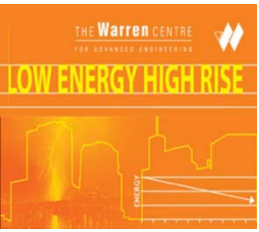




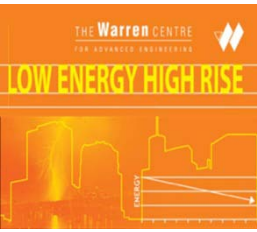
# Delivering Energy Efficient Buildings

## The Low Energy High Rise Project



# LEHR – The Objective

- Measurable evidence
- Factors affecting energy & water efficiency
  - Encouraging factors
  - Discouraging factors
- For commercial office buildings

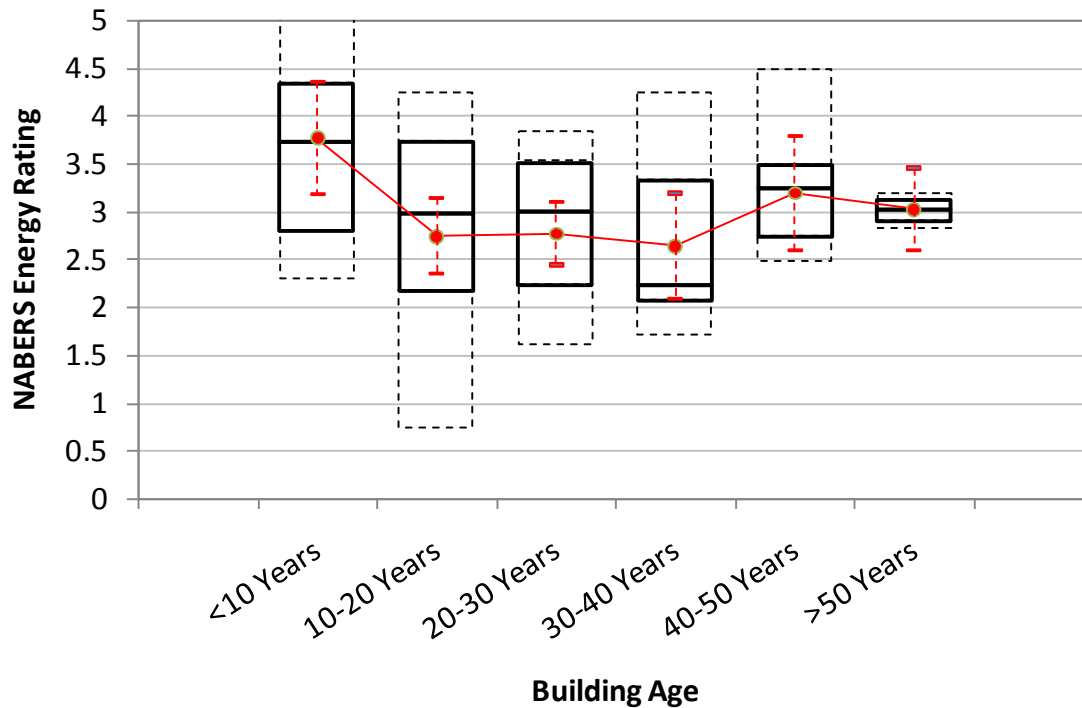


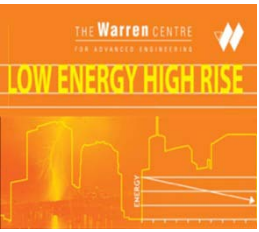
# The Process

- Major survey of building attributes and management characteristics
- Index energy/water efficiency via NABERS
- Use statistics to relate NABERS to building/management attributes

# Building Characteristics & Technical Factors

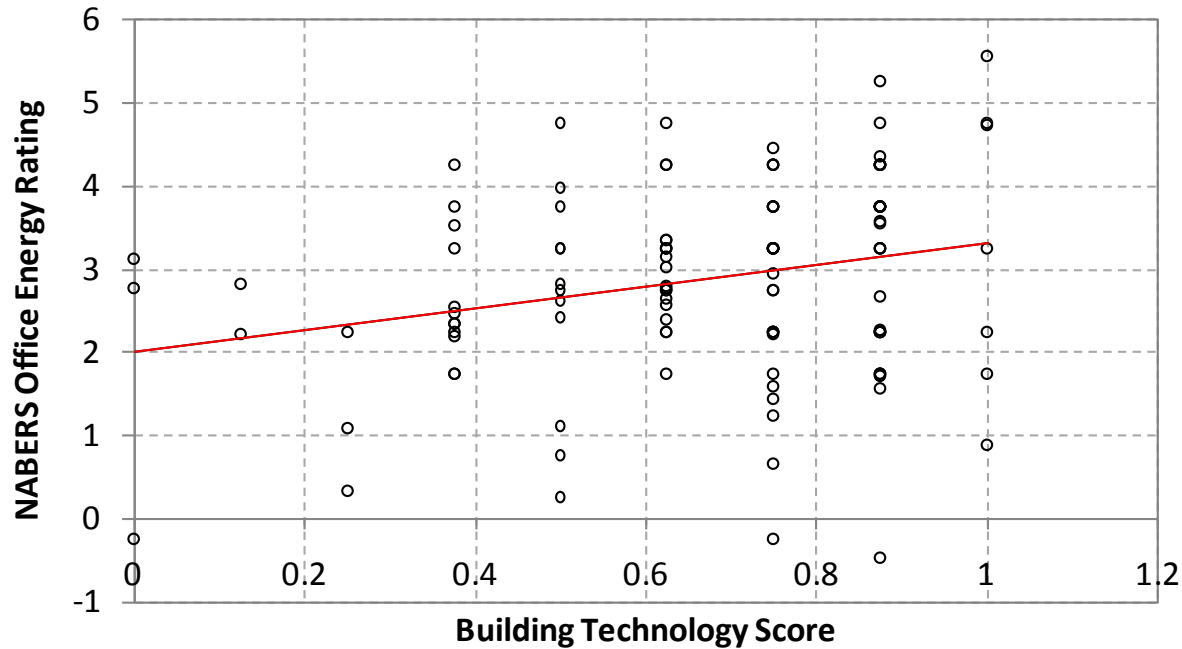
○ Newer buildings are more efficient

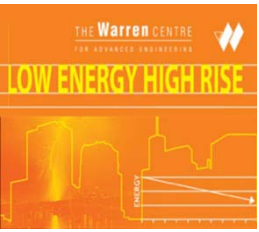




# Building Characteristics & Technical Factors

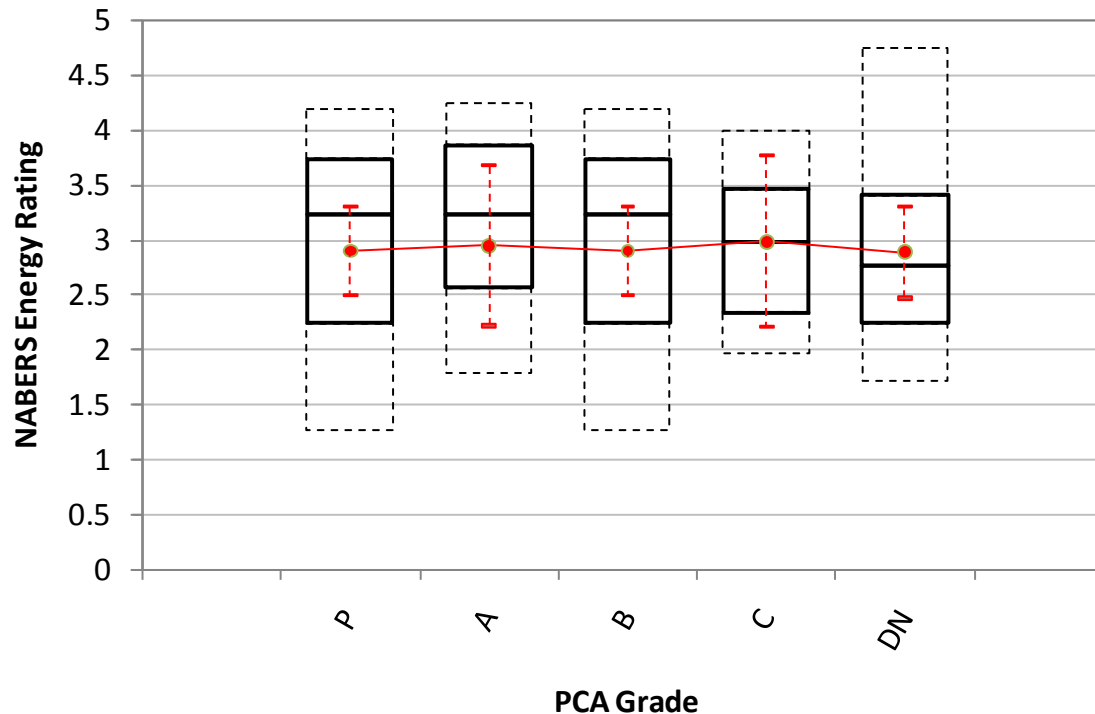
- Better technology leads to better performance

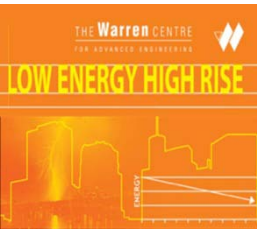




# Building Characteristics and Technical Factors

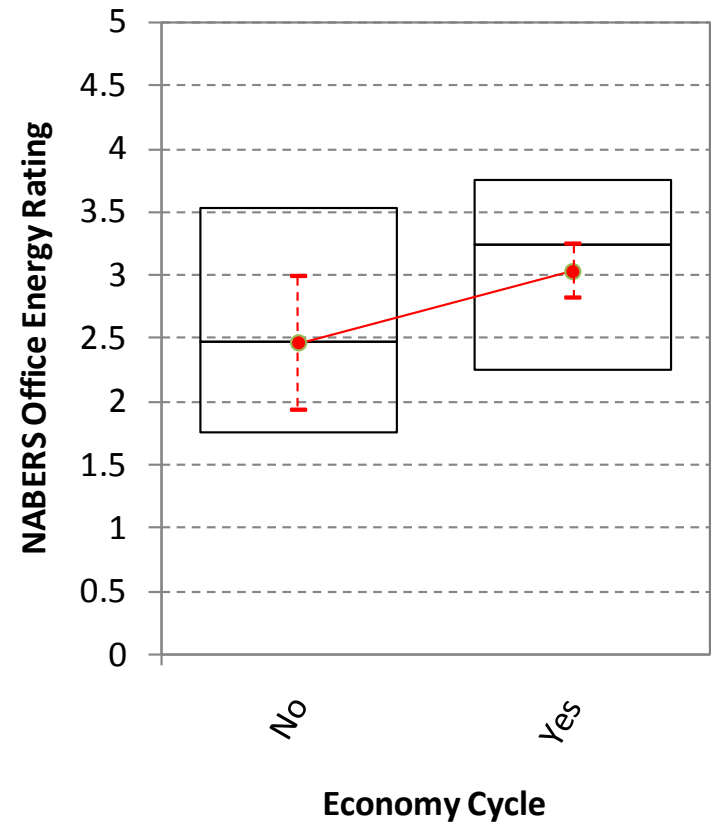
- No significant differences found between different PCA Grades

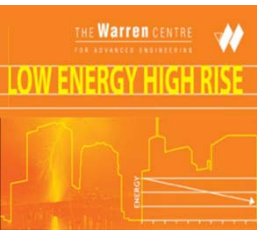




# Building Characteristics & Technical Factors

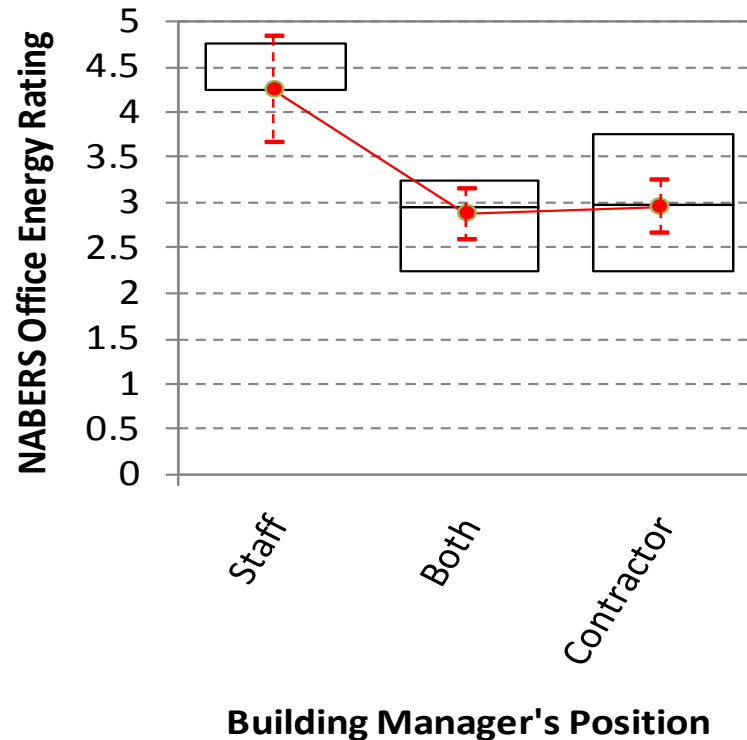
○ Buildings with economy cycles perform better



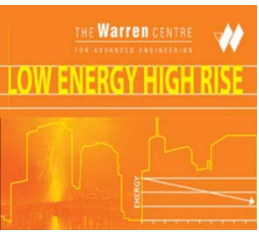


# Building Management & Operation

○ Better performance when building management is in-sourced

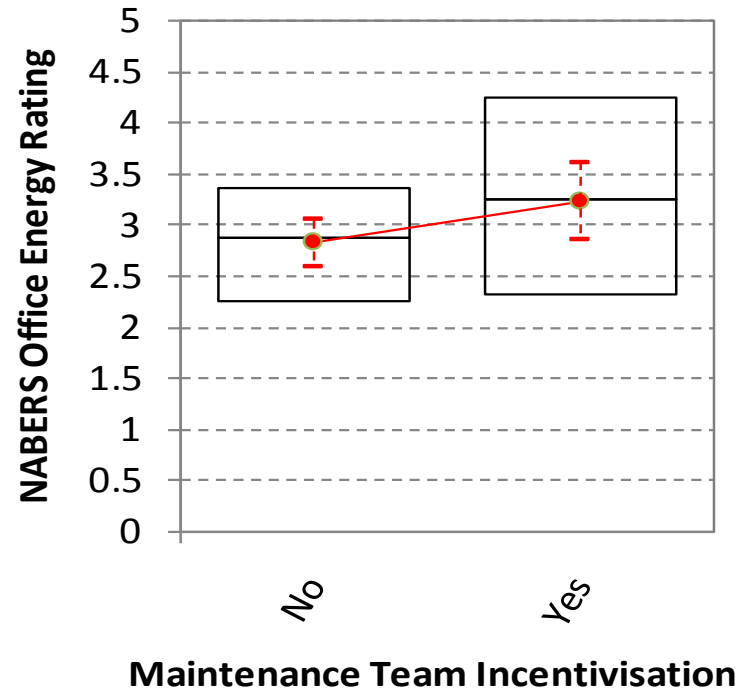


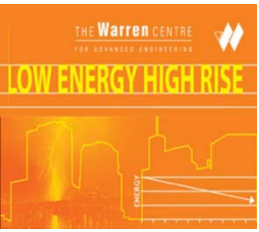




# Building Management & Operation

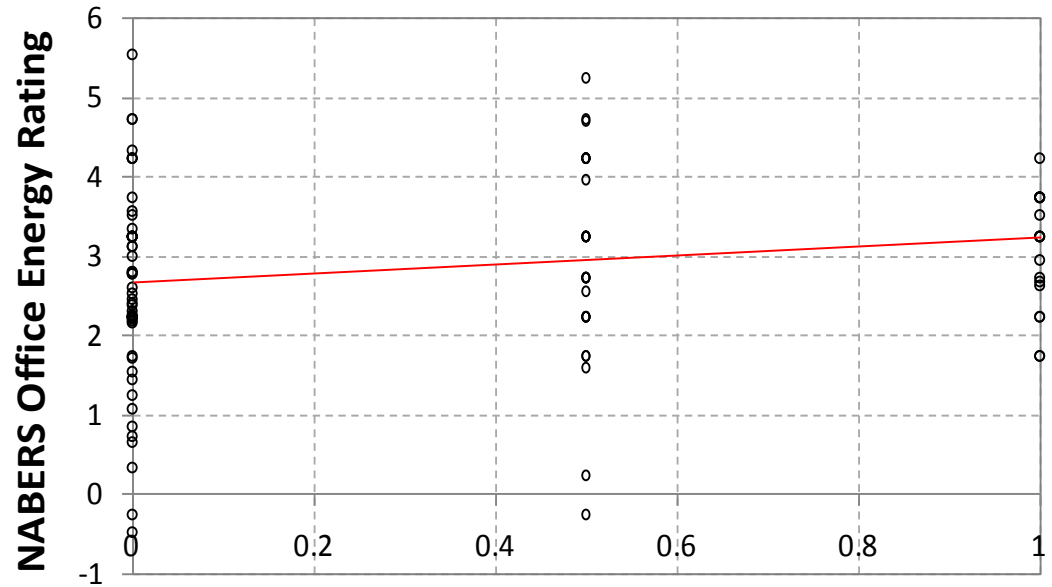
- Efficiency penalties or incentives for maintenance contractors improve performance



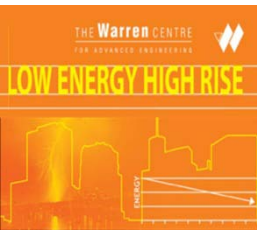


# Building Management & Operation

○ Buildings that disclose their NABERS performance to tenants perform better

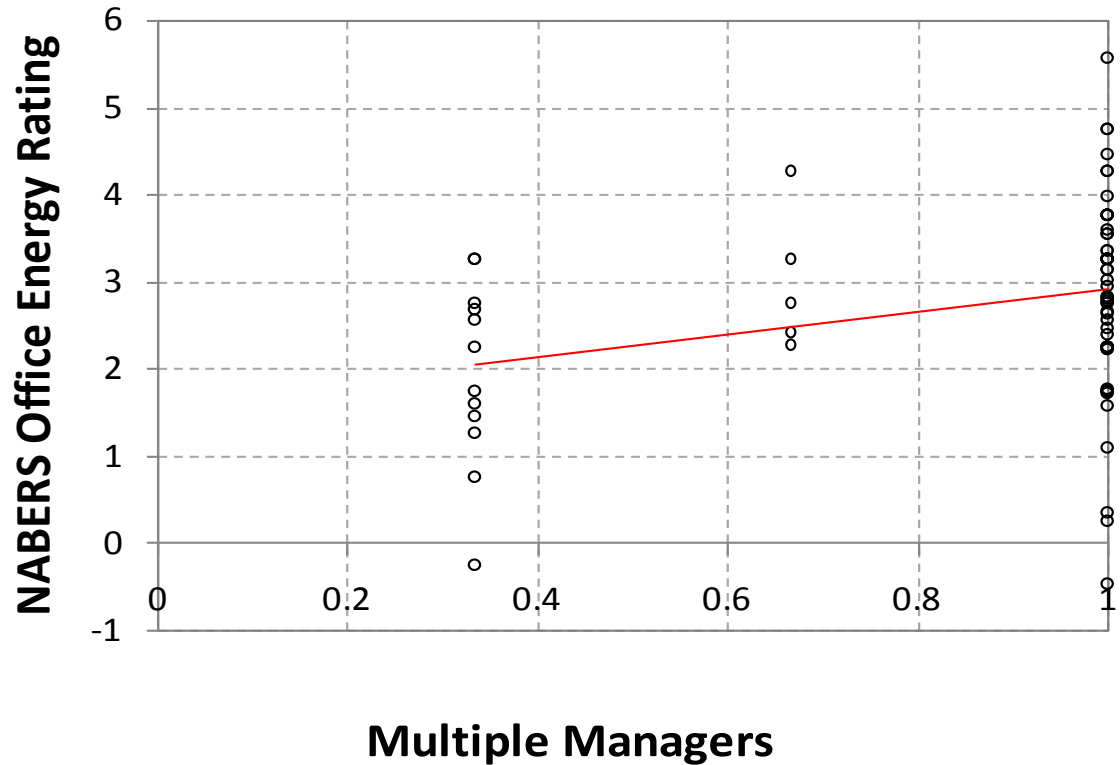


Reporting to Tenants



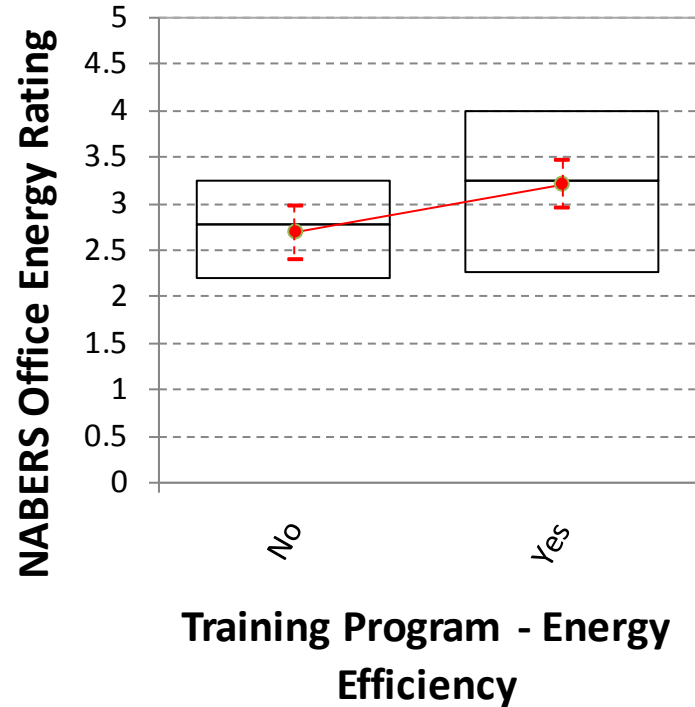
# Building Management & Operation

- Buildings perform better when building, asset and portfolio managers all feel they can influence energy efficiency

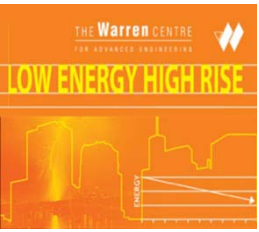


# Personnel & Skill Factors

- Better performance when there is an energy efficiency training program in place

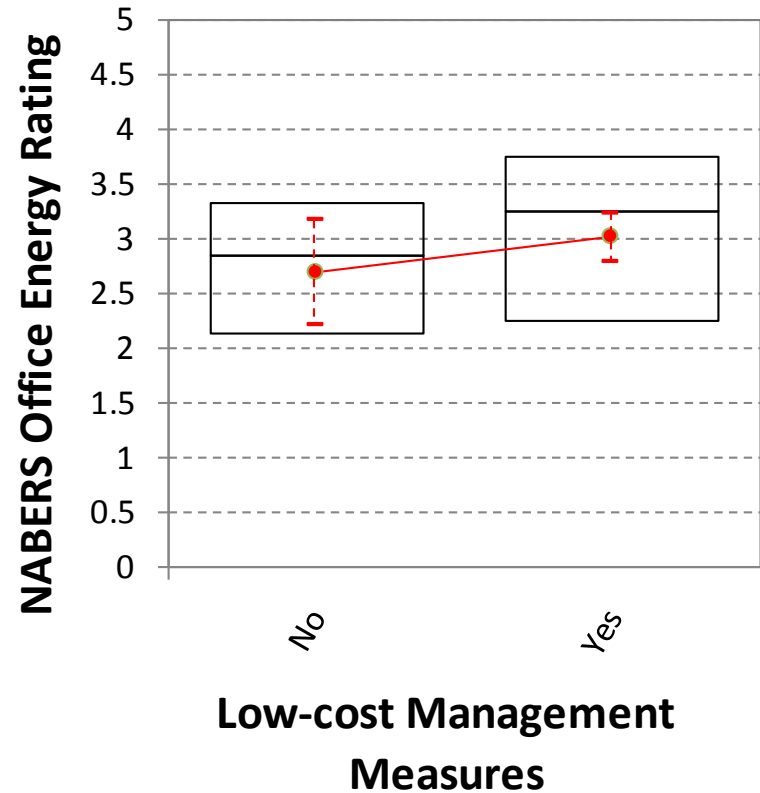






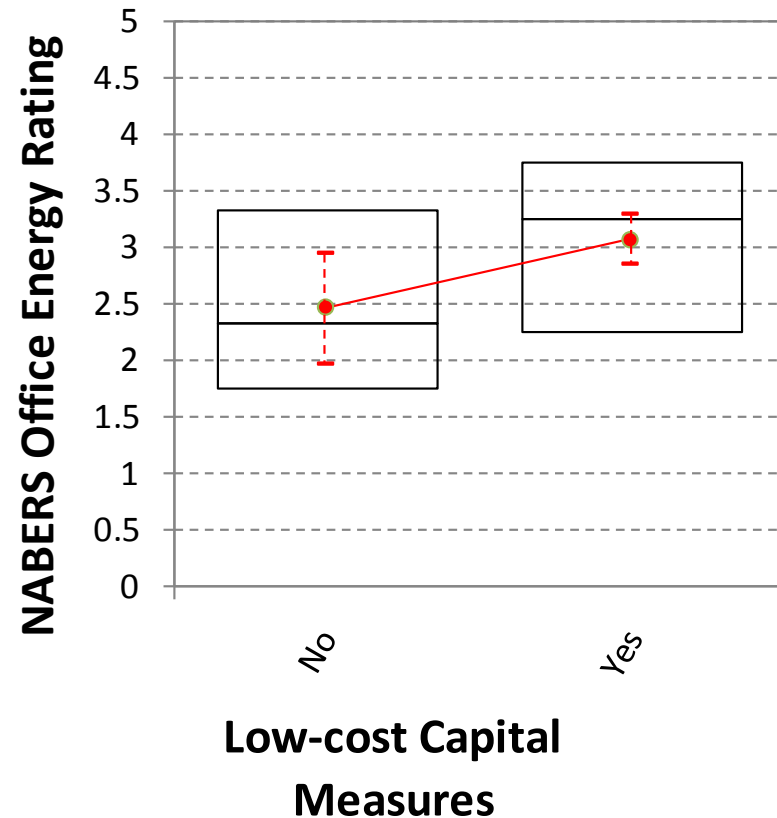
# Investment Factors

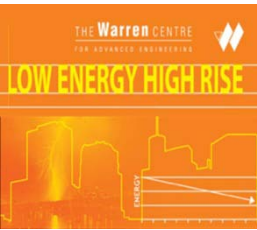
- Sites that had implemented low-cost management measures had better NABERS performance



# Investment Factors

- Sites that had implemented minor capital measures had better NABERS performance

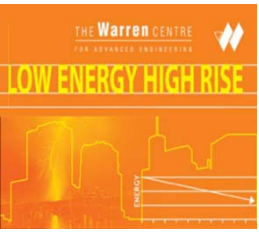




# Project Conclusions

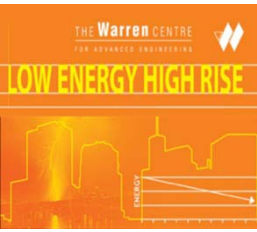
- The measures identified could lead to performance improvements of up to 30%
  - Approx 1 star relative to average
- Equivalent to a 1.2% reduction in Australia's total greenhouse emissions, when extrapolated to the CBD office building sector





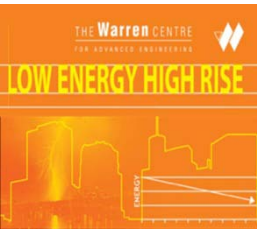
# LEHR Stage 2 - objectives

- LEHR materials covering:
  - Management
  - Monitoring and reporting
  - Technical
  - Tenants
  - Training
- Stage 2 complete with materials currently being designed for publication



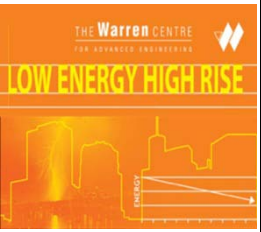
# LEHR and Existing Buildings

- LEHR demonstrates day to day operation is critical
- While new can be better it is not a guarantee of performance
- The same challenges exist in empowering and enabling performance



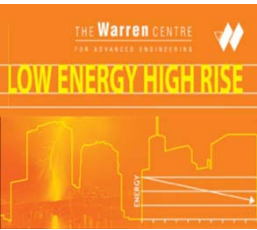
# A Building Energy Efficiency Upgrade Strategy

1. Get the day to day right
2. Identify current performance
3. Ensure the necessary skills are covered
4. Then consider at the building structure & services



# Beyond LEHR

1. Know your building – review the design and construction
2. Identify the problem areas
3. Only fix what is broken
4. Ask first is it the best fit for the building
5. Secondly look for whether it offers the most efficient outcome
6. Develop a strategy



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