

Money Isn't Everything

How Load-Reducing Design Cuts Costs and Changes Buildings

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HPBs: Little to No Premium

- Average cost for High-Performance Buildings (HPBs) in NY: \$184/sf

- Compare to RS Means Albany: \$185/sf

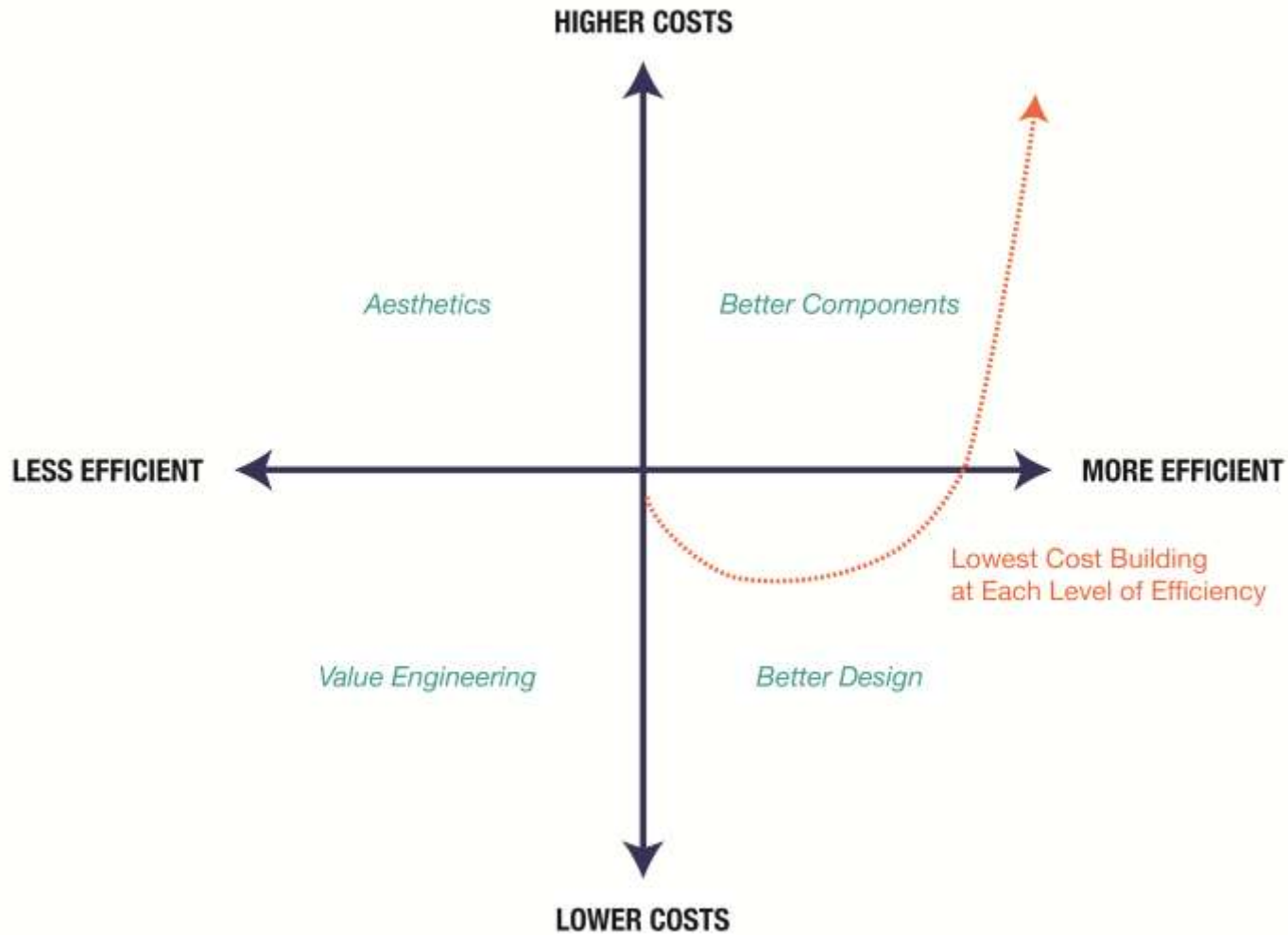
- New Buildings Institute research

- Empirical: premiums of 0% to 10%

- Modeled: premiums of 3% to 18%

Getting to Zero 2012 Status Update: A First Look at Costs and Features of Zero Energy Commercial Buildings

The Lowest-Cost Curve



Negative-Cost Measures



Glass Curtain Wall

- ❑ More expensive
- ❑ Less efficient
- ❑ Pretty?

vs.



Wall

- ❑ Less expensive
- ❑ More efficient
- ❑ Good for hanging things

No-Cost Measures

- Alberici
Headquarters
 - 34 kBtu/sf/yr
- Measures:
 - Orientation
 - Footprint
 - Window shape



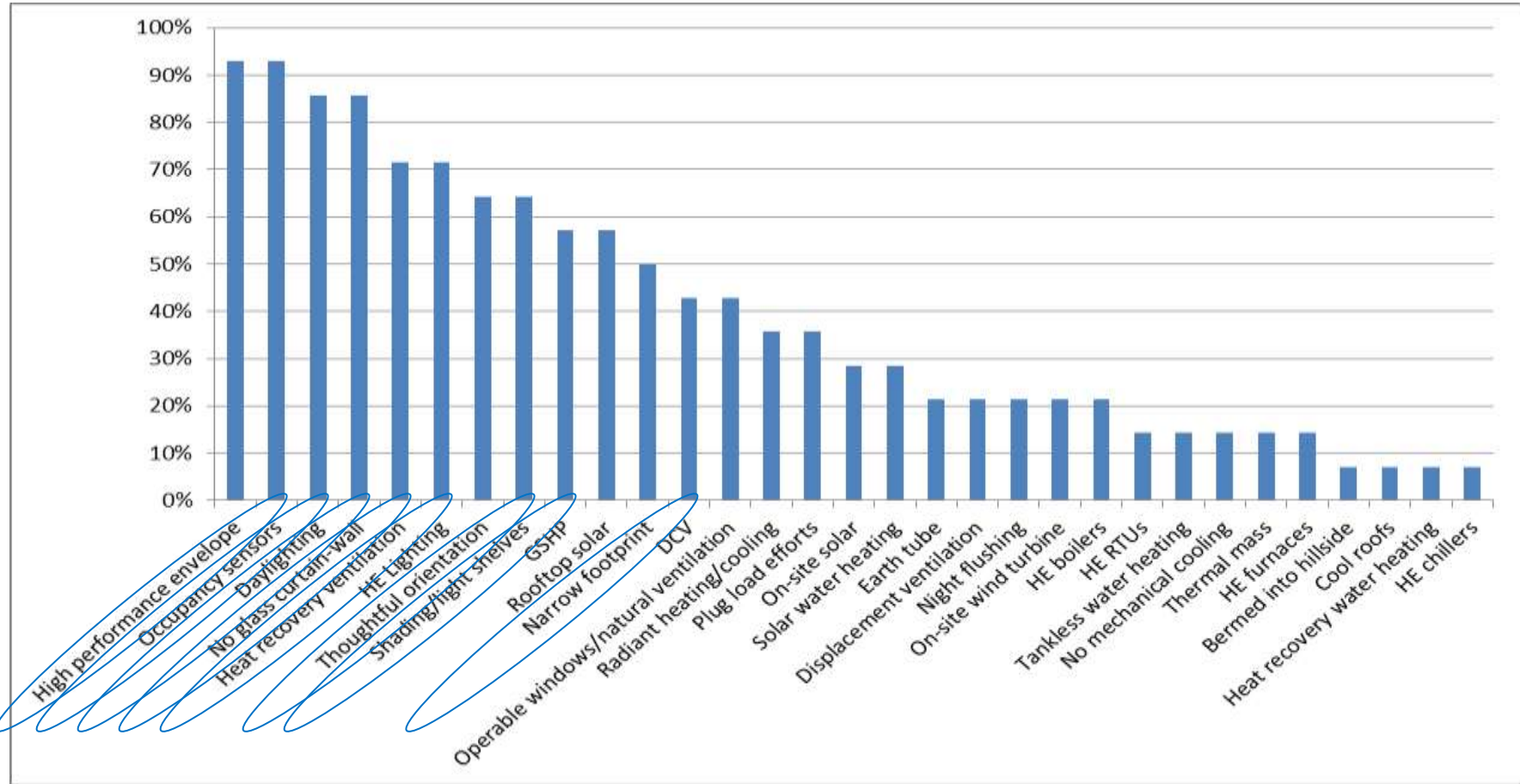
□ Empire State Building

- Invest to reduce load
 - DCV, more insulated windows, improved controls, daylighting
- Downsized chiller load 1,600 tons
 - Saved \$17.3 million on chiller upgrade



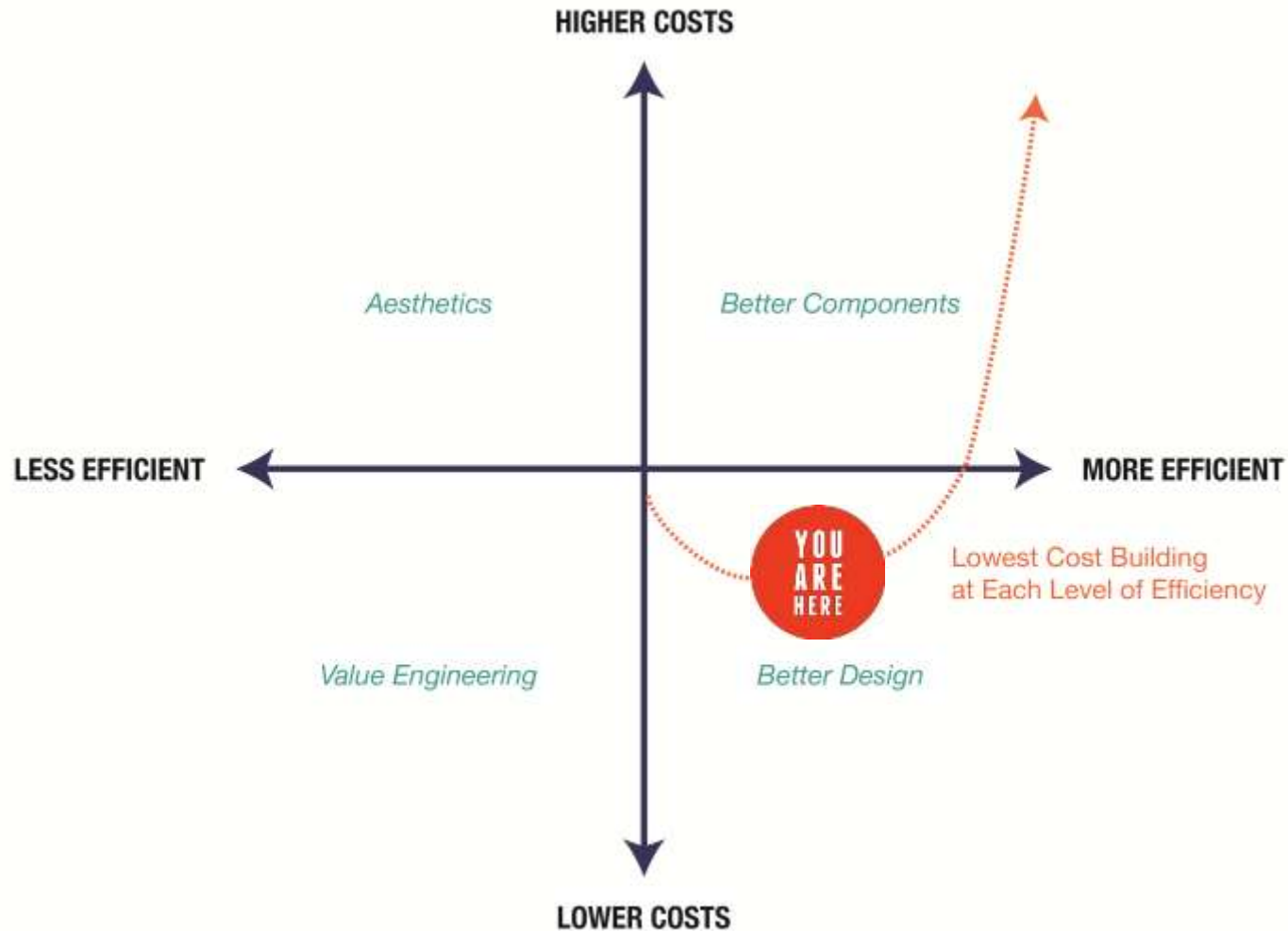
Load Reducing Design

Inventory of Measures in NY's HPBs by Frequency of Appearance



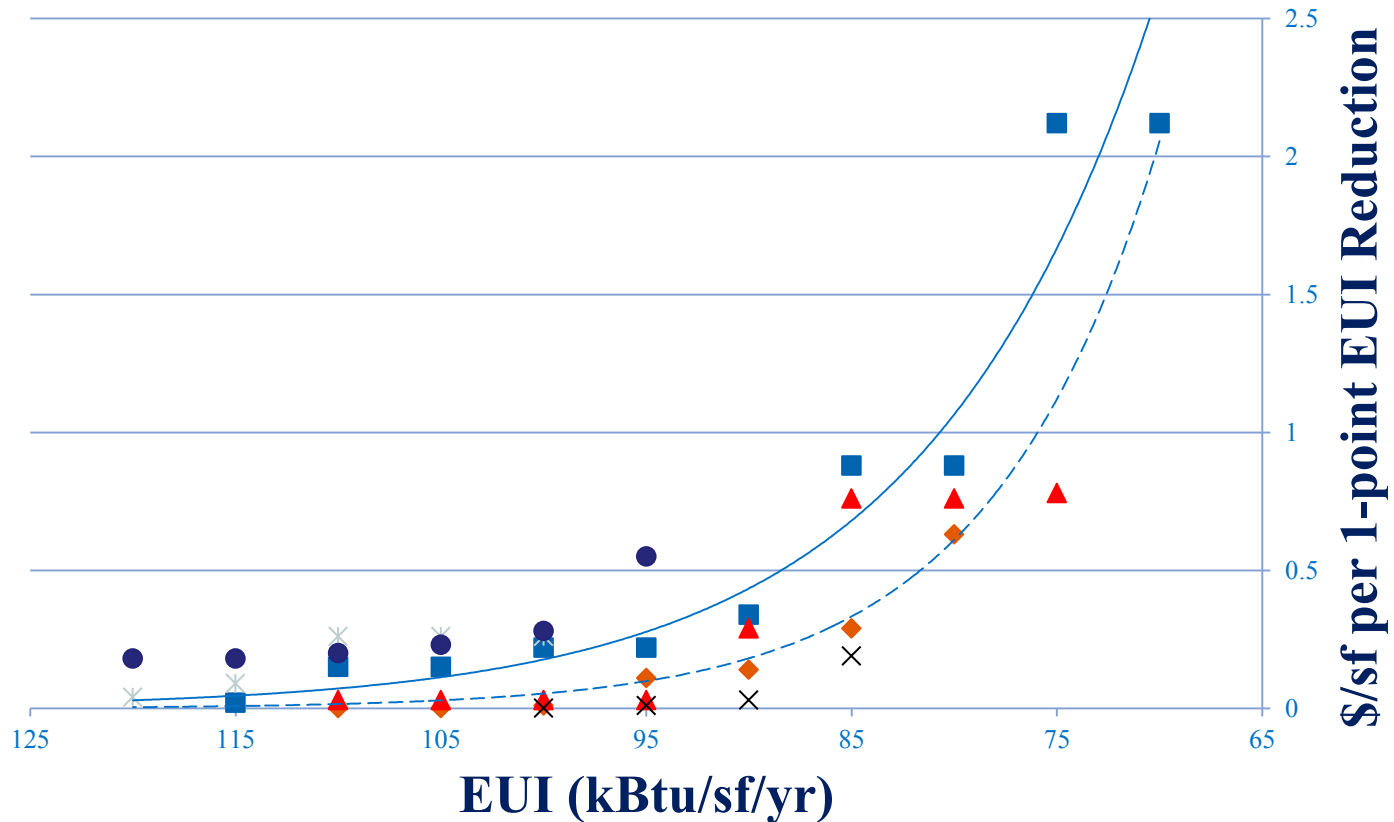
Load-reducing design features dominate high-performance construction.

We're Halfway There...



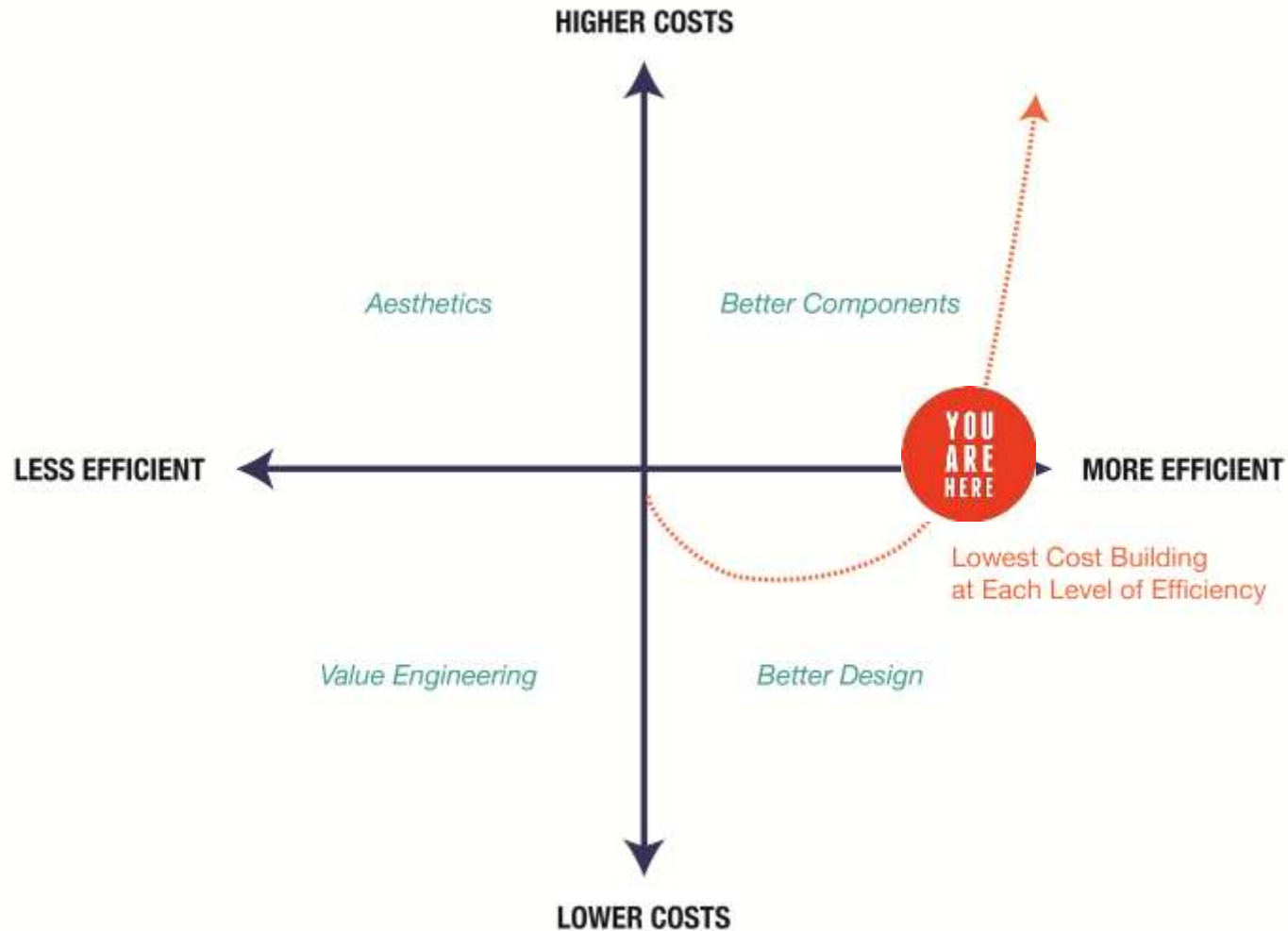
Incremental Cost Measures

Measure Costs vs. EUI in Retrofits



Efficiency measures hit a point of exponentially diminishing returns

Destination High Performance



Free Lunch?



Non-Energy Tradeoffs

□ Aesthetics

- Untraditional exterior...



□ Functionality

- Open layouts...

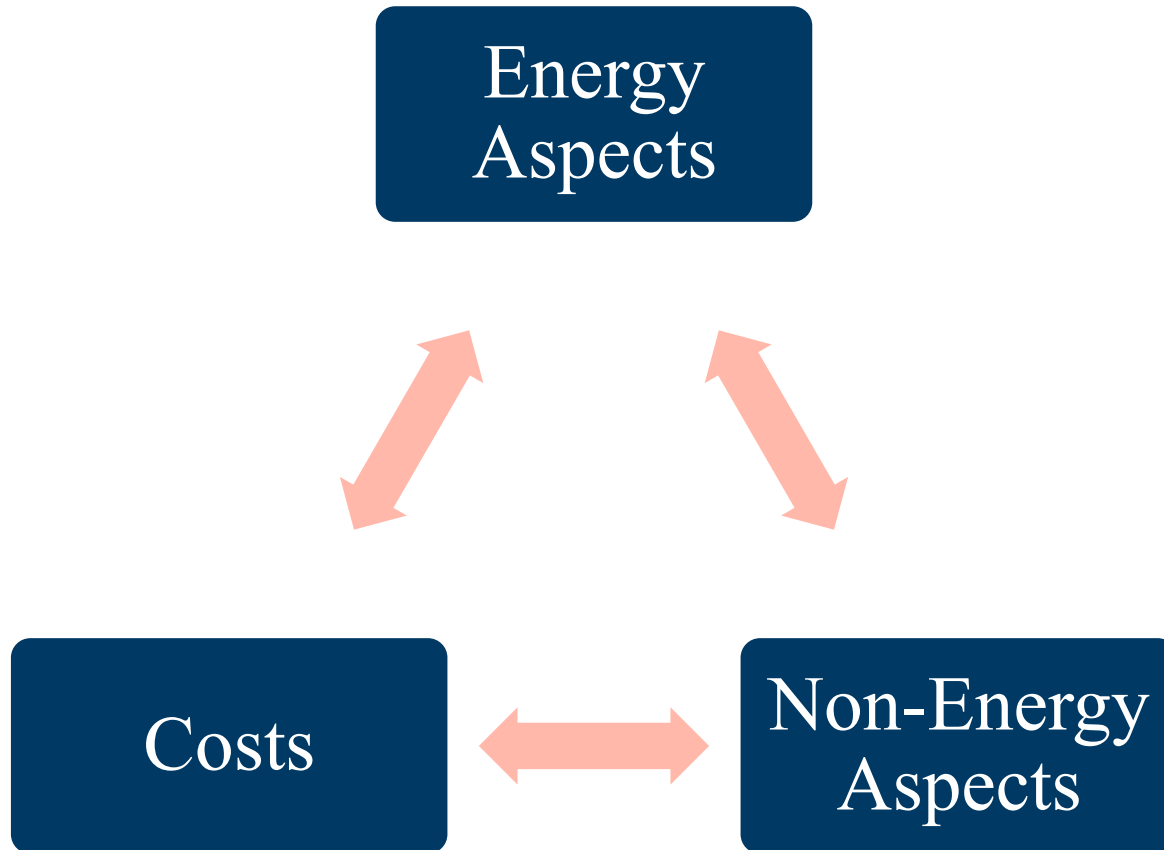


□ Comfort

- Natural ventilation...



Triangle of Tradeoffs

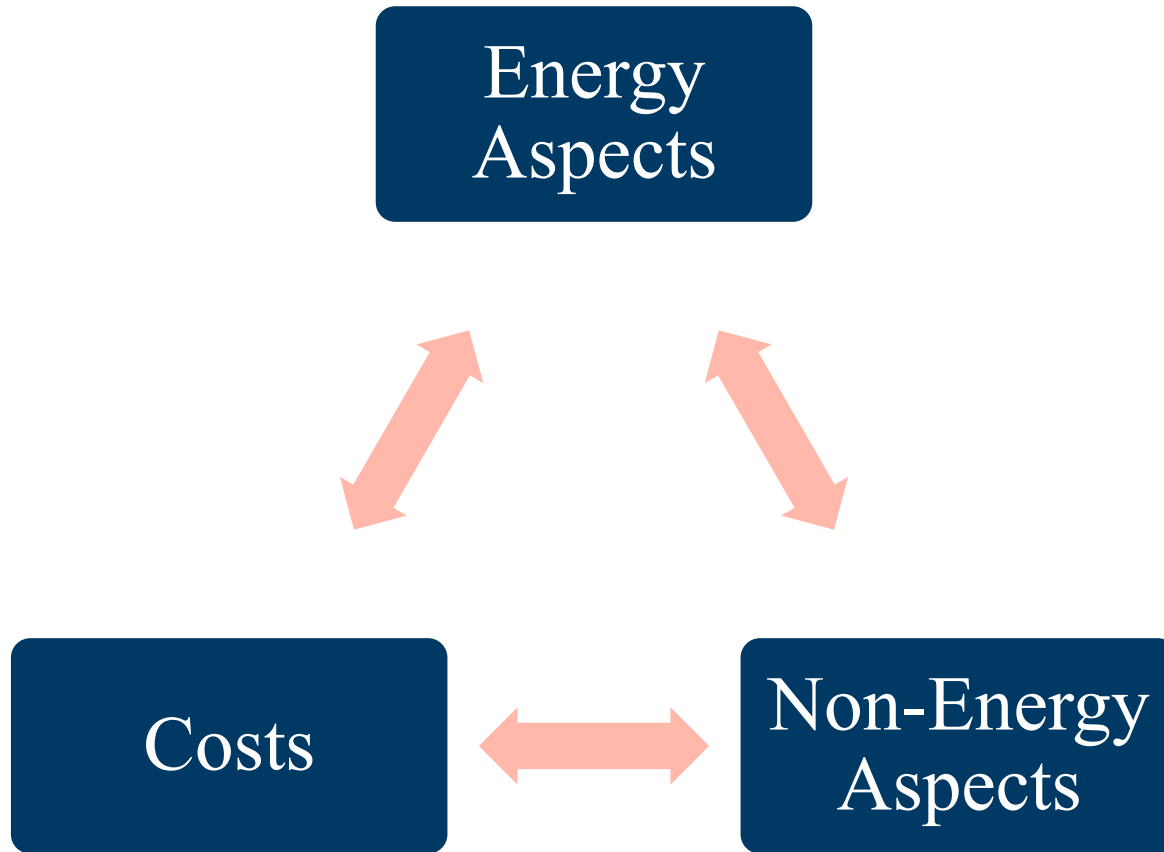


Making the Tradeoffs

- ❑ Environmental Organizations
 - Santa Monica office of NRDC
- ❑ Progressive A&E Firms
 - Johnson Braund Design Group in Seattle
- ❑ Public Facilities
 - U.S. Navy Building at Port Hueneme
- ❑ Corporations with Sustainability Goals
 - Exelon headquarters in Chicago



Triangle of Tradeoffs



Non-Energy: Can Be Sold



Unique façade that screams sustainability!



SUMMER SUN

Bullpen style layout to encourage collaboration!



Fresh air and sunlight!

- ❑ Load-reducing design saves money
 - No-cost measures
 - Negative-cost measures
 - Investment measures
- ❑ Not a free lunch: non-energy tradeoffs
 - Perception = worse
 - Reality = different
- ❑ Program goal: prove that different is not worse and may actually be better

Thank You Questions?

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