

RESEARCH: FILLING IN THE GAPS

What don't we know about buildings energy use?

Where is energy actually dissipated, and what goes to reducible waste, irreducible waste, and beneficial energy services?

What are the key gaps in understanding building energy performance?

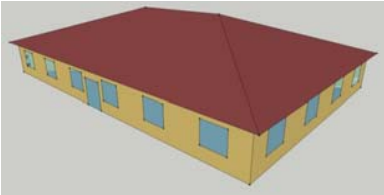
We know (?)

- Energy loads and use can vary by:
 - Building type
 - Climate
 - Building construction and systems
- But do we know why?

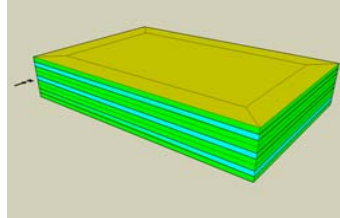
'Typical' Buildings

(mean of PBA/CBECS building types)

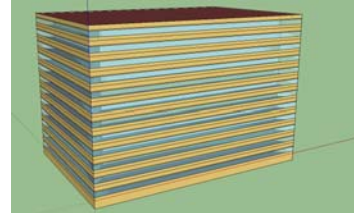
Small Office



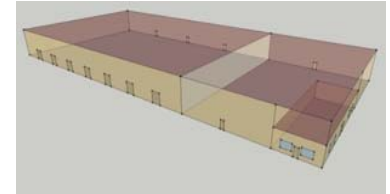
Medium Office



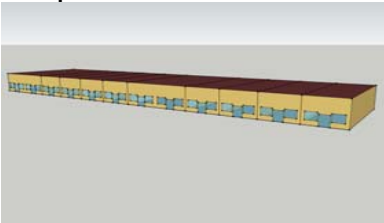
Large Office



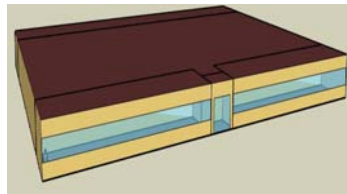
Warehouse



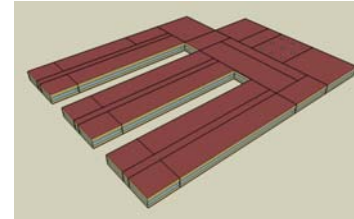
Strip Mall Retail



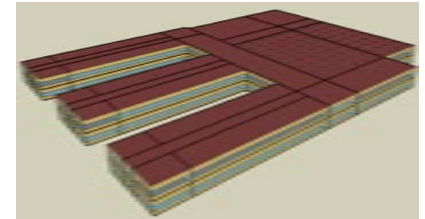
Standalone Retail



Primary School



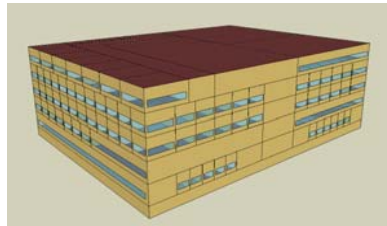
Secondary School



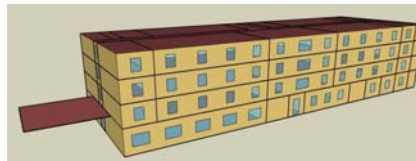
Outpatient Healthcare



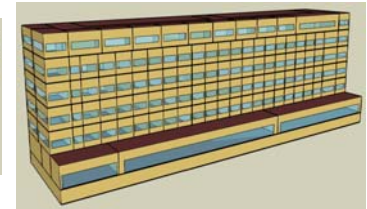
Hospital



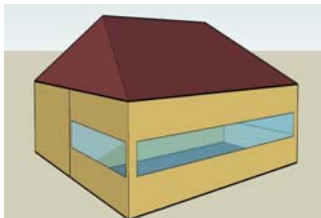
Small Hotel



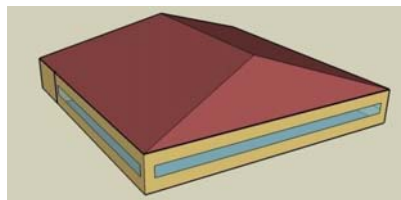
Large Hotel



Quick-service Restaurant



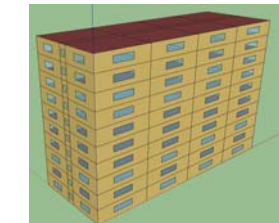
Full-service Restaurant



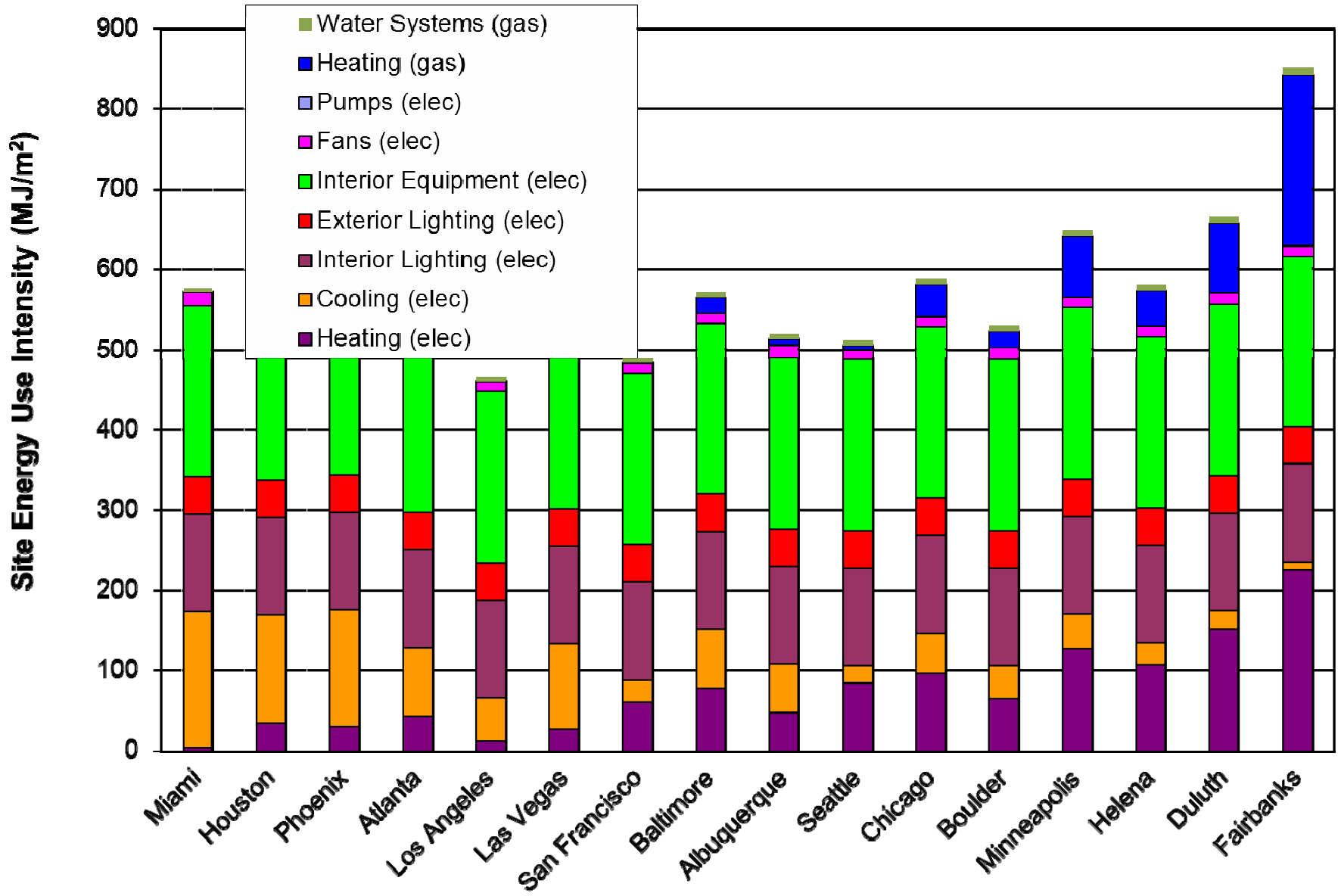
Mid-rise Apartment



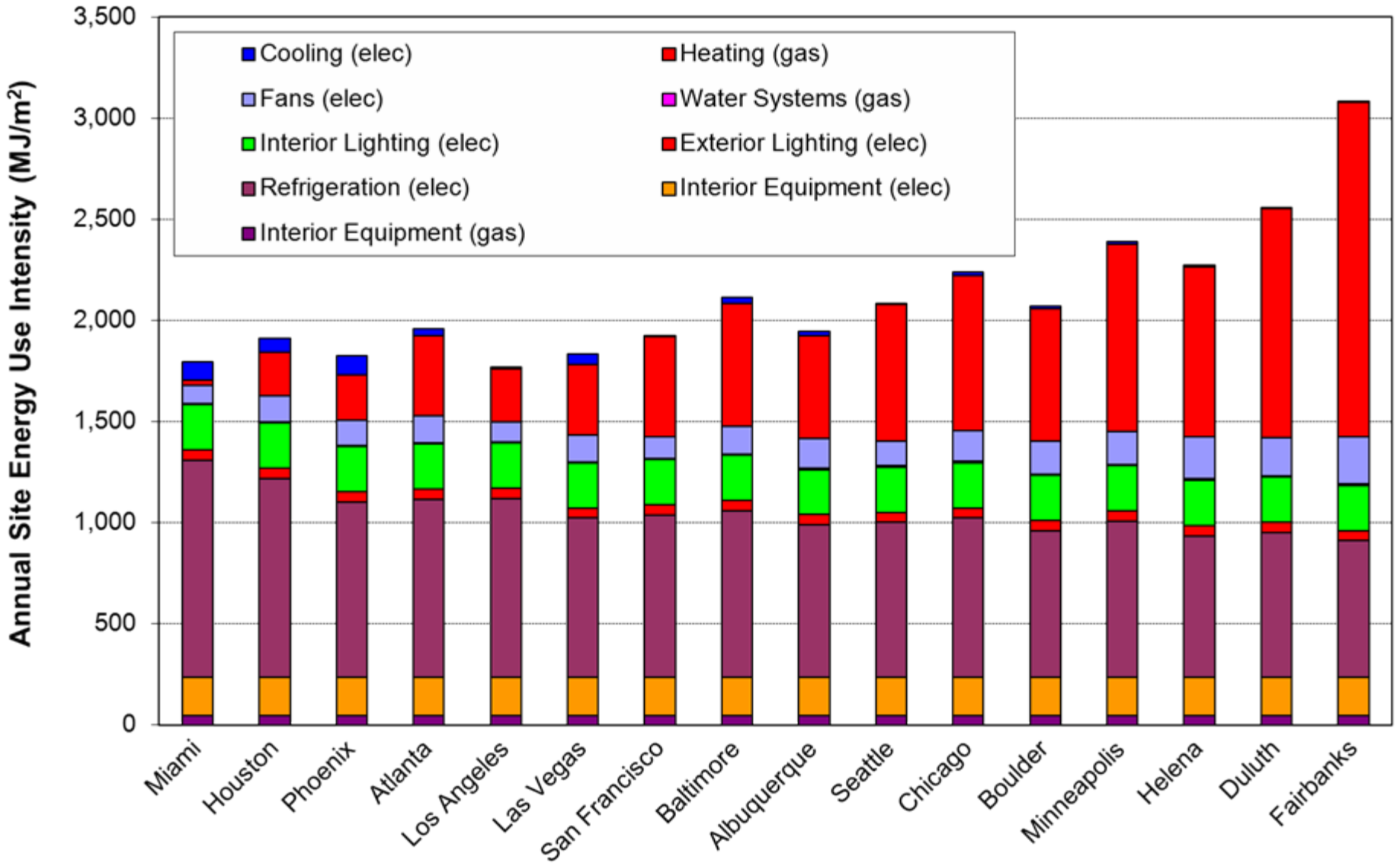
High-rise Apartment



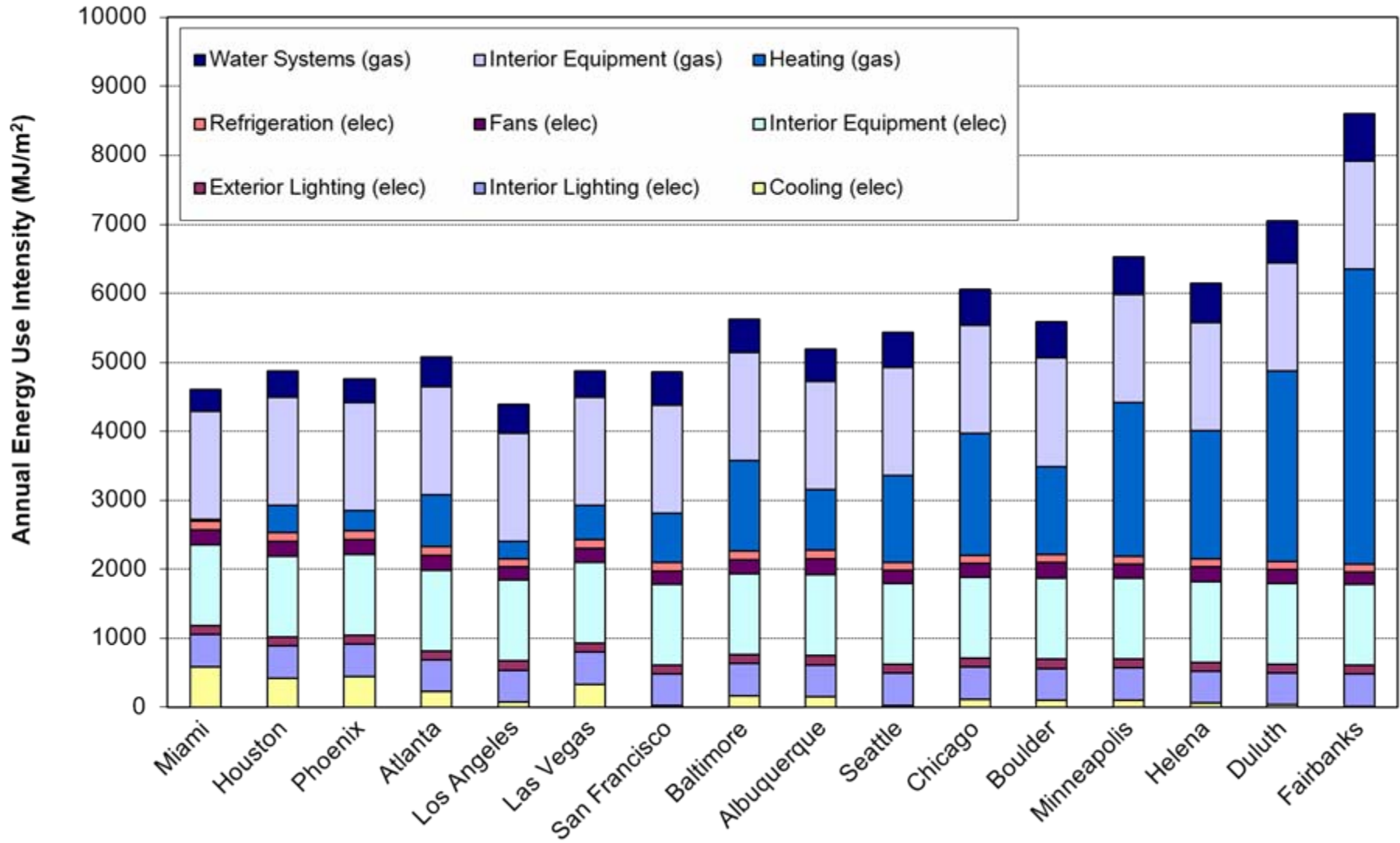
Medium Office:
variation of almost 100% across climates



Supermarket:
less variation but equipment dominates
(and scale is triple that of Small Office)

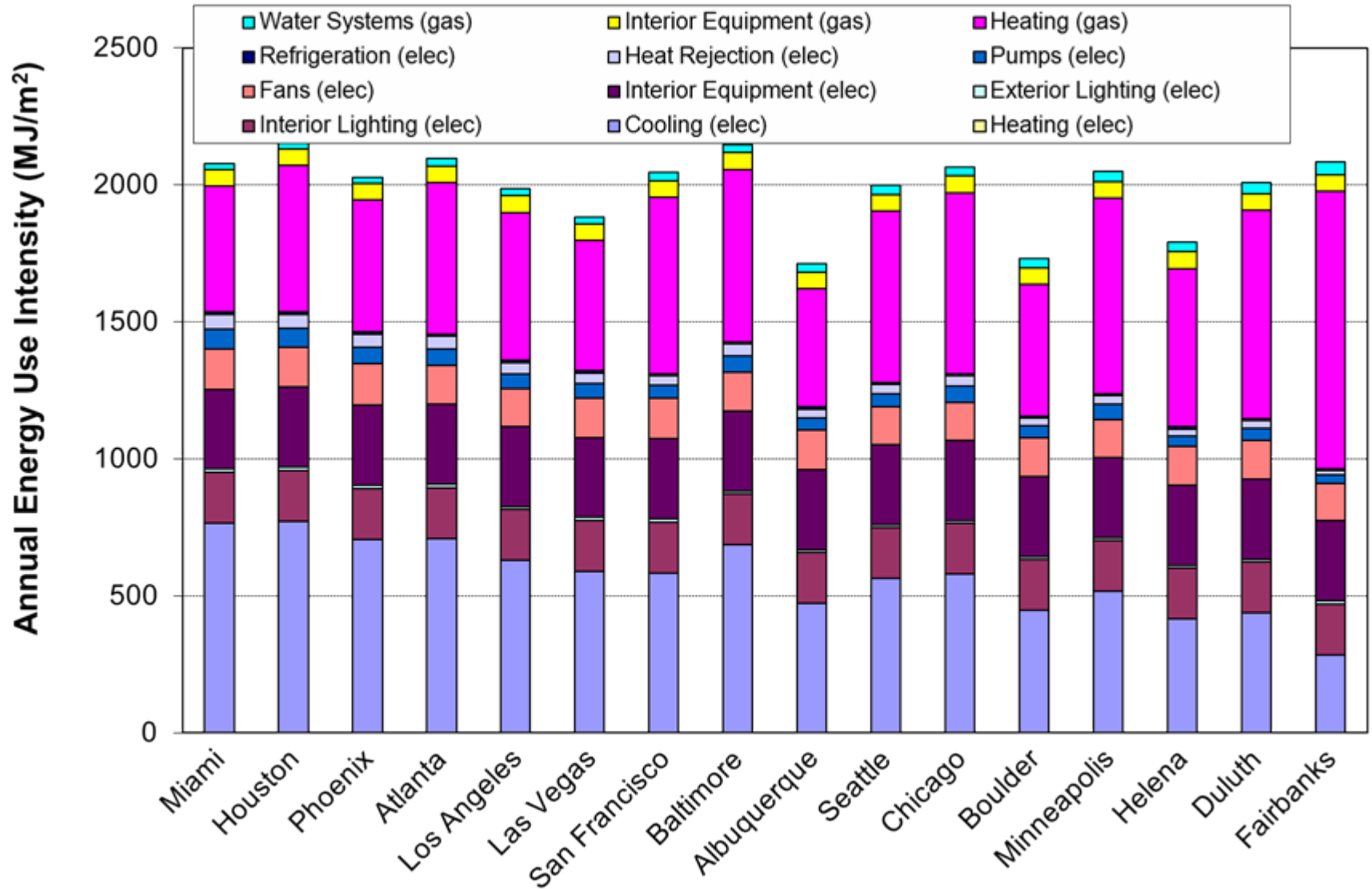


Full Service Restaurant:
Variation as large as the small office but energy x10!

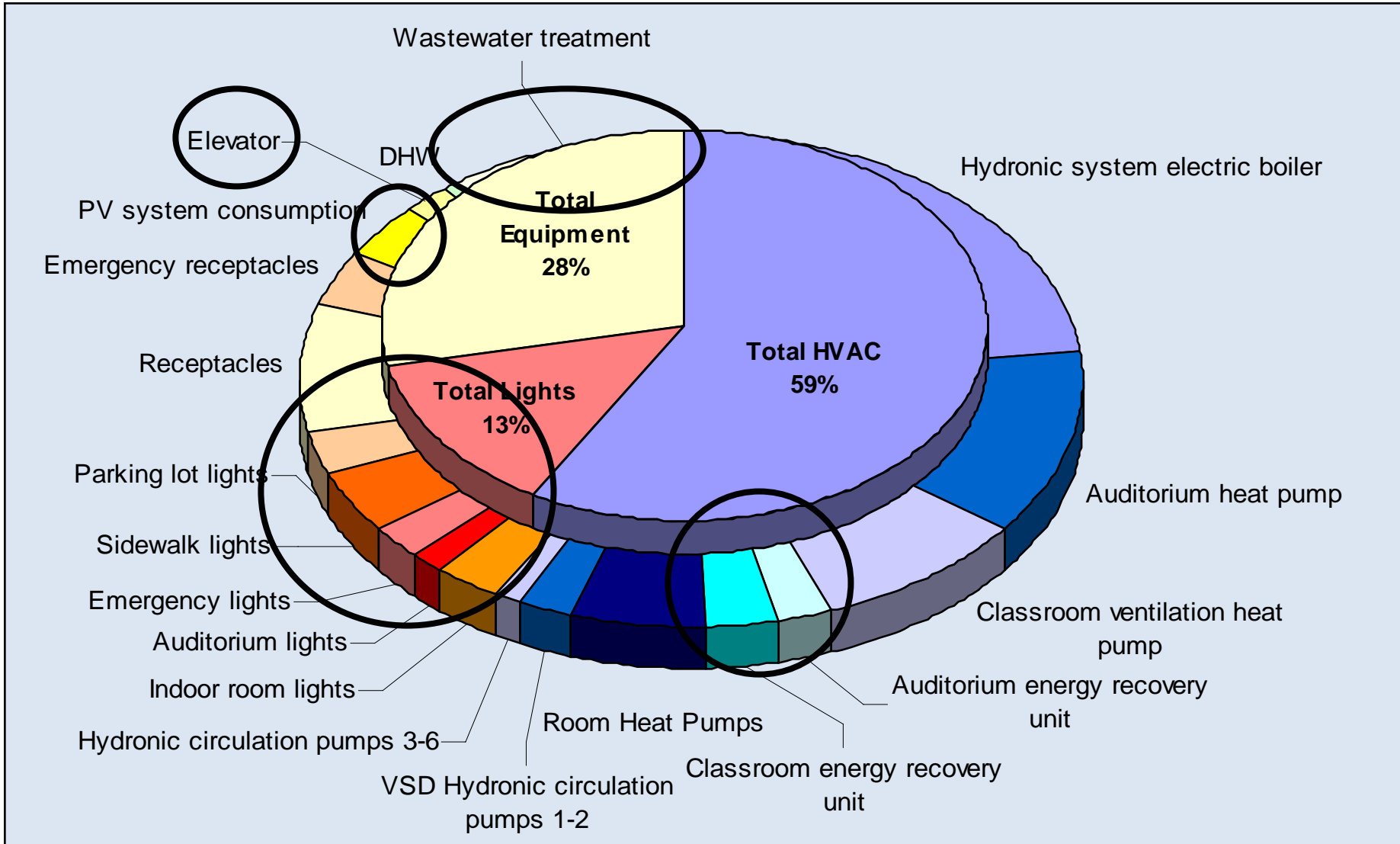


Hospital:

Twice the energy of small office but climate influence weak



Why? Energy Use Details are Critical



We know (?)

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 - Climate
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