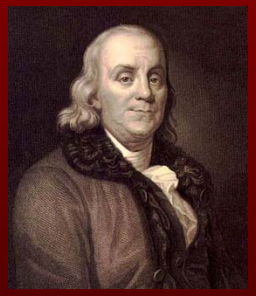
Energy Reduction

THE FUTURE STARTS TODAY

Verizon Energy Efficiency Team

Energy Reduction



"A penny saved is a penny earned"

-Benjamin Franklin (Founding Father)

"A goal without a plan is just a wish."

-Antoine de Saint-Exupery (French Writer)

"With great power comes great responsibility."

-Benjamin Parker (Spiderman's Uncle)

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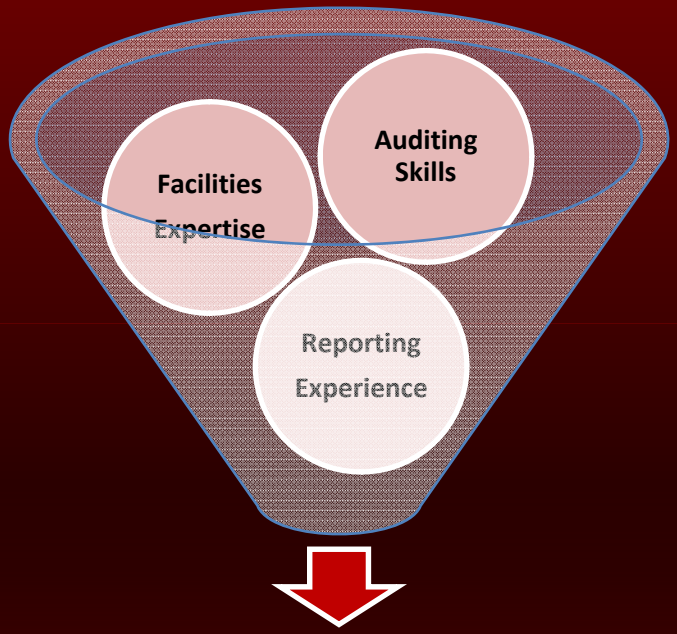
Then 1 2 3 4 5 Now

Step 1) Initial contact with:

U.S. Department Of Energy

Lawrence Berkeley National Labs

Step 2) Team Selection

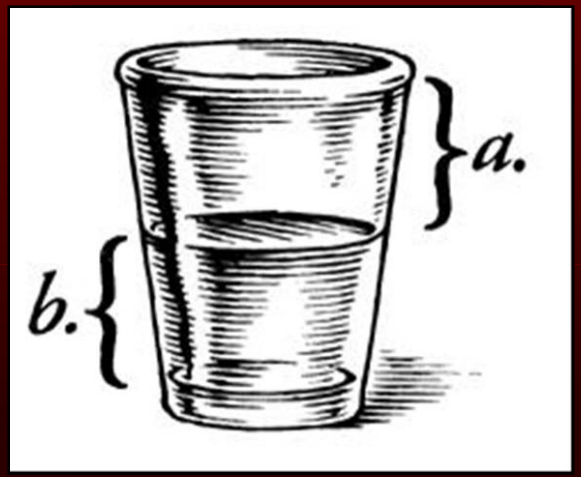


Energy Efficiency Team

Step 3) Analysis

Measurements

Findings



Step 4) Implementation – Cooling

Shut off CRAC/H units (Where Feasible)

Raise Overall Temperature Set points

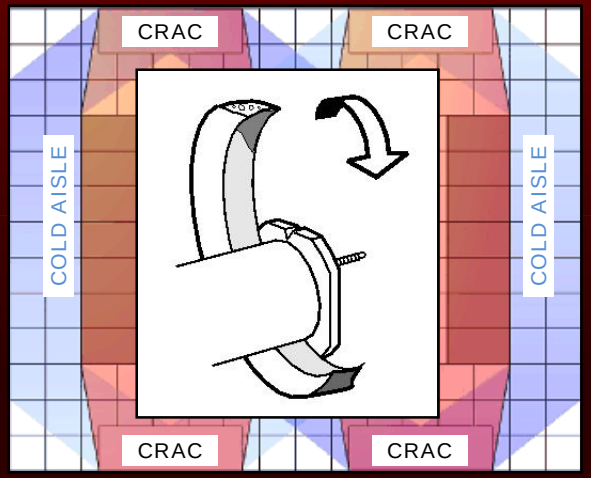
Convert to variable speed fans

Step 4) Implementation – Cooling

Use supplemental cooling In “Hot Spots”

Line up CRAC units with the hot aisles

Seal ducts or casings to reduce leakage

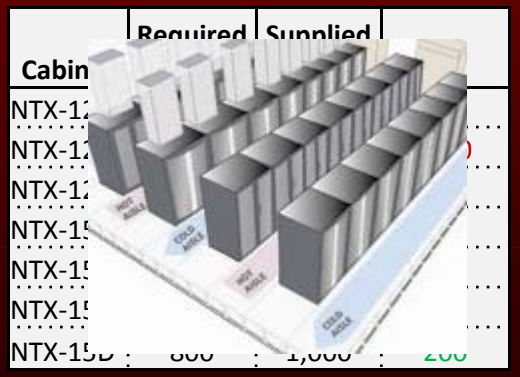


Step 4) Implementation – Airflow

Implement air-balancing program

Implement alternating hot/cold aisles

Place supply devices in cold aisles only

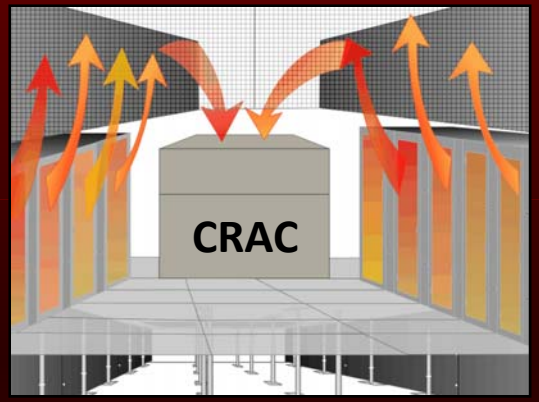


Step 4) Implementation – Airflow

Take return air from the hot aisles

Use over-head diffusers where applicable

Place returns at high elevation



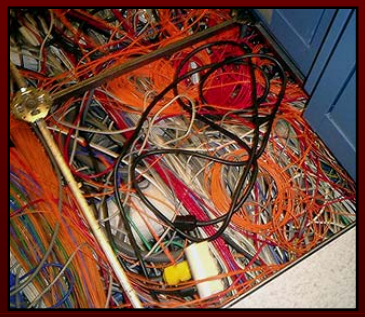
Step 4) Implementation – Airflow

Provide adequate ceiling return plenum height

Provide physical separation of hot and cold air

Step 4) Implementation – Supply

Verify heat load vs. raised-floor plenum height



Remove abandoned cables and other obstructions

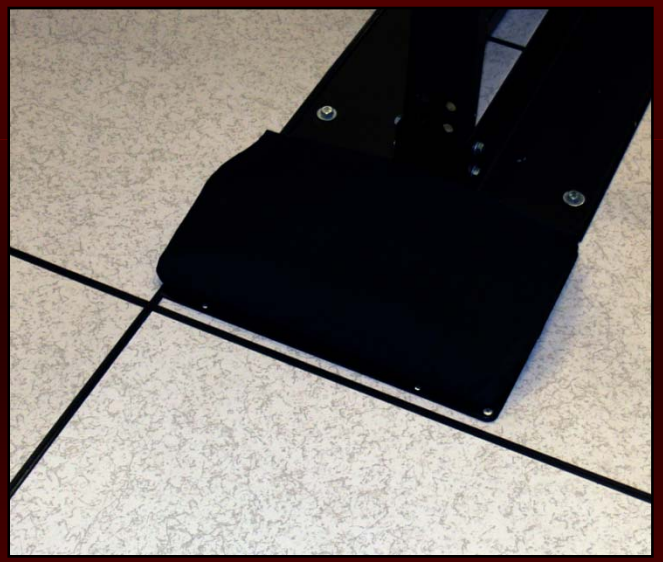
Provide adequate floor plenum pressure

Step 4) Implementation – Supply

Seal floor leaks, including cable cutouts

Remove cosmetic doors from equipment racks

Provide adequate free area on rack doors



Step 4) Implementation – Supply

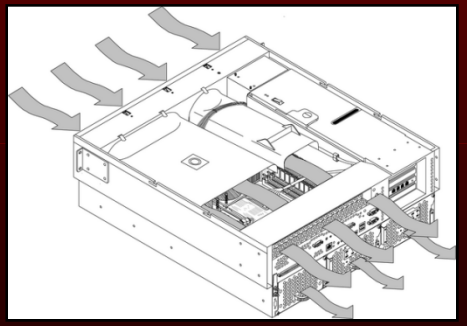
Maintain tight racks to prevent bypass of air

Maintain unbroken lineups to prevent by-pass air

Configure equipment racks in straight lineups/rows

Step 4) Implementation – Supply

Use IT equipment with front to rear and/or front to top airflow



Use IT equipment with higher temperature rise

Step 4) Implementation – Lighting

Use occupancy sensors for lighting control

Train staff to turn off lights when unneeded

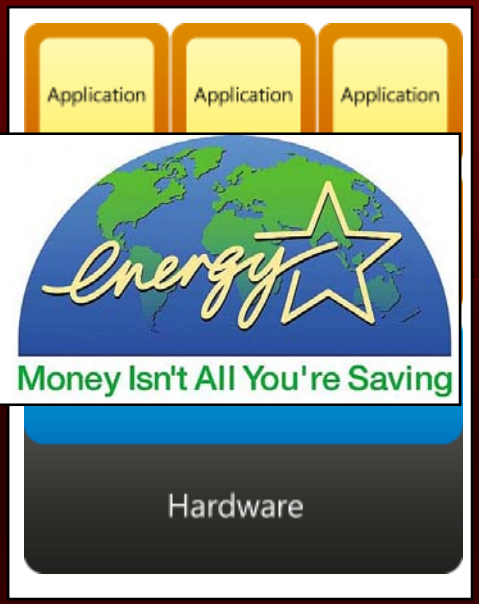
Replace T12 fixtures with Super T8 or T5/T5HO fluorescent lighting fixtures

Step 4) Implementation – Servers

Old/ Un-used equipment decommissioning

Virtualization

Specification of energy efficient IT Equipment



Step 4) Implementation – Electrical

Ensure proper UPS/PDU maintenance

Upgrade aging UPS units

Ensure distribution systems are up to date and properly documented

Implement a continuous commissioning plan

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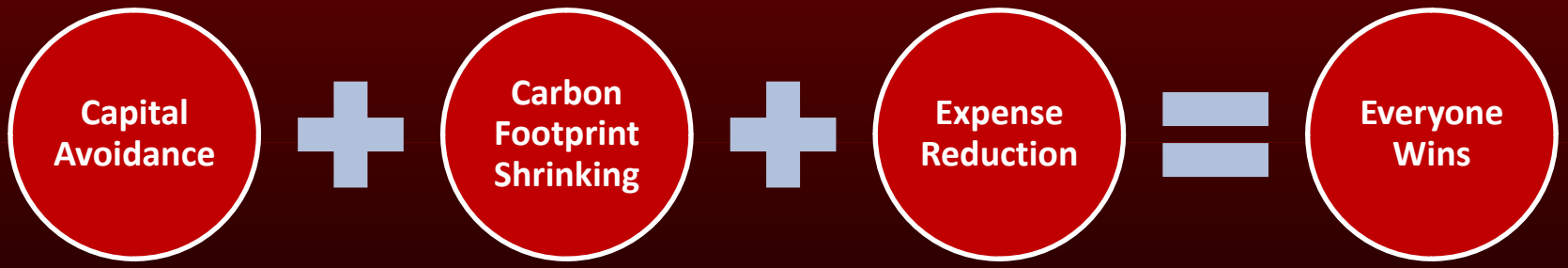
Then 1 2 3 4 5 Now

Step 5) Results



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Questions

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