

Innovation and Technology for Change: Introduction to Panel Theme



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Energy Intensity (Retail - Building Alone)

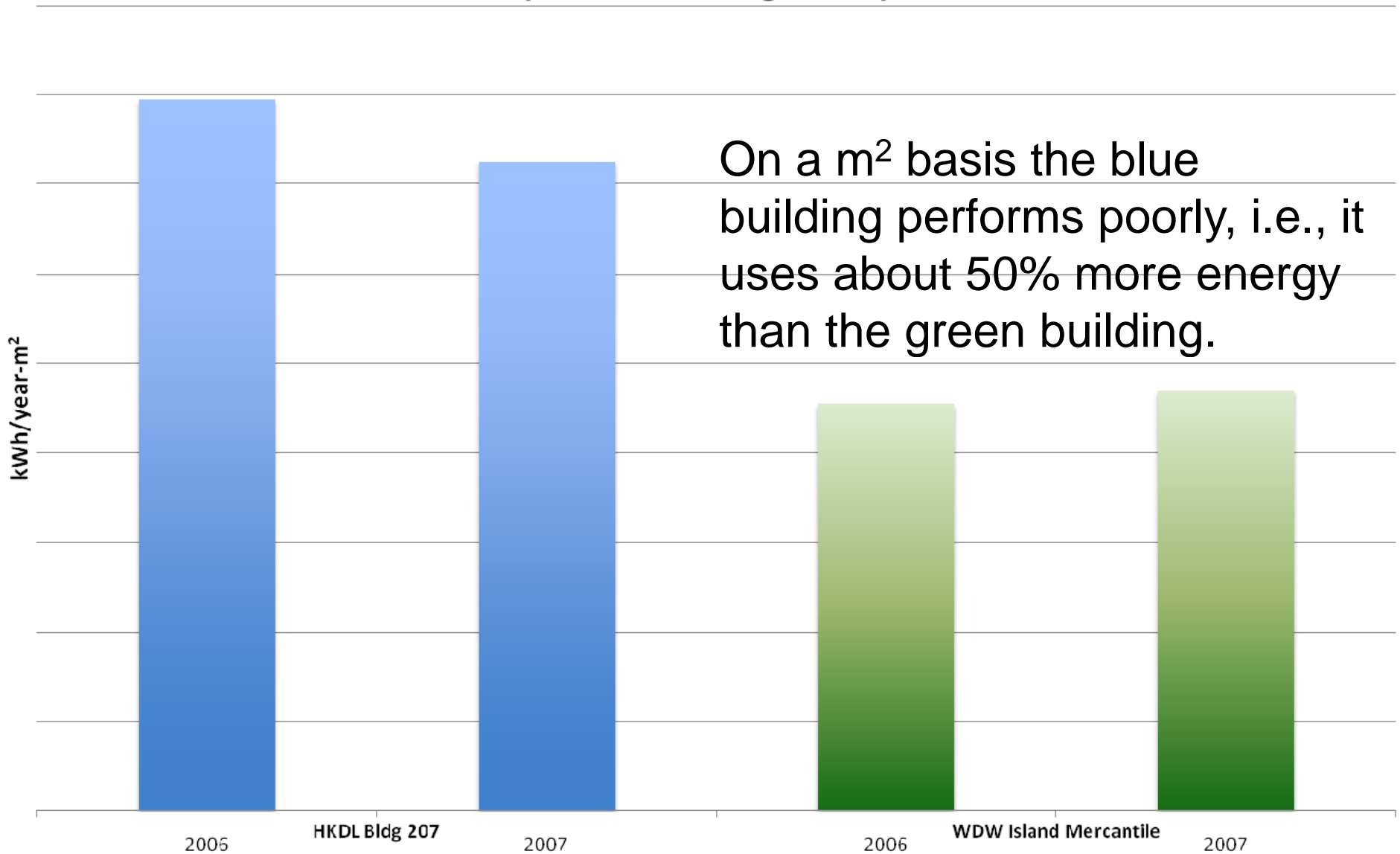


Figure Courtesy, WDI

Energy Intensity (Retail - With Building Function)

On a transaction per m² basis the green building performs poorly, i.e., it uses about 80% more energy than the blue building.

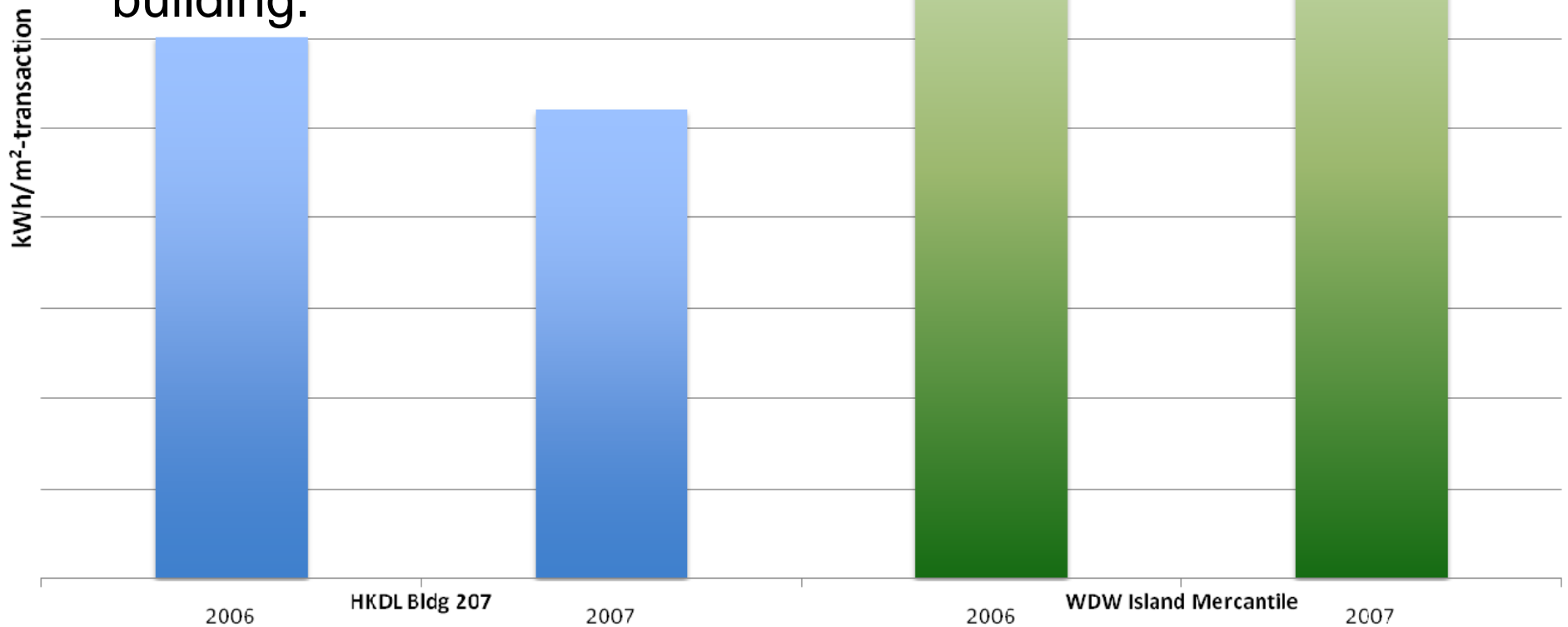
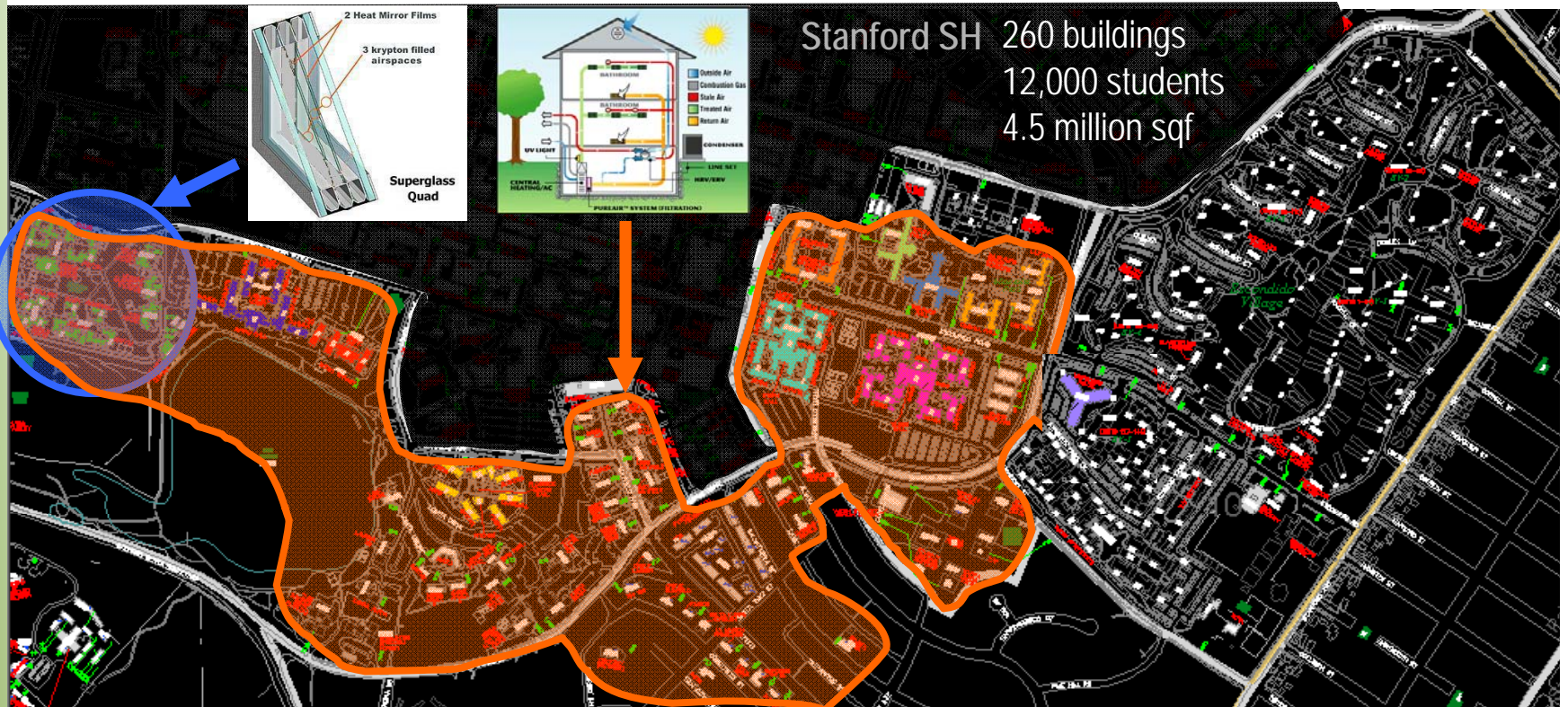


Figure Courtesy, WDI

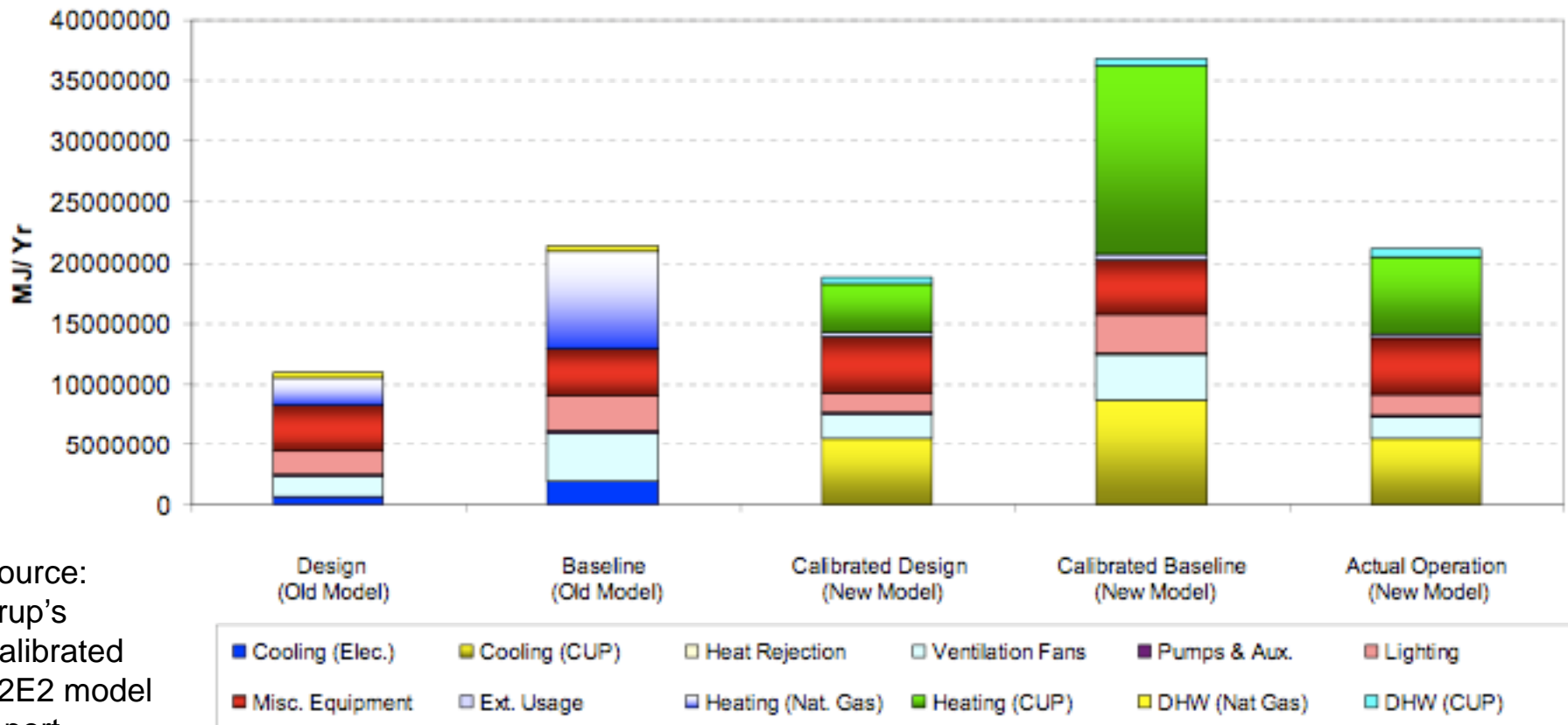
Where to intervene to reduce energy and water consumption?



Energy performance of Y2E2



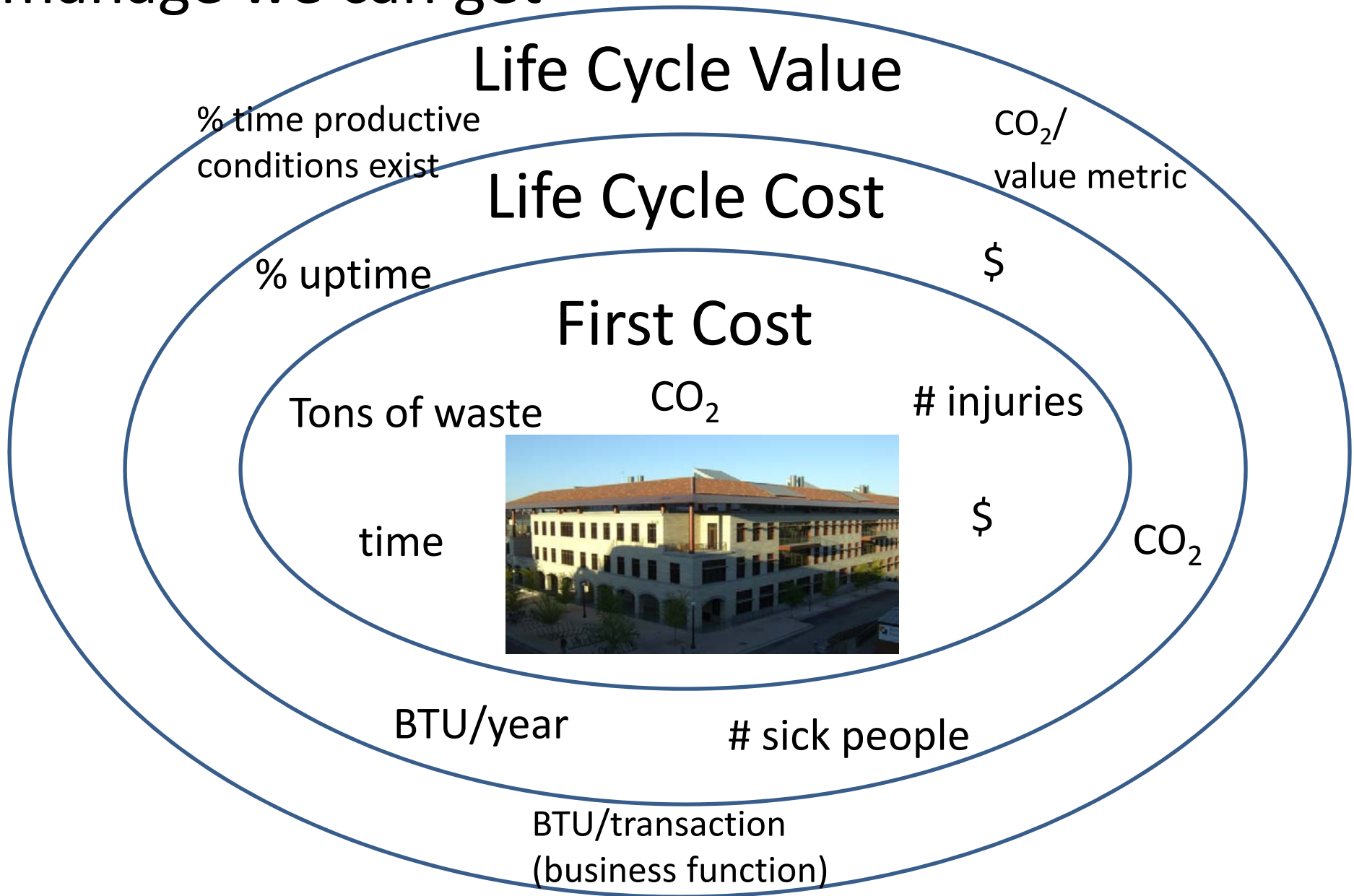
Comparison (With Process Loads)



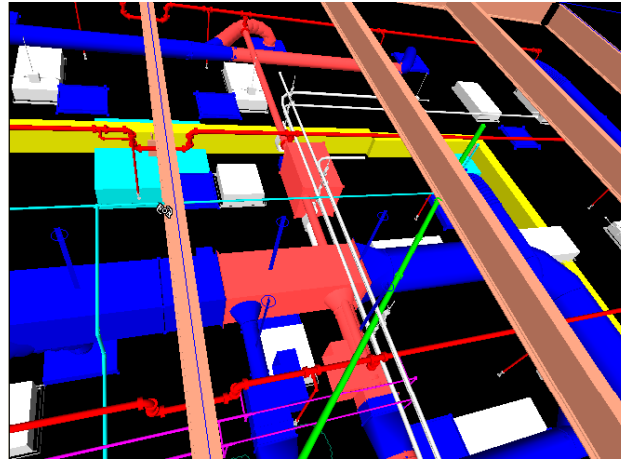
Source:
Arup's
Calibrated
Y2E2 model
report

- Actual operation is close to design baseline model (code)
- Actual operation is far away from original design goal
- Calibrated models show about 50% improvement compared to calibrated baseline

What we measure we can manage, what we manage we can get



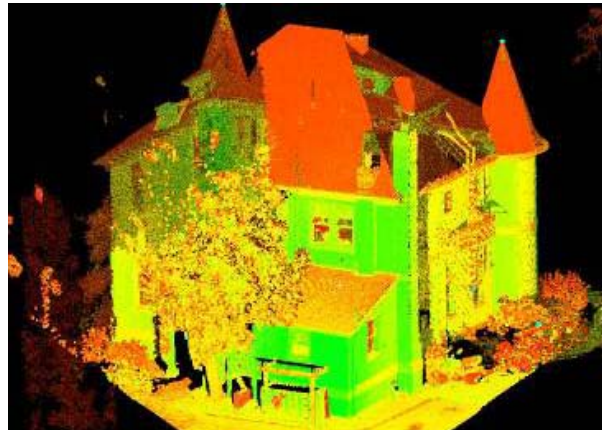
VDC technologies and methods commonly used on advanced projects



- ALLOWS START OF EXC. EARLY.
- Do we still need a wall on south if one is on north?
- Removes the constraint of WATER Proofing here

MILESTONE
CONSTRUCTION
TEMPORARY
DEMOLITION

MOVE F. WALL TO NORTH OF CORRIDOR?



First we shape the project organization, then it shapes the project and its performance

- Successful large complex projects don't just happen.
- To be high-performing and cost-effective, they require **synergy** between architectural, structural, mechanical, and many other building systems,
- which requires the **holistic** and **integrated** consideration of **all key aspects** from all key perspectives in a **timely manner**.
- This is virtually **impossible** to do **without technology**, in particular Virtual Design and Construction Methods.

VDC includes

- **People** working together productively (**process**)
 - **Technology**
 - **Concepts** to link what the technology does to what the people do
 - **Metrics** to guide the decisions of the team about the design of the facility and how it will be delivered
- Note that the design and use of this VDC system is entirely up to us

The design and construction team for a built facility

- Must meet an owner's **business objectives** by
- setting up an **organization** and schedule (**process**) that leverages the **multiple disciplines'** knowledge as best as possible to
- deliver a facility (**product**) that meets or exceeds the facility **performance metrics** that support the owner's **business objectives**.
- This team has to **predict** and **manage** towards the desired **facility performance**.

Focus on design and construction because facility life cycle impact is largely defined in these phases

Virtual Design and Construction (VDC) is

In the computer

Goals

- the use of *multi-disciplinary performance models* All key stakeholders and perspectives
- of building projects, including their
 - *Products* (facilities), Scope
 - *Organizations*, and
 - *work Processes* How to realize the scope
- for *business objectives*
What the project does for the owner

Watch for:

Integration



Technology