Federal Energy Efficiency Through Improved Operations & Maintenance

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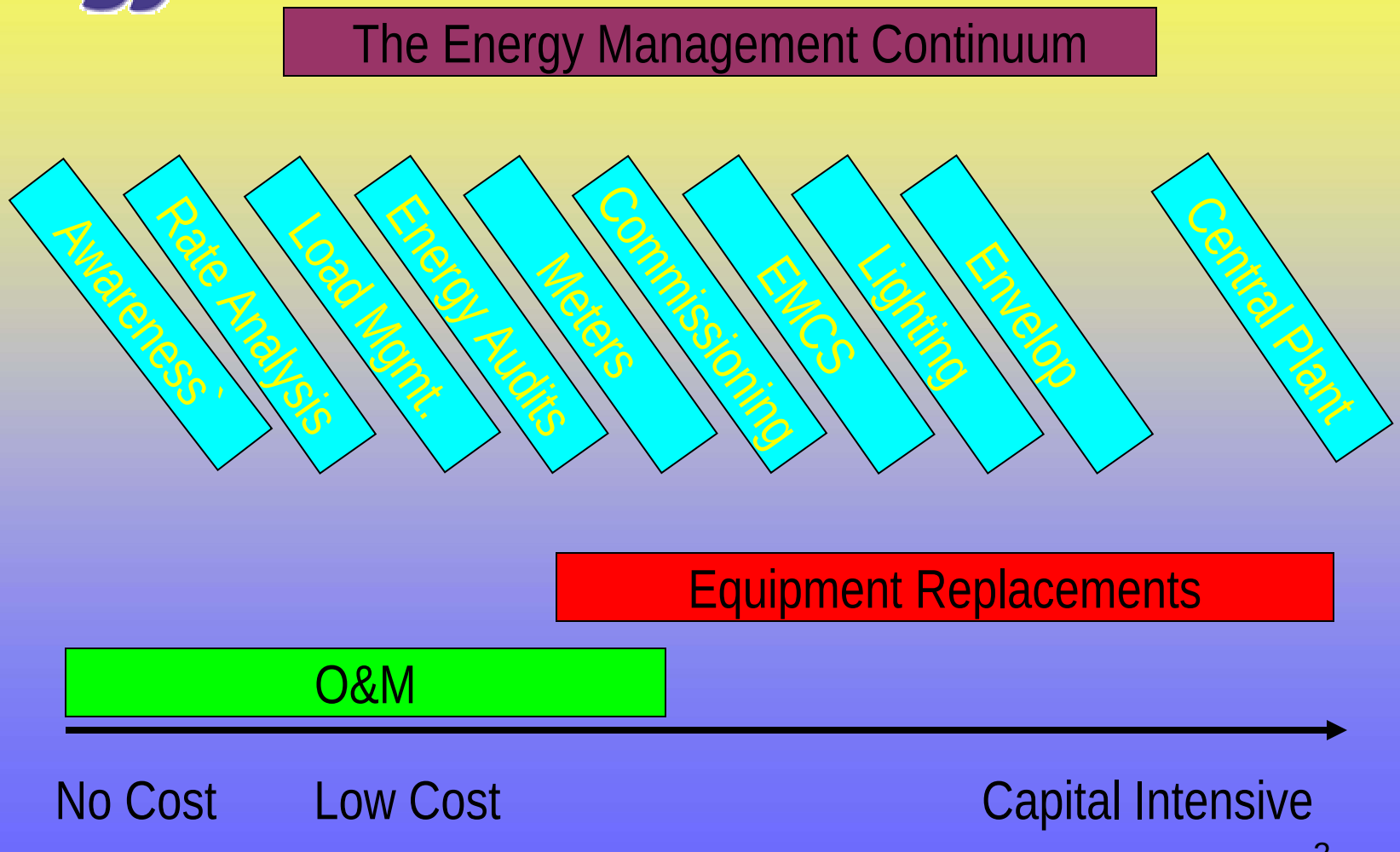
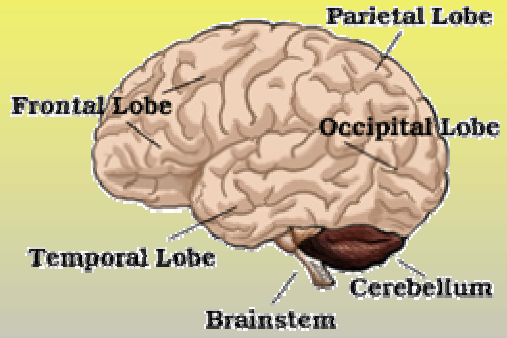
What is O&M, Anyway?



An O&M Lobotomy

- Operations – schedules, control strategies, sequences of operations
  - Mission-oriented
    - How we use a facility to achieve agency mission
    - Tempo of operations
  - Facilities-oriented
    - Intended use vs.
    - How we use it



- Maintenance – care,cleaning & feeding of equipment
  - Equipment-oriented
  - Aimed at reducing:
    - Complaints
    - Downtime
    - Premature failure

Why do we care about O&M?

- 10-30% savings are fairly typical
- Can help reach mandated goals, and beyond
- Extend equipment life
- Improve occupant satisfaction
- Enhance health and safety
- Reduce life cycle costs
- Non capital intensive
- Simple paybacks < 2 yrs typical

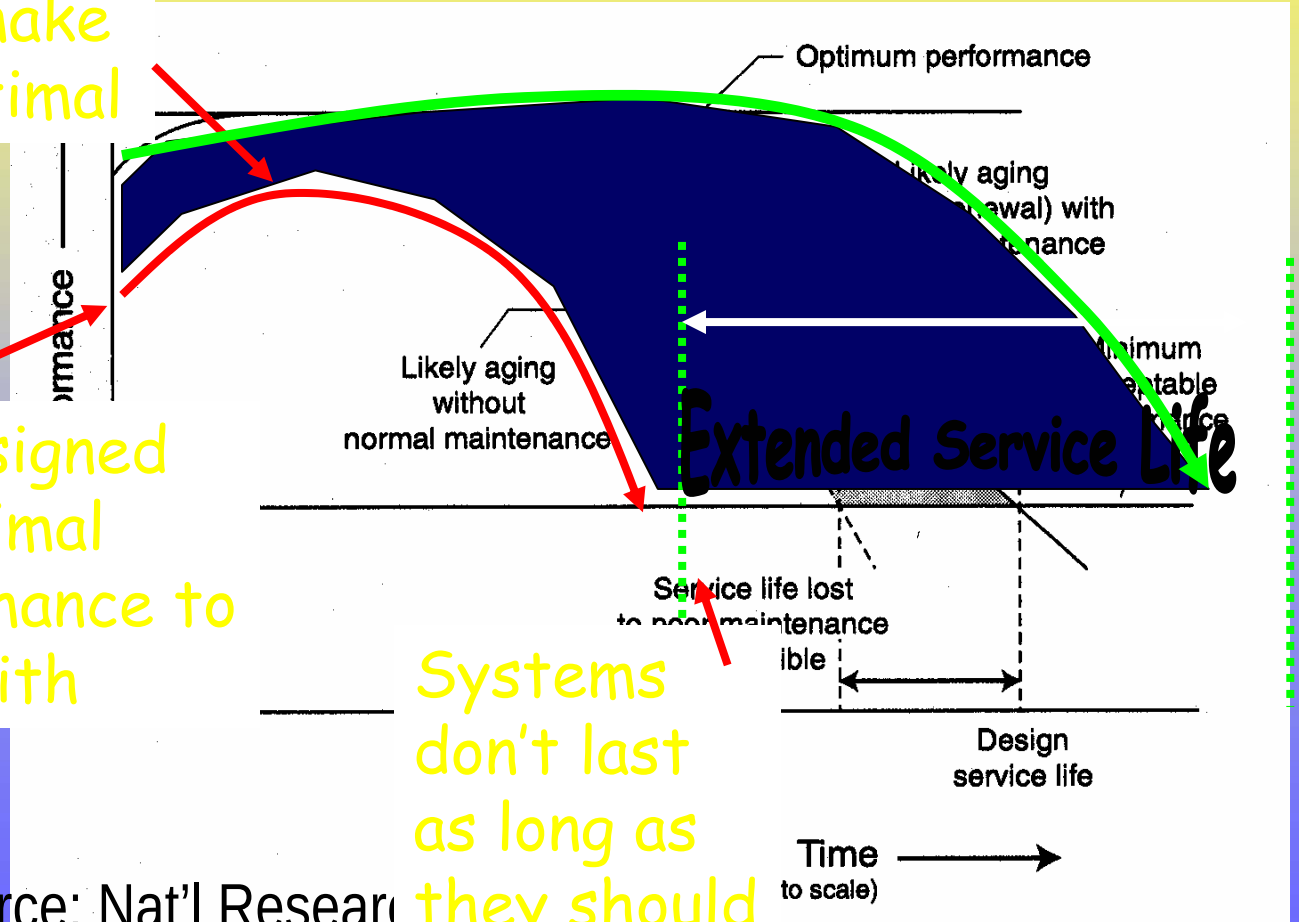
Current State of Affairs

- Buildings aren't designed for optimal performance and therefore have no hope of getting there.
- Commissioning never/rarely takes place.
- Building design assumptions don't match actual use.
- Run-to-failure prevails.
- Service life compromised.
- Energy/dollars wasted throughout reduced system life.

Effect of O&M on Service Life

Never make it to optimal

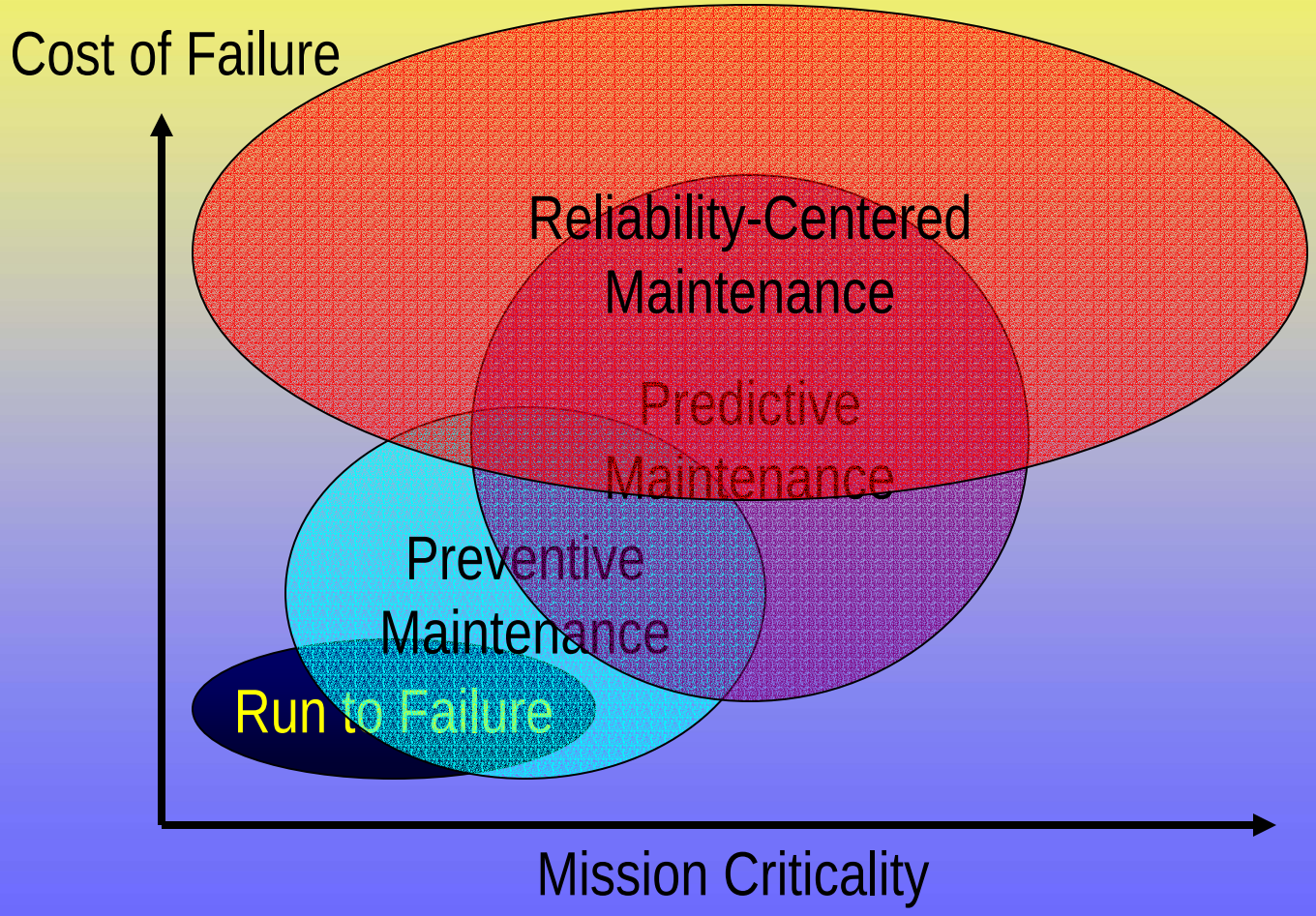
Not designed for optimal performance to begin with



Systems don't last as long as they should

Source: Nat'l Researc

What O&M level do you need?



Federal O&M Savings Potential

Total non-residential Federal Energy Use (FY99)	.30 quads
Savings potential (10-30%)	.03 - .10 quads
Dollar Savings Potential	$300 Million to $1 Billion
Estimated Simple Payback	1.4 years
Investment required ($0.17/s.f.)	$408 Million

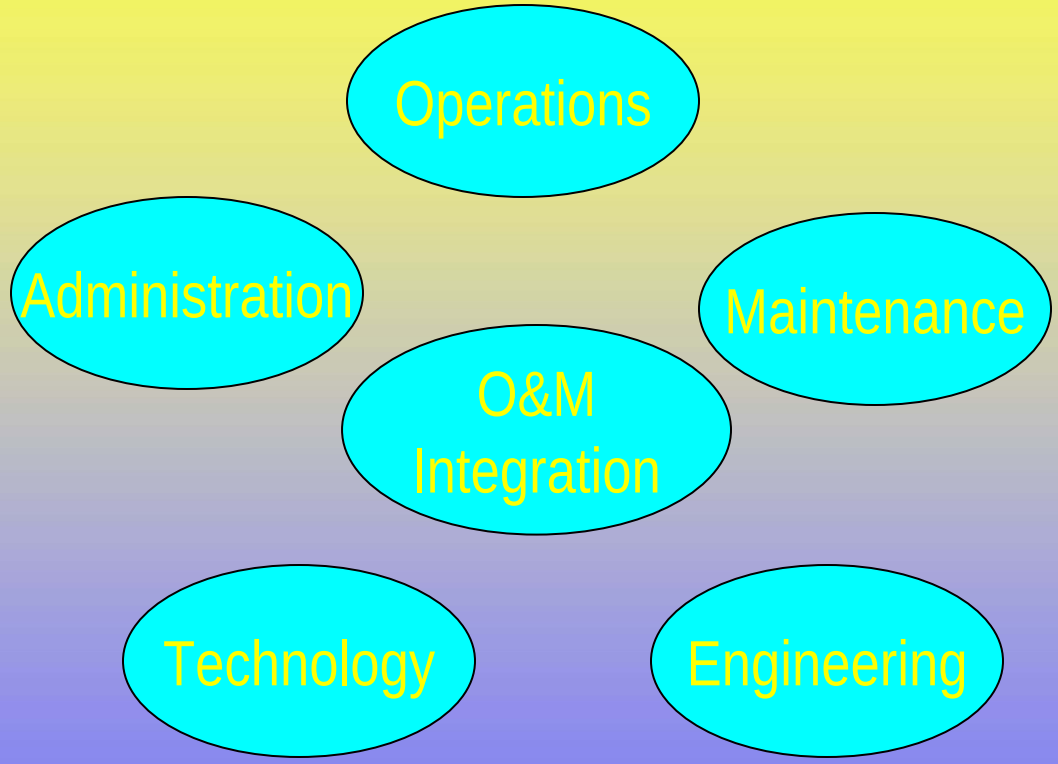
So - Why are we not doing more O&M?

- Momentum on the side of equip retrofits:
  - Most energy audits not exactly O&M oriented.
  - Don’t have to think as hard to replace one piece of equipment with another, more efficient one.
  - Doesn’t require a lot of data to stipulate savings.
- Optimal O&M requires more thoughtful approach and integration with Facilities Mgmt. – and lots of information/data
- O&M generally not getting the attention it seems to deserve.

O&M Fundamentals

OMETA

- Operations
- Maintenance
- Engineering
- Technology
- Administration



Are all of these people on the same sheet of music?

FEMP O&M Program Components

- Funding
- Marketing
- Training
- Technical Assistance
- Performance Measurement
- Incentives
- Integration

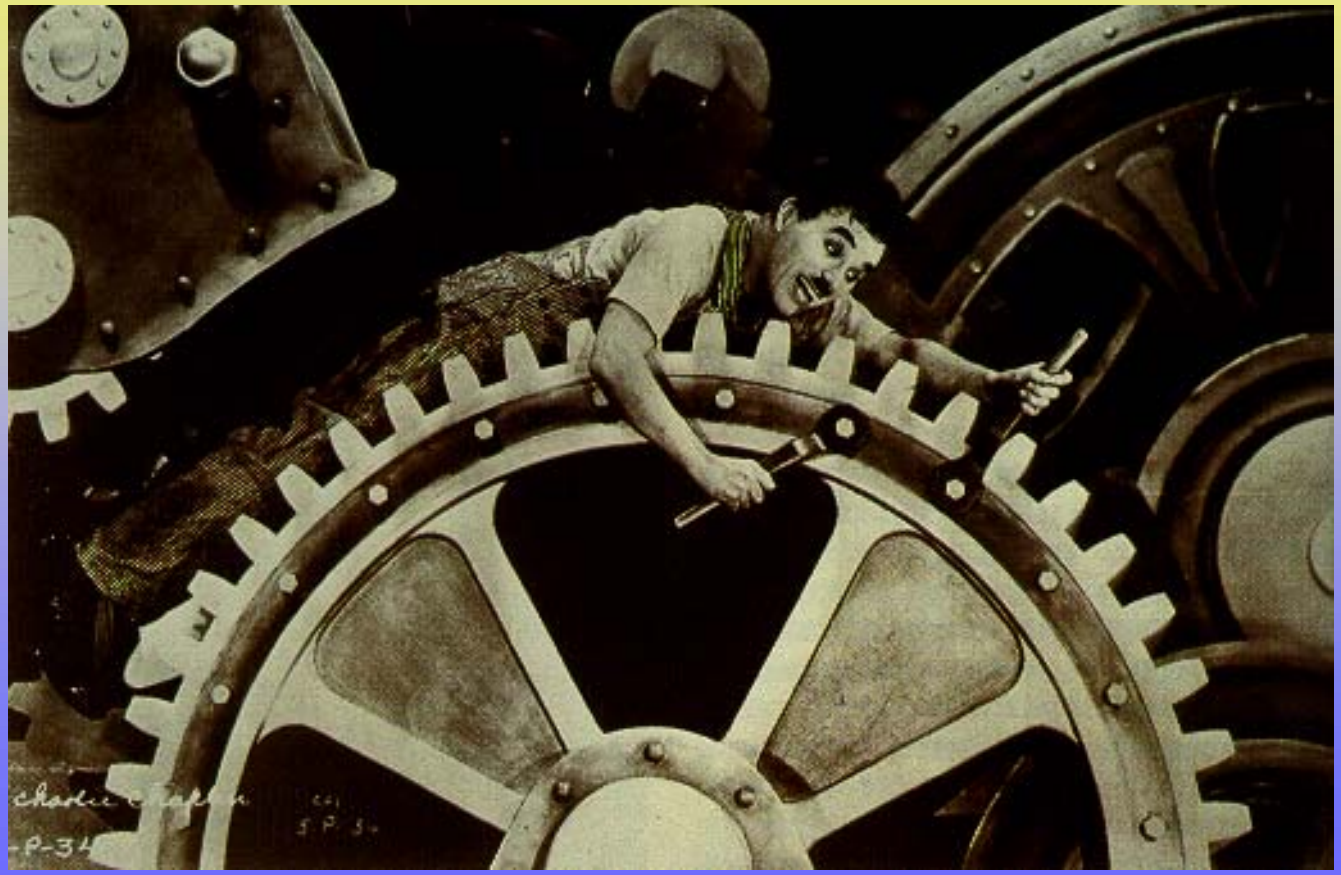
Some Lessons Learned

- Myth: new buildings run better
  - We only presume they run better
  - Control systems fail to deliver
- Don't believe everything you hear
  - HVAC schedules rarely match what people are actually doing
- Organizational barriers are common
  - Leases, O&M service contracts, internal subdivisions between O&M and energy budgets
- Data is essential!
  - You can't manage it if you don't measure it

What Customers Want:

- Feedback From FEMP's O&M Workshops:
  - $ for training & test equipment
  - How to do O&M performance contracts
  - Tech Assist on creating maintenance programs
  - Best Practices guidance
  - Tech. Specific help
  - Advice on Computerized Maintenance Management Systems (CMMS)

Is your O&M team on top of things?



OR –
Is the
future
here?

22. The inventor will no longer understand his own machine. 1941

Orlando, Florida

August 17 - 20, 2003

www.energy2003.ee.doe.gov/

Thank You!

- **Questions?**
- **Comments?**
- **Ideas?**

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