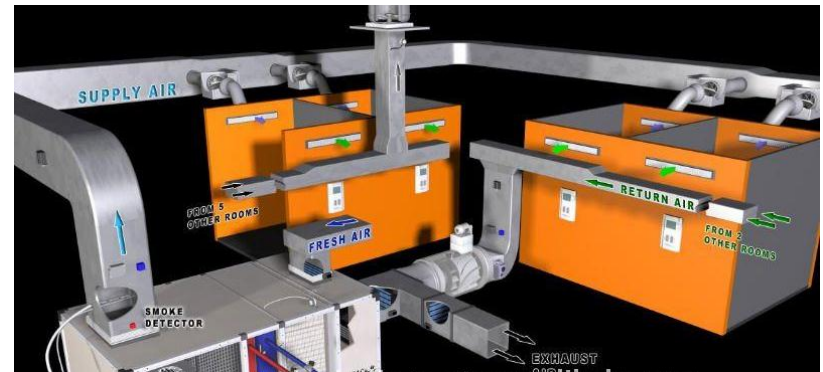


Routine Maintenance Components

- Operation and Maintenance (O&M) is a large expense in owning and operating a facility over its life cycle.
- Maintenance programs need to be comprehensive and facility-specific. This should include all serviceable components:
 - HVAC
 - Electrical
 - Plumbing
 - Building Envelope (buildings skin and roof)
 - Painting (interior and exterior)
 - Drywall and Plaster
 - Landscaping
 - Interior Cleaning
 - Flooring
 - Hardware
 - Other



Lack of Routine Maintenance

- Lack of maintenance causes liability issues = lawsuits
 - Uneven sidewalks
 - Potholes in parking lots
 - Slip hazards – water and ice build ups
 - ADA regulations
- Lack of maintenance = equals added expense and or failures
 - Parking lots
 - Joint sealants
 - Mechanical systems
 - Drainage systems
 - Others



Lack of Routine Maintenance



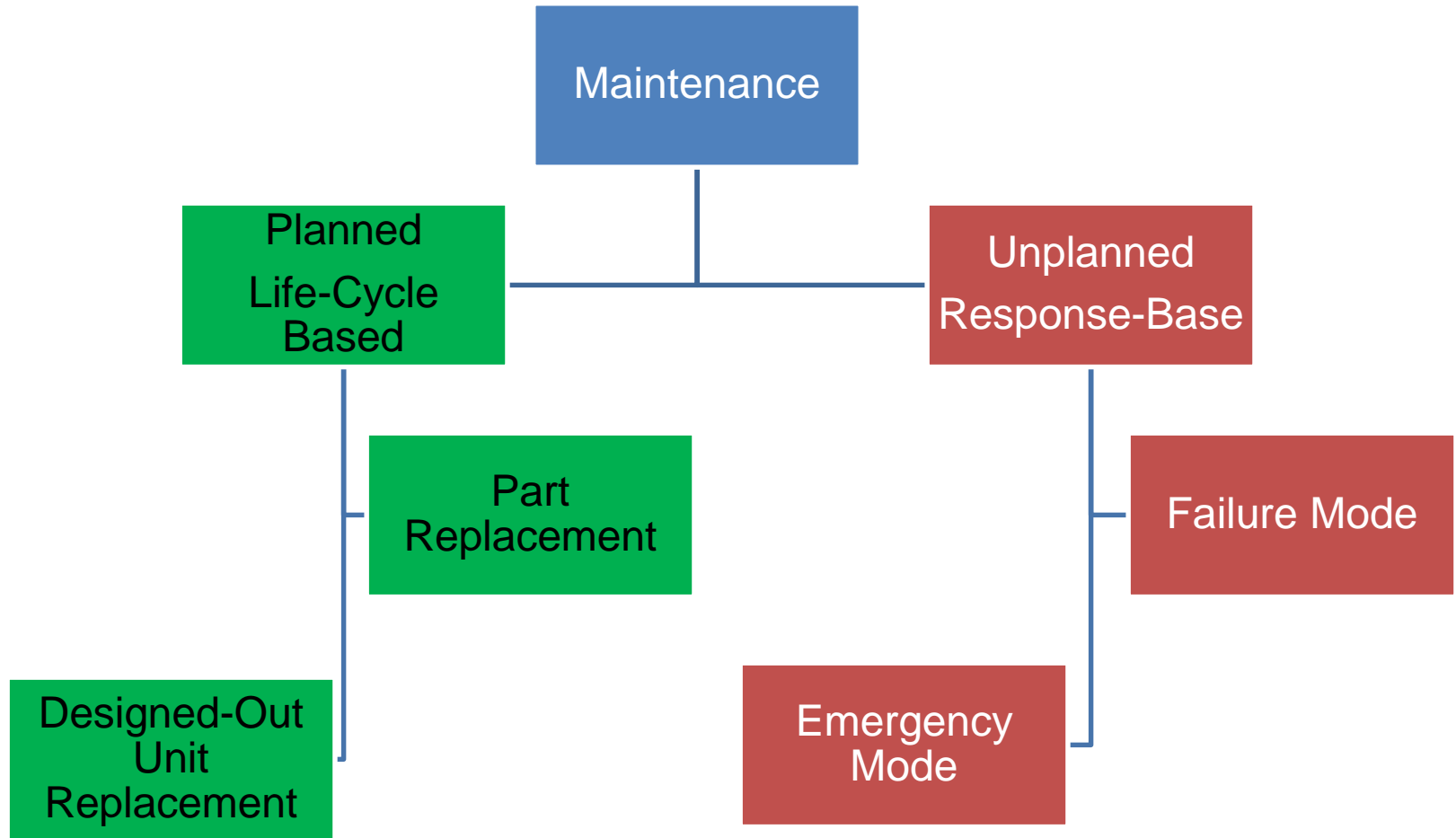
Routine Maintenance Goals

- Ultimate goal of routine maintenance is to:
 - Improve the comfort and health of building occupants through a better indoor / outdoor environment
 - Extend the life expectancy of all building components
 - Gain a return on your investment through energy savings and premature failure of equipment
 - Avoids need for emergency action
 - Saves money!
- Developing or enhancing a routine maintenance program requires patience and persistence.
 - Define your process – include responsibilities and partners
 - Conduct inspections and develop checklists
 - Establish budget
 - Keep accurate records
 - Continue to repeat these steps

Life Cycle & Replacement “Planned Maintenance”

- Life Cycle & Replacement – what we like to call “Planned Maintenance” – refers to larger-scale maintenance that is not addressed under routine maintenance.
- Planned Maintenance is to replace building subsystems that are at the end of their serviceable lives.
 - Roof systems (15-25 Years)
 - Elevators (25 Years)
 - HVAC Equipment and Controls (20 Years)
 - HVAC Distribution System (40 Years)
 - Electrical Equipment (30 Years)
 - Plumbing Fixtures (30 Years)
 - Plumbing Rough-in (50 Years)
 - Fire Protection Systems (40 Years)
 - Fire Detection Systems (20 Years)
 - Built-in Specialties and Equipment (25 Years)
 - Interior Finishes (15 Years)
 - Site Development Hardscape (As needed)
 - Site Development Landscape (As needed)

Planned Maintenance vs. Unplanned



Emergency Management Risk Management Plan

- Even with routine and planned maintenance setup emergencies will happen from time to time.
- Is it a insurance claim or internal expense?
- Define emergency procedures and contact list.
- Are there future risks or other component issues?

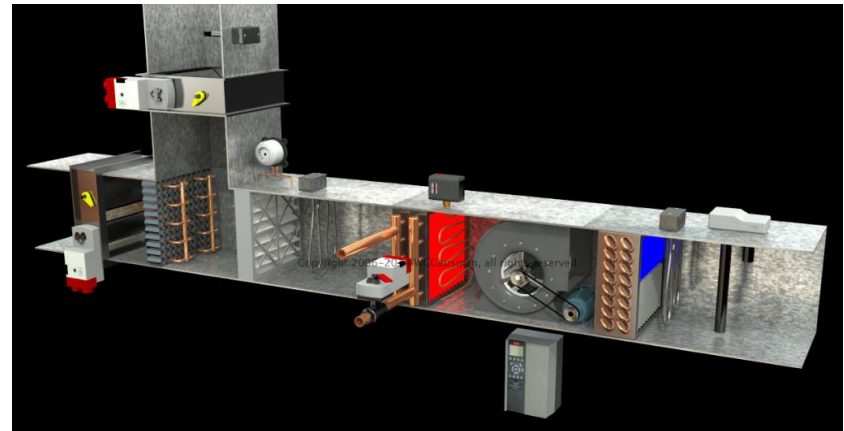
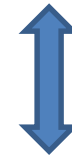


Energy Management Mechanical / Electrical Systems

- Mechanical Systems
 - Type of System
 - Operating as designed
 - Building Controls..
 - Routine Maintenance
 - Equipment Efficiencies
 - Operational cost and Tracking
 - Defined Life-cycle
 - Spare Parts
- Electrical Systems
 - Type of System
 - Lighting Type
 - Lighting Controls

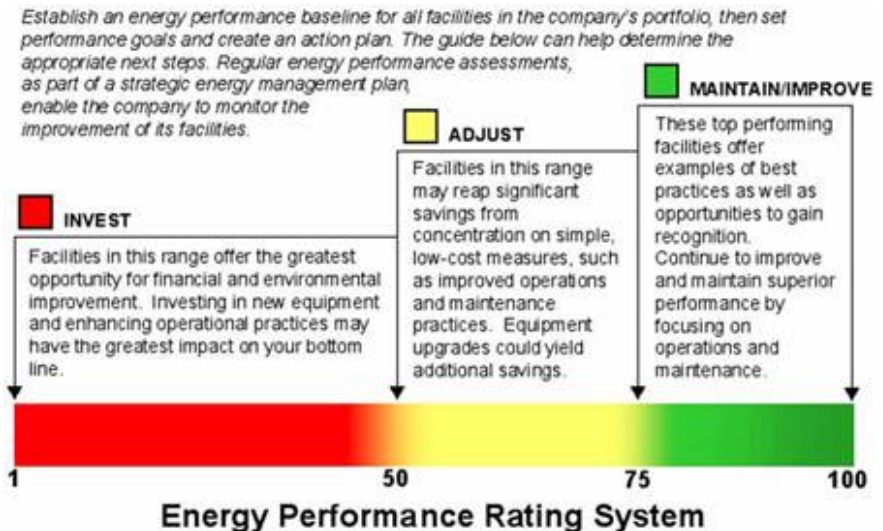


Programmable
Thermostat



Energy Management Mechanical / Electrical Systems

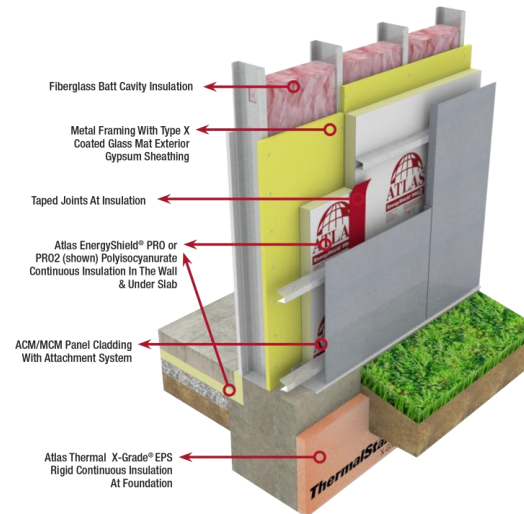
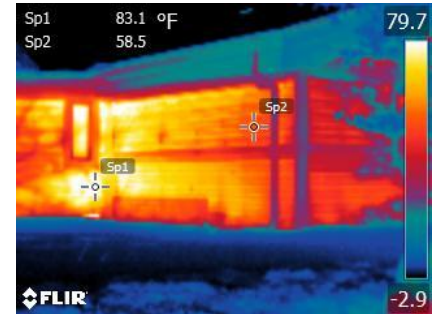
- LED light bulbs now offer direct replacement without changing out the existing ballast. These bulbs are extremely efficient and can offer a short pay back period.
- HVAC efficiency are up to 95% and can vastly change operational costs.
- Utility cost summary uses the past three year's utilities cost and compares that to the buildings square footage and use of the building to determine how efficient the building is.



Energy Management

Building Envelope

- Heating and cooling needs are effected by the performance of interrelated building systems, these include the units and their controls, the building envelope components and efficiency of each system.
- The appropriate building component solutions should be determined only when the entire team has thoroughly reviewed the requirements and contributing thermal loads of these interrelated systems and has carefully considered all efficiency gains possible through design or maintenance strategies.



The Problem Identified

- Actual vs. spoken commitment (e.g., during board meetings) about facilities stewardship
 - Numerous comments in a facilities manager survey ...
 - They give an “A” to intentions, but a “C” or “D” to actual funding for maintenance and renewal projects
- Biggest problem?
 - Gathering data and presenting it in a way that can make the case to administrative leaders and board

The Problem Identified – Terminology

- Concurrent needs and resulting confusion about priorities:
 - Operations – Normal daily functions (janitorial, etc.)
 - Maintenance – Work needed to realize the intended useful life of the asset
 - Repairs – Restoring damaged or worn out facilities and equipment
 - Replacements – Exchanging one asset for another (usually a complete component)
 - Alterations – Work to change the interior arrangements or other physical characteristics to meet current needs
 - Deferred Maintenance – Work needed to bring assets back to acceptable standards of presentation and usage

Case Study

- Current

- On-premise servers need replacing
- Accessing through remote desktop or VPN when offsite
- Backups on premise with hard drives
- Security
- Financials

- Future

- Cloud Server
- Local Server
- Cloud Backup
- Hosted Email
- Cloud File Share