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A River of Energy Solutions

**An O&M Bonanza:
Energy Audits and Existing
Building Commissioning**

Ed St.Germain – Enviro- Management & Research

New Building Commissioning

A systematic process to ensure the total building will:

- **Have high quality, reliability, functionality, & maintainability**
- **Meet energy/operating efficiency goals**
- **Operate and function as Owner Intended and as designed**
- **Be what the Owner paid for**



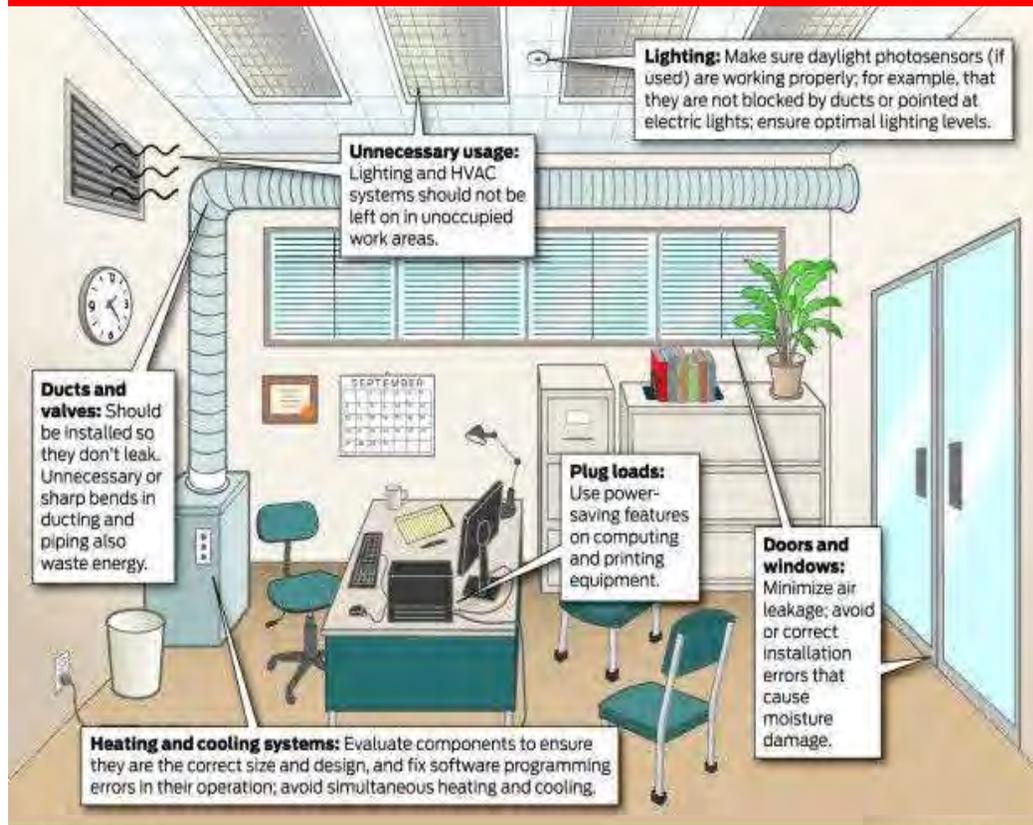
Building Retro-Commissioning

A systematic process...

- **objective is to improve and optimize building performance**
- **not necessarily save energy**
- **for existing buildings that have never before been commissioned**
- **seeks to identify and correct the root causes of problems**
- **uses all forensic tools available - personal interviews, observation, reviewing controls sequences, testing and data collection, document review, and analysis.**
- **considers specific system, sub-systems, and systems, usually those identified as most problematic or most energy use intensive**



Energy Audits



Source: Chronicle research

Todd Turnbull / The Chronicle

Different Emphasis:

- Energy saving opportunities vs equipment condition & output
- More generalized – envelope, procedures, habits
- Retro-Cx recommendations *not necessarily* energy savers

Existing Building Assessments

Assessments of existing buildings – both retroCx and audits – do not have to seek expensive fixes...

As a matter of fact, DOE FEMP places strong emphasis on no cost/ low cost solutions – and there are plenty!

Existing Building Assessments



Signs of Trouble

Existing Building Assessments



Air Distribution



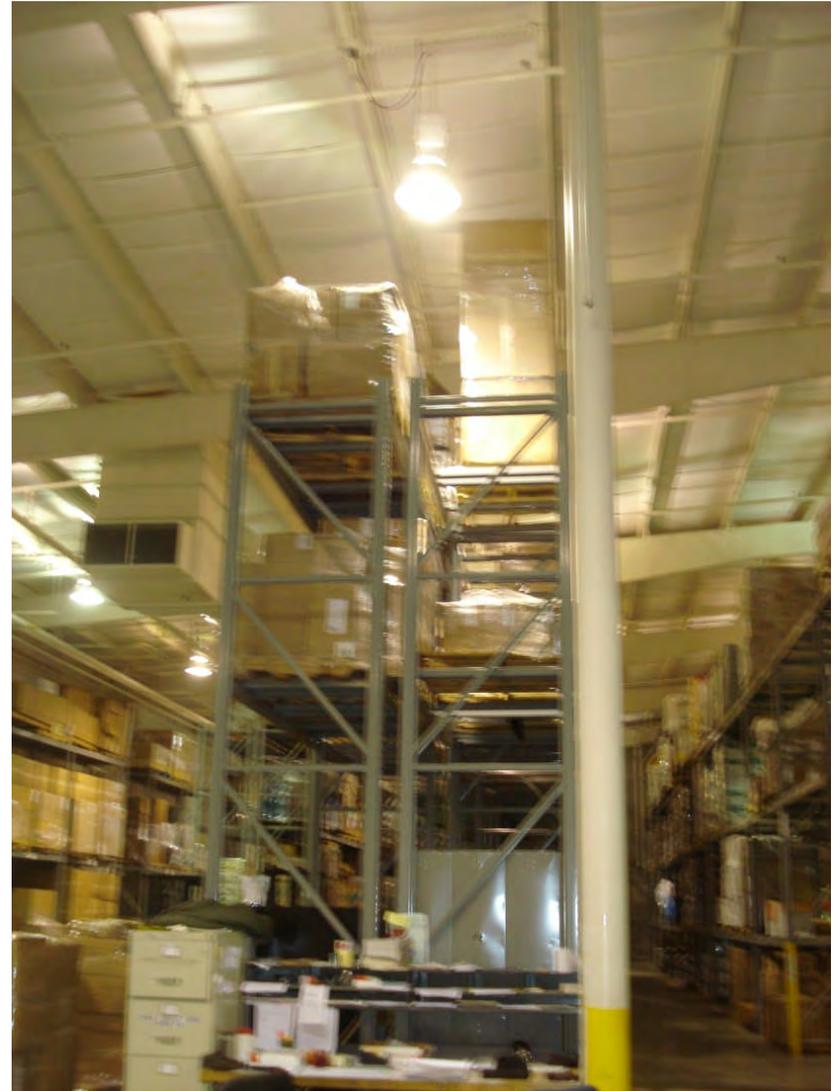
Existing Building Assessments



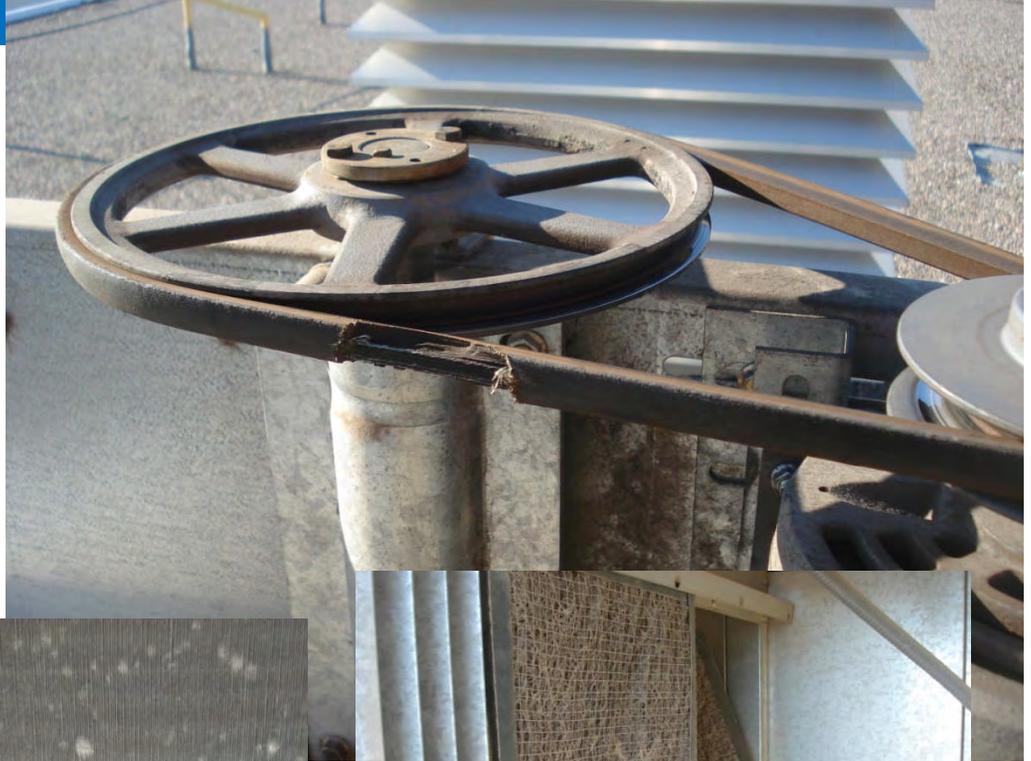
**Air
Circulation**

Existing Building Assessments

Inefficient Lighting



Existing Building Assessments



Rooftop Forgetfulness

Existing Building Assessments



Vending
Machines

Existing Building Assessments



Arcade Machines

Existing Building Assessments



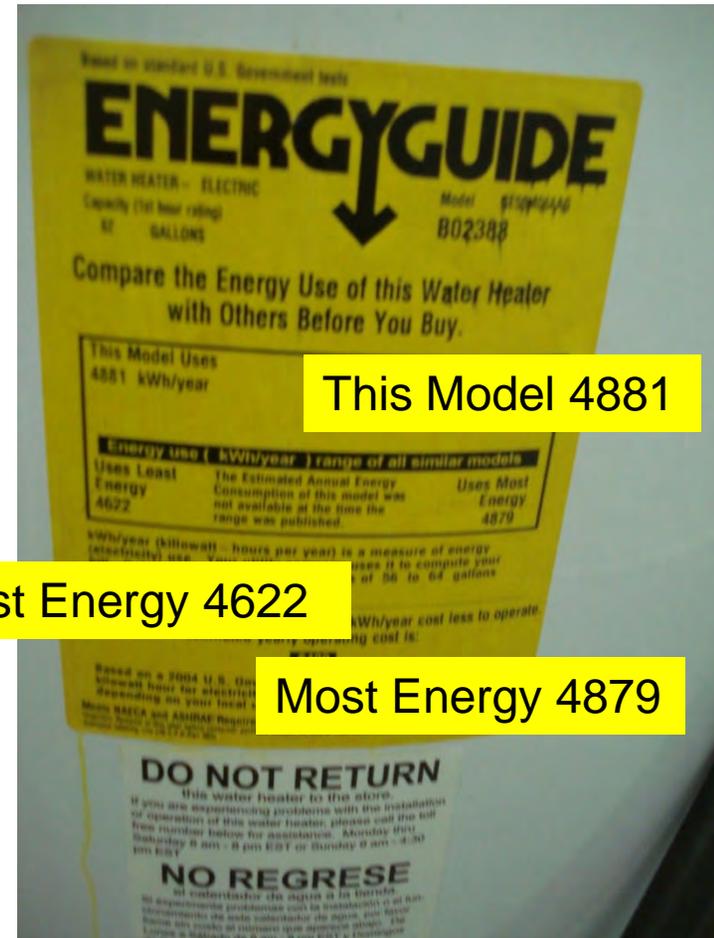
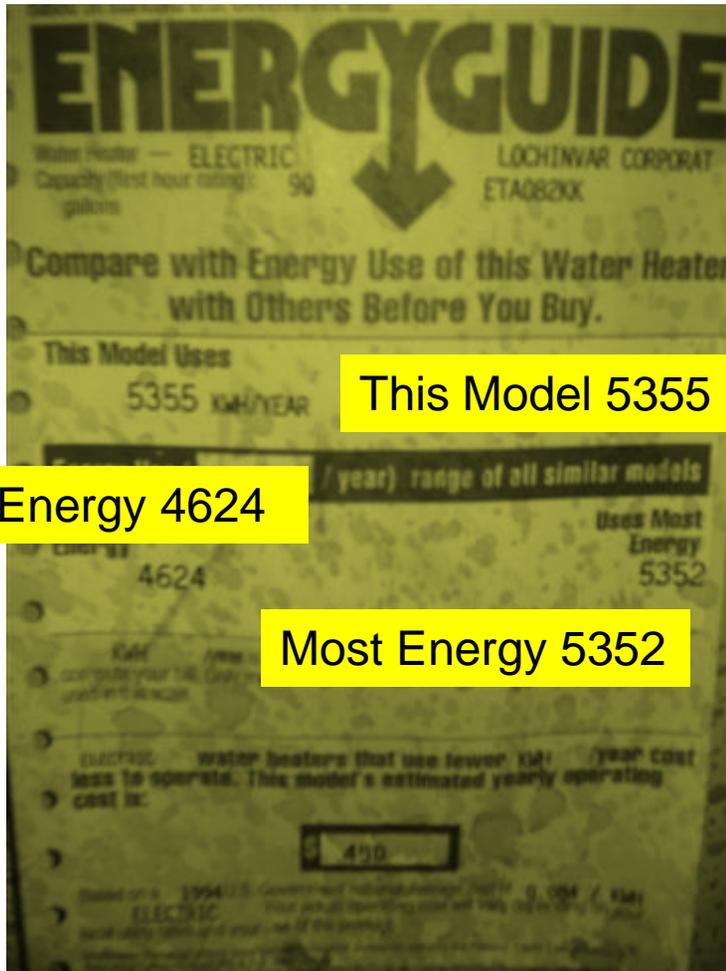
Landscaping
“Green Thumb”

Existing Building Assessments



Tunnel to
Nowhere

Existing Building Assessments



Worse than Worst

Existing Building Assessments

Controls Placement



Existing Building Assessments



Water Saving Devices

Existing Building Assessments



Wild
Blue
Yonder

Existing Building Assessments



Animal
Kindness

Existing Building Assessments

What's
under
your
roof??



Existing Building Assessments



Think
Infrared

Existing Building Assessments



47 x 100W
Always On

Existing Building Assessments



120sf hole,
air-conditioned
space,
in the tropics

Existing Building Assessments



Like a 42 in₂ hole
in the wall (1/2" x
7 ft)

Existing Building Assessments



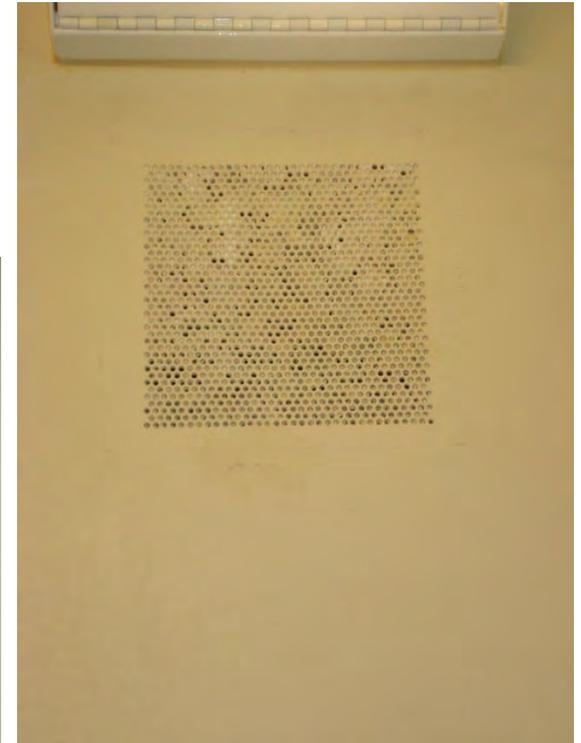
Get rid of that Heat

Existing Building Assessments



Steam kettles

Existing Building Assessments



**Excessive
Humidity**

Existing Building Assessments



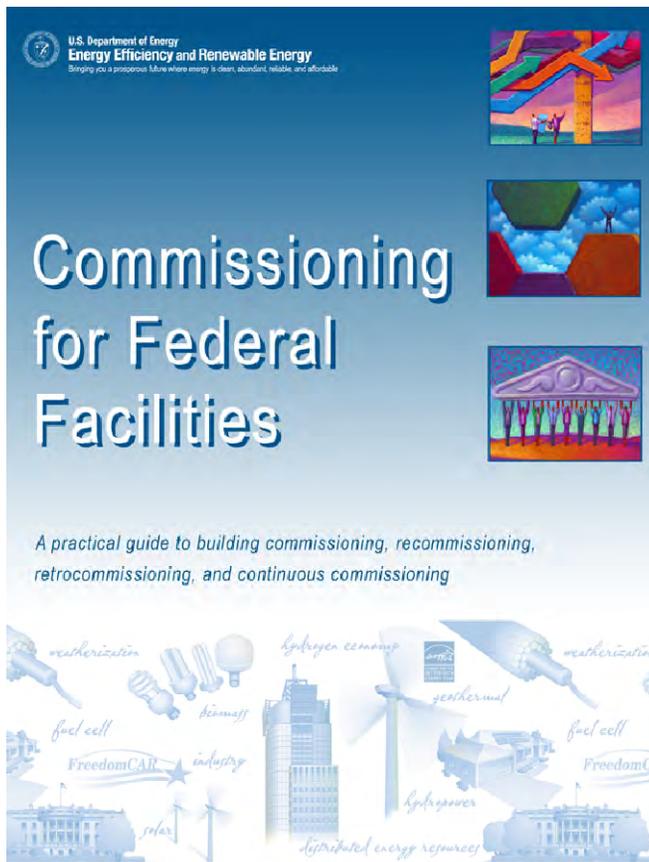
Ice Storage

Existing Building Assessments



Hot
Aisles,
Cold
Lakes

Existing Building Assessments



***Commissioning for Federal Facilities –
A Practical Guide to Building
Commissioning,
Re-Commissioning,
Retro-Commissioning, and Continuous
Commissioning***

<http://www1.eere.energy.gov/femp/information/publications.html#om>