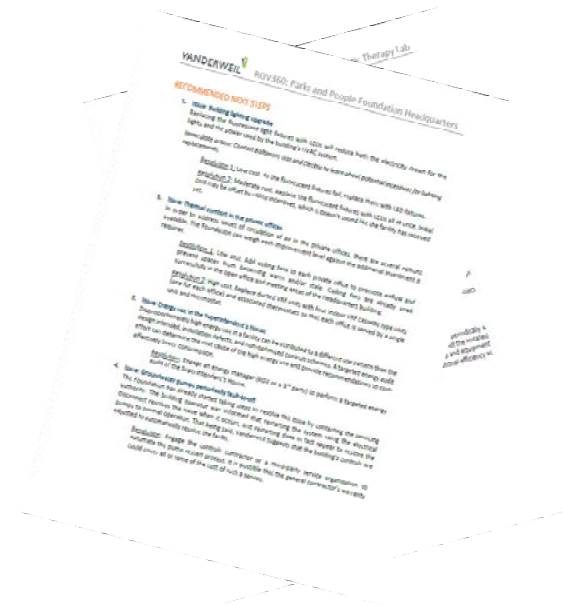
- **Parks and People: DHW circulation pump**
Relatively small (and low-power) pump causes wait for HW in bathrooms but was designed to meet project's energy efficiency goals and limit the DHW loop's first cost.
- **Radian: DHW heaters**
The need to maximize rentable square footage forced the DHW heaters 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

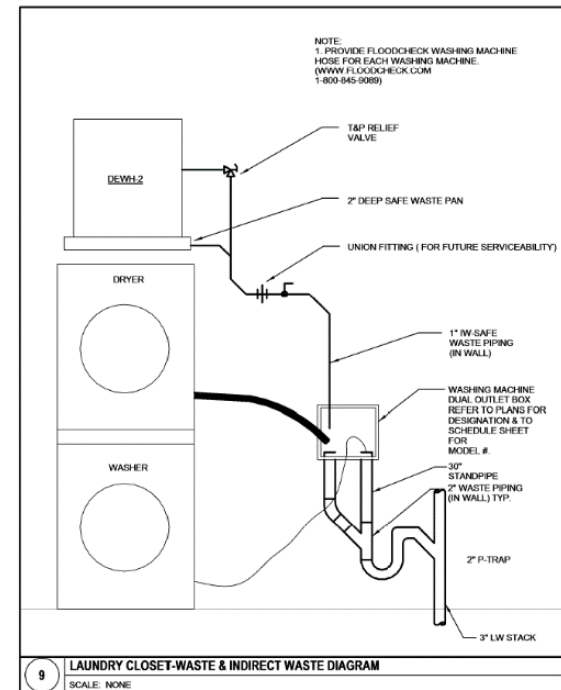
Incorporates lessons learned into future designs

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

Domestic water heater

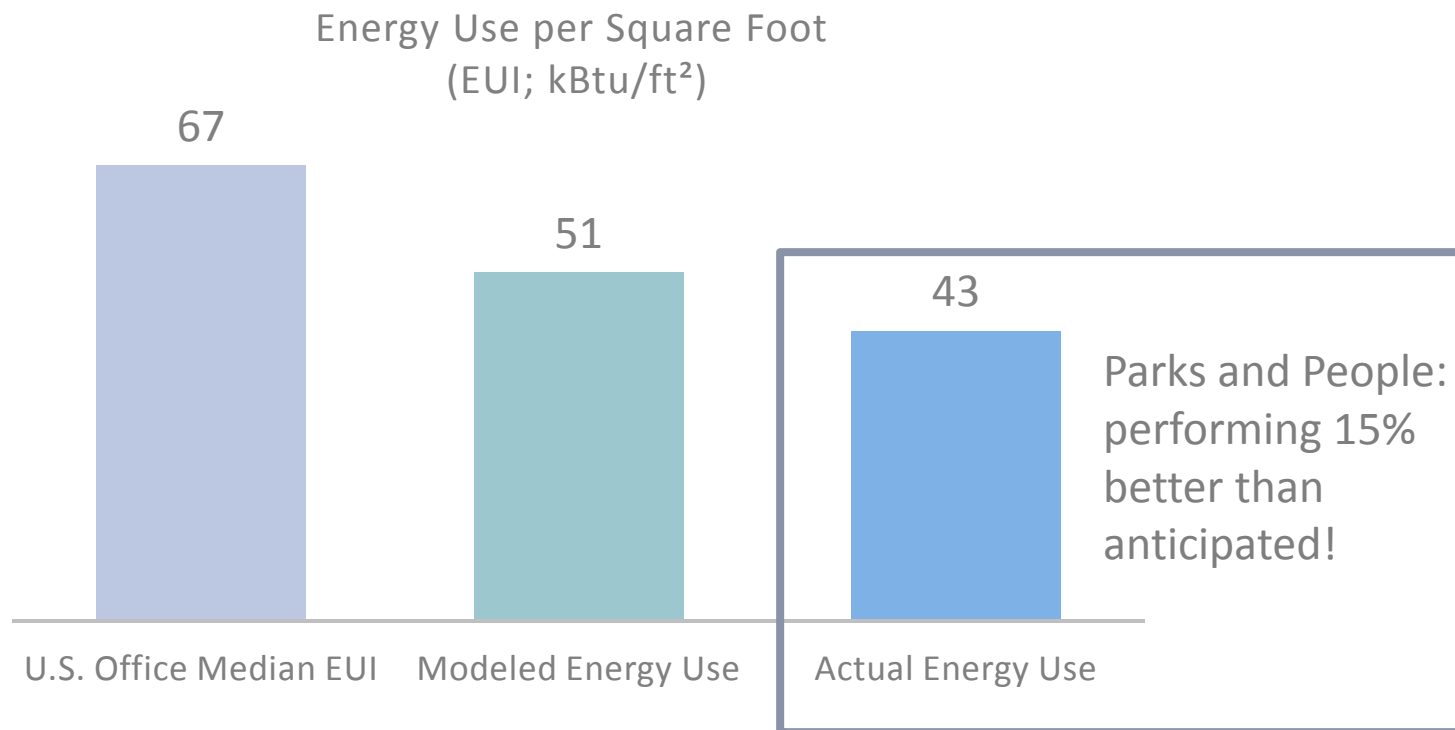
Clothes dryer

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.)



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

